

General Description

Smartflow® mechanical flowmeters are durable, vane-operated devices that provide visual indication of flow rate in many different styles and sizes. Rugged wetted parts are compatible with many process liquids.

Optional temperature and pressure gauges add functionality and flexibility to Smartflow® flowmeters. Brass quick-connect fittings are available on the smaller flowmeters to create an excellent, portable tool for determining flow and locating clogged lines.

Features and Benefits

- **Compact size** works well in restricted-space locations.
- **Rugged construction** gives years of dependable service.
- **Variety of inlet sizes** provides exactly the right connection.
- **240°F (115°C) Temperature Rating** allows installation into a wide range of applications.
- **Optional Temperature and Pressure Gauges** give instant access to pressure and temperature information in addition to flow in one unit.
- **Common Flowmeter Configurations Stocked** to provide same-day delivery in most cases.
- **No Mounting Restrictions** ease installation in any position without extra brackets or hardware.

Turbulent Flow

Injection molders know that a certain rate of flow is needed to achieve turbulent flow in cooling lines. This concept applies to most cooling applications using a water-based coolant mixture*. This chart is provided for reference only.

Cooling Line Inside Diameter	Turbulent Flow Rate			
	pipe size	drill size (dia.) inches mm	gpm	lpm
1/16"	1/4	6.6	.33	1.3
1/8"	R	8.73	.44	1.7
1/4"	7/16	11.8	.55	2.1
3/8"	19/32	15.25	.74	2.8
1/2"	23/32	19.05	.90	3.4
3/4"	15/16	24.5	1.17	4.5
1"	1-5/32	30.75	1.44	5.5

* based on Reynolds Number of 4000

Design and specifications are subject to change without notice.

Model Number

F 3 - D - 25		
Inlet Size		Flow Rate (maximum)
1/4"NPT(F)	2	15 1.5 gpm
1/4"BSPP(F)	2B	(gallons per minute)
3/8"NPT(F)	3	25 2.5 gpm
3/8"BSPP(F)	3B	80 8.0 gpm
1/2"NPT(F)	4	100 10 lpm (liters per minute)
3/4"NPT(F)	6	300 30 lpm

Accessories

- A Flowmeter only
- B Thermometer
- C Thermometer and pressure gauge
- CL Thermometer and liquid-filled pressure gauge
- D Thermometer, pressure gauge, quick change socket and plug*
- DL Thermometer, liquid-filled pressure gauge, quick change socket and plug
- E Thermometer and quick change socket and plug*
- F Pressure gauge
- FL Liquid-filled pressure gauge

