Main PCB Replacement Instructions for TracVision® R5SL/R4SL

These instructions explain how to replace the main PCB (printed circuit board) in a TracVision R5SL/R4SL system.

IMPORTANT!

The main PCB is static-sensitive. Ensure that you take the necessary grounding precautions before handling.

Installation Steps

Tools Required

This procedure requires the following tools:

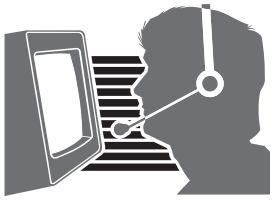
- 11/32" open-end wrench
- Needle-nose pliers
- Phillips-head screwdriver
- Needle-nose pliers
- PC with the latest version of the KVH Flash Update Wizard installed

NOTE: *The Flash Update Wizard is available to KVH-authorized dealers through the KVH Partner Portal.*

Technical Support

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

Phone: +1 401 847-3327
E-mail: techs@kvh.com



Step 1 - Replace the Main PCB

The following steps explain how to replace the main PCB.

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

a. Disconnect power from the TracVision system and any connected receivers and/or multiswitch.

b. Remove the eight screws securing the radome (see Figure 1). Then remove the radome and set it aside in a safe place.

c. Using an 11/32" open-end wrench, loosen the elevation motor shaft nut, but do not remove it (see Figure 2).

d. Rotate the elevation motor shaft counter-clockwise until the motor shaft nut is flush with the spacer.

e. Using a Phillips-head screwdriver, remove the four screws from the main PCB cover (see Figure 3).

f. Remove the two Phillips screws securing the elevation motor to the elevation motor mounting plate. Then remove the elevation motor from the mounting plate and set it aside (see Figure 3).

g. Gently remove the main PCB cover, ensuring no cables are damaged or pinched by the edges of the cover.

Figure 1 Radome Screws

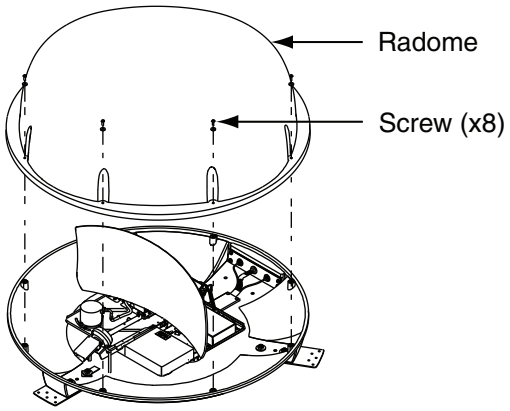


Figure 2 Elevation Motor Shaft Nut

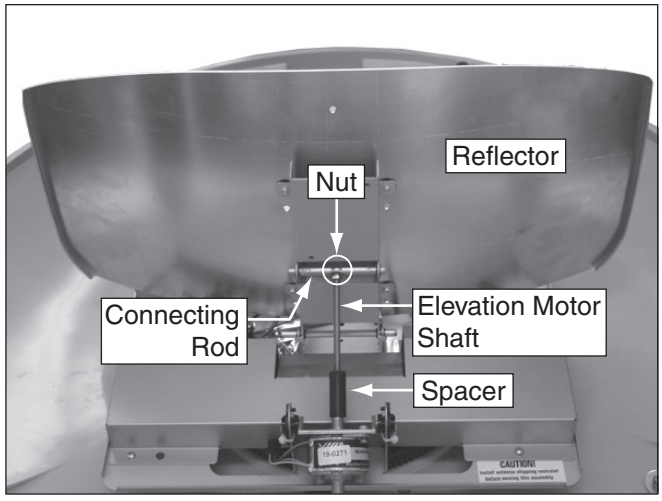
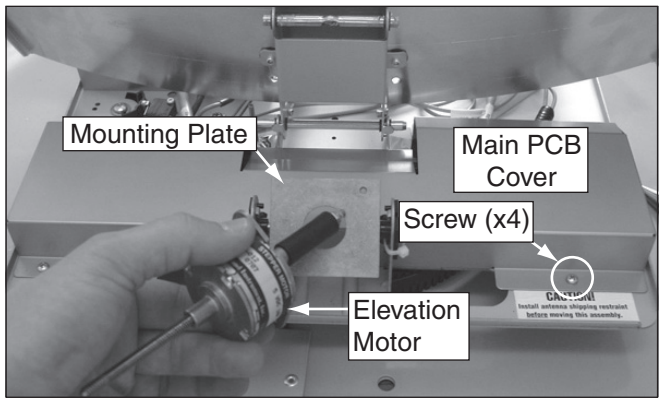


