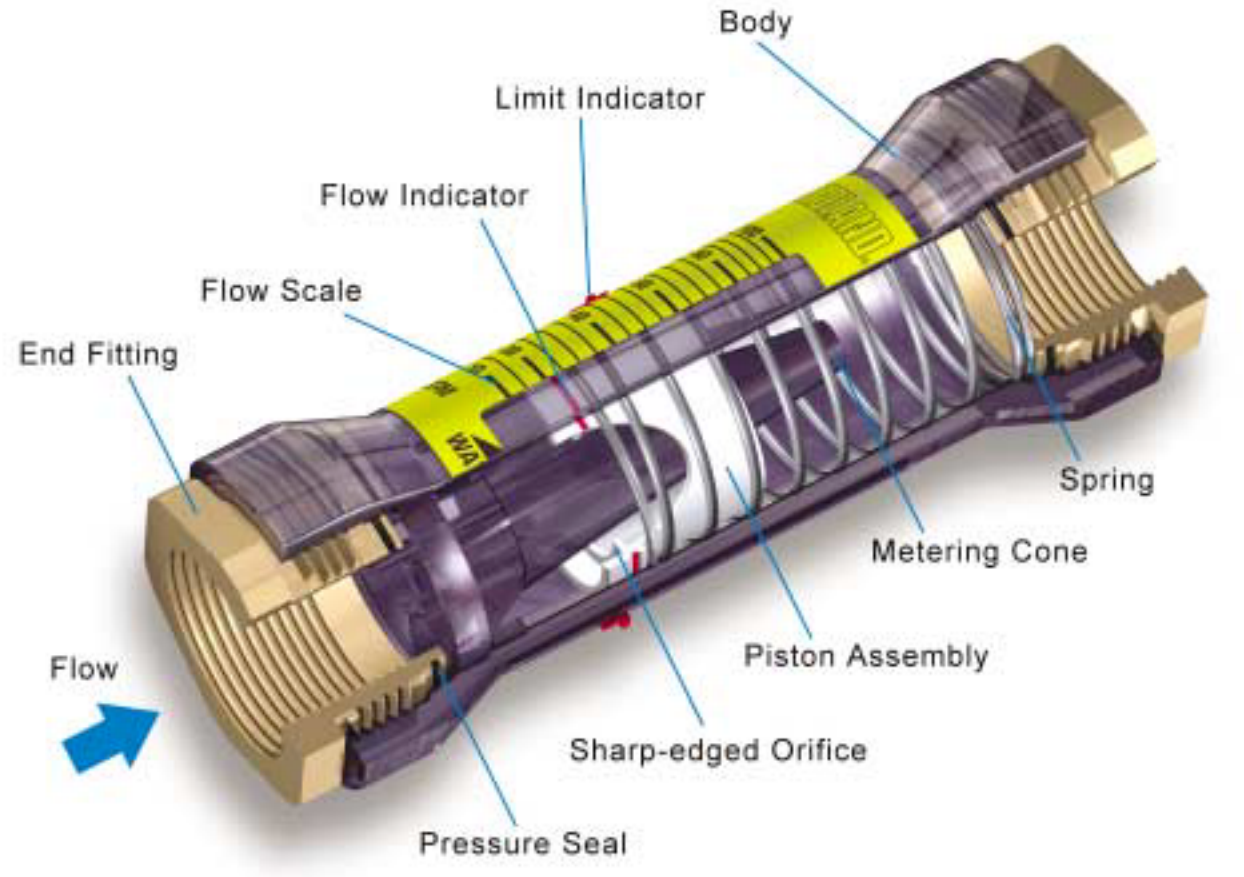
EZ-View® Flow Meters
General Design Features



OPERATING PRINCIPLE

The EZ-View Flow Meter is a variable-area instrument. A precision-molded, sharp-edged Orifice, located within the Piston Assembly, forms an annular opening with the Metering Cone. Flow through the meter creates a pressure differential across the sharp-edged orifice, moving the piston against the Spring. The piston moves precisely, in direct proportion to the rate of flow. The calibrated spring opposes flow in the forward direction. This spring decreases viscosity sensitivity and allows the flow meters to be used in any position, including inverted. The indicated flow rate is measured by viewing the red indicator line on the piston relative to the precalibrated numerical scale, mounted on the outer surface of the transparent flow meter body.

Note: The piston assembly carries a cylindrical magnet on all EZ-View Flow Alert models. This magnet is necessary to activate the AC, DC or Reed switch modules when flow conditions are too high or too low.

Operates in any position: The Hedland In-line flow meter's unique spring loaded variable-area design allows meters to be installed in any position without affecting accuracy. It can be installed into horizontal or vertical lines, or with an optional inverted flow scale, this meter can monitor flow in a downward flowing (i.e. gravity feed) line.

Easy-to-read scale: This flow meter is the most readable product in its class. A brightly colored flow scale contains bold, easy-to-read numerals and gauge marks. This enhanced resolution virtually eliminates parallax problems associated with competitive, direct reading flow meters.

Accuracy within ±5% full scale: The EZ-View Flow Meter accuracy is within ±5% of full scale while monitoring liquids and gases with viscosity and specific gravity similar to factory calibrated fluids.

Repeatability within ±1%: This is particularly important in cyclical applications, which require consistent readings.

Operating Temperature: Maximum operating temperature is 250 °F (121 °C)

Operating Pressure:
Liquid: Maximum operating pressure is 325 psi/22.4 bar.
Air/Gases: Maximum operating pressure is 125 psi/8.6 bar.

