



Automatic wear detection system

# **PTD** **UPGRADE KIT**

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This is an addition to the Diverter Valves Installation, Operation and Maintenance Manual (IOM) listed on [the technical support page](#) (ACCESSIBLE THROUGH QR CODE ON THE VALVE, OR CLICKING THE LINK)

<https://support.dmnwestinghouse.com/en/ptd/>

*This manual provides information useful to someone skilled to the level of a technical specialist.*

# 1. HOW TO INSTALL THE ACTIVE AUTOMATIC WEAR DETECTION SYSTEMS ON A PTD

Automatic Wear detection system (AWDS) active and passive systems.

This short instruction is meant for all PTD executions to be equipped with an AWDS.

## 1.1. BEFORE YOU START

Make sure the PTD is in a safe position to work on. Either remove it from the system or make sure there is enough room to access the pneumatic components and the non-sensor side of the PTD.

Confirm you can access the non-sensor side of the PTD by looking for the two blind plugs on the end cover of the PTD.

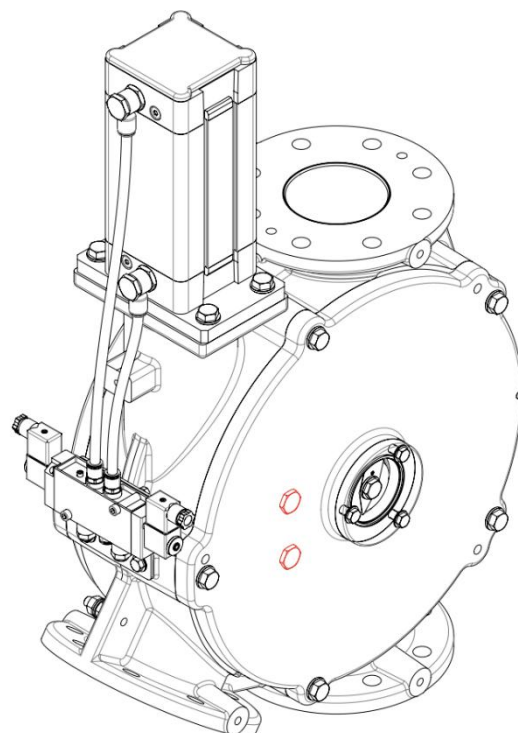


Figure 1 Blind plugs visible on the end cover



### **DANGER!**

before disassembly of the diverter valve, make sure there is no pressure on the conveying line or the PTD body. Shut off the air supply to the complete diverter valve and disconnect all electrical connections. Make sure to comply with all safety instructions found in chapter 10.4 in the complete diverter manual listed on the technical support page

## 1.2. INSTALLATION ACTIVE AWDS

1. Make sure there is no pressure on the conveying line, PTD body or cylinder;
2. Make sure to remove all electrical connections before continuing the disassembly;
3. Remove both blind plugs;

