Tri-Americas™ LNB Installation

TracVision® HD7

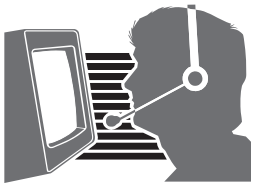
These instructions explain how to install the Ka/Ku Tri-Americas LNB on a TracVision HD7 system. Complete instructions on how to use the system are provided in the User's Guide.

Installation Steps

Who Should Install the LNB?

To ensure a safe and effective installation, KVH recommends that a KVH-authorized marine technician perform this procedure. KVH-authorized technicians have the tools and electronics expertise necessary to install the LNB. To find a technician near you, visit www.kvh.com/wheretogetservice.

Technical Support



If you need technical assistance, please contact KVH Technical Support:

Phone: +1 401 847-3327
E-mail: techs@kvh.com
(Mon.-Fri., 9 am - 6 pm Eastern)
(Sat., 9 am - 2 pm Eastern)

54-0674 Rev. A

1 Remove the Antenna and Get Tools

CAUTION

For your own safety, be sure to disconnect power from all wired components before performing this procedure.

IMPORTANT!

Always lift the antenna by the baseplate and never by the radome or any portion of the internal antenna assembly (see Figure 1).

a. Before you begin, record the system's current network settings. You might need to be re-enter these settings later. Refer to the TracVision HD7 Installation Guide or User's Guide for complete details.

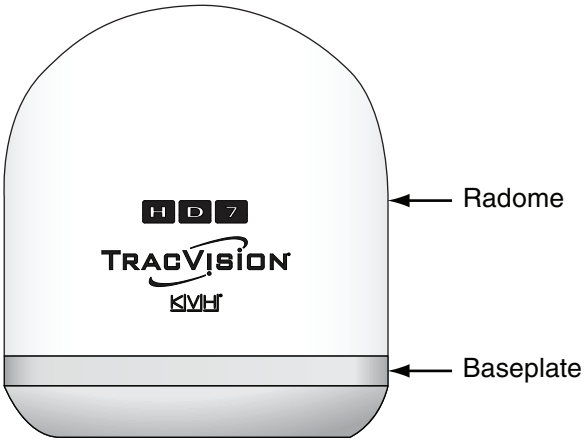
b. Remove the antenna from the vessel and move it to a location suitable for service.

NOTE: *This procedure requires handling exposed electronic parts and components, and might take over two hours to complete. Ensure that you take the necessary grounding precautions before handling, and perform this procedure in an adequate workspace.*

c. Gather the tools and materials listed below. You will need these items to complete the installation.

- #1 Phillips screwdriver
- #2 Phillips screwdriver
- 9/32" open-end wrench
- 5/16" nut driver
- Cutting pliers
- 2.5 mm ball-end hex wrench (supplied)
- 9/64" ball-end hex wrench (supplied)
- 3/32" ball-end hex wrench (supplied)
- 1/16" hex wrench (supplied)
- 7/64" hex wrench (supplied)
- Needle-nose pliers
- Ruler, or equivalent
- Scribe, or equivalent

Figure 1 Antenna Radome/Baseplate



2 Remove the Radome

Follow the instructions below to remove the radome.

Standard Dome Version

a. Using a #2 Phillips screwdriver, remove the six #10-32 screws securing the radome to the baseplate (see Figure 2).

b. Carefully lift the radome straight up off the antenna. Then set it aside in a safe place.

TIP: *If you keep the radome topside, secure it with a lanyard to prevent it from falling overboard.*

35" (90 cm) Dome Version

a. Using a #2 Phillips screwdriver, remove the eight #10-32 screws securing the radome to the baseplate (see Figure 3).

b. Carefully lift the radome straight up off the antenna. Then set it aside in a safe place.

TIP: *If you keep the radome topside, secure it with a lanyard to prevent it from falling overboard.*

Figure 2 Radome Screws (standard dome version)

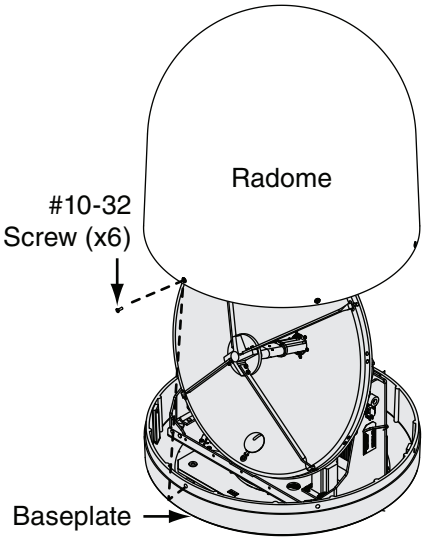
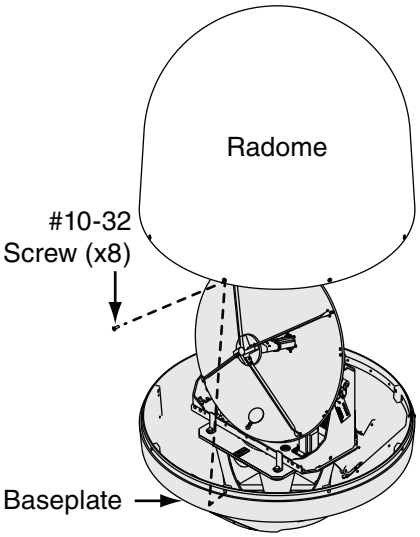


Figure 3 Radome Screws (35" dome version)



3 Disconnect the RF Cables

Follow the instructions below to disconnect the RF cables from the LNB.

a. Using cutting pliers, cut the tie-wrap securing cables to the bottom of the LNB (see Figure 4).

b. Using a Phillips screwdriver, remove the screw and nut securing the P-clip on the bottom of the LNB (see Figure 4).

c. If your LNB includes a connector plate (see Figure 5), cut and remove the tie-wrap securing it in place. Then remove the plate.

d. If your LNB does not include a connector plate, using cutting pliers, cut the tie-wrap securing the three RF cables on the top of the LNB (see Figure 6).

e. Using 7/16" open-end wrench, disconnect the four RF cables from the LNB (see Figure 5 or Figure 6).

