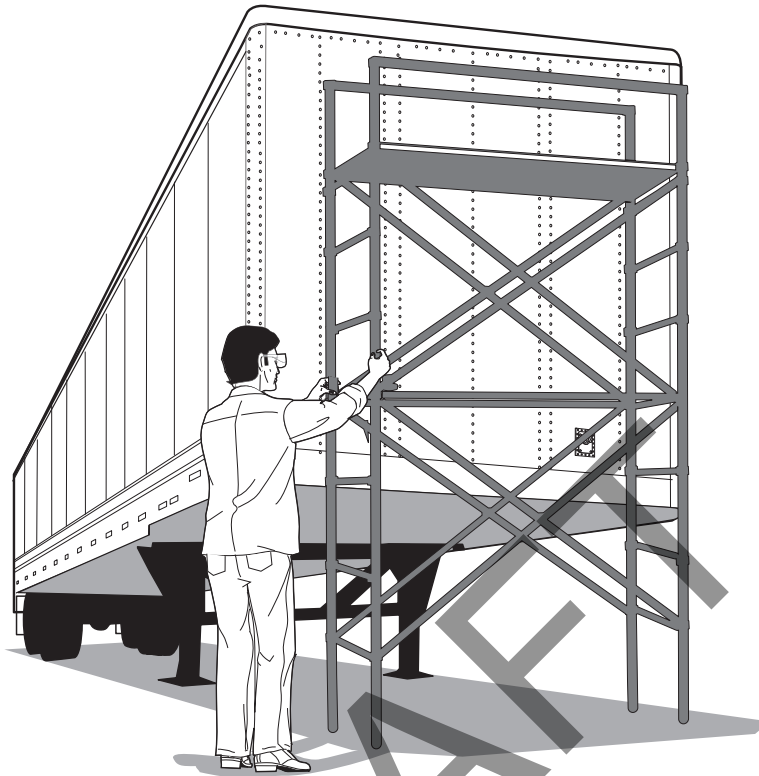


1. Position a portable scaffold in front of the trailer nose where the cargo sensor will be installed.



04AAA_131

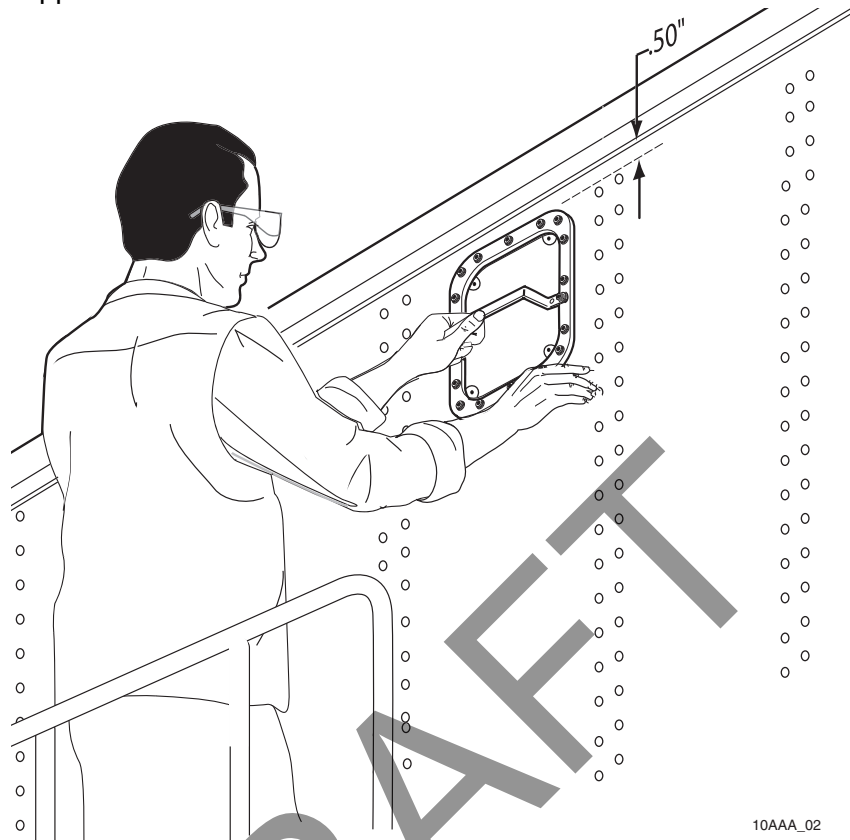
2. Carefully ascend the scaffolding.

Note

Mount on the bay next to the TT210 terminal which will be on the driver's side (left of center) no closer than 18" to the trailer sidewall.

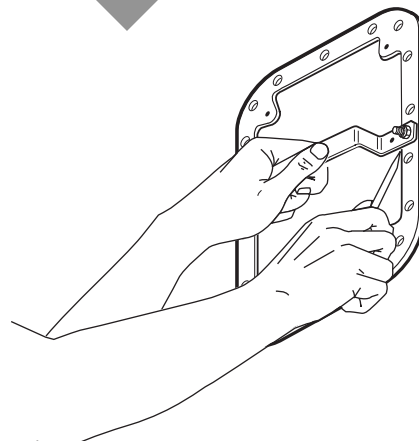
3. Locate the mounting position of the cargo sensor. It should be centered in the bay next to the TT210 terminal which will be on the driver's side (left of center).

4. Place the cargo mount installation template as high up as practical between the vertical support rails.



5. Secure the template with two self-drilling screws through holes in the handle.
6. Using the template as a guide, drill the 18 stud holes using a 3/8" drill.
7. Trace the inside of the template using a felt-tip pen.

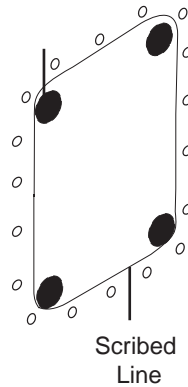
Trace the inside of the template



8. Drill 1/4" pilot holes in the four inside corners of the template.

9. Remove the self-drilling screws and the template.
10. Drill a 7/8" hole on each of the four corners of the template using the pilot holes as a guide.

Drill four 7/8" corner holes

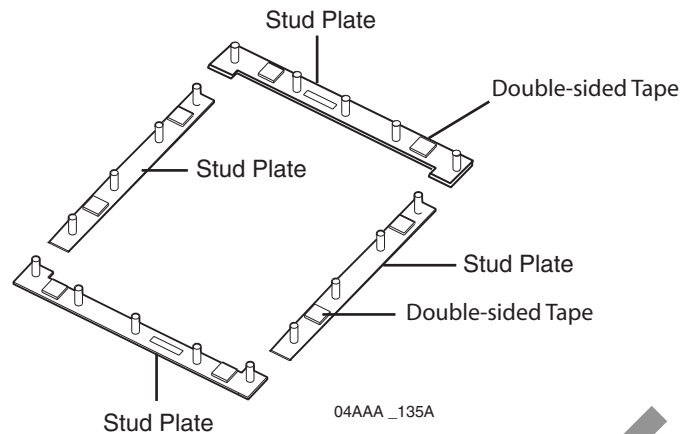


11. Completely cut out the marked area for the cargo sensor with a cutting tool, being careful not to drop the newly cut panel inside or outside of the trailer. Avoid sharp edges and debur if necessary.
12. Verify the trailer skin around the cutout area (inside and outside the trailer) is free of dirt and grime. If not, clean the surface with alcohol.
13. Drill four holes in the plywood liner that are lined up with the four 7/8" holes in the trailer skin. Mark and cut out the plywood in the area inside the four holes. The plywood cutout must extend a minimum of 6" below the lower edge of the cargo sensor cones at the bottom.

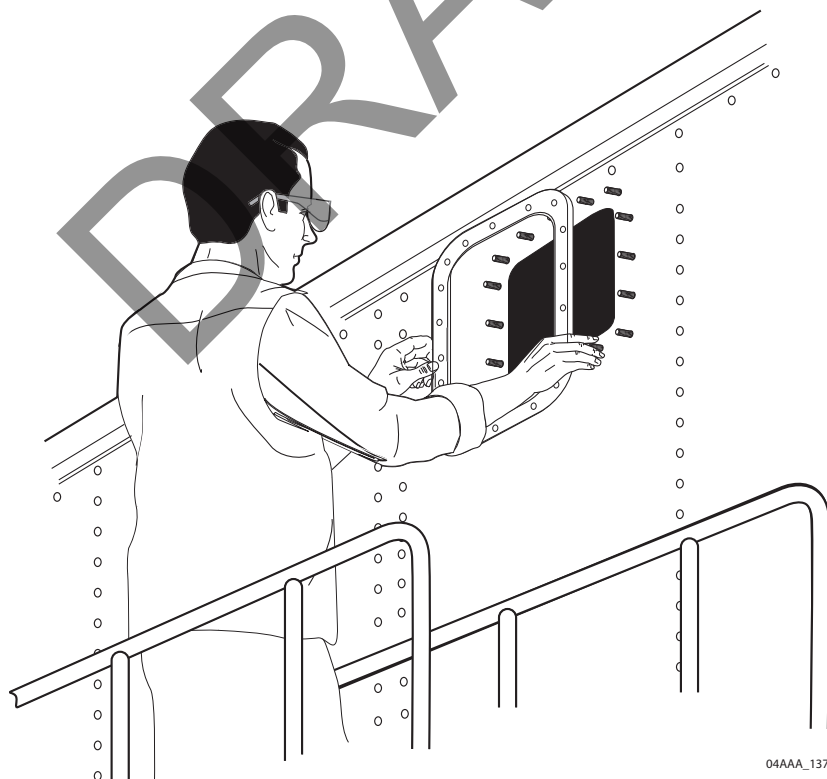
Note

If the 3" pan is used with a trailer having a greater than 2" spacing, increase plywood cutout 3" lower (9" below cargo sensor).

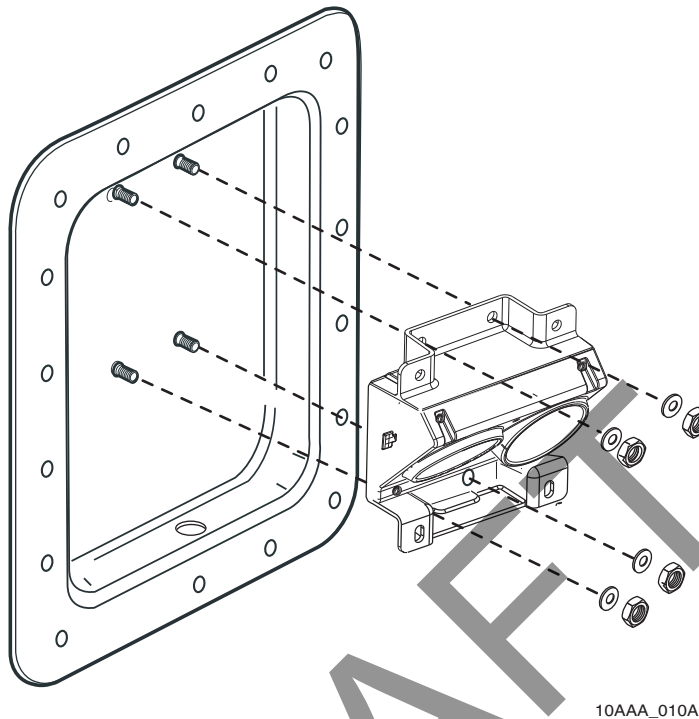
14. Remove the protective plastic cover from the double-sided adhesive tape on each of the four prefabricated stud plates.



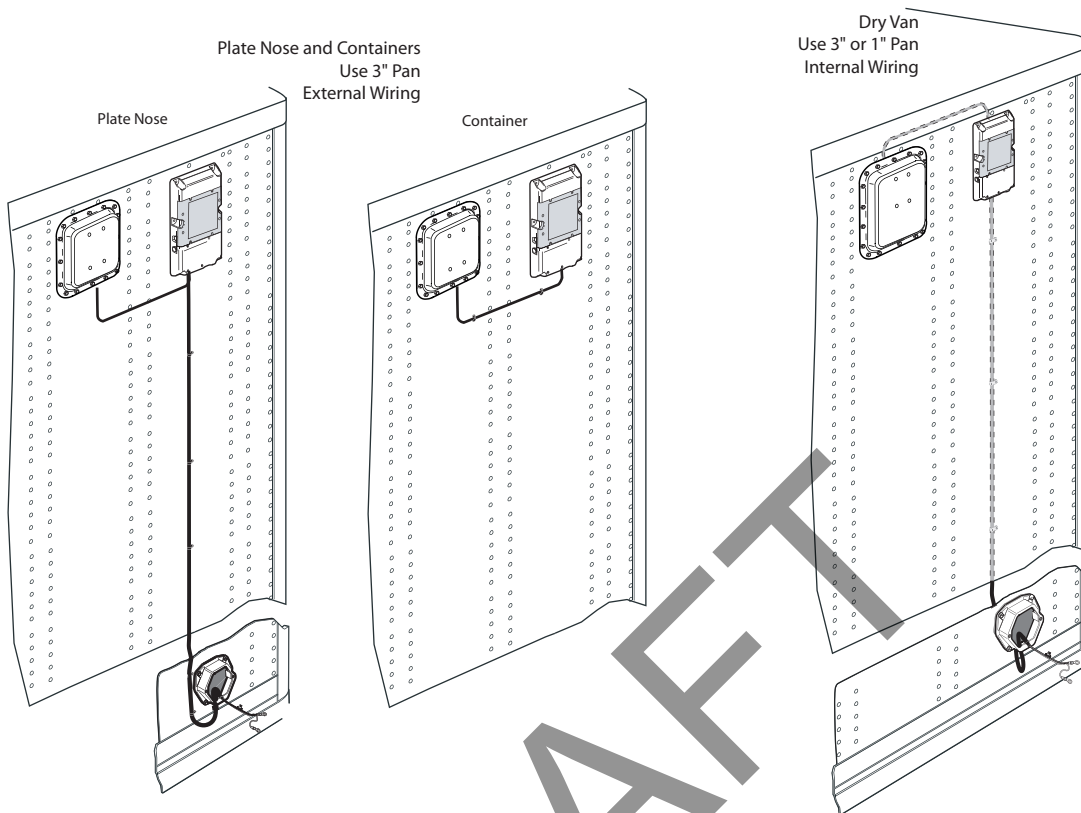
15. Each of the four stud plates are installed on the inside of the trailer skin. Position each to line up with the stud holes that were just drilled. Push the studs through the holes and press firmly to adhere the stud plate to the inside of the trailer skin.
16. There is a gasket supplied with the mount. With the studs now protruding through the outside of the trailer skin, place the gasket over the studs and against the trailer skin. Gasket is one time use only. Replace the gasket each time the pan is removed and reinstalled



17. Mount the cargo sensor to the 3" or 1" cargo sensor pan mount using four lock nuts and four flat washers. Tighten just until snug and torque to 20 inch-pounds +/- 5 inch-pounds.



18. For a container or plate nose:
 - a. Place the grommet around the cargo sensor connector and down the cable about 9".
 - b. Route the cable through the 7/8" hole in the bottom of the 3" pan and connect to the sensor.
 - c. Fit the grommet securely into the 7/8" hole and adjust the cable length so it does not protrude into the area in front of the cargo sensor.
19. For a dry van:
 - a. Reach into the hole and grab the cargo sensor cable.
 - b. Connect the cable to the cargo sensor.
 - c. Secure the cargo sensor cable so that it does not fall into the area in front of the cargo sensor.
20. Position the mount into place, lining it up with the studs. Press firmly to secure over the gasket.
21. Fasten supplied nuts over each stud and tighten to spec 80 inch-pounds +/- 9 inch-pounds.



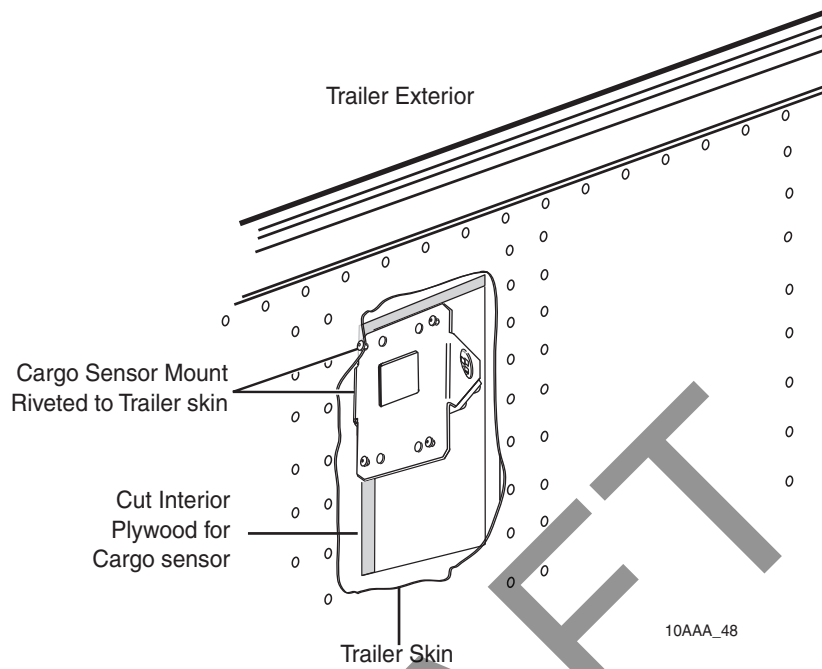
Installing the Cargo Sensor Using a Flat Internal Mount

Note

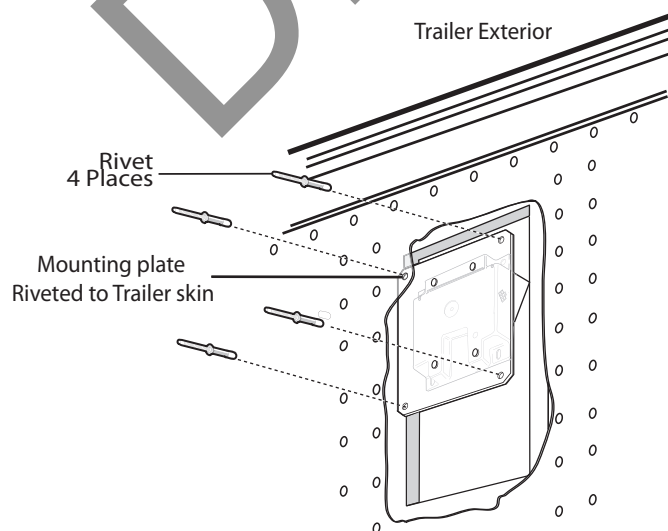
Mount on the bay next to the TT210 terminal which will be on the driver's side (left of center) no closer than 18" to the trailer sidewall.

1. Locate the mounting position of the cargo sensor. It should be centered in the bay next to the TT210 terminal which will be on the driver's side (left of center).
2. Measure and cut a hole approximately 9 1/2" x 12 " in the liner that allows the cargo sensor an unobstructed view of the inside of the trailer.

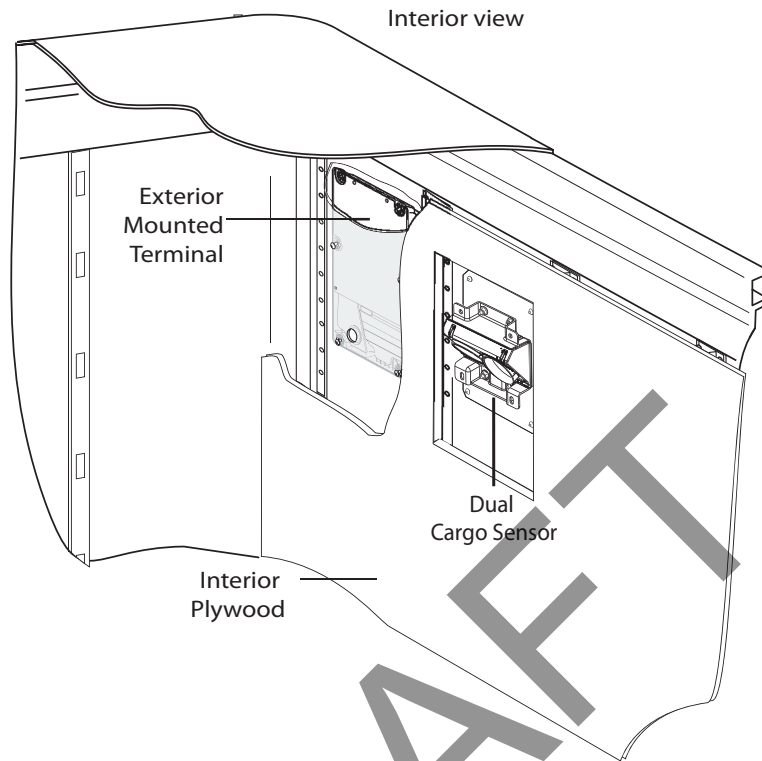
- Center the cargo sensor side to side in the hole. The bottom edge of the plywood hole should be a minimum of 6" below the lower lip of the cargo sensor cone.



- From the inside of the trailer, while holding the mount in place, drill four 3/16" rivet holes. It may be possible to tape the mount temporarily to hold it in place for drilling and riveting.
- This step will require two people to perform.** While holding the mount in place, install the provided rivets from the outside of the trailer and rivet mount to the trailer skin.



6. Attach the cargo sensor to the cargo sensor mount using the supplied hardware. Tighten just until snug and torque to 20 inch-pounds +/- 5 inch-pounds.



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7. Route and connect the cargo sensor cable. Ensure that the cable does not block the cargo sensor or is visible in the cone area. Secure cable.

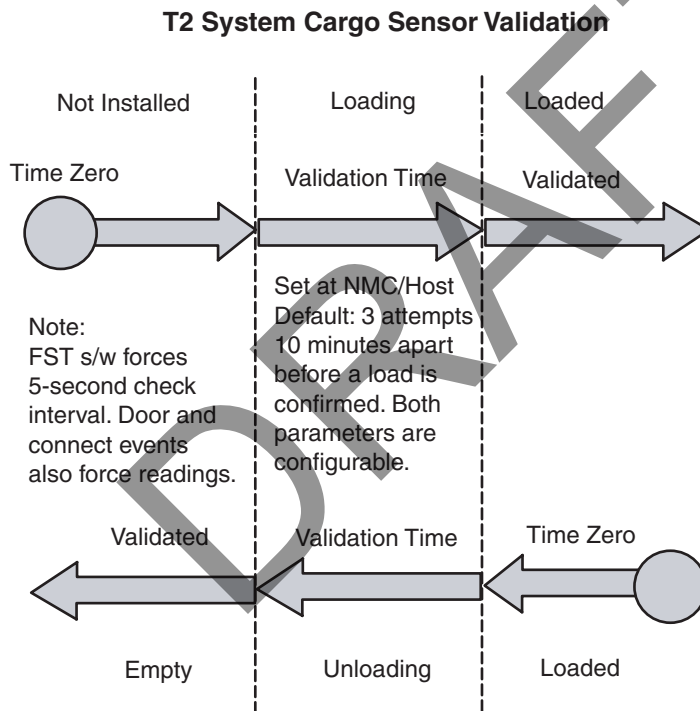
TT210 System Cargo Sensor Validation

The TT210 system terminal's cargo sensor default setting will "wake up" the cargo sensor every 30 minutes and check for a cargo load.

This is customer configurable. The terminal can be customer configured to:

- Message immediately
- Send on next report
- Respond to a ping
- Ignore

An ultrasonic sensor detects objects approximately 20 feet back from the nose of the trailer. The interval is set up per the customer's request and state change reports are sent to the customer, as shown in the following illustration.



05AAA_026

12

Installing the Swing Door Sensor

Introduction

This chapter provides guidelines and instructions for installing the TT210 system trailer swing door sensor.

