Product Catalog

Badger Meter

Variable Area Flow Meters and Flow Switches

Hedland®
Variable Area Flow Meters

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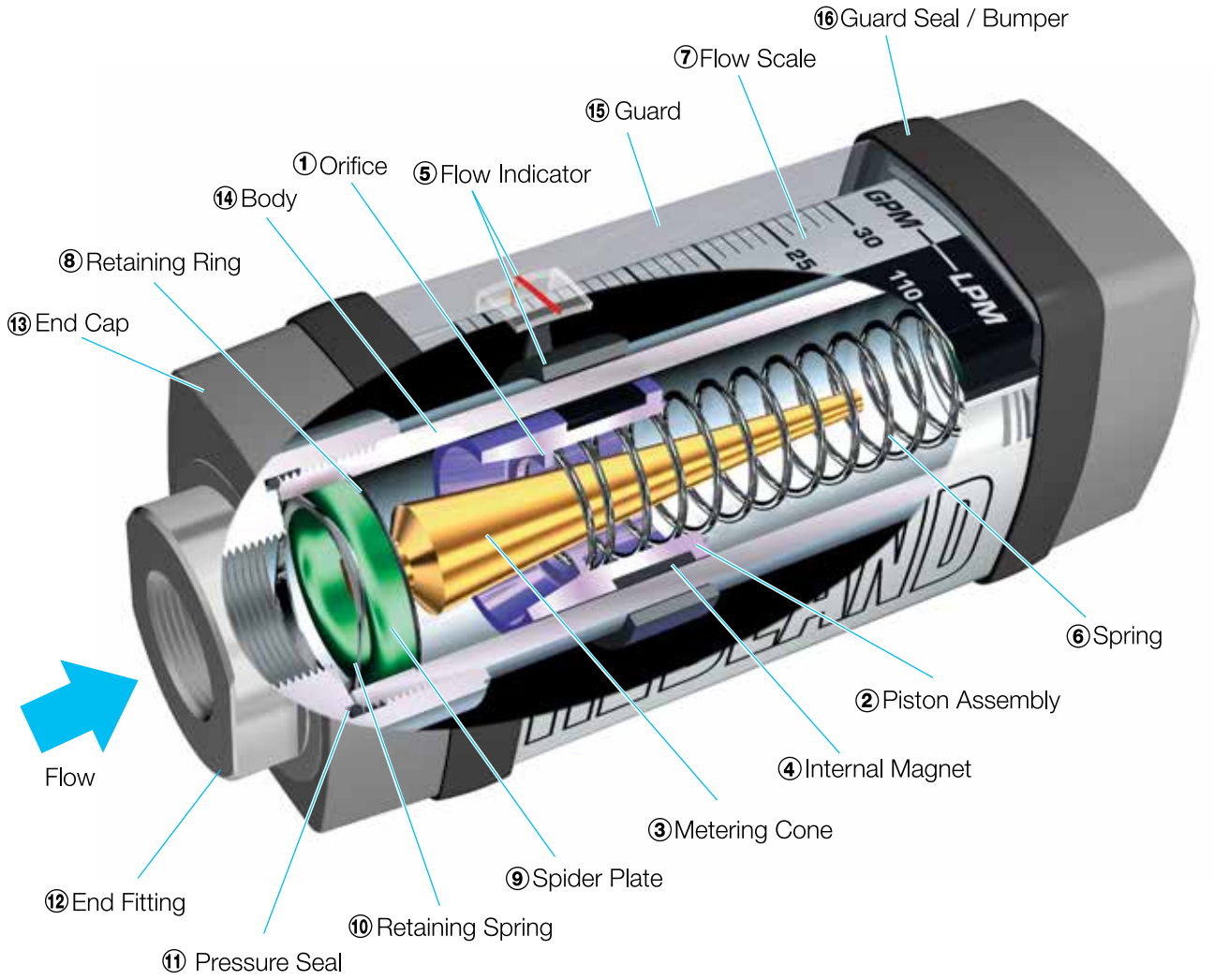
General Design Features



OPERATING PRINCIPLE

The Hedland flow meter is a variable area instrument. A precision machined, sharp-edged Orifice ① located within the Piston Assembly ②, forms an annular opening with the contoured Metering Cone ③. The Piston Assembly carries a cylindrical PPS/Ceramic Magnet ④ that is magnetically coupled to an external Flow Indicator ⑤ that moves precisely, in direct response to movement of the Piston. A calibrated Spring ⑥ opposes flow in the forward direction. This spring decreases viscosity sensitivity and allows the flow meter to be used in any position, including inverted.

Bi-directional flow capability: If required, a reverse flow by-pass option is available and is depicted on individual product pages. Note that flow is measured in the forward direction only.

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. An optional inverted flow scale is also available.

Easier to read linear scale: This flow meter is the most readable product in its class. Brightly colored indicators move over the graduated, linear Flow Scale ⑦ which contains bold, easy-to-read numerals and gauge marks. This enhanced resolution virtually eliminates parallax problems associated with competitive, direct reading flow meters.

360° Rotatable guard/scale: Hedland's unique design allows the meter to be installed in any orientation without regard to scale direction. Once the meter is permanently installed, the guard/scale can be rotated 360° to optimize readability.

Rugged construction: Flow meters are available in anodized aluminum, brass, T303 and T316 stainless steel, with SAE, NPTF, BSPP, and Code 61 and Code 62 4-bolt flanged ports. This easy-to-read flow meter is a reliable and trouble-free flow rate indicator, monitoring a variety of liquids and gases (including aggressive chemicals), under a wide range of pressures, temperatures and rigorous conditions encountered in industrial applications.

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 to provide greatest system design flexibility, while saving installation time and money.

Relatively insensitive to shock and vibration: This unique design is inherently less sensitive to shock and vibration than other variable area flow meters. The new, improved coupling forces between the internal and external magnets greatly reduce the chance of decoupling the flow indicator under high flow and pressure transients. The magnetic coupling also eliminates the need for mechanical linkages that wear, loosen and leak over the functional life of competitive meters.

Technical Information

Liquid & Gas Flow Meters

REPEATABILITY WITHIN ±1%:
Flow meter repeatability is within ±1%. This is particularly important in cyclical applications, which require consistent readings.

OPERATING TEMPERATURE:
Standard operating temperature range is -20 to +240 °F (-29 to +116 °C). High Temperature flow meter range is -20 to +400 °F (-29 to +204 °C) continuous, and +400 to +500 °F (+204 to +260 °C) intermittent. Maximum operating pressure of aluminum and brass body flow meters is reduced for temperatures over 240 °F (116 °C). Stainless steel flow meters do not require derating. Refer to pressure derating charts in the High Temperature flow meter section.

OPERATING PRESSURE:
Liquids: Maximum operating pressure of aluminum and brass flow meters is 3,500 psi (241 bar) in ¼ to 1½ inch sizes and 800 psi (55 bar) for 3 inch meters. Type 303 and 316 stainless steel flow meters have a 6,000 psi (414 bar) maximum operating pressure in ¼ and ½ inch models and 5,000 psi (345 bar) maximum operating pressure in ¾ to 1½ inch models. All liquid flow meters are designed with a 3:1 safety factor. High temperature affects maximum operating pressure. Refer to pressure derating charts in the High Temperature flow meter section.

Air/Gases: Maximum operating pressure of aluminum and brass flow meters is 1,000 psi (69 bar) in ¼ to 1½ inch sizes and 250 psi (17 bar) for 3 inch meters. Type 303 and 316 stainless steel flow meters have a 1,500 psi (103 bar) maximum operating pressure. All air/gas flow meters are designed with a 10:1 safety factor. All pneumatic test kits are limited to a maximum operating pressure of 600 psi (41 bar) by the control valve pressure rating. Consult factory for high pressure use.

Fatigue Rating: per NFPA T2.6.1R1-1991 - C/90 (see page 7 for further details).

PRESSURE DROP (ΔP):
Refer to pages 61 to 66 for Flow vs. Pressure Drop data for oil, phosphate ester, water-based fluids, water, and air.

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

CALIBRATION:
Oil, PE and WBF flow meters are calibrated with 0.876 specific gravity, 140 SUS (32cSt) hydraulic oil, irrespective of final fluid use. After calibration, PE and WBF flow meters are computer corrected for 1.18 s.g. and 1.0 s.g. respectively. Water meters are calibrated with water at 1.0 specific gravity. Air and gas meters are calibrated with air at 1.0 specific gravity (70 °F at 100 psi).

FLOW METER CERTIFICATION
There are three (3) types of certificates available with the Hedland Flow Meter:
1. Certificate of Conformance
2. Calibration Certificate
3. Certified Drawing

Certificate of Conformance: This document states that the specified Hedland Flow Meter meets the performance standards indicated in the Hedland Catalog. The certificate is signed by the Corporate Quality Assurance Manager or authorized delegate and should meet most needs for performance certification.

Calibration Certificate: This document contains the actual flow vs. indicated flow of a specific flow meter. It documents the error of each flow point relative to the stated tolerance limit.The master meters used to calibrate flow meters are traceable to the National Institute for Standards and Testing (NIST).

Meter Type	Traceable Range
Petroleum-based	0.02 to 400 GPM/0.08 to 1514 LPM
Water-based	0.02 to 325 GPM/0.08 to 1230 LPM
Air/gas	0.5 to 1000 SCFM/0.24 to 472 LPS

Certified Drawings: Certified assembly prints are available and contain:
1. Final meter assembly with part number and dimensions
2. Parts list by part number and description
3. Authorized drawing signatures

Reproducible ANSI A-D size drawings are available on standard bond paper. Large size drawings can also be reduced to ANSI A or B sizes. ACAD R13 and 2000 drawings can be sent by electronic format when requested.

Certificate of Origin and Flow Meter Tags also available upon request.

Liquid Flow Meter
Application Information

STANDARD FLOW SCALES:
Standard liquid flow scales are calibrated in gpm and lpm at 0.876 specific gravity for petroleum-based fluids, 1.18 s.g. for phosphate ester based fluids and 1.0 s.g. for water and water-based fluids. For field conversion of the standard scale to other fluids, see liquid propane example below.

SPECIAL FLOW SCALES:
Special scales are available for liquids and gases in any measurement unit, and other fluid viscosities and/or specific gravities.

VISCOSITY EFFECT (SUS/cSt):
Hedland's design utilizes a precision machined, sharp-edged orifice and biasing calibration spring that ensures operating stability and accuracy over the wide viscosity range common to many fluids. Generally, high flow models of each meter size 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 proportional 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 the following correction factor:

$\sqrt{1.0 / \text{specific gravity}}$, for water/water-based meters

$\sqrt{0.876 / \text{specific gravity}}$, for petroleum-based meters

Example: Measuring liquid propane with petroleum meter
Fluid ~ Liquid Propane (LPG)
Scale Measured Flow ~ 28.5 gpm

1. Select (LPG) specific gravity from the Fluid Selection Chart = 0.51
2. Since petroleum meter is utilized, select petroleum formula
3. Divide 0.876 by 0.51 = 1.72
4. Take square root of 1.72 = 1.31 (correction factor)
5. Multiply scale reading by 1.31, 28.5 (indicated flow) × 1.31(correction factor) = 37.3 gpm (actual flow of liquid propane)

This correction may be ignored for petroleum-based hydraulic fluids.

Fluid Selection Chart

		Correction Factor of Standard Scale		Internal Body Material				External Press. Seals		Dust Guard		
Fluid	Specific Gravity	Oil	Water	Aluminum	Brass	T316 SST	T303 SST	Vitron®	EPR	Polycarbonate	Nylon	Pyex®
Acetic Acid (Air Free)	1.06	0.909	0.971	C	N	R	R	R	R	C	N	R
Acetone	0.79	1.053	1.125	R	R	R	R	N	R	N	R	R
Alcohol Butyl (Butanol)	0.83	1.027	1.098	C	C	R	R	C	R	R	R	R
Alcohol Ethyl (Ethanol)	0.83	1.027	1.098	C	C	R	R	C	R	R	N	R
Ammonia	0.89	0.992	1.060	R	C	R	R	N	R	N	C	R
Benzene	0.69	1.127	1.204	C	R	R	C	R	N	N	R	R
Carbon Disulphide	1.26	0.834	0.891	R	N	R	R	R	N	N	R	R
Castor Oil	0.97	0.950	1.015	C	R	R	C	R	N	C	C	R
Cotton Seed Oil	0.93	0.970	1.037	C	R	R	R	R	N	R	R	R
Ethylene Glycol 50/50	1.12	0.884	0.945	R	R	R	R	R	R	R	C	R
Freon II	1.46	0.774	0.828	R	R	R	R	R	N	R	R	R
Gasoline	0.70	1.119	1.195	R	R	R	R	R	N	C	R	R
Glycerin	1.26	0.834	0.891	R	R	R	R	R	R	R	C	R
Kerosene	0.82	1.033	1.104	R	R	R	R	R	N	R	R	R
Liquid Propane (LPG)	0.51	1.310	1.400	R	R	R	R	R	N	N	R	R
Mineral Oil	0.92	0.976	1.042	R	N	R	R	R	N	R	R	R
Naphtha	0.76	1.074	1.147	R	N	R	R	R	N	C	R	R
Perchloroethylene	1.62	0.735	0.786	C	N	R	R	R	N	N	N	R
Petroleum Oil	0.876	1.000	1.068	R	R	R	R	R	N	R	R	R
Phosphate Ester	1.18	0.862	0.921	R	R	R	R	N	R	N	R	R
Phosphate Ester Base	1.26	0.833	0.891	R	R	R	R	N	R	N	R	R
Phosphoric Acid (Air Free)	1.78	0.701	0.749	N	N	R	N	R	N	R	N	R
Sea Water	1.03	0.922	0.985	N	N	C	C	N	R	R	R	R
Synthetic Petroleum Base	1.00	0.936	1.000	R	C	R	R	R	N	R	R	R
Water	1.00	0.936	1.000	N	R	R	R	N	R	R	R	R
Water Glycol 50/50	1.07	0.905	0.967	R	R	R	R	R	N	R	R	R
Water-in-oil	0.93	0.970	1.037	R	R	R	R	N	R	R	R	R

R - Recommended N - Not Recommended C - Consult Factory

Pneumatic Flow Meter

Application Information

SELECTING A HEDLAND PNEUMATIC FLOW METER

Flow meters are offered in Aluminum, Brass, T303 and T316 Stainless Steel. This wide alloy selection allows for applications from relatively benign dry compressed air to corrosive gases such as hydrogen chloride or sulfur dioxide.

Aluminum, Brass and Type 303 Stainless Steel are available in four configurations: Standard inlet and outlet ports, an extended inlet cap fitted with a pressure gauge, an extended inlet cap with a ¼ inch NPTF plugged gauge port, and a test kit with an extended inlet cap fitted with a 160 psi pressure gauge and control valve on the outlet.

Consult the factory for the configuration best suited to your application.

STANDARD FLOW RATE SCALES – AIR/GASES

The Hedland Pneumatic Flow Meter is offered with a standard Multi-Pressure Flow Scale.

The **Multi-Pressure Flow Scale** (Figure 1) has a vertically graduated scale, calibrated for air in standard cubic feet per minute (scfm) at 1.0 s.g. (70 °F at 100 psi), or liters per second (lps) at 1.0 s.g. (21 °C at 6.9 bar). The multi-pressure scale design allows for use at line pressures from 40 to 130 psi in 10 psi increments (3.0 to 9.0 bar in 1 bar increments). This configuration **requires** that a pressure gauge be installed at the meter inlet.

To use, the operator reads the inlet gauge pressure and selects the appropriate vertical line or interpolated value closest to the gauge reading and follows the line until it intersects the brightly colored horizontal indicator bar. The flow rate in scfm/lps is read by taking the intersection point and following the slope of the closest diagonal line to a scale value and interpolating the scfm/lps flow rate. No further calculations are required.

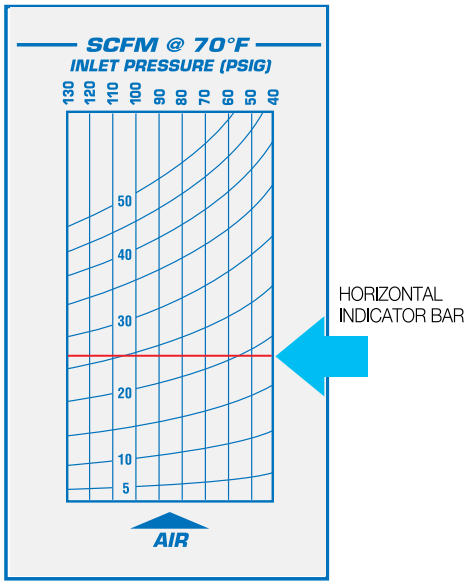


Figure 1. Multi-Pressure Flow Scale

A special **Single Pressure Flow Scale** is available in U.S. and metric units for an additional charge, see Price and Availability Digest, Form 000141. This is a graduated scale, calibrated for air in standard cubic feet per minute (scfm) at 1.0 s.g. (70 °F at 100 psi), or liters per second (lps) at 1.0 s.g. (21 °C at 6.9 bar), see Figure 2, Single Pressure Flow Scale, for further details. A standard cubic foot of air is defined as a cubic foot of air at 70 °F, at atmospheric pressure 14.7 psia at sea level. Since it is impossible to flow air at "standard" conditions the scale is calibrated for an inlet condition of 100 psi (6.9 bar) at 70 °F (21 °C). A correction factor must be calculated to determine the actual air volume. Each meter is supplied with the Conversion Chart shown in Figure 3.

Hedland can also supply a specially calibrated scale for higher or lower fixed pressures in any measurement unit, and other fluid specific gravities. Consult factory for details.

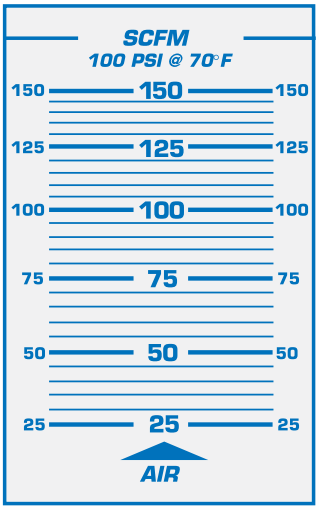


Figure 2. Single Pressure Flow Scale

Hedland®

Conversion Information

Chart Calculations and Flow Meter Sizing (SCFM Applications)

Compressibility of Gases

Since gases are significantly compressible, their density varies with pressure and temperature. Tables 1 & 2 of the Conversion Chart shown in Figure 3 are used to convert "indicated" scfm flow rates to "actual" scfm flow rates for your application.

Effects of Specific Gravity

Standard scales are calibrated for air with a specific gravity of 1.0. Table 3 of the Conversion Chart shown in Figure 3 is used to calculate "actual" scfm flow rates of gases with a specific gravity other than 1.0.

Example: Measuring Natural Gas with Air Meter

Operating Parameters

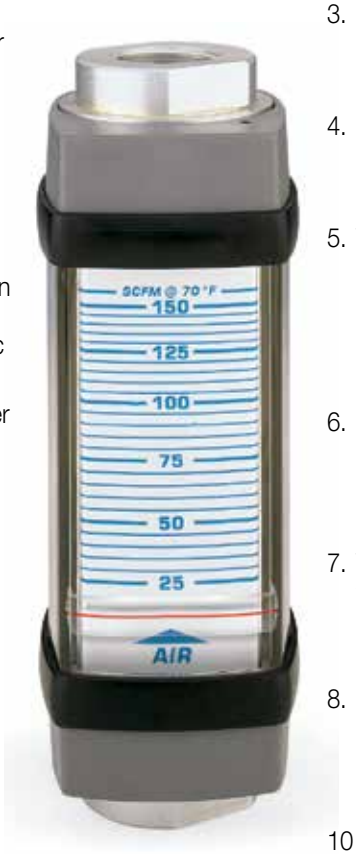
Fluid ~ Natural Gas
Line Pressure ~ 140 psig
Temperature ~ 40 °F
Desired Maximum Flow ~ 85 scfm
Pressure Drop ~ 10 psid maximum
Port Size ~ ½ inch NPTF desired

1. Pressure correction for 140 psi

$$f_1 = \sqrt{\frac{114.7}{14.7 + 140}} = \sqrt{\frac{114.7}{154.7}} = .861$$

2. Temperature correction for 40° F

$$f_2 = \sqrt{\frac{460 + 40}{530}} = \sqrt{\frac{500}{530}} = .971$$



3. Specific gravity correction for natural gas, s.g. = 0.60

$$f_3 = \sqrt{.60} = .775$$

4. Make total correction calculation. f_{total}

$$f_{total} = f_1 \times f_2 \times f_3 = .861 \times .971 \times .775 = .648$$

5. To determine actual flow vs. indicated flow: read indicated flow at 100 psi vertical line on the multipressure scale (see Figure 1) and apply correction factor.

$$\text{scfm (actual)} = \frac{55 \text{ scfm (indicated)}}{.648\ (f_{total})} = 84.9$$

6. 10 psid maximum
See page 66 for pressure drop (ΔP) to find the appropriate size/flow range to meet the 10 psid requirements.

7. To determine which standard Hedland meter is required to achieve desired maximum flow of 85 scfm.

$$85 \text{ scfm (max flow)} \times .648\ (f_{total}) = 55.1 \text{ scfm}$$

8. From the example – model H671A-100 or H771A-100 can be selected. Both meet the 55.1 scfm flow requirement and operate with less than 10 psid. The actual scale range can be calculated as follows:

10 scfm (standard) ÷ .648 (f_{total}) = 15.4 scfm (actual)
100 scfm (standard) ÷ .648 (f_{total}) = 154.3 scfm (actual)

DETERMINE FLOW RATES USING DIFFERENT PRESSURES & TEMPERATURES

$$\text{scfm (actual)} = \frac{\text{scfm (indicated)}}{f_1 \times f_2 \times f_3}$$

Where f_1 = Conversion factor for inlet pressure
f_2 = Conversion factor for temperature
f_3 = Conversion factor for specific gravity

TABLE 1 PRESSURE CORRECTION FACTOR (f_1) Operating Pressure

psig	25	50	75	100	125	150	175	200	225	250
BAR	1.7	3.5	5.2	6.9	8.6	10.4	12.1	13.8	15.5	17.2
kPa	172	345	517	689	862	1034	1207	1379	1551	1724
f_1	1.700	1.331	1.131	1.00	.902	.835	.778	.731	.692	.658

$$f_1 = \sqrt{\frac{114.7}{14.7 + \text{psig}}} \quad f_1 = \sqrt{\frac{7.914}{1.014 + \text{BAR}}} \quad f_1 = \sqrt{\frac{790.857}{101.357 + \text{kPa}}}$$

TABLE 2 TEMPERATURE CORRECTION FACTOR (f_2)

°F	+10	+30	+50	+70	+90	+110	+130	+150	+170	+190
°C	-12.2	-1.1	+9.9	+21.0	+32.1	+43	+54	+65	+76	+88
f_2	.942	.962	.981	1.00	1.018	1.037	1.055	1.072	1.090	1.107

$$f_2 = \sqrt{\frac{460 + °F}{530}} \qquad f_2 = \sqrt{\frac{273 + °C}{293}}$$

TABLE 3 SPECIFIC GRAVITY CORRECTION FACTOR (f_3)

$$f_3 = \sqrt{\text{Sp. Gr.}}$$

Figure 3. Conversion Chart

Fluid Selection Chart

Fluid	Specific Gravity	Correction Factor of Standard Scale	Internal Body Material				External Press. Seals		Dust Guard		
			Aluminum	Brass	T316 SST	T303 SST	Viton®	EPR	Polycarbonate	Nylon	Pyrex®
Air	1.0	1000	R	R	R	R	R	R	R	R	R
Argon	1.38	1.175	R	R	R	R	R	R	R	R	R
Carbon Dioxide (CO_2)	1.53	1.237	R	R	R	R	R	R	R	R	R
Freon 11 (CCl_3F)	4.92	2.218	R	R	R	R	R	R	R	R	R
Freon 12 (CCl_2F)	4.26	2.060	R	R	R	R	R	R	R	R	R
Helium (HE)	0.14	0.374	R	R	R	R	R	R	R	R	R
Hydrogen (H_2)	0.07	0.265	R	R	R	R	R	R	R	R	R
Natural Gas	0.60	0.775	C	C	R	C	R	N	C	R	R
Nitrogen (N_2)	0.97	0.985	C	C	R	R	R	R	C	R	R
Oxygen (O_2)	1.10	1.049	R	R	R	R	R	R	R	R	R
Propane (C_3H_8)	1.57	1.253	R	R	R	R	R	N	N	R	R

R - Recommended N - Not Recommended C - Consult Factory

Figure 4. Specific Gravity and Correction Factor for Common Gases

Pyrex is a registered trademark of Corning, Inc. Viton is a registered trademark of DuPont Dow Elastomers

Conversion Information

Chart Calculations and Flow Meter Sizing (ACFM Applications)

Example:
Operating Parameters
Fluid ~ Air
Line Pressure ~ 35 psig
Temperature ~ 70 °F
Desired Maximum Flow ~ 20 acfm

Since acfm measurements are not relative to the standard 1 atmosphere condition (14.7 psia), the volume of a cubic foot at 35 psig must first be related to the volume it would occupy at 1 atmosphere. The two volumes are related through Boyle's Law.

Since, $V \propto \frac{1\ Atm}{\times\ Atm}$, then $V_1P_1 = V_2P_2$, and

V_1 = 20 acfm

P_1 = 35 psig + 14.7 psig

V_2 = scfm

P_2 = 14.7 psia

$$V_2 = \frac{V_1P_1}{P_2} = \frac{20 \times (35 + 14.7)}{14.7} = 67.62 \text{ scfm}$$

To correct for density at 35 psig; Use Figure 3 (Tables 1, 2 & 3) on page 6.

$$f_1 = \sqrt{\frac{114.7}{14.7 + 35}} = 1.52$$

$f_2 = 1.0$

$f_3 = 1.0$

$f_1 \times f_2 \times f_3 = 1.52 \times 1.0 \times 1.0 = 1.52 = f_{total}$

$V_2 \times f_{total}$ = Hedland indicated flow

67.62 × 1.52 = 102.78 scfm indicated

A Hedland meter installed in this system would indicate 103 scfm. Hedland can also supply a custom calibrated scale for higher or lower fixed pressures in any measurement unit, and other fluid specific gravities. Consult factory for details.

High Cycle/High Pressure Fatigue Rating:
per NFPA/T2.6.1 R1 - 1991, C/90

The method of verifying rated fatigue pressure (or establishing the rated burst pressure, or both) of the pressure containing envelope conforms to NFPA/T2.6.1 R1, Fluid power systems and products – Method for verifying the fatigue and establishing the burst pressure ratings of the pressure containing envelope of a metal fluid power component.

Meter	Aluminum		Brass		Stainless Steel	
	RFP*	Cycles	RFP*	Cycles	RFP*	Cycles
¼	2000	1×10^6	**		3000	1×10^6
½	2000	1×10^6	**		3000	1×10^6
¾	1500	1×10^6	**		3000	1×10^6
1	1500	1×10^6	**		3000	1×10^6
1¼	1000 1500	1×10^6 70×10^3	**		3000	1×10^6
1½	1000 1500	1×10^6 70×10^3	**		3000	1×10^6

* RFP = Rated Fatigue Pressure, psi
** Consult Factory

Common Conversions

To Convert	Into…	Multiply by…
Barrel (U.S. liquid)	Gallons	31.5
Bars	Kgs/sq meter	10,200
Bars	Pounds/sq in	14.50
Centigrade	Fahrenheit	(C° x 9.5) +32
Cubic centimeters	Cu feet	.00003521
Cubic centimeters	Cu inches	0.06102
Cubic centimeters	Cu meters	.000001
Cubic centimeters	Gallons (U.S. liquid)	.0002642
Cubic centimeters	Liters	0.001
Cubic feet	Cu cms	28,320
Cubic feet	Cu inches	1,728
Cubic feet	Cu meters	0.02832
Cubic feet	Gallons (U.S. liquid)	7.48052
Cubic feet	Imperial gallons	6.23210
Cubic feet	Liters	28.317
Cubic feet/min	Cu cms/min	28,317
Cubic feet/min	Gallons/min	7.481
Cubic feet/min	Liters/min	28.32
Cubic feet/sec	Gallons/min	448.83
Cubic inches	Cu cms	16.39
Cubic inches	Cu feet	.0005787
Cubic inches	Cu meters	.00001639
Cubic inches	Gallons (U.S. liquid)	.004329
Cubic inches	Imperial gallons	.0036065
Cubic inches	Liters	0.01639
Cubic meters	Cu cms	1,000,000
Cubic meters	Cu feet	35.31
Cubic meters	Cu inches	61,023
Cubic meters	Gallons (U.S. liquid)	264.2
Cubic meters	Liters	1,000
Degree Fahrenheit	Degree Celsius	t °C = (t °F – 32)/1.8
Feet/min	Cms/sec	0.5080

To Convert	Into…	Multiply by…
Feet/min	Meters/min	0.3048
Gallons/min	Cu cms/min	3,785.412
Gallons/min	Cu feet/min	.1337
Gallons/min	Liters/min	3.785
Imperial gallons	Cu feet	.160459
Imperial gallons	Cu inches	277.274
Imperial gallons	Liters	4.54374
Imperial gallons	U.S. gallons	1.20032
Kilograms/sq cm	Pounds/sq ft	2,048
Kilograms/sq cm	Pounds/sq in	14.22
Kilograms/sq meter	Bars	.00009807
Kilograms/sq meter	Pounds/sq in	.001422
Liters	Cu cm	1,000
Liters	Cu feet	0.0353145
Liters	Cu inches	61.0234
Liters	Cu meters	0.001
Liters	Gallons (U.S. liquid)	0.264170
Liters	Imperial gallons	.220083
Liters/min	Cu cms/min	1000
Liters/min	Cu feet/min	.035
Liters/min	Gallons/min	.264
Pascal (Pa)	Bar	.00001
Pascal (Pa)	Pounds/sq in	.000145
Pounds/sq inch	Kgs/sq meter	703.1
Pounds/sq inch	Pascal (Pa)	6,895
Pounds/sq inch	Bar	.069
U.S. gallons	Imperial gallons	.83267
U.S. gallons	Cu cms	3785
U.S. gallons	Cu feet	.133681
U.S. gallons	Cu inches	231
U.S. gallons	Cu meters	.3785
U.S. gallons	Liters	3.785

Viscosity Conversion Table

	Saybolt Universal Seconds (SSU)	ISO-VG	CentiStoke	CentiPoise*	Typical Brands/Liquids at 100 °F
Standard Range	31	2	1.0	0.876	Water
	35	3	2.5	2.19	–
	40	5	4.2	3.68	–
	45	5/7	5.9	5.17	–
	50	7	7.5	6.57	Kerosene
	55	7/10	8.8	7.71	Atlantic Richfield/Duro 55 Hyd. Oil
	60	10	10.5	9.20	Monsanto/Skydrol - 500 A
	70	10/15	13.2	11.56	Mobil/Aero HFA Hydraulic Oil
	80	15	15.7	13.75	No 4 Fuel Oil
	90	22	18.2	15.94	Stauffer Chemical/Fyrquel 90
	100	22	20.6	18.05	Conoco/Syncon Synthetic AW Hyd. Oil
	150	32	32.0	28.03	Mobil/DTE 24 Hydraulic Oil
	200	46	43.2	37.84	Citco/Glycol FR-40XD (Oil in Water)
	300	68	65.0	56.94	SAE 20 Crankcase Oil
	400	68/100	86.0	75.34	Sunoco/Sunvis 41 Hydraulic Oil
Extended Range**	500	100	108	94.61	SAE 30 Crankcase Oil
	750	150	162	141.91	SAE 40 Crankcase Oil
	1000	220	216	189.22	Mobil/Paper Machine Oil - Type K
	1500	320	323	282.95	SAE 50 Crankcase Oil
	2000	460	431	377.56	Amoco/American Industrial Oil - No. 460
	3000	680	648	567.65	SAE 140 Gear Oil
	4000	1000	862	755.11	SAE 250 Gear Oil

* Centipoise are given for oil of 0.876 specific gravity. Relationship: centistokes x specific gravity = centipoise

** Meters measuring fluid within this range may require custom scales. Consult factory for details.

3500/6000 PSI Flow Meters

For Petroleum Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone①
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926-1*, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 61** and **Code 62: SAE**J518

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temp. meters, see page 13

PRESSURE RATING:

Aluminum / Brass Operating: 3,500 psi/241 bar max. (800 psi/55 bar max. for 3" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

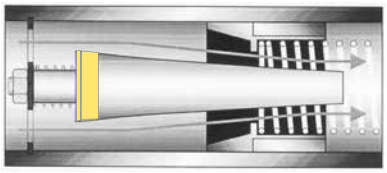
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series and 4,000 psi/276 bar max. for code 62 flange) with a 3:1 safety factor.
For High Cycle Applications: See page 7

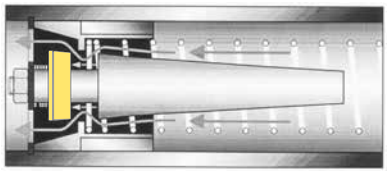
PRESSURE DROP: See Ordering Information Table, page 10.
For detailed differential pressure charts, see page 55.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

* SAE ports will accept both light-duty (SAE J1926-3) and heavy-duty (SAE J1926-2) stud ends, except 1/4 (SAE 6) size, which will accept only light-duty (SAE J1926-3) studs ends.

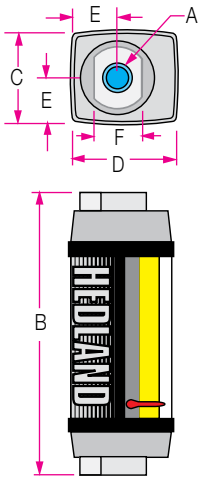
REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.


Normal Flow Direction


Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**
¼ (SAE 6)	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½ (SAE 10)	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼ (SAE 20)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½ (SAE 24)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)



NOTE: Dimensions for 1½" Code 62, 3" and 3" Code 61 can be found on page 78. Weights for all sizes can be found on page 79.

