

# 3WPS Diaphragm Seal - Piston Pressure Switch Installation and Maintenance Instructions



## Intended Applications

The pressure switches are specifically applied for monitoring and controlling of operations using maximum and minimum pressures. A micro switch triggers an electrical signal when minimum or maximum pressures are reached.

### DANGER

The switch may only be used in the specified fields of applications (see type label).

The temperature has to be within the specified ranges, the pressure values and the electrical rating must not exceed the value specified.

Observe the applicable national safety instructions for assembly, commissioning and operation of the switch.

## Safety Instructions

The safety instructions are intended to protect the user from dangerous situations and/or material damage. In the operating instructions the seriousness of the potential risk is designated by the following signal words:

### DANGER

Refers to imminent danger to personnel.  
Non-observance may result in fatal injury.

### WARNING

Refers to a recognizable danger.  
Non-observance may result in fatal injuries and destroy the equipment or plant parts.

### CAUTION

Refers to a danger.  
Non-observance may result in light injuries and material damage to the equipment and/or the plant.

### IMPORTANT

Refers to important information essential to the user.

### DISPOSAL

The equipment must be disposed of correctly in accordance with the local regulations for electric/electronic equipment.  
The equipment must not be disposed of with household garbage.

## Standards

The standards applied during development, manufacture and configuration are listed in the (CSA) safety agency certification reports and the manufacturers CE declaration.

## Warranty/Guarantee

Our scope of delivery and services is governed by Winters' warranties and warranty periods.

### Terms of Guarantee

We guarantee the function and material of the pressure switch under normal operating and maintenance conditions in accordance with the statutory provisions.

### Loss of Guarantee

The agreed guarantee period will expire in case of:

- change or modifications to the switch/housing/fitting
- incorrect use
- incorrect installation
- incorrect handling or operation contrary to the provisions of these operating instructions.

Tel: 1-800-WINTERS / [www.winters.com](http://www.winters.com)

No liability is assumed for any damage resulting there from, or any consequential damage.

## Transportation/Storage

### CAUTION

Severe shock and vibrations should be avoided during transport. Storage should be dry and clean.

## Adjustment

### IMPORTANT

The adjustment screw for 3WPS pressure switches is on the bottom (see Figure 5).

Allow pressure switch to reach the desired switch pressure.

Turn adjustment screw (nut) clockwise or counter clockwise to change the actuation point of the micro switch.

### IMPORTANT

Please consult the wiring diagram for the contact status at atmospheric pressure.

### IMPORTANT

Particularly important for small pressures! Set point adjustment must be performed in the installed position.

As a general rule, when installing a switch for the first time, it's best to cycle the system pressure up and down a few times (not to exceed the max. operating pressure) before verifying set point.

### Precise adjustment of set point to actuate on increasing pressure:

- Lower the system pressure to 0 psi
- Increase pressure slowly and check if micro switch actuates at desired switch pressure
- If necessary, readjust by turning the adjustment screw (nut)
- Repeat preceding steps until micro switch operates at desired switch pressure

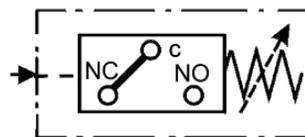
### Precise adjustment of set point to actuate on decreasing pressure:

- Increase pressure up to a point clearly above the desired switch set point (Do Not exceed the maximum operating pressure)
- Lower pressure slowly and check if micro switch actuates at desired switch pressure
- If necessary, readjust by turning the adjustment screw (nut)
- Repeat preceding steps until micro switch operates at desired switch set point

### IMPORTANT

The adjustment of set points occurs for each set point as specified above.

## Wiring Code for all Types (Contact status at atm. pressure)



C = Common

NC = Normally Closed

NO = Normally Open

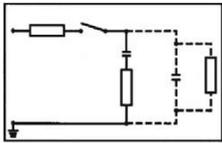


Fig. 1: Protection in case of capacitive loads  
R1: Protection against starting current rushes R2,R3: Protection against high discharge currents

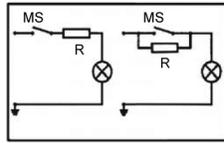


Fig. 2: Lamp load provided with resistance in parallel or series connection to switch of condensers

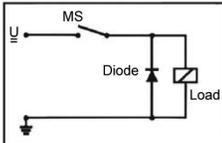


Fig. 3: Protection in case of continuous current and inductive load by recovery diode

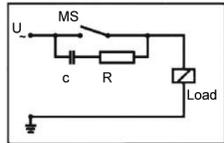


Fig. 4: Protection in case of alternating current and inductive load by RC-link

## Electrical Rating 3WPS Pressure Switch

Micro Switch	Special Characteristics	Volt AC 50/60 Hz	Ind. Load A	Res. Load A	Volt DC	Ind. Load A	Res. Load A	Notes
H	Micro switch with silver contacts	125 250 480	10 10 3	10 10 3	6 to 24	0, 50	0, 5	Small hysteresis; high AC / low DC loads
GH	Micro switch with gold plated contacts for low voltage and low current	125	1	1	24	1.0	1.0	Low change-back values

### IMPORTANT

We recommend using a pre-fuse of the maximum current rating from the table above according to the load switched. We recommend gold plated contacts for all low voltage/power applications.

