



WATER METER MATERIAL & ORDER INFORMATION

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Material (Residential):

1. *METER BOX*

Residential: Oldcastle Christy B16 Concrete Meter Box

2. *BADGER METER*

Residential: Recordall Disc Series Meters

Size: $\frac{3}{4}$ "(M35); **1" (M70)**; **1.5"(M120)**; or 2"(M170)

3. *ENCODER*

HR-E High Resolution 8-Dial Encoder, registered in cubic foot

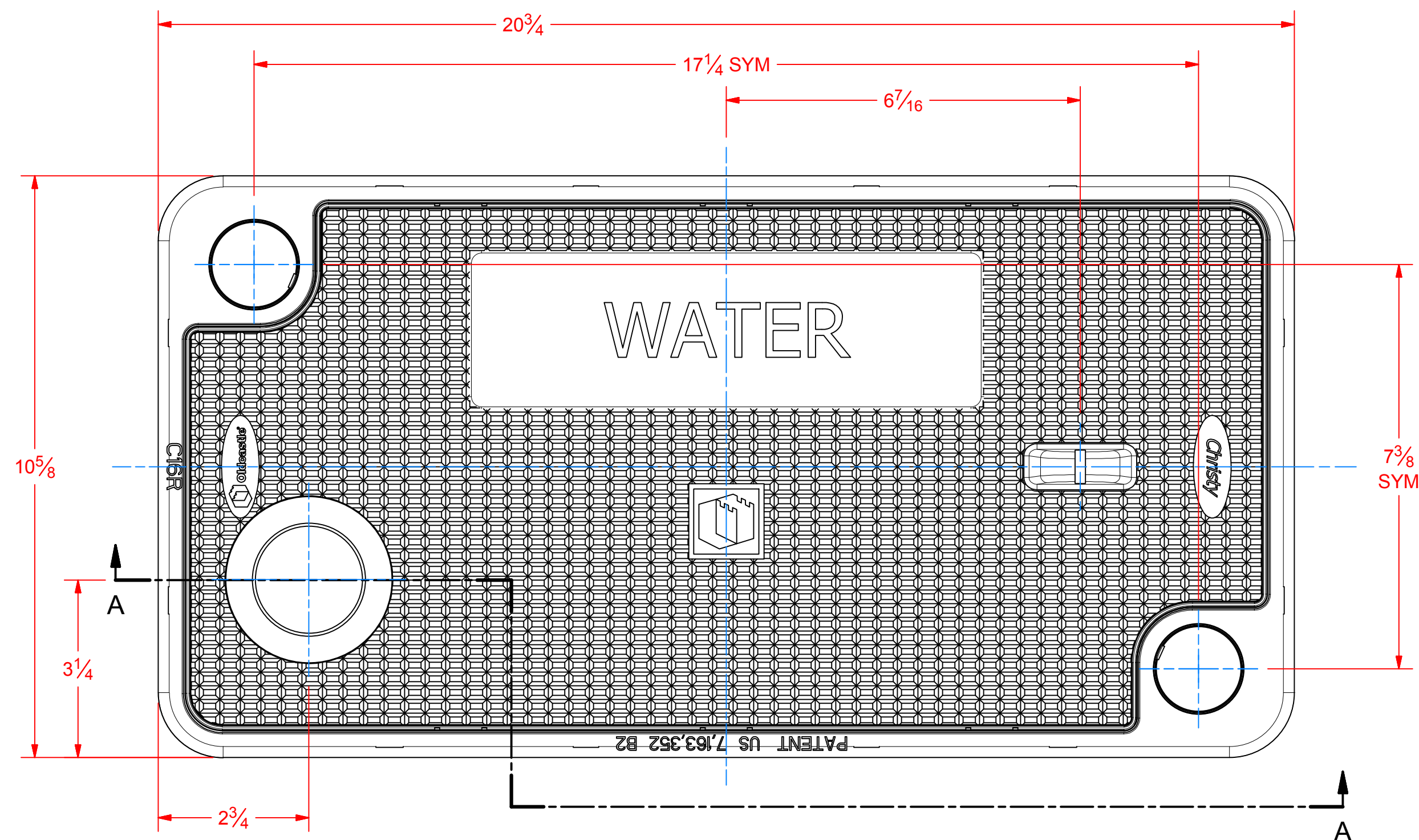
Note: Model of Encoder should match the meter size model.

