

# Truflo® — TIP Series Insertion Paddle Wheel Flow Meter Sensor

**ICON**™ Corrosion-Free  
PROCESS CONTROLS Instrumentation Equipment

Flow | Total | Pulse | RS485



# Industry's **Longest Lasting** Paddle Wheel Flow Meter

# Truflo® — TIP Series

## Insertion Paddle Wheel Flow Meter Sensor

- ✓ Lifetime Warranty
- ✓ ½" – 24" Line Sizes
- ✓ Flow Rate | Total
- ✓ Pulse | RS485 | Voltage Outputs

- ✓ M12 Quick Connection
- ✓ Industry's Highest Accuracy: ±0.5% F.S
- ✓ Retrofits into Signet® Type Fittings
- ✓ Double O-Ring Seal



### Industry's Most Accurate & Reliable Paddle Wheel Flow Meter Sensors

The TIP digital flow meter sensors are easy to install with exceptional guaranteed long-life performance and are engineered to provide long-term accurate flow measurement in tough industrial applications.

The paddle wheel assembly consists of an engineered high performance Tefzel® paddle and micro-polished zirconium ceramic rotor pin and bushings, providing excellent chemical and wear resistant properties.

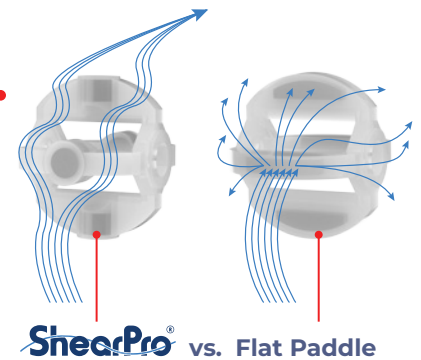
The TIP Series paddle wheel flow meter sensors are highly repeatable, exceptionally accurate, extremely rugged, offer outstanding value and require absolutely no maintenance.

The TIP flow meter sensors can be installed using Truflo's® extensive line of ANSI and DIN fittings. Truflo® offers SDR Pipe Saddles from DN15 - DN600 in GFPP material.

### Revolutionary New ShearPro® Design

- ✓ Contoured Flow Profile
- ✓ Reduced Turbulence = Increased Longevity
- ✓ 78% Less Drag than Old Flat Paddle Design\*

\*Ref: NASA "Shape Effects on Drag"



### Tefzel® Paddle Wheel

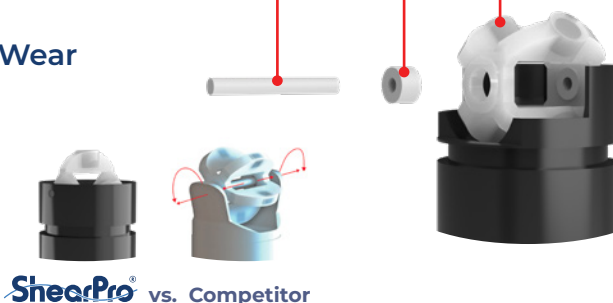
- ✓ Superior Chemical And Wear Resistance vs PVDF

### Zirconium Ceramic Rotor | Bushings

- ✓ Up to 15x the Wear Resistance
- ✓ Integral Rotor Bushings Reduce Wear and Fatigue Stress

### 360° Shielded Rotor Design

- ✓ Eliminates Finger Spread
- ✓ No Lost Paddles



On Paddle Wheel Assembly

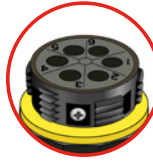
# Truflo® — TIP Series

## Insertion Paddle Wheel Flow Meter Sensor

### Terminal Connections



**Cable Grip Wire Connector Combo**  
(no Internal wiring required)



### Cable Grip Connection

Terminal	Description
1	+ 10-30VDC
2	OUT 2 (NPN)
3	- VDC
4	OUT 1 (NPN)
5	RS485 B
6	RS485 A



### M12 Connection (no Internal wiring required)

Terminal	Description	Color
1	+ 10-30 VDC	Brown
2	Totalizer Pulse Output NPN	White
3	- VDC	Blue
4	Flow Rate Pulse Output NPN	Black
5	RS485 A	Yellow
6	RS485 B	Grey

