

ICON PROCESS CONTROLS TIF Series Batching Paddle Wheel Flow Meter Sensor



ICON PROCESS CONTROLS TIF Series Batching Paddle Wheel Flow Meter Sensor User Manual

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ICON PROCESS CONTROLS TIF Series Batching Paddle Wheel Flow Meter Sensor



Specifications

- Operating Voltage
- Current Compensation Control
- Communication Transmitter
- Relay Output
- Flow Rate GPM | LPM
- Fluid Accuracy
- Response Frequency
- Max Flow Rate
- Min Flow Rate
- Materials of Construction
- O-ring material
- Operating Temperature
- Protection Rating
- Approval *Optional

Product Usage Instructions

Safety Information:

Before installation, ensure to de-pressurize and vent the system. Confirm chemical compatibility and do not exceed maximum temperature or pressure specifications. Always wear safety goggles during installation. Do not alter product construction.

Installation:

1. Lubricate O-rings with silicone provided.
2. Carefully lower the sensor into the fitting using an alternating twisting motion. Do not force it.
3. Ensure tab/notch are parallel to flow direction.
4. Hand tighten the sensor cap. Do not use tools.

Correct Sensor Position Setup:

Ensure there are no air bubbles in the liquid media being measured. The pipe must always remain full. The flow meter needs to be placed in a straight run pipe with a minimum distance upstream and downstream of the flow sensor for accurate measurement.

FAQ

Q: What should I do if I encounter sediment during installation?

A: If sediment is present, refer to Figure-3 for the preferred installation method.

Q: Can I use tools to tighten the sensor cap?

A: No, hand tightening is recommended to prevent damage to the product.

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, personal injury, or death.


Hand Tighten Only
 Over tightening may permanently damage product.


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.


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.





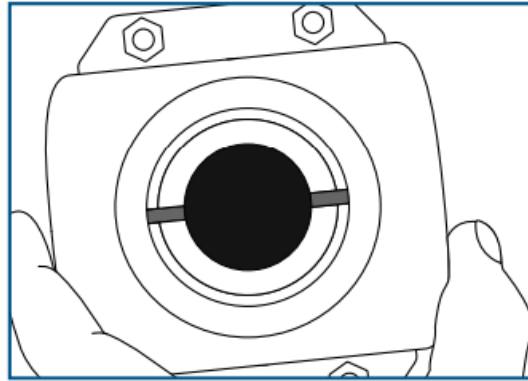
General Information

Function/Description	Specification
Operating Voltage	10 – 30VDC
Current Compensation	60mA max.
Control Communication	RS-485 Modbus
Transmitter	4-20mA
Relay Output	10A 30VDC NO NC
Flow Rate GPM LPM	0.0 – 999.9
Fluid	H2O Liquid Chemical Media
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	Rotor: ETFE Tefzel® Rotor Pin: Zirconium Ceramic Rotor Bushings: Ceramic Sensor Body: PVC/PP/PVDF/316SS
O-ring material	FPM EPDM* FFKM*
Operating Temperature	PVC < 60°C PP < 80°C PF < 100°C
Protection Rating	NEMA 4X IP66 General Purpose
Approval	CE RoHS

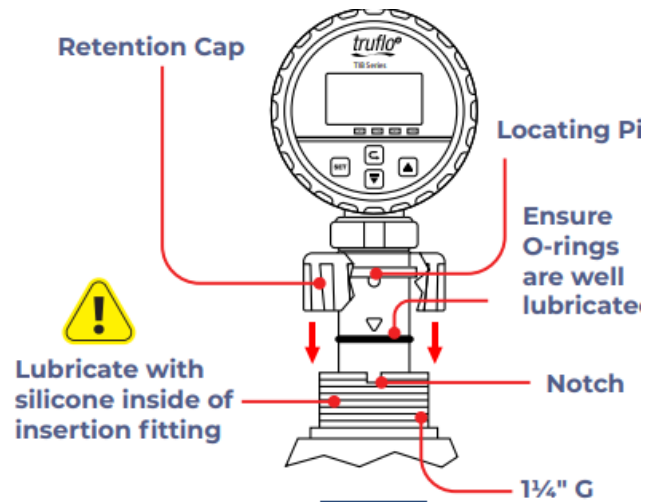
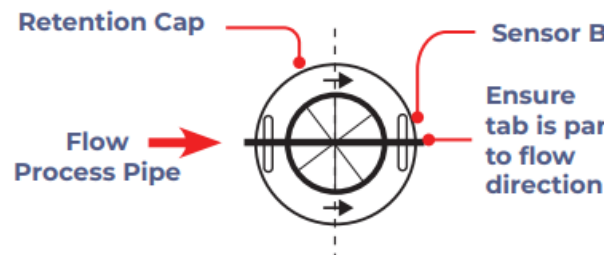
Installation