* Not available with 3/4" inlet

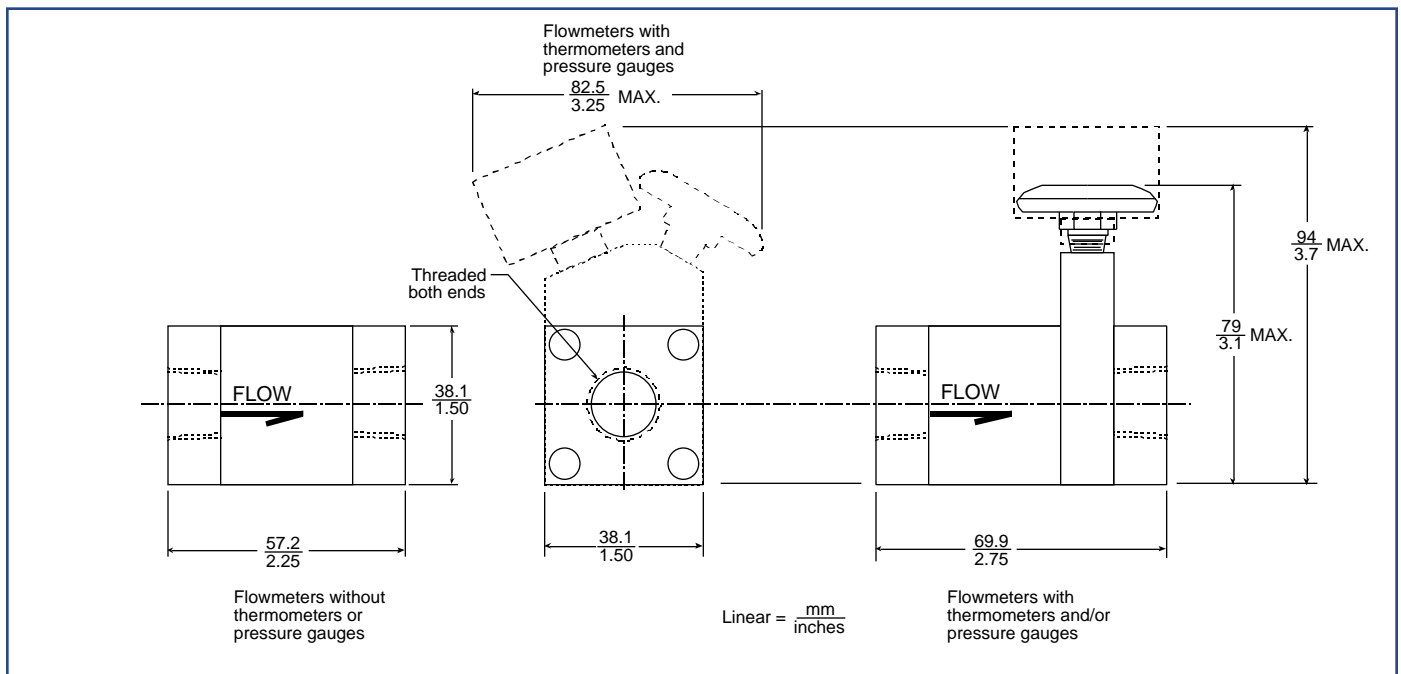
Wetted Parts and Materials

End Caps	Brass
Body	Polysulfone
Vane.....	Glass-Filled Nylon
Spring	Stainless Steel
O-Rings.....	EPDM
Cap Screws.....	Stainless Steel
Optional Quick-Connect Fittings	Brass

Specifications

Flow Accuracy.....	±10% full scale
Operating Temperature.....	240°F max. (115°C max.)
Operating Pressure.....	150 psi max. (10.3 bar max.)
Dial Thermometer.....	0° to 250°F (-20° to 120°C) ±2% accuracy (full scale)
Pressure Gauge	0 to 100 psi (0 to 700 Kpa) ±3% accuracy (full scale)

Contact the factory for other thread styles and sizes.





MEDIUM MECHANICAL FLOWMETERS

Model Number

F 6 - B - 20

Inlet Size

3/4"NPT(F)	6
3/4"BSPP(F)	6B
1"NPT(F)	8
1"BSPP(F)	8B

Flow Rate (maximum)

20	20 gpm (gallons per minute)
75	75 lpm (liters per minute)

Accessories

- A Flowmeter only
- B Thermometer
- C Thermometer and pressure gauge
- CL Thermometer and liquid-filled pressure gauge
- F Pressure gauge
- FL Liquid-filled pressure gauge

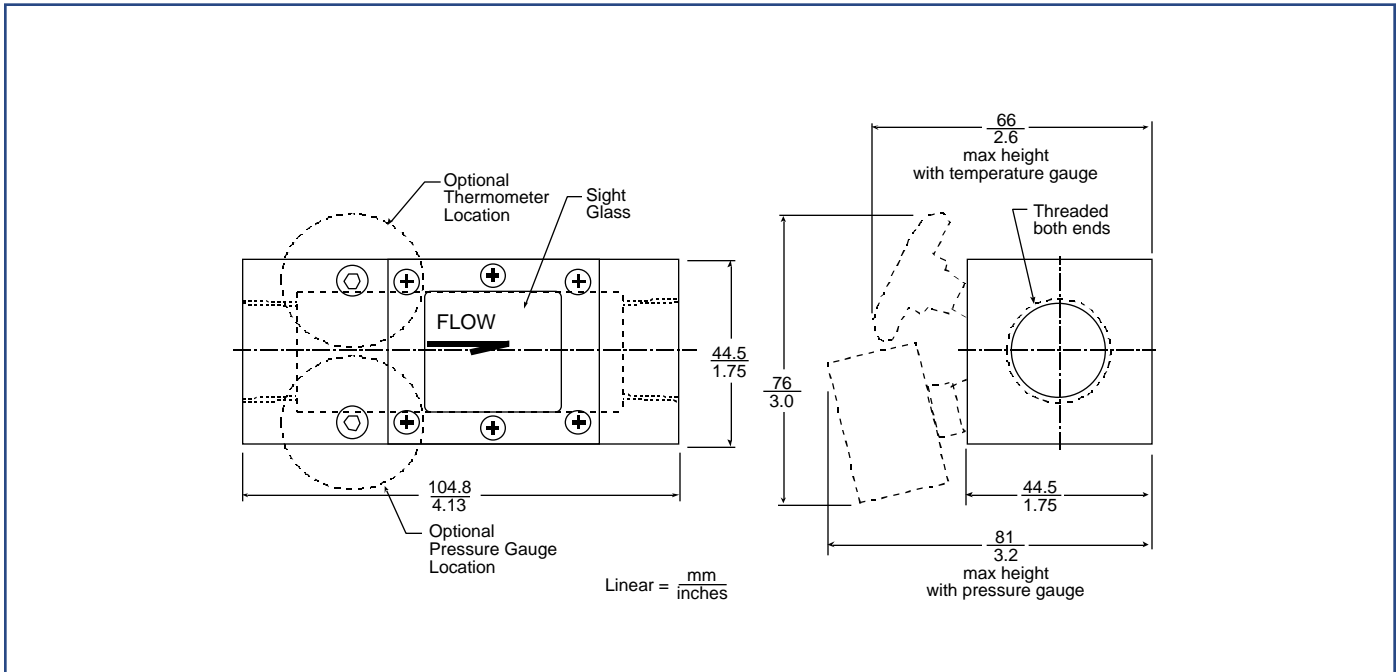
Wetted Parts and Materials

Body	Anodized Aluminum
Sight Glass	Polysulfone
Vane.....	Stainless Steel
Spring	Stainless Steel
Pin.....	Stainless Steel
Gasket	Neoprene

Specifications

Operating Temperature.....	240°F max. (115°C max.)
Pressure	100 psi max. (6.9 bar max.)
Accuracy.....	±10%
Thermometer.....	0° to 250°F (-20° to 120°C)
Pressure Gauge.....	0 to 100 PSI (0 to 700 Kpa)

Contact the factory for other thread styles and sizes.





LARGE MECHANICAL FLOWMETERS

Model Number

F 8 - B - 40

Inlet Size		Flow Rate (maximum)
1"NPT(F)	8	40 gpm
1"BSPP(F)	8B	100 gpm (only available with 12 or 16 inlet size)
1-1/4"NPT(F)	10	150 gpm (only available with 16 & 24 inlet size)
1-1/2"NPT(F)	12	
1-1/2BSPP(F)	12B	
2"NPT(F)	16	19 to 150 lpm (only available with 8 or 10 inlet size)
2"BSPP(F)	16B	
3"NPT(F)	24	38 to 375 lpm (only available with 12 or 16 inlet size)

Accessories

Flowmeter only	A
Thermometer	B
Thermometer and pressure gauge	C
Thermometer and liquid-filled pressure gauge	CL
Pressure gauge	F
Liquid-filled pressure gauge	FL

Contact the factory for other thread styles and sizes.

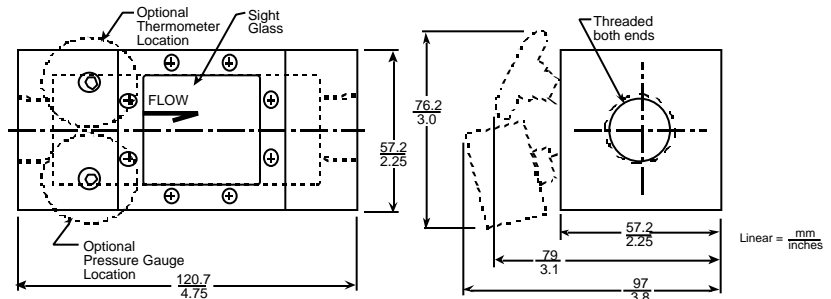
Wetted Parts and Materials

Body	Anodized Aluminum
Sight Glass	Polysulfone
Vane	Stainless Steel
Spring	Stainless Steel
Pin	Stainless Steel
Gasket	Neoprene
Thermometer	0° to 250°F (-20° to 120°C)
Pressure Gauge	0 to 100 PSI (0 to 700 kg/cm ²)

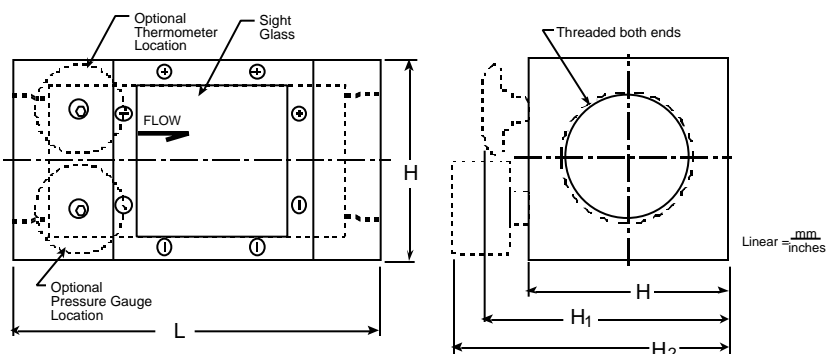
Specifications

Operating Temperature	240°F max. (115°C max.)
Pressure	100 psi max. (6.9 bar max.)
Accuracy	±10%
Thermometer	0° to 250°F (-20° to 120°C)
Pressure Gauge	0 to 100 PSI (0 to 700 Kpa)

1" and 1-1/4" Flowmeters 40 gpm & 150 lpm



1-1/2", 2" & 3" Flowmeters 40, 100, & 150 gpm, 150, 375 lpm



Dim	Body Size	
	1-1/2 or 2"	3"
L	139.7 / 5.5	165.1 / 6.5
H	76.2 / 3.0	101.6 / 4.0
H ₁	99 / 3.9	124.5 / 4.9
H ₂	114 / 4.5	139.7 / 5.5

SMARTFLOW® HOT OIL FLOWMETERS



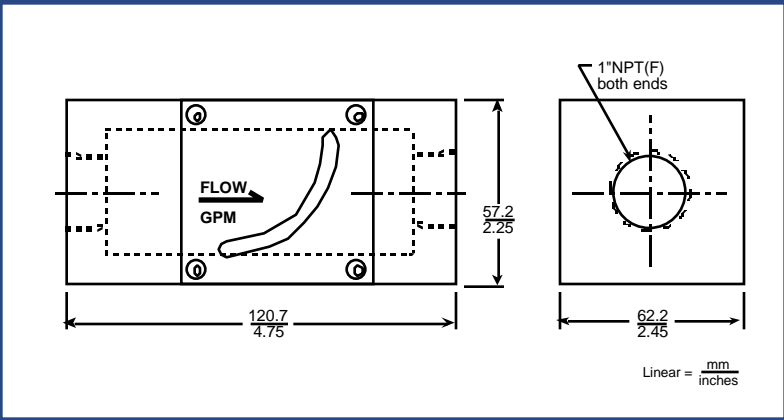
General Description

Smartflow® hot oil flowmeters are durable, vane-operated devices that provide visual indication of flow rate in gallons per minute. The indicator ball is separated from the process by a high temperature gasket and stainless steel plate. A glass window retains the indicator ball. This flowmeter is designed specifically for hot oil circulating loops in industrial processes.

Features and Benefits

- **Compact size** works well in restricted-space locations.
- **Rugged construction** provides years of dependable service.
- **550°F (288°C) Temperature Rating** allows installation into hot oil applications.
- **Economical** for use in many locations throughout the plant.
- **Line mounted** for easy installation without extra brackets or hardware.

Dimensions



Model Number

HF8 - A - 40

Wetted Parts and Materials

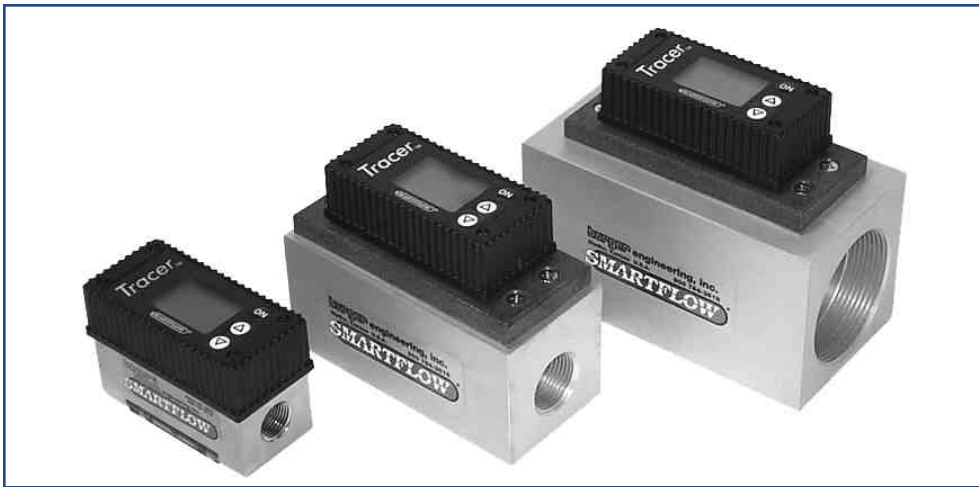
Inlet Size.....	1"NPT(F)
Body	Carbon Steel (black oxide finish)
Viewing Window	Glass
Vane.....	Stainless Steel
Spring.....	Stainless Steel
Pin.....	Stainless Steel
Gasket.....	Non-Asbestos Fiber
Magnet.....	Sintered Alnico 8HE

Specifications

Operating Temperature	550°F max. (288°C max.)
Pressure	150 psi max. (10.3 bar max.)
Accuracy.....	±10%

Design and specifications are subject to change without notice.

SMARTFLOW[®] TRACER[®] ELECTRONIC FLOWMETER



Model DD Digital Display

- Battery Powered
- LCD Display
- Flow
- Temperature
- BTU's per minute

See page 21 for model numbers and dimensions

General Description

Tracer™ Electronic Flowmeter with Liquid Crystal Display (LCD) measures liquid flow rate, temperature, and calculates BTU's per minute. The highly-visible display is configured via the sealed push buttons and user-friendly menus.

As a diagnostic tool, engineers and maintenance personnel can quickly spot-check temperature and flow in water lines using the LCD Tracer™ flowmeter. This portable LCD unit is unmatched as a troubleshooting tool.

As a process control tool, the Tracer™ can be left in place to closely monitor more critical applications. The adjustable, automatic shut-off feature prolongs battery life.

Annual calibration is recommended for best results.

Features and Benefits

- **Bi-directional flow reading** makes installation simple and convenient.
- **English or Metric units** for flow and temperature are user-selectable.
- **Optional quick-connect fittings** provide fast, portable water line connection (8 GPM models only).
- **Corrosion-resistant wetted parts** assure long-lasting durability.
- **Polysulfone viewing window** provides visual flow indication (DD-3B & DD-3E models only).
- **Automatic display shut-off** prolongs battery life.
- **Weathertight housing** protects the electronics.

Specifications

Flow Accuracy±5%*

Flow Repeatability±3%*

Wetted Parts

3/8" Body.....Nickel-Plated Brass

3/4" - 2" Body.....Clear-Anodized Aluminum
or 303 Stainless Steel (-SS model suffix)

Sight Window (3/8" only).....Polysulfone

Impeller.....Nylon 6/12

Impeller Shaft18-8 Stainless Steel

Magnet.....Neodymium

Power

Battery3.6V 1.0A Lithium
Tadiran 5902 (part no. EFB-36)

Battery Life.....40 - 50 hrs actual use

Temperature

Range.....32°F to 230°F
(0°C to 110°C)

Accuracy.....±2% of display value

Repeatability.....±1% of display value

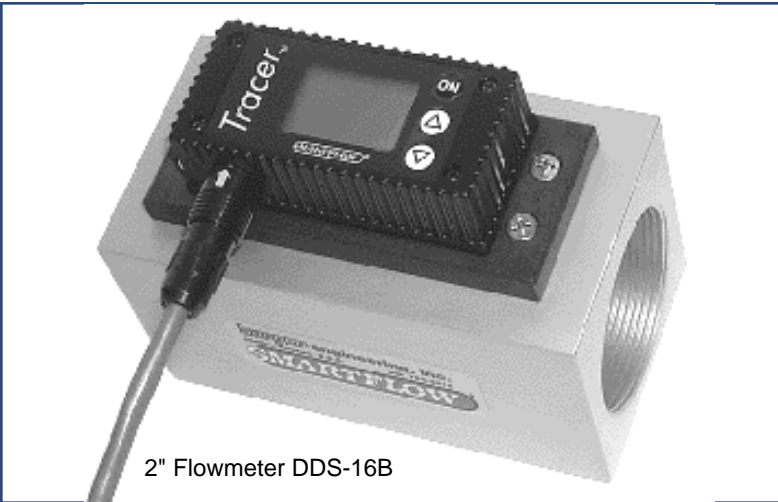
Environmental

Pressure

3/8" Body.....150 psi max.
(10.3 bar max.)

3/4" - 2" Body.....100 psi max.
(6.9 bar max.)

*Accuracy and Repeatability figures are based on the full scale of the range.



2" Flowmeter DDS-16B

General Description

Tracer® Electronic Switching Flowmeter measures liquid flow rate and temperature while providing a programmable switch for high or low flow or temperature.

8 to 28VDC power source operates the flowmeter to provide continuous monitoring of the process. Sealed push-buttons configure the flowmeter and switching operations through user-friendly menus. BTU's per minute calculation is available as standard.

The Tracer Electronic Switching Flowmeter is designed to be permanently mounted to closely monitor water flow and temperature conditions. The SPDT switch in the Tracer flowmeter can be wired directly to an alarm circuit in a process controller or other peripheral equipment. The NPT(F) threaded openings provide versatile, leak-free connections to match existing plumbing.

Tracer flowmeter is suitable for use in injection molding machine cooling water loops, lube oil systems, blending systems, filter condition indicators, and varied applications requiring flow measurement of clean, non-viscous, chemically compatible process liquids.

Annual calibration is recommended for best results. Not recommended for use with liquids containing metallic particles.

Model DDS Digital Display Switching

- Remotely Powered 8 to 28VDC
- Programmable SPDT Switch
 - Low or High Flow
 - Low or High Temperature
- LCD Display
 - Flow
 - Temperature
 - BTU's per minute

See page 21 for model numbers and dimensions

Specifications

Flow Accuracy±5%*

Flow Repeatability±3%*

Wetted Parts

3/8" Body.....Nickel-Plated Brass

3/4" - 2" Body.....Clear-Anodized Aluminum
or 303 Stainless Steel (-SS model suffix)

ImpellerNylon 6/12

Impeller Shaft.....18-8 Stainless Steel

Magnet.....Neodymium

Power8 to 28VDC

Switching.....SPDT, 1A,
30VAC, 42VDC

Temperature

Range32°F to 230°F
(0°C to 110°C)

Accuracy.....±2% of display value

Repeatability±1% of display value

Environmental

Pressure

3/8" Body.....150 psi max.
(10.3 bar max.)

3/4" - 2" Body.....100 psi max.
(6.9 bar max.)

*These figures based on the full scale of the range.

Features and Benefits

- **Programmable SPDT switch** tied to high or low flow, or high or low temperature conditions to help protect equipment and processes.
- **Remotely powered** for low maintenance operation.
- **Bi-directional flow reading** makes installation simple and convenient.
- **Metric or English units** for flow and temperature are user-selectable.
- **Corrosion-resistant wetted parts** assure long-lasting durability.
- **3/8"through 2" NPT(F) inlet/outlet** installs easily into existing plumbing.

Model Numbers and Dimensions

Display Tracer	Switching Tracer	Connection Size	Flow Range	Max Dimensions (mm/in)			
				L	H	W	C
DD-3B	DDS-3B	3/8" NPT(F)	0 - 8 gpm 0 - 30 lpm	87/3.42	58/2.27	42/1.67	21/0.83
DD-3B-B	DDS-3B-B	3/8" BSPP(F)					
DD-3E		3/8" quick connect					
DD-6B	DDS-6B	3/4" NPT(F)	2 - 20 gpm 8 - 76 lpm	121/4.75	94/3.70	57/2.25	29/1.13
DD-6B-B	DDS-6B-B	3/4" BSPP(F)					
DD-8B	DDS-8B	1" NPT(F)	3 - 30 gpm 11 - 114 lpm				
DD-8B-B	DDS-8B-B	1" BSPP(F)					
DD-12B	DDS-12B	1-1/2" NPT(F)	6.5 - 60 gpm 25 - 228 lpm	140/5.50	118/4.65	76/3.00	38/1.50
DD-12B-B	DDS-12B-B	1-1/2" BSPP(F)					
DD-16B	DDS-16B	2" NPT(F)	10 - 110 gpm 38 - 418 lpm				
DD-16B-B	DDS-16B-B	2" BSPP(F)					

Add "-SS" suffix to above model numbers for 303 Stainless Steel bodies with NPT threads only.

Stainless Steel Application Note:

Stainless Steel flowmeter bodies are strongly recommended when copper is present in water lines. This includes water treatments such as organic biocides containing copper. Aluminum is susceptible to galvanic action in the presence of copper. Contact your factory representative for more information.