4. *TRANSPONDER/ENDPOINT*

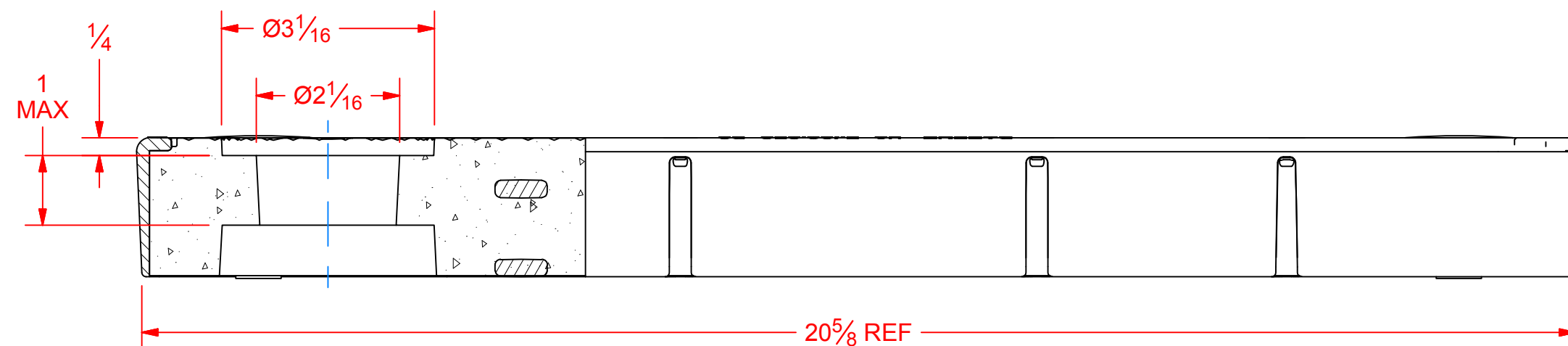
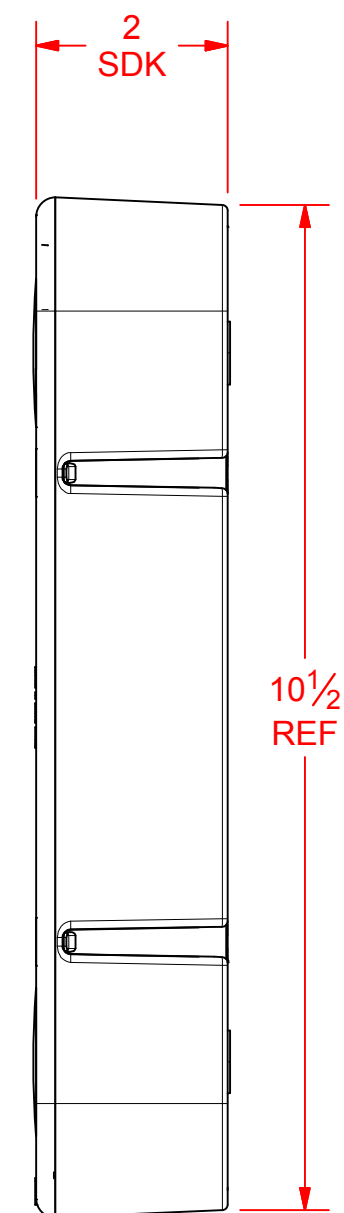
ORION Cellular Endpoint with Nicor Connector

