

FlowHUB ViscoCorrect

Flow, Temperature, Measure, display

Up to

- 240 lpm, 64 US gpm
- 420 bar, 6,000 psi

The FlowHUB is ideal for condition monitoring, test stands and closed loop control applications both for fluid power and lubrication systems. The FlowHUB can measure and display flow and temperature readings as well as switch and transmit flow values. This enables a system designer to trigger alarms, shutoffs and transmit real-time values to a PLC using just one component, instead of up to six which might have been required conventionally. This represents a significant cost saving in terms of reduced complexity of wiring and far fewer components.

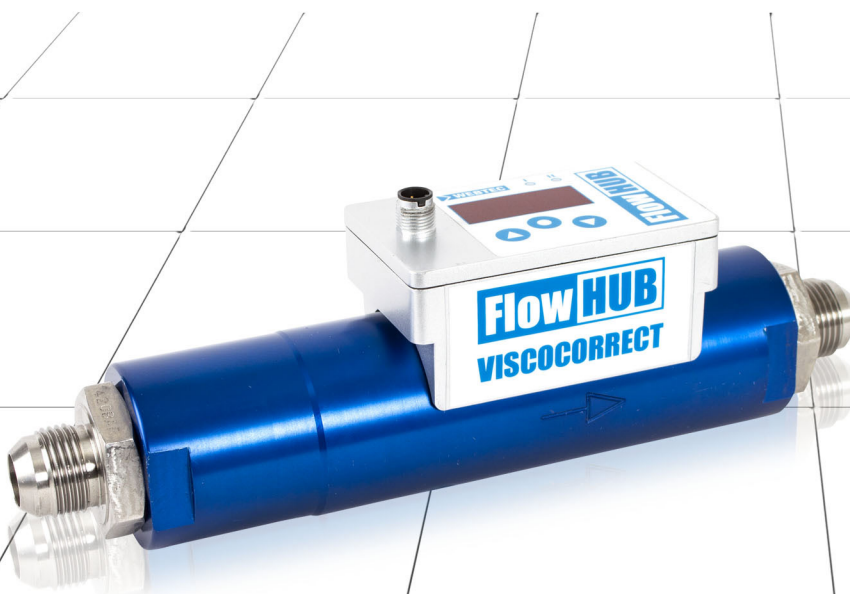
It is available in two ranges only - 30 and 240 lpm (8 and 64 US gpm) and capable to measure flow for two different fluids - water or oil (1 to 85 cSt) up to pressure of 420 bar (6,000 psi). The ViscoCorrect version has built in temperature measurement and a large bright digital display.

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Features

- **FLOW:** 1 - 240 lpm, 0.25 - 64 US gpm
- **PRESSURE:** Up to 420 bar, 6,000 psi
- **DESIGNED** for permanent installation (few wearing parts)
- **EASY** to operate
4 digit LED display
3 large keys
- **ACCURACY** better than 5%
- **REPEATABILITY** better than 1%
- **TEMPERATURE** measurement built-in
- Two programmable switches. Complete with adaptors fitted (BSP or JIC Male)
- **EASY INSTALLATION**
Mount in any orientation
Install straight after a bend.
Allows reverse flow
- **TRACEABLE** calibration on request



Hydraulic measurement and control

Specification

Functional

Flow range: see model configuration

Pressure range: 420 bar (6,000 psi)

Ambient temperature: 5 to 40 °C
(41 - 104°F)

Fluid type: hydraulic oil and water

Fluid temperature: 5 to 90 °C (41 - 194 °F)

Accuracy: Oil: +/- 5% full scale over viscosity range
1 to 85 cSt

Water: +/- 5% full scale

Repeatability:

Better than ± 1% at 21 cSt.

Response time: 50 ms

Protection: Designed to meet IP64 (NEMA Type 5)

Weight: 2 Kg (4.4 lbs)

Electrical specification

Supply voltage: 15 to 30 VDC class 2 supply only

Typical current: 35 mA

Maximum current excluding switch current: 60 mA

Switch current: 500 mA per switch max.