Very Important

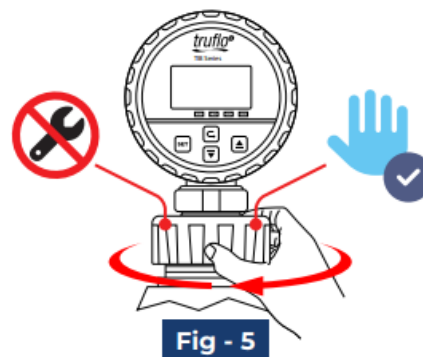
- Lubricate O-rings with silicone (provided).
- Using an alternating twisting motion, carefully lower the sensor into the fitting. | Do Not Force | See Fig 5
- Ensure tab/notch are parallel to flow direction | See Fig-2

Fig - 1**Fig - 2**

Hand-tighten the sensor cap. DO NOT use tools.

**Fig - 3****Fig - 4**

Top View

**Fig - 5**

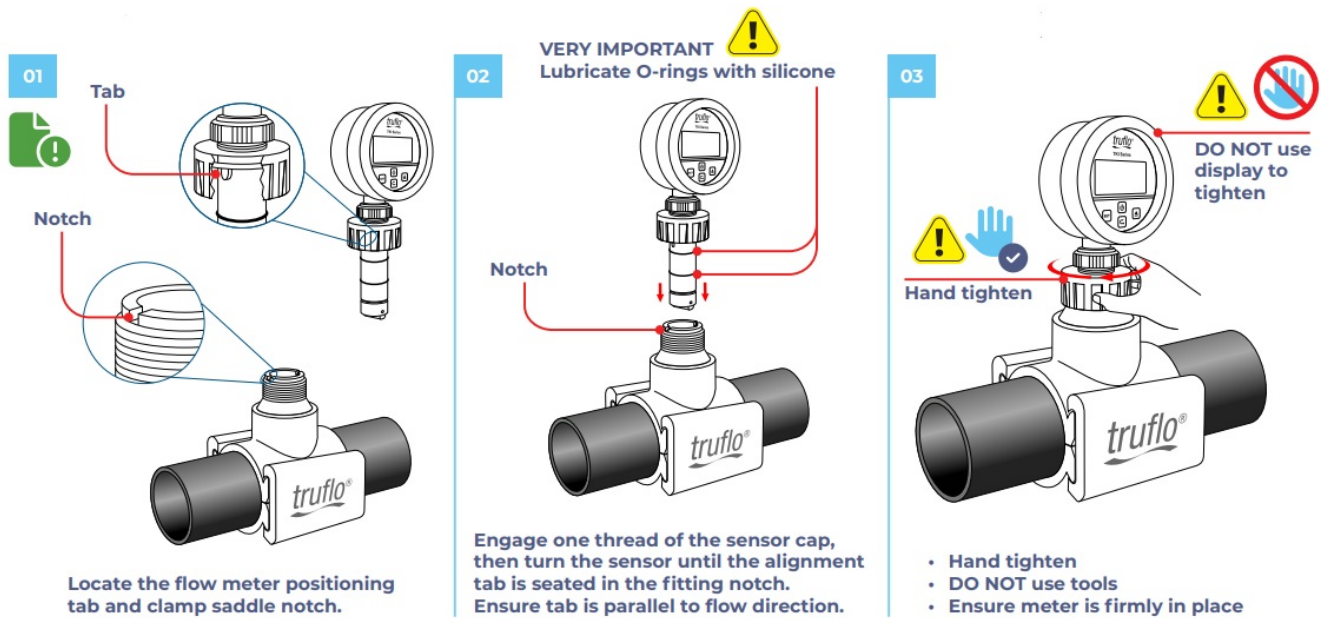
Correct Sensor Position

1. Locate the flow meter positioning tab and clamp saddle notch.
2. 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.

