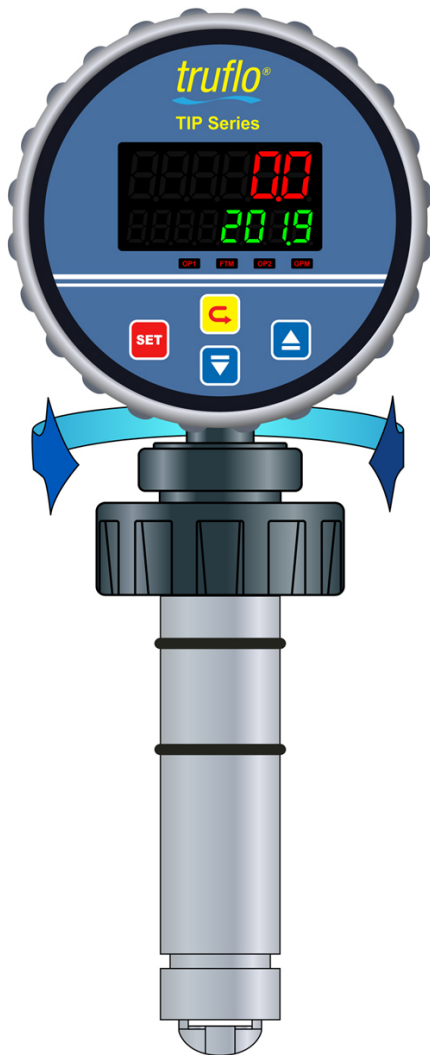


Quick Start

TIP | TIM | Series Flow Meters



CORROSION

Safety Information

Gauges are not to be subject to water hammer or pressure spikes!

⚠️ WARNING!

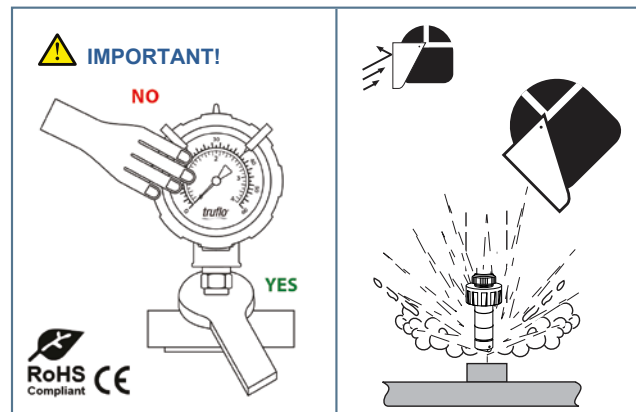
Before installation be certain the appropriate gauge has been selected considering operating pressure / full scale pressure / proof pressure, wetted material requirements, media compatibility, operating temperature, vibration, pulsation, desired accuracy and any other gauge component related to the service application (including the potential need for protective attachments and/or special installation requirements). Failure to do so could result in equipment damage, gauge failure and/or personal injury. Only qualified personnel should be permitted to install and maintain pressure gauges

Installation

⚠️ IMPORTANT!

When installing the gauge connection into the application, use the wrench area to thread in and tighten the gauge. Do not use the gauge case to install the gauge.

This could result in loss of accuracy, excessive friction, or mechanical damage to the pressure element or gauge case. The gauge connection must be compatible with the mating connection and must be assembled appropriately. If the mating parts do not seal completely, a sealing material may be considered.



Pressurize System Warning

Sensor may be under pressure, take caution to vent system prior to installation or removal. Failure to do so may result in equipment damage and/or serious injury.

Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Truflo products.



Read the User's Manual Carefully. Manufacturer Reserves the Right to Implement Changes Without Prior Notice.

Safety Information

1. De-pressurize and Vent System Prior to Installation or Removal.
2. Confirm Chemical Compatibility Before Use.
3. DO NOT Exceed Maximum Temperature or Pressure Specifications.
4. ALWAYS Wear Safety Goggles or Face-Shield During Installation and/or Service.
5. DO NOT Alter Product Construction.



Warning | Caution | Danger

Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death



Hand Tighten Only

Overtightening may permanently damage product threads and lead to failure of the retaining nut.



Note | Technical Notes

Highlights additional information or detailed procedure.

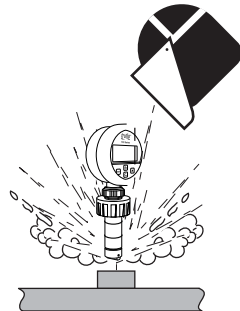


Do Not Use Tools

Use of tool(s) may damage product beyond repair and potentially void product warranty.



WARNING!



Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Truflo products.



Pressurized System Warning

Sensor may be under pressure, take caution to vent system prior to installation or removal. Failure to do so may result in equipment damage and/or serious injury.

