

This series of pressure switches can be used for all applications where an electrical circuit is required to close or open at a required pressure.

The robustness of this series of pressure switches enables all applications in all industries to be satisfied.

- **Robust and Reliable**
- **Diaphragm Operated**
- **Proven Performance**
- **Stainless steel Housing**
- **Wetted parts for use with all Fluids**
- **Externally Adjustable**
- **Enclosure Rating IP65**
- **CE marked for all Directives that apply**

Pressure Ranges

TYPE No.	PRESSURE RANGE	HYSTERESIS TYPICAL
3311	-1 to +1 bar	Adjustable
3311	0.2 to 3 bar	Adjustable
3311	0.6 to 8 bar	Adjustable
3311	1 to 20 bar	Adjustable
3311	2 to 30 bar	Adjustable
3311	2 to 40 bar	Adjustable
3411	10 to 160 mbar	Adjustable
3411	20 to 400 mbar	Adjustable
3511	2.5 to 40 mbar	1.5 mbar Fixed

Hysteresis

Where the hysteresis is shown as adjustable in the table above it can be adjustable over 5 to 95% of pressure range.

Maximum Pressure

To ensure long service life select the pressure range as follows:
 Dynamic pressure applications P_{max} = 75% of Range
 Static pressure applications P_{max} = 100% of Range
 Maximum pressure that can be applied is 125% of pressure range.

Electrical Ratings

10 amp at 250V 50Hz Inductive load
 1 amp at 30V dc Inductive load
 For other voltages and currents please consult our technical department.

Setting Accuracy±2%

Temperature Range-10 to +85°C
 (Process fluids must not solidify)

Temperature Coefficient0.05%
 of per °C from 20°C



Installation

These pressure switches can be mounted directly on the connecting thread. Sealing grooves are machined onto the end face of parallel threads for use with sealing washers. A mounting bracket is available if required.

Vacuum Setting

At ambient pressure the switches will be in the operated condition consequently the wiring should be reversed i.e. NO becomes NC.

Connecting Threads

All connecting threads used in industry are available including British, American and metric. Please state the connection thread when ordering.

Flanges and Hygienic Fittings

(See page 5 for alternative connections)
 Flanged fittings are available and all types of hygienic fittings can be supplied assembled directly onto the Pressure Switch. If flush diaphragms are required please consult our Technical Department.

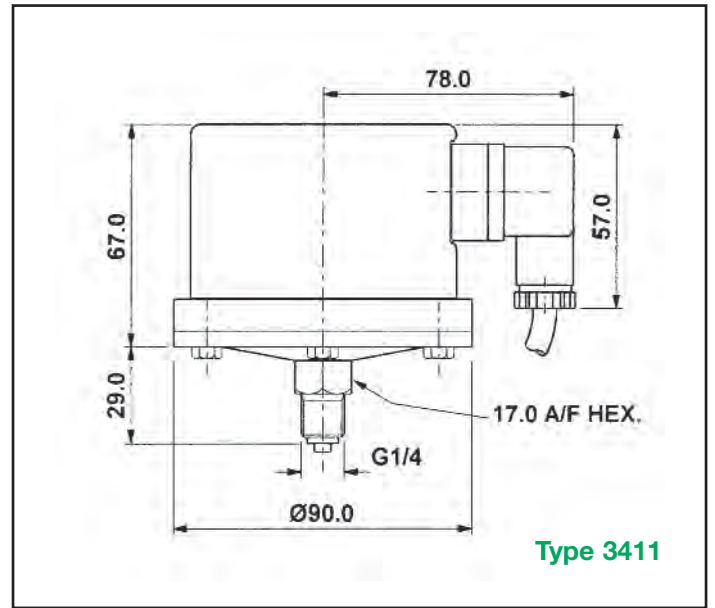
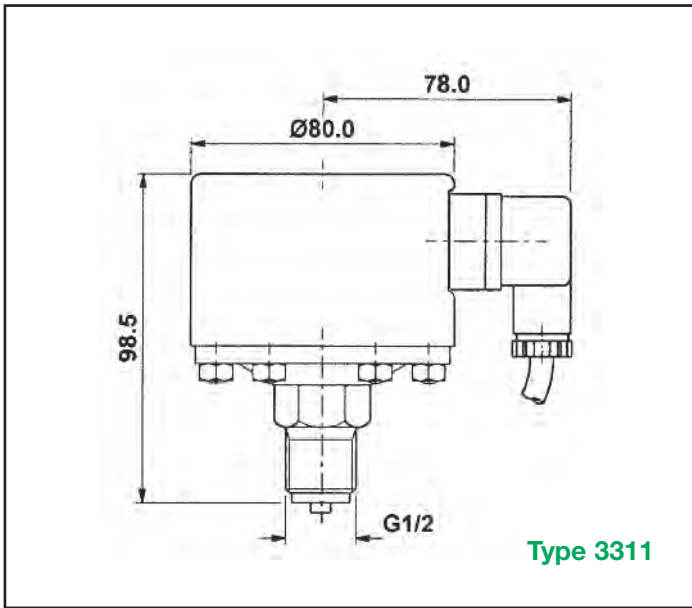
Materials of Construction Types 3311 & 3411

