

PRESSURE SWITCHES

SERIES 300

WITH ELECTRICAL OUTPUT FOR NON-HAZARDOUS AREAS



MANUFACTURED IN THE U.K.

The Series 300 Pressure Switches offer accurate, reliable switching in a robust cast enclosure. Featuring:

COMPACT DESIGN

Having a width of only 70mm these switches are ideally suited for applications where space may be limited. The design allows for any number of these switches to be mounted in a row whilst still providing easy access to the electrical entry at the top of the switch and the process connection at the bottom.

COMPREHENSIVE RANGE

The Series 300 includes switches for monitoring both pressure and vacuum. The ranges available from -1 to 600 Bar cover all medium to high pressure industrial applications. With a choice of aluminium or stainless steel IP66 housings these switches are equally well suited for mounting on-site or use in panels.

Compatability between the 'wetted parts' of the switch and your process can be assured with a number of options available for both the process chamber and diaphragm materials.

WIDE RANGE OF OUTPUT SWITCHES

The wide range of electrical output switches available includes gold contacts for low current d.c. and silver contacts for high current a.c. Switching differentials are typically below 2% of the range.

A single pole double-throw microswitch (SPDT) can make or break a circuit at the required switching point. Dual switches (2 x SPDT) can make or break two independent circuits at the same or different switching points.

Versions are also available for electrical switching in hazardous areas and pneumatic switching (see data sheets TD300 HAZ and TD300 PNU).

HIGH OVERLOAD RATINGS

All Series 300 pressure switches use a diaphragm to monitor the process pressure. This type of switch can provide high pressure overload capabilities and is ideal for applications where the maximum process pressure can be much greater than the required switching pressure.

SIMPLE MAINTENANCE

These switches can provide many years of maintenance free operation. However should the need arise output switch kits and diaphragm kits allow on-site repair rather than replacement to minimise the overall cost of ownership.

PROVEN PERFORMANCE

Series 300 pressure switches have a long established reputation for providing good value without compromising accuracy and reliability.

QUALITY ASSURANCE

Designed and manufactured by HNL in accordance with BS EN ISO 9001:2000.



CONTACT HNL SALES SUPPORT ON 01642 765553



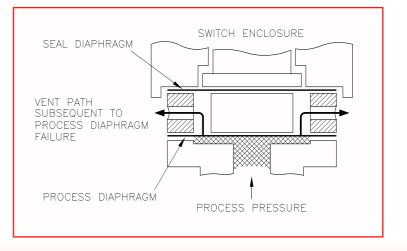
| PRESSURE RANGES | | | | | | | | | |
|---|------|-----|-------|----------|-----------|---|----------------------------|-----------|--------|
| SETPOINT RANGES (BAR) | | | | DI | DIAPHRAGM | | CHAMBER PROOF RATING (BAR) | | |
| RANGE | | MAX | % | MATERIAL | | | ALUM. | ST.ST. | HAST.C |
| CODE | MIN | MAX | RESET | 1 | 2 | 7 | 1 | 5 | 7 |
| 344 PZ | -0.6 | 0.6 | 2 | • | • | • | 30 | 30 | |
| 345 PZ | -1 | 1.4 | | • | • | • | 30 | 30 | |
| 346 PZ | -1 | 6.0 | | • | • | • | 30 | 30 | |
| 344 P | 0.1 | 1.4 | 2 | • | ٠ | • | 30 | 30 | 30 |
| 345 P | 0.2 | 3.0 | | • | • | • | 30 | 30 | 30 |
| 346 P | 0.7 | 7.0 | | • | • | • | 30 | 30 | 30 |
| 34B P | 1 | 10 | | • | • | • | 30 | 30 | 30 |
| 347 P | 2 | 21 | | | • | • | 35 | 35 | 35 |
| 354 P | 1.2 | 12 | | - | • | • | - | 250 | 250 |
| 355 P | 3 | 30 | | - | • | • | - | 250 | 250 |
| 356 P | 7 | 70 | 3 | - | • | • | - | 250 | 250 |
| 357 P | 20 | 210 | | - | • | • | - | 350 | 350 |
| 358 P | 60 | 600 | | - | _ | • | - | 1000 | 1000 |
| DIFFERENTIAL PRESSURE RANGES | | | | | | | | | |
| 344 DPZ | -0.9 | 0.9 | 3 | • | • | • | 30 | 30 | 30 |
| 345 DPZ | -1 | 2 | | • | ٠ | • | 30 | 30 | 30 |
| 344 DP | 0.2 | 2 | 2.5 | • | • | • | 30 | 30 | 30 |
| 345 DP | 0.4 | 4 | | • | • | • | 30 | 30 | 30 |
| 346 DP | 1 | 10 | | • | • | • | 30 | 30 | 30 |
| 347 DP | 2 | 21 | | • | • | • | 35 | 35 | 35 |
| Key to options: ● = available - = not available ■ = check availability with HNL Technical Sales | | | | | | | | cal Sales | |