Figure 4 Tie-wrap/P-clip Removal

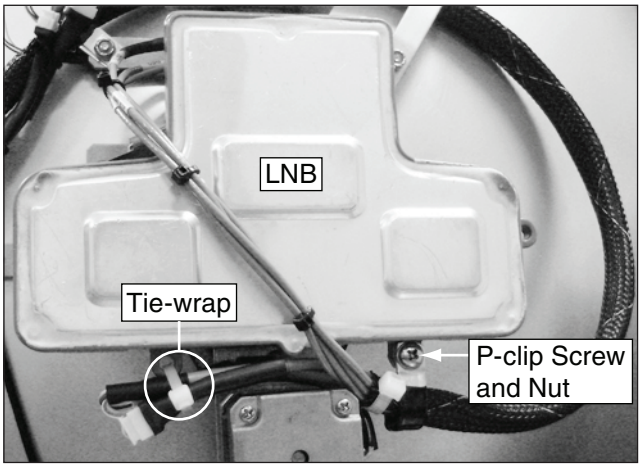


Figure 5 RF Cables/Connector Plate/Tie-wrap

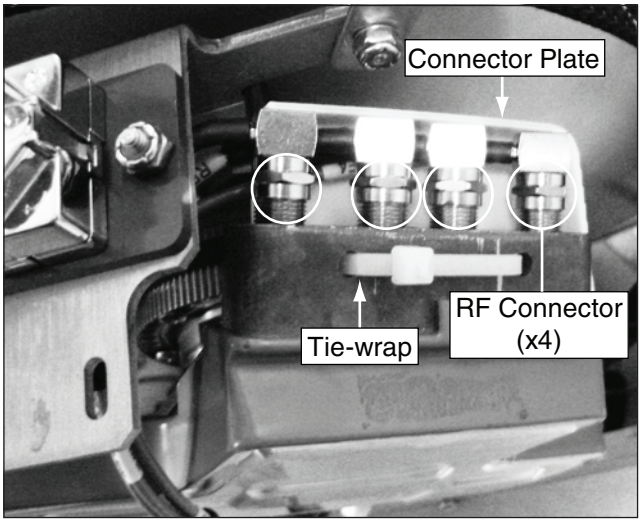
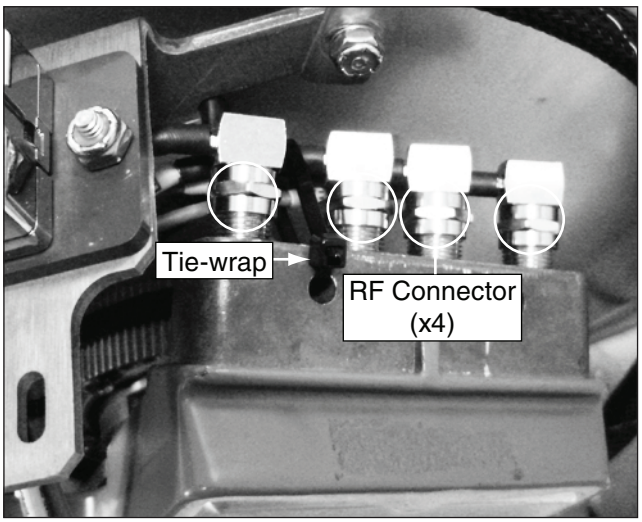


Figure 6 RF Cables/Tie-wrap



4 Remove the Lower Feed/LNB

Follow the instructions below to extract the LNB assembly.

a. For reference later, depress the belt to note the current belt tension (see Figure 8).

b. Using a 2.5 mm ball-end hex wrench, loosen the four hex screws securing the motor in place (see Figure 7).

c. Slide the motor to relieve belt tension. Then unfasten the belt from the reflector's hub and the motor pulley (see Figure 8). Set the belt aside in a safe place.

Figure 7 Motor Screws

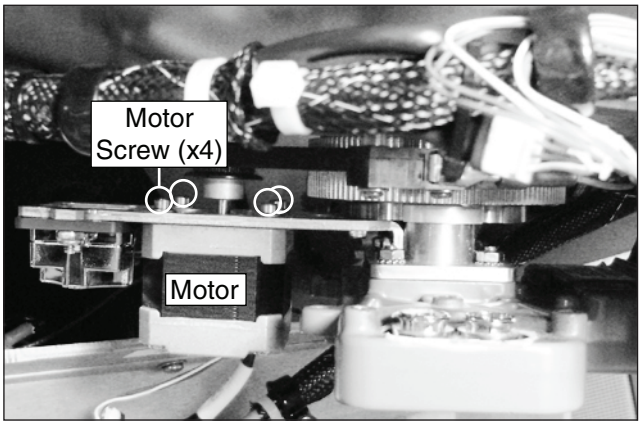
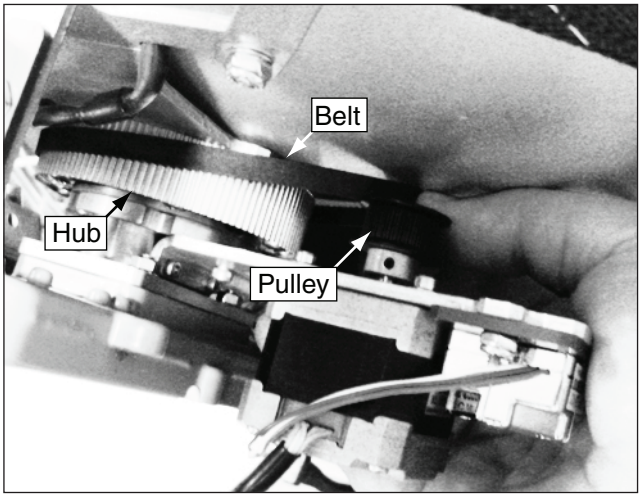


Figure 8 Motor Belt



4 Continued Remove the Lower Feed/LNB

d. While holding the LNB assembly, fully loosen the four #8 hex screws on the front of the reflector using a 9/64" ball-end hex wrench (see Figure 9).

e. Using needle-nose pliers, extract the four hex screws.

f. Carefully pull the LNB assembly straight backward.

IMPORTANT!

