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IC: 5294A-EG0R3S2**

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IC Radio Standards Specification: RSS-210**

ACS Report Number: 07-0243-15C

**Manufacturer: Cellnet Technology, Inc.
Model(s): 25-1075, 25-1080, 25-1081**

Manual
(Part 2 of 4)

CHAPTER 5 RESIDENTIAL METER MODULE RETROFIT

This chapter outlines installation procedures for:

- American Meter Module Installation
- Rockwell/Equimeter/Sensus Meter Module Installation
- Sprague/Schlumberger/Actaris Meter Module Installation
- Lancaster/National Meter Module Installation

COMPLIANCE

The Cellnet Residential Meter Retrofit modules meet the following standards:

- FCC CFR Part 15.247 - Radio Frequency Devices, Subparts B, Unintentional Radiators. For details on FCC and Industry Canada compliance, see Appendix G, FCC and IC Compliance.
- ETL Classified 3079567 - ETL Classified conforms to ISA STD ANSI/ISA 12.12.01. Certified to CSA STD C 22.2 No. 213.

TO BEGIN RESIDENTIAL METER MODULE RETROFIT

The first four steps for every gas meter module install are the same for every manufacturer. Prior to beginning the residential meter module retrofit, make sure you have followed the steps in *"If the installers come across any meters where a medical alert code appears in the Handheld for that address they are to discontinue the exchange, enter the appropriate skip code and move to the next exchange. Prior to Meter Exchange or Module Retrofit"* on page 3-1.

- 1 Remove the cover from the Meter Module.
- 2 Plug the programming cable from the Handheld into the programming power cable on the Meter Module. Refer to [Chapter 2, Using the HandHeld Device](#).
- 3 Program the Meter Module and check the Handheld for successful programming (example, Dials = 4, Meter ID = 0123456G, Meter Constant = 2).
- 4 Remove the tamper seals and index cover from the original gas meter.

American Installation



Figure 5.1 American: Meter Module before installation

- 1 Follow steps 1-4 in *"To Begin Residential Meter Module Retrofit"* on page 5-1.

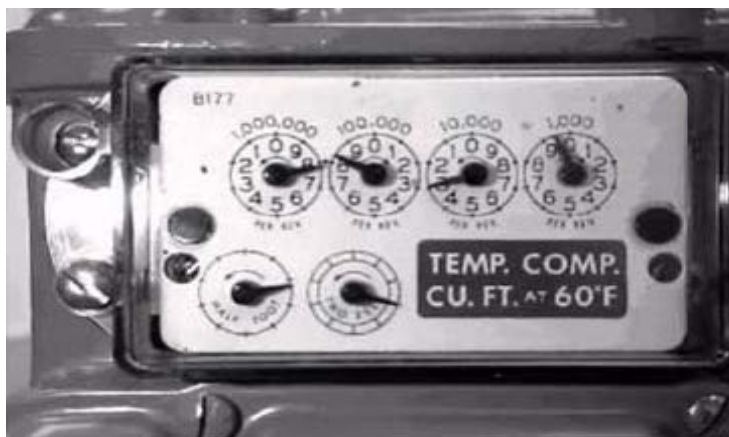


Figure 5.2 American: meter with index and index cover

- 2 Remove the index dials from the gas meter. Also remove all of the original gasket material. Replace the index if it is damaged or if the gears are discolored.

WHEN REPLACING AN INDEX YOU MUST ENTER THE METER READ INTO THE HANDHELD AND IN THE COMMENT SECTION WRITE "INDEX EXCHANGED". For Index visual verification and exchange on American meters see [Appendix B](#), *Visual Inspection of Indexes*.



Figure 5.3 American Removing the Index (one screw on each side)

- 3 Clean the area behind the index and cover gasket surface on the meter with a wire brush and gasket scraper.
- 4 Make sure that the location of the dials on the meter is free of any debris that may hamper module installation.
- 5 Slide the index attachment clips out to the sides before beginning to install module on meter.



Figure 5.4 American: Sliding the Index attachment clip out (one per side)

- 6 Align the meter drive dog with the module wiggler and install the Meter Module base to the meter by screwing in the two captured standoff screws. The torque requirement for fastening the screws is 10 inch-pounds. For modules manufactured starting in May 2005, for proper alignment see [Appendix A, Aligning the New American Meter Drive Dog](#).



Check the wiggler on the meter module for free movement. Wiggler should turn at least 10 degrees but no greater than a 1/4 turn. If it is binding, then disassemble and realign. This is also known as the “wiggle” test.



Improper alignment or tightening of the standoff screws may result in module or meter failure.



Figure 5.5 American: Aligning the drive dog

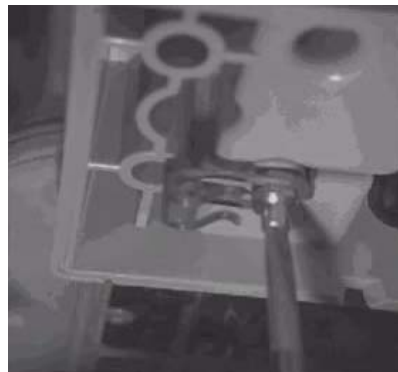


Figure 5.6 American: Attaching the Meter Module onto the meter by screwing in two stand-off fasteners



Use torque screwdriver set at 10 inch-pounds to install the two captured standoff screws for all module installations.

- 7 Attach the index to the Meter Module housing with the captured clips on the standoff screws. Be sure that the clips are extended fully towards the outside edge of the module when you fit the index to the module, and align the index dog of the index to the module's wiggler. Push the two clips towards the inside of the module to secure the index. After the index is installed, the installer must turn the proving dial on the index to ensure the index is properly engaged with the module.



Figure 5.7 American: Installing Index on standoff screws



Figure 5.8 American: Sliding the Index clip in

- 8 Plug the battery into the programming port power cable and place it in the battery compartment with the battery wires on top.



Figure 5.9 American: Connecting the battery



Figure 5.10 American: Installing the battery with the battery cable on top



Figure 5.11 American: Properly installed battery

- 9 Utilize the RF Buster to verify module is transmitting, hold the RF Buster with magnet side to the top upper left quadrant of the module plastic cover and hold the button until 10 beeps are received. See [Appendix C, Using the RF Buster](#) for more information.

