

HP-I Series

High Pressure Flowmeters

Description

The patented, highly accurate Flow Technology HP-I Series positive displacement flowmeter is ideal for liquid flow applications where process pressure is above 1,000 psig. Applications may include hydraulics, polymers, polyurethanes, plastics, and adhesives.

Features

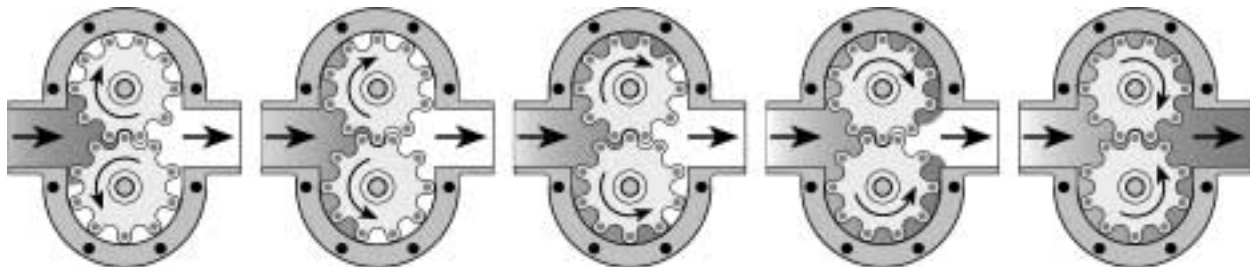
- Up to 3,000 psig operating pressure
- 1/8" to 2" line sizes, larger sizes available
- Reference accuracy $\pm 0.05\%$ of rate
- Only two moving parts
- Bearingless design
- Easy to install and maintain
- Handles viscosities up to 1,000,000 cP
- Operating temperatures up to 400° F (204° C)
- Wide range of applications
- Non-intrusive sensor
- Up to 1000:1 turndown
- Handles pulsating flow



HP-I Series
High Pressure Flowmeters

Protected by one or more U.S. Patents:
4641522, 4815318, 4911010, 4996888, 5027653, Patents Pending

