



IMPORTANT:
This manual contains important information.
READ AND KEEP FOR REFERENCE.

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DISCLAIMER

The user/purchaser is expected to read and understand the information provided in this manual, follow any listed safety precautions and instructions and keep this manual with the equipment for future reference.

Misuse, mishandling and/or inadequate maintenance may impair performance and/or compromise safety.

QUESTIONS OR SERVICE ASSISTANCE

If you have questions regarding the product or this document contact:

Badger Meter, Inc.

P.O. Box 245036

Milwaukee, WI 53224-9536

Telephone: (414) 355-0400, (800) 876-3837

Fax: (888) 371-5982

On the Web: www.badgermeter.com or call your local Badger Meter representative.

PRODUCT IDENTIFICATION

Record the product identification numbers from the nameplate.

Endpoint:

Model Number _____

Serial Number _____

Tag Number _____

SCOPE OF MANUAL

This manual contains installation instructions for the Badger Meter ORION® and the Badger Meter ORION® SE integral endpoint for American® Meter residential aluminum-case gas meters. Proper performance and reliability of the ORION gas meter system depends upon installation in accordance with these instructions.

PRODUCT UNPACKING AND INSPECTION

NOTE: If damage to the shipping container is evident upon receipt, request the carrier to be present when the product is unpacked.

Carefully open the shipping package, follow any instructions that may be marked on the exterior. Remove all cushioning material surrounding the product and carefully lift the product from the package.

Retain the package and all packing material for possible use in reshipment or storage.

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.

LICENSE REQUIREMENTS

This device complies with Part 15 of FCC Rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

No FCC license is required by a utility to operate an ORION meter reading system.

Any changes made, but not approved by Badger Meter, can void the user's authority to operate the equipment.



CAUTION! In accordance with FCC Regulations, "Code of Federal Regulations" Title 47, Part 2, Subpart J, Section 1091, transmitters (endpoints) pass the requirements pertaining to RF radiation exposure. However, to avoid public exposure in excess of limits for general population (uncontrolled exposure), a 12 CM distance between the transmitter (endpoint) and the body of the user must be maintained during testing.

INSTALLATION TOOLS AND MATERIALS

Magnetized screwdrivers:

- 1/8" flat screwdriver
- 1/4" flat screwdriver
- #1 Phillips screwdriver



If battery powered driver is used, ensure torque maximums are not exceeded (usually 15 in-lb).

Putty knife or flat blade scraper

Badger Meter handheld programmer/data collector

LABEL INFORMATION

Certification markings are noted on the product label. Label markings include:

- Serial number and bar code plus product description
- FCC identification
- Certification markings

AMERICAN GAS METERS

Gas meter models: AL, AC, AT, AM, AR with suffixes: 175, 210, 225, 250, 310, 350, 425, 630

Meter and Indexes Before Endpoint

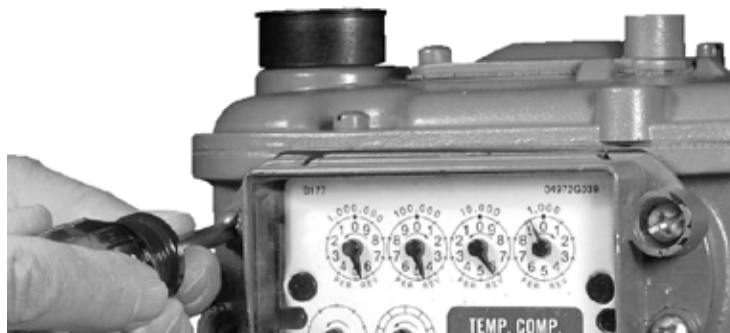


Index Removal from an American Gas Meter

1. Use a large screwdriver to puncture and remove tamper plugs, if present.



2. Use a large screwdriver to remove and discard the four (4) mounting screws and the cover.



3. Completely remove and discard the old gasket. Use a putty knife to clean the meter surface of all gasket remnants that might limit the effectiveness of the new gasket.



Use a putty knife to clean the meter surface of all gasket remnants that might limit the effectiveness of the new gasket.



