TKB SERIES

Battery Operated Flow Meter

Quick Start Operating Manual

ICON™ PROCESS CONTROLS

Corrosion-Free
Instrumentation Equipment

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ICON™ PROCESS CONTROLS Corrosion-Free Instrumentation Equipment

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.

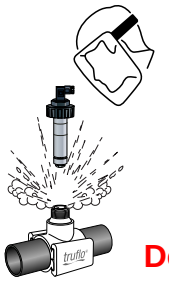
Warning | Caution | Danger
Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death

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!



Failure to follow these instructions may result in the sensor being ejected from the pipe!

If leaking is observed from the retaining cap, it indicates defective or worn o-rings on the sensor. Do not attempt to correct by further tightening.

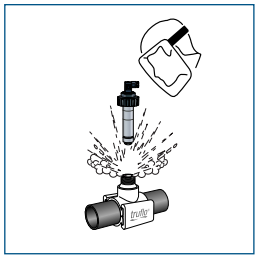
Do Not Remove Under Pressure

Please ensure that the Instruments are not to be subject to water hammer or pressure spikes! Always Pressure Test System with H_2O Prior to Initial Start-Up

Before 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 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 Equipmet (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

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 press.	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 | ZrO_2			
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				

TKB SERIES Battery Operated
In-Line Paddle Wheel Flow Meter

truflo®

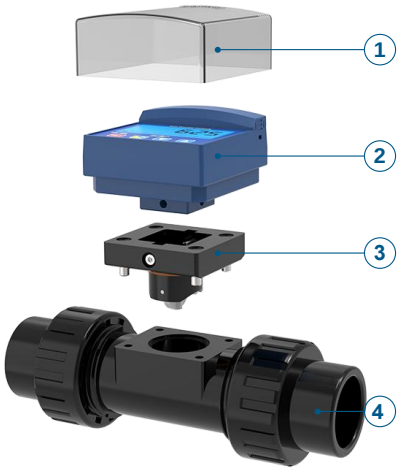
Model Selection

TKB – 15 – PF – V – S

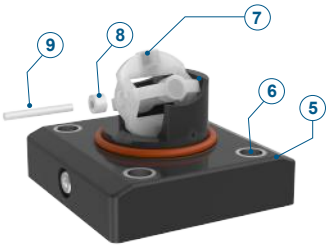
Pipe Size		Body Material	O-Rings Seals	End Connections
08 = DN08 (¼")*	40 = DN40 (1 ½")	PVC = PVC	V = Viton***	(PVC) T = NPT | S = SOC | F = Flanged
10 = DN10 (3/8")*	50 = DN50 (2")	PP = PP	E = EPDM	(PP | PVDF) T = NPT | B = Butt | F = Flanged
15 = DN15 (½")	65 = DN65 (2 ½"	PF = PVDF		(316SS) T = NPT | S = Sanitary | F = Flanged
20 = DN20 (¾")	80 = DN80 (3")**	ST = SUS 316		
25 = DN25 (1")	100 = DN100 (4")**			

* SST Version Only | Note : Sanitary and Flanged Connections Size ½"- 4" Only
** Plastic Versions Only *** Viton is Standard

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

Removable Cover

LPM | GPM | CMH

Waterproof Battery Holder Standard "C" Type Battery

Screen Backlight

Battery Life Indication

Removable Cover (No Tools Required)

