

# Quick Start Manual

**(Industry's Toughest Built Paddle Wheel Flow Meter)**

No Calibration Required

Plug & Play



No K-Factor Programming

## TK SERIES



Read the User's Manual Carefully before Starting to Use the Unit.

**All TK Series Flow Meters are Factory Calibrated and do not require K-flow Factor Programming.**

Manufacturer reserves the right to implement changes without prior notice.









# Programming NPN Pulse Control Function (TKP / TKM Model Only)

OP1 = NPN Pulse Output (Flow Rate)  
OP2 = NPN Pulse Output (Flow Totalizer)

Please Follow Hand To Program

TKP/TKM Series Only

TKP/TKM Series Only

FUNCTION OF METER	DISPLAY	DESCRIPTION
<b>Step-1</b> Home Screen (Flow Rate) Press <b>SET</b> [SET] → HOLD (3 sec)		Power On Flow Meter With 10-30 V DC 0 Flow Totalizer 0.0 Flow Rate
<b>Step-2</b> OP2 Programming OP2 Output Pulse Control (Totalizer) Press <b>SET</b> [SET]		TKP/TKM Series Only Program (NPN) Pulse Output (OP2) Totalizer Range E.n.r.c. Con = n : Manual Reset; Con = c : time (1=10 Secs) Auto Reset Using Timer Con = c : 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 Con = E (Default)
<b>Step-3</b> OP2 Programming OP2 Output Pulse Reset Time Press <b>SET</b> [SET]		TKP/TKM Series Only (Length of Time Pulse relay remains On) Program Output NPN Pulse Reset Time For Totalizer Range : 0 - 999.99 sec T1 Only Applicable if Con r or Con C are Selected above if (Con = n or E ----> Timer Control ----> will not be an option) T1 0.50 Sec (Default)
<b>Step-4</b> OP1 Programming (OP1) Output Pulse Option (Flow Rate) Press <b>SET</b> [SET] → HOLD (3 sec)		TKP/TKM Series Only Program Flow Rate Pulse (NPN) Output (OP1) Range: 0 - 3 CV > SV ----> Pulse (NPN) ON CV < SV - HYS ----> Pulse (NPN) OFF CV > SV ----> Pulse (NPN) ON CV > SV + HYS ----> Pulse (NPN) OFF ALT 0 (Default) Most Common
<b>Step-5</b> OP1 Programming Hysteresis of Output Flow Rate Pulse Press <b>SET</b> [SET] → HOLD (3 sec)		TKP/TKM Series Only Program Hysteresis of NPN Output Pulse Range 0.1-999.99 (GAL) Hysteresis HYS ± 1.0 GPM (Default) Hys - Hysteresis is a buffer around the Programmed Set Point Example (Example) Liquid Caused by Pump Stopping or Valve Closing i.e.-sloshing
<b>Step-6</b> OP1 Programming OP1 Power on Delay Time For Initial Start UP (Sec) Press <b>SET</b> [SET]		TKP/TKM Series Only - Flow Rate Program Time Delay for NPN Pulse (OP1) on Initial Start Up Range : 0-9999 (Secs) Time Delay of Pulse Output (Flow Rate) T2 = 20 (Secs) (Default) Flow Rate

CV = Current Value  
SV = Programmed Value  
Hys = See below

OP1 = NPN Pulse Output (Flow Rate)  
OP2 = NPN Pulse Output (Flow Totalizer)

CV = Current Value SV = Programmed Value

## Mode of NPN Pulse Output TKP/TKM Models

ALT NO.	DESCRIPTION
ALt = 0	$CV > SV \rightarrow ON$ ; $CV < SV - HyS \rightarrow OFF$
ALt = 1	$CV < SV \rightarrow ON$ ; $CV > SV + HyS \rightarrow OFF$
ALt = 2	$SV + HyS > CV > SV - HyS \rightarrow ON$ ; $CV > SV + HyS$ or $CV < SV - HyS \rightarrow OFF$
ALt = 3	$SV + HyS > CV > SV - HyS \rightarrow OFF$ ; $CV > SV + HyS$ or $CV < SV - HyS \rightarrow ON$

Current Value = Flow Rate      SV = Selected Value = Programmed Value (Customer)

Hys = Hysteresis ACTS Lika Buffer  $\pm$  Around Pulse Output (Measured in GPM)

## K-Factors for TK Series Flow Meters (All Models)

Size	LPM	GPM
1/2"	124	32.6
3/4"	72	18.9
1"	54	14.2
1 1/2"	19	5.0
2"	10.3	2.7
3"	4.7	1.2
4"	2.1	0.6



Required when programming remote display or controller.