Figure 3 Elevation Motor/Main PCB Screws



h. Remove all cable connectors from the main PCB (see Figure 4).

i. Remove the four Phillips screws securing the main PCB to the rotating plate.

j. Using needle-nose pliers, carefully depress the tab of the standoff located next to the RF PCB connector on the main PCB (see Figure 4 and Figure 5).

k. Carefully raise the PCB over the tab. Repeat this procedure for each of the other four standoffs (see Figure 4).

l. Remove the PCB.

m. Install the replacement main PCB. Ensure the main PCB is secured by the standoffs, then using the four screws that you removed in Step h, secure the main PCB to the rotating plate (see Figure 4).

n. Reconnect all cable connectors to the main PCB (see Figure 4).

o. Gently install the main PCB cover, ensuring no cables are damaged by the edges of the cover. Then secure the main PCB cover using the four screws you removed in Step e on page 2.

p. Secure the elevation motor to the elevation motor mounting plate using the two screws you removed in Step 1f on page 2.

q. Apply a small amount of the supplied Loctite threadlocker to the threads of the elevation motor shaft, just above the motor shaft nut (see Figure 6).

r. Extend the elevation motor shaft by rotating it clockwise, then insert the motor shaft into the connecting rod (see Figure 2 on page 2).

s. Using an 11/32" open-end wrench, tighten the elevation motor shaft nut (see Figure 2 on page 2).

t. Reinstall the radome. Then reconnect power to the TracVision system.

Figure 4 Main PCB Connectors/Screws/Standoffs

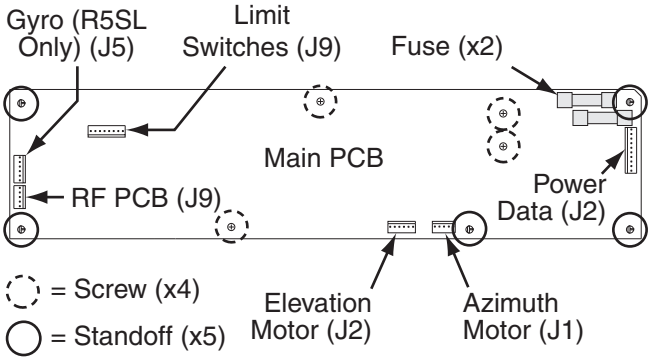


Figure 5 PCB Standoff

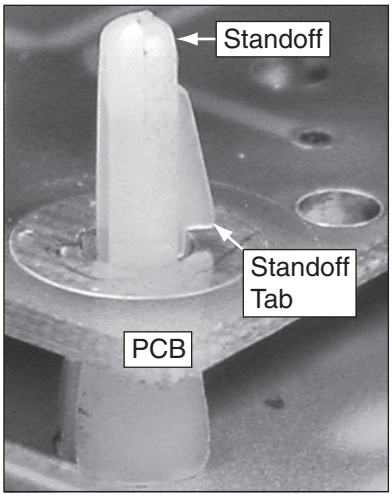
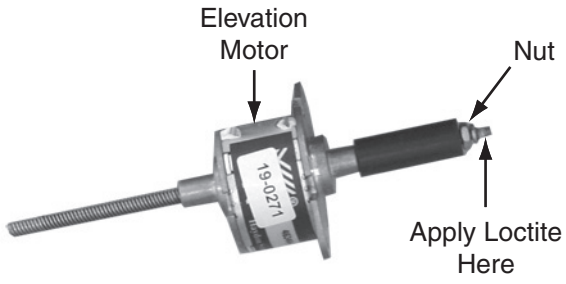


Figure 6 Loctite Application (motor shown unmounted for clarity purposes only)



Step 2 - Check for Flash Wizard Updates

You need to check for flash file updates to ensure you have the most current software available (see Figure 7). Follow the Flash Update Wizard's onscreen instructions to check for updates. This procedure requires a PC with the latest version of the KVH Flash Update Wizard installed and an Internet connection.