Switch Voltage: Supply voltage - 0.5 V

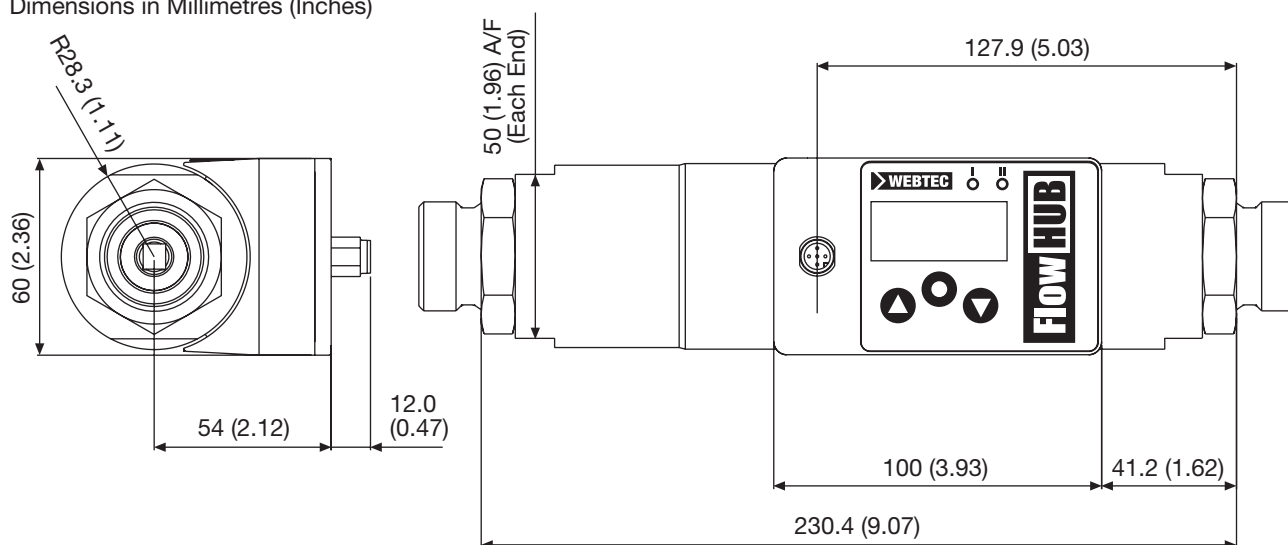
Connector type: M12 - 5 pin male

Voltage output: minimum load = 10K Ohms

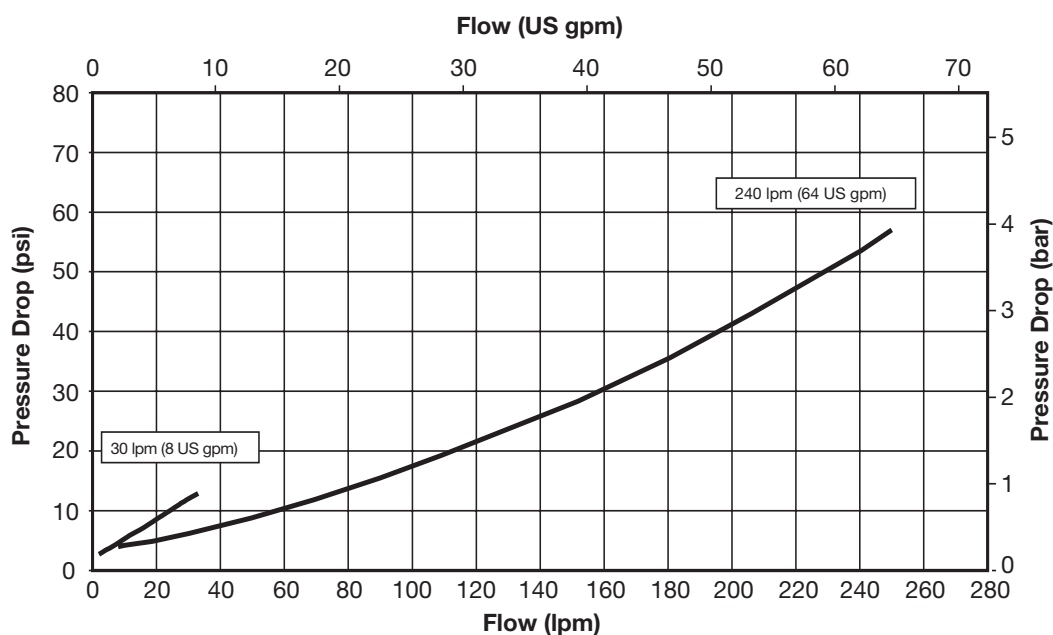
Current output: maximum load = (supply voltage x 46) - 200 ohms

Installation

Dimensions in Millimetres (Inches)



Flow versus Pressure Drop (at 21 cSt in forward direction)



Model configuration

Examples

EU **HF240** - **VISMA-6** - **B100V**
Code 1 Code 2 Code 3

Above model number is a FlowHUB ViscoCorrect: Flow range: 8 - 240 lpm, Maximum pressure: 420 bar (6,000 psi), Temperature: °C, output: 4 - 20 mA, two programmable switches, 1" BSPP adaptors.

