

AA3233-002 Antenna with Subway Environment Modification Installation Guide

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WARNING TO USERS IN THE UNITED STATES

FCC RADIO FREQUENCY INTERFERENCE STATEMENT
47 CFR §15.105(a)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate RF energy and may cause harmful interference to radio communications if not installed and used in accordance with the instruction manual. Operating this equipment in a residential area is likely to cause harmful interference, in which case, depending on the regulations in effect, the user may be required to correct the interference at their own expense.

NO UNAUTHORIZED MODIFICATIONS
47 CFR §15.21

CAUTION: This equipment may not be modified, altered, or changed in any way without permission from TransCore, LP. Unauthorized modification may void the equipment authorization from the FCC and will void the TransCore warranty.

USE OF SHIELDED CABLES IS REQUIRED
47 CFR §15.27(a)

NOTE: Shielded cables must be used with this equipment to comply with FCC regulations.

TransCore, LP
USA

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Installation Instructions

Installation Instructions

This chapter describes how to install the AA3233-002 Antenna.

Installing the AA3233-002 Antenna with Subway Environment Modification

Note: Read all directions before installing the antenna. Make sure that all parts are present and all tools and materials are available.

Accessory Kit

The accessory kit contains the following items.

Accessory Kit Item	Quantity (each)
Paper drilling template	1
Large plastic bubble bag	1
Connector enclosure cover	1
Connector enclosure gasket	1
Neoprene sheet, closed, 1/8 in. thick	48
Shoulder screw, 10-32, 0.188 SL	12
Connector conduit, ST sealed	1
Conduit sealing locknut	1
Stud anchor, stainless steel, 3/8 in. x 3 in. long	6
Set screw, socket, cup 10-32, 3/4 in. long	

Required Tools and Supplies

Use the following tools and supplies to install the antenna:

- Safety goggles
- Power drill (hammer drill recommended)

- A 3/8-inch diameter x 3-inch long masonry bit
- Soft-jaw pliers for “N” type connector (*NSN 5120-00-624-8065, available from Jensen Tools, Inc., 7815 S. 46th Street, Phoenix, AZ 85044, 1 (800) 426-1194*)
- Torque wrench with in.-lb resolution
- Torque wrench with ft-lb resolution
- Phillips head screw driver with in.-lb torque wrench adapter
- A 3/8-in. socket head and open-end wrench with in.-lb torque wrench adapter
- A 9/16-in. open-end wrench with ft-lb torque wrench adapter
- 20-in. straight edge
- Six 3/8 inch-16 x 3-inch Trubolt Red Head Wedge Anchors
- Liquid thread locker
- Liquid-tight flexible electrical conduit (UL listed)
- Straight, insulated liquid-tight, 1-inch electrical conduit connector
- Concrete (if needed)
- Test tag and reader to verify tag operation

Installation Procedures

This section provides procedures for the following tasks:

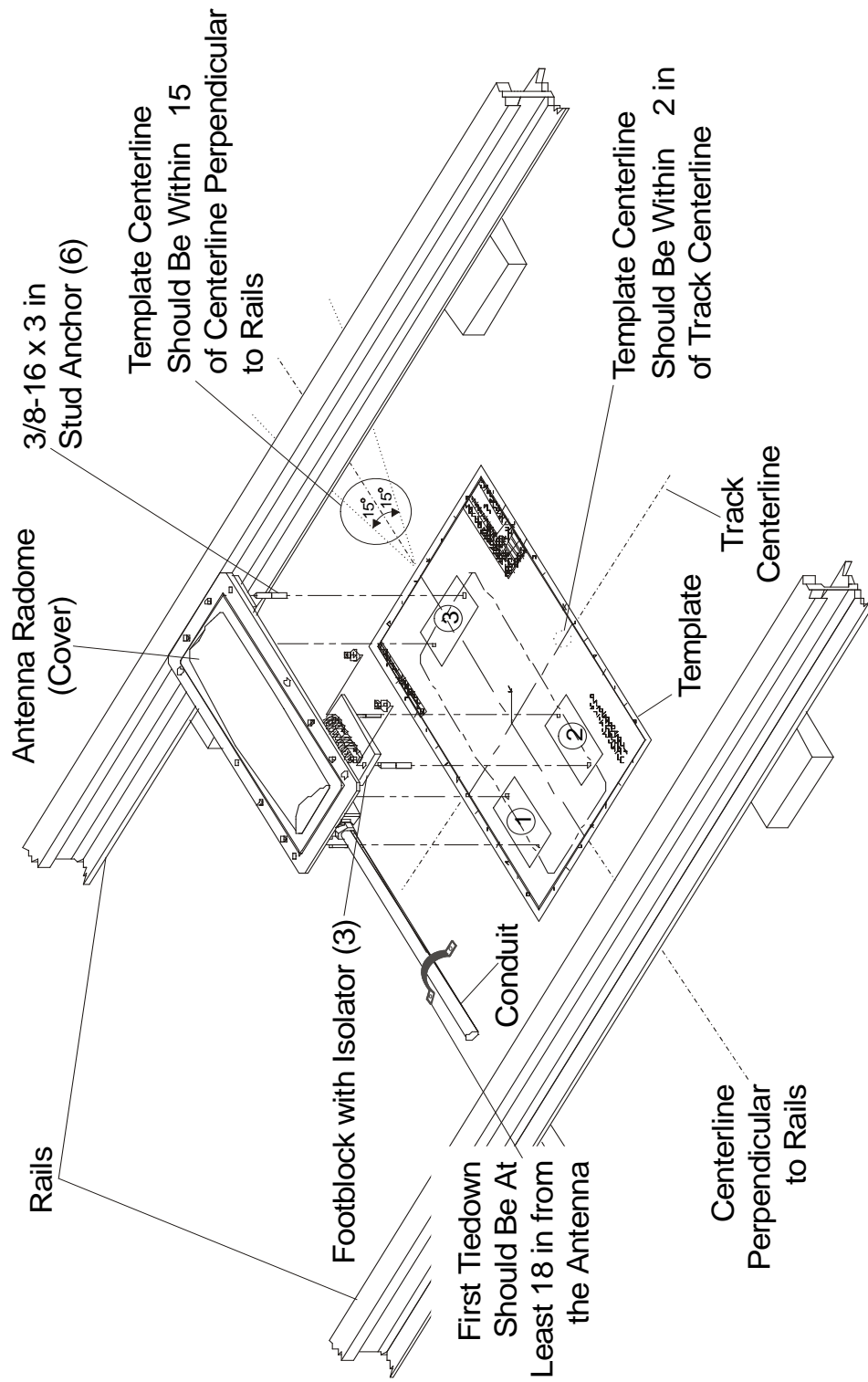
- Prepare the antenna site
- Secure the antenna hardware connections
- Fasten the antenna to the track bed

To install the AA3233-002 Antenna correctly, use these procedures in the order in which they are presented.

Preparing Antenna Site

Before you install the antenna, use the following instructions to prepare the site where the antenna is to be installed.

1. Identify the approximate antenna location on the track bed. The location should be centered between the rails. Mark parallel and perpendicular centerlines on the track bed (Figure 1-1).



Note: Remove template from concrete base before installing antenna

Figure 1-1 Antenna Configuration Showing Correct Placement and Orientation between Rails

2. Check that the track bed is sufficiently level by laying a 20-inches (50-centimeters [(cm)]) straight edge on the track bed perpendicular to the rails. This straight edge should align with the centerline of the two isolators (see Figure 1 for location of isolator) located near the connector and the centerline of the end isolator. Measure the distance from the track bed to the bottom of the straight edge. The track bed should not dip more than 1.75 inches (4.42 cm) below the straight edge at a distance of 5.0 inches (12.7 cm) from the centerline of footblock #3. Additionally, the track bed surface should be smooth (within 0.5 inches) over the lengths of the 15-inch (38.1-cm) and 5-inch (12.7-cm) segments (Figure 1-2).

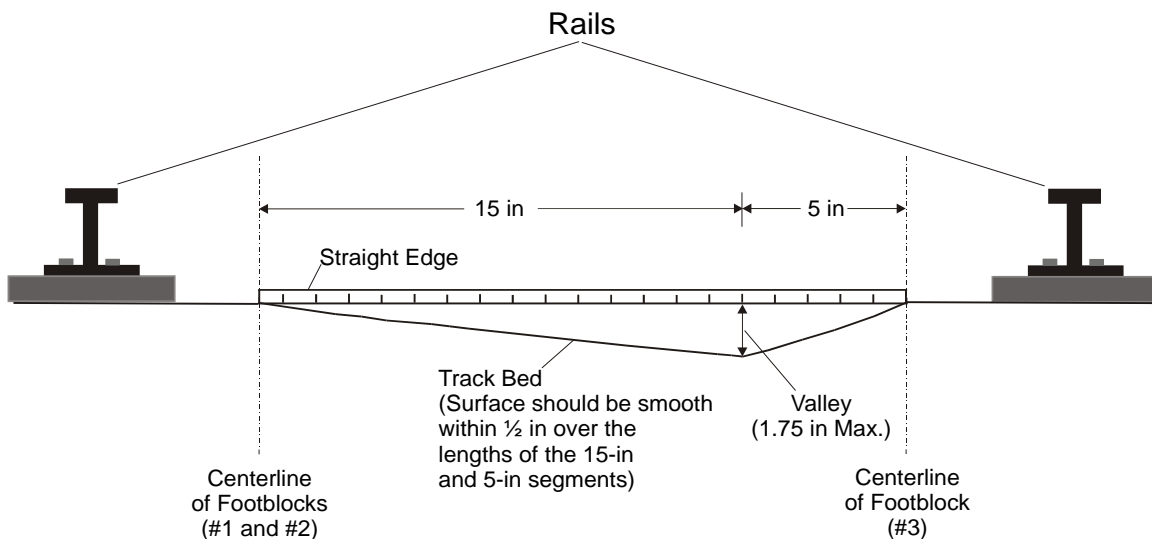


Figure 1-2 Test Configuration for Antenna Installation

3. Place the template on top of the intersecting centerlines. Center the antenna template — within 2 inches (5.1 cm) of track centerline — on the line that is parallel to the rails, then align it with the line drawn perpendicular to the rails (within 15 degrees).
4. If the track bed is out of specification from the measurements provided in step 3 of this section, grout the track bed base with up to 0.5 inches (1.3 cm) of grout replacement to bring it to specification. Allow sufficient time for the grout to cure before proceeding to the next step. Redraw the track bed centerlines if necessary.

Note: If track bed cannot be brought into the specification stated in step 2, change antenna location.

5. When the track bed base is within the requirements of step 2, stretch the template across any “valley” (as shown in Figure 1-2) to get the proper center-to-center spacing between the footblocks. Use the template to mark and drill six 0.375-inch (0.95-cm) wide x 3-inch (7.6-cm) deep holes in the concrete.

Check that the template centerlines are aligned with the track bed centerlines (see step 2 of this section).

6. Clear the concrete dust from the wedge anchor holes.

Securing Antenna Hardware Connections

After you have prepared the site as specified in the previous section, follow the steps below to secure the hardware connections.

1. Place the antenna upside down on its cover (radome facing down) on top of the template to protect the cover from being scratched.
2. Remove the locking nut and plastic washer from the conduit connector. Insert connector through the 1-inch conduit connector onto the end of the connector enclosure cover. Replace the washer and nut and tighten the conduit enclosure connector nut to torque of 28 ft-lb (Figure 1-3).

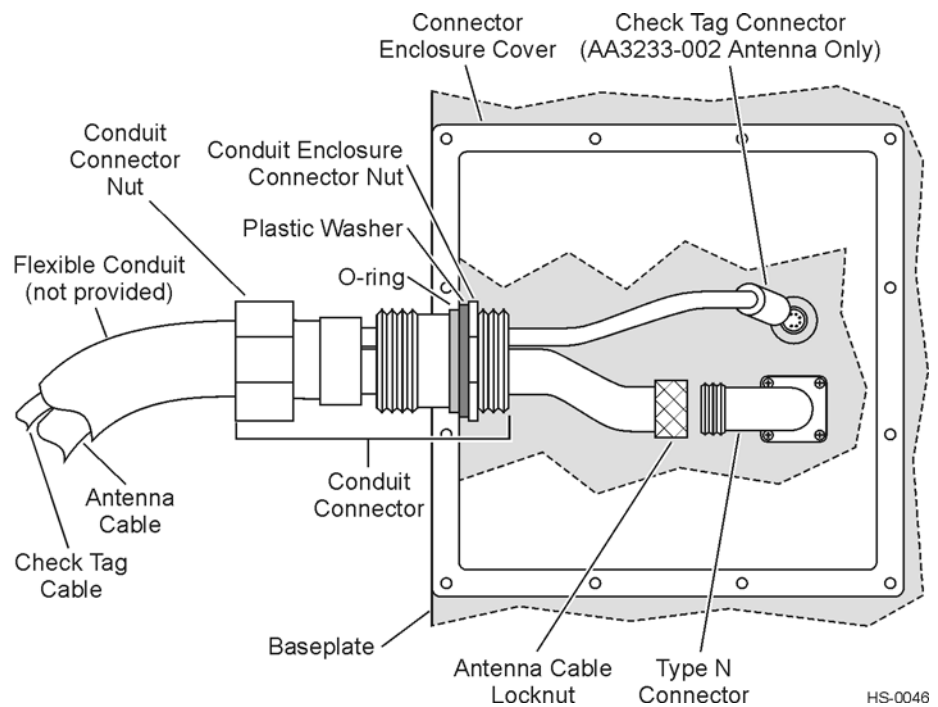


Figure 1-3 Antenna Hardware Connections

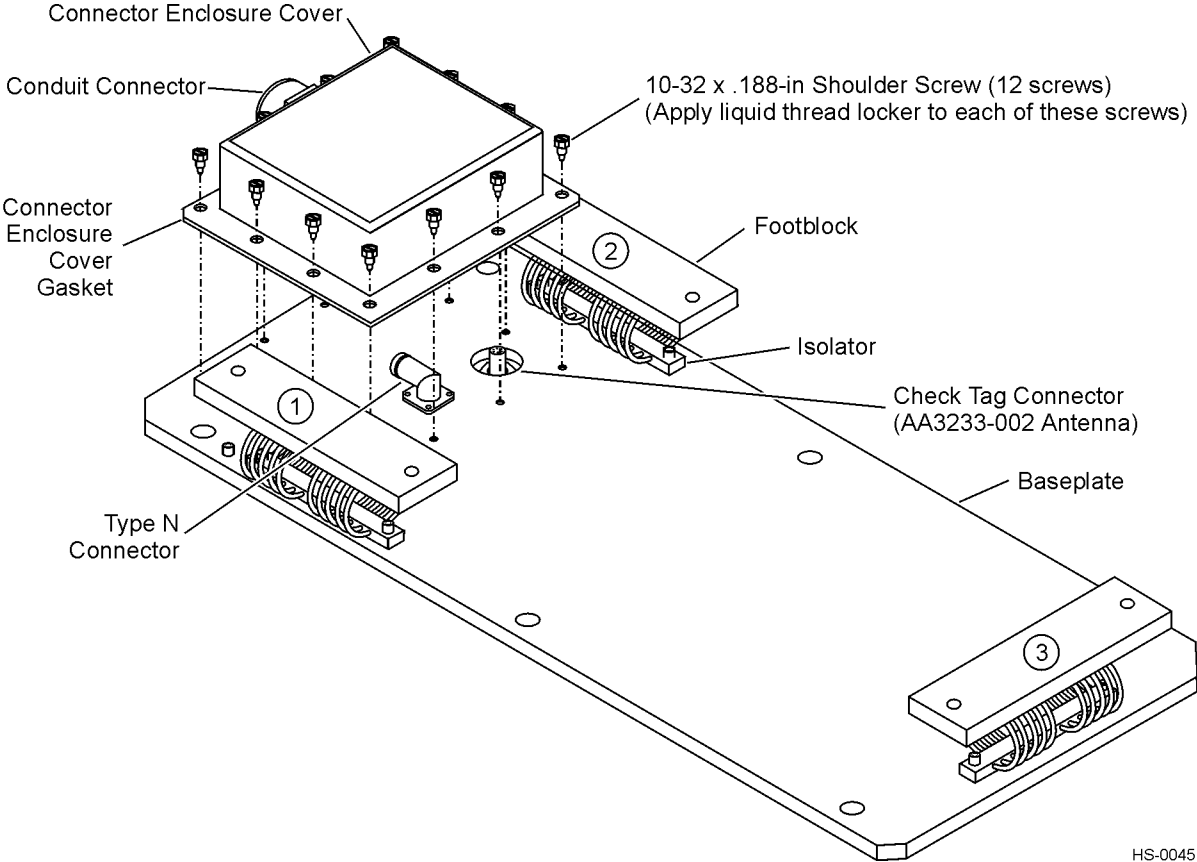
3. Insert the flexible conduit into the 1-inch conduit connector, and tighten the conduit connector nut to torque of 12 ft-lb (Figure 1-3). The flexible conduit is now secured to the connector enclosure cover.
4. Insert the antenna cable and check tag cable from the reader into the flexible conduit. Slide the cables through the flexible conduit (Figure 1-3).

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5. Pull the antenna cable through the hole in the connector enclosure cover and out of the connector enclosure cover until the cable end extends approximately 1 foot (30.5 cm) beyond the cover.
6. Attach the antenna cable to the type N connector located on the antenna baseplate by first tightening the conduit locknut securely by hand and then using the soft-jaw pliers to tighten the locknut an additional one-half turn (Figure 1-3). Attach the antenna cable to the reader.
7. Attach the check tag cable to the check tag connector located on the antenna baseplate by inserting then twisting the connector 1/4 turn to right to lock the connector. Attach the check tag cable to the reader.
8. Check that the antenna is working properly by reading a check tag. This step assumes that the installer is using and is familiar with an AI1200 Reader.
9. Ensure that the reader is switched on and in data mode (#00). Enter command #8110 to enable the check tag.

Reader response: #===== 00

Switch off reader.
10. When you determine that the antenna and check tag are functioning properly, turn the antenna upside down on top of the template to protect the cover from being scratched. Attach the connector enclosure cover to the connector baseplate using twelve 10-32 x .188-inch shoulder screws (Figure 1-4).
11. Apply liquid thread locker to all screw threads. Tighten each screw until its shoulder bottoms out against the baseplate and secure to torque of 20 in-lb.



HS-0045

Figure 1-4 Underside of Antenna Showing Antenna Components and Footblocks with Isolators

Fastening Antenna to Track Bed

After you have secured the antenna connections as specified in the previous section, follow the steps below to fasten the antenna to the track bed.

1. Lift the antenna from on top of the template.
2. Remove the template from the antenna location and place antenna rightside up (radome facing up) on template.
3. Assemble the washer and nut on the wedge anchor stud so that the nut rests below the chamfered head.
4. Place anchor in hole. Strike top sharply with a hammer to drive the anchor into the hole (Figure 1-5). Tighten nut to torque of 25 ft-lb.



HW-0015

Figure 1-5 Placing Stud Anchor into Hole



Caution

The stud anchors must not protrude more than 0.5 inches (1.3 cm) through the foot-block holes, that is, not more than 1 inch (2.5 cm) above the concrete surface.

5. Remove nuts and washers from stud anchors.
6. Place the antenna over the stud anchors.
7. Replace the nuts and washers on the anchor studs, apply liquid thread locker to threads, and tighten nuts until they are seated.
8. Secure the nuts to torque of 25 ft-lb.
9. Check that the antenna is anchored firmly to the concrete.

10. If the 1/4-20 set screws or locknuts have been removed or loosened from the isolators or baseplate, replace them and secure to torque of 40 in-lb.
11. Fasten the radio frequency coaxial cable to reader.
12. Fasten conduit to track bed using tiedowns. The first tiedown should be located at least 18 inches (45 cm) from the antenna (Figure 1-1) to allow the isolators to move freely.

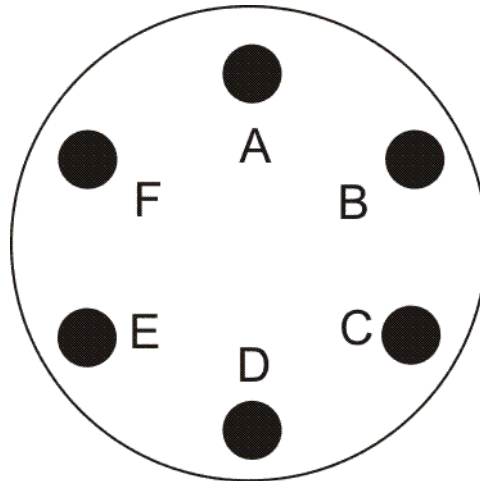
Check Tag Connector

Check Tag Connector

This chapter describes the check tag connector.

Check Tag Connector

This section shows the pin-out designations for the check tag connector (Figure 2-1).



HW-0381

Figure 2-1 Check Tag Connector Pin-Outs

Table 2-1 lists the pin-out signals and descriptions.

Table 2-1 Pin-Out Signal Descriptions

Pin	Color (reference only)	Pair	Description
A	White/blue stripe	1	Primary power
B	Blue/white stripe	1	Ground
C	Bare	1	Shield (ground)
D	Orange/white stripe	2	Check tag enable
E	White/orange stripe	2	Check tag enable (return)
F	Bare	2	Shield (ground)