**K-Factor Pre Programmed by Factory - No Flow Meter Programming of a K-Factor is required.**

# Programming TKS Model Only

Please Follow Hand To Program

TKS Series Only

TKS Series Only

FUNCTION OF METER	DISPLAY	DESCRIPTION
<b>Step-1</b> <b>Home Screen</b> Press <b>SET</b> +  [SET] + F HOLD  (3 sec)		<b>TKS Series Only</b> Power Up Flow Meter with DC Power <b>000.0</b>
<b>Step-2</b> <b>Programing Lock Output</b> Press <b>SET</b> [SET]		Programming Lock - Out Secure Feature Lk = 10 (Unlocked Status) - <b>(Default)</b> Changing Number will Lock Flow Meter <b>LK.10 (Default)</b> <b>10 = Unlocked</b> If any other Number is entered the Programming will be restricted
<b>Step-3</b> <b>No Programming Required K Value</b> Press <b>SET</b> [SET]		K-Factor Range : 0.1-999.9 (Depends on Meter Size - Factory Pre-Programmed) Ut = 0 : (LPM) Ut = 1 : (GPM) Ut = 2 : (Kiloliter (KL)) <b>UT 1 (Default)</b> K Value Preset (Do Not Change)
<b>Step-4</b> <b>Programming Communication Output Type</b> Press <b>SET</b> [SET]		Programming NPN Pulse Output con.E - Output = 1 Pulse / Gal con.F - Paddle Pulse Output 5KHZ MAX-Remote Display <b>con.E (Default)</b>
<b>Step-5</b> <b>Programming of Relay Set Point</b> Press <b>SET</b> [SET]		Programming Relay Setpoint ON - OFF Options Select ALT.0 ALT.1 ALT.2 ALT.3 <b>ALT.0 (Default)</b> See Next Page for Relay Alarm Options
<b>Step-6</b> <b>Programming Relay Time Delay</b> Press <b>SET</b> [SET]		Programming Initial Start-Up Relay Time Delay Range : 0-99 sec Delay Time to Power on Alarm Output Relay <b>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 TKS Model Only

### Program Relay Set Point And Relay Delay (Prevents Relay Chatter)

Please Follow Hand To Program

TKS Series Only

TKS Series Only

FUNCTION OF METER	DISPLAY	DESCRIPTION
<b>Step-1</b> <b>Home Screen</b> Press <b>SET</b> [SET] HOLD  (3 sec)		Power On Flow Meter - 24VDC <b>000.0 (Default) Home Screen</b>
<b>Step-2</b> <b>Programming Relay Set Point</b> Press <b>SET</b> [SET]		Programming Relay Set Point. (When Relay Switches) 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> [SET]		Program Relay Hysteresis - Prevents Relay Chatter -Due to Constant Flow Rate Change around Setpoint in Dynamic Flow Process (Cushion ±) (Prevents Relay d = Delay <b>0.10 (Default) GPM</b>

■ In the Programming Stage, the Display will Flash

### Relay ON - OFF Options For TKS Series Only (Not for TKP/TKM Series)

TKS Series Only

ALT NO.	DESCRIPTION
ALT = 0	$CV > SV \rightarrow$ Relay ON : $CV < SV - d \rightarrow$ Relay OFF
ALT = 1	$CV < SV \rightarrow$ Relay ON : $CV > SV + d \rightarrow$ Relay OFF
ALT = 2	$SV + d > CV > SV - d \rightarrow$ Relay ON: $CV > SV + d$ or $CV < SV - d \rightarrow$ Relay OFF
ALT = 3	$SV + d > CV > SV - d \rightarrow$ Relay OFF: $CV > SV + d$ or $CV < SV - d \rightarrow$ Relay ON

CV = Current Display Value = Flow Rate      SV = Selected Value = Programmed Value

d = (GPM) Hysteresis Measured around Relay Set Point (± Measured in Gallons)

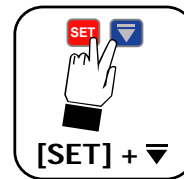
## General Terms

- 1) **K** : Coefficient of Flow Volume, **Note : Factory Set Do Not Change**
- 2) **tr** : TKM Range of Transmitter - Flow Rate 4-20 mA → 4mA = 0    20mA = Max Range  
TKP - RS 485 Option
- 3) **NPN** : Transistor Relay - No Moving Parts
- 5) **Con** : Output Control of Flow Total OP2, Con = n → Manual Reset  
Con = C - Time Reset (1=10 Secs) → Auto Reset, Con = r → Auto Reset,  
Based on Volume (GPM) Con = E → Pulse Output of Unit Volume,  
Con = F → Pulse Output of Paddle = 5 KHZ Max

