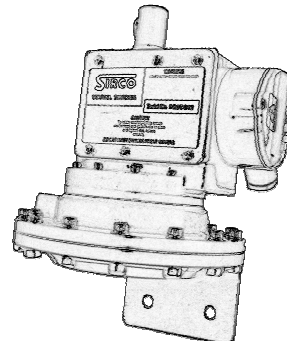
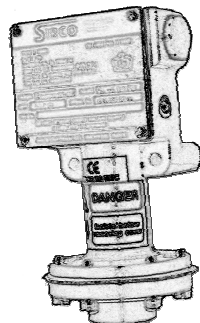
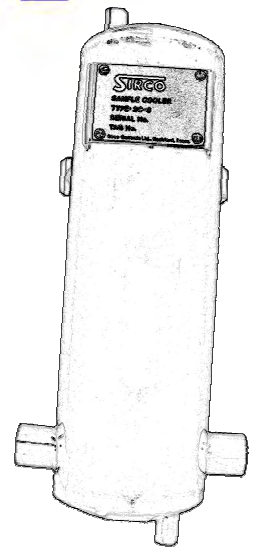
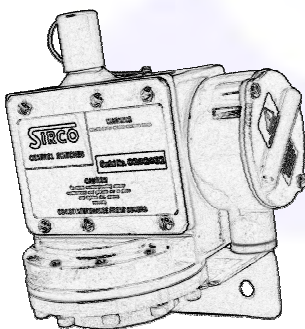


# SIRCO™

## CONTROLS LTD.

# CONTROLS CATALOGUE



SIRCO™ CONTROLS LIMITED  
SWEYNES INDUSTRIAL ESTATE  
ASHINGDON ROAD  
ROCHFORD  
ESSEX  
SS4 1RQ

Tel: +44 (0)1702 545125  
Web Site: [www.sirco-controls.co.uk](http://www.sirco-controls.co.uk)  
Email: [info@sirco-controls.co.uk](mailto:info@sirco-controls.co.uk)



Supplier Number: 275523



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The basic Models of the Series 2000 Pressure Switches follow the same pattern throughout, as far as housing or signal units are concerned.

## Basic Standard Specifications

Standard construction: Aluminium Housing and Pressure Chamber(s) with Mounting Bracket.  
Buna-N (nitrile rubber) Diaphragms.

Process Connection: 1/4" BSP Female (RP 1/4).

Switch: one S.P.D.T. Microswitch 15 amp 125, 250, 400 vac, 1/2 amp 125 vdc.  
Electrical Connection: Multi Directional Terminal Box with M20 x 1.5 int. Connection.

Housing: Weatherproof, all parts etch primed and stoved with high quality epoxy resin paint.

## Electrical Output Switches

In most cases we offer a choice of two non-adjustable differentials in the specifications of the Series 2000 Switch. This is possible by use of microswitches, which have different operating forces and gaps. Please state preference when ordering; if not stated, the higher differential will be supplied automatically. The standard electrical rating for all microswitches for the Series 2000 is 15 amp 400 vac or 2 amp 24 vdc, Single Pole Double Throw (S.P.D.T.) with Silver Contacts.

The lower of the two differentials shown is not recommended for use with DC Current.

Variants or other makes of microswitch can be fitted to suit customer requirements but remember – the switching differential value alters with each different type of microswitch used. Variants can also be supplied with 2 identical or simultaneously activated S.P.D.T. microswitches of the same rating.

Where a manual reset is required, please remember this is only possible with a single switch model of the standard type.

Explosion proof, Flameproof and Twin S.P.D.T. switches cannot have manual reset.

Electrical Connections are a standard M20 x 1.5 int. Variants can be offered to suit customer requirements at extra cost.

## Pneumatic Output Switches

All models can be fitted with spool or poppet valves (see Leaflet No. 20/05 & 13/06) note that the differential is higher than that which is given for electrical outputs.

## Additional Information

Process Connections are usually 1/4" BSP Female (RP 1/4) as standard, but can be varied according to customer requirements, up to and including 2" BSP Male.

In most cases flanges to DIN Standards, ANSI or BS10 can be fitted (please consult factory).

Switches can be factory set to customer requirements and Test Certificates issued if required.

All switches are available with internal or external adjustment (external adjustment is standard).

## SERIES 2000

### VARIATIONS AVAILABLE WITH SIRCO CONTROLS

Performance requirements and Health & Safety Regulations demand that guesswork be removed from the choice of controls. The variations allow a positive choice to be made exactly to specification. All the variations available on the range of switches have been listed overleaf with the coding and description of the variables given alongside each code.

Where differentials or other characteristics alter due to variations, this is given in the remark's column.

In studying this list, you will see an infinite number of variations, which could be introduced to make a Standard into a Special Pressure Switch. Care should be taken, because not all variations can be combined; and because certain approval design features items such as microswitches in explosion-proof controls must remain the same.

|  | <u>Coding</u>        | <u>Description</u>  | <u>Remarks</u>  |
|--|----------------------|---|---|
| <b>SPECIAL</b>                         | <b>X</b>             | Any special requirement not listed – requirement to be stated e.g., Higher Proof Pressure than those listed<br>Internal Adjustment. |   |
| <b>TYPE OF OUTPUT<br/>(Electrical)</b> | <b>*BZ-2R</b>        | Microswitch SPDT<br>15 amp 400 vac, 1/2 amp 125 vdc   |   |
|  | <b>*BM-1R</b>        | Microswitch SPDT<br>22 amp 400 vac, (no DC rating)  | 1.5 x Smaller of the 2 Differentials                                  |
|  | <b>†*BZ-R</b>        | Microswitch SPDT<br>15 amp 400 vac, (no DC rating)  | Smaller of the 2 Differentials  |
|  | <b>†*BM-R</b>        | Microswitch SPDT<br>22 amp 400 vac, (no DC rating)  | 1.5 x Smaller of the 2 Differentials                                  |
|  | <b>*BZ-2R-722</b>    | Microswitch SPDT, Gold Plated Contacts<br>1 amp 125 vac, 1/2 amp 24 vdc   | 1.5 x Differential  |
|  | <b>*MT-4R</b>        | Microswitch SPDT<br>10 amp 125 vac, 10 amp 125 vdc  | 4 x Differential  |
|  | <b>†*E1V3CS</b>      | Microswitch SPDT (Kestrel)<br>5 amp 250 vac, 5 amp 28 vdc   | 4 x Differential  |
|  | <b>†*91-SE1</b>      | Microswitch SPDT, Environment Free<br>5 amp 250 vac, 5 amp 28 vdc   | 2 x Differential  |
|  | <b>†*91-SE1-3N55</b> | Microswitch SPDT, Environment Free, Gold Contact<br>1 amp 30 vdc  | 2 x Differential  |
|  |                      | <b>†*Licon</b>  | Microswitch SPDT, Gold Plated Contacts<br>7 amp 250 vac, 7 amp 28 vdc |
|  | <b>†BZ-RX</b>        | Microswitch SPDT, Manual Reset<br>15 amp 400 vac, 1/2 amp 125 vdc   |   |
| <b>(Pneumatic)</b>                     | <b>†*SMS</b>         | Pneumatic 3 Port Poppet Valve (see Leaflet 03/06)   | 2 x Differential  |
|  | <b>†PV</b>           | Pneumatic 3 Port Pilot Operated Valve (see Leaflet 11/05)   | 4 x Differential  |
| <b>RANGE</b>                           |                      | See Range Code on appropriate Leaflet   |   |
| <b>TWIN</b>                            | <b>TW</b>            | Two Microswitches actuated simultaneously to give DPDT operation<br>Not available with outputs 1HM1, 3HM1                           | 2 x Differential  |
| <b>FLANGE MOUNTING</b>                 | <b>F</b>             | Flange – Customer to state size when required   |   |
| <b>VACUUM</b>                          | <b>V</b>             | Vacuum Operated Model   |   |
| <b>SAFETY VENTED</b>                   | <b>G</b>             | Safety Vented Construction  |   |
| <b>MODEL TYPE</b>                      | <b>2001</b>          | See Model Code on appropriate Leaflet<br><br>- examples only shown left   |   |
|  | <b>201</b>           |   |   |
|  | <b>2002</b>          |   |   |
|  | <b>202</b>           |   |   |

|                            |                |  |                   |
|----------------------------|----------------|--|-------------------|
| <b>ENCLOSURES</b>          | <b>W</b>       | Weatherproof   |                   |
|                            | <b>(IP66)</b>  | Degree of Protection   |                   |
|                            | <b>†*E(d)</b>  | ATEX approved for Zone 2 areas<br>Compliant to: <b>(CE)</b> EN IEC 60079-0:2018<br>EN IEC 60079-15:2019<br>EN IEC 60079-7 2015:2015 + A1: 2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C) | 2 x Differential  |
|                            |                | Certificate Number: Baseefa03ATEX0319X – Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  |                   |
|                            |                | Compliant to: <b>(UKCA)</b> EN IEC 60079-0:2018<br>EN IEC 60079-15:2019<br>EN IEC 60079-7:2015 + A1: 2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> -20°C to +60°C)  |                   |
|                            |                | Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |                   |
|                            | <b>*H(A-K)</b> | ATEX approved for Zone 1 areas<br>Compliant to: <b>(CE)</b> EN IEC 60079-0:2018<br>EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)                                |                   |
|                            |                | Certificate Numbers: Baseefa02ATEX0025X - Issue 4 (single switch)<br>Baseefa02ATEX0026X - Issue 3 (twin/two switch)  |                   |
|                            |                | Certifying Authority: <b>SGS Fimko Oy</b>  |                   |
|                            |                | Compliant to: <b>(UKCA)</b> EN IEC 60079-0:2018<br>EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)  |                   |
|                            |                | Certificate Number: BAS22UKEX0245X (single switch)<br>BAS22UKEX0246X (twin/two switch)   |                   |
|                            |                | Certifying Authority: <b>SGS Baseefa Limited</b>   |                   |
|                            | <b>WIS</b>     | Intrinsic Safety. Gold Contact Microswitch classed as 'Simple Electrical Apparatus' and may be used without Certification in a Barrier Circuit.<br>BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5         | 1½ x Differential |
| <b>FLUSHOUT</b>            | <b>F</b>       | Flushout   |                   |
| <b>PRESSURE CHAMBER(S)</b> | <b>A</b>       | Aluminium  |                   |
| <b>(wetted surface)</b>    | <b>S</b>       | Stainless Steel  |                   |
|                            | <b>J</b>       | Trovidor   |                   |
|                            | <b>X</b>       | P.T.F.E  |                   |
|                            | <b>M</b>       | Monel  |                   |
|                            | <b>I</b>       | Incoloy  |                   |
|                            | <b>Z</b>       | Phosphor Bronze  |                   |
|                            | <b>Hast.</b>   | Hastelloy  |                   |
|                            | <b>Tit.</b>    | Titanium   |                   |
| <b>DIAPHRAGM(S)</b>        | <b>O</b>       | Buna-N   |                   |
| <b>(wetted surface)</b>    | <b>X</b>       | P.T.F.E.   |                   |
|                            | <b>T</b>       | Stainless Steel  | 2 x Differential  |
|                            | <b>V</b>       | Viton  | 1½ x Differential |
|                            | <b>M</b>       | Monel  | 2 x Differential  |
|                            | <b>Tant.</b>   | Tantalum   | 2 x Differential  |
|                            | <b>Fep</b>     | Teflon FEP   |                   |
|                            | <b>E</b>       | EPDM   |                   |
| <b>COATED SURFACES</b>     | <b>X</b>       | PFA (P.T.F.E.) Coating of Pressure Chamber or Flange   |                   |

|                         |            |   |
|-------------------------|------------|---|
| <b>MANUAL<br/>RESET</b> | <b>MRR</b> | Manual Reset Rising, not available on outputs marked*         |
|                         | <b>MRF</b> | Manual Reset Falling, not available on outputs marked*        |
|                         | <b>R/A</b> | Reset Adjustable, not available on outputs/enclosures marked† |

Extra special requirements such as those listed below must be stated in full with the Code of the Control required:

- a) Wetted surfaces to NACE specifications. MR-01-75 (latest revision)
- b) Special cleaning and handling for Nuclear Power usage
- c) Paint specification suitable for sea water or offshore usage – prefix Range Code with **OS**
- d) No copper or copper bearing alloys
- e) Helium leak tested to  $10^{-5}$  torr (or figure required)
- f) Built to withstand full vacuum
- g) Vacuum switch built to withstand positive pressure of x Bar
- h) Controls to be used in ambient temperatures below or in excess of -20°C to +60°C
- i) Degreased for oxygen service

## PRECISION BUILT SNAP ACTING ENCLOSURES (fitted to SIRCO 2000 Series Switches)

### SINGLE SWITCH ENCLOSURE:



Compliant to: **(CE)** EN IEC 60079-0:2018  
 EN 60079-1:2014  
 Ⓜ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (Tamb -20°C to +60°C)  
 Directive: 2014/324/EU  
 Certificate Number: Baseefa02ATEX0025X – Issue 4  
 Certifying Authority: **SGS Fimko Oy**

**(UKCA)** EN IEC 60079-0: 2018  
 EN 60079-1: 2014  
 Ⓜ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (Tamb -20°C to +60°C)  
 UKSI:1107 (as amended) – Schedule 3A, Part 1  
 Certificate Number: BAS22UKEX0245X  
 Certifying Authority: **SGS Baseefa Limited**

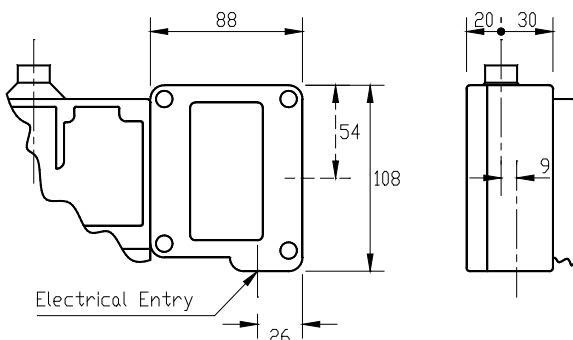


Flanged 2004 Pressure Switch with Single Switch Enclosure

### Description of Equipment or Protective System

The Type H Series Microswitch Unit comprises a flat flanged housing and cover manufactured from aluminium alloy, cast iron or a thinner walled enclosure from stainless steel. The cover is attached using 4 screws of grade A2-70 stainless steel. The housing has provision for a threaded bushing with an operating shaft and up to two cable entries. Various specified microswitches can be fitted with various ratings to produce Type References as indicated below.

| Type Reference  | Rating  |
|-----------------|---|
| H(BZ-2R)        | 15A Res. 125, 250, 480 Vac<br>0.125 HP 125 125 Vac, 1/4 HP 250 Vac<br>0.25A 250 Vdc, 1/2A 125 Vdc |
| H(BZ-R)         | 15A Res. 125, 250, 480 Vac<br>0.125 HP 125 125 Vac, 0.25 HP 250 Vac                               |
| H(BZ-2R-722331) | 1A Res. 125 Vac<br>1A Res. 24 Vdc<br>0.5A Ind. 24 Vdc   |
| H(MT-4R)        | 10A Res. 125 Vac, 125 Vdc<br>0.25 HP. 125 Vac, 125 Vdc<br>(non polarised)                         |
| H(91SE1)        | 5A Res. 3A Ind. 28 Vdc<br>5A Res. 5A Ind. 125 Vac, 250 Vac 50Hz                                   |
| H(91SE1-3N55)   | 1A Res. 0.25A Ind. 30 Vdc   |
| H(BM-2R)        | 15A Res. 125, 250, 480 Vac<br>2A Res. 30 Vdc, 0.4A Res. 125 Vdc<br>0.2A Res. 230 Vdc              |
| H(BM-1R)        | 15A Res. 125, 250, 480 Vac  |



Internal and external earth facilities are provided.

Cable entry holes are provided as specified on the certified drawings for the accommodation of suitable ATEX certified flameproof cable entry devices, with or without the interposition of a suitable ATEX certified flameproof thread adaptor. Unused entries are to be fitted with suitable ATEX certified flameproof stopping plugs.

Suitable flameproof cable entry devices, thread adaptors and stopping plugs certified as Equipment (not a Component) under an EU type Examination Certificate to Directive 2014/34/EU may be used in the manner specified above.