3. Hand tighten

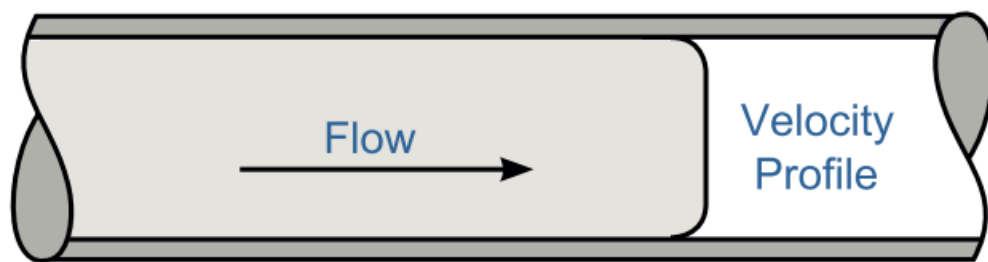
DO NOT use tools

Ensure meter is firmly in place



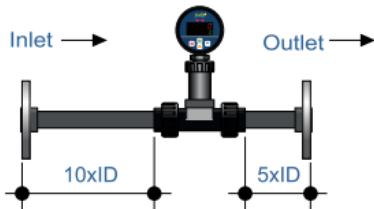
Correct Sensor Position Setup

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 meter needs to adhere to specific parameters. This requires a straight run pipe with a minimum number of pipe diameters distance upstream and downstream of the flow sensor.

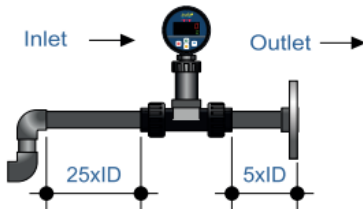


Developed Turbulent Flow

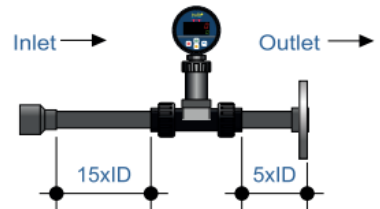
Flange



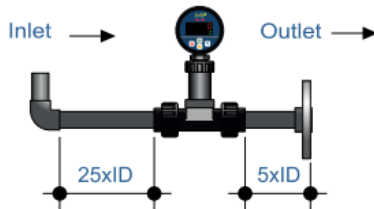
2x 90° Elbow



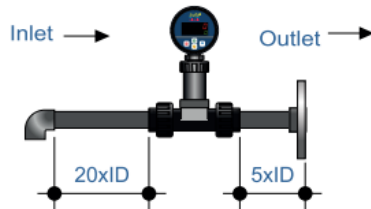
Reducer



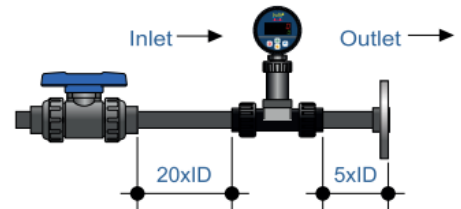
90° Downward Flow



90° Elbow Flow Upward

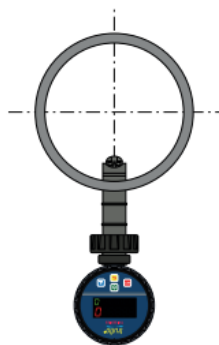


Ball Valve



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

Terminal Connections

Terminal Connections



**Cable Grip Wire
Connector Combo**
(no Internal wiring required)



Cable Grip Connection

Terminal	Description
1	+ 10-30VDC
2	OUT 2 (NPN)
3	- VDC
4	OUT 1 (NPN)
5	4-20mA -
6	4-20mA +



M12 Connection (no Internal wiring required)

Terminal	Description	Color
1	+ 10-30 VDC	Brown
2	Totalizer Pulse Output NPN	White
3	- VDC	Blue
4	Flow Rate Pulse Output NPN	Black
5	4-20mA +	Yellow
6	4-20mA -	Grey

Fittings and K-Factor

TEE FITTINGS



Tee Fitting		K-Factor		Sensor Length
IN	DN	LPM	GPM	
½" (V1)	20	156.1	593.0	S
½" (V2)	25	267.6	1013.0	S
¾"	20	160.0	604.0	S
1"	25	108.0	408.0	S
1½"	40	37.0	140.0	S
2"	50	21.6	81.7	L
2½"	65	14.4	54.4	L
3"	80	9.3	35.0	L
4"	100	5.2	19.8	L