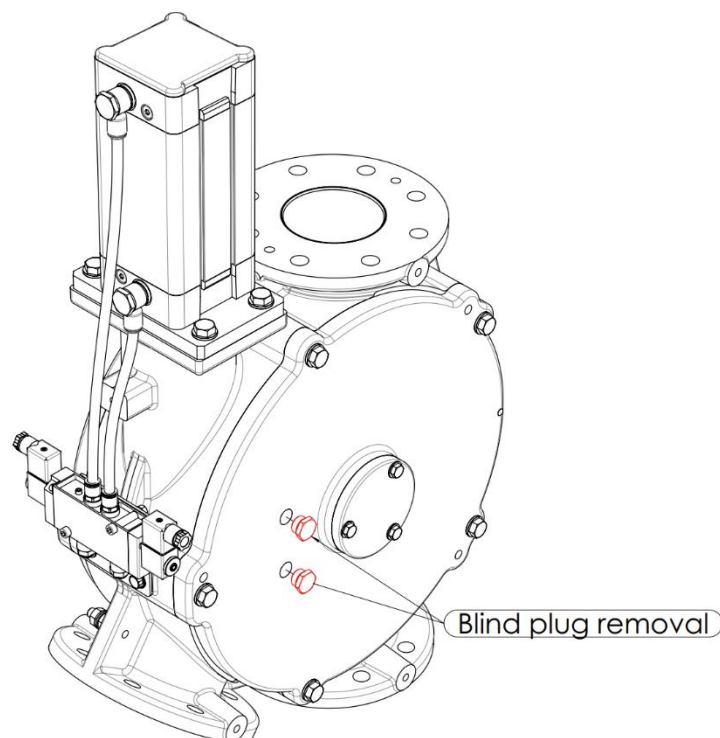


Figure 2 Removal of blind plugs

4. Install the new pneumatic connection on the provided adapter plug;
5. Install the adapter with pneumatic connection in the top M18 location
6. Install the safety relief valve on the other provided adapter plug;
7. Install the safety relief valve and adapter in the lower M18 location

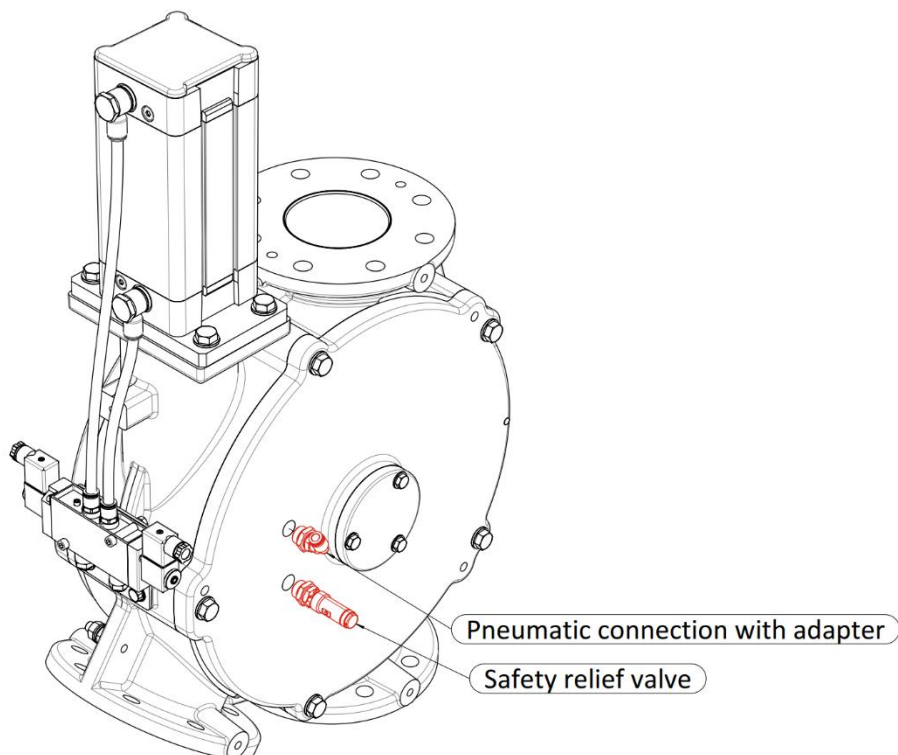


Figure 3 Installation of new pneumatic connection and safety relief valve

8. Remove the old pneumatic components by decoupling them from the cylinder and removing the mounting plate;
9. *(For inflatable seal only)*  
Remove the inflatable seal tube (coming from the upper flange area) from the pneumatic plate;