**TWIN OR TWO SWITCH ENCLOSURE:**

Compliant to:

- (CE)** EN IEC 60079-0:2018  
 EN 60079-1:2014  
 II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (Tamb -20°C to +60°C)  
 Directive: 2014/324/EU  
 Certificate Number: Baseefa02ATEX0026X – Issue 3  
 Certifying Authority: **SGS Fimko Oy**
  
- (UKCA)** EN IEC 60079-0:2018  
 EN 60079-1:2014  
 II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (Tamb -20°C to +60°C)  
 UKSI:1107 (as amended) – Schedule 3A, Part 1  
 Certificate Number: BAS22UKEX0246X  
 Certifying Authority: **SGS Baseefa Limited**



HPN2001 Pressure Switch with Twin/Two Switch Enclosure

**Description of Equipment or Protective System**

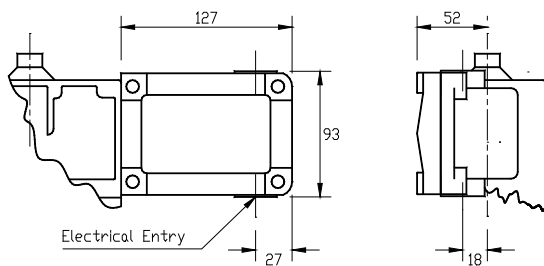
The Type H2 Series Microswitch Unit comprises a flat flanged housing and cover manufactured from aluminium alloy or cast iron. The cover is attached using 4 screws of grade A2-70 stainless steel. The housing has provision for a threaded bushing with an operating shaft and up to two cable entries. The internal arrangement comprises a terminal block and up to two specified microswitches, or one microswitch and two end line resistors. Various specified microswitches can be fitted with various ratings to produce Type References as indicated below.

|                  |   |
|------------------|---|
| H2(BZ-2R)        | 15A Res. 125, 250, 400 Vac<br>0.125 HP 125 125 Vac, 1/4 HP 250 Vac<br>0.25A 250 Vdc, 1/2A 125 Vdc |
| H2(BZ-R)         | 15A Res. 125, 250, 400 Vac<br>0.125 HP 125 125 Vac, 0.25 HP 250 Vac                               |
| H2(BZ-2R-722331) | 1A Res. 125 Vac<br>1A Res. 24 Vdc<br>0.5A Ind. 24 Vdc   |
| H2(BM-2R)        | 15A Res. 125, 250, 400 Vac<br>2A Res. 30 Vdc, 0.4A Res. 125 Vdc<br>0.2A Res. 230 Vdc              |
| H2(BM-1R)        | 15A Res. 125, 250, 400 Vac  |

Internal and external earth facilities are provided.

Cable entry holes are provided as specified on the certified drawings for the accommodation of suitable ATEX certified flameproof cable entry devices, with or without the interposition of a suitable ATEX certified flameproof thread adaptor. Unused entries are to be fitted with suitable ATEX certified flameproof stopping plugs.

Suitable flameproof cable entry devices, thread adaptors and stopping plugs certified as Equipment (not a Component) under an EU type Examination Certificate to Directive 2014/34/EU may be used in the manner specified above.





## PANEL MOUNTED 4000 SERIES SWITCHES

### SINGLE SWITCH ENCLOSURE:

Compliant to: **(CE)** EN IEC 60079-0:2018  
 EN 60079-1:2014  
 EN IEC 60079-7:2015 +A1:2018  
 Ⓜ II 2 G Ex db eb IIC T6 Gb (Tamb = -20°C to +60°C)  
 Directive: 2014/324/EU  
 Certificate Number: Baseefa03ATEX0128 – Issue 4  
 Certifying Authority: **SGS Fimko Oy**

**(UKCA)** EN IEC 60079-0:2018  
 EN 60079-1:2014  
 EN IEC 60079-7:2015 + A1:2018  
 Ⓜ II 2 G Ex db eb IIC T6 Gb (Tamb = -20°C to +60°C)  
 UKSI:1107 (as amended) – Schedule 3A, Part 1  
 Certificate Number: BAS22UKEX0247  
 Certifying Authority: **SGS Baseefa Limited**



### Description of Equipment or Protective System

Type ATEX Ex4000 Pressure Switch rated for use up to 250V a.c. or d.c. It has a three-chamber cast aluminium enclosure comprising a venting chamber, a chamber housing the spring operating plunger assembly and a chamber housing a microswitch and terminal block.

The rectangular terminal chamber has a removable gasketed cover fixed by four stainless steel screws. The microswitch type 'Kestrel' EIV 3CS-ATEX manufactured by Burgess and covered by Baseefa Component Certificate No. BAS01ATEX2358U/9 coded EEx d IIC is fixed by screws to a combined baseplate and mounting bracket which is screwed to the base of the terminal chamber. The flying leads from the microswitch are terminated in a Klippon type BK3 terminal block covered by Baseefa Component Certificate No. TUV18ATEX8209U, coded Ex e IIC which is screwed to the mounting bracket above the microswitch.

The operating plunger passes into the terminal chamber through a screwed adjustment bush. Ingress Protection of at least IP54 is assured by the inclusion of a diaphragm between the venting chamber and the plunger and spring assembly chamber.

Internal and external earthing facilities are provided.

One cable entry port is provided for fitting a suitable cable entry device with or without the interposition of a suitable thread adaptor. The installation of the cable entry device shall maintain the ingress protection of the terminal chamber.

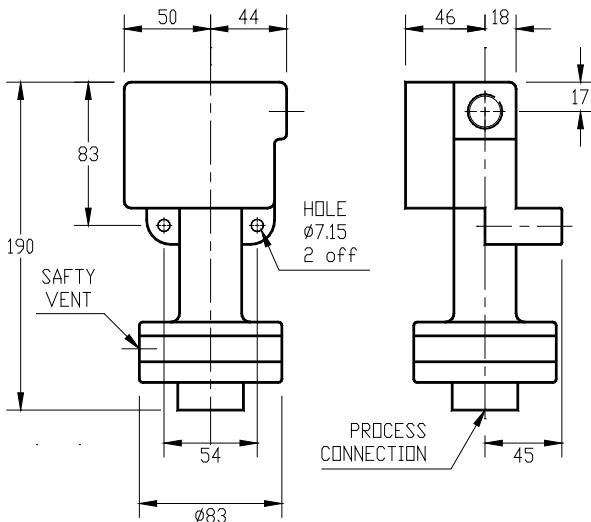
### Variation 0.1

Alternative ratings of the unit as follows:

- 250V ac 5A Res. or Ind.
- 125V ac 5A Res. or Ind.
- 250V dc 0.25A Res. or 0.03A Ind.
- 125V dc 0.5A Res. or 0.03A Ind.
- 75V dc 0.75A Res. or Ind.
- 50V dc 1A Res. or Ind.
- 30V dc 5A Res. or 3A Ind.

### Variation 0.2

Alternative pressure chambers to meet individual requirements.





### SERIES 2000 SWITCHES

**SINGLE SWITCH ENCLOSURE:**

Compliant to: **(CE)** EN IEC 60079-0:2018  
 EN IEC 60079-15:2019  
 EN IEC 60079-7:2015 + A1:2018  
 Ⓢ II 3G Ex ec nC IIC T6 Gc (Tamb = -20°C to +60°C)  
 Directive: 2014/324/EU  
 Certificate Number: Baseefa03ATEX0319X – Issue 4  
 Certifying Authority: **SGS Fimko Oy**

**(UKCA)** EN IEC 60079-0:2018  
 EN IEC 60079-15:2019  
 EN IEC 60079-7: 2015 + A1: 2018  
 Ⓢ II 3G Ex ec nC IIC T6 Gc (Tamb = -20°C to +60°C)  
 UKSI:1107 (as amended)  
 Certificate Number: BAS22UKEX0248X  
 Certifying Authority: **SGS Baseefa Limited**



**Description of Equipment**

Type ATEX E(d) Range of Pressure Switches rated at 250V a.c. 5A Inductive (0.75PF @ 50Hz), 30V d.c. 3A Inductive (100mH), 30V d.c. 5A Resistive comprising of a separate pressure unit, switch unit and terminal chamber bolted together to form the pressure switch assembly. All pressure units have the same mating dimensions to fit the switch unit. The pressure assembly may be diaphragm, piston or bellows operated and in all cases the switch unit is sealed from the pressure unit and is protected against over pressure by a buffer plate.

The pressure chamber of the power unit may be made from Aluminium, Phosphor Bronze, Monel, Titanium, Hastelloy, Aluminium-Bronze, Incolloy, PTFE, PVDF or Stainless Steel and the diaphragm from PTFE, Stainless Steel, Buna-N, Teflon FEP, EPDM, Tantalum, Monel or Viton, the piston and bellows Stainless Steel.

The movement of the diaphragm, piston or bellows is transmitted into the aluminium switch unit by a pushrod, and this compresses a range spring which has been pre-stressed by an adjustment screw. Springs with various rates are used to give different pressure ranges. The movement of the push rod is transmitted via a buffer spring to an angle lever which actuates a Honeywell Type 91SE1 enclosed break microswitch certified as KEMA03ATEX1182U. The switch unit enclosure is sealed by means of an Aluminium cover and a Neoprene gasket.

The microswitch leads pass via a silicone sealant filled plastic tube and are terminated in a Klippon type MK3/12 terminal block housed in a Klippon type K1 terminal enclosure which is mounted on the switch unit. A suitably tapped hole (M20 x 1.5 Int.) is provided in this enclosure for a cable entry device.

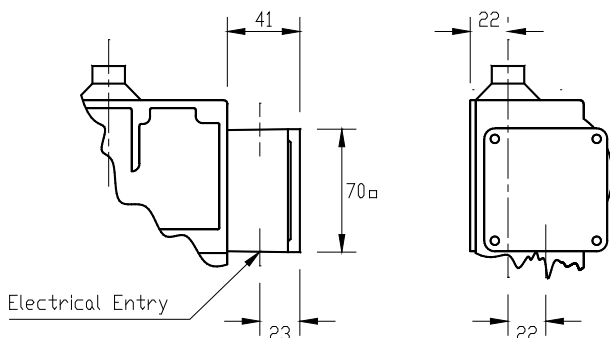
A code for the manufacturer's type reference of the pressure switches including pressure range, pressure chamber material, power unit model and diaphragm material used is shown in Drawing No. A3-3978.

**Variation 0.1**

To allow for Type ATEX E(d) Range of Temperature Switches.

These are almost identical to the pressure switches but have bellows in place of the pressure chamber of the power unit. The bellows are connected to a sensing bulb via a fixed or flexible capillary. To achieve various measurement ranges the bellows-capillary sensor-unit is filled with liquids having different coefficients of expansion.

A code for the manufacturer's type reference of the temperature switches including temperature range, bulb material and capillary type is shown in Drawing No. A3-3978.





## THE PNEUMATIC SWITCH

The design combines two separate units into a single control.

The sensing unit is the well tried, job proven SIRCO™ Control, replacing the electric switching element with a Pneumatic Output.

Main application areas:

- Hazardous (being absolutely explosion proof).
- Direct actuation of valve motors (without the use of solenoids or pilot valves).
- Control system simplification (with consequent decrease in original and maintenance costs).

The valves furnish a positive pneumatic on / off signal.

### NOTE:

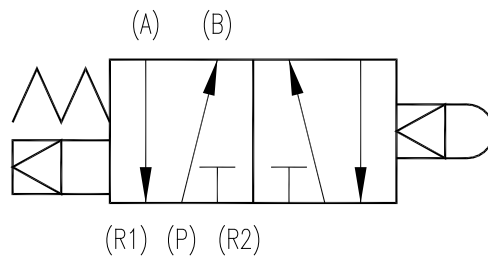
Controls fitted with PV Pneumatic Valves, can only be supplied with a Fixed Differential.

Differentials are 5 x the larger of the two offered on a particular range, or 10 x when only one differential is offered.



PV Pneumatic Valve fitted to 2001W Pressure Switch

The valve described above can be supplied fitted to any model of the series 2000 pressure, vacuum and temperature controls.



### CONNECTION DETAILS:

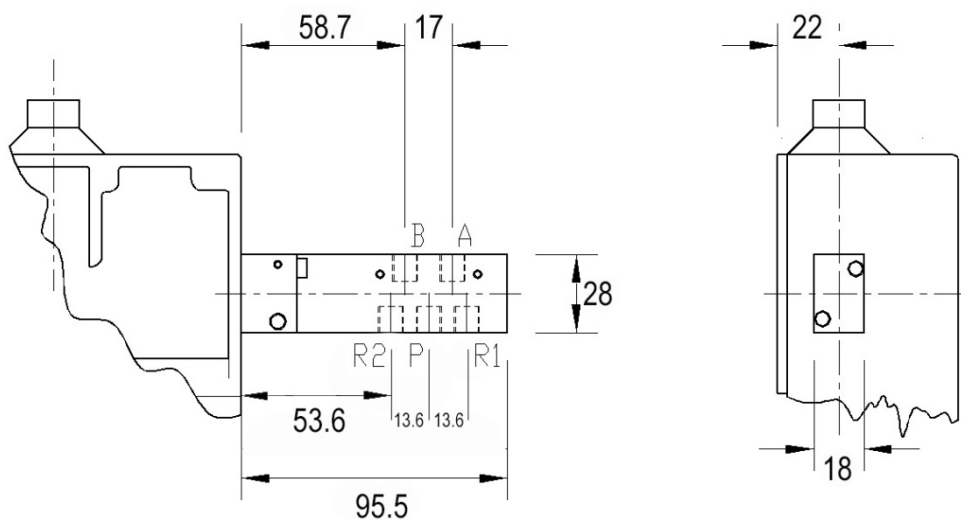
Air must be fed into port 'P' at all times as this also feeds the Internal Pilot.

When the Valve is in the 'un-operated' position air will flow from port 'B'.  
Port 'A' will be vented through port 'R1'.

When the Valve is operated air will flow from port 'A' and port 'B' will be vented through port 'R2'.

### Notes:

- A pilot air supply of between 1.5 to 7 Bar must be connected to port 'P'.  
Whatever pressure is put in as a pilot, this will also be the switching pressure.
- Main Port connections are 5 x 1/8" BSP (standard)
- Pilot Exhaust connection is M5 x 0.8











SMS Miniature Pneumatic Switch fitted to 2001W type Pressure Switch

The miniature pneumatic switch (SMS) used on SIRCO™ Controls, is a three way control valve which is ideally suited for the operation of cylinders having up to 1½" bore diameters, and for actuating pilot valves controlling diaphragm valves or large bore cylinders.

They can be fitted to the Series 2000 switches with Non-Adjustable Differentials only.

These valves operate at an air pressure of 1.4 to 10.5 Barg and have a flow capacity of 10 c.f.m. at 7 Barg. They may be used as normally open or normally closed valves.

They consist of a zinc die cast body, plastic valve spool and floating nitrile 'O' rings, and can be fitted to any range of control with a fixed differential only.

The operating force on normally closed with a valve line pressure of 1.4 Bar is 22 ounces, with a valve line pressure of 5 Bar it goes up to 28 ounces.

For normally open the operating force is 2½ lbs and 6 lbs respectively.

They employ a bleed type actuator.

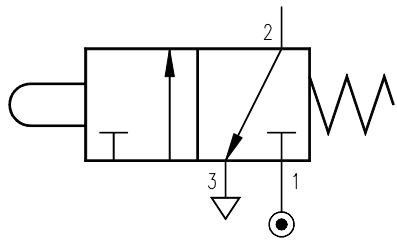


Fig. A

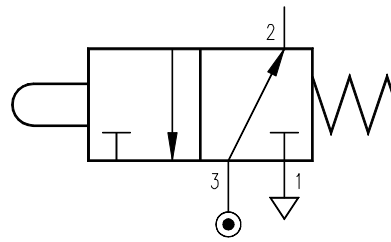
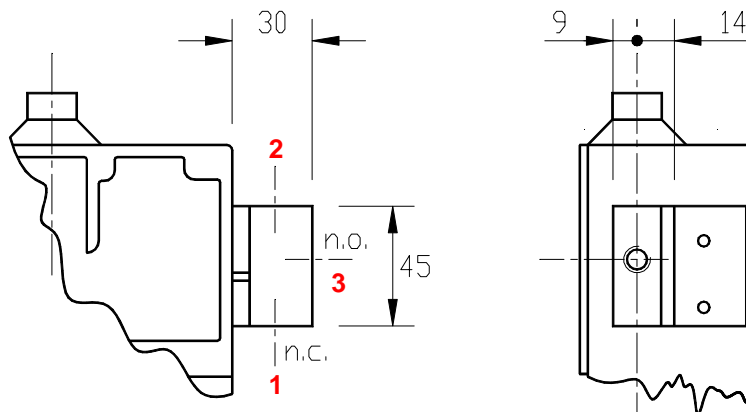


Fig. B

**CONNECTION DETAILS:**

For normally closed valve (**Fig. A**): See Fig. A inlet port **1** is closed and port **2** can exhaust through port **3**.  
When spool is actuated port 1 is now open to port 2 and port 3 is closed.

For normally open valve (**Fig. B**): Port **3** becomes the inlet port and port **1** now becomes the exhaust port.



Pneumatic valve connections: 1/8" NPT Female  
n.c. Normally closed  
n.o. Normally open

The Series 2000 is available with either Internal or External Adjustment. (External adjustment is standard supply unless otherwise requested). The principle for both is exactly the same as in that the Spring Button is acting on the Range Spring Tension required to reach the Set Point. As the Spring Button compresses the Spring, the pressure needed to move the Actuator on to the Switching Mechanism is higher. To get a lower Set Point release the tension on the Spring as required.