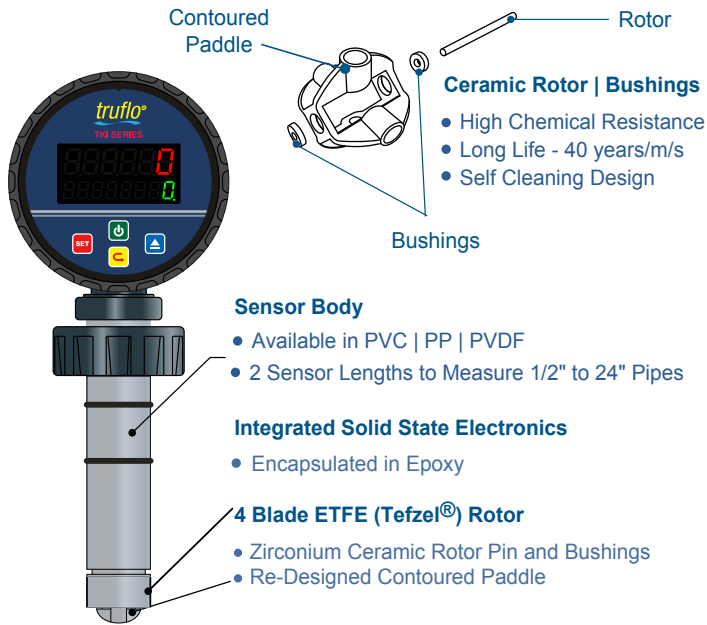
General Information

Specification	Description
Operating Voltage	10 - 30VDC
Current Consumption	60mA max.
Control Output	NPN 150mA max.
Transmitter	4-20mA
Communication	RS485*
Flow Rate GPM LPM	0.0 - 999.9
Fluid	H ₂ O Liquid Chemicals
Accuracy	± 0.5% of F.S. @ 25°C
Response Frequency	5K Hz
Max Flow Rate	10m/s 33ft/s
Min Flow Rate	0.1m/s 0.3ft/s
Materials of Construction	Paddle Tefzel® Rotor Busings Zirconium Ceramic Sensor Body PVC PP PVDF
O-Ring Material	Viton (std) EPDM*
Operating Temperature	PVC < 60°C PP < 80°C PF < 100°C
Protection Class	IP-65 General Purpose
Approval	CE RoHS

*Optional

Long Service Life

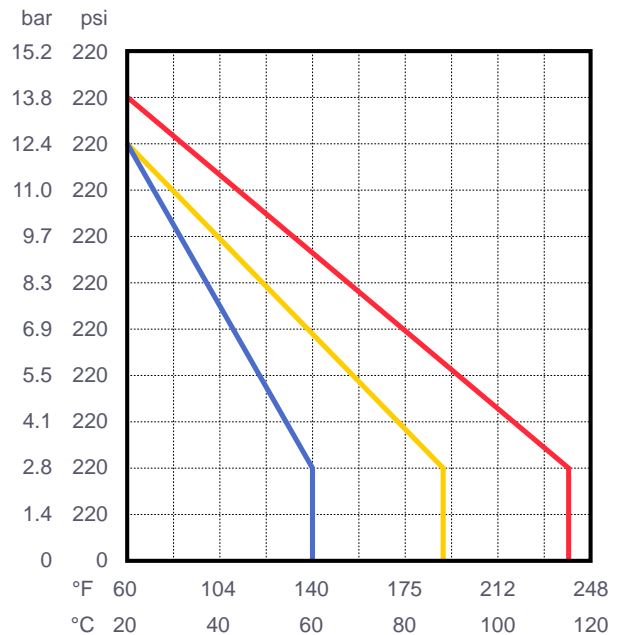
The TI Series is equipped with a Zirconium Ceramic Rotor Pin and 2 Bushings. The TI Series also incorporates a contoured, 'Low Drag' Paddle Wheel leading to reduced drag, longer wear and a higher accuracy.