## Important



**Totalizer Reset TKP/TKM**  
To Reset the Flow Totalizer to Zero Press

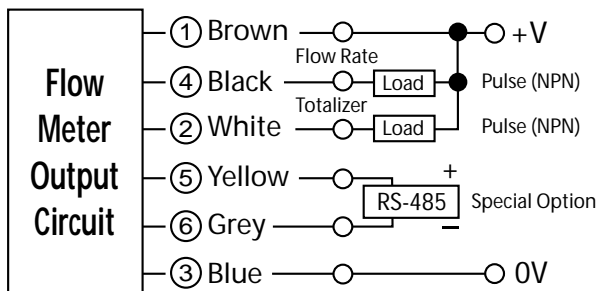


for (3 sec)  
**Important**

## Standard Pipe Size

Pipe Size (O.D.)	ANSI (ID) (Inches)		DIN (ID) (mm)	Flow Rate (LPM) / USGPM	
	Sch (40)	Sch (80)		0.3m/s min.	10m/s max.
DN15 (1/2")	0.62	0.55	Ø20	3.5 / 1.0	120 / 32
DN20 (3/4")	0.82	0.74	Ø25	5.0 / 1.5	170 / 45
DN25 (1")	1.00	0.96	Ø32	9.0 / 2.5	300 / 79
DN40 (1 ½")	1.40	1.50	Ø50	25.0 / 6.5	850 / 225
DN50 (2")	2.00	1.90	Ø63	40.0 / 10.5	1350 / 357
2 ½	2.50	2.30	Ø75	60.0 / 16	1850 / 357
DN80 (3")	3.10	2.90	Ø78	90.0 / 24	2800 / 739
DN100 (4")	4.00	3.80	Ø96.50	125.0 / 33	4350 / 1149

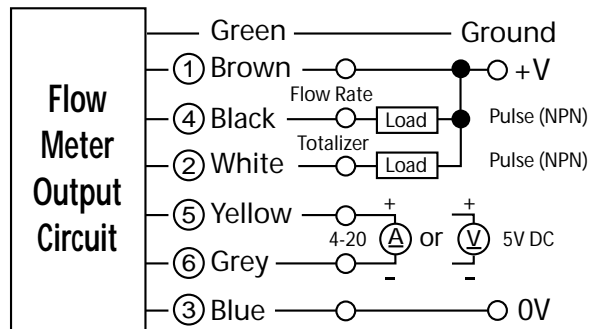
**MODEL TKP**  
**FLOW RATE + FLOW TOTALIZER + NPN PULSE**



- **Yellow & Grey with RS485 (Only)**  
Black Wire can be Changed for Flow Total Limit Output or Unit Volume Pulse Output

Brown	10 - 30 VDC (+)	Yellow	(+) RS-485 (OPT)
Blue	0V (-)	Grey	(-) RS-485 1 OPT RS485 is a Special Order Item
White	Totalizer Pulse Output NPN	Black	Flow Rate Pulse Output (NPN)

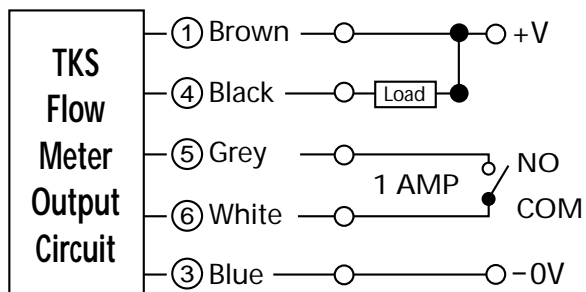
**MODEL TKM(4-20mA Or 0-5V DC + NPN Pulse)**  
**FLOW RATE + FLOW TOTALIZER + PULSE**



- **Black Wire can be Changed for Flow Total Limit Output or Unit Volume Pulse Output**

Brown	10 - 30 VDC (+)	Yellow	+ (4-20mA) or (0-5V)
Blue	0V (-)	Grey	Totalizer Output NPN (4-20mA or 0 - 5V DC) (4-20mA Default -0-5VDC Option-Special Order)
White	Totalizer Pulse Output NPN	Black	Flow Rate Pulse Output NPN

