Hedland®
Variable Area Flow Meters

Badger Meter Europa

Variable area flow meters

and flow switches

Great versatility with low cost alternatives

Hedland® variable area flow meters (rotameters) are the industry benchmark. This product line has grown to over 15.000 flow meters constructed of aluminium, brass or stainless steel with variable measuring area for liquids, oil, water, compressed air and many other fluids and gases. Hedland® meters are recommended for use in machine cooling and lubrication, packaging, semiconductor production, high pressure and hose applications, automotive and aviation industry as well as in the mining industry.

EZ-View®

Low cost meters for oil, water and other liquids:

- Rugged construction
- Installation in any position
- Shock and vibration resistant
- Instantaneous direct reading

Standard meters

- Variable area in-line flow meters.
- Rugged, durable construction in aluminium, brass or stainless steel
- Installation in any position
- Available from 1/4" to 2" and 3"
- Direct reading
- 360° rotable guard scale

MR Transmitter and Flow-Alert

For fluids, air and compressed gases

- Mounting in any position
- Electronic signal output
- Digital display (MR only)
- IP 52 and 54 housings (NEMA 12/13)

Measuring principle

The variable area (rotameter) flow measurement method allows fluids (liquids and gases) volume streams to be determined. A moving sharp-edged orifice is located within the piston assembly, forming an annular opening with the contoured metering cone. The piston assembly carries a cylindrical PPS/ceramic magnet that is magnetically coupled to an external flow indicatior that moves precisely in direct response to movement for the piston therefore provicing a visual display for the flow rate.

CE

Content

General design features

Operating principle

Hedland® flow meters are variable area (rotameter) instruments. 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 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: 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

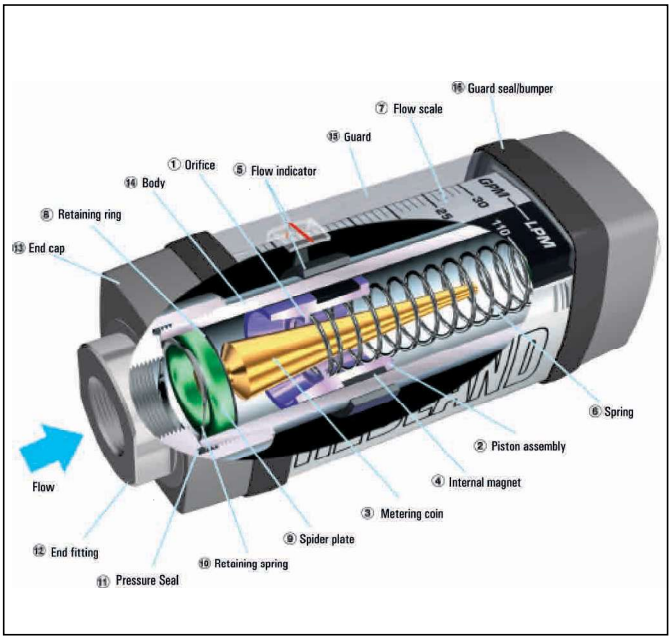
This flow meter is the most readable product in its class. Brightly colored indicators move over the graduated, linear flow scale ⑦ which contains bold, easy-to-read numerals and gauge marks. This enhanced resolution virtually eliminates parallax problems associated with competitive, direct reading flow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

360° rotatable guard/scale

The 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, 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 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 other 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 -29 to +116 °C (-20 to +240 °F). High temperature flow meter range is -29 to +204 °C (-20 to +400 °F) continuous, and +204 to +260 °C (+400 to +500 °F) 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 241 bar (3,500 psi) in ¼ to 1½ inch sizes and 55 bar (800 psi) for 3 inch meters. Type 303 and 316 stainless steel flow meters have a 414 bar (6,000 psi) maximum operating pressure in ¼ and ½ inch models and 345 bar (5,000 psi) 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 69 bar (1,000 psi) in ¼ to 1½ inch sizes and 17 bar (250 psi) for 3 inch meters. Type 303 and 316 stainless steel flow meters have a 103 bar (1,500 psi) 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 41 bar (600 psi) by the control valve pressure rating. Consult factory for high pressure use.

Fatigue Rating: per NFPA T2.6.1R1-1991 - C/90
(see page 8 for further details).

Pressure drop (ΔP)

Refer to pages 62 to 67 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.

Note: All gallon units indicated in this catalouge are US gallons.

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:

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

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

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) x 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	Pyrex®
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

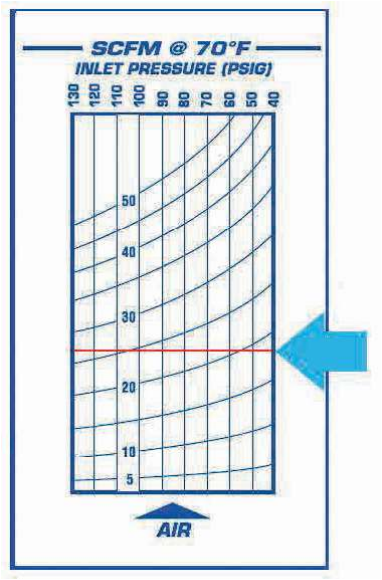
The Hedland® pneumatic flow meter is offered with a standard Multi-Pressure Flow Scale.

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.

A special Single Pressure Flow Scale is available in U.S. and metric units for an additional charge. 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.

A specially calibrated scale for higher or lower fixed pressures in any measurement unit, and other fluid specific gravities can be supplied upon request. Consult factory for details.



Horizontal indicator bar

Figure 1: Multi-pressure flow scale

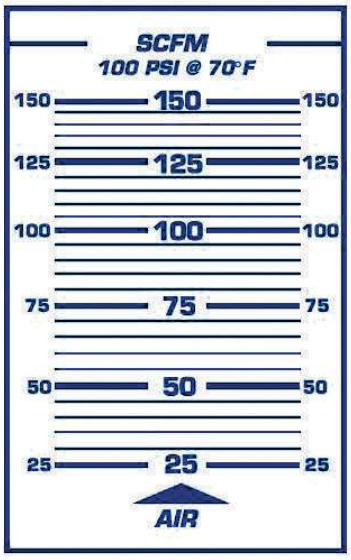


Figure 2: Single pressure flow scale

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

$$f1 = \sqrt{\frac{114.7}{14.7 + 140}} = \sqrt{\frac{114.7}{154.7}} = .861$$

2. Temperature correction for 40° F

$$f2 = \sqrt{\frac{460 + 40}{530}} = \sqrt{\frac{500}{530}} = .971$$

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

$$f3 = \sqrt{.60} = .775$$

4. Make total correction calculation. f_{total}

$$f_{total} = f1 \times f2 \times f3 = .861 \times .971 \times .775 = .648$$

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 (f1) 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
f1	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 (f2)

°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
f2	.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 (f3)

$$f3 = \sqrt{\text{Sp. Gr.}}$$

Figure 3: Conversion chart

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 69 for pressure drop (DP) 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)

Fluid selection chart

Fluid	Specific Gravity	Correction Factor of Standard Scale	Internal body material: Aluminum	Brass	T316 SST	T303 SST	External press. seals: Vitron®	EPR	Dust guard: Polycarbonate	Nylon	Pyex®
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

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 oc $\frac{1\ \text{Atm}}{x\ \text{Atm}}$, 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 7.

$$f_1 = \sqrt{\frac{114,7}{14.7 + 35}} = 1.52$$

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 x 1.52 = 102.78 scfm indicated

A Hedland® meter installed in this system would indicate 103 scfm. A custom calibrated scale for higher or lower fixed pressures in any measurement unit, and other fluid specific gravities can be supplied upon request.

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.

	Aluminum		Brass		Stainless steel	
Meter	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 116 °C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

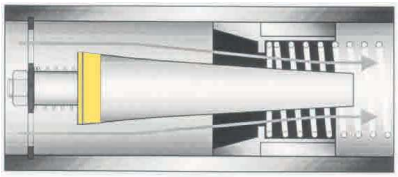
Technical data

Materials	2024 - T351 anodized aluminum body, piston and cone C360 brass body, piston and conej T303 stainless body, 2024 - T351 anodized aluminum piston and cone
Common parts	
Spider plate: T316 SS **Spring:** T302 SS **Fasteners:** T303 SS **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum **End caps:** Nylon ST	**Retaining ring:** SAE 1070/1090 carbon steel **Retaining spring:** SAE 1070/1090 carbon steel **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Guard:** Polycarbonate
Threads	SAE J1926-1*, NPTF ANSI B2.2, BSPP ISO1179, Code 61 and Code 62: SAEJ518
Temperature range	-29 °C to +116 °C (-20 °F to +240 °F) for higher temp. meters, see page 16-17
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 conversion information
Stainless steel operating	6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see conversion information
Pressure drop	See ordering information table, see next page. For detailed differential pressure charts, see page 62.
Accuracy	±2% of full scale, ±7% of full scale for ¼" meters
Repeatability	±1%

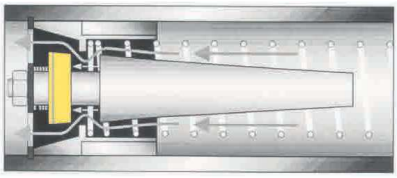
* SAE ports will accept both light-duty (SAE J1926-3) and heavy-duty (SAE J1926-2) stud ends, except 1/4 (SAE 6) size, which will accept only light-duty (SAE J1926-3) studs ends.

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.



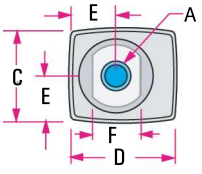
Normal flow direction

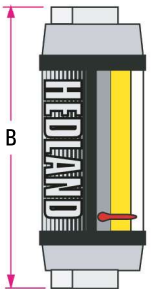


Reverse flow by-pass

Dimensions

A	B	C	D	E	F
Nominal port size[1]	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 79.
Weights for all sizes can be found on page 80.

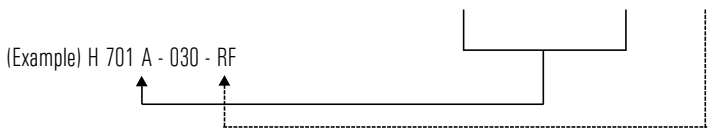
① 3 inch models have Celcon® piston/piston ring

3500/6000 PSI flow meters

For petroleum fluids

Ordering information

Nominal port size②	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options ♦
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP③	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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 psi 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 psi 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

3500/6000 PSI test kits

For petroleum fluids

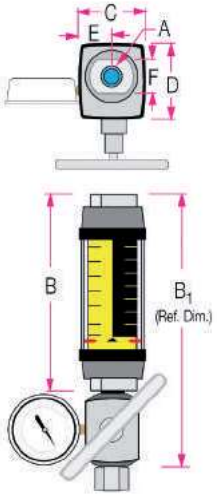
- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

Technical data

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 **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum **End caps:** Nylon ST	**Retaining ring:** SAE 1070/1090 carbon steel **Retaining spring:** SAE 1070/1090 carbon steel **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Guard:** Polycarbonate
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating:**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications: See page conversion information 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 conversion information
Pressure drop	See ordering information table, next page and differential pressure charts on 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; ¼" and 1½" series - ball valve. Produce ΔP up to 3,500 psi/241 bar psiD and 6,000 psi/414 bar psiD.

Dimensions

A	B	B1	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 80.
SAE and BSPP test kits include inlet adapter.

3500/6000 PSI test kits

For petroleum fluids

Ordering information

Nominal port size①	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options
	gal/min	l/min	50% flow psi (bar))	100% flow psi (bar))	Revers 100% flow psi (bar))	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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.

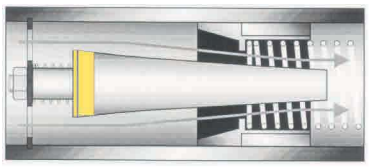
Note: TK suffix represents standard testkit configuration. For reverse flow by-pass test kit,replace TK suffix with RT suffix.

Example: H 701 A - 030 - RT

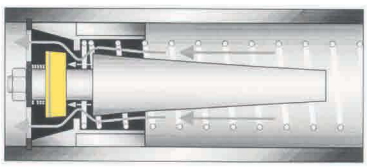
Note: RT option is not available with standard brass flow meters.

Reverse flow by-pass options

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

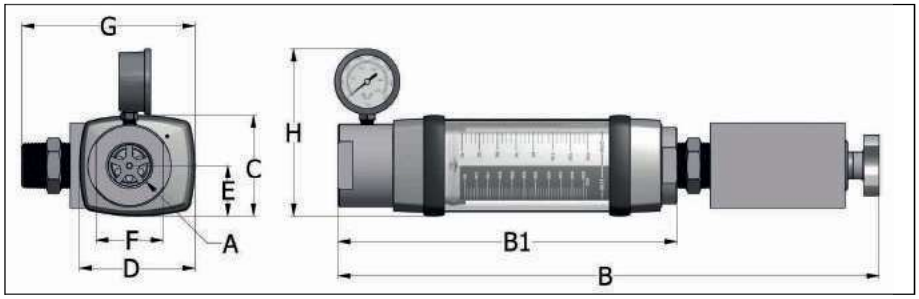
3500/5000 PSI test kits

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 116°C (240 °F)
- Accuracy ± 2% full scale
- Repeatability ± 1%
- Special scales available
- Calibrated for .876 S.G.

Technical data

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 **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum **End caps:** Nylon ST	**Retaining ring:** SAE 1070/1090 carbon steel **Retaining spring:** SAE 1070/1090 carbon steel **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Guard:** Polycarbonate
Threads	NPT
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating:**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications: See conversion information 5,000 psi/345 bar max. with a 3:1 safety factor For high cycle applications, see page conversion information
Pressure drop	See ordering information table, next page and differential pressure charts on 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 - 5,000 psi / 0 - 345 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	B1	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 80. Pressures above 7500 psi will pop the rupture disc, allowing fluid flow to continue. This is a fail safe machanism.

3500/5000 PSI test kits

For petroleum fluids (1¼" and 1½")

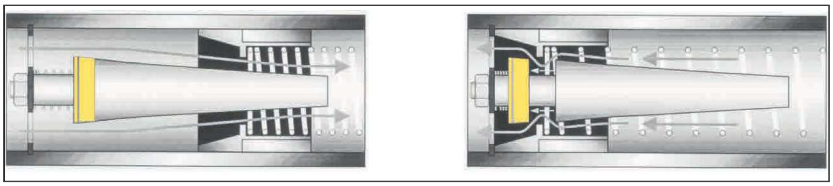
Ordering information

Nominal port size	Flow range		Pressure drop			Model number (see example below)	Material ⌘		Options
	gal/min	l/min	50% Flow psi (bar)	100% Flow psi (bar)	Reverse 100% Flow psi (bar)	NPT	Aluminium 3500 PSI	Stainless 5000 PSI	Reverse flow
1¼"	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.4 (.23) 4.3 (.30) 6.3 (.43) 8.3 (.57) 14.3 (.99)	7.8 (.54) 8.8 (6.1) 14.3 (9.9) 21.3 (1.5) 41.3 (2.8)	5.6 (.39) 14.3 (.99) 35.7 (2.5) 45.3 (3.1) 124 (8.6)	H TK 801 ⌘ - 030 H TK 801 ⌘- 050 H TK 801 ⌘- 075 H TK 801 ⌘ - 100 H TK 801 ⌘- 150	A	S	RT
1½"	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.4 (.23) 4.3 (.30) 6.3 (.43) 8.3 (.57) 14.3 (.99)	7.8 (.54) 8.8 (6.1) 14.3 (9.9) 21.3 (1.5) 41.3 (2.8)	5.6 (.39) 14.3 (.99) 35.7 (2.5) 45.3 (3.1) 124 (8.6	H TK 861 ⌘ - 030 H TK 861 ⌘ - 050 H TK 861 ⌘ - 075 H TK 861 ⌘ - 100 H TK 861 ⌘ - 150	A	S	RT

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

(Example) H RT 801 A - 030

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

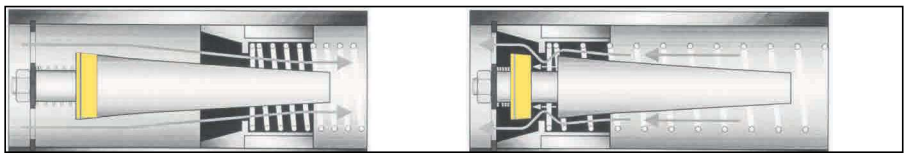
Flow meters for petroleum fluids

- 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 205°C (500 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for .876 S.G.