4" ◄——————————► ½" Same Controller | Rotor Assembly for All Sizes

Selection of the Engineering Units for Flow Rate | Flow Total

Press SET Key for Hold 3 Seconds, then press ▼ or ▲ to select

Flow Rate Units → Flow Total | Totalizer Units

GPM → LPM → CMH → GAL → LTR → KL

Programming

SETUP	SELECTION	DESCRIPTION
		Use ▼ or ▲ to change values
Home Screen Press SET & F Key for 5 sec		**Home Screen** r = Flow Rate | Default Setting
Set Password | Enter #	 Programmable 0~9	Factory Unlock Number is 8 Enter ANY Number from 0 - 9 to Set
Press SET key Changing K Factor | K = #	 Factory Preset	1. Flow Coefficient = Input pulses x 1/k * Only required if changing displays from one size to another i.e. 1" to 2" pipe size
Press SET key Display Mode | dSP.non	dSP-Eco  dSP-non	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
Press SET key Light -On | t-5	 1~9999	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)
Press SET key Flow Alarm Delay | dt-10	 1~9999	Delay Time ensures Alarm Setting only becomes active after the flow remains constant for xx seconds ☞ Programming the High | Low Alarm Press SET + ▲ 3 Sec to Display High Alarm Setting Press ▲ or ▼ to Enter Alarm Value. Press SET to Display Low Alarm Setting. Press ▲ or ▼ to Enter Alarm Value. The Press SET to Confirm
Press SET key Reset Totalizer | rESEt.0		1. To Prevent Totalizer reset - Enter Password Number 0-9 (excluding # 5) Flow Totalizer Reset Protection Active 2. rESEt.= 5 Default = Flow Totalizer Reset Enabled
Press SET key		

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

Alarm Limit of Flow Rate Meter

How to Set the Alarm Limit of Flow Rate Meter?

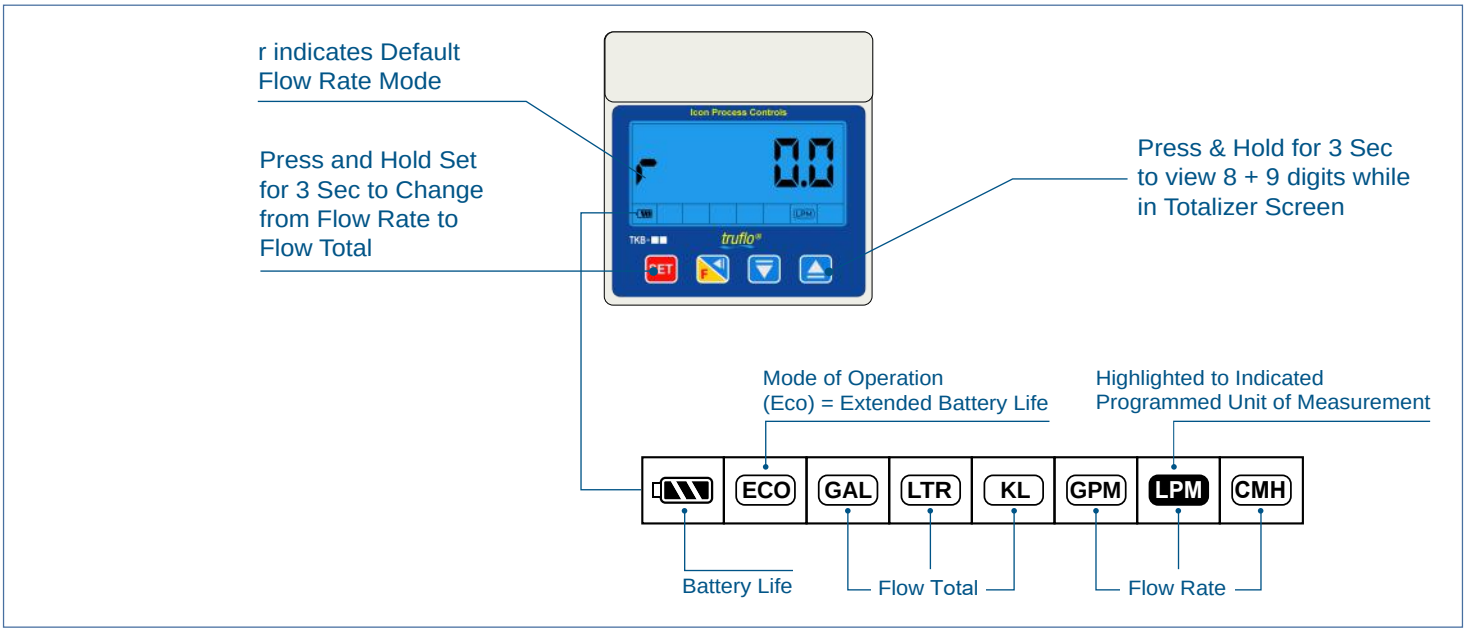
The Flow Total | Totalizer can be Protected from an Accidental Reset. To set lockout program set any number from 0-9 excluding | # 5 | The Unlock Number = 5 = Factory Default

