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.

Contents

Product Description

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

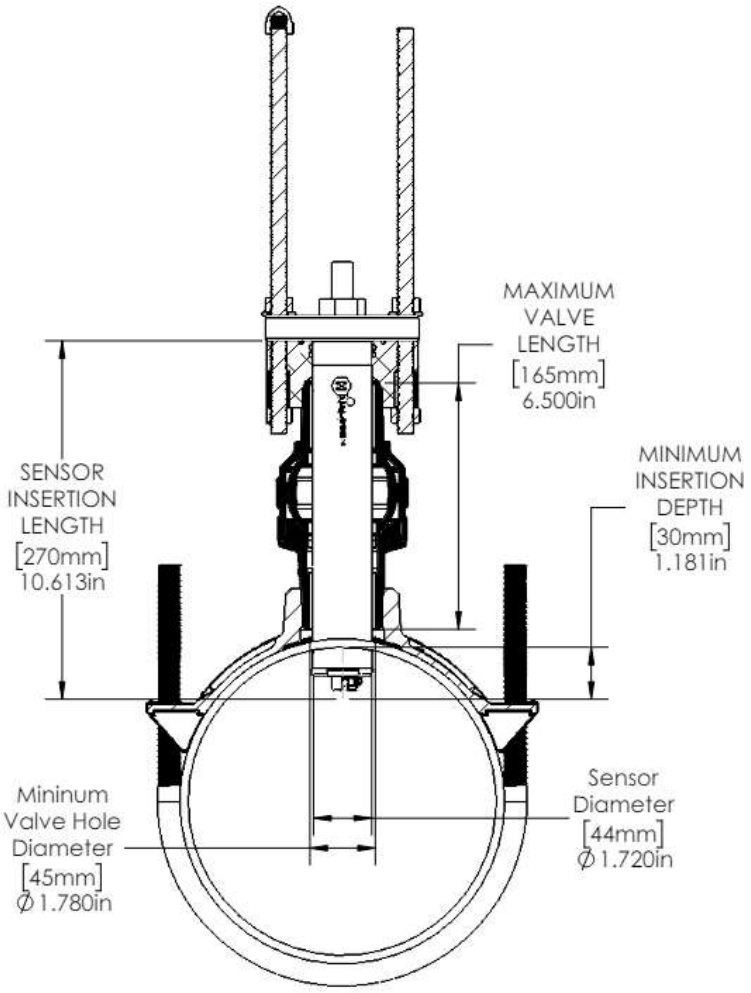
The sensor can be connected or implemented to a system by either:

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

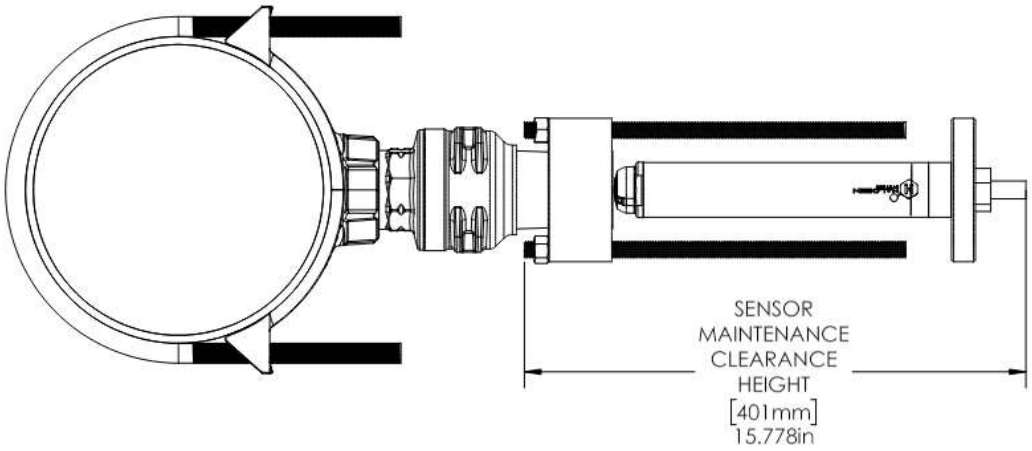
Depending on your product configuration, you can mount the remover assembly onto a **Corp Stop Male x Male valve** with British Standard Pipe – Tapered (BSPT) threads or National Pipe – Tapered (NPT) threads.