Rugged Construction: Flow meters are available in brass, stainless, and PVC fittings, with NPT or BSP ports (see ordering information table). Constructed of high-impact polysulfone plastic, this simple variable-area flow meter contains a minimum number of moving parts, offering you a reliable, trouble-free flow rate indicator to monitor a wide range of liquids and gases.

Note: Inlet and outlet pipe supports are recommended to prevent breakage.

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No flow straighteners or special piping: The Hedland design does not require special plumbing or accessories to stabilize turbulent flow. Flow meters can be installed immediately adjacent to 90-degree elbows or other components providing system design flexibility.

Filtration: Although Hedland flow meters are more contamination-tolerant than most fluid system components, 200 mesh (74 micron) or better filtration is required to assure reliable performance.

Standard flow scales:
Liquid: Standard liquid flow scales are calibrated in gallons per minute (gpm) and liters per minute (lpm) at 0.876 specific gravity for petroleum-based fluids, 1.0 specific gravity for water and water-based emulsions.

Air/Gases: Standard pneumatic flow scales are calibrated in standard cubic feet per minute (scfm) and liters per second (lps) at 1.0 specific gravity at 70 °F at 100 psi (21 °C at 6.9 bar).

Special flow scales: Special scales are available for liquids and gases in any measurement unit and/or specific gravity.

Viscosity Effect (SUS/cSt): Hedland's design utilizes a precision-molded, sharp-edged orifice and biasing calibration spring that assures operating stability and accuracy over the wide viscosity range common to many fluids. Generally, high flow models provide good accuracy over a viscosity range of 40 to 500 SUS (4.2 to 108 cSt.).

Density Effect (specific gravity): Any fluid density change from stated standards has a square-root effect on meter accuracy. Special scales can be supplied if actual specific gravity decreases accuracy beyond application limits.

Corrections for more or less dense fluids can be made to standard scales using correction equations. Refer to Hedland Catalog #140-2G – pages 4-6.

Fluid Selection Chart

				Internal Components					Fittings		
Fluid	Specific Gravity	Correction Factor of Standard Scale		Polysulfone	T300 Stainless Spring	Buna N	PH15-7 MO Stainless Retaining Ring		C360 Brass	PVC - Type 1	T303 Stainless
		Oil	Water								
Acetic Acid (Air Free)	1.06	0.909	0.971	R	R	C	R		N	R	R
Acetone	0.79	1.053	1.125	N	R	N	R		R	N	R
Alcohol Butyl (Butanol)	0.83	1.027	1.098	R	R	R	R		C	R	R
Alcohol Ethyl (Ethanol)	0.83	1.027	1.098	R	R	N	R		C	R	R
Ammonia	0.89	0.992	1.060	R	R	C	R		C	R	R
Benzene	0.69	1.127	1.204	N	N	N	N		R	N	N
Carbon Disulphide	1.26	0.834	0.891	N	R	N	R		N	N	R
Castor Oil	0.97	0.950	1.015	C	C	R	C		R	C	C
Cotton Seed Oil	0.93	0.970	1.037	R	R	R	R		R	N	R
Ethylene Glycol 50/50	1.12	0.884	0.945	R	R	R	R		R	R	R
Freon II	1.46	0.774	0.828	N	R	N	R		R	N	R
Gasoline	0.70	1.119	1.195	R	R	R	R		R	C	R
Glycerin	1.26	0.834	0.891	R	R	R	R		R	R	R
Kerosene	0.82	1.033	1.104	R	R	R	R		R	R	R
Liquid Propane (LPG)	0.51	1.310	1.400	N	R	R	R		R	R	R
Mineral Oil	0.92	0.976	1.042	R	R	R	R		R	R	R
Naphtha	0.76	1.074	1.147	N	R	R	R		N	N	R
Perchloroethylene	1.62	0.735	0.786	N	R	R	R		N	N	R
Petroleum Oil	0.876	1.000	1.068	R	R	R	R		R	R	R
Phosphate Ester	1.18	0.862	0.921	N	R	N	R		R	N	R
Phosphate Ester Base	1.26	0.833	0.891	N	R	N	R		R	N	R
Phosphoric Acid (Air Free)	1.78	0.701	0.749	R	N	C	N		N	R	N
Sea Water	1.03	0.922	0.985	R	N	R	N		N	R	N
Synthetic Petroleum Base	1.00	0.936	1.000	R	R	R	R		C	R	R
Water	1.00	0.936	1.000	R	R	R	R		R	R	R
Water Glycol 50/50	1.07	0.905	0.967	R	R	R	R		R	R	R
Water-in-oil	0.93	0.970	1.037	R	R	R	R		R	R	R
		Air/Compressed Gas									
Air	1.00	1.000		R	R	R	R		R	R	R
Argon (A)	1.38	1.175		R	R	R	R		R	R	R
Carbon Dioxide (CO_2)	1.53	1.237		R	R	R	R		R	R	R
Freon 11 (CCl_3F)	4.92	2.218		N	R	N	R		R	N	R
Freon 12 (CCl_2F)	4.26	2.060		N	R	N	R		R	N	R
Helium (HE)	0.14	0.374		C	R	R	R		R	R	R
Hydrogen (H_2)	0.07	0.265		C	R	R	R		R	N	R
Natural Gas	0.60	0.775		R	R	R	R		C	R	R
Nitrogen (N_2)	0.97	0.985		R	R	R	R		R	R	R
Oxygen (O_2)	1.10	1.049		R	R	R	R		R	R	R
Propane (C_3H_8)	1.57	1.253		N	R	R	R		R	R	R

R – Recommended N – Not Recommended C – Consult Factory