Diaphragm.....17 / 7 PH Stainless Steel
 SealGlass filled PTFE < 11bar
 Nitrile rubber > 11 bar
 Base316 Stainless Steel
 Housing316 Stainless Steel

Materials of Construction Type 3511

Diaphragm.....Beryllium Copper
 SealNitrile rubber
 BaseBrass
 Housing316 Stainless Steel

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Alternative Wetted Parts

(see page 9 for abbreviated chemical compatibility chart)

Switches with standard wetted parts above are suitable for applications using air, nitrogen, inert gasses, oils, water and steam.

Alternative wetted parts for use with fluids other than these are shown opposite.

Please contact our technical Department for further information.

TYPE	MATERIAL	BASE	DIAPHRAGM	PROTECTION DISC
3311	316 Stainless	Yes	No	Yes
3311	Carbon Steel	Yes	No	No
3311 & 3411	UPVC	Yes	No	No
3311 & 3411	PTFE	Yes	No	Yes
3311 & 3411	PVDF	Yes	No	No
3311	Halar Lined	Yes	No	No
3311	Rubber Lined	Yes	No	No
3311 & 3411	Chrome Plated	Yes	Yes	No
3311 & 3411	17/7 Stainless Steel	No	Yes	No
3311 & 3411	Silver Plate	Yes	Yes	No
3311	Pure Silver	No	No	Yes
3311 & 3411	PVDF (Dykor) coated	No	Yes	No

To make Series 3000 Pressure Switches more suitable for many applications there are several standard options available.

Option D – Degreased for oxygen use

Pressure switches for use on oxygen have to be free from all traces of oil or grease. Diaphragm pressure switches have the diaphragm, pressure chamber and seal specially cleaned and handled during assembly and are marked with the 'Use no oil' symbol.

Option G – Gold plate Micro-switches

Micro-switches with Gold plated contacts are used in low power circuits where the contact resistance of standard silver contact is too high. For electrical loads below 6V at 0.1A dc.

Option H – Low leak assembly

A modified design of pressure switch is available for use on extinguishers, switchgear, transformers or sealed pressure systems. Special machining and assembly gives freedom from leaks greater than 10^{-5} Nccs / sec.

Option M – For Mining Applications

No aluminium parts used

Option Q – overload Protection

Pressures above the adjustable range shown in the table should not be applied to the switches. Overload will strain the diaphragm, either causing distortion that will alter the set point of the pressure switch or reduce the diaphragm life through fatigue failure.

Normally, the pressure range should be chosen to cover the highest pressures likely to develop in the system; Series 3000 switches can be constructed to accept higher pressures than the adjustable range by fully supporting the diaphragm above its normal operating deflection.

Maximum temperature 60°C

MAXIMUM ADJUSTABLE RANGE	OVERLOAD PRESSURE ALT. 1	OVERLOAD PRESSURE ALT. 2
40 mbar	1 bar	–
20 to 400 bar	7 bar	–
1 bar	28 bar	200 bar
2 to 40 bar	70 bar	200 bar

Series 3000

Differential Pressure Switches

This series of pressure switches are used to monitor the difference between two pressures. For example, they can be used to monitor filter condition and signal when the filter is becoming blocked. They can also be used as flow monitoring switches if used across orifice plates etc.

- Robust and Reliable
- Diaphragm Operated
- Proven Performance
- Fully adjustable
- Enclosure Rating IP65
- CE marked for all Directives that apply

Pressure Ranges

TYPE No.	PRESSURE RANGE	HYSTERESIS TYPICAL
3312	0.07 to +1 bar	0.04 bar
3312	0.2 to 3 bar	Adjustable
3312	0.6 to 8 bar	Adjustable
3312	1 to 20 bar	Adjustable
3412	10 to 160 mbar	Adjustable
3412	20 to 400 mbar	Adjustable

Available hysteresis range from 5% to 90% of range typical.

Max. Line Pressure

Pressure range > 250 mbar 34 bar
 Pressure range < 250 mbar 14 bar

Electrical Ratings

10 amp at 250V 50Hz Inductive load
 1 amp at 30V dc Inductive load
 For other voltages and currents please consult our technical department.