To avoid damage, extract the bracket straight backward; do not move the assembly from side to side.

g. Using a 3/32" ball-end hex wrench, remove the two #4 hex screws securing the lower feed to the motor bracket (see Figure 10).

h. Using a 7/64" ball-end hex wrench, remove the #6 hex screw securing the lower feed/LNB to the motor bracket (see Figure 10).

i. Remove the lower feed/LNB and the lower feed gasket (shown in Figure 13 on page 9) from the motor bracket.

Figure 9 Hex Screws on Reflector

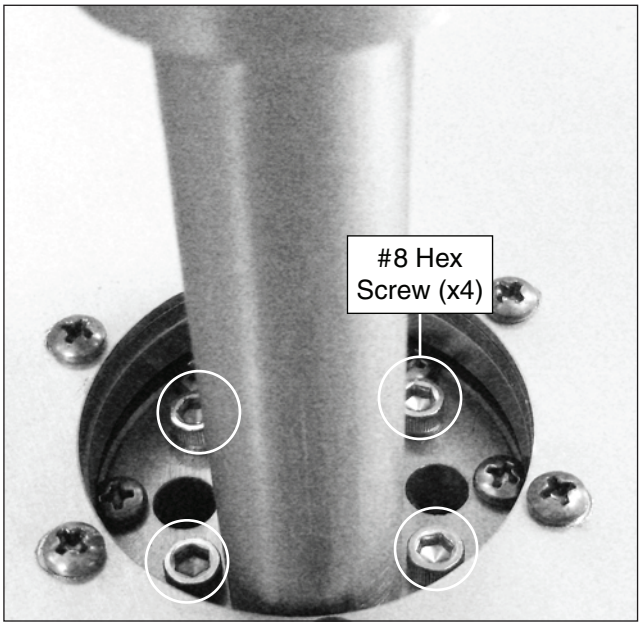
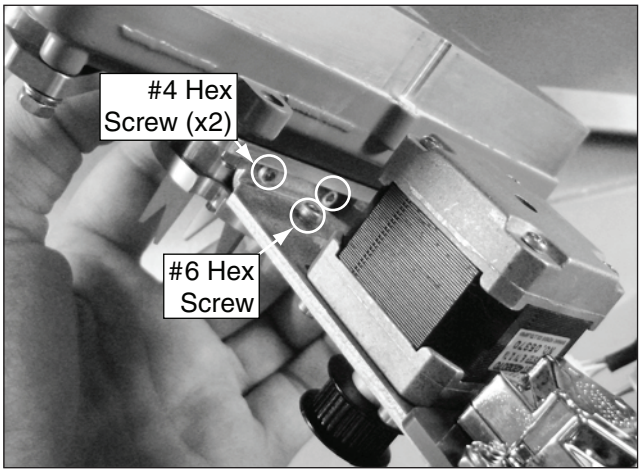


Figure 10 Lower Feed Screws



5 Install the New Lower Feed/LNB

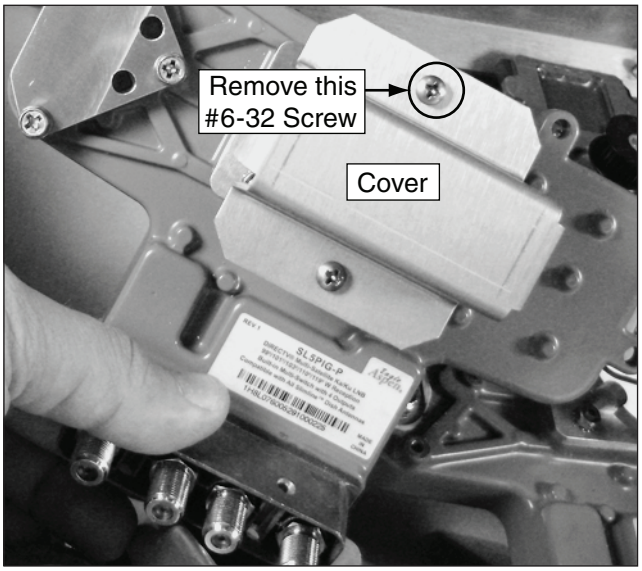
Follow the instructions below to install the new lower feed.

a. Using a #2 Phillips screwdriver, remove the #6-32 screw securing the lower feed cover (see Figure 11).

NOTE: *Leave the other cover screw installed for now.*

> ***IMPORTANT!***
>
> To avoid damage, handle the new lower feed/cover extremely carefully once you remove the screw. If you exert pressure on the cover, the cover might pivot and break the phase cards on the lower feed.

Figure 11 Lower Feed Cover Screw



5 Continued Install the New Lower Feed/LNB

b. Using a 3/32" ball-end hex wrench, carefully secure the new lower feed/LNB onto the motor bracket with two supplied #4 hex screws (see Figure 12).

c. Using a 7/64" ball-end hex wrench, secure the new lower feed onto the motor bracket with one supplied #6 hex screw (see Figure 12).

d. Remove the second lower feed cover screw (see Figure 11 on page 8). Then remove the cover.

IMPORTANT!

To avoid damage, handle the new lower feed/LNB extremely carefully once you remove the protective cover (see Figure 11 on page 8). All three phase cards on the new lower feed/LNB must remain intact to complete the installation.

e. Press the supplied lower feed gasket into the grooves on the lower feed (see Figure 13).

Figure 12 Lower Feed Screws

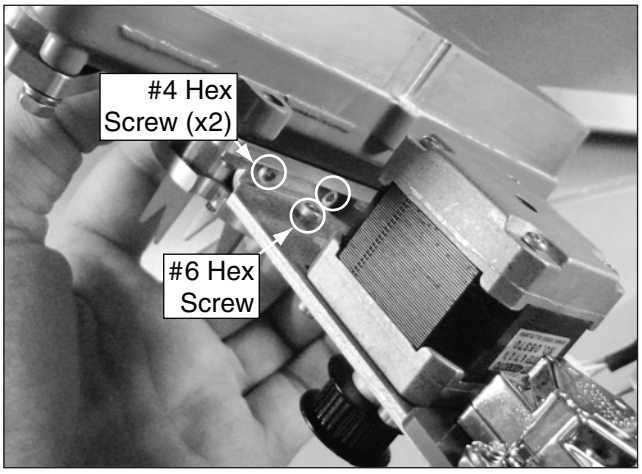
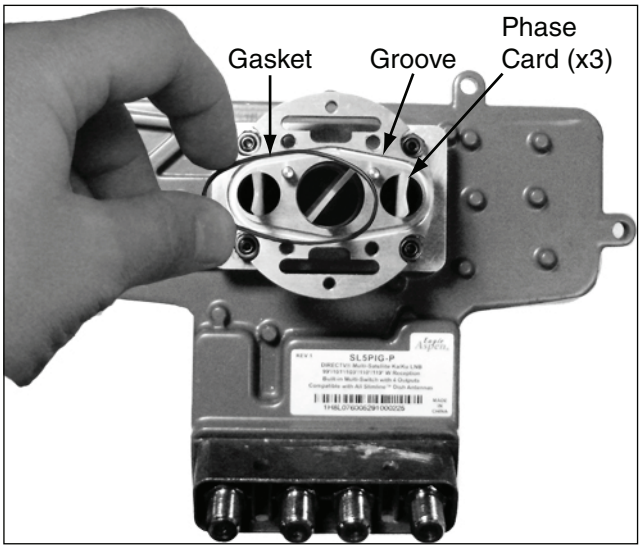