**MODEL TKS NPN**  
**(FLOW RATE - RELAY + PULSE)**



- **Black Wire is a Unit Volume NPN Pulse Output-1 pulse for every gallon**

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



**NOTES**

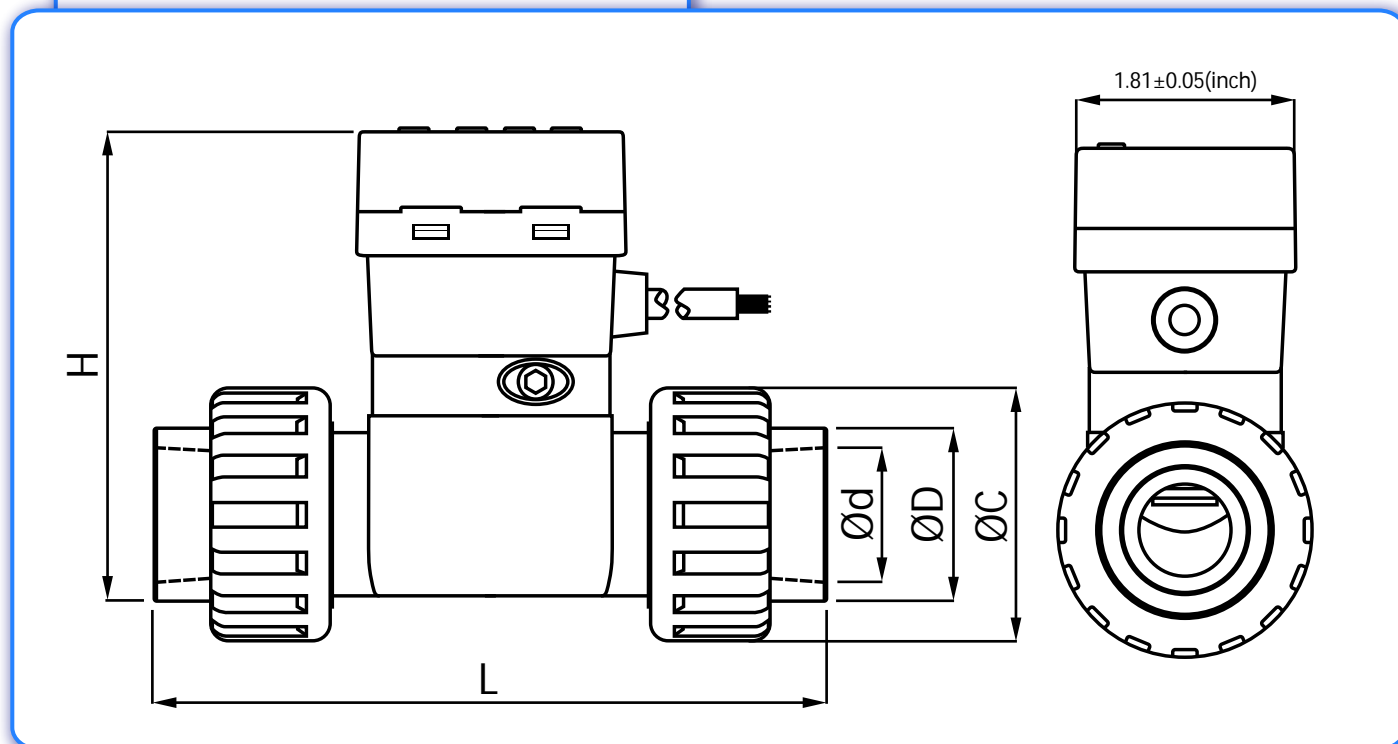
**TKP - Yellow & Grey wires with RS - 485 Option Only**

**Current output (4 - 20mA) : 120 Ω max.  
Voltage output (0 - 5V) : 10K Ω min.**

**NOTE - DC Power Only**

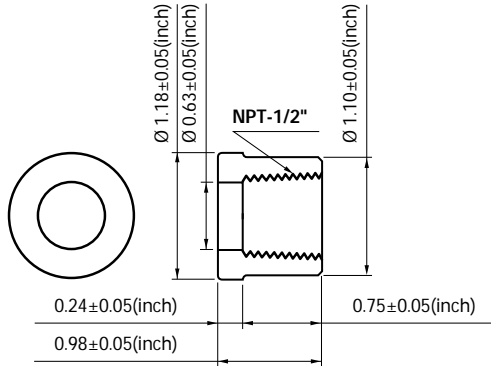
**TKM Series (0-5VDC) Optional  
4-20mA is Standard**

## Dimensions

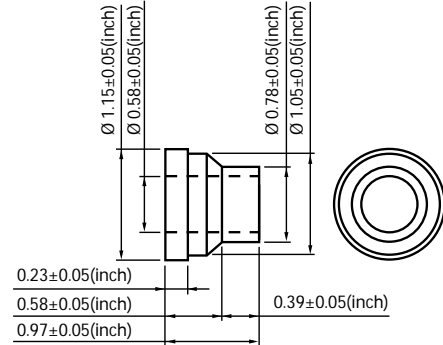


Pipe Size	H (inch)	L (inch)	Ød (inch)	ØD (inch)	ØC (inch)
(1/2") DN (15)	4.09±0.05	5.48±0.05	0.84±0.05	1.07±0.05	1.61±0.05
(3/4") DN (20)	4.17±0.05	6.12±0.05	1.05±0.05	1.36±0.05	2.08±0.05
(1") DN (25)	4.30±0.05	6.76±0.05	1.32±0.05	1.68±0.05	2.36±0.05
(1-1/2") DN (40)	5.02±0.05	7.66±0.05	1.91±0.05	2.33±0.05	3.26±0.05
(2") DN (50)	5.56±0.05	8.39±0.05	2.38±0.05	2.86±0.05	4.33±0.05