US **HF064** - **VISMA-6** - **S100V**
Code 1 Code 2 Code 3

Above model number is a FlowHUB ViscoCorrect: Flow range 2 -64 US gpm, Maximum pressure 6,000 psi (420 bar), Temperature: °F, output: 4 - 20 mA, two programmable switches, 1-5/16" -12UN JIC adaptors.

Step 1 - Choose flow range and engineering units

EU flow range (lpm & °C)			US Flow Range (US gpm & °F)		
Code 1	Oil flow range/ Water flow range	Standard adaptors	Code 1	Oil flow range/ Water flow range	Standard adaptors
HF030	1 - 30 / 1 - 27.5	1/2" BSPP	HF008	0.3 - 8 / 0.3 - 7	1-1/16"- 12UN JIC Male
HF240	8 - 240 / 8 - 230	1" BSPP	HF064	2 - 64 / 2 - 61	1-5/16"- 12UN JIC Male

Step 2 - Choose electronics and maximum pressure

Electronic control and maximum pressure options		
Code 2	Maximum working pressure	Function description
VISMA - 6	420 bar (6,000 psi)	Two programmable switches, output 4-20 mA, for oil and water
VIS5V - 6	420 bar (6,000 psi)	Two programmable switches, output 0 - 5 Volt, for oil and water

Step 3 - Choose adaptors

Adaptors*			
BSPP options		SAE options	
Code 3	Description	Code 3	Description
B050V	1/2" BSPP	S075V	1-1/16" JIC Male
B100V	1" BSPP	S100V	1-5/16" JIC Male

*Adaptors for ViscoCorrect FlowHUB are made in Stainless Steel.

Custom configurations are available, please contact sales.

Build your own FlowHUB

- -
Code 1 Code 2 Code 3

Filtration

It is recommended that a 25-micron filter is installed in the hydraulic circuit prior to the FlowHUB.

Calibration

The above specification is met without 'wet' calibration - if full traceable calibration is required then please state at the time of ordering - this is an option and will incur an additional charge. As standard it is completed at 21 cSt (ISO 32 oil at 50 °C / 122 °F)

Construction material

Flow body: High tensile aluminium 2014 T6

Internal parts: Brass CZ121, Stainless steel 316 and 303, Steel 212A42

Adaptors: Stainless Steel 303.

Electronics enclosure: Die cast aluminium

Operation

All FlowHUBs work on the same theory - the fluid flow is used to move a magnet which is mounted within a piston, the distance moved is proportional to the flow rate. This movement is measured by a sensitive magnetic device. The piston is designed to minimise the effects of variations in temperature and viscosity and built-in flow conditioning eliminates flow swirl and allow any connection to be made at the input without the normal 10 diameters of straight pipe. The on-board electronics condition the signal and convert the linear movement to fluid flow. The FlowHUB also allows unmeasured flow in the reverse direction.

Installation

The FlowHUB can be installed in any orientation and since the unit has built-in flow conditioning, no lengths of straight tube are needed. As the unit contains a sensitive magnetic device it is recommended to mount away from strong magnetic fields and large ferrous objects, a distance of 80 mm is recommended. For this reason it is also recommended to use only the adaptors supplied as different shaped adaptors can effect the readings.

Reverse flow operation

The FlowHUB will allow reverse flow but it will not measure the flow rate. The pressure drop in reverse flow is considerably higher than that for forward flow. Please see chart below for details.

Reverse flow pressure drop

Flow range	Pressure drop at 1/2 full flow	Pressure drop at full flow
240 lpm (64 US gpm)	40 psi @ 120 lpm	130 psi @ 240 lpm
30 lpm (8 US gpm)	9 psi @ 15 lpm	28 psi @ 30 lpm

(1 bar = 14.5 psi, 10 lpm = 2.64 USgpm)

Fluid viscosity

FlowHUB ViscoCorrect will automatically adjust the flow reading over the viscosity range of 1 to 85 cSt. If the viscosity is stable and at the calibration value (standard calibration is at 21 cSt) then the accuracy is improved to +/- 3% of full scale.



APPROVED

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