

WPM Series

Flow Monitor with Flow Rate Alarm

The WPM series in-line flow rate alarms are ideal for protecting hydraulic or pneumatic systems by triggering an alarm if flow passes a user defined pre-set level.

The easily adjustable dry contact switch connects via a standard 4 pin square DIN connector and only a hexagon key is required for set-up.

A flow rate alarm will help reduce down time and avoid damage to critical equipment.

A varied choice of materials and seals can make it suitable for a wide range of fluids.

Due to the sharp edge orifice technology the units have excellent viscosity stability which means it is suitable for a wide operating temperature range.

Installation is made easy with a choice of threaded ports, no need for straight lengths of pipe on inlet or outlet and no restriction to orientation. This combined with the unit being sealed means that it can nearly be installed anywhere.

Specifications

| | |
|-------------------------------------|--|
| Maximum Rated Pressure: | Up to 420 bar, 6000 psi |
| Maximum Rated Flow: Liquids: | Up to 550 L/min, 150 US gpm |
| Air/Gas: | Up to 600 SLPS, 1300 SCFM |
| Maximum Rated Temperature: | 85 °C, 185 °F |
| Accuracy: | ± 2.0% of full scale |
| Porting: | BSPP, NPTF, SAE |
| Material: | |
| Body Materials: | Aluminium, Brass or Stainless Steel |
| Internal Materials: | Stainless Steel |
| Seals: | NBR (Other seals consult sales office) |

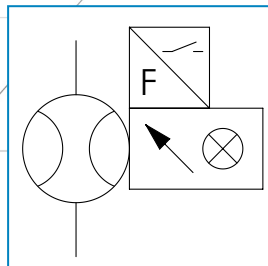
Make it **BLUE**®

Features

- Hydraulic or Pneumatic models available.
- Direct reading from laser engraved scale.
- Field adjustable alarm setting with only a hexagon key required.
- Unrestricted mounting in any orientation.
- Simple on/off logic. Positive alarm points using dry-contact.
- Pre-wired with cable disconnect using standard 4 pin square DIN connection.
- Other series available: WPB Hydraulic Flow Monitor
WPC Hydraulic Case Drain Monitor
WPR Flow Monitor with Flow Rate Transmitters

ISO Symbol:

WPM monitor series



Sales Order Code

Please contact our technical sales team to discuss any special order requirements.

| TYPICAL CODE | DESCRIPTION | SEE TABLE | YOUR CODE |
|--------------|--------------------------|-----------|-----------|
| WP | Monitor Series | - | WP |
| M | Alarm Switch | Table 1 | |
| 3 | Port / Line Size | Table 2 | |
| S | Material | Table 3 | |
| 7 | Pressure Rating Maximum | Table 4 | |
| H | Fluid Media | Table 5 | |
| T | Thread Porting | Table 6 | |
| 10 | Flow Ranges | Table 7 | |
| -RF | Optional Flow Directions | Table 8 | |

Table 1:

| ALARM SWITCH | CODE |
|----------------------|------|
| Flow Alarm, 1 Switch | M* |
| Flow Alarm, 2 Switch | N |

* For units which are to switch in the upper 2/3 of scale add "-A247" to the end of M style part number.

Table 2:

| PORT / LINE SIZE | CODE |
|------------------|------|
| 1/4" - 1/2" | 3 |
| 3/4" - 1" | 4 |
| 1 1/4" - 2" | 5 |

Table 4:

| PRESSURE RATING MAXIMUM | CODE |
|--|------|
| 42 bar, 600 psi (Air and gas / Aluminium and brass) | 4 |
| 69 bar, 1000 psi (Air and gas / Stainless Steel) | 5 |
| 240 bar, 3500 psi (Liquids / Aluminium and Brass) | 6 |
| 420 bar, 6000 psi (Liquids / Stainless Steel) | 7 |

Table 3:

| MATERIAL | CODE |
|-----------------|------|
| Aluminium | A |
| Brass | B |
| Stainless Steel | S |