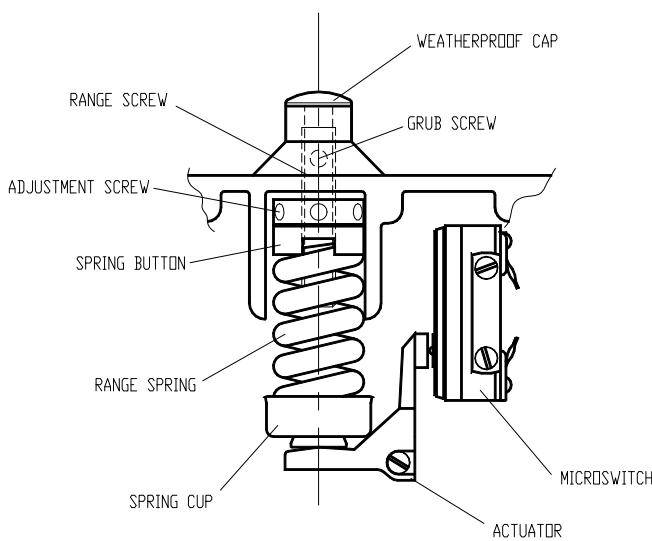
Example:  
TW - 2001H with Internal Adjustment

For Internal Adjustment the Range Screw is fixed to the Housing by a Grub Screw whilst setting is achieved by turning the Adjustment Screw clockwise to raise and anti-clockwise to lessen the Set Point to the required pressure. To rotate the Adjustment Screw insert a 3/16" diameter rod into the equi-spaced holes (see **Fig. 1**).

For External Adjustment the Range Screw passes through the top of the Housing in to a location depression in the Spring Button for the External Adjustment variation. Setting is achieved by releasing the Lock Nut and turning the Range Screw with a 3/16" A/F Allen Key, clockwise or anti-clockwise, the effect will be the same as above. When the Set Point is reached tighten up the Lock Nut again (see **Fig. 2**).

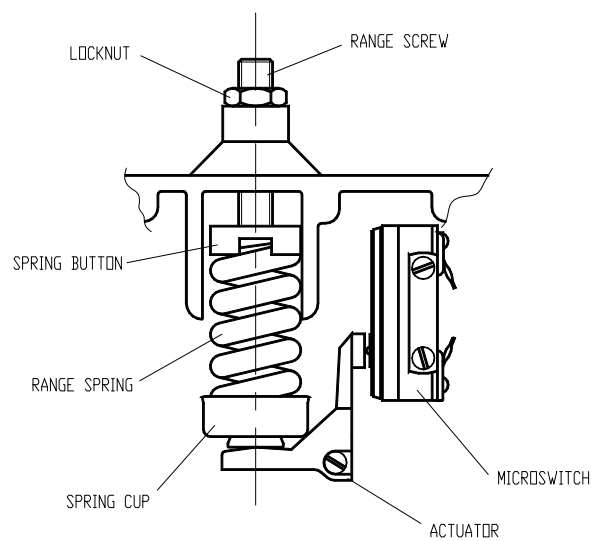
Note: Both variations are Weatherproof.

**Internal Adjustment**



**Fig. 1**

**External Adjustment**



**Fig. 2**

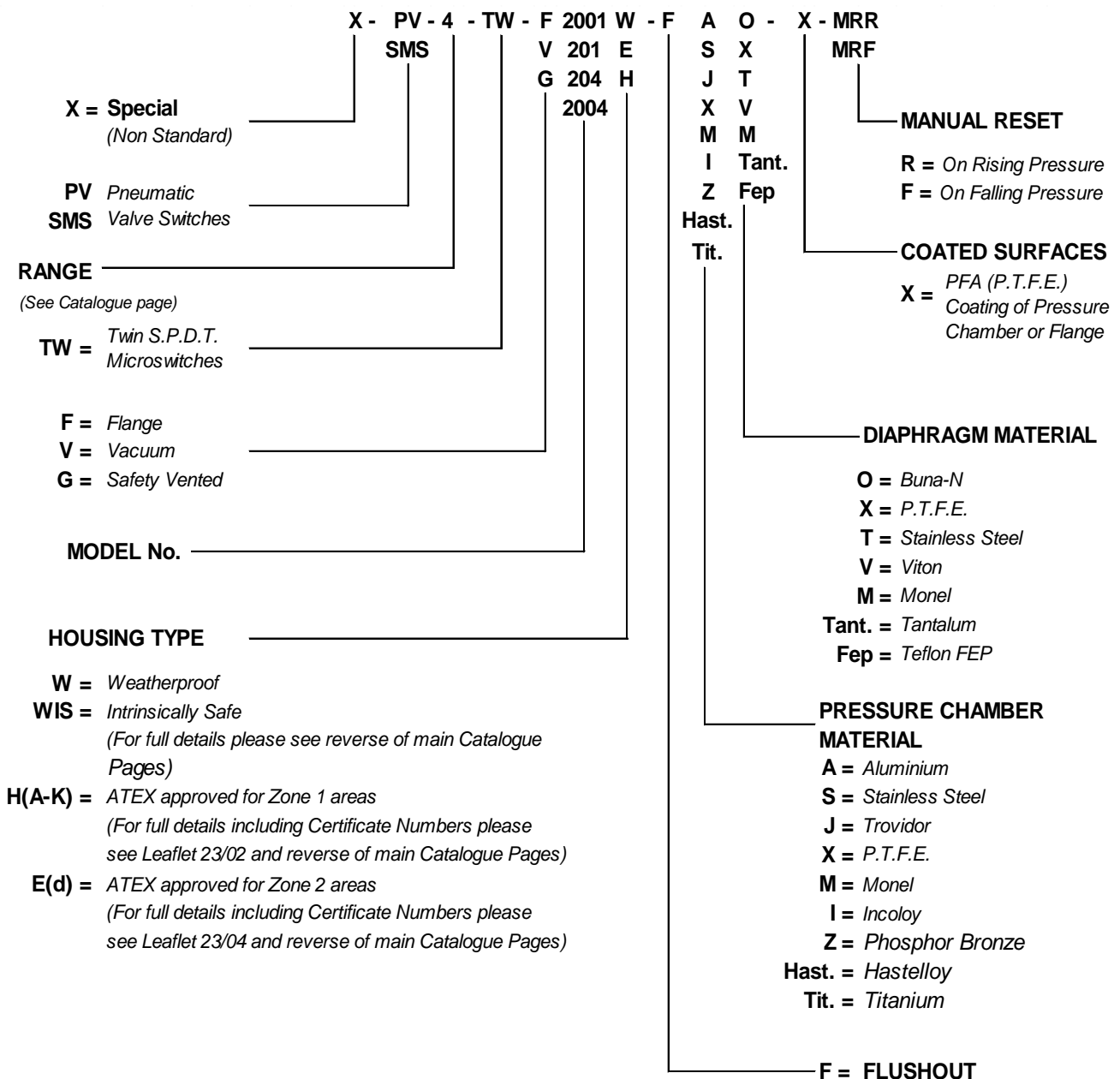
To facilitate the selection of switches, a coding system is utilised and consists basically of codes for the range, the model, and the wetted surface material. The other prefixes and suffixes are permutations of special features offered on most of the units.

**Notes:**

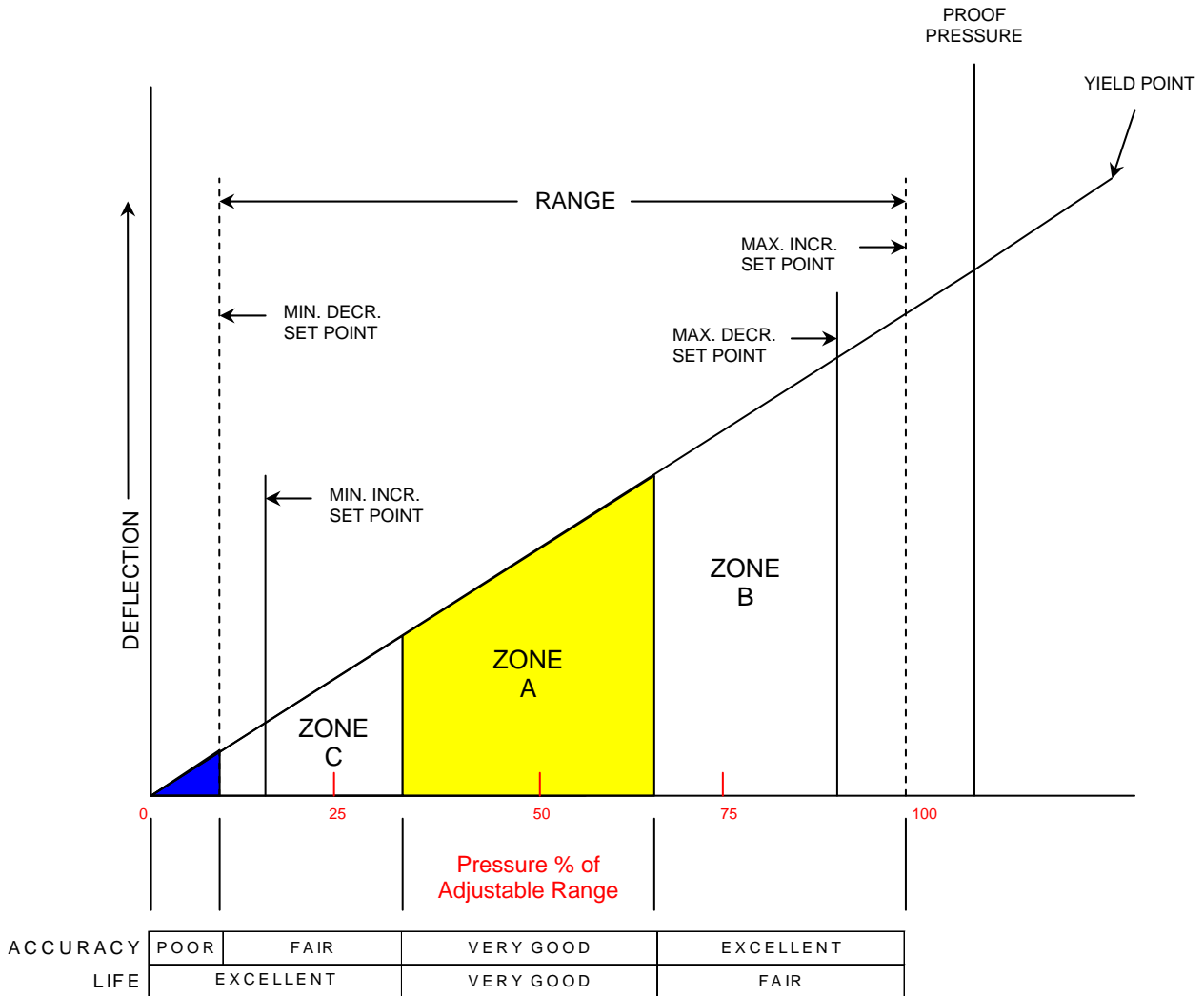
1. In Pressure Switches the elimination of one zero from the model number e.g., 2004 to 204 indicates Differential Adjustable.
2. In Differential Pressure Switches there is only one zero and the letter 'P' is added e.g., 204P. Reset Adjustable is indicated by suffixing model code with R/A e.g., 0 -204P – AO –R/A.

Other code guides (given later in the catalogue) apply to series 4000 (Panel and Field Mounting) and Series 2009 Temperature Switches.

If 'Offshore' Paint finish required, add the letters 'OS' at the beginning of the code number, i.e.: OS – PV 4 – 2001W – AO.



1. For Accuracy & Life Select Zone A.
2. For Life Select Zone C.



| ACCURACY ZONE | ACCURACY CLASS<br>PER CENT OF OPERATING RANGE |
|---------------|---|
| Zone B        | 1%  |
| Zone A        | 2%  |
| Zone C        | 5%  |
| <b>LIFE</b>   |   |
| Zone C        | Excellent                                     |
| Zone A        | Very Good                                     |
| Zone B        | Fair  |

On Differential Pressure Switches, these accuracies are for constant static pressure only.



## MODELS:

|      |                |   |
|------|----------------|---|
| 2001 | Single Switch, | Differential Non-Adjustable                               |
| 201  | Single Switch, | Differential Adjustable                                   |
| 2002 | Two Switch,    | Differential Non-Adjustable                               |
| 202  | Two Switch,    | Differential Adjustable<br>on 1 <sup>st</sup> Switch Only |

All models are available as either Pressure or Vacuum sensitive switches and cover the range -1 to +175 Barg in a group of 12 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Models falling within the range 0 to 1 Barg can be supplied as Vacuum switches (see code guide).

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except Flanged Controls).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



## PRESSURE AND VACUUM OPERATED CONTROLS

| OPERATING RANGE    | DIFFERENTIAL NON ADJUSTABLE | BASIC MODEL CODE |               | PROOF PRESSURE | MAX WORKING PRESSURE |   |
|--------------------|-----------------------------|------------------|---------------|----------------|----------------------|---|
|                    |                             | RANGE CODE       | SERIES CODE   |                |                      |   |
| -1 to +5 Barg      | 0.1 or 0.2 Bar              | 00               | 2001W – AO†   | 7.5 Barg       | 5.8 Barg             |   |
| -112 to +112 mbarg | 7.5 or 15 mbar              | 00A              | 2001W – AO†   | 7.5 Barg       | 5.8 Barg             |   |
| 20 to 200 mbarg    | 7.5 or 15 mbar              | 2                | 2001W – AO†   | 10.5 Barg      | 8.07 Barg            |   |
| 0.1 to 0.5 Barg    | 0.02 or 0.04 Bar            | 3                | 2001W – AO†   | 10.5 Barg      | 8.07 Barg            | Higher Proof Pressures Available. Consult Factory.  |
| 0.14 to 1.4 Barg   | 0.02 or 0.04 Bar            | 3A               | 2001W – AO†   | 10.5 Barg      | 8.07 Barg            |   |
| 0.14 to 4.2 Barg   | 0.04 or 0.07 Bar            | 4                | 2001W – AO†   | 10.5 Barg      | 8.07 Barg            |   |
| 0.35 to 7 Barg     | 0.05 or 0.1 Bar             | 5                | 2001W – AO†   | 10.5 Barg      | 8.07 Barg            |   |
| 1.4 to 14 Barg     | 0.1 or 0.2 Bar              | 6                | 2001W – SO††  | 52.5 Barg      | 40.38 Barg           |   |
| 2.1 to 21 Barg     | 0.15 or 0.35 Bar            | 7                | 2001W – SO††  | 52.5 Barg      | 40.38 Barg           | Re-calibration of Operating Range may be required if Maximum Working Pressure exceeds 20% above the top of the Operating Range. |
| 3.5 to 35 Barg     | 0.35 or 0.7 Bar             | 7A               | 2001W – SO††  | 52.5 Barg      | 40.38 Barg           |   |
| 7 to 100 Barg      | 3 or 6 Bar                  | 8                | 2001W – ST††† | 250 Barg       | 192 Barg             |   |
| 70 to 175 Barg     | 5 or 10 Bar                 | 9                | 2001W – ST††† | 250 Barg       | 192 Barg             |   |

## DIFFERENTIAL ADJUSTABLE

|                    |                   |     |             |           |            |   |
|--------------------|-------------------|-----|-------------|-----------|------------|---|
| -1 to +5 Barg      | 0.2 to 1.7 Barg   | 00  | 201W – AO†  | 7.5 Barg  | 5.8 Barg   |   |
| -112 to +112 mbarg | 15 to 63 mbarg    | 00A | 201W – AO†  | 7.5 Barg  | 5.8 Barg   | Proof Pressures over 21 Bar will have High Tensile Steel Grade 12.9 Screws, Plated. |
| 20 to 200 mbarg    | 15 to 60 mbarg    | 2   | 201W – AO†  | 10.5 Barg | 8.07 Barg  |   |
| 0.1 to 0.5 Barg    | 0.04 to 0.21 Barg | 3   | 201W – AO†  | 10.5 Barg | 8.07 Barg  | Proof Pressures up to 21 Bar will have Stainless Steel Screws Grade A2/A4.          |
| 0.14 to 1.4 Barg   | 0.04 to 0.4 Barg  | 3A  | 201W – AO†  | 10.5 Barg | 8.07 Barg  |   |
| 0.14 to 4.2 Barg   | 0.07 to 0.7 Barg  | 4   | 201W – AO†  | 10.5 Barg | 8.07 Barg  |   |
| 0.35 to 7 Barg     | 0.1 to 2.1 Barg   | 5   | 201W – AO†  | 10.5 Barg | 8.07 Barg  |   |
| 1.4 to 14 Barg     | 0.2 to 3.5 Barg   | 6   | 201W – SO†† | 52.5 Barg | 40.38 Barg |   |
| 2.1 to 21 Barg     | 0.35 to 6.3 Barg  | 7   | 201W – SO†† | 52.5 Barg | 40.38 Barg |   |
| 3.5 to 35 Barg     | 0.7 to 10.5 Barg  | 7A  | 201W – SO†† | 52.5 Barg | 40.38 Barg |   |

Standard switches contain one single pole double throw microswitch.

Standard electrical rating 15 amps 400 vac.

