

Wet Tap Sensor Installation Manual



Critical Safety Information

NOTICE

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental, and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator and/or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information



DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury



WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

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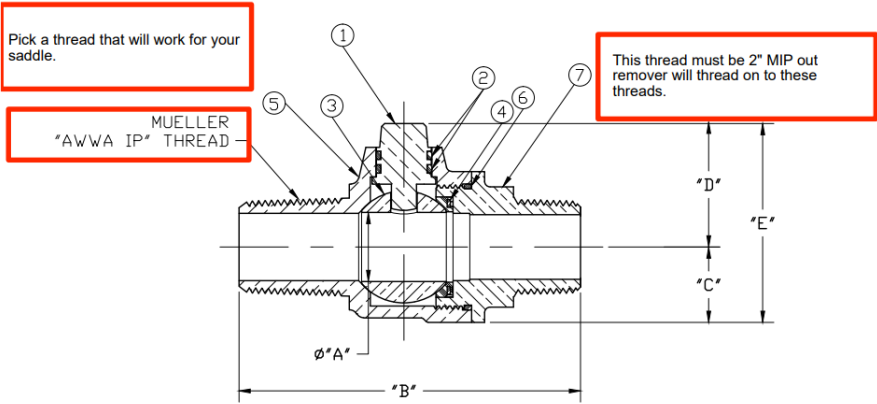
Product Description

The Wet Tap Sensor consists of the sensor probe, and a drinking water mounting system, referred to as the remover assembly.

The sensor can be connected or implemented to a system by either:

1. Using a Display/Transmitter powered with 24VDC
2. To a SCADA system using Modbus RTU protocol and 24VDC

The remover assembly must be secured onto an MIP threaded end. Using a (**AWWA IP X MIP**) 2" Mueller Corp. Stop Ball Wet Tap Valve (or equivalent) is recommended, below is more information on this valve.



					DRF TR	RWB	6/25/03	Mueller Co.	
					CHKR				
					ENGR			UNLESS OTHERWISE NOTED SURFACE PREPARATION: BREAK CORNER(S) ---- .000 SURFACE FINISH -- .000 RMS TOLERANCE(S): LINEAR ----- ± .000 ANGULAR ----- ± 0°00'	
					MGR				
					BY		DATE	REF. No.	SCALE
					STK No:				NONE
					MAT'L:				
REV	ECR	DESCRIPTION	DATE	BY	CHKR	DESCR. MUELLER CORP. STOP BALL VALVE (*AWWA IP" x MIP)			PART NUMBER B2969N
PER EST NO: DXXXX EST FIN WT = 0.0000 lbs									

1. Features

- Measures chlorine in samples having pH as high as 9.0
- Requires minimum maintenance
- Replaceable wear parts for minimal down time
- No membranes or electrolyte replacement required
- No waste stream or flow control needed
- Direct pipe insertion
- Self-cleaning
- 316 stainless steel sensor housing

1.1 Specifications

Sensor Sample Requirements

Sample Pressure	-0.7 to 10 Bar
Sample Temperature	1 to 50° C
Sample pH	pH 5-10
Suspended Solids	Up to 3,000 ppm
Sample Flowrate	Variable from 0 to 5 m/Second
Sample Conductivity	400 to 55,000 μ S at 0 to 25°C

2. Sensor Installation



DANGER

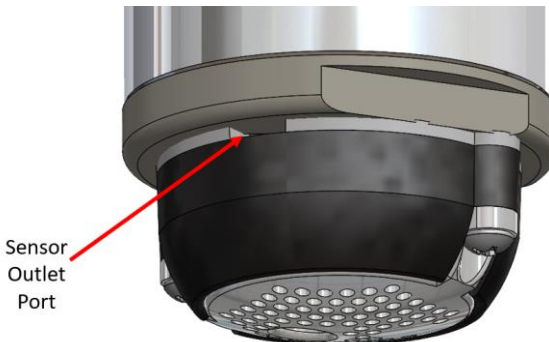
Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

The sensor is not affected by changes in flow rates. Flow velocities from zero to 15 feet per second result in a negligible change in signal.

