

**Before Installation
with Wire Seal Security Screw**



**After Installation of
ORION Transmitter**



**Before Installation
with Red Security Seals**



**After Installation of
ORION Transmitter**

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



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 Information

Record the product identification numbers from the nameplate.

Transmitter

Model Number _____

Serial Number _____

Tag Number _____

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Note Explanations

NOTE: *Communicates installation, operation, or maintenance information that is safety related but not hazard related.*

Scope of Manual

This manual contains installation instructions for mounting the **Badger® ORION® Integral Transmitter for Gas Meters** on two American Gas Meters.

Proper performance and reliability of the Badger ORION system depends upon installation in accordance with these instructions.

Product Unpacking and Inspection

Upon receipt of the product, perform the following unpacking and inspection procedures:

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 a Badger ORION meter reading system.

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

Badger® ORION® Integral Transmitter/Hardcase Gas Meter Identification

Badger ORION integral transmitters for gas meters are designed for use with only two major brands of hardcase gas meters. Please refer to and use the following identification table.

Identification Table

| Gas Meter Manufacturer | American Gas Meter Models | Badger ORION Transmitter Number |
|-------------------------------|---|--|
| American® Meter | AL-800, AL-1000, AL-1400, AL-2300, AL-5000 and GTS/GTX Turbine Meters | 64989-002 |

Installation Tools and Materials

Use magnetized screwdrivers.

1/4" flat screwdriver

3/16" flat screwdriver

Radix® Handheld

Label Information

Certification markings are noted on the product label.

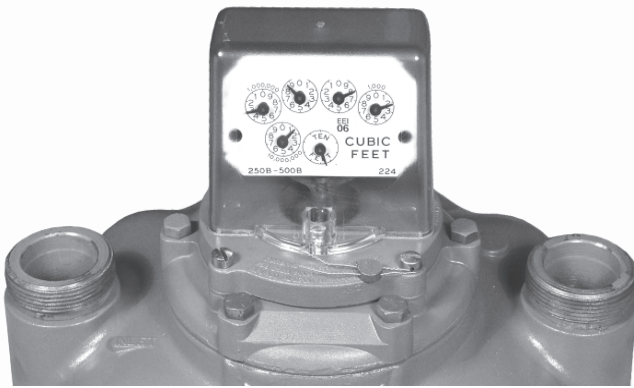
Installation of Badger ORION Integral Transmitter

This manual describes two types of installation of the Badger ORION transmitter and American index on an American gas meter.

The first section of this manual describes the installation on an American Commercial Diaphragm and Turbine Meter with Wire Seal Security Screws.

The second section of this manual describes the installation on an American Commercial Diaphragm and Turbine Meter with Red Security Seals.

AMERICAN® Commercial Diaphragm and Turbine Meters with Wire Seal Security Screw



American Commercial Diaphragm and Turbine Meter with Wire Seal Security Screw

Index and Index Cover Plate Removal from American Meter with Seal Security Screw

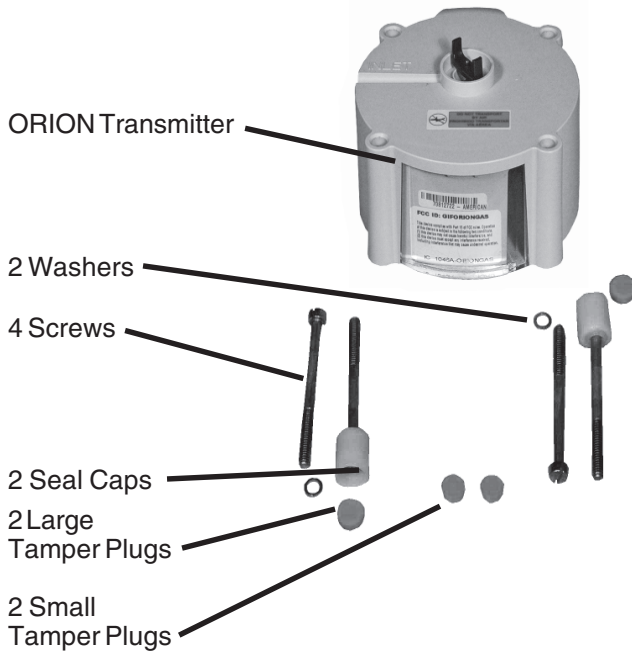
Step 1: Remove the wire security seal from the index cover mounting screw.



Step 2: Use a large screwdriver to remove the four (4) 18-8 index cover mounting plate screws and American Index. Discard the four screws.



Step 3: Remove the American index and mounting plate.