CLAMP-ON SADDLES



Clamp Saddles		K-Factor		Sensor Length
IN	DN	LPM	GPM	
2"	50	21.6	81.7	S
3"	80	9.3	35.0	S
4"	100	5.2	19.8	S
6"	150	2.4	9.2	L
8"	200	1.4	5.2	L

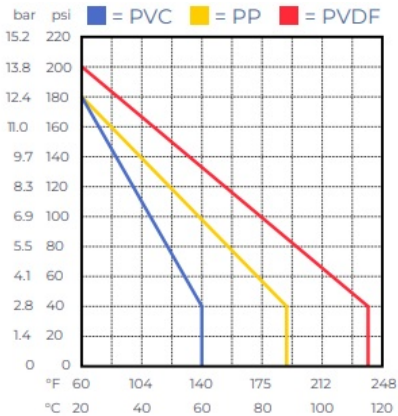
CPVC SOCKET WELD-ON ADAPTERS



Weld On Adapter		K-Factor		Sensor Length
IN	DN	LPM	GPM	
2"	50	14.4	54.4	S
2½"	65	9.3	35.5	S
3"	80	9.3	35.0	S
4"	100	5.2	19.8	S
6"	150	2.4	9.2	L
8"	200	1.4	5.2	L
10"	250	0.91	3.4	L
12"	300	0.65	2.5	L
14"	400	0.5	1.8	L
16"	500	0.4	1.4	L
18"	600	0.3	1.1	L
20"	800	0.23	0.9	L
24"	1000	0.16	0.6	L

Pressure vs. Temperature















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










Min/Max Flow Rates

Pipe Size (O.D.)	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
6" DN150	230.0 60.0	7590.0 1997.0
8" DN200	315.0 82.0	10395.0 2735.0














Programming

STEPS	DISPLAY	OPERATION
1 Press and Hold SET  SET +  3 SEC		Home Screen
2 Password  SET		Factory Default: Lk = 10 Otherwise meter will enter Lockout Mode* Press  /  to change Press SET to save
3 Units of Flow  SET		Ut.G = Gallons (Factory default) Ut.L = Liters Ut.KL = Kiloliters Press  to change Press SET to save
4 K Factor  SET		Enter K Factor Value Refer to Page 6 for K-Factor Values
5 Transmitter Range  SET		Factory Default — 4mA = 0, 20mA = 100** **This can be change to suit application

Programming Frequency Pulse Relay Output

STEPS	DISPLAY	OPERATION
1 Press and Hold SET  SET +  3 SEC		Home Screen
2 Flow Rate Pulse Output  SET		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
3 Flow Total Pulse Output  SET		CV - Program Value of Flow Totalizer Pulse (NPN) Output SV: Preset Value of Flow Total SV - CV > SV ► Flow Rate Pulse Output ON 2000 Default can be changed to desired value. Refer to "Programming OP2 Output" for totalizer options Flow Totalizer Pulse - (Step #2 - Next)



Programming Relay Output

STEPS	DISPLAY	OPERATION
1 Press and Hold SET  SET +  3 SEC		Home Screen
2 OP2 Output Pulse Control (Frequency)  SET		Con = n: OP2 Manual Reset (Press  for 3 sec to reset) CV < SV: Relay 2 on (OP2 on) CV < SV: Relay 2 off (OP2 off)
3 Pulse Relay  SET		Refer to Relay Selection Mode Below
4 Hysteresis  SET		Press  to change Press SET to save (Hysteresis is a buffer around the programmed set point)
5 Time Delay  SET		