KITS-WT10: Remover Assembly with **2" Female NPT Threads**
KITS-WT20: Remover Assembly with Female **Rc 2 BSPT Threads**

The minimum insertion depth of the sensor must be 30mm from the sensor end to the inner diameter of the process pipe as shown below:



Install the wet tap sensor in a location where it can be maintained, refer below for the clearance height of the wet tap sensor.



1. Features

- Minimal maintenance.
- Reduced downtime with replaced wear parts
- No membrane and electrolyte 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 6.5 to 8.75
Suspended Solids	Up to 3,000 ppm
Sample Flowrate	Variable from 0 to 5 m/Second
Sample Conductivity	50 to 10,000 µS 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.

Location of Components

Outlet Port

The outlet port, or ejection 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

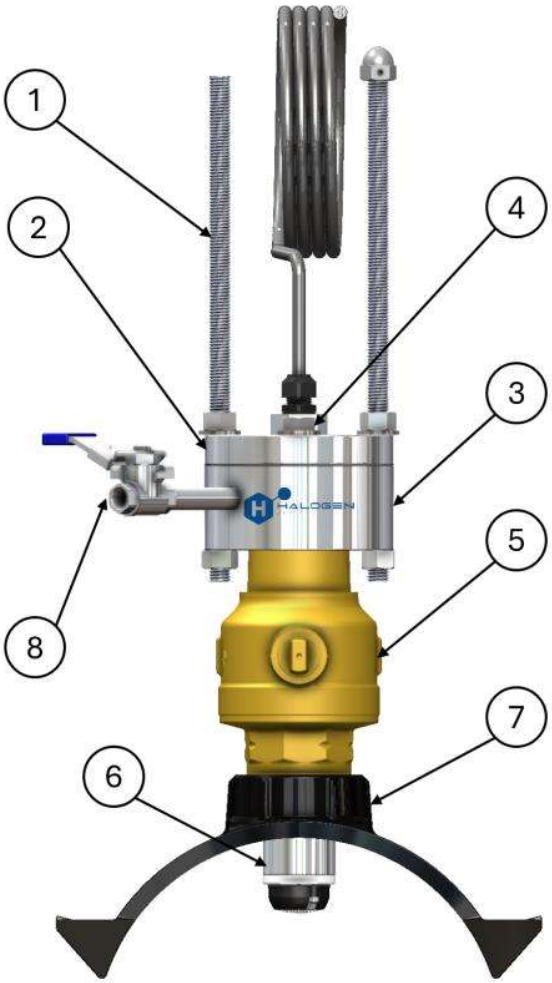


Figure 1. Drinking Water unit installed in pipe and detail of installation components.

No.	Part Description
1	Threaded Rod
2	Cap Mater
3	Remover Cap (configurable to NPT or BSPT threads)
4	Hex Bolt and Washer
5	Corp Stop Male x Male Valve (not included)
6	Sensor
7	Female Pipe Saddle (not included)
8	Sample Port

Depending on your product configuration, the Drinking water Assembly is designed to be installed in a Corp Stop Male x Male valve with 2” NPT threads or Rc 2 BSPT threaded valve. These instructions assume that a Wet Tap Valve 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).