ORION Model 64989-002 Transmitter Kit for American Commercial Diaphragm and Turbine Meter with Wire Seal Security Screw

NOTE: The screws provided in this installation kit are not drilled for wire seals. Therefore, the wire seal is replaced with plastic seal cups provided in the kit.

Badger® ORION® Transmitter Label

If the utility chooses to add an additional label, follow steps A, B, and C below. If not, go to Install in the next column.



Step A: With a needle nose pliers pull the plastic cover plate down and off.



Step B: Place a new serial number tag above the one that is on the transmitter.



Step C: Place the cover plate back on the transmitter.



Install the Badger ORION Transmitter and American Cover Plate

Use care when handling the Badger ORION transmitter to insure the drive pawl is not subjected to any physical abuse. Abuse may cause this spindle to become bent, misaligned, or otherwise inoperative.

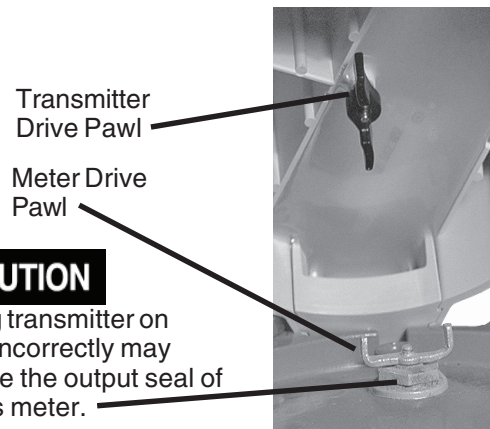
When attaching an Badger ORION transmitter to a gas meter make sure it mounts securely to the meter.

Step 1: Place the Badger ORION transmitter on top of the gas meter, where the index and index cover plate were previously removed.

Place the transmitter drive pawl so it is perpendicular to the meter drive pawl.



Step 2: When mounting a Badger ORION transmitter to a gas meter, make sure the transmitter drive pawl engages the gas meter drive pawl. These two drive pawls must mate without causing any binding or potential for disengagement.

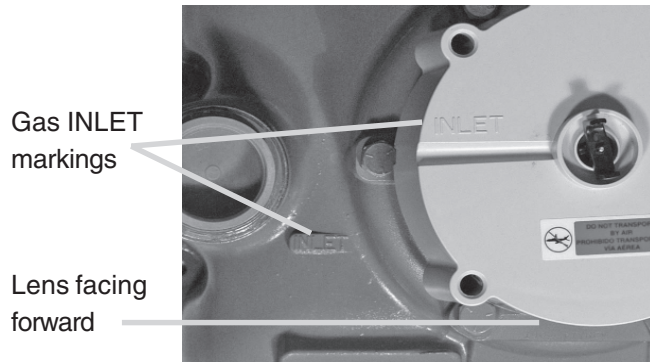


CAUTION

placing transmitter on meter incorrectly may damage the output seal of the gas meter.

Test to ensure the pawls are engaged and moving freely.

Step 3: Be sure the gas INLET markings are on the same side of the meter and the lens faces forward.



Step 4: Place the American Index and cover plate (removed earlier) back on the Badger® ORION® transmitter.

Place it so the text; *TURBINE FRONT FLOW AL-600, AL-1000, AL-1400, AL-2300, and AL-5000* (or other such text); faces the front and the index hole is centered around the transmitter drive pawl.

Place the index drive pawl perpendicular to the transmitter drive pawl.



Step 5: Place two screws, with a washer on each, into two corners of the cover mounting plate.

Use four (4) 18-18x3-1/2 supplied mounting screws to attach the index, cover plate, and Badger ORION transmitter to the gas meter.



Step 6: Index and cover has two plastic seal caps that are difficult to maneuver around with the long bolts. Place two of the screws, without washers, through the white seal caps. Place them in the other opposite corners of the cover mounting plate.

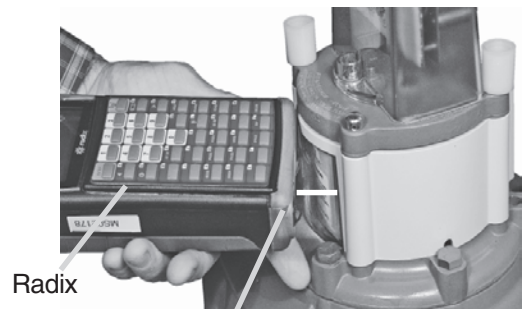


Step 7: Tighten all screws evenly with a large screwdriver to approximately 70 inch lbs.