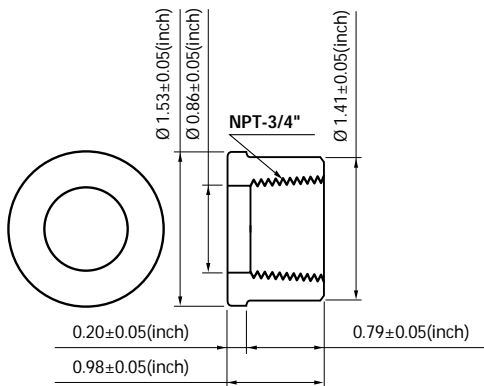
**1/2" DN15-UNION-NPT-PP**



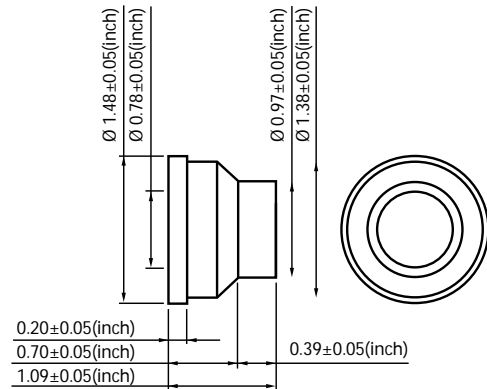
**1/2" DN15-UNION-NPT-PP SDR 11 IR FUSION**



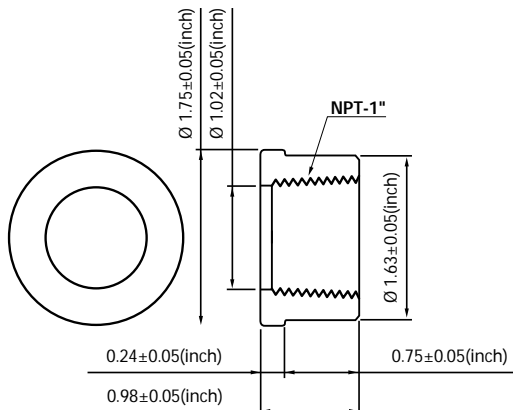
**3/4" DN20-UNION-NPT-PP**



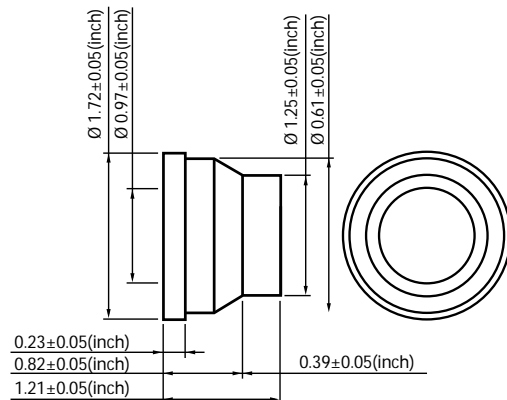
**3/4" DN20-UNION-NPT-PP SDR 11 IR FUSION**



**1" DN25-UNION-NPT-PP**

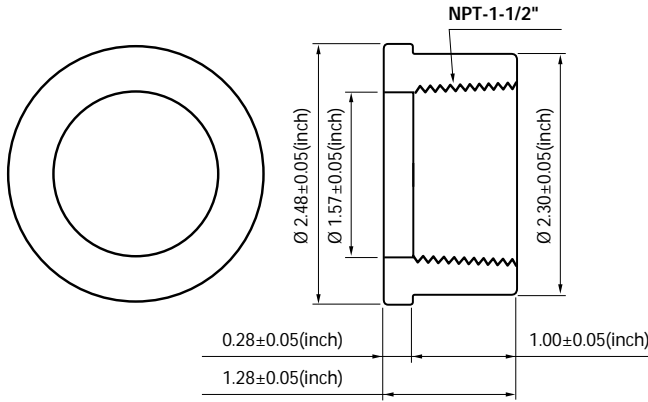


**1" DN25-UNION-NPT-PP SDR 11 IR FUSION**

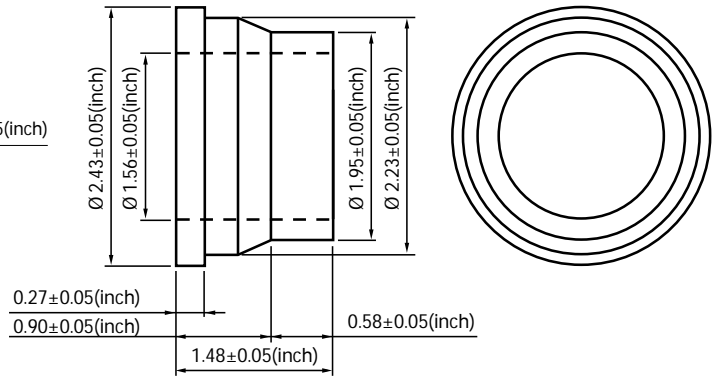


(Max Fluid Velocity should NOT EXCEED 8 ft/sec)

