



MODEL 10HT Optical Dissolved Oxygen Hot Tap Pipe Insertion Sensor

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GENERAL INFORMATION

The Model 10HT DO sensor is designed to work with the InsiteIG Model 1000, Model 2000 and MPA48 analyzers for the continuous measurement of dissolved oxygen in aqueous solutions in pipes. The microprocessor-based electronics of the analyzers provide a high degree of flexibility and ease of use. Calibration is not required on a routine basis, nor is calibration required after initial startup and commissioning. Two isolated analog outputs are standard. Three programmable set-point relays and one relay to control self-cleaning are also standard. See the Analyzer OP Manual for calibration procedures and relay programming.

The Model 10HT sensor is an optical type sensor that measures the fluorescence and quenching reactions of a ruthenium complex that is immobilized in a sol-gel matrix.



Note ! – In “Normal Operation” the pressure in the pipe should not exceed 40 psig. If possible the pressure should be as low as possible (under 30psig) during sensor extraction. INJURY MAY OCCUR IF INSTRUCTIONS ARE NOT FOLLOWED!

INSTALLATION

1. Preparation:

- 1.1. The recommended pipe diameter is 6" and larger. (The sensor can be installed in a 4" pipe but it will obstruct flow.)
- 1.2. To insure that sample is flowing past the measurement element, the sensor location should be two pipe diameters from any flow obstructions (bends) and in a filled pipe.
- 1.3. Install 2" full port low profile weld-o-let per manufactures specification and at the clocked location shown in drawing IIG02N601. The port through the pipe wall must be a minimum of 2.0" with smooth edges to avoid sensor damage during extraction.
- 1.4. Install the customer supplied ball valve and the InsiteIG Main Shaft, Figure 1a., onto pipe using PTFE Thread Compound or Teflon tape. Do not completely tighten. Final alignment will be made when sensor is in place. The back edge of ball valve should be no more than 10 inches from inside wall of pipe.

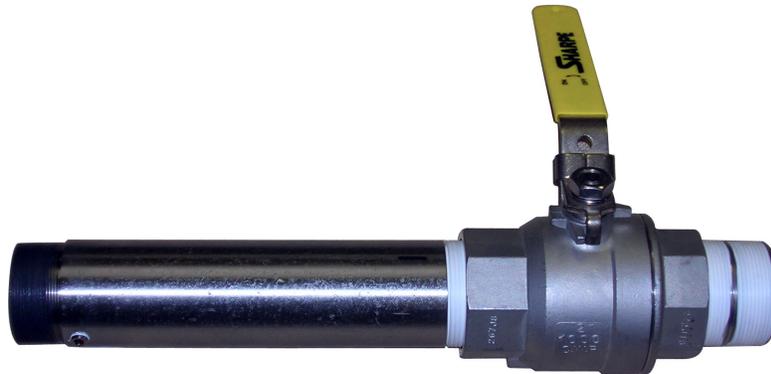


Figure 1a; S.S. Ball Valve Assembly in closed position. (The CPVC sensor uses a customer supplied ball valve.)

- 1.5. Check to make sure that the ball valve can open and close freely.
- 1.6. Close Ball valve. The pipe can be put into service at this time but it is recommended to wait until installation is complete.

2. Sensor Alignment:

- 2.1. The sensor element surface must 90° to the flow of sample to $\pm 10^\circ$. The direction of the line flow is indicated by the handle. Insert Sensor Assembly into the Ball Valve Assembly until the sensor head comes in contact with the ball. See figure 2a.



Figure 2a; Sensor in Extracted Position

- 2.2. Slide Retaining collar onto the main shaft as shown above and screw it completely down until threads are no longer visible.
- 2.3. Open ball valve and push sensor assembly into the pipe while lining up the pin hole in the collar to the one in the shaft. While holding the sensor in place, inserting the locking pin, making sure it locks into place. The sensor is now captured.



Figure 2b; Sensor Inserted and Pinned.

Note: Ball valve must be completely open for the sensor to pass through.

- 2.4. Once the sensor is pinned in place, use the handle as an alignment guide and rotate the Ball Valve assembly such that the handle is inline with the pipe.

NOTE! Do not use the handle to turn the assembly. Turn the entire assembly at the hex of the ball valve.

