C H A P T E R 3

Sensus/Rockwell Meter Installation

This chapter provides instructions to install the 100G Datalogging Gas Endpoint on a Sensus/Rockwell Meter. These instructions apply to 11-tooth, 16-tooth, and 18-tooth Sensus 100G Datalogging Gas Endpoints.

Note Sensus meters are also known as Invensys, Equimeter, and Rockwell. For these instructions, all meter types are referred to as Sensus meters.

100G Datalogging Gas Endpoint Sensus 11-tooth

Sensus 16-tooth

Sensus 18-tooth

To Remove the Index from the Meter

1. Remove the four index cover screws and the index cover from the Sensus meter. Alternate screw removal following the numbered pattern as shown in the photo.

2. Examine the mounting screws. If they are 5/8" long and not corroded, keep them to attach the 100G Datalogging Gas Endpoint assembly. If the screws are not the correct length or if the screws are corroded, discard.

> **Note** You may use the removed index cover as a temporary storage container for screws. Properly dispose all unused screws, old index covers, gaskets, tamper seals, and other leftover materials. Do not leave materials on customer premises.

3. Unscrew one index mounting screw completely. Hold one hand under the index to catch the screw. While removing the other mounting screw, pull the index away from the meter to keep the index backplate against the back of the screw. Remove the screw completely after the index is free of the meter.


Set the index aside where it will not be damaged or fill with dirt, rain or snow. The index will be mounted in the endpoint later in this procedure. Verify the index mounting screws are 5/8" long and not corroded. If the screws are the correct length and not corroded, retain for later use. If the original screws are discarded, use the correct replacement screws (see Installation Prerequisites on page 8.)

4. Remove the old gasket, gasket residue, and dirt from the meter (if applicable). The meter face must be free of gasket residue or dirt before you install the 100G Datalogging Gas Endpoint.
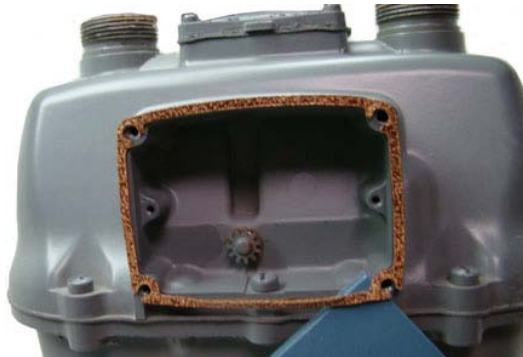

To Assemble the 100G Datalogging Gas Endpoint and Index

1. Separate the 100G Datalogging Gas Endpoint housing from the cover by pulling the cover straight out from the housing. Set the endpoint cover aside where it will not be damaged or fill with rain, dirt or snow. The cover will be used later in this installation procedure.

2. Place the index drive gear (1) in the housing wriggler gear cup (2) of the endpoint. The example shows an 11-tooth drive gear. Your index may be a 16- or 18-tooth gear. Use the appropriate 100G Datalogging Gas Endpoint for your specific meter. See the Meter Compatibility List on page 2 for more information.
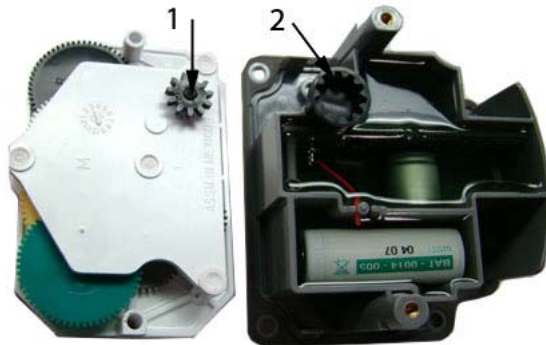
3. After the drive gear is aligned with the wriggler gear, the mounting holes will line up.
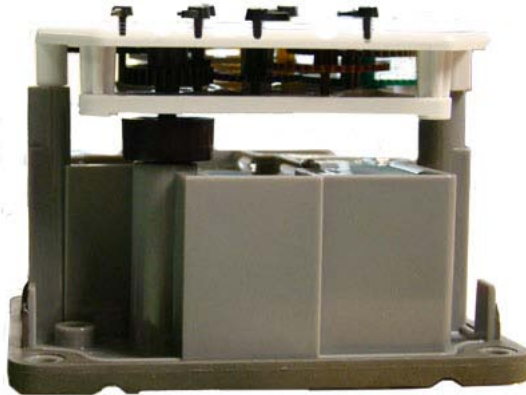
4. Using the original index mounting screw or a replacement screw (if necessary), place one 6 - 32 5/8" screw into the index's right mounting screw hole. Attach the screw to the endpoint housing's right-index mounting post just enough to hold the screw and the right end of the index in place. Install and tighten the left index mounting screw. Tighten the right index mounting screw completely.
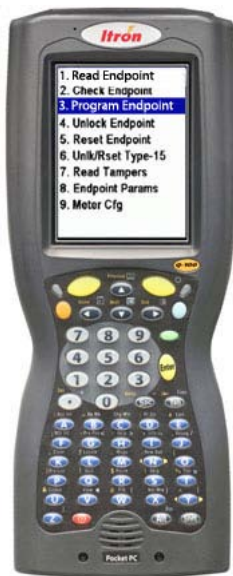
5. Slide the endpoint cover over the index and housing. Verify the cover is installed correctly. The endpoint label should be clearly visible and easily read.