Pressure vs. Temperature

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

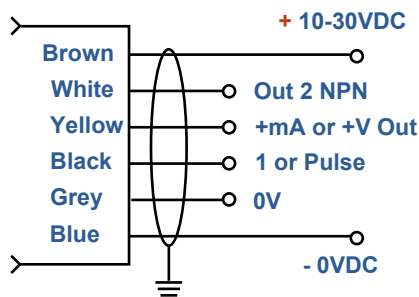
■ = PVC ■ = PP ■ = PVDF



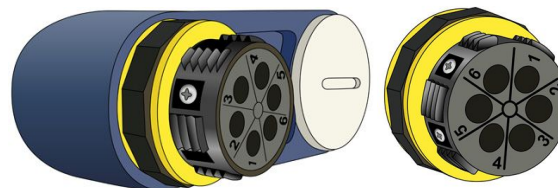
Dimensions | Wiring

! DC Power Only

TIM - H SERIES

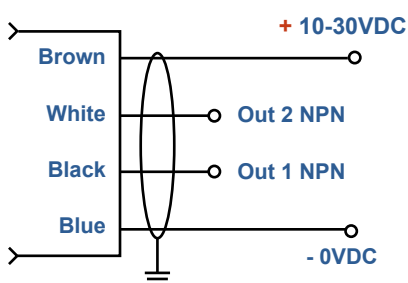


TIM- V SERIES

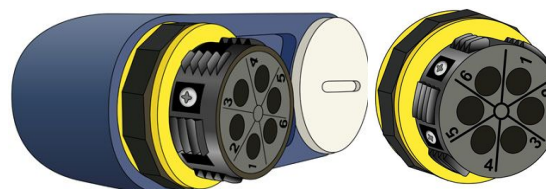


PIN ASSIGNMENT	
PIN #	WIRING
PIN 1	+10-30VDC
PIN 2	OUT 2 (NPN)
PIN 3	-VDC
PIN 4	OUT 1 (NPN)
PIN 5	4-20mA -
PIN 6	4-20mA+

TIP - H SERIES



TIM- V SERIES



PIN ASSIGNMENT	
PIN #	WIRING
PIN 1	+10-30VDC
PIN 2	OUT 2 (NPN)
PIN 3	-VDC
PIN 4	OUT 1 (NPN)
PIN 5	
PIN 6	

Press + To Reset Totalizer

Press to Increase Value

Press to Decrease Value

Press to Save Value

Press to Change Digit

Programming

DC Power Only

STEPS	OPERATION
Step-1 Home Screen Press & Hold + 3 Secs	 Home Screen
Step-2 Lock Out Feature Press	 Factory Default: Lock = 10 **NOTE: If Lock # is Changed from the # 10 the Meter will be in Lockout Mode.
Step-3 Units of Flow Press	 Units of Flow Ut.0 = LPM Ut.1 = GPM Default Ut.2 = KL
Step-4 K Factor Press	 Enter K Factor Value Refer to Page 6 for K-Factor Values
Step-5 Transmitter Range Press	 Programming 4-20mA Range for TIM Only 4 mA = 0 Default 20 mA = 100 Default** **This can be Changed to Conform to Customers Application

Programming NPN Pulse Relay Output

STEPS	DISPLAY	OPERATION
Step-1 Home Screen Press & Hold		Home Screen
Step-2 Programming Flow Rate Pulse Output Press		1000 Default One Pulse Per Gallon Default CV Program Value of (Flow Rate) Pulse (NPN) Output Preset Value of Flow Rate Change to a Value that meets your Flow Rate Pulse Output SV CV > SV → Flow Rate Pulse Output ON CV < SV → Flow Rate Pulse Output OFF
Step-3 Programming Flow Total Pulse Output Press		2000 Factory Default One Pulse Per Gallon Default 2000 Default this can be Changed to Desired Value Refer to Next Page Programming OP2 Output for Options for Totalizer Flow Totalizer Pulse (Step #2-Next) CV Program Value of Flow Totalizer Pulse (NPN) Output SV : Preset value of Flow Total SV CV > SV → Flow Rate output ON

Programming NPN Pulse Relay Output

STEPS	DISPLAY	OPERATION
Step-1 Home Screen Press & Hold 3 Secs		Home Screen
Step-2 Programming OP2 Output Pulse Control (Frequency) Press		Program (NPN) Pulse Output (OP2) Totalizer Range E. F. n. r. c. Con = n : Manual Reset; Con = c : time (1=10 Secs) Auto Reset Using Timer time (Secs) Auto Reset Using Timer i.e 5 = Pulse On (5 Secs) Con = r : Auto Reset when Total Volume Value = Selct Value (SV) Con = E : Pulse Output of Unit volume (Default) = One Gal/Pulse Con = F → Paddle Pulse → Frequency Max 5 KHZ (For TVF) Con = E (Default)
Step-3 Programming Pulse Relay Press		Refer to Relay Mode Below
Step-4 Hysteresis Press Press To Change Value		Enter Hysteresis Value **Hysteresis is a buffer around the Programmed Set Point
Step-5 Time Delay Press		Program Time Delay for NPN Pulse Delay Time (Secs)

OP1 } Pulse Frequency Output
 OP2 } Pulse Relay Output

Programming Relay Option Outputs

ALT NO.	DESCRIPTION
ALT = 0	CV > SV → ON: CV < SV - HyS → OFF *Normally Closed Relay*
ALT = 1	CV < SV → ON: CV > SV + HyS → OFF *Normally Open Relay*
ALT = 2	SV + HyS > CV > SV - HyS → ON: CV > SV + HyS or CV < SV - HyS → OFF
ALT = 3	SV + HyS > CV > SV - HyS → OFF: CV > SV + HyS or CV < SV - HyS → ON

Hys = Hysteresis ACTS Like a Buffer ± Around Pulse Output (Measured in GPM)