3. Sensor Extraction Procedure

- 3.1. The sensor need only be extracted for periodic maintenance and calibration.
- 3.2. Check the orifice and general condition of the sensor to make sure it is not damaged or in any way unsafe. If the orifice is clogged, use a standard paperclip to unblock the hole. It is important that air is allowed to flow freely through the hole.
- 3.3. Push on sensor handle to off load locking pin and remove pin. **NOTE! DO NOT STAND DIRECTLY BEHIND THE SENSOR.** It will be pushed out with a great deal of force depending on the line pressure in the pipe. The sensor will initially pop out about half way and then slow down until it is fully extracted. An orifice in the ball valve assembly will restrict the acceleration of the sensor and allow it to slowly come out.
- 3.4. Once the sensor stops at the retaining collar, close the ball valve. The sensor assemble is now cut off from the line pressure, but there is still a small area around the sensor head that is under pressure. This will quickly dissipate when sensor is removed.
- 3.5. Unscrew the retaining cap at the knurl (do not use a tool...this should be hand tight) Once the retaining cap is unscrewed the sensor will come out past the o-ring seal and the pressure and captured waste will be released.

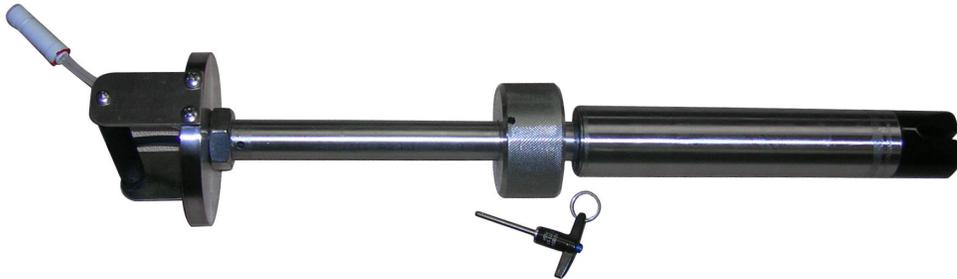


Figure 3a; Sensor Assembly

- 3.6. Pull sensor out. A quick cleaning may be necessary before performing any maintenance.

4. Jet Clean System:

- 4.1. The InsitelG cleaning system uses a pressurized stream of air or water to remove bio growth or other debris from the optical surfaces of our sensors. The InsitelG analyzers control the frequency and duration of the clean cycle through relay #4. (see drawing IIG01R112 & IIG01R113 of the analyzer operational manual) This relay is programmable through the setup menu, see Relays section of the analyzer manual for more detail. It is recommended that Plant water or air be used on the in-pipe sensors. The customer must supply clean water at 30psig or air at 40psig above the line pressure. The supply water (or air) is connected to a customer supplied 2-way solenoid valve and the analyzer need only open the valve to provide the cleaning blast. A check valve with a ¼" quick disconnect fitting is provided to restrict the backflow of process water out of the sensor. There are no changes required in the sensor head for use with water or shop air. See drawing IIG01R113 for wire details.

Maintenance:

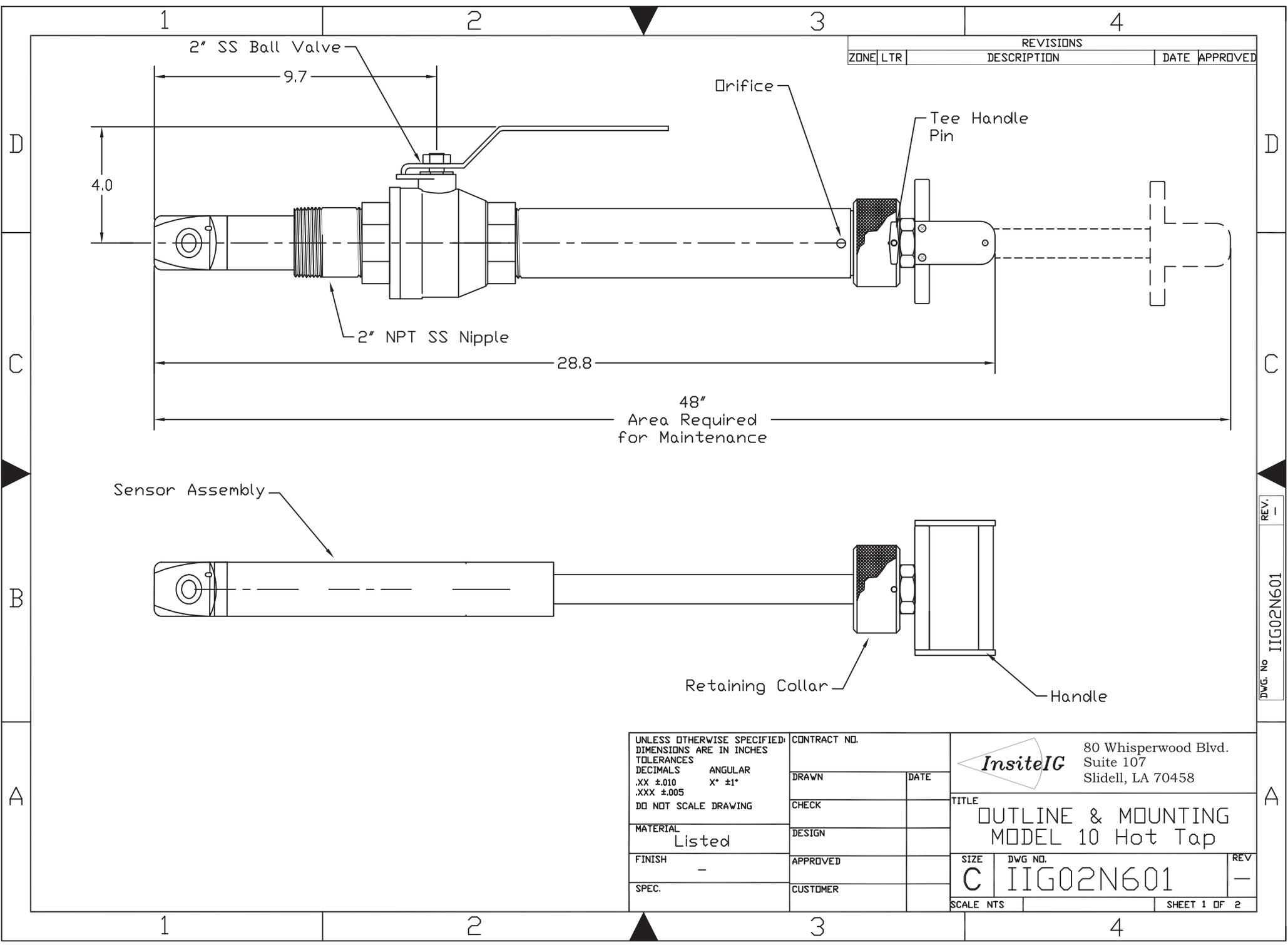
5. Maintenance: The analyzer does not require any periodic maintenance. The sensor must be kept clean for accurate readings. Normally, the jet clean system will adequately perform this function. However, the sensor should be retrieved and cleaned manually on a periodic basis to remove the heaviest fouling that may impair the performance of the sensor. The frequency of this cleaning will vary depending on the application.
 - 5.1. Lubrication: All moving parts and seals must be lubricated every time the sensor is removed for service or once a year. Use a heavy concentrated silicone lubricant. Any stainless steel treads on the retaining collar must be lubricated with anti-seize thread lubricant.
 - 5.2. The venting orifice on the ball valve assembly must be checked prior to extraction.
 - 5.2.1. Check to make sure that venting orifice is installed and is tight.
 - 5.2.2. Check that the orifice hole is not clogged. A standard paperclip is the proper diameter to clear the orifice.
 - 5.3. The locking pin could get damaged if the force of line pressure is not offloaded during extraction. Inspect the pin for damage or deformation each time the sensor is removed. If pin is damaged, another can be ordered from InsitelG or McMaster-Carr (#90293A104).
 - 5.4. Any leakage from the sensor assembly could be a sign of seal damage or damage to the molded sensor head. Please contact the factory if there is leakage from the cable entry.

Guarantee and Repair Policy:

The InsiteIG Model 10HT Optical Dissolved Oxygen sensor head is guaranteed for two years against manufacturing defects. It will be replaced or repaired free of charge during the guarantee period. Call the factory at 985-639-0006 for a return authorization number for traceability. Mark the package to the attention of the R/A number and address it to the factory at 80 Whisperwood Blvd., Suite 107, Slidell, LA 70458. Freight to the factory is to be paid by the customer and items should be insured in case of damage or loss of shipment.

All shipments are insured. If you receive a damaged unit, please notify InsiteIG immediately at 985-639-0006.

Repairs to the equipment not covered by the guarantee will be billed per standard service charges.



REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES DECIMALS ANGULAR .XX ±.010 X° ±1° .XXX ±.005 DO NOT SCALE DRAWING	CONTRACT NO.	
	DRAWN	DATE
	CHECK	
	DESIGN	
	APPROVED	
MATERIAL Listed	CUSTOMER	

 80 Whisperwood Blvd. Suite 107 Slidell, LA 70458		TITLE
		OUTLINE & MOUNTING MODEL 10 Hot Tap
SIZE C	DWG NO. IIG02N601	REV -
SCALE NTS		SHEET 1 OF 2

DWG. No IIG02N601
 REV. -

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REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

D

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C

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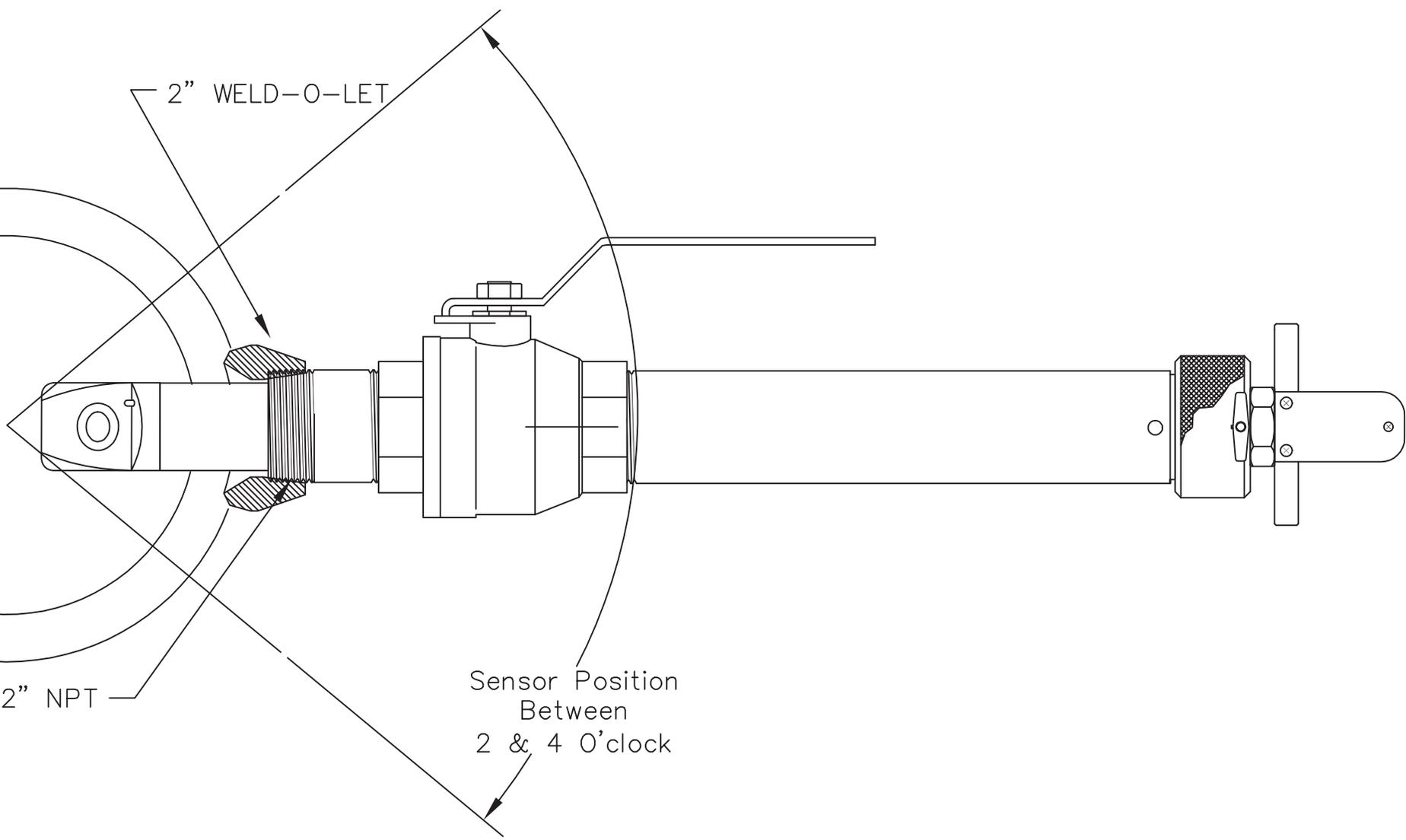
A

A

2" WELD-O-LET

2" NPT

Sensor Position
Between
2 & 4 O'clock



DWG. No IIG02N601
REV. -

SIZE C	DWG NO. IIG02N601	REV -
SCALE NTS	SHEET 2 OF 2	

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