5. & 6. *MOUNTING KITS & LIDS*

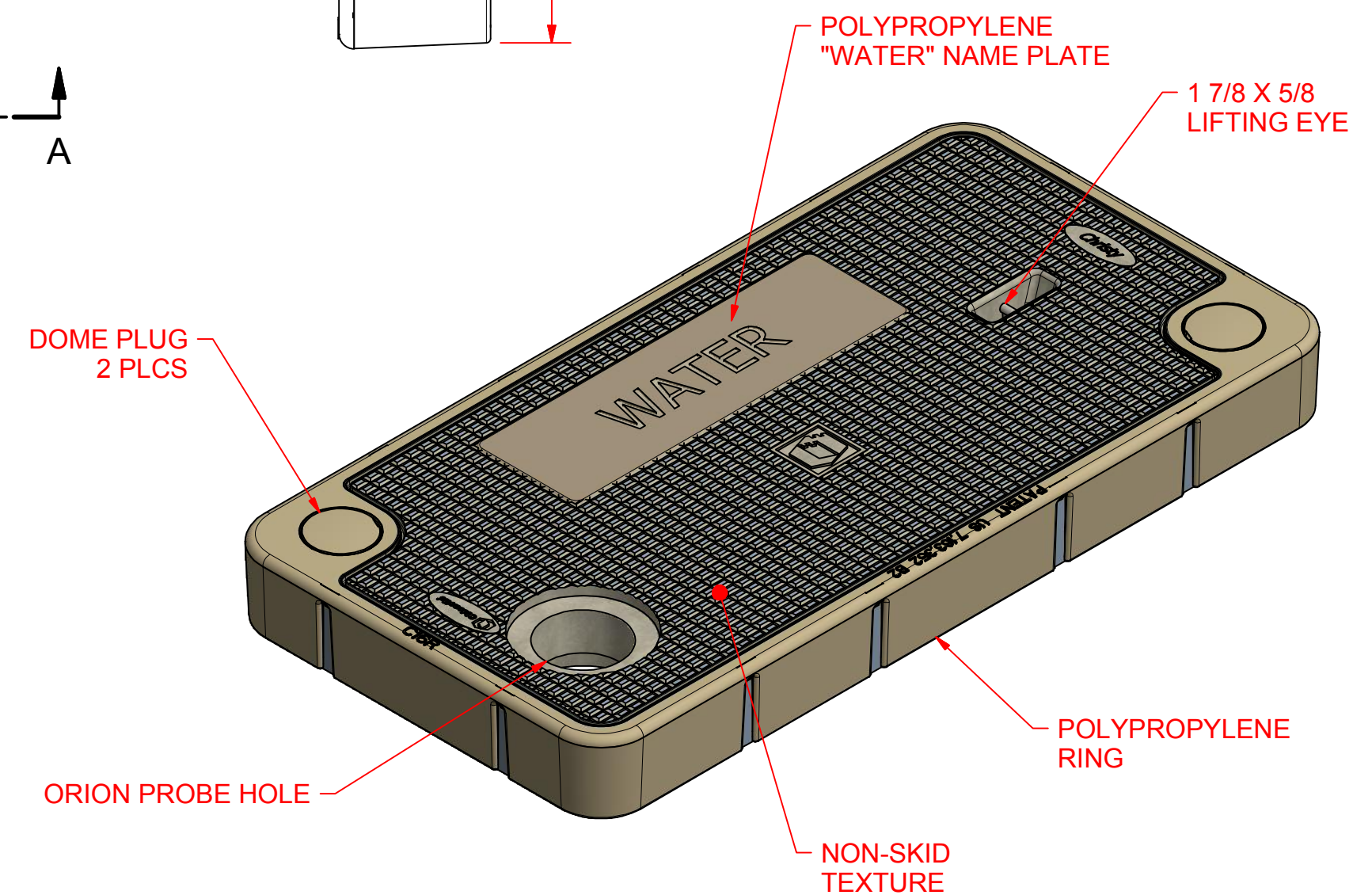
- For Meter boxes installed in grass & landscaping or non-traffic areas
 - Through-the-Lid Install Kit (64394-024)
 - Concrete Lid: Oldcastle N16RP R-Series composite lid w/ Polypropylene Ring and 2" hole, marked "water" (see attached)
- For Meter boxes that will need a drive-over lid in traffic areas, i.e. alleys & driveways
 - Below-the-Lid with Knuckles Install Kit (64394-003)
 - Fiberlyte Lid (FL 16D marked "Water")



Note to Contractor:
For Grass & Landscaping
Installations ONLY!
Please purchase a Fiberlyte FL 16D
lid for drive-over water meter box
installations.



SECTION A-A



CUSTOMER APPROVAL

THIS SPECIAL ORDER PRODUCT IS APPROVED IN
ACCORDANCE WITH THE SPECIFICATIONS
DESCRIBED ON THIS SHEET.