Figure 13 Phase Cards



6 Mount the LNB Assembly

Follow the instructions below to mount the LNB assembly onto the rear of the reflector.

a. Note the position of the mounting pins (see Figure 14)and the LNB assembly's mounting orientation (see Figure 15).

b. Rotate the upper feed (see Figure 16) to align the LNB mounting pin holes with the mounting pins on the LNB assembly (see Figure 15).

IMPORTANT!

To avoid damage, handle the LNB assembly extremely carefully. All three phase cards must remain intact to complete the installation.

c. Place the skew belt over the reflector hub (see Figure 15)

d. Slowly insert the motor pulley inside the belt loop, while aligning the phase cards and mounting pins with the mounting holes (see Figure 15).

Figure 14 Mounting Pins

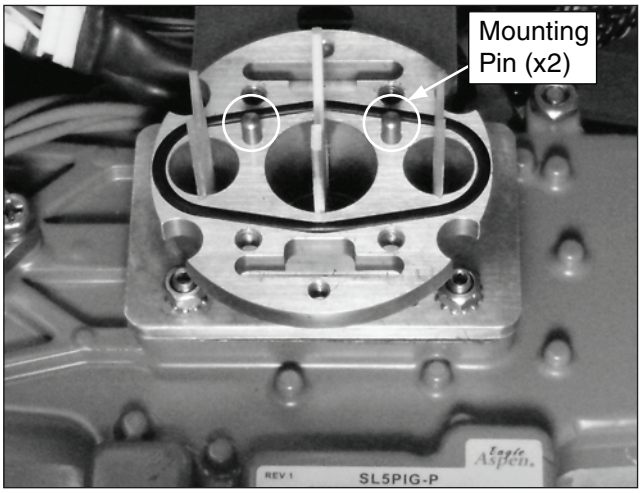


Figure 15 Assembly Mounting

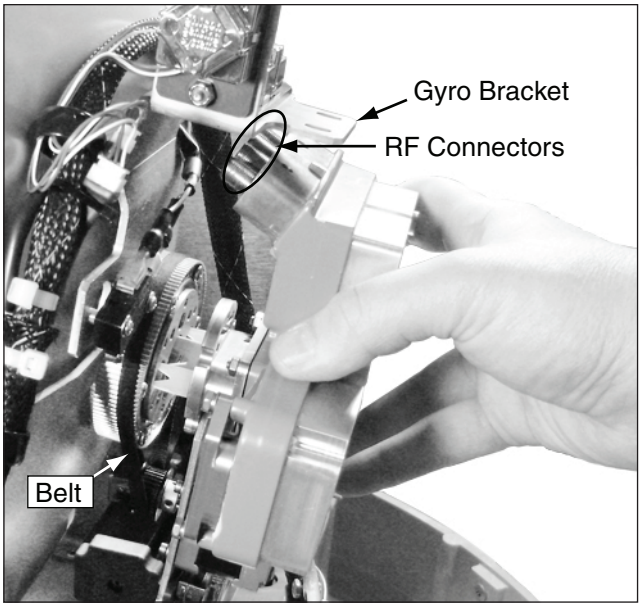
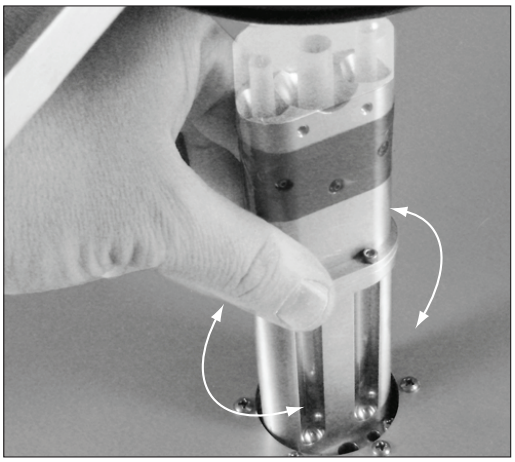


Figure 16 Upper Feed Rotation



6 Continued Mount the LNB Assembly

e. Orient the LNB assembly and upper feed to ensure the RF connectors on the LNB will be facing upward (approximately aligned with the gyro bracket), while maintaining the mounting hole alignment with the pins and phase cards (see Figure 17).

f. Gently press the LNB assembly straight into the rear of the reflector, ensuring the phase cards and mounting pins remain aligned. These cards fit snugly into the mounting holes; some friction is expected (see Figure 17).

IMPORTANT!

To avoid damage, be sure to press the phase cards straight into the mounting holes. Do not apply lateral pressure or shimmy the assembly into place.

g. While holding the LNB assembly in place, insert four supplied #8 hex screws into the mounting holes on the front of the reflector (see Figure 18).

h. Using a 9/64" ball-end wrench, tighten the screws in a cross pattern.

