

**TRACVISION**<sup>®</sup>  
BY KVH INDUSTRIES



**TracVision A7  
Installation Guide**

# TracVision A7 Installation Guide Addendum

## **ECO #7719**

The following information applies to Revision A of the *TracVision A7 Installation Guide* (KVH Part Number 54-0350).

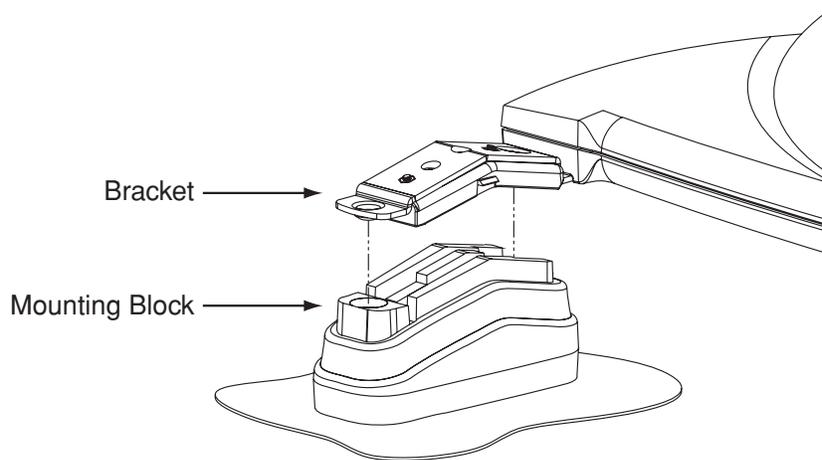
### **Mounting the Antenna - Roof Mount Kit**

The parts and procedure for mounting the TracVision A7 directly to the roof have changed. This addendum explains this different procedure.

1. With an assistant's help, position the antenna onto the center of the vehicle's roof with a rubber mounting block under each bracket.

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#### **Positioning an Antenna Bracket Onto a Mounting Block**



#### **WARNING**

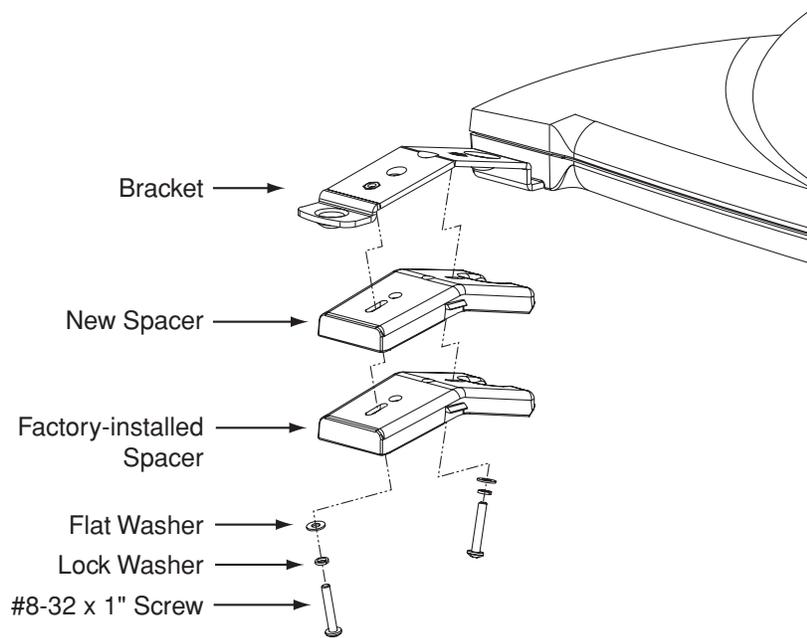
#### **PLEASE READ - IMPORTANT!**

*The roof mount kit is designed for mounting the antenna to a flat metal roof up to  $\frac{3}{16}$ " thick. It is not intended to be a universal solution for all vehicles. Improper use of this kit, or the use of any other installation technique, could result in an unsafe installation and is not supported by KVH.*

2. The bottom of the antenna should rest a minimum of 1" above the vehicle's roof. If the antenna's base is less than 1" from the roof, you will need to add a spacer under each bracket to raise the antenna higher. If spacers are needed, follow the steps below to install a spacer under each bracket:
  - a. Remove the #8-32 x  $\frac{3}{8}$ " screws and washers securing the factory-installed plastic spacer to the metal bracket.
  - b. Insert a second spacer from the kitpack between the original spacer and the bracket. Secure both spacers to the bracket using the #8-32 x 1" screws supplied in the kitpack and the original washers that you removed in Step a.

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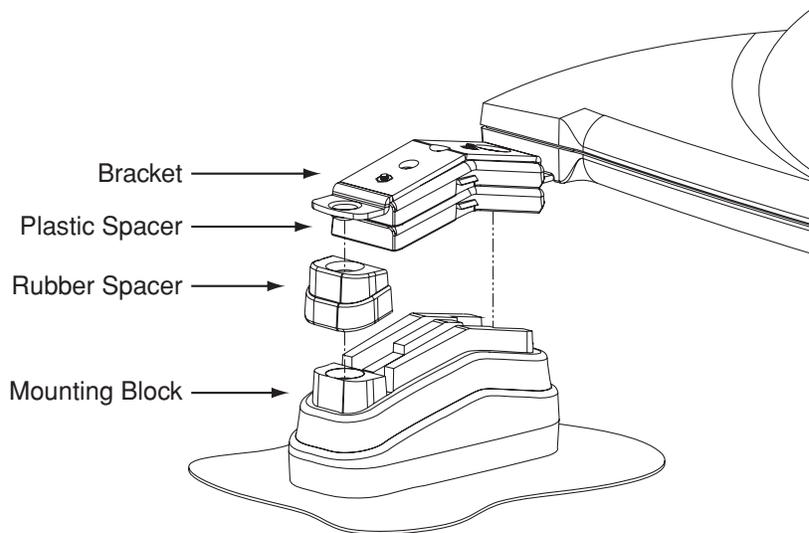
***Adding a Second Spacer to the Bracket (If Needed)***



- c. Place a rubber spacer onto the end of each rubber mounting block.