Magnet location
for "busting" →



Figure 5.12 American: Meter module with cover and tamper seals installed

- 10 Install the cover on the Meter Module base, using the four screws that were provided. Tighten the screws until the cover sits snug, then tighten an additional quarter turn.
- 11 Install new red tamper seals over two diagonal screws (upper right and lower left, or upper left and lower right).
- 12 Clean up any debris from the retrofit and installation processes, and leave a door hanger tag with any appropriate information filled in. Make sure to always leave a door hanger.
- 13 At the end of the day, the installer returns to the Cross Dock for the check-in process. The installer should also turn in inventory of unused, defective, or broken gas Meter Modules. The Installer must check in all Handhelds issued. The installer is responsible for reconciling any discrepancies in changed data before the check-in process can be completed. Meters Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Rockwell/Equimeter/Sensus Meter Module Installation



Figure 5.13 Rockwell/Equimeter/Sensus: meter module before installation



Figure 5.14 Rockwell/Equimeter/Sensus: meter

- 1 Follow steps 1-4 in *"To Begin Residential Meter Module Retrofit"* on page 5-1.



Figure 5.15 Rockwell/Equimeter/Sensus: Meter with tamper seals and index cover removed

- 2 Remove the index and all of the original gasket material. Clean the area behind the index on the meter with a wire brush and gasket scraper to remove all debris.



Figure 5.16 Rockwell/Equimeter/Sensus: Removal of index cover gasket

- 3 Insert the two screws through the index and through the Meter Module base. Ensure that the module's wiggler and the meter drive dog of the index are properly aligned.



Figure 5.17 Rockwell/Equimeter/Sensus: Meter Module and index with screws in place ready for assembly

- 4 While holding the index and Meter Module base together, align the meter drive dog with the module wiggler. The torque requirement for fastening the screws is 4-8 inch-pounds. Refer to "*Rockwell/Equimeter/Sensus: Attaching the Meter Module and index to the meter*" on page 5-10.



Do not over tighten the standoff screws; if module wiggler and meter drive dog are not aligned properly it may result in a meter failure.

Check the wiggler on the meter module for free movement. The wiggler should turn at least 10 degrees, but no greater than 1/4 turn. If it is binding, then disassemble and realign. This is also known as the "wiggle" test.



Figure 5.18 Rockwell/Equimeter/Sensus: Attaching the Meter Module and index to the meter



All of the original gasket and all debris must be completely removed or it will result in a module and meter failure.

- 5 Gently wiggle the two-foot proving dial to make sure the gears are meshed properly. There should be no greater than 1/4 turn play.

- 6 Plug the battery into the programming power cable and place it in the battery compartment with the battery wires on top.



Figure 5.19 Rockwell/Equimeter/Sensus: Connecting the battery



Figure 5.20 Rockwell/Equimeter/Sensus: Correct battery orientation (connector on top)



Figure 5.21 Rockwell/Equimeter/Sensus: Battery properly installed

- 7 Use the four remaining screws to install the cover to the Meter Module base, tightening the screws until the cover sits snug, then tighten an additional quarter turn.



Figure 5.22 Rockwell/Equimeter/Sensus: Installing the Meter Module cover

You can mount an Equimeter module to a Rockwell/Equimeter Residential Gas meter using only two screws, as long as you use one of the following configurations (based on the image below): A-D, B-C, or A-B. If screws cannot be properly installed, replace with threaded inserts and 8-32 screws.



Figure 5.23 Rockwell/Equimeter/Sensus: two-screw configuration

Configurations C-D, B-D, and A-C are unacceptable. These are not strong enough to exclude rainwater.

- 8 Install new red tamper seals over diagonal screws (upper right and lower left, or upper left and lower right).



Figure 5.24 Rockwell/Equimeter/Sensus: Correctly installed Meter Module

- 9 Utilize the RF Buster to verify module is transmitting, hold the RF Buster with magnet side to the top upper left quadrant of the module plastic cover and hold the button until 10 beeps are received. Refer to [Appendix C, Using the RF Buster](#).
- 10 Clean up any debris from the retrofit and installation processes, and leave a door hanger tag with any appropriate information filled in, if door hangers are specified during installer training for that utility. Make sure to always leave a door hanger.
- 11 At the end of the day, the installer returns to the Cross Dock for the check-in process. The installer should also return unused, defective, or broken Gas 3 Meter Modules. The installer must check in all Handhelds issued at the start of the shift. The installer is responsible for reconciling any discrepancies in changeout data before the check-in process can be completed. Meter Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Sprague/Schlumberger/Actaris Meter Module Installation



Figure 5.25 Sprague/Schlumberger/Actaris: Meter Module before installation



Figure 5.26 Sprague/Schlumberger/Actaris: Meter

- 1 Follow steps 1-4 in *"To Begin Residential Meter Module Retrofit"* on page 5-1.



Figure 5.27 Sprague/Schlumberger/Actaris: Removing the index cover

- 2 Remove the index and index screws from the meter. Inspect the index for any signs of damage. If damaged, replace the index. Refer to [Appendix B](#), *Visual Inspection of Indexes* for more information. Also remove all of the original gasket material, if any.



Figure 5.28 Sprague/Schlumberger/Actaris: Removing the index

- 3 Clean the area behind the index and the cover gasket surface on the meter with a wire brush and gasket scraper. Ensure the entire area is free of debris.



Figure 5.29 Sprague/Schlumberger/Actaris: Removal of index cover gasket

- 4 Insert the two Phillips head screws through the Meter Module base.



Figure 5.30 Sprague/Schlumberger/Actaris: Meter Module pre-assembled

- 5 Align the Meter Module base to the meter. Lead the Index screws into the meter. Ensure that the module's wiggler and the meter's drive dog are aligned properly. Only engage screws 1 turn, leave clearance to slide the index under the screw heads.



Figure 5.31 Sprague/Schlumberger/Actaris: Alignment of the meter drive dog and screws



Figure 5.32 Sprague/Schlumberger/Actaris: Meter Module base attached to meter, ready to slide on dials

- 6 Install the index by sliding the tabs on the index under the heads of the screw and tightening the screws. The torque requirement is 4-8 inch-pounds. Ensure that the module's wiggler and the meter drive dog of the index are properly aligned before tightening the screws. Also ensure that the module is not bound up by checking the 2 Foot dial to ensure that it has between 1/4 and 1/2 turn play in it.