Technical data

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® **Guard:** Cylindrical Pyrex® glass **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 **End Caps:** 2011 - T3 anodized aluminum
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179, Code 62: SAE J518
Temperature range	-29 to +205 °C (-20 to +400 °F) continuous +205 to +260 °C (+400 to +500 °F) intermittent For detailed "Pressure vs. temperature" correlation information, see next page.
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see conversion information. 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see conversation information.
Pressure drop	See ordering information table, next page and differential pressure charts on 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.

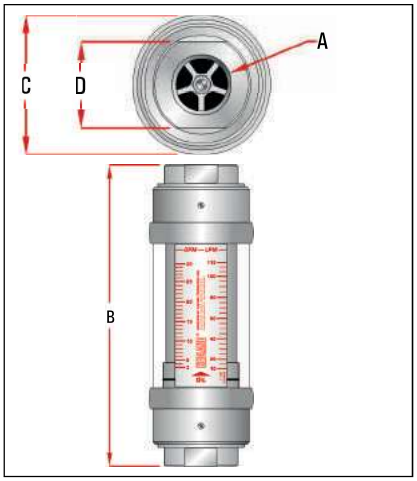


Normal flow direction

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 79.
Weights for all sizes can be found on page 80.

3500/6000 PSI high temperature

Flow meters for petroleum fluids

Ordering information

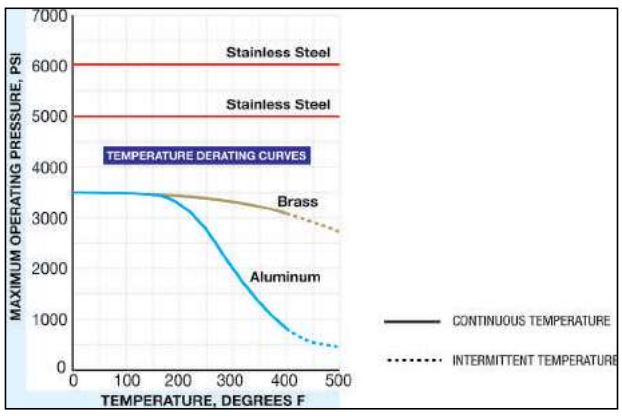
Nominal port size ①	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	Reverse flow
¼" SAE 6	0.1 - 1.0 0.2 - 2.0	0.5 - 3.75 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	4000 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

① Fractional sizes apply to NPTF and BSPP.

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.

Example: H 701 A - 030 - HR



3500/6000 PSI flow meters

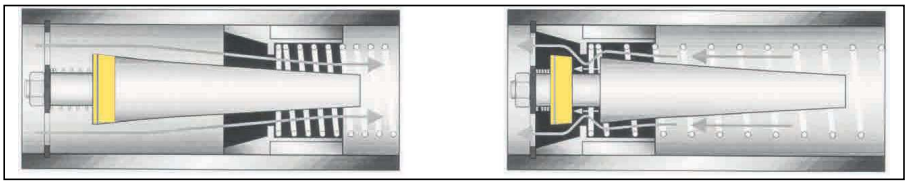
For phosphate ester fluids

- 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 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

Technical data

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 **End caps: Nylon ST**	**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
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179, code 62: SAE J518
Temperature range	-29 to +116 °C (-20 to +240 °F) for higher temp. meters, see page 24-25.
Pressure rating -	
Aluminum / brass operating	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications: See page conversion information
Stainless steel operating	6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications: See page conversion information
Pressure drop:	See ordering information table, next page and detailed differential pressure charts on 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.

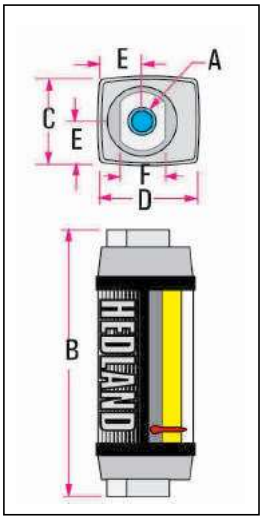


Normal flow direction

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 79.
Weights for all sizes can be found on page 80.

3500/6000 PSI flow meters

For phosphate ester fluids

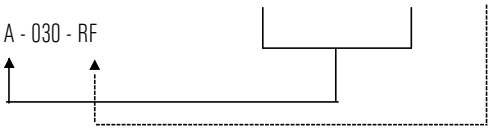
Ordering information

Nominal port size ①	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options ♦
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	Reverse flow
¼" SAE 6	.02 - 0.2	0.1 - 0.75	3.5 (.24)	4.0 (.28)		H294 ⌘ - 002 - ♦	H295 ⌘ - 002 - ♦	H296 ⌘ - 002 - ♦	A	B	6000 psi S	Not available
	.05 - 0.5	0.2 - 1.9	3.0 (.21)	5.0 (.35)		H294 ⌘ - 005 - ♦	H295 ⌘ - 005 - ♦	H296 ⌘ -005 - ♦				
	0.1 - 1.0	0.5 - 3.75	4.0 (.28)	9.0 (.62)		H294 ⌘ - 010 - ♦	H295 ⌘ - 010 - ♦	H296 ⌘ -010 - ♦				
	0.2 - 2.0	1.0 - 7.5	6.0 (.41)	13 (.90)		H294 ⌘ - 020 - ♦	H295 ⌘ - 020 - ♦	H296 ⌘ -020 - ♦				
½" SAE 10	0.1 - 1.0	0.5 - 3.75	2.0 (.14)	2.75 (.19)	5.2 (.36)	H694 ⌘ - 001 - ♦	H695 ⌘ - 001 - ♦	H696 ⌘ -001 - ♦	A	B	6000 psi S	RF
	0.2 - 2.0	1 - 7.5	2.0 (.14)	3.0 (.21)	9.6 (.66)	H694 ⌘ - 002 - ♦	H695 ⌘ - 002 - ♦	H696 ⌘ -002 - ♦				
	0.5 - 5.0	2 - 19	3.0 (.21)	6.0 (.41)	4.8 (.33)	H694 ⌘ - 005 - ♦	H695 ⌘ - 005 - ♦	H696 ⌘ -005 - ♦				
	1 - 10	5 - 38	4.0 (.28)	9.5 (.66)	23.0 (1.6)	H694 ⌘ - 010 - ♦	H695 ⌘ - 010 - ♦	H696 ⌘ -010 - ♦				
	1 - 15	4 - 56	6.5 (.45)	18.5 (1.3)	55.2 (3.8)	H694 ⌘ - 015 - ♦	H695 ⌘ - 015 - ♦	H696 ⌘ -015 - ♦				
¾" SAE 12	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	2.9 (.20)	H794 ⌘ - 002 - ♦	H795 ⌘ - 002 - ♦	H796 ⌘ -002 - ♦	A	B	5000 psi S	RF
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	5.3 (.37)	H794 ⌘ - 005 - ♦	H795 ⌘ - 005 - ♦	H796 ⌘ -005 - ♦				
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	8.8 (.61)	H794 ⌘ - 010 - ♦	H795 ⌘ - 010 - ♦	H796 ⌘ -010 - ♦				
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	18.0 (1.24)	H794 ⌘ - 020 - ♦	H795 ⌘ - 020 - ♦	H796 ⌘ -020 - ♦				
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	45.1 (3.11)	H794 ⌘ - 030 - ♦	H795 ⌘ - 030 - ♦	H796 ⌘ -030 - ♦				
1" SAE 16	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	2.9 (.20)	H764 ⌘ - 002 - ♦	H765 ⌘ - 002 - ♦	H766 ⌘ -002 - ♦	A	B	5000 psi S	RF
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	5.3 (.37)	H764 ⌘ - 005 - ♦	H765 ⌘ - 005 - ♦	H766 ⌘ -005 - ♦				
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	8.8 (.61)	H764 ⌘ - 010 - ♦	H765 ⌘ - 010 - ♦	H766 ⌘ -010 - ♦				
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	18.0 (1.24)	H764 ⌘ - 020 - ♦	H765 ⌘ - 020 - ♦	H766 ⌘ -020 - ♦				
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	45.1 (3.11)	H764 ⌘ - 030 - ♦	H765 ⌘ - 030 - ♦	H766 ⌘ -030 - ♦				
	4 - 40	15 - 150	9.0 (.62)	24.0 (1.7)	87.5 (6.04)	H764 ⌘ - 040 - ♦	H765 ⌘ - 040 - ♦	H766 ⌘ -040 - ♦				
	5 - 50	20 - 190	12.5 (.86)	34.0 (2.3)	150 (10.4)	H764 ⌘ - 050 - ♦	H765 ⌘ - 050 - ♦	H766 ⌘ -050 - ♦				
1¼" SAE 20	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H894 ⌘ - 030 - ♦	H895 ⌘ - 030 - ♦	H896 ⌘ -030 - ♦	A	B	5000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H894 ⌘ - 050 - ♦	H895 ⌘ - 050 - ♦	H896 ⌘ -050 - ♦				
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H894 ⌘ - 075 - ♦	H895 ⌘ - 075 - ♦	H896 ⌘ -075 - ♦				
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H894 ⌘ - 100 - ♦	H895 ⌘ - 100 - ♦	H896 ⌘ -100 - ♦				
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H894 ⌘ - 150 - ♦	H895 ⌘ - 150 - ♦	H896 ⌘ -150 - ♦				
1½" SAE 24	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H864 ⌘ - 030 - ♦	H865 ⌘ - 030 - ♦	H866 ⌘ -030 - ♦	A	B	4000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H864 ⌘ - 050 - ♦	H865 ⌘ - 050 - ♦	H866 ⌘ -050 - ♦				
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H864 ⌘ - 075 - ♦	H865 ⌘ - 075 - ♦	H866 ⌘ -075 - ♦				
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H864 ⌘ - 100 - ♦	H865 ⌘ - 100 - ♦	H866 ⌘ -100 - ♦				
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H864 ⌘ - 150 - ♦	H865 ⌘ - 150 - ♦	H866 ⌘ -150 - ♦				
1½" Code 62	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H898 ⌘ - 030 - ♦			A	B	4000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H898 ⌘ - 050 - ♦						
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H898 ⌘ - 075 - ♦						
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H898 ⌘ - 100 - ♦						
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H898 ⌘ - 150 - ♦						

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 116°C (240 °F)
- Accuracy ± 2% full scale
- Repeatability ± 1%
- Special scales available
- Calibrated for 1.18 S.G.

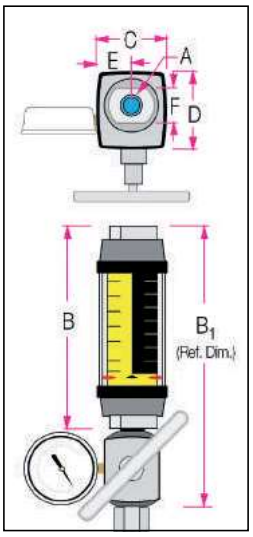
Technical data

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 **End caps:** Nylon ST	**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 **Guard:** Nylon
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor For high cycle applications, see page conversion information 6,000 psi/414 bar max. (5,000 psi/345 bar max.or ¾" to 1½" series) with a 3:1 safety factor. For high cycle applications, see page conversion information
Pressure drop	See ordering information table on next page, detailed differential pressure charts, 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	B1	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 80.
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
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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

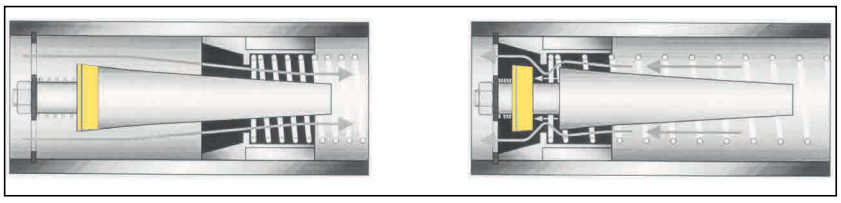
Note: RT option is not available with standard brass flow meters.

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

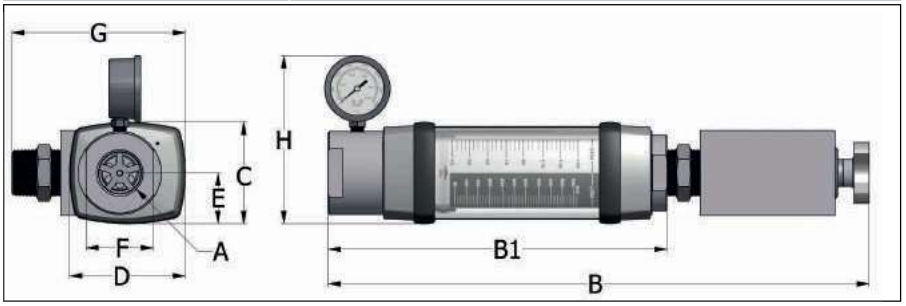
3500/5000 PSI test kits

For phosphate ester fluids (1¼" and 1½")

- 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 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

Technical data

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 **End caps:** Nylon ST	**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 **Guard:** Nylon
Threads	NPT
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see conversion information. 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see conversation information.
Pressure drop	See ordering information table on next page, detailed differential pressure charts, 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	Produce ΔP up to 3,500 psi/241 bar psiD and 6,000 psi/414 bar psiD



Dimensions

A	B	B1	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 80.
Pressures above 7500 psi will pop the rupture disc, allowing fluid flow to continue. This is a fail safe machanism.

3500/5000 PSI test kits

For phosphate ester fluids

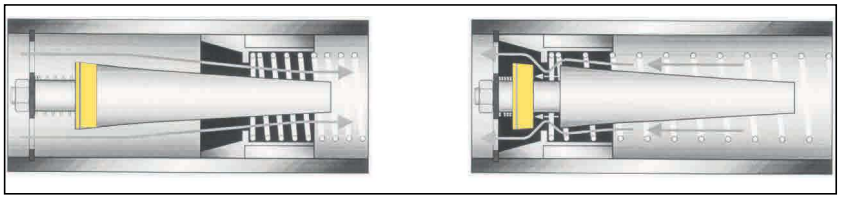
Ordering information

Nominal port size	Flow range		Pressure drop			Model number (see example below)	Material ⌘		Options
	gal/min	l/min	50% Flow psi (bar)	100% Flow psi (bar)	Reverse 100% Flow psi (bar)	NPT	Aluminium 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			

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

(Example) H RT 895 A - 030

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

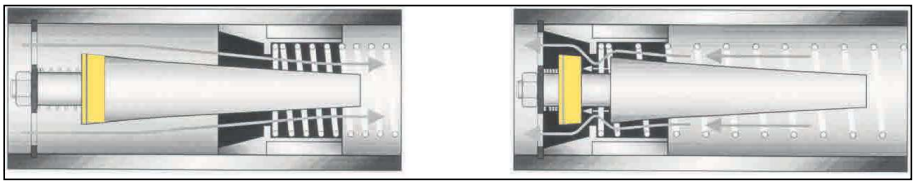
Flow meters for phosphate ester fluids

- 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 205°C (500 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.18 S.G.

Technical data

Materials	2024 - T351 Anodized aluminum body, piston and cone 360 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 **Guard:** Cylindrical Pyrex® glass	**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 **End caps:** 2011 - T3 anodized aluminum
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179, Code 62: SAE J518
Temperature range	-29 to +205 °C (-20 to +400 °F) continuous +205 to +260 °C (+400 to +500 °F) intermittent For detailed "pressure vs. temperature" correlation information, see next page.
Pressure rating	
Aluminum / brass operating	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see page conversion information
Stainless steel operating	6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see page conversion information
Pressure drop	See ordering information table next page. 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.



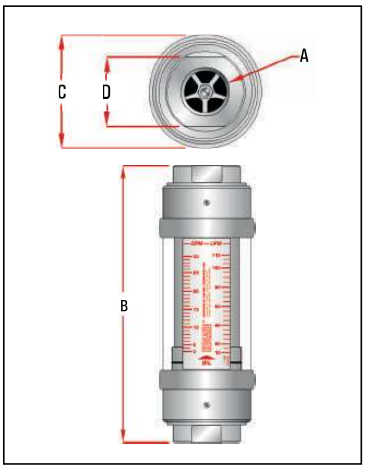
Normal flow direction

Reverse flow by-pass

Dimensions

A Nominal port size	B Length in (mm)	C Wieth in (mm)	D 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 79.
Weights for all sizes can be found on page 80.