Figure 17 Assembly Mounting

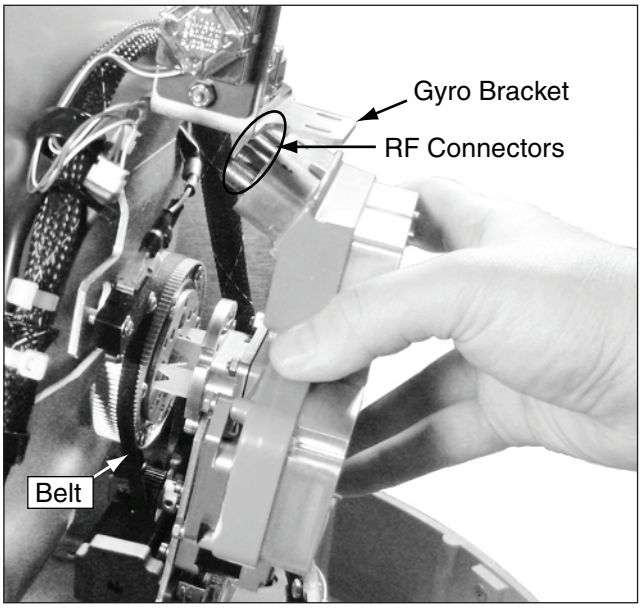
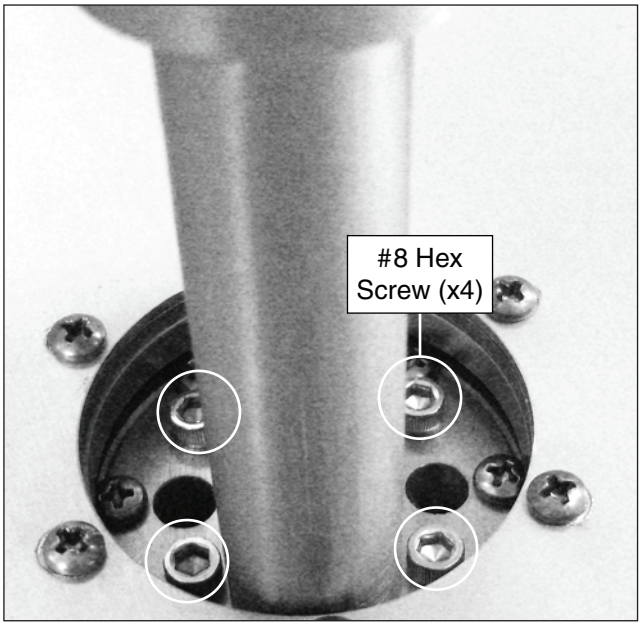


Figure 18 Hex Screws on Reflector



7 Set the Belt Tension

Follow the instructions below to set the motor belt tension.

a. Adjust the skew motor on the bracket to achieve moderate belt tension. Using a 2.5 mm ball-end hex wrench, tighten the motor screws to secure the motor in place

b. Using a scribe, mark the resting location of the belt against the reflector midway between the hub and the pulley (see Figure 19).

c. Using a scribe and ruler, measure 1/8" outward from the scribe mark you just created (see Figure 19). This marks the desired belt deflection distance.

d. Using the supplied tension meter, secure the belt at the midway point. Then pull the belt outward using 2 lbs of force (see Figure 20).

e. Reference the scribe marks in relation to the belt position. Adjust the motor position, as required, to ensure the belt deflection is 1/8" using 2 lbs of force.

f. Using a 2.5 mm ball-end hex wrench, fully tighten the four motor screws (see Figure 21).

Figure 19 Belt Tension Adjustment

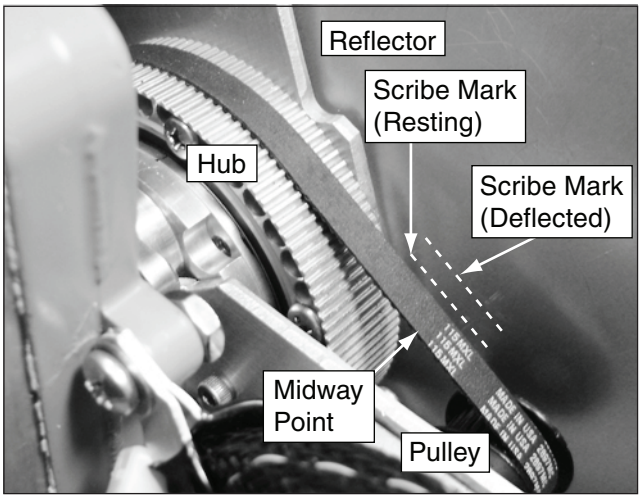


Figure 20 Belt Tension Measurement

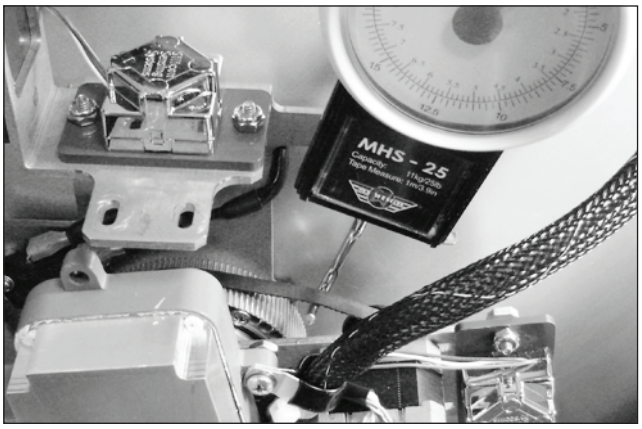
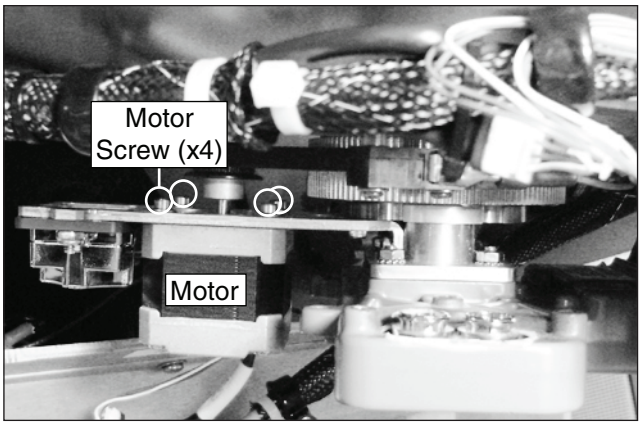


Figure 21 Motor Screws



8 Reconnect and Dress Cables

Follow the instructions below to reconnect and dress the cables.

a. Using a 7/16" open-end wrench, connect and tighten the RF1, RF2, RF3, and RF4 cables to the LNB exactly as shown in Figure 22 and Figure 23. Tighten the RF1 cable first. Then tighten each of the remaining connectors, ensuring the wire of each connector contacts the flat of the previous connector when tightened.

b. Place the supplied connector plate onto the LNB, as shown in Figure 24.

c. Firmly secure the connector plate onto the LNB by inserting a supplied thin tie-wrap through the LNB mounting holes (shown in Figure 23).

d. Rotate the LNB assembly to ensure there is no contact between the connector plate and the limit switch cable (see Figure 24). If there is contact, adjust the RF cables and connector plate to maximize clearance. Then retighten the tie-wrap to resecure the connector plate.

e. Trim and remove the excess tie-wrap length.