### Fittings and K-Factor

#### TEE FITTINGS



Tee Fitting		K-Factor		Sensor Length
IN	DN	LPM	GPM	
½" (V1)	15	156.1	593.0	S
½" (V2)	15	267.6	1013.0	S
¾"	20	160.0	604.0	S
1"	25	108.0	408.0	S
1½"	40	37.0	140.0	S
2"	50	21.6	81.7	L
2½"	65	14.4	54.4	L
3"	80	9.3	35.0	L
4"	100	5.2	19.8	L

#### CLAMP-ON SADDLES



Clamp Saddles		K-Factor		Sensor Length
IN	DN	LPM	GPM	
2"	50	21.6	81.7	S
3"	80	9.3	35.0	S
4"	100	5.2	19.8	S
6"	150	2.4	9.2	L
8"	200	1.4	5.2	L

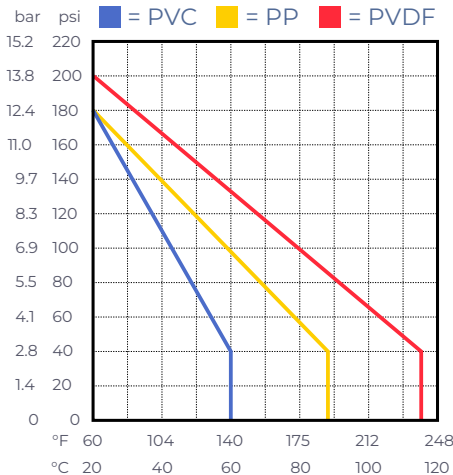
#### CPVC SOCKET WELD-ON ADAPTERS



Weld On Adapter		K-Factor		Sensor Length
IN	DN	LPM	GPM	
2"	50	14.4	54.4	S
2½"	65	9.3	35.5	S
3"	80	9.3	35.0	S
4"	100	5.2	19.8	S
6"	150	2.4	9.2	L
8"	200	1.4	5.2	L
10"	250	0.91	3.4	L
12"	300	0.65	2.5	L
14"	400	0.5	1.8	L
16"	500	0.4	1.4	L
18"	600	0.3	1.1	L
20"	800	0.23	0.9	L
24"	1000	0.16	0.6	L

### Pressure vs. Temperature

**Note:** During system design the specifications of all components must be considered. | Non-Shock



### Min/Max Flow Rates

Pipe Size (O.D.)	LPM   GPM	
	0.3m/s min.	10m/s max
½"   DN15	3.5   1.0	120.0   32.0
¾"   DN20	5.0   1.5	170.0   45.0
1"   DN25	9.0   2.5	300.0   79.0
1 ½"   DN40	25.0   6.5	850.0   225.0
2"   DN50	40.0   10.5	1350.0   357.0
2 ½"   DN60	60.0   16.0	1850.0   357.0
3"   DN80	90.0   24.0	2800.0   739.0
4"   DN100	125.0   33.0	4350.0   1149.0
6"   DN150	230.0   60.0	7590.0   1997.0
8"   DN200	315.0   82.0	10395.0   2735.0



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## Insertion Paddle Wheel Flow Meter Sensor