3500/6000 PSI high temperature

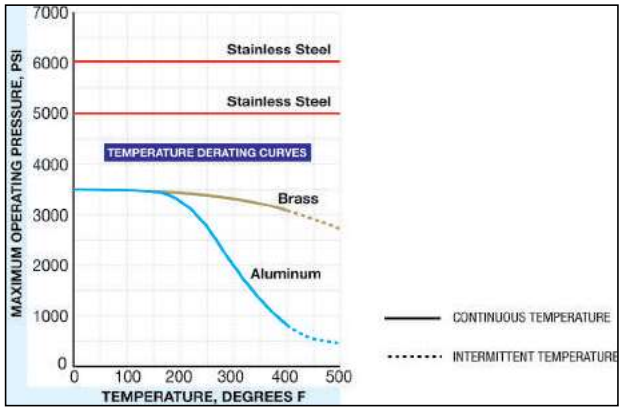
Flow meters for phosphate ester fluids

Ordering information

Nominal port size①	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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

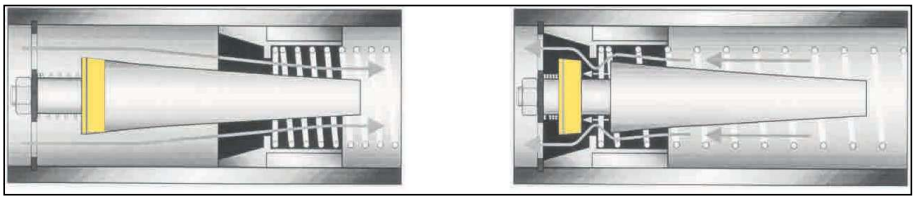
For water-based fluids (water/oil emulsions)

- 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 116°C (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

Technical data

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 **Guard seal / bumper:** Buna N **Guard:** Polycarbonate **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Scale support:** 6063 - T6 aluminum
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179, Code 61 and Code 62: SAE J518
Temperature range	-29 to +116 °C (-20 to +240 °F), for higher temp. meters, see page 32.
Pressure rating	
Aluminum / brass operating **Stainless steel 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 conversion information 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see page conversion information
Pressure drop	See ordering information table next page. 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.



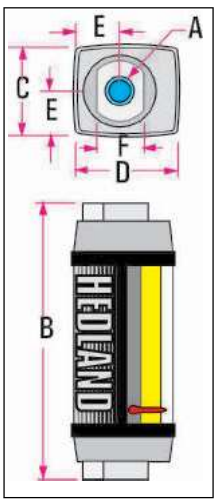
Normal flow direction

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)

①3 inch models have Celcon® piston/piston ring



Note: Dimensions for 1½" Code 62, 3" and 3" code 61 can be found on page 79. Weights for all sizes can be found on page 80.

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
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP③	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	Reverse flow
¼" SAE 6	.02 - 0.2	0.1 - 0.75	3.5 (.24)	4.0 (.28)		H212 ⌘ - 002 - ♦	H213 ⌘ - 002 - ♦	H214 ⌘ - 002 - ♦	A	B	6000 psi S	Not available
	.05 - 0.5	0.2 - 1.9	3.0 (.21)	5.0 (.35)		H212 ⌘ - 005 - ♦	H213 ⌘ - 005 - ♦	H214 ⌘ -005 - ♦				
	0.1 - 1.0	0.5 - 3.75	4.0 (.28)	9.0 (.62)		H212 ⌘ - 010 - ♦	H213 ⌘ - 010 - ♦	H214 ⌘ -010 - ♦				
	0.2 - 2.0	1 - 7.5	6.0 (.41)	13 (.90)		H212 ⌘ - 020 - ♦	H213 ⌘ - 020 - ♦	H214 ⌘ -020 - ♦				
½" SAE 10	0.1 - 1.0	0.5 - 3.75	2.0 (.14)	2.75 (.19)	5.2 (.36)	H612 ⌘ - 001 - ♦	H613 ⌘ - 001 - ♦	H614 ⌘ -001 - ♦	A	B	6000 psi S	RF
	0.2 - 2.0	1 - 7.5	2.0 (.14)	3.0 (.21)	9.6 (.66)	H612 ⌘ - 002 - ♦	H613 ⌘ - 002 - ♦	H614 ⌘ -002 - ♦				
	0.5 - 5.0	2 - 19	3.0 (.21)	6.0 (.41)	4.8 (.33)	H612 ⌘ - 005 - ♦	H613 ⌘ - 005 - ♦	H614 ⌘ -005 - ♦				
	1 - 10	5 - 38	4.0 (.28)	9.5 (.66)	23.0 (1.6)	H612 ⌘ - 010 - ♦	H613 ⌘ - 010 - ♦	H614 ⌘ -010 - ♦				
	1 - 15	4 - 56	6.5 (.45)	18.5 (1.3)	55.2 (3.8)	H612 ⌘ - 015 - ♦	H613 ⌘ - 015 - ♦	H614 ⌘ -015 - ♦				
¾" SAE 12	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	2.9 (.20)	H712 ⌘ - 002 - ♦	H713 ⌘ - 002 - ♦	H714 ⌘ -002 - ♦	A	B	5000 psi S	RF
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	5.3 (.37)	H712 ⌘ - 005 - ♦	H713 ⌘ - 005 - ♦	H714 ⌘ -005 - ♦				
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	8.8 (.61)	H712 ⌘ - 010 - ♦	H713 ⌘ - 010 - ♦	H714 ⌘ -010 - ♦				
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	18.0 (1.24)	H712 ⌘ - 020 - ♦	H713 ⌘ - 020 - ♦	H714 ⌘ -020 - ♦				
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	45.1 (3.11)	H712 ⌘ - 030 - ♦	H713 ⌘ - 030 - ♦	H714 ⌘ -030 - ♦				
1" SAE 16	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	2.9 (.20)	H782 ⌘ - 002 - ♦	H783 ⌘ - 002 - ♦	H784 ⌘ -002 - ♦	A	B	5000 psi S	RF
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	5.3 (.37)	H782 ⌘ - 005 - ♦	H783 ⌘ - 005 - ♦	H784 ⌘ -005 - ♦				
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	8.8 (.61)	H782 ⌘ - 010 - ♦	H783 ⌘ - 010 - ♦	H784 ⌘ -010 - ♦				
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	18.0 (1.24)	H782 ⌘ - 020 - ♦	H783 ⌘ - 020 - ♦	H784 ⌘ -020 - ♦				
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	45.1 (3.11)	H782 ⌘ - 030 - ♦	H783 ⌘ - 030 - ♦	H784 ⌘ -030 - ♦				
	4 - 40	15 - 150	9.0 (.62)	24 (1.7)	87.5 (6.04)	H782 ⌘ - 040 - ♦	H783 ⌘ - 040 - ♦	H784 ⌘ -040 - ♦				
	5 - 50	20 - 190	12.5 (.86)	34 (2.3)	150 (10.4)	H782 ⌘ - 050 - ♦	H783 ⌘ - 050 - ♦	H784 ⌘ -050 - ♦				
1¼" SAE 20	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H812 ⌘ - 030 - ♦	H813 ⌘ - 030 - ♦	H814 ⌘ -030 - ♦	A	B	5000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H812 ⌘ - 050 - ♦	H813 ⌘ - 050 - ♦	H814 ⌘ -050 - ♦				
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H812 ⌘ - 075 - ♦	H813 ⌘ - 075 - ♦	H814 ⌘ -075 - ♦				
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H812 ⌘ - 100 - ♦	H813 ⌘ - 100 - ♦	H814 ⌘ -100 - ♦				
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H812 ⌘ - 150 - ♦	H813 ⌘ - 150 - ♦	H814 ⌘ -150 - ♦				
1½" SAE 24	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H882 ⌘ - 030 - ♦	H883 ⌘ - 030 - ♦	H884 ⌘ -030 - ♦	A	B	5000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H882 ⌘ - 050 - ♦	H883 ⌘ - 050 - ♦	H884 ⌘ -050 - ♦				
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H882 ⌘ - 075 - ♦	H883 ⌘ - 075 - ♦	H884 ⌘ -075 - ♦				
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H882 ⌘ - 100 - ♦	H883 ⌘ - 100 - ♦	H884 ⌘ -100 - ♦				
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H882 ⌘ - 150 - ♦	H883 ⌘ - 150 - ♦	H884 ⌘ -150 - ♦				
1½" Code 62	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	4.8 (.33)	H818 ⌘ - 030 - ♦			A	B	4000 psi S	RF
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	12.5 (.86)	H818 ⌘ - 050 - ♦						
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	31.9 (2.2)	H818 ⌘ - 075 - ♦						
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	39.0 (2.7)	H818 ⌘ - 100 - ♦						
	10 - 150	50 - 560	10.5 (.72)	27.5 (1.9)	110 (7.6)	H818 ⌘ - 150 - ♦						
3"	20 - 180	100 - 650	11 (.76)	17 (1.1)		Not available	H913 ⌘ - 180 - ♦	H914 ⌘ -180 - ♦	800 psi A	B	Not available	
	20 - 275	100 - 1000	11 (.76)	18 (1.2)			H913 ⌘ - 275 - ♦	H914 ⌘ -275 - ♦				
3" Code 61	10 - 200	50 - 750	11 (.76)	17 (1.1)		H919 ⌘ - 180 - ♦			800 psi A	B	Not available	
	20 - 300	100 - 1100	11 (.76)	18 (1.2)		H919 ⌘ - 275 - ♦						

②Fractional sizes apply to NPTF and BSPP.
③3 inch models have BSPT (BS21) threads

Example: H 713 A - 030 - RF

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

Caution: For emulsions with less than 20% oil, factory recommends the brass body meter.

3500/6000 PSI test kits

For water-based fluids (water/oil emulsions)

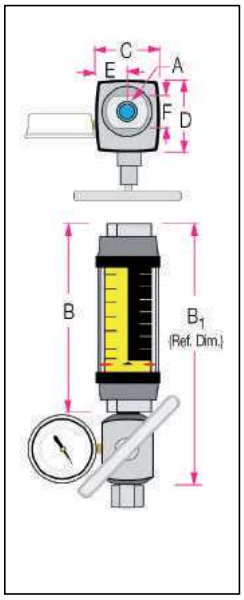
- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.
- For 80/20 and other water/oil emulsions

Technical data

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 **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Guard:** Polycarbonate
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see page conversion information. 6,000 psi/414 bar max. (5,000 psi/345 bar max. for 3/4" series) with a 3:1 safety factor. For high cycle applications, see page conversion information.
Pressure drop	See ordering information table next page. 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	B1	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 80.
SAE and BSPP test kits include inlet adapter.
Pressure above 7500 psi will pop the rupture disc, allowing fluid flow to continue. This is a fail safe mechanism.

3500/6000 PSI test kits

For water-based fluids (water/oil emulsions)

Ordering information

Nominal port size ①	Flow range		Pressure drop			Model number (see example below)			Material ⌘			Options
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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 - ,	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.

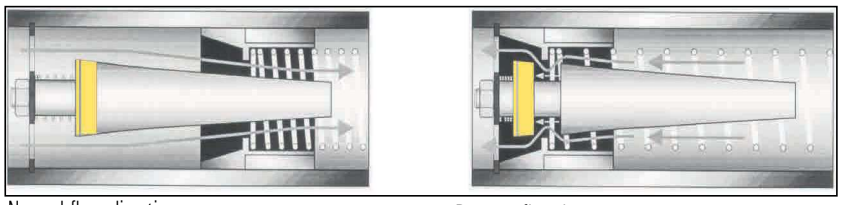
Example: H 713 A - 030 - RT

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.

Caution: For emulsions with less than 20% oil, factory recommends the brass body meter.

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

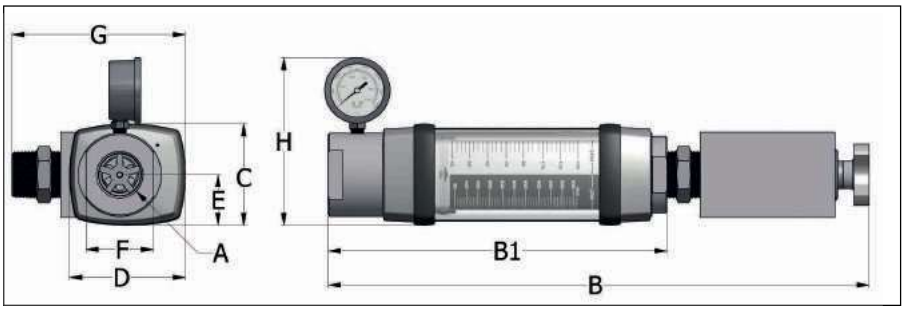
3500/5000 PSI test kits

For water-based fluids (water/oil emulsions) (1¼" and 1½")

- 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 116°C (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

Technical data

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 **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Guard:** Polycarbonate
Threads	NPT
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see conversion information. 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000psi for code 62) with a 3:1 safety factor. For high cycle applications, see conversation information.
Pressure drop	See ordering information table next page. 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	Produce ΔP up to 3,500 psi/241 bar psiD and 6,000 psi/ 414 bar psiD.



Dimensions

A	B	B1	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 80.

3500/5000 PSI test kits

For water-based fluids (water/oil emulsions) (1¼" and 1½")

Ordering information

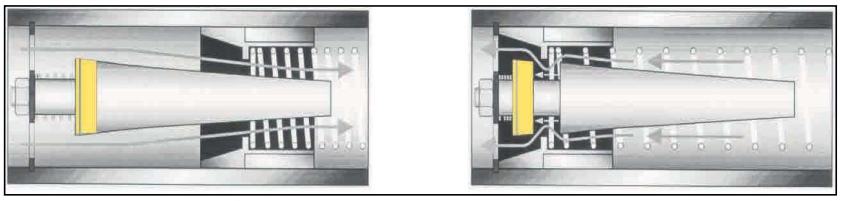
Nominal port size	Flow range		Pressure drop			Model number (see example below)	Material		Options
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	NPT	Aluminum 3500 psi	Stainless 5000 psi	Reverse flow
1¼"	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.4 (.23) 4.3 (.30) 6.3 (.43) 8.3 (.57) 14.3 (.99)	7.8 (.54) 8.8 (6.1) 14.3 (9.9) 21.3 (1.5) 41.3 (2.8)	5.6 (.39) 14.3 (.99) 35.7 (2.5) 45.3 (3.1) 124 (8.6)	H TK 813 * - 030 H TK 813 * - 050 H TK 813 * - 075 H TK 813 * - 100 H TK 813 * - 150	A	S	RT
1½"	3 - 30 5 - 50 10 - 75 10 - 100 10 - 150	10 - 110 20 - 190 40 - 280 50 - 380 50 - 560	3.4 (.23) 4.3 (.30) 6.3 (.43) 8.3 (.57) 14.3 (.99)	7.8 (.54) 8.8 (6.1) 14.3 (9.9) 21.3 (1.5) 41.3 (2.8)	5.6 (.39) 14.3 (.99) 35.7 (2.5) 45.3 (3.1) 124 (8.6)	H TK 883 * - 030 H TK 883 * - 050 H TK 883 * - 075 H TK 883 * - 100 H TK 883 * - 150	A	S	RT

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

(Example) H RT 813 A - 030

Caution: For emulsions with less than 20% oil, factory recommends the brass body meter.

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

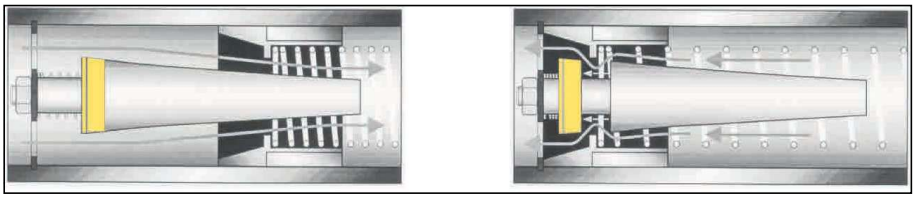
Flow meters for water-based fluids (water/oil emulsions)

- 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 260°C (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

Technical data

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 **Guard:** Cylindrical Pyrex® glass **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 **End caps:** 2011 - T3 anodized aluminum
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179, Code 62: SAE J518
Temperature range	-29 to +205 °C (-20 to +400 °F) continuous +205 to +260 °C (+400 to +500 °F) intermittent Detailed "Pressure vs. temperature" correlation information, see next page.
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see page conversion information. 6,000 psi/414 bar max. (5,000 psi/345 bar max. for ¾" to 1½" series, 4000 psi for code 62) with a 3:1 safety factor. For high cycle applications, see page conversion information.
Pressure drop	See ordering information table, next page 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.