① 3 inch models have Celcon® piston/piston ring

Celcon is a registered trademark of Hoechst Celanese Corp. Viton is a registered trademark of DuPont Dow Elastomers

Hedland®

3500/6000 PSI Flow Meters

For Petroleum Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE②	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP③	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	.02 - 0.2 .05 - 0.5 0.1 - 1.0 0.2 - 2.0	0.1 - 0.75 0.2 - 1.9 0.5 - 3.75 1 - 7.5	3.5 (.24) 3.0 (.21) 4.0 (.28) 6.0 (.41)	4.0 (.28) 5.0 (.35) 9.0 (.62) 13 (.90)		H200 * - 002 - † H200 * - 005 - † H200 * - 010 - † H200 * - 020 - †	H201 * - 002 - † H201 * - 005 - † H201 * - 010 - † H201 * - 020 - †	H202 *-002 - † H202 *-005 - † H202 *-010 - † H202 *-020 - †	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H600 * - 001 - † H600 * - 002 - † H600 * - 005 - † H600 * - 010 - † H600 * - 015 - †	H601 * - 001 - † H601 * - 002 - † H601 * - 005 - † H601 * - 010 - † H601 * - 015 - †	H602 *-001 - † H602 *-002 - † H602 *-005 - † H602 *-010 - † H602 *-015 - †	A	B	6000 PSI S	RF
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H700 * - 002 - † H700 * - 005 - † H700 * - 010 - † H700 * - 020 - † H700 * - 030 - †	H701 * - 002 - † H701 * - 005 - † H701 * - 010 - † H701 * - 020 - † H701 * - 030 - †	H702 *-002 - † H702 *-005 - † H702 *-010 - † H702 *-020 - † H702 *-030 - †	A	B	5000 PSI S	RF
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24 (1.7) 34 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H760 * - 002 - † H760 * - 005 - † H760 * - 010 - † H760 * - 020 - † H760 * - 030 - † H760 * - 040 - † H760 * - 050 - †	H761 * - 002 - † H761 * - 005 - † H761 * - 010 - † H761 * - 020 - † H761 * - 030 - † H761 * - 040 - † H761 * - 050 - †	H762 *-002 - † H762 *-005 - † H762 *-010 - † H762 *-020 - † H762 *-030 - † H762 *-040 - † H762 *-050 - †	A	B	5000 PSI S	RF
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H800 * - 030 - † H800 * - 050 - † H800 * - 075 - † H800 * - 100 - † H800 * - 150 - †	H801 * - 030 - † H801 * - 050 - † H801 * - 075 - † H801 * - 100 - † H801 * - 150 - †	H802 *-030 - † H802 *-050 - † H802 *-075 - † H802 *-100 - † H802 *-150 - †	A	B	5000 PSI S	RF
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H860 * - 030 - † H860 * - 050 - † H860 * - 075 - † H860 * - 100 - † H860 * - 150 - †	H861 * - 030 - † H861 * - 050 - † H861 * - 075 - † H861 * - 100 - † H861 * - 150 - †	H862 *-030 - † H862 *-050 - † H862 *-075 - † H862 *-100 - † H862 *-150 - †	A	B	5000 PSI S	RF
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H808 * - 030 - † H808 * - 050 - † H808 * - 075 - † H808 * - 100 - † H808 * - 150 - †			A	B	4000 PSI S	RF
3"	10 - 200 20 - 300	50 - 750 100 - 1100	11 (.76) 11 (.76)	17 (1.1) 18 (1.2)		Not Available	H901 * - 200 H901 * - 300	H902 *-200 H902 *-300	800 PS A	 B	Not Available	
3" Code 61	10 - 200 20 - 300	50 - 750 100 - 1100	11 (.76) 11 (.76)	17 (1.1) 18 (1.2)		H909 * - 200 H909 * - 300			800 PS A	 B	Not Available	

NOTE: RF option is not available with standard brass flow meters.

② Fractional sizes apply to NPTF and BSPP.

③ 3 inch models have BSPT (BS21) threads

(example) **H 701 A - 030 - RF**

3500/6000 PSI Test Kits

For Petroleum Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

SPECIFICATIONS:

MATERIALS:
2024 – T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 – T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:
Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" and 1" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 12.
For detailed differential pressure charts, see page 55.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

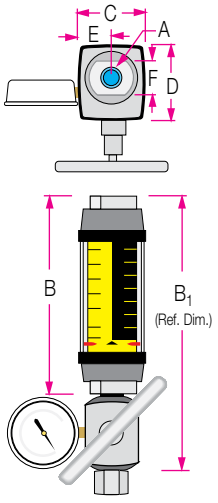
PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum and brass test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: ½", ¾" and 1" series - needle valve;
Produce ΔP up to 3,500 psi/241 bar PSID and 6,000 psi/414 bar PSID.

DIMENSIONS:

A	B	B_1	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
½ (SAE 10)	6.6 (168)	10.3 (262)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)

NOTE: Weights for all sizes can be found on page 79.
SAE and BSPP Test Kits include inlet adapter.



Viton is a registered trademark of DuPont Dow Elastomers

3500/6000 PSI Test Kits

For Petroleum Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
½" SAE 10	0.1 - 1.0	0.5 - 3.75	3.0 (.21)	4.75 (.33)	7.2 (.50)	H600 * - 001 - TK	H601 * - 001 - TK	H602 * - 001 - TK	A	B	6000 PSI S	RT
	0.2 - 2.0	1 - 7.5	5.0 (.34)	9.0 (.62)	15.6 (1.1)	H600 * - 002 - TK	H601 * - 002 - TK	H602 * - 002 - TK				
	0.5 - 5.0	2 - 19	10.0 (.69)	26.0 (1.8)	24.8 (1.7)	H600 * - 005 - TK	H601 * - 005 - TK	H602 * - 005 - TK				
	1 - 10	5 - 38	24.0 (1.7)	71.5 (4.9)	85 (5.9	H600 * - 010 - TK	H601 * - 010 - TK	H602 * - 010 - TK				
	1 - 15	4 - 56	39.0 (2.7)	155 (10.7)	210 (14.5)	H600 * - 015 - TK	H601 * - 015 - TK	H602 * - 015 - TK				
¾" SAE 12	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H700 * - 002 - TK	H701 * - 002 - TK	H702 * - 002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H700 * - 005 - TK	H701 * - 005 - TK	H702 * - 005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H700 * - 010 - TK	H701 * - 010 - TK	H702 * - 010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H700 * - 020 - TK	H701 * - 020 - TK	H702 * - 020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H700 * - 030 - TK	H701 * - 030 - TK	H702 * - 030 - TK				
1" SAE 16	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H760 * - 002 - TK	H761 * - 002 - TK	H762 * - 002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H760 * - 005 - TK	H761 * - 005 - TK	H762 * - 005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H760 * - 010 - TK	H761 * - 010 - TK	H762 * - 010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H760 * - 020 - TK	H761 * - 020 - TK	H762 * - 020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H760 * - 030 - TK	H761 * - 030 - TK	H762 * - 030 - TK				
	4 - 40	15 - 150	26.0 (1.8)	75.0 - (5.2)	139 (9.6)	H760 * - 040 - TK	H761 * - 040 - TK	H762 * - 040 - TK				
	5 - 50	20 - 190	63.5 (4.4)	114 (7.9)	230 (15.9)	H760 * - 050 - TK	H761 * - 050 - TK	H762 * - 050 - TK				

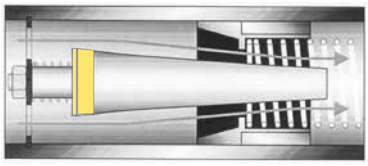
①Fractional sizes apply to NPTF and BSPP.

(example) **H 701 A - 030 - RT**

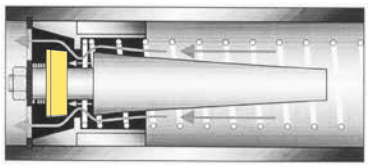
NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

NOTE: RT option is not available with standard brass flow meters.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

3500/5000 PSI Test Kits

For Petroleum Fluids (1-1/4" and 1-1/2")

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

SPECIFICATIONS:

MATERIALS:
2024 – T351 Anodized aluminum body, piston and cone
T303 Stainless body, 2024 – T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: NPT

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

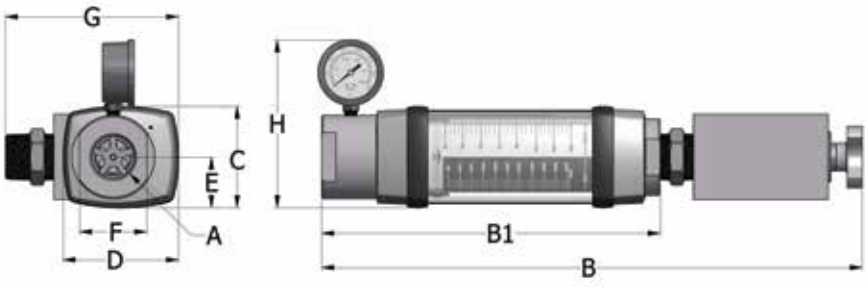
PRESSURE RATING:
Aluminum: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 5,000 psi/345 bar max.with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 14.
For detailed differential pressure charts, see page 61.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: Produce ΔP up to 3,500 psi/241 bar PSID and 5,000 psi/345 bar PSID.



DIMENSIONS:

A	B	B_1	C	D	E	F	G	H
NOMINAL PORT SIZE	**LENGTH in (mm)**	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**	**DEPTH in (mm)**	**WIDTH in (mm)**
1-1/4	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)
1-1/2	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)

NOTE: Weights for all sizes can be found on page 79.
Pressures above 7500 PSI will pop the rupture disc allowing fluid flow to continue. This is a fail safe mechanism.

Viton is a registered trademark of DuPont Dow Elastomers

3500/5000 PSI Test Kits

For Petroleum Fluids

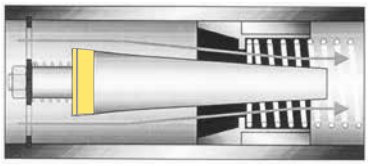
ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)	MATERIAL		OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	NPT	ALUMINUM 3500 PSI	STAINLESS 5000 PSI	REVERSE FLOW
1¼"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 801 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 801 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 801 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 801 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6)	H TK 801 * - 150			
1½"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 861 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 861 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 861 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 861 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6	H TK 861 * - 150			

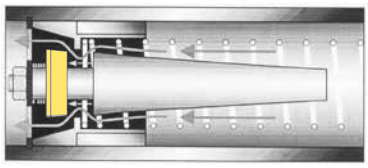
(example) **H RT 801 A - 030**

NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

3500/6000 PSI High Temperature

Flow Meters For Petroleum Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 500 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

SPECIFICATIONS:

MATERIALS:
2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Seals: Viton®
Scale Support: T316 SS
Scale: Polymide
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator: Nickel-plated Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Bumper: 2011 - T3 Anodized Aluminum
Guard: Cylindrical Pyrex® Glass
End Caps: 2011 - T3 Anodized Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 62: SAE**J518

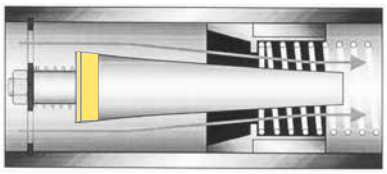
TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent
For detailed "Pressure vs. Temperature" correlation information, see page 14.

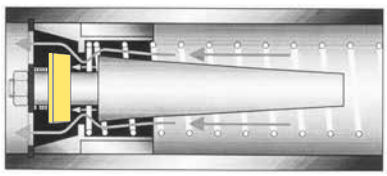
PRESSURE RATING:
Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 14.
For detailed differential pressure charts, see page 55.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice, which allows the fluid to flow freely in the reverse direction.

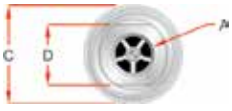

Normal Flow Direction

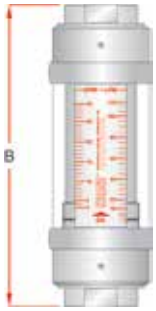

Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	FLATS in (mm)
¼ (SAE 6)	6.60 (168)	2.01 (53)	1.25 (32)
½ (SAE 10)	6.60 (168)	2.01 (53)	1.25 (32)
¾ (SAE 12)	7.20 (183)	2.48 (63)	1.50 (38)
1 (SAE 16)	7.20 (183)	2.48 (63)	1.75 (44)
1¼ (SAE 20)	12.20 (310)	4.20 (105)	2.75 (70)
1½ (SAE 24)	12.20 (310)	4.20 (105)	2.75 (70)

NOTE: Dimensions for 1½" Code 62 can be found on page 78.
Weights for all sizes can be found on page 79.





Pyrex is a registered trademark of Corning, Inc.
Teflon is a registered trademark of E.I. DuPont de Nemours & Co.
Viton is a registered trademark of DuPont Dow Elastomers

3500/6000 PSI High Temperature

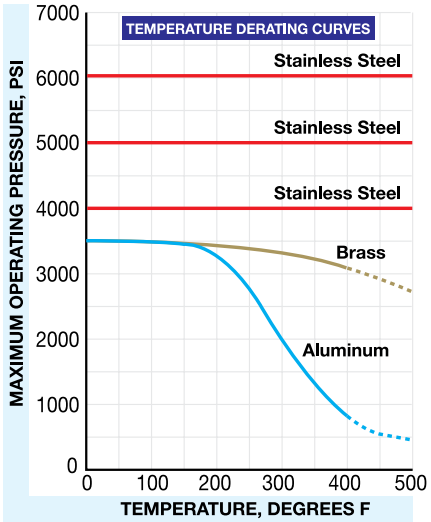
Flow Meters For Petroleum Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	4.0 (.28) 6.0 (.41)	9.0 (.62) 13 (.90)		H200 ✱ - 010 - HT H200 ✱ - 020 - HT	H201 ✱ - 010 - HT H201 ✱ - 020 - HT	H202 ✱-010 - HT H202 ✱-020 - HT	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1.0 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H600 ✱ - 001 - HT H600 ✱ - 002 - HT H600 ✱ - 005 - HT H600 ✱ - 010 - HT H600 ✱ - 015 - HT	H601 ✱ - 001 - HT H601 ✱ - 002 - HT H601 ✱ - 005 - HT H601 ✱ - 010 - HT H601 ✱ - 015 - HT	H602 ✱-001 - HT H602 ✱-002 - HT H602 ✱-005 - HT H602 ✱-010 - HT H602 ✱-015 - HT	A	B	6000 PSI S	HR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5(.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H700 ✱ - 002 - HT H700 ✱ - 005 - HT H700 ✱ - 010 - HT H700 ✱ - 020 - HT H700 ✱ - 030 - HT	H701 ✱ - 002 - HT H701 ✱ - 005 - HT H701 ✱ - 010 - HT H701 ✱ - 020 - HT H701 ✱ - 030 - HT	H702 ✱-002 - HT H702 ✱-005 - HT H702 ✱-010 - HT H702 ✱-020 - HT H702 ✱-030 - HT	A	B	5000 PSI S	HR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5(.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7) 34.0 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H760 ✱ - 002 - HT H760 ✱ - 005 - HT H760 ✱ - 010 - HT H760 ✱ - 020 - HT H760 ✱ - 030 - HT H760 ✱ - 040 - HT H760 ✱ - 050 - HT	H761 ✱ - 002 - HT H761 ✱ - 005 - HT H761 ✱ - 010 - HT H761 ✱ - 020 - HT H761 ✱ - 030 - HT H761 ✱ - 040 - HT H761 ✱ - 050 - HT	H762 ✱ - 002 - HT H762 ✱ - 005 - HT H762 ✱ - 010 - HT H762 ✱ - 020 - HT H762 ✱ - 030 - HT H762 ✱ - 040 - HT H762 ✱ - 050 - HT	A	B	5000 PSI S	HR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H800 ✱ - 030 - HT H800 ✱ - 050 - HT H800 ✱ - 075 - HT H800 ✱ - 100 - HT H800 ✱ - 150 - HT	H801 ✱ - 030 - HT H801 ✱ - 050 - HT H801 ✱ - 075 - HT H801 ✱ - 100 - HT H801 ✱ - 150 - HT	H802 ✱ - 030 - HT H802 ✱ - 050 - HT H802 ✱ - 075 - HT H802 ✱ - 100 - HT H802 ✱ - 150 - HT	A	B	5000 PSI S	HR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72	4.0 (.28) 7.0 (.48) 10.5 (.72) 15 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H860 ✱ - 030 - HT H860 ✱ - 050 - HT H860 ✱ - 075 - HT H860 ✱ - 100 - HT H860 ✱ - 150 - HT	H861 ✱ - 030 - HT H861 ✱ - 050 - HT H861 ✱ - 075 - HT H861 ✱ - 100 - HT H861 ✱ - 150 - HT	H862 ✱ - 030 - HT H862 ✱ - 050 - HT H862 ✱ - 075 - HT H862 ✱ - 100 - HT H862 ✱ - 150 - HT	A	B	5000 PSI S	HR
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H808 ✱ - 030 - HT H808 ✱ - 050 - HT H808 ✱ - 075 - HT H808 ✱ - 100 - HT H808 ✱ - 150 - HT			A	B	4000 PSI S	HR

①Fractional sizes apply to NPTF and BSPP.

(example) H 701 A - 030 - HR



NOTE: HT suffix represents standard high temperature configuration. For reverse flow high temperature, replace HT with HR suffix.

NOTE: HR option is not available with brass flow meters.

3500/6000 PSI Flow Meters

For Phosphate Ester Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: EPR
Guard: Nylon
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: EPR
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 62: SAE**J518

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temp. meters, see page 23

PRESSURE RATING:

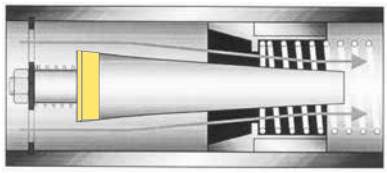
Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

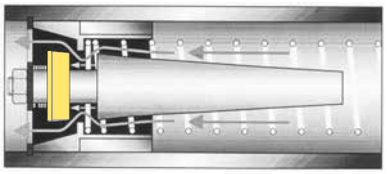
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series and 4,000 psi/276 bar max. for code 62 flange) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 18.
For detailed differential pressure charts, see page 62.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.

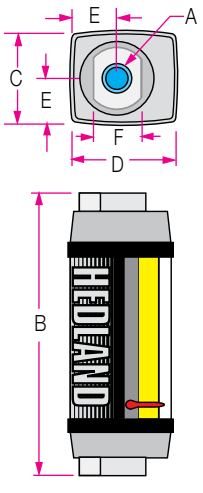

Normal Flow Direction


Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
¼ (SAE 6)	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½ (SAE 10)	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼ (SAE 20)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½ (SAE 24)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)

NOTE: Dimensions for 1-½"Code 62 can be found on page 78.
Weights for all sizes can be found on page 79.



3500/6000 PSI Flow Meters

For Phosphate Ester Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	.02 - 0.2 .05 - 0.5 0.1 - 1.0 0.2 - 2.0	0.1 - 0.75 0.2 - 1.9 0.5 - 3.75 1.0 - 7.5	3.5 (.24) 3.0 (.21) 4.0 (.28) 6.0 (.41)	4.0 (.28) 5.0 (.35) 9.0 (.62) 13 (.90)		H294 ✱ - 002 - † H294 ✱ - 005 - † H294 ✱ - 010 - † H294 ✱ - 020 - †	H295 ✱ - 002 - † H295 ✱ - 005 - † H295 ✱ - 010 - † H295 ✱ - 020 - †	H296 ✱-002 - † H296 ✱-005 - † H296 ✱-010 - † H296 ✱-020 - †	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H694 ✱ - 001 - † H694 ✱ - 002 - † H694 ✱ - 005 - † H694 ✱ - 010 - † H694 ✱ - 015 - †	H695 ✱ - 001 - † H695 ✱ - 002 - † H695 ✱ - 005 - † H695 ✱ - 010 - † H695 ✱ - 015 - †	H696 ✱-001 - † H696 ✱-002 - † H696 ✱-005 - † H696 ✱-010 - † H696 ✱-015 - †	A	B	6000 PSI S	RF
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H794 ✱ - 002 - † H794 ✱ - 005 - † H794 ✱ - 010 - † H794 ✱ - 020 - † H794 ✱ - 030 - †	H795 ✱ - 002 - † H795 ✱ - 005 - † H795 ✱ - 010 - † H795 ✱ - 020 - † H795 ✱ - 030 - †	H796 ✱-002 - † H796 ✱-005 - † H796 ✱-010 - † H796 ✱-020 - † H796 ✱-030 - †	A	B	5000 PSI S	RF
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7) 34.0 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H764 ✱ - 002 - † H764 ✱ - 005 - † H764 ✱ - 010 - † H764 ✱ - 020 - † H764 ✱ - 030 - † H764 ✱ - 040 - † H764 ✱ - 050 - †	H765 ✱ - 002 - † H765 ✱ - 005 - † H765 ✱ - 010 - † H765 ✱ - 020 - † H765 ✱ - 030 - † H765 ✱ - 040 - † H765 ✱ - 050 - †	H766 ✱-002 - † H766 ✱-005 - † H766 ✱-010 - † H766 ✱-020 - † H766 ✱-030 - † H766 ✱-040 - † H766 ✱-050 - †	A	B	5000 PSI S	RF
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H894 ✱ - 030 - † H894 ✱ - 050 - † H894 ✱ - 075 - † H894 ✱ - 100 - † H894 ✱ - 150 - †	H895 ✱ - 030 - † H895 ✱ - 050 - † H895 ✱ - 075 - † H895 ✱ - 100 - † H895 ✱ - 150 - †	H896 ✱-030 - † H896 ✱-050 - † H896 ✱-075 - † H896 ✱-100 - † H896 ✱-150 - †	A	B	5000 PSI S	RF
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H864 ✱ - 030 - † H864 ✱ - 050 - † H864 ✱ - 075 - † H864 ✱ - 100 - † H864 ✱ - 150 - †	H865 ✱ - 030 - † H865 ✱ - 050 - † H865 ✱ - 075 - † H865 ✱ - 100 - † H865 ✱ - 150 - †	H866 ✱-030 - † H866 ✱-050 - † H866 ✱-075 - † H866 ✱-100 - † H866 ✱-150 - †	A	B	5000 PSI S	RF
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H898 ✱ - 030 - † H898 ✱ - 050 - † H898 ✱ - 075 - † H898 ✱ - 100 - † H898 ✱ - 150 - †			A	B	4000 PSI S	RF

①Fractional sizes apply to NPTF and BSPP.

NOTE: RF option is not available with standard brass flow meters.

(example) **H 795 A - 030 - RF**

3500/6000 PSI Test Kits

For Phosphate Ester Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: EPR
Guard: Nylon
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: EPR
Scale Support: 6063-T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:

Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 20.
For detailed differential pressure charts, see page 62.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

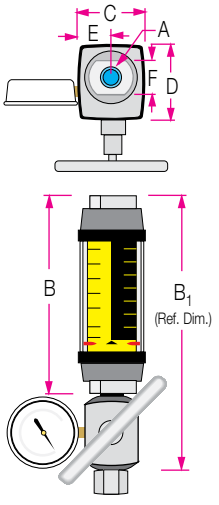
PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum and brass test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: ½", ¾" and 1" series - needle valve;
Produce ΔP up to 3,500 psi/241 bar PSID and 6,000 psi/414 bar PSID.

DIMENSIONS:

A	B	B_1	C	D	E	F
NOMINAL PORT SIZE	**LENGTH in (mm)**	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**
½ (SAE 10)	6.6 (168)	10.3 (262)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)

NOTE: Weights for all sizes can be found on page 79.
SAE and BSPP Test Kits include inlet adapter.



3500/6000 PSI Test Kits

For Phosphate Ester Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
½" SAE 10	0.1 - 1.0	0.5 - 3.75	3.0 (.21)	4.75 (.33)	7.2 (.50)	H694 * - 001 - TK	H695 * - 001 - TK	H696 * - 001 - TK	A	B	6000 PSI S	RT
	0.2 - 2.0	1 - 7.5	5.0 (.34)	9.0 (.62)	15.6 (1.1)	H694 * - 002 - TK	H695 * - 002 - TK	H696 * - 002 - TK				
	0.5 - 5.0	2 - 19	10.0 (.69)	26.0 (1.8)	24.8 (1.7)	H694 * - 005 - TK	H695 * - 005 - TK	H696 * - 005 - TK				
	1 - 10	5 - 38	24.0 (1.7)	71.5 (4.9)	85.0 (5.9)	H694 * - 010 - TK	H695 * - 010 - TK	H696 * - 010 - TK				
	1 - 15	4 - 56	39.0 (2.7)	155 (10.7)	210 (14.5)	H694 * - 015 - TK	H695 * - 015 - TK	H696 * - 015 - TK				
¾" SAE 12	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H794 * - 002 - TK	H795 * - 002 - TK	H796 * - 002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H794 * - 005 - TK	H795 * - 005 - TK	H796 * - 005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H794 * - 010 - TK	H795 * - 010 - TK	H796 * - 010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H794 * - 020 - TK	H795 * - 020 - TK	H796 * - 020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H794 * - 030 - TK	H795 * - 030 - TK	H796 * - 030 - TK				
1" SAE 16	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H764 * - 002 - TK	H765 * - 002 - TK	H766 * - 002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H764 * - 005 - TK	H765 * - 005 - TK	H766 * - 005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H764 * - 010 - TK	H765 * - 010 - TK	H766 * - 010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H764 * - 020 - TK	H765 * - 020 - TK	H766 * - 020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H764 * - 030 - TK	H765 * - 030 - TK	H766 * - 030 - TK				
	4 - 40	15 - 150	26.0 (1.8)	75.0 (5.2)	139 (9.6)	H764 * - 040 - TK	H765 * - 040 - TK	H766 * - 040 - TK				
	5 - 50	20 - 190	63.5 (4.4)	114 (7.9)	230 (15.9)	H764 * - 050 - TK	H765 * - 050 - TK	H766 * - 050 - TK				

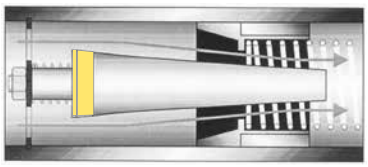
①Fractional sizes apply to NPTF and BSPP.

(example) **H 795 A - 030 - RT**

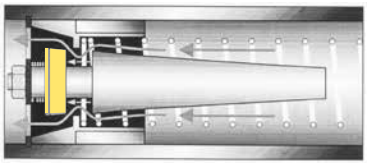
NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

NOTE: RT option is not available with standard brass flow meters.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

3500/5000 PSI Test Kits

For Phosphate Ester Fluids (1-1/4" and 1-1/2")

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

SPECIFICATIONS:

MATERIALS:
2024 - T351 Anodized aluminum body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: EPR
Guard: Nylon
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: EPR
Scale Support: 6063-T6 Aluminum
End Caps: Nylon ST

THREADS: NPT

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

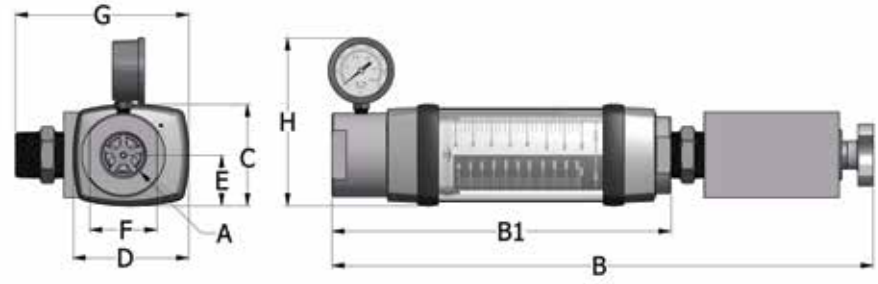
PRESSURE RATING:
Aluminum Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 5,000 psi/345 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 22.
For detailed differential pressure charts, see page 62.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: Produce ΔP up to 3,500 psi/241 bar PSID and 5,000 psi/345 bar PSID.



DIMENSIONS:

A	B	B_1	C	D	E	F	G	H
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)	DEPTH in (mm)	WIDTH in (mm)
1-1/4	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)
1-1/2	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)

NOTE: Weights for all sizes can be found on page 79.
Pressures above 7500 PSI will pop the rupture disc allowing fluid flow to continue. This is a fail safe mechanism.

3500/5000 PSI Test Kits

For Phosphate Ester Fluids

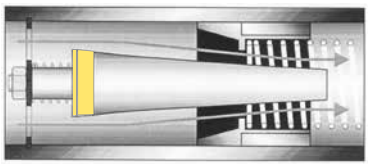
ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)	MATERIAL		OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	NPT	ALUMINUM 3500 PSI	STAINLESS 5000 PSI	REVERSE FLOW
1¼"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 895 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 895 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 895 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 895 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6)	H TK 895 * - 150			
1½"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 865 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 865 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 865 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 865 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6)	H TK 865 * - 150			

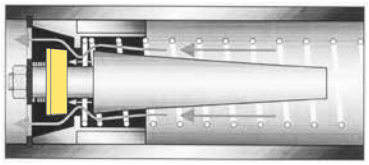
(example) **H RT 895 A - 030**

NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

3500/6000 PSI High Temperature

Flow Meters For Phosphate Ester Fluids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 500 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Seals: EPR
Scale Support: T316 SS
Scale: Polymide
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator: Nickel-plated Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Bumper: 2011 - T3 Anodized Aluminum
Guard: Cylindrical Pyrex® Glass
End Caps: 2011 - T3 Anodized Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 62: SAE**J518

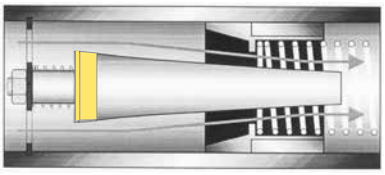
TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent
For detailed "Pressure vs. Temperature" correlation information, see page 20.

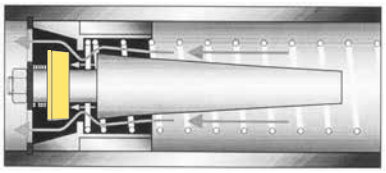
PRESSURE RATING:
Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 24
For detailed differential pressure charts, see page 62.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice, which allows the fluid to flow freely in the reverse direction.

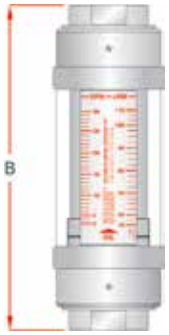

Normal Flow Direction


Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	FLATS in (mm)
¼ (SAE 6)	6.60 (168)	2.01 (53)	1.25 (32)
½ (SAE 10)	6.60 (168)	2.01 (53)	1.25 (32)
¾ (SAE 12)	7.20 (183)	2.48 (63)	1.50 (38)
1 (SAE 16)	7.20 (183)	2.48 (63)	1.75 (44)
1¼ (SAE 20)	12.20 (310)	4.20 (105)	2.75 (70)
1½ (SAE 24)	12.20 (310)	4.20 (105)	2.75 (70)

NOTE: Dimensions for 1½" Code 62 can be found on page 78.
Weights for all sizes can be found on page 79.



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Teflon is a registered trademark of E.I. DuPont de Nemours & Co.

3500/6000 PSI High Temperature

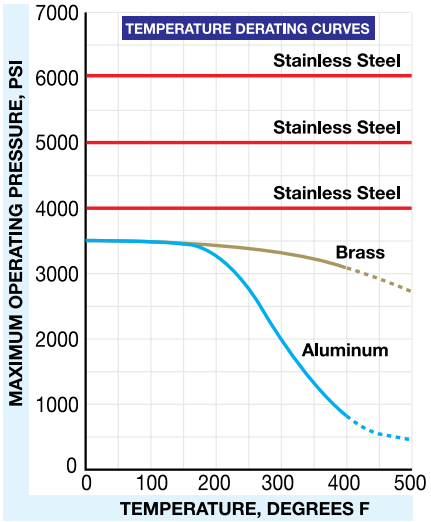
Flow Meters For Phosphate Ester Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	4.0 (.28) 6.0 (.41)	9.0 (.62) 13 (.90)		H294 * - 010 - HT H294 * - 020 - HT	H295 * - 010 - HT H295 * - 020 - HT	H296 *-010 - HT H296 *-020 - HT	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H694 * - 001 - HT H694 * - 002 - HT H694 * - 005 - HT H694 * - 010 - HT H694 * - 015 - HT	H695 * - 001 - HT H695 * - 002 - HT H695 * - 005 - HT H695 * - 010 - HT H695 * - 015 - HT	H696 *-001 - HT H696 *-002 - HT H696 *-005 - HT H696 *-010 - HT H696 *-015 - HT	A	B	6000 PSI S	HR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H794 * - 002 - HT H794 * - 005 - HT H794 * - 010 - HT H794 * - 020 - HT H794 * - 030 - HT	H795 * - 002 - HT H795 * - 005 - HT H795 * - 010 - HT H795 * - 020 - HT H795 * - 030 - HT	H796 *-002 - HT H796 *-005 - HT H796 *-010 - HT H796 *-020 - HT H796 *-030 - HT	A	B	5000 PSI S	HR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7) 34.0 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H764 * - 002 - HT H764 * - 005 - HT H764 * - 010 - HT H764 * - 020 - HT H764 * - 030 - HT H764 * - 040 - HT H764 * - 050 - HT	H765 * - 002 - HT H765 * - 005 - HT H765 * - 010 - HT H765 * - 020 - HT H765 * - 030 - HT H765 * - 040 - HT H765 * - 050 - HT	H766 *-002 - HT H766 *-005 - HT H766 *-010 - HT H766 *-020 - HT H766 *-030 - HT H766 *-040 - HT H766 *-050 - HT	A	B	5000 PSI S	HR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H894 * - 030 - HT H894 * - 050 - HT H894 * - 075 - HT H894 * - 100 - HT H894 * - 150 - HT	H895 * - 030 - HT H895 * - 050 - HT H895 * - 075 - HT H895 * - 100 - HT H895 * - 150 - HT	H896 *-030 - HT H896 *-050 - HT H896 *-075 - HT H896 *-100 - HT H896 *-150 - HT	A	B	5000 PSI S	HR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H864 * - 030 - HT H864 * - 050 - HT H864 * - 075 - HT H864 * - 100 - HT H864 * - 150 - HT	H865 * - 030 - HT H865 * - 050 - HT H865 * - 075 - HT H865 * - 100 - HT H865 * - 150 - HT	H866 *-030 - HT H866 *-050 - HT H866 *-075 - HT H866 *-100 - HT H866 *-150 - HT	A	B	5000 PSI S	HR
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H898 * - 030 - HT H898 * - 050 - HT H898 * - 075 - HT H898 * - 100 - HT H898 * - 150 - HT			A	B	4000 PSI S	HR

①Fractional sizes apply to NPTF and BSPP.

(example) **H 795 A - 030 - HR**



NOTE: HT suffix represents standard high temperature configuration. For reverse flow high temperature, replace HT with HR suffix.

NOTE: HR option is not available with brass flow meters.

3500/6000 PSI Flow Meters

For Water-based Fluids (Water/Oil Emulsions)

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.
- For 80/20 and other water/oil emulsions

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone①
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 61** and **Code 62: SAE**J518

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temp. meters, see page 31.