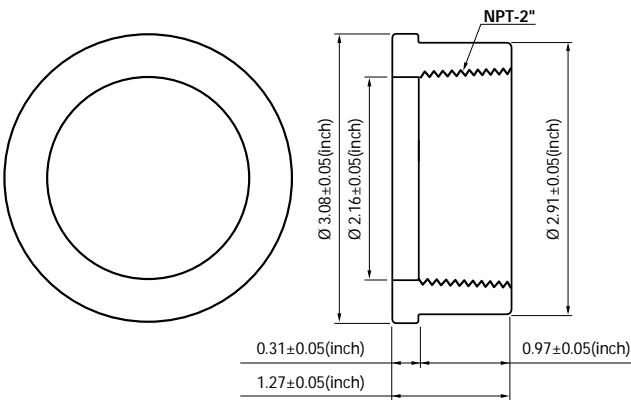
**1½" DN40-UNION-NPT-PP**



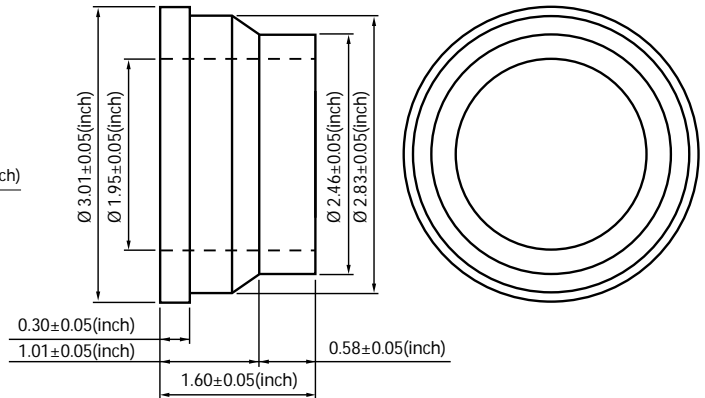
**1½" DN40-UNION-NPT-PP  
SDR 11 IR FUSION**



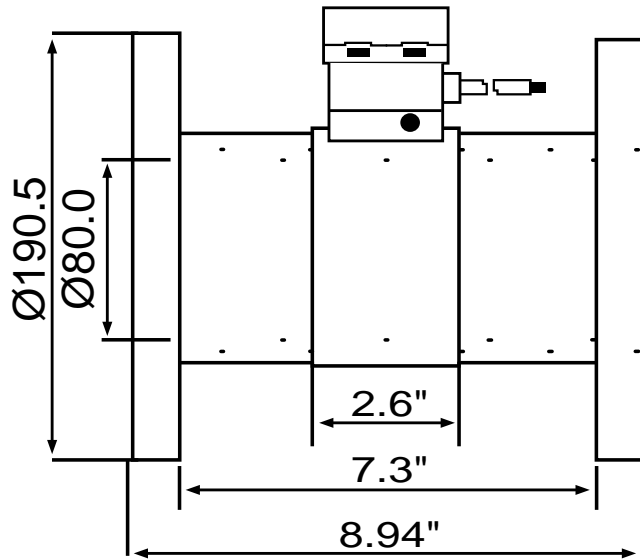
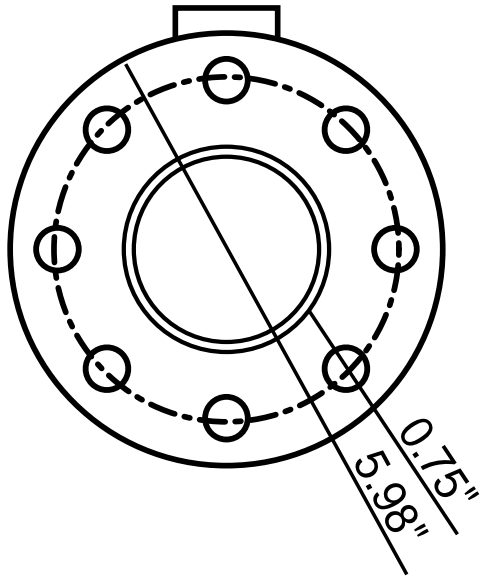
**2" DN50-UNION-NPT-PP**