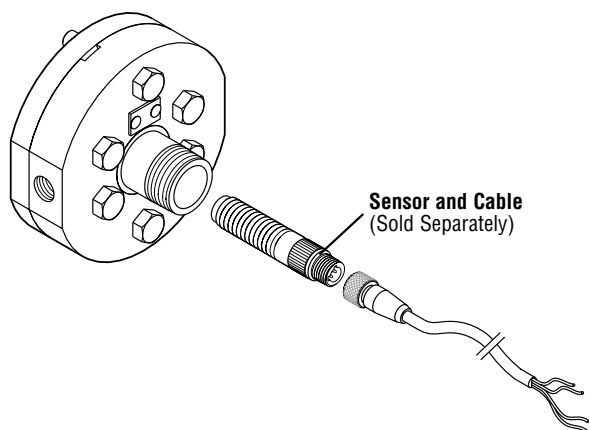
Principle of Operation



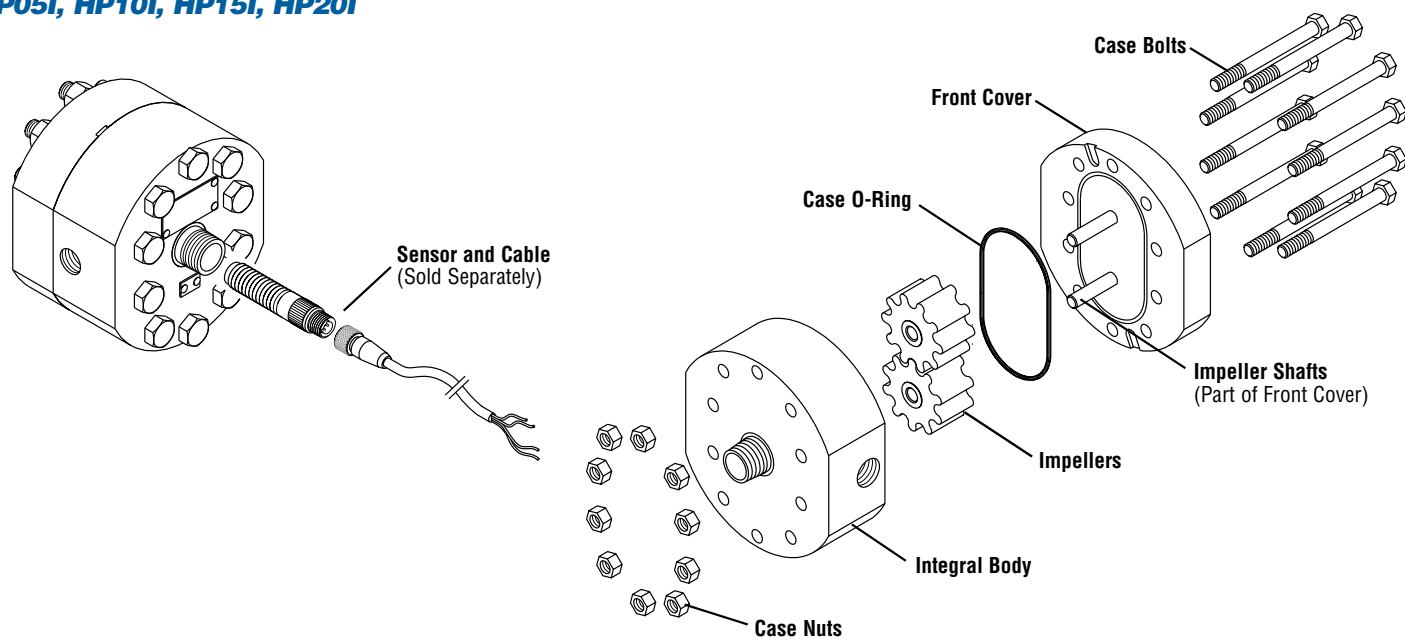
Flow Technology positive displacement flowmeters use two rotating, thermoplastic impellers driven by the flowing liquid. Magnets imbedded in the impellers activate a non-intrusive sensor which generates a pulsed output signal. Each pulse represents a known volume of liquid that is captured in between the lobes of the impellers. A K-factor converts the pulses into engineering units for remote data collection and digital display.

Flowmeter Assembly Diagrams

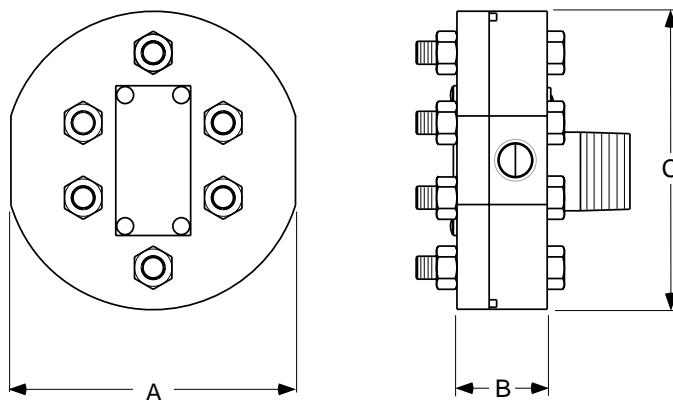
HP01I, HP02I



HP05I, HP10I, HP15I, HP20I



Dimensions



Specifications

Process Temperature

Up to 400° F (204° C) (Based on impeller materials)
Temperatures above 100° F (8° C) reduce pressure rating - consult factory.

Operating Pressure

Standard 3,000 psi (20.68 MPa)
(For higher pressure rating, see BL series product sheet)

Turndown Ratio

(Ratios based on maximum rated flow)

Low viscosity fluids 10:1 standard
Medium viscosity fluids 100:1
High viscosity fluids Up to 1000:1

Repeatability (Reference Accuracy)

±0.05% of rate

Note: Each flowmeter is individually calibrated on a ballistic calibrator traceable to NIST in the flow lab on a liquid representing the specific application

Accuracy (Linearity)

Typical ±0.5% of rate over upper 80% of full span

With enhanced signal conditioning Up to ±0.1% of rate over full turndown range

Output

(Refer to individual product sheets for complete specifications)
Sensors (1 required per meter)

Hall Effect Sensor: 5–24 VDC square-wave pulse depending on supply voltage, 3 wire