Programming the 100G Datalogging Gas Endpoint Assembly

The 100G Datalogging Gas Endpoint must be programmed with the FC200SR handheld computer loaded with EndPoint-Link® or Point-Link Pro® software version 5.3 or later. See the Endpoint-Link v5.3 (or later) Endpoint Programming Guide (TDC-0744) for more complete programming information.

Caution The 100G Datalogging Gas Endpoint must be programmed before use. Follow the steps in this section to properly program the endpoint.

Take note of the index drive rate shown on a lower left dial on the index. The endpoint is programmed based on the drive rate. Sensus meter index drive rates are typically 2-cubic feet.

To Program the 100G Datalogging Gas Endpoint

1. Program the index drive rate into the 100G Datalogging Gas Endpoint using the FC200SR. For all programming and "Check Endpoint" operations, hold the FC200SR as close to vertical as possible. For best success, keep the FC200SR within 6 feet of the target endpoint. Verify you have the correct programming mode (Fixed Network Mode, Mobile/Handheld Mode, or Hard to Read Mobile/Handheld Mode) for your application. Programming parameters are based on the mode defined by your system administrator.
   During programming, the 100G Datalogging Gas Endpoint is set to the nearest 100 cubic feet; the last two digits (tens and units) are programmed as zeros (0). After programming is complete, the endpoint assembly will read to the nearest cubic foot.

2. Slowly turn the endpoint's drive wriggler two turns in the direction shown on the index drive rate. This verifies the endpoint is counting properly after assembly.

⚠️ **Caution** Do not turn the drive wriggler faster than one turn per second.

3. Read the 100G Datalogging Gas Endpoint using the FC200SR.

- If the read result is higher than the number programmed in Step 1, the 100G Datalogging Gas Endpoint is counting correctly.

- If the read result is not higher than the number programmed in Step 1, replace the 100G Datalogging Gas Endpoint.

Attaching the 100G Datalogging Gas Endpoint Assembly to the Sensus Meter

After 100G Datalogging Gas Endpoint programming is complete, attach the endpoint assembly to the Sensus meter.

To Attach the 100G Datalogging Gas Endpoint

1. Gently place the ERT module assembly against the front of the meter at angle.

Endpoint-to-meter mounting screws are installed and tightened in an alternating fashion. Align the top right mounting screw-hole on the meter with the top right screw-hole on the endpoint. Insert the top-right cover mounting screw and tighten the screw enough to hold it in place. Do not completely tighten. Rotate the Endpoint assembly counterclockwise until the remaining three endpoint screw holes line up with the holes in the meter. Use the original mounting screws if they were the correct size and not corroded. If the original screws were discarded, use the correct replacement screws (see Installation Prerequisites on page 8.)

Install the remaining three mounting screws and tighten in the pattern shown.

- Insert lower left mounting screw and tighten to snug position.
- Tighten upper right mounting screw to snug position.
- Insert upper left mounting screw and tighten to snug position.
- Insert lower right mounting screw and tighten to snug position.

Each mounting screw should be tightened evenly.

> **Important** Meter manufacturers should torque the mounting screws 15 to 20 inch-pounds.

2. Place a new tamper seal over the two screws with tamper seal cups. Press the new tamper seals into place using the 11/32-inch nut driver (or similar blunt tool).

3. Complete any necessary paperwork and properly dispose excess installation materials and scrap from the customer premises.

100G Datalogging Gas Endpoint installation on the Sensus Meter is complete.

CHAPTER 4

Itron/Actaris Meter Installation

This chapter provides instructions to install the 100G Datalogging Gas Endpoint on an Itron/Actaris Meter.

Note Itron/Actaris meters are also known as Sprague and Schlumberger meters. For these instructions, all meters will be referred to as Itron/Actaris meters.