Totalizer Reset → **Press Both** ▼ & ▲ Keys Together for 3 Seconds

Low Battery Notification

Voltage of Battery	Symbol of Battery	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



TKB SERIES Battery Operated
In-Line Paddle Wheel Flow Meter

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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

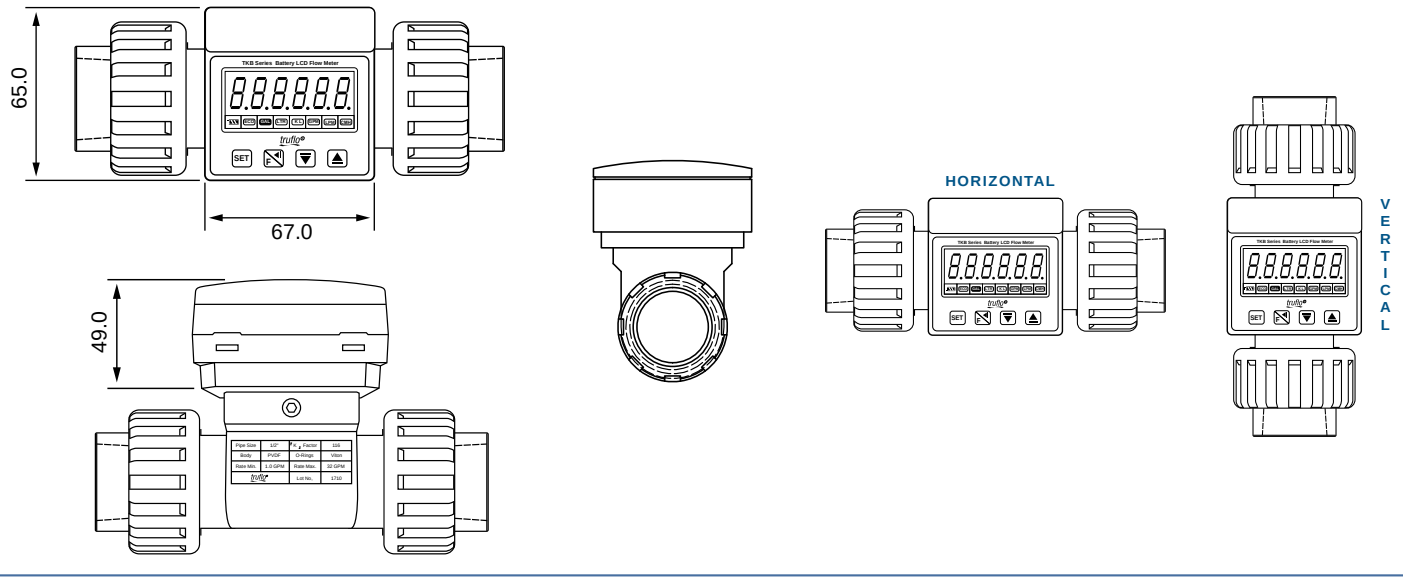
Flow Rates

Pipe Size (O.D.)	LPM | GPM	LPM | GPM
	0.3m/s min.	10m/s max.
DN15 (½")	3.5 | 1.0	120 | 32
DN20 (3/4")	5.0 | 1.5	170 | 45
DN25 (1")	9.0 | 2.5	300 | 79
DN40 (1 ½")	25.0 | 6.5	850 | 225
DN50 (2")	40.0 | 10.5	1350 | 357
2 ½	60.0 | 16	1850 | 357
DN80 (3")	90.0 | 24	2800 | 739
DN100 (4")	125.0 | 33	4350 | 1149

