

## GUARDIAN

## DIFFERENTIAL PRESSURE

### DP1500 GUARDIAN INDUSTRIAL & ATEX CERTIFIED Exia DIFFERENTIAL PRESSURE SWITCH

The standard ranges cover differential pressure applications for settings from 2 mBar to 12 Bar. Dual microswitch and adjustable deadband options are available as detailed overleaf.



## FEATURES

- ✓ 316 stainless steel or black anodised aluminium switchcase.
- ✓ IP66/IP67 certified housing.
- ✓ SIL2 - IEC61508 proven reliability.
- ✓ Internal adjustment scale.
- ✓ Differential pressure settings from 2 mBar to 12 Bar.
- ✓ Single or dual microswitch option. Adjustable deadband option.
- ✓ Wetted parts NACE MR-01-75 compliant.
- ✓ Manual reset pushbutton option.
- ✓ ATEX Certified Option  
CE II1G Ex ia IIC  
T6 Tamb -50 to +78°C  
T5 Tamb -50 to +93°C  
T4 Tamb -50 to +128°C

## STANDARD VITON DIAPHRAGM

Dual microswitches may increase the deadband by a factor of two.  
 $\Delta$  3.5 Bar option available.

ADJUSTMENT RANGE (BAR) *MBAR	ADJUSTMENT RANGE (PSI)    *"WG	MAX WORKING PRESS. (BAR) ONE SIDED EQUAL	DEADBAND (BAR) *MBAR	DIAPHRAGM CODE	SPRING CODE
6 - 12	90 - 170	14      28	<1.2	01SB	3
5 - 7	75 - 100	14      28	<0.7	01SB	B
3 - 5	45 - 75	14      28	<0.5	01SB	G
2 - 4	30 - 60	14      28	<0.4	01SB	R
0.2 - 2.4	5 - 35	14      28	<0.25	01SB	1
0.1 - 1.1	2 - 16	7      10	<0.15	02SB	2
*30 - 330	*12 - 132	7      10	<*35	03SB	1
*5 - 55	*2 - 20	0.35    0.5 $\Delta$	<*6	08SB	2
*2 - 42	*1 - 16	0.35    0.5 $\Delta$	<*3	08SB	1