Note on Vent Ring Option:

As an additional safety feature, all of the Series 300 pressure switches can be specified to include an optional vent ring. Its purpose is to isolate the electrical housing from the process in the event of process diaphragm failure, as shown.

If a vent ring is included a new process diaphragm can be fitted to allow the switch to be returned to service. Without a vent ring ingress of the process into the electrical housing may additionally necessitate the replacement of the output switch or render the switch unserviceable.

Inclusion of a vent ring will increase the overall length of the switch by 15mm.

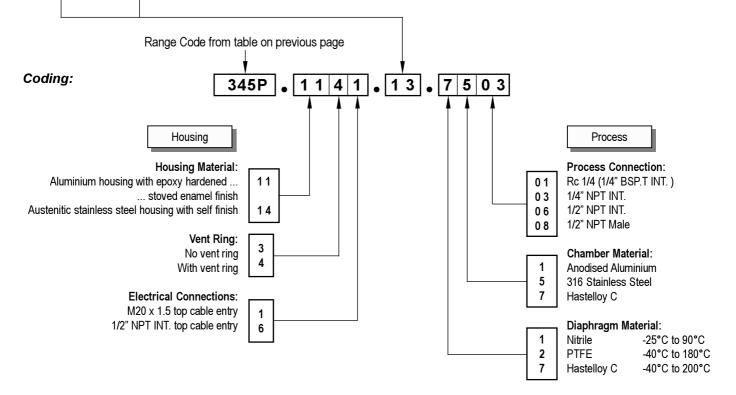




SERIES 300 PRESSURE SWITCHES SPECIFICATIONS & CODING

Output Switch

| Output Switch Codes | | | | | | |
|---------------------|-------------------------|-----------------------------|--------|--|--|--|
| Single Switch | Twin Switch 2 x SPDT | CUITOUT SWITCH Rating | | Notes | | |
| 13 | 23 | 250 Vac 4A, 28 Vdc 2A | Silver | HNL standard low differential microswitches | | |
| 14 | 24 | 125 Vac 800mA, 28 Vdc 800mA | Gold | HINL standard low differential microswitches | | |
| 15 | 25 | 125 Vac 800mA, 28 Vdc 800mA | Gold | Environment free encapsulated low differential microswitch | | |
| 17 | 27 | 250 Vac 4A, 28 Vdc 2A | Silver | Environment free encapsulated low differential microswitch | | |
| 1A | 2A | 250 Vac 6A, 28 Vdc 2.5A | Silver | | | |
| 1B | 2B | 250 Vac 100mA, 28 Vdc 100mA | Gold | HNL standard encapsulated microswitches | | |



Notes on Output Switch Selection:

- Gold contact microswitches are especially well suited for low voltages and currents, or for applications with low switching frequencies or sulphurous atmospheres. When heavier loads need to be switched preference should usually be given to silver contacts.
- 2. The use of twin switches will increase the basic reset by 1%. The combined reset band must not exceed 7%.
- When twin switches are set up to operate as DPDT, simultaneous operation on both rising and falling pressures cannot be guaranteed due to mechanical variations between individual microswitches.
- 4. The use of output switch codes 1A, 2A, 1B and 2B will increase the basic reset by 1%.