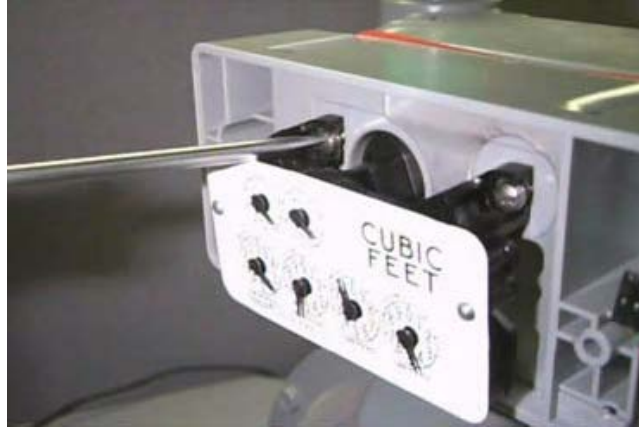


Figure 5.33 Sprague/Schlumberger/Actaris: Securing index and checking for free movement of wiggler-

- 7 Plug the battery into the programming power cable and place it into the battery compartment with the battery wires and connector in back (see Figures 36, 37, and 38).

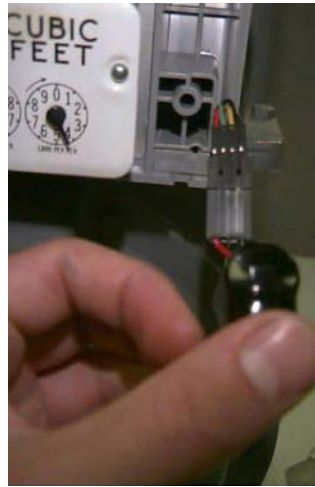


Figure 5.34 Sprague/Schlumberger/Actaris: Connecting the Battery



Figure 5.35 Sprague/Schlumberger/Actaris: Correct Battery Orientation



Figure 5.36 Sprague/Schlumberger/Actaris: Battery Correctly Installed

- 8 Use the remaining two screws to install the cover on the Meter Module, tightening the screws until the cover sits snug, then tighten an additional quarter turn. Insert the two red tamper seals.



Figure 5.37 Sprague/Schlumberger/Actaris: Fasten Cover Screws and Insert Tamper seals

- 9 Utilize the RF Buster to verify module is transmitting, hold the RF Buster with magnet side to the top upper left quadrant of the module plastic and hold the button until 10 beeps are received.
- 10 Clean up any debris from the retrofit and installation processes, and leave a door hanger tag with any appropriate information filled in, if door hangers are specified during installer training for that utility.
- 11 At the end of the day, the installer returns to the Cross Dock for the check-in process. The installer should also turn in inventory of unused, defective, or broken gas Meter Modules. The installer must check in all Handhelds issued at the start of the shift. The installer is responsible for reconciling any discrepancies in changeout data before the check-in process can be completed. Meter Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Lancaster/National Meter Module Installation

Before beginning the Lancaster retrofit, ensure that the meter is retrofittable. You can identify this by the placement of the screws that attach the dials to the module. It is very important that you do not break the seal of the meter dial cover if this is not a retrofittable meter.



Figure 5.38 Lancaster/National: Meter retrofittable



Figure 5.39 Lancaster/National: Meter non-retrofittable



Figure 5.40 Lancaster/National: Meter Module before installation



Figure 5.41 Lancaster/National: Meter

- 1 Follow steps 1-4 in *"To Begin Residential Meter Module Retrofit"* on page 5-1.



Figure 5.42 Lancaster/National: Removing the index cover

- 2 Remove the index from the meter.



Figure 5.43 Lancaster/National: Removing the index

- 3 Remove all of the original gasket material, if any. Clean the area behind the index and the cover gasket surface on the meter with a wire brush and gasket scraper, ensure that the entire area is free of debris.



Figure 5.44 Lancaster/National: Removal of index cover gasket

- 4 Remove original one-prong coupler and replace with two-pronged coupler, being careful not to cross the threads. This does not have to be tightened since the meter turning will keep tension on the drive dog.



Figure 5.45 Lancaster/National: Installation of New Coupler

- 5 Insert the two longer screws through the Meter Module base.



Figure 5.46 Lancaster/National: Meter Module pre-assembled

- 6 Fasten the Meter Module base to the meter, ensuring that the module's wiggler and meter's drive dog are properly aligned. Only engage screws 1 turn.



Figure 5.47 Lancaster/National: Alignment of the meter drive dog and screws



Figure 5.48 Lancaster/National: Meter Module base attached to meter, ready to slide on dials

- 7 Install the index by sliding the tabs on the index under the heads of the screw and tightening the screws. The torque requirement is 10 inch-pounds. Ensure that the module's wiggler and the meter drive dog of the index are properly aligned before tightening the screws. Also ensure that the module is not bound up by checking the 2 Foot dial to ensure that it has between 1/4 and 1/2 turn play in it. Securing Index and Checking for Free Movement of Drive Dog.

- 8 Plug the battery into the programming port/power cable and place it into the battery compartment with the battery wires and connector in back.



Figure 5.49 Lancaster/National: Connecting the Battery



Figure 5.50 Lancaster/National: Correct Battery Orientation



Figure 5.51 Lancaster/National: Battery Correctly Installed

- 9 Use the remaining two screws to install the cover on the Meter Module, tightening the screws until the cover sits snug, then tighten as additional quarter turn. Insert the two red tamper seals.



Figure 5.52 Lancaster/National: Fasten Cover Screws and Insert Tamper seals

- 10 If needed, remove serial number plate from original cover and install on new cover with two small screws provided.



Figure 5.53 Lancaster/National: Replacing Serial Number Plate

- 11 Utilize the RF Buster to verify module is transmitting, hold the RF Buster with magnet side to the top upper left quadrant of the module plastic cover and hold the button until 10 beeps are received. See [Appendix C, Using the RF Buster](#) for more information.

Notes:

CHAPTER 6 COMMERCIAL AND INDUSTRIAL METER MODULE INSTALLATION

This chapter outlines change out procedures for:

- American CG3
- Rockwell/Equimeter/Sensus Meter Module Installation
- Sprague/Actaris Meter Module Installation
- Schlumberger/Actaris Meter Module Installation

Refer to [Appendix E](#), *Difficult/Non-compatible Commercial Retrofits* for difficult and non-compatible module installation instructions.

TO BEGIN C&I METER MODULE INSTALLATION

The first four steps for every gas meter module install are the same for every manufacturer. Prior to beginning the commercial meter module retrofit, make sure you have followed the steps in *"If the installers come across any meters where a medical alert code appears in the Handheld for that address they are to discontinue the exchange, enter the appropriate skip code and move to the next exchange. Prior to Meter Exchange or Module Retrofit"* on page 3-1.

