

# Quick Start Manual



**EzVu®**  
Rotates 360°



True Union Design

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

Read the user's manual carefully before starting to use the unit.  
Producer reserves the right to implement changes without prior notice.



### Safety Information

- De-pressurize and vent system prior to installation or removal
- Confirm chemical compatibility before use
- **DO NOT** exceed maximum temperature or pressure specifications
- **ALWAYS** wear safety goggles or face-shield during installation and/or service
- **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.



#### Personal Protective Equipment (PPE)

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



#### Note | Technical Notes

Highlights additional information or detailed procedure.



#### 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.



#### Please ensure that the Instruments are not to be subject to water hammer or pressure spikes! Always Pressure Test System with H2O Prior to Initial Start-Up

Before installation be certain the appropriate instrument has been selected considering operating pressure, full scale pressure, wetted material requirements, media compatibility, operating temperature, vibration, pulsation, desired accuracy and any other instrument 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, failure and/or personal injury. Ensure only qualified personnel are permitted to install and maintain this instrument.



#### 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.



#### Please Ensure Full Pipe

TK Series can be installed in a horizontal or vertical direction. Please ensure enough length of straight pipe to avoid turbulence that can effect readings.



#### Min 10x Pipe Diameters Upstream 3x Pipe Diameters Downstream

A Bag Filter or Y Strainer Filtering Device upstream to Avoid the Paddle Wheel from being damaged by the solids or fibers - max 10% Particle Size - Not to Exceed .5mm Cross Section or Length. Please do not flush the pipe after the Flow Meter is installed with compressed air this may damage the ceramic shaft and will void warranty.



**WARNING**

# Truflo® — TKB Series In-Line Paddle Wheel Flow Meter Sensor

## Industry's Most Accurate & Reliable Paddle Wheel Flow Meters



The TK Series in-line plastic paddle wheel flow meter has been engineered to provide long-term accurate flow measurement in tough industrial applications.

The paddle wheel assembly consists of an engineered Tefzel® paddle and micro-polished zirconium ceramic rotor pin and bushings.

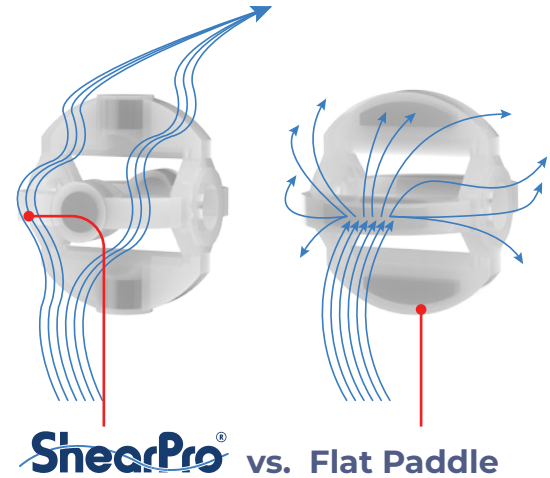
High performance Tefzel® and Zirconium materials have been selected due to their excellent chemical and wear resistant properties.

- ✓ ½" – 4" Line Sizes
- ✓ Flow Rate | Total

### 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

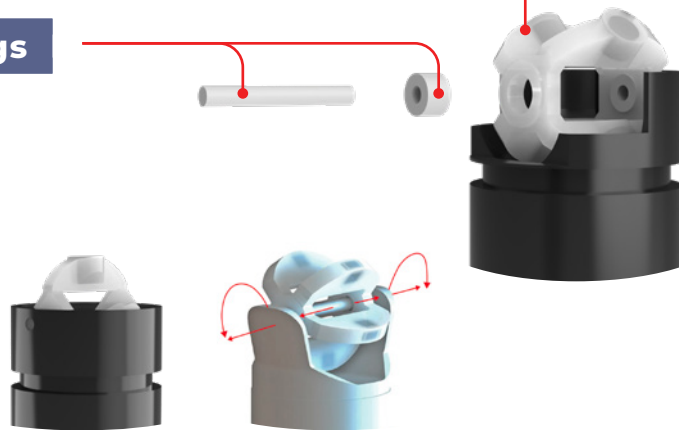
- ✓ Superior Chemical And Wear Resistance vs PVDF