Overload

Dimensions of the diaphragm housing are such that movement is stopped when the diaphragm exceeds the range. This ensures that the differential pressure switches will accept the accidental application of 4 times the range without damage except for a possible setting shift of up to 2% of the Range. It is possible that these switches can be modified to accept the full line pressure on one side of the diaphragm.

Temperature Range-10 to +85°C
 (Process fluid must not be allowed to solidify)

Temperature Coefficient0.05%
 of range per °C from 20 °C



Installation

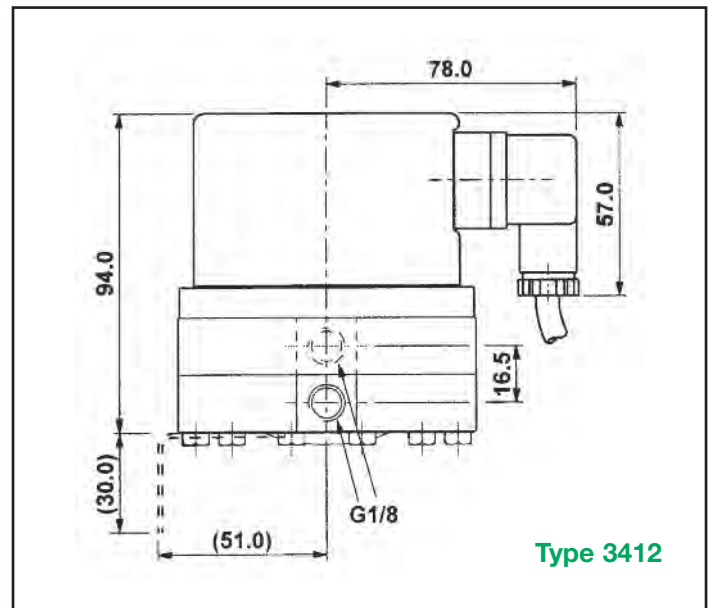
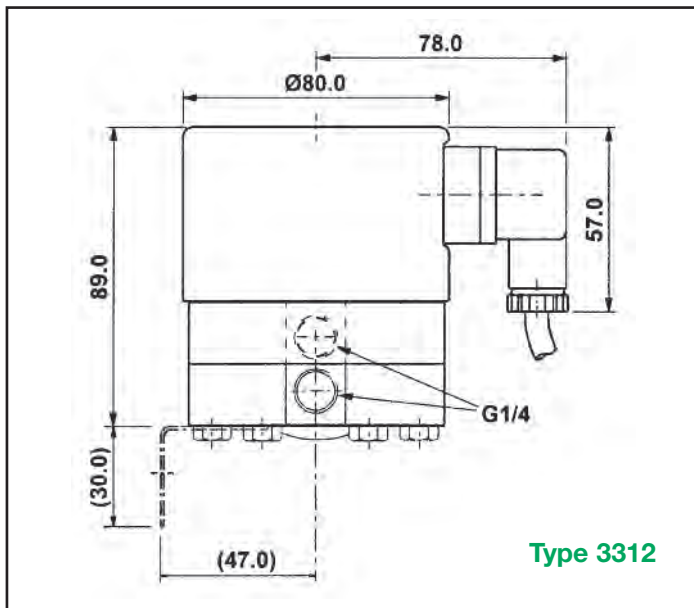
These pressure switches can be mounted directly on the connecting thread. A Mounting Bracket is available if required.

Vacuum Use

If used to detect the difference between two levels of vacuum a slight modification is needed and vacuum use must be specified when ordering. At ambient pressure the switches will be in the operated condition consequently the wiring should be reversed i.e. NO becomes NC.

Materials of Construction Types 3312 & 3412

Diaphragm17 / 7ph Stainless Steel
 SealsNitrile rubber
 Connection316 Stainless Steel
 Housing316 Stainless Steel



Options Available

To make Series 3000 Differential Pressure Switches more suitable for many applications there are several standard options available. A suffix letter that follows the Type Number designates these options.

Option D – Degreased for oxygen use

Pressure switches for use on oxygen have to be free from all traces of oil or grease. Diaphragm pressure switches have the diaphragm, pressure chamber and seal specially cleaned and handled during assembly and are marked with the 'Use no oil' symbol.

Option G – Gold plate Micro-switches

Micro-switches with Gold plated contacts are used in low power circuits where the contact resistance of standard silver contact is too high. For electrical loads below 6V at 0.1A dc.

Option V – Adjustable Hysteresis

This option enables the hysteresis to be increased and can be varied between approximately 5 % and 95 % of the adjustable pressure range.

Option X

In some applications a higher electrical rating is required this option is fitted with a micro-switch for 15 amps at 250V 50Hz