- 1 Remove the cover from the Meter Module.
- 2 Plug the programming cable from the Handheld into the programming power cable on the Meter Module. Refer to [Chapter 2](#), *Using the HandHeld Device*.
- 3 Program the Meter Module and check the Handheld for successful programming (example, Dials = 4, Meter ID = 0123456G, Meter Constant = 2).
- 4 Remove the tamper seals and index cover from the original gas meter.

American CG3 Installation

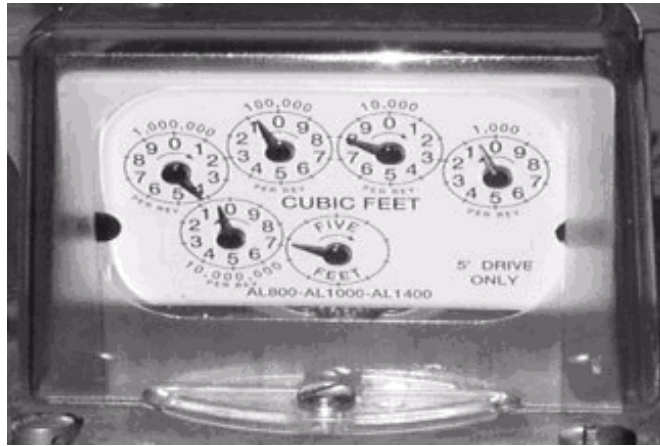


Figure 6.1 American CG3: Meter before installation

- 1 Follow the steps in "To Begin C&I Meter Module Installation" on page 6-1.
- 2 Remove the tamper caps and index cover from the original meter. Remove the index from the index cover. Clean the work areas with a wire brush and/or scraper as needed. Remove all of the original gasket if it is unserviceable. Inspect Index for wear and gear fading.

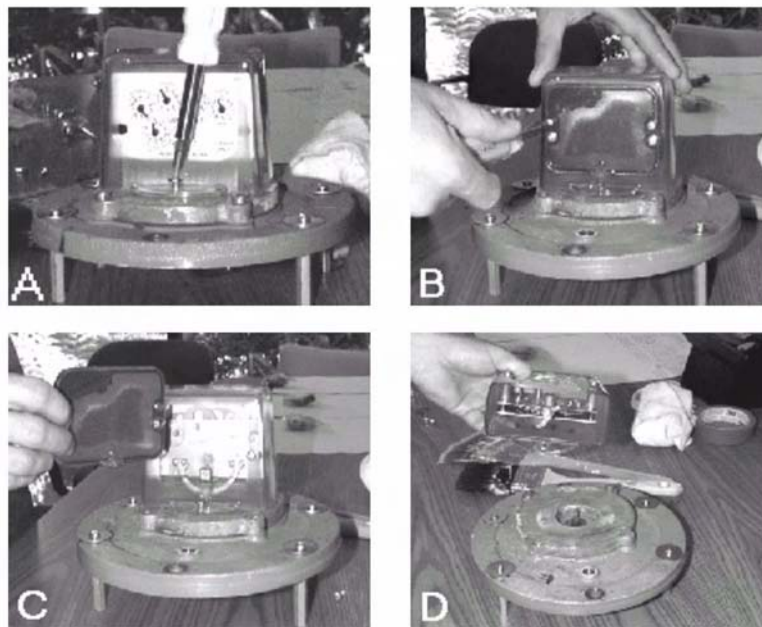


Figure 6.2 American CG3: Removing the cover and index

- 3 Open the package containing the Meter Module, screws, and battery.



Figure 6.3 Common American meter module packaging with hardware on the right

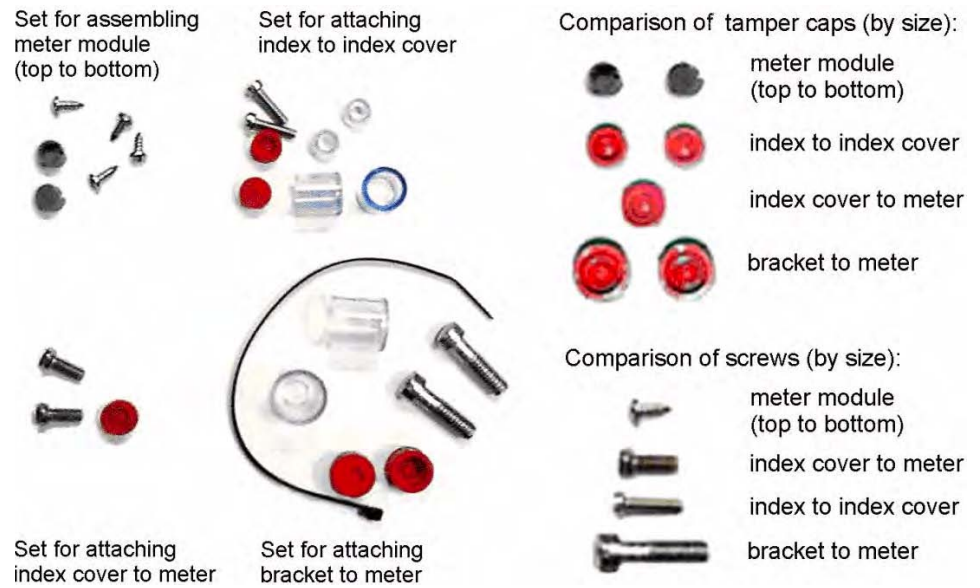


Figure 6.4 American CG3: screw kit

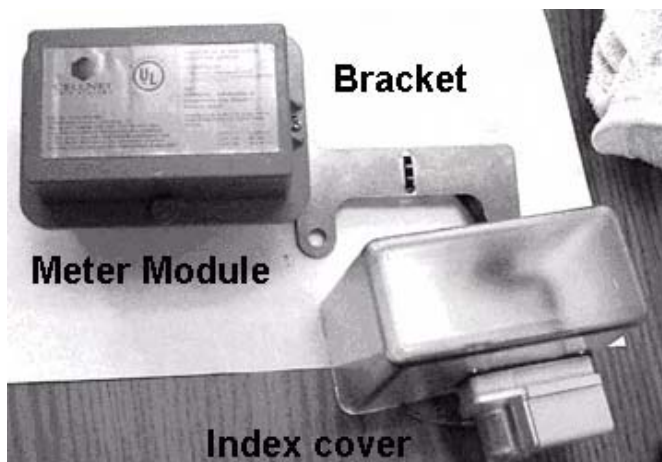


Figure 6.5 American CG3: meter module kit

- 4 Open the bag containing the battery. Carefully remove the battery.
- 5 Open the meter module. Avoid pulling the cables.