To remove the index from the meter

1. Remove the index cover screws and the index cover from the Itron/Actaris meter. Examine the mounting screws. If they are 5/8" long and not corroded, keep them to re-attach the 100G Datalogging Gas Endpoint assembly. If the screws are not the correct length or if the screws are corroded, discard.

Note Use the removed index cover as a temporary storage container for screws. Properly dispose all unused screws, old index covers, gaskets, tamper seals, and other leftover materials. Do not leave materials on customer premises.

2. Loosen the index mounting screws 1/2 to one turn. Slide the index to the left and off the mounting screws and remove from the meter.

Set the index aside where it will not be damaged or fill with dirt, rain or snow. The index will be mounted in the endpoint later in this procedure. Verify the index mounting screws are 1/4" long and not corroded. If the screws are the correct length and not corroded, retain for later use. If the original screws are discarded, use the correct replacement screws (see Installation Prerequisites on page 8.)

3. Remove the old gasket, gasket residue, and dirt from the meter (if applicable). The meter face must be free of gasket residue or dirt before you install the 100G Datalogging Gas Endpoint.
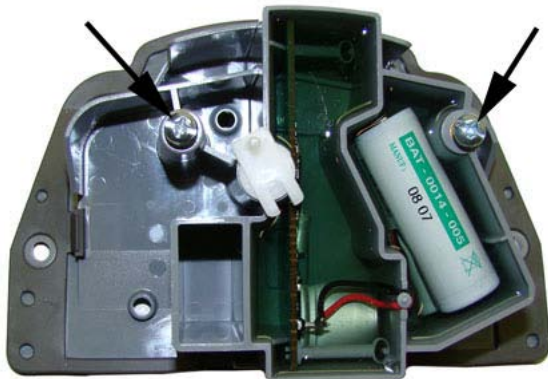

### *To assemble the 100G Datalogging Gas Endpoint and index*

1. Separate the 100G Datalogging Gas Endpoint housing from the cover by pulling the cover straight out from the housing. Set the endpoint cover aside where it will not be damaged or fill with rain, dirt or snow. The cover will be used later in this installation procedure.

2. Screw the 10 - 24 x 1/4" screws into the index mounting posts two turns. Do not tighten the screws.

3. Align the index wriggler (1) with the endpoint drive post (2). Carefully slide the index onto the mounting screws. Verify the 100G Datalogging Gas Endpoint's housing drive post makes positive engagement with the index wriggler. Hold the index in place and tighten the index mounting screws.
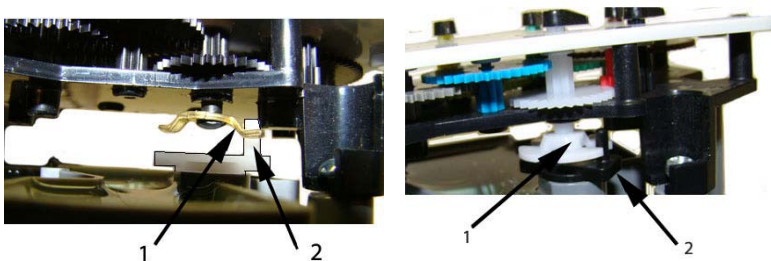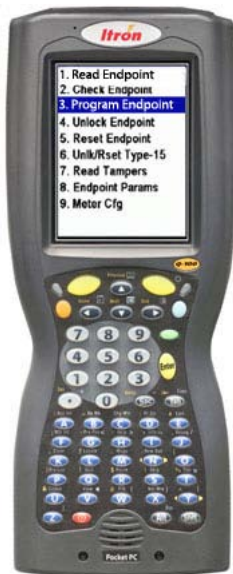

Caution Indexes have varying drive mechanism styles. The diagrams show a bar-type (left) and "Scottish Yoke" type (right). Failure to align the endpoint wriggler with the index drive post can cause binding and lead to poor registration or meter failure. To verify proper engagement of the index to the endpoint housing, spin the wriggler one clockwise rotation, then one-counterclockwise rotation. Do not spin more than one complete rotation. The wriggler should spin freely, with little or no resistance.

4. Slide the endpoint cover over the index and housing. Verify the cover is installed correctly. The endpoint label should be clearly visible and easily read.
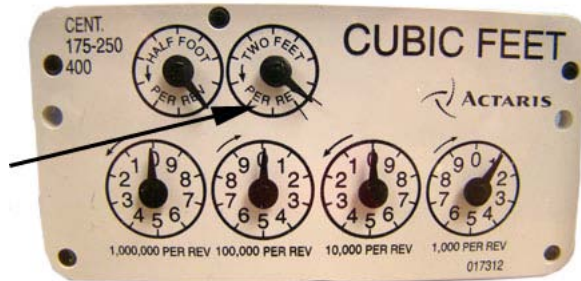