### Approvals for 3WPS Pressure Switch

3WPS is CSA Certified (File No. LR22355, Class 3231-02), Switches - Automatic Pressure Type Hermetically sealed, Class I, Division II CSA File LR22365 for hazardous locations

These models which have aluminum enclosures or enclosure parts must be protected against all impact or friction which can ignite an explosive atmosphere.

The customer must provide for a highly conductive connection between switch and ground.

### Maintenance/Cleaning Maintenance

The pressure switch is maintenance free. Checking the set points lies within the discretion of the user. The usual preventive maintenance work in accordance with the PED and normal safe use guidelines must always be carried out. Please note that small setpoint drifts may occur during the initial use of the switch (run-in period).

Larger or continuing setpoint drifts during the normal use of the switch may indicate that the switch is not installed correctly, is not being used within the specified limits, exceeds the design criteria or is worn out. Inconsistent switching may also indicate diaphragm damage, caused by high cycle rates, overpressure, or media incompatibility. It should be replaced before the ultimate rupture of the diaphragm takes place. Please consult your supplier or Winters directly for guidelines.

### Cleaning

Wipe with clean damp cloth only. Nameplate legibility may be impaired by use of chemical solvents!

### Operating Life Time

Normal expected service life (expressed in the number of cycles over the full adjustment range) is approximately 1 million for the pressure switch. This may be extended to 2.5 million cycles max. if only a part of the adjustment range is used (about 20%).

Switch sensor life may also be effected negatively by:

- Media not compatible with the wetted materials
- Too high switch cycling speed or more than 20 cycles per minute
- System cycling pressure exceeding the top of the adjustable range

The proof pressure must never be exceeded; otherwise the switch may be damaged. Careful selection of the pressure range can have a positive effect on the service life of the switch.

Specifications are subject to change without notice!

## Set point adjustment

### IMPORTANT

Factory Provided Pressure Switch Point Setting

We confirm for pressure switches that have been factory set the setting will be detailed on the box label or nameplate.

Warranty is not applicable for any changes that may occur due to transportation or installation. For critical applications we recommend that the setting is checked and re-set if necessary after installation and wiring of the pressure switch.

In pressure switches, a displacement of the pressure sensing element occurs with a change in pressure. Following the displacement of the pressure sensing element, a micro switch is operated.

Upon delivery of the product, the set points are likely to be found in the middle of the adjustable range. On request, fix set points may be adjusted by our factory. In this event, the point will be indicated on the type plate, box plate, or a separate plate, i=increasing, d=decreasing.

The set point is adjusted by turning the adjustment screw (nut).

## Technical Data

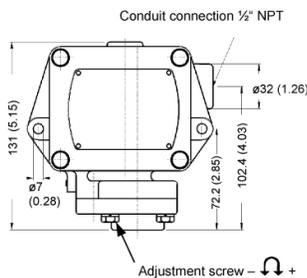


Figure 5.

Diaphragm seal piston pressure switch 3WPS.

Housed model with NEMA Type 4 Rated enclosure.

## Adjustable Range 3WPS Pressure Switch

Adjustable Range				Approximate Deadband (Actuation Value) psi (bar)	Proof Pressure psi (bar)
Decreasing psi (bar)		Increasing psi (bar)			
Min	Max	Min	Max		
0.5 (0.03)	28 (1.9)	1.5 (0.1)	30 (2)	0.4-2 (0.03-13)	2,000 (133)
3 (0.2)	78 (5.2)	4.5 (0.3)	85 (5.7)	0.8-7 (0.05-0.5)	2,000 (133)
6 (0.4)	318 (21)	10 (0.6)	340 (23)	2-22 (0.13-1.5)	2,000 (133)
25 (1.7)	583 (39)	27 (1.8)	600 (40)	2-17 (0.13-1.1)	2,000 (133)
400 (27)	1,520 (101)	480 (32)	1,600 (107)	20-80 (1.3-5.3)	2,000 (133)