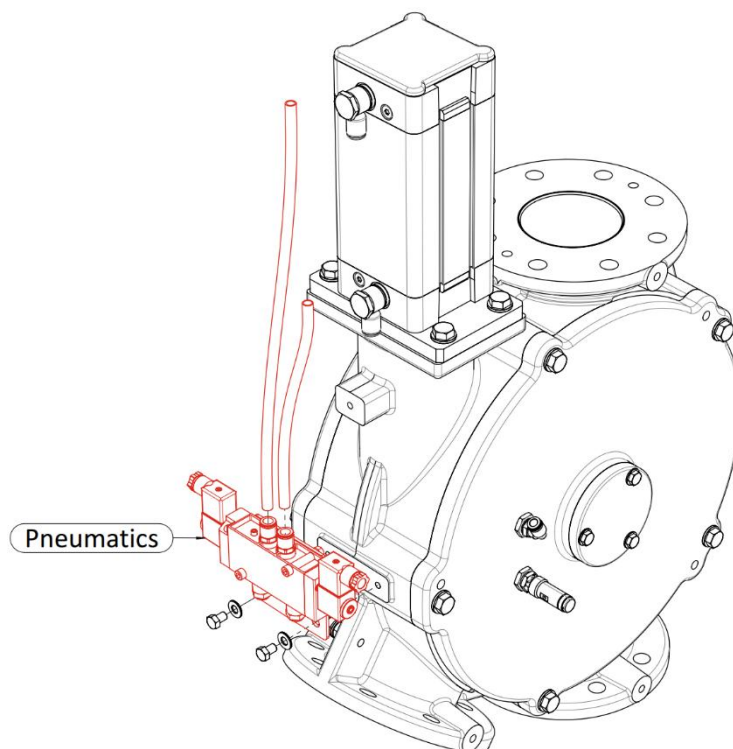


Figure 4 Removal of the pneumatic components

10. Install the complete pneumatics plate provided with the AWDS set using the three hex bolts;

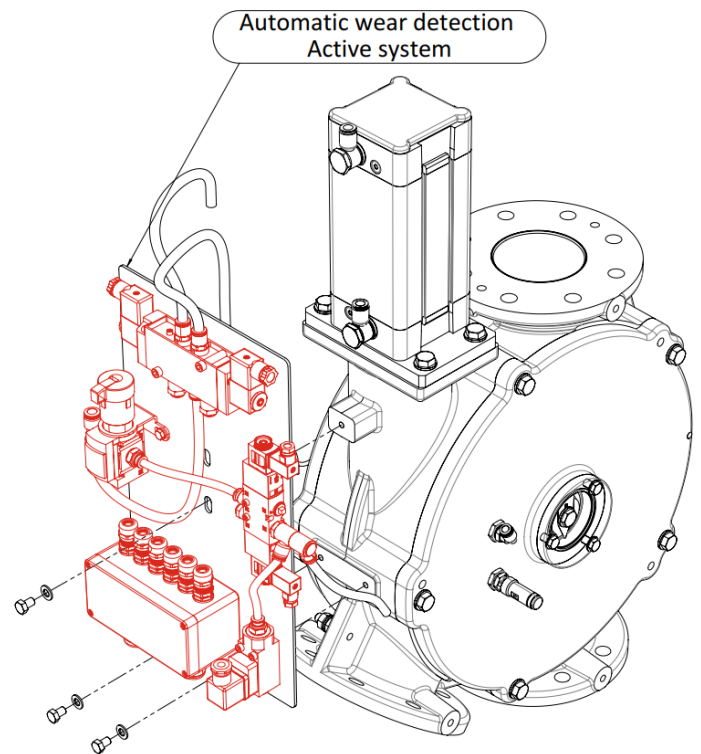


Figure 5 Installation of active AWDS system

11. Connect the AWDS to the pneumatic cylinder according to Figure 6. Attach the left pneumatic connection to the upper cylinder connection, the right one to the lower connection.
12. Connect the VUVS solenoid valve with the pneumatic connection on the end cover.
13. For the wiring connection, please follow the wiring diagrams listed in **Error! Reference source not found.**