## SPECIFICATION

### Temperature limitations

Diaphragm code : 01SB

Viton : -20 to + 150°C

Nitrile : -30 to +90°C

Diaphragm code : 02SB 03SB & 08SB

Viton : -10 to + 150°C

Nitrile : -25 to +95°C

**Wetted parts** : 316 Stainless steel

**Process connections** : Diaphragm Code 01SB, 02SB and 03SB 1/4"

BSP.P or NPT Female

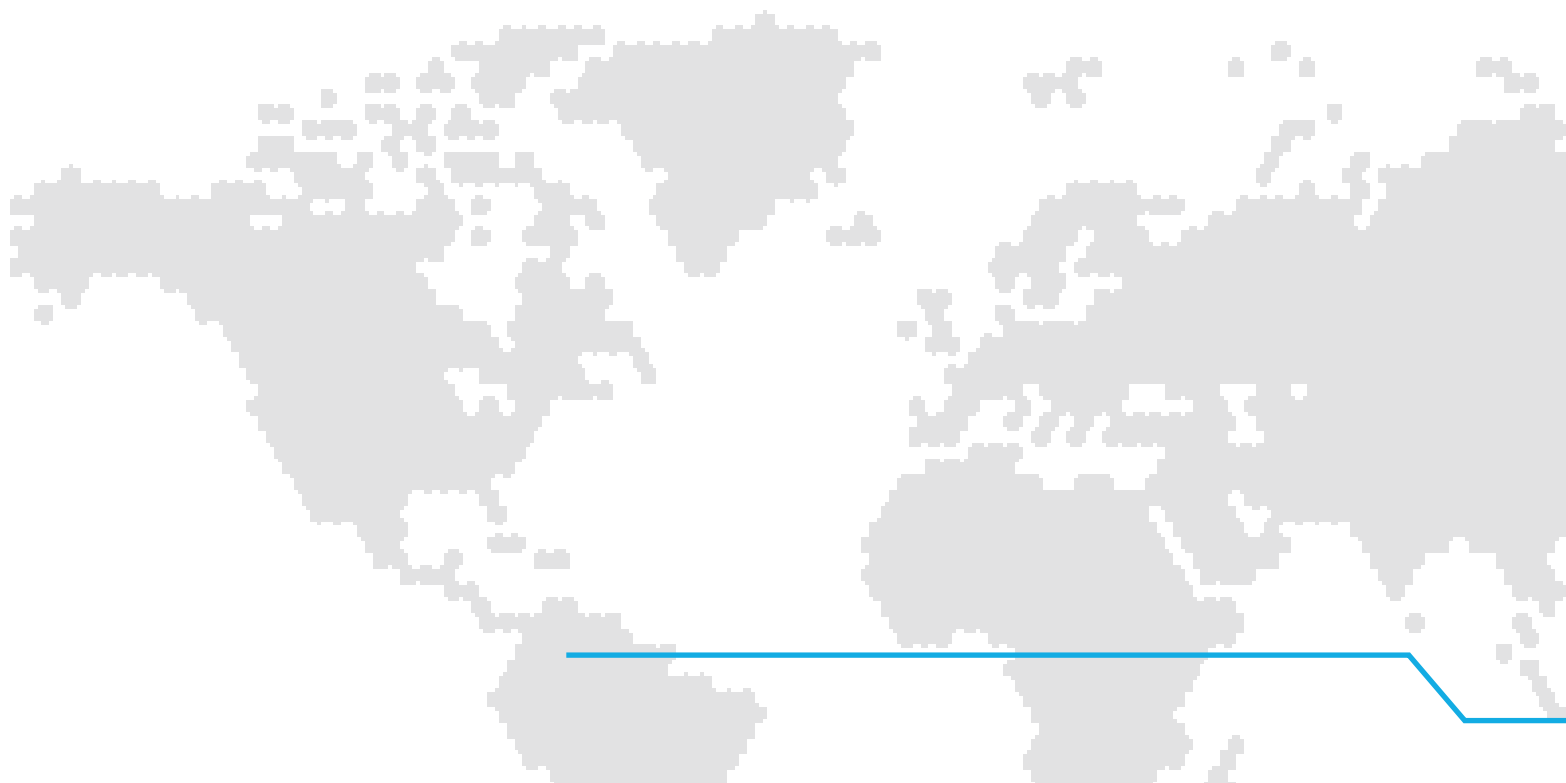
Code 08SB compression fittings or threaded connections as shown overleaf.