### 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



ShearPro® vs. Competitor

# Truflo® — TKB Series

## In-Line 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 4"	DN15 to DN100
Linearity	±0.5% of F.S @ 25°C   77°F	
Repeatability	±0.5% of F.S @ 25°C   77°F	
Fluid	Water or Chemical Liquid-Viscosity Range: .5-20 centistokes	
Flow Velocity	10 m / s max	
Low Cut	0.3 m / s min.	
Operating Pressure	150 PSI (10 Bar) @ Ambient Temp-Non Shock	
Range Ability	10 : 1	
Response Time	Real Time	
Flow Total Meter	Range = 0~999999 ; Unit = Gallon or Liter or Ton (KL) Selectable	
Repeatability	Range = 0.0~999.9 ; Unit = GPM or LPM or CMH Selectable	
Accuracy	± 0.5% of F.S. @ 25°C	
Wetted Materials		
Sensor Body	PVC (Dark)   PP (Pigmented)   PVDF (Natural)	
O-Rings	FKM   EPDM*   FFKM*	
Rotor Pin   Bushings	Zirconium Ceramic   ZrO2	
Paddle   Rotor	ETFE Tefzel®	
Electrical		
Operating Voltage Battery	3.0 VDC	
Battery	Lithium Battery (CR2477T)	
Life of battery	>1 Year Normal >2 Years Eco Mode	
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°C
PP	180 psi @ 68°F   40 psi @ 190°F	12.5 bar @ 20°C   2.7 bar @ 88°C
PVDF	200 psi @ 68°F   40 psi @ 240°F	14 bar @ 20°C   2.7 bar @ 115°C
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
Outputs		
TKB Series	Flow   Frequency Pulse - Total	
Standards and Approvals		
CE   FCC   RoHS Compliant		

\*Optional

# Truflo® — TKB Series

## In-Line Paddle Wheel Flow Meter Sensor



### Model Selection

PVC		
Size	End Connections	Part Number
1/2"	Sch 80 Soc	TKB-15-P
3/4"	Sch 80 Soc	TKB-20-P
1"	Sch 80 Soc	TKB-25-P
1 1/2"	Sch 80 Soc	TKB-40-P
2"	Sch 80 Soc	TKB-50-P
3"	Flanged	TKB-80-P
4"	Flanged	TKB-100-P

PP		
Size	End Connections	Part Number
1/2"	NPT	TKB-15-PP
3/4"	NPT	TKB-20-PP
1"	NPT	TKB-25-PP
1 1/2"	NPT	TKB-40-PP
2"	NPT	TKB-50-PP
3"	Flanged	TKB-80-PP
4"	Flanged	TKB-100-PP

PVDF		
Size	End Connections	Part Number
1/2"	NPT	TKB-15-PF
3/4"	NPT	TKB-20-PF
1"	NPT	TKB-25-PF
1 1/2"	NPT	TKB-40-PF
2"	NPT	TKB-50-PF

**Add 1<sup>st</sup> Suffix (end connection):**  
**-T** ▶ NPT End Connectors (on PVC)  
**-B** ▶ Butt Fused End Connections for PP or PVDF  
**-F** ▶ Flange ANSI 150lb - Consult Factory

**Add 2<sup>nd</sup> Suffix (seals):**  
 FKM (std, no suffix required)  
**-E** ▶ EPDM Seals  
**-K** ▶ FFKM | Kalrez® Seals

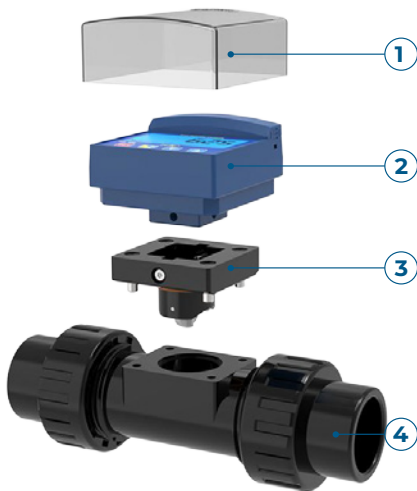
Note: PVC Socket Ends (Std)  
PP/PVDF NPT Ends (Std)