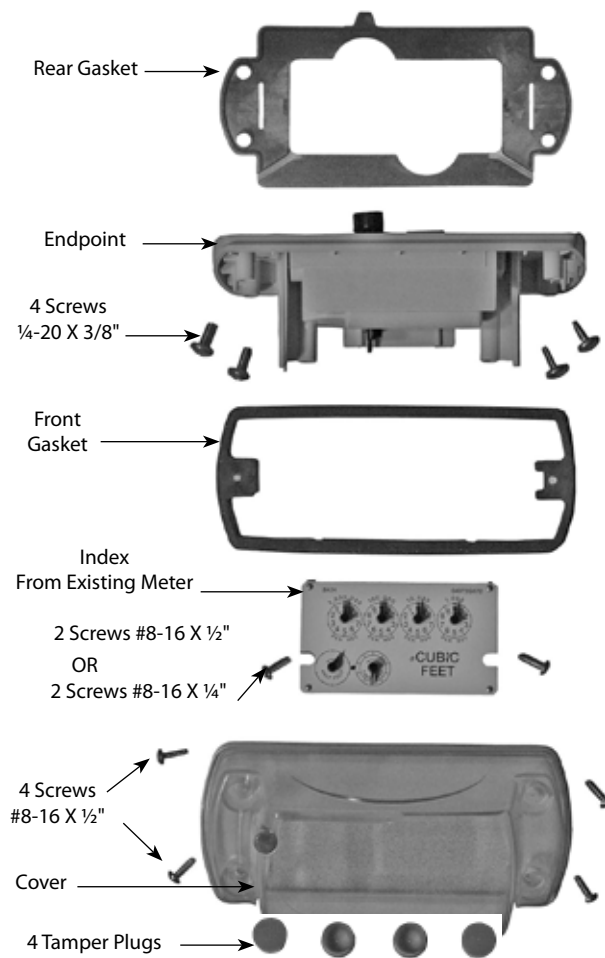
4. Use a small screwdriver to remove the index. Discard the two (2) screws.



Shown below is an American gas meter with the tamper plugs, index and gasket removed.



ORION AMERICAN METER INSTALLATION MATERIALS

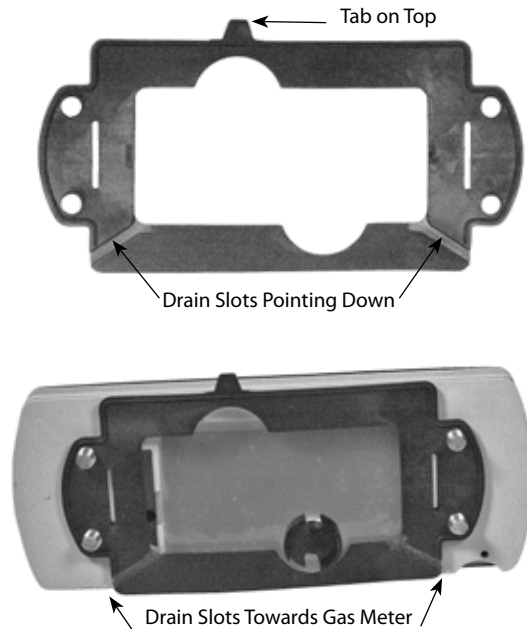


ASSEMBLE THE ORION ENDPOINT AND INDEX

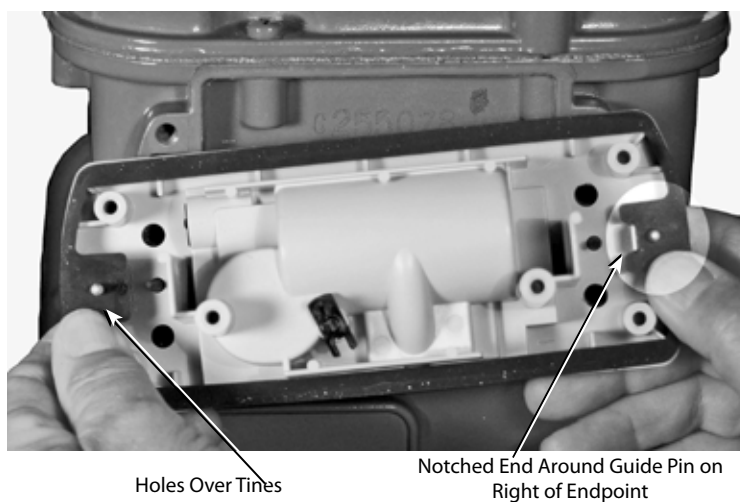
Endpoint Gaskets Attachment

The gaskets should be attached to the endpoint at the factory. If the gaskets are not attached:

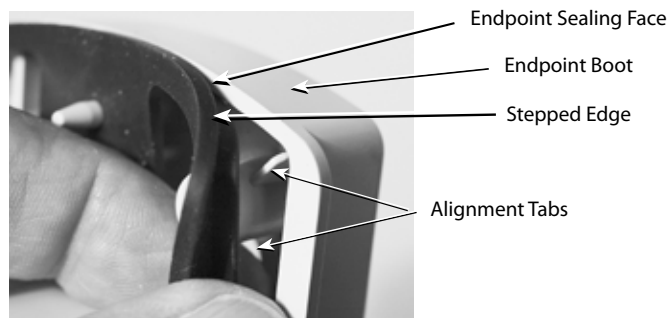
1. Place the rear gasket on the back of the endpoint. Place the rear gasket so the tab is at the top of the endpoint, the drain slots are pointing down, facing towards the gas meter.



2. Place the front gasket on the other side of the endpoint.
 - Place the gasket so that its two holes go over the two protruding tines.
 - Be sure the notched end goes around the guide pin on the right side of the endpoint.

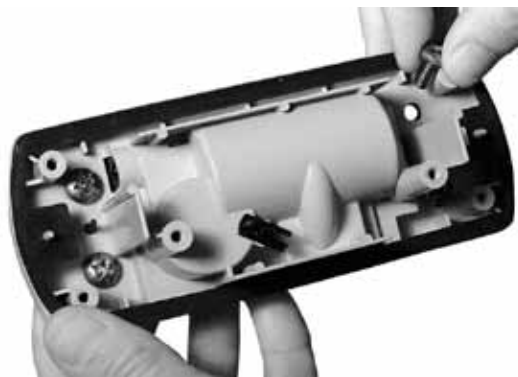


- Be certain that the stepped edge is toward the endpoint boot and seated between the endpoint sealing face and the alignment tabs.

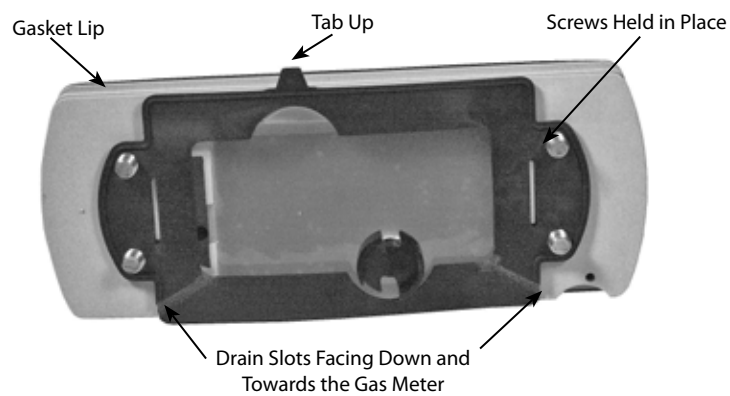


Place Four (4) Screws Into the Endpoint

1. Place the four (4) ¼-20 X 3/8" screws through the endpoint and rear gasket from the front.



2. The screws are temporarily held in place by the rear gasket.

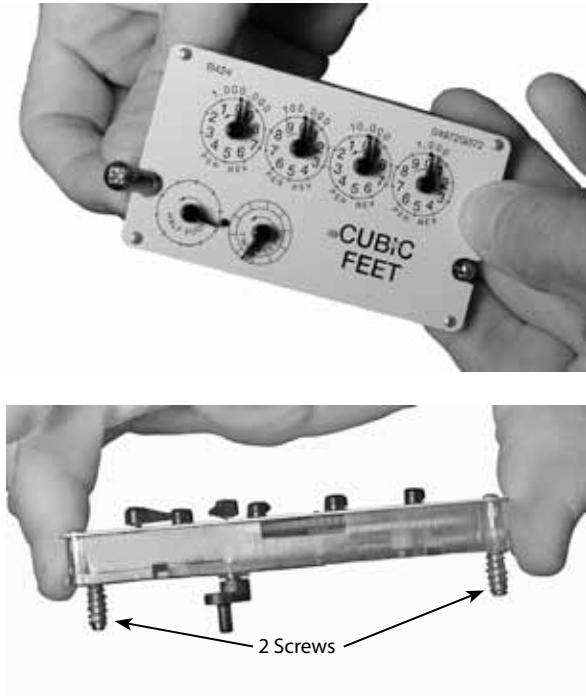


INDEX INSTALLATION

There are two (2) index capacities, ONE-FOOT and TWO-FEET; and two (2) index mounting styles, slots and holes.