Figure 22 RF Connector Orientation

Figure 23 LNB Cables/Mounting Holes

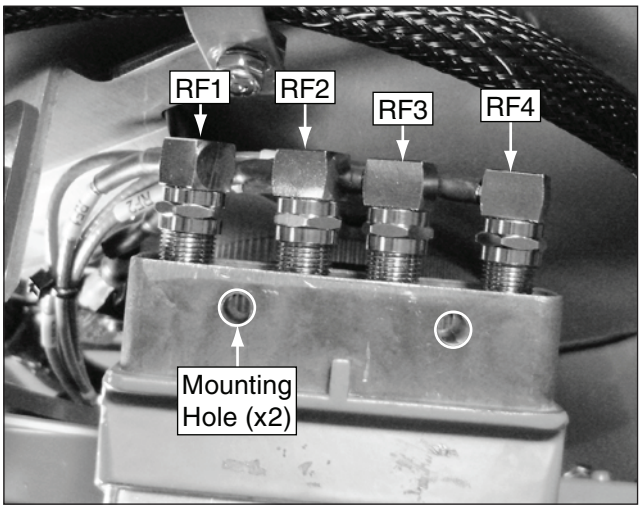
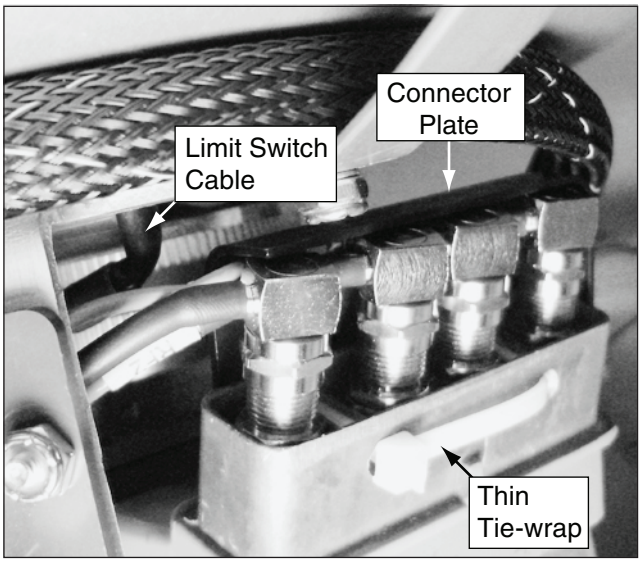


Figure 24 Connector Plate Mounting



8 Continued Reconnect and Dress Cables

f. Tuck the motor cable and gyro wires between the LNB and the motor (see Figure 25).

g. While aligning the end of the cable braid with the right edge of the motor, tuck the cable harness between the LNB and motor (see Figure 25)

h. Secure the cable harness to the LNB with the P-clip you removed earlier, and a supplied #8-32 screw, washer, and nut (see Figure 25). Ensure the P-clip is mounted on the inside of the LNB (facing the reflector).

i. Using a supplied tie-wrap, secure the cable harness and gyro wires to the LNB, as shown in Figure 25

j. Route the cables around the LNB, as shown in Figure 26.

k. Loosely secure the RF cables to the LNB plate, as shown in Figure 27.

l. Rotate the LNB assembly and ensure the cables do not contact the limit switch.

m. Tighten the tie-wrap securing the RF cables to the LNB plate (see Figure 27).