316 SS		
Size	End Connections	Part Number
1/4"	NPT	TK3B-08-SS
3/8"	NPT	TK3B-10-SS
1/2"	NPT	TK3B-15-SS
3/4"	NPT	TK3B-20-SS
1"	NPT	TK3B-25-SS
1 1/2"	NPT	TK3B-40-SS
2"	NPT	TK3B-50-SS
3"	NPT	TK3B-80-SS
4"	NPT	TK3B-100-SS

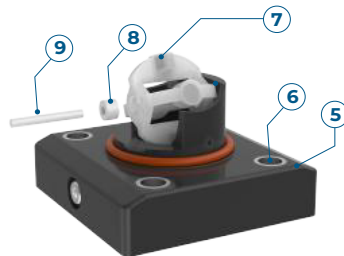
**Add 1<sup>st</sup> Suffix (end connection):**  
**-T** ▶ NPT End Connectors  
**-SE** ▶ Sanitary - Consult Factory for Pricing  
**-F** ▶ Flange ANSI 150lb - Consult Factory

**Add 2<sup>nd</sup> Suffix (seals):**  
 FKM (std, no suffix required)  
**-E** ▶ EPDM Seals  
**-K** ▶ FFKM | Kalrez® Seals

### Exploded View



1. Polycarbonate Cover
2. Flow Controller
3. Hall Pickup Sensor
4. Redesigned Rotor Assembly
5. Body | PVC | PP | PVDF \*
6. Re-inforced Inserts
7. Shearpro Contoured Rotor
8. Rotor Bushings
9. Rotor Pin



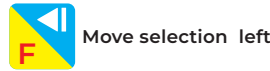
Zirconium Rotor Pin & Bearings



# Truflo® — TKB Series

## In-Line Paddle Wheel Flow Meter Sensor

### Programming



Press **SET** and hold for 3 seconds, then press **▼** or **▲** to select



STEPS	DISPLAY	OPERATION
<b>1 Home Screen</b> <b>SET</b> + <b>5 SEC</b>		Home Screen r = Flow Rate   Default Setting
<b>2 Set Pasword — Enter #</b> <b>SET</b>		Factory Default: Lock = 8 Enter ANY Number from 0 - 9 to Set
<b>3 Changing K Factor — K= #</b> <b>SET</b>		Flow Coefficient = Input pulses x 1/k * <i>Only required if changing displays from one size to another i.e. 1" to 2" pipe size</i>
<b>4 Display Mode — dSP.non</b> <b>SET</b>		1. dSP-non   Press any key to turn on the LED back light   Default is set to 6 seconds 2. dSP-Eco   Backlight LED function is not active
<b>5 Light On — t-5</b> <b>SET</b>		In dSP-non mode Backlight default is t-0006   Set Duration Time (sec) of Backlight to remain On. Press any key to turn on the display to turn on LED light (> Time = < Reduced Battery Life)
<b>5 Flow Alarm Delay — dt-10</b> <b>SET</b>		Delay Time ensures Alarm Setting only becomes active after the flow remains constant for xx seconds <b>Programming the High   Low Alarm</b> Press <b>SET</b> + <b>▲</b> 3 Sec to Display High Alarm Setting Press <b>▲</b> or <b>▼</b> to Enter Alarm Value. Press <b>SET</b> to Display Low Alarm Setting. Press <b>▲</b> or <b>▼</b> to Enter Alarm Value. The Press <b>SET</b> to Confirm
<b>5 Reset Totalizer — rSEt.0</b> <b>SET</b>		1. To Prevent Totalizer reset - Enter Password Number 0-9 (excluding # 5) Flow Totalizer Reset Protection Active 2. rSEt.= 5 Default = Flow Totalizer Reset Enabled



### Flow Totalizer

Display the Current Value of Flow Totalizer : Range 0~99,999,999

1. Hold the key for 3 seconds to show current value of the 7th – 8th digits
2. After releasing the key the current value of the 1st – 6th digits will be displayed

### Flow | Totalizer Reset Lock

How to Set the Flow/Totalizer Reset Lock?