Pressure vs. Temperature Psi H_2O | Non-Shock

NOMINAL SIZE		PVC				PP				PVDF				
INCHES	mm	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
½-2	15-50	150	120	100	30	150	110	90	55	150	125	100	85	55
2-½	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



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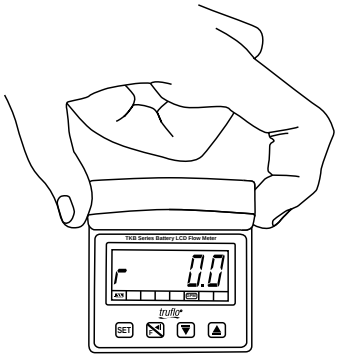
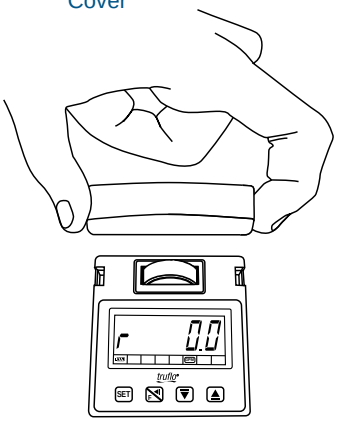
Battery Replacement

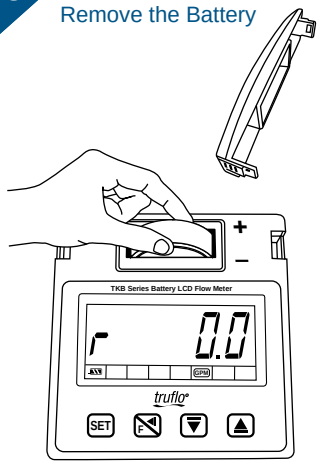
1 Lightly Press on Both Sides Battery Cover



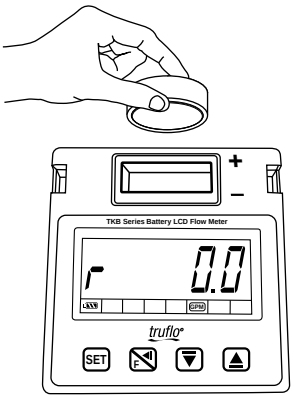
2 Remove the Battery Cover



3 Remove the Battery

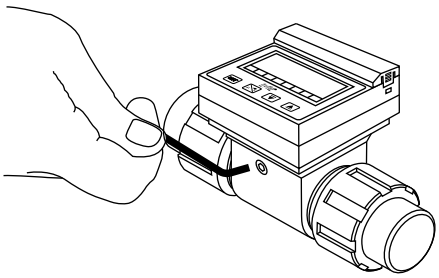


4 Insert the New Battery Ensure (+ -) orientation is correct

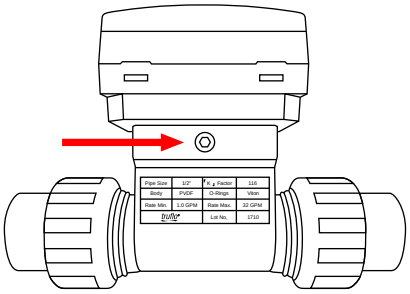


Procedure to Rotate Display

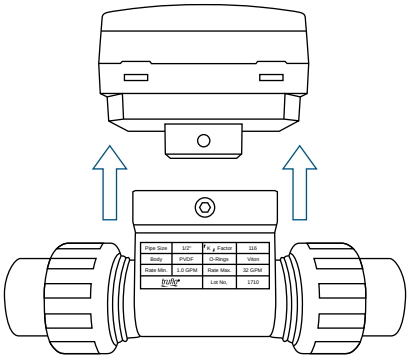
1 Use an Allen key and loosen the screws located on both side of the display



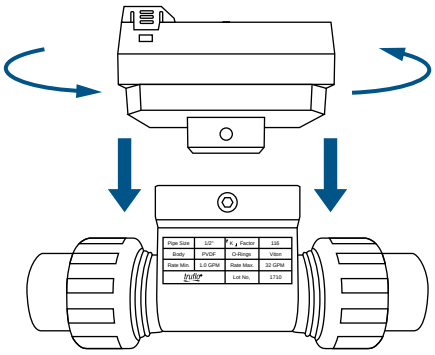
2 Lightly pull on the screws in an outwards direction Screws are Captive - Do Not Completely Remove