Programming the 100G Datalogging Gas Endpoint Assembly

The 100G Datalogging Gas Endpoint must be programmed with the FC200SR handheld computer loaded with EndPoint-Link® or Point-Link Pro® software version 5.3 or later. See the Endpoint-Link v5.3 (or later) Endpoint Programming Guide (TDC-0744) for more complete programming information.
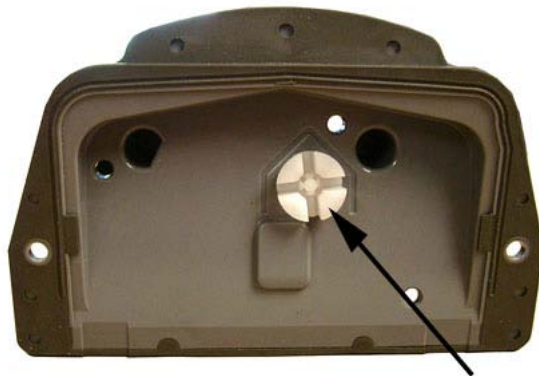

Caution The 100G Datalogging Gas Endpoint must be programmed before use. Follow the steps in this section to properly program the endpoint.

Take note of the index drive rate shown on the drive dial on the index. The endpoint is programmed based on the drive rate. Itron/Actaris meter index drive rates are typically 2-cubic feet.

To program the 100G Datalogging Gas Endpoint

1. Program the index drive rate into the 100G Datalogging Gas Endpoint using the FC200SR. For all programming and "Check Endpoint" operations, hold the FC200SR as close to vertical as possible. For best success, keep the FC200SR within 6 feet of the target endpoint. Verify you have the correct programming mode (Fixed Network Mode, Mobile/Handheld Mode, or Hard to Read Mobile/Handheld Mode) for your application. Programming parameters are based on the mode defined by your system administrator.
   During programming, the 100G Datalogging Gas Endpoint is set to the nearest 100 cubic feet; the last two digits (tens and units) are programmed as zeros (0). After programming is complete, the endpoint assembly will read to the nearest cubic foot.

2. Slowly turn the endpoint's drive wriggler two turns in the direction shown on the index drive rate. This verifies the endpoint is counting properly after assembly.

⚠️ **Caution** Do not turn the drive wriggler faster than one turn per second.

3. Read the 100G Datalogging Gas Endpoint using the FC200SR.

- If the read result is higher than the number programmed in Step 1, the 100G Datalogging Gas Endpoint is counting correctly.

- If the read result is not higher than the number programmed in Step 1, replace the 100G Datalogging Gas Endpoint.

Attaching the 100G Datalogging Gas Endpoint Assembly to the Itron/Actaris Meter

After the 100G Datalogging Gas Endpoint has been programmed, attach it to the Itron/Actaris meter.

To attach the 100G Datalogging Gas Endpoint

1. Align the white wriggler (1) so one of its four drive slots lines up with the meter's drive dog (2).

2. Carefully place the 100G Datalogging Gas Endpoint on the meter.

Warning Failure to correctly align the meter drive post and endpoint drive slot can cause binding and lead to poor registration or meter failure. If there is a gap between the endpoint gasket and the meter, it may be the drive slot of the endpoint assembly's wriggler is not correctly aligned with the meter drive slot. Remove the 100G Datalogging Gas Endpoint assembly and repeat the alignment procedure. You must establish proper engagement of the meter drive dog within the endpoint wriggler slot.

3. Endpoint to meter mounting screws must be installed in an alternating fashion. Use the original mounting screws if they were the correct size and not corroded. If the original screws were discarded, use the correct replacement screws (see Installation Prerequisites on page 8.) Insert the right index cover mounting screw and tighten the screw enough to hold it in place. Do not completely tighten. Install the left index cover mounting screw and tighten to a snug fit. Finish by tightening the right mounting screw to a snug fit. Each mounting screw must be tightened evenly.

> **Important** Meter manufacturers should torque the mounting screws 15 to 20 inch-pounds.

1. Place a new tamper seal over the two screws in the tamper seal cups. Press the new tamper seals into place using the 11/32-inch nut driver (or similar blunt tool).

2. Complete any necessary paperwork and properly dispose excess installation materials and scrap from the customer premises.

100G Datalogging Gas Endpoint installation on the Itron/Actaris Meter is complete.

Attaching the 100G Datalogging Gas Endpoint Assembly to Flat-faced Itron/Actaris Meters

100G Datalogging Gas Endpoint installation on a flat-faced Itron/Actaris meter requires the Itron Adapter Shim Kit (CFG-0015-001).