Topics in this chapter include:

<i>Swing Door Sensor Installation Overview</i>	12-2
<i>Swing Door Sensor Validation</i>	12-2
<i>Swing Door Sensor Installation</i>	12-3
<i>External Cable Installation Procedure</i>	12-3
<i>Internal Cable Installation Procedure</i>	12-9

If you have technical questions, please contact Qualcomm Enterprise Services (QES) Customer Support. QES Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Swing Door Sensor Installation Overview

The swing door sensor kit contains the swing door sensor (with magnet and switch) and an 85-foot door sensor cable assembly. (The replacement swing door sensor kit comes without the 85-foot cable assembly.)

The door sensor cable assembly can be routed two ways:

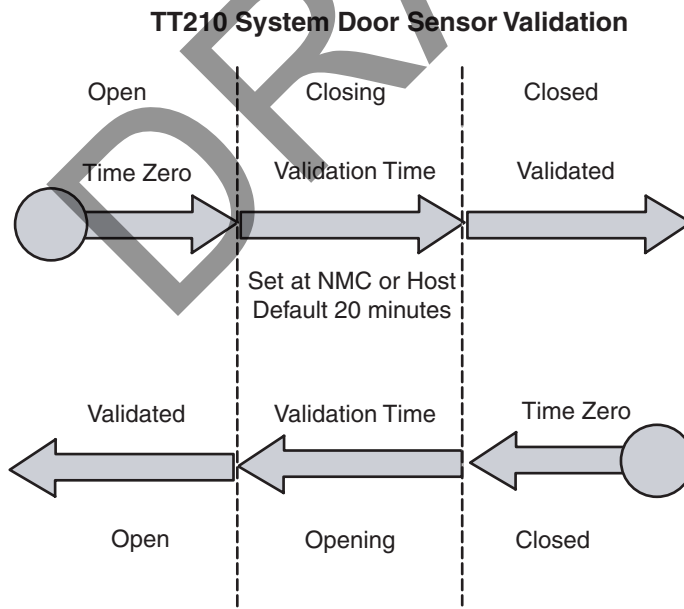
- Externally, under the trailer up to the TT210 system mount assembly (along the same route as the factory wiring and/or brake lines).
- Internally, along the top of the trailer up to the TT210 system mount assembly.

For external cable installation, refer to [External Cable Installation Procedure on page 12-3](#). For internal cable installation, refer to [Internal Cable Installation Procedure on page 12-9](#).

At the TT210 system mount assembly, the two door sensor cable wires are butt-spliced to the YELLOW (DOOR-) and ORANGE (DOOR+) wires in the TT210 system power/accessory cable assembly.

Swing Door Sensor Validation

A simple opened/closed magnetic switch detects when the state of a trailer door changes. The interval is set up per the customer's request and state change reports are sent to the customer, as shown in the following illustration.



Simple open and closed switch that detects a changed state immediately and reports as configured by the customer.

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Swing Door Sensor Installation

The *recommended* external installation procedure is to route the door sensor cable underneath the trailer from the trailer nose where the TT210 system mount assembly is located, to the rear where it will connect with the swing door sensor. The cable can route along the left side, right side, or center underneath the trailer.

Note

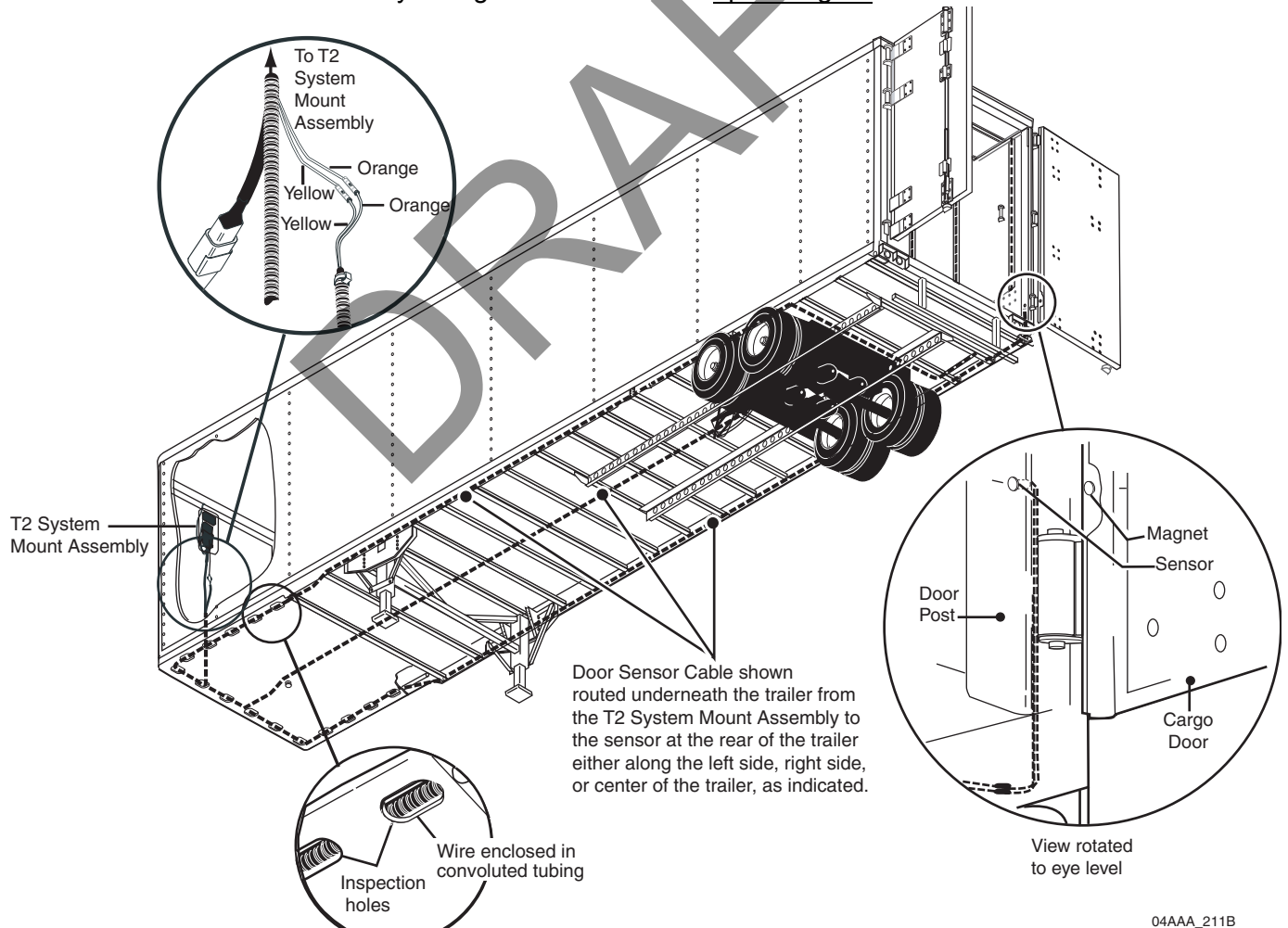
The entire length of the 85-foot cable is covered with convoluted tubing. If there is any excess cable, cut the excess cable and discard.

External Cable Installation Procedure

Note

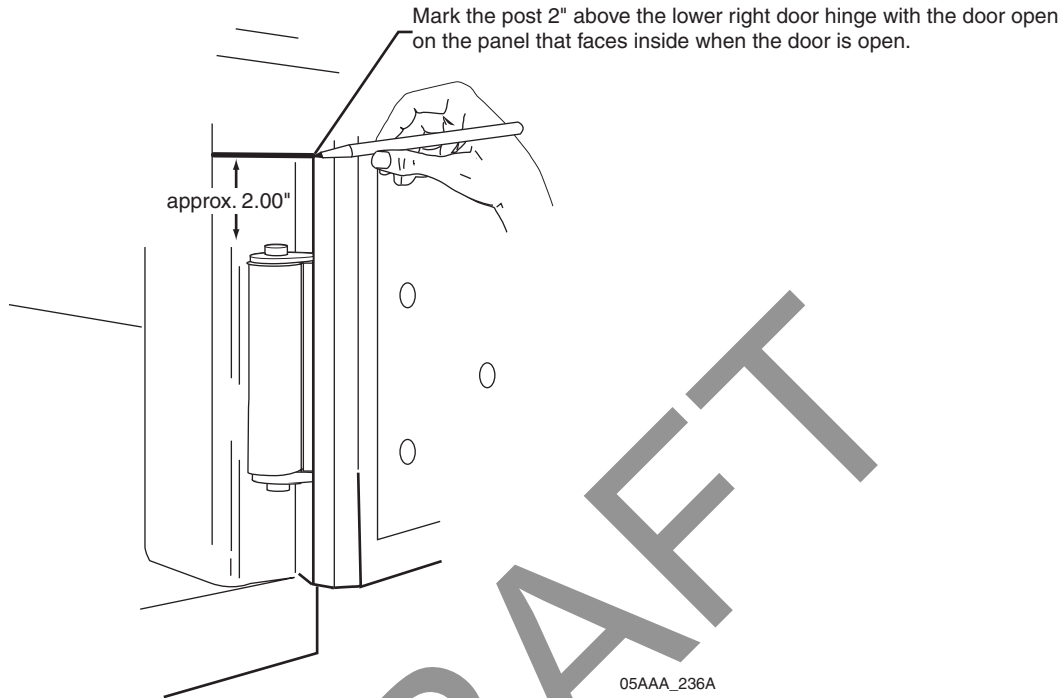
The actual door sensor cable run location will vary between different trailer manufacturers.

1. Route the 85-foot door sensor cable assembly externally underneath the trailer from the TT210 system mount assembly to the swing door sensor location along the same route as the factory wiring and/or brake line. update figure

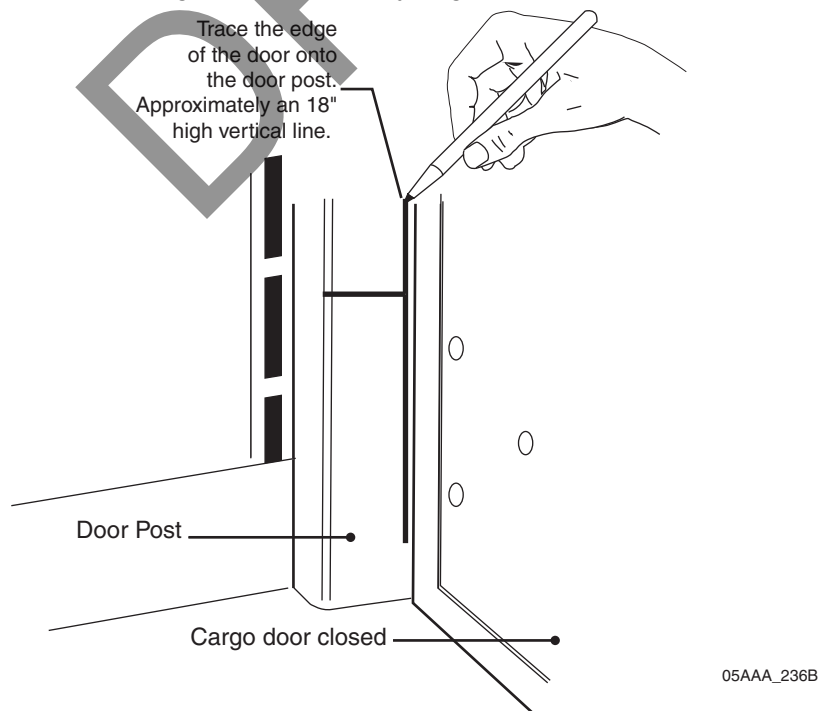


Swing Door Sensor Placement

1. With the door open, use a felt-tip pen to mark a horizontal reference line on the door post in the area where the sensor will be located. Qualcomm recommends you locate the swing door sensor 2" above the bottom right side door hinge area where the door seal ends.



2. With the door closed, mark a vertical reference line on the door and door post so the sensor and magnet can be easily aligned.

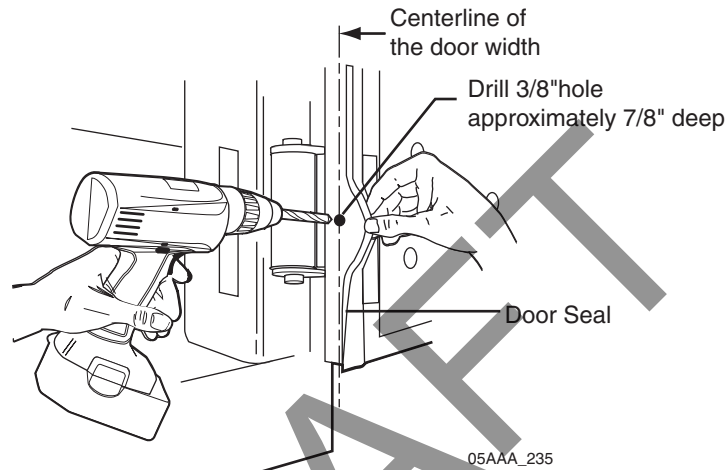


Swing Door Magnet Installation

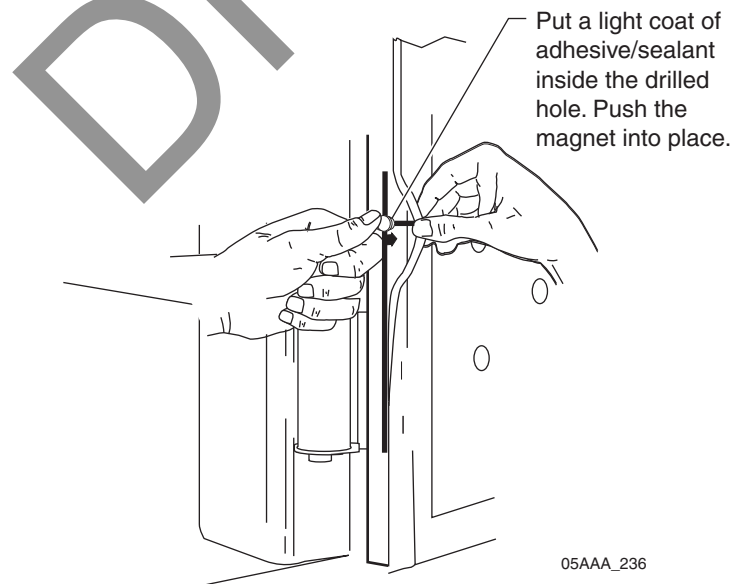
1. Open the door.
2. Drill a 3/8" diameter x 7/8" deep hole along the horizontal line at the centerline of the door width.

Note

The 3/8" hole diameter is critical for proper magnet installation.



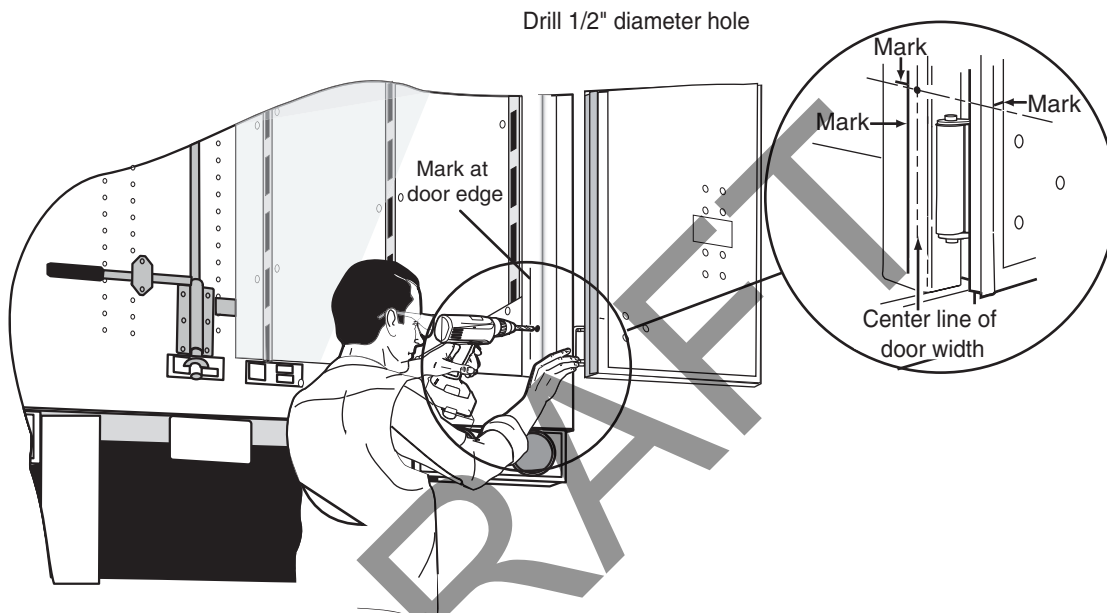
3. Apply a generous amount of adhesive/sealant into the 3/8" hole in the door.
4. Press the magnet about half-way into the 3/8" hole in the door.



5. Close the door to press the magnet further into the hole.

Swing Door Sensor Installation

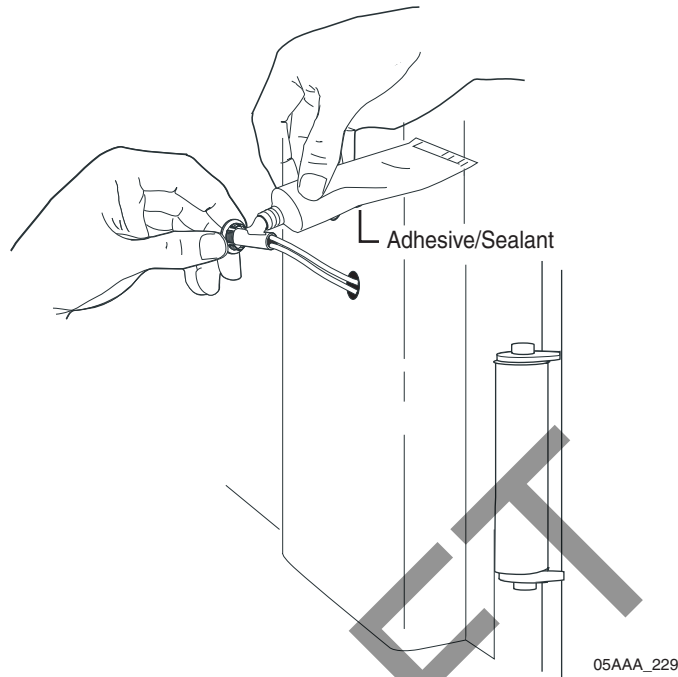
1. Remove the taillight assembly from the trailer's passenger side. Most taillight assemblies are held into place by a large rubber grommet.
2. Using a center punch, mark a spot on the door post to line up with the horizontal line and the middle of the door when the door is closed. This is where the switch will be located.
3. Drill a 1/2" hole at this point in the door post.



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4. Feed the 24" leads of the sensor through the 1/2" hole and out the bottom of the door post into the area behind the taillight.

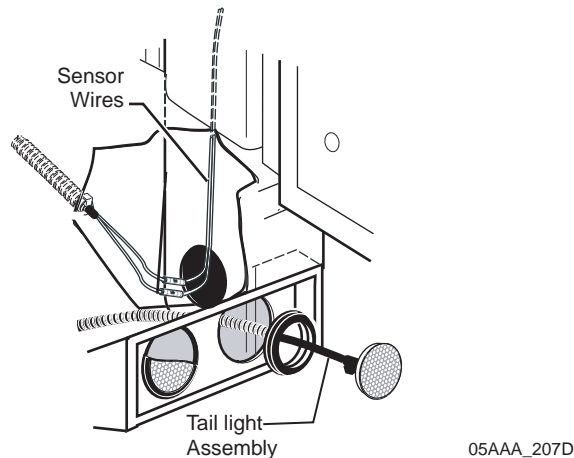
5. Apply adhesive/sealant to the sensor and inside the hole in the door post.



6. Press the sensor all the way into the 1/2" hole until it is fully seated.
7. Wipe off any excess adhesive/sealant.

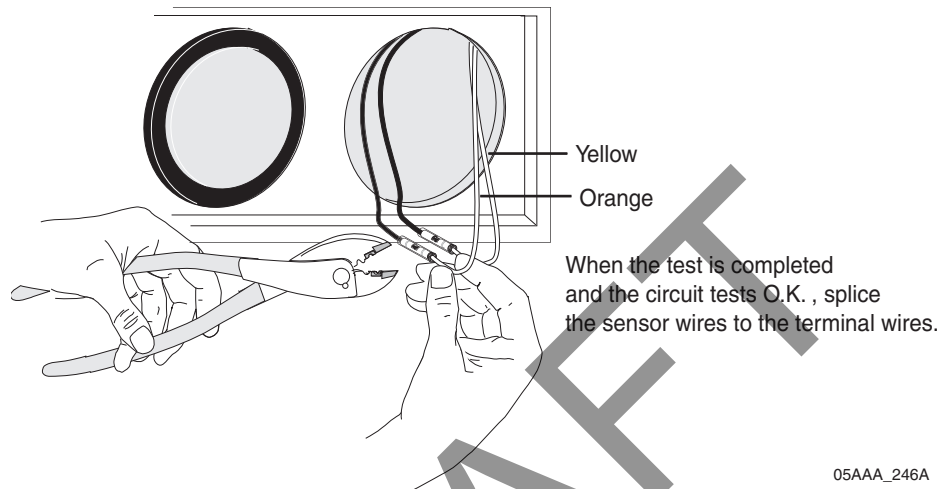
Testing the Swing Door Sensor

1. Attach an ohmmeter to the sensor wires.
2. Close the door and check the ohmmeter for proper swing door sensor operation.
 - When the door is closed, the ohmmeter should measure 0 ohms.
 - When the door is open, the ohmmeter should measure an infinite resistance.



Swing Door Sensor Installation Verification

1. At the back of the trailer, butt splice the white sensor wires to the orange and yellow cable wires. Add additional strain relief by following the procedure on page 3-7. Slide convoluted tubing onto sensor wires, making sure to also cover the butt splices. Store excess wire behind the taillight assembly.
2. Replace the taillight assembly.



3. At the front of the trailer, butt splice the orange and yellow cable wires to the orange and yellow TT210 system door sensor wires at the TT210 system terminal.

Note

The sensor wire is a simple switch device; polarity does not matter.

4. Perform the door sensor validation as part of the TT210 system verification (see [Chapter 15: Performing System Verification](#)).
5. The swing door sensor installation is now complete.

If you have technical questions about installing the TT210 system swing door sensor, please contact QES Customer Support:

In the United States, call 800-541-7490;
in Canada, call 800-863-9191.

Internal Cable Installation Procedure

The *recommended* internal installation procedure is to route the door sensor cable along the trailer “ceiling” from the trailer nose where the TT210 system mount assembly is located, to the rear where it will connect with the swing door sensor.