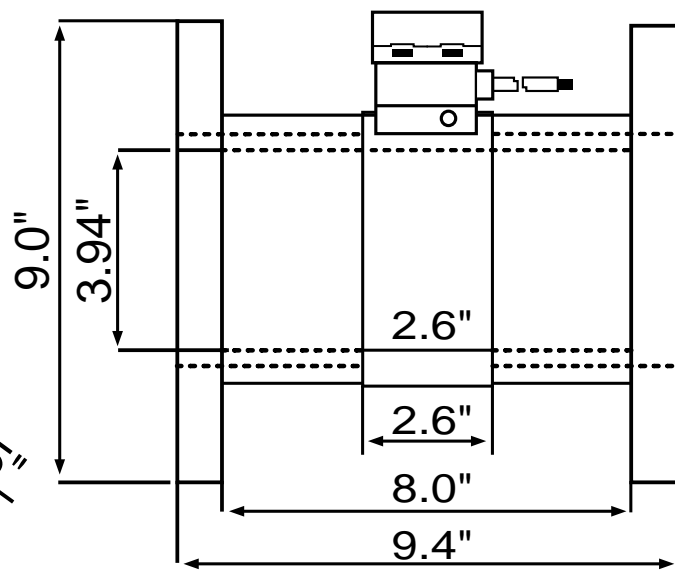
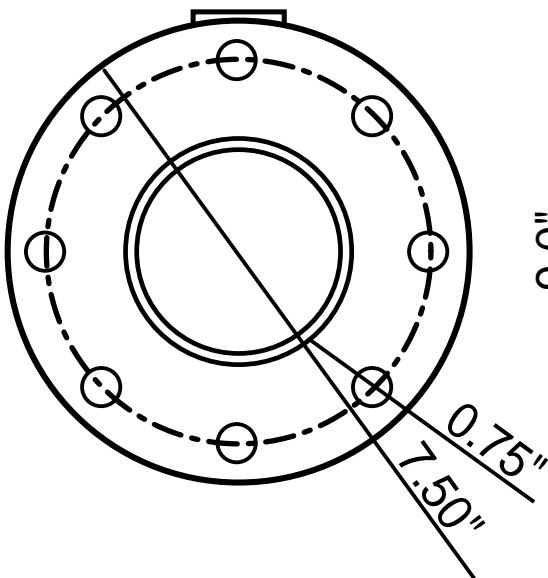
**2" DN50-UNION-NPT-PP  
SDR 11 IR FUSION**