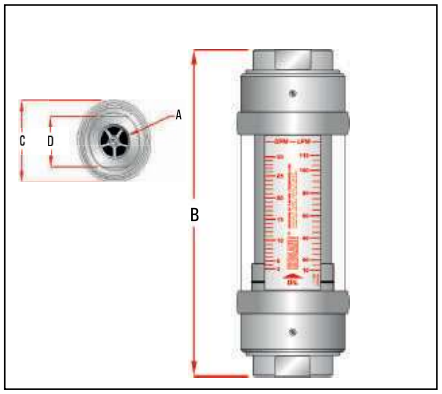


Normal flow direction

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 79. Weights for all sizes can be found on page 80.

3500/6000 PSI high temperature

Flow meters for water-based fluids (water/oil emulsions)

Ordering information

Nominal port size①	Flow range		Pressure drop			Model number (see example below)			Material			Options
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	Reverse 100% flow psi (bar)	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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

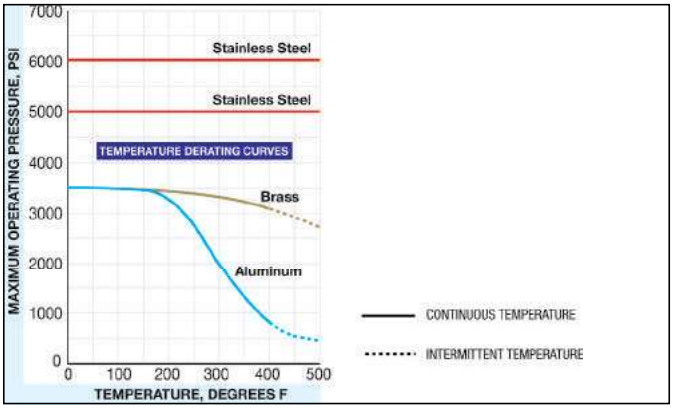
① Fractional sizes apply to NPTF and BSPP.

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.

Example: H 713 A - 030 - HR



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 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.

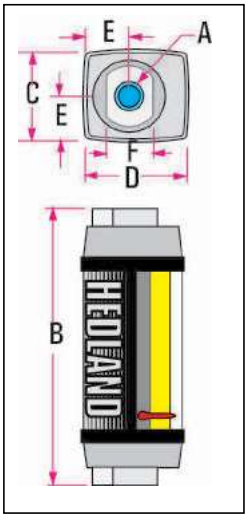
Technical data

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 **Guard seal / bumper:** Buna N **Guard:** Polycarbonate **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic **Pressure seals:** Viton® **Scale support:** 6063 - T6 aluminum
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F) For higher temp. meters, see page 36.
Pressure rating	
Brass operating **Stainless steel 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 conversion information. 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 conversion information.
Pressure drop	See ordering information table next page. For detailed differential pressure charts, see page 62.
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)

①3 inch models have Celcon® piston/piston ring



Note: Dimensions for 3" can be found on page 79.
Weights for all sizes can be found on page 80.

3500/6000 PSI flow meters

For water and other liquids

Ordering information

Nominal port size②	Flow range		Pressure drop		Model number (see example below)			Material ⌘	
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	SAE	NPTF	BSPP③	Brass 3500 psi	Stainless steel
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 ⌘ - 050 H905 ⌘ - 100 H905 ⌘ - 150 H905 ⌘ - 275	H906 ⌘ -050 H906 ⌘ -100 H906 ⌘ -150 H906 ⌘ -275	800 psi B	Not available

②Fractional sizes apply to NPTF and BSPP.
③3 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 240°C (500 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.

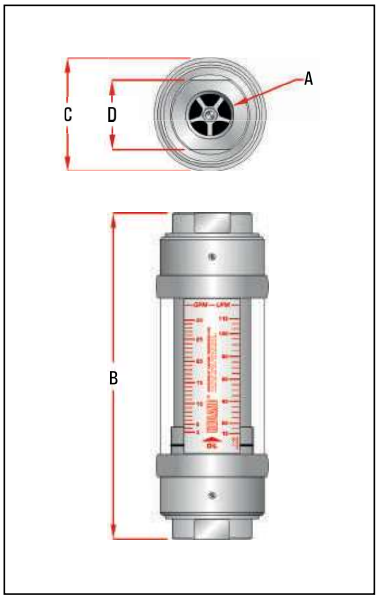
Technical data

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 **Guard:** cylindrical Pyrex® glass **End caps:** 2011 - T3 anodized aluminum	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator:** Nickel-plated carbon steel **Internal magnet:** Teflon® coated Alnico 8 **Bumper:** 2011 - T3 anodized aluminum **Scale:** Polymide
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-20 to +400 °F (-29 to +205 °C) continuous +205 to +260 °C (+400 to +500 °F) intermittent Detailed "Pressure vs. temperature" correlation information, see next page.
Pressure rating	
Brass operating **Stainless steel operating**	3,500 psi/241 bar max. with a 3:1 safety factor. For high cycle applications, see page conversion information. 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 conversion information.
Pressure drop	See ordering information table, next page. For detailed differential pressure charts, see page 62.
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 80.



3500/6000 PSI high temperature

Flow meters for water and other liquids

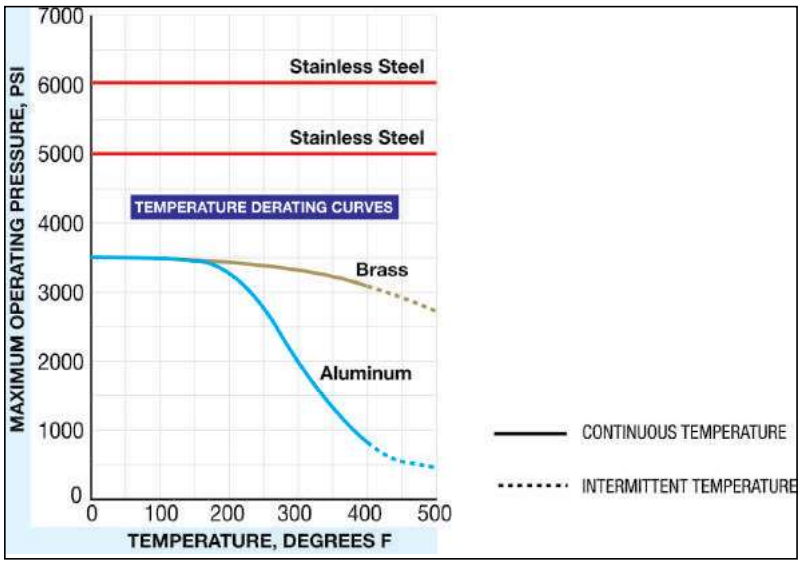
Ordering information

Nominal port size①	Flow range		Pressure drop		Model number (see example below)			Material ⌘	
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	SAE	NPTF	BSPP③	Brass 3500 psi	Stainless steel
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

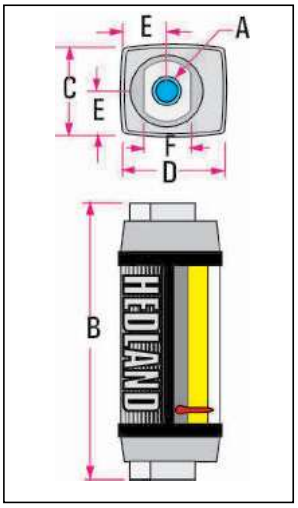
- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Good viscosity stability
- Temperature up to 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

Technical data

Materials	T316 Stainless body, piston and cone
Common parts	
Spider plate: T316 SS **Spring:** T316 SS **Fasteners:** T316 SS **Guard seal / Bumper:** Buna N **Guard:** Polycarbonate **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic pressure **Seals:** Viton® **Scale support:** 6063 - T6 aluminum
Threads	NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F) 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 conversion information.
Pressure drop	See ordering information table next page. Detailed differential pressure charts, see page 62.
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
Comon parts	
Spider plate: T316 SS **Spring:** T316 SS **Fasteners:** T316 SS **Bumper:** T316 SS **Seals:** Viton® **End caps:** T316 SS	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator:** T416 SS **Scale support:** T316 SS **Guard:** Cylindrical Pyrex® glass **Internal magnet** Teflon® Coated Alnico 8
Temperature range	-29 to +205 ° C (-20 to +400 °F) continuous +205 to +260 °C (+400 to +500 °F) intermittent For detailed "Pressure vs. temperature" correlation information, see next page.

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 80.

6000 PSI flow meters

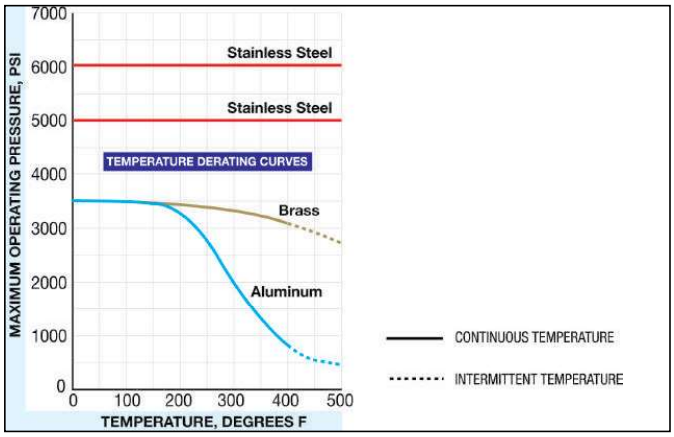
For A.P.I. oil / Caustic and corrosive liquids

Ordering information

Nominal port size	Flow range		Pressure drop		Model number (see example below)				Hostile environment option ♦
					API - oil .876 (S.G.)		Liquids1.0 (S.G.)		
	gal/min	l/min	50% flow psi (bar)	100% flow psi (bar)	NPTF	BSPP	NPSF	BSPP	
¼"					6000 psi	6000 psi	6000 psi	6000 psi	HE
	0.1 - 1.0	0.5 - 3.75	4.0 (.28)	9.0 (.62)	H231X - 010 - ♦	H232X - 010 - ♦	H234X - 010 - ♦	H235X - 010 - ♦	
	0.2 - 2.0	1 - 7.5	6.0 (.41)	13.0 (.90)	H231X - 020 - ♦	H232X - 020 - ♦	H234X - 020 - ♦	H235X - 020 - ♦	
½"					6000 psi	6000 psi	6000 psi	6000 psi	HE
	0.2 - 2.0	1 - 7.5	2.0 (.14)	3.0 (.21)	H631X - 002 - ♦	H632X - 002 - ♦	H634X - 002 - ♦	H635X - 002 - ♦	
	0.5 - 5.0	2 - 19	3.0 (.21)	6.0 (.41)	H631X - 005 - ♦	H632X - 005 - ♦	H634X - 005 - ♦	H635X - 005 - ♦	
	1 - 10	5 - 38	4.0 (.28)	9.5 (.66)	H631X - 010 - ♦	H632X - 010 - ♦	H634X - 010 - ♦	H635X - 010 - ♦	
	1 - 15	4 - 56	6.5 (.45)	18.5 (1.3)	H631X - 015 - ♦	H632X - 015 - ♦	H634X - 015 - ♦	H635X - 015 - ♦	
¾"					5000 psi	5000 psi	5000 psi	5000 psi	HE
	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	H731X - 002 - ♦	H732X - 002 - ♦	H734X - 002 - ♦	H735X - 002 - ♦	
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	H731X - 005 - ♦	H732X - 005 - ♦	H734X - 005 - ♦	H735X - 005 - ♦	
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	H731X - 010 - ♦	H732X - 010 - ♦	H734X - 010 - ♦	H735X - 010 - ♦	
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	H731X - 020 - ♦	H732X - 020 - ♦	H734X - 020 - ♦	H735X - 020 - ♦	
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	H731X - 030 - ♦	H732X - 030 - ♦	H734X - 030 - ♦	H735X - 030 - ♦	
1"					5000 psi	5000 psi	5000 psi	5000 psi	HE
	0.2 - 2.0	1 - 7.5	1.0 (.07)	2.0 (.14)	H741X - 002 - ♦	H742X - 002 - ♦	H744X - 002 - ♦	H745X - 002 - ♦	
	0.5 - 5.0	2 - 19	2.5 (.17)	3.5 (.24)	H741X - 005 - ♦	H742X - 005 - ♦	H744X - 005 - ♦	H745X - 005 - ♦	
	1 - 10	5 - 38	3.5 (.24)	9.0 (.62)	H741X - 010 - ♦	H742X - 010 - ♦	H744X - 010 - ♦	H745X - 010 - ♦	
	2 - 20	10 - 76	4.0 (.28)	9.0 (.62)	H741X - 020 - ♦	H742X - 020 - ♦	H744X - 020 - ♦	H745X - 020 - ♦	
	3 - 30	10 - 115	7.0 (.48)	16.5 (1.1)	H741X - 030 - ♦	H742X - 030 - ♦	H744X - 030 - ♦	H745X - 030 - ♦	
	4 - 40	15 - 150	9.0 (.62)	24.0 (1.7)	H741X - 040 - ♦	H742X - 040 - ♦	H744X - 040 - ♦	H745X - 040 - ♦	
1¼"					5000 psi	5000 psi	5000 psi	5000 psi	HE
	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	H831X - 030 - ♦	H832X - 030 - ♦	H834X - 030 - ♦	H835X - 030 - ♦	
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	H831X - 050 - ♦	H832X - 050 - ♦	H834X - 050 - ♦	H835X - 050 - ♦	
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	H831X - 075 - ♦	H832X - 075 - ♦	H834X - 075 - ♦	H835X - 075 - ♦	
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	H831X - 100 - ♦	H832X - 100 - ♦	H834X - 100 - ♦	H835X - 100 - ♦	
1½"					5000 psi	5000 psi	5000 psi	5000 psi	HE
	3 - 30	10 - 110	3.0 (.21)	4.0 (.28)	H841X - 030 - ♦	H842X - 030 - ♦	H844X - 030 - ♦	H845X - 030 - ♦	
	5 - 50	20 - 190	3.5 (.24)	7.0 (.48)	H841X - 050 - ♦	H842X - 050 - ♦	H844X - 050 - ♦	H845X - 050 - ♦	
	10 - 75	40 - 280	5.0 (.35)	10.5 (.72)	H841X - 075 - ♦	H842X - 075 - ♦	H844X - 075 - ♦	H845X - 075 - ♦	
	10 - 100	50 - 380	6.5 (.45)	15.0 (1.0)	H841X - 100 - ♦	H842X - 100 - ♦	H844X - 100 - ♦	H845X - 100 - ♦	

Note: Consult factory for availability.

Example: H731X - 030 - HE



1500 PSI flow meters

For air / Caustic and corrosive gases

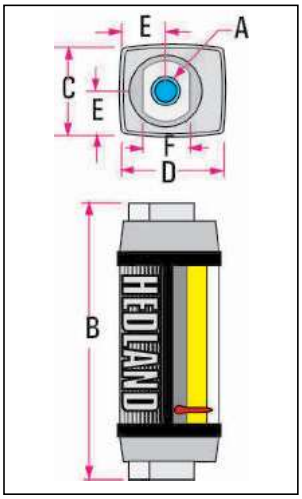
- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Temperature up to 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

Technical data

Materials	T316 Stainless body, piston and cone
Common parts	
Spider plate: T316 SS **Spring:** T316 SS **Fasteners:** T316 SS **Guard seal / Bumper:** Buna N **Guard:** Polycarbonate **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic pressure **Seals:** Viton® **Scale support:** 6063 - T6 aluminum
Threads	NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F) 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 conversion information.
Pressure drop	See ordering information table next page. Detailed differential pressure charts, see page 62.
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
Comon parts	
Spider plate: T316 SS **Spring:** T316 SS **Fasteners:** T316 SS **Bumper:** T316 SS **Seals:** Viton® **End caps:** T316 SS	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator:** T416 SS **Scale support:** T316 SS **Guard:** Cylindrical Pyrex® glass **Internal magnet** Teflon® Coated Alnico 8
Temperature range	-29 to +205 ° C (-20 to +400 °F) continuous +205 to +260 °C (+400 to +500 °F) intermittent For detailed "Pressure vs. temperature" correlation information, see next page.