Note

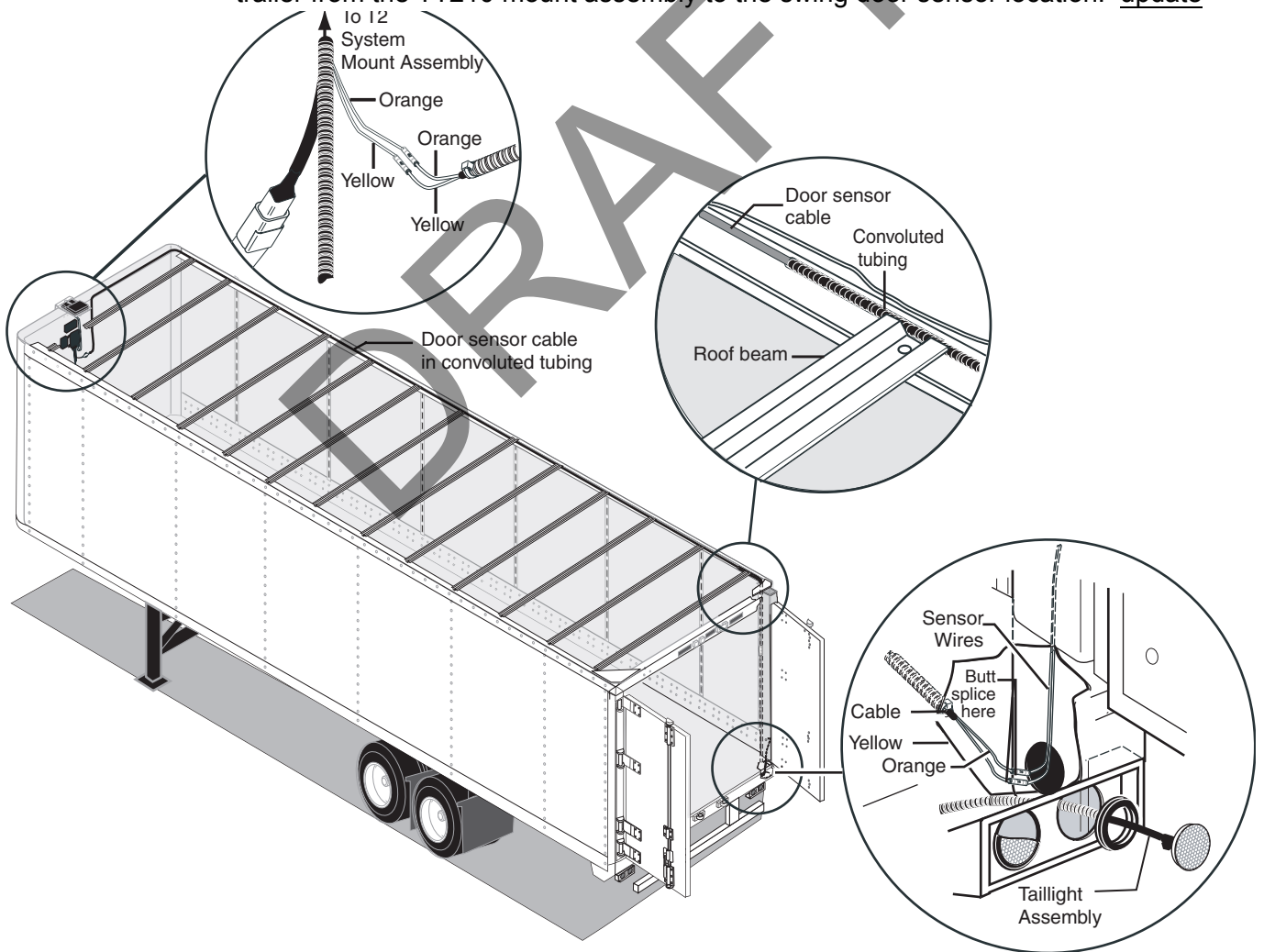
The entire length of the 85-foot cable is covered with convoluted tubing. If there is any excess cable, cut the excess cable and discard.

Internal Cable Installation Procedure

Note

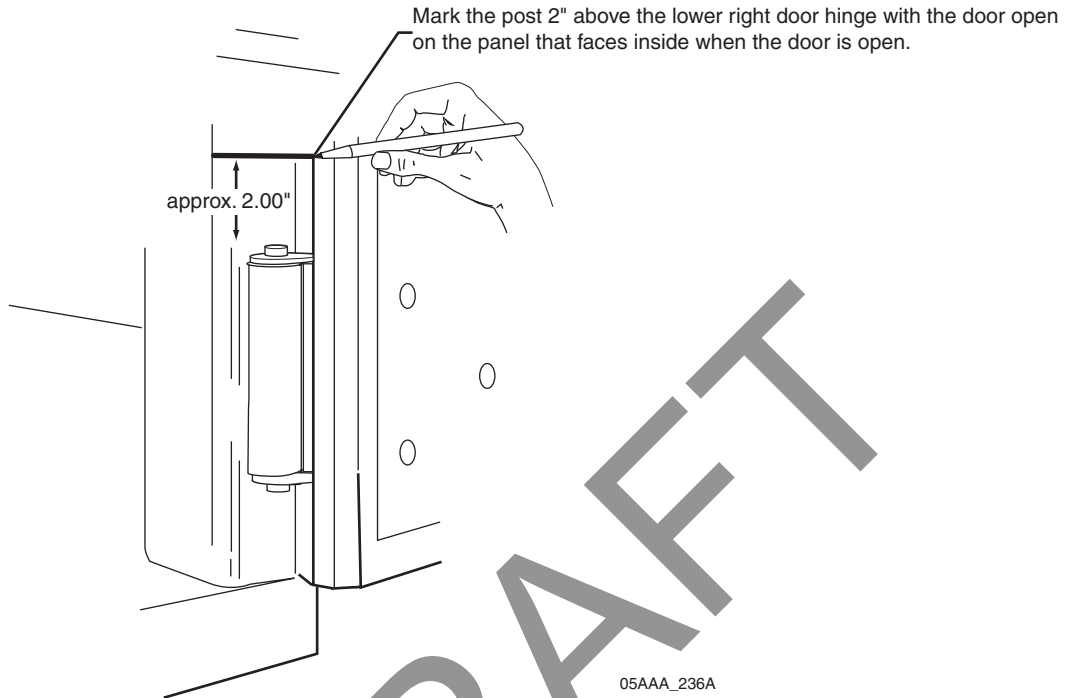
The actual swing door sensor cable run location will vary between different trailer manufacturers.

1. Route the 85-foot door sensor cable assembly internally along the inside “ceiling” of the trailer from the TT210 mount assembly to the swing door sensor location. update



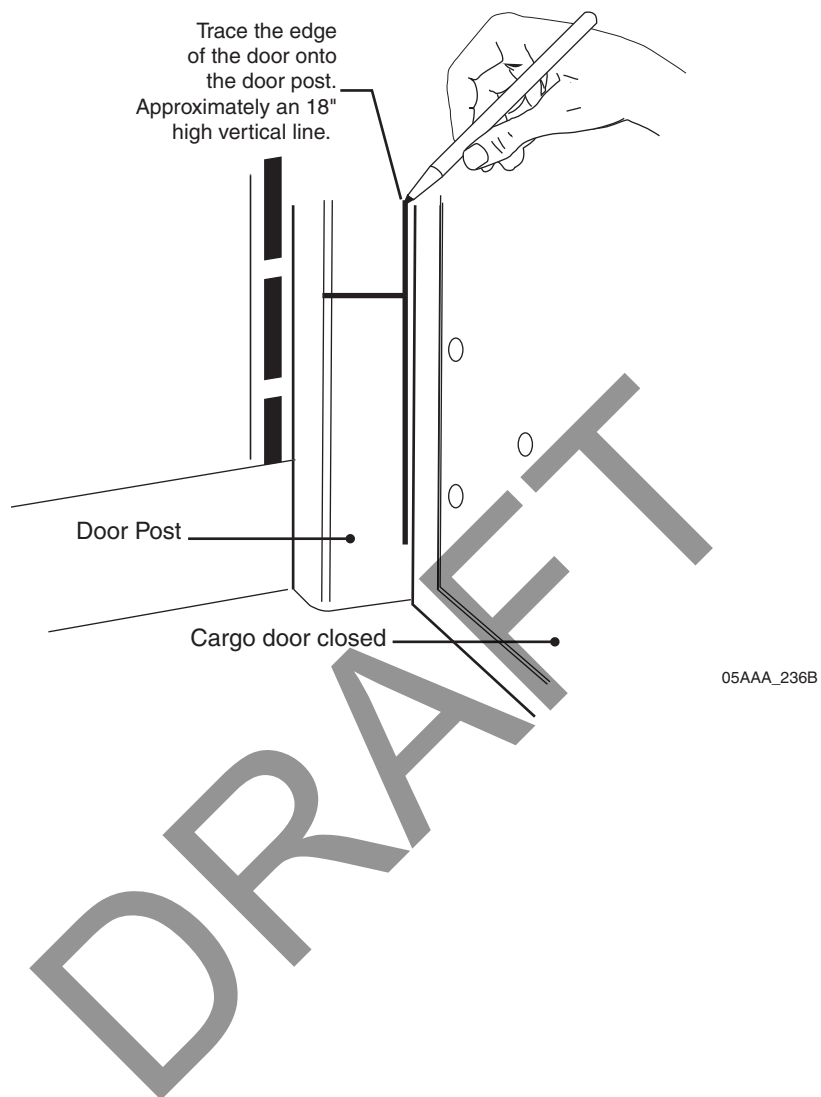
Swing Door Sensor Placement

1. With the door open, use a felt-tip pen to mark a horizontal reference line on the door post in the area where the sensor will be located. It is recommended you locate the swing door sensor 2" above the bottom right side door hinge area where the door seal ends.



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2. With the door closed, mark a horizontal reference line on the door and door post so the sensor and magnet can be easily aligned.

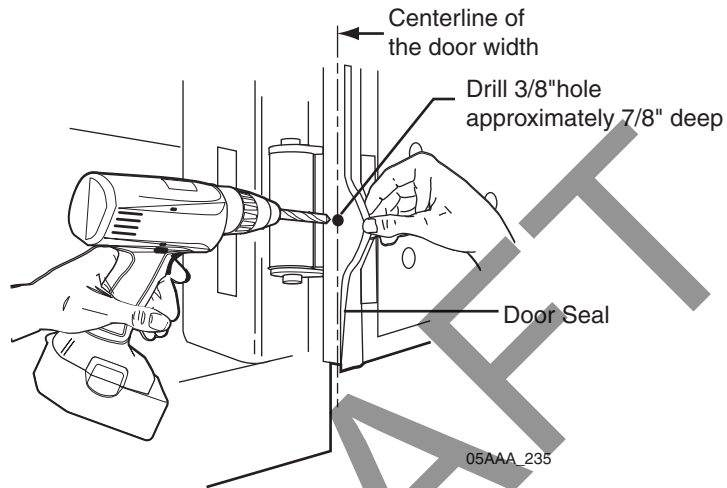


Swing Door Magnet Installation

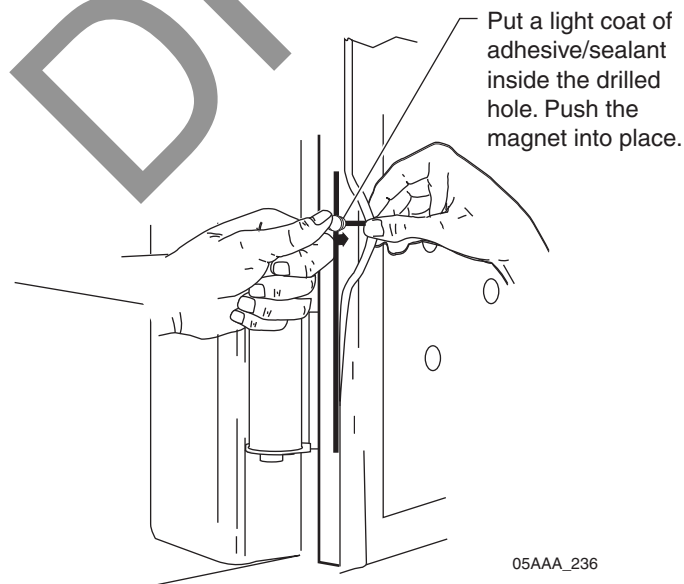
1. Open the door.
2. Drill a 3/8" diameter x 7/8" deep hole along the horizontal line at the centerline of the door width.

Note

The 3/8" hole diameter is critical for proper magnet installation.



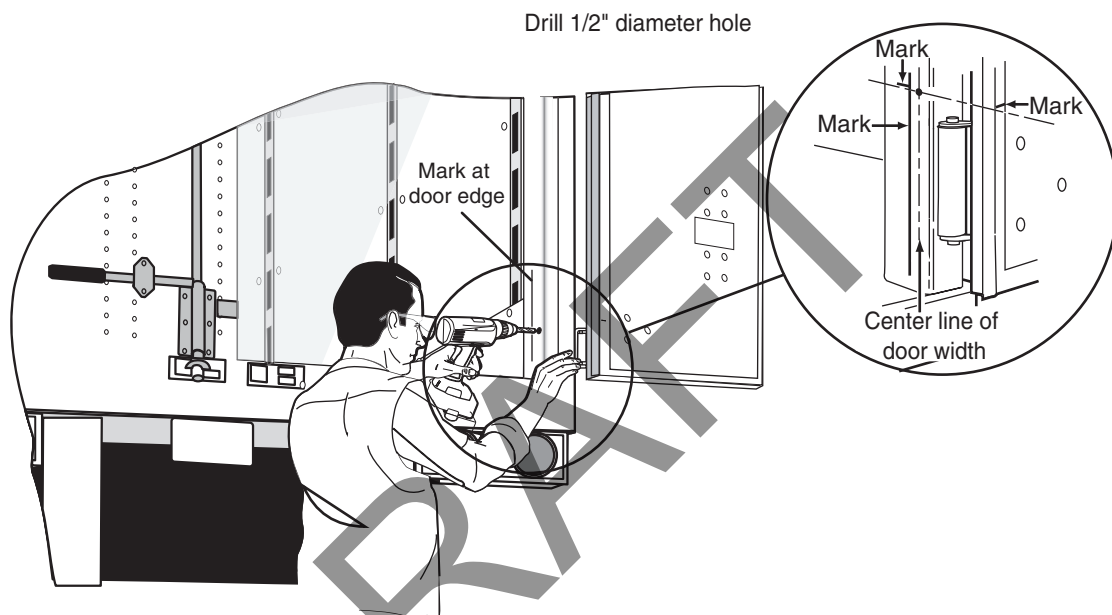
3. Apply a generous amount of adhesive/sealant into the 3/8" hole in the door.
4. Press the magnet about half-way into the 3/8" hole in the door.



5. Close the door to press the magnet further into the hole.

Swing Door Sensor Installation

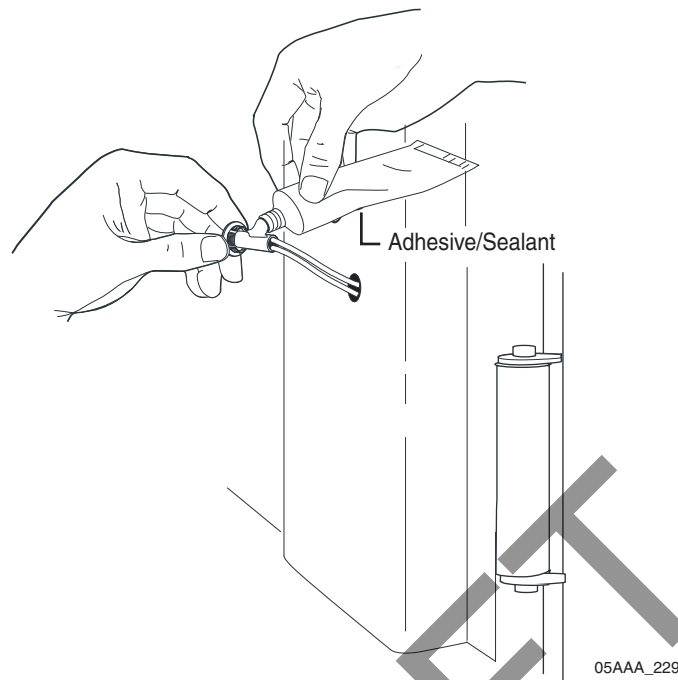
1. Remove the taillight assembly from the trailer's passenger side. Most taillight assemblies are held into place by a large rubber grommet.
2. Using a center punch, mark a spot on the door post to line up with the horizontal line and the middle of the door when the door is closed. This is where the switch will be located.
3. Drill a 1/2" hole at this point in the door post.



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4. Feed the 24" leads of the sensor through the 1/2" hole and out the bottom of the door post into the area behind the taillight.

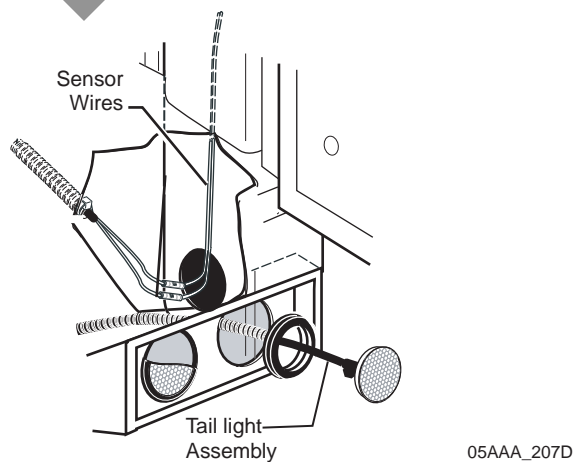
5. Apply adhesive/sealant to the sensor and inside the hole in the door post.



6. Press the sensor all the way into the 1/2" hole until it is fully seated.
7. Wipe off any excess adhesive/sealant.

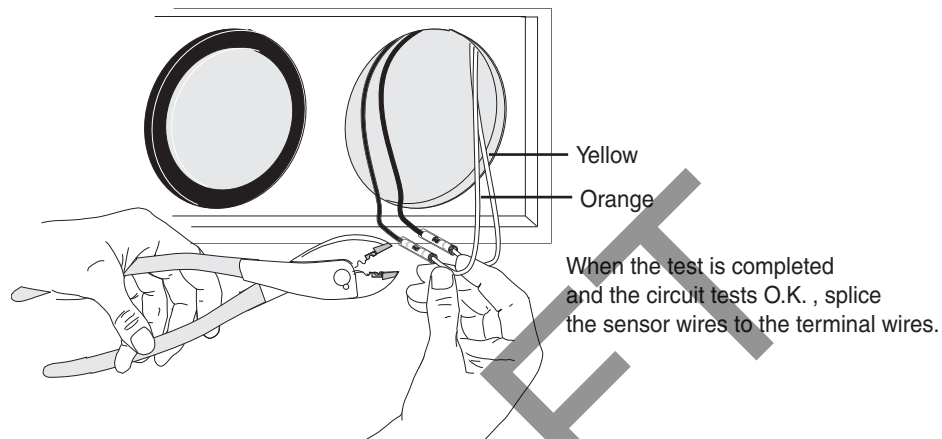
Testing the Swing Door Sensor

1. Attach an ohmmeter to the sensor wires.
2. Close the door and check the ohmmeter for proper swing door sensor operation.
 - When the door is closed, the ohmmeter should measure 0 ohms.
 - When the door is open, the ohmmeter should measure an infinite resistance of ohms.



Swing Door Sensor Installation Verification

1. At the back of the trailer, butt splice the white sensor wires to the orange and yellow cable wires. Add additional strain relief by following the procedure on page 3-7. Slide convoluted tubing onto sensor wires, making sure to also cover the butt splices. Store excess wire behind the taillight assembly.
2. Replace the taillight assembly.



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3. At the front of the trailer, butt splice the orange and yellow cable wires to the orange and yellow TT210 system swing door sensor wires at the TT210 system terminal.

Note

The sensor wire is a simple switch device; polarity does not matter.

4. Perform the door sensor verification as part of the TT210 system verification (see [Chapter 15: Performing System Verification](#)).
5. The swing door sensor installation is now complete.

If you have technical questions about installing the TT210 system swing door sensor, please contact QES Customer Support:

In the United States, call 800-541-7490;
in Canada, call 800-863-9191.

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Introduction

This chapter provides guidelines and instructions for installing the TT210 system trailer roll door sensor.

Topics in this chapter include:

<i>Roll Door Sensor Installation Overview</i>	13-2
<i>Roll Door Sensor Validation</i>	13-2
<i>Roll Door Sensor Installation</i>	13-3
<i>Cable Installation Procedure</i>	13-3

If you have technical questions, please contact Qualcomm Enterprise Services (QES) Customer Support. QES Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490

In Canada, call 800-863-9191

Roll Door Sensor Installation Overview

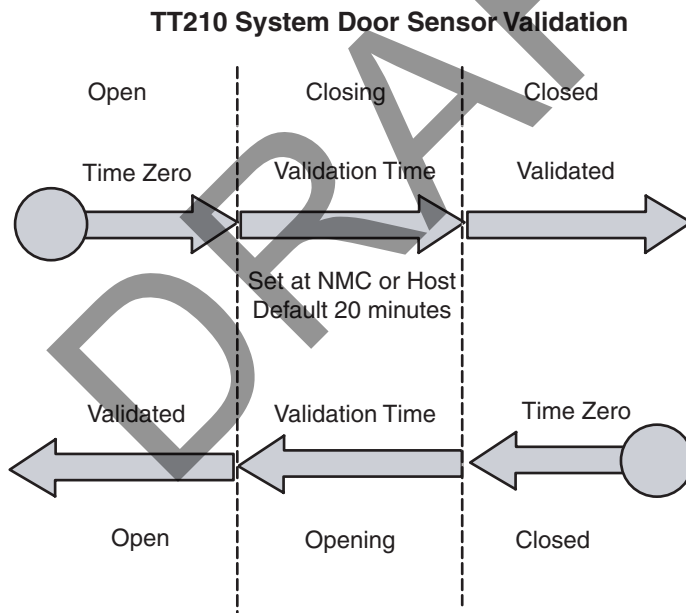
The roll door sensor kit contains the rear door switch with attached 3-foot cable assembly, a magnet, and an 85-foot door sensor cable assembly. (The replacement roll door sensor kit comes without the 85-foot cable assembly.)

The door sensor cable assembly is typically routed externally, under the trailer up to the TT210 system mount assembly (along the same route as the factory wiring and/or brake lines).

At the TT210 system mount assembly, the two roll door sensor cable wires are butt spliced to the yellow (DOOR-) and orange (DOOR+) wires coming from the TT210 system power/accessory cable assembly.

Roll Door Sensor Validation

A simple opened/closed magnetic switch detects when the state of a trailer door changes. The interval is set up per the customer's request and state change reports are sent to the customer, as shown in the following illustration.



Simple open and closed switch that detects a changed state immediately and reports as configured by the customer.

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Roll Door Sensor Installation

The *recommended* external installation procedure is to route the door sensor cable underneath the trailer from the trailer nose where the TT210 system mount assembly is located, to the rear where it will connect with the roll door sensor. The cable can route along the left side, right side, or center underneath the trailer.