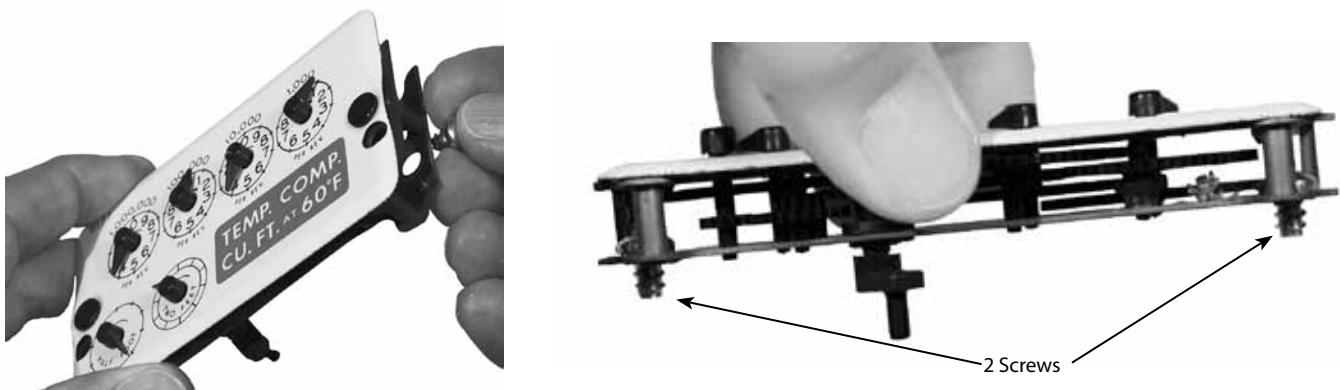
Place Screws in Slotted Index

Place two (2) #8 X ½" self-tapping screws between the top metal dial and the lower plastic frame and into the holes on each side of the index.



Place Screws in Index With Holes

Place two (2) #8 X ¼" self-tapping screws between the dial and lower plate and into the holes on each side of the meter.

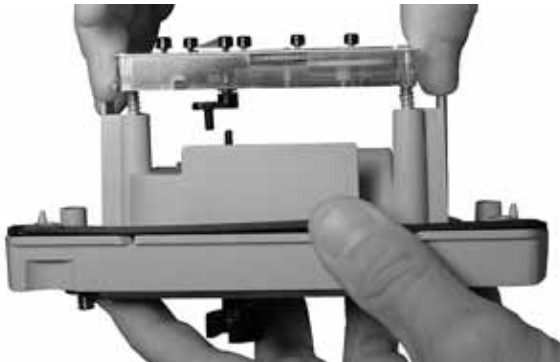


Drive Pawl Engagement and Index Installation

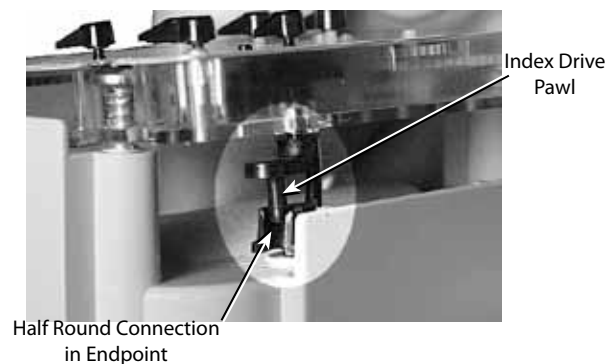
1. Use care when handling the ORION endpoint and index to insure the endpoint rear drive pawl and the mating drive pawls are not subjected to any physical abuse. Abuse may cause the spindles to become bent, misaligned or otherwise inoperative.