Figure 6.6 Open American CG3: module

- 6 Connect the battery to the Meter Module. Assemble the battery into the retaining clip on the metal bracket.

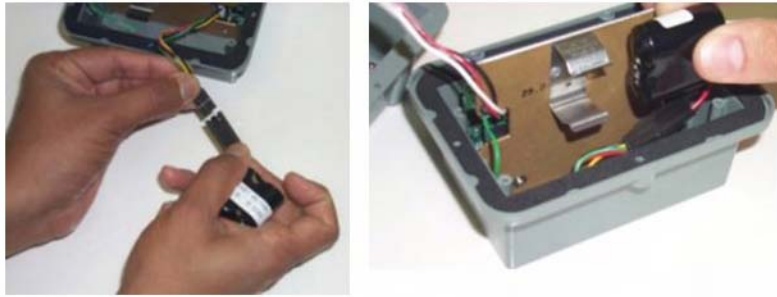


Figure 6.7 American CG3:Connecting the battery to the module



Route wire through cutout area so that wire is not pinched.

- 7 Connect the programming cable from the handheld computer to the programming port on the Meter Module. Program the Meter Module. Check the handheld for successful programming (example - Dials = 4 or 5, Meter ID = 0123456G, Meter Constant = 5 or 10).



Figure 6.8 American CG3:Connecting the programming cable to the American Commercial meter module



Figure 6.9 American CG3: module route wire

- Slide the metal bracket (not the green circuit board) into the slots of the clamshell (one of the clamshell halves has slots on opposite sides of the interior). If you are looking down into the slots, the battery clip should be towards the top - the large capacitors on the circuit board go deep into the clamshell. Assemble the Meter Module halves together with the four small self-tapping screws provided. The torque requirement is 6-10 inch pounds. Ensure that the gasket is in place and the wires are not pinched. Install the tamper seals.



Check condition of the index for looseness of index pointers on shaft, cracks on face enamel, or peeling. Ensure that the index is not bound up. Replace the index if dials are loose or locked, or if the enamel is cracked, loose or damaged.

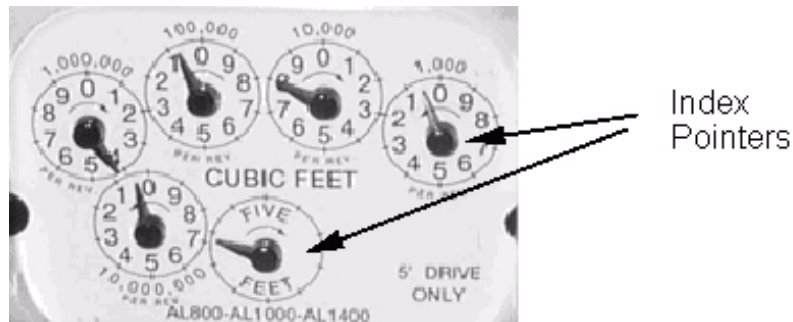


Figure 6.10 American CG3: module Index detail

- Attach the new index cover to the index using the screws provided. The torque requirement is 10-inch pounds. Handle the index carefully to avoid breaking the counter or index. Ensure that the counter and index are properly aligned. Verify that the counter is fully engaged to the index pointer.

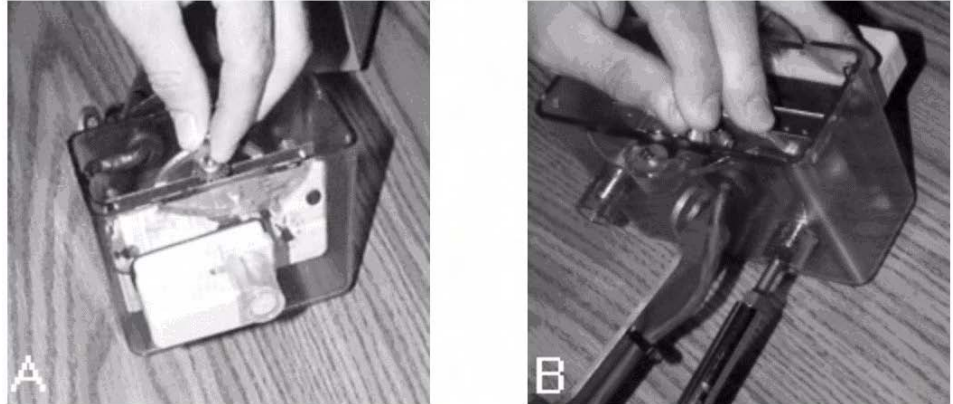


Figure 6.11 American CG3:module- Attaching the new Index cover

- Attach tamper seals as shown. there are two tamper seals for the Index-to-Index cover connections.

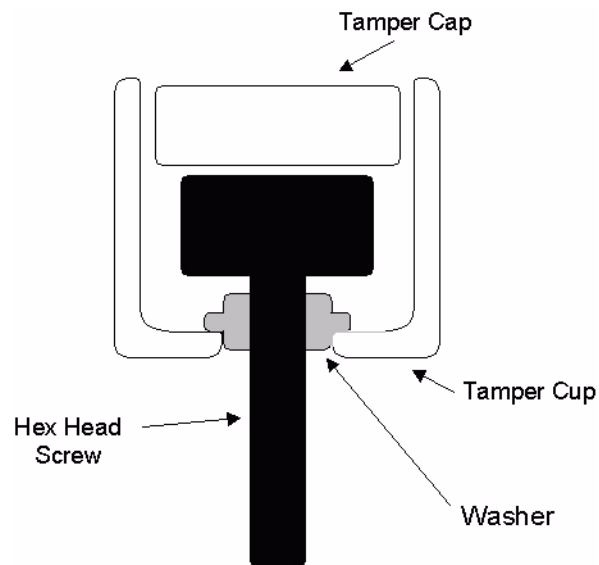


Figure 6.12 American CG3: tamper sealing for index cover

- 11 Mount the index and cover onto the meter. Place the gasket on the meter (replace if necessary), aligning the holes. Secure the index to the meter with the two hex-head screws provided. The torque requirement is 20-30 inch pounds. Install the tamper seal.