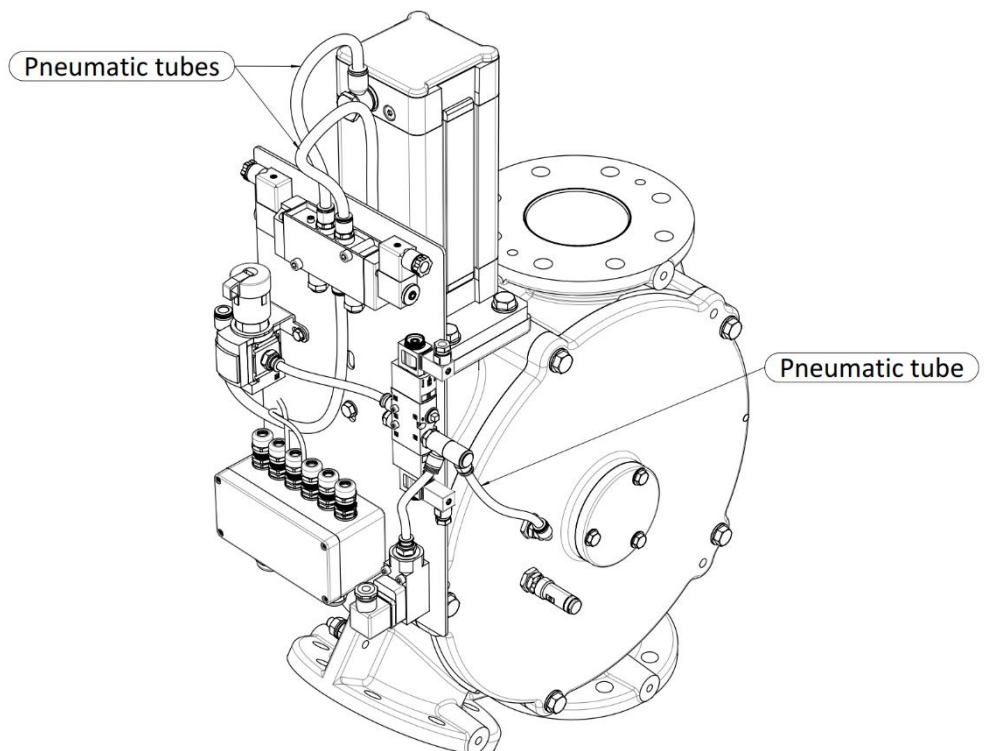


Figure 6 Connecting the AWDS pneumatic tubes

### 1.2.1. WIRING STATIC SEAL

How to wire the electrical components of the Automatic Wear detection system (AWDS) to a static seal PTD. Make sure to wire the AWDS set correctly to the junction box or directly to the external control system. Figure 7