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 80.

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 - ♦	n/a
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

Note: Consult factory for availability.

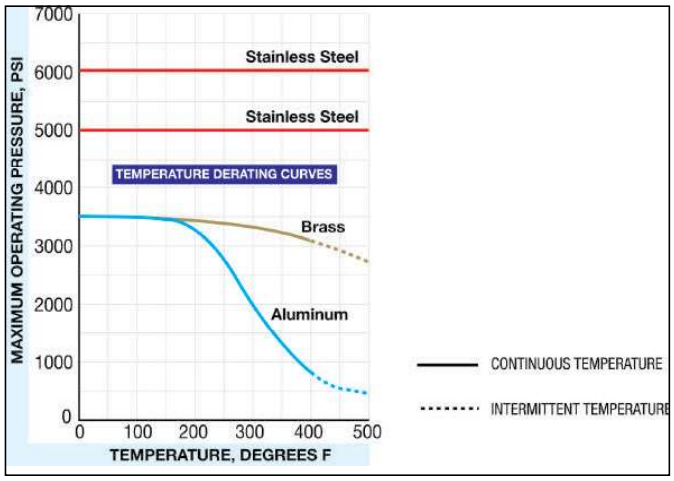
① SCFM/PSI multipressure scales are standard.

② L/sec/bar multipressure scales are available at no extra charge. Consult factory for other options.

Example: H 737X - 250 - HE

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

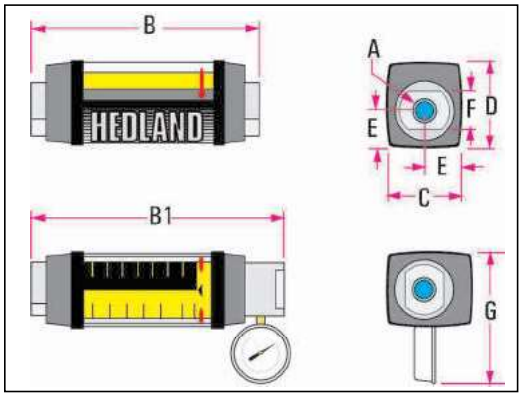
- Direct reading
- Install in any position
- 360° rotatable guard/scale
- Easier-to-read linear scale
- No flow straighteners or special piping required
- Relatively insensitive to shock and vibration
- Temperature up to 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available
- Calibrated for 1.0 S.G.

Technical data

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	-29 to +116 °C (-20 to +240 °F) For higher temperatures, consult factory.
Pressure rating	
Aluminum / brass operating **Stainless steel 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 conversion information. 1,500 psi/103 bar max. with a 10:1 safety factor. For high cycle applications, see page conversion information.
Pressure drop	See ordering information table next page. For detailed differential pressure charts, see page 62.
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	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 (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 79.
Weights for all sizes can be found on page 80.

① 3 inch models have Celcon® piston/piston ring

1000/1500 PSI flow meters

For air and other compressed gases

Ordering information

Nominal port size②	Flow range		Pressure drop		Model number (see example below)			Material ⌘			Oprions ♦	
	③ SCFM	④ l/sec	50% flow psi (bar)	100% flow psi (bar)	SAE	NPTF	BSPP⑤	Aluminium 1000 psi	Brass 1000 psi	Stainless 1500 psi	Extended cap plugged⑥	Extended cap with gauge⑥
¼" SAE 6	0.5 - 5	0.2 - 2.2	2.51 (0.17)	4.45 (0.31)	H270 ⌘ - 005 - ♦	H271 ⌘ - 005 - ♦	H272 ⌘ - 005 - ♦	A	B	S	EP	EG
	1 - 10	0.5 - 4.75	9.29 (0.64)	16.46(1.13)	H270 ⌘ - 010 - ♦	H271 ⌘ - 010 - ♦	H272 ⌘ - 010 - ♦					
	2 - 20	1 - 9	10.15 (0.70)	18.71 (1.29)	H270 ⌘ - 020 - ♦	H271 ⌘ - 020 - ♦	H272 ⌘ - 020 - ♦					
	3 - 30	1.5 - 14	13.75 (0.95)	26.23 (1.81)	H270 ⌘ - 030 - ♦	H271 ⌘ - 030 - ♦	H272 ⌘ - 030 - ♦					
½" SAE 10	3 - 25	2 - 12	3.73 (0.26)	6.10 (0.42)	H670 ⌘ - 025 - ♦	H671 ⌘ - 025 - ♦	H672 ⌘ - 025 - ♦	A	B	S	EP	EG
	5 - 50	3 - 22	6.04 (0.42)	10.35 (0.71)	H670 ⌘ - 050 - ♦	H671 ⌘ - 050 - ♦	H672 ⌘ - 050 - ♦					
	10 - 100	5 - 47	7.18 (0.50)	13.85 (0.95)	H670 ⌘ - 100 - ♦	H671 ⌘ - 100 - ♦	H672 ⌘ - 100 - ♦					
	15 - 150	7 - 70	8.06 (0.56)	18.49 (1.27)	H670 ⌘ - 150 - ♦	H671 ⌘ - 150 - ♦	H672 ⌘ - 150 - ♦					
¾" SAE 12	3 - 25	1.5 - 11.5	2.99 (0.21)	5.90 (0.41)	H770 ⌘ - 025 - ♦	H771 ⌘ - 025 - ♦	H772 ⌘ - 025 - ♦	A	B	S	EP	EG
	5 - 50	2 - 23	2.00 (0.14)	3.58 (0.25)	H770 ⌘ - 050 - ♦	H771 ⌘ - 050 - ♦	H772 ⌘ - 050 - ♦					
	10 - 100	5 - 47.5	7.19 (0.50)	12.87 (0.89)	H770 ⌘ - 100 - ♦	H771 ⌘ - 100 - ♦	H772 ⌘ - 100 - ♦					
	15 - 150	7 - 70	4.44 (0.31)	9.52 (0.66)	H770 ⌘ - 150 - ♦	H771 ⌘ - 150 - ♦	H772 ⌘ - 150 - ♦					
	25 - 250	10 - 118	6.27 (0.43)	15.38 (1.06)	H770 ⌘ - 250 - ♦	H771 ⌘ - 250 - ♦	H772 ⌘ - 250 - ♦					
1" SAE 16	3 - 25	1.5 - 11.5	2.99 (0.21)	5.90 (0.41)	H790 ⌘ - 025 - ♦	H791 ⌘ - 025 - ♦	H792 ⌘ - 025 - ♦	A	B	S	EP	EG
	5 - 50	2 - 23	2.00 (0.14)	3.58 (0.25)	H790 ⌘ - 050 - ♦	H791 ⌘ - 050 - ♦	H792 ⌘ - 050 - ♦					
	10 - 100	5 - 47.5	7.19 (0.50)	12.87 (0.89)	H790 ⌘ - 100 - ♦	H791 ⌘ - 100 - ♦	H792 ⌘ - 100 - ♦					
	15 - 150	7 - 70	4.44 (0.31)	9.52 (0.66)	H790 ⌘ - 150 - ♦	H791 ⌘ - 150 - ♦	H792 ⌘ - 150 - ♦					
	25 - 250	10 - 118	6.27 (0.43)	15.38 (1.06)	H790 ⌘ - 250 - ♦	H791 ⌘ - 250 - ♦	H792 ⌘ - 250 - ♦					
1¼" SAE 20	20 - 200	10 - 95	1.89 (0.13)	3.16 (0.22)	H870 ⌘ - 200 - ♦	H871 ⌘ - 200 - ♦	H872 ⌘ - 200 - ♦	A	B	S	EP	EG
	40 - 400	20 - 180	2.53 (0.17)	5.49 (0.38)	H870 ⌘ - 400 - ♦	H871 ⌘ - 400 - ♦	H872 ⌘ - 400 - ♦					
	60 - 600	30 - 280	4.47 (0.31)	10.71 (0.74)	H870 ⌘ - 600 - ♦	H871 ⌘ - 600 - ♦	H872 ⌘ - 600 - ♦					
	80 - 800	50 - 350	6.13 (0.42)	17.14 (1.18)	H870 ⌘ - 800 - ♦	H871 ⌘ - 800 - ♦	H872 ⌘ - 800 - ♦					
	100 - 1000	50 - 475	9.84 (0.68)	28.45 (1.96)	H870 ⌘ - 999 - ♦	H871 ⌘ - 999 - ♦	H872 ⌘ - 999 - ♦					
1½" SAE 24	20 - 200	10 - 95	1.89 (0.13)	3.16 (0.22)	H890 ⌘ - 200 - ♦	H891 ⌘ - 200 - ♦	H892 ⌘ - 200 - ♦	A	B	S	EP	EG
	40 - 400	20 - 180	2.53 (0.17)	5.49 (0.38)	H890 ⌘ - 400 - ♦	H891 ⌘ - 400 - ♦	H892 ⌘ - 400 - ♦					
	60 - 600	30 - 280	4.47 (0.31)	10.71 (0.74)	H890 ⌘ - 600 - ♦	H891 ⌘ - 600 - ♦	H892 ⌘ - 600 - ♦					
	80 - 800	50 - 350	6.13 (0.42)	17.14 (1.18)	H890 ⌘ - 800 - ♦	H891 ⌘ - 800 - ♦	H892 ⌘ - 800 - ♦					
	100 - 1000	50 - 475	9.84 (0.68)	28.45 (1.96)	H890 ⌘ - 999 - ♦	H891 ⌘ - 999 - ♦	H892 ⌘ - 999 - ♦					
3"	100 - 1400	75 - 750	10.0 (0.69)	16.0 (1.10)	Not available	H971 ⌘ - 140 - ♦	H972 ⌘ - 140 - ♦	250 psi A	250 psi B	Not available		
	200 - 2200	75 - 1130	10.0 (0.69)	16.0 (1.10)		H971 ⌘ - 220 - ♦	H972 ⌘ - 220 - ♦					

② Fractional sizes apply to NPTF and BSPP.

③ SCFM/psi multipressure scales are standard.

④ l/sec/bar multipressure

⑤ Scales are available at no extra charge.

⑥ 3 inch models have BSPT (BS21) threads
EP 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

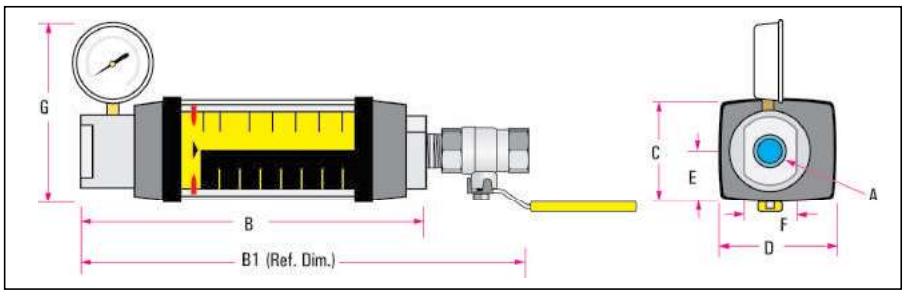
600 PSI test kits

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 116°C (240 °F)
- Accuracy ±2% full scale
- Repeatability ±1%
- Special scales available

Technical data

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 **End caps:** Nylon ST	**Retaining ring:** T316 SS **Retaining spring:** T316 SS **Indicator and internal magnet:** PPS / ceramic **Guard seal / bumper:** Buna N **Scale support:** 6063 - T6 aluminum
Threads	NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Stainless steel operating**	600 psi/41 bar max. with a 10:1 safety factor. For high cycle applications, see page conversion information. 600 psi/41 bar max. with a 10:1 safety factor. For high cycle applications, see page conversion information.
Pressure drop	See ordering information table next page. For detailed differential pressure charts, see page 62.
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 Nominal port size	B Length in (mm)	B1 Length in (mm)	C Width in (mm)	D Depth in (mm)	E Offset in (mm)	F Flats in (mm)	G 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 80.
BSPP Test Kits include outlet adapter.

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

① SCFM/psi multipressure scales are standard.

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

Example: H 771 A - 250 - TK

Note: Consult factory for other options.

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

Example: H771 A - 250 - TK - S1

Flow-Alert flow switches (microswitch)

For liquids / Air and other compressed gases

- Automatically signals alarm if flow is too high or too low
- Automatically opens orcloses 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

Technical data

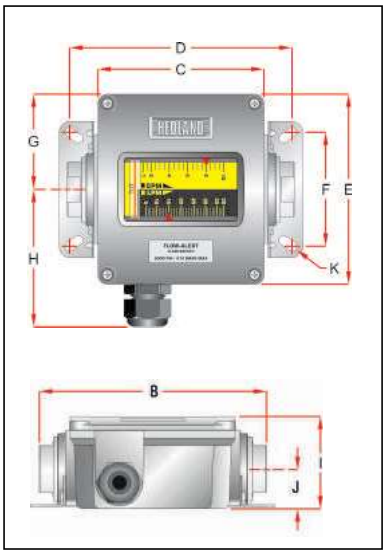
Materials	2024 - T351 anodized aluminum body, piston and cone C360 brass body, piston and cone 303 stainless body, 2024 - T351 anodized aluminum piston and cone Oil, PE, WBF, & air meters T303 stainless body, C360 brass piston and cone (water meters) T316 stainless body, piston and cone
Petroleum (oil) 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: T**302 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	-29 to +116 °C (-20 to +240 °F)
Pressure rating	
Aluminum / brass operating **Liquids** **Gases** **Stainless steel operating** **Liquids** **Gases**	 3,500 psi/241 bar max. with a 3:1 safety factor. 1,000 psi/69 bar max. with a 10:1 safety factor. For high cycle applications, see page conversion information. 6,000 psi/414 bar max. with a 3:1 safety factor. 1,500 psi/103 bar max. with a 10:1 safety factor. For high cycle applications, see page conversion information.
Accuracy	±2% of full scale
Repeatability	±1%

Flow-Alert flow switches (microswitch)

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

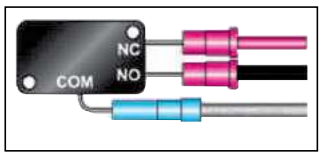
Material	Anodized and epoxy powder-coated aluminum with polycarbonate lens.
Seals	Silicone gasket between enclosure and lens. Viton® O-rings between enclosure and flow meter body.
Connection	Pig-tail conductor (standard) with water-tight strain relief. Other connections, including quick-disconnect, are 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) UL recognized and CSA certified with high or low flow limit setting, adjustable over the entire flow measuring range. Other switches are available – consult factory for details. Optional 2,4 m (8 ft) cables 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.



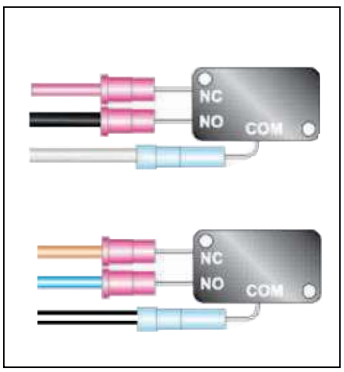
One (1) switch 4-wire cable

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 80.