SIGNATURE

DATE _____

CUSTOMER FORMAT DRAWING

EST. WEIGHT: 34 LBS

MATERIAL: POLYMER CONCRETE

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1. Introduction

MFG

Oldcastle® Enclosure Solutions

801 S PINE ST
MADERA, CA 93637
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N16RP, WITH ORION PROBE HOLE

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In-line Connectors

An in-line connector is an optional feature that allows connectivity to AMR/AMI devices without the need for a field splice kit. When the endpoint and encoder have connectors, join the connector ends as shown in [Figure 2](#). With the proper orientation, the connector ends go together easily.

- With 308 in-line connectors, align the notch on one connector (endpoint side) with the corresponding projection on the other (encoder side) and push the ends together for the correct fit. See *308 In-line connector*, [Figure 2](#).
- With Nicor in-line connectors, hold the connector ends with the arrow side up, point the arrows toward each other and push the ends together for the correct fit. See *Nicor In-line connector*, [Figure 2](#).

You will hear a “click” when the ends are firmly seated and the connection is secure.

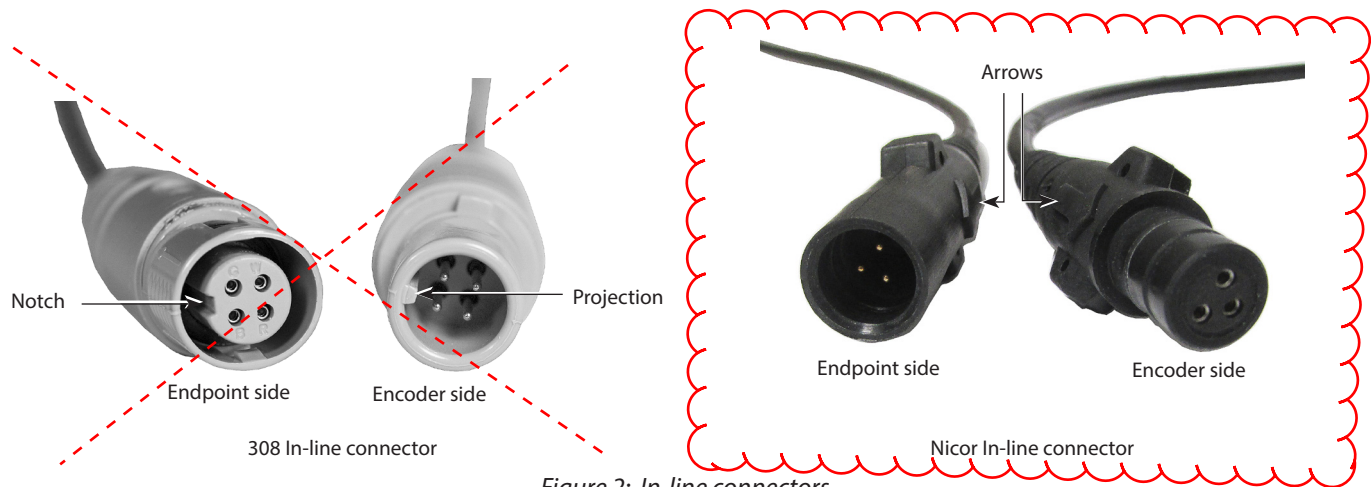


Figure 2: In-line connectors

PIT INSTALLATION

Through-the-Lid Installation Kit

The **Through the Lid Installation Kit (PN: 64394-024)** is designed for use with a pit lid of one inch maximum thickness and a standard hole diameter of 1-7/8 inches.