Notes:

- 1. Dust and weatherproof ratings are IP66 to BS EN 60529 (IEC 60529).
- A 'Z' within the range code signifies at or below zero. This is achieved with the use of a stainless steel biasing assembly within the process chamber. If stainless steel is not compatible with the process an alternative 'X' option is available (e.g. 344PX instead of 344PZ).
- 3. A large number of alternative threaded connections, diaphragm & chamber materials are available as special options. Please contact HNL Technical Sales for details.



Combined Switching Errors & Maximum Working Pressure (MWP):

In accordance with BS6134 1991:

The sum of the average switching errors and the operating value repeatability will typically not exceed 0.3% of range span, at setpoints of 10%, 50% and 90% of span, at constant calibration and measurement temperatures.

The maximum working pressure of the Series 300 switches is 0.67 x the proof pressure. It should be noted that diaphragm type switches generally have a high overload capability.

Reset (Switching Differential):

The reset varies throughout the range, normally increasing with setpoint, and the figure quoted in the range table is the switching differential value (as defined in BS6134) expressed as a percentage of the span at the mid range setpoint.

Ambient Temperature Ratings:

Enclosures are rated for continuous use over the temperature range -20° C to $+85^{\circ}$ C, with short term operation down to -50° C.

Storage limits for all enclosures are -50°C to +90°C.

Exposure of the enclosure to direct sunlight should be such that the heat gain due to absorption of radiant energy does not cause the enclosure temperature to exceed the recommended maximum. Sufficient signal line cooling must always be provided to ensure that heat conduction from the process will not cause the switch enclosure to operate outside the stated ambient temperature limits.

Temperature Coefficient:

The additional error, relative to a setpoint calibration of 20°C, will not exceed 0.3% per 10°C change within the normal ambient temperature range of the switch enclosure.

Process Options:

For switches fitted with metallic diaphragms, a PTFE ring is incorporated on some ranges to provide additional sealing. Should PTFE not be compatible with the process media please contact HNL Technical Sales for advice on alternatives.

Special Options & Specifications:

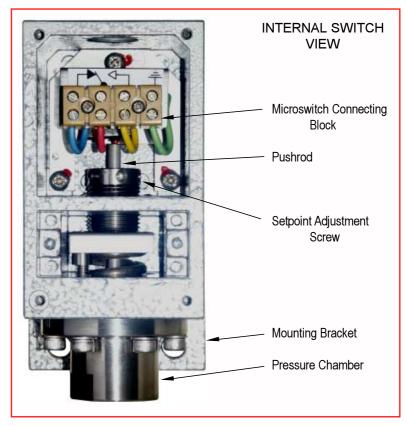
For degreasing of process wetted materials for oxygen service and accessories, refer to data sheet TD OPT. For additional diaphragms, chamber materials and connections, refer to data sheet TD SPO.

Standards

This product satisfies the requirements of the Low Voltage Directive 73/23/EEC as amended by directive 93/68/EEC by compliance with standards EN60947-1:1991 and EN60947-5-1:1991.

Specifications

Parameter definitions are in accordance with BS6134:1991 (Pressure and Vacuum Switches).



ENGINEERING LTD Instruments & Controls

Precision Machining Manifolds & Valves

Teesside Industrial Estate Thornaby-on-Tees TS17 9LT UK Tel: +44 (0)1642 765553 Fax: +44 (0)1642 762899 Email: sales@hnl-uk.com Website: www.hnl-uk.com HNL Engineering Ltd comprises three Divisions offering a wide range of products & services which includes:

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The information contained in this data sheet may be changed without notice.