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

Technical data

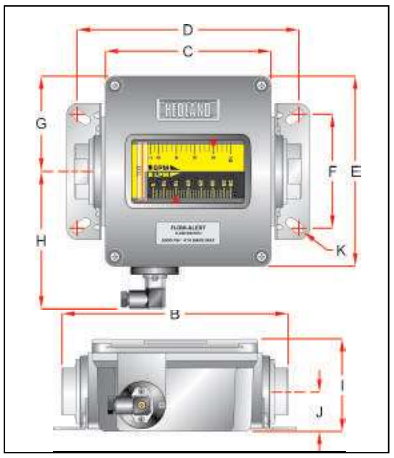
Materials	2024 - T351 anodized aluminum body, piston and cone C360 brass body, piston and cone T303 stainless body, 2024 T351 anodized aluminum piston and cone (Oil, PE, WBF, & air meters) T303 stainless body, C360 brass piston and cone (water meters) T316 stainless body, piston and cone
Petroleum common 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
Phosphat 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
Scale support: 6063 - T6 aluminum	**Enclosure seal:** Silicone gasket
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
Switch carrier: Aluminum	**Lens:** Polycarbonate
Scale support: 6063 - T6 aluminum	**Enclosure seal:** Silicone gasket
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
Scale support: 6063 - T6 aluminum	**Enclosure seal:** Silicone gasket
Threads	SAE J1926/1, NPTF ANSI B2.2, BSPP ISO1179
Temperature range	-29 to +116 °C (-20 to +240 °F)
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 conversion information.
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 conversion information.
Accuracy	±2% of full scale, ±7% of full scale for 4.8" (122 mm) length ¼" meters.
Repeatability	±1%

Flow-Alert flow switches (reed switch)

For liquids / Air and other compressed gases

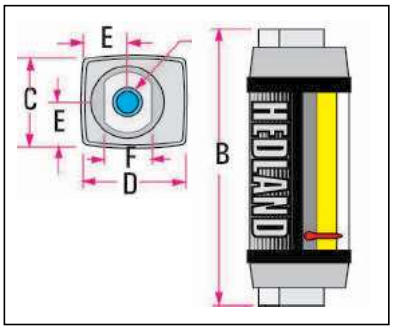
Dimensions

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	Lemgth 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

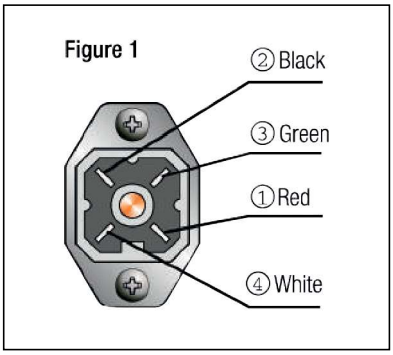
Material	Anodized and epoxy powder-coated aluminum with polycarbonate lens.
Seals	Silicone gasket between enclosure and lens. Viton® O-rings between enclosure and flow meter body.
Connection	4-pin (IP65)
Fastener	T303 SS
Rating	NEMA 12 & 13 (IP 52/54)

Electrical specifications

Adjustable flow-alert signal: Single (1) or double (2) reedswitch, pre-wired single-pole, single-throw (SPST-NO) normally open; or single-pole, single-throw (SPST-NC) normally closed. UL recognized and CSA certified with high or low flow limit setting, adjustable over the entire flow measuring range.

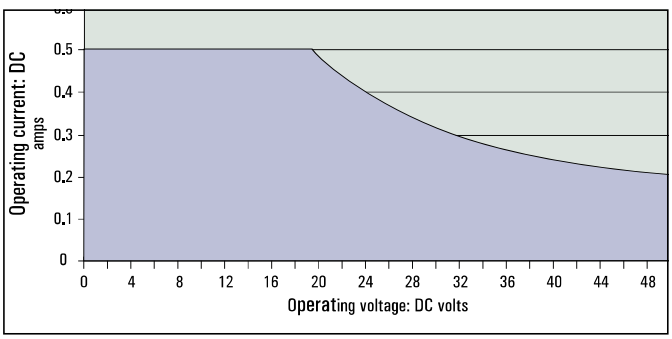
Contact form	SPST-NO	SPST-NC
Electrical specification		
Contact rating	10 Watts max	5 Watts max
Voltage, switching	50 VDC max	50 VDC max
Current (resistive), switching	0.500 A max	0.500 A max
Operating specification		
Contact resistance, initial	0.100 Ω max	0.100 Ω max
Operating temperature	-20 to +116 °C (20 to +240 °F)	-20 to +116 °C (20 to +240 °F)

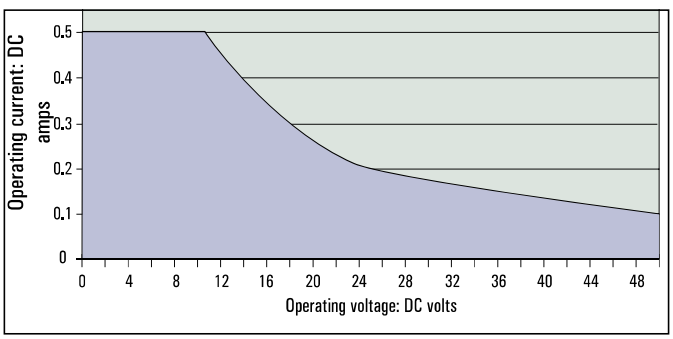
Note: Weights for all sizes can be found on page 80.



Electrical circuitry

The low switch is supplied with 15 feet of shielded, 4-wire #22 AWG PVC jacketed cable, color coded as follows: 1) red, 2) black, 3) green, 4) white for double (2) reedswitch.





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

Technical data

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
Phospate 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 **Lens:** Polycarbonate **Pressure seals:** Viton®	**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 range	
Aluminum / brass operating **Liquids** **Gases** **Stainless steel operating** **Liquids** **Liquids** **Gases** **Gases**	 3,500 psi/241 bar maximum with a 3:1 safety factor. 1,000 psi/69 bar maximum with a 10:1 safety factor. For high cycle applications, see page conversion information. (¼" to ½") - 6,000 psi/414 bar maximum with a 3:1 safety factor (¾" to 1½") - 5,000 psi/345 bar maximum with a 3:1 safety factor 1,500 psi/103 bar maximum with a 10:1 safety factor. For high cycle applications, see page conversion information.
Accuracy	±2% of full scale
Repeatability	1%

MR flow transmitters

For liquids / Air and other compressed gases

Schematics

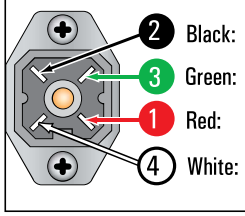
The transmitter can be wired in various configurations to allow interface with many different types of data collection and control instrumentation.
Schematics 1 & 2 represent typical wiring for a target powered by either AC power or DC supply. Schematics 3 & 4 will be utilized when the flow transmitter is operated with loop-powered process indicators or dataloggers that do not have external sensor excitation available.

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 standard, see figure 2. Other connections available, consult factory for details.
Fasteners	T303 SS
Rating	NEMA 12 & 13 (IP 52/54)

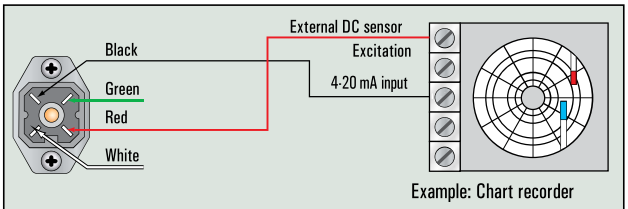
Electrical specification

Power requirement	0-5 VDC output: 10-30 VDC at 0.75W maximum 0-10 VDC output: 12-30 VDC at 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 300 m (1000 ft) 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

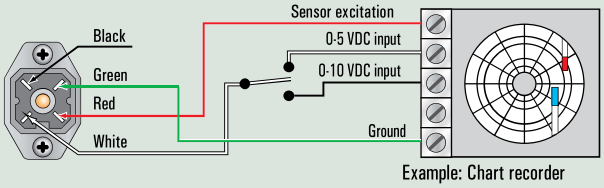


	DC output connection	Loop power connection
2 Black:	No connection	(-) 4-20 mA out
3 Green:	0 VDC	No connection
1 Red:	(+) DC power	(+) 4-20 mA in
4 White:	0-5 VDC or 0-10 VDC output	No connection

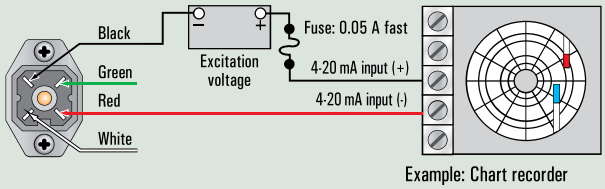
Figure 2: Electrical 4-pin connection



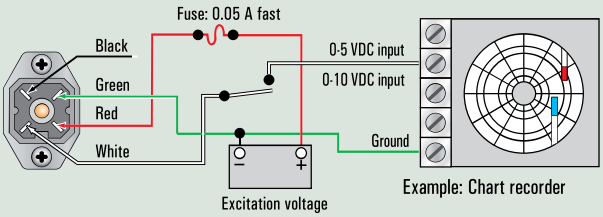
Schematic 1: 4-20 mA connection using target power supply



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

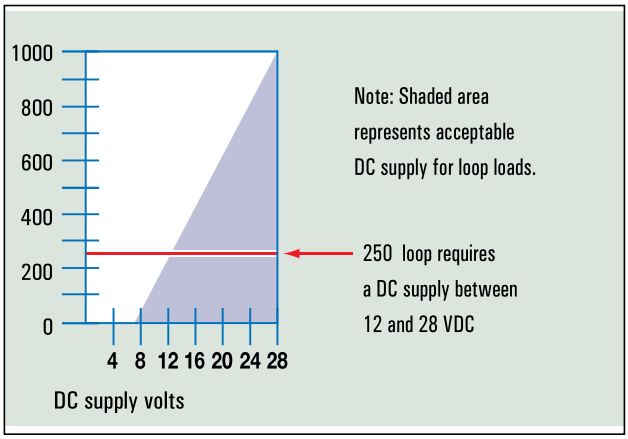


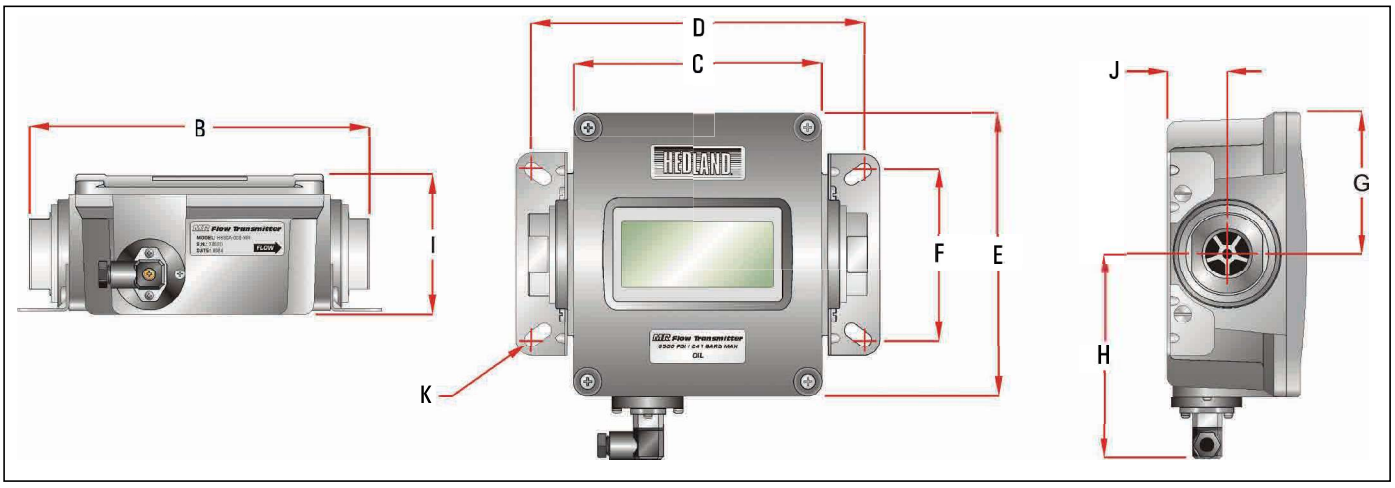
Figure 1: Load limitations (4-20 mA output only)

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

We also offer 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.

Flow-Alert flow switches and flow transmitters

For petroleum fluids

Ordering information

Nominal port size①	Flow range		Model number (see example below)			Material ⌘			Options ♦		
	gal/min	l/min	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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

Example: H 701 A - 030 - MR

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

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.

Flow-Alert flow switches and flow transmitters

For phosphate ester fluids

Ordering information

Nominal port size ①	Flow range		Model number (see Example below)			Material ⌘			Options ♦		
	gal/min	l/min	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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 psil S	Not available		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	See	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	options below	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

① Fractional 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)

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

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.

Flow-Alert flow switches and flow transmitters

For water-based fluids (water/oil emulsions)

Ordering information

Nominal port size ①	Flow range		Model number (see example: below)			Material ⌘			Options ♦		
	gal/min	l/min	SAE	NPTF	BSPP	Aluminium 3500 psi	Brass 3500 psi	Stainless steel	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

① Fractional 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)
Note: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

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.

Flow-Alert flow switches and flow transmitters

For water fluids

Ordering information

Nominal port size①	Flow range		Model number (see example below)			Material ⌘		Options ♦		
	gal/min	l/min	SAE	NPTF	BSPP	Brass 3500 psi	Stainless steel	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		Not avilable
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	See	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	options below	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)
Note: ¼" liquid meters for .02-0.2 and .05-0.5 GPM ranges available in strap-on design for RS1NO and RS1NC only.

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

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.)				
	gal/min	l/min	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		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	See	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	options below	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)

Note: ¼" liquid meters for 0.1-1.0 gal/min range available in strap-on For detailed flow/pressure drop charts, see page 62.

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

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 VDt
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.

Caution: High flow gas shock may decouple indicator.

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	Aluminium 1000 psi	Brass 1000 psi	Stainless 1500 psi	Flow-Alert 1 switch / 2 switch	Flow-Alert reed switch	Multiple output ssensor
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 (reedswitch one (1) normally open)
RS2NO (reedswitch two (2) normally open)
RS1NC (reedswitch one (1) normally closed)
RS2NC (reedswitch two (2) normally closed)

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.

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

Caution: High flow gas shock may decouple indicator.

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.

Technical data

Display	5-digit, 0.56" sunlight-readable red LED
Power **AC** **DC**	 85 to 250 VAC, 50/60 Hz, 15 VA 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	0 °C to 50 °C (32 °F to 122 °F) 0 °C to 45 °C (32 °F to 113 °F with all three plug-in cards installed)

Digital display

For Hedland® MR flow transmitters

Ordering example

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

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		

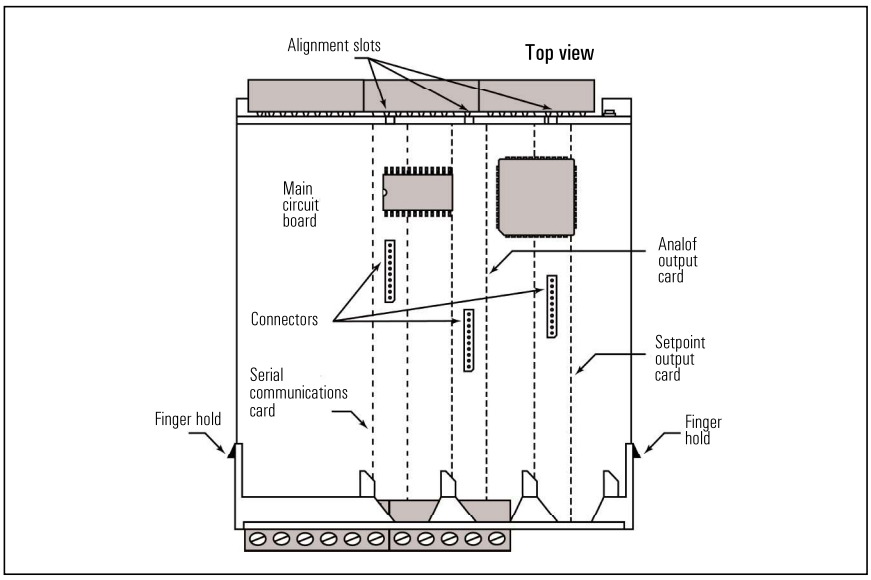
Note: Select one option from each category

Form C relay plug-in option card

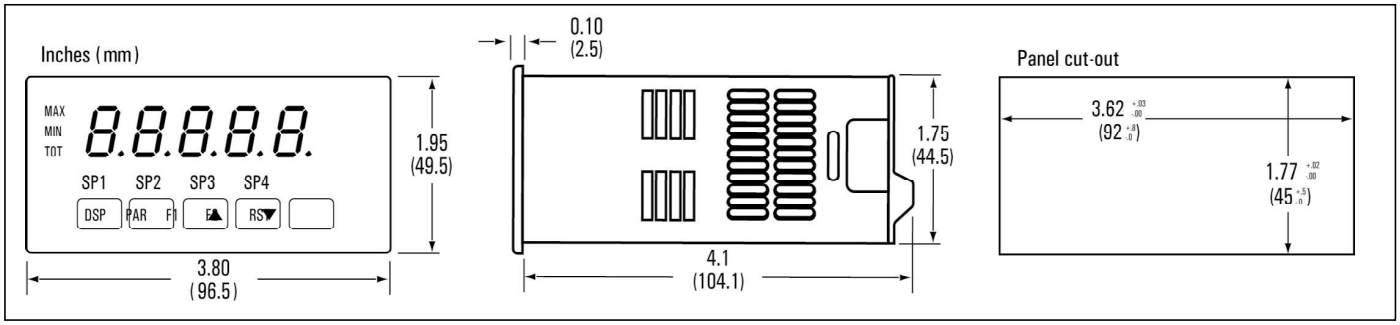
Part number F6542

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.

