

PERSEUS FLOW

FF60 PERSEUS ATEX & IECEx Exd, Exia & INDUSTRIAL FLOW SWITCH

As will be apparent from the illustrations the complete flow switch comprising orifice plate, differential pressure sensitive element and switching mechanism are combined in a single compact assembly which enables easy installation between pipe flanges, models being available for pipe sizes 15 - 250mm diameter. These sensors incorporate a spring loaded pressure sensitive flexible diaphragm, which when deflected by pressure drop across the orifice plate, actuates directly by push rod a snap action S.P.D.T. microswitch at the flow setting. Microswitches can be set for single, dual simultaneous, or dual independently adjustable operation. Environmentally sealed or hermetically sealed microswitch options are available.



Each instrument can be provided with one of seven standard orifice ratios which enables a wide range of flow rates to be accommodated. When using fluids other than fresh water these values will of course alter. It should be also noted that the head loss values are those occurring immediately across the orifice and that up to 50% of this head loss can be recovered by providing at least ten diameters of straight plain pipe either side of the flow switch.

FEATURES



- ✓ 316 Stainless steel or black anodised aluminium switchcase to IP66 & IP67 standards.
- ✓ Easy installation between pipe and flanges
- ✓ SIL 2 - IEC61508 proven reliability.
- ✓ Single or dual microswitches option.
- ✓ Pipe sizes 15mm to 250mm
- ✓ ATEX/IECEx Flameproof Gas & Dust version
II 2G Ex db IIC T6...T5 Gb Tamb -50°C to +75°C...+90°C
II 2D Ex tb IIIC T85°C...T100°C Db
Tamb-50°C to +75°C T85°C/-50°C to +90°C T100°C
- ✓ ATEX/IECEx Flameproof Gas version
II 2G Ex db IIC T6...T5 Gb Tamb -50°C to +75°C...+90°C
(With or without resistors)
- ✓ ATEX/IECEx Intrinsically safe Gas & Dust version
II 1G Ex ia IIC T6 ...T2 Ga Tamb - 50 to +78°C...+93°C
II 1D Ex ia IIIC T135°C Da Tamb - 50 to +70°C
(without resistors)
- ✓ ATEX/IECEx Intrinsically safe Gas version
II 1G Ex ia IIC T5...T2 Ga
(Tamb -50°C to +72°C...+122°C)
(with resistors)

Flange casting : Gunmetal - standard (316 stainless steel, Monel or Tufnol options)

(Tufnol option on industrial and Exd versions only)

Orifice plate : 316 stainless steel - standard or acetal (for Tufnol plates)

Diaphragm : Nitrile - with metallic plates
Viton - with Tufnol plates

Temperature parameters : Nitrile : -30 to +90°C

Viton : -20 to +100°C

Pressure parameters : Metallic flanges : 8 bar

Tufnol flanges : 12 bar

PART NUMBER BREAKDOWN		ELECTRICAL ENTRY	
		A = M20 LEAVE BLANK	C = 1/2" NPT STRAIGHT
		F = M25 STRAIGHT	
O = ATEX/IECEX Exia INSTRINSIC SAFETY B = ATEX/IECEX Exd GAS FLAMEPROOF T = ATEX/IECEX Exd GAS FLAMEPROOF & DUST OPTION A = INDUSTRIAL / MARINE		DIAPHRAGM MATERIAL A = NITRILE B = VITON	FLANGE MATERIAL 1 = GUNMETAL - STANDARD 2 = STAINLESS STEEL 3 = MONEL 4 = TUFNOL EPOXIDE
A = ALUMINIUM SWITCHCASE S = ST. STEEL SWITCHCASE	SPRING CODE (PLEASE SEE BELOW)		
F F 6 1 S B / A G 0 1 0 0 1 0 / 1 1 X B _			
1 = 1 x SPDT SWITCH 2 = 2 x SPDT SWITCH LINKED 3 = 1 x ADJUSTABLE DEADBAND 4 = 2 x SPDT INDEPENDENTLY ADJUSTABLE 5 = 1 x HERMETICALLY SEALED 6 = 2 x SPDT HERMETICALLY SEALED	NOMINAL BORE/PIPE SIZE CODES 010005 = 1/2" 030030 = 3" 010007 = 3/4" 040040 = 4" 010010 = 1" 060040 = 4" on 6" plates 015015 = 1 1/2" 060060 = 6" 020020 = 2" 080080 = 8" 020025 = 2 1/2" 100100 = 10"	ELECTRICAL ENTRY CONNECTION B = RIGHT HAND SIDE L = DUAL ENTRY T = DUAL ENTRY TOP PLUGGED R = DUAL ENTRY SIDE PLUGGED *STAINLESS STEEL CASE	