Standard electrical entry M20 x 1.5 Int. through 360°.

†Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

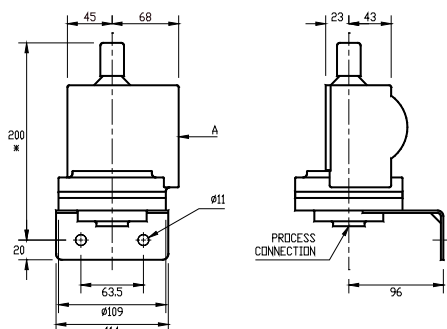
††Standard construction Stainless Steel Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = SO.

†††Standard construction Stainless Steel Pressure Chamber and Stainless Steel Diaphragm (M.W.T. 200° C) = ST.

††(Aluminium Pressure Chambers are not available on these models.)

†††(Aluminium Pressure Chambers and Fabric Diaphragms are not available on these models.)

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options, and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'

\*This dimension is 242 for '00' and '00A' ranges, it will also differ for vacuum models and safety vented models.

| DEGREE OF PROTECTION                     | WEATHERPROOF<br>IP55<br>IP66  | CODE<br>W<br>IP55<br>IP66   |
|--|---|---|
| ELECTRICAL OUTPUTS (FOR HAZARDOUS AREAS) | <p><b>ATEX approved for Zone 2 areas</b><br/>EN IEC 60079-0:2018, EN IEC 60079-15:2019, EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: Baseefa03ATEX0319X – Issue 4<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN IEC 60079-15:2019, EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0248X<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>ATEX approved for Zone 1 areas</b><br/>EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: Baseefa02ATEX0025X<br/>Issue 4 (single switch) *1<br/>Certificate Number: Baseefa02ATEX0026X<br/>Issue 3 (twin/two switch) *1<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0245X (single switch) *2<br/>Certificate Number: BAS22UKEX0246X (twin/two switch) *2<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>Intrinsic Safety. Gold Contact Microswitch</b><br/>classed as 'Simple Electrical Apparatus'<br/>and may be used without certification in a barrier circuit.<br/>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)</p> | <p>E(d) All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.</p> <p>H(A – K) *1/2 H(A) = BZ-2R<br/>*1/2 H(B) = BZ-R<br/>*1/2 H(C) = BZ-2R-722<br/>*1 H(D) = 91-SE1<br/>*1 H(F) = 91-SE1-3N55<br/>*1 H(I) = MT-4R<br/>*1/2 H(J) = BM-2R<br/>*1/2 H(K) = BM-1R<br/><i>Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details</i></p> <p>WIS All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.</p> |
| S.P.D.T. ALTERNATIVES                    | HIGH LOAD 10 amp, 125 vac/vdc   | Prefix Range Code with 'X' and state ratings.   |
| TWO SWITCH MODELS (ELECTRICAL OUTPUT)    | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.   | 2002<br>202<br>E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS (ELECTRICAL OUTPUT)   | Twin Microswitches for simultaneous action  | TW Differential x 2   |
| PNEUMATIC VALVE SWITCHES                 | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV<br>All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 5 x the larger listed.   |
| PRESSURE CHAMBER MATERIAL                | Stainless Steel<br>Phosphor Bronze<br>P.T.F.E.<br>Trovidor (P.V.D.F.)<br>Phosphor Bronze<br>Hastelloy<br>Titanium<br>Incoloy<br>Monel<br>If P.T.F.E. lining is required for Pressure Chambers add - after Pressure Chamber material   | S<br>Z<br>X<br>J<br>Z<br>Hast.<br>Tit.<br>I<br>M<br>X<br>Other material available on request. Consult Factory   |
| DIAPHRAGM MATERIAL                       | Stainless Steel (Differential x 2)<br>P.T.F.E.<br>Viton (Differential x 1½)<br>Monel (Differential x 2)<br>Tantalum (Differential x 2)  | T<br>X<br>V<br>M<br>TANT<br>Not available on 00 or 00A Range<br>Not available on 00 or 00A Range<br>Not available on 00 or 00A Range  |
| SAFETY VENTED CONSTRUCTION               |   | Prefix Range Code with: G   |
| FLANGES                                  | Available on all models.  | Prefix Series Code with: F  |
| FOR VACUUM SERVICE                       |   | Prefix Series Code with: V  |
| PROCESS CONNECTIONS                      | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout<br>Prefix Pressure Chamber Material code with: F   | Alternatives available up to ½"   |
| MANUAL RESET (RISING or FALLING)         | Available on all Electrical & Pneumatic 2001/201 Series, except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure)   |



**MODELS:**

HPN2001      Single Switch, Differential Non-Adjustable

All models are available as Pressure switches and cover the range 0.14 to 21 Barg in a group of 5 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard.

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



### PRESSURE OPERATED CONTROLS – PISTON TYPE

| OPERATING RANGE  | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE CODE    SERIES CODE | PROOF PRESSURE | MAX WORKING PRESSURE |
|------------------|-----------------------------|---|----------------|----------------------|
| 0.14 to 1.4 Barg | 0.16 Barg                   | 3A – HPN2001W – SO†                           | 226 Barg       | 200 Barg             |
| 0.14 to 4 Barg   | 0.4 Barg                    | 4 – HPN2001W – SO†                            | 226 Barg       | 200 Barg             |
| 0.9 to 7 Barg    | 0.45 Barg                   | 5 – HPN2001W – SO†                            | 226 Barg       | 200 Barg             |
| 1.4 to 14 Barg   | 0.65 Barg                   | 6 – HPN2001W – SO†                            | 226 Barg       | 200 Barg             |
| 2.1 to 21 Barg   | 0.8 Barg                    | 7 – HPN2001W – SO†                            | 226 Barg       | 200 Barg             |

### PRESSURE OPERATED CONTROLS – DIAPHRAGM TYPE

| OPERATING RANGE  | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE CODE    SERIES CODE | PROOF PRESSURE | MAX WORKING PRESSURE |
|------------------|-----------------------------|---|----------------|----------------------|
| 0.14 to 1.4 Barg | 0.16 Barg                   | 3A – HPN2001W – ST††                          | 226 Barg       | 200 Barg             |
| 0.14 to 4 Barg   | 0.4 Barg                    | 4 – HPN2001W – ST††                           | 226 Barg       | 200 Barg             |
| 0.9 to 7 Barg    | 0.45 Barg                   | 5 – HPN2001W – ST††                           | 226 Barg       | 200 Barg             |
| 1.4 to 14 Barg   | 0.65 Barg                   | 6 – HPN2001W – ST††                           | 226 Barg       | 200 Barg             |
| 2.1 to 21 Barg   | 0.8 Barg                    | 7 – HPN2001W – ST††                           | 226 Barg       | 200 Barg             |

Standard switches contain one single pole double throw microswitch.

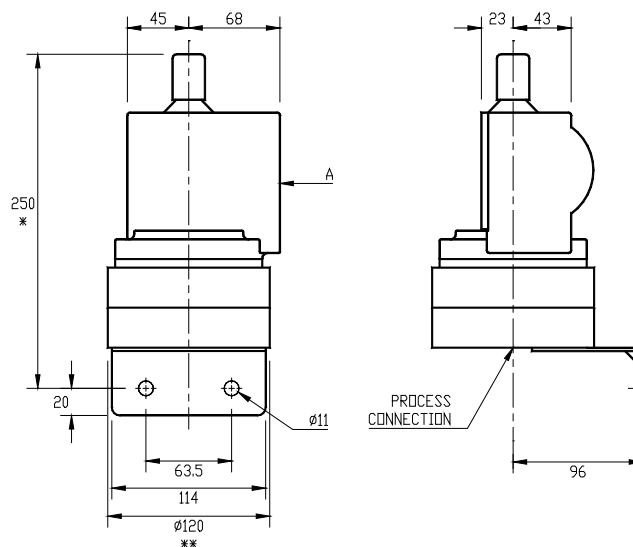
Standard electrical rating 15 amps 400 vac.

Standard electrical entry M20 x 1.5 Int. through 360°.

†Standard construction Stainless Steel Pressure Chambers and Stainless Steel Piston with Buna N 'O' Ring (M.W.T. 90° C) = SO.

††Standard construction Stainless Steel Pressure Chambers and Stainless Steel Diaphragm (M.W.T. 200° C) = ST.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, exp/flameproof enclosure, pneumatic valve fitted to surface 'A'

| DEGREE OF PROTECTION                              | WEATHERPROOF  | CODE  |   |
|---|---|---|---|
|   | IP55<br>IP66  | W<br>IP55<br>IP66   |   |
| ELECTRICAL OUTPUTS (CE)<br>(FOR HAZARDOUS AREAS)  | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.   |
| (UKCA)  | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |   |
| (CE)  | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R |
| (UKCA)  | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details   |
|   | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.   |
| S.P.D.T. ALTERNATIVES                             | HIGH LOAD 10 amp, 125 vac/vdc   |   | Prefix Range Code with 'X' and state ratings.   |
| TWIN SWITCH MODELS<br>(ELECTRICAL OUTPUT)         | Twin Microswitches for simultaneous action  | TW  | All ranges will have 2 x the Non-Adjustable Differential listed.  |
| PRESSURE CHAMBER MATERIAL<br>(Diaphragm Operated) | Tantalum<br>Monel<br>Hastelloy<br>Titanium<br>Incoloy   | Tant.<br>M<br>Hast.<br>Tit.<br>I                                  |   |
| (Piston Operated)                                 | Monel   | M   |   |
| DIAPHRAGM MATERIAL<br>(Diaphragm Operated)        | Monel   | M   |   |
| 'O' RING MATERIAL<br>(Piston Operated)            | EPDM  | E   | (-40 to +150°C)   |
| PROCESS CONNECTIONS                               | 1/4" N.P.T. Female standard<br>1/4" Flushout Prefix Pressure Chamber Material code with: F  |   | Alternatives available up to 1/2"   |
| MANUAL RESET<br>(RISING or FALLING)               | Available on all Electrical HPN2001 Series except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |   |

**MODEL:**  
2003 Single Switch, Differential Non-Adjustable

The Pressure Switches in this group are built to operate with complete versatility in the higher-pressure ranges, from 7 to 420 Barg by the use of an encapsulated bellows.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of capsule units are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard.

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



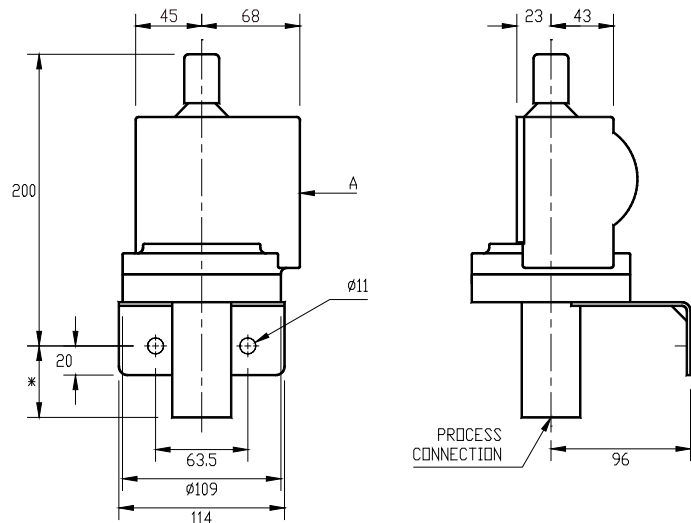
### PRESSURE OPERATED CONTROLS

| OPERATING RANGE | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE | PROOF PRESSURE | MAX WORKING PRESSURE |
|-----------------|-----------------------------|------------------|----------------|----------------------|
| 7 to 100 Barg   | 1 or 2 Barg at range max*   | 8 – 2003W – S    | 140 Barg       | 120 Barg             |
| 140 to 420 Barg | 7 or 14 Barg at range max*  | 10 – 2003W – S   | 560 Barg       | 504 Barg             |

\*Please state preference

Standard switches contain one single pole double throw microswitch.  
 Standard electrical rating 15 amps 400 vac.  
 Standard electrical entry M20 x 1.5 Int. through 360°.  
 Standard construction Stainless Steel Capsule and Stainless Steel Bellows (M.W.T. 200°C)

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
 \*This dimension 48 for 8 & 9 ranges, 51 for 10 range.

| DEGREE OF PROTECTION                                    | WEATHERPROOF  | CODE  |   |
|---|---|---|---|
|   | IP55<br>IP66  | W<br>IP55<br>IP66   |   |
| <b>ELECTRICAL OUTPUTS (CE)</b><br>(FOR HAZARDOUS AREAS) | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |   |
| <b>(CE)</b>   | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details   |
|   | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>S.P.D.T. ALTERNATIVES</b>                            | <b>HIGH LOAD</b> 10 amp, 125 vac/vdc  |   | Prefix Range Code with 'X' and state ratings.   |
| <b>TWIN SWITCH MODELS (ELECTRICAL OUTPUT)</b>           | Twin Microswitches for simultaneous action  | TW  | Differential x 2  |
| <b>PNEUMATIC VALVE SWITCHES</b>                         | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 5 x the larger listed.  |
| <b>TRANSFER SEAL DIAPHRAGM</b>                          | Stainless Steel   | 2003/2  |   |
| <b>PROCESS CONNECTIONS</b>                              | ¼" B.S.P. Female standard (Rp¼)   |   | Alternatives available up to ½"   |
| <b>MANUAL RESET (RISING or FALLING)</b>                 | Available on all Electrical & Pneumatic 2003 Series, except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |   |

**MODELS:**

|       |                |   |
|-------|----------------|---|
| 2003X | Single Switch, | Differential Non-Adjustable                               |
| 203X  | Single Switch, | Differential Adjustable                                   |
| 2013X | Two Switch,    | Differential Non-Adjustable                               |
| 213X  | Two Switch,    | Differential Adjustable<br>on 1 <sup>st</sup> Switch Only |

These Pressure Switches are operated by a Capsule Unit consisting of a Piston and Buna N 'O' Ring in the pressure range between 14 to 420 Barg.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard.

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.

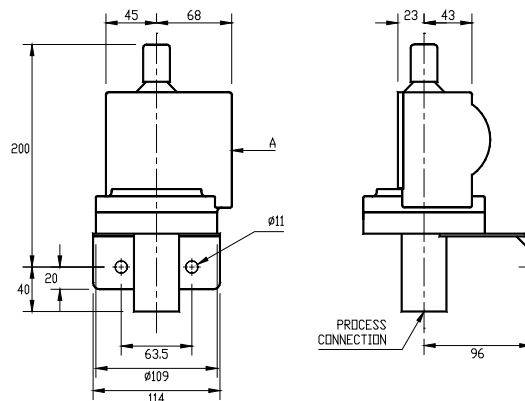


**PRESSURE OPERATED CONTROLS**

| OPERATING RANGE                | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE SERIES CODE CODE | PROOF PRESSURE | MAX WORKING PRESSURE |                             |
|--------------------------------|-----------------------------|--|----------------|----------------------|-----------------------------|
| 14 to 105 Barg                 | 4 or 6 Barg at Range Max*   | 8 – 2003XW – SO                            | 140 Barg       | 126 Barg             | Higher Proof Pressures      |
| 70 to 210 Barg                 | 6 or 10 Barg at Range Max*  | 9 – 2003XW – SO                            | 280 Barg       | 252 Barg             | Available. Consult Factory. |
| 140 to 420 Barg                | 15 or 25 Barg at Range Max* | 10 – 2003XW – SO                           | 560 Barg       | 504 Barg             |                             |
| *Please state preference       |                             |  |                |                      |                             |
| <b>DIFFERENTIAL ADJUSTABLE</b> |                             |  |                |                      |                             |
| 14 to 105 Barg                 | 6 to 25 Barg                | 8 – 203XW – SO                             | 140 Barg       | 126 Barg             | Higher Proof Pressures      |
| 70 to 210 Barg                 | 10 to 50 Barg               | 9 – 203XW – SO                             | 280 Barg       | 252 Barg             | Available. Consult Factory. |
| 140 to 420 Barg                | 25 to 100 Barg              | 10 – 203XW – SO                            | 560 Barg       | 504 Barg             |                             |

Standard switches contain one single pole double throw microswitch.  
 Standard electrical rating 15 amps 400 vac.  
 Standard electrical entry M20 x 1.5 Int. through 360°.  
 Standard construction Stainless Steel Pressure Capsule and Buna N 'O' Ring (M.W.T. 90° C)

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'

| DEGREE OF PROTECTION                             | WEATHERPROOF<br>IP55<br>IP66  | CODE<br>W<br>IP55<br>IP66   |
|--|---|---|
| ELECTRICAL OUTPUTS (CE)<br>(FOR HAZARDOUS AREAS) | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d) All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
| (UKCA)   | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |
| (CE)   | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K) *1/2 H(A) = BZ-2R<br>*1/2 H(B) = BZ-R<br>*1/2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/2 H(J) = BM-2R<br>*1/2 H(K) = BM-1R |
| (UKCA)   | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H <sub>2</sub> T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details   |
|  | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.   |
| S.P.D.T. ALTERNATIVES                            | HIGH LOAD 10 amp, 125 vac/vdc   | Prefix Range Code with 'X' and state ratings.   |
| TWO SWITCH MODELS<br>(ELECTRICAL OUTPUT)         | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.   | 2013X<br>213X<br>E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS<br>(ELECTRICAL OUTPUT)        | Twin Microswitches for simultaneous action  | TW Differential x 2   |
| PNEUMATIC VALVE SWITCHES                         | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>PV<br>Prefix Range Code:<br>All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 5 x the larger listed.             |
| PRESSURE CHAMBER MATERIAL                        | Stainless Steel   | S   |
| TRANSFER SEAL DIAPHRAGM                          | Stainless Steel   | 2003/2X, 203/2X<br>2013/2X, 213/2X  |
| PROCESS CONNECTIONS                              | ¼" B.S.P. Female standard   | Alternatives available up to ½"   |
| MANUAL RESET<br>(RISING or FALLING)              | Available on all Electrical & Pneumatic 2003X/203X Series,<br>except Explosion-proof/Flameproof Models.   | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure)   |

**MODELS:**

|      |                |   |
|------|----------------|---|
| 2004 | Single Switch, | Differential Non-Adjustable                               |
| 204  | Single Switch, | Differential Adjustable                                   |
| 2005 | Two Switch,    | Differential Non-Adjustable                               |
| 205  | Two Switch,    | Differential Adjustable<br>on 1 <sup>st</sup> Switch Only |

All models are available as either Pressure or Vacuum sensitive switches and cover the range -5 mbar to +2.8 Barg in a group of 5 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Models falling within the range 0 to 1 Barg can be supplied as Vacuum switches (see code guide).