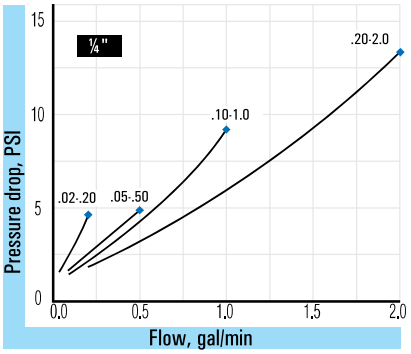


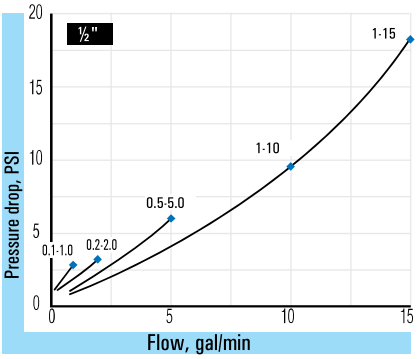
Dimensions

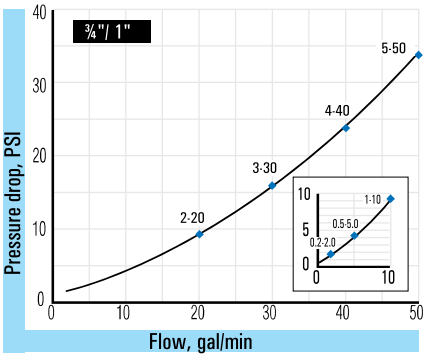


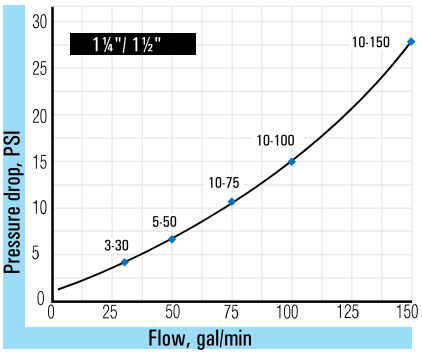
Flow vs. Pressure drop

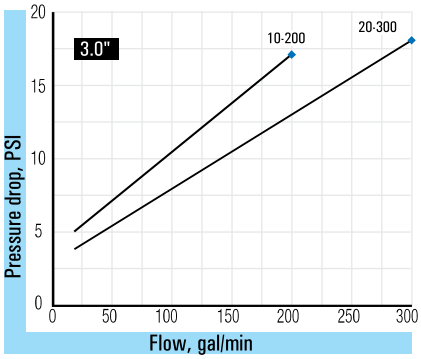
Petroleum fluids

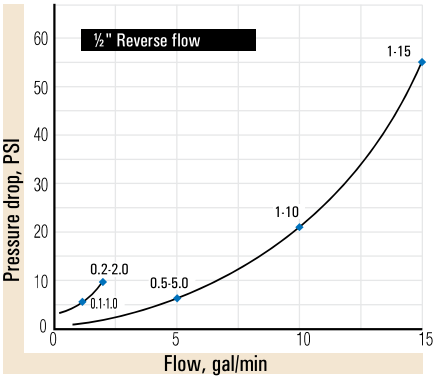


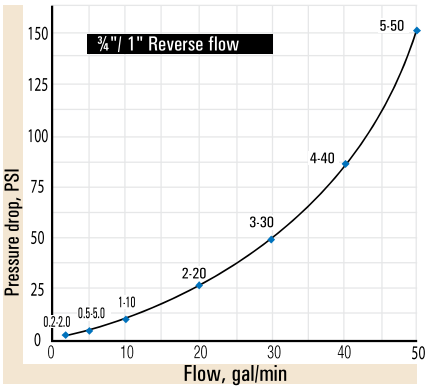


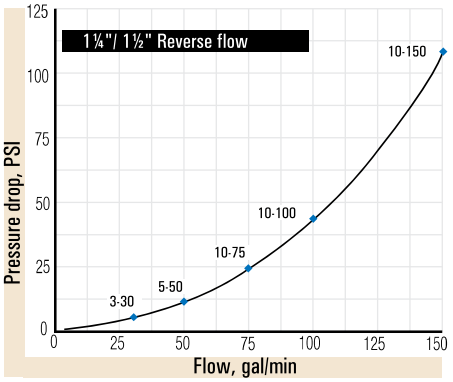




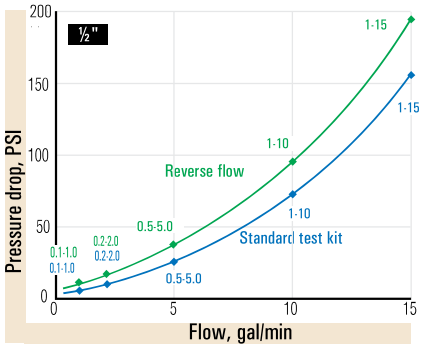


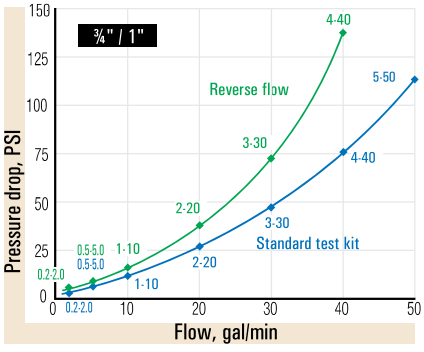


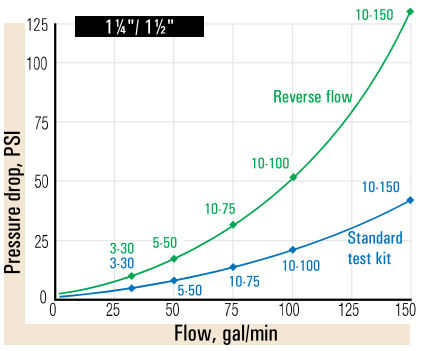




Petroleum test kits

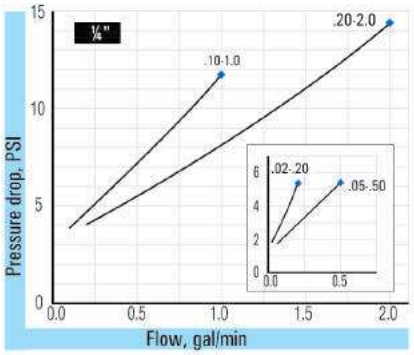


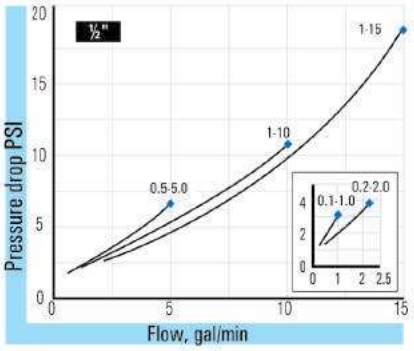


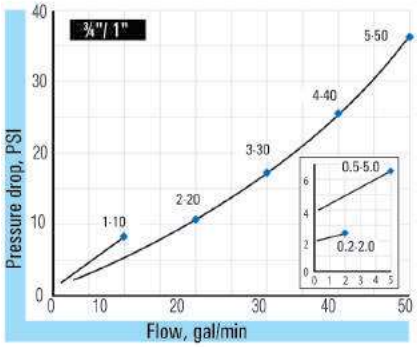


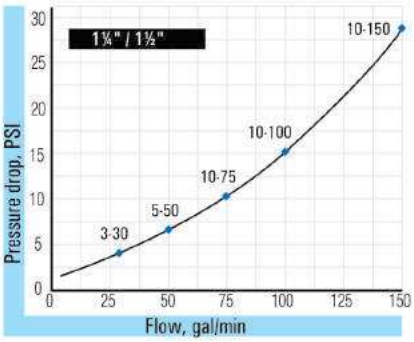
Flow vs. Pressure drop

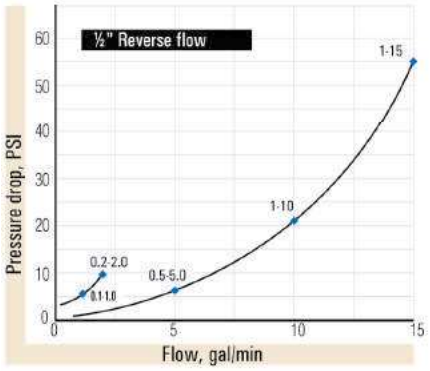
Phosphate ester

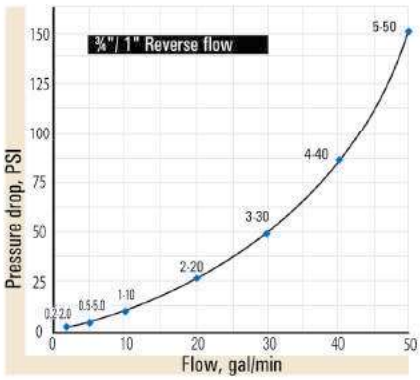


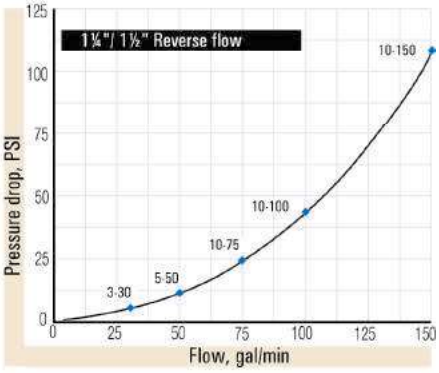




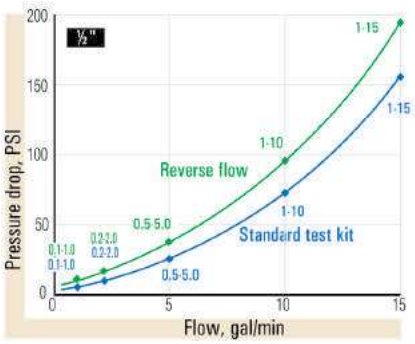


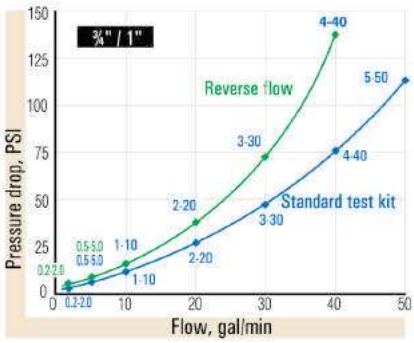


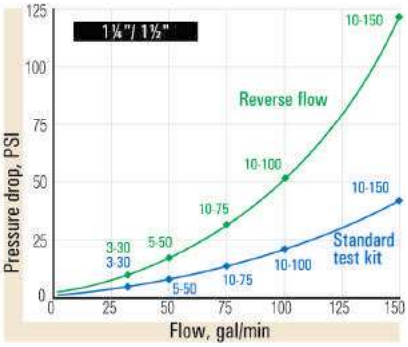




Phosphate ester test kits

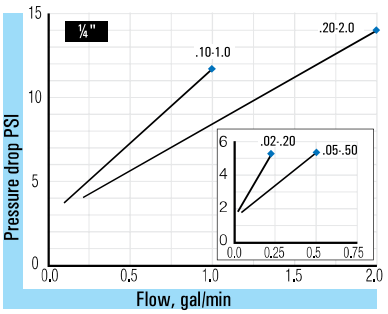


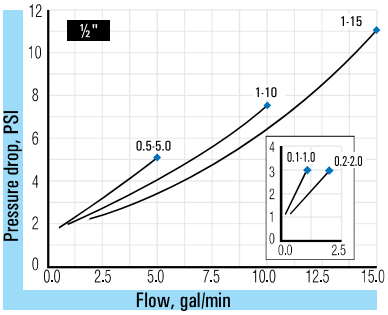


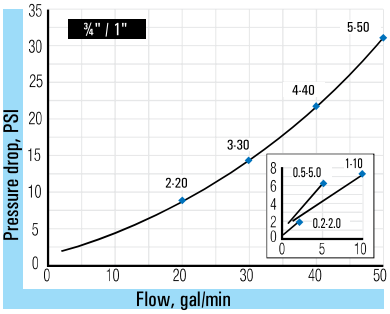


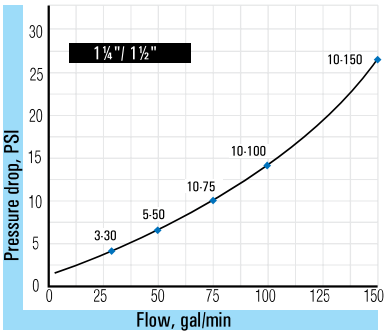
Flow vs. Pressure drop

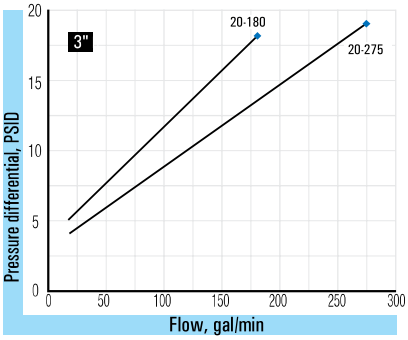
Water-based fluids

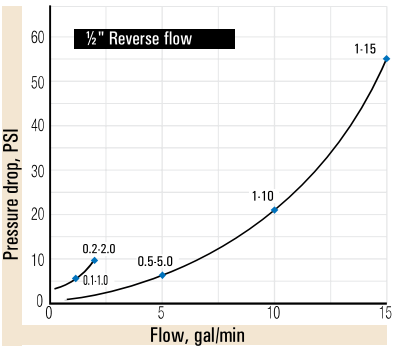


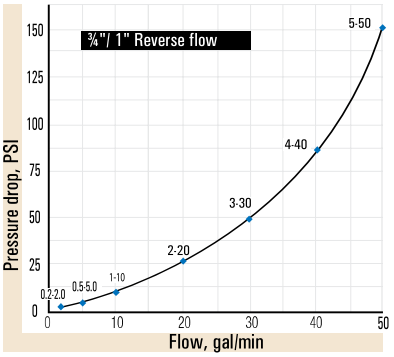


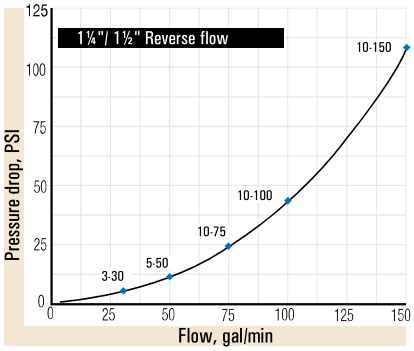




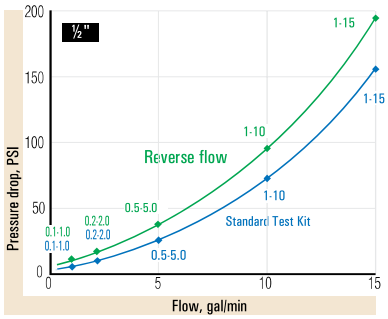


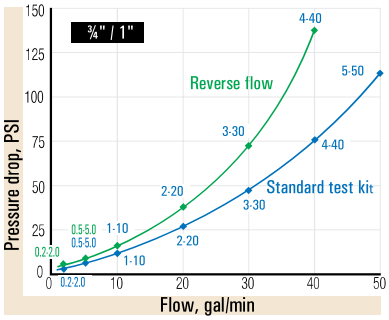


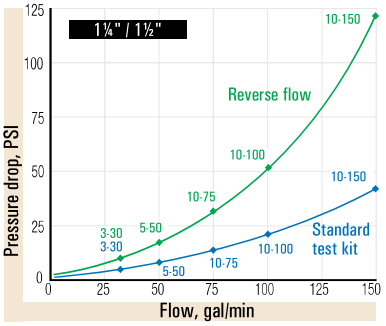




Water-based fluid test kits

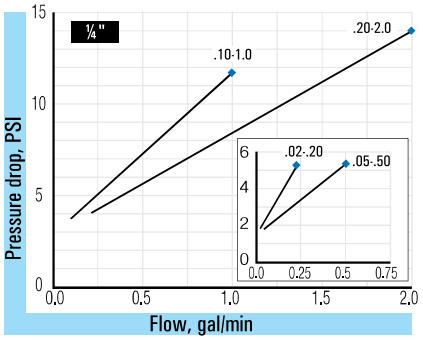


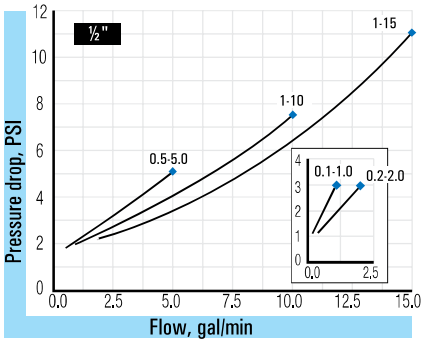


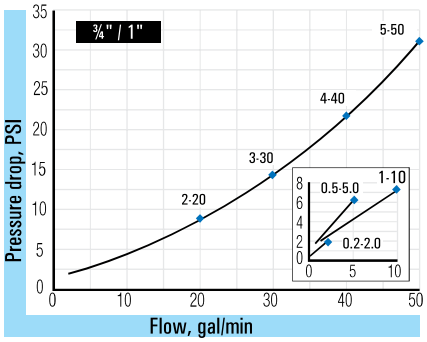


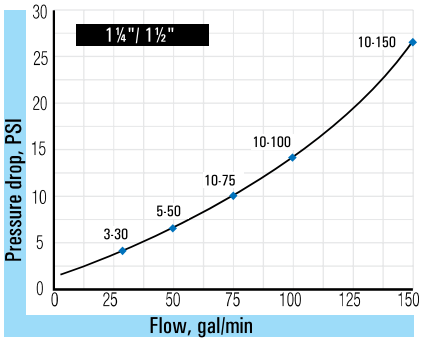
Flow vs. Pressure drop

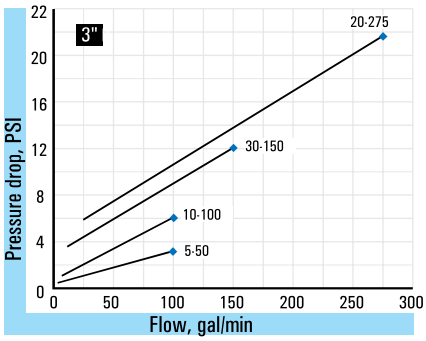
Water



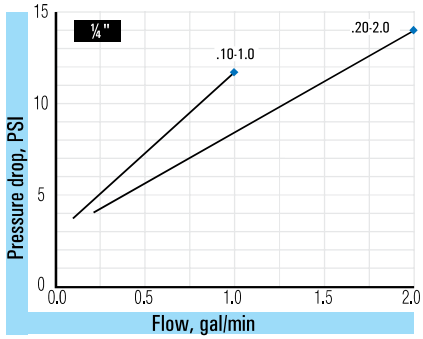


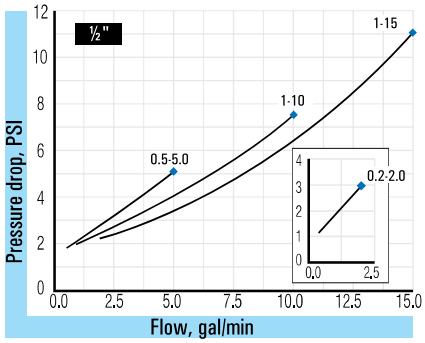


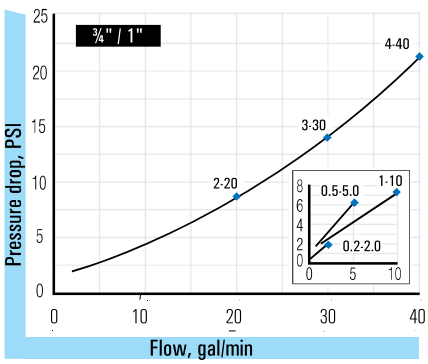


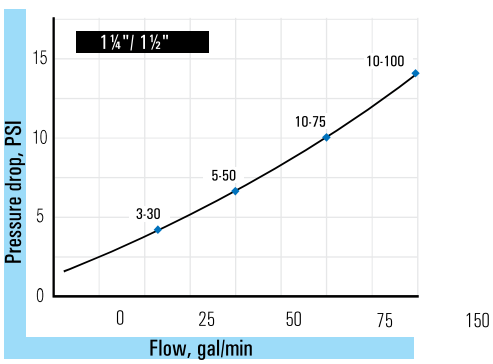


Caustic and corrosive liquids



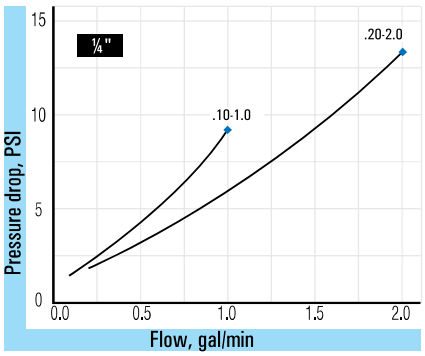


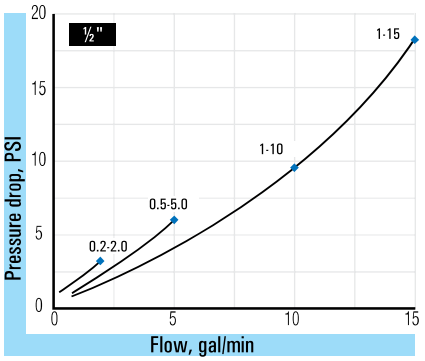


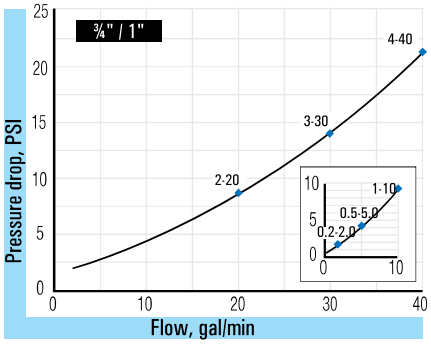


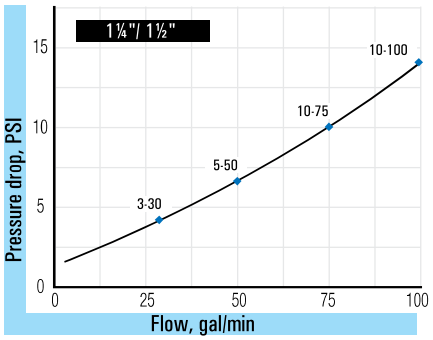
Flow vs. Pressure drop

A.P.I. oil

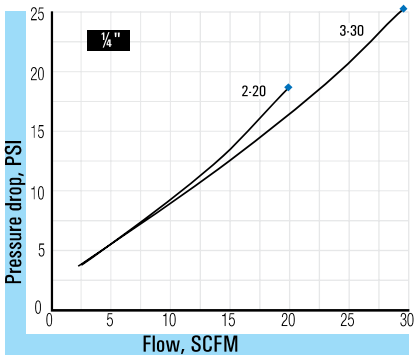


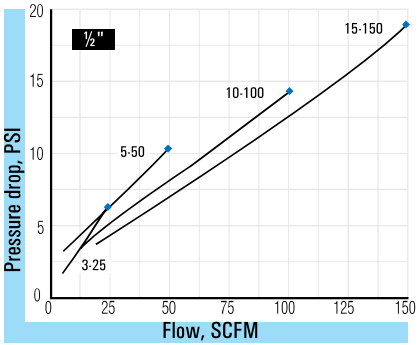


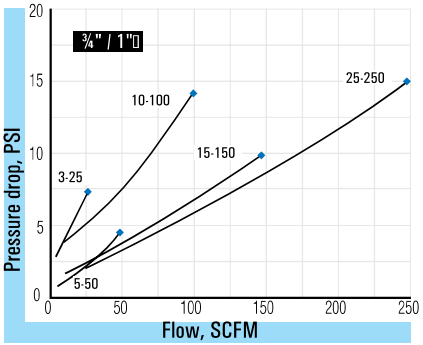


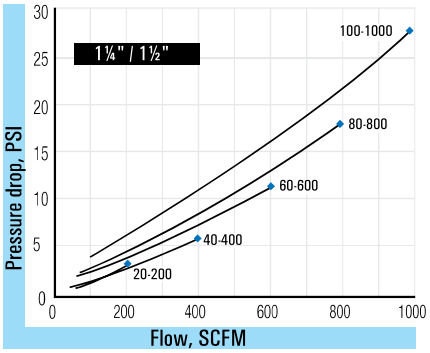


Air, caustic and corrosive gases



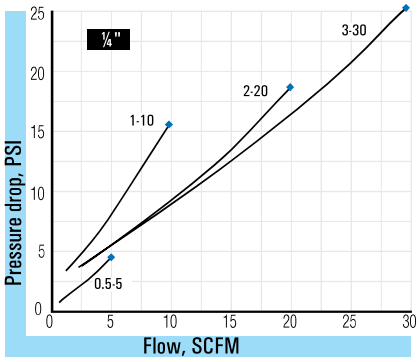


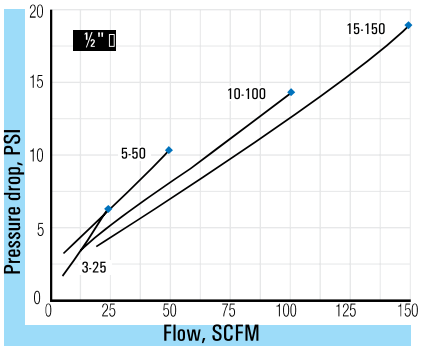


