

Quick Start  
TKS Series Flow Meter



# CORROSION

## Safety Information



### WARNING!

Please ensure that the Instruments are not to be subject to water hammer or pressure spikes!

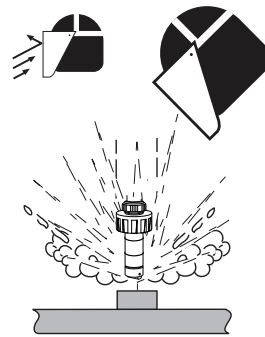
### Always Pressure Test System with H<sub>2</sub>O Prior to Initial Start-Up

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.



### Personal Protective Equipment (PPE)

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



### 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.

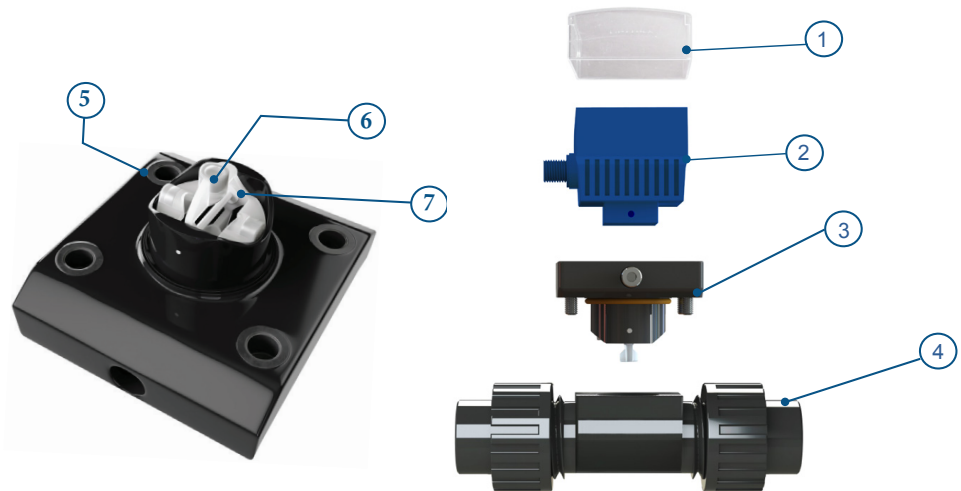
A Bag Filter or Y Strainer Filtering Device upstream to Avoid the Paddle Wheel from being damaged by the solids or fibers - max 10% Particle Size - Not to Exceed .5mm Cross Section or Length.

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

### TK Series

### Exploded View

1. Polycarbonate Cover
2. Flow Controller
2. Hall Pickup Sensor
3. Redesigned Rotor Assembly
4. Body | PVC | PP | PVDF \*
5. Re-inforced Inserts
6. ShearPro® Contoured Rotor
7. Zirconium Rotor Pin & Bearings



### Product Selection

#### EXAMPLE

TKS ---- 25 ---- P ---- E ---- T  
 (2) (3) (4) (5)

#### 2. PIPE SIZE

15 | (1/2") | 20 | (3/4")  
 25 | (1") | 40 | (1 1/2")  
 50 | (2") | 80 | (3") | 100 | (4")

#### 3. BODY MATERIAL

P = PVC  
 PP = Polypropylene  
 PF = PVDF

#### 4. SEALS\*

E = EPDM (Optional)  
 F = FFKM (Optional)