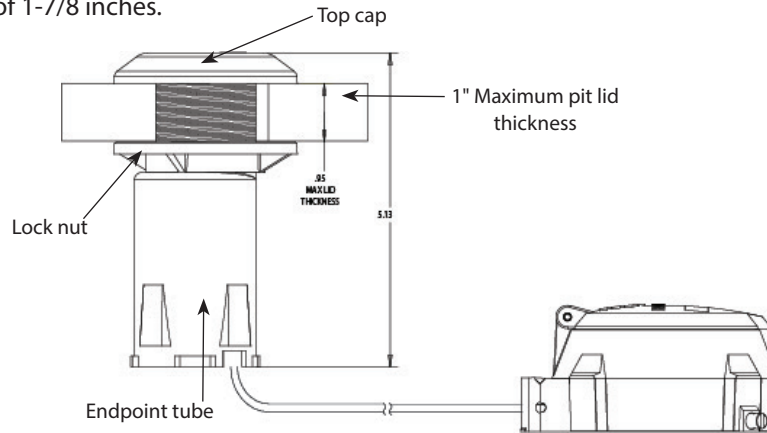


Figure 7: ORION pit endpoint

To install the endpoint through the lid, follow these steps and see [Figure 7](#).

1. Screw the lock nut onto the tube threads as shown.
2. Insert the endpoint tube through the bottom of the lid.
3. Screw the top cap onto the endpoint tube threads as shown and tighten.
4. Tighten the lock nut against the bottom of the lid until secure.

NOTE: If installing an ORION endpoint through a thick lid, you may use a **Pit Tube Extender (PN: 67025-001)** which requires a two-inch diameter hole. Radio frequency (RF) performance may be reduced when using the Pit Tube Extender.



Figure 8: Endpoint pit tube extender

Below-the-Lid with Knuckles Installation Kit

For below the lid installations, a special **Below-the-Lid with Knuckles Installation Kit (PN: 64394-003)** with mounting bracket ([Figure 9](#)) is available. This mounting support bracket is designed for use with a 3/8, 5/8 and 1/2 inch rebar or 1/2 inch schedule 40 PVC pipe.

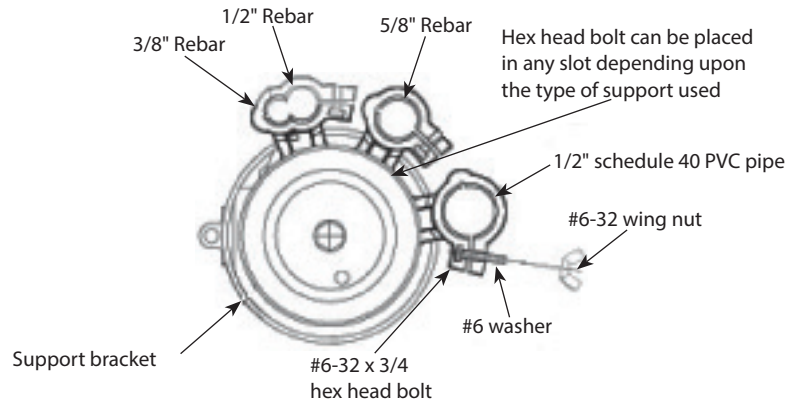


Figure 9: Pit support bracket (knuckles) - top view

To install an ORION endpoint below a meter pit lid, follow these steps and see [Figure 10](#).

1. Drive rebar or stake into the ground.

CAUTION

DRIVE REBAR OR STAKE INTO THE GROUND PRIOR TO ATTACHING THE ENDPOINT TO AVOID DAMAGE.

2. Once in the ground, secure the mounting bracket on the appropriate rebar or pipe using the enclosed washer, wing nut and hex head bolt provided with the bracket.
3. Insert the endpoint through the bottom of the bracket and thread the lock nut onto the top of the endpoint. For best results, mount the endpoint a maximum of one to two inches below the underside of the lid.

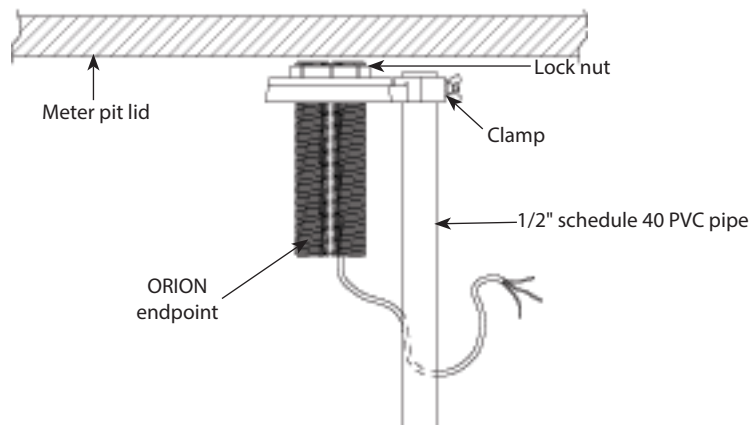


Figure 10: Pit ORION beneath lid installation



SAFETY INFORMATION

The installation of the Recordall® Disc Series Meters must comply with all applicable federal, state, and local rules, regulations, and codes.