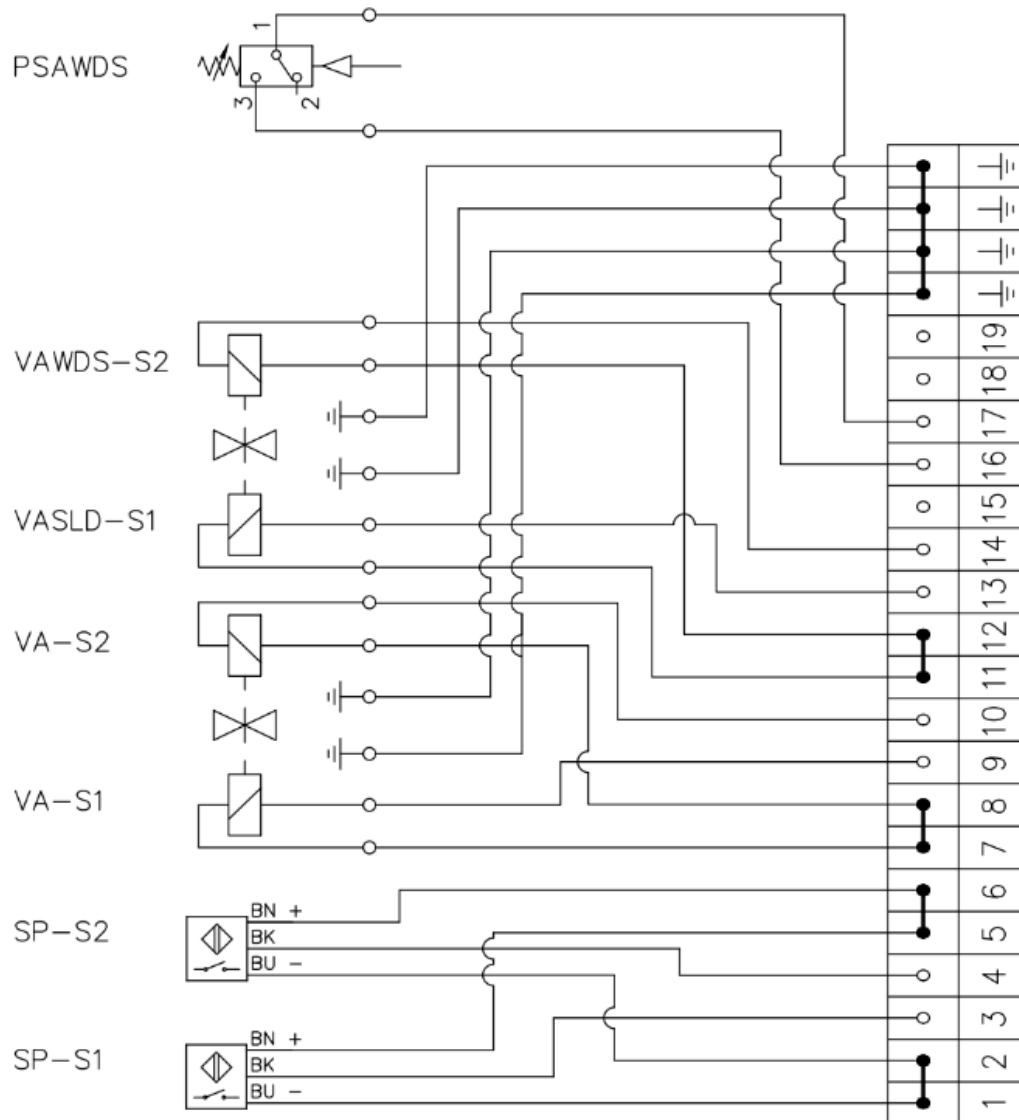
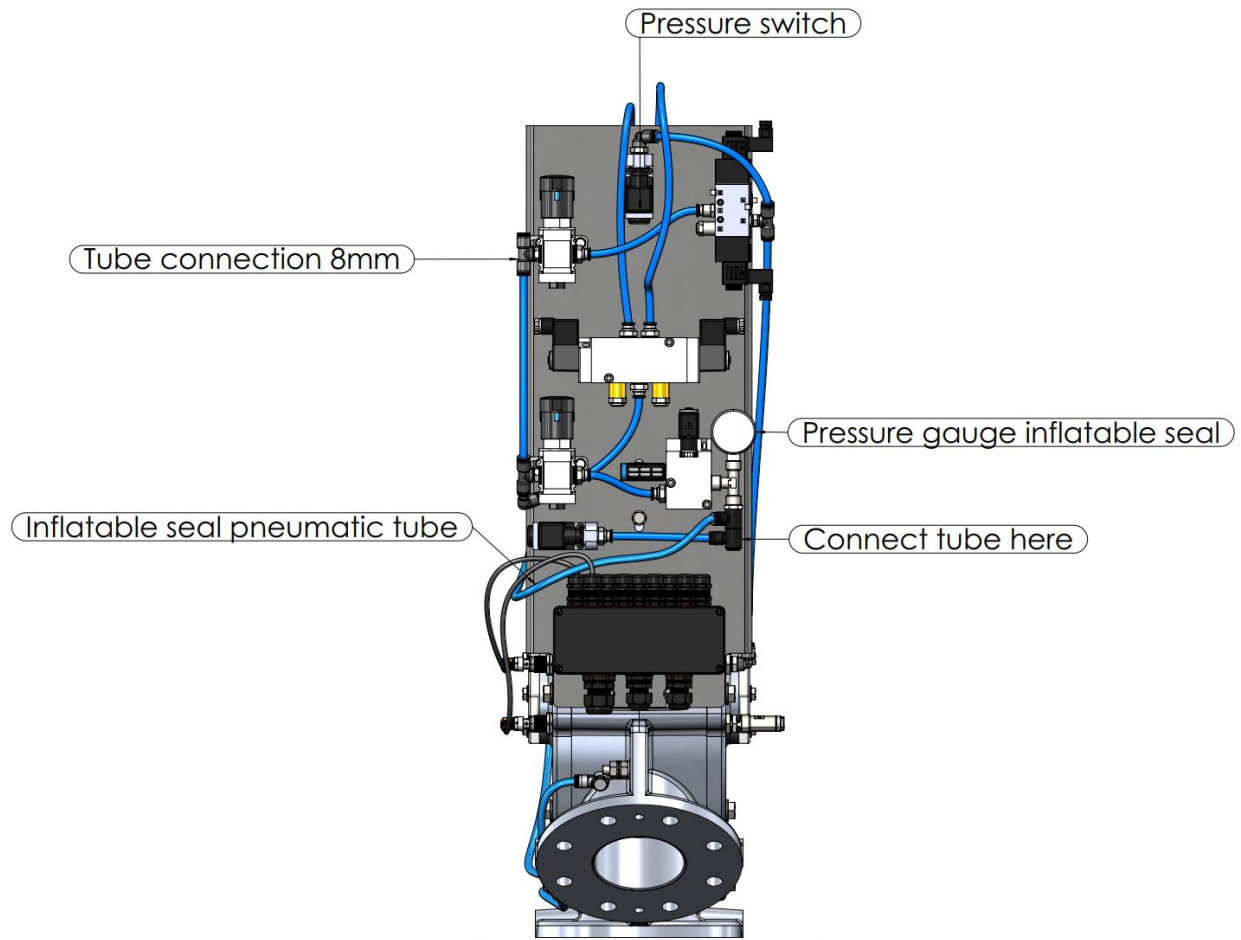