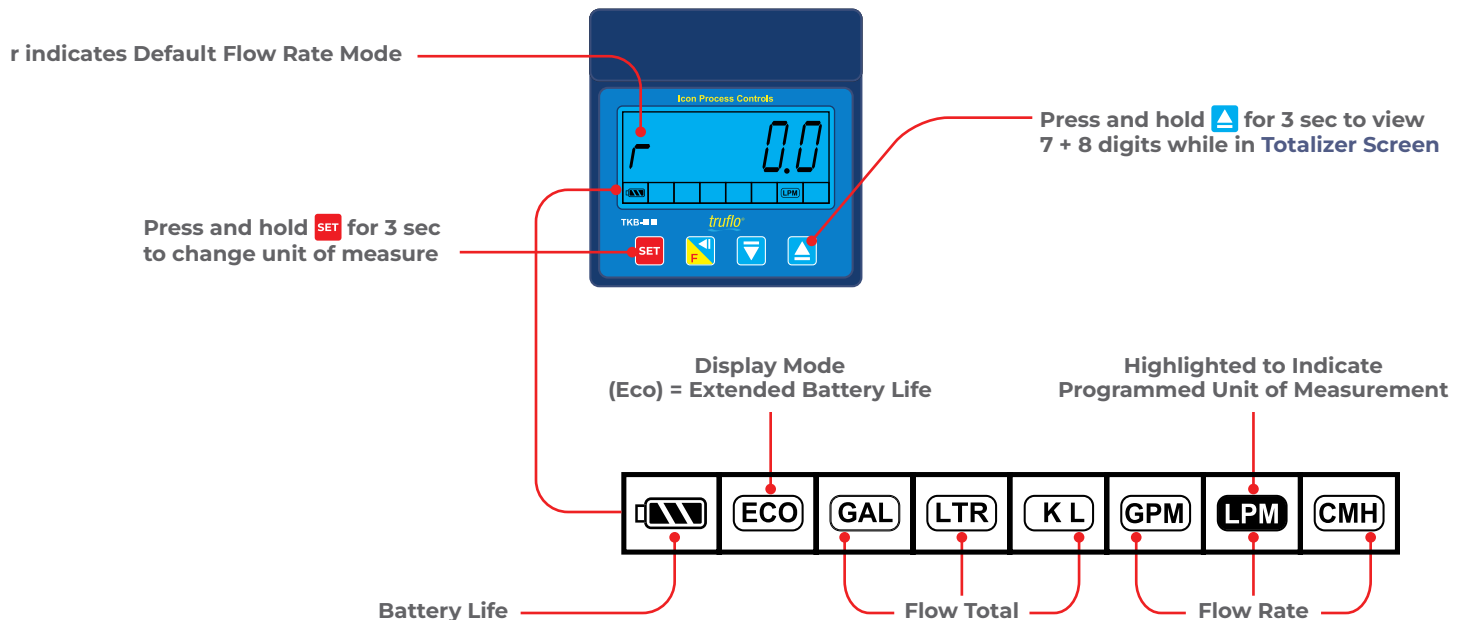
The **Flow Total | Totalizer** can be protected from an accidental reset. To set lockout program set any number from 0-8. The factory default unlock number 9.

Totalizer Reset → Press both & keys together for 3 SEC

### Low Battery Notification

Voltage of Battery	Symbol	Status
3.0V		Full Scale
< 3.0V		Mild Scale
< 2.8V		Low Scale (Pilot BAT Flashing)
< 2.6V		Low Voltage (Pilot BAT & Display Flashing)