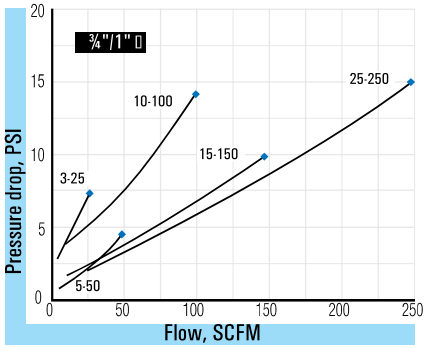


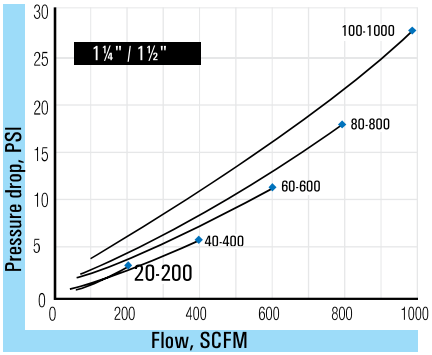
Flow vs. Pressure drop

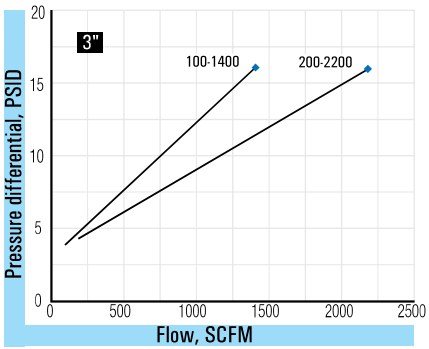
Air and compressed gases



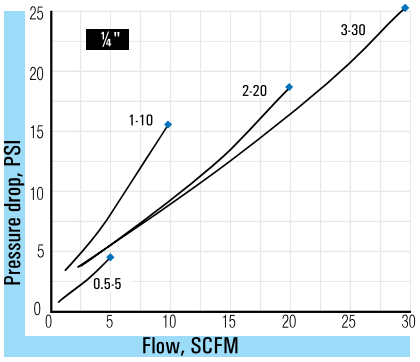


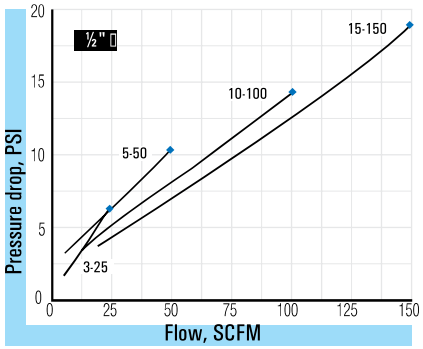


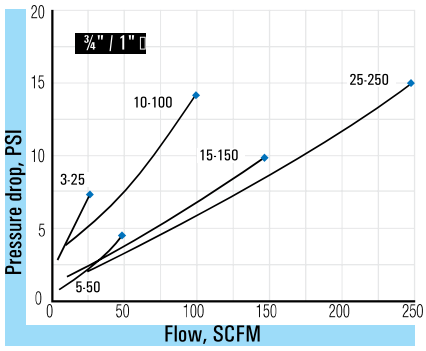


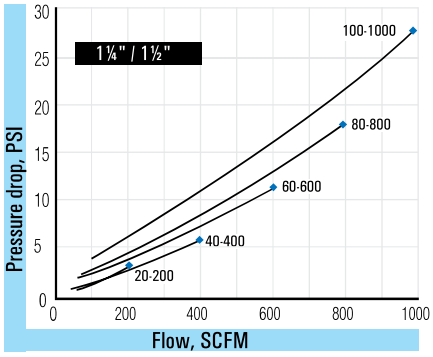


Air and compressed gas test kits









Weights for all flow meter models	Aluminium with aluminum internals lbs (kg)	Brass with brass internals lbs (kg)	T303 SS with aluminum internals lbs (kg)	T303 SS with brass internals lbs (kg)	T316 SS with T316 SS internals lbs (kg)	Hostile environment T316 SS withT316 internals lbs (kg)
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 with extended cap with gauge	1.2 (.55)	2.1 (1.0)	2.0 (.91)	~	~	~
Test kit with extended 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" 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 with extended cap with gauge	2.7 (1.2)	4.3 (2.0)	3.8 (1.7)	~	~	~
Test kit with extended 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" 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 with extended cap with gauge	3.5 (1.6)	7.1 (3.2)	6.7 (3.1)	~	~	~
Test kit with extended 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" 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 with extended cap with gauge	3.3 (1.5)	6.8 (3.1)	5.9 (2.7)	~	~	~
Test kit with extended 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" Standard meter	7.3 (3.3)	16.8 (7.6)	14.6 (6.6)	16.8 (7.6)	~	~
1¼" Liquid test kit	18.7 (8.5)	28.2 (12.8)	26.0 (11.8)	~	~	~
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 with extended cap with gauge	10.4 (4.7)	24.8 (11.2)	21.7 (9.8)	~	~	~
Test kit with extended 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" Flow transmitter	CF	CF	CF	CF	CF	~
1½" Standard meter	7.3 (3.3)	16.4 (7.5)	14.1 (6.4)	15.8 (7.2)	~	~
1½" Standard meter with C62 flange	19.0 (8.6)	28.2 (12.8)	25.8 (11.7)	~	~	~
1½" Liquid test kit	18.7 (8.5)	27.8 (12.6)	25.5 (11.6)	~	~	~
1½" High temperature	9.6 (4.4)	21.40 (9.71)	CF	21.40 (9.71)	21.40 (9.71)	~
1½" High temperature with 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 with extended cap with gauge	10.4 (4.7)	24.4 (11.1)	21.2 (9.6)	~	~	~
Test kit with extended 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" Standard meter	17.5 (8.0)	52.5 (23.8)	~	~	~	~
3" Standard meter with C61 flange	20.0 (9.1)	55.0 (25.0)	~	~	~	~

~ : Not available as standard option

CF: Consult factory for weights

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