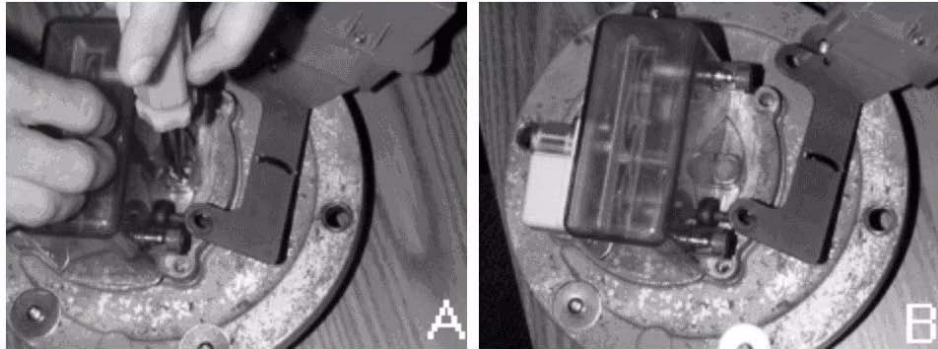


Figure 6.13 American CG3:I installing Index

- 12 Determine the best orientation for the mounting bracket (see following configurations). To change the bracket orientation, remove the two Phillips head screws holding the bracket to the module. The bracket can be turned or flipped over for the best configuration. Cable tie may need to be removed.

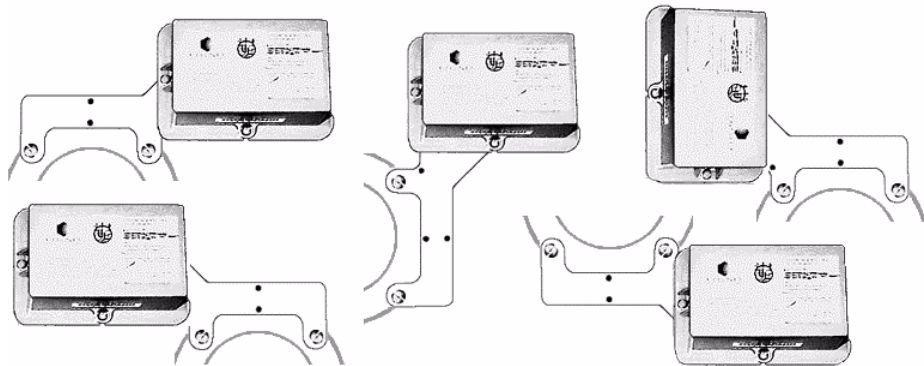


Figure 6.14 American CG3: mounting bracket configurations

- 13 Attach the mounting bracket to the meter using the large Fillister screws provided. Use a tamper cup seal on one or two of the screws. The torque requirement is 30-40 inch pounds. Install the two tamper seals.

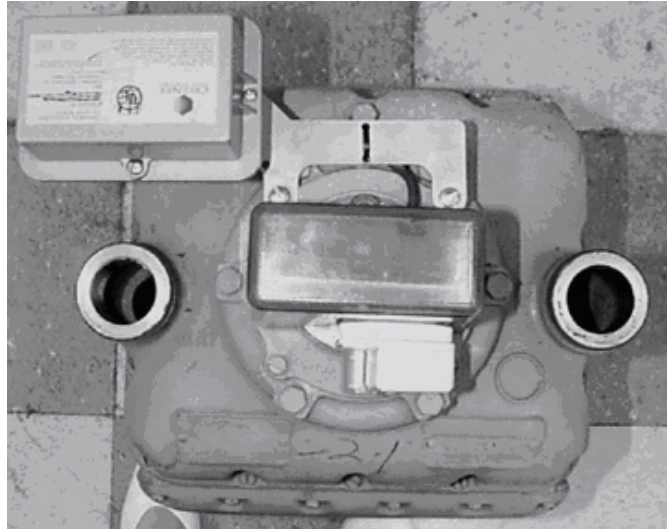


Figure 6.15 American CG3:meter module with mounting bracket installed

- 14 Install tamper caps over remaining five screws.
- 15 Utilize the RF Buster to verify module is transmitting, hold RF Buster with magnet side to the top upper left quadrant of the module plastic and hold the button until 10 beeps are received. See [Appendix C](#), *Using the RF Buster* for more information.
- 16 Clean up any debris from the retrofit and installation processes and tie any loose cables with tie wraps.
- 17 Proceed to the next installation site.
- 18 At the end of the day, return to the Cross Dock for the check-in process. Turn in inventory of unused, defective, or broken gas Meter Modules. Check in the handheld computer. The installer must reconcile any discrepancies in the changeout data before the check-in process can be completed. The crossdock will not check out any Meter Modules to an installer who has not completed the previous day's check-in process.

Rockwell/Equimeter/Sensus Meter Module Installation

There are two types of Rockwell modules: Center and Offset. The left side illustrates center proving dial and the right side illustrates offset proving dial. Verify the appropriate type before starting installation.

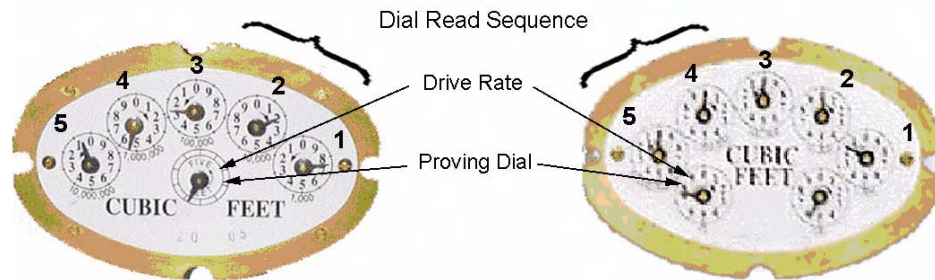


Figure 6.16 Rockwell/Equimeter/Sensus: Indexes before installation

- 1 Follow the steps in "To Begin C&I Meter Module Installation" on page 6-1.
- 2 Remove the tamper caps and index cover from the original meter. Remove all of the original gasket if it is unserviceable. Clean the work area with a wire brush and scraper if needed.
- 3 Select the appropriate Meter Module (Rockwell/Equimeter Center or Offset). Open the package containing the Meter Module, screws, and battery.