Note

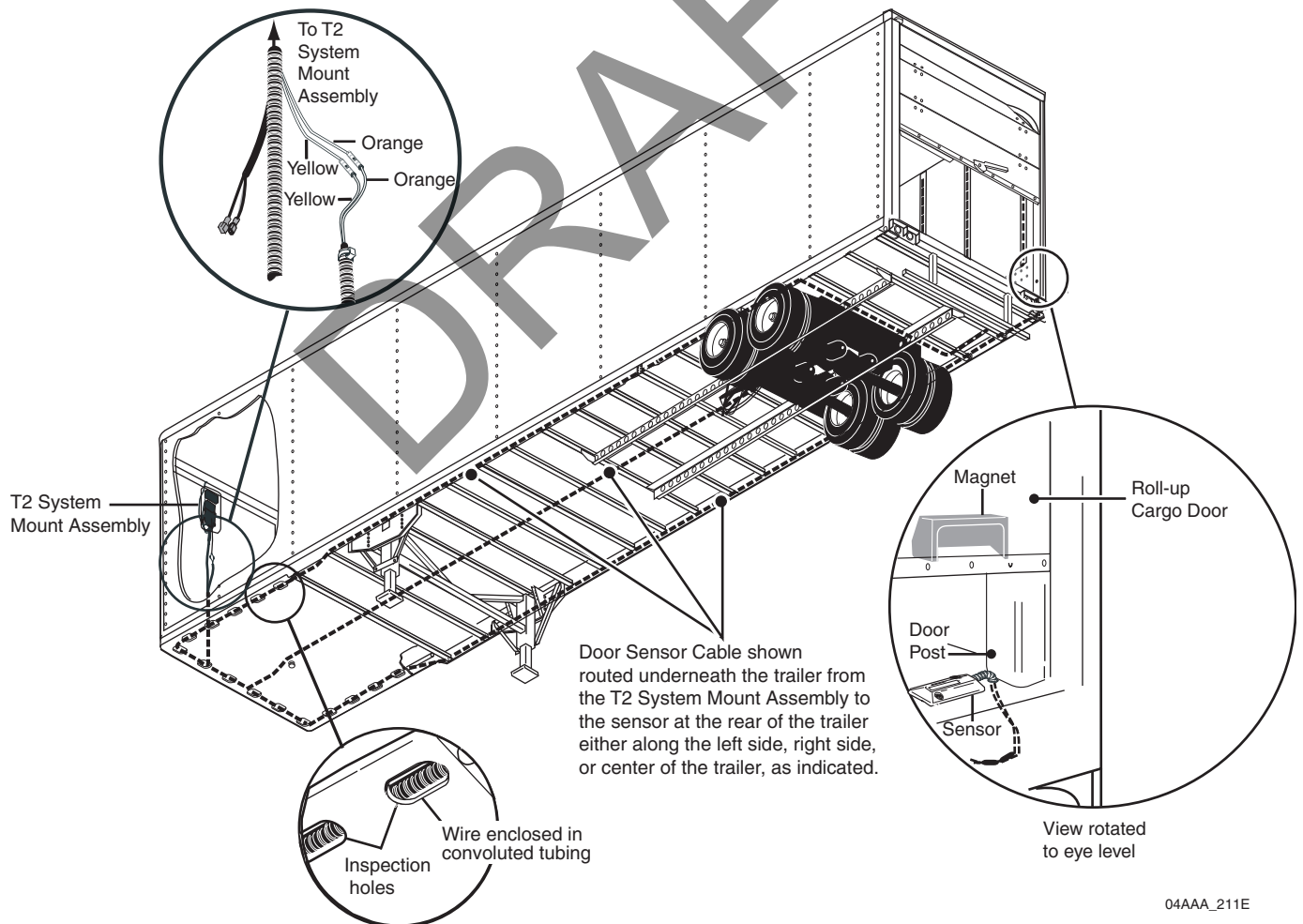
The entire length of the 85-foot cable is covered with convoluted tubing. If there is any excess cable, cut the excess cable and discard.

Cable Installation Procedure

Note

The actual door sensor cable run location will vary between different trailer manufacturers.

1. Route the 85-foot door sensor cable assembly externally, underneath the trailer from the TT210 system mount assembly to the roll door sensor location along the same route as the factory wiring and/or brake line. update figure

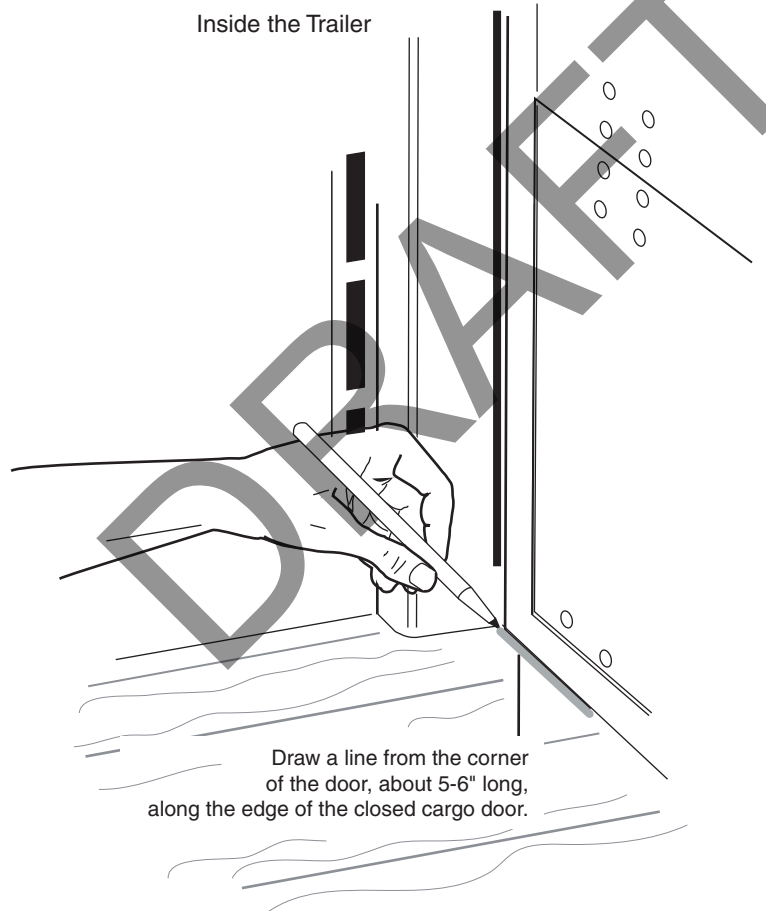


Roll Door Sensor Installation

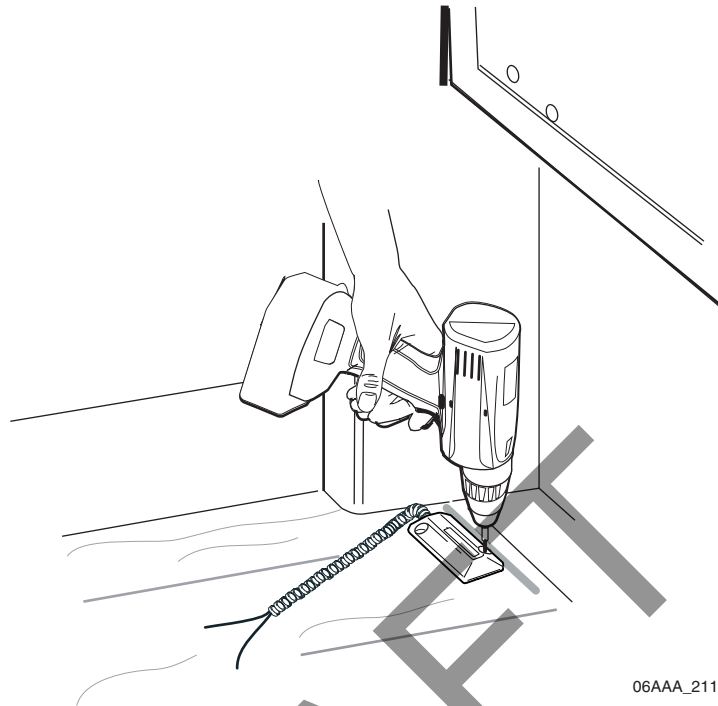
1. With the trailer roll door closed, use a felt-tip pen to draw a line along the inside of the passenger side of the door, close to door jamb.
2. Open the trailer roll door and position the roll door sensor switch as close as possible to the door jamb to avoid damage to the door sensor cable when loading the trailer. Take into consideration that the door sensor cable has a bend radius of two inches. Position the sensor switch so the cable is as close to the door jamb as possible.
3. Use a felt-tip pen to mark the location to drill the hole for the door sensor cable (as close to the door jamb as possible).

Note

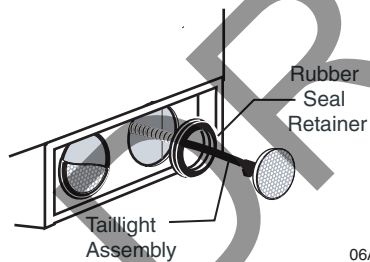
The door sensor cable has a bend radius of approximately two inches. Position the roll door sensor so the cable bend in as close to the door jamb as possible.



4. Position the roll door sensor switch and mark the holes for the roll door sensor switch using a 3/16" drill bit.

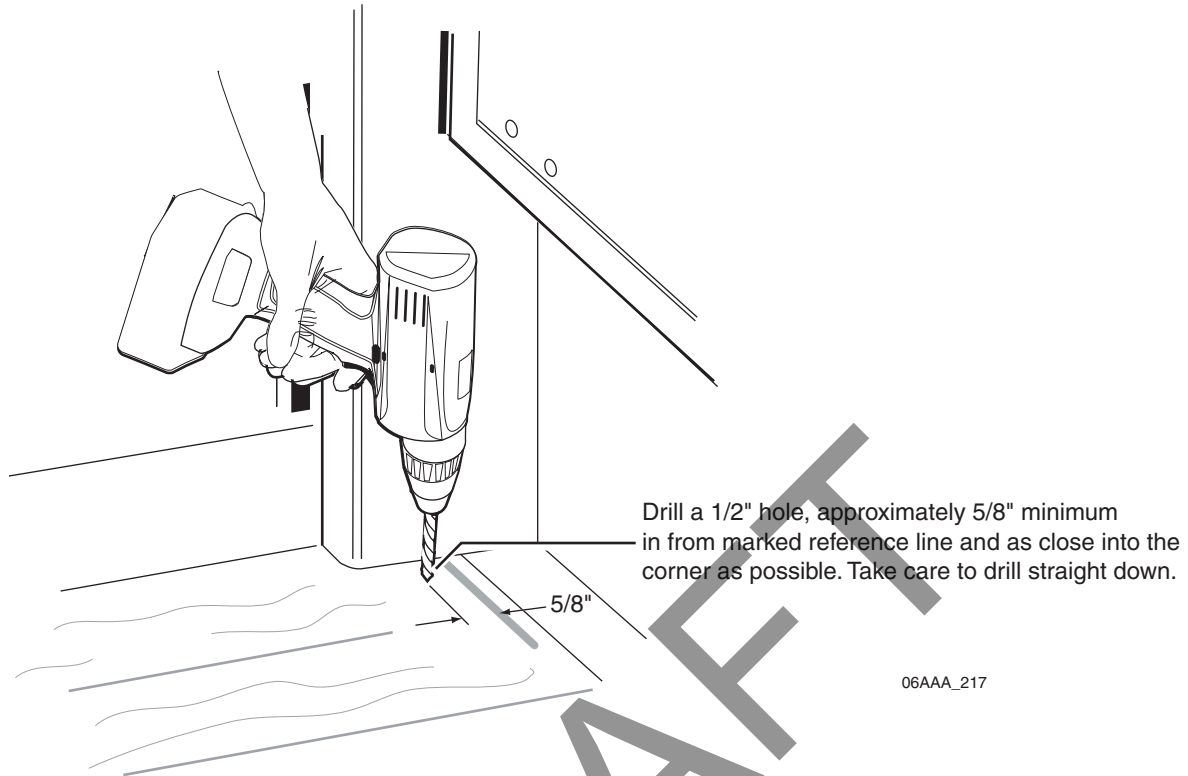


5. Remove the taillight assembly from the trailer's passenger side. Most taillight assemblies are held into place by a large rubber grommet.

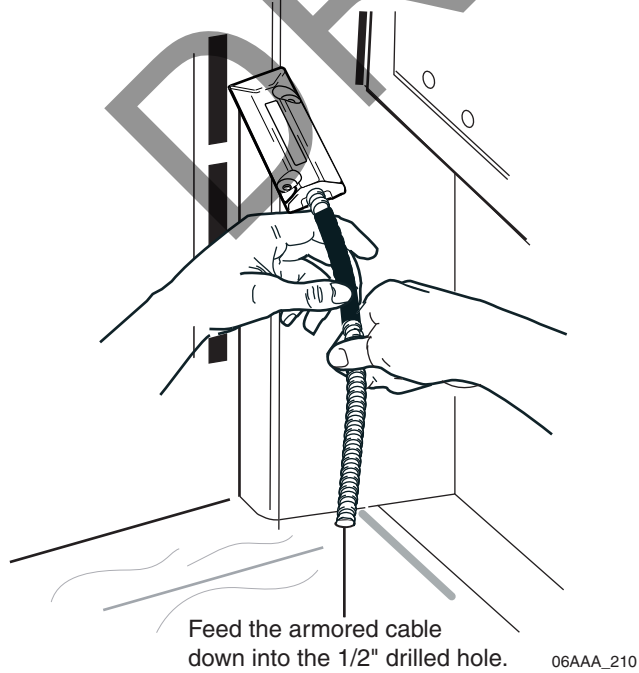


6. Using a center punch, mark a spot on the trailer floor 5/8" minimum in from where the vertical reference mark was made for the door sensor cable.

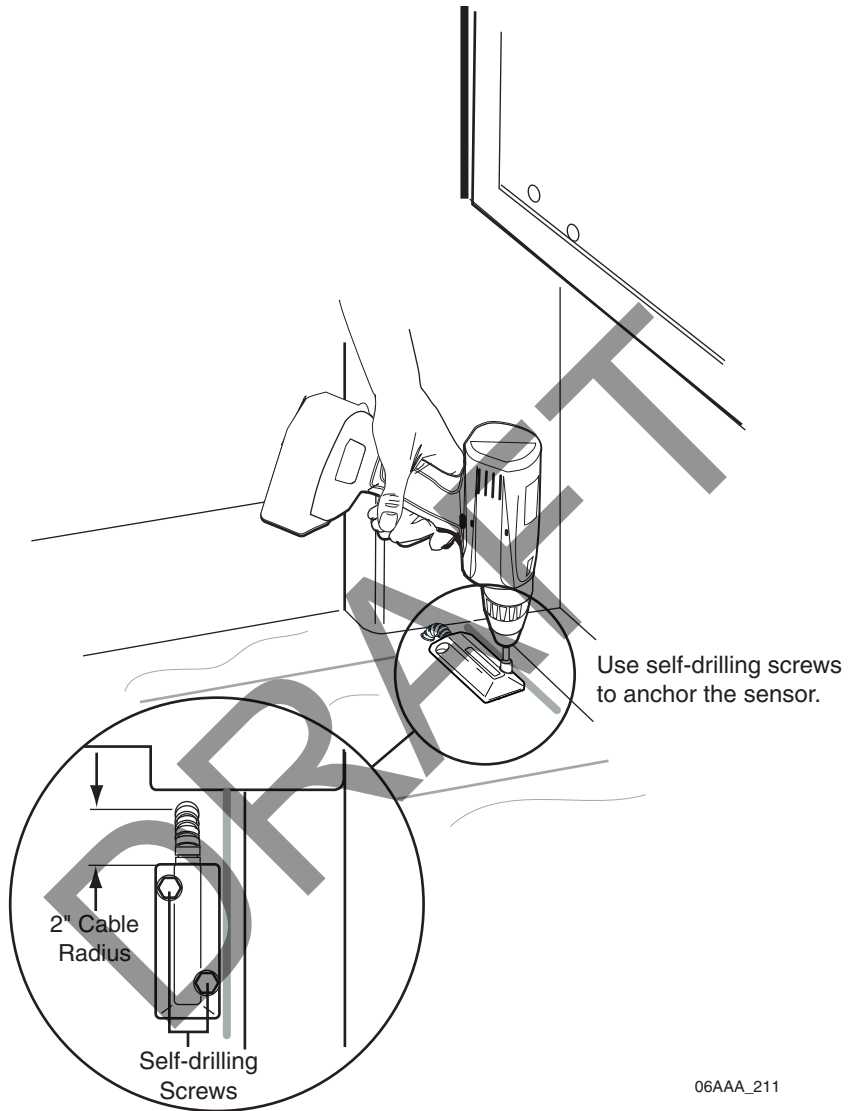
7. Drill a 1/2" hole at this point in the trailer floor.



8. Feed the sensor cable leads through the 1/2" hole and out the bottom of the trailer floor into the area behind the taillight.



9. Position the roll door sensor on the trailer floor to be aligned with the vertical reference line you marked.
10. Secure the roll door sensor in place with the self-drilling screws. Pilot holes may be required.

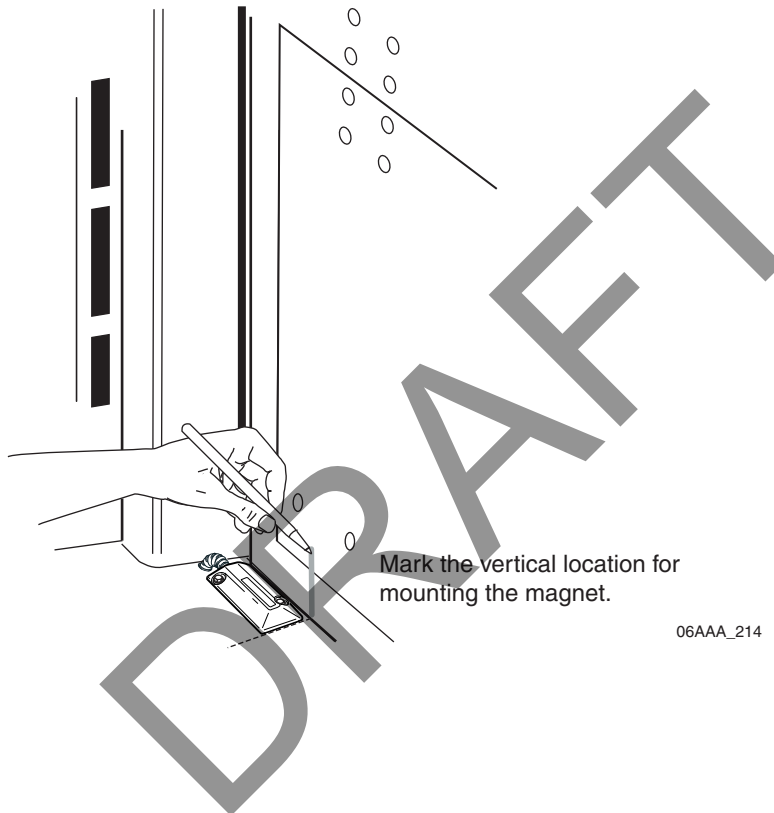


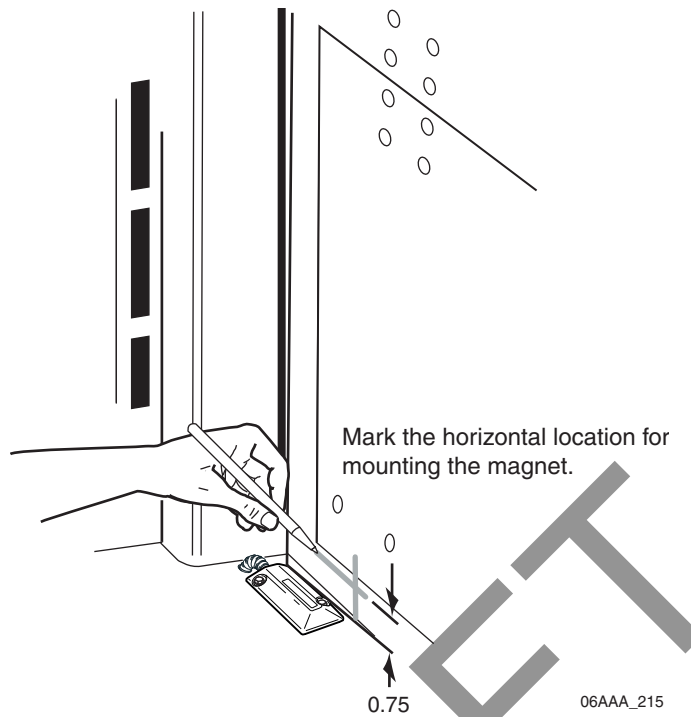
Roll Door Magnet Installation

Note

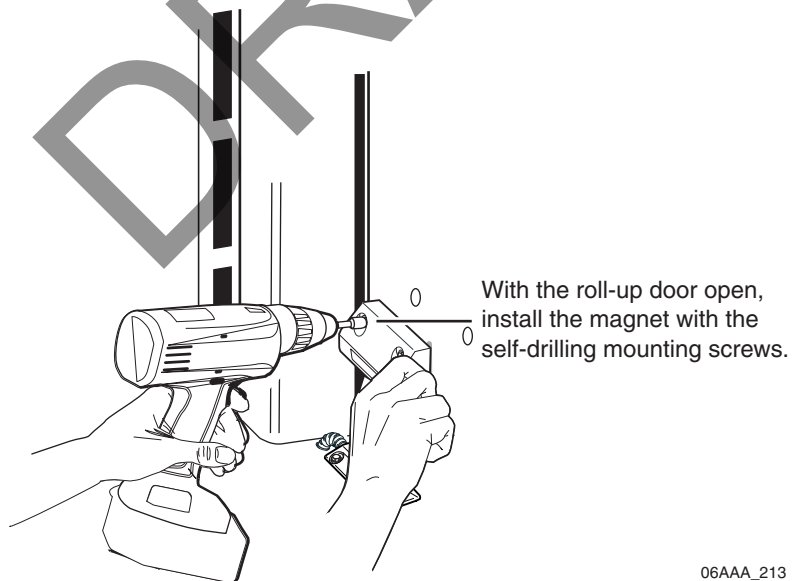
The bottom of the trailer door may have a metal strip. Placement of the magnet may pitch the angle of the magnet forward over the roll door sensor switch. As long as the magnet is positioned within one inch of the top of the roll door sensor switch, the roll door sensor will operate properly.

1. Inside the trailer with the trailer door rolled down, mark the vertical and horizontal reference lines on the bottom of the roll door so the roll door sensor switch and magnet can be easily aligned. Refer to the following two illustrations.

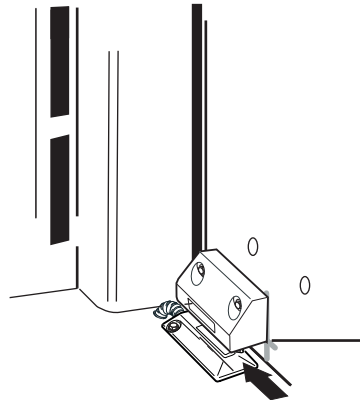




2. Open and secure the door part way.
3. Position the magnet within the reference lines.
4. Secure the magnet using the self-drilling screws.

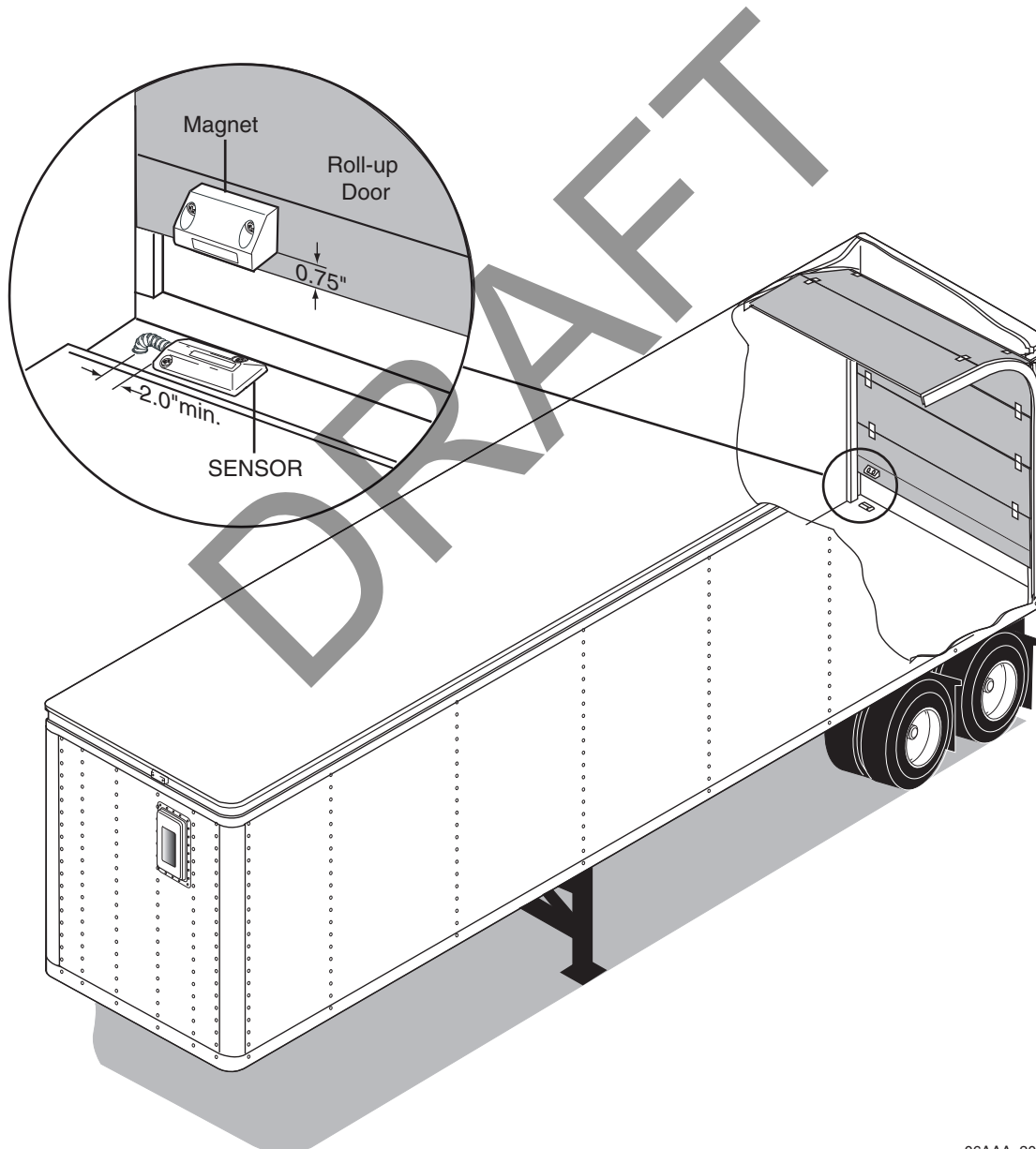


5. Close the trailer door and ensure the sensor switch and magnet are aligned. Ensure also there is some clearance between the sensor switch and the magnet.



Carefully close the roll-up door, and check to be sure there is some clearance between the sensor and the magnet.

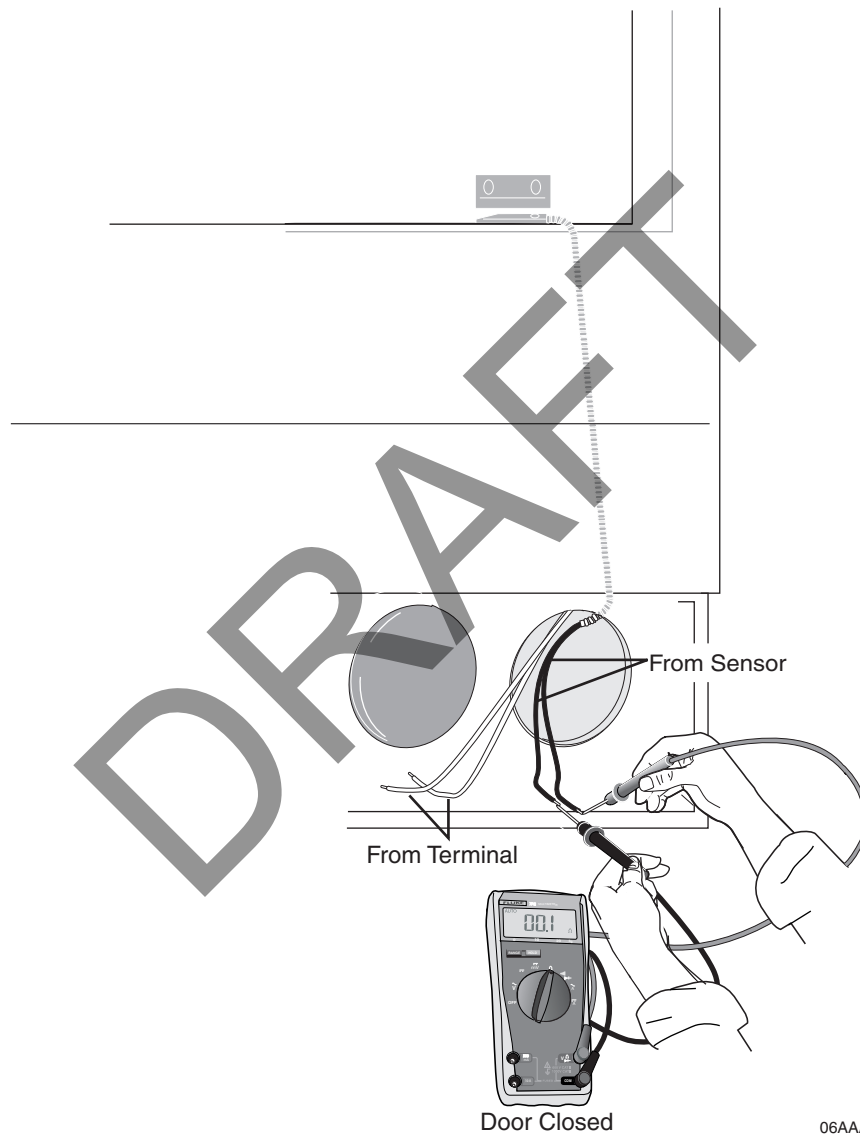
06AAA_212



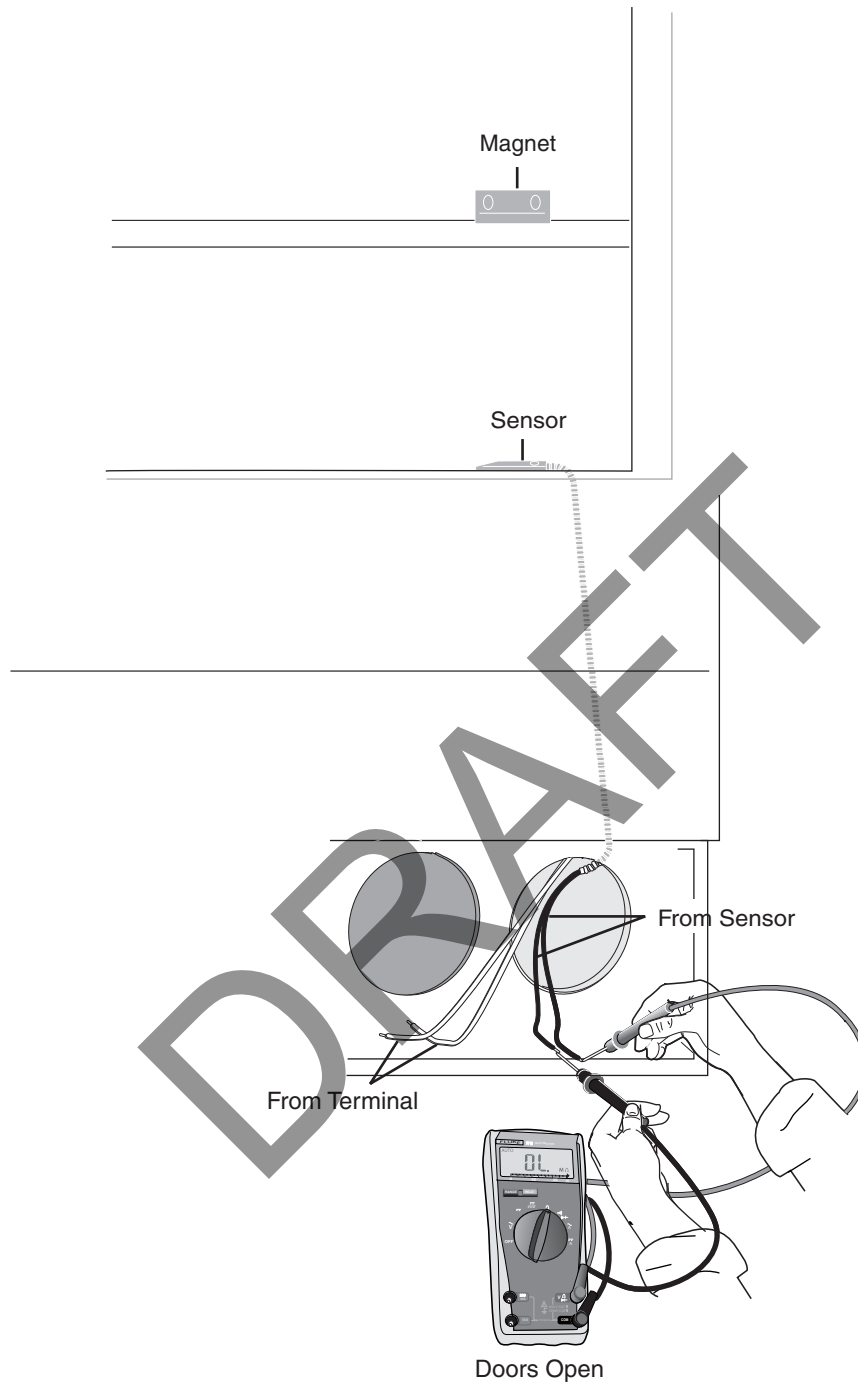
06AAA_207

Testing the Roll Door Sensor

1. Attach an ohmmeter to the sensor wires.
2. Close the door and check the ohmmeter for proper roll door sensor operation.
 - When the door is closed, the ohmmeter should measure 0 ohms.
 - When the door is open, the ohmmeter should measure infinite resistance.

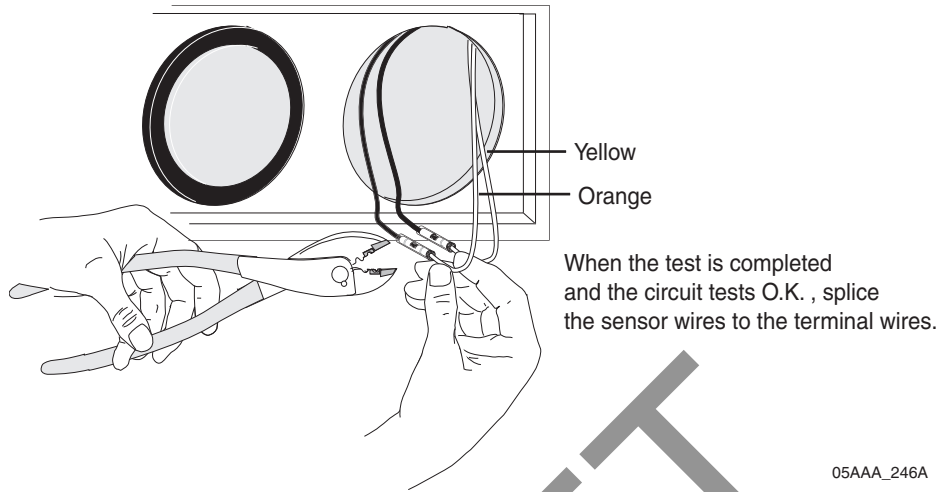


06AAA_218



Roll Door Sensor Installation Verification

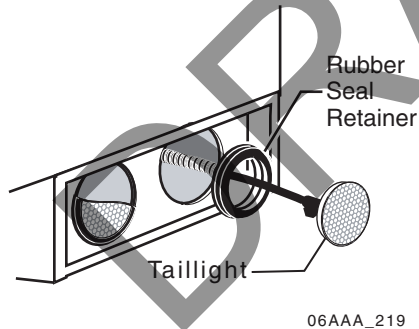
1. At the back of the trailer, butt splice the white sensor wires to the orange and yellow cable wires. Add additional strain relief by following the procedure on page 3-7.



Note

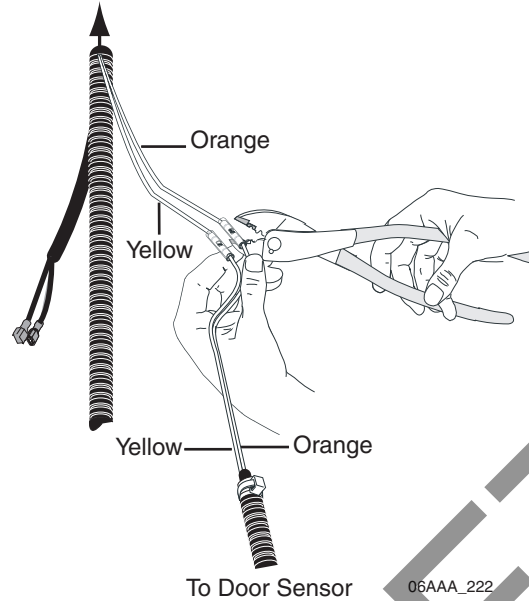
The sensor is a simple switch device; polarity does not matter.

2. Cover butt splices with convoluted and store excess wire behind the taillight assembly.
3. Replace the taillight assembly.



- At the front of the trailer, butt splice the orange and yellow cable wires to the orange and yellow TT210 system door sensor wires at the TT210 system terminal.

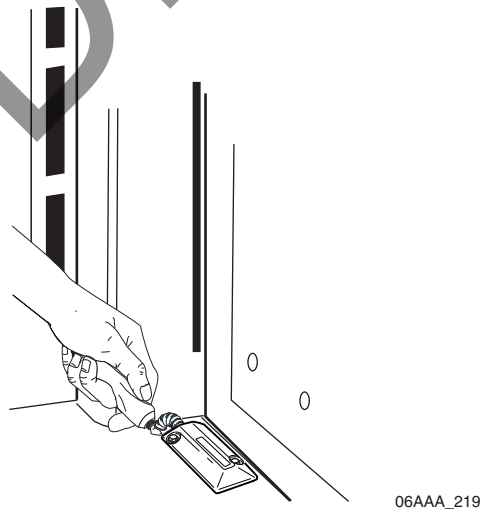
To TT210 System Mount Assembly



Note

The sensor is a simple switch device; polarity does not matter.

- Perform the door sensor validation as part of the TT210 system verification (see [Chapter 15: Performing System Verification](#)).
- If the system verification checks out positively, use sealant around the door sensor cable where it enters the trailer floor to completely seal the 1/2" hole and around the magnet and sensor screws to prevent them from coming loose.



- The roll door sensor installation is now complete.

If you have technical questions about installing the TT210 system roll door sensor, please contact QES Customer Support:

In the United States, call 800-541-7490;
in Canada, call 800-863-9191.

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Introduction

The TT210 auxiliary sensor wires are available on the TT210 power/accessory cable assembly. This sensor option allows customers to use a third-party sensor with the TT210 system.

The TT210 AUX sensor input is designed to detect digital (on/off switch) signals *only*. The TT210 system can be configured to generate alerts when an input transitions from high to low or from low to high.

Topics in this chapter include:

Overview	14-2
Tire Pressure Sensor Kit Installation	14-2
Tire Pressure Sensor Kit Validation	14-6

If you have technical questions, please contact Qualcomm Enterprise Services (QES) Customer Support. QES Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

Overview

The TT210 tire pressure sensor kit (65-J7313-1) contains the following components:

- 20-foot AUX sensor extension cable assembly with convoluted protective tubing
- AUX relay
- Self-drilling hex washer-head screws
- Black cable ties
- Yellow inline, step-down butt splices
- Blue insulated butt splices
- Blue #10 ring terminal connectors

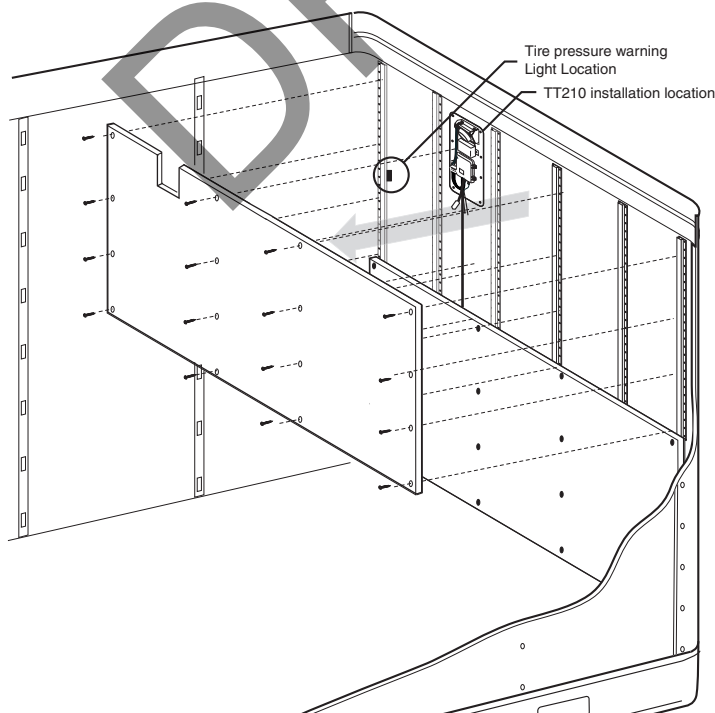
The AUX relay should be installed next to the TT210 system inside the trailer.

The chapter contains a wiring schematic of an installation with the AUX relay connected to the tire pressure light via the 20-foot AUX extension cable. (Refer to Wiring Schematic A on page 14-5.)

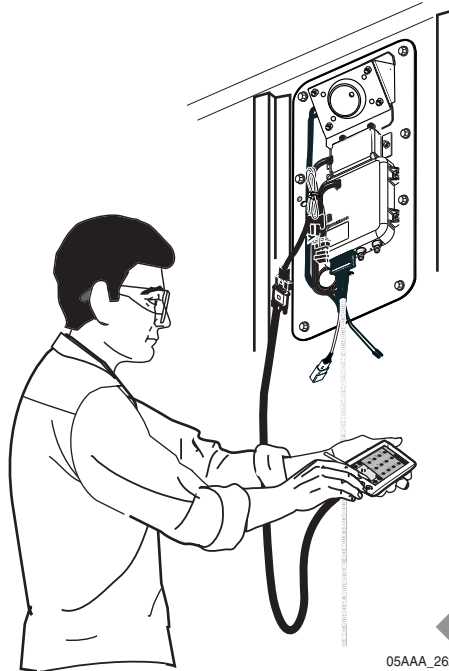
Tire Pressure Sensor Kit Installation

The following instructions and wiring schematics provide details and procedures for wiring the tire pressure sensor into the TT210 system.

1. Inside the trailer at the trailer nose, remove the inner lining to gain access to the tire pressure warning light installation site and the TT210 system diagnostic cable connector. (It may also be necessary to remove the metal liner in the corner of some trailers to access the tire pressure light.)



2. Once the TT210 system diagnostic cable connector is located, connect Configuration tool?? software application. figure



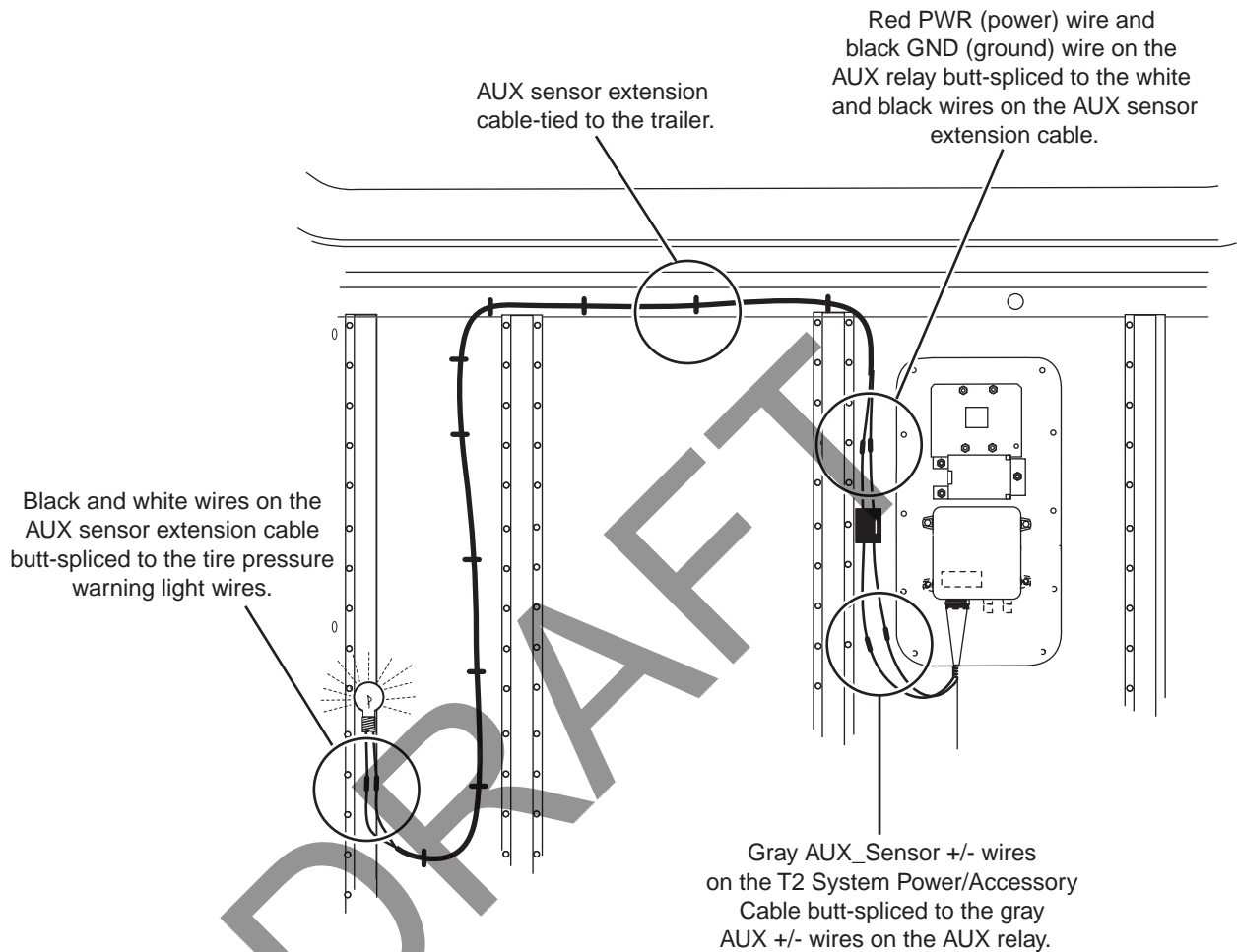
3. Perform a TT210 system verification to ensure the TT210 system is functioning properly prior to installing the tire pressure sensor kit. (Refer to [Chapter 15: Performing System Verification](#).)
4. Butt splice the black and white wires of the 20-foot AUX sensor extension cable inline to the tire pressure warning light wires. Refer to the following illustration and to Wiring Schematic A on page [14-5](#) of this document.

Use a multi-meter to determine polarity to make the following butt splice connections:

- Use a yellow splice supplied in the kit to connect the ground wire of the tire pressure warning light to the white AUX sensor extension cable wire.
- Use a yellow splice supplied in the kit to connect the 12 VDC wire of the tire pressure warning light to the black AUX sensor extension cable wire.

Note

The tire pressure light wire colors may vary from trailer to trailer.



04AAA_140C

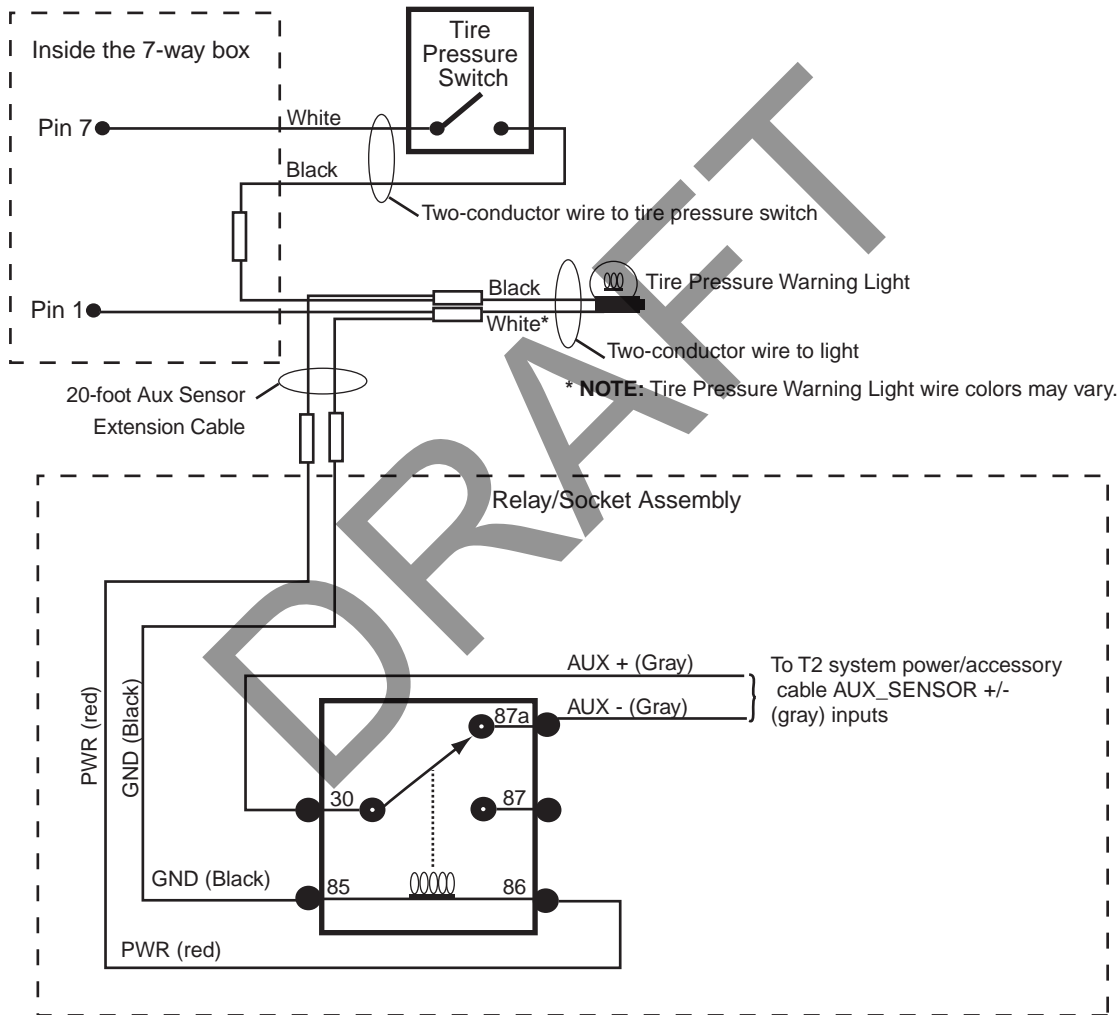
5. Run the AUX sensor extension cable from the tire pressure warning light to the TT210 system terminal location.
6. Secure the AUX sensor extension cable to the trailer post between the tire pressure warning light bay and the TT210 system terminal bay using supplied cable ties and self-drilling screws as needed. This will prevent vibration from severing the cable and shorting to ground.
7. Install the AUX relay on the trailer post next to the TT210 system mount location.
8. Using a blue or pink splice, connect the red positive wire on the AUX relay to the black wire on the AUX sensor extension cable, routed from the tire pressure warning light.
9. Using a blue or pink splice, connect the black ground wire on the AUX relay to the white wire on the AUX sensor extension cable, routed from the tire pressure warning light.

- 10. Using blue or pink splices, connect the two gray wires coming from the AUX relay to the two gray AUX_SENSOR wires on the TT210 system power/accessory cable (will be near the TT210 system terminal). Refer to the wiring schematics in this document.

Wiring Schematic

Wiring Schematic A

In this wiring configuration, the AUX relay is wired directly to the tire pressure warning light. The 20-foot AUX sensor extension cable is used to connect the two.

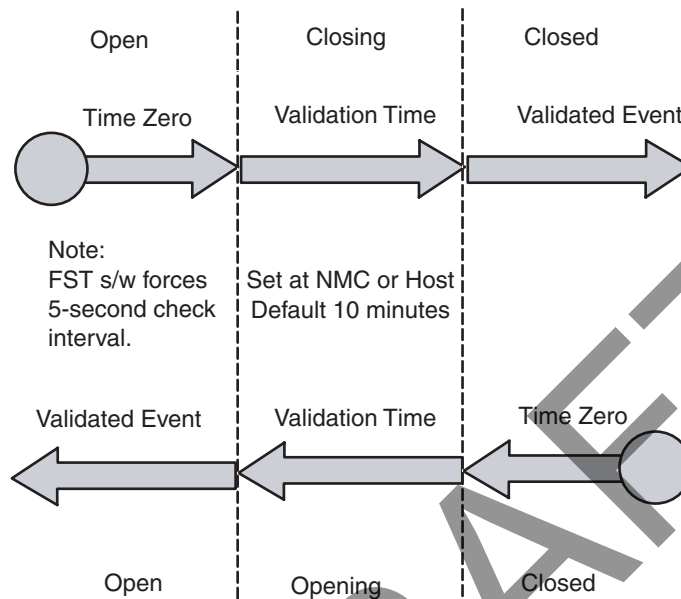


07AAA_72A

Tire Pressure Sensor Kit Validation

A simple opened/closed switch detects tire pressure. The validation time is set up per the customer's request and state change reports are sent to the customer, as shown in the following illustration.

TT210 System AUX Sensor Validation



Simple open and closed switch that detects a changed state immediately and reports as configured by the customer.

05AAA_026a

1. In order to validate default settings and verify if the tire pressure sensor is working correctly with the TT210 system, certain TT210 system parameters must be set at the customer site using the TT210 Web application or the AS400 system. To find out if the parameters have been set, contact QES Customer Support.

United States: 800-541-7490

Canada: 800-863-9191

Default parameters may vary by customers.

Parameter Defaults

Settings displayed in the following table are specific to the tire pressure sensor application. Other applications may require different initial and operational settings.

<i>Modified Parameters</i>	<i>Initial Settings</i>	<i>Operational Settings</i>
Parameter 1043 Sensor 4 Label:	Tire Pressure Alarm	Label Varies depending on application
Parameter 1113 Sensor 4 Open Time:	5 Seconds	10 minutes Varies depending on application
Parameter 1114 Sensor 4 Close Time:	5 Seconds	10 minutes Varies depending on application
Parameter 1117 Send Sensor 4 Open:	Ignore	Send Immediately Varies depending on application
Parameter 1118 Send Sensor 4 Close:	Ignore	Ignore Varies depending on application
Parameter 1130 Sensor 4 Installed:	Uninstalled	Installed

1. If the correct parameters have been set in TT210 Web or the AS400, release tire air pressure by opening the valve on the tire pressure sensor switch box under the trailer. This will cause the tire pressure warning light to illuminate.
2. With the Configuration tool is connected to the TT210 system, you will see **AUX. Sensor** change from **Closed** to **Opening** then **Open** after validation on the Configuration tool health screen, if the sensor has been properly wired to the TT210 system. It will take approximately 10 minutes to validate.

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15

Performing System Verification

Introduction to System Verification

This chapter describes the TT210 system verification process and basic diagnostic procedures.

Topics in this chapter include:

<i>What Is TT210 System Verification?</i>	15-2
<i>TT210 System Verification</i>	15-2
<i>Diagnostic Flowchart—TT210 System Verification</i>	15-3
<i>TT210 System Verification Procedure</i>	15-5
<i>Getting the TT210 System Terminal ID Using the 7-way Diagnostic Tool</i>	15-17
<i>Tethered Asset Management Service Overview</i>	15-21
<i>Getting the TT210 System Terminal ID (DU)</i>	15-21
<i>Getting the TT210 System Terminal ID (EDU)</i>	15-24
<i>Getting the TT210 System Terminal ID (MVPc)</i>	15-28
<i>for DIU>????</i>	
<i>Ongoing Maintenance</i>	15-30
<i>Troubleshooting</i>	15-31
<i>System Verification Form</i>	15-31
<i>TT210 System Verification Checklist</i>	15-33

If you have technical questions, please contact Qualcomm Enterprise Services (QES) Customer Support. QES Customer Support is staffed 24 hours a day, 365 days a year:

In the United States, call 800-541-7490
In Canada, call 800-863-9191

For Configuration tool software information and setup procedures, see the *TT200/TT210 Quick Reference 80-J7595-1*.

CHANGE ALL SCREENS TO TT210 CONFIG TOOL. and FIGURES

What Is TT210 System Verification?

The TT210 system verification is a functional system check that should be performed after installation of the TT210 system and after service to verify the TT210 system is operating properly.

The chapters following this System Verification chapter provide the diagnostics steps necessary to resolve any problem that appears during the system verification.

Note

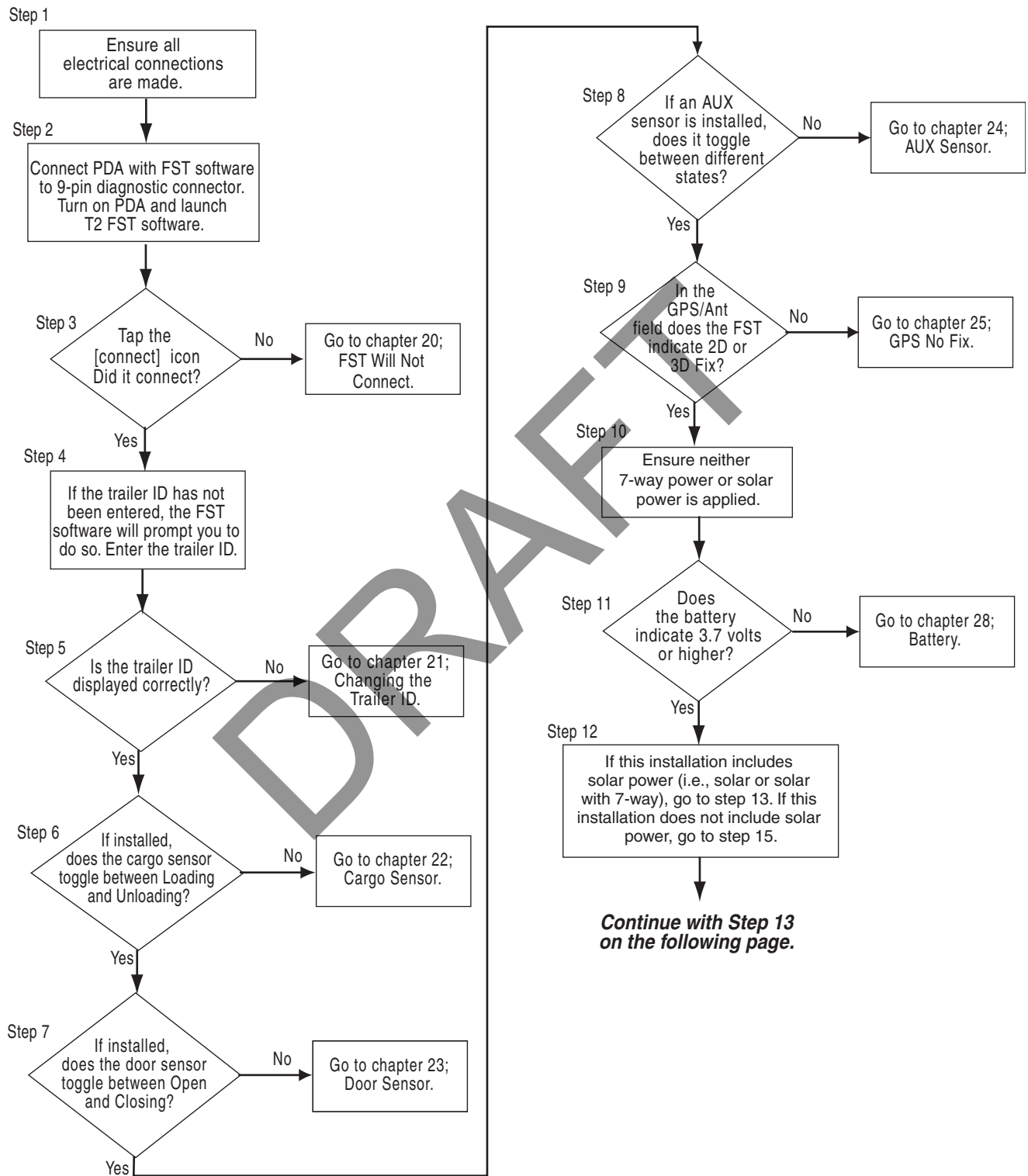
There are two ways to configure the TT210 system, either by using the Configuration tool software or by using the Trailer Tracks software.

TT210 System Verification

The flowchart on the following page represents a step-by-step guide to the verification procedures. It is important that you read the procedure on the pages following the flowchart for detailed information about this process. If, at any time, you reach a step and cannot proceed, call QES Customer Support at (800-541-7490).

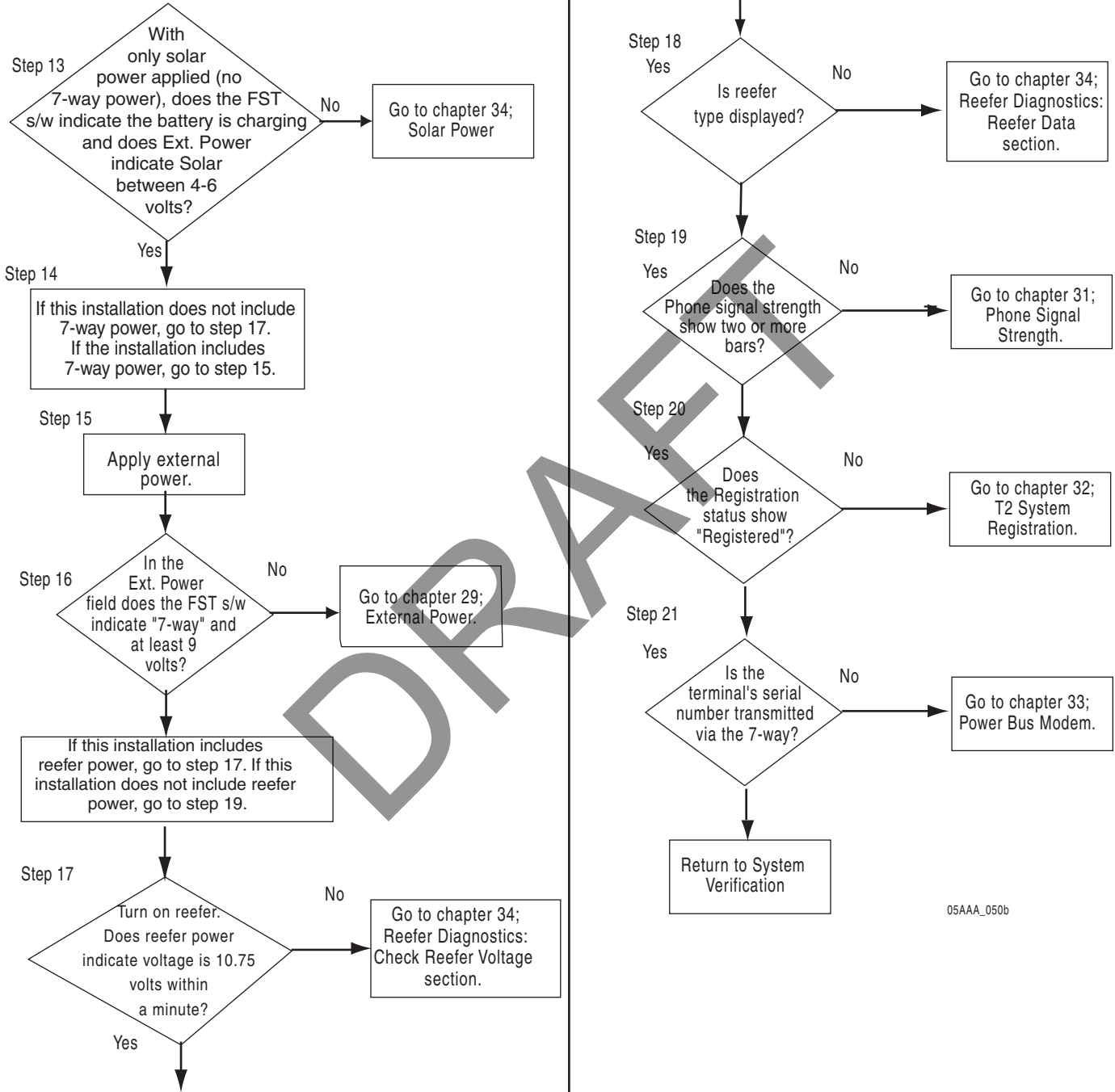
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Diagnostic Flowchart—TT210 System Verification



05AAA_050a

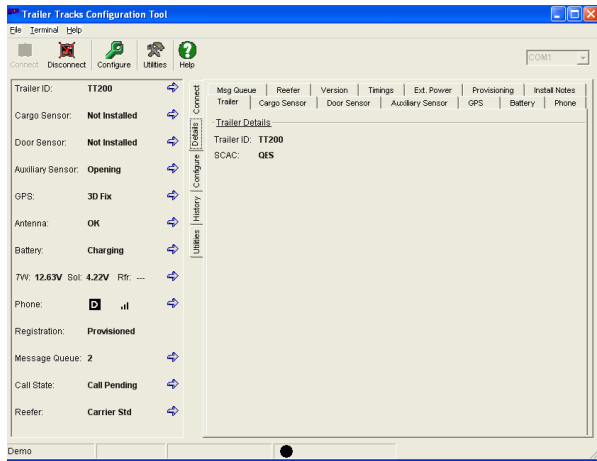
Continued from Step 12 on the previous page.



05AAA_050b

TT210 System Verification Procedure

<p>The diagram illustrates the electrical connection for the TT210 system. It shows a 7.5 amp fuse connected to Pin 7 (Blue PWR) and Pin 1 (White GND) of a terminal block. A secondary diagram shows a cable assembly with a connector. The diagrams are labeled with part numbers 05AAA_217D and 03AAA_264a.</p>	<p>The steps in this procedure match the steps on the preceding system verification flowchart. The steps are not always sequential—you may be instructed to skip steps.</p> <ol style="list-style-type: none">1. Ensure that the following electrical connections are made:<p>NOTE: External power should not be applied to the TT210 system terminal until step 13.</p><ul style="list-style-type: none">• The blue (POWER) and white (GROUND) wires from the TT210 system power/ accessory cable are connected to the trailer's 7-way.• RF connections/antenna connections.• Any installed optional sensor wires (cargo, door, and AUX) are properly connected. <p>Ensure that the following also apply:</p> <ul style="list-style-type: none">• The TT210 system battery should be connected.• The antenna for the TT210 system should have a clear view of the sky.
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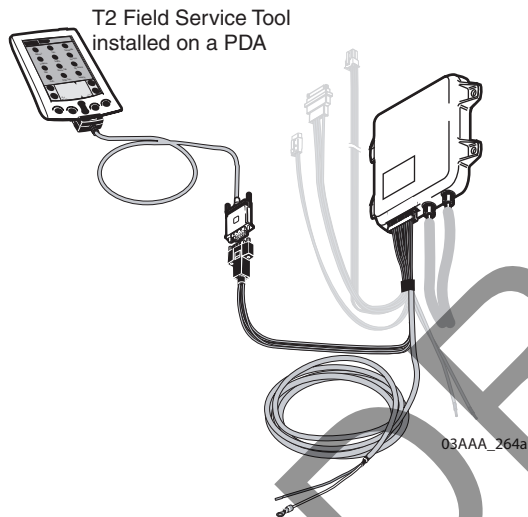
2. Connect the TT210 system terminal to a laptop on which the Configuration tool software has been installed.

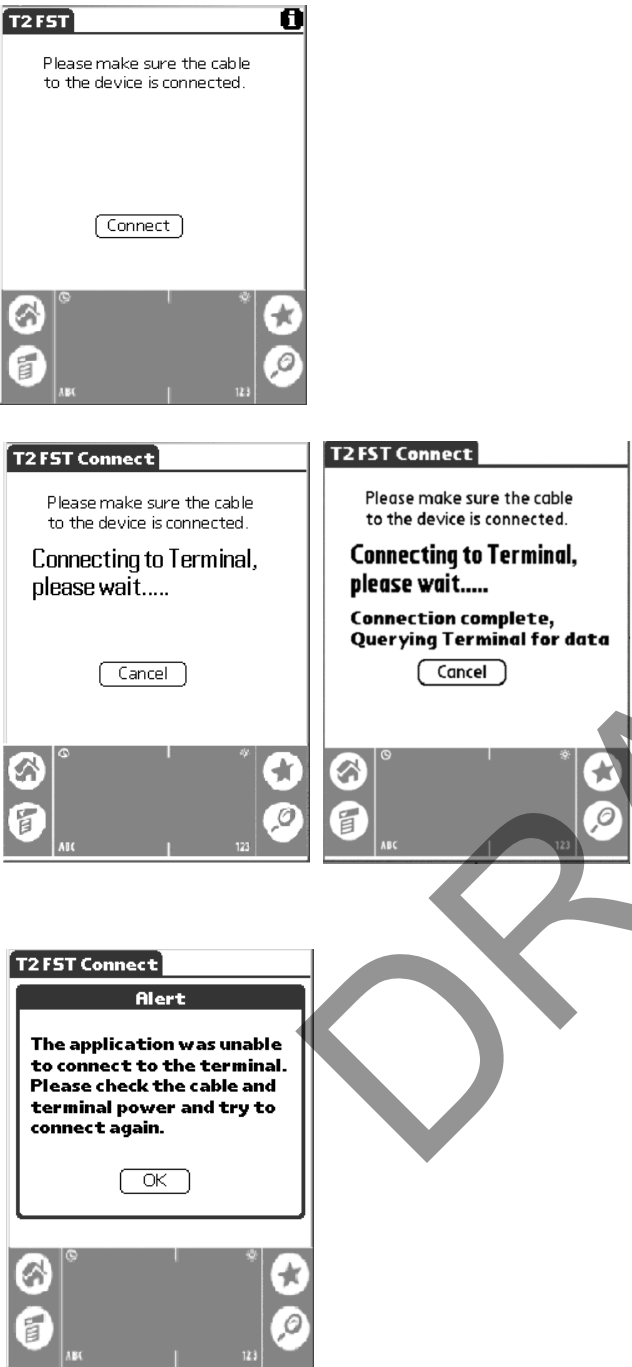
- The serial cable connects to the 9-pin diagnostic connector on the TT210 system power/accessory cable. ???

To launch the TT210 Configuration tool software, double click the TT210 configure icon on the laptop

need TT210 screens (only have 200)

update figure

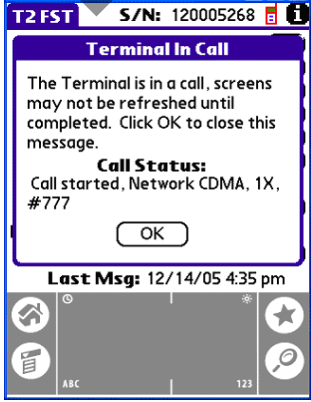




3. Tap **Connect**. Please allow up to two minutes for the Configuration tool software to connect. Did the Configuration tool software connect to the TT210 system terminal?

- If **YES**, go to step 4.
- If **NO**, the failure to connect Alert screen will appear. Tap OK to clear the Alert screen. Check cable connections and tap **Connect** again. Does the Configuration tool software connect now?
 - If YES, go to step 4.
 - If NO, go to [Chapter 16: TT210 System Diagnostics: Configuration Tool Will Not Connect](#).

NOTE: The following pop-up screen appears each time the unit goes into a call.



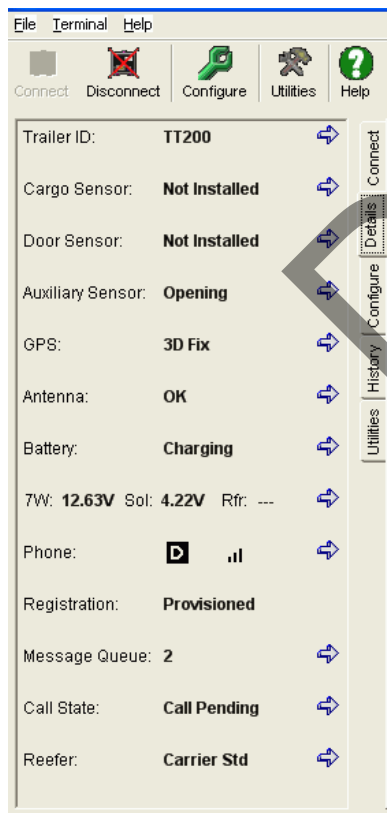


- If this is a new installation, the Configuration tool software will prompt you to enter the trailer ID. Qualcomm recommends that the trailer ID be set at this time. (This process associates the trailer ID with the TT210 system terminal's ID in the customer's account.)

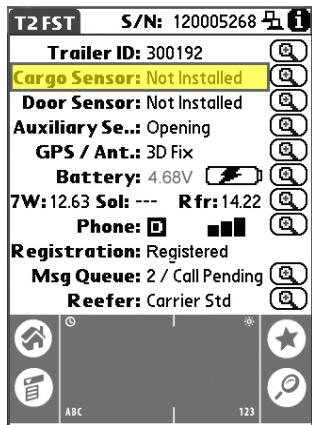
For detailed information regarding entering the trailer ID, refer to the *TT200/TT210 Configuration Tool Quick Reference*, 80-J7595-1. **OR** go to [Chapter 17: TT210 System Diagnostics: Changing the Trailer ID](#). The process to enter the trailer ID is similar to changing the trailer ID.

NOTE: If not prompted to enter the trailer ID, the terminal may already have information in the trailer ID field.

Go to step 5.



- The Configuration tool software **Health** screen will open. Verify the **Trailer ID** is correct.
 - If **YES**, go to step 6.
 - If **NO**, go to [Chapter 17: TT210 System Diagnostics: Changing the Trailer ID](#).



6. **Cargo Sensor** verification. If a cargo sensor is installed on the trailer, verify it is functioning correctly by toggling the current state.

NOTE: How to Toggle the Cargo Sensor
 If the trailer is empty, block the cargo sensor by holding a piece of cardboard approximately 6 inches from the cargo sensor. Confirm the cargo sensor state changes from Empty to Loading or Loaded. If the trailer is loaded, toggle the cargo sensor by positioning it so it is not blocked. Confirm the cargo sensor state changes from Loaded to Unloading or Empty. The cargo sensor can “see” objects from up to 20 feet away.

- If **YES**, it is functioning correctly, go to step 7.
- If **NO**, it is not functioning correctly, go to [Chapter 18: TT210 System Diagnostics: Cargo Sensor](#).

NOTE: On new installations, the cargo sensor can sometimes toggle to Not Installed until it completes one validation cycle. This can take up to 30 minutes.

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7. **Door Sensor** verification. If a door sensor is installed on the trailer, verify it is functioning correctly by toggling the current state.

NOTE: How to Toggle the Door Sensor

If the trailer door is closed, open it. Confirm the door sensor state changes from Closed to Opening or Open. If the trailer door is open, close it. Confirm the door sensor state changes from Open to Closing or Closed.

- If **YES**, it is functioning correctly, go to step 8.
- If **NO**, it is not functioning correctly, go to [Chapter 19: TT210 System Diagnostics: Door Sensor](#).

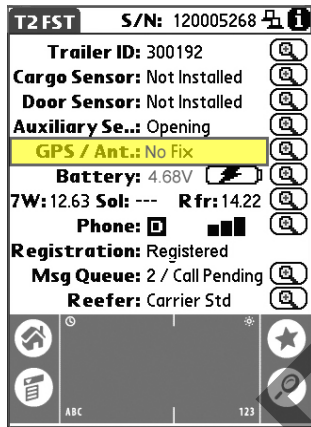
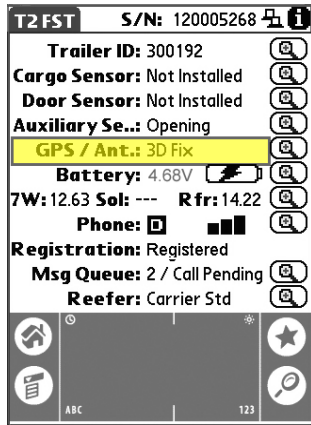
NOTE: *On new installations, the door sensor can sometimes toggle to Not Installed until it completes one validation cycle. This can take up to 30 minutes.*



8. **Auxiliary sensor** verification. If an auxiliary sensor is installed on the trailer, verify it is functioning correctly by toggling the current state.

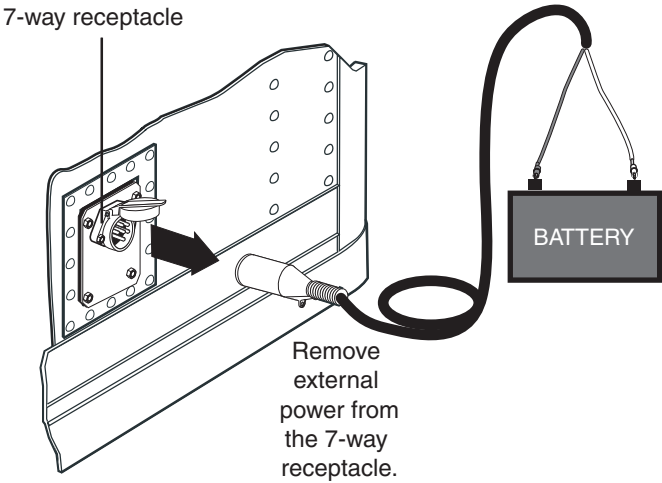
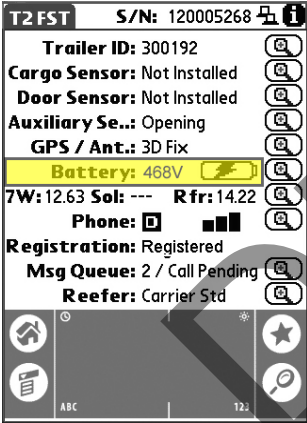
- If **YES**, it is functioning correctly, go to step 9.
- If **NO**, it is not functioning correctly, go to [Chapter 20: TT210 System Diagnostics: Auxiliary Sensor](#).

NOTE: *On new installations, the auxiliary sensor can sometimes toggle to Not Installed until it completes one validation cycle. This can take up to 30 minutes.*



9. Verify the **GPS/Ant.** status is OK—**2D (good) or 3D (best) Fix.**
 - If **YES**, go to step 10.
 - If **NO**, **GPS/Ant.** is **No Fix**, go to [Chapter 21: TT210 System Diagnostics: GPS No Fix](#).

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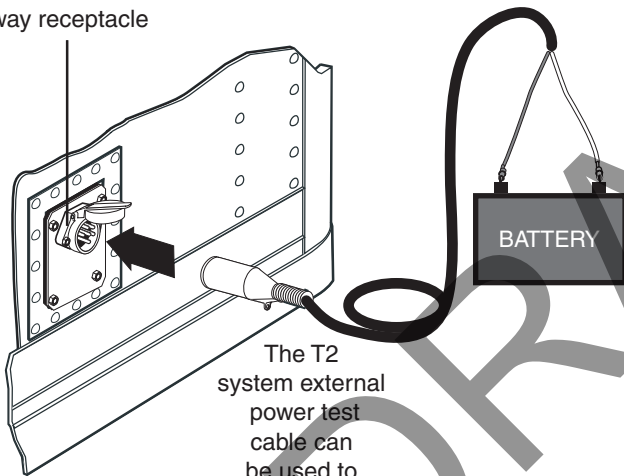
 <p>7-way receptacle</p> <p>Remove external power from the 7-way receptacle.</p> <p>04AAA_127E</p>	<p>10. Make sure no external power (i.e., reefer, 7-way) is applied. Go to step 11.</p>
	<p>11. Is the Battery voltage 3.7 volts or higher?</p> <p>NOTE: This verification must be done without external power applied to the TT210 system terminal. If external power is applied, the Battery voltage indicated on the Configuration Tool software will be the charger voltage, not the actual TT210 system terminal battery voltage.</p> <p>Battery voltage below 4.0 volts indicates the battery needs to be charged.</p> <ul style="list-style-type: none"> • If YES, go to step 12. • If NO, go to Chapter 24: TT210 System Diagnostics: Battery.



12. If this installation does not include 7-way power, go to step 17.

If this installation includes 7-way power, go to step 15.



7-way receptacle

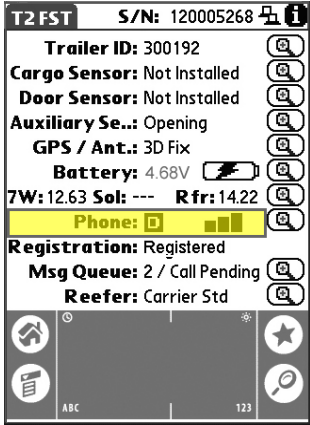
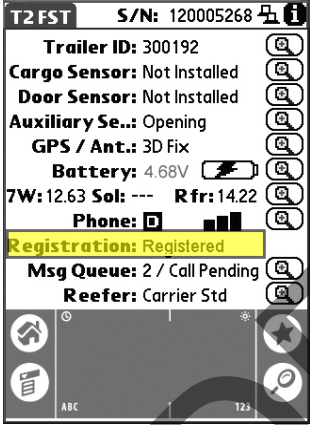


The T2 system external power test cable can be used to apply external power.

04AAA_127D

13. Apply external 7-way power to the TT210 system terminal. Go to step 16.

 <p>The screenshot shows a mobile application interface for a TT210 system. At the top, it displays 'T2 FST' and 'S/N: 120005268'. Below this, several status fields are listed: 'Trailer ID: 300192', 'Cargo Sensor: Not Installed', 'Door Sensor: Not Installed', 'Auxiliary Se...: Opening', 'GPS / Ant.: 3D Fix', 'Battery: 4.68V', '7W: 12.63 Sol: Rfr:'. The 'Reefer' field is highlighted in yellow and shows 'Carrier Std'. At the bottom, there are navigation icons and a signal strength indicator.</p>	<p>14. Does the Ext. Power field indicate “7-way” and at least 9 volts or more?</p> <ul style="list-style-type: none"> • If YES, go to step 17. • If NO, go to Chapter 25: TT210 System Diagnostics: External 7-way Power. <p>15. If this installation includes reefer power, go to step 18.</p> <p>If this installation does not include reefer power, go to step 19.</p> <p>16. Turn on reefer. Does reefer power indicate voltage is 10.75 volts or higher within one minute?</p> <ul style="list-style-type: none"> • If YES, go to step 20. • If NO, go to Chapter 30: TT210 System Diagnostics: Refrigerated Trailers.
 <p>This screenshot is identical to the one above, showing the same TT210 system interface. The 'Reefer' field is highlighted in yellow and shows 'Carrier Std'.</p>	<p>17. Is reefer type displayed?</p> <ul style="list-style-type: none"> • If YES, go to step 20. • If NO, go to Chapter 30: TT210 System Diagnostics: Refrigerated Trailers.

 <p>The screenshot shows the TT210 system status screen. At the top, it displays 'T2 FST' and 'S/N: 120005268'. Below this, several status indicators are listed: 'Trailer ID: 300192', 'Cargo Sensor: Not Installed', 'Door Sensor: Not Installed', 'Auxiliary Se.: Opening', 'GPS / Ant.: 3D Fix', 'Battery: 4.68V', '7W: 12.63 Sol: --- Rfr: 14.22', 'Phone: [Signal strength bars]', 'Registration: Registered', 'Msg Queue: 2 / Call Pending', and 'Reefer: Carrier Std'. The bottom of the screen shows a keypad with 'ABC' and '123'.</p>	<p>18. Verify the Phone signal strength indicates two or more bars.</p> <ul style="list-style-type: none">• If YES, go to step 21.• If NO, go to Chapter 27: TT210 System Diagnostics: Phone Signal Strength.
 <p>This screenshot is identical to the one above, but the 'Registration: Registered' field is highlighted in yellow. A large 'DRAFT' watermark is visible across the center of the page.</p>	<p>19. Verify the Registration field indicates "Registered."</p> <ul style="list-style-type: none">• If YES, go to step 22.• If NO, go to Chapter 28: TT210 System Diagnostics: TT210 System Registration.



20. **If using the 7-way tool**, verify the TT210 system terminal's serial number (**S/N**; top right-hand area of the Configuration tool software Health screen) has transmitted via the 7-way on the trailer. This can also be verified in any of the following ways depending on what hardware is available:

To verify the trailer ID using the 7-way diagnostic tool go to [Getting the TT210 System Terminal ID Using the 7-way Diagnostic Tool](#) on page 15-17.

To verify the trailer ID for an OmniTRACS unit using a display unit (DU) go to [Getting the TT210 System Terminal ID \(DU\)](#) on page 15-21.

To verify the trailer ID for an OmniTRACS unit using an enhanced display unit (EDU) go to [Getting the TT210 System Terminal ID \(EDU\)](#) on page 15-24.

To verify the trailer ID for an OmniTRACS unit using an MVPc® in-vehicle computer go to [Getting the TT210 System Terminal ID \(MVPc\)](#) on page 15-28.

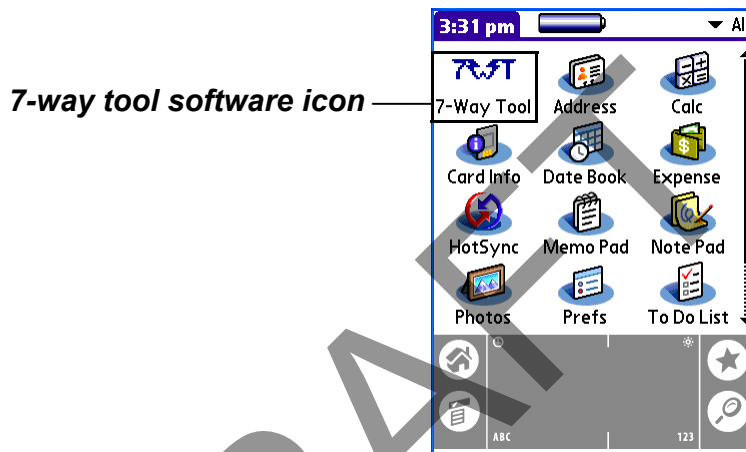
- If **YES**, system verification is complete.
- If **NO** and you are using the 7-way diagnostic tool, go to [Chapter 29: TT210 System Diagnostics: Power Bus Modem](#).

Getting the TT210 System Terminal ID Using the 7-way Diagnostic Tool

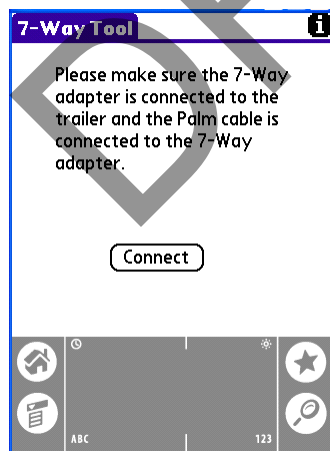
Complete the following procedure to launch the TT210 system 7-way diagnostic tool software on your handheld device.

To Launch the TT210 System 7-way Diagnostic Tool Software

1. Connect the TT210 system 7-way adaptor to the handheld device via the handheld's serial cable.
2. Tap the **Home** or **Applications** icon on the handheld device and cycle through the application categories to locate the 7-way diagnostic tool software icon.



3. Tap the **7-Way Tool** icon.



4. Tap **Connect**.

The TT210 system 7-way diagnostic tool software connects to the terminal via the trailer's 7-way receptacle and reads the information from the terminal.

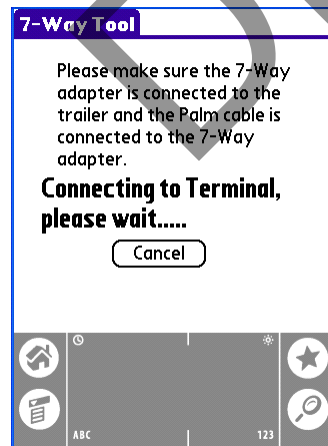
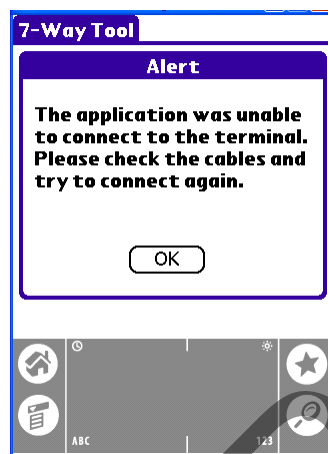
If the 7-way diagnostic tool software detects a problem while connecting to the terminal, the software attempts to connect to the terminal for approximately two minutes before you are given additional information regarding the problem:

Note

If there is a connection problem, the following screen will display.

The following are situations that can occur with the TT210 system terminal that can cause the connection process to fail:

- Discharged 7-way tool adaptor battery
- Faulty cable connections
- Unresponsive due to firmware upgrade process



7-Way Tool Health Screen Information



The 7-Way Tool Health screen lists the latest values detected from the terminal, including a terminal's registration status. If multiple terminals are detected, you can change the currently viewed terminal by selecting a different terminal. To select a different terminal, tap the drop-down arrow next to the terminal number (e.g., 120000001) near the upper-right corner of the screen.

Note

If the 7-way diagnostic tool software cannot communicate with the terminal for one minute and 20 seconds, you are prompted with a message and the Connect screen redisplay. This happens for any of the following reasons:


- The cable between the handheld device and the 7-way tool is disconnected.
- The 7-way tool battery is not charged or dead.
- Over-the-air (OTA) upgrade is being performed.

After resolving the issue, you can re-establish a connection to the terminal.

Diagnostic Values

The 7-way diagnostic tool software detects the current values of the following:

Terminal S/N

The TT210 system terminal serial number that the 7-way diagnostic tool software is connected to. If the “No MCT” () image appears, the terminal is configured so the mobile communications terminal (MCT) will not recognize the data sent from this terminal.

Cargo Sensor Status

If installed, the cargo sensor status shows as: NOT INSTALLED, EMPTY/UNLOADING, or LOADED/LOADING.

Door Sensor Status

The trailer/container swing door sensor status shows as: NOT INSTALLED, OPEN/OPENING or CLOSED/CLOSING.

Auxiliary Sensor Status

If third-party accessories are installed, the auxiliary sensor input status shows as: NOT INSTALLED, OPEN/OPENING or CLOSED/CLOSING.

GPS/Antenna Status

The GPS/Ant status shows as: 2D FIX (good), 3D FIX (best), or NO FIX.

Phone Signal Strength and Mode

The phone signal strength status is indicated by bars, e.g., 2 or more bars indicate good signal strength.

Registration Status

The registration status shows as: REGISTERED or NOT REGISTERED.

Message Queue

The message queue indicates if there are any calls waiting in the queue and is shown as: NUMBER OF CALLS/CALL PENDING.

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Tethered Asset Management Service Overview

The tethered asset management service is an option that allows dispatch to monitor trailer connections and disconnections. Connects and disconnects are detected by the mobile communications terminal and passed on to dispatch via the satellite link with the date, time, and location.

Firmware Requirements

The mobile communications terminal firmware version must be 15.50 or above for the tethered asset management service option. If the mobile communications terminal firmware version is below 15.50, contact your Regional Qualcomm Customer Support Specialist.

Getting the TT210 System Terminal ID (DU)

The screens you view when verifying trailer connections and disconnections are different depending on the type of display unit being used. This first section describes the method used with a display unit (DU). The following sections describe the method used with the enhanced display unit (EDU) and the MVPc in-vehicle computer.

If you are using an EDU, go directly to page [15-24](#) for proper instructions. If you are using an MVPc in-vehicle computer, go directly to page [15-28](#) for proper instructions.

This section provides information on system verification for single trailer connections and disconnections.

Enable Tethered Asset Management Service and Auto Connect

Note

If tethered asset management service screens are not available, then the tethered asset management service option is not enabled.

To activate the mobile communications terminal for the tethered asset management service option and to enable Auto Connect, call the QES Customer Support. In the United States, call 800-541-7490; in Canada, call 800-863-9191.

Trailer Connection/Disconnection

This section provides system verification information on trailer connections/disconnections.

Connection

1. Turn on the ignition.
2. Hook up the tractor to the trailer, connect the tractor's 7-way pigtail.
3. Press the **OPTION** key from the View Status screen.

4. Press ▼ until the TrailerTRACS ID screen is displayed.

If “Hit C to Connect” (see illustration below) is displayed on the screen, Auto Connect is not enabled. Call the QES Customer Support to enable Auto Connect. In the United States, call 800-541-7490; in Canada, call 800-863-9191. Have the mobile communications terminal serial number (unit address) available when you call.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN
TRAILERTRACS ID#’s **(HIT "C" TO CONNECT)**
CONNECTED: NONE CONNECTED

If a trailer is not currently connected, the status is None Connected, as shown in the following screen.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN
TRAILERTRACS ID#’s
CONNECTED: **NONE CONNECTED**

After the trailer is connected and the TrailerTRACS system transmitter sends its ID to the mobile communications terminal, the trailer ID is updated on the display unit as shown in the following screen.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN
TRAILERTRACS ID#’s
CONNECTED: **1234**

Disconnection

1. Remove 7-way pigtail.
2. Leave ignition on.

3. Wait up to five minutes for disconnect message.

A disconnect message is sent when the tractor’s ignition is on and there has been no signal from the tethered transmitter for a preset time period. This will usually occur within five minutes.

WARNING: A TRAILER HAS DISCONNECTED
(ANY FUNCTION KEY EXITS.)

Tethered Asset Management Service Diagnostic Screen

From the previous tethered asset management service ID screen, press the **D** key to view the tethered asset management service Diagnostic screen. This screen may be helpful when performing diagnostics. The following illustration shows a tethered asset management service Diagnostic screen without a connected trailer.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN
TRAILER DIAG 854
ID#

When a trailer is connected, the tethered asset management service Diagnostic screen appears as seen in the following illustration.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN
TRAILER DIAG 854
ID# 10000702 24 15

A tethered asset management service ID number (10000702) appears, as well as other numerical information, such as the number of seconds since ignition ON (854), number of ID packets (24), and the number of seconds since the last packet was sent (15).

Getting the TT210 System Terminal ID (EDU)

This section provides information on system verification for single trailer connections and disconnections.

Enable the Tethered Asset Management Service and Auto Connect

Note

If tethered asset management service screens are not available, then the tethered asset management service option is not enabled.

To activate the mobile communications terminal for the tethered asset management service option and to enable Auto Connect, call the QES Customer Support. In the United States, call 800-541-7490; in Canada, call 800-863-9191.

Trailer Connection/Disconnection

This section provides system verification information on trailer connections/disconnections.