Itron Adapter Shim Kit (CFG-0015-001)

1	Adapter Shim Plate
2	Clear Cover Mounting Screws
3	Drive Dog
4	Adapter Plate Mounting Screws

To Attach the 100G Datalogging Gas Endpoint Assembly

1. Verify the kit includes the materials listed in the Itron Adapter Shim Kit Table.

Warning The Adapter Shim Plate must fit flush against the meter face. Some older Schlumberger/Sprague meters are not compatible with the adapter plate. The following examples illustrate the potential obstruction (problem) areas between the adapter plate and meter. Failure to mount adapter plate flush on the front of a meter could result in a binding condition and lead to poor registration or meter failure.
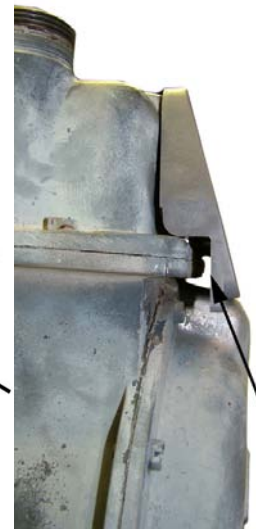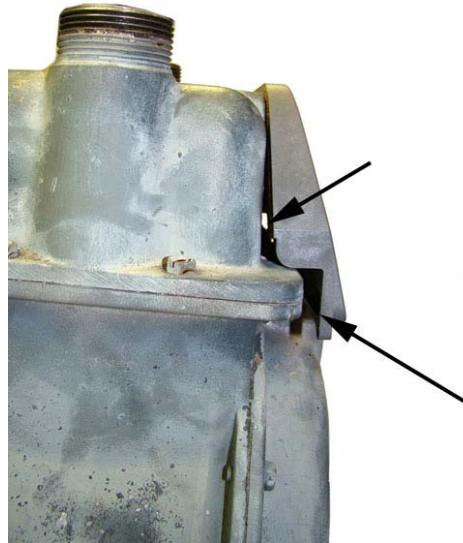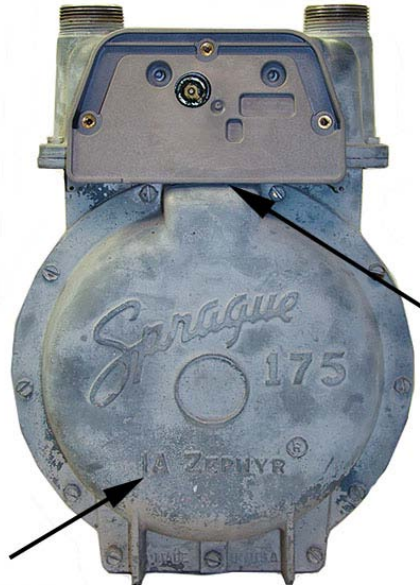
2. Remove the drive dog from the flat-faced Itron/Actaris meter. Replace it with the extended drive dog included in the kit. Hand-tighten to snug.

Warning   The meter drive dog shaft is surrounded by a gasket. A gas leak could result if the gasket is damaged. Do not use a tool to install or tighten the new drive dog. Hand-tighten only.

3. Attach the Adapter Shim Plate to the meter with the gasket against the meter face. Secure with the two adapter plate mounting screws in an alternating fashion.

    - Insert the right adapter plate screw and tighten the screw enough to hold it in place.

    - Install the left mounting screw and tighten to a snug fit.

    - Finish by tightening the right mounting screw to a snug fit.

    Each adapter plate screw must be tightened evenly.

    Note 100G Datalogging Gas Endpoints must be assembled and programmed following the instructions in To Assembe the 100G Datalogging Gas Endpoint and Index on page 32 and Programming the 100G Datalogging Gas Endpoint Assembly on page 34 prior to installation on the meter.

4. Align the white wriggler (1) so one of its four drive slots lines up with the meter's drive dog (2).
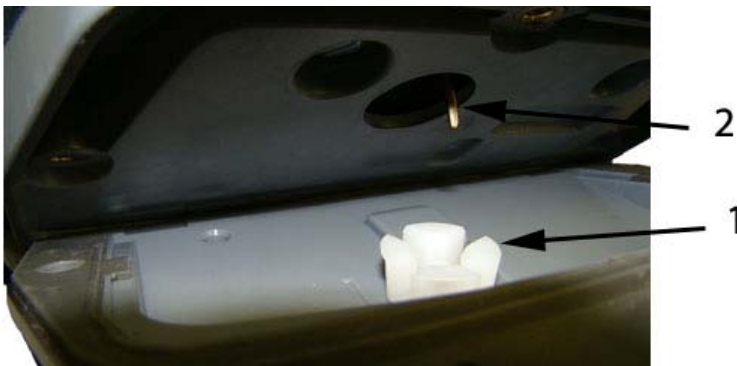
5. Carefully place the 100G Datalogging Gas Endpoint assembly on the meter.

    Warning Failure to correctly align the meter drive post and endpoint drive slot can cause binding and lead to poor registration or meter failure. If there is a gap between the endpoint gasket and the meter, remove the 100G Datalogging Gas Endpoint assembly and repeat the alignment procedure. You must engage the meter drive dog in the endpoint wriggler slot.

6. Secure the endpoint to the meter by installing mounting screws in an alternating fashion. Use the original index cover mounting screws if they were the correct size and not corroded. If the original screws were discarded, use the correct replacement screws (see Installation Prerequisites on page 8.)

    - Insert the right index cover mounting screw and tighten the screw enough to hold it in place. Do not completely tighten.

    - Install the left index cover mounting screw and tighten to a snug fit.

    - Finish by tightening the right mounting screw to a snug fit.

Each mounting screw must be tightened evenly.

Important Meter manufacturers should torque the mounting screws 15 to 20 inch-pounds.

1. Place a new tamper seal over the two screws with tamper seal cups. Press the new tamper seals into place using the 11/32-inch nut driver or similar blunt tool.

2. Complete any necessary paperwork and properly dispose excess installation materials and scrap from the customer premises.

100G Datalogging Gas Endpoint installation on the Itron/Actaris Meter is complete.

Securing Brass Meter Tags to Flat-faced Meters

Some older Sprague meters have metal index covers with brass meter tags attached (by screws or rivets) to metal index covers.


Typically, brass meter tags have mounting (screw/rivet) holes on each end of the tag.

Note If the brass meter tag will be secured to the meter utilizing the endpoint-to-meter mounting hole, it must be attached during the endpoint installation procedure described in Step 1 of Attaching the 100G Datalogging Gas Endpoint to the Itron/Actaris Meter on page 36.

To Secure Brass Meter Tags to Flat-faced Meters

1. After the metal index cover is removed from the meter, carefully remove the brass meter tag from the meter index cover. Do not damage the meter tag mounting holes. The Itron Adapter Shim Plate was designed with a tag mounting hole in the lower right corner. After the 100G Datalogging Gas Endpoint assembly is attached to the meter, secure the meter tag to the Shim Plate meter tag mounting hole with a utility-approved wire security seal. Itron acceptable meter tag mounting methods are shown in the photos.
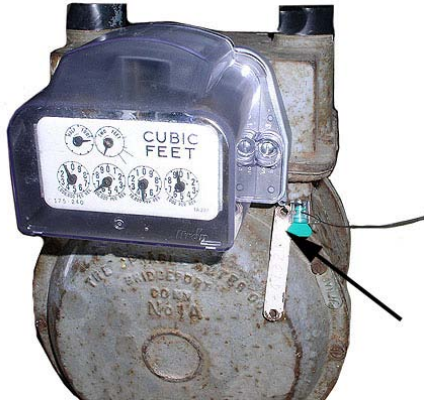
2. If the meter tag mounting holes were damaged during removal so a wire security seal cannot be used, remove the 100G Datalogging Gas Endpoint index cover and place the meter tag inside the endpoint assembly to maintain meter security. (See To Assemble the 100G Datalogging Gas Endpoint on page 32.)

Warning Placing the brass meter tag inside the 100G Datalogging Gas Endpoint assembly is not the preferred method of securing the tag to the meter. Use this method only if the brass meter tag mounting holes are damaged and cannot be used for mounting. This method does not secure the tag inside the endpoint. The brass meter tag may move out of view if the meter is bumped or jarred.

C H A P T E R   5

National/Lancaster Meter Installation

This chapter provides instructions to install the 100G Datalogging Gas Endpoint on 175 - 250 CFH National/Lancaster meters.

To Remove the Index from the Meter

1. Remove any tamper seals from the index cover screws. Remove the index cover screws and the index cover from the meter. Discard the index cover mounting screws and index cover. The 100G Datalogging Gas Endpoint includes new, different-size endpoint mounting screws
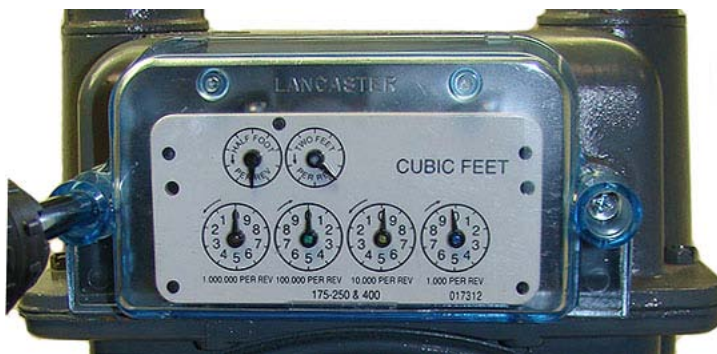
> **Note** You may use the removed index cover as a temporary storage container for screws. Properly dispose all unused screws, old index covers, gaskets, tamper seals, and other leftover materials. Do not leave materials on customer premises.