### Electrical connections

M20 x 1.5 ISO female standard

Suffix "F" for M25 x 1.5 ISO female

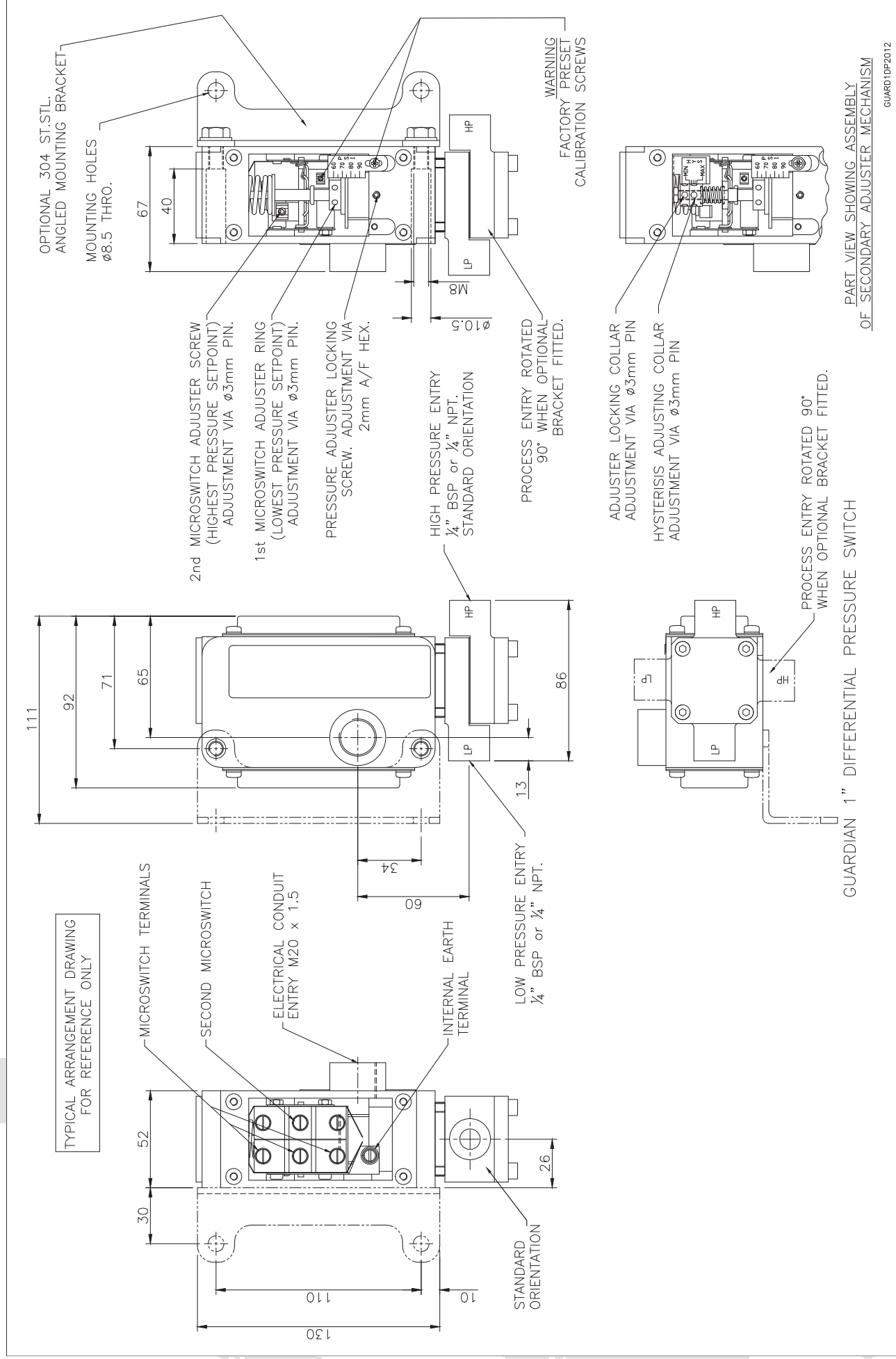
or "C" for 1/2" NPT female



ADJUSTABLE DEADBAND SWITCHING LIMITS					DUAL MICROSWITCH ADJUSTMENT LIMITS	
MINIMUM DEADBAND AT BOTTOM OF RANGE (BAR) *MBAR	MAXIMUM DEADBAND AT BOTTOM OF RANGE (BAR) *MBAR	ADJUSTMENT RANGE (BAR) (FALLING SET POINTS ONLY) SWITCH 1	MINIMUM DEADBAND AT TOP OF RANGE (BAR) *MBAR	MAXIMUM DEADBAND AT TOP OF RANGE (BAR) *MBAR	SWITCH 2 RELATIVE TO SWITCH 1 MIN - (BAR) - MAX (SECONDARY ADJUSTER)	
0.65	3.5	6 - 12	0.8	3.8	0.45	1.45
1.45	2.5	5 - 7	0.6	2.8	0.35	1.35
0.35	2	3 - 5	0.5	2.1	0.3	1.25
0.25	1.5	2 - 4	0.4	1.8	0.25	1.25
0.15	0.55	0.2 - 2.4	0.2	0.8	0.2	1.2
*30	*120	0.1 - 1.1	*40	*180	0.1	0.55
*30	*120	30 - 330	*40	*180	0.05	0.30
*3	*12	5 - 55	*3	*17	0.01	0.15
*3	*12	2 - 42	*3	*17	0.005	0.030