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except Flanged Controls).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



## PRESSURE AND VACUUM OPERATED CONTROLS

| OPERATING RANGE                | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE |              | PROOF PRESSURE | MAX WORKING PRESSURE | Higher Proof Pressures Available. Consult Factory.  |
|--------------------------------|-----------------------------|------------------|--------------|----------------|----------------------|---|
|                                |                             | RANGE CODE       | SERIES CODE  |                |                      |   |
| -5 to +68 mbar                 | 1.2 or 3 mbar               | 00               | 2004W – AO†  | 2345 mbar      | 1804 mbar            | Re-calibration of Operating Range may be required if Maximum Working Pressure exceeds 20% above the top of the Operating Range. |
| 25 to 200 mbar                 | 1.2 or 3 mbar               | 0                | 2004W – AO†  | 2345 mbar      | 1804 mbar            |   |
| 60 to 600 mbar                 | 2.5 or 5 mbar               | 1                | 2004W – AO†  | 2345 mbar      | 1804 mbar            |   |
| 130 to 1340 mbar               | 3.8 or 7.6 mbar             | 2                | 2004W – AO†  | 2345 mbar      | 1804 mbar            |   |
| 0.35 to 2.8 Barg               | 7.6 or 15 mbar              | 4A               | 2004W – SO†† | 4.9 Barg       | 3.77 Barg            |   |
| <b>DIFFERENTIAL ADJUSTABLE</b> |                             |                  |              |                |                      |   |
| -5 to +68 mbar                 | 3 to 22 mbar                | 00               | 204W – AO†   | 2345 mbar      | 1804 mbar            | Proof Pressures over 4.2 Bar will have High Tensile Steel Grade 12.9 Screws, Plated.  |
| 25 to 200 mbar                 | 3 to 60 mbar                | 0                | 204W – AO†   | 2345 mbar      | 1804 mbar            |   |
| 60 to 600 mbar                 | 5 to 152 mbar               | 1                | 204W – AO†   | 2345 mbar      | 1804 mbar            | Proof Pressures up to 4.2 Bar will have Stainless Steel Screws Grade A2/A4.   |
| 130 to 1340 mbar               | 7.6 to 381 mbar             | 2                | 204W – AO†   | 2345 mbar      | 1804 mbar            |   |
| 0.35 to 2.8 Barg               | 15 to 838 mbar              | 4A               | 204W – SO††  | 4.9 Barg       | 3.77 Barg            |   |

Standard switches contain one single pole double throw microswitch.

Standard electrical rating 15 amps 400 vac.

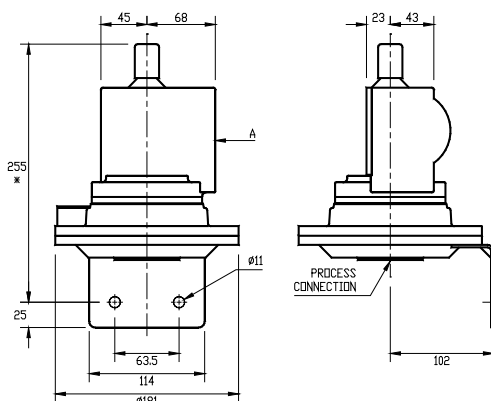
Standard electrical entry M20 x 1.5 Int. through 360°.

† Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

†† Standard construction Stainless Steel Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = SO.

†† (Aluminium Pressure Chambers are not available on these models.)

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
\*This dimension will differ when pressure chamber material is from solid blank.

| DEGREE OF PROTECTION                     | WEATHERPROOF  | CODE  | W  |
|--|---|---|--|
|  | IP55  | IP55  |  |
|  | IP66  | IP66  |  |
| ELECTRICAL OUTPUTS (FOR HAZARDOUS AREAS) | <p><b>ATEX approved for Zone 2 areas</b><br/> EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/> EN IEC 60079-7:2015 + A1:2018<br/> II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/> Certificate Number: Baseefa03ATEX0319X<br/> Issue 4<br/> Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/> EN IEC 60079-7:2015 + A1:2018<br/> II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/> Certificate Number: BAS22UKEX0248X<br/> Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>(CE)</b> <b>ATEX approved for Zone 1 areas</b><br/> EN IEC 60079-0:2018, EN 60079-1:2014<br/> II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/> Certificate Number: Baseefa02ATEX0025X<br/> Issue 4 (single switch) *1<br/> Certificate Number: Baseefa02ATEX0026X<br/> Issue 3 (twin/two switch) *1<br/> Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN 60079-1:2014<br/> II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/> Certificate Number: BAS22UKEX0245X<br/> (single switch) *2<br/> Certificate Number: BAS22UKEX0246X<br/> (twin/two switch) *2<br/> Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>Intrinsic Safety. Gold Contact Microswitch</b><br/> classed as 'Simple Electrical Apparatus'<br/> and may be used without certification in a barrier circuit.<br/> (BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)</p> | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
|  |   | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R<br>Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details |
|  |   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.  |
| S.P.D.T. ALTERNATIVES                    | HIGH LOAD   | 10 amp, 125 vac/vdc   | Prefix Range Code with 'X' and state ratings.  |
| TWO SWITCH MODELS (ELECTRICAL OUTPUT)    | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.   | 2005<br>205   | E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS (ELECTRICAL OUTPUT)   | Twin Microswitches for simultaneous action  | TW  | Differential x 2   |
| PNEUMATIC VALVE SWITCHES                 | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 5 x the larger listed.   |
| PRESSURE CHAMBER MATERIAL                | Stainless Steel<br>Phosphor Bronze<br>P.T.F.E.<br>Trovidor (P.V.D.F.)<br>If P.T.F.E. lining is required for Pressure Chambers add - after Pressure Chamber material   | S<br>Z<br>X<br>J<br>X   | Not available with Vacuum  |
| DIAPHRAGM MATERIAL                       | Stainless Steel (Differential x 2)<br>P.T.F.E.<br>Viton (Differential x 1½)   | T<br>X<br>V   |  |
| SAFETY VENTED CONSTRUCTION               |   | Prefix Range Code with: G   |  |
| FLANGES                                  | Available on all models.  | Prefix Series Code with: F  |  |
| FOR VACUUM SERVICE                       |   | Prefix Series Code with: V  |  |
| PROCESS CONNECTIONS                      | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout<br>Prefix Pressure Chamber Material code with: F   | Alternatives available up to ½"                                   |  |
| MANUAL RESET (RISING or FALLING)         | Available on all Electrical & Pneumatic 2004/204 Series, except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |  |



**MODELS:**

|      |                |  |
|------|----------------|--|
| 2006 | Single Switch, | Differential Non-Adjustable                            |
| 206  | Single Switch, | Differential Adjustable                                |
| 2007 | Two Switch,    | Differential Non-Adjustable                            |
| 207  | Two Switch,    | Differential Adjustable on 1 <sup>st</sup> Switch Only |
| 2008 | Single Switch, | Differential Non-Adjustable                            |

All models are available as either Pressure or Vacuum sensitive switches and cover the range -5 mbarg to +500 mbarg in a group of 6 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Models falling within the range 0 to 500 mbar can be supplied as Vacuum switches (see code guide).

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except Flanged Controls).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



**PRESSURE AND VACUUM OPERATED CONTROLS**

| OPERATING RANGE | DIFFERENTIAL NON-ADJUSTABLE | BASIC MODEL CODE |             | PROOF PRESSURE | MAX WORKING PRESSURE |
|-----------------|-----------------------------|------------------|-------------|----------------|----------------------|
|                 |                             | RANGE CODE       | SERIES CODE |                |                      |
| -5 to +5 mbarg  | 0.1 mbar                    | 1 – LO           | 2008W – AO  | 1.4 Bar        | 1.08 Bar             |
| -5 to +10 mbarg | 0.1 mbar                    | 2 – LO           | 2008W – AO  | 1.4 Bar        | 1.08 Bar             |
| -5 to +25 mbarg | 0.3 mbar                    | 00               | 2006W – AO  | 1.4 Bar        | 1.08 Bar             |
| 7 to 70 mbarg   | 0.3 mbar                    | 0                | 2006W – AO  | 1.4 Bar        | 1.08 Bar             |
| 15 to 150 mbarg | 0.6 mbar                    | 1                | 2006W – AO  | 1.4 Bar        | 1.08 Bar             |
| 25 to 500 mbarg | 1.25 mbar                   | 2                | 2006W – AO  | 1.4 Bar        | 1.08 Bar             |

Higher Proof Pressures Available. Consult Factory.

Re-calibration of Operating Range may be required if Maximum Working Pressure exceeds 20% above the top of the Operating Range.

**DIFFERENTIAL ADJUSTABLE**

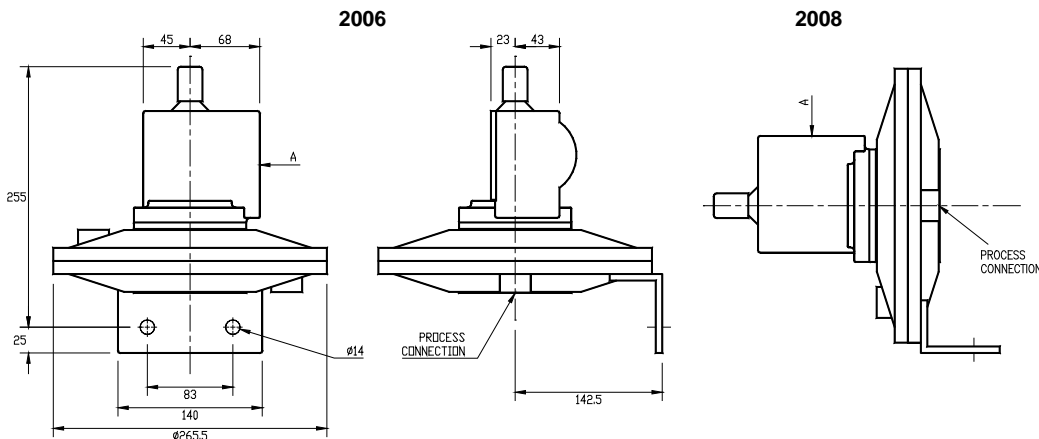
|                 |                |    |           |         |          |
|-----------------|----------------|----|-----------|---------|----------|
| -5 to +25 mbarg | 1.2 to 5 mbar  | 00 | 206W – AO | 1.4 Bar | 1.08 Bar |
| 7 to 70 mbarg   | 1.2 to 22 mbar | 0  | 206W – AO | 1.4 Bar | 1.08 Bar |
| 15 to 150 mbarg | 2 to 45 mbar   | 1  | 206W – AO | 1.4 Bar | 1.08 Bar |
| 25 to 500 mbarg | 2.5 to 75 mbar | 2  | 206W – AO | 1.4 Bar | 1.08 Bar |

Proof Pressures over 1.4 Bar will have High Tensile Steel Grade 12.9 Screws, Plated.

Proof Pressures up to 1.4 Bar will have Stainless Steel Screws Grade A2/A4.

Standard switches contain one single pole double throw microswitch.  
 Standard non-adjustable differential switches have a BZ-R microswitch fitted.  
 Standard electrical rating 15 amps 400 vac.  
 Standard electrical entry M20 x 1.5 Int. through 360°.  
 Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
 \*This dimension will differ when pressure chamber material is from solid blank.

| DEGREE OF PROTECTION                                    | WEATHERPROOF  | CODE  |   |
|---|---|---|---|
|   | IP55<br>IP66  | W<br>IP55<br>IP66   |   |
| <b>ELECTRICAL OUTPUTS (CE)</b><br>(FOR HAZARDOUS AREAS) | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |   |
| <b>(CE)</b>   | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details   |
|   | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>S.P.D.T. ALTERNATIVES</b>                            | <b>HIGH LOAD</b> 10 amp, 125 vac/vdc  |   | Prefix Range Code with 'X' and state ratings.   |
| <b>TWO SWITCH MODELS</b><br>(ELECTRICAL OUTPUT)         | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.   | 2007<br>207   | E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model   |
| <b>TWIN SWITCH MODELS</b><br>(ELECTRICAL OUTPUT)        | Twin Microswitches for simultaneous action  | TW  | Differential x 5  |
| <b>PNEUMATIC VALVE SWITCHES</b>                         | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 8 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 8 x the larger listed.  |
| <b>PRESSURE CHAMBER MATERIAL</b>                        | Stainless Steel<br>Phosphor Bronze  | S<br>Z  |   |
| <b>DIAPHRAGM MATERIAL</b>                               | Stainless Steel (Differential x 2)<br>P.T.F.E.<br>Viton (Differential x 1½)   | T<br>X<br>V   |   |
| <b>SAFETY VENTED CONSTRUCTION</b>                       |   |   | Prefix Range Code with: G   |
| <b>FLANGES</b>  | Available on all models.  |   | Prefix Series Code with: F  |
| <b>FOR VACUUM SERVICE</b>                               |   |   | Prefix Series Code with: V  |
| <b>PROCESS CONNECTIONS</b>                              | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout<br>Prefix Pressure Chamber Material code with: F   |   | Alternatives available up to ½"   |
| <b>MANUAL RESET</b><br>(RISING or FALLING)              | Available on all Electrical & Pneumatic 2006/206 Series, except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |   |

**MODELS:**  
4000 PRESSURE SWITCH

This low cost, rugged and versatile control has been designed with dependability in mind. Gravity castings are used to eliminate the 'working' of the control housing, with subsequent shifting of the set point, commonly encountered in controls manufactured from sheet metal.

The Series 4000 switches cover the range of 0.14 to 21 Barg in a group of 4 basic models.

Repeatability is maintained due to exclusive 'SIRCOTM' construction, which limits the movement of the full (100%) supported diaphragm between the zero ring and flange face, maintaining the 'Set Point' under the severest working and overpressure conditions. The cover is gasketed to weatherproof the unit.

These controls are known and used throughout the world and are available in a wide choice of ranges and materials. They are ideal for innumerable industrial and marine applications.



### SWITCHES FOR HAZARDOUS AREAS

The Series 4000 switches can be supplied for use in hazardous areas compliant to:

- (CE)** EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015  
 II 2 G Ex db eb IIC T6 Gb (Tamb = -20°C to +60°C)  
 Certificate Number: Baseefa03ATEX0128  
 Issue 4  
 Certifying Authority: **SGS Fimko Oy**
  
- (UKCA)** EN IEC 60079-0:2018, EN 60079-1:2014, EN IEC 60079-7:2015 + A1:2018  
 II 2 G Ex db eb IIC T6 Gb (Tamb = -20°C to +60°C)  
 Certificate Number: BAS22UKEX0247  
 Certifying Authority: **SGS Baseefa Limited**

Switches are also available Intrinsically Safe to BS EN 60079-11: 2012, BS EN 60079-14: 2008 Para 3.5.4.

