FLOW RATE MONITORS

INDICATORS, SWITCHES, TRANSMITTERS AND FOR WATER, OILS, PAINTS, AIR, AND GASES

SERIES HFR, HFS, HFDS, and HFT

Series HFR

Series HFT, HFS, HFDS

FEATURES:

- ★ Direct Reading Flow Rate Indication
- ★ Optional Switch(es)
- ★ Optional (field selectable) transmitter outputs of: 4-20mA, 0 to 5 VDC, or 1 to 5VDC, square wave pulse
- ★ Pressures up to 6000 PSIG (413 Bar)
- ★ Maximum Temperatures to 600°F (315°C)
- ★ Not effected by viscosity changes up to 500 SSU/100 Centipoise
- ★ Versatile mounts in any orientation
- ★ No Straight Pipe Runs Required
- ★ Easy to read with Dark or Opaque Fluids
- ★ Flow Ranges:
  Liquids: 0.5 to 175 GPM
  Air & Gases: 2 to 1300 SCFM
- ★ Connections Sizes Available:
  1/4 through 2 Inch NPT, SAE, BSP, and Flanges

GENERAL DESCRIPTION:

Sure Flow Products variable area flow rate indicators are designed for tough industrial applications. This flow indicator is mechanical with a spring-loaded float and magnetic follower. This allows for mounting in any orientation and is ideal for use with dark or opaque fluids. The sharp edge orifice provides excellent measurement stability. These unique flow devices are not affected by changes in viscosities up to 500 SSU. For viscosities greater than 500 SSU and for air or gas applications, each flow indicator is individually calibrated for customer operating conditions.

Technical Data:

Measuring Accuracy:	±2.5% of full scale on center 1/3 of measuring range ±1% of full scale over the entire scale range
Repeatability:	±1% of full scale
Flow Measuring Range:	0.05-150 GPM
Max. Operating Pressure:	Aluminum or brass monitor: 3500 PSIG (240 Bar) Stainless steel monitor: 6000 PSIG (410 Bar)
Max. Operating Temp:	Media: 240°F (110°C) Ambient: 180°F (82°C)
Max. Pressure Drop:	Consult Sure Flow Products
Standard Calibration:	Oil monitors: DTE 25° @ 110°F (43°C), 0.873 sg Water monitors: Tap water @ 70°F (21°C), 1.0 sg Air monitors: Air @ 70°F (21°C), 1.0 sg & 100 PSIG (6.8 Bar)
Enclosure:	NEMA type 4X (UL approved)
Alarm Switch:	4% of full scale
Alarm Switch Contacts:	SPDT (dry contact): UL/CSA rating at 10 amps and 1/4 hp, 125 or 250 VAC, 1/2 amp, 125 VDOC, 1/4 amp, 250 VDC (3 amps, 125 VAC lamp load

Power Requirements:	12-35 VDC
Load Driving Capacity:	4-20: Load resistance is dependent on power supply voltage. Use the following equation to calculate the maximum load resistance: Max. loop load (Ω) = 50 (power supply volts-12). 0-5 VDC: Minimum load resistance 1000~. 1-5 VDC: Minimum load resistance 25K~. Square wave pulse: Min. load resistance 1000~.
Over-Current Protection:	Self-limiting at 35mA
Resolution:	10 bit (0.1%)
Isolation:	Inherently isolated from the process
Response Time:	<100 milliseconds

W. H. Cooke & Co., Inc.
Manufacturer of thermocouples & RTD's Made in the USA
Supplier of industrial controls, heaters, and sensors since 1963
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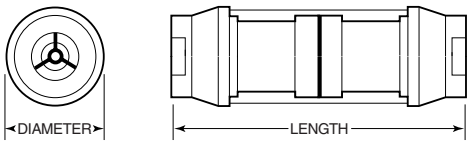
Materials of Construction

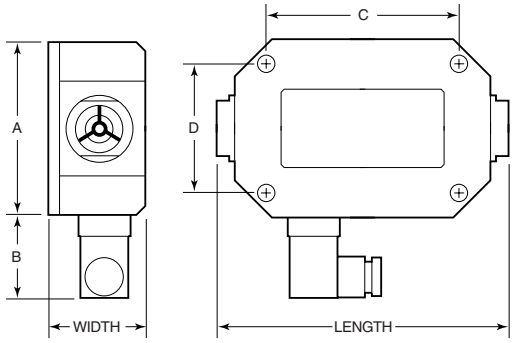
WETTED COMPONENTS			
CASING END PORTS TAPERED SHAFT	Aluminum	Brass	Stainless Steel
SEALS	Buna-N (Std), EPR, Viton®, Kalrez®		Viton® w/ Teflon® (Std), Buna-N, EPR, Kalrez®
TRANSFER MAGNET	Teflon® Coated Alnico		
FLOATING ORIFICE DISK	Stainless Steel		
ALL OTHER INTERNAL PARTS	Stainless Steel		
NON-WETTED COMPONENTS			
ENCLOSURE & COVER	Aluminum		
SEALS	Buna-N		
WINDOW	Pyrex		
DIN CONNECTOR	Polyamide		