Location of Components

Outlet Port

The outlet port for all intents and purposes is also known as the ejection port. The outlet port is responsible for ejecting the process water back into the system. The orientation of the outlet port within a pipe must be carefully considered. Instructions for the alignment of the outlet port have been laid out in **sections 2.2 and 2.3**. The image below displays how to identify the sensor outlet port.



TRO Sensor

1. Located in a straight length of pipe at least 1.5 times the pipe diameter.
2. The tip of the sensor should protrude into the pipe a minimum of 30mm.

2.1 Component Labels

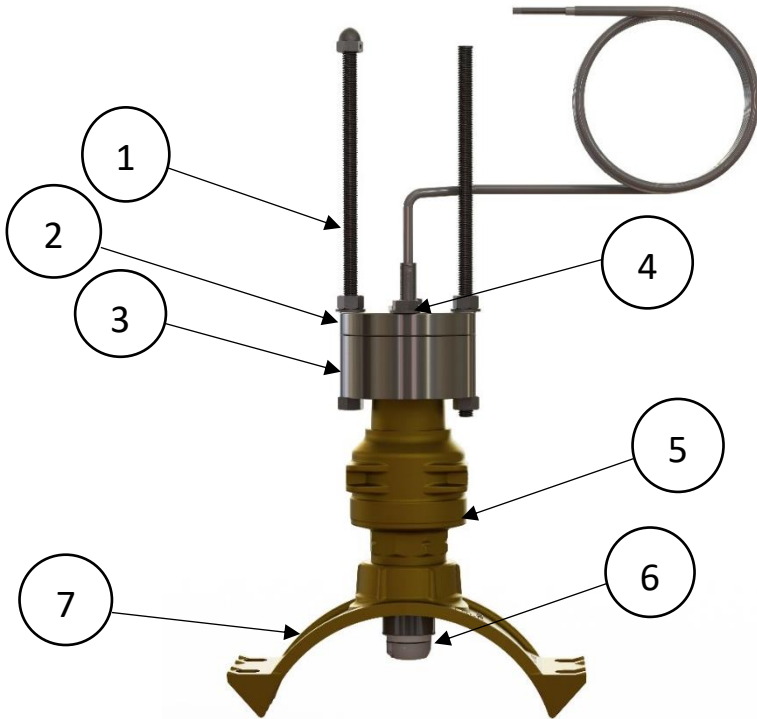


Figure 1. Drinking Water unit installed in pipe and detail of installation components.

No.	Part Description
1	Threaded Rod
2	Cap Mater
3	Remover Cap
4	Hex Bolt and Washer
5	2" AWWA IP X MIP Corp Stop Valve (not included)
6	Sensor
7	2" FIP Pipe Saddle (not included)

The Drinking water Assembly is designed to be installed in a 2" AWWA IP X MIP Corp Stop Valve (or equivalent). These instructions assume a 2" Wet Tap Valve such as Mueller PN B-2969N and the appropriate saddle have been successfully installed.

2.2 Vertical Installation

For vertical installations, where a pipe is installed along a vertical wall, the sensor must not be inserted into a segment of the pipe where the water flows downward Figure 2 (b).

For vertical installations, water must flow upwards, and the Wet Tap Sensor must align with the direction of flow as shown in Figure 2 (a).