Failure to read and follow these instructions can lead to misapplication or misuse of the Recordall® Disc Series Meters, resulting in personal injury and damage to equipment.

PRODUCT UNPACKING AND INSPECTION

Upon opening the shipping container, visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

NOTE: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damage in transit is the sole responsibility of the purchaser.

METER PRE-INSTALLATION

Take into account the following considerations before you begin an installation:

- Inspect the piping around the meter setting for suitable conditions. The service line, valves, connections and meter must be watertight. Repair the piping system if pipes are corroded or damaged.
- Set the meter in a horizontal position with flow in the up direction. Registration should be upright and protected from damage, freezing, and tampering.
- Position the meter so it is accessible for installation, removal and reading.
- Verify that a suitable electrical grounding wire is properly attached to the upstream and downstream pipe connections of the meter. The grounding wire provides an alternative path for any electrical current that may exist across the opening in the line.
- Close the curb (shut-off) valve to relieve water pressure in the line before starting the cutting operation. Provide a high-quality upstream shut-off valve with a low pressure drop.
- When cutting into a new section of service pipe, flush the pipe to clear chips, pipe dope or other plumbing residue.
- The installed meter must not be an obstacle or a hazard to the customer or interfere with public safety.

⚠ CAUTION

- **DO NOT ATTEMPT TO USE ANY METER AS A LEVER OR CROWBAR TO STRAIGHTEN A MISALIGNED METER SETTING. THIS COULD DAMAGE THE METER.**
- **DO NOT ATTEMPT TO SET A METER INTO AN OPENING THAT IS TOO LONG BY FORCING THE PIPING INTO PLACE WITH THE METER'S COUPLING NUTS. THIS WILL CAUSE SERIOUS DAMAGE TO THE THREADED ENDS OF THE METER AND HOUSING.**

To avoid potential problems, correct any irregularities in pipe spacing and misalignment before placing the meter into its setting.

SPECIAL INSTRUCTIONS FOR REMOVING A METER

⚠ WARNING

THE LINE MUST BE DEPRESSURIZED BEFORE STARTING ANY DISASSEMBLY OPERATION. REMOVING A METER THAT IS UNDER LINE PRESSURE CAN RESULT IN COMPONENTS BECOMING PROJECTILES, CAPABLE OF CAUSING PERSONAL INJURY.

SPECIAL FITTINGS AND ACCESSORIES

To accommodate 5/8", 3/4", and 1" meter installations, special fittings and accessories are available. Metal meter setters, re-setters, horns and meter yokes are available for holding the service pipe in proper alignment to the meter and laying length spacing. The metal setters and meter yokes can provide an electrical continuity to protect meters and consumers from electrical shocks.

NL bronze connections are available from Badger Meter. To compensate for minor service pipe and setting misalignment for a 5/8", 3/4", and 1" meter, plastic swivel connections are also available.

Cast iron or NL bronze companion flanges are available for a 1-1/2" and 2" meter.

INSTALLING RECORDALL DISC SERIES METERS

Outdoor Installations

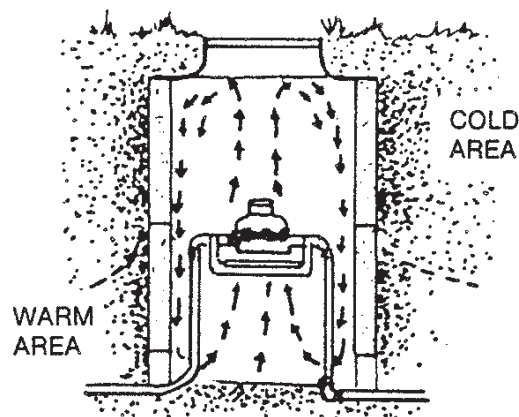
When installed outdoors in a meter box, the disc meter should have a two- to three-inch clearance to avoid damage or strain to the service piping or meter, and to accommodate any "settling" that may occur after installation.