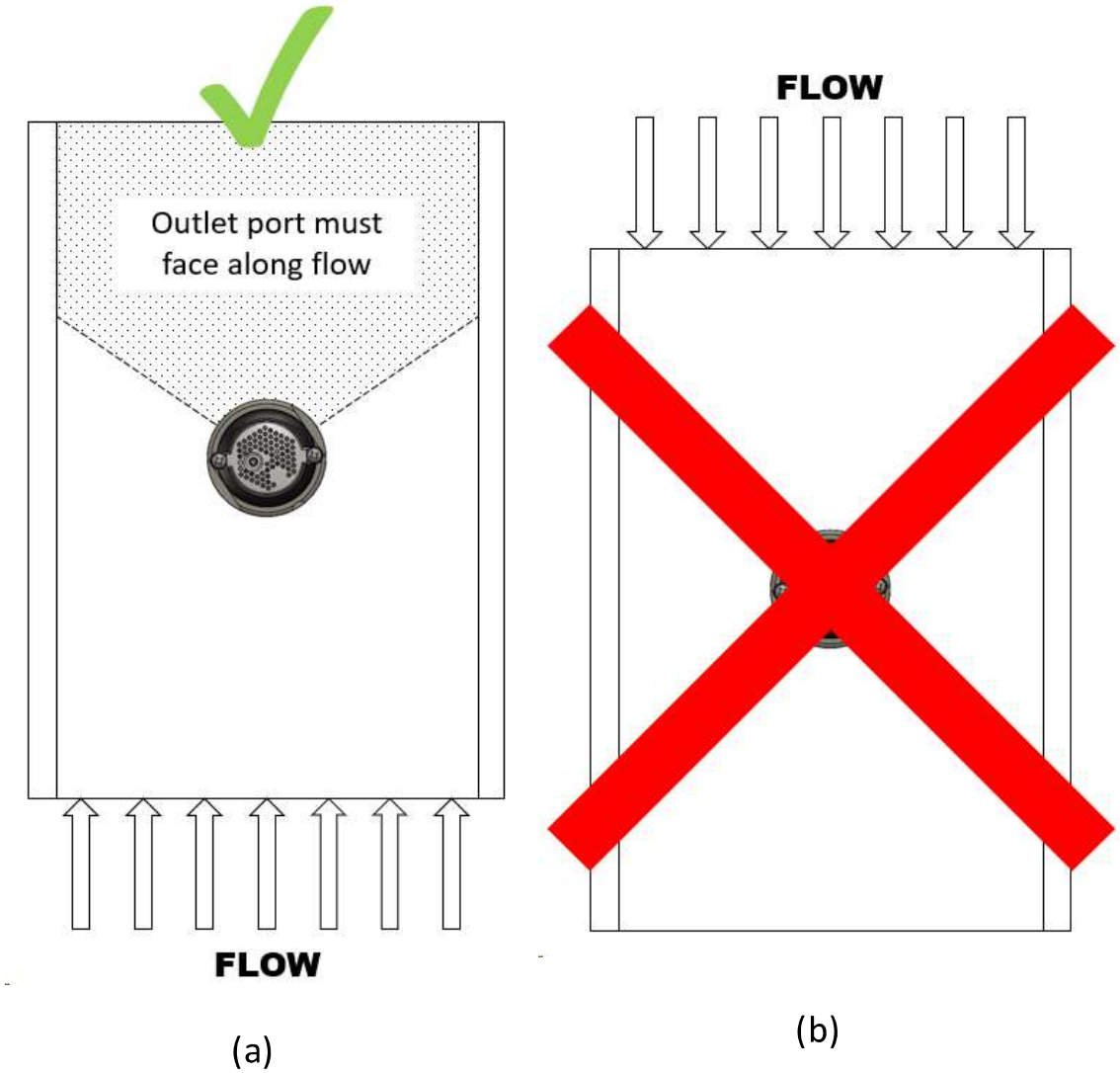


Figure 2. Front-facing cross-sectional views of vertical pipe installations. (a) Displays a correct installation of a Wet Tap Sensor, the outlet port must face in the marked region, along the direction of water flow. For clarity, (b) Depicts an incorrect installation of a Wet Tap Sensor, the direction 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 +/- 45° from horizontal** as shown in figure 3 (a), and (b).