Figure 25 P-clip/Tie-wrap Mounting

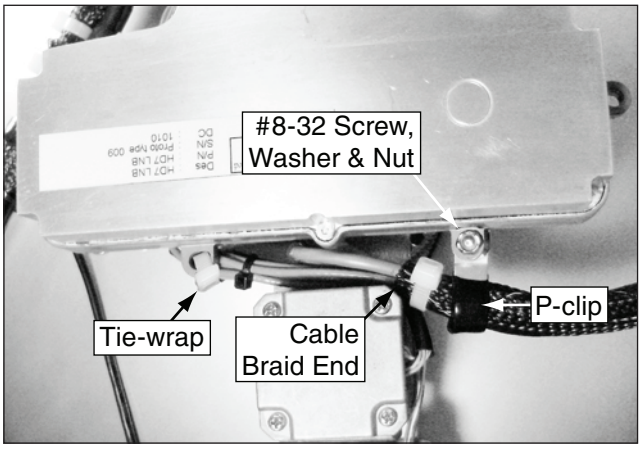


Figure 26 Cable Harness/Cable Routing

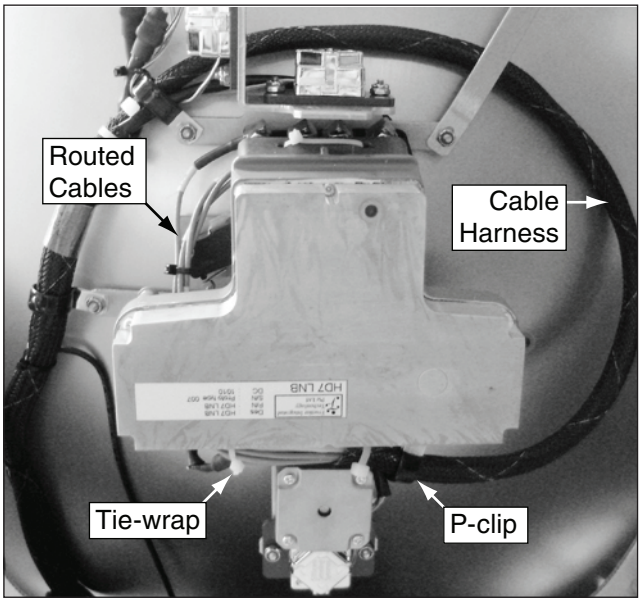
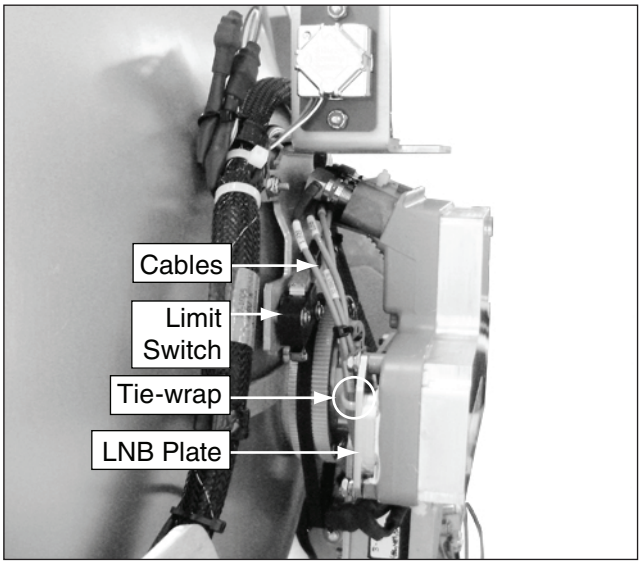


Figure 27 LNB Plate Tie-wrap



9 Mount the Hall Effect Magnet

Follow the instructions below to mount the Hall Effect magnet fixture.

a. Mount the supplied magnet fixture onto the gyro bracket by inserting the fixture studs from underneath and through the gyro bracket mounting holes, as shown in Figure 28.

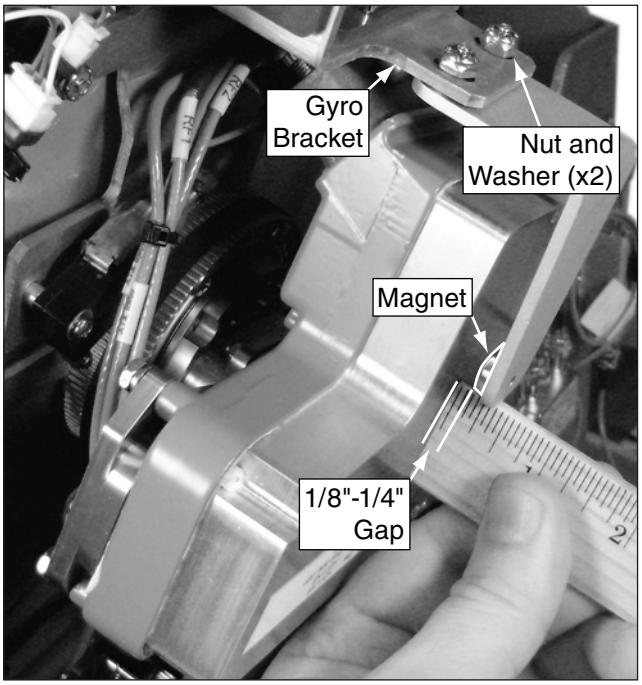
b. Insert and hand-tighten two supplied nuts and washers onto the fixture studs, as shown in Figure 28.

c. Using a ruler, or equivalent, distance the magnet, located on the magnet fixture, approximately 1/8" - 1/4" from the LNB (see Figure 28).

d. While holding the fixture in place, tighten the nuts and washers using a 5/16" nut driver (see Figure 28).

e. Remeasure the gap between the magnet and the LNB. Readjust and retighten the fixture, as necessary, to achieve a 1/8" - 1/4" gap (see Figure 28).

Figure 28 Hall Effect Magnet Fixture Mounting



10 Mount the Counterweight

Follow the instructions below to mount the counterweight and reinstall the radome.

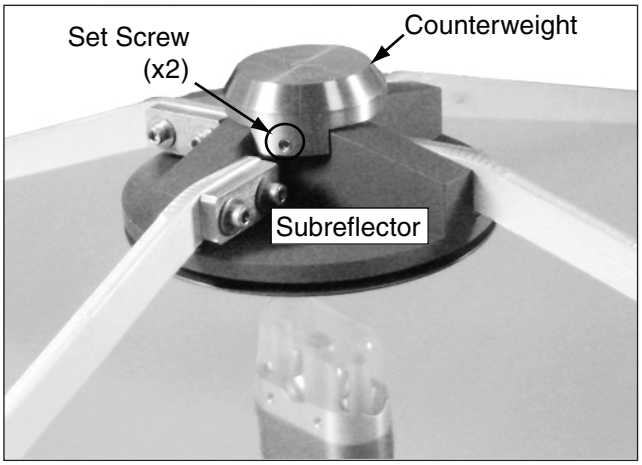
a. Slowly tilt the reflector so that it points nearly straight upwards (see Figure 29).

b. Peel off the release liner from the double-sided adhesive tape on the underside of the counterweight.

c. Mount the supplied counterweight onto the subreflector, as shown in Figure 29.

d. Using a 1/16" hex wrench, tighten the two set screws to secure the counterweight in place (see Figure 29).

Figure 29 Counterweight/Set Screws



11 Replace the Radome

Standard Dome Version

Reinstall the radome. Then secure it in place using the six #10-32 screws you removed earlier (see Figure 30).

35" (90 cm) Dome Version

Reinstall the radome. Then secure it in place using the eight #10-32 screws you removed earlier (see Figure 31).

Figure 30 Radome Screws (standard dome version)

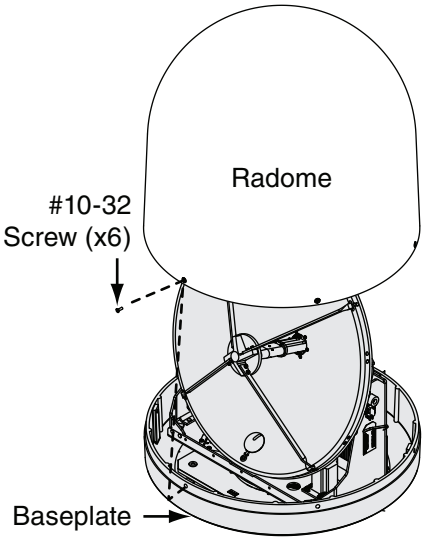
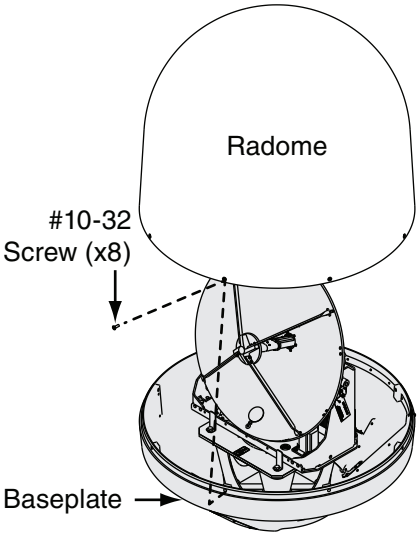


Figure 31 Radome Screws (35" dome version)



12 Replace the ACU SD Card

Follow the instructions below to replace the SD card inside the ACU.

> **CAUTION**
>
> For your own safety, be sure to disconnect power from all wired components before performing this procedure.

NOTE: *This procedure requires handling exposed electronic parts and components. Ensure that you take the necessary grounding precautions before handling.*

a. Using a #1 Phillips screwdriver, remove the eight Phillips screws securing the ACU cover (see Figure 32). Then remove the cover and set it aside in a safe place.

b. Locate the SD card (see Figure 33).

c. Gently press and slide the locking tab to unlock it (see Figure 34).

Figure 32 ACU Cover Screws

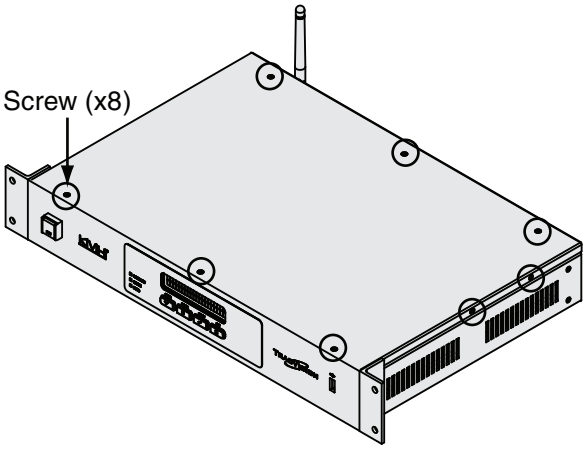


Figure 33 SD Card Location

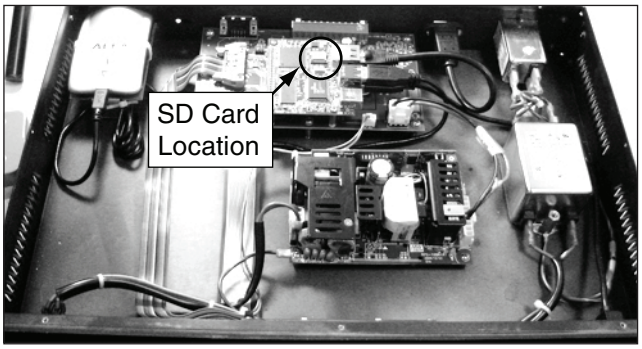
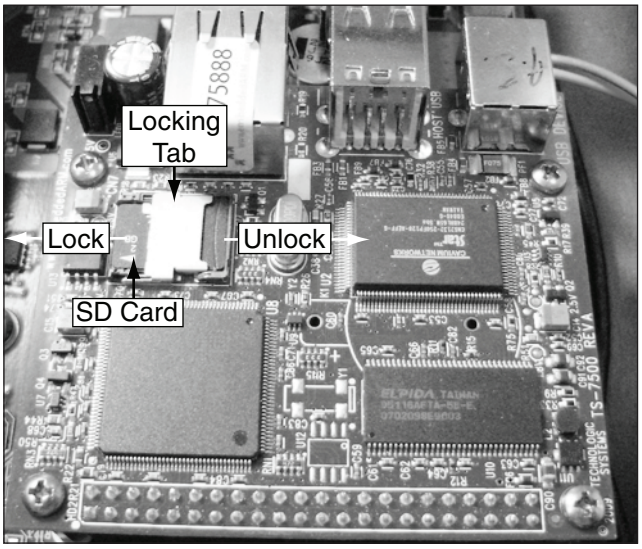


Figure 34 Locking Tab/SD Card



12 Continued Replace the ACU SD Card

d. Gently remove the SD card (see Figure 35).

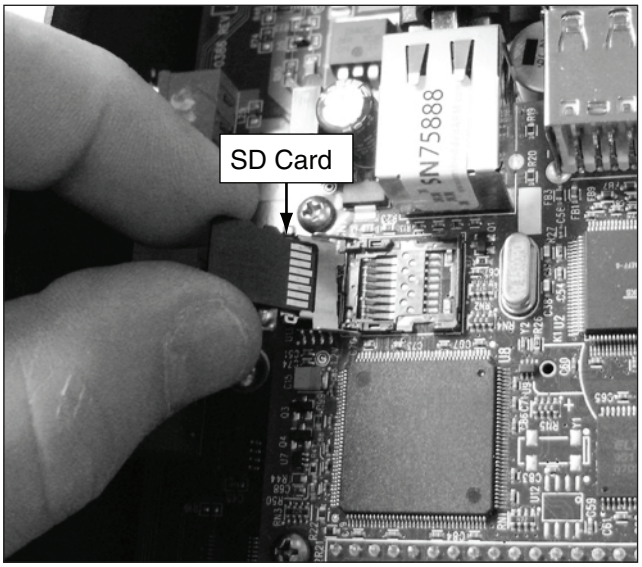
e. Insert the supplied SD card (see Figure 35).

f. Gently close and slide the SD card locking tab (see Figure 34 on page 18).

g. Reinstall the ACU cover.

h. Using a #1 Phillips screwdriver, secure the ACU cover with the eight Phillips screws you removed earlier.

Figure 35 SD Card Removal/Installation



13 Complete the Installation

Follow the steps below to complete the installation.

NOTE: *For additional information on any of the following steps, please refer to the TracVision HD7 User's Guide or the TracVision HD7 Installation Guide.*

a. Using the supplied USB drive, update the TracVision HD7 software.

b. Re-enter the network settings, if required.

c. Set the satellite service to DIRECTV L.A. to enable DIRECTV Latin American service.