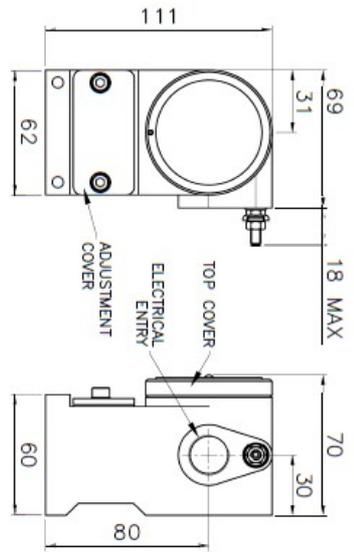
Spring code: This will be designated by our Engineer upon calculating the most applicable orifice ratio dependent on the pipe size, normal flow and alarm flow required for your specific application. These calculations will give a figure in "HG and the spring codes cover specific ranges.

T = 0.5 - 0.65" HG, **R** = 0.6 - 1.3" HG, **G** = 1.2 - 7.0" HG, & **B** = 6.5 - 12" HG.

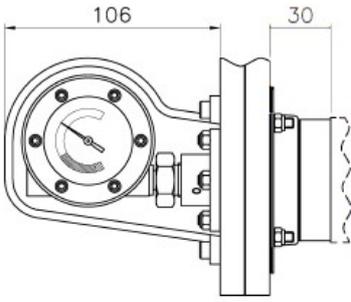
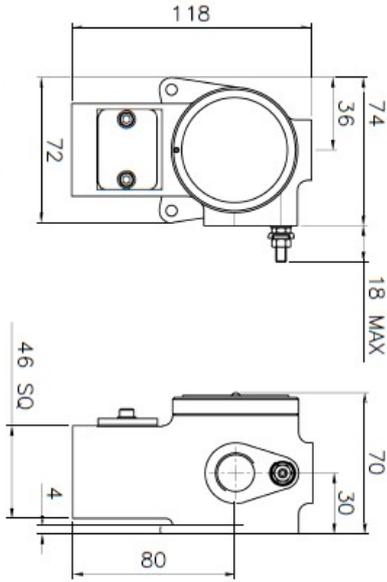
Note: Flow switches with Tufnol Epoxide flange will have a flange thickness of 38mm.

Each instrument is tested before despatch and switch set point marked on adjustment scale. If specially ordered this scale can be calibrated to indicate the adjustable range of flow rate in litres per hour or other units of measurement as required. The accuracy of such calibration will be affected by many external factors such as fluid temperature change, pipe layout etc., but experience has shown this to be within +/-5% for a given set of conditions.

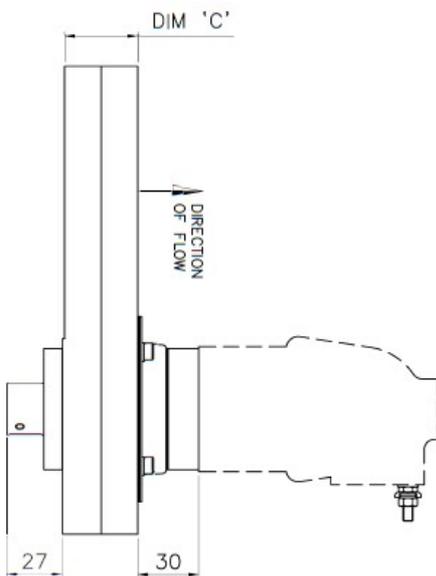
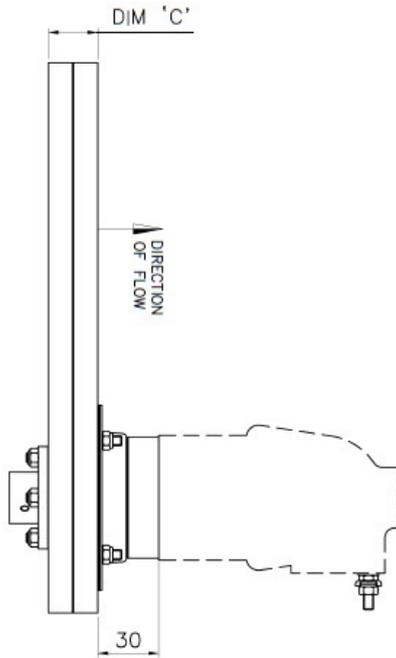
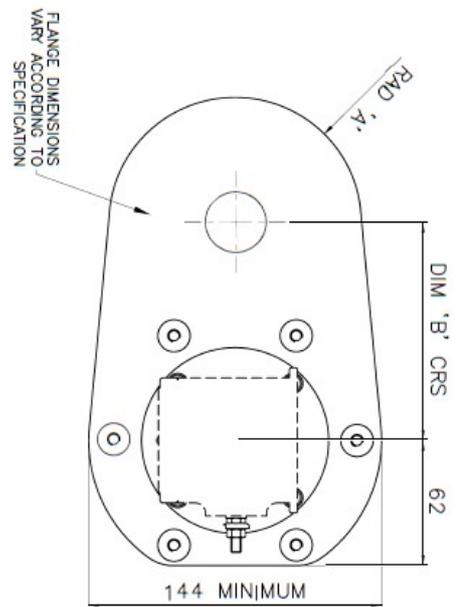
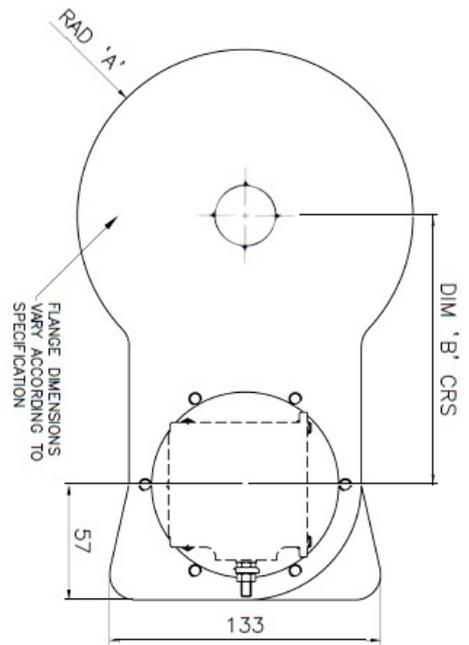
ALUMINIUM HOUSING