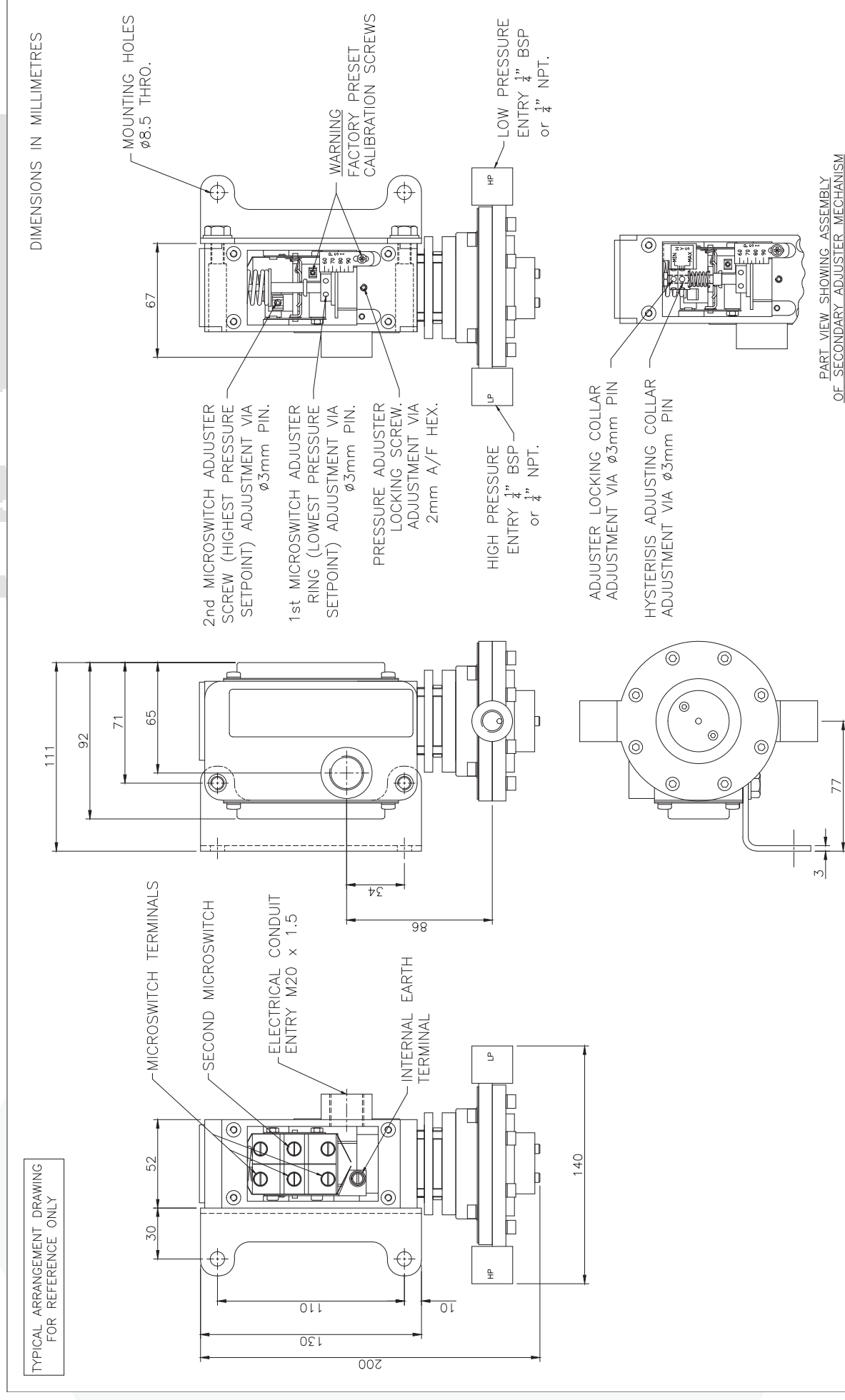
PART NUMBER BREAKDOWN				
<b>DP15</b> = DIFFERENTIAL PRESSURE PREFIX WITH 'S' FOR STAINLESS STEEL SWITCHCASE	<b>DIAPHRAGM</b> <b>A</b> = NITRILE <b>B</b> = VITON	<b>SPRING CODE</b> SEE RANGE TABLE	<b>DIAPHRAGM CODE</b> SEE RANGE TABLE	<b>MOUNTING DETAILS</b> <b>X</b> = 01SB CASE MOUNTING <b>N</b> = 02SB & 03SB BRACKET <b>X</b> = 08SB BRACKET <b>E</b> = 2" PIPE BRACKET
<div>( S )    D P 1 5 0 1 / A 1 N 0 1 S B 1 / S S X</div>				
<b>MICROSWITCH OPTIONS</b> 01 = SINGLE SWITCH 02 = DUAL SWITCHES 03 = USE 01 04 = USE 02 05 = SINGLE FOR Exia 06 = DUAL FOR Exia  <b>ADJUSTABLE DEADBAND</b> 07 = SINGLE SWITCH - STANDARD 08 = SINGLE SWITCH - USE FOR Exia  09* = MANUAL AND AUTO (RESET RISING) 0A* = MANUAL AND AUTO (RESET FALLING)  <b>PLEASE REFER TO MICROSWITCH RATINGS ON PAGE 11.