Magnetic Pick-up Sensor: 10 mV to 10 V sine-wave pulse depending on flow rate, 2-wire
Explosion-proof optional

Signal Conditioners and Transmitters

Refer to individual product sheets, available from Flow Technology

Materials of Construction

Integral Body (Case), Cover(s)
Shafts

316 stainless steel, standard
Other materials available
316 stainless steel, standard
Tungsten Carbide, optional
See Flowmeter Ordering on last page

Impellers

Viton® or Teflon® standard

O-Rings

Other materials available
Zinc Plated Grade 8, standard
Other materials and plating available

Bolts and Nuts

Model Specifications

Basic Model No.	Nominal Meter Size	Standard Connection	Maximum Flow Rate		Recommended Mesh Size	Weight	
			GPM	L/min		lbs	kg
HP01I	1/8"	1/8" NPT	1	3.79	100	2	0.9
HP02I	1/4"	1/4" NPT	3	11.4	100	8	3.6
HP05I	1/2"	1/2" NPT	12	45.4	80	22	10
HP10I	1"	1" NPT	25	94.6	60	45	20
HP15I	1-1/2"	1-1/2" NPT	50	189	60	55	25
HP20I	2"	2" NPT	100	379	40	135	61.2

Dimensions

Basic Model No.	A		B		C	
	Inches	mm	Inches	mm	Inches	mm
HP01I	3.8	97	1.2	30	4.0	102
HP02I	3.8	97	1.8	46	4.0	102
HP05I	5.4	137	2.7	69	6.0	152
HP10I	7.0	178	3.9	99	7.5	191
HP15I	8.0	203	4.8	122	8.4	213
HP20I	9.5	241	6.0	152	10.9	277

Model Numbering System



Basic Model No.

Nominal Size

- 01 = 1/8"
- 02 = 1/4"
- 05 = 1/2"
- 10 = 1"
- 15 = 1-1/2"
- 20 = 2"

Case Material

- 6 = 316 SS*✓
- 0 = Specify

Shaft Material

- 1 = 316 SS*✓
- C = Tungsten Carbide ✓
- 0 = Specify

O-Ring Material

- 1 = Viton®*✓
- 2 = Buna N ✓
- 3 = Chemraz® ✓
- 4 = Kalrez® ✓
- 6 = EPDM
- 9 = Teflon® ✓
- 0 = Specify

Special Designator

000 = Standard Meter*

Connection Size

- 01 = 1/8"
- 02 = 1/4"
- 05 = 1/2"
- 10 = 1"
- 15 = 1-1/2"
- 20 = 2"
- 00 = Specify

Connection Type

- 1 = NPT (Female)*
- 0 = Specify

Impeller Style (See Chart)

- 5 = Normal Temperature*
- A = Normal Temperature, Grooved +
- 0 = Specify

Impeller Material

- 3 = UHMWPE ✓+
- 5 = PPS
- 9 = PTFE
- 0 = Specify

Impeller Normal Temperature Chart

Impeller Material	Operating Temperature	CIP Temperature
PPS	-20° F to + 400° F (-29° C to + 204° C)	400° F (204° C)
PTFE	-20° F to + 250° F (-29° C to + 121° C)	250° F (121° C)
UHMWPE	-20° F to + 150° F (-29° C to + 66° C)	185° F (85° C)

Key

*	Standard Configuration
✓	FDA Compliant
CIP	"Clean in Place," a brief cleaning cycle
CF	Consult Factory
+	Not available in size 01 and 02 meters

Material Guide

Name	Description
316 SS ✓	316 Stainless Steel
Buna N ✓	Nitrile
Chemraz®	Elastomeric PTFE by Greene, Tweed & Co. Inc
EPDM	Ethylene Propylene
Kalrez®	Perfluorinated Elastomer by DuPont
PPS	Polyphenylene Sulfide, Ryton® by Phillips Petroleum
PTFE	Carbon Filled Polytetrafluoroethylene, Teflon® by DuPont (Impeller Material)
Teflon® ✓	Polytetrafluoroethylene, by DuPont (O-Ring Material)
UHMWPE ✓	Ultra High Molecular Weight Polyethylene
Viton® ✓	Fluorocarbon, by DuPont

Specifications are for reference only and are subject to change without notice.

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