PRESSURE RATING:

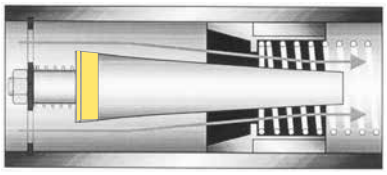
Aluminum / Brass Operating: 3,500 psi/241 bar max. (800 psi/55 bar max. for 3" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

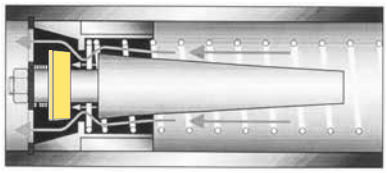
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series and 4,000 psi/276 bar max. for code 62 flange) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 26.
For detailed differential pressure charts, see page 63.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

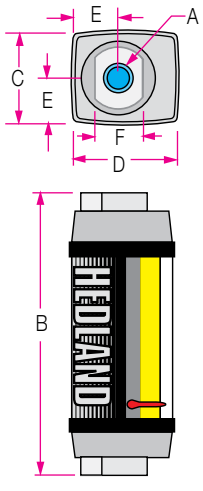
REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.


Normal Flow Direction


Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
¼ (SAE 6)	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½ (SAE 10)	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼ (SAE 20)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½ (SAE 24)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)



NOTE: Dimensions for 1½" Code 62, 3" and 3" Code 61 can be found on page 78.
Weights for all sizes can be found on page 79.

①3 inch models have Celcon® piston/piston ring

3500/6000 PSI Flow Meters

For Water-based Fluids (Water/Oil Emulsions)

ORDERING INFORMATION:

NOMINAL PORT SIZE②	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP③	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	.02 - 0.2 .05 - 0.5 0.1 - 1.0 0.2 - 2.0	0.1 - 0.75 0.2 - 1.9 0.5 - 3.75 1 - 7.5	3.5 (.24) 3.0 (.21) 4.0 (.28) 6.0 (.41)	4.0 (.28) 5.0 (.35) 9.0 (.62) 13 (.90)		H212 ✱ - 002 - † H212 ✱ - 005 - † H212 ✱ - 010 - † H212 ✱ - 020 - †	H213 ✱ - 002 - † H213 ✱ - 005 - † H213 ✱ - 010 - † H213 ✱ - 020 - †	H214 ✱-002 - † H214 ✱-005 - † H214 ✱-010 - † H214 ✱-020 - †	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H612 ✱ - 001 - † H612 ✱ - 002 - † H612 ✱ - 005 - † H612 ✱ - 010 - † H612 ✱ - 015 - †	H613 ✱ - 001 - † H613 ✱ - 002 - † H613 ✱ - 005 - † H613 ✱ - 010 - † H613 ✱ - 015 - †	H614 ✱-001 - † H614 ✱-002 - † H614 ✱-005 - † H614 ✱-010 - † H614 ✱-015 - †	A	B	6000 PSI S	RF
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H712 ✱ - 002 - † H712 ✱ - 005 - † H712 ✱ - 010 - † H712 ✱ - 020 - † H712 ✱ - 030 - †	H713 ✱ - 002 - † H713 ✱ - 005 - † H713 ✱ - 010 - † H713 ✱ - 020 - † H713 ✱ - 030 - †	H714 ✱-002 - † H714 ✱-005 - † H714 ✱-010 - † H714 ✱-020 - † H714 ✱-030 - †	A	B	5000 PSI S	RF
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24 (1.7) 34 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H782 ✱ - 002 - † H782 ✱ - 005 - † H782 ✱ - 010 - † H782 ✱ - 020 - † H782 ✱ - 030 - † H782 ✱ - 040 - † H782 ✱ - 050 - †	H783 ✱ - 002 - † H783 ✱ - 005 - † H783 ✱ - 010 - † H783 ✱ - 020 - † H783 ✱ - 030 - † H783 ✱ - 040 - † H783 ✱ - 050 - †	H784 ✱-002 - † H784 ✱-005 - † H784 ✱-010 - † H784 ✱-020 - † H784 ✱-030 - † H784 ✱-040 - † H784 ✱-050 - †	A	B	5000 PSI S	RF
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H812 ✱ - 030 - † H812 ✱ - 050 - † H812 ✱ - 075 - † H812 ✱ - 100 - † H812 ✱ - 150 - †	H813 ✱ - 030 - † H813 ✱ - 050 - † H813 ✱ - 075 - † H813 ✱ - 100 - † H813 ✱ - 150 - †	H814 ✱-030 - † H814 ✱-050 - † H814 ✱-075 - † H814 ✱-100 - † H814 ✱-150 - †	A	B	5000 PSI S	RF
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H882 ✱ - 030 - † H882 ✱ - 050 - † H882 ✱ - 075 - † H882 ✱ - 100 - † H882 ✱ - 150 - †	H883 ✱ - 030 - † H883 ✱ - 050 - † H883 ✱ - 075 - † H883 ✱ - 100 - † H883 ✱ - 150 - †	H884 ✱-030 - † H884 ✱-050 - † H884 ✱-075 - † H884 ✱-100 - † H884 ✱-150 - †	A	B	5000 PSI S	RF
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H818 ✱ - 030 - † H818 ✱ - 050 - † H818 ✱ - 075 - † H818 ✱ - 100 - † H818 ✱ - 150 - †			A	B	4000 PSI S	RF
3"	20 - 180 20 - 275	50 - 650 100 - 1000	11 (.76) 11 (.76)	17 (1.1) 18 (1.2)		Not Available	H913 ✱ - 180 H913 ✱ - 275	H914 ✱-180 H914 ✱-275	800 PSI A	800 PSI B	Not Available	
3" Code 61	20 - 180 20 - 275	50 - 650 100 - 1000	11 (.76) 11 (.76)	17 (1.1) 18 (1.2)		H919 ✱ - 180 H919 ✱ - 275			800 PSI A	800 PSI B	Not Available	

NOTE: RF option is not available with standard brass flow meters.

②Fractional sizes apply to NPTF and BSPP.

③3 inch models have BSPT (BS21) threads

⚠ CAUTION: For emulsions with less than 20% oil, factory recommends the Brass body meter.

(example) **H 713 A - 030 - RF**

3500/6000 PSI Test Kits

For Water-based Fluids (Water/Oil Emulsions)

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.
- For 80/20 and other water/oil emulsions

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:

Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 28.
For detailed differential pressure charts, see page 63.

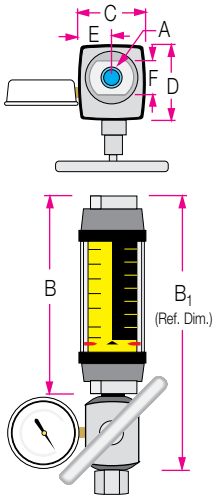
ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum and brass test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: ½", ¾" and 1" series - needle valve;
Produce ΔP up to 3,500 psi/241 bar PSID and 6,000 psi/414 bar PSID.

DIMENSIONS:

A	B	B_1	C	D	E	F
NOMINAL PORT SIZE	**LENGTH in (mm)**	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**
½ (SAE 10)	6.6 (168)	10.3 (262)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	11.3 (287)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)



NOTE: Weights for all sizes can be found on page 79.
SAE and BSPP Test Kits include inlet adapter.

Viton is a registered trademark of DuPont Dow Elastomers

3500/6000 PSI Test Kits

For Water-based Fluids (Water/Oil Emulsions)

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
½" SAE 10	0.1 - 1.0	0.5 - 3.75	3.0 (.21)	4.75 (.33)	7.2 (.50)	H612 * - 001 - TK	H613 * - 001 - TK	H614 *-001 - TK	A	B	6000 PSI S	RT
	0.2 - 2.0	1 - 7.5	5.0 (.34)	9.0 (.62)	15.6 (1.1)	H612 * - 002 - TK	H613 * - 002 - TK	H614 *-002 - TK				
	0.5 - 5.0	2 - 19	10.0 (.69)	26.0 (1.8)	24.8 (1.7)	H612 * - 005 - TK	H613 * - 005 - TK	H614 *-005 - TK				
	1 - 10	5 - 38	24.0 (1.7)	71.5 (4.9)	85.0 (5.9)	H612 * - 010 - TK	H613 * - 010 - TK	H614 *-010 - TK				
	1 - 15	4 - 56	39.0 (2.7)	155 (10.7)	210 (14.5)	H612 * - 015 - TK	H613 * - 015 - TK	H614 *-015 - TK				
¾" SAE 12	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H712 * - 002 - TK	H713 * - 002 - TK	H714 *-002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H712 * - 005 - TK	H713 * - 005 - TK	H714 *-005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H712 * - 010 - TK	H713 * - 010 - TK	H714 *-010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H712 * - 020 - TK	H713 * - 020 - TK	H714 *-020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H712 * - 030 - TK	H713 * - 030 - TK	H714 *-030 - TK				
1" SAE 16	0.2 - 2.0	1 - 7.5	1.5 (.10)	3.0 (.21)	3.9 (.27)	H782 * - 002 - TK	H783 * - 002 - TK	H784 *-002 - TK	A	B	5000 PSI S	RT
	0.5 - 5.0	2 - 19	4.0 (.28)	6.5 (.45)	8.3 (.57)	H782 * - 005 - TK	H783 * - 005 - TK	H784 *-005 - TK				
	1 - 10	5 - 38	6.5 (.45)	16.0 (1.1)	15.8 (1.1)	H782 * - 010 - TK	H783 * - 010 - TK	H784 *-010 - TK				
	2 - 20	10 - 76	11.0 (.76)	26.0 (1.8)	35.0 (2.4)	H782 * - 020 - TK	H783 * - 020 - TK	H784 *-020 - TK				
	3 - 30	10 - 115	18.0 (1.2)	47.5 (3.3)	76.1 (5.2)	H782 * - 030 - TK	H783 * - 030 - TK	H784 *-030 - TK				
	4 - 40	15 - 150	26.0 (1.8)	75.0 (5.2)	139 (9.6)	H782 * - 040 - TK	H783 * - 040 - TK	H784 *-040 - TK				
	5 - 50	20 - 190	63.5 (4.4)	114 (7.9)	230 (15.9)	H782 * - 050 - TK	H783 * - 050 - TK	H784 *-050 - TK				

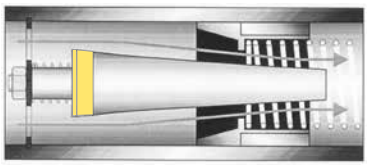
①Fractional sizes apply to NPTF and BSPP.

(example) **H 713 A - 030 - RT**

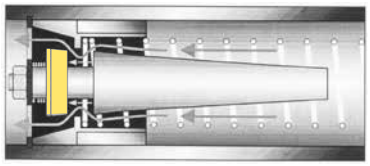
NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

NOTE: RT option is not available with standard brass flow meters.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

⚠ CAUTION: For emulsions with less than 20% oil, factory recommends the Brass body meter.

3500/5000 PSI Test Kits

For Water-based Fluids (Water/Oil Emulsions) (1-1/4" and 1-1/2")

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.
- For 80/20 and other water/oil emulsions

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone

T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: NPT

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:

Aluminum / Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

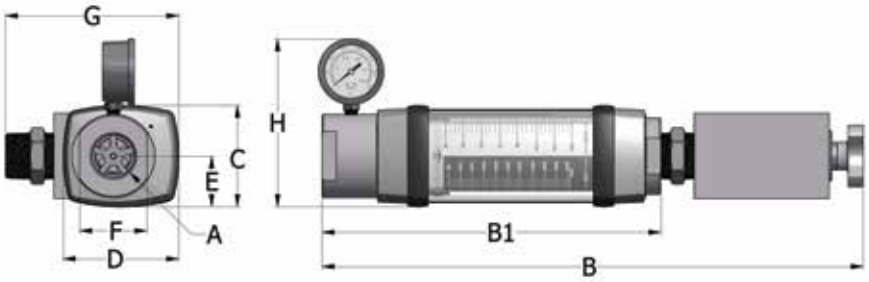
Stainless Steel Operating: 5,000 psi/345 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 30.
For detailed differential pressure charts, see page 57.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE GAUGE: Glycerin dampened, 0 - 3,500 psi / 0 - 240 bar pressure range available on aluminum test kits.
Glycerin dampened, 0 - 6,000 psi / 0 - 400 bar pressure range available on stainless steel test kits.

LOAD VALVE: Produce ΔP up to 3,500 psi/241 bar PSID and 5,000 psi/345 bar PSID.



DIMENSIONS:

A	B	B_1	C	D	E	F	G	H
NOMINAL PORT SIZE	**LENGTH in (mm)**	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**	**DEPTH in (mm)**	**WIDTH in (mm)**
1-1/4	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)
1-1/2	22.1 (561)	13.9 (353)	4.15 (105)	4.75 (121)	2.08 (53)	2.75 (70)	7.1 (180)	6.9 (175)

NOTE: Weights for all sizes can be found on page 79.
Pressures above 7500 PSI will pop the rupture disc allowing fluid flow to continue. This is a fail safe mechanism.

Viton is a registered trademark of DuPont Dow Elastomers

3500/5000 PSI Test Kits

For Water-based Fluids (Water/Oil Emulsions)

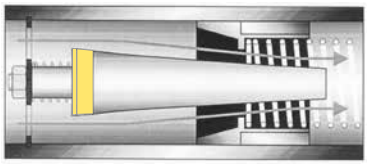
ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)	MATERIAL		OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	NPT	ALUMINUM 3500 PSI	STAINLESS 5000 PSI	REVERSE FLOW
1¼"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 813 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 813 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 813 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 813 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6)	H TK 813 * - 150			
1½"	3 - 30	10 - 110	3.4 (.23)	7.8 (.54)	5.6 (.39)	H TK 883 * - 030	A	S	RT
	5 - 50	20 - 190	4.3 (.30)	8.8 (6.1)	14.3 (.99)	H TK 883 * - 050			
	10 - 75	40 - 280	6.3 (.43)	14.3 (9.9)	35.7 (2.5)	H TK 883 * - 075			
	10 - 100	50 - 380	8.3 (.57)	21.3 (1.5)	45.3 (3.1)	H TK 883 * - 100			
	10 - 150	50 - 560	14.3 (.99)	41.3 (2.8)	124 (8.6)	H TK 883 * - 150			

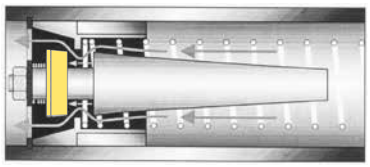
(example) **H RT 813 A - 030**

NOTE: TK suffix represents standard test kit configuration. For reverse flow by-pass test kit, replace TK suffix with RT suffix.

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice. This shift creates a gap which allows the fluid to flow freely in the reverse direction.



Normal Flow Direction



Reverse Flow By-Pass

⚠ CAUTION: For emulsions with less than 20% oil, factory recommends the Brass body meter.

3500/6000 PSI High Temperature

Flow Meters For Water-based Fluids (Water/Oil Emulsions)

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 500 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.
- For 80/20 and other water/oil emulsions

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Seals: Viton®
Scale Support: T316 SS
Scale: Polymide
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator: Nickel-plated Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Bumper: 2011 - T3 Anodized Aluminum
Guard: Cylindrical Pyrex® Glass
End Caps: 2011 - T3 Anodized Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179, **Code 62: SAE** J518

TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent

For detailed "Pressure vs. Temperature" correlation information, see page 32.

PRESSURE RATING:

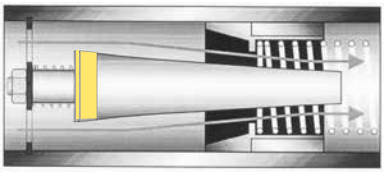
Aluminum / Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7

Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

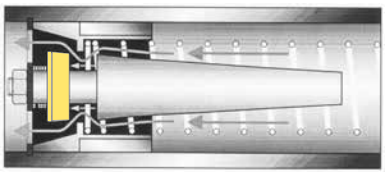
PRESSURE DROP: See Ordering Information Table, page 32.
For detailed differential pressure charts, see page 63.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

REVERSE FLOW BY-PASS OPTION: Features a two-piece cone that responds to flow in the primary flow direction in the same manner as the standard design. Flow in the reverse direction causes the lower cone shuttle to shift, moving it below the sharp-edged piston orifice, which allows the fluid to flow freely in the reverse direction.



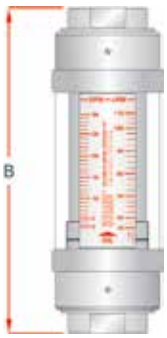
Normal Flow Direction



Reverse Flow By-Pass

DIMENSIONS:

A	B	C	D
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	FLATS in (mm)
¼ (SAE 6)	6.60 (168)	2.01 (53)	1.25 (32)
½ (SAE 10)	6.60 (168)	2.01 (53)	1.25 (32)
¾ (SAE 12)	7.20 (183)	2.48 (63)	1.50 (38)
1 (SAE 16)	7.20 (183)	2.48 (63)	1.75 (44)
1¼ (SAE 20)	12.20 (310)	4.20 (105)	2.75 (70)
1½ (SAE 24)	12.20 (310)	4.20 (105)	2.75 (70)



NOTE: Dimensions for 1½" Code 62 can be found on page 78.
Weights for all sizes can be found on page 79.

Hedland®

3500/6000 PSI High Temperature

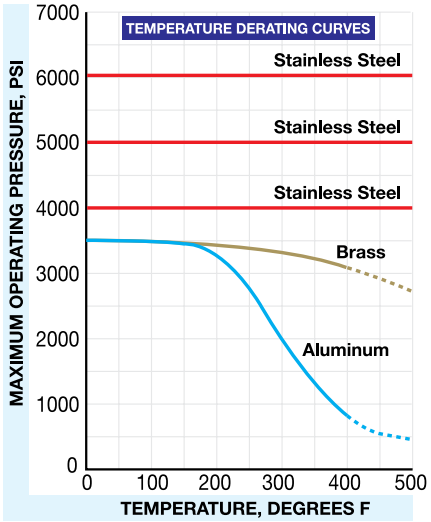
Flow Meters For Water-based Fluids (Water/Oil Emulsions)

ORDERING INFORMATION:

NOMINAL PORT SIZE[1]	FLOW RANGE		PRESSURE DROP			MODEL NUMBER (see example below)			MATERIAL			OPTIONS
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	REVERSE 100% FLOW PSI (BAR)	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	REVERSE FLOW
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	4.0 (.28) 6.0 (.41)	9.0 (.62) 13 (.90)		H212 * - 010 - HT H212 * - 020 - HT	H213 * - 010 - HT H213 * - 020 - HT	H214 *-010 - HT H214 *-020 - HT	A	B	6000 PSI S	Not Available
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	5.2 (.36) 9.6 (.66) 4.8 (.33) 23.0 (1.6) 55.2 (3.8)	H612 * - 001 - HT H612 * - 002 - HT H612 * - 005 - HT H612 * - 010 - HT H612 * - 015 - HT	H613 * - 001 - HT H613 * - 002 - HT H613 * - 005 - HT H613 * - 010 - HT H613 * - 015 - HT	H614 *-001 - HT H614 *-002 - HT H614 *-005 - HT H614 *-010 - HT H614 *-015 - HT	A	B	6000 PSI S	HR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11)	H712 * - 002 - HT H712 * - 005 - HT H712 * - 010 - HT H712 * - 020 - HT H712 * - 030 - HT	H713 * - 002 - HT H713 * - 005 - HT H713 * - 010 - HT H713 * - 020 - HT H713 * - 030 - HT	H714 *-002 - HT H714 *-005 - HT H714 *-010 - HT H714 *-020 - HT H714 *-030 - HT	A	B	5000 PSI S	HR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7) 34.0 (2.3)	2.9 (.20) 5.3 (.37) 8.8 (.61) 18.0 (1.24) 45.1 (3.11) 87.5 (6.04) 150 (10.4)	H782 * - 002 - HT H782 * - 005 - HT H782 * - 010 - HT H782 * - 020 - HT H782 * - 030 - HT H782 * - 040 - HT H782 * - 050 - HT	H783 * - 002 - HT H783 * - 005 - HT H783 * - 010 - HT H783 * - 020 - HT H783 * - 030 - HT H783 * - 040 - HT H783 * - 050 - HT	H784 *-002 - HT H784 *-005 - HT H784 *-010 - HT H784 *-020 - HT H784 *-030 - HT H784 *-040 - HT H784 *-050 - HT	A	B	5000 PSI S	HR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H812 * - 030 - HT H812 * - 050 - HT H812 * - 075 - HT H812 * - 100 - HT H812 * - 150 - HT	H813 * - 030 - HT H813 * - 050 - HT H813 * - 075 - HT H813 * - 100 - HT H813 * - 150 - HT	H814 *-030 - HT H814 *-050 - HT H814 *-075 - HT H814 *-100 - HT H814 *-150 - HT	A	B	5000 PSI S	HR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H882 * - 030 - HT H882 * - 050 - HT H882 * - 075 - HT H882 * - 100 - HT H882 * - 150 - HT	H883 * - 030 - HT H883 * - 050 - HT H883 * - 075 - HT H883 * - 100 - HT H883 * - 150 - HT	H884 *-030 - HT H884 *-050 - HT H884 *-075 - HT H884 *-100 - HT H884 *-150 - HT	A	B	5000 PSI S	HR
1½" Code 62	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	4.8 (.33) 12.5 (.86) 31.9 (2.2) 39.0 (2.7) 110 (7.6)	H818 * - 030 - HT H818 * - 050 - HT H818 * - 075 - HT H818 * - 100 - HT H818 * - 150 - HT			A	B	4000 PSI S	HR

[1]Fractional sizes apply to NPTF and BSPP.

(example) H 713 A - 030 - HR



NOTE: HT suffix represents standard high temperature configuration. For reverse flow high temperature, replace HT with HR suffix.

NOTE: HR option is not available with brass flow meters.

⚠ CAUTION: For emulsions with less than 20% oil, factory recommends the Brass body meter.

3500/6000 PSI Flow Meters

For Water and Other Liquids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.

SPECIFICATIONS:

MATERIALS:

C360 Brass body, piston and cone①

T303 Stainless body, C360 Brass piston and cone

COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temp. meters, see page 35.

PRESSURE RATING:

Brass Operating: 3,500 psi/241 bar max. (800 psi/55 bar max. for 3" series) with a 3:1 safety factor.

For High Cycle Applications: See page 7

Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series) with a 3:1 safety factor.

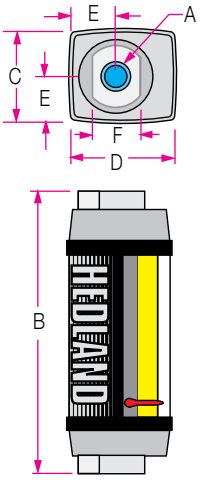
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 34. For detailed differential pressure charts, see page 64.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	**LENGTH in (mm)**	**WIDTH in (mm)**	**DEPTH in (mm)**	**OFFSET in (mm)**	**FLATS in (mm)**
¼ (SAE 6)	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½ (SAE 10)	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾ (SAE 12)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1 (SAE 16)	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼ (SAE 20)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½ (SAE 24)	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)



NOTE: Dimensions for 3" can be found on page 78. Weights for all sizes can be found on page 79.

①3 inch models have Celcon® piston/piston ring

Celcon is a registered trademark of Hoechst Celanese Corp.
Viton is a registered trademark of DuPont Dow Elastomers

3500/6000 PSI Flow Meters

For Water and Other Liquids

ORDERING INFORMATION:

NOMINAL PORT SIZE[2]	FLOW RANGE		PRESSURE DROP		MODEL NUMBER (see example below)			MATERIAL	
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	SAE	NPTF	BSPP[3]	BRASS 3500 PSI	STAINLESS
¼" SAE 6	.02 - 0.2 .05 - 0.5 0.1 - 1.0 0.2 - 2.0	0.1 - 0.75 0.2 - 1.9 0.5 - 3.75 1 - 7.5	3.5 (.24) 3.0 (.21) 4.0 (.28) 6.0 (.41)	4.0 (.28) 5.0 (.35) 9.0 (.62) 13 (.90)	H204 * - 002 H204 * - 005 H204 * - 010 H204 * - 020	H205 * - 002 H205 * - 005 H205 * - 010 H205 * - 020	H206 *-002 H206 *-005 H206 *-010 H206 *-020	B	6000 PSI S
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	H604 * - 001 H604 * - 002 H604 * - 005 H604 * - 010 H604 * - 015	H605 * - 001 H605 * - 002 H605 * - 005 H605 * - 010 H605 * - 015	H606 *-001 H606 *-002 H606 *-005 H606 *-010 H606 *-015	B	6000 PSI S
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	H704 * - 002 H704 * - 005 H704 * - 010 H704 * - 020 H704 * - 030	H705 * - 002 H705 * - 005 H705 * - 010 H705 * - 020 H705 * - 030	H706 *-002 H706 *-005 H706 *-010 H706 *-020 H706 *-030	B	5000 PSI S
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24 (1.7) 34 (2.3)	H754 * - 002 H754 * - 005 H754 * - 010 H754 * - 020 H754 * - 030 H754 * - 040 H754 * - 050	H755 * - 002 H755 * - 005 H755 * - 010 H755 * - 020 H755 * - 030 H755 * - 040 H755 * - 050	H756 *-002 H756 *-005 H756 *-010 H756 *-020 H756 *-030 H756 *-040 H756 *-050	B	5000 PSI S
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	H804 * - 030 H804 * - 050 H804 * - 075 H804 * - 100 H804 * - 150	H805 * - 030 H805 * - 050 H805 * - 075 H805 * - 100 H805 * - 150	H806 *-030 H806 *-050 H806 *-075 H806 *-100 H806 *-150	B	5000 PSI S
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	H854 * - 030 H854 * - 050 H854 * - 075 H854 * - 100 H854 * - 150	H855 * - 030 H855 * - 050 H855 * - 075 H855 * - 100 H855 * - 150	H856 *-030 H856 *-050 H856 *-075 H856 *-100 H856 *-150	B	5000 PSI S
3"	5 - 50 10 - 100 30 - 150 20 - 275	20 - 190 40 - 360 125 - 575 100 - 1000	.50 (.03) 1.40 (.10) 3.25 (.22) 11.0 (.76)	.75 (.05) 2.25 (1.6) 5.25 (.36) 18 (1.2)	Not Available	H905 B - 050 H905 B - 100 H905 B - 150 H905 B - 275	H906 B - 050 H906 B - 100 H906 B - 150 H906 B - 275	800 PSI B	Not Available

[2]Fractional sizes apply to NPTF and BSPP.

[3]3 inch models have BSPT (BS21) threads

(example) **H 705 B - 030**

3500/6000 PSI High Temperature

Flow Meters For Water and Other Liquids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 500 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.

SPECIFICATIONS:

MATERIALS:
C360 Brass body, piston and cone
T303 Stainless body, C360 Brass piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Seals: Viton®
Scale Support: T316 SS
Scale: Polymide
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator: Nickel-plated Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Bumper: 2011 - T3 Anodized Aluminum
Guard: Cylindrical Pyrex® Glass
End Caps: 2011 - T3 Anodized Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent
For detailed "Pressure vs. Temperature" correlation information, see page 36.

PRESSURE RATING:
Brass Operating: 3,500 psi/241 bar max. with a 3:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

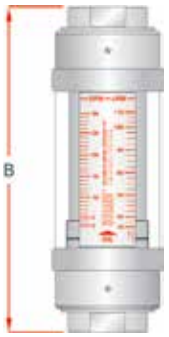
PRESSURE DROP: See Ordering Information Table, page 36.
For detailed differential pressure charts, see page 64.

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

DIMENSIONS:

A	B	C	D
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	FLATS in (mm)
¼ (SAE 6)	6.60 (168)	2.01 (53)	1.25 (32)
½ (SAE 10)	6.60 (168)	2.01 (53)	1.25 (32)
¾ (SAE 12)	7.20 (183)	2.48 (63)	1.50 (38)
1 (SAE 16)	7.20 (183)	2.48 (63)	1.75 (44)
1¼ (SAE 20)	12.20 (310)	4.20 (105)	2.75 (70)
1½ (SAE 24)	12.20 (310)	4.20 (105)	2.75 (70)

NOTE: Weights for all sizes can be found on page 79.



Pyrex is a registered trademark of Corning, Inc.
Teflon is a registered trademark of E.I. DuPont de Nemours & Co.
Viton is a registered trademark of DuPont Dow Elastomers

3500/6000 PSI High Temperature

Flow Meters For Water and Other Liquids

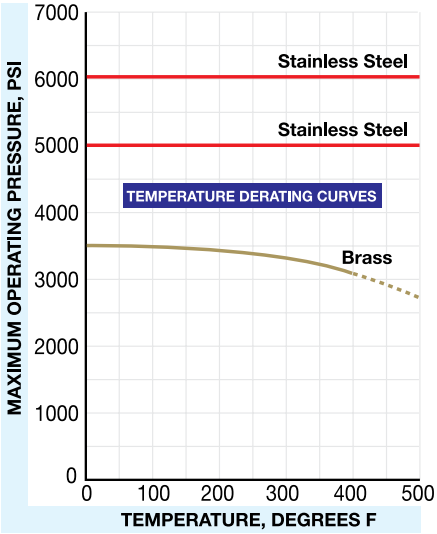
ORDERING INFORMATION:

NOMINAL PORT SIZE②	FLOW RANGE		PRESSURE DROP		MODEL NUMBER (see example below)			MATERIAL	
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	SAE	NPTF	BSPP③	BRASS 3500 PSI	STAINLESS
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1 - 7.5	4.0 (.28) 6.0 (.41)	9.0 (.62) 13.0 (.90)	H204 ✱ - 010 - HT H204 ✱ - 020 - HT	H205 ✱ - 010 - HT H205 ✱ - 020 - HT	H206 ✱-010 - HT H206 ✱-020 - HT	B	6000 PSI S
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	2.75 (.19) 3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	H604 ✱ - 001 - HT H604 ✱ - 002 - HT H604 ✱ - 005 - HT H604 ✱ - 010 - HT H604 ✱ - 015 - HT	H605 ✱ - 001 - HT H605 ✱ - 002 - HT H605 ✱ - 005 - HT H605 ✱ - 010 - HT H605 ✱ - 015 - HT	H606 ✱-001 - HT H606 ✱-002 - HT H606 ✱-005 - HT H606 ✱-010 - HT H606 ✱-015 - HT	B	6000 PSI S
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	H704 ✱ - 002 - HT H704 ✱ - 005 - HT H704 ✱ - 010 - HT H704 ✱ - 020 - HT H704 ✱ - 030 - HT	H705 ✱ - 002 - HT H705 ✱ - 005 - HT H705 ✱ - 010 - HT H705 ✱ - 020 - HT H705 ✱ - 030 - HT	H706 ✱-002 - HT H706 ✱-005 - HT H706 ✱-010 - HT H706 ✱-020 - HT H706 ✱-030 - HT	B	5000 PSI S
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62) 12.5 (.86)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7) 34.0 (2.3)	H754 ✱ - 002 - HT H754 ✱ - 005 - HT H754 ✱ - 010 - HT H754 ✱ - 020 - HT H754 ✱ - 030 - HT H754 ✱ - 040 - HT H754 ✱ - 050 - HT	H755 ✱ - 002 - HT H755 ✱ - 005 - HT H755 ✱ - 010 - HT H755 ✱ - 020 - HT H755 ✱ - 030 - HT H755 ✱ - 040 - HT H755 ✱ - 050 - HT	H756 ✱-002 - HT H756 ✱-005 - HT H756 ✱-010 - HT H756 ✱-020 - HT H756 ✱-030 - HT H756 ✱-040 - HT H756 ✱-050 - HT	B	5000 PSI S
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	H804 ✱ - 030 - HT H804 ✱ - 050 - HT H804 ✱ - 075 - HT H804 ✱ - 100 - HT H804 ✱ - 150 - HT	H805 ✱ - 030 - HT H805 ✱ - 050 - HT H805 ✱ - 075 - HT H805 ✱ - 100 - HT H805 ✱ - 150 - HT	H806 ✱-030 - HT H806 ✱-050 - HT H806 ✱-075 - HT H806 ✱-100 - HT H806 ✱-150 - HT	B	5000 PSI S
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45) 10.5 (.72)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0) 27.5 (1.9)	H854 ✱ - 030 - HT H854 ✱ - 050 - HT H854 ✱ - 075 - HT H854 ✱ - 100 - HT H854 ✱ - 150 - HT	H855 ✱ - 030 - HT H855 ✱ - 050 - HT H855 ✱ - 075 - HT H855 ✱ - 100 - HT H855 ✱ - 150 - HT	H856 ✱-030 - HT H856 ✱-050 - HT H856 ✱-075 - HT H856 ✱-100 - HT H856 ✱-150 - HT	B	5000 PSI S

①Fractional sizes apply to NPTF and BSPP.

(example) **H 705 B - 030 - HT**

NOTE: HT suffix represents standard high temperature configuration.



6000 PSI Flow Meters

For A.P.I. Oil / Caustic and Corrosive Liquids

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

SPECIFICATIONS:

MATERIALS:
T316 Stainless body, piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: NPTF ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temperatures consult factory

PRESSURE RATING:
Oil / Liquids Operating: 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" Series) with a 3:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 38.
For detailed differential pressure charts, see page 65 for API Oil, and page 64 for Liquids.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

HOSTILE ENVIRONMENT OPTION SPECIFICATIONS:

MATERIALS:
T316 Stainless body, piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Seals: Viton®
End Caps: T316 SS
Internal Magnet: Teflon® Coated Alnico 8
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator: T416 SS
Bumper: T316 SS
Scale Support: T316 SS
Guard: Cylindrical Pyrex® glass

TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent

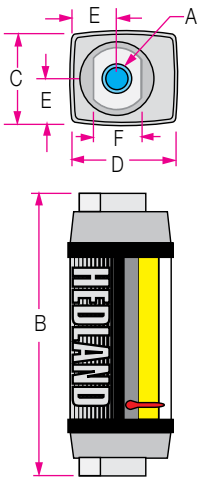
For detailed "Pressure vs. Temperature" correlation information, see page 38.

NOTE: See page 35 for dimensions and similar photo illustration.

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
¼	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)

NOTE: Weights for all sizes can be found on page 79.