Figure 7 Wiring diagram active AWDS static seal

You have now fitted your static PTD with an active automatic wear detection system

### 1.3. ADDITION FOR INFLATABLE SEAL CONNECTION ACTIVE AWDS

For inflatable seal executed PTD's. Please make sure to connect the inflatable seal tube back to the system after installation. This tube is connected to the pressure gauge.



**Automatic wear detection, Inflatable PTD**

*Figure 8 Inflatable seal and AWDS executed PTD*

For the wiring diagram of the Inflatable seal PTD with AWDS please refer to Figure 9.

### 1.3.1. WIRING INFLATABLE SEAL

How to wire the electrical components of the Automatic wear detection system (AWDS) to a inflatable seal PTD. Make sure to wire the AWDS set correctly to the junction box or directly to the external control system.

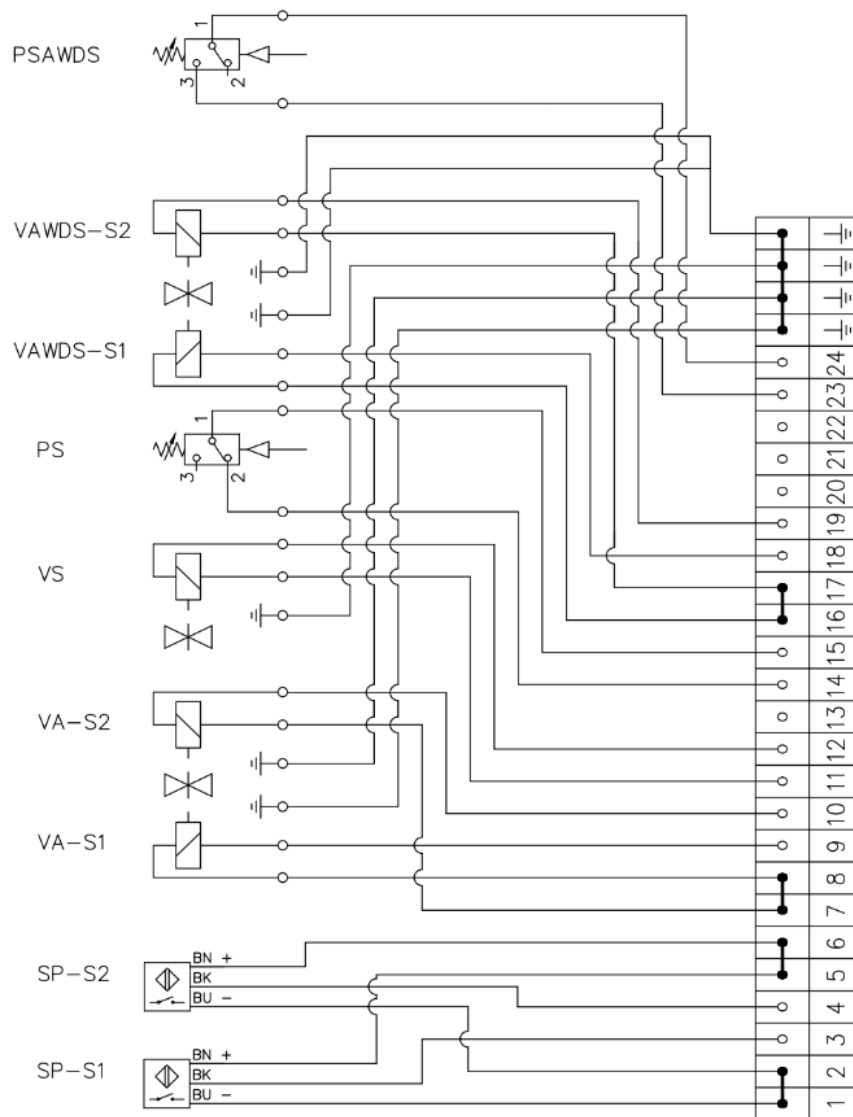


Figure 9 Wiring diagram AWDS inflatable seal

