

Delrin® Non-Metallic Probes



Turbo-Flo™ probes offer the precision of turbine technology with rugged construction. The practical design of the probe includes a bluff bar which protects the turbine from foreign materials in the stream as well as from over insertion. Installation is simple and does not require special fittings. The Turbo-Flo™ probe may be installed in standard pipe tees, through pipe saddles, welding spuds and 1½" full opening ball or gate valves.

Features

- Delrin® non-metallic construction is ideal for water applications. Resists corrosion and mineral salt accumulation.
- Brass or stainless steel connector fittings.
- Adjustable insertion length for 1½ to 10 inch pipe.
- Lower cost than stainless steel probes.
- Rugged construction for industrial environments.
- No external power required.
- Wide measuring range with 30:1 turndown.
- Low mass Delrin® turbines offer improved sensitivity and long life.
- Use standard pipe fittings for installation.

Principle of Operation

The turbine is positioned in the mid-section of the pipe with its axis of rotation parallel with the flow stream. Fluid velocity causes the turbine, which has a ring magnet inside of its hub, to rotate in proportion to flow rate. As the turbine rotates, the magnetic field passes through a coil in the probe body, generating a pulse output in proportion to the turbine rotation speed. Flow volume is then determined from fluid velocity measurement and pipe diameter information.

Applications

- Water and other aqueous solutions
- Chiller and cooling tower loops
- Water treatment systems
- Irrigation systems

Options

15 feet or more of cable for connection to remotely mounted display/transmitter.



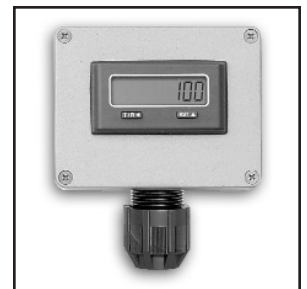
Probe mounted options include 4-20 mA signal output transmitters and displays.



The LCD rate/total display does not require external power. Turbine rotation recharges the lithium power cell in the display.

Transmitters and displays can also be wall mounted.

Shown:
 TF-15350-2 Rate/total display
 TF-15390 Rate/total display
 with 4-20 mA transmitter



TF-15385 4-20 mA transmitter
 (no display)

The wall mounted TF-15275 Flow Controller includes 4-20 mA signal output, two adjustable flow rate set points each with SPDT normally open 5A contacts. Set points may be adjusted in 10% of full scale increments. NEMA 4X enclosure. 120/240 vac, 50/60 Hz, or 24 vdc.



Delrin® Non-Metallic Probes

Sizing Data					
Pipe Size (inch)	ID (inch)	GPM Range		Ft/Gallon	Pulse/Gallon
		Threshold	Max		
1.5	1.610	4	120	9.454	21.46
2	2.067	6	180	5.736	13.08
2.5	2.469	8	240	4.020	9.648
3	3.068	12	360	2.593	7.131
3.5	3.548	16	500	1.947	5.160
4	4.026	20	600	1.512	3.840
5	5.047	32	1000	0.962	2.60
6	6.065	46	1400	0.666	1.88
8	7.981	80	2400	0.384	1.00
10	10.020	125	3800	0.244	0.625

Specifications	
Accuracy:	±1.0%
Repeatability:	±0.5%
Linearity:	±0.5%
Turndown:	30:1
Insertion Length:	02 = 2 inches 06 = 6 inches 12 = 12 inches
Threshold:	0.5 ft/s or 1.22 x ID ² = GPM
Liquid Velocity:	ft/s = $\frac{0.408 \times \text{GPM}}{\text{pipe ID}^2}$
Point Velocity =	2.625 pulses/ft/s
Pulse/gallon correction for uncharted pipe diameters =	
$\frac{\text{ID}^2 \text{ charted pipe}}{\text{ID}^2 \text{ uncharted pipe}}$	$\frac{\text{Pulse/gallon charted pipe}}{\text{Pulse/gallon uncharted pipe}}$
Materials of Construction:	
Probe:	Delrin®
Connector:	Brass, 303sst
Turbine:	Delrin®
O-rings:	Buna-n or Viton®
Temperature Limits:	225°F(107°C)
Pressure Limits:	145 psig(10bar) @ 75°F(24°C)

Turbo-Flo™ part number construction

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<u>25</u> Series	<u>3</u> Body Mat'l	<u>06</u> Size	<u>C</u> Connector	<u>3</u> Turbine	<u>2</u> Shaft	<u>7</u> O-ring	-	<u>1</u> Option	<u>5</u>	<u>3</u>	<u>2</u>	<u>5</u>
25-Non-Metallic	3-Delrin®	02-2" 06-6"	A-303ss 1¼" B-303ss Recessed 1½" C-Brass Recessed 1½"	3-Delrin®	2-316ss	7-Buna 8-Viton®						
		12-12" (See Note 1)	B-303ss Recessed 1½" C-Brass Recessed 1½"	3-Delrin®	2-316ss	7-Buna 8-Viton®						

When probe mountable electronics are to be factory installed on the probe, a dash is added to the probe model number followed by five numeric digits for the accessory to be added.

The example depicts a 6" Delrin® probe with 1½" brass recessed connector, Delrin® turbine, 316ss shaft, buna o-rings including a probe mounted TF-15325 4-20 mA transmitter.

Electronics available for probe mounting are:

TF-15325 4-20 mA Transmitter, Probe Mount
 TF-15375 4-20 mA Transmitter with Totalizer/Ratometer, Probe Mount
 TF-15350 Totalizer/Ratometer, Probe Mount
 TF-15504 Frequency Output, Probe Mount

Notes:
1. 12" probes for installation through ball valve only.