Relay Selection Mode

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

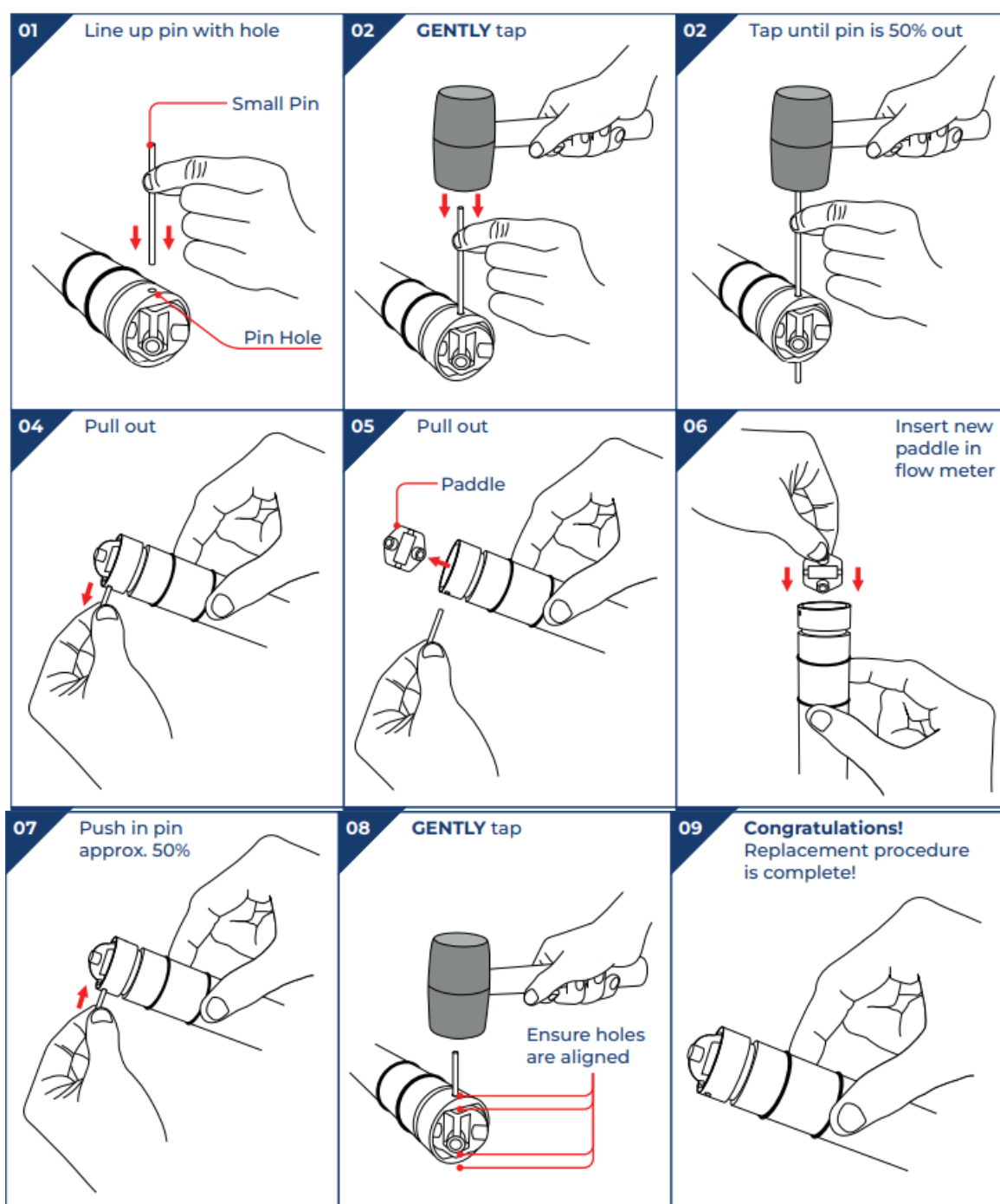
Press  +  keys for 3 seconds to reset the flow totalizer.

Min | Max Flow Rates

PIPE SIZE	GPM	LPM
½" DN15	1.0 3.5	32 120
¾" DN20	1.5 5	45 170
1" DN25	2.5 9	79 300
1½" DN40	6.5 25	225 850
2" DN50	10.5 40	357 1350

PIPE SIZE	GPM	LPM
3" DN80	24 90	739 2800
4" DN100	33 125	1149 4350
6" DN150	60 230	1997 7590
8" DN200	82 315	2735 10395

Rotor Pin | Paddle Replacement



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.

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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 or support@iconprocon.com | Ph: 905.469.9283

Documents / Resources



[ICON PROCESS CONTROLS TIF Series Batching Paddle Wheel Flow Meter Sensor](#) [pdf] User Manual
TIF Series, TIF Series Batching Paddle Wheel Flow Meter Sensor, Batching Paddle Wheel Flow Meter Sensor, Paddle Wheel Flow Meter Sensor, Wheel Flow Meter Sensor, Flow Meter Sensor, Meter Sensor, Sensor

References

- [User Manual](#)

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