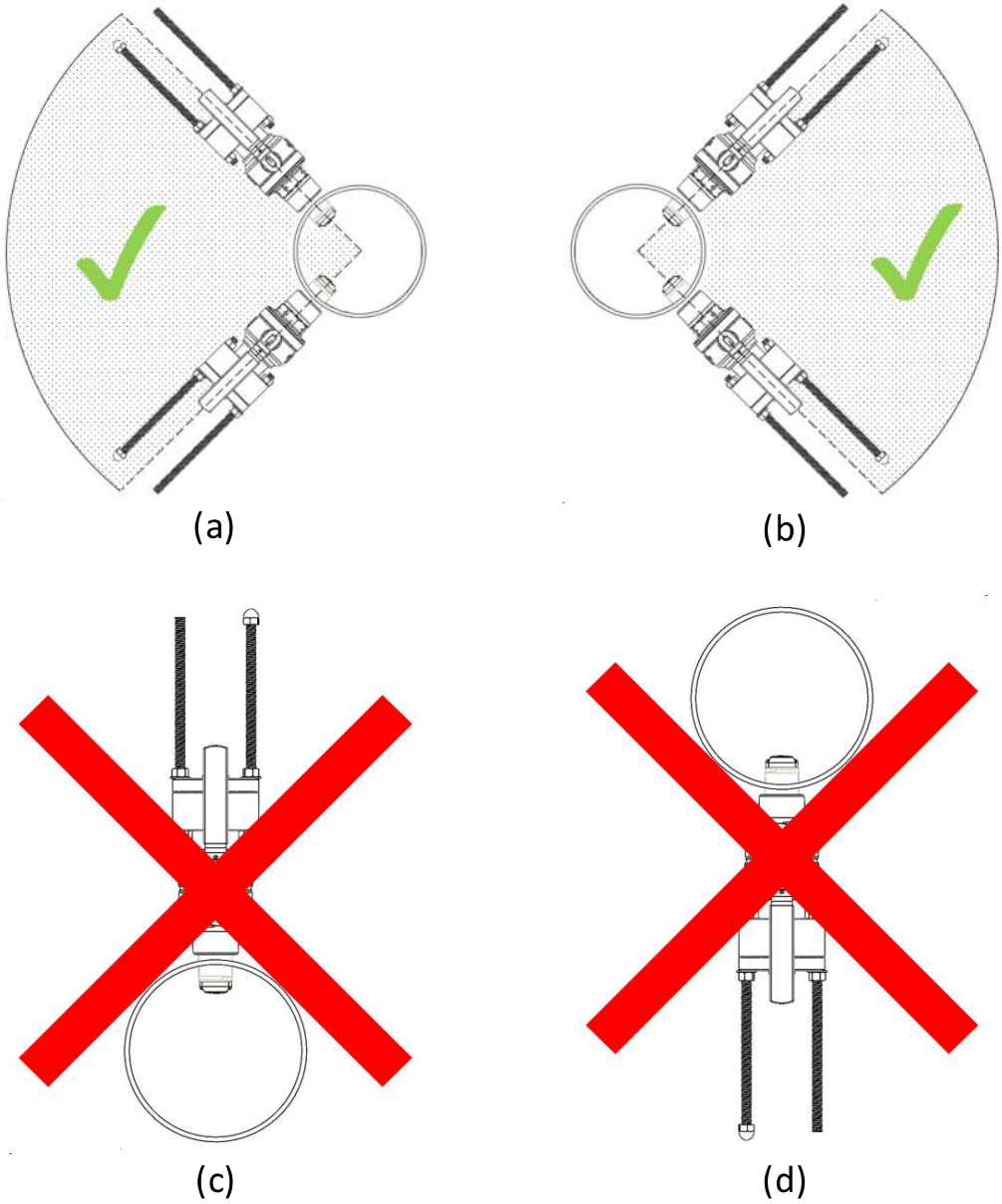


Figure 3. Flow-facing cross-sectional views of horizontal pipe installations. (a) and (b) display the acceptable range in which the Wet Tap Sensor can be installed onto a horizontal pipe. The Wet Tap Sensor must be installed within +/- 45° from horizontal. For clarity, (c) and (d) display incorrect installations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