</b>		<b>N</b> = STANDARD ADJUSTER <b>A</b> = SECONDARY ADJUSTER (FOR DUAL SETTING OR ADJUSTABLE DIFFERENTIAL MECHANISM)  <b>0C*</b> = MANUAL (RESET RISING) <b>0D*</b> = MANUAL (RESET FALLING) <b>0E*</b> = DUAL HIGH CURRENT DC <b>0M*</b> = SINGLE HIGH DC CURRENT *Change <b>0</b> to <b>E</b> for Exia certification		
		<b>PROCESS CONNECTION FOR DIAPHRAGM CODES 01SB AND 03SB</b> 1 = 1/4" BSP.P FEMALE (DP) 2 = 1/4" NPT FEMALE (DP)  <b>PROCESS CONNECTIONS FOR DIAPHRAGM CODE 08SB</b>		
1 = 1/4" O/D TUBE POSI. ELBOW DP 2 = 1/4" O/D TUBE TEE DP A = 6mm O/D TUBE DP C = 8mm O/D TUBE DP E = 10mm O/D TUBE DP G = 12mm O/D TUBE DP		J = 1/4" BSP.P FEMALE STRAIGHT DP L = 1/4" BSP.T FEMALE STRAIGHT DP N = 1/4" BSP.P MALE STRAIGHT DP Q = 1/4" NPT FEMALE STRAIGHT DP S = 1/4" NPT MALE STRAIGHT DP U = 1/2" NPT FEMALE STRAIGHT DP		