You have now fitted your Inflatable PTD with an active automatic wear detection system

## 1.4. INSTALLATION PASSIVE AWDS SYSTEM

Installation of passive Automatic wear detection system requires less steps and is as simple as fitting a sensor to the end cover. An overview is listed below. Please note that the ATEX variant uses a different sensor

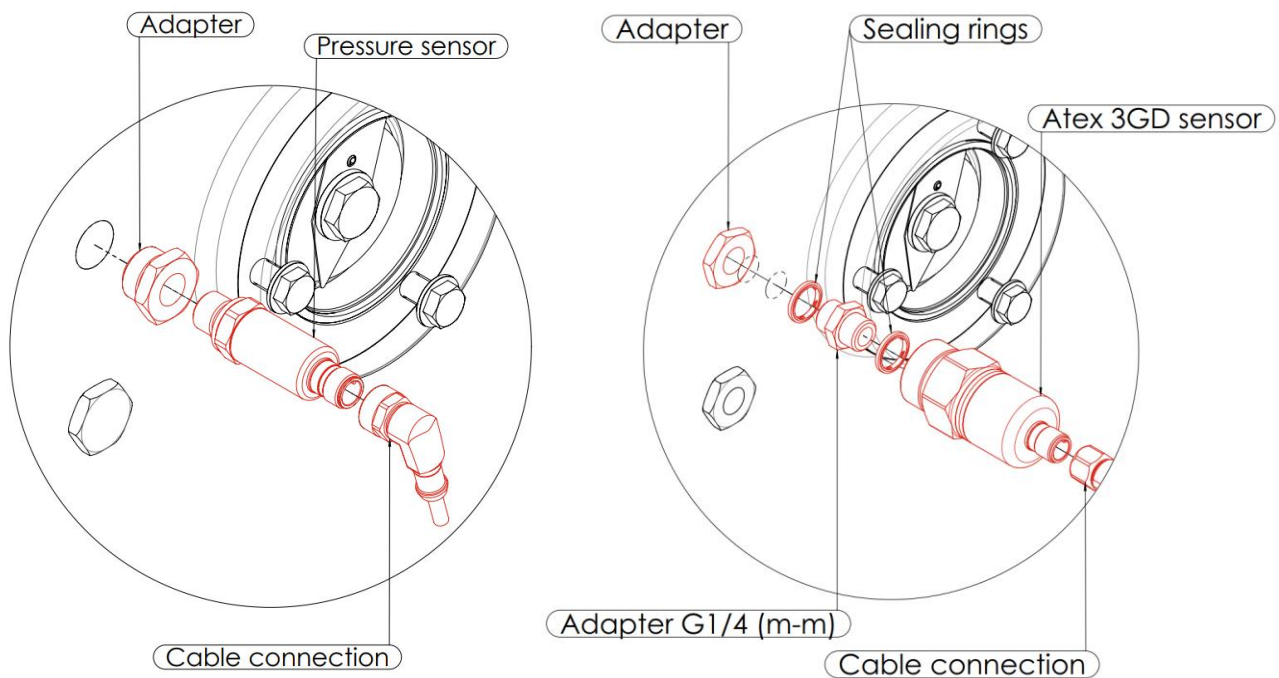


Figure 10 Installation of passive system. ATEX 3GD (right), Non ATEX (left)

## 1.5. HOW TO SET UP THE PASSIVE AWDS

1. Connect the sensor to the adapter plug supplied with the kit.
2. Remove one of the blind plugs from the PTD end cover.
3. Install the adapter with the attached sensor into the opening on the PTD end cover and tighten securely.
4. Set the target pressure level at which escaping pressure from the product flow should be detected.
5. Confirm that an alert or signal is sent to the control room once the pressure reaches the configured detection threshold.