Dimensions Series HFR



Dimension in Inches	SIZE 2	SIZE 3	SIZE 4	SIZE 5	
Diameter	1-1/4	1-7/8	2-3/8	3-1/2	
Length	4-13/16	6-9/16	7-5/32	10-1/8	12-5/8
Port Size NPTF:	1/8, 1/4	1/4, 3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2
SAE#:		6, 8, 10	12, 16	20, 24	32
BSP:		3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2

Dimensions Series HFS, HFDS, HFT



Dimension in Inches	SIZE 3	SIZE 4	SIZE 5	
Length	6-9/16	7-5/32	10-1/8	12-5/8
Width	2-3/16	2-15/16	3-13/16	
A	4	4-1/2	5-5/16	
B	1-7/8	1-7/8	1-7/8	
C	4-7/8	5	6-3/4	
D	2-1/4	2-7/8	3-1/4	
Port Size NPTF:	1/4, 3/8, 1/2	3/4, 1	1-1/4, 1-1/2	2
SAE#:	6, 8, 10	12, 16	20, 24	32
BSP:	3/8, 12	3/4, 1	1-1/4, 1-1/2	2

MODEL SELECTION:

Example: HFS /4 - 20GPM - .750 - B - 2

SERIES:

HFR = Flow Rate Indicator
HFS = Flow Rate Indicator w/Switch
HFDS = Flow Rate Indicator w/2 Switches
HFT = Flow Transmitter

SIZES AVAILABLE FLOW RANGES:

SIZE	GPM		RANGES LIQUID GPM	RANGES AIR & GAS SCFM
/2 or /3	1	=	.1 to 1 or .05 to 1	1.5 to **12**
/3	2	=	.2 to 2	4 to **23**
/4	5	=	.5 to 5	6 to **60**
/4	10	=	1 to 10	10 to **100**
/4	15	=	1 to 15	15 to **150**
/4	20	=	2 to 20	20 to **215**
/5	25	=	2 to 25	20 to **250**
/5	30	=	3 to 30	30 to **330**
/5	40	=	4 to 40	30 to **400**
/5	50	=	5 to 50	30 to **470**
/5	75	=	8 to 75	30 to **750**
/5	100	=	10 to 100	150 to **900**
/5	150	=	20 to 150	150 to **1300**

Other units of measure available, consult Sure Flow

CONNECTIONS SIZES/TYPES:

.250	=	1/4 inch NPT	**6 SAE**	=	#6 SAE
.250BSP	=	1/4 inch BSP			
.375	=	3/8 inch NPT	**8 SAE**	=	#8 SAE
.375BSP	=	3/8 inch BSP			
.500	=	1/2 inch NPT	**10 SAE**	=	#10 SAE
.500BSP	=	1/2 inch BSP			
.750	=	3/4 inch NPT	**10 SAE**	=	#10 SAE
.750BSP	=	3/4 inch BSP			
1.00	=	1 inch NPT	**10 SAE**	=	#12 SAE
1.00BSP	=	1 inch BSP			
1.25	=	1-1/4 inch NPT	**10 SAE**	=	#16 SAE
1.25BSP	=	1-1/4 inch BSP			
1.5	=	1-1/2 inch NPT	**10 SAE**	=	#20 SAE
1.5BSP	=	1-1/2 inch BSP			
2.00	=	2 inch NPT	**10 SAE**	=	#24 SAE
2.00BSP	=	2 inch BSP			

For flanged connections, consult Sure Flow

BODY MATERIAL:

A = Aluminum
B = Brass
SS = Stainless Steel

SEAL MATERIALS:

1 = Viton
2 = Buna N
3 = Ethylene Propylene
4 = Teflon & Kalrez

OPTIONAL MOUNTING ORIENTATION/SPECIAL CALIBRATION:

R = Horizontal Mount - left to right flow
L = Horizontal Mount - right to left
D = Vertical Mount - flow down
B = Bidirectional

Note - Standard is vertical mount - flow up. However, meter can be mounted in any orientation. Options above include turning of the calibrated number for ease in reading.

High Temperature Option
(rate indicators only, consult Sure Flow Products)
HT = 400°F (requires Viton/Teflon seal)
HT6 = 600°F (requires Teflon/Kalrez seal)

S* - Calibrated for a viscosity greater than 500 SSU, or Specific Gravity greater than 1.0 (please specify both viscosity and specific gravity. Ex: S1000/.9 means calibrate for 1000 SSU and S.G. of .9

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