When attaching an index to a ORION endpoint, make sure the index mounts securely to the endpoint. The front and rear drive pawls must mate without causing any binding or potential for disengagement.

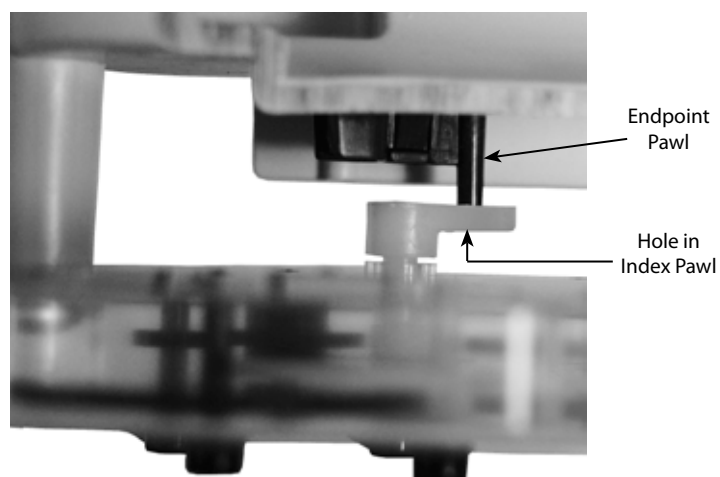
2. Align the two (2) screws in the endpoint holes.



On a TWO-FEET dial, engage the index drive pawl into the half round connection in the endpoint.



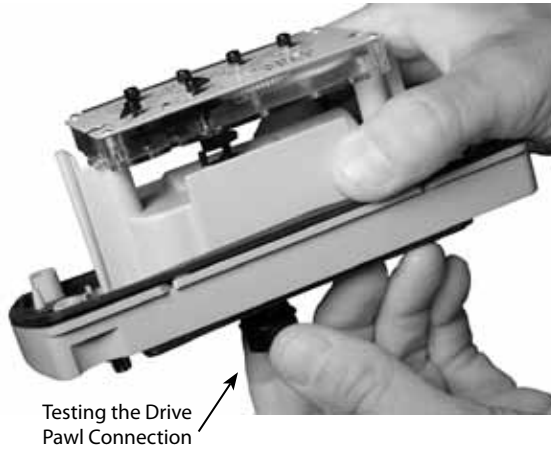
On a ONE-FOOT dial, place the index pawl hole into the pawl sticking out of the endpoint.



3. Tighten the two (2) screws (6 in-lbs max).



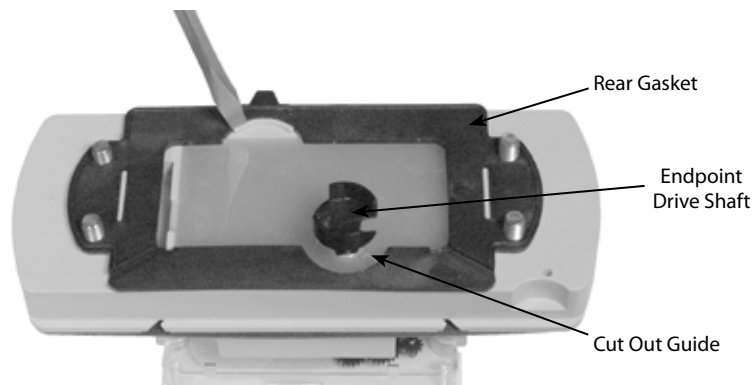
4. Test the drive pawl connection by turning the shaft on the rear of the endpoint several times. If dragging or friction is felt, reposition the index to eliminate any drag. The dials should turn smoothly.



PLACE THE ENDPOINT AND INDEX ON AN AMERICAN GAS METER

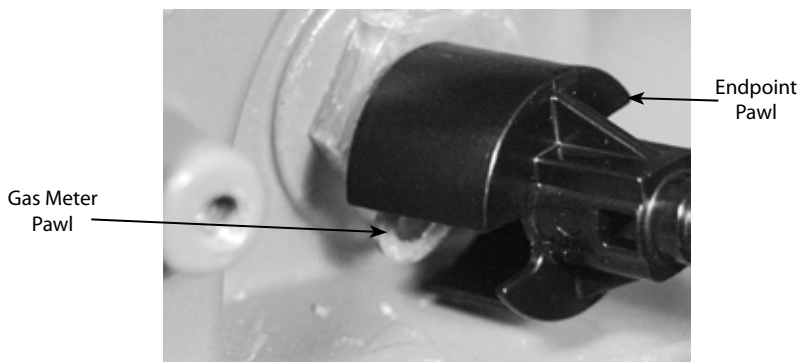
Verify that the rear gasket does not interfere with the endpoint drive shaft.