Program the Badger ORION Transmitter
Badger uses the Radix® system to display and process screens.

Place the Radix so the optic read head aligns with the LED output port. The angle of approach should be about 30 degrees.

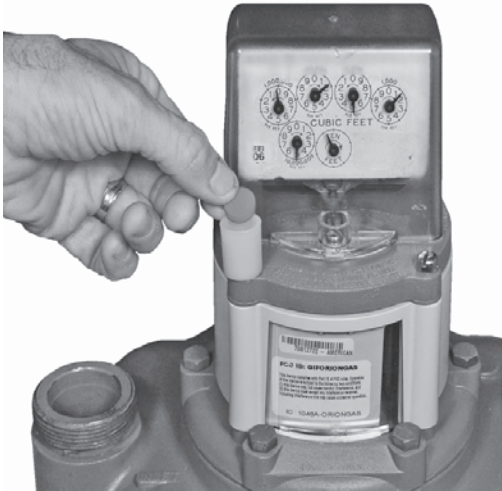


Rotate Radix unit to about 30 degrees



Complete the Installation

After programming, add seal caps to the front and rear screws of the index cover plate. Only the front screw is shown below.



If the index mounting seal caps were removed, replace them with the extra caps provided in the installation kit.



This completes the installation of a Badger® ORION® transmitter on an American® Commercial Diaphragm and Turbine Meter with Wire Seal Security Screw converted to seal caps.



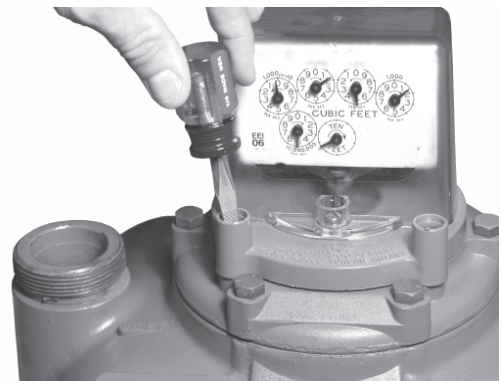
AMERICAN® Commercial Diaphragm and Turbine Meters with Red Security Seals



American Commercial Diaphragm and Turbine Meter with Red Security Seals

Index and Index Cover Plate Removal from American Meter with Red Security Seals

Step 1: Use a large screwdriver to remove the four (4) 18-8 index cover mounting plate screws and American Index. Discard the four screws.



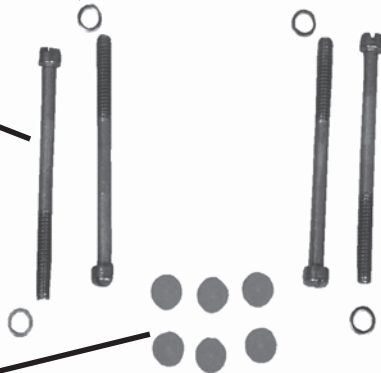
ORION® Transmitter



4 Washers

4 Screws

6 Small Tamper Plugs



Step 2: Remove the American index and mounting plate.



ORION Model 64989-002 Transmitter Kit for American Commercial Diaphragm and Turbine Meter with Red Security Seals

Badger® ORION® Transmitter Label

If the utility chooses to add an additional label, follow steps A, B, and C below. If not, go to Install in the next column.



Step A: With a needle nose pliers pull the plastic cover plate down and off.



Step B: Place a new serial number tag above the one that is on the transmitter.



Step C: Place the cover plate back on the transmitter.



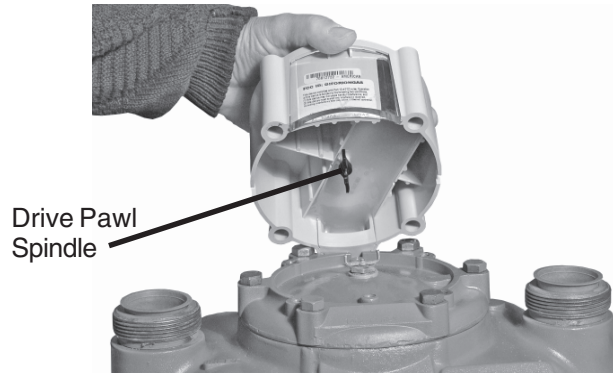
Install the Badger ORION Transmitter and American Cover Plate

Use care when handling the Badger ORION transmitter to insure the drive pawl is not subjected to any physical abuse. Abuse may cause this spindle to become bent, misaligned or otherwise inoperative.