\* FPM is Standard

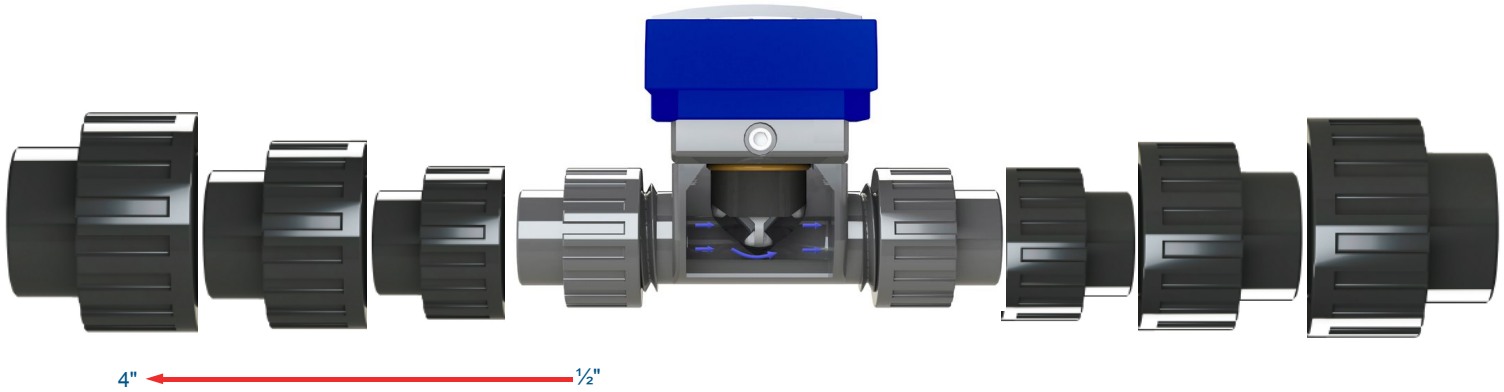
#### 5. END CONNECTIONS

S - Sch 80 Soc  
 T - NPT  
 B - SDR11 Butt  
 D - DIN  
 F - ANSI 150 lb

### Specifications

<b>Fluid</b>	Liquid - Viscosity Range <.5-20 centistokes
<b>Accuracy</b>	> ± €5% of F.S. @ 68°F   20°C   Repeatability 0.5 of Full Scale
<b>Max Flow Velocity</b>	32.8 ft/s max   10 m/s max
<b>Min Flow</b>	0.8 ft/s min   0.3 m/s min
<b>Operating Press</b>	225psi
<b>Turndown</b>	33:1
<b>Response Time</b>	Real Time
<b>Material of Construction</b>	<b>Paddle:</b> Tefzel   Zirconium Ceramic <b>Body:</b> PVC   PP   PVDF <b>Shaft:</b> Zirconium Ceramic <b>Seals:</b> FPM*   EPDM
<b>Operating Temperature</b>	PVC < 140°F   60°C PP < 176°F   80°C PVDF < 240°F   115°C
<b>Electronics</b>	122°F °C
<b>Protection Class</b>	NEMA 4X   IP66
<b>Approval</b>	CE   Rohs
<b>Current Draw</b>	60mA Max
<b>Voltage</b>	10-30VDC

Same Controller | Rotor Assembly for All Sizes

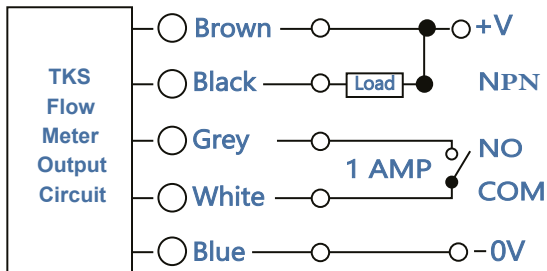


### General Terms

- 1) **K:** Coefficient of Flow Volume, **Note: Factory Set Do Not Change**
- 2) **NPN:** Transistor Relay

### Wiring Diagram

#### TKS - NPN Pulse | Relay



Brown	10 - 30 VDC (+)	White	COM
Blue	0V (-)	Grey	NO
Black	Flow Rate Pulse Output (NPN)		1 Amp



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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

