

## PVC 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

- PVC non-metallic construction is ideal for installation in PVC or other non-metallic piping.
- PVC connector fittings.
- Excellent chemical resistance.
- Adjustable insertion length for 1½ to 10 inch pipe.
- Rugged construction for industrial environments.
- No external power required.
- Wide measuring range with 30:1 turndown.
- Low mass 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
- Ideal for PVC piping systems
- Water treatment systems
- Groundwater monitoring
- 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.

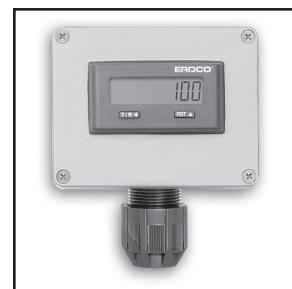
The LCD rate/total display does not require external power. Turbine rotation recharges the lithium power cell in the display.



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.



## PVC Non-Metallic Probes

### Sizing Data

Pipe Size		GPM Range		Ft/Gallon	Pulse/Gallon
(inch)	ID (inch)	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  
 $1.22 \times ID^2 = GPM$

**Liquid Velocity:** ft/s =  $\frac{0.408 \times GPM}{pipe\ ID^2}$

**Point Velocity =** 2.625 pulses/ft/s

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

#### Materials of Construction:

**Probe:** PVC  
**Connector:** PVC  
**Turbine:** Delrin® or Polypropylene  
**O-rings:** Buna-n or Viton®  
**Temperature Limits:** 140°F(60°C)  
**Pressure Limits:** 145 psig(10bar)@ 75°F(24°C)

### Turbo-Flo™ part number construction

<u>25</u> Series	<u>4</u> Body Mat'l	<u>06</u> Size	<u>G</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	4-PVC	02-2" 06-6"	G-PVC 1¼"	3-Delrin® 5-Polypro	2-316ss 4-PVC	7-Buna 8-Viton®						
		12-12"	J-PVC (See Note 1) Recessed 1½"	3-Delrin® 5-Polypro	2-316ss 4-PVC	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" PVC probe with 1¼" PVC 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

#### Notes:

1. 12" probes for installation through ball valve only – 10" pipe maximum.

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Series	Body Mat'l	Size	Connector	Turbine	Shaft	O-ring		Option				
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