The service pipe in the meter box should be properly bedded to ensure that it is not axially misaligned and that it lays evenly on the bottom of the pipe trench. The backfill material covering the pipe should be placed appropriately to maintain pipe alignment in the event of eventual ground shifts. This will prevent damage to the pipe.

The service lines and the water meter must be protected from freezing. The earth covering the service line must be adequate to prevent frost penetration. Due to the smaller volume of water, service line pipes will freeze sooner than the main distribution line.

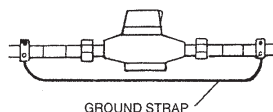
For those locations in which a remote possibility of freezing exists, thermoplastic or lead-free bronze alloy meters with cast iron bottoms are recommended.

The meter box pit should be excavated below the frost line. Even though the meter itself may be positioned above the frost line, the warmer air rising from the earth below the frost line will reduce the possibility of freezing.



Indoor Installations

As a precautionary measure when working with metallic pipes, indoor settings must be checked for electrical continuity through the service pipe before you remove or service a meter. American Water Works Association (AWWA) policy specifies that service pipes must not be used as an electrical ground. Check your local codes and practices. A permanent ground strap or metal setter must be used if electrical grounding to water services is required in your community. This is important for the engineered polymer meter.



To prevent floor damage, close the valve downstream from the meter before installing or removing a meter.

INSTALLATION INSTRUCTIONS

To prepare for meter installation, follow these steps:

1. Close the meter's inlet-side valve.
2. Open a faucet and wait until water flow stops, to depressurize the system. Do not remove the meter until the flow stops.
3. Check valves and make necessary repairs to the curb (shut-off) valve or inlet side valve if necessary.
4. Close the meter's outlet-side valve. Protect the floor below the meter against potential spills or leaks that could occur. Protect the coupling area from debris, so that the new meter will not be damaged or contaminated.
5. To replace an existing meter, continue with Step 6. To install a new meter, skip to Step 8.
6. Loosen meter couplings or flange bolts and remove the meter and the old gaskets in the coupling nuts.

IMPORTANT

Badger Meter recommends that you replace the entire connection set at the time of meter replacement or if conditions require earlier replacement.

7. Clean the coupling nuts or flange ends, removing any pipe dope or dirt from the threads or flange ends.
8. Check the existing setting for proper alignment and spacing. Correct any misalignment and spacing in the setting.
9. Place the new connection gaskets inside the connection coupling nuts.
10. Set the meter between the coupling nuts or in the flange pipeline positioned so that the flow arrow on the meter housing points in the direction of flow.

5/8" to 1" Straight

11. Start the coupling nuts at the threaded meter ends. Verify that the nuts are properly aligned to avoid cross threading damage (stripping) to the meter ends. This is especially important for the engineered polymer meter.

An effective method for starting a coupling nut is:

- a. Position the nut squarely against the meter's spud end.
- b. Turn the nut counterclockwise (in reverse) while holding the nut against the meter spud end. When the first threads on both the nut and the spud end coincide, you will hear a slight click and feel the nut move into the starting position.
- c. Tighten the nut by hand until it is "hand tight."
- d. With an open-end wrench, apply a partial turn. Do not over tighten. For plastic swivel connections, a one-quarter turn beyond hand tight is usually sufficient.

1-1/2" to 2" Elliptical Flange End

With meter and gaskets in place, tighten the flange connection bolts. Verify the nuts are properly aligned to avoid damage to the flanged ends.

PROTECT AGAINST LEAKAGE

Before turning on the service water, use care to protect against potential leakage.

1. Shut off the valves on both the inlet and outlet sides of the meter.
2. Open the curb (shut-off) valve slowly to pressurize the service line to the meter.
3. Slowly open the meter's inlet-side valve to fill the meter.
4. Check for leaks around the meter and its connections.
5. Slowly open the meter's outlet-side valve to pressurize the consumer side of the system.
6. Open a faucet to allow entrapped air to escape.
7. Once water is flowing normally, turn off the faucet.

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