### GENERAL SPECIFICATIONS

- CONSTRUCTION:**
- Housing: Rugged gravity cast aluminium with gasketed cover for weatherproofing – painted stoved blue epoxy resin.
  - Pressure Chamber: Aluminium (also available in other materials – see code guide on page 2).
  - Diaphragm: Buna-N, nylon reinforced (also available in other materials – see code guide on page 2).
  - Range Adjustment: Spring-loaded.
  - Mounting: Two mounting lugs integral with housing.
  - Process Connection: Rp¼ (¼" BSP Female) Standard (other sizes available).
  - Electrical Connection: M20 x 1.5 Int. Standard

**ELECTRICAL:**

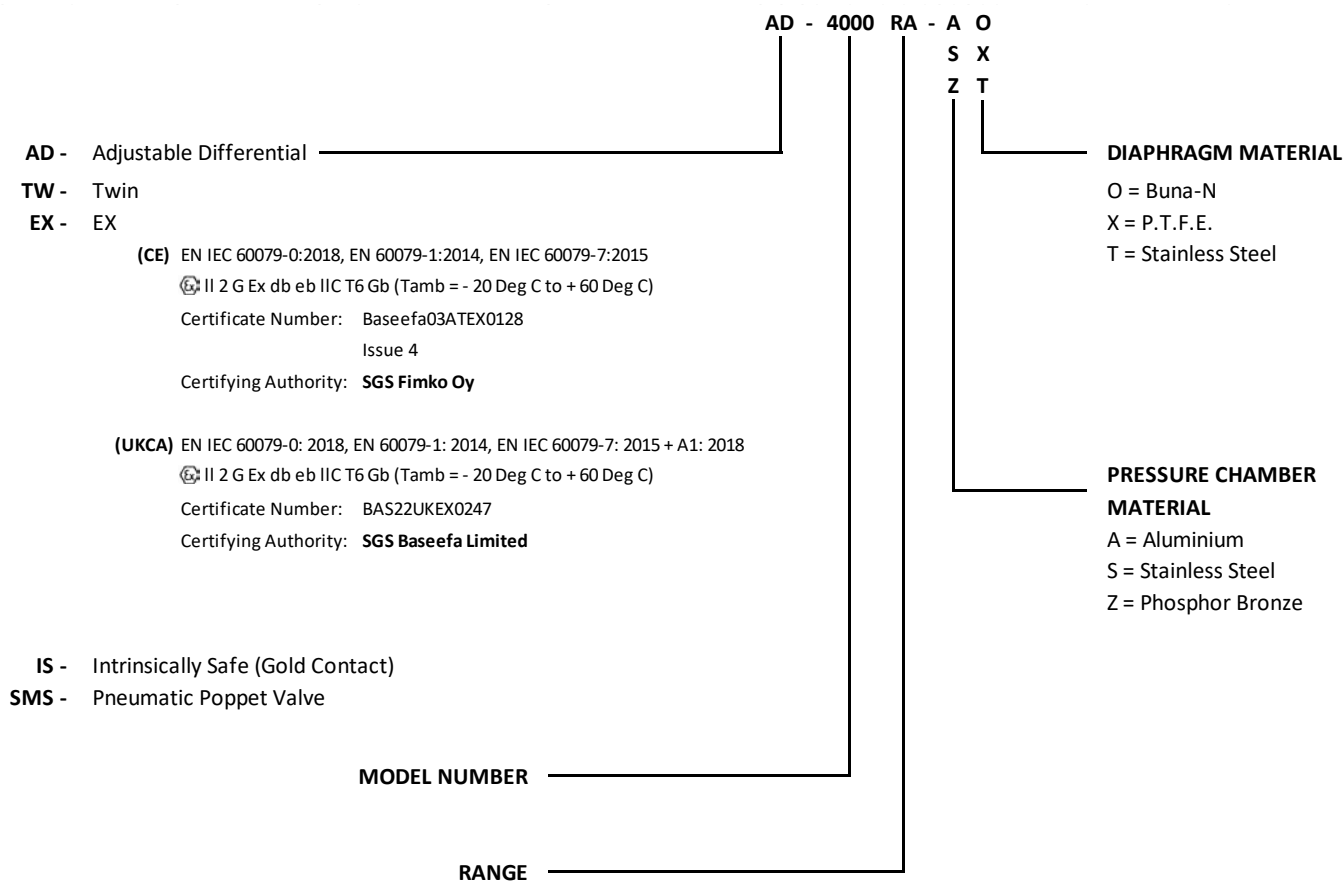
S.P.D.T. snap-acting microswitch rated at 15 amp 230/480 vac standard with screw terminals. Also available in other ratings. For D.P.D.T. operation 2 x S.P.D.T. microswitches rated at 5 amps 250 vac are fitted.

### PRESSURE OPERATED CONTROLS – MODEL 4000

| OPERATING RANGE                | DIFFERENTIAL<br>NON-ADJUSTABLE | BASIC MODEL CODE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |   |
|--------------------------------|--------------------------------|------------------|-------------------|-------------------------|---|
| 0.14 to 1.1 Barg               | 10 mbar                        | 4000RA-AO        | 21 Barg           | 16.16 Barg              | Re-calibration of Operating Range may be required if Maximum Working Pressure exceeds 20% above the top of the Operating Range.                                       |
| 0.14 to 1.4 Barg               | 70 mbar                        | 4000RB-AO        | 21 Barg           | 16.16 Barg              |   |
| 0.7 to 7 Barg                  | 140 mbar                       | 4000RC-AO        | 21 Barg           | 16.16 Barg              |   |
| 2.1 to 21 Barg                 | 500 mbar                       | 4000RD-AO        | 28 Barg           | 21.54 Barg              |   |
| <b>DIFFERENTIAL ADJUSTABLE</b> |                                |                  |                   |                         |   |
| 0.14 to 1.4 Barg               | 0.07 to 0.1 Bar                | AD4000RB-AO      | 21 Barg           | 16.16 Barg              | Proof Pressures over 21 Bar will have High Tensile Steel Grade 12.9 Screws, Plated.<br><br>Proof Pressures up to 21 Bar will have Stainless Steel Screws Grade A2/A4. |
| 0.7 to 7 Barg                  | 0.4 to 0.9 Bar                 | AD4000RC-AO      | 21 Barg           | 16.16 Barg              |   |
| 2.1 to 21 Barg                 | 0.6 to 1 Bar                   | AD4000RD-AO      | 28 Barg           | 21.54 Barg              |   |

- NOTE:**
- (i) Model 4000RA is not available with adjustable differential.
  - (ii) Models 4000RA and all adjustable differential models not available for use in hazardous areas.
  - (iii) Twin microswitch variation not available with adjustable differential or Ex models.
  - (iv) The non-adjustable differential will vary for Ex and IS Models.

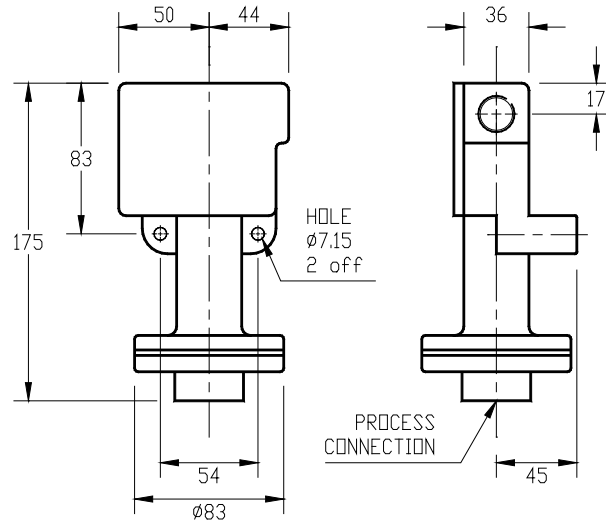
**CODE GUIDE**



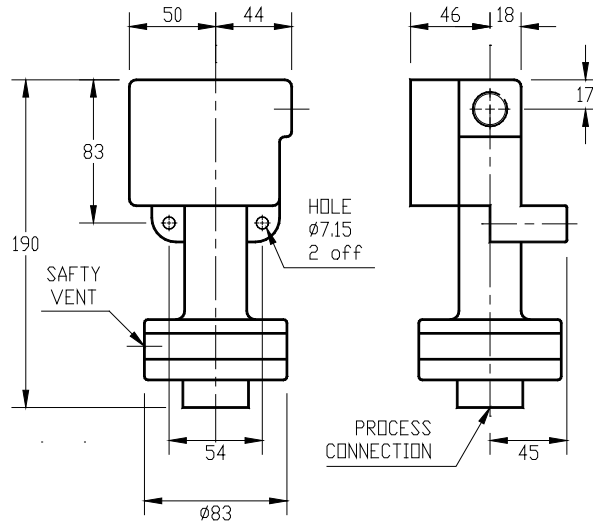
**TEMPERATURE RATINGS**

| PRESSURE CHAMBER MATERIAL | DIAPHRAGM MATERIAL    | TEMPERATURE (Degrees C) |         |
|---------------------------|-----------------------|-------------------------|---------|
|                           |                       | MAXIMUM                 | MINIMUM |
| Aluminium                 | Buna-N                | +90                     | -40     |
|                           | P.T.F.E.              | +170                    | -40     |
|                           | Teflon FEP            | +170                    | -40     |
| Stainless Steel (316)     | Buna-N                | +90                     | -40     |
|                           | P.T.F.E.              | +200                    | -40     |
|                           | Teflon FEP            | +200                    | -40     |
|                           | Stainless Steel (316) | +200                    | -40     |
| Phosphor Bronze           | Buna-N                | +90                     | -40     |
|                           | P.T.F.E.              | +200                    | -40     |
|                           | Teflon FEP            | +200                    | -40     |
|                           | Stainless Steel (316) | +200                    | -40     |

**STANDARD PRESSURE SWITCH MODELS  
4000RA, RB, RC and RD Only**



**PRESSURE SWITCH  
MODEL Ex4000**





**MODELS:**

N201P                      Single Switch,    Differential Non-Adjustable  
 N202P                      Two Switch,      Differential Non-Adjustable

All models are available as either Pressure or Vacuum sensitive switches and cover the range -1 to +21 Barg in a group of 7 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard.

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.

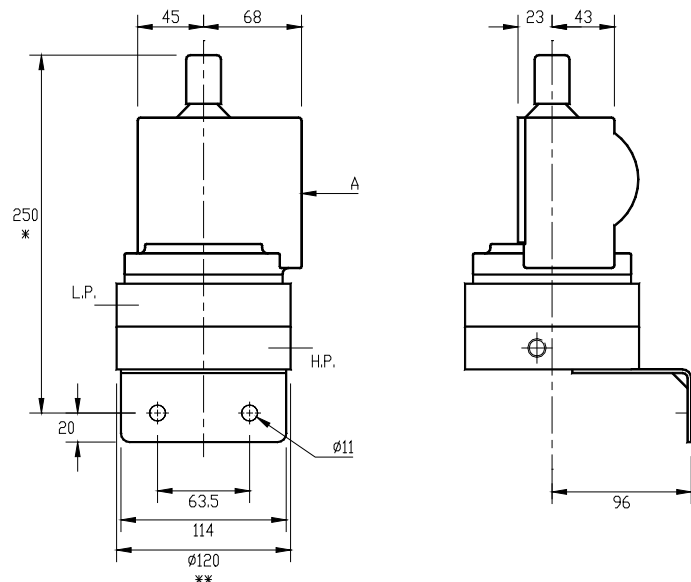


**PRESSURE AND VACUUM DIFFERENCE OPERATED CONTROLS**

| OPERATING RANGE  | RESET SENSITIVITY<br>NON ADJUSTABLE | BASIC MODEL CODE |                | MAX STATIC<br>PRESSURE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |
|------------------|-------------------------------------|------------------|----------------|------------------------|-------------------|-------------------------|
|                  |                                     | RANGE<br>CODE    | SERIES<br>CODE |                        |                   |                         |
| -1 to +5.2 Barg  | 0.2 Barg                            | 00               | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 0.07 to 0.5 Barg | 0.08 Barg                           | 3                | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 0.14 to 1.4 Barg | 0.08 Barg                           | 3A               | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 0.14 to 4.2 Barg | 0.1 Barg                            | 4                | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 0.4 to 7 Barg    | 0.2 Barg                            | 5                | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 1.4 to 14 Barg   | 0.5 Barg                            | 6                | N201PW – AO    | 14 Barg                | 21 Barg           | 14 Barg                 |
| 2.1 to 21 Barg   | 1 Barg                              | 7                | N201PW – AO    | 21 Barg                | 21 Barg           | 21 Barg                 |

Standard switches contain one single pole double throw microswitch.  
 Standard electrical rating 15 amps 400 vac.  
 Standard electrical entry M20 x 1.5 Int. through 360°.  
 Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
 \*This Dimension 260 for 1/2" NPT Female  
 \*\*This Diameter 140 for 1/2" NPT Female  
 L.P. - Low Pressure Connection, H.P. - High Pressure Connection

| DEGREE OF PROTECTION                              | WEATHERPROOF  | CODE  |  |
|---|---|---|--|
|   | IP55<br>IP66  | W<br>IP55<br>IP66   |  |
| ELECTRICAL OUTPUTS (FOR HAZARDOUS AREAS)          | <p><b>ATEX approved for Zone 2 areas</b><br/>EN IEC 60079-0:2018, EN IEC 60079-15:2019, EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: Baseefa03ATEX0319X<br/>Issue 4<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN IEC 60079-15:2019, EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0248X<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>ATEX approved for Zone 1 areas</b><br/>EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H2 T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: Baseefa02ATEX0025X<br/>Issue 4 (single switch) *1<br/>Certificate Number: Baseefa02ATEX0026X<br/>Issue 3 (twin/two switch) *1<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H2 T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0245X<br/>(single switch) *2<br/>Certificate Number: BAS22UKEX0246X<br/>(twin/two switch) *2<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>Intrinsic Safety. Gold Contact Microswitch</b><br/>classed as 'Simple Electrical Apparatus'<br/>and may be used without certification in a barrier circuit.<br/>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)</p> | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
|   |   | H(A – K)  | <p>*1/*2 H(A) = BZ-2R<br/>*1/*2 H(B) = BZ-R<br/>*1/*2 H(C) = BZ-2R-722<br/>*1 H(D) = 91-SE1<br/>*1 H(F) = 91-SE1-3N55<br/>*1 H(I) = MT-4R<br/>*1/*2 H(J) = BM-2R<br/>*1/*2 H(K) = BM-1R</p> <p>Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted.<br/>See Leaflet 22/02 for Details</p> |
|   |   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.  |
| S.P.D.T. ALTERNATIVES                             | HIGH LOAD   | 10 amp, 125 vac/vdc   | Prefix Range Code with 'X' and state ratings.  |
| TWO SWITCH MODELS (ELECTRICAL OUTPUT)             | Max. Setting Span = 30% of the Range Span   | N202P   | E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS (ELECTRICAL OUTPUT)            | Twin Microswitches for simultaneous action  | TW  | All ranges will have 2 x the Non-Adjustable Reset Sensitivity listed.  |
| PNEUMATIC VALVE SWITCHES                          | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>PV   | All ranges will have 2 x the Non-Adjustable Reset Sensitivity listed.<br>Differential will be 5 x the larger listed.   |
| PRESSURE CHAMBER MATERIAL                         | Stainless Steel<br>Phosphor Bronze  | S<br>Z  |  |
| DIAPHRAGM MATERIAL                                | Viton (Reset Sensitivity x 1½)<br>P.T.F.E.  | V<br>X  |  |
| RESET SENSITIVITY ADJUSTABLE (on N/T Switch Only) | An Adjustable Reset Sensitivity (Adjustable Differential) is available on all ranges up to 30% of the span with the lowest Reset Sensitivity being 2x the one listed. (Not available on Pneumatic Output).  | R/A   |  |
| FLANGES   | Available on all models.  | Prefix Series Code with: F  |  |
| FOR VACUUM SERVICE                                |   | Prefix Series Code with: V  |  |
| PROCESS CONNECTIONS                               | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout  | Prefix Pressure Chamber Material code with: F                     | Alternatives available up to ½"  |
| MANUAL RESET (RISING or FALLING)                  | Available on all Electrical & Pneumatic N201P Series, except Explosion-proof/Flameproof Models.   | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |  |



**MODELS:**  
HPN201P                      Single Switch, Differential Non-Adjustable

All models are available as Pressure Difference switches and cover the range 0.14 to 21 Barg in a group of 5 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard.

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



### PRESSURE AND VACUUM DIFFERENCE OPERATED CONTROLS – PISTON TYPE

| OPERATING RANGE  | RESET SENSITIVITY<br>NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE SERIES<br>CODE CODE | MAX STATIC<br>PRESSURE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |
|------------------|-------------------------------------|---|------------------------|-------------------|-------------------------|
| 0.14 to 1.4 Barg | 0.15 Barg                           | 3A – HPN201PW – SO†                           | 200 Barg               | 226 Barg          | 200 Barg                |
| 0.14 to 4 Barg   | 0.4 Barg                            | 4 – HPN201PW – SO†                            | 200 Barg               | 226 Barg          | 200 Barg                |
| 0.9 to 7 Barg    | 0.45 Barg                           | 5 – HPN201PW – SO†                            | 200 Barg               | 226 Barg          | 200 Barg                |
| 1.4 to 14 Barg   | 0.65 Barg                           | 6 – HPN201PW – SO†                            | 200 Barg               | 226 Barg          | 200 Barg                |
| 2.1 to 21 Barg   | 0.8 Barg                            | 7 – HPN201PW – SO†                            | 200 Barg               | 226 Barg          | 200 Barg                |

### PRESSURE AND VACUUM DIFFERENCE OPERATED CONTROLS – DIAPHRAGM TYPE

| OPERATING RANGE  | RESET SENSITIVITY<br>NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE SERIES<br>CODE CODE | MAX STATIC<br>PRESSURE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |
|------------------|-------------------------------------|---|------------------------|-------------------|-------------------------|
| 0.14 to 1.4 Barg | 0.16 Barg                           | 3A – HPN201PW – ST††                          | 200 Barg               | 226 Barg          | 200 Barg                |
| 0.14 to 4 Barg   | 0.4 Barg                            | 4 – HPN201PW – ST††                           | 200 Barg               | 226 Barg          | 200 Barg                |
| 0.9 to 7 Barg    | 0.45 Barg                           | 5 – HPN201PW – ST††                           | 200 Barg               | 226 Barg          | 200 Barg                |
| 1.4 to 14 Barg   | 0.65 Barg                           | 6 – HPN201PW – ST††                           | 200 Barg               | 226 Barg          | 200 Barg                |
| 2.1 to 21 Barg   | 0.8 Barg                            | 7 – HPN201PW – ST††                           | 200 Barg               | 226 Barg          | 200 Barg                |

Standard switches contain one single pole double throw microswitch.

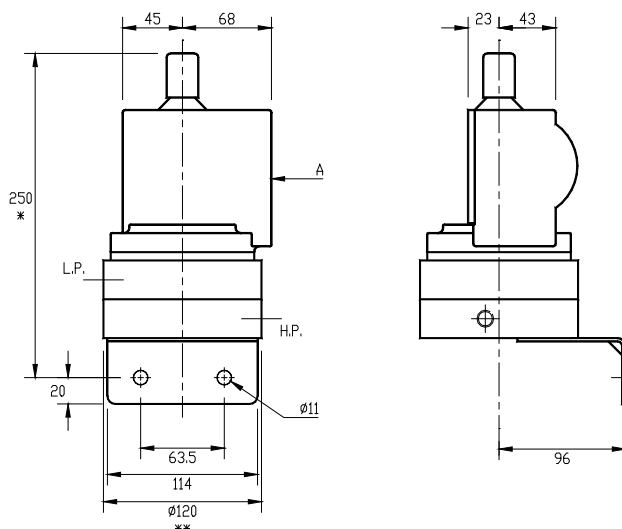
Standard electrical rating 15 amps 400 vac.

Standard electrical entry M20 x 1.5 Int. through 360°.

†Standard construction Stainless Steel Pressure Chambers and Stainless Steel Piston with Buna N 'O' Ring (M.W.T. 90° C) = SO.

††Standard construction Stainless Steel Pressure Chambers and Stainless Steel Diaphragm (M.W.T. 200° C) = ST.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'

| DEGREE OF PROTECTION                     | WEATHERPROOF  | CODE  |  |
|--|---|---|--|
|  | IP55<br>IP66  | W<br>IP55<br>IP66                             |  |
| ELECTRICAL OUTPUTS (FOR HAZARDOUS AREAS) | <p><b>ATEX approved for Zone 2 areas</b><br/> EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/> EN IEC 60079-7:2015 + A1:2018<br/> ⊕ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/> Certificate Number: Baseefa03ATEX0319X<br/> Issue 4<br/> Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/> EN IEC 60079-7:2015 + A1:2018<br/> ⊕ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/> Certificate Number: BAS22UKEX0248X<br/> Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>ATEX approved for Zone 1 areas</b><br/> EN IEC 60079-0:2018, EN 60079-1:2014<br/> ⊕ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/> Certificate Number: Baseefa02ATEX0025X<br/> Issue 4 (single switch) *1<br/> Certificate Number: Baseefa02ATEX0026X<br/> Issue 3 (twin/two switch) *1<br/> Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN 60079-1:2014<br/> ⊕ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/> Certificate Number: BAS22UKEX0245X<br/> (single switch) *2<br/> Certificate Number: BAS22UKEX0246X<br/> (twin/two switch) *2<br/> Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>Intrinsic Safety. Gold Contact Microswitch</b><br/> classed as 'Simple Electrical Apparatus'<br/> and may be used without certification in a barrier circuit.<br/> (BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)</p> | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
|  |   | H(A – K)                                      | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R<br><br>Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details |
|  |   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.  |
| S.P.D.T. ALTERNATIVES                    | HIGH LOAD   | 10 amp, 125 vac/vdc                           | Prefix Range Code with 'X' and state ratings.  |
| TWIN SWITCH MODELS (ELECTRICAL OUTPUT)   | Twin Microswitches for simultaneous action  |   | TW All ranges will have 2 x the Non-Adjustable Differential listed.  |
| PRESSURE CHAMBER/ PISTON MATERIAL        | Monel   |   | M  |
| DIAPHRAGM MATERIAL (Diaphragm Operated)  | Monel   |   | M  |
| 'O' RING MATERIAL (Piston Operated)      | EPDM  |   | E (-40 to +150°C)  |
| PROCESS CONNECTIONS                      | ¼" N.P.T. Female standard<br>¼" Flushout  | Prefix Pressure Chamber Material code with: F | Alternatives available up to ½"  |
| MANUAL RESET (RISING or FALLING)         | Available on all Electrical HPN2001 Series except Explosion-proof/Flameproof Models.  |   | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure)  |

**MODELS:**

|      |                |                             |
|------|----------------|-----------------------------|
| 204P | Single Switch, | Differential Non-Adjustable |
| 205P | Two Switch,    | Differential Non-Adjustable |

All models are available as either Pressure or Vacuum sensitive switches and cover the range -5 mbar to +2.8 Barg in a group of 5 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except Flanged Controls).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.



### PRESSURE AND VACUUM DIFFERENCE OPERATED CONTROLS

| OPERATING RANGE  | RESET SENSITIVITY<br>NON-ADJUSTABLE | BASIC MODEL CODE<br>RANGE SERIES<br>CODE CODE | MAX STATIC<br>PRESSURE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |
|------------------|-------------------------------------|---|------------------------|-------------------|-------------------------|
| -5 to +68 mbar   | 1.2 or 3 mbar*                      | 00 – 204PW – AO†                              | 2.3 Barg               | 3.5 Barg          | 2.3 Barg                |
| 25 to 200 mbar   | 1.2 or 3 mbar*                      | 0 – 204PW – AO†                               | 2.7 Barg               | 3.5 Barg          | 2.7 Barg                |
| 60 to 600 mbar   | 2.5 or 5 mbar*                      | 1 – 204PW – AO†                               | 2.7 Barg               | 3.5 Barg          | 2.7 Barg                |
| 130 to 1340 mbar | 3.8 or 7.6 mbar*                    | 2 – 204PW – AO†                               | 2.7 Barg               | 3.5 Barg          | 2.7 Barg                |
| 0.35 to 2.8 Barg | 7.6 or 15 mbar*                     | 4A – 204PW – SO††                             | 7 Barg                 | 10 Barg           | 7 Barg                  |

\*State preference

Standard switches contain one single pole double throw microswitch.

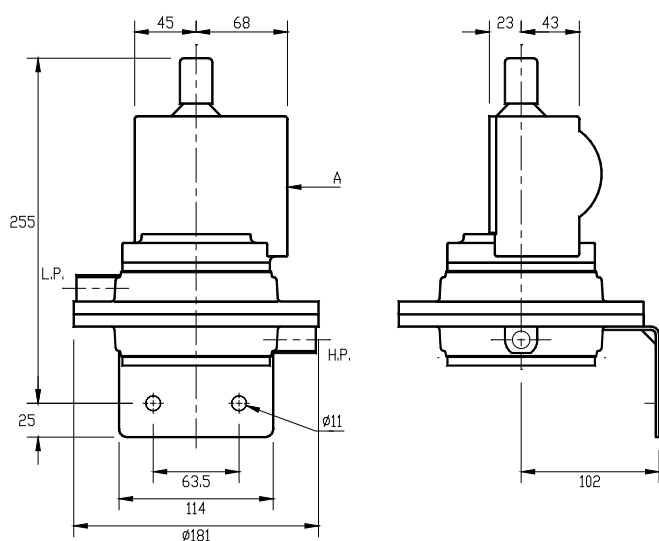
Standard electrical rating 15 amps 400 vac.

Standard electrical entry M20 x 1.5 Int. through 360°.

†Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

††Standard construction Stainless Steel Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = SO.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
L.P. - Low Pressure Connection, H.P. - High Pressure Connection

| DEGREE OF PROTECTION                              | WEATHERPROOF  | CODE  |  |
|---|---|---|--|
|   | IP55<br>IP66  | W<br>IP55<br>IP66   |  |
| ELECTRICAL OUTPUTS (CE)<br>(FOR HAZARDOUS AREAS)  | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
| (UKCA)  | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |  |
| (CE)  | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R                              |
| (UKCA)  | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details  |
|   | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.  |
| S.P.D.T. ALTERNATIVES                             | HIGH LOAD 10 amp, 125 vac/vdc   |   | Prefix Range Code with 'X' and state ratings.  |
| TWO SWITCH MODELS<br>(ELECTRICAL OUTPUT)          | Max. Setting Span = 30% of the Range Span   | 205P  | E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS<br>(ELECTRICAL OUTPUT)         | Twin Microswitches for simultaneous action  | TW  | Reset Sensitivity x 2  |
| PNEUMATIC VALVE SWITCHES                          | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 2 x the Non-Adjustable Reset Sensitivity listed.<br>Differential will be 5 x the larger listed.   |
| PRESSURE CHAMBER MATERIAL                         | Stainless Steel<br>Phosphor Bronze  | S<br>Z  |  |
| DIAPHRAGM MATERIAL                                | Viton (Reset Sensitivity x 1½)<br>P.T.F.E.  | V<br>X  |  |
| RESET SENSITIVITY ADJUSTABLE (on N/T Switch Only) |   | R/A   | An Adjustable Reset Sensitivity (Adjustable Differential) is available on all ranges up to 30% of the span with the lowest Reset Sensitivity being 2x the one listed. (Not available on Pneumatic Output). |
| FLANGES   | Available on all models.  |   | Prefix Series Code with: F   |
| FOR VACUUM SERVICE                                |   |   | Prefix Series Code with: V   |
| PROCESS CONNECTIONS                               | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout<br>Prefix Pressure Chamber Material code with: F   |   | Alternatives available up to ½"  |
| MANUAL RESET<br>(RISING or FALLING)               | Available on all Electrical & Pneumatic 204P Series,<br>except Explosion-proof/Flameproof Models.   | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |  |

**MODELS:**

206P Single Switch, Differential Non-Adjustable  
 207P Two Switch, Differential Non-Adjustable

All models are available as either Pressure or Vacuum sensitive switches and cover the range -5 mbarg to +500 mbarg in a group of 5 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of sensing units and pressure chambers are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except Flanged Controls).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).

For accuracy class and zone refer to leaflet 03/09.

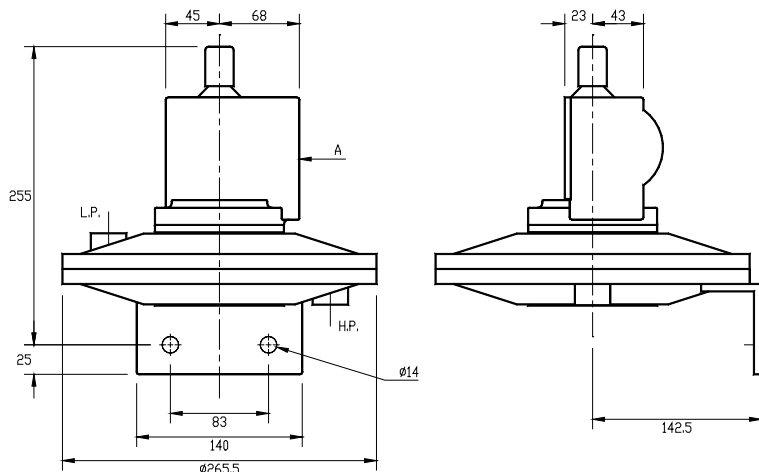


**PRESSURE AND VACUUM DIFFERENCE OPERATED CONTROLS**

| OPERATING RANGE | RESET SENSITIVITY<br>NON-ADJUSTABLE | BASIC MODEL CODE |                | MAX STATIC<br>PRESSURE | PROOF<br>PRESSURE | MAX WORKING<br>PRESSURE |
|-----------------|-------------------------------------|------------------|----------------|------------------------|-------------------|-------------------------|
|                 |                                     | RANGE<br>CODE    | SERIES<br>CODE |                        |                   |                         |
| -5 to +25 mbarg | 0.25 mbar                           | 00               | 206PW – AO     | 0.7 Barg               | 1.4 Barg          | 0.7 Barg                |
| 7 to 70 mbarg   | 0.3 mbar                            | 0                | 206PW – AO     | 0.7 Barg               | 1.4 Barg          | 0.7 Barg                |
| 15 to 150 mbarg | 0.6 mbar                            | 1                | 206PW – AO     | 0.7 Barg               | 1.4 Barg          | 0.7 Barg                |
| 25 to 250 mbarg | 1.25 mbar                           | 2                | 206PW – AO     | 0.7 Barg               | 1.4 Barg          | 0.7 Barg                |
| 53 to 500 mbarg | 1.25 mbar                           | 3                | 206PW – AO     | 0.7 Barg               | 1.4 Barg          | 0.7 Barg                |

Standard switches contain one single pole double throw microswitch.  
 Standard non adjustable differential switches have a BZ-R microswitch fitted.  
 Standard electrical rating 15 amps 400 vac.  
 Standard electrical entry M20 x 1.5 Int. through 360°.  
 Standard construction Aluminium Pressure Chamber and Nitrile Rubber Diaphragm (M.W.T. 90° C) = AO.

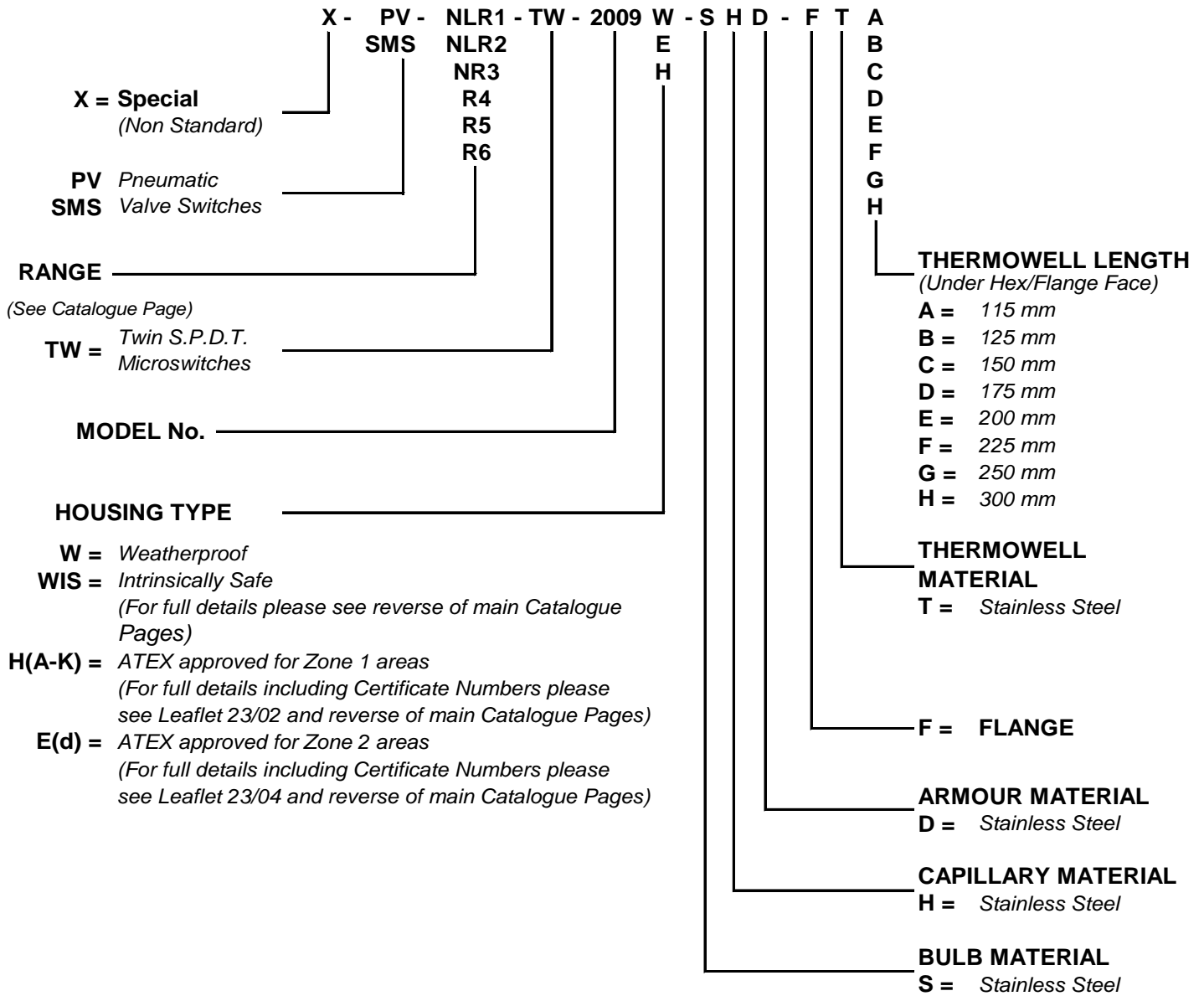
For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'  
 L.P. - Low Pressure Connection, H.P. - High Pressure Connection

