

## 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.
- Steel 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 Series of Flow Controllers includes 4-20 mA signal output and two optional adjustable set points each with Form C 5A contacts. NEMA 4X enclosure. 85-265 VAC, 47-63 Hz.



## 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  
 $1.22 \times ID^2 = \text{GPM}$

**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 =**  
 $\frac{ID^2 \text{ charted pipe}}{ID^2 \text{ uncharted pipe}} \times \text{Pulse/gallon charted pipe}$

#### Materials of Construction:

**Probe:** Delrin®  
**Connector:** Steel, 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

ERDCO reserves the right to alter design and/or specifications without notice. Viton® and Delrin® are registered trademarks of E.I. DuPont de Nemours and Co.

<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 1½" Recessed D-Steel 1¼" Zinc Plated E-Steel 1½" Zinc Plated Recessed	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/Ratemeter, Probe Mount  
**TF-15350** Totalizer/Ratemeter, Probe Mount  
**TF-15504** Frequency Output, Probe Mount