2. Unscrew one index mounting screw completely. Hold one hand under the index to catch the screw. While removing the other mounting screw, pull the index away from the meter to keep the index backplate against the back of the screw. Remove the screw completely after the index is free of the meter.

Set the index aside where it will not be damaged or fill with dirt, rain or snow. The index will be mounted in the endpoint later in this procedure. Discard the index mounting screws. The 100G Datalogging Gas Endpoint for National/Lancaster meters includes new, different-sized index mounting screws (see for screw information).

3. Remove the old gasket, gasket residue, and dirt from the meter (if applicable). The meter face must be free of gasket residue or dirt before you install the 100G Datalogging Gas Endpoint assembly.

To Assemble the 100G Datalogging Gas Endpoint and Index

1. Separate the 100G Datalogging Gas Endpoint housing from the cover by pulling the cover straight out from the housing.


2. Set the endpoint cover aside where it will not be damaged or fill with rain, dirt or snow. The cover will be used later in this installation procedure.

Note National/Lancaster meter indexes are available in different models:

Some National/Lancaster Meter indexes have index legs to mount the index on the meter or endpoint. Some indexes have both legs and index mounting holes and some have just mounting holes. Mounting methods are dependent on the index. Index types require different mounting screws to attach the index to the 100G Datalogging Gas Endpoint housing (see Installation Prerequisites on page 8). Indexes with legs must be mounted to the endpoint housing mounting posts. Indexes with mounting holes must be attached to the endpoint housing's bracket mounting posts.
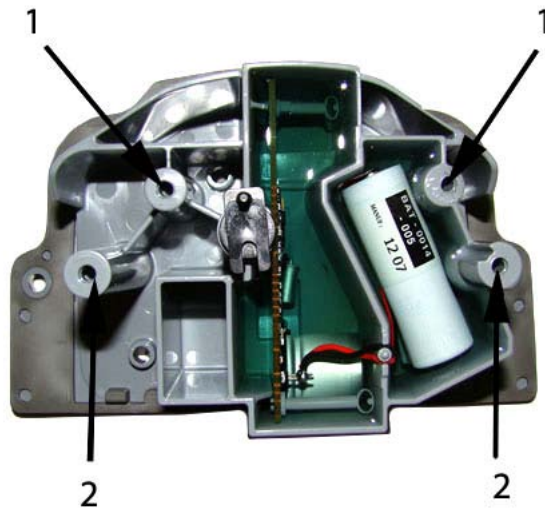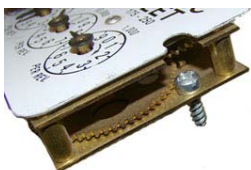

1 Bracket mounting posts (indexes with legs)

2 Housing mounting posts (indexes without legs)

If your index has legs with mounting screw slots, skip steps 3 and 4. If your index has mounting screw holes in the index back plate (no legs), perform steps 3 and 4, and skip steps 5 and 6.

3. For indexes with mounting screw holes in the index back plate (no legs), use replacement index mounting screws (SCR-0037-001 - see Installation Prerequisites on page 8). Place one screw into the index's right-hand mounting screw hole.

Note National/Lancaster index mounting screws are thread-forming screws and may require more torque.

4. Attach the screw to the endpoint housing's right-index mounting post just enough to hold the screw and the right end of the index in place.

5. For indexes with legs (mounting slots), screw one 6 - 19 x 3/16" screw (SCR-0015-001 - see Installation Prerequisites on page 8 for screw information) into the right index mounting post one or two turns. Do not completely tighten the screw.

6. Place the right index mounting screw slot under the screw head. Do not completely tighten the screw.

7. Carefully slide the index drive post into the endpoint wriggler. Verify positive engagement of the index wriggler to the endpoint drive dog. (The following photos show three types of index/wrigglers with positive engagement.)
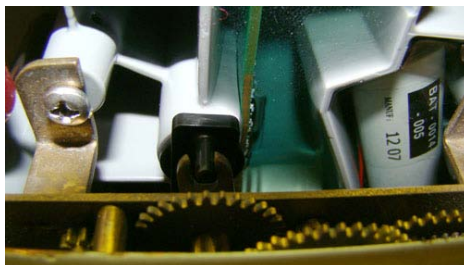
Caution Verify the index drive slot engages with the 100G Datalogging Gas Endpoint wriggler. Failure to mate the endpoint wriggler with the index drive post (or slot) can cause binding and lead to poor registration or meter failure.