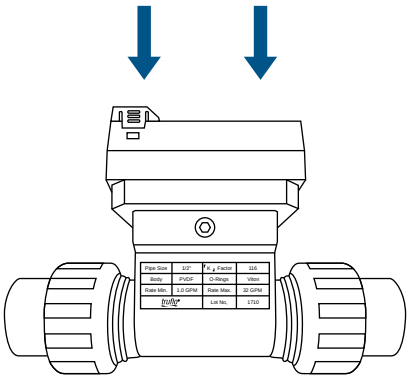
3 Lift the display



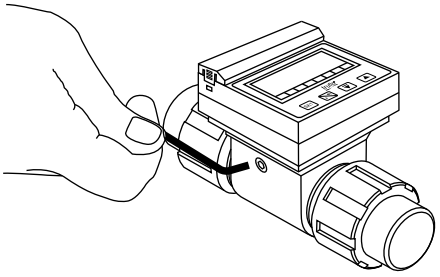
4 Rotate Display



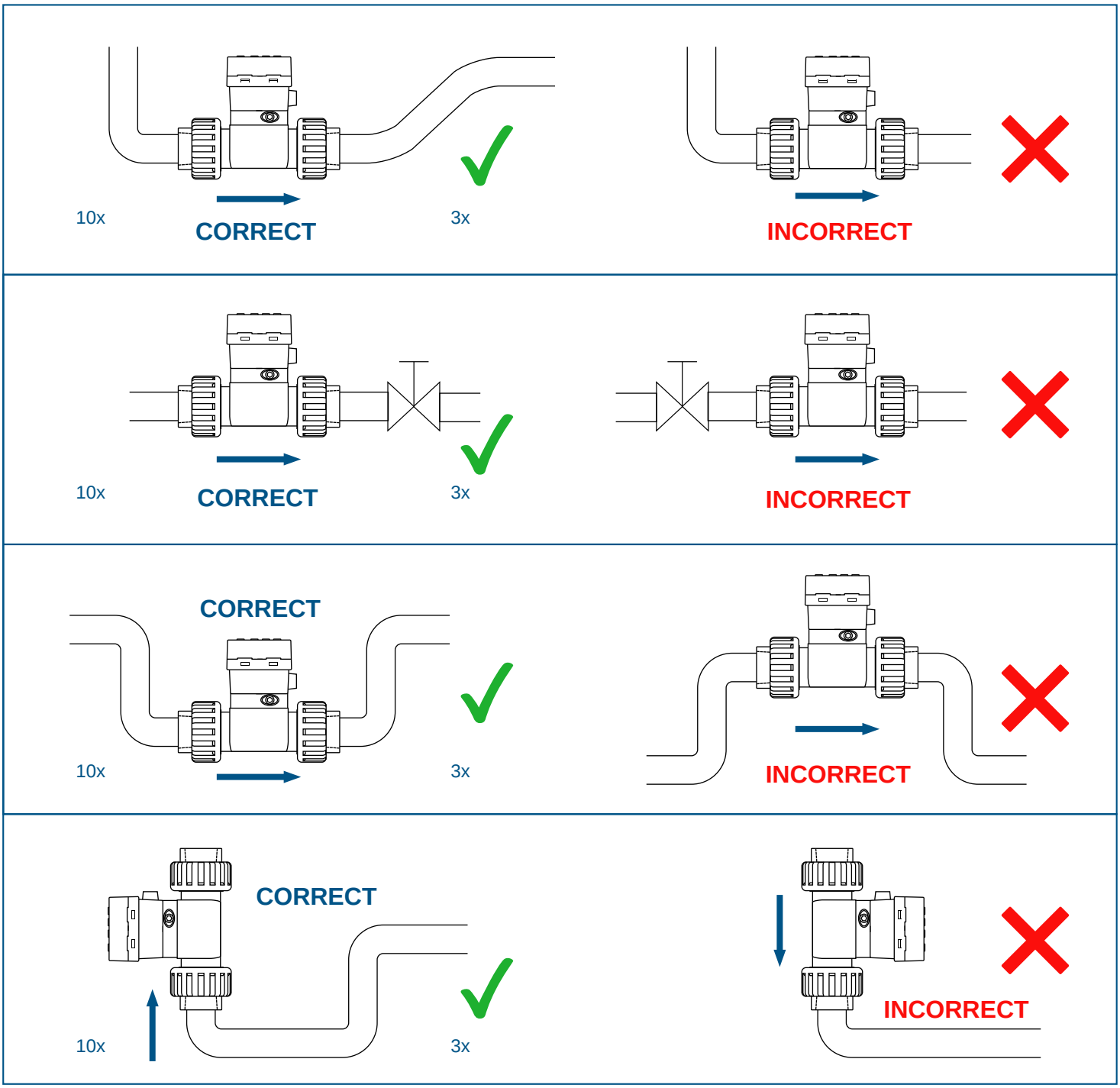
5 Reposition the Display



6 Tighten (Snug) the Allen Screws Both Sides



Installation Positions



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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

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 years 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 