CV: Current Value = Flow Rate | SV = Selected or Programmed Value



Reset Flow Totalizer



for 3 seconds

Min | Max Flow Rates

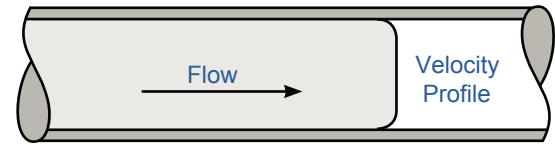
PIPE SIZE	GPM	LPM
	0.3m/s min.	10m/s max.
1/2" DN15	3.5 1.0	120 32
3/4" DN20	5 1.5	170 45
1" DN25	9 2.5	300 79
1 1/2" DN40	25 6.5	850 225
2" DN50	40 10.5	1350 357
2 1/2"	60 16	1850 357
3" DN80	90 24	2800 739
4" DN100	125 33	4350 1149
6" DN150	230 60	7590 1997
8" DN200	315 82	10395 2735

Fittings K- Factors

TEE FITTINGS						CLAMP-ON SADDLES					CPVC SOCKET WELD-ON ADAPTERS						
Tee Fitting Size		K-Factor		Sensor Length		Clamp Saddles Size		K-Factor		Sensor Length		Weld On Adapter Size		K-Factor		Sensor Length	
IN	DN	LPM	GPM			IN	DN	LPM	GPM			IN	DN	LPM	GPM		
1/2"	50	268.0	1013.0	S		2"	50	21.6	81.7	S		2"	50	21.6	81.7	S	
3/4"	50	160.0	604.0	S		3"	80	9.3	35.0	S		2-1/2"	65	14.4	54.4	S	
1"	50	108.0	408.0	S		4"	100	5.2	19.8	S		3"	80	9.3	35.0	S	
1-1/2"	50	37.0	140.0	S		6"	150	2.4	9.2	L		4"	100	5.2	19.8	S	
2"	50	21.6	81.7	L		8"	200	1.4	5.2	L		6"	150	2.4	9.2	L	
2-1/2"	65	14.4	54.4	L								8"	200	1.4	5.2	L	
3"	80	9.3	35.0	L								10"	250	0.91	3.4	L	
4"	100	5.2	19.8	L								12"	300	0.65	2.5	L	
												14"	50	0.5	1.8	L	
												16"	65	0.4	1.4	L	
												18"	80	0.3	1.1	L	
												20"	100	0.23	0.9	L	
												24"	150	0.16	0.6	L	

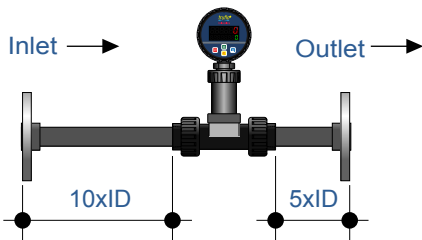
Correction Sensor Installation Position

TI Series Flow Meters measure liquid media only. There should be no air bubbles and the pipe must always remain full. To ensure accurate flow measurement the placement of the flow meters needs to be adhered. This requires a straight run pipe with a minimum number of pipe diameters distance upstream and downstream of the flow sensor.