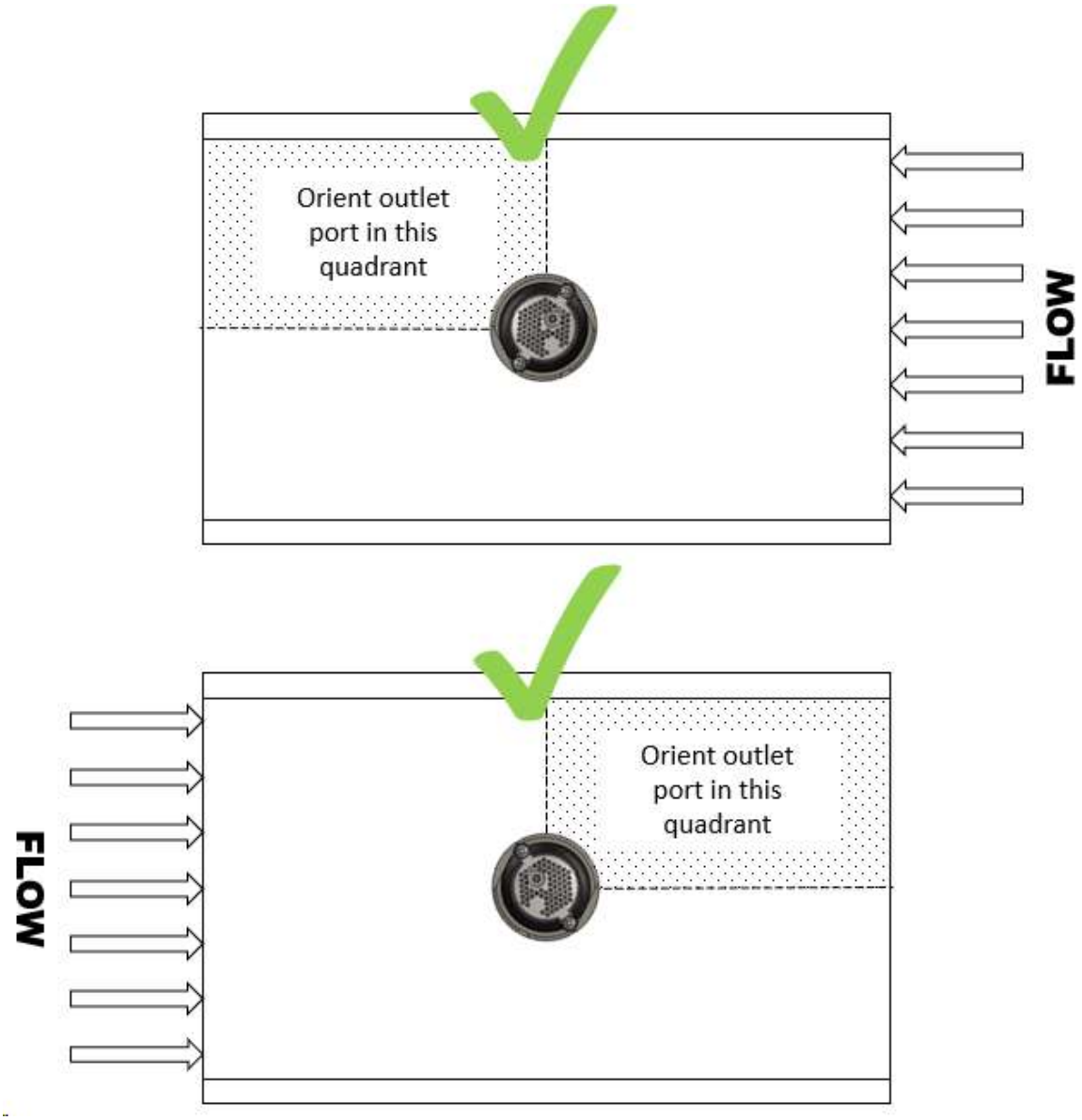


Figure 4. Front-facing cross-sectional views of correct outlet port orientation. The outlet must be directed upwards and along the flow.

2.4 Initial Installation

This installation assumes that a ⑤ **Valve** and ⑦ **Pipe Saddle** have been installed in the desired location in the pipeline. Ensure that the threads on the Corp Stop Male x Male Valve and Female Pipe Saddle are compatible. Valve I.D. must be 2" [50mm]

Figure 5. Blue tape location on cap.

1. Remove blue tape from the ③**Remover Cap**.
2. Install ③**Remover Cap** onto ⑤ **Corp Stop Male x Male Valve**.
3. Install ⑧**Sampling Port** onto ③**Remover Cap**.

Figure 6. Installation of sampling port fitting.

⚠ **WARNING**
To avoid leaking or damaging the sealing O-ring. Do NOT overtighten the sampling port fitting onto the remover cap

Note: When sampling water, please allow a minimum of 200mL of water to be dispensed before collecting a sample.

4. Install the two ①**All-thread Rods** into the ③**Remover Cap** until protruding from the other side by about 3/4" [19mm]. Thread hex nuts onto protruding threads.

Figure 7. Demonstration of All-thread Rod protruding ¾" from the other side of the Remover Cap.

5. 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 8. The outlet port aligns with the sticker shown.

Figure 9. How to identify the outlet port in a Wet Tap Sensor.

6. Slide ⑥**Sensor** assembly into cap using ③**All-thread Rods** as guide. Ensure sensor sleeves are pushed past the two O-rings located inside mater.