### Displaying Flow Rate | Flow Totalizer



# Truflo® — TKB Series

## In-Line Paddle Wheel Flow Meter Sensor



### K-Factors for TK Series

Size	K-Factor
¼"	547
⅜"	300
½"	124
¾"	72
1"	54
1½"	19
2"	10.3
3"	4.7
4"	2.1

▲ K-Factor is Pre-Programmed

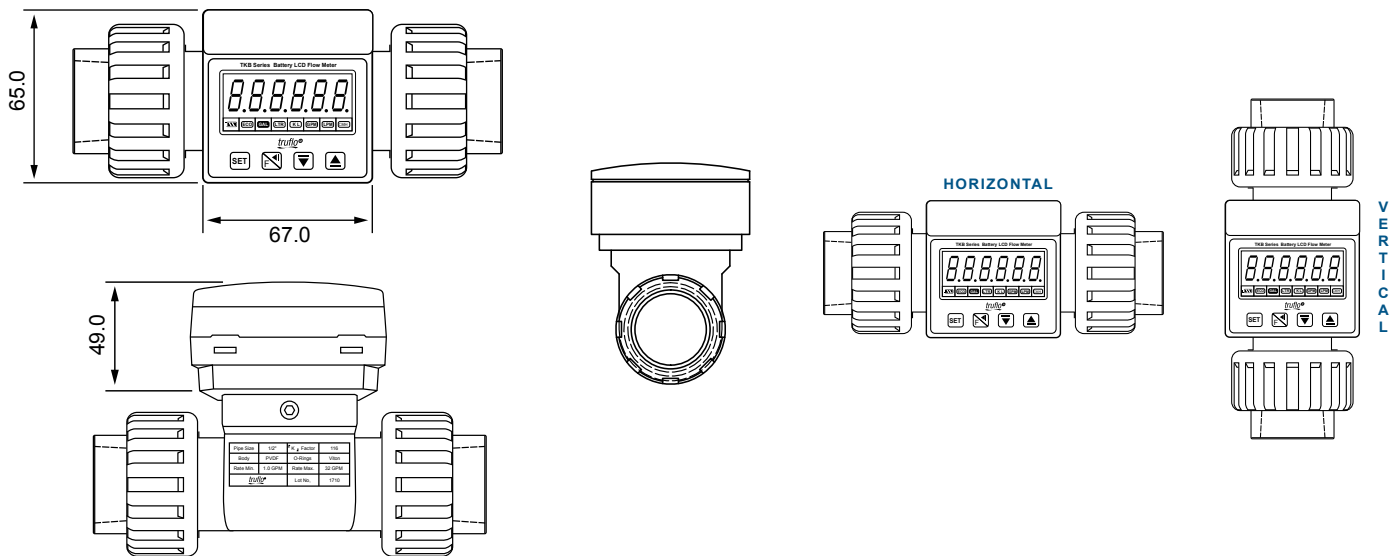
### Min/Max Flow Rates

Pipe Size (O.D.)	LPM   GPM	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

### Pressure vs. Temperature Psi H<sub>2</sub>O | Non-Shock

Nominal Size		PVC				PP				PVDF				
		30° F	71° F	106° F	121° F	-5° F	86° F	121° F	141° F	-5° F	71° F	106° F	141° F	176° F
Inches	mm	70° F	105° F	120° F	140° F	85° F	120° F	140° F	175° F	70° F	105° F	140° F	175° F	210° F
½ - 2	15-50	150	120	100	30	150	110	90	55	150	125	100	85	55
2½	65	150	120	100	NA	150	95	70	40	150	125	100	85	55
3	80	150	120	100	NA	150	95	70	40	150	125	100	85	60
4	100	150	120	100	NA	150	95	70	40	150	125	100	85	60

### Dimensions







## Battery Replacement

- 1** Lightly Press on Both Sides Battery Cover
- 2** Remove the Battery Cover
- 3** Remove the Battery
- 4** Insert the New Battery Ensure (+ -) orientation is correct