### Programming TKS Model

STEPS	DISPLAY	OPERATION	24V DC POWER ONLY
<b>Step-1</b> <b>Home Screen</b> Press & Hold <b>SET</b> + <b>ESC</b> Together 3 Sec		<b>TKS Series Only</b> Power Up Flow Meter with VDC Power <b>000.0</b>	
<b>Step-2</b> <b>Programming Lock-Out</b> Press <b>SET</b>		Programming Lock-Out Security Feature <b>Lk = 10 Unlocked Status -   Default</b> Changing Number will Lock Flow Meter <b>LK.10   Default Enter 10 to Unlock</b> If any other Number is entered the Programming will be restricted	
<b>Step-3</b> <b>K-Factor Pre Programmed</b> Press <b>SET</b>		K-Factor Range : 0.1-999.9 <b>Factory Pre-Programmed K-Value Preset - Do Not Change</b>	
<b>Step-4</b> <b>Programming Units of Measurement</b> Press <b>SET</b>		Program Measured Units Ut = 0 : LPM <b>Ut = 1 : GPM   Default</b> Ut = 2 : Kiloliter   KL	
<b>Step-5</b> <b>Programming Pulse Output</b> Press <b>SET</b>		Programming NPN Pulse Output con.E - Output = 1 Pulse/Gal con.F - Paddle Pulse Output 5KHZ MAX <b>con.E   Default</b>	
<b>Step-6</b> <b>Programming Relay Set Point</b> Press <b>SET</b>		Programming Relay Set-point Select - ALt.0 ALt.1 ALt.2 ALt.3 <b>ALt.0 Default</b> <b>See Next Page for ALt Settings</b>	
<b>Step-7</b> <b>Programming Relay Delay</b> Press <b>SET</b>		Programming Initial Start-Up Relay Time Delay Range : 0-99 sec Delay Time to Power on Alarm Output <b>Relay t.20 Default = 20 Seconds</b> Initial Start up of Flow Meter or Process   Allows for System Steady State before Relay Switch becomes Active).	

### Programming Relay

STEPS	DISPLAY	OPERATION	24V DC POWER ONLY
<b>Step-1</b> <b>Home Screen</b> Press & Hold <b>SET</b> 3 Sec		Power On Flow Meter Home Screen 000.0	
<b>Step-2</b> <b>Programming Relay Set Point</b> Press <b>SET</b>		Programming Relay Set Point. When Relay Becomes Active Range : 0.1 - 999.9 GPM <b>100.0 GPM   Default</b> Relay will Activate when this Set Point or Flow Rate is Reached	
<b>Step-3</b> <b>Programming Relay Hysteresis</b> Press <b>SET</b>		Program Relay Hysteresis - Prevents Relay Chatter - Due to Constant Flow Rate Change around Set Point in Dynamic Flow Process. <b>d = Delay 0.10 GPM d.0.10   Default</b>	

### Relay Settings

ALT NO.	DESCRIPTION
<b>Alt = 0</b>	CV > SV → Relay <b>ON</b> : CV < SV - d → Relay <b>OFF</b>
<b>Alt = 1</b>	CV < SV → Relay <b>ON</b> : CV > SV + d → Relay <b>OFF</b>
<b>Alt = 2</b>	SV + d > CV > SV - d → Relay <b>ON</b> : CV > SV + d or CV < SV - d → Relay <b>OFF</b>
<b>Alt = 3</b>	SV + d > CV > SV - d → Relay <b>OFF</b> : CV > SV + d or CV < SV - d → Relay <b>ON</b>
<b>CV</b> = Current Display Value = Flow Rate <b>SV</b> = Selected Value = Programmed Value	
<b>d</b> = GPM Hysteresis Measured around Relay Set Point ± Measured in Gallons	

### K-Factors for TK

Size	LPM	GPM
½"	124	471
¾"	72	274
1"	54	171
1 ½"	19	72
2"	10.3	39
3"	4.7	18
4"	2.1	8



**K-Factor is Pre-Programmed**

### Flow Rates

Pipe Size O.D.	LPM   GPM	
	0.3m/s min.	10m/s max.
½"   DN15	3.5   1.0	120   32
¾"   DN20	5.0   1.5	170   45
1"   DN25	9.0   2.5	300   79
1 ½"   DN40	25.0   6.5	850   225
2"   DN50	40.0   10.5	1350   357
2 ½"	60.0   16.0	1850   357
3"   DN80	90.0   24.0	2800   739
4"   DN100	125.0   33.0	4350   1149