Connection

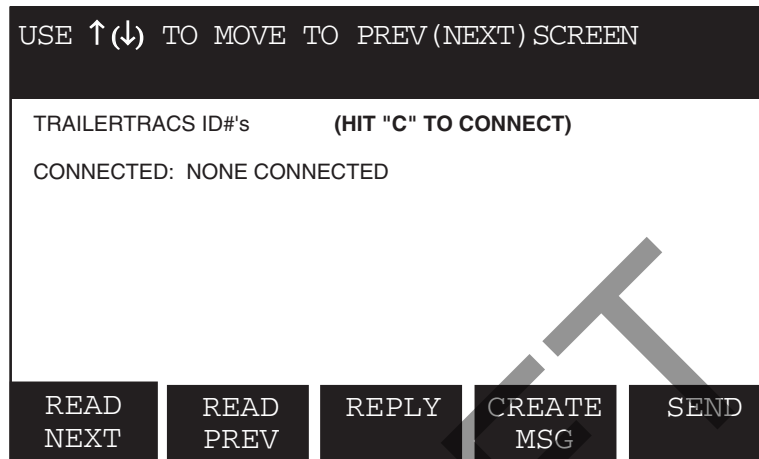
1. Turn on the ignition.
2. Hook up the tractor to the trailer and connect the tractor's 7-way pigtail. Press the **ENTER** key.
3. Press the **VIEW STATUS** key to display the View Status screen.

USE ↑(↓) TO MOVE TO PREV (NEXT) SCREEN				
OMNITRACS	4/22/06	10:23:21	CST	

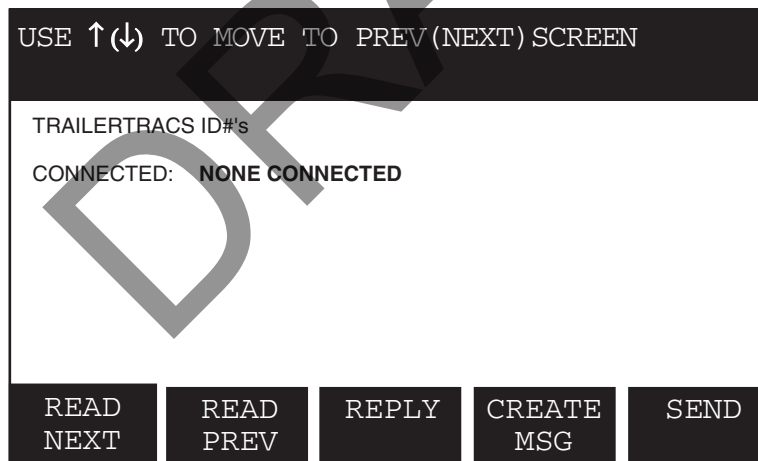
DRIVER: UNIDENTIFIED		UNREAD MESSAGES: 0		
STATUS: GOOD		MSGs BEING SENT: 0		
PRESS +, - TO CHANGE TIME ZONE: GMT				
READ NEXT	READ PREV	REPLY	CREATE MSG	SEND

4. Press **▼** until the TrailerTRACS ID screen is displayed.

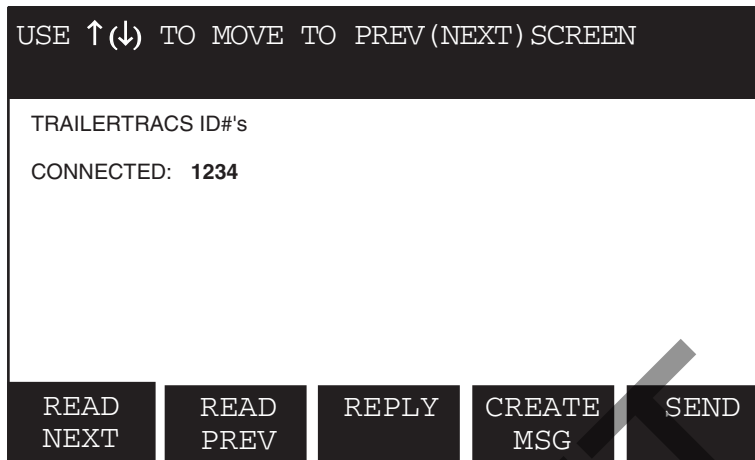
If “Hit ‘C’ to connect” (see the following illustration) appears this means Auto Connect is not enabled. Call the QES Customer Support to enable Auto Connect. In the United States, call 800-541-7490; in Canada, call 800-863-9191. Have the mobile communications terminal serial number (unit address) available when you call.



If a trailer is not currently connected, the status is None Connected, as shown in the following screen.



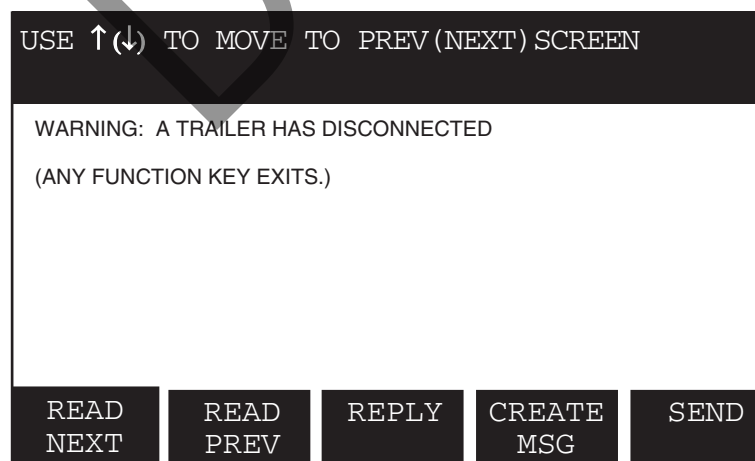
After the trailer is connected and the TrailerTRACS system transmitter sends its ID to the mobile communications terminal, the trailer ID is updated on the EDU as shown in the following screen.



Disconnection

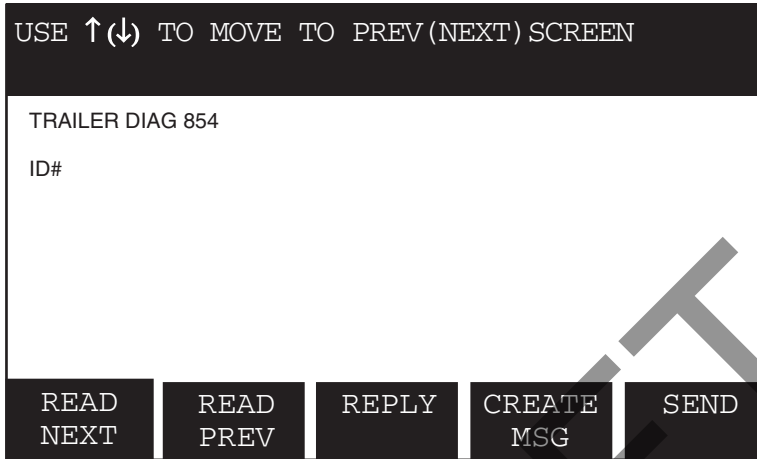
1. Remove 7-way pigtail.
2. Leave ignition on.
3. Wait up to five minutes for disconnect message.

A disconnect message is sent when the tractor's ignition is on and there has been no signal from the tethered transmitter for a preset time period. This will usually occur within five minutes.

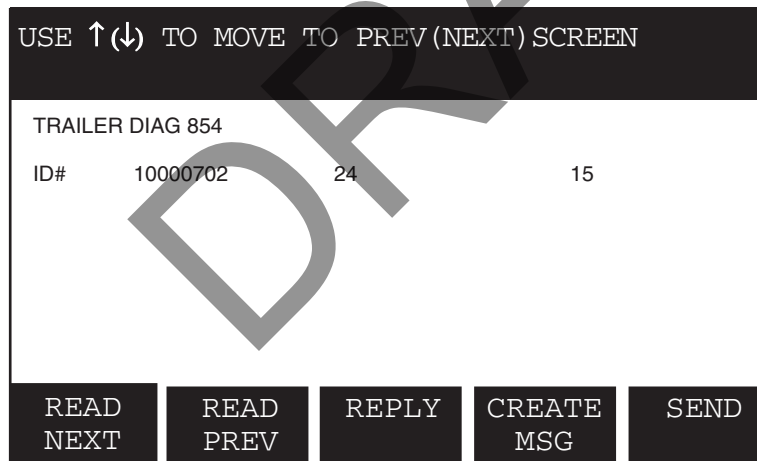


Tethered Asset Management Service Diagnostic Screen

From the previous tethered asset management service ID screen, press the **D** key to view the tethered asset management service Diagnostic screen. This screen may be helpful when performing diagnostics. The following illustration shows a tethered asset management service Diagnostic screen without a connected trailer.



When a trailer is connected, the tethered asset management service Diagnostic screen appears as seen in the following illustration.



A tethered asset management service ID number (10000702) appears, as well as other numerical information, such as the number of seconds since ignition ON (854), number of ID packets (24), and the number of seconds since the last packet was sent (15).

Getting the TT210 System Terminal ID (MVPc)

This section provides information on system verification for single trailer connections and disconnections.

Enable Tethered Asset Management Service and Auto Connect

Note

If tethered asset management service screens are not available, then the tethered asset management service option is not enabled.

To activate the mobile communications terminal for the tethered asset management service option and to enable Auto Connect, call the QES Customer Support. In the United States, call 800-541-7490; in Canada, call 800-863-9191.

Trailer Connection/Disconnection

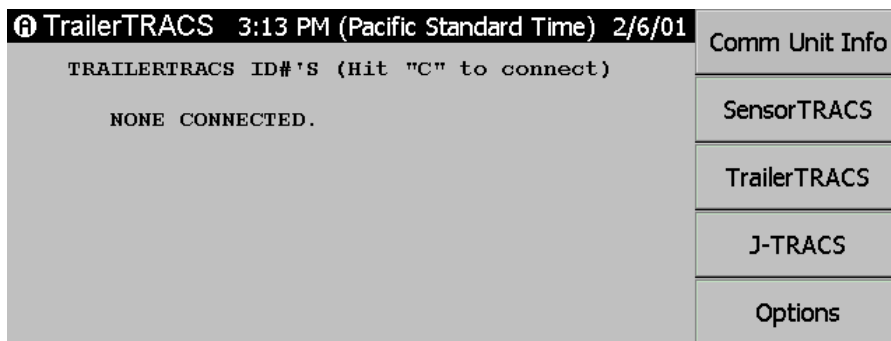
This section provides system verification information on trailer connections/disconnections.

Connection

1. Turn on the ignition.
2. Hook up the tractor to the trailer and connect the tractor’s 7-way pigtail.
3. Press the **Menu** key, then tap the **Vehicle Info** touch button, and then tap the **tethered asset management service** screen button, the tethered asset management service ID screen appears.

If the tethered asset management service screen does not appear, call the QES Customer Support. In the United States, call 800-541-7490; in Canada, call 800-863-9191.

If “Hit ‘C’ to connect” (see illustration below) appears, this means Auto Connect is not enabled. Call the QES Customer Support to enable Auto Connect. In the United States, call 800-541-7490; in Canada, call 800-863-9191. Have the mobile communications terminal serial number (unit address) available when you call.



If a trailer is not currently connected, the status is None Connected, as shown in the following figure.



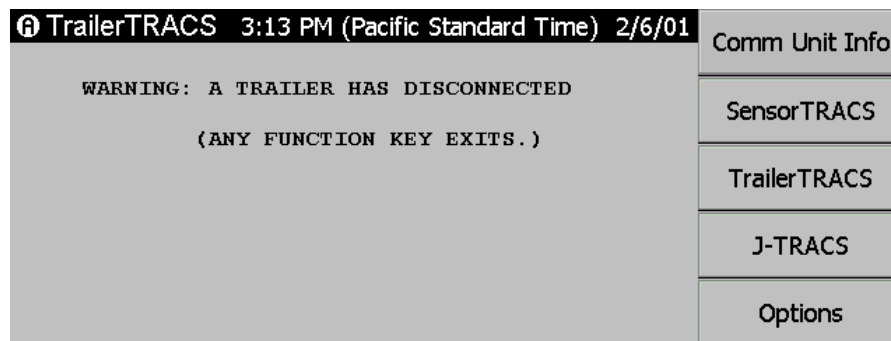
After the trailer is connected and the TrailerTRACS transmitter sends its ID to the mobile communications terminal, the trailer ID is updated on the MVPc as shown in the following screen.



Disconnection

1. Remove 7-way pigtail.
2. Leave ignition on.
3. Wait up to five minutes for disconnect message.

A disconnect message is sent when the tractor’s ignition is on and there has been no signal from the tethered transmitter for a preset time period. This will usually occur within five minutes.

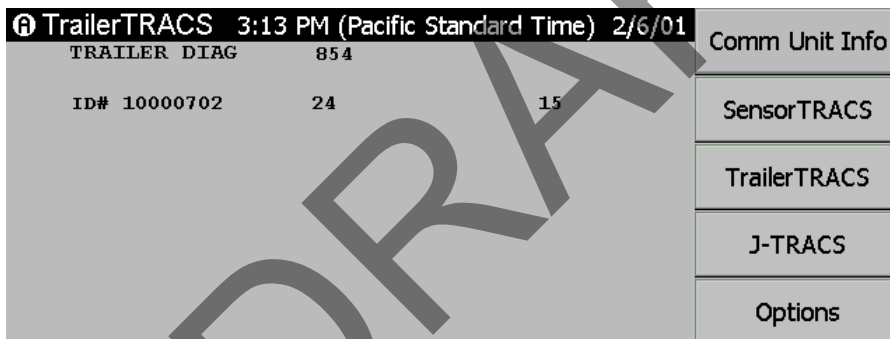


Tethered Asset Management Service Diagnostic Screen

From the previous tethered asset management service ID screen, press the **D** key to view the tethered asset management service Diagnostic screen. This screen may be helpful when performing diagnostics. The following illustration shows a tethered asset management service Diagnostic screen without a connected trailer.



When a trailer is connected, the tethered asset management service Diagnostic screen appears as seen in the following illustration.



A tethered asset management service ID number (10000702) appears, as well as other numerical information, such as the number of seconds since ignition ON (854), number of ID packets (24), and the number of seconds since the last packet was sent (15).

Ongoing Maintenance

Qualcomm recommends that, when you perform preventive maintenance on the tractor and trailer, you perform the following checks on the tethered system.

Maintaining the Tethered System on Tractors

Do the following to ensure optimum system performance on the tractor:

- Secure cables from movement.
- Cover any exposed cables with convoluted tubing.
- Inspect, clean, and apply dielectric grease to all 7-way connection points.
- Verify that the 7-way cord is free from cuts and abrasions.
- Verify that voltage (12–24 V) on pin 7 at all 7-way connection points.

Maintaining the Tethered System on Trailers

Do the following to ensure optimum system performance on the trailer:

- Secure and cover any exposed cabling with convoluted tubing.
- Inspect, clean, and apply dielectric grease to all 7-way connection points.
- If necessary, open the face plate and clean the inside of the receptacle.

Troubleshooting

<i>Problem</i>	<i>Solution</i>
Connection:	
Will not connect to tractor.	1. Is Auto Connect enabled? 2. Check 5-amp fuse on the mobile communications terminal TTRACS wire.
Disconnection:	
Will not disconnect.	1. Disconnect tractor 7-way pigtail. 2. Turn key to the ON position (could take up to five minutes for the disconnect to occur).

System Verification Form

On the following page is the TT210 System Verification Form. You can make copies of this form and record important information concerning the trailer and the TT210 system.


Note

To access the information for the TT210 System Verification Form, you must use the TT210 Config Tool software.

TT210 SYSTEM VERIFICATION FORM		
Installer(s):	Date:	
Trailer Information		
Trailer ID:	Customer:	
Make:	Location:	
Model:	Terminal ID:	
Year:		
System Verification	Accessories/Options Installed	
Enter Trailer ID:	<input type="checkbox"/> Cargo Sensor	<input type="checkbox"/> TT210 System Mount (type):
Cargo Sensor: <input type="checkbox"/> Shows Loaded and Unloaded	<input type="checkbox"/> Door Sensor	<input type="checkbox"/> Antenna (type):
Door Sensor: <input type="checkbox"/> Shows Opened and Closed	<input type="checkbox"/> AUX Sensor	<input type="checkbox"/> Solar:
Aux Sensor: <input type="checkbox"/> Shows Opened and Closed	<input type="checkbox"/> 7-Way	<input type="checkbox"/> Other:
GPS Antenna Fix:		
Battery Voltage: _____	Note: TT210 will hibernate if there is no external power and the battery voltage is below 3.6 Volts.	
7-Way Power On: <input type="checkbox"/> Yes <input type="checkbox"/> No	Record Voltage: _____	
Solar Power On: <input type="checkbox"/> Yes <input type="checkbox"/> No	Record Voltage: _____	
Reefer Power On: <input type="checkbox"/> Yes <input type="checkbox"/> No	Record Voltage: _____	
Phone Signal Strength: Number of Bars: _____ <input type="checkbox"/> Analog <input type="checkbox"/> Digital		
Registration Status (must show registered):		
Omni Unit Shows Trailer Connected: Trailer ID _____		
Notes		
Checkout Completed		
Signature:	Date:	Time:
If you have any questions, contact QES Customer Support at 800-541-7490.		

TT210 System Verification Checklist

The following system verification checklist presents a quick and efficient way to proceed through the TT210 system verification process. While referring to the checklist, should a problem with the TT210 system be detected, refer to the [Diagnostic Flowchart—TT210 System Verification on page 15-3](#) and the [TT210 System Verification Procedure on page 15-5](#) for the complete system verification procedure.

r	<p>Connect the TT210 system terminal to a laptop with Configuration tool software installed. Launch TT210 Configuration tool . If the Health screen appears, proceed. If the trailer ID has not been configured, the Configuration tool will prompt you to do this.</p> <p>NOTE: When the Configuration Tool software is connected to a TT210 system terminal that does not have a set customer-supplied trailer ID, the following alert pops up: “The Trailer ID has not been set, would you like to set it now?” Set the trailer ID using the Configuration Tool software. Tap OK. When you tap OK, the Configure screen opens in the Configuration Tool software. (If you do not have the trailer ID, tap Cancel and the Health screen opens in the Configuration Tool software.)</p>
r	<p>Verify Cargo Sensor. Toggle the cargo sensor to verify it is functioning properly.</p> <p>NOTE: If the trailer is empty, hold a piece of cardboard approximately 6 inches from the cargo sensor. Confirm the correct cargo sensor Current State data changes from Empty to Loading or Loaded. If the trailer is loaded, toggle the cargo sensor by positioning it so it is not blocked. Confirm the correct cargo sensor Current State data goes from Loaded to Unloading or Empty.</p>
r	<p>Verify Door Sensor. Toggle the door sensor to verify it is functioning properly.</p> <p>NOTE: If the trailer door is closed, open it. Confirm the correct door sensor Current State data changes from Closed to Opening or Open. If the trailer door is open, close it. Confirm the correct door sensor Current State data goes from Open to Closing or Closed.</p>
r	<p>Verify Auxiliary Sensor. Toggle the auxiliary sensor, according to the design function, to verify it is functioning properly.</p>
r	<p>Verify GPS/Antenna. Confirm that the fix is either 3D (best) or 2D (good) and antenna is OK.</p>
r	<p>Verify Battery voltage. Battery should be in the 3.7V range. System hibernates when battery drops to 3.6V.</p> <p>NOTE: This verification must be done without external power applied to the TT210 system. If external power is applied, the battery voltage indicated on the Configuration Tool software’s Health screen will be the charger voltage, not the battery voltage.</p>
r	<p>If solar power is being used, verify Solar power. Battery should be charging and Ext. Power should indicate Solar between 4–9 volts.</p>
r	<p>Verify External Power. Values are either Solar, 7-Way, Reefer, or None.</p> <p>NOTE: Solar means the terminal is being powered by the solar panel, and a lightning bolt appears through the battery icon. 7-Way means the terminal is being powered by 7-way power, and a lightning bolt appears through the battery icon. None means the terminal is being powered by the battery pack.</p>
r	<p>Verify Phone signal strength. At least two signal bars should be present.</p>
r	<p>If this is a refrigerated trailer, verify Reefer status.</p>
r	<p>Verify Power Bus Modem/TTRACS. Confirm the TT210 ID is being transmitted via the 7-way.</p>
r	<p>Verify Power Bus Modem/TTRACS. Confirm the TT210 ID is being transmitted via the 7-way.</p>
r	<p>If no problems with the TT210 system were detected, the system verification is complete.</p>

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Component and Document Information

This appendix provides document control numbers (DCNs) and material control numbers (MCNs) for the different documents and TT210 system components referred to in this guide or considered additional useful information.

TT210 System Document Control Numbers

The following table lists DCNs for documents that are either referenced in this guide or that may be helpful while installing or using the TT210 system.

<i>Document Name</i>	<i>DCN</i>
<i>TT200/TT210 Configuration Tool Quick Reference</i>	80-J7595-1
<i>T2 Untethered TrailerTRACS™ Asset Management System 7-way Diagnostic Tool Installation and User's Guide ???</i>	80-J8050-1
<i>T2 Untethered TrailerTRACS™ Asset Management System Cargo Sensor Installation Guide???</i>	80-J1548-1
<i>T2 Untethered TrailerTRACS™ Asset Management System Cargo Sensor User's Guide???</i>	80-J4084-1
<i>T2 Untethered TrailerTRACS™ Asset Management System Parts Catalog???</i>	80-J6758-1

TT210 System Dry Van, Field Assembled Component Material Control Numbers

The following table lists the system component MCNs associated with dry van, field assembled components. CHANGES??

<i>System component</i>	<i>Latest MCN</i>
TT210 System Terminal Master Packs	
TT210 system terminal without Cargo Sensor (includes terminal, power/accessory cable, battery pack)	64-J6778-1
TT210 system terminal with Cargo Sensor (includes terminal, cargo sensor, power/accessory cable, battery pack)	64-J6778-2
TT210 system terminal with Dual Power <ul style="list-style-type: none"> • Cable Kit (65-J4023-13) • TT210 system terminal (10-J4089-2) • Battery Pack 	65-J6778-6
TT210 system terminal without Cargo Sensor (includes terminal, power/accessory cable, battery pack)	
TT210 system power/accessory cable assembly kit (internal wiring/standard dry van)	65-J4023-2
TT210 system power/accessory cable assembly kit (external wiring/T2MA23)	65-J4023-5
TT210 system power/accessory cable assembly kit (internal/dual power [7-way and <u>solar</u>])	65-4023-13
TT210 system power/accessory cable assembly	CV90-J1536-11 CV90-J1536-15
TT210 System Mounts	
TT210 System Miscellaneous Components	
Cargo sensor kit	65-J6946

<i>System component</i>	<i>Latest MCN</i>
Cargo sensor	CV90-J4016
Cargo sensor bracket	50-J6836
Swing Door Sensor Kit	65-J6928-1
Swing Door Sensor only (replacement)	65-J6928-2
Roll-Up Door Sensor Kit	65-53977-2
Roll-up Door sensor only (replacement)	65-53977-1
TT210 system terminal (non-solar)	10-J4089-1
TT210 system terminal (solar-capable)	10-J4089-2
Rechargeable battery pack	CV90-J4077
Stud plates, top and bottom	50-J4885
Stud plates, sides	50-J4886
Gasket	50-J4883
Flush cover plate	50-J6846
1" cover plate	50-J4884
TT210 7-way Tool Kit	65-J6738
7-way pigtail adaptor	364-45913-0001
TT210 system PSI tire pressure sensor kit	65-J7313-1
7-way junction box	750-47679-0961
Trailer exchange kit	65-J7105-1
TT210 system installation drill template	50-J8051-1

Fuse, automotive Mini at 32V 3A violet ROHS (Littlefuse Inc)	325-53230-0003
Fuse, automotive Mini at 32V 3A violet ROHS (Cooper Bussmann Inc)	325-53230-0003

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