# TYPE DP1500 GUARDIAN DIFFERENTIAL PRESSURE SWITCH (DIAPHRAGM CODE 01SB)



PART VIEW SHOWING ASSEMBLY  
OF SECONDARY ADJUSTER MECHANISM

**TYPE DP1500 GUARDIAN DIFFERENTIAL PRESSURE SWITCH (DIAPHRAGM CODE 03SB)**

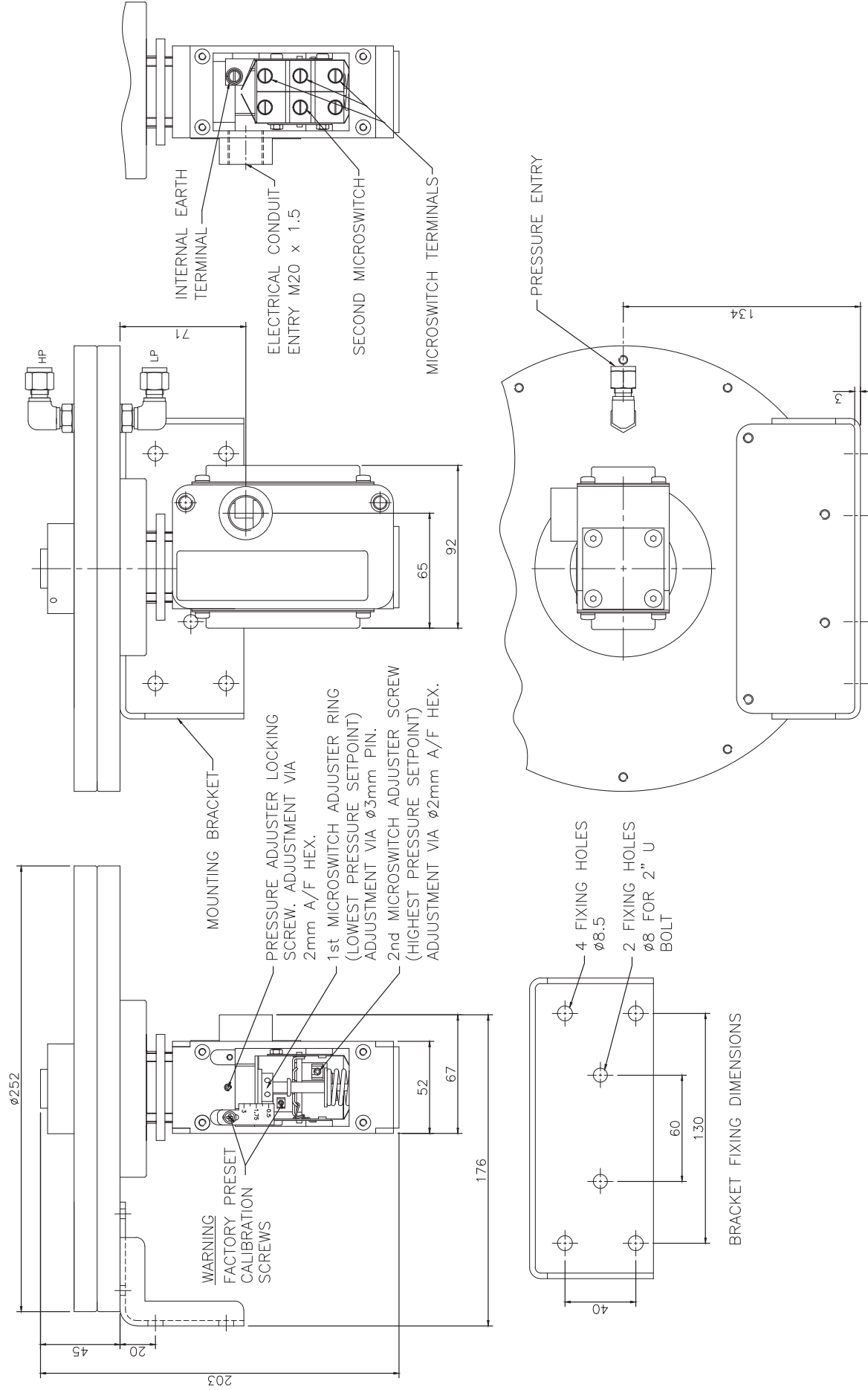


## GUARDIAN 2" & 3" DIFFERENTIAL PRESSURE SWITCH

# TYPE DP1500 GUARDIAN DIFFERENTIAL PRESSURE SWITCH (DIAPHRAGM CODE 08SB)

TYPICAL ARRANGEMENT DRAWING  
FOR REFERENCE ONLY

DIMENSIONS IN MILLIMETRES



# GUARDIAN INDUSTRIAL & ATEX SWITCHES

## INTRODUCTION

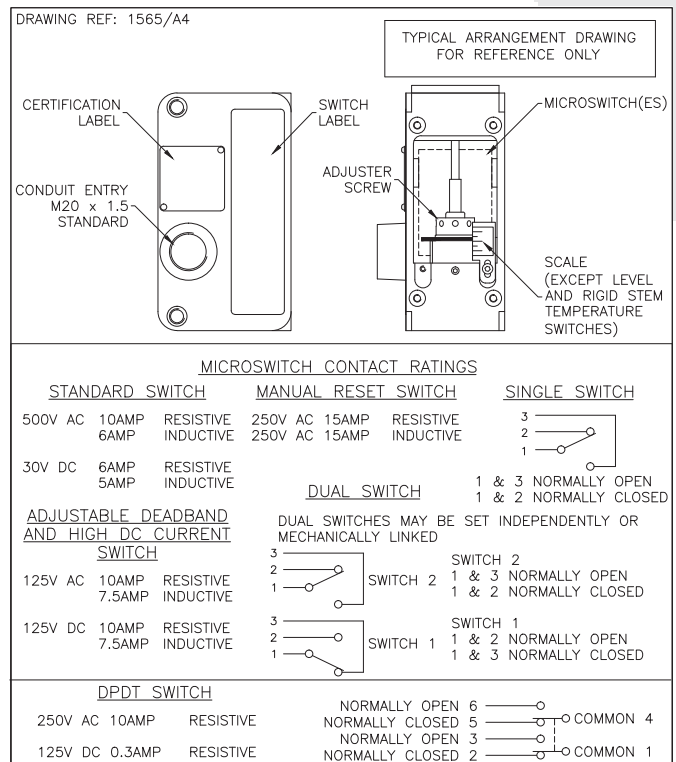
The Guardian pressure, differential pressure, temperature, level and flow switches are a part of our extensive range of specialist process sensors. They utilise the expertise gained from over 50 years experience of designing and manufacturing control devices for industrial, marine and hazardous area applications.