Table 5:

| FLUID MEDIA | CODE |
|--------------------------------|------|
| Air & Gas | A |
| Oil and 0.873 specific gravity | H |
| Water and 1.0 specific gravity | W |

Table 6:

| THREAD PORTING | CODE |
|---------------------------|------|
| Size 3 available threads | |
| 1/4" NPTF | S |
| 3/8" NPTF | A |
| 1/2" NPTF | B |
| 9/16" -18UN #6 SAE ORB | E |
| 3/4" -16UN #8 SAE ORB | F |
| 7/8" -14UN #10 SAE ORB | G |
| 1/4" BSPP | 8 |
| 3/8" BSPP | R |
| 1/2" BSPP | T |
| Size 4 available threads | |
| 3/4" NPTF | C |
| 1" NPTF | D |
| 1-1/16" -12UN #12 SAE ORB | H |
| 1-5/16" -12UN #16 SAE ORB | J |
| 3/4" BSPP | U |
| 1" BSPP | V |
| Size 5 available threads | |
| 1-1/4" NPTF | K |
| 1-1/2" NPTF | L |
| 2" NPTF | M |
| 1-5/8" -12UN #20 SAE ORB | N |
| 1-7/8" -12UN #24 SAE ORB | P |
| 2" -12UN #32 SAE ORB | Q |
| 1-1/4" BSPP | W |
| 1-1/2" BSPP | Y |
| 2" BSPP | X |

NPTF porting threads are dry seal to ANSI B1.20.3
For SAE porting in brass please contact technical sales team.

Table 7:

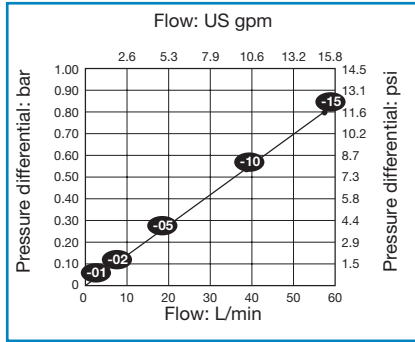
| LIQUID | | AIR & GAS | | SIZE | CODE |
|---------|---------|-----------|---------|--------|------|
| L/min | US gpm | SCFM | SLPS | | |
| 0.5-4 | 0.1-1.0 | 2-12 | 1-5.5 | 3 only | 01 |
| 1-8 | 0.2-2.0 | 4-23 | 2-10 | 3 & 4 | 02 |
| 2-19 | 0.5-5.0 | 5-50 | 3-23 | 3 & 4 | 05 |
| 5-37.5 | 1-10 | 10-100 | 6-48 | 3 & 4 | 10 |
| 5-55 | 1-15 | 25-150 | 10-70 | 3 & 4 | 15 |
| 10-75 | 2-20 | 20-215 | 10-100 | 4 only | 20 |
| 10-95 | 2-25 | 20-250 | 15-120 | 4 & 5 | 25 |
| 15-115 | 3-30 | 30-330 | 15-150 | 4 only | 30 |
| 20-150 | 4-40 | 30-400 | 15-180 | 4 only | 40 |
| 20-190 | 5-50 | 40-500 | 30-230 | 4 only | 50 |
| 20-190 | 5-50 | 30-470 | 30-210 | 5 only | 50 |
| 30-280 | 8-75 | 30-750 | 25-350 | 5 only | 75 |
| 50-375 | 10-100 | 150-900 | 50-450 | 5 only | 88 |
| 100-550 | 20-150 | 150-1300 | 100-600 | 5 only | 99 |

Table 8:

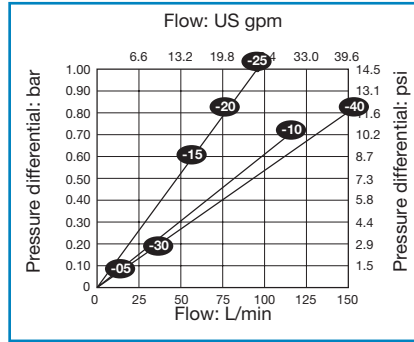
| OPTIONAL FLOW DIRECTIONS | CODE |
|--------------------------|------|
| Uni- directional | |
| Reverse flow | -RF |

Pressure Differential Graphs Categorised by Sized Code

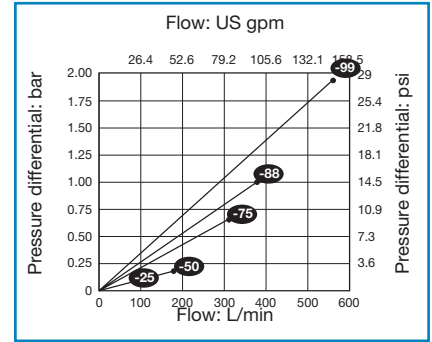
Series 3 (3/8" - 1/2")



Series 4 (3/4" - 1")



Series 5 (1 1/4" - 2")



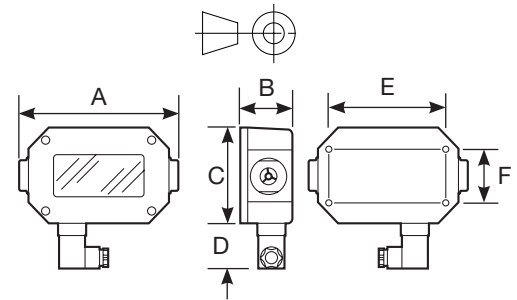
-15 = Flow size (see Product Selector)

14.5 psi = 1 bar, 1 US gpm = 3.785 L/min

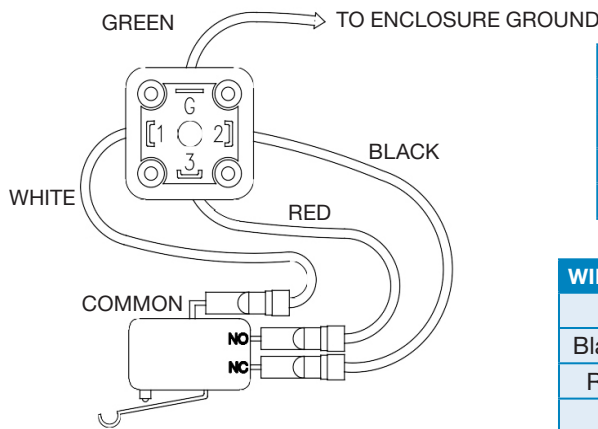
Installation Details

Table Dimensions

| SIZE CODE | 3 | | 4 | | 5 | | 5 (2"PORTS) | |
|-----------|-----|--------|-----|---------|-----|---------|-------------|---------|
| | mm | inch | mm | inch | mm | inch | mm | inch |
| A | 167 | 6-9/16 | 182 | 7-5/32 | 258 | 10-1/8 | 322 | 12-5/8 |
| B | 56 | 2-3/16 | 75 | 2-15/16 | 97 | 3-13/16 | 97 | 3-13/16 |
| C | 101 | 4 | 114 | 4-1/2 | 135 | 5-5/16 | 135 | 5-5/16 |
| D | 47 | 1-7/8 | 47 | 1-7/8 | 47 | 1-7/8 | 47 | 1-7/8 |
| E | 128 | 4-7/8 | 127 | 5 | 172 | 6-3/4 | 172 | 6-3/4 |
| F | 57 | 2-1/4 | 73 | 2-7/8 | 95 | 3-3/4 | 95 | 3-3/4 |



Connecting Details



WIRING CODE: STANDARD SINGLE SWITCH

| | |
|--------------------------|-------------------------------|
| White - Common | Terminal #1 of DIN connector |
| Black - N.C. Contact | Terminal #2 of DIN connector |
| Red - N.O. Contact | Terminal #3 of DIN connector |
| Green - Enclosure Ground | Terminal "G" of DIN connector |

WIRING CODE: DUAL SWITCH ALARM

| | |
|---------------------------------|-------------------------------|
| White - Both Common | Terminal #1 of DIN connector |
| Black - Decreasing N.O. Contact | Terminal #2 of DIN connector |
| Red - Increasing N.O. Contact | Terminal #3 of DIN connector |
| Green - Enclosure Ground | Terminal "G" of DIN connector |

Switches Specification

| | |
|-----------------------|--|
| Type: | Form C, dry contact |
| UL/CS Rating: | 10 amps and 1/4 hp, 125 or 250 V a.c. 1/2 amp, 125 V d.c. (regulated); 1/4 amp, 250 V d.c. (regulated); 3 amps, 125 V a.c. "L" lamp load |
| Actuating Mechanical: | Simulated roller, lever operated, low force |

Product Information

| | |
|-----------------------------|---|
| Accuracy: | ±2.0% of full scale for oil and water ±2.5% of full scale in centre third of measuring range; ±4% in upper & lower thirds for air and gas |
| Repeatability: | ±1% of full scale |
| Max. rated pressure: | Liquids: Aluminium and Brass 240 bar, 3500 psi. Stainless Steel 420 bar, 6000 psi. Air/Gas: Aluminium and Brass 40 bar, 600 psi. Stainless Steel 69 bar, 1000 psi. |
| Max. operating temperature: | 85 °C, 185 °F |
| Calibration: | Oil monitors: DTE 25 @ 43 °C, 110 °F (40 cSt), 0.873 sg (DTE 25 is a registered trademark of Exxon) |

| | |
|--------------------------|---|
| | Mobil). |
| | Water monitors: Tap water @21 °C, 70 °F (1 cSt), 1.0 sg |
| | Air meters: air @ 21 °C, 70 °F, 1.0 sg and 6.8 bar, 100 psig |
| | Flow calibration certificates are available on request - this is a chargeable option. |
| | Note: Must be requested at time of order & cannot be retrospectively requested. |
| Alarm switch dead-band: | 4% of full scale |
| Degree of protection: | NEMA 4X type- with cable connected |
| Viscosity: | Standard viscosities up to 110 cSt - viscosities between 110 to 430 cSt consult sales office. |
| Filtration requirements: | 74 micron filter or 200 mesh screen minimum |

Construction

Wetted Components:

| | |
|---------------------------|--|
| Casting and End Ports: | Anodised Aluminium, Brass, Stainless Steel |
| Seals: Aluminium & Brass: | NBR (as standard); Optional EPR, FKM or FFKM - consult sales office |
| Stainless Steel: | FKM with PTFE backup (as standard); Optional NBR, EPR or FFKM - consult sales office |
| Transfer Magnet: | PTFE coated Alnico |
| All other Internal Parts: | Stainless Steel |

Non-wetted Components:

| | |
|----------------------|-------------------|
| Enclosure and Cover: | Painted Aluminium |
| Window Tube: | Polycarbonate |
| Window Seal: | NBR (as standard) |
| Din Connector: | Polyamide |

Operation

The flow monitor consists of tapered centre shaft, encircled by a sharp edged floating orifice disk, transfer magnet and return spring.

As flow moves through the monitor, a pressure differential occurs across the floating orifice disk, forcing the disk & transfer magnet against the return spring. As flow increases, the pressure differential increases, forcing the disk transfer magnet along the tapered shaft. As flow decreases, the biased spring forces the disk & transfer magnet down the tapered shaft, returning to the "no flow" position.

In metal casing monitors, where the disk & transfer magnet are sealed in the body casing, there is a magnetically coupled magnet follower which displays the reading on the outside scale.

The flow monitor has a linear relationship between flow rate, pressure differential and piston displacement which is displayed on the calibrated scale.

General information

The Flow Alarms incorporates a NO (normally open) or NC (normally closed) switch that can be used to signal a limit setting. The switch may be used to trigger a warning indicator, alarm or even to shut down a process. The switches can be configured to open or close a contact for an increasing or decreasing set point. Single switch units are built to switch in the lower 2/3 of the scale.