NOTE: *Refer to the Flash Update Wizard's Help file for details on checking for updates.*

Step 3 - Flash Both Antenna Boards

Connect a PC to your TracVision system, as described in the Flash Update Wizard's Help file. Then follow the Flash Update Wizard's onscreen instructions to flash the antenna's main and RF boards.

NOTE: *Refer to the Flash Update Wizard's Help file for details on flashing the antenna.*

Step 4 - Configure the Antenna

Follow the steps below to configure the new main PCB. You will enter PC commands into the Flash Update Wizard's "TracVision Antenna Comms" window.

a. Set the switchplate's POWER switch to the On (up) (|) position (see Figure 8), then turn on the receiver(s). Wait one minute for system startup.

b. Type **HALT** then press Enter.

c. Type **DEBUGON** then press Enter.

d. (R4SL Only) - Type **=TVR4SL** then press Enter.

e. (R4SL Only) - Skip to Step i on page 5.

f. (R5SL Only) - Type **=LSTEST** then press Enter to perform a limit switch test. Wait for the test to pass or fail. If the test fails, contact KVH Technical Support.

g. (R5SL Only) - Type **EL,300** then press Enter.

Figure 7 Check for Updates Option

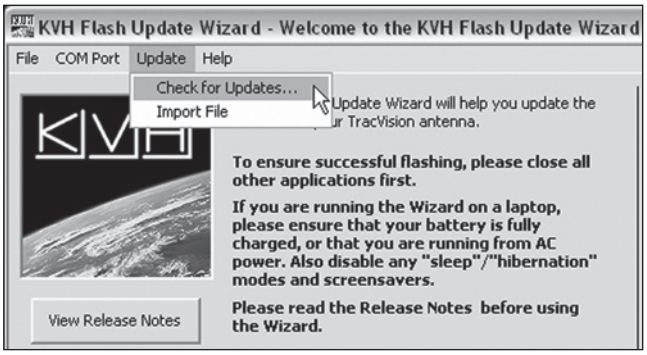
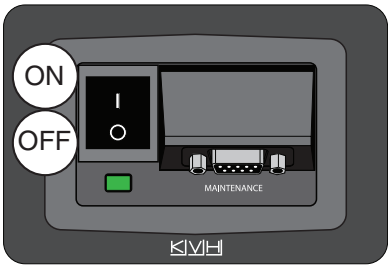


Figure 8 On/Off Switch



h. (R5SL Only) - Type **=CALGYRO** then press Enter to calibrate the gyro. If "scale factor out of range appears", contact KVH Technical Support.

i. The antenna will restart. Wait one minute for system startup.

j. Type **HALT** then press Enter.

Step 5 - Install Satellites

Now you need set the system to track the satellites of your choice. This procedure varies according to your selected service configuration. ***NOTE:*** *If the TracVision system is equipped with service keys (see Figure 9), follow the steps in the Service Key Instructions to set up the TracVision system; if the TracVision system is equipped with an HDTV Control Panel or a Multi-Sat Control Panel (see Figure 10), follow the steps in the HDTV Control Panel/Multi-Sat Control Panel's User's Guide to set up the TracVision system.*

Option A - DIRECTV Ku-band HDTV

a. If you need to track the DIRECTV 101, 110, and 119 satellites for DIRECTV Ku-band HDTV service, type the following Satinstall command then press Enter.

SATINSTALL,TRISAT,DSS

b. Type **ZAP** then press Enter.

c. The antenna will restart.

Figure 9 Service Keys

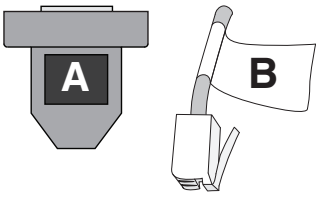


Figure 10 Multi-Sat Control Panel (MCP)/ HDTV Control Panel

Option B - DISH 1000

DISH 1000 setup varies by region. Refer to the map in Figure 11 to determine the appropriate DISH 1000 satellite installation for your region.

a. Type the appropriate Satinstall command for your DISH 1000 setup, then press Enter.