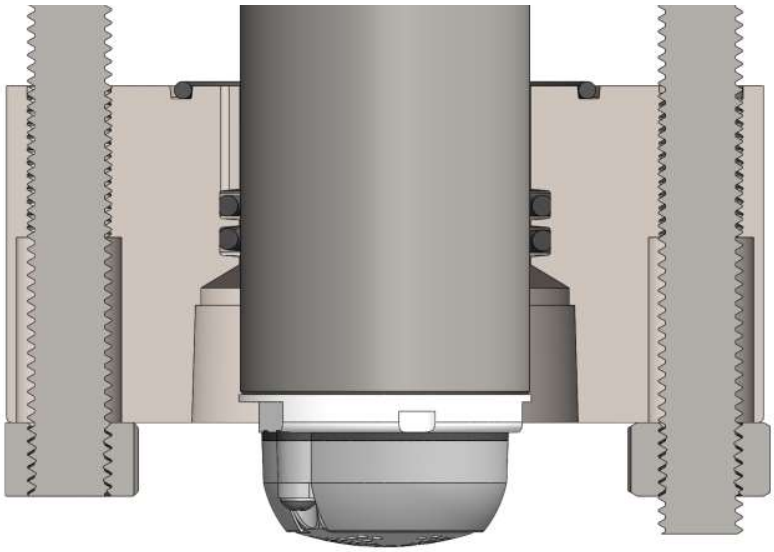


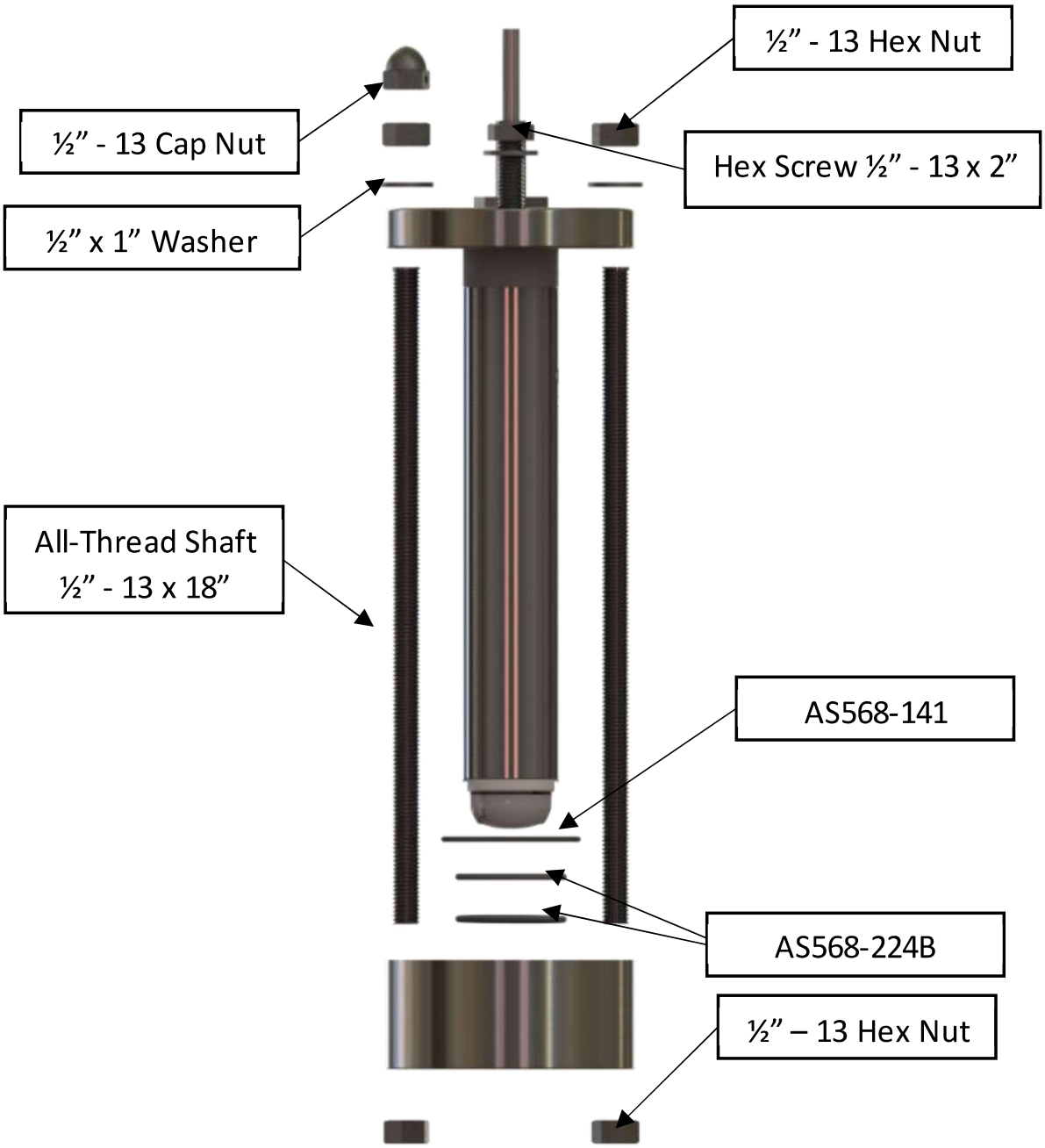
Figure 10. Cross-Section of Cap with sensor end pushed passed both internal O-rings.

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

Figure 11. Orientation arrow depicting location of ejection port on sensor end. Line up perpendicular to flow direction.

8. Open ⑤**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).
9. 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.
10. Add locking cap nut to one threaded rod. This serves to prevent accidentally removing the retaining nuts completely.

3. Replacement Part Descriptions



4. 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.