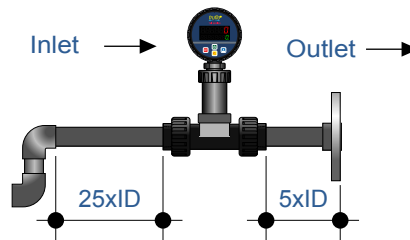


Developed Turbulent Flow

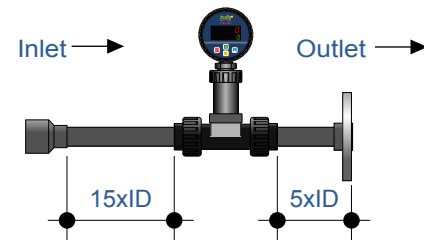
Flange



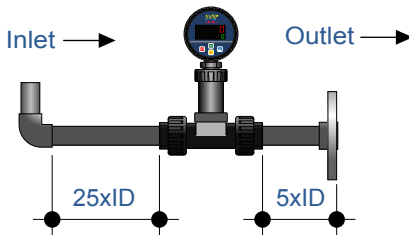
2x 90 Elbow



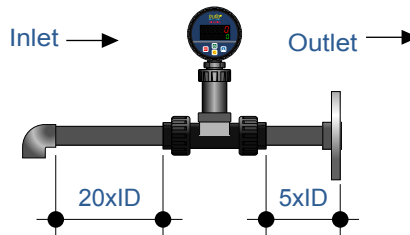
Reducer



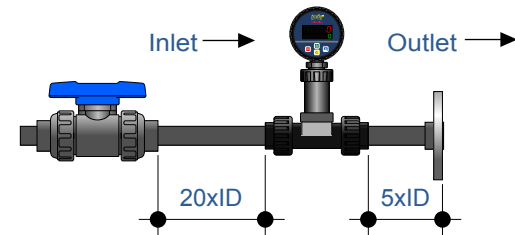
90 Elbow Downward Flow



90 Elbow Downward Flow Upward

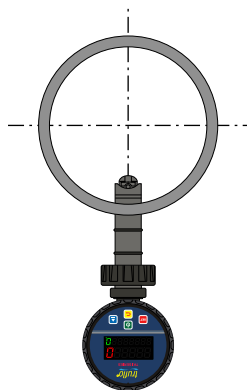


Ball Valve



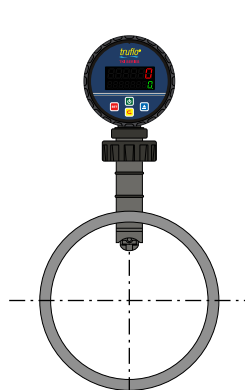
Installation Positions

Figure 1



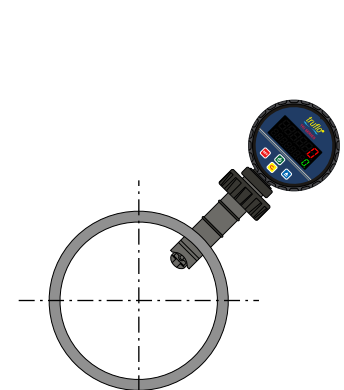
Good if NO Sediment Present

Figure 2



Good if NO Air Bubbles Present

Figure 3



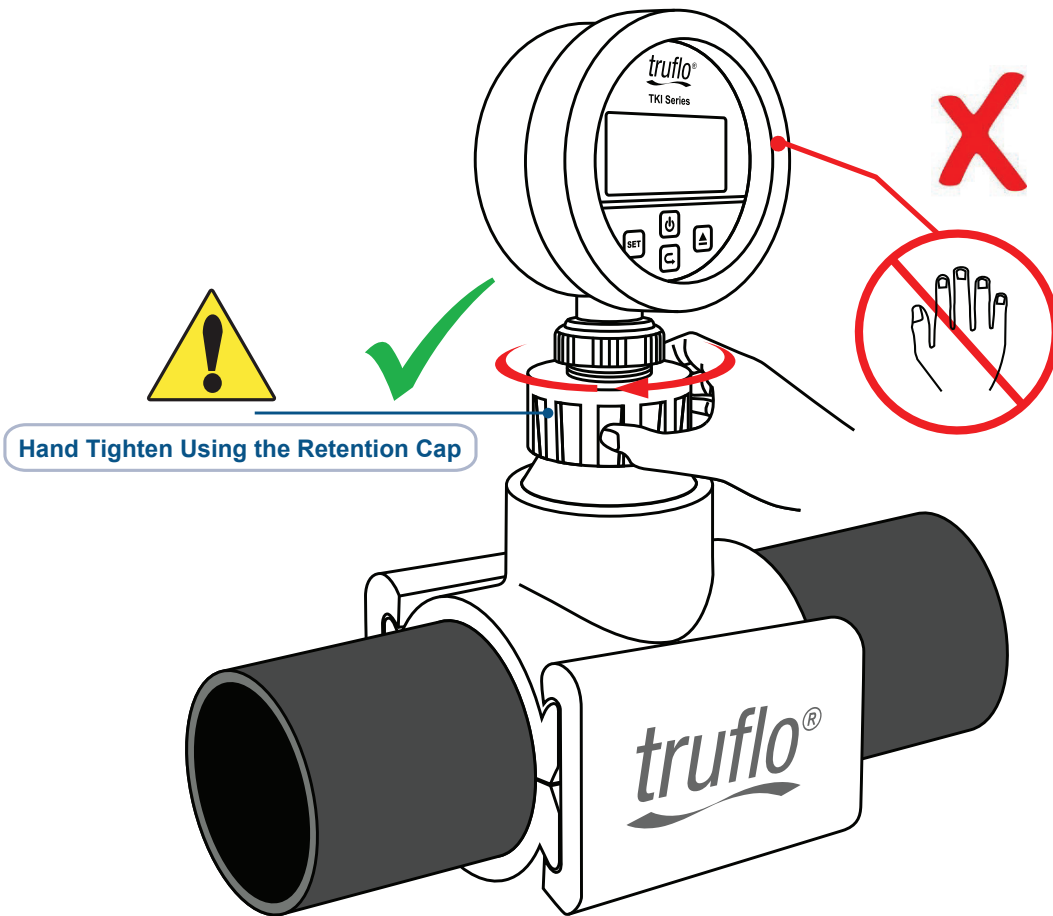
Preferred Installation if Sediment* or Air Bubbles may be Present

* Maximum % Solids: 10% with particle size not exceeding 0.5 mm cross section or length.

