WPP Series

Phosphate Ester Flow Monitor

Up to
- 490 lpm, 140 US gpm
- 420 bar, 6000 psi

The WPP series in-line flow meters are ideal for monitoring pump performance that use aviation lubricants and fire retardant fluids.

The flow rate is easily read in either US GPM or LPM from the laser engraved scale.

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.

Symbol

Hydraulic measurement and control

WEBTEC

Milwaukee, WI 53235, USA
Tel: +1 (414) 769-6400
sales-us@webtec.com

St. Ives, Cambs. PE27 3LZ, UK
Tel: +44 (0) 1480 397 400
sales-uk@webtec.com

www.webtec.com

Features

- **CALIBRATED** for use with phosphate esters
- **WIDE** variety of flow ranges, 0.4 - 490 lpm (0.1 - 130 US gpm)
- **PRESSURE** rating up to 420 bar (6000 psi)
- **WIDE** variety of port threads
- **DIRECT** reading dual calibration, lpm & US gpm
- **ACCURATE** within 2.0% FSD
- **ADVANCED** stainless steel sharp edge orifice
- **UNRESTRICTED** mounting in any orientation

nqa. ISO 9001 Registered
UKAS QUALITY MANAGEMENT 015
Certificate No.8242

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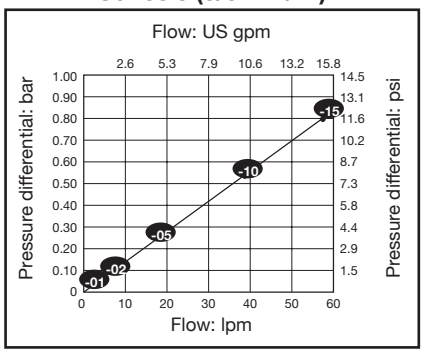
(Issue 6)

Specifications

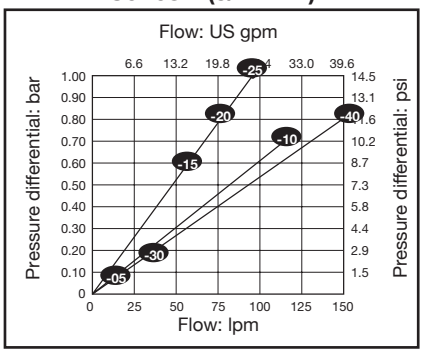
Measuring accuracy	± 2.0 % of full scale
Repeatability	± 1% of full scale
Flow measuring range	0.4 - 490 lpm (0.1 - 130 US gpm) (Phosphate ester flow rate monitors have a scale range equivalent to 0.93 x standard hydraulic oil range). See oil graphs below.
Max. operating pressure	Aluminium & brass monitors 240 bar (3000 psi), stainless steel 420 bar (6000 psi)
Max. operating temperature	115° C (240° F)
Pressure differential	See graphs below
Calibration	Oil monitors: DTE 25 @ 43°C (40 cSt), 0.873 sg Water monitors: Tap water @ 21°C (1 cSt), 1.0 sg Flow calibration certificates are available on request, this is a chargeable option. Note: Must be requested at time of order & cannot be retrospectively requested.

Pressure differential graphs categorised by size code

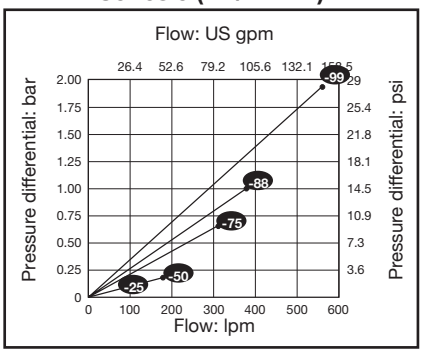
Series 3 (3/8" - 1/2")



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 lpm

Construction

Wetted components:

High pressure casing, end ports and tapered shafts:	*2014 Aluminium, CA360 Brass and 304 Stainless Steel*
Seals:	*EPR w/Teflon® backup (STD), Viton® or Kalrez®*
Transfer magnet:	*Teflon® coated Alnico*
Floating Orifice disc:	*Stainless Steel*
All other internal parts:	*Stainless Steel*

Non-wetted components:

Window tube:	Pyrex
Window seals:	Teflon®

(Teflon® is a Registered Trademark of DuPont)
(Viton® & Kalrez® are Registered Trademarks of Dow DuPont Elastomers)

Operation

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

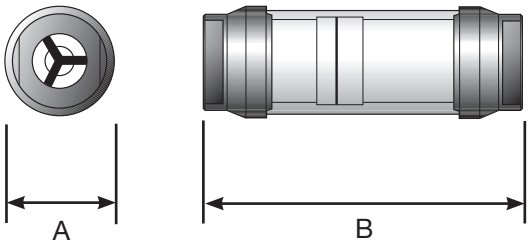
As flow moves through the monitor, a pressure differential occurs across the floating orifice disk, forcing the disk & transfer magnet against the return spring. As flow increases, the pressure differential increases, forcing the disk transfer magnet along the tapered shaft. As flow decreases, the biased 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.

Dimensions

Size code	3	4	5	5 (2” ports)
Dim. A mm (inches)	48 (1.9)	60 (2.4)	90 (3.5)	90 (3.50
Dim. B mm (inches)	167 (6.6)	182 (7.2)	258 (10.2)	322 (12.7)



Product Selector

Standard Flow Meter Part Number
(For custom units, consult the Sales Office)

Series # WPP ☐☐–☐ ☐ ☐–☐ ☐ Webtec Part Number

Style

Phosphate esters	= P

Port / Line Size

1/4” - 1/2”	= 3
3/4” - 1”	= 4
1 1/4” - 2”	= 5

Material

Aluminium	= A
Brass	= B
Stainless Steel	= S

Pressure rating maximum

240 bar (3500 psi) (Liquids / Aluminium and brass)	= 6
420 bar (6000 psi) (Liquids / Stainless steel)	= 7

Fluid Media:

Water and 1.0 specific gravity	= W

Thread porting

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
3/8” BSPP	= R
½” 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

Please note - SAE porting not available in brass

Flow ranges

Oil and Water LPM (USgpm)		Size
0.5-4 (0.1 – 1)	= 01	3 only
1-8 (0.2-2)	= 02	3 & 4
2-19 (0.5-5)	= 05	3 & 4
4-38 (1-10)	= 10	3 & 4
4-56 (1-15)	= 15	3 & 4
10-75 (2-20)	= 20	4 only
10-100 (2-25)	= 25	4 & 5
10-115 (3-30)	= 30	4 only
15-150 (4-40)	= 40	4 only
15-190 (5-50)	= 50	4 only
15-190 (5-50)	= 50	5 only
30-280 (8-75)	= 75	5 only
40-375 (10-100)	= 88	5 only
75-550 (20-150)	= 99	5 only

Optional flow directions

Uni-directional	=
Bi directional	= BI
Reverse flow	= RF

* Bi-directional option only available in the following flow ranges:
Size code 3 - flow range 5,10 and 15 gpm only
Size code 4 - flow range 10,15, 20 and 30 gpm only
Size code 5 - flow range 50, 75 and 100 gpm only

Other Series available

WPB Series Hydraulic Flow Monitor
WPG Series Pneumatic Flow Monitor
WPH Series High Temperature Flow Monitor
WPR Series Flow Monitor with Flow Rate Transmitters
WPM Series Flow Monitor with Flow Rate Alarm
WPC Series Hydraulic Case Drain Monitor