8. Install and tighten the left index mounting screw (for indexes with either mounting screw slots or holes). Tighten the right index mounting screw. Each index mounting screw must be tightened evenly.
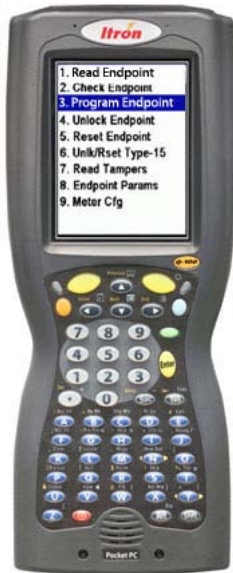

9. Slide the endpoint cover over the index and housing. Verify the cover is installed correctly. The endpoint label should be clearly visible and easily read.

Programming the 100G Datalogging Gas Endpoint Assembly

The 100G Datalogging Gas Endpoint must be programmed with the FC200SR handheld computer loaded with EndPoint-Link® or Point-Link Pro® software version 5.3 or later. See the Endpoint-Link v5.3 (or later) Endpoint Programming Guide (TDC-0744) for more complete programming information.

> ⚠️ **Caution** The 100G Datalogging Gas Endpoint must be programmed before use. Follow the steps in this section to properly program the endpoint.

Take note of the index drive rate shown on a top right dial on the index. The endpoint is programmed based on the drive rate. National/Lancaster meter index drive rates are typically 2-cubic feet.

To Program the 100G Datalogging Gas Endpoint

1. Program the index drive rate into the 100G Datalogging Gas Endpoint using the FC200SR. For all programming and "Check Endpoint" operations, hold the FC200SR as close to vertical as possible. For best success, keep the FC200SR within 6 feet of the target endpoint. Verify you have the correct programming mode (Fixed Network Mode, Mobile/Handheld Mode, or Hard to Read Mobile/Handheld Mode) for your application. Programming parameters are based on the mode defined by your system administrator.
   During programming, the 100G Datalogging Gas Endpoint is set to the nearest 100 cubic feet; the last two digits (tens and units) are programmed as zeros (0). After programming is complete, the endpoint assembly will read to the nearest cubic foot.

2. Slowly turn the endpoint's drive wriggler two turns in the direction shown on the index drive rate. This verifies the endpoint is counting properly after assembly.

> ⚠️ **Caution** Do not turn the drive wriggler faster than one turn per second.

3. Read the 100G Datalogging Gas Endpoint using the FC200SR.

   - If the read result is higher than the number programmed in Step 1, the 100G Datalogging Gas Endpoint is counting correctly.

   - If the read result is not higher than the number programmed in Step 1, replace the 100G Datalogging Gas Endpoint.

Attaching the 100G Datalogging Gas Endpoint Assembly to the National/Lancaster Meter

After the 100G Datalogging Gas Endpoint has been programmed, attach it to the National/Lancaster meter.

To Attach the 100G Datalogging Gas Endpoint

1. Align the white wriggler (1) so one of its four drive slots lines up with the meter's drive dog (2).

2. Carefully place the 100G Datalogging Gas Endpoint on the meter.

   Warning Failure to correctly align the meter drive post and endpoint drive slot can cause binding and lead to poor registration or meter failure. If there is a gap between the endpoint gasket and the meter, it may be the drive slot of the endpoint assembly's wriggler is not correctly aligned with the meter drive slot. Remove the 100G Datalogging Gas Endpoint assembly and repeat the alignment procedure. You must engage endpoint wriggler in the meter drive dog.

3. Install endpoint to meter mounting screws in an alternating fashion. 100G Datalogging Gas Endpoints for National/Lancaster meters come with new, different-size endpoint mounting screws (SCR-0014-004 - see Installation Prerequisites on page 8 for screw information.) Insert the right index cover mounting screw and tighten the screw enough to hold it in place. Do not completely tighten. Install the left index cover mounting screw and tighten to a snug fit. Finish by tightening the right mounting screw to a snug fit. Each endpoint mounting screw must be tightened evenly.

   Important Meter manufacturers should torque the mounting screws 15 to 20 inch-pounds.

4. Place new tamper seals over the screws. Press the new tamper seals into place using the 11/32-inch nut driver or similar blunt tool.

5. Complete any necessary paperwork and properly dispose excess installation materials and scrap from the customer premises.

100G Datalogging Gas Endpoint installation on the National/Lancaster Meter is complete.