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

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

### Procedure to Rotate Display

**1**

Using an allen key loosen the 2 screws located on either side of the display

**2**

Pull the screws | Do Not Remove

**3**

Lift the Display

**4**

Rotate Display - 90 Degrees

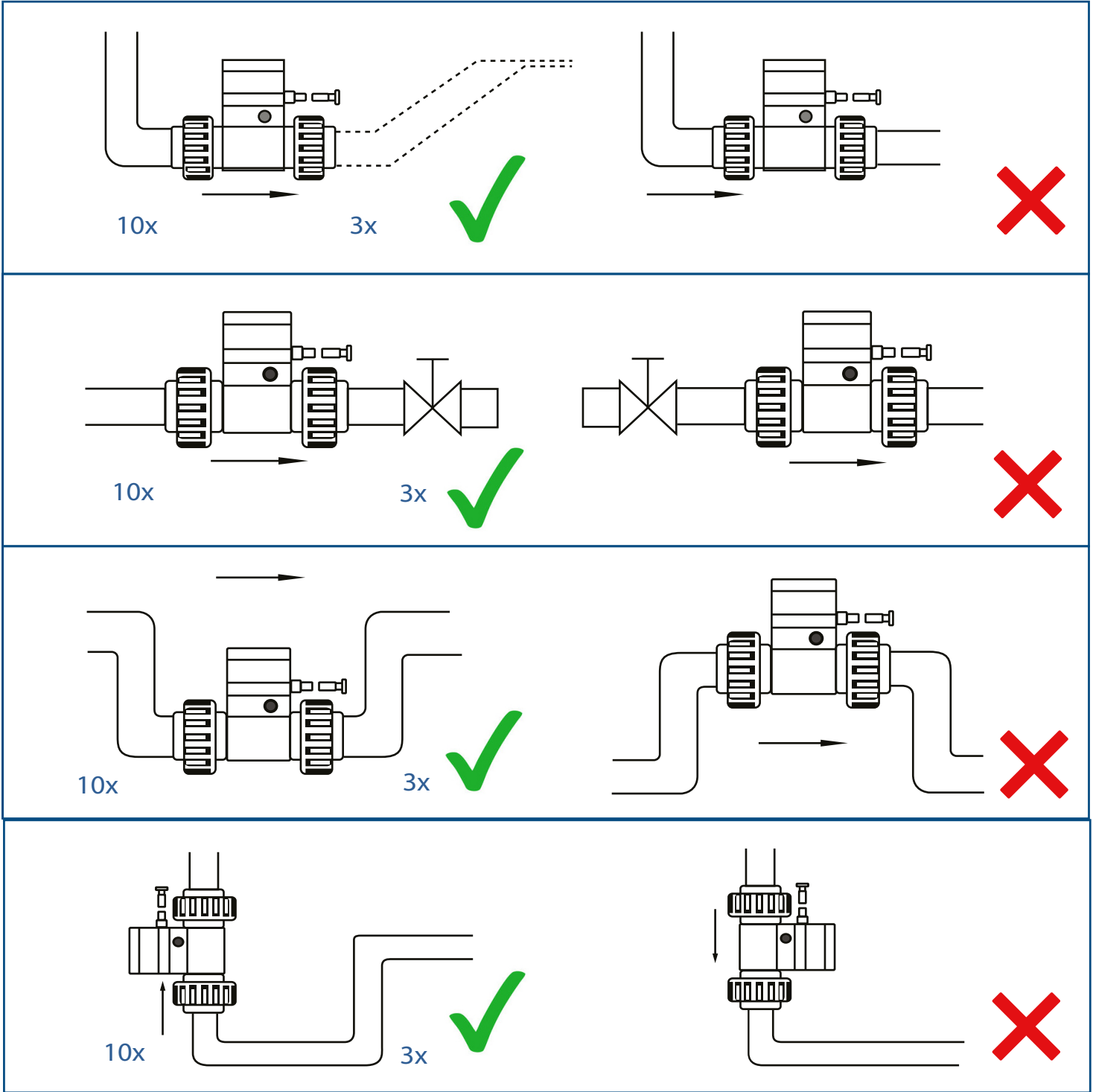
**5**

Lower Display

**6**

Tighten the Allen screws | Snug Tight Do Not Over-Tighten

Installation Positions



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## 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.

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