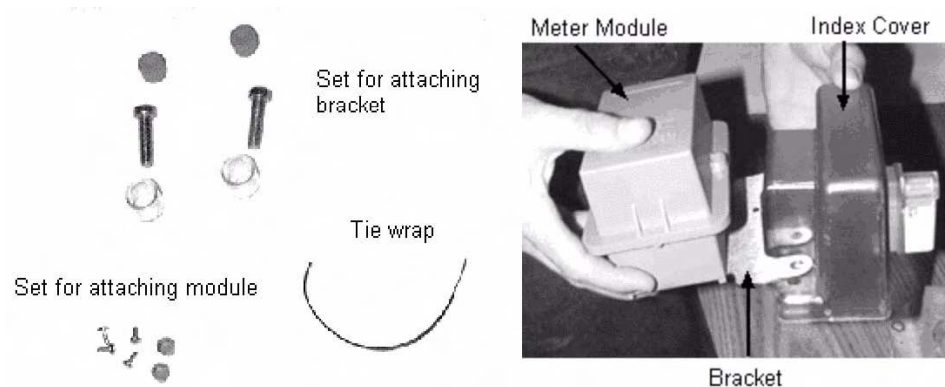


Figure 6.17 Rockwell/Equimeter/Sensus: screw and meter module kits

- 4 Open the bag containing the battery. Carefully remove the battery.
- 5 Open the Meter Module, taking care to avoid pulling on the cables.
- 6 Connect the battery to the Meter Module. Assemble the battery into the retaining clip on the metal bracket.
- 7 Connect the programming cable from the handheld computer to the programming port on the Meter Module. Program the Meter Module. Check the handheld for successful programming
- 8 Slide the metal bracket (not the green circuit board) into the slots of the clamshell (one of the clamshell halves has slots on opposite sides of the interior). If you are looking down into the slots, the battery clip should be towards the top - the large capacitors on the circuit board go deep into the clamshell.

- Assemble the Meter Module halves together with the four small self-tapping screws provided. The torque requirement is 6-10 inch pounds. Ensure that the gasket is in place and the wires are not pinched. Install the tamper seals.



Check condition of the index for looseness of index pointers on shaft, cracks on face enamel, or peeling. Replace the index if dials are loose or bound up, or if enamel is cracked or loose.

- Install the new index cover. Gently slide the cover over the index to avoid breaking the counter. Be careful not to damage the dials. Ensure that the counter and indexes are properly aligned. Verify that the counter is fully engaged to the index pointers.



Figure 6.18 Rockwell/Equimeter/Sensus: meter module installing Index cover

- Attach the cover and Meter Module to the meter. Position the module bracket over the cover and align the screw holes. The torque requirement is 30-40 inch pounds.

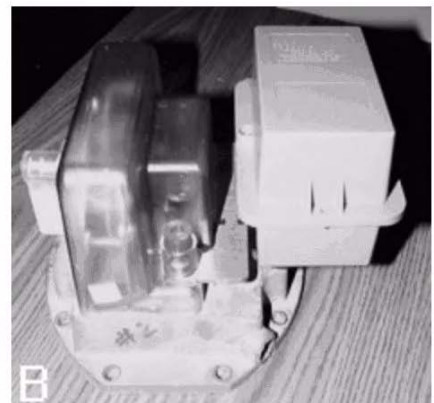
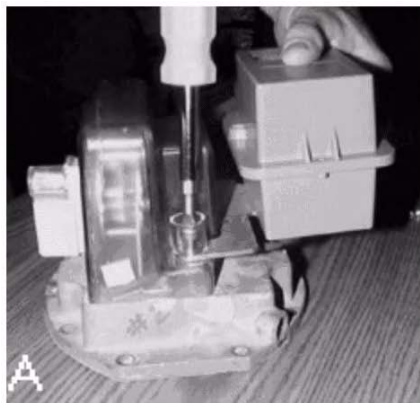


Figure 6.19 Rockwell/Equimeter/Sensus: securing index cover & Meter Module

- 12 Install new tamper seals over two screws using the plastic sleeve provided (optional).



Figure 6.20 Rockwell/Equimeter/Sensus: center test dial, counter installed, or index

- 13 Utilize the RF Buster to verify module is transmitting, hold RF Buster with magnet side to the top upper left quadrant of the module plastic and hold the button until 10 beeps are received. See [Appendix C, Using the RF Buster](#) for more information.
- 14 Clean up any debris from the retrofit and installation processes and tie any loose cables with tie wraps.
- 15 Proceed to the next installation site.
- 16 At the end of the day, return to the Cross Dock for the check-in process. Turn in inventory of unused, defective, or broken gas Meter Modules. Check in all handheld computers issued. You must reconcile any discrepancies in the changeout data before the check-in process can be completed. Meter Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Sprague/Actaris Meter Module Installation



Figure 6.21 Sprague/Actaris: Indexes before installation

- 1 Follow the steps in *"To Begin C&I Meter Module Installation"* on page 6-1.
- 2 Remove the tamper caps and index cover from the original meter. Remove all of the original gasket material. Clean the gasket surface on the meter with a wire brush and gasket scraper.
- 3 Open the package containing the Meter Module, screws, and battery.



Figure 6.22 Sprague/Actaris: screw kit

- 4 Open the bag containing the battery. Carefully remove the battery.
- 5 Open the Meter Module, taking care to avoid pulling on the cables.
- 6 Connect the battery to the Meter Module. Assemble the battery into the retaining clip on the metal bracket.
- 7 Connect the programming cable from the handheld computer to the programming port on the replacement Meter Module. Program the Meter Module. Check the handheld for successful programming.
- 8 Slide the metal bracket (not the green circuit board) into the slots of the clamshell (one of the clamshell halves has slots on opposite sides of the interior). If you are looking down into the slots, the battery clip should be towards the top - the large capacitors on the circuit board go deep into the clamshell. Assemble the Meter Module halves together with the four small self-tapping screws provided. The torque requirement is 6-10 inch pounds. Ensure that the gasket is in place and the wires are not pinched. Install the tamper seals.
- 9 Slide the bracket between the index cover and the meter.



Check condition of the index for looseness of index pointers on shaft, cracks on face enamel, or peeling. Replace the index if dials are loose or if enamel is cracked or loose.

- 10 Install the new gasket (if required) and index cover to the front of the index. Handle the index carefully. The torque requirement is 30-40 inch pounds. The screws go through the index cover and bracket, and fasten into the meter.



Ensure that the counter is aligned with proving dial (on top).



Figure 6.23 Sprague/Actaris: installing Index cover

- 11 Install new tamper seals.



Figure 6.24 Sprague/Actaris: installed tamper seals

- 12 Utilize the RF Buster to verify module is transmitting, hold RF Buster with magnet side to the top upper left quadrant of the module plastic and hold the button until 10 beeps are received. See [Appendix C, Using the RF Buster](#) for more information.