Verify that the gasket fits around the semi-circular cut out guide.



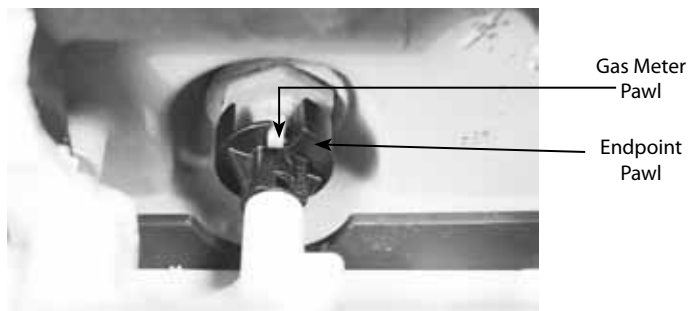
Placing a Two-Foot Dial

Align the rear endpoint drive pawl and the gas meter pawl. Place the four (4) 1/4-20 X 3/8" endpoint screws against the holes in the gas meter.



Placing a One-Foot Index

Place the endpoint against the gas meter. Place the endpoint drive pawl so it is around the gas meter pawl.



Tighten the four (4) endpoint screws (20 in-lbs max).

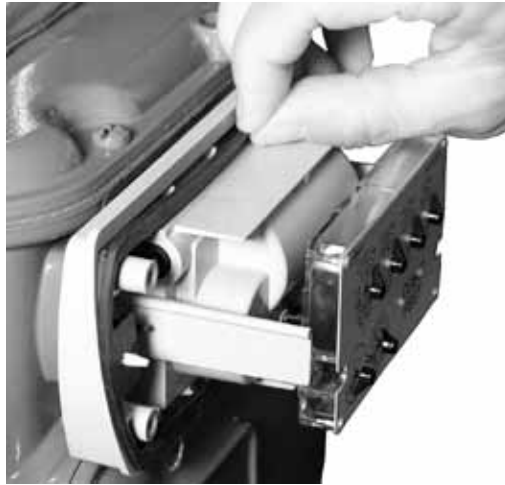


Move the TWO-FEET or ONE-FOOT dial back and forth to verify pawl connections.



PLACE THE COVER OVER THE ENDPOINT AND INDEX

1. Verify the front gasket is set properly.



2. Place the cover on the gas meter and tighten it with the four (4) remaining screws (15 in-lbs max).



The endpoint unit is now ready for programming.

PROGRAM THE ENDPOINT

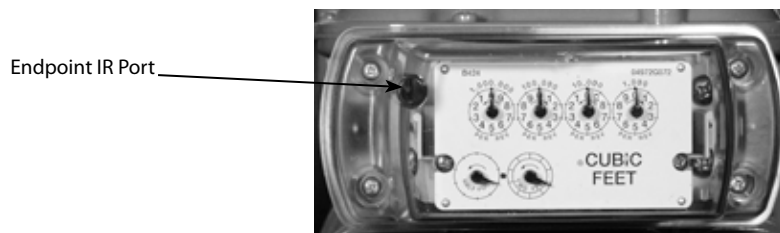
Badger Meter uses a handheld programmer/data collector system to process and display screens.



Please reference the Programming Guide for ORION gas endpoints and the manual for the handheld system, ORI-IOM-52 Trimble Ranger Installation and Operation Manual.

Programming Procedure

To program the endpoint, position the handheld optic read head with the endpoint IR port.



Align the IR port of the handheld optic read head with the endpoint IR port.



INSERT TAMPER PLUGS

After programming the endpoint is complete and for security purposes, insert the four (4) red tamper plugs (supplied) in the screw holes and push them in.



INSTALLATION COMPLETE

Installation of ORION for American residential gas meter with dial or odometer index is now complete.



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Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

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