- To track the DISH 110, 119 and 129 satellites:

  SATINSTALL,TRISAT,DISH

- To track the DISH 110, 119 and 61 satellites:

  SATINSTALL,TRISAT,DISH61

b. Type **ZAP** then press Enter to restart the antenna.

Option C - Alternate Satellites

Although most installations do not require choosing different satellites than those listed in "Option A - DIRECTV Ku-band HDTV" on page 5 or "Option B - DISH 1000," you can set up your TracVision system to track a pair of alternate satellites. Follow the steps below to configure the system to track satellites from the satellite library.

a. Choose your desired satellites from the satellite library (see Figure 12)

b. Type the following command then press Enter. Be sure to use your selected satellites' Install Names. An example is provided in Figure 13.

SATINSTALL,<SAT_A_NAME>, <SAT_B_NAME>

NOTE: *Select the satellite you want to track first as "SAT_A". Once the procedure is complete, the TracVision system will begin tracking that satellite.*

c. Type **ZAP** then press Enter to restart the antenna.

Figure 11 DISH 1000 Satellite Coverage Map

Figure 12 Satellite Library

Satellite	Install Name
DIRECTV 72° W	DSS_72
DIRECTV 101° W	DSS_101
DIRECTV 110° W	DSS_110
DIRECTV 119° W	DSS_119
DISH Network 61° W	ECHO_61
DISH Network 110° W	ECHO_110
DISH Network 119° W	ECHO_119
DISH Network 129° W	ECHO_129
ExpresssVu 82° W	EXPRESSVU
ExpressVu 91° W	EXPRESSTV
None	None

Figure 13 Example of Satellite Installation

Installing DIRECTV 101 and DIRECTV 119
HALT SATINSTALL,DSS_101,DSS_119 ZAP

Step 6 - Enter your GPS Position (Optional)

If you wish to speed up how quickly the antenna will track the satellite the first time after this procedure is completed, you can enter your GPS coordinates into the antenna. The TracVision system will use this data to speed up initial satellite acquisition.

a. Determine your latitude and longitude.

NOTE: *For your convenience, Figure 14 lists approximate latitude and longitude values for North America.*

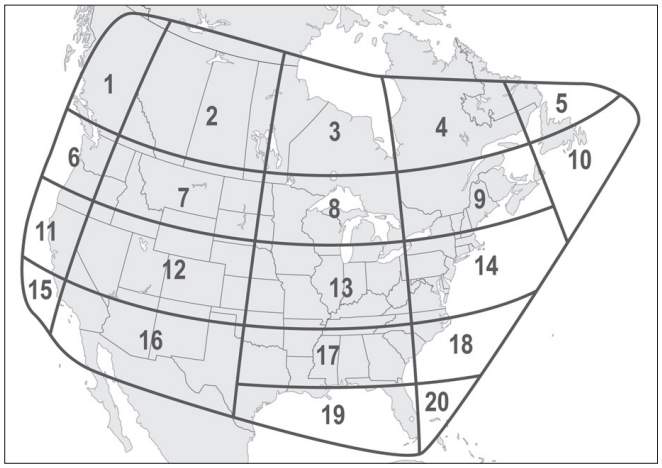
b. Using the table below, type the following command to enter your latitude and longitude.

GPS,*XX*,N,*YYY*,W

Variable	Value
XX	latitude (0-90)
YYY	longitude (0-180)

The procedure is complete!

Figure 14 North American Position Grid



Grid #	Latitude	Longitude
1	55° N	125° W
2	55° N	110° W
3	55° N	90° W
4	55° N	70° W
5	55° N	55° W
6	45° N	125° W
7	45° N	110° W
8	45° N	90° W
9	45° N	70° W
10	45° N	50° W
11	40° N	125° W
12	40° N	110° W
13	40° N	90° W
14	40° N	70° W
15	32° N	125° W
16	32° N	110° W
17	32° N	90° W
18	32° N	75° W
19	27° N	83° W
20	27° N	78° W