STAINLESS STEEL HOUSING



OPTIONAL FLOW RATE INDICATOR (METALLIC PLATES ONLY)



F₋₆ FLOW (METALLIC)

F₋₆ FLOW (NON-METALLIC)

NOTE: HOLE DIMENSIONS TO BS EN 1092-1 OR AS CUSTOMER REQUIREMENT

SIZE	METALLIC PLATES														NON-METALLIC PLATES			
	15	20	25	32	40	50	65	80	100	125	150	200	250	15	20	25	40	50
A	57	57	70	70	83	83	102	140	140	140	168	203	62	62	62	83	83	
B	108	108	117	117	133	133	152	191	191	191	219	254	108	108	108	133.3	133.3	
C	24	24	24	24	24	24	24	24	24	24	24	24	24	38	38	38	38	38

INDUSTRIAL SWITCHES

INTRODUCTION

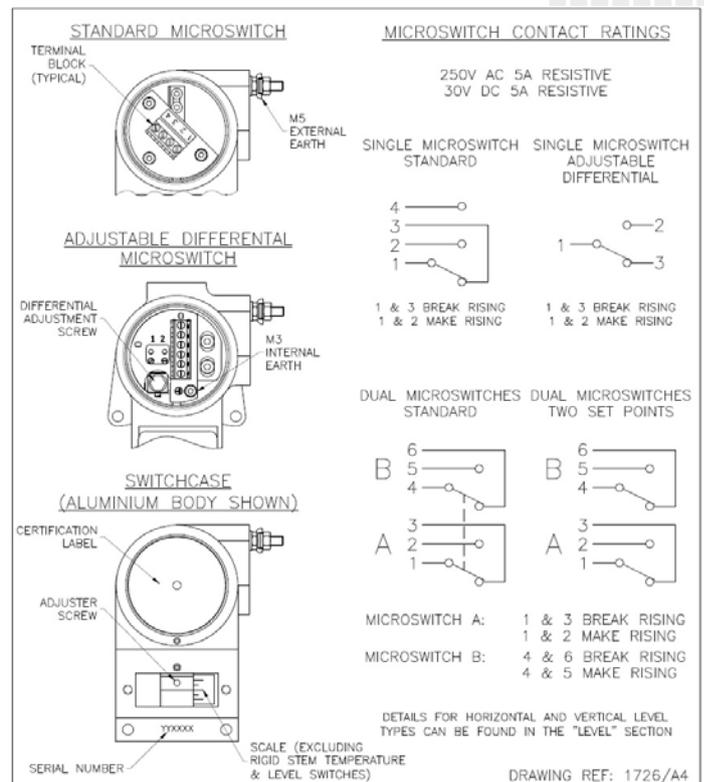
The Perseus **pressure, vacuum, differential pressure, temperature, and level** switches are designed for use in environments where explosive gases and dust can be present (e.g. Gas fields, Oil rigs and Chemical plants etc.) and have been ATEX and IECEx certified as detailed overleaf (SIL2 - IEC 61508 proven reliability).