I**con 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 I**MPLIED 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. I**N 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 | e-mail: sales@iconprocon.com support@iconprocon.com | Ph: 905.469.9283**

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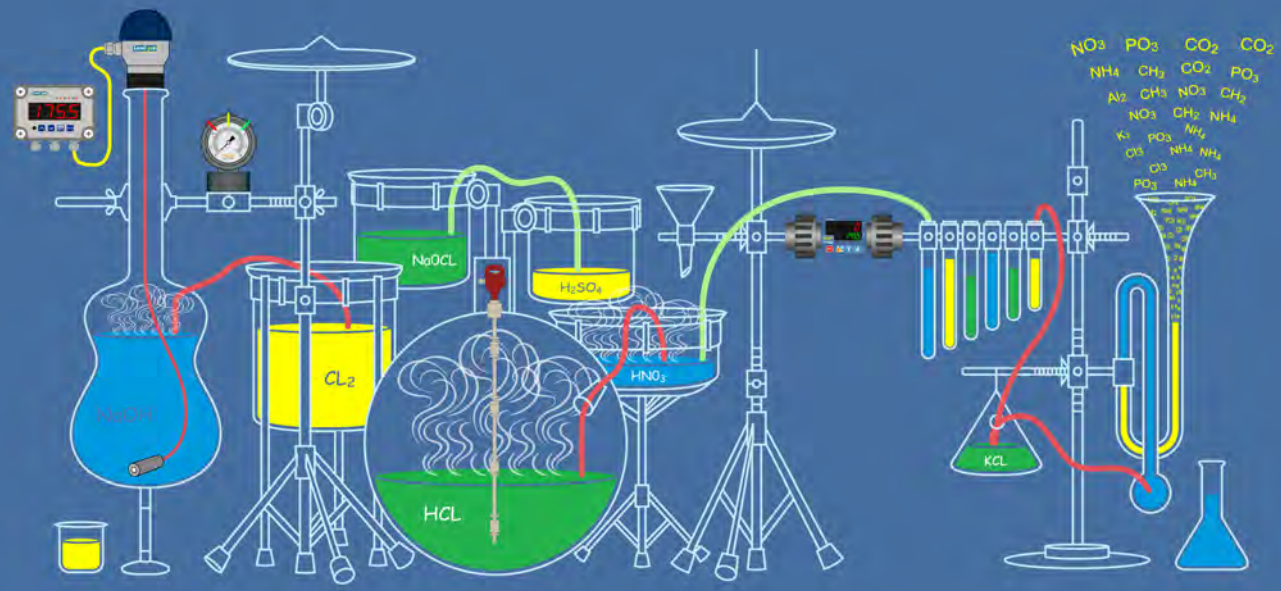
Instrumentation Equipment

~~CORROSION~~



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