**Recommendation:** Configure the sensor to trigger a signal when the detected pressure reaches approximately 90% of the normal product conveying pressure.

## 2.SETTING

### 2.1 FACTORY SETTINGS ACTIVE AWDS

The factory settings for pressurization of the body are as follows. The body will be pressurized to 3bar, and the pressure switch will give a signal if the pressure drops below 2.4bar.

For most users these settings will provide enough information. If you would like to be notified earlier about possible seal leakage, the detection pressure can be adjusted to detect a smaller pressure drop.

With the active and passive Automatic Wear Detection System installed the following steps are required for good detection results.

If the PTD gets inflated to pressures greater than 4bar, the safety relief valve will open and the body will depressurize.

### 2.2 HOW TO ADJUST THE ACTIVE AWDS PRESSURE

Setting the detection value:

1. Switch the solenoid valve connected to the PTD body to pressurize the body. Pressurize the body to the desired detection pressure (standard 2.4 bar). Adjust pressure by using the turn knob on the pressure regulator.
2. Turn the small knob on the pressure switch using a flathead screwdriver. Clockwise to increase detection pressure. Counterclockwise to decrease detection pressure.
3. Turn until there is a signal change.
4. The pressure switch will now receive a signal.
5. Make sure the pressure switch turns on with pressure lower than 2.4bar and off with pressures higher than 2.4bar Set to your desired value. We recommend 2.4bar, this will mean the system will give a signal if the pressure drops from 3 to 2.4bars pressure (20% decrease). (Higher set value=earlier seal leakage detection)
6. Turn the pressure up to 3bar on the PTD body
7. You can now start using the system. We recommend performing this test every 2000switches. Pressurizing to 3bar pressure on the body and a detection pressure of 2.4bar.

### 3. OPERATION:

#### 3.1. USING THE ACTIVE AWDS

1. Do not inflate the PTD body to pressures greater than 3 bar.
2. Make sure the PTD is not switching during the pressurization or detection time.
3. Make sure no line pressure is active during the pressurization or detection time.
4. Activate the solenoid connected to the PTD body to pressurize the PTD. Pressurize the body to 3bar in the Table 1 Time needed for pressurization listed amount of time.

*Table 1 Time needed for pressurization*

| PTD size | Time needed for pressurization (sec) |
|----------|--------------------------------------|
| 50       | 30                                   |
| 65       | 30                                   |
| 80       | 40                                   |
| 100      | 40                                   |
| 125      | 50                                   |
| 150      | 60                                   |

5. Deactivate the solenoid valve to close the system.
6. Wait for 2minutes whilst the pressure over the PTD body slowly drops.
7. If a signal is received from the pressure switch within this time. The beforehand set pressure of the pressure switch is reached, and the seals should be replaced.

Note that there should always be a signal if the PTD is not pressurized.

If this is not the case, rewire the pressure switch so that it is Normally closed.

#### 3.2. USING THE PASSIVE AWDS

1. Make sure the sensor with adapter is installed in the PTD end cover.
2. Connect the sensor to your system to continuously monitor the pressure within the PTD body.
3. If the pressure on this sensor is almost the same (90%) as the conveying pressure.

Replace the seals

#### 3.3 TROUBLESHOOTING

- If the system detects leakage before maintenance is required; lower the detection pressure. information is listed in: *How to adjust the active AWDS pressure.*
- Exposure of the PTD to high ambient temperatures or rapid temperature changes may cause variations in internal pressure. Heating of the PTD housing (for example from direct sunlight) can increase the internal air pressure due to thermal expansion. At relatively low conveying pressures, this may lead to false-positive readings when using the passive system.