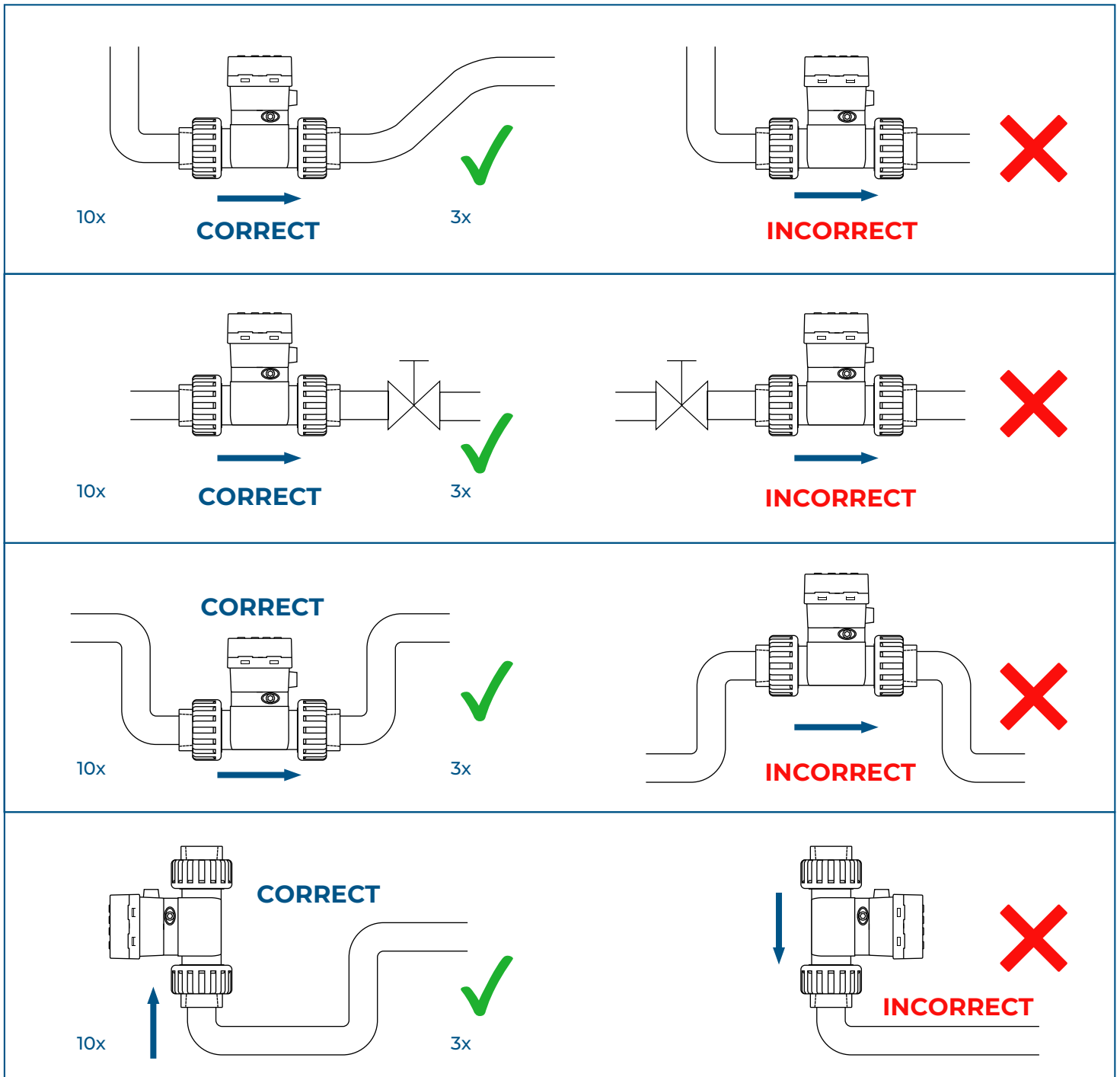
## Procedure to Rotate Display

- 1** Use an Allen key and loosen the screws located on both sides of the display
- 2** Lightly pull on the screws in an outwards direction. Screws are Captive — Do Not Completely Remove
- 3** Lift the display
- 4** Rotate display
- 5** Reposition the display
- 6** Tighten (snug) the Allen screws on both sides

# Truflo® — TKB Series

## In-Line Paddle Wheel Flow Meter Sensor

### Installation Position



#### Please Ensure Full Pipe

TK Series can be installed in a horizontal or vertical direction.

Please ensure enough length of straight pipe to avoid turbulence that can effect readings.

**Note: Min 10x Pipe Diameters Upstream 3x Pipe Diameters Downstream.**

A plastic basket strainer, bag filter or Y strainer filtering device upstream to avoid the paddle wheel from being damaged by the solids or fibers - max 10% particle size - **Not to Exceed .5mm Cross Section or Length.**

Please do not flush the pipe after the flow meter is installed with compressed air as this may damage the ceramic shaft and will void warranty.

### 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](http://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.

For additional product documentation and technical support visit:

[www.iconprocon.com](http://www.iconprocon.com) | e-mail: [sales@iconprocon.com](mailto:sales@iconprocon.com) or [support@iconprocon.com](mailto:support@iconprocon.com) | Ph: 905.469.9283