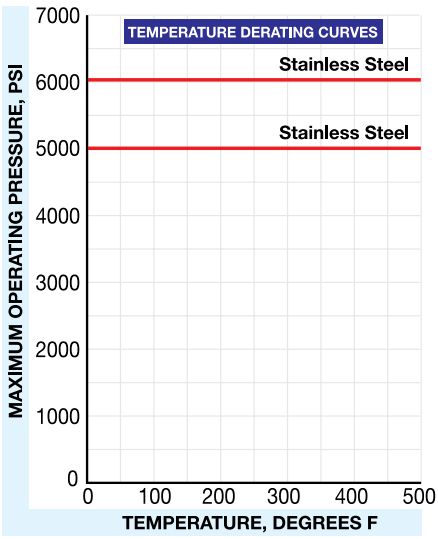
6000 PSI Flow Meters

For A.P.I. Oil / Caustic and Corrosive Liquids

ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP		MODEL NUMBER (see example below)				HOSTILE ENVIRONMENT OPTION
					API - OIL .876 (S.G.)		LIQUIDS 1.0 (S.G.)		
	GPM	LPM	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	NPTF	BSPP	NPSF	BSPP	
¼"	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1 - 7.5	4.0 (.28) 6.0 (.41)	9.0 (.62) 13.0 (.90)	6000 PSI H231X - 010 - † H231X - 020 - †	6000 PSI H232X - 010 - † H232X - 020 - †	6000 PSI H234X - 010 - † H234X - 020 - †	6000 PSI H235X - 010 - † H235X - 020 - †	HE
½"	0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	1 - 7.5 2 - 19 5 - 38 4 - 56	2.0 (.14) 3.0 (.21) 4.0 (.28) 6.5 (.45)	3.0 (.21) 6.0 (.41) 9.5 (.66) 18.5 (1.3)	6000 PSI H631X - 002 - † H631X - 005 - † H631X - 010 - † H631X - 015 - †	6000 PSI H632X - 002 - † H632X - 005 - † H632X - 010 - † H632X - 015 - †	6000 PSI H634X - 002 - † H634X - 005 - † H634X - 010 - † H634X - 015 - †	6000 PSI H635X - 002 - † H635X - 005 - † H635X - 010 - † H635X - 015 - †	HE
¾"	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1)	5000 PSI H731X - 002 - † H731X - 005 - † H731X - 010 - † H731X - 020 - † H731X - 030 - †	5000 PSI H732X - 002 - † H732X - 005 - † H732X - 010 - † H732X - 020 - † H732X - 030 - †	5000 PSI H734X - 002 - † H734X - 005 - † H734X - 010 - † H734X - 020 - † H734X - 030 - †	5000 PSI H735X - 002 - † H735X - 005 - † H735X - 010 - † H735X - 020 - † H735X - 030 - †	HE
1"	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150	1.0 (.07) 2.5 (.17) 3.5 (.24) 4.0 (.28) 7.0 (.48) 9.0 (.62)	2.0 (.14) 3.5 (.24) 9.0 (.62) 9.0 (.62) 16.5 (1.1) 24.0 (1.7)	5000 PSI H741X - 002 - † H741X - 005 - † H741X - 010 - † H741X - 020 - † H741X - 030 - † H741X - 040 - †	5000 PSI H742X - 002 - † H742X - 005 - † H742X - 010 - † H742X - 020 - † H742X - 030 - † H742X - 040 - †	5000 PSI H744X - 002 - † H744X - 005 - † H744X - 010 - † H744X - 020 - † H744X - 030 - † H744X - 040 - †	5000 PSI H745X - 002 - † H745X - 005 - † H745X - 010 - † H745X - 020 - † H745X - 030 - † H745X - 040 - †	HE
1¼"	3 - 30 5 - 50 10 - 75 10 - 100	10 - 110 20 - 190 40 - 280 50 - 380	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0)	5000 PSI H831X - 030 - † H831X - 050 - † H831X - 075 - † H831X - 100 - †	5000 PSI H832X - 030 - † H832X - 050 - † H832X - 075 - † H832X - 100 - †	5000 PSI H834X - 030 - † H834X - 050 - † H834X - 075 - † H834X - 100 - †	5000 PSI H835X - 030 - † H835X - 050 - † H835X - 075 - † H835X - 100 - †	HE
1½"	3 - 30 5 - 50 10 - 75 10 - 100	10 - 110 20 - 190 40 - 280 50 - 380	3.0 (.21) 3.5 (.24) 5.0 (.35) 6.5 (.45)	4.0 (.28) 7.0 (.48) 10.5 (.72) 15.0 (1.0)	5000 PSI H841X - 030 - † H841X - 050 - † H841X - 075 - † H841X - 100 - †	5000 PSI H842X - 030 - † H842X - 050 - † H842X - 075 - † H842X - 100 - †	5000 PSI H844X - 030 - † H844X - 050 - † H844X - 075 - † H844X - 100 - †	5000 PSI H845X - 030 - † H845X - 050 - † H845X - 075 - † H845X - 100 - †	HE

NOTE: Consult factory for availability.



(example) **H731X - 030 - HE**

1500 PSI Flow Meters

For Air / Caustic and Corrosive Gases

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

SPECIFICATIONS:

MATERIALS:
T316 Stainless body, piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal/Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: NPTF ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temperatures consult factory

PRESSURE RATING:

Air / Gases Operating: 1,500 psi/103 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

PRESSURE DROP: See Ordering Information Table, page 40.
For detailed differential pressure charts, see page 65.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

HOSTILE ENVIRONMENT OPTION SPECIFICATIONS:

MATERIALS:
T316 Stainless body, piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Seals: Viton®
End Caps: T316 SS
Internal Magnet: Teflon® Coated Alnico 8
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator: T416 SS
Bumper: T316 SS
Scale Support: T316 SS
Guard: Cylindrical Pyrex® glass

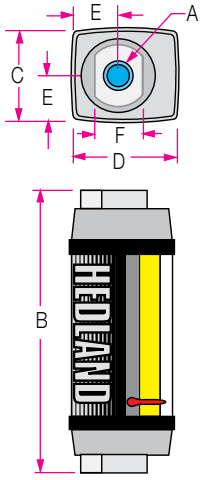
TEMPERATURE RANGE: -20 to +400 °F (-29 to +205 °C) Continuous
+400 to +500 °F (+205 to +260 °C) Intermittent

For detailed "Pressure vs. Temperature" correlation information, see page 40.

NOTE: See page 29 for dimensions and similar photo illustration.

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
¼	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)
½	6.6 (168)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)
¾	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)
1	7.2 (183)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)
1¼	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)
1½	12.2 (310)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)



NOTE: Weights for all sizes can be found on page 79.

Pyrex is a registered trademark of Corning, Inc.
Teflon is a registered trademark of E.I. DuPont de Nemours & Co.
Viton is a registered trademark of DuPont Dow Elastomers

1500 PSI Flow Meters

For Air / Caustic and Corrosive Gases

ORDERING INFORMATION:

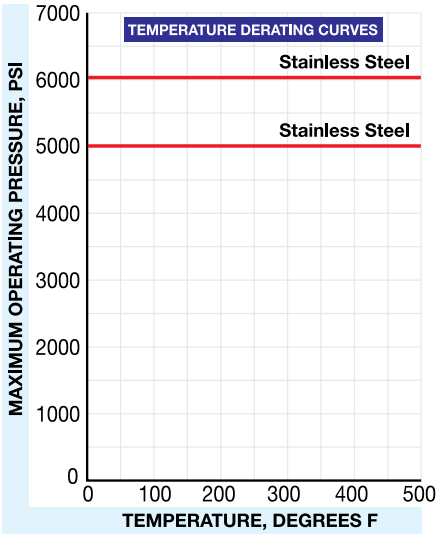
NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP		MODEL NUMBER (see example below)		HOSTILE ENVIRONMENT OPTION
	① SCFM	② L/SEC	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	GASES 1.0 (S.G.) NPTF	GASES 1.0 (S.G.) BSPP	
¼"	2 - 20 3 - 30	1 - 9 1.5 - 14	10.15 (0.70) 13.75 (0.95)	18.71 (1.29) 26.23 (1.81)	H237X - 020 - † H237X - 030 - †	H238X - 020 - † H238X - 030 - †	Not Available
½"	3 - 25 5 - 50 10 - 100 15 - 150	2 - 12 3 - 22 5 - 47 7 - 70	3.73 (0.26) 6.04 (0.42) 7.18 (0.50) 8.06 (0.56)	6.10 (0.42) 10.35 (0.71) 13.85 (0.95) 18.49 (1.27)	H637X - 025 - † H637X - 050 - † H637X - 100 - † H637X - 150 - †	H638X - 025 - † H638X - 050 - † H638X - 100 - † H638X - 150 - †	HE
¾"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	2.99 (0.21) 2.00 (0.14) 7.19 (0.50) 4.44 (0.31) 6.27 (0.43)	5.90 (0.41) 3.58 (0.25) 12.87 (0.89) 9.52 (0.66) 15.38 (1.06)	H737X - 025 - † H737X - 050 - † H737X - 100 - † H737X - 150 - † H737X - 250 - †	H738X - 025 - † H738X - 050 - † H738X - 100 - † H738X - 150 - † H738X - 250 - †	HE
1"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	2.99 (0.21) 2.00 (0.14) 7.19 (0.50) 4.44 (0.31) 6.27(0.43)	5.90 (0.41) 3.58 (0.25) 12.87 (0.89) 9.52 (0.66) 15.38 (1.06)	H747X - 025 - † H747X - 050 - † H747X - 100 - † H747X - 150 - † H747X - 250 - †	H748X - 025 - † H748X - 050 - † H748X - 100 - † H748X - 150 - † H748X - 250 - †	HE
1¼"	20 - 200 40 - 400 60 - 600 80 - 800	10 - 95 20 - 180 30 - 280 50 - 350	1.89 (0.13) 2.53 (0.17) 4.47 (0.31) 6.13 (0.42)	3.16 (0.22) 5.49 (0.38) 10.71 (0.74) 17.14 (1.18)	H837X - 200 - † H837X - 400 - † H837X - 600 - † H837X - 800 - †	H838X - 200 - † H838X - 400 - † H838X - 600 - † H838X - 800 - †	HE
1½"	20 - 200 40 - 400 60 - 600 80 - 800	10 - 95 20 - 180 30 - 280 50 - 350	1.89 (0.13) 2.53 (0.17) 4.47 (0.31) 6.13 (0.42)	3.16 (0.22) 5.49 (0.38) 10.71 (0.74) 17.14 (1.18)	H847X - 200 - † H847X - 400 - † H847X - 600 - † H847X - 800 - †	H848X - 200 - † H848X - 400 - † H848X - 600 - † H848X - 800 - †	HE

(example) **H 737X - 250 - HE**

NOTE: Consult factory for availability.
① SCFM/PSI multipressure scales are standard.
② L/sec/bar multipressure scales are available at no extra charge. Consult factory for other options.

NOTE: When ordering a L/sec/bar scale add "S1" suffix to part number

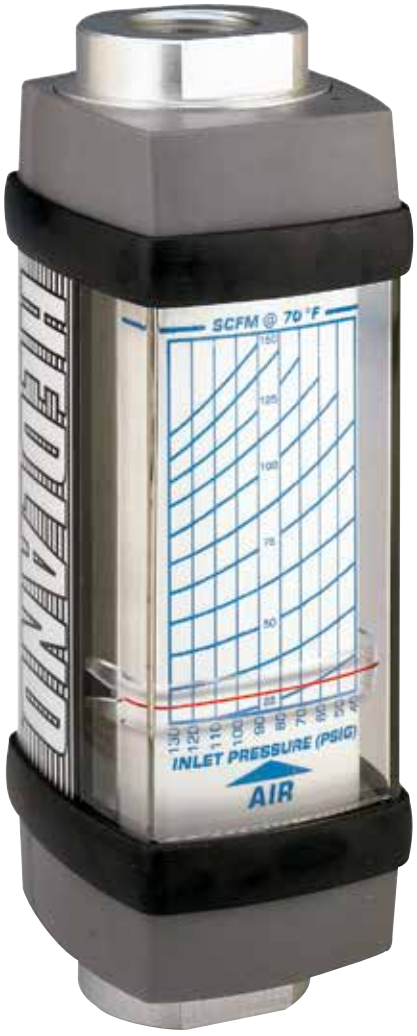
(example) H737 X - 250 - S1 or H737 X - 250 - HE - S1



1000/1500 PSI Flow Meters

For Air and Other Compressed Gases

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.



SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone①
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C) for higher temperatures, consult factory

PRESSURE RATING:

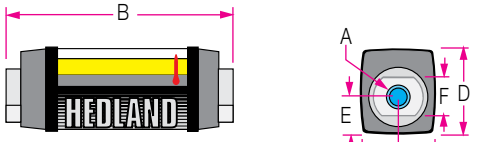
Aluminum / Brass Operating: 1,000 psi/69 bar max. (250 psi/17 bar max. for 3" series) with a 10:1 safety factor.
For High Cycle Applications: See page 7

Stainless Steel Operating: 1,500 psi/103 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

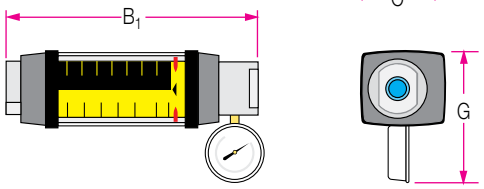
PRESSURE DROP: See Ordering Information Table, page 42.
For detailed differential pressure charts, see page 66.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

STANDARD PRODUCT



STANDARD PRODUCT WITH EP & EG OPTION



DIMENSIONS:

A	B	B_1	C	D	E	F	G
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)	HEIGHT in (mm)
¼ (SAE 6)	4.8 (122)	6.12 (155)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)	5.0 (127)
½ (SAE 10)	6.6 (168)	8.00 (203)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)	5.4 (137)
¾ (SAE 12)	7.2 (183)	8.9 (226)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)	5.9 (150)
1 (SAE 16)	7.2 (183)	8.9 (226)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)	5.9 (150)
1¼ (SAE 20)	12.2 (310)	13.8 (351)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)	7.2 (183)
1½ (SAE 24)	12.2 (310)	13.8 (351)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)	7.2 (183)

NOTE: Dimensions for 3" meters can be found on page 78.
Weights for all sizes can be found on page 79.

①3 inch models have Celcon® piston/piston ring

Celcon is a registered trademark of Hoechst Celanese Corp.
Viton is a registered trademark of DuPont Dow Elastomers

1000/1500 PSI Flow Meters

For Air and Other Compressed Gases

ORDERING INFORMATION:

NOMINAL PORT SIZE②	FLOW RANGE ③ SCFM	FLOW RANGE ④ L/SEC	PRESSURE DROP 50% FLOW PSI (BAR)	PRESSURE DROP 100% FLOW PSI (BAR)	MODEL NUMBER (see example below) SAE	NPTF	BSPP⑤	MATERIAL ALUMINUM 1000 PSI	MATERIAL BRASS 1000 PSI	MATERIAL STAINLESS 1500 PSI	OPTIONS EXTENDED CAP PLUGGED⑥	OPTIONS EXTENDED CAP W/GAUGE⑥
¼" SAE 6	0.5 - 5 1 - 10 2 - 20 3 - 30	0.2 - 2.2 0.5 - 4.75 1 - 9 1.5 - 14	2.51 (0.17) 9.29 (0.64) 10.15 (0.70) 13.75 (0.95)	4.45 (0.31) 16.46 (1.13) 18.71 (1.29) 26.23 (1.81)	H270 * - 005 - † H270 * - 010 - † H270 * - 020 - † H270 * - 030 - †	H271 * - 005 - † H271 * - 010 - † H271 * - 020 - † H271 * - 030 - †	H272 * - 005 - † H272 * - 010 - † H272 * - 020 - † H272 * - 030 - †	A	B	S	EP	EG
½" SAE 10	3 - 25 5 - 50 10 - 100 15 - 150	2 - 12 3 - 22 5 - 47 7 - 70	3.73 (0.26) 6.04 (0.42) 7.18 (0.50) 8.06 (0.56)	6.10 (0.42) 10.35 (0.71) 13.85 (0.95) 18.49 (1.27)	H670 * - 025 - † H670 * - 050 - † H670 * - 100 - † H670 * - 150 - †	H671 * - 025 - † H671 * - 050 - † H671 * - 100 - † H671 * - 150 - †	H672 * - 025 - † H672 * - 050 - † H672 * - 100 - † H672 * - 150 - †	A	B	S	EP	EG
¾" SAE 12	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	2.99 (0.21) 2.00 (0.14) 7.19 (0.50) 4.44 (0.31) 6.27 (0.43)	5.90 (0.41) 3.58 (0.25) 12.87 (0.89) 9.52 (0.66) 15.38 (1.06)	H770 * - 025 - † H770 * - 050 - † H770 * - 100 - † H770 * - 150 - † H770 * - 250 - †	H771 * - 025 - † H771 * - 050 - † H771 * - 100 - † H771 * - 150 - † H771 * - 250 - †	H772 * - 025 - † H772 * - 050 - † H772 * - 100 - † H772 * - 150 - † H772 * - 250 - †	A	B	S	EP	EG
1" SAE 16	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	2.99 (0.21) 2.00 (0.14) 7.19 (0.50) 4.44 (0.31) 6.27 (0.43)	5.90 (0.41) 3.58 (0.25) 12.87 (0.89) 9.52 (0.66) 15.38 (1.06)	H790 * - 025 - † H790 * - 050 - † H790 * - 100 - † H790 * - 150 - † H790 * - 250 - †	H791 * - 025 - † H791 * - 050 - † H791 * - 100 - † H791 * - 150 - † H791 * - 250 - †	H792 * - 025 - † H792 * - 050 - † H792 * - 100 - † H792 * - 150 - † H792 * - 250 - †	A	B	S	EP	EG
1¼" SAE 20	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	1.89 (0.13) 2.53 (0.17) 4.47 (0.31) 6.13 (0.42) 9.84 (0.68)	3.16 (0.22) 5.49 (0.38) 10.71 (0.74) 17.14 (1.18) 28.45 (1.96)	H870 * - 200 - † H870 * - 400 - † H870 * - 600 - † H870 * - 800 - † H870 * - 999 - †	H871 * - 200 - † H871 * - 400 - † H871 * - 600 - † H871 * - 800 - † H871 * - 999 - †	H872 * - 200 - † H872 * - 400 - † H872 * - 600 - † H872 * - 800 - † H872 * - 999 - †	A	B	S	EP	EG
1½" SAE 24	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	1.89 (0.13) 2.53 (0.17) 4.47 (0.31) 6.13 (0.42) 9.84 (0.68)	3.16 (0.22) 5.49 (0.38) 10.71 (0.74) 17.14 (1.18) 28.45 (1.96)	H890 * - 200 - † H890 * - 400 - † H890 * - 600 - † H890 * - 800 - † H890 * - 999 - †	H891 * - 200 - † H891 * - 400 - † H891 * - 600 - † H891 * - 800 - † H891 * - 999 - †	H892 * - 200 - † H892 * - 400 - † H892 * - 600 - † H892 * - 800 - † H892 * - 999 - †	A	B	S	EP	EG
3"	100 - 1400 200 - 2200	75 - 750 75 - 1130	10.0 (0.69) 10.0 (0.69)	16.0 (1.10) 16.0 (1.10)	Not Available	H971 * - 140 H971 * - 220	H972 * - 140 H972 * - 220	250 PSI A	250 PSI B	Not Available		

NOTE: Consult factory for other options.
②Fractional sizes apply to NPTF and BSPP.
③SCFM/PSI multipressure scales are standard.
④L/sec/bar multipressure scales are available at no extra charge.
⑤3 inch models have BSPT (BS21) threads
⑥EP and EG options are only available with NPTF and BSPP models.

(example) **H 771 A - 030 - EP**

NOTE: When ordering a L/sec/bar scale add "S1" suffix to part number

(example) H771 A - 250 - S1 or H771 A - 250 - EG - S1

600 PSI Test Kits

For Air and Other Compressed Gases

- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Temperature up to 240 °F
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

SPECIFICATIONS:

MATERIALS:
2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone

COMMON PARTS:
Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Guard: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Guard Seal / Bumper: Buna N
Scale Support: 6063 - T6 Aluminum
End Caps: Nylon ST

THREADS: NPTF ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:
Aluminum / Brass Operating: 600 psi/41 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating: 600 psi/41 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

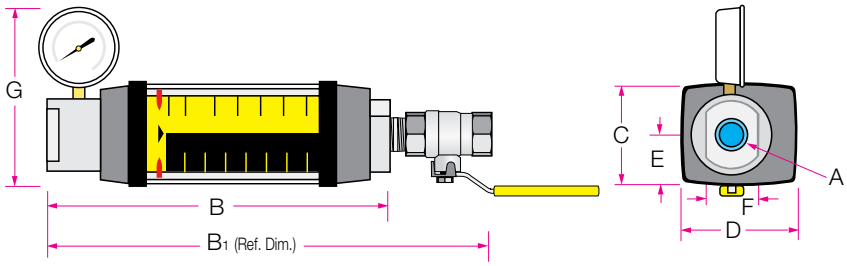
PRESSURE DROP: See Ordering Information Table, page 44.
For detailed differential pressure charts, see page 66.

ACCURACY: ±2% of full scale, ±7% of full scale for ¼" meters **REPEATABILITY:** ±1%

PRESSURE GAUGE: Glycerin dampened, 0 - 160 psi / 0 - 10 bar pressure range available on all test kits.

LOAD VALVE: ½" to 1½" nickel-plated brass ball valve with chrome-plated brass ball and Teflon® seals.

SILENCER (optional) : Brass body with 40 micron porous sintered bronze filter.



DIMENSIONS:

A	B	B1	C	D	E	F	G
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)	HEIGHT in (mm)
¼	6.12 (155)	8.38 (213)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)	5.0 (127)
½	8.00 (203)	11.0 (279)	2.07 (53)	2.40 (61)	1.04 (26)	1.25 (32)	5.4 (137)
¾	8.90 (226)	12.38 (315)	2.48 (63)	2.85 (72)	1.24 (32)	1.50 (38)	5.9 (150)
1	8.90 (226)	12.38 (315)	2.48 (63)	2.85 (72)	1.24 (32)	1.75 (44)	5.9 (150)
1¼	13.80 (351)	18.39 (465)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)	7.2 (183)
1½	13.80 (351)	18.39 (465)	4.12 (105)	4.72 (120)	2.06 (52)	2.75 (70)	7.2 (183)

NOTE: Weights for all sizes can be found on page 79.
BSPP Test Kits include outlet adapter.

Teflon is a registered trademark of E.I. DuPont de Nemours & Co.
Viton is a registered trademark of DuPont Dow Elastomers

600 PSI Test Kits

For Air and Other Compressed Gases

ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		PRESSURE DROP		MODEL NUMBER (see example below)		MATERIAL		
	① SCFM	② L/SEC	50% FLOW PSI (BAR)	100% FLOW PSI (BAR)	NPTF	BSPP	ALUMINUM 600 PSI	BRASS 600 PSI	STAINLESS 600 PSI
¼"	0.5 - 5 1 - 10 2 - 20 3 - 30	0.2 - 2.2 0.5 - 4.75 1 - 9 1.5 - 14	3.38 (0.23) 8.08 (0.56) 11.02 (0.76) 14.62 (1.01)	5.32 (0.37) 17.33 (1.19) 19.64 (1.35) 27.10 (1.87)	H271 * - 005 - TK H271 * - 010 - TK H271 * - 020 - TK H271 * - 030 - TK	H272 * - 005 - TK H272 * - 010 - TK H272 * - 020 - TK H272 * - 030 - TK	A	B	S
½"	3 - 25 5 - 50 10 - 100 15 - 150	2 - 12 3 - 22 5 - 47 7 - 70	4.60 (0.32) 6.91 (0.48) 8.67 (0.60) 8.93 (0.62)	6.97 (0.48) 11.22 (0.77) 14.72 (1.01) 19.36 (1.33)	H671 * - 025 - TK H671 * - 050 - TK H671 * - 100 - TK H671 * - 150 - TK	H672 * - 025 - TK H672 * - 050 - TK H672 * - 100 - TK H672 * - 150 - TK	A	B	S
¾"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	3.86 (0.27) 2.87 (0.20) 8.06 (0.56) 5.31 (0.37) 7.14 (0.49)	6.77 (0.47) 4.45 (0.31) 13.74 (0.95) 10.39 (0.72) 16.25 (1.12)	H771 * - 025 - TK H771 * - 050 - TK H771 * - 100 - TK H771 * - 150 - TK H771 * - 250 - TK	H772 * - 025 - TK H772 * - 050 - TK H772 * - 100 - TK H772 * - 150 - TK H772 * - 250 - TK	A	B	S
1"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 15 2 - 23 5 - 47.5 7 - 70 10 - 118	3.86 (0.27) 2.87 (0.20) 8.06 (0.56) 5.31 (0.37) 7.14 (0.49)	6.77 (0.47) 4.45 (0.31) 13.74 (0.95) 10.39 (0.72) 16.25 (1.12)	H791 * - 025 - TK H791 * - 050 - TK H791 * - 100 - TK H791 * - 150 - TK H791 * - 250 - TK	H792 * - 025 - TK H792 * - 050 - TK H792 * - 100 - TK H792 * - 150 - TK H792 * - 250 - TK	A	B	S
1¼"	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	2.76 (0.19) 3.40 (0.23) 5.34 (0.37) 7.00 (0.48) 10.71 (0.74)	4.03 (0.28) 6.36 (0.44) 11.58 (0.80) 18.01(1.24) 29.32 (2.02)	H871 * - 200 - TK H871 * - 400 - TK H871 * - 600 - TK H871 * - 800 - TK H871 * - 999 - TK	H872 * - 200 - TK H872 * - 400 - TK H872 * - 600 - TK H872 * - 800 - TK H872 * - 999 - TK	A	B	S
1½"	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	2.76 (0.19) 3.40 (0.23) 5.34 (0.37) 7.00 (0.48) 10.71 (0.74)	4.03 (0.28) 6.36 (0.44) 11.58 (0.80) 18.01(1.24) 29.32 (2.02)	H891 * - 200 - TK H891 * - 400 - TK H891 * - 600 - TK H891 * - 800 - TK H891 * - 999 - TK	H892 * - 200 - TK H892 * - 400 - TK H892 * - 600 - TK H892 * - 800 - TK H892 * - 999 - TK	A	B	S

NOTE: Consult factory for other options.

①SCFM/PSI multipressure scales are standard.

②L/sec-bar multipressure scales are available at no extra charge.

(example) **H 771 A - 250 - TK**

NOTE: When ordering a L/sec-bar scale add "S1" suffix to part number

(example) H771 A - 250 - TK - S1

Flow-Alert Flow Switches (Micro Switch)

For Liquids / Air and Other Compressed Gases

- Automatically signals alarm if flow is too high or too low
- Automatically opens or closes electrical circuits
- Triggers warning lights, buzzers and other devices
- Shuts down pumps and/or other equipment to protect your operation against permanent damage
- Available from ¼" to 1½" sizes in aluminum, brass and stainless
- Installs in any position
- Easier-to-read linear scale
- No flow straighteners or special piping requirements
- Relatively insensitive to shock and vibration
- Special scales available

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone (Oil, PE, WBF, & Air Meters)
T303 Stainless body, C360 Brass piston and cone (Water meters)
T316 Stainless body, piston and cone

PETROLEUM (Oil) COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Enclosure Seal: Silicone gasket
Scale Support: 6063 - T6 Aluminum

PHOSPHATE ESTER (PE) COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: EPR
Lens: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Indicator and Internal Magnet: PPS / Ceramic
Enclosure Seal: Silicone gasket
Scale Support: 6063 - T6 Aluminum

WATER-BASED (WBF), WATER, AIR COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Enclosure Seal: Silicone gasket
Scale Support: 6063 - T6 Aluminum

API OIL / AIR / CAUSTIC and CORROSIVE LIQUIDS and GASES:

Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Indicator and Internal Magnet: PPS / Ceramic
Enclosure Seal: Silicone gasket
Scale Support: 6063 - T6 Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:

Aluminum / Brass Operating:

Liquids - 3,500 psi/241 bar max. with a 3:1 safety factor.
Gases - 1,000 psi/69 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

Stainless Steel Operating:

Liquids - 6,000 psi/414 bar max. with a 3:1 safety factor.
Gases - 1,500 psi/103 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE DROP REFERENCE TABLE:

	FLUID TYPE							
	Oil	PE	WBF	Water	API Oil	Caustic & Corrosive Liquids	Air/Caustic & Corrosive Gases	Air
50% / 100% Pressure Drop	p. 10	p. 18	p. 26	p. 34	p. 38	p. 38	p. 40	p. 42
Pressure Drop Chart	p. 61	p. 62	p. 63	p. 64	p. 65	p. 64	p. 65	p. 66

Viton is a registered trademark of DuPont Dow Elastomers

Flow-Alert Flow Switches (Micro Switch)

For Liquids / Air and Other Compressed Gases

DIMENSIONS:

A	B	C	D	E	F	G	H	I	J	K
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	HOLE DIA. in (mm)
¼ (SAE 6)	6.6 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
½ (SAE 10)	6.6 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
¾ (SAE 12)	7.2 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1 (SAE 16)	7.2 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1¼ (SAE 20)	12.2 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)
1½ (SAE 24)	12.2 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)

ENCLOSURE:

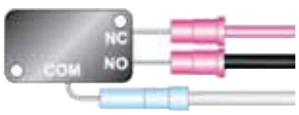
Material: Anodized and epoxy powder-coated aluminum with polycarbonate lens.
Seals: Silicone gasket between enclosure and lens.
Viton® O-rings between enclosure and flow meter body.
Connection: Pig-tail conductor (standard) with water-tight strain relief.
Other connections, including quick-disconnect, are available – consult factory for details.
Fastener: T303 SS
Rating: NEMA 12 & 13 (IP52/54)

ELECTRICAL CIRCUITRY:

Adjustable Flow-Alert signal: single (1) or double (2) switch, pre-wired single-pole, double-throw (SPDT) with high or low flow limit setting, adjustable over the entire flow measuring range. Other switches are available – consult factory for details.

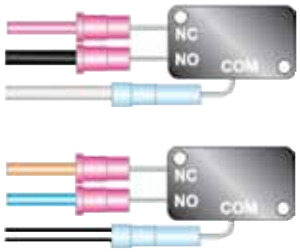
10A @ 250 VAC maximum, 0.5A @ 125 VDC maximum.

All Flow-Alert sizes (¼ to 1½ inch series) are offered in single (1) switch or double (2) switch models.
The single switch model is supplied with a 34" length of 4-wire #18 AWG jacketed cable.
The double switch model is supplied with an 18" length of 7-wire #16 AWG jacketed cable.
Optional 8 ft. cables are available – consult factory for details.



One (1) Switch 4-wire cable
Red: Normally Closed (NC)
Black: Normally Open (NO)
White: Common (COM)
Green: Ground

Two (2) Switch 7-wire cable
Switch #1
Red: Normally Closed (NC)
Black: Normally Open (NO)
White: Common (COM)
Switch #2
Orange: Normally Closed (NC)
Blue: Normally Open (NO)
White/Black: Common (COM)
Green: Ground



NOTE: Weights for all sizes can be found on page 79.

Flow-Alert Flow Switches (Reed Switch)

For Liquids / Air and Other Compressed Gases

- No mechanical linkage
- Automatically signals alarm if flow is too high or too low
- Available from ¼" to 1½" sizes in aluminum, brass and stainless
- Installs in any position
- Easier-to-read linear scale
- No flow straighteners or special piping requirements
- Relatively insensitive to shock and vibration
- Special scales available

SPECIFICATIONS:

MATERIALS:
2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone (Oil, PE, WBF, & Air meters)
T303 Stainless body, C360 Brass piston and cone (Water meters)
T316 Stainless body, piston and cone

PETROLEUM (Oil) COMMON PARTS:
Spider Plate: T316 SS **Retaining Ring:** SAE 1070/1090 Carbon Steel
Spring: T302 SS **Retaining Spring:** SAE 1070/1090 Carbon Steel
Fasteners: T303 SS **Indicator:** T400 Series Stainless
Pressure Seals: Viton® **Internal Magnet:** Teflon® Coated Alnico 8
Lens: Polycarbonate **Switch Carrier:** Aluminum
Enclosure Seal: Silicone gasket **Scale Support:** 6063 - T6 Aluminum

PHOSPHATE ESTER (PE) COMMON PARTS:
Spider Plate: T316 SS **Retaining Ring:** SAE 1070/1090 Carbon Steel
Spring: T302 SS **Retaining Spring:** SAE 1070/1090 Carbon Steel
Fasteners: T303 SS **Indicator:** T400 Series Stainless
Pressure Seals: EPR **Internal Magnet:** Teflon® Coated Alnico 8
Lens: Polycarbonate **Switch Carrier:** Aluminum
Enclosure Seal: Silicone gasket **Scale Support:** 6063 - T6 Aluminum

WATER-BASED (WBF), WATER, AIR COMMON PARTS:
Spider Plate: T316 SS **Retaining Ring:** T316 SS
Spring: T302 SS **Retaining Spring:** T316 SS
Fasteners: T303 SS **Indicator:** T400 Series Stainless
Pressure Seals: Viton® **Internal Magnet:** Teflon® Coated Alnico 8
Lens: Polycarbonate **Switch Carrier:** Aluminum
Enclosure Seal: Silicone gasket **Scale Support:** 6063 - T6 Aluminum

API OIL / AIR / CAUSTIC and CORROSIVE LIQUIDS and GASES:
Spider Plate: T316 SS **Retaining Ring:** T316 SS
Spring: T316 SS **Retaining Spring:** T316 SS
Fasteners: T316 SS **Indicator:** T400 Series Stainless
Pressure Seals: Viton® **Internal Magnet:** Teflon® Coated Alnico 8
Lens: Polycarbonate **Switch Carrier:** Aluminum
Enclosure Seal: Silicone gasket **Scale Support:** 6063 - T6 Aluminum

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-20 to +116 °C)

PRESSURE RATING:
Aluminum / Brass Operating:
Liquids - 3,500 psi/241 bar max. with a 3:1 safety factor.
Gases - 1,000 psi/69 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7
Stainless Steel Operating:
Liquids - 6,000 psi/414 bar max. with a 3:1 safety factor.
Gases - 1,500 psi/103 bar max. with a 10:1 safety factor.
For High Cycle Applications: See page 7

ACCURACY: ±2% of full scale, ±7% of full scale for 4.8" (122 mm) length ¼" meters

REPEATABILITY: ±1%

PRESSURE DROP REFERENCE TABLE:

	FLUID TYPE							
	Oil	PE	WBF	Water	API Oil	Caustic & Corrosive Liquids	Air/Caustic & Corrosive Gases	Air
50% / 100% Pressure Drop	p. 10	p. 18	p. 26	p. 34	p. 38	p. 38	p. 40	p. 42
Pressure Drop Chart	p. 61	p. 62	p. 63	p. 64	p. 65	p. 64	p. 65	p. 66

Flow-Alert Flow Switches (Reed Switch)

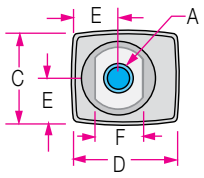
For Liquids / Air and Other Compressed Gases

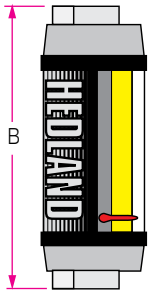
DIMENSIONS:

A	B	C	D	E	F	G	H	I	J	K
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	HOLE DIA. in (mm)
¼ (SAE 6)	6.6 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
½ (SAE 10)	6.6 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
¾ (SAE 12)	7.2 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1 (SAE 16)	7.2 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1¼ (SAE 20)	12.2 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)
1½ (SAE 24)	12.2 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)

DIMENSIONS:

A	B	C	D	E	F
NOMINAL PORT SIZE	LENGTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	FLATS in (mm)
¼ (SAE 6)	4.8 (122)	1.68 (43)	1.90 (48)	.84 (21)	.88 (22)

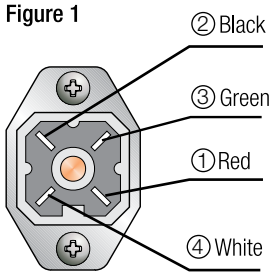




ENCLOSURE:

Material: Anodized and epoxy powder-coated aluminum with polycarbonate lens.
Seals: Silicone gasket between enclosure and lens.
Viton® O-rings between enclosure and flow meter body.
Connection: 4-pin (Protection Class IP65)
Fastener: T303 SS
Rating: NEMA 12 & 13 (IP 52/54)

Figure 1

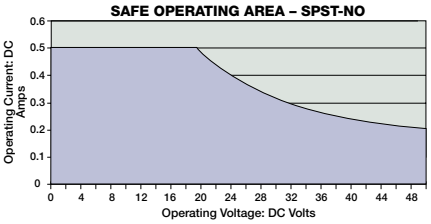


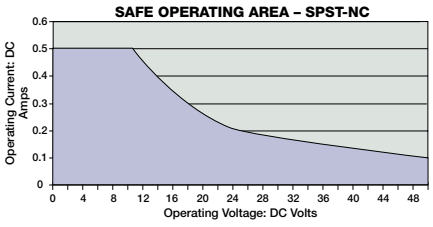
Electrical Circuitry:
The flow switch is supplied with 15 feet of shielded, 4-wire #22 AWG PVC jacketed cable, color coded as follows: ① Red, ② Black for single (1) Reed Switch, and ③ Green, ④ White for double (2) Reed Switch.

ELECTRICAL SPECIFICATIONS:

Adjustable Flow-Alert signal: single (1) or double (2) reed switch, pre-wired single-pole, single-throw (SPST-NO) normally open; or single-pole, single-throw (SPST-NC) normally closed, with high or low flow limit setting, adjustable over the entire flow measuring range.

Contact Form	SPST-NO	SPST-NC
ELECTRICAL SPECIFICATIONS		
Contact Rating	10 Watts Max	5 Watts Max
Voltage, Switching	50 VDC Max	50 VDC Max
Current (resistive), Switching	0.500 A Max	0.500 A Max
OPERATING SPECIFICATIONS		
Contact Resistance, Initial	0.100 Ω Max	0.100 Ω Max
Operating Temperature	20 to +240 °F (-20 to +116 °C)	-20 to +240 °F (-20 to +116 °C)





NOTE: Weights for all sizes can be found on page 79.

MR Flow Transmitters

For Liquids / Air and Other Compressed Gases

- Full line of multi-functional remote flow indicators and transmitters
- Operate as part of a totally integrated electronic process control/data acquisition system
- Non-contact sensor electronics
- Electronic signal conditioning circuit
- Digital flow rate and total flow indication
- Proportional analog output
- In-field compensation for- Specific gravity of all fluids Viscosity of petroleum-based fluids Specific gravity, pressure, and temperature of pneumatic systems
- CE compliant- exceeds US and meets European standards for EMI/EMC
- US Patent 7,130,750

Viton is a registered trademark of DuPont Dow Elastomers
Teflon is a registered trademark of E.I. DuPont de Nemours & Co.

SPECIFICATIONS:

MATERIALS:

2024 - T351 Anodized aluminum body, piston and cone
C360 Brass body, piston and cone
T303 Stainless body, 2024 - T351 Anodized aluminum piston and cone (Oil, PE, WBF, & Air meters)
T303 Stainless body, C360 Brass piston and cone (Water meters)
T316 Stainless body, piston and cone

PETROLEUM (Oil) COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Enclosure Seal: Silicone gasket

PHOSPHATE ESTER (PE) COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: EPR
Lens: Polycarbonate
Retaining Ring: SAE 1070/1090 Carbon Steel
Retaining Spring: SAE 1070/1090 Carbon Steel
Internal Magnet: Teflon® Coated Alnico 8
Enclosure Seal: Silicone gasket

WATER-BASED (WBF), WATER, AIR COMMON PARTS:

Spider Plate: T316 SS
Spring: T302 SS
Fasteners: T303 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Internal Magnet: Teflon® Coated Alnico 8
Enclosure Seal: Silicone gasket

API OIL / AIR / CAUSTIC and CORROSIVE LIQUIDS and GASES:

Spider Plate: T316 SS
Spring: T316 SS
Fasteners: T316 SS
Pressure Seals: Viton®
Lens: Polycarbonate
Retaining Ring: T316 SS
Retaining Spring: T316 SS
Internal Magnet: Teflon® Coated Alnico 8
Enclosure Seal: Silicone gasket

THREADS: SAE J1926/1, **NPTF** ANSI B2.2, **BSPP** ISO1179

TEMPERATURE RANGE: -20 to +240 °F (-29 to +116 °C)

PRESSURE RATING:

Aluminum / Brass Operating:

Liquids - 3,500 psi/241 bar maximum with a 3:1 safety factor.
Gases - 1,000 psi/69 bar maximum with a 10:1 safety factor.
For High Cycle Applications: See page 7

Stainless Steel Operating:

Liquids - (¼" to ½") - 6,000 psi/414 bar maximum with a 3:1 safety factor
Liquids - (¾" to 1½") - 5,000 psi/345 bar maximum with a 3:1 safety factor
Gases - 1,500 psi/103 bar maximum with a 10:1 safety factor.
For High Cycle Applications: See page 7

ACCURACY: ±2% of full scale **REPEATABILITY:** ±1%

PRESSURE DROP REFERENCE TABLE:

	FLUID TYPE							
	Oil	PE	WBF	Water	API Oil	Caustic & Corrosive Liquids	Air/Caustic & Corrosive Gases	Air
50% / 100% Pressure Drop	p. 10	p. 18	p. 26	p. 34	p. 38	p. 38	p. 40	p. 42
Pressure Drop Chart	p. 61	p. 62	p. 63	p. 64	p. 65	p. 64	p. 65	p. 66

MR Flow Transmitters

For Liquids / Air and Other Compressed Gases

ENCLOSURE:

Material: Anodized and epoxy powder-coated aluminum with polycarbonate lens

Seals: Silicone gaskets between enclosure and lens
Viton® O-rings between enclosure and flow meter body

Connection: 4-pin (Protection Class IP65) standard, see Figure 2
Other connections available - consult factory for details

Fasteners: T303 SS

Rating: NEMA 12 & 13 (IP 52/54)

ELECTRICAL SPECIFICATIONS:

Power Requirement: 0-5 VDC Output: 10-30 VDC @ 0.75W maximum
0-10 VDC Output: 12-30 VDC @ 0.75W maximum
4-20 mA Output: loop-powered, 30 VDC maximum

Power Consumption: 25 mA maximum

Analog Outputs: 0-5 VDC and 0-10 VDC into 10,000 Ohms minimum
4-20 mA into 1000 Ohms maximum, see Figure 1

Circuit Protection: Reverse polarity and current limiting

Transmission Distance: 4-20 mA limited by cable resistance
0-5 VDC and 0-10 VDC 1000 feet (300 m) maximum

Isolation: Inherently isolated from the piping system

Display: Fixed or toggle modes of operation for rate and totalizer display
8 digit, 0.70" high numeric display for rate and total
8 digit, 0.35" high alphanumeric display for units and setup

Temperature Drift: 50 ppm / °C (max)

Analog Output: Resolution - 1:4000

Transient Over-Voltages: Category 3, in accordance with IEC 664

Pollution Degree: Category 2, in accordance with IEC 664

Approvals: EMC Directive 89/336/EEC

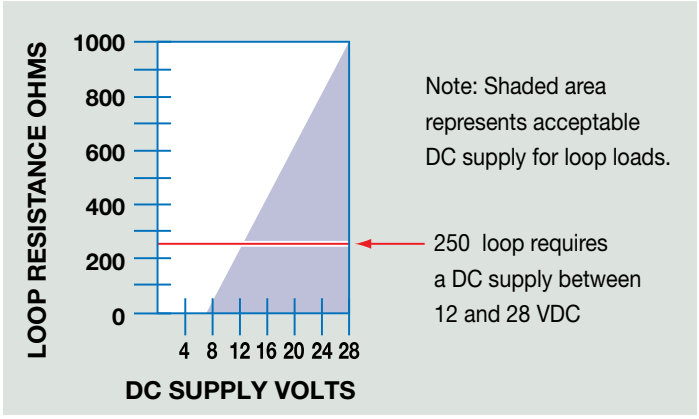
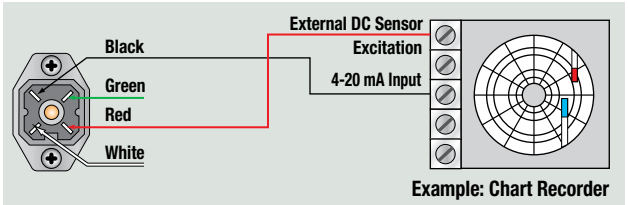


Figure 1. Load Limitations (4-20 mA Output Only)

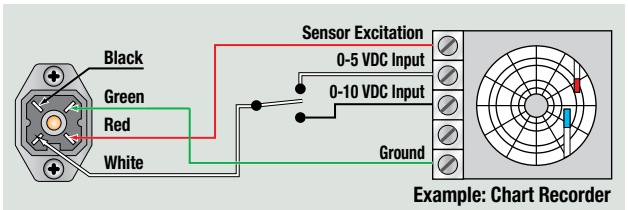
SCHEMATICS:

The transmitter can be wired in various configurations to allow interface with many different types of data collection and control instrumentation.

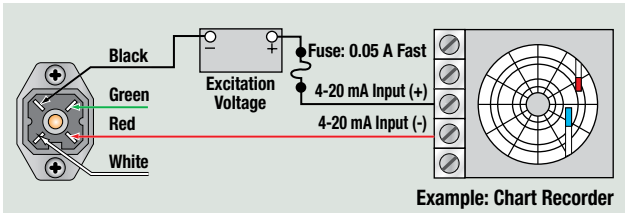
Schematics 1 & 2 represent typical wiring for a target powered by either AC power or DC supply. Schematics 3 & 4 will be utilized when the flow transmitter is operated with loop-powered process indicators or data loggers that do not have external sensor excitation available.



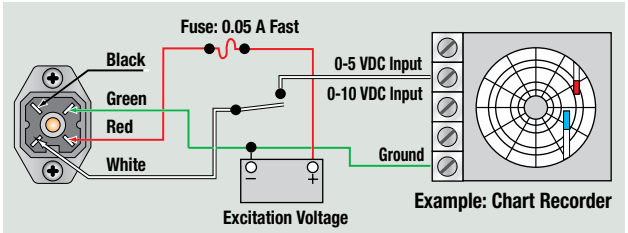
Schematic 1: 4-20 mA connection using target power supply



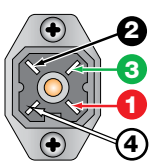
Schematic 2: 0-5 Vdc or 0-10 Vdc connection using target power supply



Schematic 3: 4-20 mA connection using target external power supply



Schematic 4: 0-5 Vdc or 0-10 Vdc connection using target external power supply



	DC Output Connection	Loop Power Connection
2 Black:	No Connection	(-) 4-20 mA Out
3 Green:	0 VDC	No Connection
1 Red:	(+) DC Power	(+) 4-20 mA In
4 White:	0-5 VDC or 0-10 VDC Output	No Connection

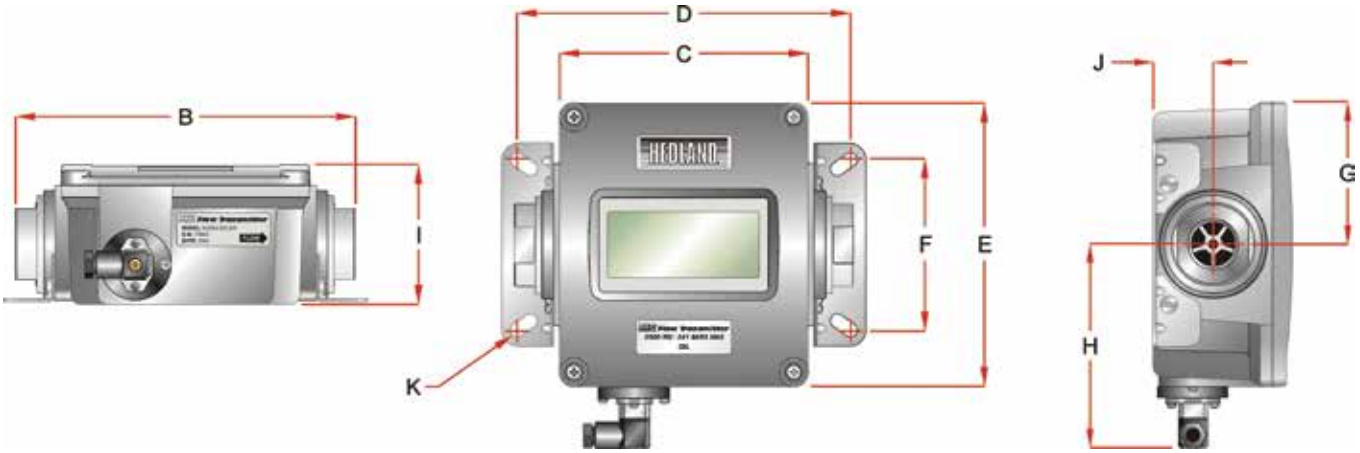
Figure 2. Electrical 4-Pin Connection

MR Flow Transmitters

For Liquids / Air and Other Compressed Gases

Dimensions:

A	B	C	D	E	F	G	H	I	J	K
NOMINAL PORT SIZE	LENGTH in (mm)	LENGTH in (mm)	LENGTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	WIDTH in (mm)	DEPTH in (mm)	OFFSET in (mm)	HOLE DIA. in (mm)
¼ (SAE 6)	6.60 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
½ (SAE 10)	6.60 (168)	5.27 (134)	6.41 (163)	6.00 (152)	3.23 (82)	3.00 (76)	4.20 (107)	2.94 (75)	1.51 (38)	.31 (8)
¾ (SAE 12)	7.20 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1 (SAE 16)	7.20 (183)	5.27 (134)	7.04 (179)	6.00 (152)	3.60 (91)	3.00 (76)	4.20 (107)	2.94 (75)	1.27 (32)	.31 (8)
1¼ (SAE 20)	12.20 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)
1½ (SAE 24)	12.20 (310)	10.68 (271)	11.65 (296)	7.63 (194)	4.84 (123)	3.82 (97)	5.02 (128)	4.50 (114)	2.20 (56)	.31 (8)



Optional Remote Display and Signal Processor:

Hedland also offers the F6700/F6750 Series Digital Display with integrated signal processor capabilities to further enhance the utility of the MR Flow Transmitters. In addition to remote flow monitoring, these units can be configured to provide alarm processing and communication options including RS232, RS485, Modbus, Profibus and DeviceNet. For complete product specifications, refer to page 59.

Flow-Alert Flow Switches and Flow Transmitters
For Petroleum Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		MODEL NUMBER (see example below)			MATERIAL			OPTIONS		
	GPM	LPM	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼" SAE 6	.02 - 0.2 .05 - 0.5	0.1 - 0.75 0.2 - 1.9	H200 ★ - 002 - † H200 ★ - 005 - †	H201 ★ - 002 - † H201 ★ - 005 - †	H202 ★-002 - † H202 ★-005 - †	A	B	6000 PSI S	Not Available	SEE OPTIONS BELOW	Not Available
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	H200 ★ - 010 - † H200 ★ - 020 - †	H201 ★ - 010 - † H201 ★ - 020 - †	H202 ★-010 - † H202 ★-020 - †	A	B	6000 PSI S	F1/F2		MR
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	H600 ★ - 001 - † H600 ★ - 002 - † H600 ★ - 005 - † H600 ★ - 010 - † H600 ★ - 015 - †	H601 ★ - 001 - † H601 ★ - 002 - † H601 ★ - 005 - † H601 ★ - 010 - † H601 ★ - 015 - †	H602 ★-001 - † H602 ★-002 - † H602 ★-005 - † H602 ★-010 - † H602 ★-015 - †	A	B	6000 PSI S	F1/F2		MR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	H700 ★ - 002 - † H700 ★ - 005 - † H700 ★ - 010 - † H700 ★ - 020 - † H700 ★ - 030 - †	H701 ★ - 002 - † H701 ★ - 005 - † H701 ★ - 010 - † H701 ★ - 020 - † H701 ★ - 030 - †	H702 ★-002 - † H702 ★-005 - † H702 ★-010 - † H702 ★-020 - † H702 ★-030 - †	A	B	5000 PSI S	F1/F2		MR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	H760 ★ - 002 - † H760 ★ - 005 - † H760 ★ - 010 - † H760 ★ - 020 - † H760 ★ - 030 - † H760 ★ - 040 - † H760 ★ - 050 - †	H761 ★ - 002 - † H761 ★ - 005 - † H761 ★ - 010 - † H761 ★ - 020 - † H761 ★ - 030 - † H761 ★ - 040 - † H761 ★ - 050 - †	H762 ★-002 - † H762 ★-005 - † H762 ★-010 - † H762 ★-020 - † H762 ★-030 - † H762 ★-040 - † H762 ★-050 - †	A	B	5000 PSI S	F1/F2		MR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H800 ★ - 030 - † H800 ★ - 050 - † H800 ★ - 075 - † H800 ★ - 100 - † H800 ★ - 150 - †	H801 ★ - 030 - † H801 ★ - 050 - † H801 ★ - 075 - † H801 ★ - 100 - † H801 ★ - 150 - †	H802 ★-030 - † H802 ★-050 - † H802 ★-075 - † H802 ★-100 - † H802 ★-150 - †	A	B	5000 PSI S	F1/F2		MR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H860 ★ - 030 - † H860 ★ - 050 - † H860 ★ - 075 - † H860 ★ - 100 - † H860 ★ - 150 - †	H861 ★ - 030 - † H861 ★ - 050 - † H861 ★ - 075 - † H861 ★ - 100 - † H861 ★ - 150 - †	H862 ★-030 - † H862 ★-050 - † H862 ★-075 - † H862 ★-100 - † H862 ★-150 - †	A	B	5000 PSI S	F1/F2		MR

①Fractional sizes apply to NPTF and BSPP.

(example) H 701 A - 030 - F1 or F2

Flow-Alert Flow Switches

F1 = Single Switch

F2 = Double Switch

(example) H 701 A - 030 - RS1NO

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)

RS2NO (reed switch two (2) normally open)

RS1NC (reed switch one (1) normally closed)

RS2NC (reed switch two (2) normally closed)

(example) H 701 A - 030 - MR

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

NOTE: For 50% and 100% flow/pressure drop information, see page 16. For detailed flow/pressure drop charts, see page 61.

Flow-Alert Flow Switches and Flow Transmitters

For Phosphate Ester Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		MODEL NUMBER (see example below)			MATERIAL			OPTIONS		
	GPM	LPM	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼" SAE 6	.02 - 0.2 .05 - 0.5	0.1 - 0.75 0.2 - 1.9	H294 ✱ - 002 - † H294 ✱ - 005 - †	H295 ✱ - 002 - † H295 ✱ - 005 - †	H296 ✱-002 - † H296 ✱-005 - †	A	B	6000 PSI S	Not Available	SEE OPTIONS BELOW	Not Available
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	H294 ✱ - 010 - † H294 ✱ - 020 - †	H295 ✱ - 010 - † H295 ✱ - 020 - †	H296 ✱-010 - † H296 ✱-020 - †	A	B	6000 PSI S	F1/F2		MR
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	H694 ✱ - 001 - † H694 ✱ - 002 - † H694 ✱ - 005 - † H694 ✱ - 010 - † H694 ✱ - 015 - †	H695 ✱ - 001 - † H695 ✱ - 002 - † H695 ✱ - 005 - † H695 ✱ - 010 - † H695 ✱ - 015 - †	H696 ✱-001 - † H696 ✱-002 - † H696 ✱-005 - † H696 ✱-010 - † H696 ✱-015 - †	A	B	6000 PSI S	F1/F2		MR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	H794 ✱ - 002 - † H794 ✱ - 005 - † H794 ✱ - 010 - † H794 ✱ - 020 - † H794 ✱ - 030 - †	H795 ✱ - 002 - † H795 ✱ - 005 - † H795 ✱ - 010 - † H795 ✱ - 020 - † H795 ✱ - 030 - †	H796 ✱-002 - † H796 ✱-005 - † H796 ✱-010 - † H796 ✱-020 - † H796 ✱-030 - †	A	B	5000 PSI S	F1/F2		MR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	H764 ✱ - 002 - † H764 ✱ - 005 - † H764 ✱ - 010 - † H764 ✱ - 020 - † H764 ✱ - 030 - † H764 ✱ - 040 - † H764 ✱ - 050 - †	H765 ✱ - 002 - † H765 ✱ - 005 - † H765 ✱ - 010 - † H765 ✱ - 020 - † H765 ✱ - 030 - † H765 ✱ - 040 - † H765 ✱ - 050 - †	H766 ✱-002 - † H766 ✱-005 - † H766 ✱-010 - † H766 ✱-020 - † H766 ✱-030 - † H766 ✱-040 - † H766 ✱-050 - †	A	B	5000 PSI S	F1/F2		MR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H894 ✱ - 030 - † H894 ✱ - 050 - † H894 ✱ - 075 - † H894 ✱ - 100 - † H894 ✱ - 150 - †	H895 ✱ - 030 - † H895 ✱ - 050 - † H895 ✱ - 075 - † H895 ✱ - 100 - † H895 ✱ - 150 - †	H896 ✱-030 - † H896 ✱-050 - † H896 ✱-075 - † H896 ✱-100 - † H896 ✱-150 - †	A	B	5000 PSI S	F1/F2		MR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H864 ✱ - 030 - † H864 ✱ - 050 - † H864 ✱ - 075 - † H864 ✱ - 100 - † H864 ✱ - 150 - †	H865 ✱ - 030 - † H865 ✱ - 050 - † H865 ✱ - 075 - † H865 ✱ - 100 - † H865 ✱ - 150 - †	H866 ✱-030 - † H866 ✱-050 - † H866 ✱-075 - † H866 ✱-100 - † H866 ✱-150 - †	A	B	5000 PSI S	F1/F2		MR

①Fractional sizes apply to NPTF and BSPP.

(example) **H 795 A - 030 - F1** or **F2**

Flow-Alert Flow Switches

F1 = Single Switch

F2 = Double Switch

(example) **H 701 A - 030 - RS1NO**

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)

RS2NO (reed switch two (2) normally open)

RS1NC (reed switch one (1) normally closed)

RS2NC (reed switch two (2) normally closed)

(example) **H 795 A - 030 - MR**

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

} Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

NOTE: For 50% and 100% flow/pressure drop information, see page 24. For detailed flow/pressure drop charts, see page 62.

Flow-Alert Flow Switches and Flow Transmitters

For Water-based Fluids (Water/Oil Emulsions)

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		MODEL NUMBER (see example below)			MATERIAL			OPTIONS		
	GPM	LPM	SAE	NPTF	BSPP	ALUMINUM 3500 PSI	BRASS 3500 PSI	STAINLESS	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼" SAE 6	.02 - 0.2 .05 - 0.5	0.1 - 0.75 0.2 - 1.9	H212 ✱ - 002 - † H212 ✱ - 005 - †	H213 ✱ - 002 - † H213 ✱ - 005 - †	H214 ✱-002 - † H214 ✱-005 - †	A	B	6000 PSI S	Not Available	SEE OPTIONS BELOW	Not Available
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	H212 ✱ - 010 - † H212 ✱ - 020 - †	H213 ✱ - 010 - † H213 ✱ - 020 - †	H214 ✱-010 - † H214 ✱-020 - †	A	B	6000 PSI S	F1/F2		MR
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	H612 ✱ - 001 - † H612 ✱ - 002 - † H612 ✱ - 005 - † H612 ✱ - 010 - † H612 ✱ - 015 - †	H613 ✱ - 001 - † H613 ✱ - 002 - † H613 ✱ - 005 - † H613 ✱ - 010 - † H613 ✱ - 015 - †	H614 ✱-001 - † H614 ✱-002 - † H614 ✱-005 - † H614 ✱-010 - † H614 ✱-015 - †	A	B	6000 PSI S	F1/F2		MR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	H712 ✱ - 002 - † H712 ✱ - 005 - † H712 ✱ - 010 - † H712 ✱ - 020 - † H712 ✱ - 030 - †	H713 ✱ - 002 - † H713 ✱ - 005 - † H713 ✱ - 010 - † H713 ✱ - 020 - † H713 ✱ - 030 - †	H714 ✱-002 - † H714 ✱-005 - † H714 ✱-010 - † H714 ✱-020 - † H714 ✱-030 - †	A	B	5000 PSI S	F1/F2		MR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	H782 ✱ - 002 - † H782 ✱ - 005 - † H782 ✱ - 010 - † H782 ✱ - 020 - † H782 ✱ - 030 - † H782 ✱ - 040 - † H782 ✱ - 050 - †	H783 ✱ - 002 - † H783 ✱ - 005 - † H783 ✱ - 010 - † H783 ✱ - 020 - † H783 ✱ - 030 - † H783 ✱ - 040 - † H783 ✱ - 050 - †	H784 ✱-002 - † H784 ✱-005 - † H784 ✱-010 - † H784 ✱-020 - † H784 ✱-030 - † H784 ✱-040 - † H784 ✱-050 - †	A	B	5000 PSI S	F1/F2		MR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H812 ✱ - 030 - † H812 ✱ - 050 - † H812 ✱ - 075 - † H812 ✱ - 100 - † H812 ✱ - 150 - †	H813 ✱ - 030 - † H813 ✱ - 050 - † H813 ✱ - 075 - † H813 ✱ - 100 - † H813 ✱ - 150 - †	H814 ✱-030 - † H814 ✱-050 - † H814 ✱-075 - † H814 ✱-100 - † H814 ✱-150 - †	A	B	5000 PSI S	F1/F2		MR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H882 ✱ - 030 - † H882 ✱ - 050 - † H882 ✱ - 075 - † H882 ✱ - 100 - † H882 ✱ - 150 - †	H883 ✱ - 030 - † H883 ✱ - 050 - † H883 ✱ - 075 - † H883 ✱ - 100 - † H883 ✱ - 150 - †	H884 ✱-030 - † H884 ✱-050 - † H884 ✱-075 - † H884 ✱-100 - † H884 ✱-150 - †	A	B	5000 PSI S	F1/F2		MR

①Fractional sizes apply to NPTF and BSPP.

(example) **H 713 A - 030 - F1** or **F2**

Flow-Alert Flow Switches

F1 = Single Switch

F2 = Double Switch

(example) **H 701 A - 030 - RS1NO**

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)

RS2NO (reed switch two (2) normally open)

RS1NC (reed switch one (1) normally closed)

RS2NC (reed switch two (2) normally closed)

(example) **H 713 A - 030 - MR**

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

} Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

NOTE: For 50% and 100% flow/pressure drop information, see page 32.
For detailed flow/pressure drop charts, see page 63.

Flow-Alert Flow Switches and Flow Transmitters
For Water Fluids

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		MODEL NUMBER (see example below)			MATERIAL		OPTIONS		
	GPM	LPM	SAE	NPTF	BSPP	BRASS 3500 PSI	STAINLESS	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼" SAE 6	.02 - 0.2 .05 - 0.5	0.1 - 0.75 0.2 - 1.9	H204 ✱ - 002 - † H204 ✱ - 005 - †	H205 ✱ - 002 - † H205 ✱ - 005 - †	H206 ✱-002 - † H206 ✱-005 - †	B	6000 PSI S	Not Available	SEE OPTIONS BELOW	Not Available
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 1.0 - 7.5	H204 ✱ - 010 - † H204 ✱ - 020 - †	H205 ✱ - 010 - † H205 ✱ - 020 - †	H206 ✱-010 - † H206 ✱-020 - †	B	6000 PSI S	F1/F2		MR
½" SAE 10	0.1 - 1.0 0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	0.5 - 3.75 1 - 7.5 2 - 19 5 - 38 4 - 56	H604 ✱ - 001 - † H604 ✱ - 002 - † H604 ✱ - 005 - † H604 ✱ - 010 - † H604 ✱ - 015 - †	H605 ✱ - 001 - † H605 ✱ - 002 - † H605 ✱ - 005 - † H605 ✱ - 010 - † H605 ✱ - 015 - †	H606 ✱-001 - † H606 ✱-002 - † H606 ✱-005 - † H606 ✱-010 - † H606 ✱-015 - †	B	6000 PSI S	F1/F2		MR
¾" SAE 12	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	H704 ✱ - 002 - † H704 ✱ - 005 - † H704 ✱ - 010 - † H704 ✱ - 020 - † H704 ✱ - 030 - †	H705 ✱ - 002 - † H705 ✱ - 005 - † H705 ✱ - 010 - † H705 ✱ - 020 - † H705 ✱ - 030 - †	H706 ✱-002 - † H706 ✱-005 - † H706 ✱-010 - † H706 ✱-020 - † H706 ✱-030 - †	B	5000 PSI S	F1/F2		MR
1" SAE 16	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40 5 - 50	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150 20 - 190	H754 ✱ - 002 - † H754 ✱ - 005 - † H754 ✱ - 010 - † H754 ✱ - 020 - † H754 ✱ - 030 - † H754 ✱ - 040 - † H754 ✱ - 050 - †	H755 ✱ - 002 - † H755 ✱ - 005 - † H755 ✱ - 010 - † H755 ✱ - 020 - † H755 ✱ - 030 - † H755 ✱ - 040 - † H755 ✱ - 050 - †	H756 ✱-002 - † H756 ✱-005 - † H756 ✱-010 - † H756 ✱-020 - † H756 ✱-030 - † H756 ✱-040 - † H756 ✱-050 - †	B	5000 PSI S	F1/F2		MR
1¼" SAE 20	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H804 ✱ - 030 - † H804 ✱ - 050 - † H804 ✱ - 075 - † H804 ✱ - 100 - † H804 ✱ - 150 - †	H805 ✱ - 030 - † H805 ✱ - 050 - † H805 ✱ - 075 - † H805 ✱ - 100 - † H805 ✱ - 150 - †	H806 ✱-030 - † H806 ✱-050 - † H806 ✱-075 - † H806 ✱-100 - † H806 ✱-150 - †	B	5000 PSI S	F1/F2		MR
1½" SAE 24	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	H854 ✱ - 030 - † H854 ✱ - 050 - † H854 ✱ - 075 - † H854 ✱ - 100 - † H854 ✱ - 150 - †	H855 ✱ - 030 - † H855 ✱ - 050 - † H855 ✱ - 075 - † H855 ✱ - 100 - † H855 ✱ - 150 - †	H856 ✱-030 - † H856 ✱-050 - † H856 ✱-075 - † H856 ✱-100 - † H856 ✱-150 - †	B	5000 PSI S	F1/F2		MR

①Fractional sizes apply to NPTF and BSPP.

(example) **H 705 B - 030 - F1** or **F2**

Flow-Alert Flow Switches

F1 = Single Switch

F2 = Double Switch

(example) **H 701 A - 030 - RS1NO**

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)

RS2NO (reed switch two (2) normally open)

RS1NC (reed switch one (1) normally closed)

RS2NC (reed switch two (2) normally closed)

(example) **H 705 B - 030 - MR**

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

} Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

NOTE: For 50% and 100% flow/pressure drop information, see page 36. For detailed flow/pressure drop charts, see page 64.

Flow-Alert Flow Switches and Flow Transmitters
For API Oil / Caustic and Corrosive Liquids

ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		MODEL NUMBER (see example below)				OPTIONS		
			API - OIL .876 (S.G.)		LIQUIDS 1.0 (S.G.)				
	GPM	LPM	NPTF	BSPP	NPSF	BSPP	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼"	0.1 - 1.0	0.5 - 3.75	6000 PSI H231X - 010 - †	6000 PSI H232X - 010 - †	6000 PSI H234X - 010 - †	6000 PSI H235X - 010 - †	Not Available	SEE OPTIONS BELOW	Not Available
¼"	0.2 - 2.0	1 - 7.5	6000 PSI H231X - 020 - †	6000 PSI H232X - 020 - †	6000 PSI H234X - 020 - †	6000 PSI H235X - 020 - †	F1/F2		MR
½"	0.2 - 2.0 0.5 - 5.0 1 - 10 1 - 15	1 - 7.5 2 - 19 5 - 38 4 - 56	6000 PSI H631X - 002 - † H631X - 005 - † H631X - 010 - † H631X - 015 - †	6000 PSI H632X - 002 - † H632X - 005 - † H632X - 010 - † H632X - 015 - †	6000 PSI H634X - 002 - † H634X - 005 - † H634X - 010 - † H634X - 015 - †	6000 PSI H635X - 002 - † H635X - 005 - † H635X - 010 - † H635X - 015 - †	F1/F2		MR
¾"	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115	5000 PSI H731X - 002 - † H731X - 005 - † H731X - 010 - † H731X - 020 - † H731X - 030 - †	5000 PSI H732X - 002 - † H732X - 005 - † H732X - 010 - † H732X - 020 - † H732X - 030 - †	5000 PSI H734X - 002 - † H734X - 005 - † H734X - 010 - † H734X - 020 - † H734X - 030 - †	5000 PSI H735X - 002 - † H735X - 005 - † H735X - 010 - † H735X - 020 - † H735X - 030 - †	F1/F2		MR
1"	0.2 - 2.0 0.5 - 5.0 1 - 10 2 - 20 3 - 30 4 - 40	1 - 7.5 2 - 19 5 - 38 10 - 76 10 - 115 15 - 150	5000 PSI H741X - 002 - † H741X - 005 - † H741X - 010 - † H741X - 020 - † H741X - 030 - † H741X - 040 - †	5000 PSI H742X - 002 - † H742X - 005 - † H742X - 010 - † H742X - 020 - † H742X - 030 - † H742X - 040 - †	5000 PSI H744X - 002 - † H744X - 005 - † H744X - 010 - † H744X - 020 - † H744X - 030 - † H744X - 040 - †	5000 PSI H745X - 002 - † H745X - 005 - † H745X - 010 - † H745X - 020 - † H745X - 030 - † H745X - 040 - †	F1/F2		MR
1¼"	3 - 30 5 - 50 10 - 75 10 - 100	10 - 110 20 - 190 40 - 280 50 - 380	5000 PSI H831X - 030 - † H831X - 050 - † H831X - 075 - † H831X - 100 - †	5000 PSI H832X - 030 - † H832X - 050 - † H832X - 075 - † H832X - 100 - †	5000 PSI H834X - 030 - † H834X - 050 - † H834X - 075 - † H834X - 100 - †	5000 PSI H835X - 030 - † H835X - 050 - † H835X - 075 - † H835X - 100 - †	F1/F2		MR
1½"	3 - 30 5 - 50 10 - 75 10 - 100	10 - 110 20 - 190 40 - 280 50 - 380	5000 PSI H841X - 030 - † H841X - 050 - † H841X - 075 - † H841X - 100 - †	5000 PSI H842X - 030 - † H842X - 050 - † H842X - 075 - † H842X - 100 - †	5000 PSI H844X - 030 - † H844X - 050 - † H844X - 075 - † H844X - 100 - †	5000 PSI H845X - 030 - † H845X - 050 - † H845X - 075 - † H845X - 100 - †	F1/F2		MR

(example) **H 734 X - 030 - F1** or **F2**

Flow-Alert Flow Switches
F1 = Single Switch
F2 = Double Switch

(example) **H 734 X - 030 - RS1NO**

Flow-Alert Reed Switches
Options:
RS1NO (reed switch one (1) normally open)
RS2NO (reed switch two (2) normally open)
RS1NC (reed switch one (1) normally closed)
RS2NC (reed switch two (2) normally closed)

(example) **H 734 X - 030 - MR**

Multiple Output Flow Sensor
3 Standard field selectable outputs
0-5 VDC
0-10 VDC
4-20 mA

Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow.
Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" liquid meters for 0.1-1.0 GPM range available in strap-on design for RS1NO and RS1NC only.

NOTE: For 50% and 100% flow/pressure drop information, see page 38. For detailed pressure drop charts, see page 65 for API Oil and page 64 for Water and Other Liquids.

Flow-Alert Flow Switches and Flow Transmitters

For Air / Caustic and Corrosive Gases

ORDERING INFORMATION:

NOMINAL PORT SIZE	FLOW RANGE		MODEL NUMBER (see example below)		OPTIONS		
	SCFM	L/SEC	GASES 1.0 (S.G.)		Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
			NPTF	BSPP			
¼"	2.0 - 20 3.0 - 30	1 - 9 1.5 - 14	H237X - 020 - † H237X - 030 - †	H238X - 020 - † H238X - 030 - †	Not Available	SEE OPTIONS BELOW	Not Available
¼"	3 - 25 5 - 50	2 - 12 3 - 22	H237X - 025 - † H237X - 050 - †	H238X - 025 - † H238X - 050 - †	F1/F2		MR
½"	3 - 25 5 - 50 10 - 100 15 - 150	2 - 12 3 - 22 5 - 47 7 - 70	H637X - 025 - † H637X - 050 - † H637X - 100 - † H637X - 150 - †	H638X - 025 - † H638X - 050 - † H638X - 100 - † H638X - 150 - †	F1/F2		MR
¾"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	H737X - 025 - † H737X - 050 - † H737X - 100 - † H737X - 150 - † H737X - 250 - †	H738X - 025 - † H738X - 050 - † H738X - 100 - † H738X - 150 - † H738X - 250 - †	F1/F2		MR
1"	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	H747X - 025 - † H747X - 050 - † H747X - 100 - † H747X - 150 - † H747X - 250 - †	H748X - 025 - † H748X - 050 - † H748X - 100 - † H748X - 150 - † H748X - 250 - †	F1/F2		MR
1¼"	20 - 200 40 - 400 60 - 600 80 - 800	10 - 95 20 - 180 30 - 280 50 - 350	H837X - 200 - † H837X - 400 - † H837X - 600 - † H837X - 800 - †	H838X - 200 - † H838X - 400 - † H838X - 600 - † H838X - 800 - †	F1/F2		MR
1½"	20 - 200 40 - 400 60 - 600 80 - 800	10 - 95 20 - 180 30 - 280 50 - 350	H847X - 200 - † H847X - 400 - † H847X - 600 - † H847X - 800 - †	H848X - 200 - † H848X - 400 - † H848X - 600 - † H848X - 800 - †	F1/F2		MR

(example) **H 737 X - 250 - F1** or **F2**

Flow-Alert Flow Switches

F1 = Single Switch
F2 = Double Switch

(example) **H 737 X - 250 - RS1NO**

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)
RS2NO (reed switch two (2) normally open)
RS1NC (reed switch one (1) normally closed)
RS2NC (reed switch two (2) normally closed)

NOTE: ¼" air meters for 2.0-20 and 3.0-30 SCFM ranges available in strap-on design for RS1NO and RS1NC only.

(example) **H 737 X - 250 - MR**

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

} Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

⚠ **CAUTION:** High flow gas shock may decouple indicator.
NOTE: For 50% and 100% flow/pressure drop information, see page 40. For detailed flow/pressure drop charts, see page 65.

Flow-Alert Flow Switches and Flow Transmitters

For Air / Compressed Gases

ORDERING INFORMATION:

NOMINAL PORT SIZE①	FLOW RANGE		MODEL NUMBER (see example below)			MATERIAL			OPTIONS		
	SCFM	L/SEC	SAE	NPTF	BSPP	ALUMINUM 1000 PSI	BRASS 1000 PSI	STAINLESS 1500 PSI	Flow-Alert 1 SWITCH / 2 SWITCH	Flow-Alert REED SWITCH	MULTIPLE OUTPUT SENSOR
¼" SAE 6	0.5 - 5 1 - 10 2 - 20 3 - 30	0.2 - 2.2 0.5 - 4.75 1 - 9 1.5 - 14	H270 ✱ - 005 - † H270 ✱ - 010 - † H270 ✱ - 020 - † H270 ✱ - 030 - †	H271 ✱ - 005 - † H271 ✱ - 010 - † H271 ✱ - 020 - † H271 ✱ - 030 - †	H272 ✱ - 005 - † H272 ✱ - 010 - † H272 ✱ - 020 - † H272 ✱ - 030 - †	A	B	S	Not Available	SEE OPTIONS BELOW	Not Available
¼" SAE 6	3 - 25 5 - 50	2 - 12 3 - 22	H270 ✱ - 025 - † H270 ✱ - 050 - †	H271 ✱ - 025 - † H271 ✱ - 050 - †	H272 ✱ - 025 - † H272 ✱ - 050 - †	A	B	S	F1/F2		MR
½" SAE 10	3 - 25 5 - 50 10 - 100 15 - 150	2 - 12 3 - 22 5 - 47 7 - 70	H670 ✱ - 025 - † H670 ✱ - 050 - † H670 ✱ - 100 - † H670 ✱ - 150 - †	H671 ✱ - 025 - † H671 ✱ - 050 - † H671 ✱ - 100 - † H671 ✱ - 150 - †	H672 ✱ - 025 - † H672 ✱ - 050 - † H672 ✱ - 100 - † H672 ✱ - 150 - †	A	B	S	F1/F2		MR
¾" SAE 12	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	H770 ✱ - 025 - † H770 ✱ - 050 - † H770 ✱ - 100 - † H770 ✱ - 150 - † H770 ✱ - 250 - †	H771 ✱ - 025 - † H771 ✱ - 050 - † H771 ✱ - 100 - † H771 ✱ - 150 - † H771 ✱ - 250 - †	H772 ✱ - 025 - † H772 ✱ - 050 - † H772 ✱ - 100 - † H772 ✱ - 150 - † H772 ✱ - 250 - †	A	B	S	F1/F2		MR
1" SAE 16	3 - 25 5 - 50 10 - 100 15 - 150 25 - 250	1.5 - 11.5 2 - 23 5 - 47.5 7 - 70 10 - 118	H790 ✱ - 025 - † H790 ✱ - 050 - † H790 ✱ - 100 - † H790 ✱ - 150 - † H790 ✱ - 250 - †	H791 ✱ - 025 - † H791 ✱ - 050 - † H791 ✱ - 100 - † H791 ✱ - 150 - † H791 ✱ - 250 - †	H792 ✱ - 025 - † H792 ✱ - 050 - † H792 ✱ - 100 - † H792 ✱ - 150 - † H792 ✱ - 250 - †	A	B	S	F1/F2		MR
1¼" SAE 20	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	H870 ✱ - 200 - † H870 ✱ - 400 - † H870 ✱ - 600 - † H870 ✱ - 800 - † H870 ✱ - 999 - †	H871 ✱ - 200 - † H871 ✱ - 400 - † H871 ✱ - 600 - † H871 ✱ - 800 - † H871 ✱ - 999 - †	H872 ✱ - 200 - † H872 ✱ - 400 - † H872 ✱ - 600 - † H872 ✱ - 800 - † H872 ✱ - 999 - †	A	B	S	F1/F2		MR
1½" SAE 24	20 - 200 40 - 400 60 - 600 80 - 800 100 - 1000	10 - 95 20 - 180 30 - 280 50 - 350 50 - 475	H890 ✱ - 200 - † H890 ✱ - 400 - † H890 ✱ - 600 - † H890 ✱ - 800 - † H890 ✱ - 999 - †	H891 ✱ - 200 - † H891 ✱ - 400 - † H891 ✱ - 600 - † H891 ✱ - 800 - † H891 ✱ - 999 - †	H892 ✱ - 200 - † H892 ✱ - 400 - † H892 ✱ - 600 - † H892 ✱ - 800 - † H892 ✱ - 999 - †	A	B	S	F1/F2		MR

①Fractional sizes apply to NPTF and BSPP.

(example) **H 771 A - 250 - F1** or **F2**

Flow-Alert Flow Switches

F1 = Single Switch

F2 = Double Switch

(example) **H 701 A - 030 - RS1NO**

Flow-Alert Reed Switches

Options:

RS1NO (reed switch one (1) normally open)

RS2NO (reed switch two (2) normally open)

RS1NC (reed switch one (1) normally closed)

RS2NC (reed switch two (2) normally closed)

(example) **H 771 A - 250 - MR**

Multiple Output Flow Sensor

3 Standard field selectable outputs

0-5 VDC
0-10 VDC
4-20 mA

} Flow Transmitter is factory-calibrated to provide 4 mA (0 VDC) at zero flow and 20 mA (5/10 VDC) at full flow. Optional 5-point calibration certificate available (see Price and Availability Digest for details).

NOTE: ¼" air meters for .05-5, 1-10, 2-20 and 3-30 SCFM ranges available in strap-on design for RS1NO and RS1NC only.

⚠ **CAUTION:** High flow gas shock may decouple indicator.

NOTE: For 50% and 100% flow/pressure drop information, see page 40. For detailed flow/pressure drop charts, see page 66.

Digital Display

For Hedland® MR Flow Transmitters

Applications

- Remote flow meter monitoring
- Totalizing
- Alarm processing
- Process control

Features

- 5-digit rate display
- 5-digit totalizer with 4-digit overcarry
- Input: 4-20 mA or 0-10 VDC
- Built-in transmitter power supply
- Three plug-in card slots
- Optional setpoint alarm cards
- AC and DC powered versions
- NEMA 4X/IP65 rated

Introduction

The F6700/F6750 series digital display with integrated signal processor accepts a 4-20 mA or 0-10 VDC signal from Hedland's MR Flow Transmitters as well as any other 4-20 mA or 0-10 VDC source. These 5-digit displays can be scaled to most engineering units and are easily programmed using the front panel buttons or available programming software. To meet your specific requirements, each display accepts up to three optional plug-in cards. One card for each of the following function types can be installed in each display:

Analog Outputs – A linear DC output signal card will be set up to provide either 4-20 mA, 0-20 mA or 0-10 VDC signals and can be scaled independent of the input range.

Communications – Optional plug-in cards to facilitate digital communications include: RS232, RS485, Modbus, Profibus and DeviceNet.

Setpoint Alarms – Select from dual FORM-C relays (5 Amp), quad FORM-A relays (3 Amp) or either sinking or sourcing quad open collector logic outputs.

The analog output and communication cards will be installed by the factory at time of order, or they may be installed by the customer at a later date. The setpoint alarm cards are available for customer installation and setup only.

SPECIFICATIONS:

Display:	5-digit, 0.56" sunlight-readable red LED
Power:	
AC	85 to 250 VAC, 50/60 Hz, 15 VA
DC	11 to 36 VDC, 11 W
A/D Converter:	16-bit resolution
A/D Conversion Rate:	20 readings/sec
Display Update Rate:	1 to 20 updates/sec
Sensor Inputs:	4-20 mA or 0-10 VDC
Transmitter Power:	24 VDC, ±5%, regulated 50 mA maximum
Totalizer Time Base:	Second, minute, hour or day
Total:	9 digits, display alternates between high order and low order readouts
Linearization Data Point Pairs:	Selectable from 2 to 16
Operating Temperature:	32 °F to 122 °F (0 °C to 50 °C) (32 °F to 113 °F with all three plug-in cards installed)

Digital Display

For Hedland® MR Flow Transmitters

Ordering Information

Power Version	Display	Analog Output		Communications		Dispaly Units	
AC	F6700	4-20 mA	– A	RS232	– A	GPM	– G
DC	F6750	0-20 mA	– B	RS485	– B	LPM	– L
		0-10 VDC	– C	Modbus	– C	SCFM	– S
		None	– X	Profibus	– D	LPS	– T
				DeviceNet	– E		
				None	– X		

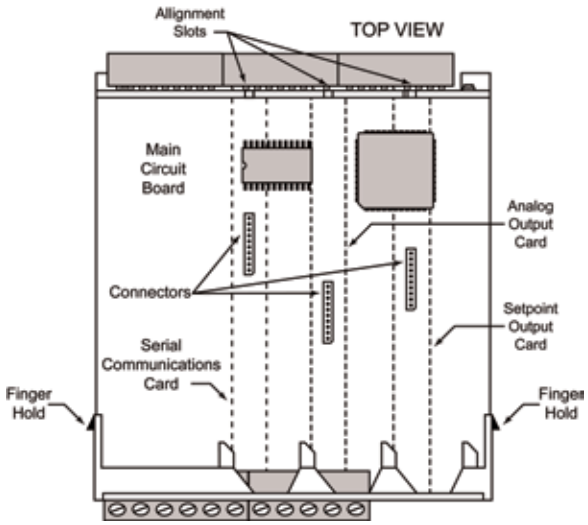
Note: Select one option from each category

Ordering Examples:

F6700-X-X-G = AC powered, displays GPM

F6700-A-A-L = AC powered + 4-20 mA Out + RS232, displays LPM

F6750-C-X-S = DC powered + 0-10 VDC Out, displays SCFM



Form C Relay Plug-in Option Card

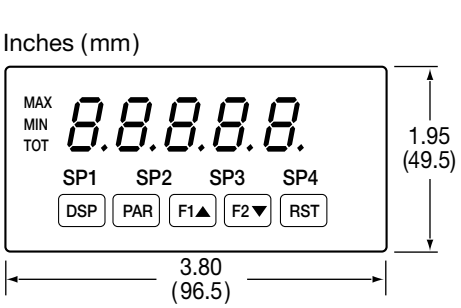
Part Number F6542

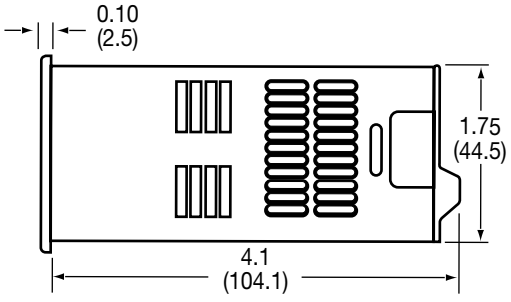
This optional plug-in card requires customer installation and setup. To facilitate setup, it is recommended that this feature be utilized with a display that includes a serial communication card (RS232 or RS485) and programming software.

NOTE: For additional setpoint alarm options, consult factory for information.

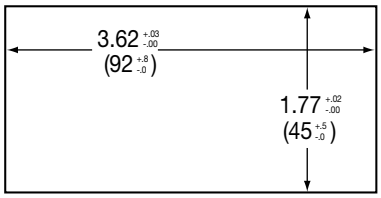
Dimensions:

Inches (mm)



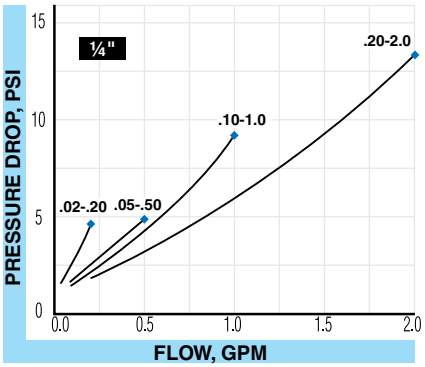


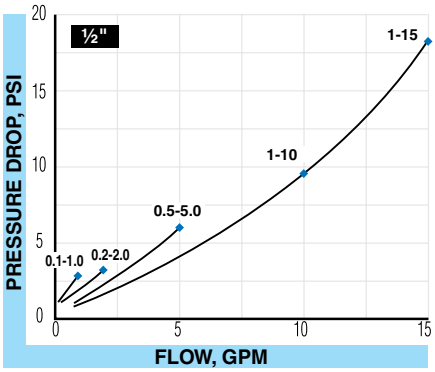
Panel cut-out

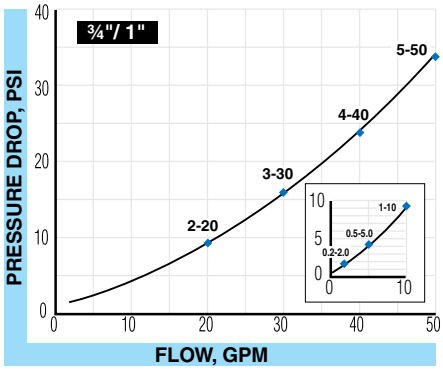


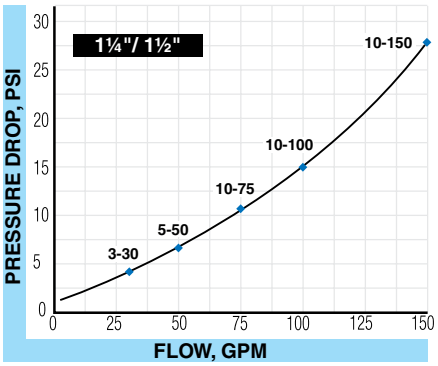
Flow vs. Pressure Drop

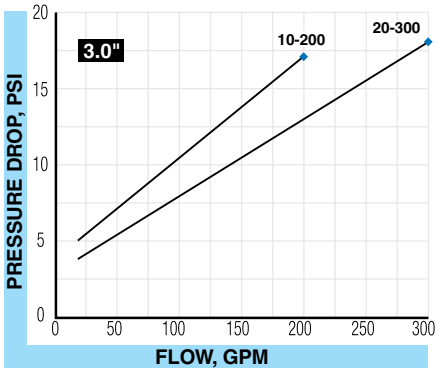
Petroleum Fluids

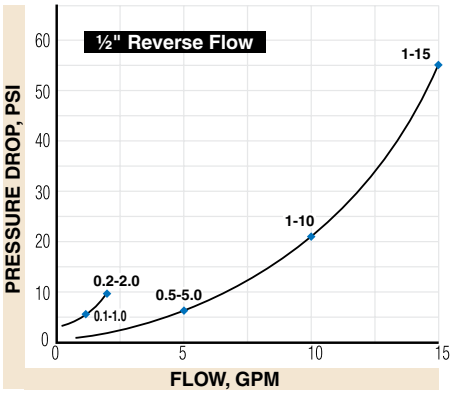


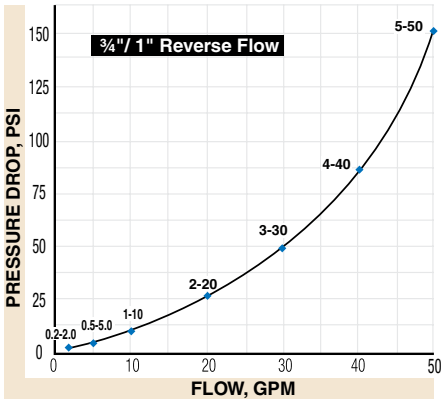


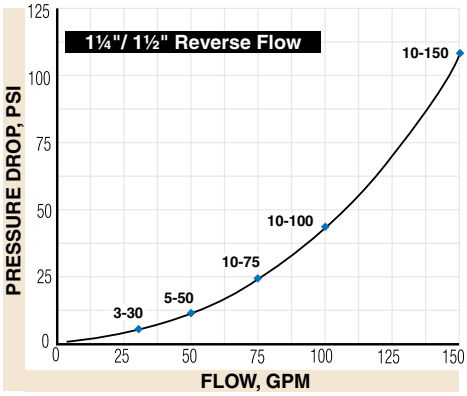




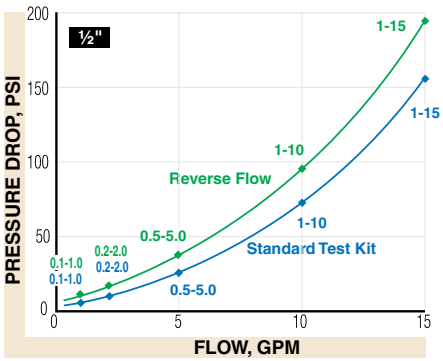


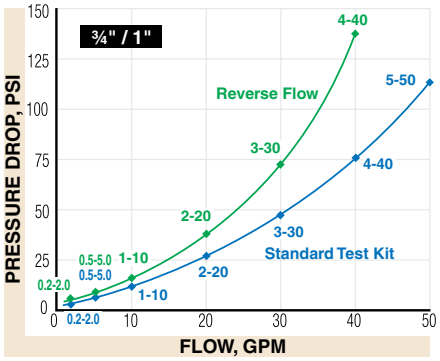


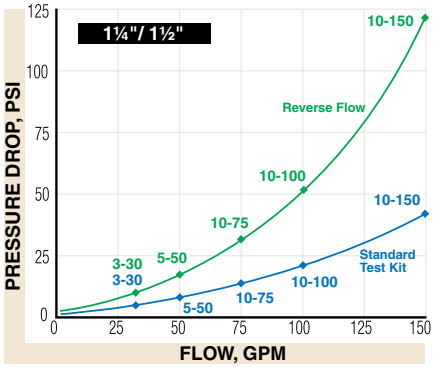




Petroleum Test Kits



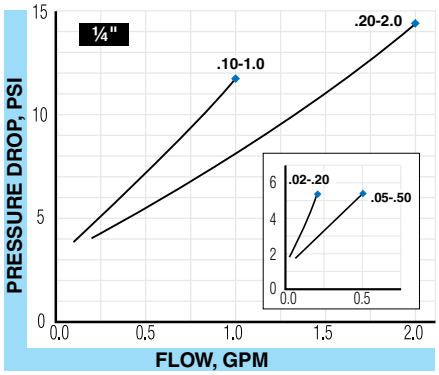


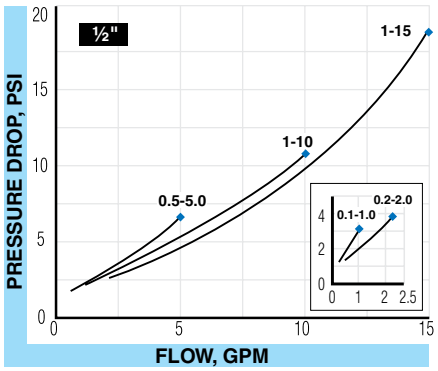


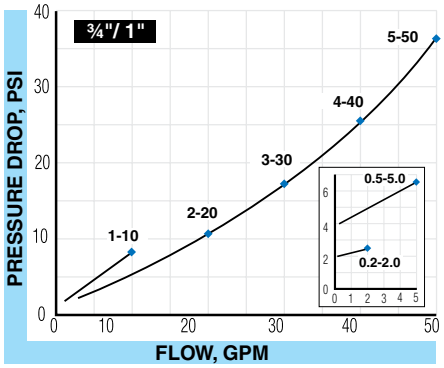
Hedland®

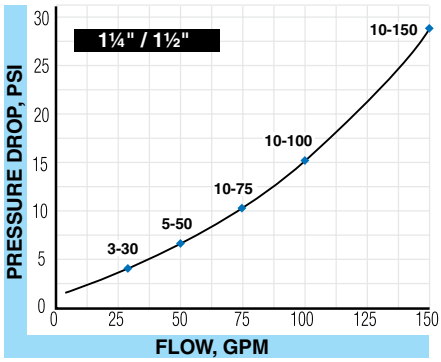
Flow vs. Pressure Drop

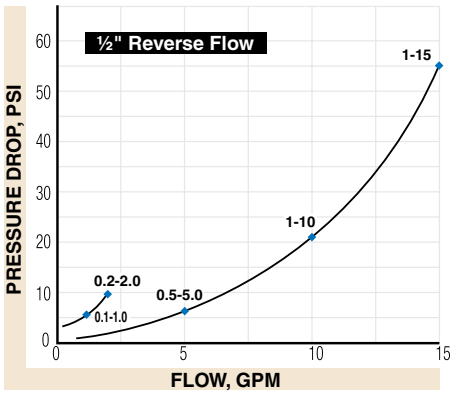
Phosphate Ester

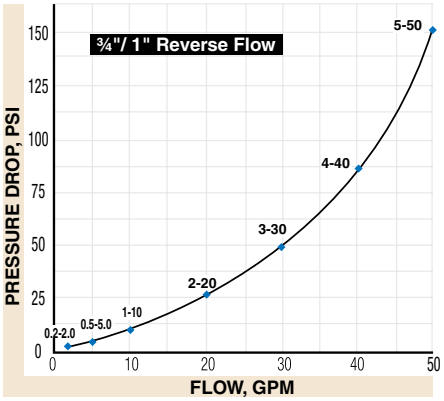


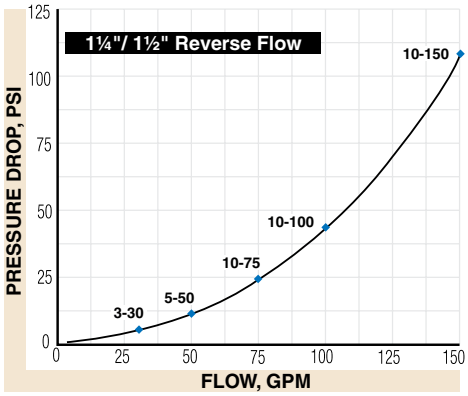




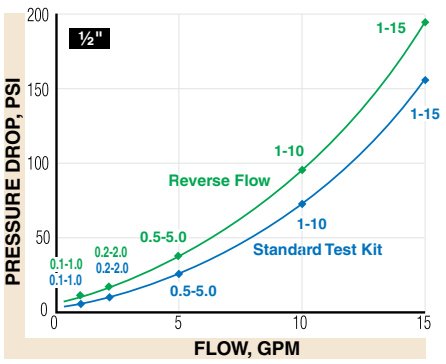


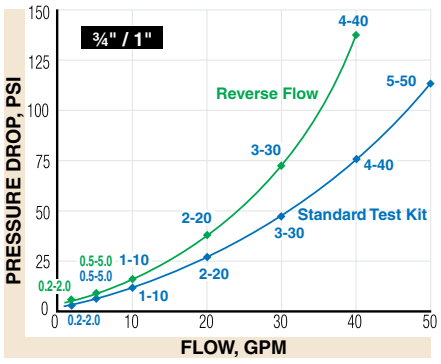


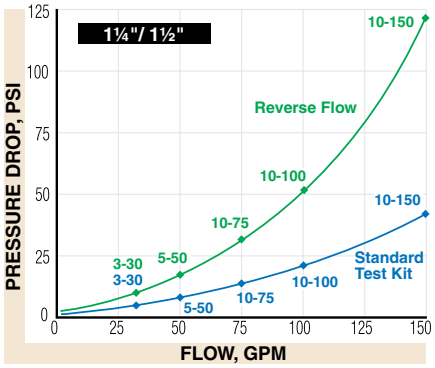




Phosphate Ester Test Kits

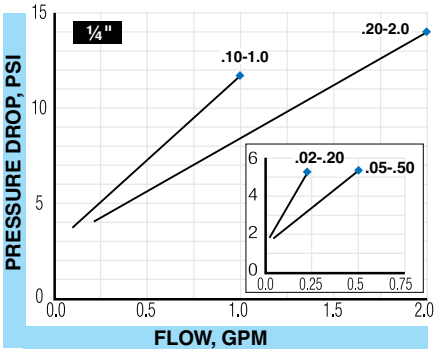


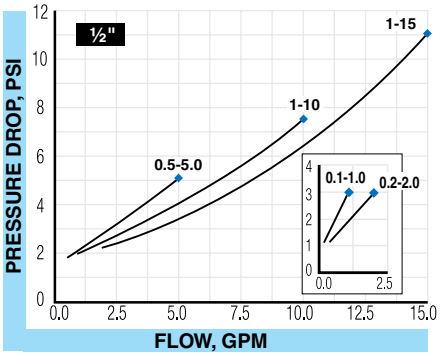


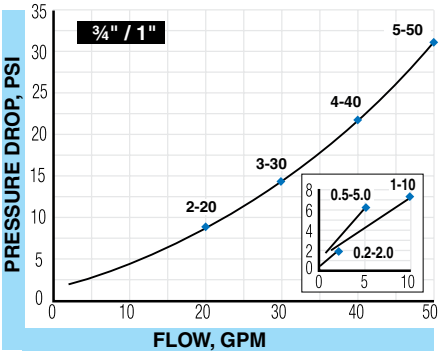


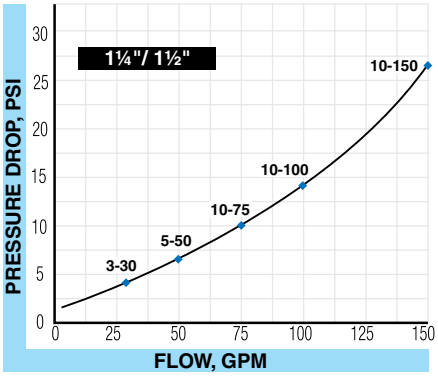
Flow vs. Pressure Drop

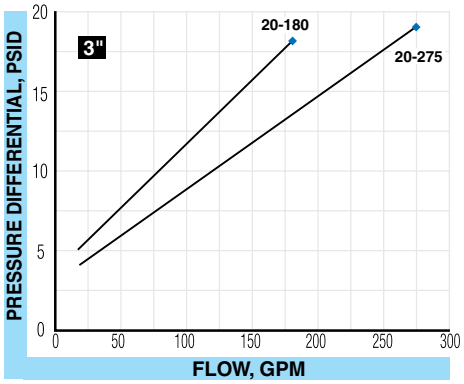
Water - based Fluids

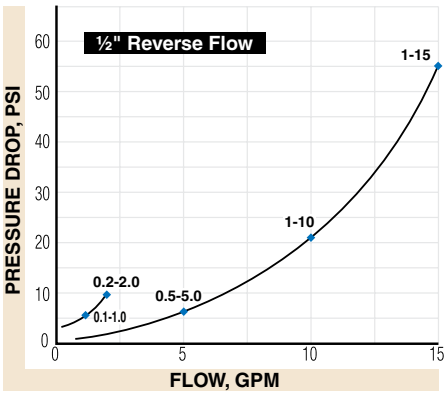


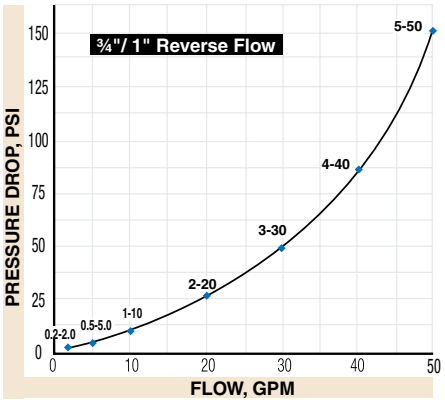


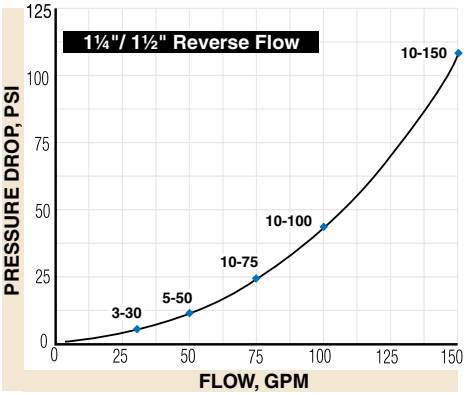




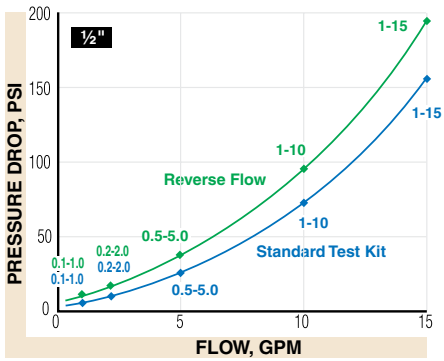


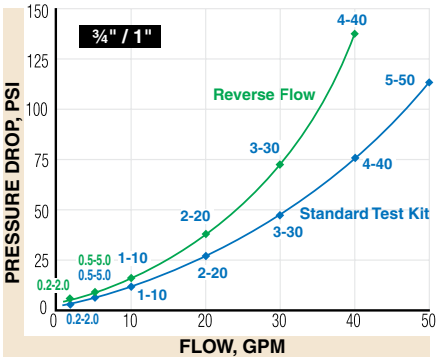


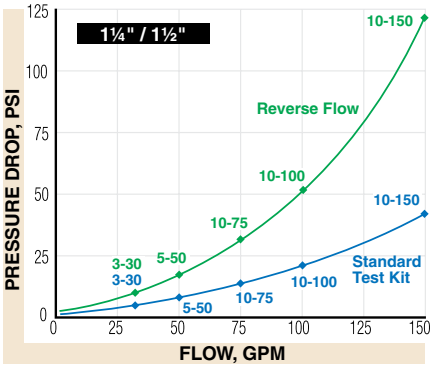




Water - based Fluid Test Kits



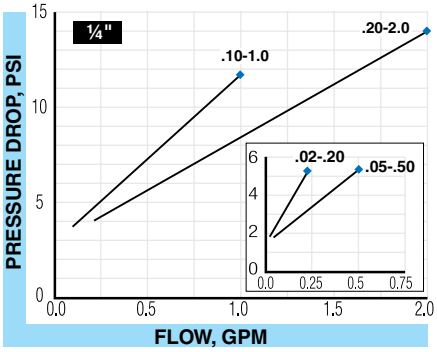


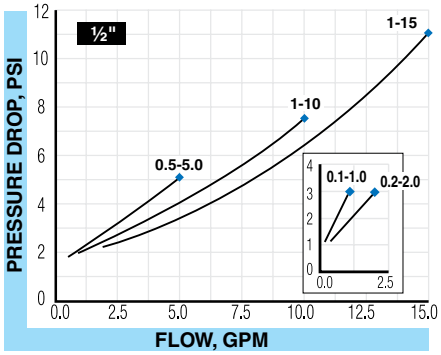


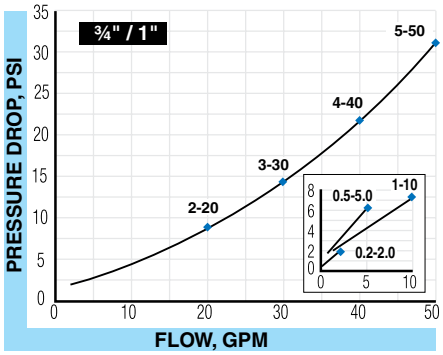
Hedland®

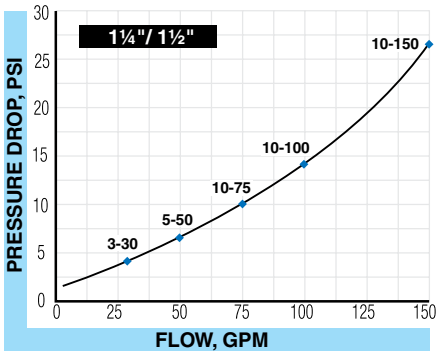
Flow vs. Pressure Drop

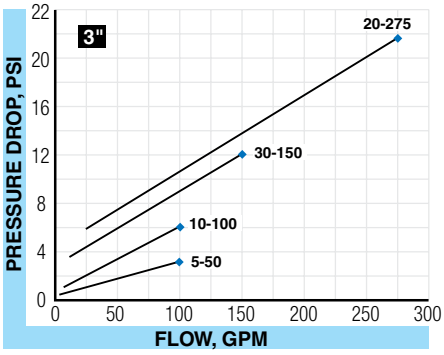
Water



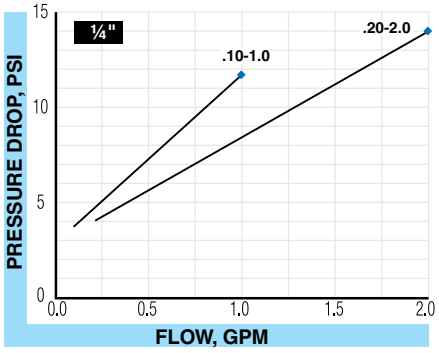


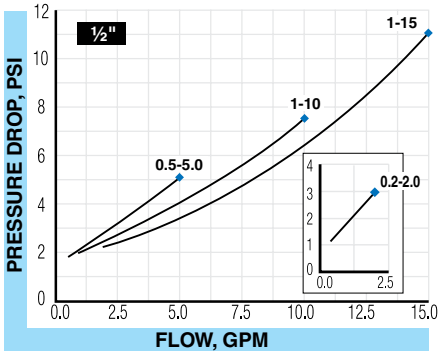


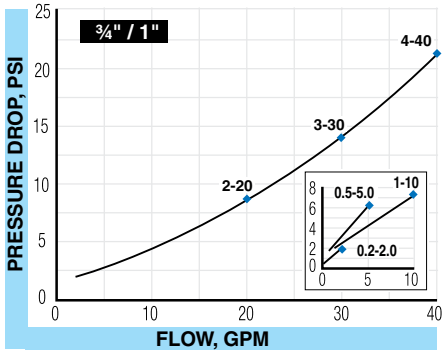


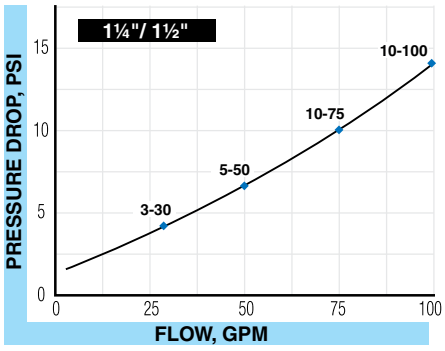


Caustic and Corrosive Liquids



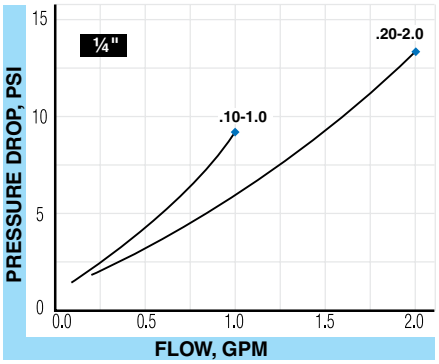


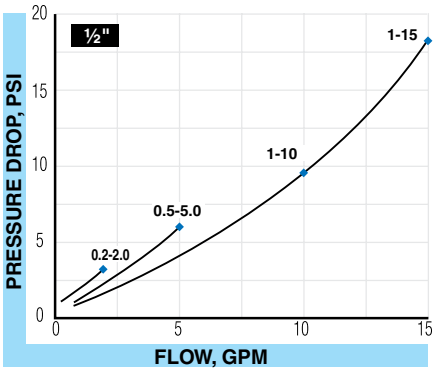


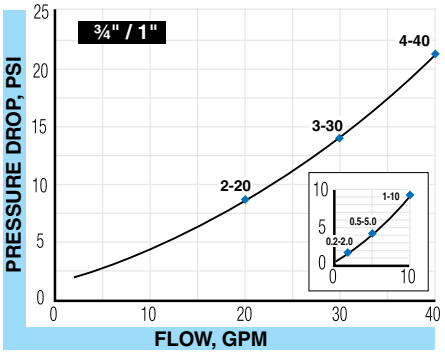


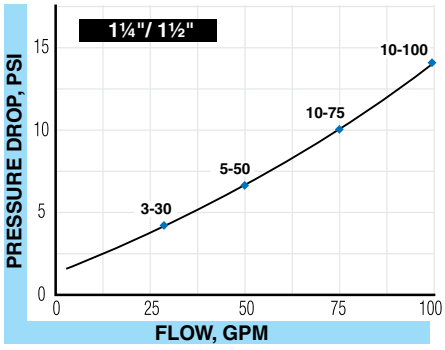
Flow vs. Pressure Drop

A.P.I. Oil

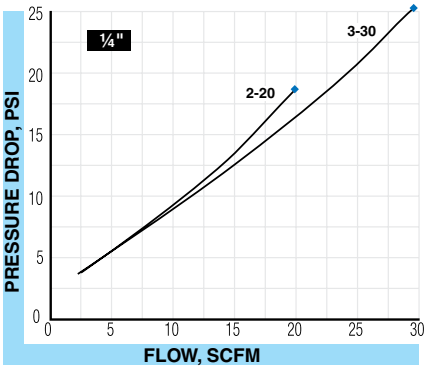


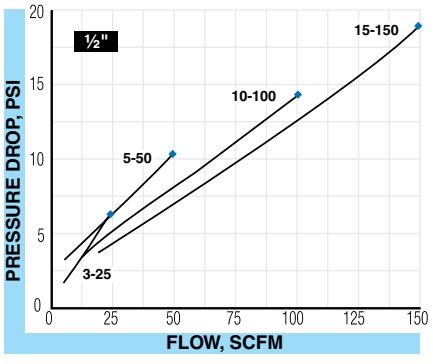


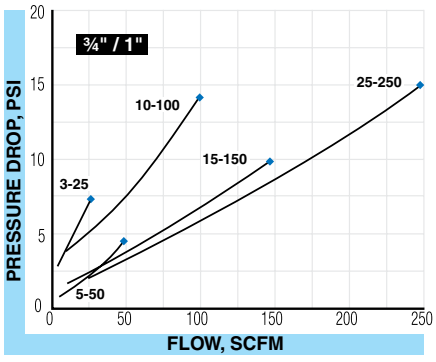


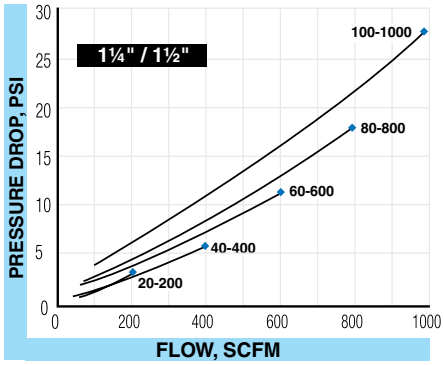


Air / Caustic and Corrosive Gases





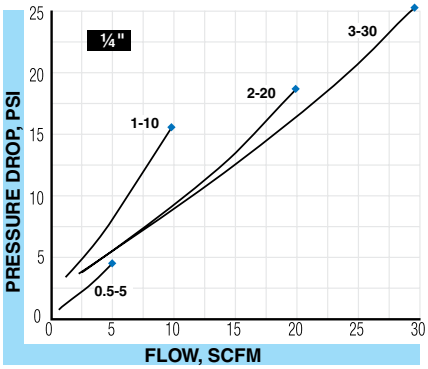


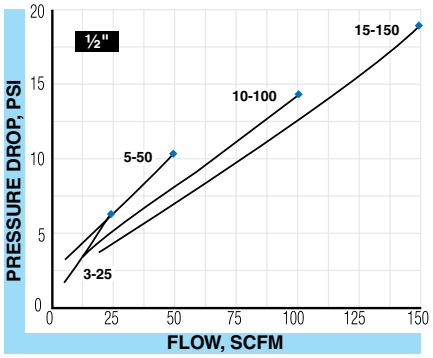


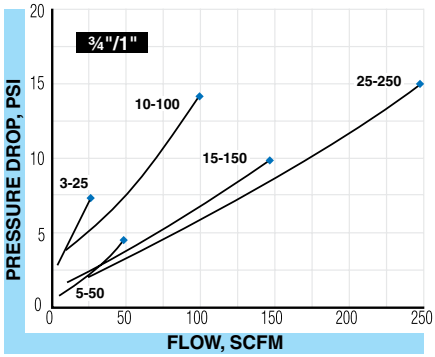
Hedland

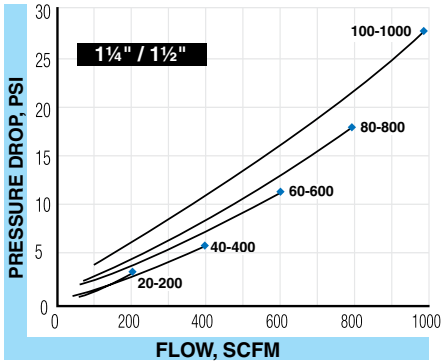
Flow vs. Pressure Drop

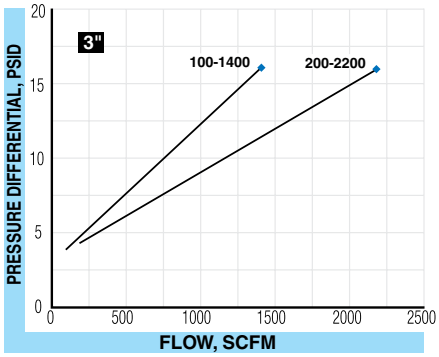
Air / Compressed Gases



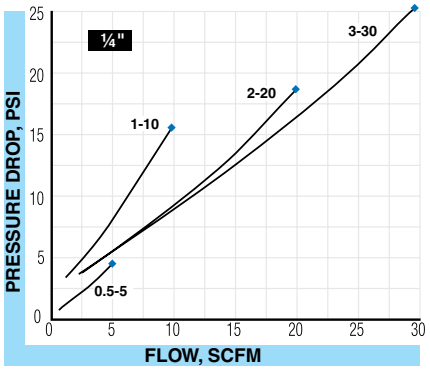


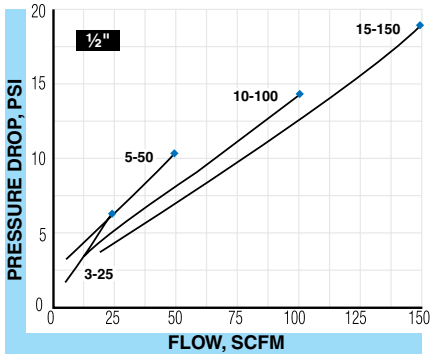


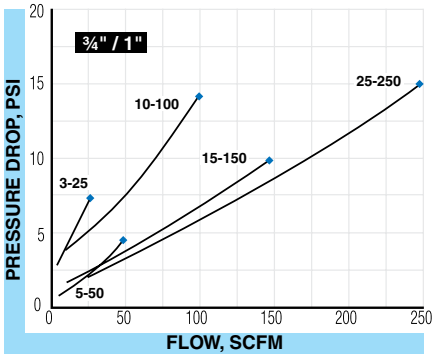


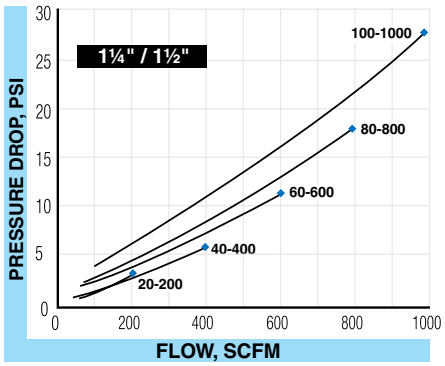


Air / Compressed Gas Test Kits



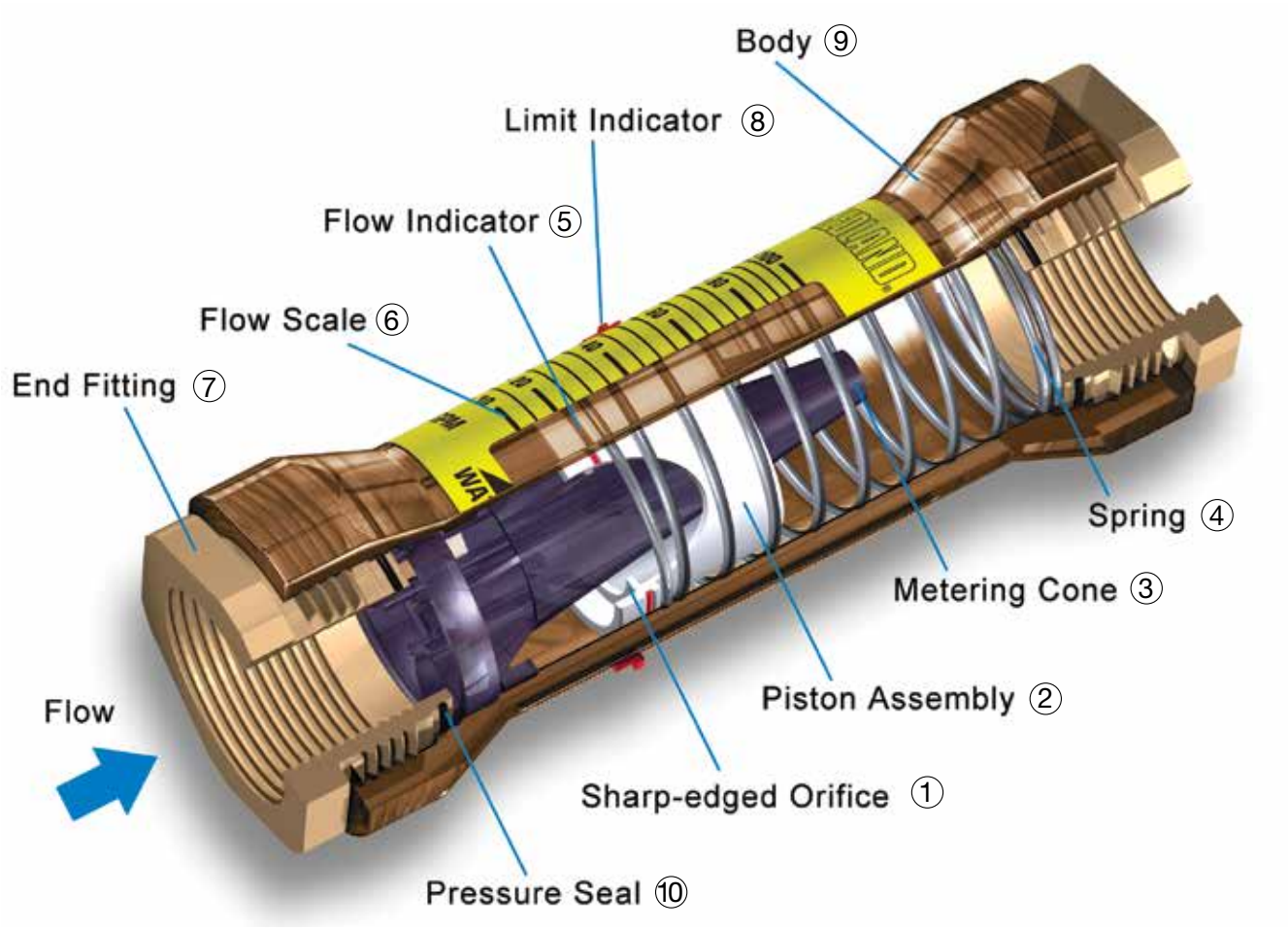






EZ-View® Flow Meters

General Design Features



OPERATING PRINCIPLE

The EZ-View Flow Meter is a variable area instrument. A precision-molded, sharp-edged Orifice①, located within the Piston Assembly,② forms an annular opening with the Metering Cone③. Flow through the meter creates a pressure differential across the sharp-edged orifice, moving the piston against the Spring④. 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 Flow Indicator⑤line 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-AlertTM 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 effecting 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 Scale⑥contains 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 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: Maximum operating pressure is 325 psi/22.4 bar.

Rugged Construction: Flow meters are available in brass, stainless, and PVC fittings, with NPT or BSP ports (see Ordering Information Tables). Constructed of high-impact polysulfone plastic, this simple variable area flow meter contains a minimum number of moving parts, offering 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.

EZ-View® Flow Meters
General Design Features

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:
Standard 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.

Special flow scales: Special scales are available 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 ensures 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 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

R – Recommended N – Not Recommended C – Consult Factory

EZ-View® Flow Meters
For Oil and Water

- ½ to 1 inch ports
- EZ to install, in any position
- Polysulfone bodies for standard applications or Radel® R for more aggressive media
- No special piping or flow straighteners needed
- No electrical connections
- Direct reading indication
- Accuracy within 5% full scale
- Relatively insensitive to shock and vibration

SPECIFICATIONS:

MATERIALS:
Polysulfone plastic body, piston and cone
Radel® R plastic body and cone, polysulfone piston

COMMON PARTS:
Spring: T300-series stainless
Indicator Ring: Buna N
Pressure Seals: Buna N
Fittings: C360 brass, PVC, or T303 stainless steel
Limit Indicators: Polypropylene
Retaining Ring: PH15 – 7MO stainless

OPTIONAL (consult factory):
Spring and Retaining Ring: Teflon® coated

FITTINGS/ THREADS: NPT ANSI/ASME B1.20.1, BSPT ISOR7
See Ordering Information Table, page 70

TEMPERATURE RANGE: +32 °F to +250 °F (0 °C to +121 °C)

PRESSURE RATING: 325 psi / 22.4 bar maximum

PRESSURE DROP: See Differential Pressure Charts, page 64

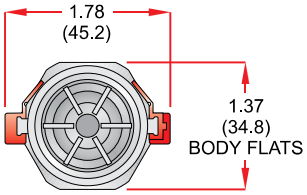
ACCURACY: ±5% of full scale

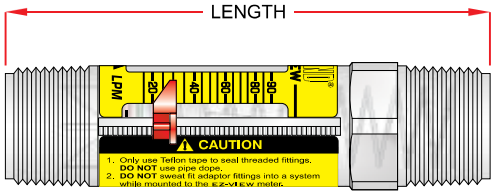
REPEATABILITY: ±1%

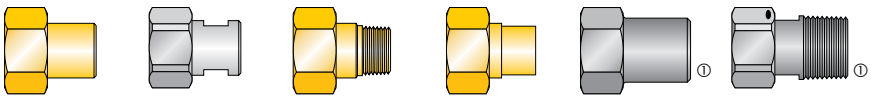
DIMENSIONS: See Ordering Information Table, page 70

EZ-View with
Polysulfone body

EZ-View with
Radel® R body







½" NPTF/BSPT female, swivel brass fitting

½" NPTF female, swivel T303 SS fitting

¾" NPTF/BSPT male, swivel brass fitting

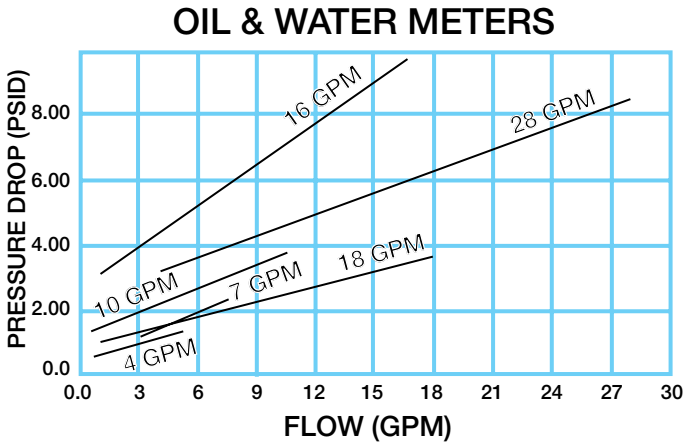
¾" or 1" swivel, sweat brass fitting

1" nominal socket weld PVC fitting ①

1" NPTF male, swivel PVC fitting ①

① Meters with Type 1 PVC fittings:
Pressure rating per normal PVC system specifications
Temperature range +32 °F to +140 °F (0 °C to +60 °C)

EZ-View® Flow Meters
For Oil and water



Ordering Information

Fluid Media	Flow Range GPM	Flow Range LPM	½" NPTF female, swivel brass fitting	½" NPTF female, swivel T303 SS fitting	½" BSPT female, swivel brass fitting	¾" NPTF male, swivel brass fitting	¾" BSPT male, swivel brass fitting	¾" or 1"① nominal, swivel sweat brass fitting	1" NPTF② male, plastic polysulfone fitting	1" nominal③ socket weld PVC fitting	1" NPTF male, swivel PVC fitting	Material: Polysulfone	Material: Radel R
Oil 0.876 s.g.	0.5 - 4 1.0 - 7 1.0 - 10 1.0 - 16 3.0 - 18 4.0 - 28	2 - 15 4 - 26 4 - 35 5 - 60 15 - 65 20 -100	H624-104 H624-107 H624-110 H624-116	H626-104 H626-107 H626-110 H626-116	H627-104 H627-107 H627-110 H627-116	H625-104 H625-107 H625-110 H625-116 H625-118 H625-128	H630-104 H630-107 H630-110 H630-116 H630-118 H630-128		H621-104 H621-107 H621-110 H621-116 H621-118 H621-128	H628-104 H628-107 H628-110 H628-116 H628-118 H628-128	H629-104 H629-107 H629-110 H629-116 H629-118 H629-128	STD	-R
Water 1.0 s.g.	0.5 - 4 1.0 - 7 1.0 - 10 1.0 - 16 3.0 - 18 4.0 - 28	2 - 15 4 - 26 4 - 35 5 - 60 15 - 65 20 -100	H624-004 H624-007 H624-010 H624-016	H626-004 H626-007 H626-010 H626-016	H627-004 H627-007 H627-010 H627-016	H625-004 H625-007 H625-010 H625-016 H625-018 H625-028	H630-004 H630-007 H630-010 H630-016 H630-018 H630-028	H620-004 H620-007 H620-010 H620-016 H620-018 H620-028	H621-004 H621-007 H621-010 H621-016 H621-018 H621-028	H628-004 H628-007 H628-010 H628-016 H628-018 H628-028	H629-004 H629-007 H629-010 H629-016 H629-018 H629-028	STD	-R
DIMENSIONS: Length④ in (mm) Fitting Flats in (mm) Weight lb (kg)			7.75 (196.8) 1.50 (38.1) 0.95 (0.43)	7.75 (196.8) 1.50 (38.1) 0.85 (0.39)	7.75 (196.8) 1.50 (38.1) 0.95 (0.43)	8.25 (209.5) 1.50 (38.1) 0.90 (0.41)	8.25 (209.5) 1.50 (38.1) 0.90 (0.41)	7.75 (196.8) 1.50 (38.1) 0.75 (0.34)	5.25 (133.3) N/A 0.20 (0.09)	8.46 (214.9) 1.54 (39.1) 0.35 (0.16)	8.86 (225.0) 1.50 (38.1) 0.55 (0.25)		

① Fits ¾"copper tube types K, L, M; 1" copper tube type M only
② DO NOT use pipe dope. Use Teflon® tape only. Use with plastic fittings only.
③ Fits 1" Sch 40/80 PVC, CPVC pipe. Requires 1" pipe coupling.
④ Length includes end fittings.

(example) Polysulfone Model = **H 624 - 104**
Radel® R Model = **H 624 - 104 -R**

EZ-View® Flow Meters
With Flow-Alert Flow Switch

- Reed switch and latching models
- Automatically signals alarm if flow is too high or too low
- Models available for AC or DC power supply
- Latching models include Hirschmann type electrical connector
- Polysulfone bodies for standard applications or Radel® R for more aggressive media
- Easy to install
- Easy flow limit adjustment
- Operates in any position
- Relatively insensitive to shock and vibration
- Repeatability within ±1%
- Low cost

SPECIFICATIONS:

MATERIALS:
Polysulfone plastic body, piston and cone
Radel® R plastic body and cone, polysulfone piston

COMMON PARTS:
Spring: T300-series stainless
Indicator Ring: Buna N
Pressure Seals: Buna N
Fittings: C360 Brass, PVC, or T303 stainless steel
Limit Indicators: Polypropylene
Magnet: Strontium Ferrite
Retaining Ring: PH15 – 7MO stainless

FITTINGS/ THREADS: NPT ANSI/ASME B1.20.1, **BSPT** ISOR7
See Ordering Information Table, page 72

TEMPERATURE RANGE: +32 °F to +250 °F (0 °C to +121 °C)

PRESSURE RATING: 325 psi / 22.4 bar maximum

PRESSURE DROP: See Differential Pressure Chart, page 72

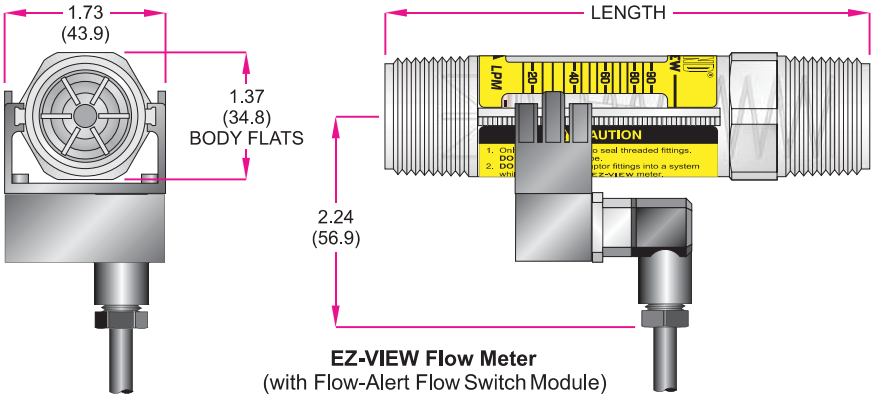
ACCURACY: ±5% of full scale

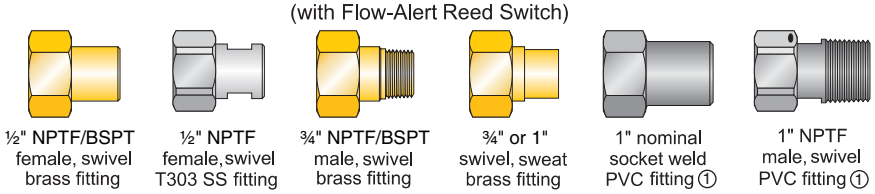
REPEATABILITY: ±1%

DIMENSIONS: See Ordering Information Table, page 72

EZ-View with Polysulfone body

EZ-View with Radel® R body





① Meters with Type 1 PVC fittings:
Pressure rating per normal PVC system specifications
Temperature range +32 °F to +140 °F (0 °C to +60 °C)

EZ-View® Flow Meters
With Flow-Alert Flow Switch

Flow Switch Options and Specifications:

The AC and DC powered Flow-Alert Flow Switch modules consist of a latching relay circuit housed in a sealed polypropylene enclosure. The modules have a normally open dry relay contact that can be used to directly control alarms, warning lights, relays or be used to interface to a PLC. The relay will be latched on as the magnet inside the flow meter passes by the module, and remain latched on until the magnet passes in the other direction or power is interrupted.The set point is adjustable from 0 to 100% of full scale.

The Reed Switch Flow-Alert modules are housed in a sealed polypropylene enclosure. The reed switch module does not provide the latching function like the AC and DC powered units. When the magnet inside the flow meter comes within proximity of the module, the reed switch will change state. The set point is adjustable from 0 to 100% full scale. Two reed switches providing low flow and high flow set points may be installed on a single flow meter.

	AC Latching	DC Latching		Reed Switch Form-A Normally Open (NO)	Reed Switch Form-B Normally Closed (NC)	Reed Switch Form-C
Operating Voltage	115 VAC ±10%	10-30 VDC		–	–	–
Operating Current	25 mA maximum	25 mA maximum		–	–	–
Contact Rating	1A @ 30 VDC 0.5A @ 125 VAC Resistive Load	1A @ 30 VDC 0.5A @ 125 VAC Resistive Load		1A max 200 VDC max 15 Watts max Resistive Load	0.25A max 175 VDC max 5 Watts max Resistive Load	0.25A max 175 VDC max 5 Watts max Resistive Load
Operating Temperature	+32 to +158 °F (0 to +70 °C)	+32 to +158 °F (0 to +70 °C)		+32 to +250 °F (0 to +121 °C)	+32 to +250 °F (0 to +121 °C)	+32 to +250° F (0 to +121 °C)
Connector	4-pin connector (Protection Class IP65)	4-pin connector (Protection Class IP65)		–	–	–
Cable	Not Included	Not Included		3 foot, 2-wire #24 AWG black PVC Jacketed pig-tail	3 foot, 2-wire #20 AWG grey PVC Jacketed pig-tail	3 foot, 3-wire #24 AWG grey PVC Jacketed pig-tail
Rating	NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)		NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)
Certification	N/A	EMC Directive 89/336/EEC		EMC Directive 89/336/EEC	EMC Directive 89/336/EEC	EMC Directive 89/336/EEC
Model Number	H526-003	H526-005		H526-008-NO	H526-008-NC	H526-008

NOTE: Flow switches and flow meters sold separately

Ordering Information

Fluid Media	Flow Range GPM	Flow Range LPM	½" NPTF female, swivel brass fitting	½" NPTF female, swivel T303 SS fitting	½" BSPT female, swivel brass fitting	¾" NPTF male, swivel brass fitting	¾" BSPT male, swivel brass fitting	¾" or 1"① nominal, swivel sweat brass fitting	1" NPTF② male, plastic polysulfone fitting	1" nominal③ socket weld PVC fitting	1" NPTF male, swivel PVC fitting	Material: Polysulfone	Material: Radel R
Oil 0.876 s.g.	0.5 - 4 1.0 - 7 1.0 - 10 1.0 - 16 3.0 - 18 4.0 - 28	2 - 15 4 - 26 4 - 35 5 - 60 15 - 65 20 -100	H624-704 H624-707 H624-710 H624-716	H626-704 H626-707 H626-710 H626-716	H627-704 H627-707 H627-710 H627-716	H625-704 H625-707 H625-710 H625-716 H625-718 H625-728	H630-704 H630-707 H630-710 H630-716 H630-718 H630-728		H621-704 H621-707 H621-710 H621-716 H621-718 H621-728	H628-704 H628-707 H628-710 H628-716 H628-718 H628-728	H629-704 H629-707 H629-710 H629-716 H629-718 H629-728	STD	-R
Water 1.0 s.g.	0.5 - 4 1.0 - 7 1.0 - 10 1.0 - 16 3.0 - 18 4.0 - 28	2 - 15 4 - 26 4 - 35 5 - 60 15 - 65 20 -100	H624-604 H624-607 H624-610 H624-616	H626-604 H626-607 H626-610 H626-616	H627-604 H627-607 H627-610 H627-616	H625-604 H625-607 H625-610 H625-616 H625-618 H625-628	H630-604 H630-607 H630-610 H630-616 H630-618 H630-628	H620-604 H620-607 H620-610 H620-616 H620-618 H620-628	H621-604 H621-607 H621-610 H621-616 H621-618 H621-628	H628-604 H628-607 H628-610 H628-616 H628-618 H628-628	H629-604 H629-607 H629-610 H629-616 H629-618 H629-628	STD	-R
DIMENSIONS: Length④ in (mm) Fitting Flats in (mm) Weight lb (kg)			7.75 (196.8) 1.50 (38.1) 0.95 (0.43)	7.75 (196.8) 1.50 (38.1) 0.85 (0.39)	7.75 (196.8) 1.50 (38.1) 0.95 (0.43)	8.25 (209.5) 1.50 (38.1) 0.90 (0.41)	8.25 (209.5) 1.50 (38.1) 0.90 (0.41)	7.75 (196.8) 1.50 (38.1) 0.75 (0.34)	5.25 (133.3) N/A 0.20 (0.09)	8.46 (214.9) 1.54 (39.1) 0.35 (0.16)	8.86 (225.0) 1.50 (38.1) 0.55 (0.25)		

① Fits ¾"copper tube types K, L, M; 1" copper tube type M only
② DO NOT use pipe dope. Use Teflon® tape only. Use with plastic fittings only.
③ Fits 1" Sch 40/80 PVC, CPVC pipe. Requires 1" pipe coupling.
④ Length includes end fittings.

(example) Polysulfone Model = **H 624 - 704**
Radel® R Model = **H 624 - 704** -R

EZ-View® Flow Meters
For Oil and Water

- 1½ to 2 inch ports
- No special piping or flow straighteners needed
- EZ to install, in any position
- No electrical connections
- Direct reading indication
- Accuracy within ±5% full scale
- Relatively insensitive to shock and vibration

SPECIFICATIONS:

MATERIALS:
Radel® R plastic body; polysulfone piston and cone
T300-series stainless spring
Buna N flow indicator ring and pressure seals
C360 Brass or PVC fittings
Polypropylene limit indicators

FITTINGS/ THREADS: NPT ANSI/ASME B1.20.1, **BSPP** ISO228
See Ordering Information Table, page 74

TEMPERATURE RANGE: +32 °F to +250 °F (0 °C to +121 °C)

PRESSURE RATING: 325 psi / 22.4 bar maximum

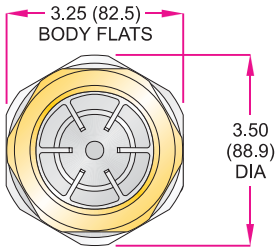
PRESSURE DROP: See Differential Pressure Chart, page 74

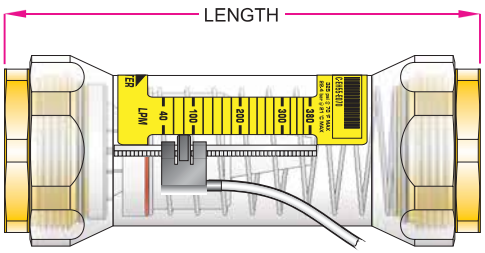
ACCURACY: ±5% of full scale

REPEATABILITY: ±1%

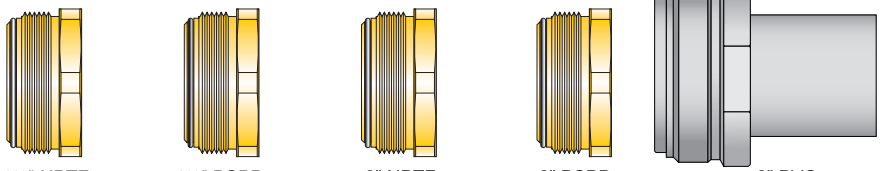
DIMENSIONS: See Ordering Information Table, page 74

EZ-View with
Radel® R body





EZ-VIEW Flow Meter
(with Flow-Alert Reed Switch)



1½" NPTF female brass fitting

1½" BSPP female brass fitting

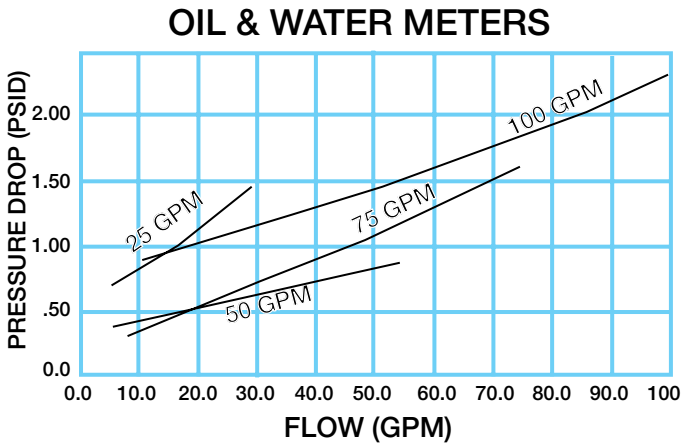
2" NPTF female brass fitting

2" BSPP female brass fitting

2" PVC socket weld fitting ①

① Meters with Type 1 PVC fittings:
Pressure rating per normal PVC system specifications
Temperature range +32 °F to +140 °F (0 °C to +60 °C)

EZ-View® Flow Meters
For Oil and Water



Ordering Information

Fluid Media	Flow Range GPM	Flow Range LPM	1½" NPTF female, brass fitting	1½" BSPP female, brass fitting	2" NPTF female, brass fitting	2" BSPP female, brass fitting	2" PVC socket weld fitting①
Oil 0.876 s.g.	2 – 25 5 – 50 7 – 75 10 – 100	10 – 95 20 – 190 30 – 280 40 – 380	H615-125-R H615-150-R H615-175-R H615-110-R	H616-125-R H616-150-R H616-175-R H616-110-R	H617-125-R H617-150-R H617-175-R H617-110-R	H618-125-R H618-150-R H618-175-R H618-110-R	
Water 1.0 s.g.	2 – 25 5 – 50 7 – 75 10 – 100	10 – 95 20 – 190 30 – 280 40 – 380	H615-025-R H615-050-R H615-075-R H615-010-R	H616-025-R H616-050-R H616-075-R H616-010-R	H617-025-R H617-050-R H617-075-R H617-010-R	H618-025-R H618-050-R H618-075-R H618-010-R	H619-025-R H619-050-R H619-075-R H619-010-R
DIMENSIONS:	Length② in (mm) Fitting Flats in (mm) Weight lb (kg)		8.72 (221.5) 3.00 (76.2) 4.10 (1.86)	8.72 (221.5) 3.00 (76.2) 4.10 (1.86)	8.72 (221.5) 3.00 (76.2) 3.10 (1.41)	8.72 (221.5) 3.00 (76.2) 3.10 (1.41)	11.48 (291.6) N/A 1.70 (0.77)

① Fits 2" Sch 40/80 PVC, CPVC pipe.
② Length includes end fitting.

EZ-View® Flow Meters
With Flow-Alert Flow Switch

- Reed switch and latching models
- Automatically signals alarm, if flow is too high or too low
- Models available for AC or DC power supply
- Latching model includes Hirschmann type electrical connector
- Easy to install
- Easy flow limit adjustment
- Operates in any position
- Relatively insensitive to shock and vibration
- Repeatability within ±1%
- Low cost

EZ-View with
Radel® R body

SPECIFICATIONS:

MATERIALS:
Radel® R plastic body; polysulfone piston and cone
T300-series stainless spring
Buna N flow indicator ring and pressure seals
C360 Brass or PVC fittings
Polypropylene limit indicators
Strontium Ferrite magnet

FITTINGS/ THREADS: NPT ANSI/ASME B1.20.1, **BSPP** ISO228
See Ordering Information Table, page 76

TEMPERATURE RANGE: +32 °F to +250 °F (0 °C to +121 °C)

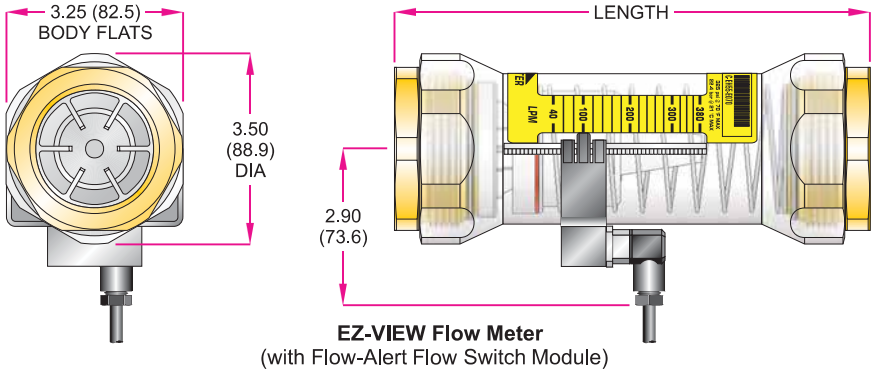
PRESSURE RATING: 325 psi / 22.4 bar maximum

PRESSURE DROP: See Differential Pressure Chart, page 74

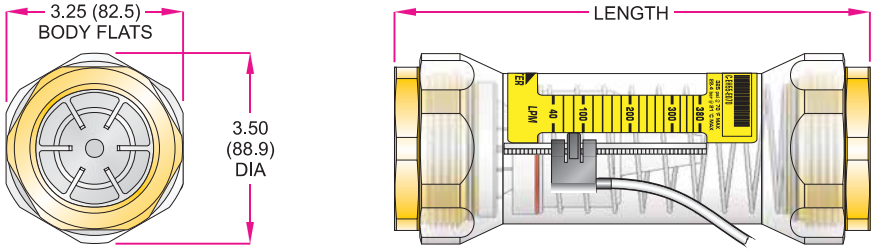
ACCURACY: ±5% of full scale

REPEATABILITY: ±1%

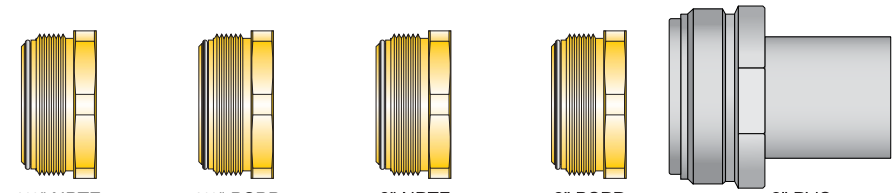
DIMENSIONS: See Ordering Information Table, page 76



EZ-VIEW Flow Meter
(with Flow-Alert Flow Switch Module)



EZ-VIEW Flow Meter
(with Flow-Alert Reed Switch)



1½" NPTF female brass fitting | 1½" BSPP female brass fitting | 2" NPTF female brass fitting | 2" BSPP female brass fitting | 2" PVC socket weld fitting ①

① Meters with Type 1 PVC fittings:
Pressure rating per normal PVC system specifications
Temperature range +32 °F to +140 °F (0 °C to +60 °C)

EZ-View® Flow Meters
With Flow-Alert Flow Switch

Flow Switch Options and Specifiations:

The AC and DC powered Flow-Alert Flow Switch modules consist of a latching relay circuit housed in a sealed polypropylene enclosure. The modules have a normally open dry relay contact that can be used to directly control alarms, warning lights, relays or be used to interface to a PLC. The relay will be latched on as the magnet inside the flow meter passes by the module, and remain latched on until the magnet passes in the other direction or power is interrupted. The set point is adjustable from 0 to 100% of full scale.

The Reed Switch Flow-Alert modules are housed in a sealed polypropylene enclosure. The reed switch module does not provide the latching function like the AC and DC powered units. When the magnet inside the flow meter comes within proximity of the module, the reed switch will change state. The set point is adjustable from 0 to 100% full scale. Two reed switches providing low flow and high flow set points may be installed on a single flow meter.

	AC Latching	DC Latching		Reed Switch Form-A Normally Open (NO)	Reed Switch Form-B Normally Closed (NC)	Reed Switch Form-C
Operating Voltage	115 VAC ±10%	10-30 VDC		–	–	–
Operating Current	25 mA maximum	25 mA maximum		–	–	–
Contact Rating	1A @ 30 VDC 0.5A @ 125 VAC Resistive Load	1A @ 30 VDC 0.5A @ 125 VAC Resistive Load		1A max 200 VDC max 15 Watts max Resistive Load	0.25A max 175 VDC max 5 Watts max Resistive Load	0.25A max 175 VDC max 5 Watts max Resistive Load
Operating Temperature	+32 to +158 °F (0 to +70 °C)	+32 to +158 °F (0 to +70 °C)		+32 to +250 °F (0 to +121 °C)	+32 to +250 °F (0 to +121 °C)	+32 to +250° F (0 to +121 °C)
Connector	4-pin connector (Protection Class IP65)	4-pin connector (Protection Class IP65)		–	–	–
Cable	Not Included	Not Included		3 foot, 2-wire #24 AWG black PVC Jacketed pig-tail	3 foot, 2-wire #20 AWG grey PVC Jacketed pig-tail	3 foot, 3-wire #24 AWG grey PVC Jacketed pig-tail
Rating	NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)		NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)	NEMA 12 & 13 (IP65)
Certification	N/A	EMC Directive 89/336/EEC		EMC Directive 89/336/EEC	EMC Directive 89/336/EEC	EMC Directive 89/336/EEC
Model Number	H526-004	H526-006		H526-008-NO	H526-008-NC	H526-008

NOTE: Flow switches and flow meters sold separately

Ordering Information

Fluid Media	Flow Range GPM	Flow Range LPM	1½" NPTF female, brass fitting	1½" BSPP female, brass fitting	2" NPTF female, brass fitting	2" BSPP female, brass fitting	2" PVC socket weld fitting①
Oil 0.876 s.g.	2 – 25 5 – 50 7 – 75 10 – 100	10 – 95 20 – 190 30 – 280 40 – 380	H615-725-R H615-750-R H615-775-R H615-710-R	H616-725-R H616-750-R H616-775-R H616-710-R	H617-725-R H617-750-R H617-775-R H617-710-R	H618-725-R H618-750-R H618-775-R H618-710-R	
Water 1.0 s.g.	2 – 25 5 – 50 7 – 75 10 – 100	10 – 95 20 – 190 30 – 280 40 – 380	H615-625-R H615-650-R H615-675-R H615-610-R	H616-625-R H616-650-R H616-675-R H616-610-R	H617-625-R H617-650-R H617-675-R H617-610-R	H618-625-R H618-650-R H618-675-R H618-610-R	H619-625-R H619-650-R H619-675-R H619-610-R
DIMENSIONS:	Length② in (mm) Fitting Flats in (mm) Weight lb (kg)		8.72 (221.5) 3.00 (76.2) 4.10 (1.86)	8.72 (221.5) 3.00 (76.2) 4.10 (1.86)	8.72 (221.5) 3.00 (76.2) 3.10 (1.41)	8.72 (221.5) 3.00 (76.2) 3.10 (1.41)	11.48 (291.6) N/A 1.70 (0.77)

① Fits 2" Sch 40/80 PVC, CPVC pipe.
② Length includes end fitting.

NOTE: Flow switches and flow meters sold separately

EZ-View® Flow Meters

In-Line Test Kits

- Simultaneously monitors in-line flow & pressure
- Compact & self-contained
- Mounts in any position
- Easily carried in tool kit

Here is a convenient, low-cost diagnostic tool to help you check flow and pressure simultaneously. The EZ-View in-line test kits were designed to measure flow from 0.5 to 28 GPM (2 to 106 LPM), and operating pressures up to 160 psi (11 bar).

This compact, self-contained unit is easy to install, and can be used as a permanent monitoring indicator, or as a temporary troubleshooting tool to help: **check pump leakage under load, verify proper flow, pressure or control settings, locate line restrictions, verify pressure drops and balance multi-line systems.**

EZ-View with Polysulfone body

EZ-View with Radel® R body

SPECIFICATIONS:

MATERIALS:
Polysulfone plastic body, piston and cone
Radel® R plastic body and cone, polysulfone piston

COMMON PARTS:
Spring: T300-series stainless
Indicator Ring: Buna N
Pressure Seals: Buna N
Fittings: C360 brass, PVC, or T303 stainless steel
Limit Indicators: Polypropylene
Retaining Ring: PH15 – 7MO stainless

OPTIONAL (consult factory):
Spring and Retaining Ring: Teflon® coated

Load Valve:
Polyvinyl Chloride (PVC) - 1 body
Polypropylene Ball
Teflon® Ball Seat
Ethylene Propylene (EPDM) O-ring

FITTINGS/ THREADS:
Flow Meter: NPT – 1 inch male / ANSI/ASME B1.20.1
Load Valve: NPT – 1 inch female / ANSI/ASME B1.20.1

TEMPERATURE RANGE: +32 °F to +150 °F (0 °C to +65.6 °C)

PRESSURE RATING: 325 psi / 22.4 bar maximum

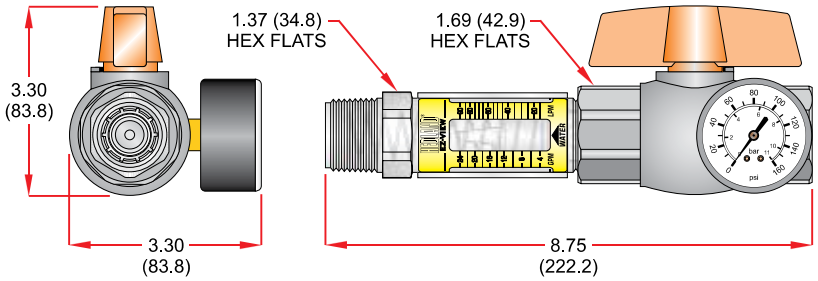
PRESSURE GAUGE:
0 to 160 psi (0 to 11.0 bar) with internal shock dampeners and blowout patch

PRESSURE DROP: See Differential Pressure Chart, page 70

ACCURACY: ±5% of full scale

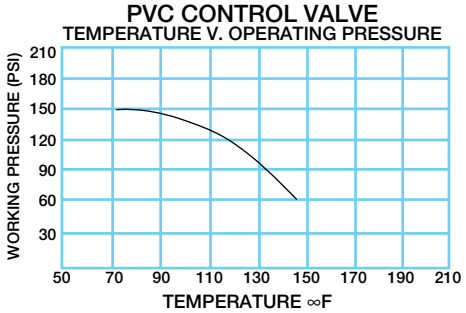
REPEATABILITY: ±1%

DIMENSIONS:



Ordering Information

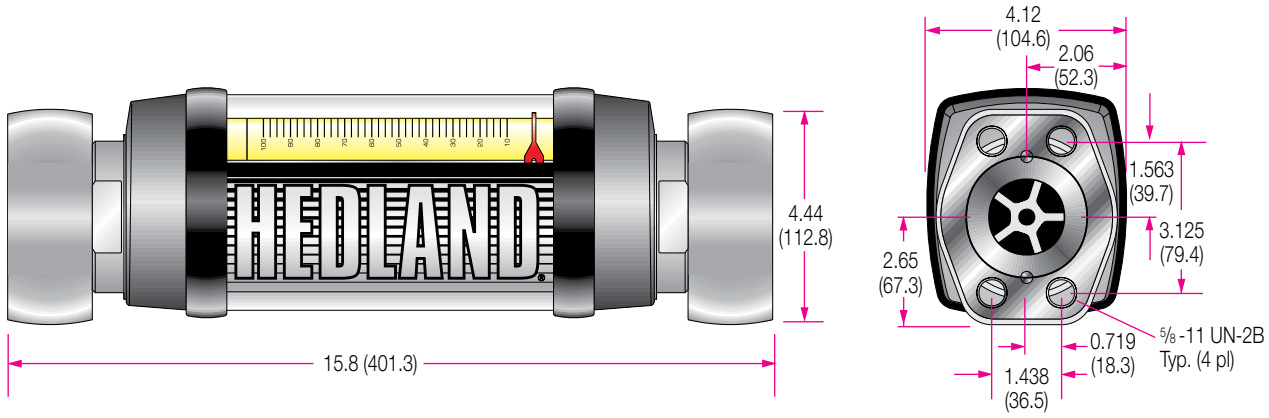
Fluid Media	Flow Range		1" NPTF male/female fitting	
	GPM	LPM	Polysulfone	Radel® R
Oil 0.876 s.g.	0.50 - 4.00	2.00 - 15.0	H623-104	H623-104-R
	1.00 - 7.00	4.00 - 26.0	H623-107	H623-107-R
	1.00 - 10.0	4.00 - 35.0	H623-110	H623-110-R
	1.00 - 16.0	5.00 - 60.0	H623-116	H623-116-R
	3.00 - 18.0	15.0 - 65.0	H623-118	H623-118-R
	4.00 - 28.0	20.0 -100	H623-128	H623-128-R
Water 1.0 s.g.	0.50 - 4.00	2.00 - 15.0	H623-004	H623-004-R
	1.00 - 7.00	4.00 - 26.0	H623-007	H623-007-R
	1.00 - 10.0	4.00 - 35.0	H623-010	H623-010-R
	1.00 - 16.0	5.00 - 60.0	H623-016	H623-016-R
	3.00 - 18.0	15.0 - 65.0	H623-018	H623-018-R
	4.00 - 28.0	20.0 -100	H623-028	H623-028-R
Weight lb (kg)			0.80 (0.36)	



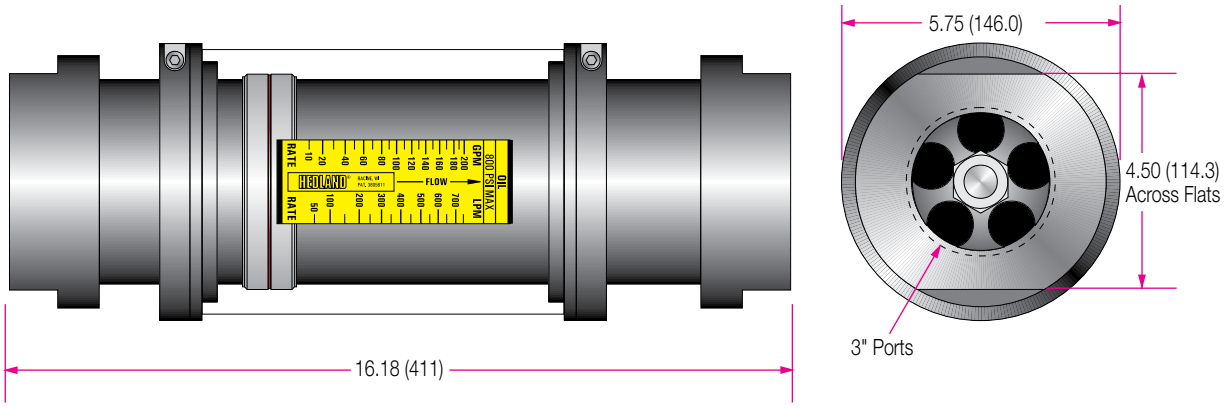
Hedland®

For standard 1½ inch C62, 3 inch; SAE, NPTF, BSPP and 3 inch C61

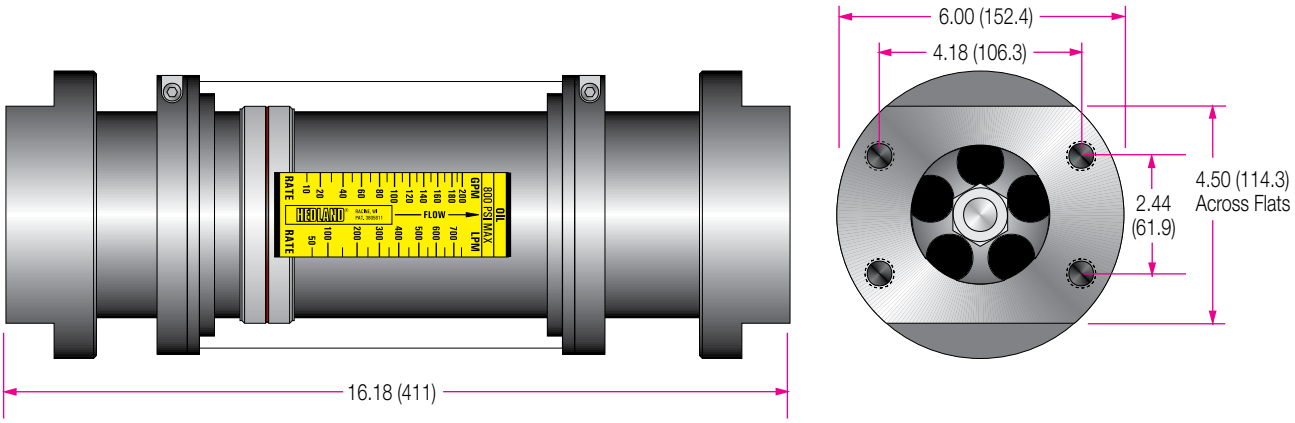
1½ inch; C62 Flange - Inches (mm)



3 inch; NPTF, BSPP - Inches (mm)



3 inch; C61 Flange - Inches (mm)



SIZE	WEIGHTS For all Flow Meter Models	ALUMINUM w/Aluminum Internals lbs. (kg)	BRASS w/Brass Internals lbs. (kg)	T303 SS w/Aluminum Internals lbs. (kg)	T303 SS w/Brass Internals lbs. (kg)	T316 SS w/T316 SS Internals lbs. (kg)	HOSTILE ENVIRONMENT T316 SS w/T316 Internals lbs. (kg)
¼" (NPT & BSP) SAE 6	¼ Standard Meter	.55 (.25)	1.05 (.48)	.9 (.41)	1.05 (.48)	~	~
	¼ High Temperature	1.35 (.61)	2.75 (1.25)	CF	2.75 (1.25)	2.75 (1.25)	~
	¼ API Oil/Caustic & Corrosive Liquids & Gases	~	~	~	~	3.00 (1.36)	3.00 (1.36)
	¼ Pneumatic Meter with Extended Cap	.7 (.32)	1.6 (.73)	1.5 (.68)	~	~	~
	¼ Pneumatic Meter w/ Extended Cap w/Gauge	1.2 (.55)	2.1 (1.0)	2.0 (.91)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	1.6 (.73)	2.5 (1.2)	2.3 (1.1)	~	~	~
	¼ Flow-Alert Flow Switch	4.30 (1.95)	5.65 (2.56)	5.15 (2.34)	5.50 (2.50)	5.80 (2.63)	~
	¼ Flow Transmitter	4.25 (1.93)	5.60 (2.54)	5.10 (2.31)	5.45 (2.47)	5.75 (2.61)	~
½" (NPT & BSP) SAE 10	½ Standard Meter	1.25 (.57)	2.60 (1.18)	2.1 (.95)	2.45 (1.11)	~	~
	½ Liquid Test Kit	4.9 (2.2)	5.7 (2.6)	5.3 (2.4)	~	~	~
	½ High Temperature	1.35 (.61)	2.75 (1.25)	CF	2.75 (1.25)	2.75 (1.25)	~
	½ API Oil/Caustic & Corrosive Liquids & Gases	3.0 (1.4)	~	~	~	2.95 (1.34)	2.95 (1.34)
	½ Pneumatic Meter with Extended Cap	2.1 (1.0)	3.8 (1.7)	3.3 (1.5)	~	~	~
	½ Pneumatic Meter w/Extended Cap w/Gauge	2.7 (1.2)	4.3 (2.0)	3.8 (1.7)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	3.2 (1.5)	4.8 (2.2)	4.3 (2.0)	~	~	~
	½ Flow-Alert Flow Switch	4.30 (1.95)	5.65 (2.56)	5.15 (2.34)	5.50 (2.50)	5.80 (2.63)	~
	½ Flow Transmitter	4.25 (1.93)	5.60 (2.54)	5.10 (2.31)	5.45 (2.47)	5.75 (2.61)	~
¾" (NPT & BSP) SAE 12	¾ Standard Meter	2.0 (.9)	4.0 (1.8)	3.5 (1.6)	3.9 (1.8)	~	~
	¾ Liquid Test Kit	7.0 (3.2)	9.0 (4.1)	8.5 (3.9)	~	~	~
	¾ High Temperature	2.1 (1.0)	4.40 (2.00)	4.00 (1.81)	4.40 (2.00)	4.40 (2.00)	~
	¾ API Oil/Caustic & Corrosive Liquids & Gases	~	~	~	~	4.40 (2.00)	4.6 (2.1)
	¾ Pneumatic Meter with Extended Cap	3.0 (1.4)	6.6 (3.0)	6.2 (2.8)	~	~	~
	¾ Pneumatic Meter w/Extended Cap w/Gauge	3.5 (1.6)	7.1 (3.2)	6.7 (3.1)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	4.4 (2.0)	7.9 (3.6)	7.5 (3.4)	~	~	~
	¾ Flow-Alert Flow Switch	4.95 (2.25)	6.95 (3.15)	6.60 (3.00)	6.85 (3.11)	7.35 (3.33)	~
	¾ Flow Transmitter	CF	CF	CF	CF	CF	~
1" (NPT & BSP) SAE 16	1 Standard Meter	1.85 (.84)	3.75 (1.70)	2.7 (1.3)	3.4 (1.5)	~	~
	1 Liquid Test Kit	6.8 (3.1)	8.7 (4.0)	7.7 (3.5)	~	~	~
	1 High Temperature	3.0 (1.4)	4.40 (2.00)	4.00 (1.81)	4.40 (2.00)	4.40 (2.00)	~
	1 API Oil/Caustic & Corrosive Liquids & Gases	~	~	~	~	4.40 (2.00)	4.60 (2.10)
	1 Pneumatic Meter with Extended Cap	2.8 (1.3)	6.3 (2.9)	5.4 (2.5)	~	~	~
	1 Pneumatic Meter w/Extended Cap w/Gauge	3.3 (1.5)	6.8 (3.1)	5.9 (2.7)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	4.2 (1.9)	7.6 (3.5)	6.7 (3.1)	~	~	~
	1 Flow-Alert Flow Switch	4.95 (2.25)	6.85 (3.11)	5.80 (2.63)	6.50 (2.95)	7.50 (3.40)	~
	1 Flow Transmitter	CF	CF	CF	CF	CF	~
1¼" (NPT & BSP) SAE 20	1¼ Standard Meter	7.3 (3.3)	16.8 (7.6)	14.6 (6.6)	16.8 (7.6)	~	~
	1¼ Liquid Test Kit	20 (9.07)	~	30 (13.6)	~	~	~
	1¼ High Temperature	9.6 (4.4)	21.40 (9.71)	CF	21.40 (9.71)	21.40 (9.71)	~
	1¼ API Oil/Caustic & Corrosive Liquids & Gases	~	~	~	~	21.40 (9.71)	CF
	1¼ Pneumatic Meter with Extended Cap	9.9 (4.5)	24.3 (11.0)	21.1 (9.6)	~	~	~
	1¼ Pneumatic Meter w/Ext. Cap w/Gauge	10.4 (4.7)	24.8 (11.2)	21.7 (9.8)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	12.5 (5.7)	27.0 (12.3)	23.8 (10.8)	~	~	~
	1¼ Flow-Alert Flow Switch	13.55 (6.15)	23.05 (10.46)	20.85 (9.46)	23.05 (10.46)	27.65 (12.54)	~
	1¼ 4 Flow Transmitter	CF	CF	CF	CF	CF	~
1½" (NPT & BSP) SAE 24	1½ Standard Meter	7.3 (3.3)	16.4 (7.5)	14.1 (6.4)	15.8 (7.2)	~	~
	1½ Standard Meter w/C62 Flange	19.0 (8.6)	28.2 (12.8)	25.8 (11.7)	~	~	~
	1½ Liquid Test Kit	20 (9.07)	~	30 (13.6)	~	~	~
	1½ High Temperature	9.6 (4.4)	21.40 (9.71)	CF	21.40 (9.71)	21.40 (9.71)	~
	1½ High Temperature w/C62 Flange	CF	21.8 (9.9)	CF	CF	CF	~
	1½ API Oil/Caustic & Corrosive Liquids & Gases	~	~	~	~	21.40 (9.71)	CF
	1½ Pneumatic Meter with Extended Cap	9.9 (4.5)	23.9 (10.8)	20.6 (9.4)	~	~	~
	1½ Pneumatic Meter w/Extended Cap w/Gauge	10.4 (4.7)	24.4 (11.1)	21.2 (9.6)	~	~	~
	Test Kit w/Ext. Cap/Gauge/Valve	12.5 (5.7)	26.6 (12.1)	23.3 (10.6)	~	~	~
	1½ Flow-Alert Flow Switch	13.55 (6.15)	22.65 (10.27)	20.35 (9.23)	22.05 (10.00)	27.65 (12.54)	~
	1½ Flow Transmitter	CF	CF	CF	CF	CF	~
3"	3 Standard Meter	17.5 (8.0)	52.5 (23.8)	~	~	~	~
	3 Standard Meter w/C61 Flange	20.0 (9.1)	55.0 (25.0)	~	~	~	~

~: Not available as standard option
CF: Consult factory for weights

BADGER METER, INC. (“BADGER METER”) GENERAL SALES INFORMATION

Purchase Orders
Minimum order size is $50.00 plus freight charges. Blanket orders and special product orders are subject to extraordinary charges for delivery schedule changes and/or cancellations.

Transportation Terms
Pricing and shipments are FCA the Badger Meter factory. Badger Meter assumes no liability for damaged or lost shipment. Claims must be made by the customer to the freight carrier. Product title transfers to the customer at the factory dock. Prices and specifications are subject to change without notice.

Payment Terms
Net 30 days of invoice date to companies with approved line of credit. For new accounts, please allow two weeks for credit approval. Badger Meter accepts American Express, MasterCard, Visa, and Cash. Accounts with balances exceeding 30 days are subject to cash on delivery (C.O.D.) status. All orders are subject to written acceptance by Badger Meter. Buyer's terms and conditions are not accepted unless approved by an authorized officer of Badger Meter.

Delivery Dates
Delivery dates are estimates only and may be subject to delays due to influences beyond the control of Badger Meter.

Export
Terms, discounts, special packing and conditions of sale for purchase orders originating from or for shipment to final destination outside the fifty states of the USA and Canada will be furnished upon request. Payment shall be made in United States currency. Shipments are Ex Works the Badger Meter factory (e.g. the buyer is responsible for the cost of freight, cost of insurance, taxes/duties and customs fees).

Customer Validation
Badger Meter reserves the right to determine OEM qualifications of any and all buyers or to request end customer invoicing in situations where project pricing may have been granted by the factory. For complete and governing purchase terms, visit **http://www.badgermeter.com/Company/Legal/Purchase-Terms.htm.**

BADGER METER RETURNED GOODS POLICY

Any product to be returned to Badger Meter for credit, warranty or servicing must have a Returned Material Authorization (RMA) logged into the Badger Meter Return Material System within the previous 90 days. Any return without an RMA will not be accepted. Please note that all returns are conditional, pending inspection by Badger Meter.

Requesting an RMA

The following information will be required to process an RMA: a reason for return and the invoice number of purchased item to be returned. Please contact Badger Meter Customer Service to initiate the RMA and assign a number to the return.

Returned Goods Labeling

The RMA number must be visible on the returned material packaging. The RMA number must be clearly labeled on the outside of the carton. Returned goods without an RMA will be refused by the receiving department at Badger Meter.

Inbound Freight

Upon issuance of an RMA all goods shall be shipped prepaid to Badger Meter. The customer is responsible for freight for returns unless otherwise agreed to in writing in advance. If Badger Meter agrees to pay for freight at the time the RMA is logged in, the Customer Service Representative will e-mail or fax the customer a list of Badger Meter Approved Carriers and Freight Policy.

Badger Meter shall not be responsible for damage caused by inadequate return packaging or shipping. Please package returned products in their original packaging or equivalent to ensure that they will arrive undamaged.

Warranty Returns

Any warranty returns may be repaired or replaced at the discretion of Badger Meter. See the governing warranty statement at www.badgermeter.com. Warranty repairs will be returned to the customer at no charge via ground freight only. If you require overnight or other special arrangements, this will be available at the customer's expense.

Service/Calibration Returns

Before a customer returns any product for service/calibration, and before Badger Meter begins any work, the customer must deliver a written purchase order to Badger Meter, including acceptance of Badger Meter payment terms and pricing. The customer is responsible for both inbound and outbound freight.

Warranty and Service Return Special Instructions

Before shipping your equipment, please be sure to remove any customer-supplied items such as end fittings, enclosures, wiring, etc. Shipping these items with your equipment increases the cost of both inbound and outbound freight and serves no purpose. Badger Meter will not "reassemble" non-Badger Meter parts and is not responsible for loss of any accessories not needed in testing and/or repair. Products must be thoroughly cleaned and any process chemicals removed before sending for service/calibration. Non-compliant returned goods will be returned to the customer untouched at the customer's cost.

Returns for Credit

All returns are at the sole discretion of Badger Meter. All returns for credit are subject to a 25% restocking charge. If an offsetting order is placed, and the offsetting value is equal to or greater than the value of the returned goods, then the restocking charge is 15%. No credit will be allowed unless the returned items are currently in production, and are in new and re-saleable condition, at the sole discretion of Badger Meter. Any returned goods beyond 90 days from the date of invoice, any special/custom (e.g. non-standard) configurations, any slow-moving products, or any private-labeled products are subject to refusal of a return for credit at the sole discretion of Badger Meter. In these situations if a return for credit is authorized, a restocking charge greater than 25% may be imposed.

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Control. Manage. Optimize.

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