| DEGREE OF PROTECTION                              | WEATHERPROOF   | CODE  |  |
|---|--|---|--|
|   | IP55<br>IP66   | W<br>IP55<br>IP66   |  |
| ELECTRICAL OUTPUTS (FOR HAZARDOUS AREAS)          | <p><b>ATEX approved for Zone 2 areas</b><br/>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/>EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: Baseefa03ATEX0319X<br/>Issue 4<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br/>EN IEC 60079-7:2015 + A1:2018<br/>⚡ II 3G Ex ec nC IIC T6 Gc (T<sub>amb</sub> = -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0248X<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>ATEX approved for Zone 1 areas</b><br/>EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: Baseefa02ATEX0025X<br/>Issue 4 (single switch) *1<br/>Certificate Number: Baseefa02ATEX0026X<br/>Issue 3 (twin/two switch) *1<br/>Certifying Authority: <b>SGS Fimko Oy</b></p> <p><b>(UKCA)</b> EN IEC 60079-0:2018, EN 60079-1:2014<br/>⚡ II 2 G Ex db IIB + H<sub>2</sub> T6 Gb (T<sub>amb</sub> -20°C to +60°C)<br/>Certificate Number: BAS22UKEX0245X<br/>(single switch) *2<br/>Certificate Number: BAS22UKEX0246X<br/>(twin/two switch) *2<br/>Certifying Authority: <b>SGS Baseefa Limited</b></p> <p><b>Intrinsic Safety. Gold Contact Microswitch</b><br/>classified as 'Simple Electrical Apparatus'<br/>and may be used without certification in a barrier circuit.<br/>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)</p> | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.  |
|   |  | H(A – K)  | <p>*1/*2 H(A) = BZ-2R<br/>*1/*2 H(B) = BZ-R<br/>*1/*2 H(C) = BZ-2R-722<br/>*1 H(D) = 91-SE1<br/>*1 H(F) = 91-SE1-3N55<br/>*1 H(I) = MT-4R<br/>*1/*2 H(J) = BM-2R<br/>*1/*2 H(K) = BM-1R</p> <p>Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details</p> |
|   |  | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.  |
| S.P.D.T. ALTERNATIVES                             | HIGH LOAD  | 10 amp, 125 vac/vdc   | Prefix Range Code with 'X' and state ratings.  |
| TWO SWITCH MODELS (ELECTRICAL OUTPUT)             | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.  | 207P  | E(d), H(D), H(F), H(G), H(H), H(I)<br>Not available as Two Switch Model  |
| TWIN SWITCH MODELS (ELECTRICAL OUTPUT)            | Twin Microswitches for simultaneous action   | TW  | Reset Sensitivity Increases  |
| PNEUMATIC VALVE SWITCHES                          | Poppet 3 port<br>Pilot Operated 3 port   | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 8 x the Non-Adjustable Reset Sensitivity listed.<br>Reset Sensitivity will be 8 x that listed.  |
| PRESSURE CHAMBER MATERIAL                         | Stainless Steel<br>Phosphor Bronze   | S<br>Z  |  |
| DIAPHRAGM MATERIAL                                | Viton (Reset Sensitivity x 1½)<br>P.T.F.E.   | V<br>X  |  |
| RESET SENSITIVITY ADJUSTABLE (on N/T Switch Only) | An Adjustable Reset Sensitivity (Adjustable Differential) is available on all ranges up to 30% of the span with the lowest Reset Sensitivity being 2x the one listed. (Not available on Pneumatic Output).   | R/A   |  |
| FLANGES   | Available on all models.   | Prefix Series Code with: F  |  |
| FOR VACUUM SERVICE                                |  | Prefix Series Code with: V  |  |
| PROCESS CONNECTIONS                               | ¼" B.S.P. Female standard (Rp¼)<br>¼" Flushout<br>Prefix Pressure Chamber Material code with: F  | Alternatives available up to ½"                                   |  |
| MANUAL RESET (RISING or FALLING)                  | Available on all Electrical & Pneumatic 206P Series, except Explosion-proof/Flameproof Models.   | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |  |





If 'Offshore' Paint finish required, add the letters 'OS' at the beginning of the code number, i.e.: **OS - PV NLR1 - 2009W - SHD.**



**MODELS:**

|      |                |   |
|------|----------------|---|
| 2009 | Single Switch, | Differential Non-Adjustable                               |
| 209  | Single Switch, | Differential Adjustable                                   |
| 2011 | Two Switch,    | Differential Non-Adjustable                               |
| 211  | Two Switch,    | Differential Adjustable<br>on 1 <sup>st</sup> Switch Only |

All models available are temperature sensitive switches, have vapour pressure filled temperature systems and cover the range between -30 and +360°C in a group of 6 basic models.

Controls can be supplied with varying degrees of protection, and with various approvals for use in Explosion-proof/Flameproof areas. (Refer to list for options). More detailed information on these approvals can be found in the relevant sections of this catalogue.

Materials used in the manufacture of Capillary, Bulb, Armour and Bulbwell are according to customer requirements and operational application.

All switches are fitted with a mounting bracket as Standard (except where Direct Mounting required).

All switches are available with internal or external set point adjustment (External Adjustment is Standard).



### TEMPERATURE CONTROLS

| OPERATING RANGE                | DIFFERENTIAL<br>NON-ADJUSTABLE | BASIC MODEL CODE   | MAX WORKING<br>TEMPERATURE |
|--------------------------------|--------------------------------|--------------------|----------------------------|
| -30 to +20°C                   | 4°C                            | NLR1 – 2009W – SHD | 120°C                      |
| 20 to 70°C                     | 4°C                            | NLR2 – 2009W – SHD | 150°C                      |
| 60 to 110°C                    | 5.5°C                          | NR3 – 2009W – SHD  | 200°C                      |
| 90 to 160°C                    | 5.5°C                          | R4 – 2009W – SHD   | 220°C                      |
| 140 to 200°C                   | 6.5°C                          | R5 – 2009W – SHD   | 300°C                      |
| 190 to 360°C                   | 7.5°C                          | R6 – 2009W – SHD   | 410°C                      |
| <b>DIFFERENTIAL ADJUSTABLE</b> |                                |                    |                            |
| -30 to +20°C                   | 4 to 13°C                      | NLR1 – 209W – SHD  | 120°C                      |
| 20 to 70°C                     | 4 to 10°C                      | NLR2 – 209W – SHD  | 150°C                      |
| 60 to 110°C                    | 5.5 to 12°C                    | NR3 – 209W – SHD   | 200°C                      |
| 90 to 160°C                    | 5.5 to 15°C                    | R4 – 209W – SHD    | 220°C                      |
| 140 to 200°C                   | 6.5 to 20°C                    | R5 – 209W – SHD    | 300°C                      |
| 190 to 360°C                   | 7.5 to 40°C                    | R6 – 209W – SHD    | 410°C                      |

Standard switches contain one single pole double throw microswitch.

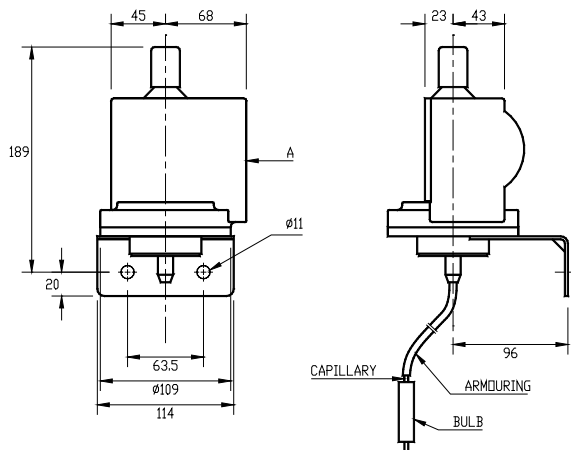
Standard electrical rating 15 amps 400 vac.

Standard electrical entry M20 x 1.5 Int. through 360°.

Standard construction, Models NLR1 & NLR2 have a 12.7mm diameter Stainless Steel bulb x 152mm long overall with 2 metres of Stainless Steel capillary & Stainless Steel armouring.

Models NR3, R4, R5 & R6 have a 12.7mm diameter Stainless Steel bulb x 114mm long overall with 2 metres of Stainless Steel capillary & armouring.

For construction other than above refer to the 2<sup>nd</sup> page of this leaflet for options and change code accordingly.



Terminal box, explosion-proof/flameproof enclosure, pneumatic valve fitted to surface 'A'

| DEGREE OF PROTECTION                                    | WEATHERPROOF  | CODE  | W   |
|---|---|---|---|
|   | IP55<br>IP66  |   | IP55<br>IP66  |
| <b>ELECTRICAL OUTPUTS (CE)</b><br>(FOR HAZARDOUS AREAS) | <b>ATEX approved for Zone 2 areas</b><br>EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: Baseefa03ATEX0319X<br>Issue 4<br>Certifying Authority: <b>SGS Fimko Oy</b>  | E(d)  | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN IEC 60079-15:2019,<br>EN IEC 60079-7:2015 + A1:2018<br>⊕ II 3G Ex ec nC IIC T6 Gc (T <sub>amb</sub> = -20°C to +60°C)<br>Certificate Number: BAS22UKEX0248X<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   |   |
| <b>(CE)</b>   | <b>ATEX approved for Zone 1 areas</b><br>EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: Baseefa02ATEX0025X<br>Issue 4 (single switch) *1<br>Certificate Number: Baseefa02ATEX0026X<br>Issue 3 (twin/two switch) *1<br>Certifying Authority: <b>SGS Fimko Oy</b> | H(A – K)  | *1/*2 H(A) = BZ-2R<br>*1/*2 H(B) = BZ-R<br>*1/*2 H(C) = BZ-2R-722<br>*1 H(D) = 91-SE1<br>*1 H(F) = 91-SE1-3N55<br>*1 H(I) = MT-4R<br>*1/*2 H(J) = BM-2R<br>*1/*2 H(K) = BM-1R |
| <b>(UKCA)</b>   | EN IEC 60079-0:2018, EN 60079-1:2014<br>⊕ II 2 G Ex db IIB + H2 T6 Gb (T <sub>amb</sub> -20°C to +60°C)<br>Certificate Number: BAS22UKEX0245X<br>(single switch) *2<br>Certificate Number: BAS22UKEX0246X<br>(twin/two switch) *2<br>Certifying Authority: <b>SGS Baseefa Limited</b>   |   | Differentials Listed over and Electrical Ratings will vary depending on Microswitch Fitted. See Leaflet 22/02 for Details   |
|   | <b>Intrinsic Safety. Gold Contact Microswitch</b><br>classed as 'Simple Electrical Apparatus'<br>and may be used without certification in a barrier circuit.<br>(BS EN 60079-11: 2012, BS EN 60079-14: 2014 Para 3.5.5)   | WIS   | All ranges will have 1.5 x the larger of the two Non-Adjustable Differentials listed.   |
| <b>S.P.D.T. ALTERNATIVES</b>                            | <b>HIGH LOAD</b> 10 amp, 125 vac/vdc  |   | <b>Prefix Range Code with 'X' and state ratings.</b>  |
| <b>TWO SWITCH MODELS</b><br>(ELECTRICAL OUTPUT)         | Max. Setting Span = 30% of the Range Span<br>Adjustable Differential is not available on second switch.   | 2011<br>211   | E(d), H(D), H(F), H(I)<br>Not available as Two Switch Model   |
| <b>TWIN SWITCH MODELS</b><br>(ELECTRICAL OUTPUT)        | Twin Microswitches for simultaneous action  | TW  | Differential x 2  |
| <b>PNEUMATIC VALVE SWITCHES</b>                         | Poppet 3 port<br>Pilot Operated 3 port  | SMS<br>Prefix Range Code:<br>PV                                   | All ranges will have 2 x the larger of the two Non-Adjustable Differentials listed.<br>Differential will be 5 x the larger listed.  |
| <b>BULB</b>   | STAINLESS STEEL   | S   |   |
| <b>CAPILLARY</b>  | STAINLESS STEEL – over 2 metres specify length  | H   |   |
| <b>ARMOURING</b>  | STAINLESS STEEL – over 2 metres specify length  | D   |   |
| <b>THERMOWELL</b>                                       | STAINLESS STEEL<br>State bulbwell length in millimetres after thermowell code   | T   | For additional information on thermowells see leaflet 06/23   |
| <b>MANUAL RESET</b><br>(RISING or FALLING)              | Available on all Electrical & Pneumatic 2009/209 Series, except Explosion-proof/Flameproof Models.  | MRR (Reset on Rising Pressure)<br>MRF (Reset on Falling Pressure) |   |

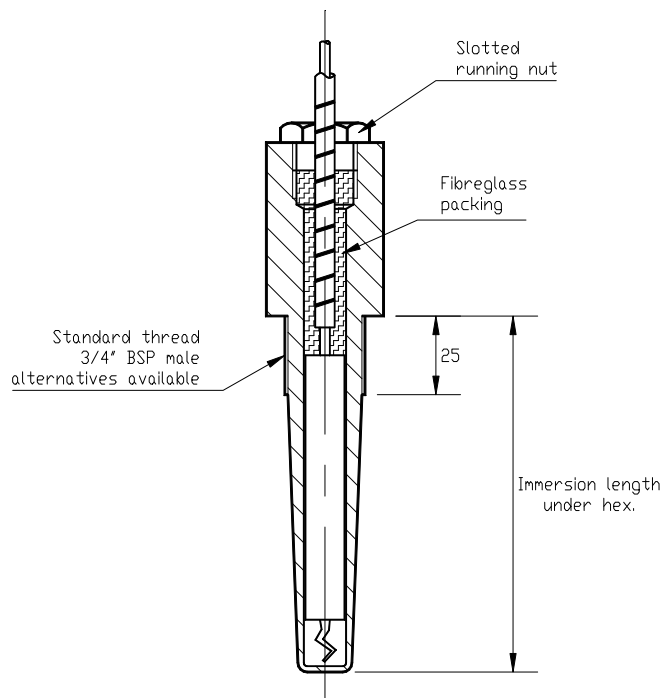
Thermowells are available in Stainless Steel.  
For alternative materials please consult the factory.

| MATERIAL CODE: | MATERIAL        | CODE |
|----------------|-----------------|------|
|                | Stainless Steel | T    |

| CODE FOR LENGTH UNDER HEXAGON: | LENGTH | CODE |
|--------------------------------|--------|------|
|                                | 115mm  | A    |
|                                | 125mm  | B    |
|                                | 150mm  | C    |
|                                | 175mm  | D    |
|                                | 200mm  | E    |
|                                | 225mm  | F    |
|                                | 250mm  | G    |
|                                | 300mm  | H    |

EXAMPLE: TE, means Stainless Steel with a length of 200mm under hexagon (add the above code to the end of The temperature switch code as shown in the code guide on leaflet 03/21, showing also the thread size required.

Thermowells are also available with flange mountings, the immersion length is then measured from under the face of the flange to the shank tip. These thermowells are prefixed with the letter 'F', placed in front of the material code, i.e. FBA (Flanged brass thermowell with an immersion under face of 115mm). Also state flange size and rating.



Section through screw type thermowell  
Showing how bulb is held inside.

Standard running nut has  $\frac{5}{8}$ " x 26 t.p.i. Brass thread (alternatives available).

Testing and inspecting procedures have been carried out, we believe, to all known standards and specifications encountered in the Chemical, Petroleum and Power Industries.

Test and material certificates can be provided when required.

Thermowells can also be manufactured to customer's own drawing/specification requirements.



**MODEL SC-S**

The SIRCO™ Sample Cooler has proved to be one of the most efficient heat exchangers in the instrument industry. With over 2.5 metres of Stainless Steel tube wound to a unique SIRCO™ designed double helical coil giving a heat transfer surface of 720 cm<sup>2</sup>, this is the ideal unit for users requiring an efficient controlled cooler for liquids or gases.

Compact in design and manufactured in Stainless Steel throughout, the coolers can be used with the coils connected in series and the water jackets in parallel for super efficient cooling.

**General Specification**

|                             |                     |
|-----------------------------|---------------------|
| Material:                   | 316 Stainless Steel |
| Max. Cooling Coil Pressure: | 100 Barg            |
| Max. Water Jacket Pressure: | 21 Barg             |
| Max. Temperature:           | 540°C               |

***Cooling Medium must not reach Boiling Point***



# SAMPLE COOLER

# MODEL SC-S

Pressure Drop/(Quantity Flow)<sup>2</sup>  
through the Coils of a Sample  
Cooler Type SC-S

Pressure Drop =  $KQ^2$   
where  $K= 6.25$