### Technical Specifications

General		
Operating Range	0.3 to 33 ft/s	0.1 to 10 m/s
Pipe Size Range	½ to 24"	DN15 to DN600
Linearity	±0.5% of F.S @ 25°C   77°F	
Repeatability	±0.5% of F.S @ 25°C   77°F	
Wetted Materials		
Sensor Body	PVC (Dark)   PP (Pigmented)   PVDF (Natural)   316SS	
O-Rings	FKM   EPDM*   FFKM*	
Rotor Pin   Bushings	Zirconium Ceramic   ZrO <sub>2</sub>	
Paddle   Rotor	ETFE Tefzel®	
Electrical		
Frequency	49 Hz per m/s nominal	15 Hz per ft/s nominal
Supply Voltage	10-30 VDC ±10% regulated	
Supply Current	<1.5 mA @ 3.3 to 6 VDC	<20 mA @ 6 to 24 VDC
Max. Temperature/Pressure Rating - Standard and Integral Sensor   Non-Shock		
PVC	180 psi @ 68°F   40 psi @ 140°F	12.5 bar @ 20°C   2.7 bar @ 60°F
PP	180 psi @ 68°F   40 psi @ 190°F	12.5 bar @ 20°C   2.7 bar @ 88°F
PVDF	200 psi @ 68°F   40 psi @ 240°F	14 bar @ 20°C   2.7 bar @ 115°F
316SS	Consult Factory	
Operating Temperature		
PVC	32°F to 140°F	0°C to 60°C
PP	-4°F to 190°F	-20°C to 88°C
PVDF	-40°F to 240°F	-40°C to 115°C
316SS	-4°F to 190°F	-20°C to 88°C
Standards and Approvals		
CE   FCC   RoHS Compliant		

See Temperature and Pressure Graphs for more information

\* Optional

### Model Selection

PVC   PP   PVDF		
Size	Part Number	Material
½" - 4"	TIP-P-S	PVC
6" - 24"	TIP-P-L	PVC
1" - 4"	TIP-PP-S	PP
6" - 24"	TIP-PP-L	PP
1" - 4"	TIP-PF-S	PVDF
6" - 24"	TIP-PF-L	PVDF

Add Suffix -

'E' - EPDM Seals    'R' - RS485 Communication Output - \$100

316 SS		
Size	Part Number	Material
½" - 4"	TI3P-SS-S	316 SS
6" - 24"	TI3P-SS-L	316 SS

Add Suffix -

'E' - EPDM Seals    'R' - RS485 Communication Output - \$100

### Installation Fittings



#### SA Clamp-On Saddle Fittings

- PVC Material
- Viton® O-Rings
- Available in Metric DIN
- Will Accept Signet® Type Flow Meter

PVC	
Size	Part Number
2"	SA020
3"	SA030
4"	SA040
6"	SA060
8"	SA080



#### PT | PPT | PFT Installation Fittings

- PVC | PP | PVDF
- Socket End Connections
- Will Accept Signet® Type Flow Meter
- True-Union Design

	PVDF	PVC	PP
Size	Part Number	Part Number	Part Number
½"	PFT005	PT005	PPT005
¾"	PFT007	PT007	PPT007
1"	PFT010	PT010	PPT010
1½"	PFT015	PT015	PPT015
2"	PFT020	PT020	PPT020

Add Suffix -  
 'E' - EPDM Seals  
 'T' - NPT End Connectors  
 'B' - Butt Fused End Connections for PP or PVDF



#### SAR Clamp-On Saddle Fittings (SDR Pipe)

- PVC Material
- Viton® O-Rings
- Available in Metric DIN
- Will Accept Signet® Type Flow Meter

PVC	
Size	Part Number
2"	SAR020
3"	SAR030
4"	SAR040
6"	SAR060
8"	SAR080
10"	SAR100
12"	SAR120
14"	SAR140
16"	SAR160



#### CT CPVC Tee Installation Fitting

- 1"-4" Pipe Sizes
- Easy to Install
- Will Accept Signet® Flow Meter

CPVC	
Size	Part Number
1"	CT010
1 ½"	CT015
2"	CT020
3"	CT030
4"	CT040

Add Suffix -  
 'E' - EPDM Seals  
 'T' - NPT End Connectors  
 'B' - Butt Fused End Connections for PP or PVDF



#### SWOL Weld-On Adapter

- 2"-12" Pipe Sizes
- 316SS Weld-o-let with PVDF insert
- Easy to Install
- Will Accept Signet® Flow Meter

Weld-On Adapter - 316 SS	
Size	Part Number
3"	SWOL3
4"	SWOL4
6"	SWOL6
8"	SWOL8
10"	SWOL10
12"	SWOL12



Glue-On Adapter - CPVC	
Size	Part Number
2"- 4"	PG4
6"- 24"	PG24

#### PG Glue-On Adapter

- 2"-24" Pipe Sizes
- Easy to Install
- Will Accept Signet® Flow Meter