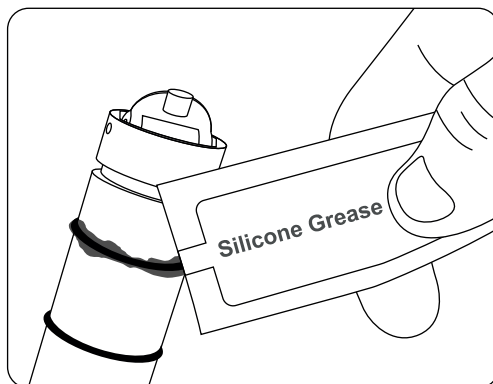
CORROSION



Do Not Use Display to Tighten



Hand Tighten Using the Retention Cap



Ensure Silicone Grease* is Applied to O-Rings Prior to Insertion into Fitting

*Ensure Silicone Grease is Suitable for Application

Installation



Very Important

- ❑ Lubricate O-rings with a Viscous Lubricant Compatible with the Materials of Construction.
- ❑ Using an Alternating | Twisting Motion Carefully Lower the Sensor into the Fitting. | Do Not Force | Fig 5
- ❑ Ensure Tab | Notch are Parallel to Flow Direction | Fig-2



Hand Tighten the Sensor Cap. **DO NOT** use any tools on the sensor cap or the cap threads or fitting threads may be damaged. | Fig-5

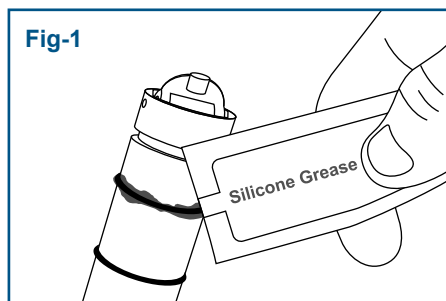


Fig-1

Ensure the Silicon Grease Provided is Applied Prior to Insertion

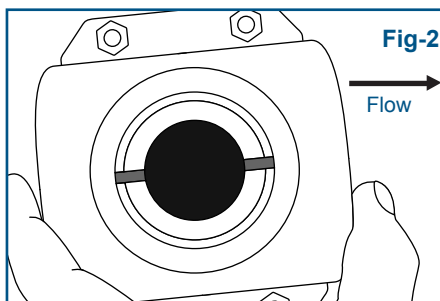


Fig-2

Ensure Location Tabs Are Parallel to Direction of Flow

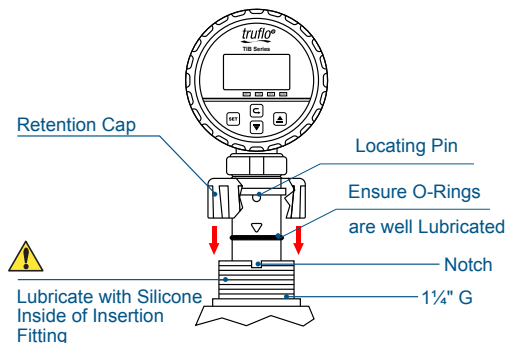


Fig-3

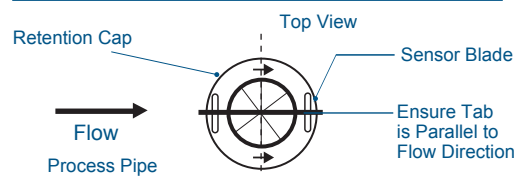


Fig-4

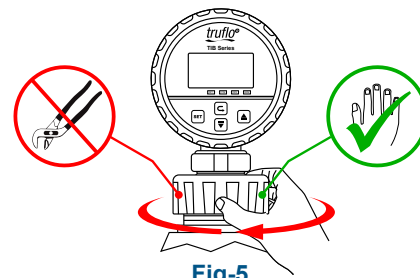
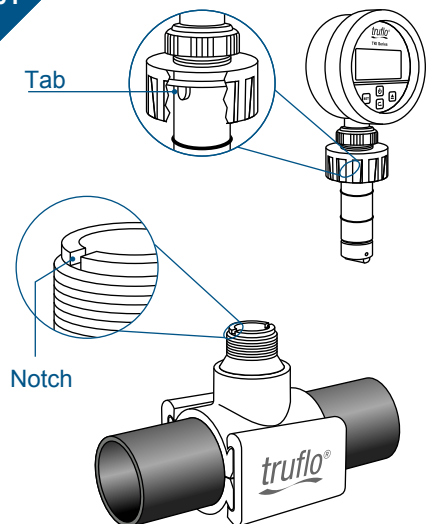


Fig-5

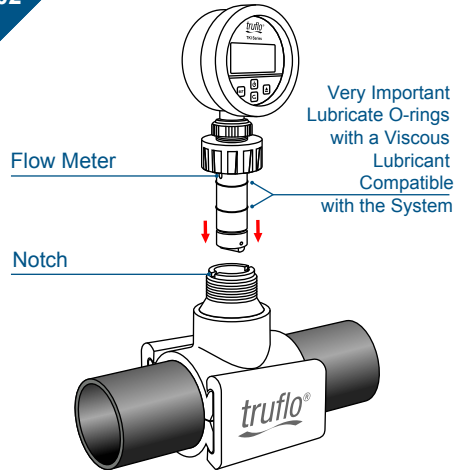
Correction Sensor Position

01



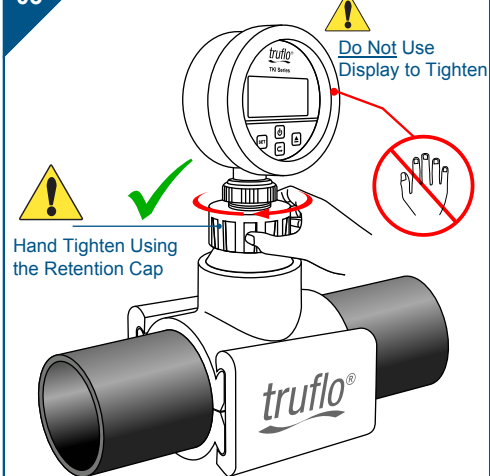
Flow Meter Positioning Tab and Clamp Saddle Notch