These switches are constructed with either a robust aluminium or stainless steel enclosure. The aluminium casting is black anodised and supplied with 316 stainless steel covers. The stainless steel case is a natural finish. Covers are gasketed and sealed to achieve an environmental seal to IP66 & IP67 standards. The internals utilise a unique mechanism designed by the engineers at PYROPRESS to produce a wide range, low switching differential and excellent repeatability. This combined with a variety of microswitches, mountings and sensor options has produced a switch range suitable for all weatherproof and intrinsically safe applications.

## CALIBRATION

The design features a simple form of calibration adjustment against a scale plate. This allows users to either order units with a specific setting, or stock a mid range setting and then calibrate to suit the application. Calibration is performed on the opposite side of the switch to the electrical connections, and can be set safely with the switch supply live. On removal of the adjustment cover a small grub screw can be loosened allowing the adjusting ring to be turned with a small Tommy bar or Allen key. The setting is read from the centre of the red indicating ring against the calibrated scale plate.

Calibration procedures for dual microswitches and adjustable switching differential switches are detailed on the operating and maintenance instructions supplied with each switch.



# TECHNICAL SPECIFICATION

**Switchcase and covers:** 316 stainless steel switchcase with 316 stainless steel covers or black anodised aluminium switchcase and 316 stainless steel covers. Optional 304 stainless steel mounting bracket.

**Microswitch:** SPCO/SPDT. Options include single or twin switch assemblies for simultaneous or separately adjustable set points, adjustable switching differential, manual reset and noble metal contacts for use on intrinsically safe circuits.

## Microswitch rating

Standard microswitch

: 6 Amps @ 480 V.AC

: 10 Amps @ 250 V.AC & 125 V.AC

: 5 Amps @ 30 V.DC & 0.05 Amps @ 125 V.DC

Adjustable deadband and high

: 1.5 Amps @ 250 V.AC & DC

Current DC switching

: 7.5 Amps @ 125 V.AC & DC

**Electrical Connections:** Screwed terminals direct onto microswitch, suitable for cable up to 2.5 mm<sup>2</sup>. (Manual reset microswitch is supplied with 6BA solder tags).

**Electrical Conduit Entry:** M20 x 1.5 straight entry. Adaptors are available.

**Environmental Protection:** Switches have been tested and certified by an external test house to IP66 in accordance with BS EN 60529 : 1992. In addition further internal tests confirm that the switchcase meets the requirements of IP67.

**Vibration and shock parameters:** Switches were subjected to Lloyds Register Type Approval System Test Specification No.1 Clause 12 or 13 Vibration Test 1 or 2 (refer to sales for exact specifications) and shock tested to BS EN 60068-2-27 : 1987.

**Temperature Limitations:** Pressure, Vacuum and Differential Pressure.

**Process:** Diaphragm actuated (unless otherwise stated) -30 to +110°C (Nitrile) or -20 to +150°C (Viton). Piston actuated -30 to +120°C (Nitrile), or -20 to +150°C (Viton) or -50 to +150°C (PTFE) -30 to 125°C (EPDM)

**Ambient:** -25 to +80 Deg.C.

**Storage:** -25 to +80°C. (For temp, level and flow refer to specific pages).

**Certification:** All switches are CE certified and marked in accordance with the following EU directives. Industrial : 2014/35/EU (Low Voltage Directive).

**Exia:** ATEX 2014/34/EU coded CE Ex II1G Exia IIC. CAT 1 (Zone 0) areas. Special conditions for safe use. (Category 1, Zone 0) Aluminium may only be used when the ignition hazardous assessment shows that there is not risk of ignition from incandive, impact or abrasion sparks.

## ABOUT PYROPRESS

Our products are designed to work in demanding and hazardous environments which require fast and cost effective solutions in instrumentation and control.

Pyropress control sensors provide safe and reliable electrical switching of alarm or control circuits in response to changes in temperature, pressure, differential pressure, vacuum, fluid, flow and level conditions.

## QUALITY

To support the design of state of the art products the company has invested heavily in the latest CNC technology.

We are able to produce our own components to a high degree of accuracy assuring a reliable and consistent quality product.

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