These switches are manufactured from a high quality casting which offers robust construction and protection to IP66 & IP67 for use within heavily polluted industrial environments. A special feature of the instruments is the separation of the flameproof and adjustment compartments allowing for safe on-site adjustment of the set point with power on and the switch in operation.

Perseus Exd switches must be installed in accordance with BS EN 60079-14

CALIBRATION

The design features a simple form of adjustment against a calibrated scale. This enables a user to order switches set at a predetermined point or stock a mid range setting and adjust switches to suit the particular application. The set point can be safely adjusted with the switch electrically live. Adjustment is made by removing the access cover and rotating the set point adjuster using a suitable tommy bar or allen key. The setting is read from the centre of the set point adjuster against the scale. Rotation to the left will increase the set point and to the right decrease it.



Perseus Stainless steel switchcase with dual electrical connection option

TECHNICAL SPECIFICATION

Switchcase & covers: 316 Stainless steel or black anodised aluminium case and 316 stainless steel adjustment cover.

Microswitch: 1 x SPCO/SPDT or 2 x SPCO/SPDT gold flashed silver contacts. Single switch is available with adjustable deadband option. Dual switches are either mechanically linked to provide DPDT switching action (switches could be up to 3% apart, reset levels may differ) or independently adjustable. Microswitches are environmentally sealed as standard, hermetically sealed can be supplied as an option. Dual microswitches may increase deadband.

Microswitch rating: 5 Amps @ 250 VAC resistive, 2 Amps @ 250VAC inductive

5 Amps @ 30VDC resistive, 3 Amps @ 30 VDC inductive

Electrical Connections: Terminals suitable for cable 0.5 - 2.5 mm². (Max 1.5 mm² for dual microswitch version)

Electrical Conduit Entry: One or two M20 x 1.5 ISO. ½" NPT or M25 via adaptors (2 entries only with SS housing)

Environmental Protection: IP66 & IP67 in accordance with BS EN 60529 : 1992 & IEC 60529 : 2001.

Vibration and shock parameters: Switches were subjected Lloyds Register Test Specification 1, section 13 BS EN 60068-2-6 : 1996 (Test Fc vibration) and BS EN 60068-2-27 : 1995 (Test Ea shock).

Temperature Limitations: Pressure, Vacuum and Differential Pressure.

Process: Diaphragm actuated (unless otherwise stated) -30 to +100°C (Nitrile) or -20 to +150 Deg.C (Viton).

Piston actuated -30 to 100°C (Nitrile), -20 to +150°C (Viton), -50 to +150°C (PTFE) or -35 to +100°C (EPDM).

Ambient: -40 to +85°C.

Storage: -40 to +85 °C (For temperature, level and flow switches please refer to specific pages).

ATEX & IECEx Flameproof Gas & Dust : II 2G Ex db IIC T6...T5 Gb. Tamb -50°C to +75°C...+90°C

II 2D Ex tb IIIC T85°C...T100°C Db - Tamb -50°C to +75°C T85°C/-50°C to + 90°C T100°C

ATEX & IECEx Flameproof Gas (with/without resistors) II 2G Ex db IIC T6...T5 Gb - Tamb -50°C to +75°C...+90°C T5

Special conditions for safe use. 1) Under rated conditions, the cable temperature can reach 9K above ambient temperature, ensure selection of correctly rated cable for the application. 2) Flameproof joints not intended for repair.

ATEX/IECEx Exia Intrinsically Safe Gas & dust (without resistors)

II 1G Ex ia IIC T6...T2 Ga - Tamb -50°C to +78°C...+93°C (see certificate)

II 1D Ex ia IIIC T135°C Da - Tamb -50°C to +70°C

ATEX/IECEx Exia Intrinsically Safe Gas (with resistors)

II 1G Ex ia IIC T5...T2 Ga - Tamb -50°C to +72°C...+122°C (see certificate)

Special conditions for safe use. 1) For Ga installations - The equipment may be constructed using aluminium for the housing and internal parts and may only be used when the ignition hazardous assessment shows there is no risk of ignition from incendeive impact or abrasion sparks.

Accuracy: +/-1% at 20°C.

Continuous development may result in changes to specification without prior notice

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, 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.

T: +44 (0)1752 333933 | sales@pyropress.com
www.pyropress.com

PPSSC1091 | issue 4