02



Engage one Thread of the Sensor Cap then turn the Sensor until the Alignment Tab is Seated in the Fitting Notch, Ensure Tab is Parallel to Flow Direction.

03

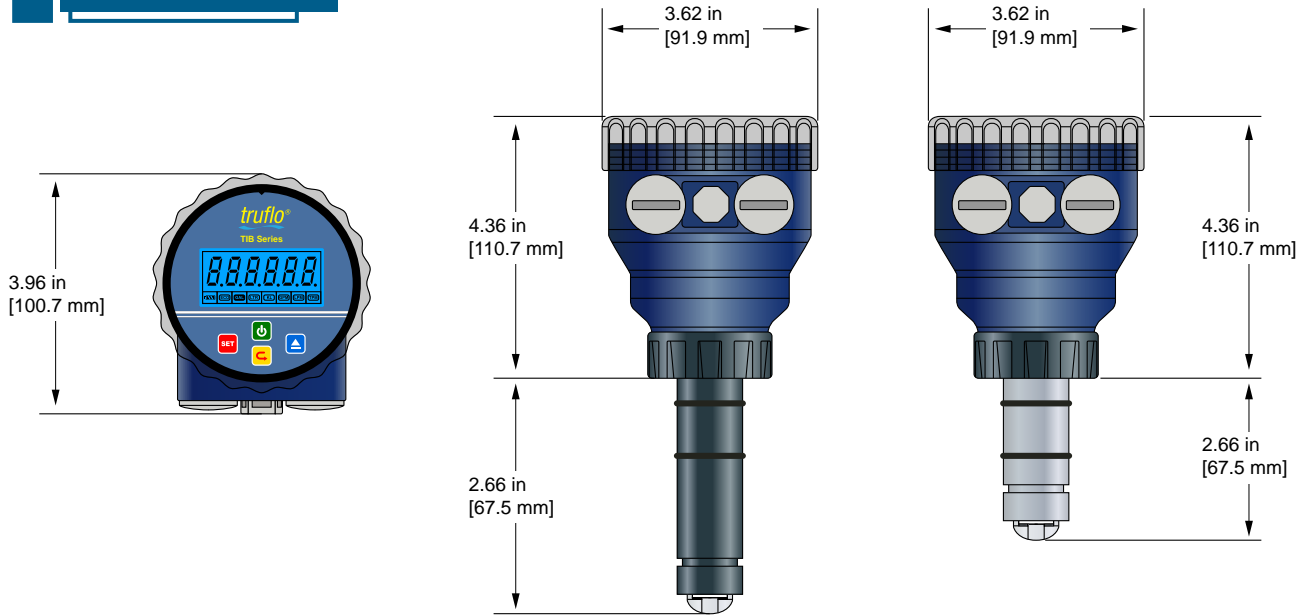


Hand Tighten Using the Retention Cap

- Hand Tighten the Screw Cap.
- DO NOT use any Tools, Threads may be Damaged.
- Ensure Meter is Firmly in Place

Dimensions

V Series



H Series



Rotor Pin | Paddle Replacement

<p>01</p> <p>Line up Pin with Rotor Hole</p>	<p>02</p> <p>GENTLY tap pin with Mallet or Hammer</p>	<p>03</p> <p>Tap until Rotor is 50% out</p>
<p>04</p> <p>Pull out Rotor Pin</p>	<p>05</p> <p>Paddle</p> <p>Pull Out Rotor Pin entire way until Paddle Wheel is loose</p>	<p>06</p> <p>Insert New Paddle in Flow Meter</p>
<p>07</p> <p>Push in Rotor Pin approx. 50%</p>	<p>08</p> <p>GENTLY tap Rotor Pin with Mallet or Hammer</p> <p>Ensure Holes are Aligned</p>	<p>09</p> <p>Congratulations! Replacement Procedure Complete!</p>

Warranty, Returns and Limitations

Warranty

Icon Process Controls Ltd warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service in accordance with instructions furnished by **Icon Process Controls Ltd** for a period of one year from the date of sale of such products. **Icon Process Controls Ltd** obligation under this warranty is solely and exclusively limited to the repair or replacement, at **Icon Process Controls Ltd** option, of the products or components, which **Icon Process Controls Ltd** examination determines to its satisfaction to be defective in material or workmanship within the warranty period. **Icon Process Controls Ltd** must be notified pursuant to the instructions below of any claim under this warranty within thirty (30) days of any claimed lack of conformity of the product. Any product repaired under this warranty will be warranted only for the remainder of the original warranty period. Any product provided as a replacement under this warranty will be warranted for the one year from the date of replacement.

Returns

Products cannot be returned to **Icon Process Controls Ltd** without prior authorization. To return a product that is thought to be defective, go to www.iconprocon.com, and submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to **Icon Process Controls Ltd** must be shipped prepaid and insured. **Icon Process Controls Ltd** will not be responsible for any products lost or damaged in shipment.

Limitations

This warranty does not apply to products which: 1) are beyond the warranty period or are products for which the original purchaser does not follow the warranty procedures outlined above; 2) have been subjected to electrical, mechanical or chemical damage due to improper, accidental or negligent use; 3) have been modified or altered; 4) anyone other than service personnel authorized by **Icon Process Controls Ltd** have attempted to repair; 5) have been involved in accidents or natural disasters; or 6) are damaged during return shipment to **Icon Process Controls Ltd** reserves the right to unilaterally waive this warranty and dispose of any product returned to **Icon Process Controls Ltd** where: 1) there is evidence of a potentially hazardous material present with the product; or 2) the product has remained unclaimed at **Icon Process Controls Ltd** for more than 30 days after **Icon Process Controls Ltd** has dutifully requested disposition. This warranty contains the sole express warranty made by **Icon Process Controls Ltd** in connection with its products. **ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED.** The remedies of repair or replacement as stated above are the exclusive remedies for the breach of this warranty. **IN NO EVENT SHALL Icon Process Controls Ltd BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING PERSONAL OR REAL PROPERTY OR FOR INJURY TO ANY PERSON. THIS WARRANTY CONSTITUTES THE FINAL, COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY TERMS AND NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES OR REPRESENTATIONS ON BEHALF OF Icon Process Controls Ltd.** This warranty will be interpreted pursuant to the laws of the province of Ontario, Canada.

If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty.

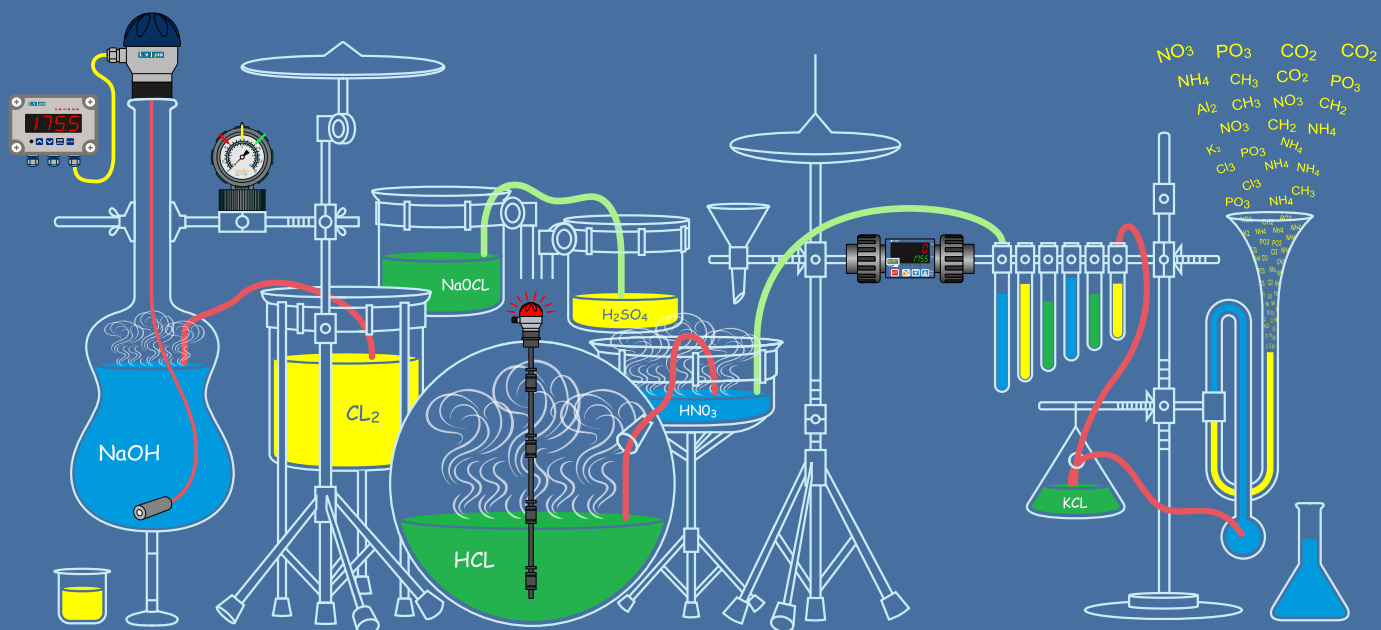
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CORROSION



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CORROSION



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