Figure 6.25 Sprague/Actaris: meter with module installed

- 13 Clean up any debris from the retrofit and installation processes and tie any loose cables with tie wraps.
- 14 Proceed to the next installation site.
- 15 At the end of the day, return to the Cross Dock for the check-in process. Turn in inventory of unused, defective, or broken gas Meter Modules. Check in all handheld computers issued. You must reconcile any discrepancies in the changeout data before the check-in process can be completed. Meter Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Schlumberger/Actaris Meter Module Installation

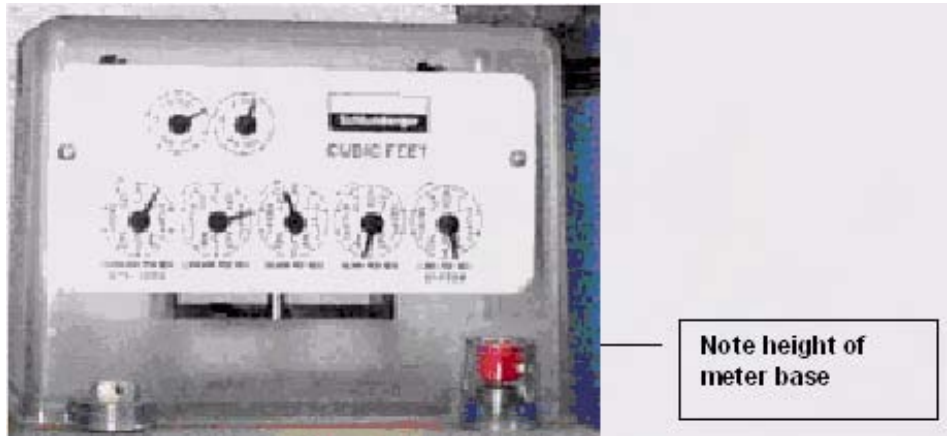


Figure 6.26 Schlumberger/Actaris: before installation



Only Schlumberger meters with the taller base (shown above) can accommodate Cellnet Meter Modules. Meters with the shorter base (shown below) will need to be retrofitted with a taller index bracket prior to module retrofit.

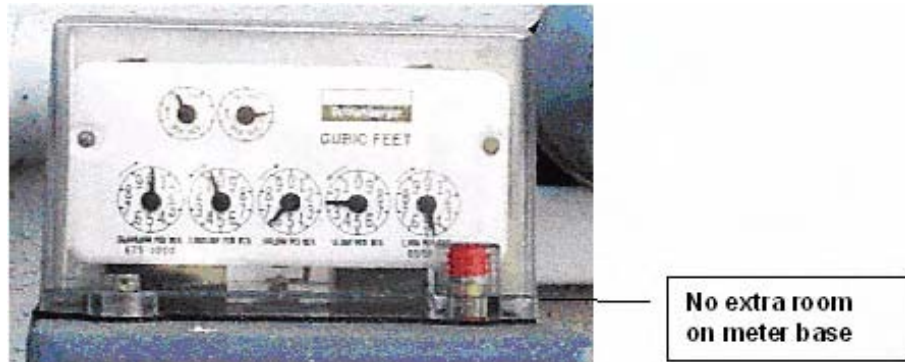


Figure 6.27 Schlumberger/Actaris: meter with short base

- 1 Follow the steps in "To Begin C&I Meter Module Installation" on page 6-1.

- 2 Remove the tamper caps and index cover from the original meter. Remove the gasket if it is unserviceable. Clean the work areas with a wire brush or scraper as needed.



Figure 6.28 Schlumberger/Actaris: Index cover removed

- 3 Open the package containing the Meter Module, screws, and battery.
- 4 Open the bag containing the battery. Carefully remove the battery.
- 5 Open the Meter Module, taking care to avoid pulling on the cables.
- 6 Connect the programming cable from the handheld computer to the programming port on the Meter Module. Program the Meter Module. Check the handheld for successful programming.
- 7 Connect the battery to the Meter Module. Assemble the battery into the retaining clip on the metal bracket.
- 8 Slide the metal bracket (not the green circuit board) into the slots of the clamshell (one of the clamshell halves has slots on opposite sides of the interior). If you are looking down into the slots, the battery clip should be towards the top - the large capacitors on the circuit board go deep into the clamshell. Assemble the Meter Module halves together with the four small self-tapping screws provided. The torque requirement is 6-10 inch pounds. Ensure that the gasket is in place and the wires are not pinched. Install the tamper seals.



Check condition of the index for looseness of index pointers on shaft, cracks on face enamel, or peeling. Replace the index if dials are loose or if enamel is cracked or loose.

- 9 Install the new index cover. Gently slide the cover over the index to avoid breaking the counter. Be careful not to damage the dials.

- 10 Attach the bracket and Meter Module to the meter. Note the order of installation: index cover, bracket, tamper cap, and screw. The torque requirement is 30-40 inch pounds.

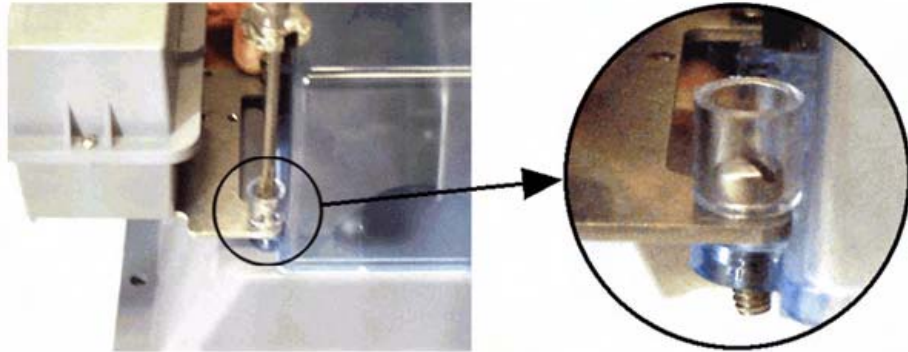


Figure 6.29 Schlumberger/Actaris: meter with bracket and meter module

- 11 Install new tamper caps over the screws using the plastic sleeves provided.
- 12 Utilize the RF Buster to verify module is transmitting, hold RF Buster with magnet side to the top upper left quadrant of the module plastic and hold the button until 10 beeps are received. See [Appendix C](#), *Using the RF Buster* for more information.
- 13 Clean up any debris from the retrofit and installation processes and tie any loose cables with tie wraps.
- 14 Proceed to the next installation site.
- 15 At the end of the day, return to the Cross Dock for the check-in process. Turn in inventory of unused, defective, or broken gas Meter Modules. Check in all handheld computers issued. You must reconcile any discrepancies in the changeout data before the check-in process can be completed. Meter Modules will not be checked out to an installer who has not completed the previous day's check-in process.

Notes: