

Flow Indicating Switch



Armor-Flo™ meters provide even more effective process control input with switching capabilities. Simple electro-mechanical switches define your process limits.

Adjustable switches provide positive indication of flow/no flow conditions and may be positioned to actuate at specific flow rates. The design of the switch is to capture the indicator, preventing movement until the flow rate is once again within the acceptable range.

The switches are SPDT glass encapsulated reed type rated at 0.25 amperes at 120V ac (1.5 amperes at 24V dc). This switch is appropriate for use in Class 1, Division 2 areas.

Features

- Instantaneous flow rate measurement.
- Adjustable low and/or high flow limit switches.
- Use in horizontal or vertical piping systems.
- Individually calibrated for fluid and operating conditions.
- User selectable 10:1 turndown flow ranges.
- User selectable units of measure.
- No floats to get stuck, tubes to break or dynamic seals to leak.
- Low pressure loss.

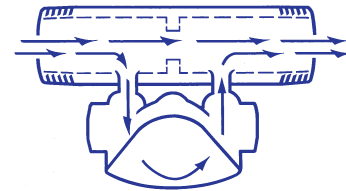
Principle of Operation

Armor-Flo™ meters are variable area flow-rate meters. The Armor-Flo™ body housing has a variable internal volume which enlarges from the inlet to the outlet.



The primary sensor is a tempered alloy vane with one end affixed to the apex of the meter housing. As the flow rate changes, the vane is flexed in direct proportion. A Teflon® encapsulated magnet links the vane position with the pointer in the indicator housing for easy viewing. Switch set points may be adjusted by repositioning them along the slotted rail within the indicator housing.

The ½", ¾" and 1" connections typically have female threaded ends. Sizes 1¼" through 6" utilize a shunt design. This integral by-pass housing enables larger connection sizes in the format of a spool with a constant 12" end to end dimension.



In addition, it permits a wide variety of connection types which include threaded, flanged, grooved ends and tri-clamp.

Applications

- Coolant monitoring
- Pump seals
- Chilled water
- Staging air compressors
- Lube oil systems

Specifications

Accuracy:	±2% full scale
Repeatability:	±1% full scale
Scales:	Direct reading
Resolution:	Maximum-30 division/Minimum-15 divisions
Rangeability:	10 to 1 turndown
Switch/Type:	Hermetically sealed reed switch
Contact rating:	0.25A @ 120 vac 1.5A @ 24V dc
Adjustment limits:	20-50% full scale-low limit 50-90% full scale-high limit 30% differential between low and high

Materials of Construction:

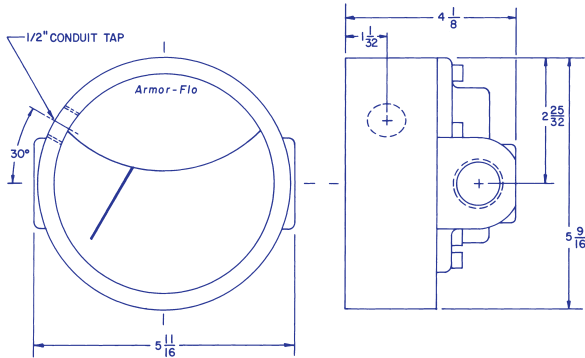
Housing:	Aluminum, brass, 70/30 copper/nickel, 316 stainless steel, Hastelloy® C-22
Shunt:	As housing or carbon steel
Window:	Tempered glass or polycarbonate
Vane:	Cobalt/chromium/nickel alloy or Hastelloy® C-22 with Teflon® encapsulated magnet
"O" rings:	Buna-n, ethylene propylene, Viton®, Kalrez® or Teflon®

Piping Connections:

- ½" to 1" NPT Female
- 1¼" to 4" NPT male
- 1½" to 3" Tri-clamp

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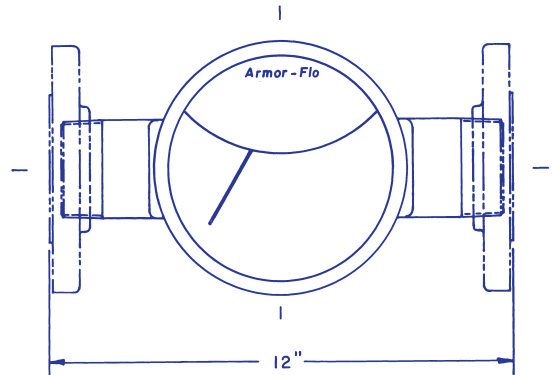
3500 Series 1/2", 3/4", & 1" connections



- 1 1/4" to 6" Grooved
- 1 1/4" to 6" Beveled
- 1/2" to 6" 150# /300# RF/FF ANSI
Flanges (carbon stl)
- 1/2" to 6" 150# RF ANSI
Flanges (stainless stl)
- 1/2" to 6" 150# RF ANSI
Flanges (aluminum)
- 1/2" to 6" 150# FF ANSI
Flanges (brass)
- 15 to 25 mm DIN 2999/BS21/ISO R7
Female threaded
- 15 to 150 mm DIN PN 10
Flanges (316 stainless stl
& carbon stl)

- Pressure Limits:**
- 1 Housing (aluminum)
 - 0, 1 or 5 Shunt-200 psig (13.8 bar)
 - 2 Housing (brass)
 - 0 Shunt-400 psig (27.6 bar)
 - 2 or 5 Shunt-200 psig (13.8 bar)
 - 6 Housing (316 stainless stl)

3500 Series 1 1/4" to 6" connections



- 0 Shunt-400 psig (27.6 bar)
- 5 or 6 Shunt-200 psig (13.8 bar)
- 7 or 8 Shunt-400 psig (27.6 bar)
- 8 Housing (high pressure 316 stainless stl)
 - 0 Shunt-1000 psig (69 bar)
- 9 Housing (Hastelloy® C-22)
 - 0 Shunt-400 psig (27.6 bar)

Temperature Limits:

- 23 to 85°C (-10 to 185°F)
with Teflon® o-ring at constant temperature conditions
- 23 to 121°C (-10 to 250°F)
with buna-n o-ring
- 23 to 204°C (-10 to 400°F)
with Viton®, Kalrez® or ethylene propylene o-ring

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Model Number System

The example **3561-12F5** describes a 3500 Armor-Flo™ meter with a stainless steel body/carbon steel shunt for left to right flow. Connections are 3" 150# raised carbon steel flanges.

<u>35</u> Series	<u>6</u> Housing Material	<u>1</u> Flow Direction	-	<u>12</u> Size	<u>F</u> Type	<u>5</u> Shunt Material
35-3500	1-Aluminum 2-Brass 6-Stainless Stl 8-Stainless Stl 1000 psig 9-Hastelloy® C-22	1-L to R 2-R to L 3-Up 4-Down		02-1/2" (15mm) 03-3/4" (20mm) 04-1" (25mm) 05-1 1/4" (32mm) 06-1 1/2" (40mm) 08-2" (50mm) 10-2 1/2" (65mm) 12-3" (80mm) 16-4" (100mm) 20-5" (125mm) 24-6" (150mm)	T-NPT End F-Flange 150#RF G-Grooved H-Flange 150#FF J-Flange 300#RF K-Flange 300#FF L-Flange DIN PN 10/15 M-Metric Thread End N-Metric Thread Back P-Flange 600#RF R-NPT Back S-Tri-clamp W-Socket End 1/2"-1" X-Beveled	0-None 1-Aluminum 2-Brass 5-Carbon Steel 6-Stainless Steel 7-Carbon Steel 400 psig 8-Stainless Steel 400 psig