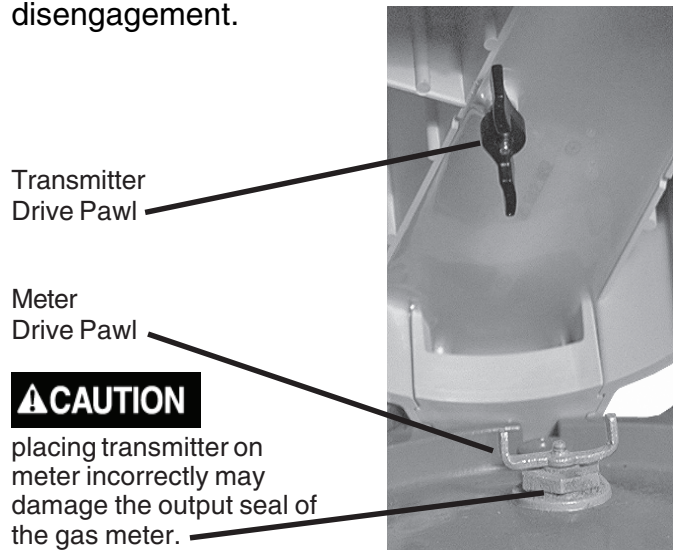
When attaching a Badger ORION transmitter to a gas meter make sure it mounts securely to the meter.

Step 1: Place the Badger ORION transmitter on top of the gas meter, where the index and index cover plate were previously removed.

Place the transmitter drive pawl so it is perpendicular to the meter drive pawl.

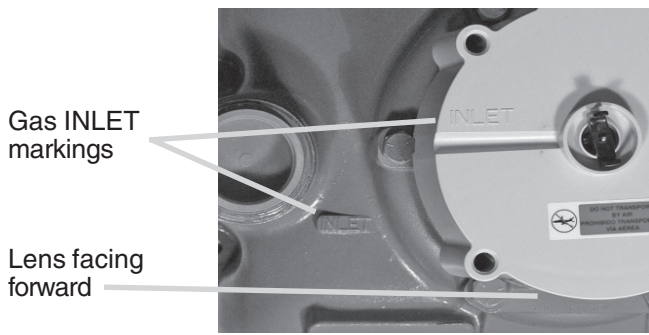


Step 2: When mounting a Badger ORION transmitter to a gas meter, make sure the transmitter drive pawl engages the gas meter drive pawl. These two drive pawls must mate without causing any binding or potential for disengagement.



Test to ensure the pawls are engaged and moving freely.

Step 3: Be sure the gas INLET markings are on the same side of the meter and the lens faces forward.



Step 4: Place the American® Index and cover plate (removed earlier) back on the Badger® ORION® transmitter.

Place it so the text; *TURBINE FRONT FLOW AL-600, AL-1000, AL-1400, AL-2300, and AL-5000* (or other such text); faces the front and the top hole is centered around the upper drive pawl.

Place the index drive pawl perpendicular to the transmitter drive pawl.



Step 5: Use four (4) 18-18x3-1/2 supplied mounting screws and a washer on each to attach the index, cover plate, and Badger® ORION transmitter to the gas meter.



Step 6: Tighten all screws evenly with a large screwdriver to approximately 70 inch-lbs.



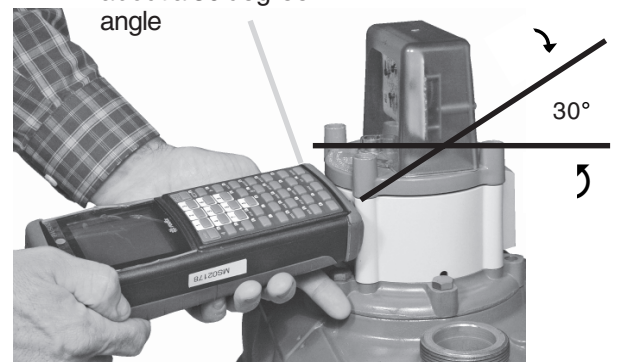
Program the Badger ORION Transmitter

Badger® uses the Radix® system to display and process screens.

Place the Radix so the optic read head aligns with the LED output port. The angle of approach should be about 30 degrees.



Rotate Radix unit to about a 30 degree angle



Complete the Installation

After programming, add seal caps to the front and rear index cover screws . Only the front screws are shown below.



If the index mounting screw seal caps were removed, replace them with the extra caps provided in the installation kit.



This completes the installation of a Badger ORION® transmitter on an American® Commercial Diaphragm and Turbine Meter with Red Security Seals.



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Please see our website at
www.badgermeter.com
for specific contacts.

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