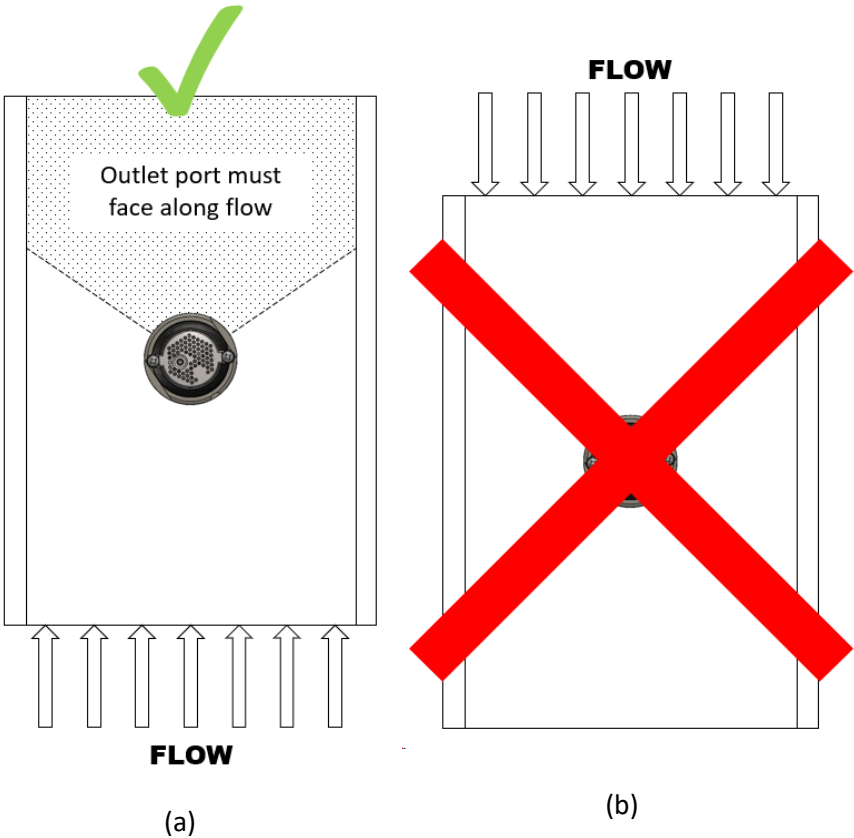


Figure 2. Front-facing cross-sectional views of vertical pipe installations. (a) Displays a correct installation of a Wet Tap Sensor, the outlet port must be directed in the marked region, along the direction of water flow. For clarity, (b) Depicts an incorrect installation of a Wet Tap Sensor, the direction of water flow must be upward.

2.3 Horizontal Installation

For horizontal installations, the Wet Tap Sensor must not be installed vertically as shown in flow-facing views of Figure 2 (c), and (d). The sensor must be installed **within $\pm 45^\circ$ from horizontal** as shown in figure 3 (a), and (b).

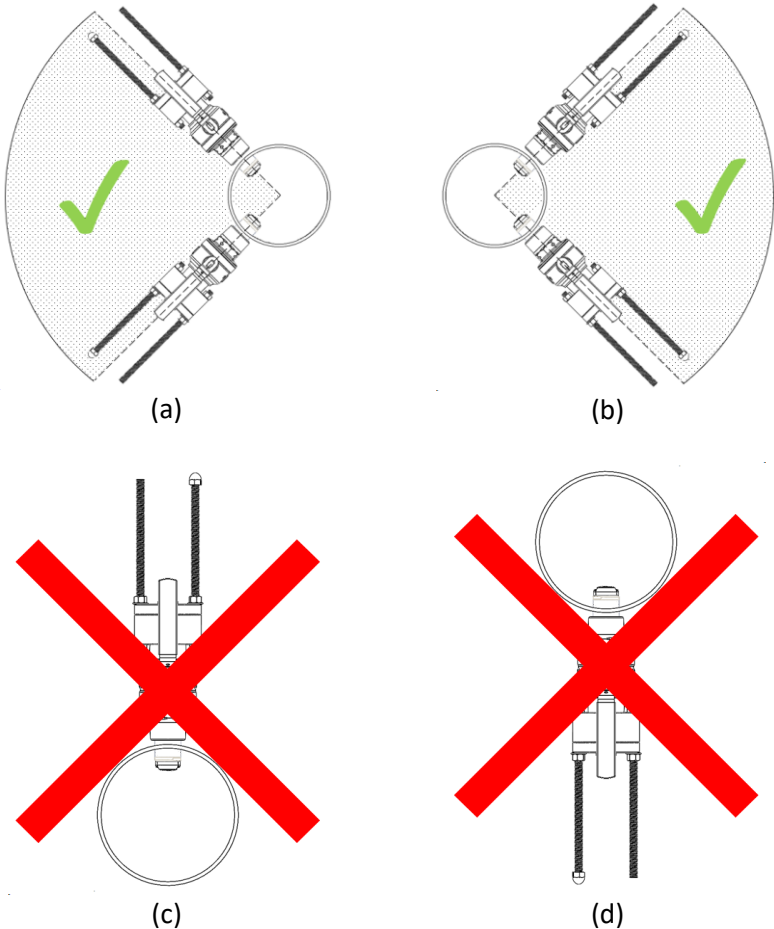


Figure 3. Flow-facing cross-sectional views of horizontal pipe installations. (a) and (b) display the acceptable range in which the Wet Tap Sensor can be installed onto a horizontal pipe. The Wet Tap Sensor must be installed within $\pm 45^\circ$ from horizontal. For clarity, (c) and (d) display incorrect installations of a Wet Tap Sensor.

Additionally, the outlet port must align with the direction of water flow and upwards, given the direction of flow, Figure 4 demonstrates where the outlet port should point.

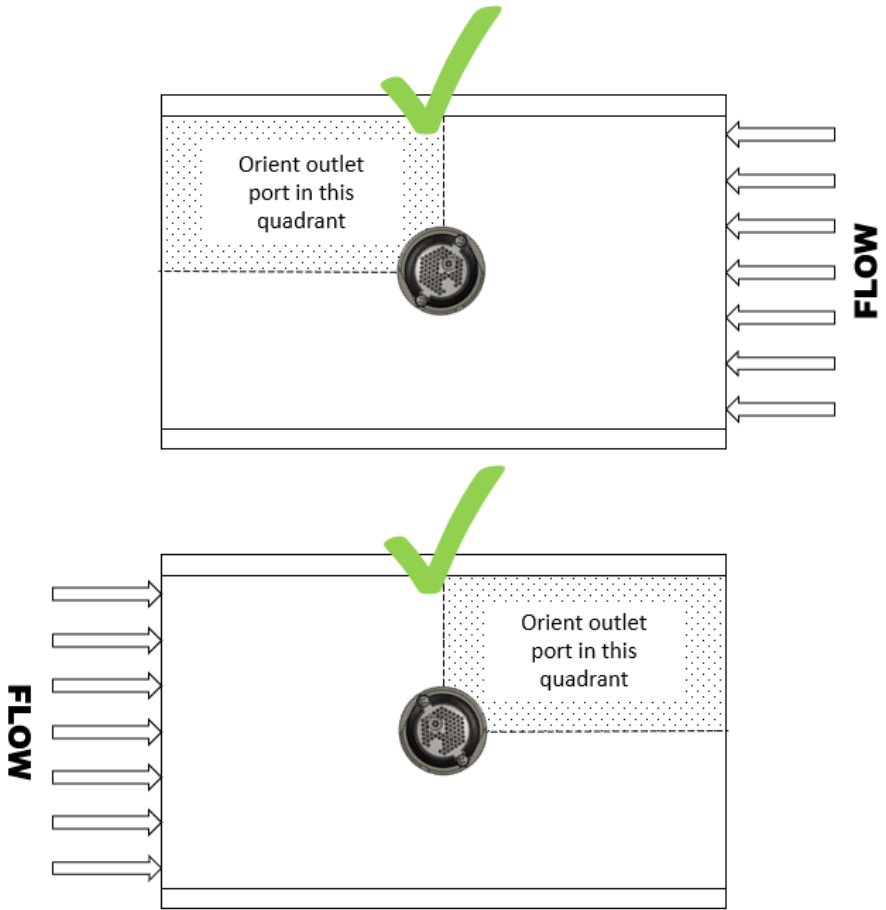


Figure 4. Front-facing cross-sectional views of correct outlet port orientation. The outlet must be directed upwards and along the flow.

2.4 Initial Installation

This installation assumes that a ⑤ Corp Stop valve and ⑦ saddle have been installed in the desired location in the pipeline. Any 2" Corp Stop valve and appropriate saddle may be used (2" AWWA IP thread X 2" MIP threads). One valve example is Mueller B-2969N.



Figure 5. Blue tape location on cap.

1. Remove blue tape from the ③ remove cap.
2. Install ③ remove Cap onto ⑤ 2" Corp Stop Valve.
3. Install the two ① all-thread rods into the ③ remove cap until protruding from the other side by about ½ inch. Thread hex nuts onto protruding threads.



Figure 6. Valve-side of cap showing ½ inch protrusion of all-thread rod.

4. The outlet port aligns with the sticker shown in Figure 9. Correctly orient ⑥ sensor by rotating the ② cap mater. **Review sections 2.2 and 2.3 for correct outlet port orientation.**



Figure 7. The outlet port aligns with the sticker shown.

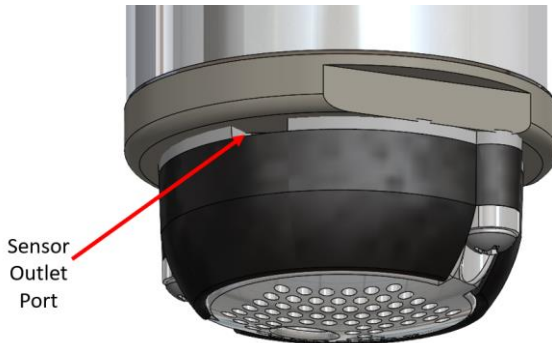


Figure 8. How to identify the outlet port in a Wet Tap Sensor.

- Slide ⑥ sensor/mater assembly into cap using ③ all-thread rods as guide. Ensure sensor sleeve is pushed past the two O-rings located inside mater.

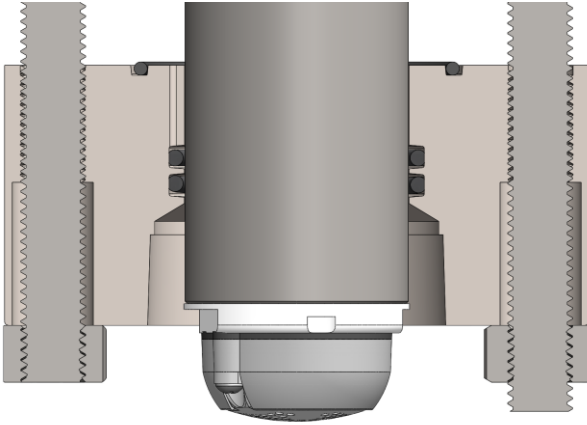


Figure 9. Cross-Section of Cap with sensor end pushed passed both internal O-rings.

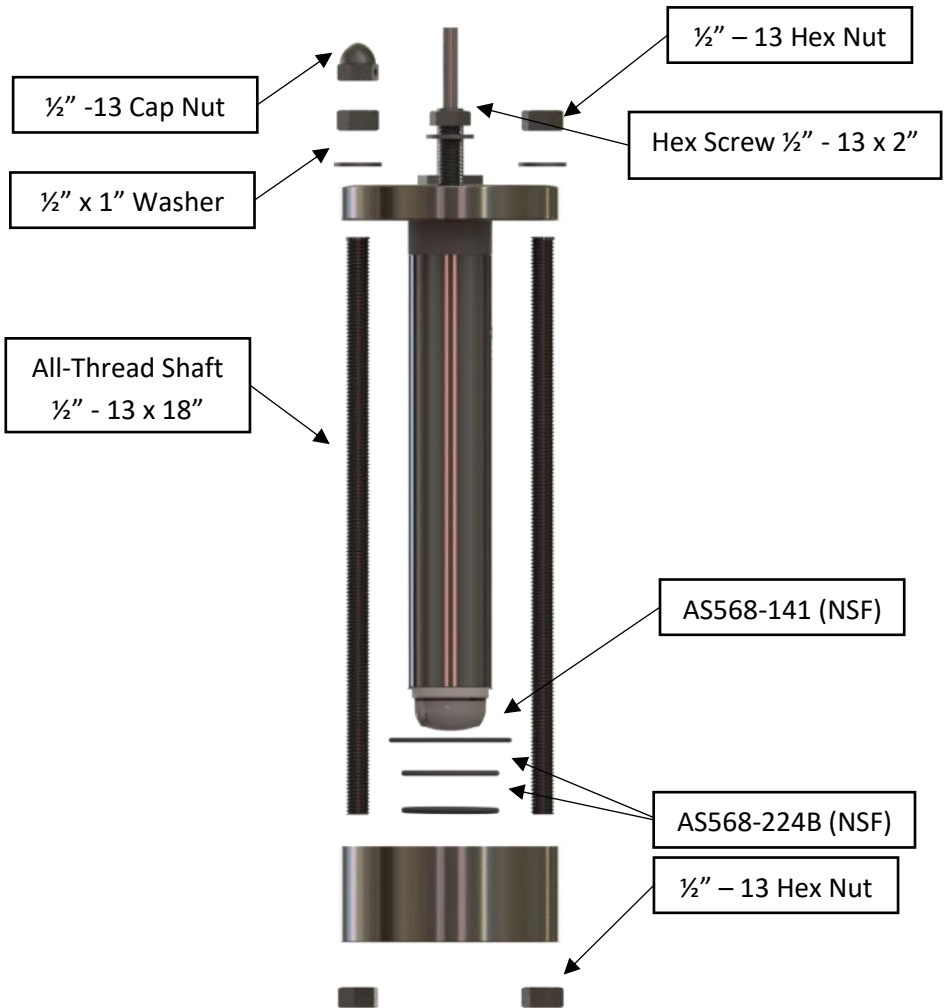
- While valve is still closed, place the washers and nuts onto the ① all-thread rods until they are flush with ② Cap mater.



Figure 10. Orientation arrow depicting location of ejection port on sensor end. Line up perpendicular to flow direction.

7. Open ⑤ wet tap valve and insert ⑥ sensor/mater assembly completely into process stream. The ② cap mater should be completely flush with ③ remover cap (as shown in figure 1).
8. Secure the ③ cap and ② mater using the ④ two hex nuts and washers. Tighten hex nuts all the way to mater wrench tight.
9. Add locking cap nut to one threaded rod. This serves to prevent accidentally removing the retaining nuts completely.

10. Replacement Part Descriptions



11. Limited Warranty

Halogen Systems warrants its products against material workmanship defects for a period of one (1) year from the date of shipment.

In the event that a defect is discovered during the warranty period, Halogen Systems agrees, at its option, to repair or replace the defective product. Any product repaired or replaced under this warranty will be warranted only for the remainder of the original product warranty period.

Products may not be returned without authorization from Halogen Systems. To obtain authorization, please call Halogen Systems for a return material authorization number.

Limitations:

This warranty does not cover:

- 1) Damage caused by misuse, neglect (lack of appropriate maintenance), alteration, accident, or improper application or installation.
- 2) Damage caused by any repair or attempted repair not authorized by Halogen Systems.
- 3) Any product not used in accordance with the instructions furnished by Halogen Systems.
- 4) Damage caused by acts of God, natural disaster, acts of war (declared or undeclared), acts of terrorism, work actions, or acts of any governmental jurisdiction.
- 5) Freight charges to return merchandise to Halogen Systems.
- 6) Travel fees associated with on-site warranty repair.

This warranty is the sole expressed warranty made by Halogen Systems in connection with its product. All other warranties, whether expresses or implied, including without limitation, the warranties of merchantability and fitness for a particular purpose, are expressly disclaimed.

The liability of Halogen Systems shall be limited to the cost of the item giving rise to the claim. In no event shall Halogen Systems be liable for incidental or consequential damages.

This warranty is the sole and complete warranty for Halogen Systems. No person is authorized to make any warranties or representations on behalf of Halogen Systems.

Halogen Systems reserves the right to change or modify this warranty at any time.