3" ANSI JIS

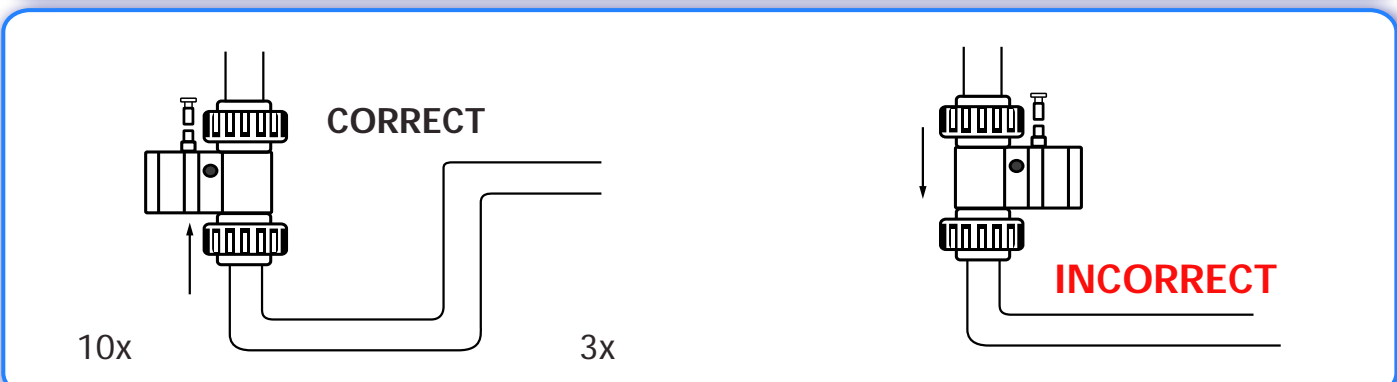
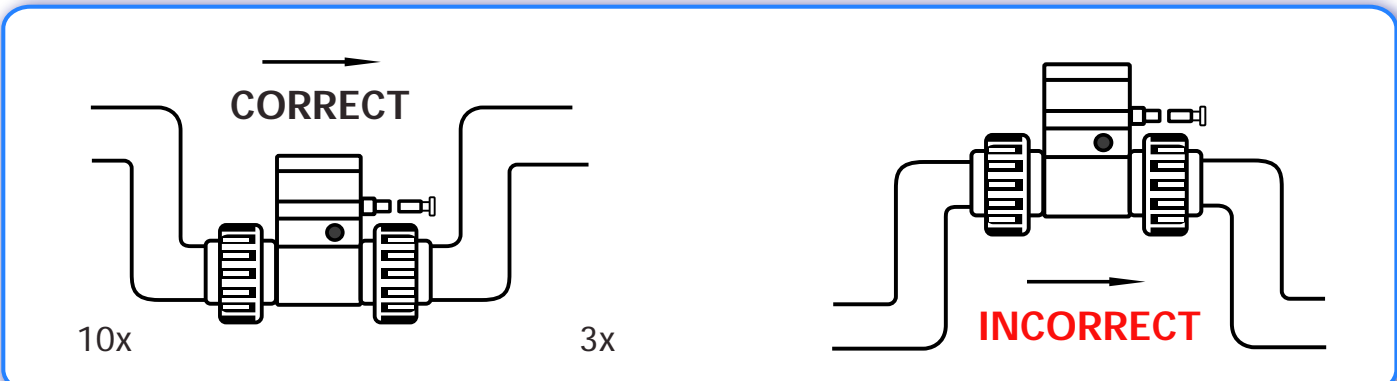
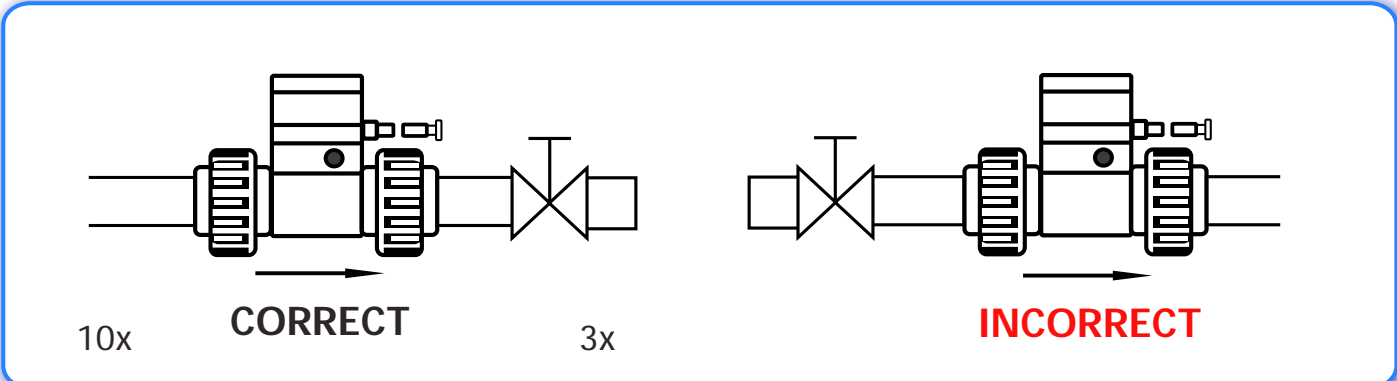
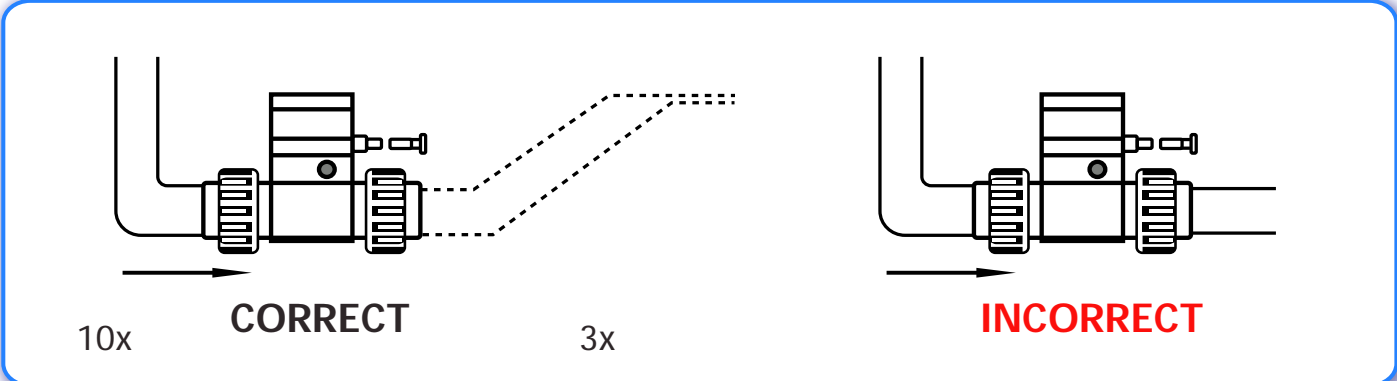


PVC 4" ANSI JIS



**Remarks :** Different Options Are Available

### Installation Positions





## Installation Positions

Please make sure the pipe is filled with the fluid under normal operation.

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 this may damage the ceramic shaft and will Void Warranty





*truflo*®

**Specifications may be modified without notice in advance.  
For More Information Visit [TrufloSales.com](http://TrufloSales.com)**