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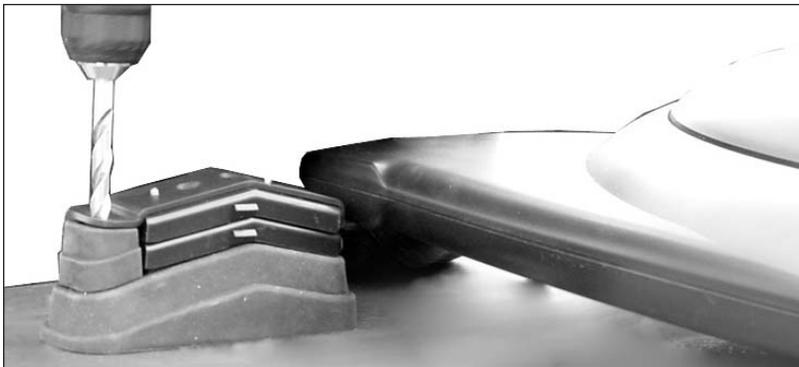
### **Adding a Rubber Spacer to the Mounting Block (If Needed)**



3. With the antenna centered on the vehicle's roof and resting on the four mounting blocks, mark the eight mounting hole locations. To mark the holes, you can use either a transfer punch or a  $\frac{21}{64}$ " drill bit as shown below.

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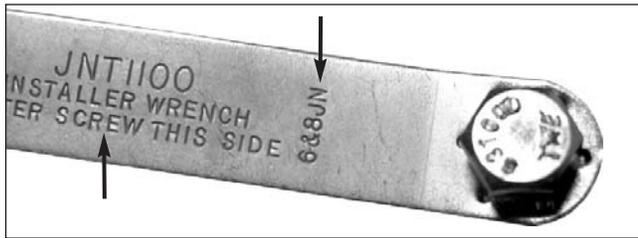
### **Marking the Mounting Holes Using a $\frac{21}{64}$ " Bit**



4. Keeping the antenna level at all times, carefully remove the antenna and mounting blocks from the vehicle's roof and set them aside in a safe place.
5. Using a  $\frac{7}{16}$ " drill bit, drill the eight mounting holes in the vehicle's roof. Be careful to drill through just the metal roof, and not through the headliner beneath it.

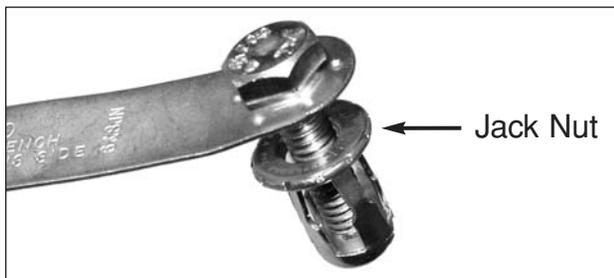
6. At each of the eight mounting holes in the roof, follow the steps below to install a jack nut.
  - a. Insert the supplied  $\frac{1}{4}$ "-20 x 1" hex head bolt into a friction wrench, using the large hole marked "6&8JN." Be sure to insert the bolt into the correct side of the wrench (marked "Enter Screw This Side"). Four friction wrenches are provided in the kitpack.

### Friction Wrench



- b. Screw the bolt into a jack nut.

### Screwing the Bolt into a Jack Nut



*If the vehicle's roof has a thick vinyl covering, trim the vinyl around each mounting hole to allow the head of the jack nut to fully contact the metal roof.*

- c. Apply silicone sealant or RTV along the edges of the mounting hole in the roof.
- d. Insert the jack nut into the mounting hole.
- e. While holding the friction wrench in place, tighten the bolt with a  $\frac{7}{16}$ " nut driver or socket. This forces the side tabs of the jack nut to compress against the underside of the roof. **Do not use an air wrench – it might strip the jack nut.**

- f. Loosen and remove the bolt, leaving the jack nut secured to the roof.

### Jack Nut Secured to Roof



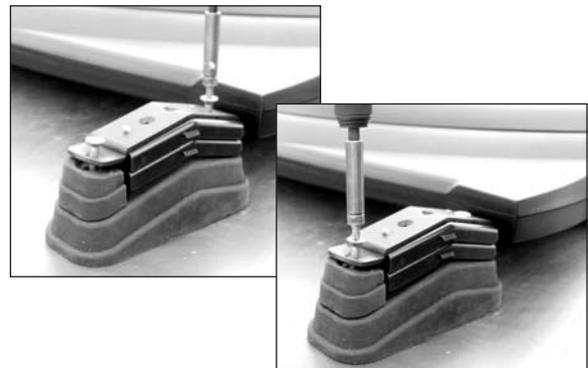
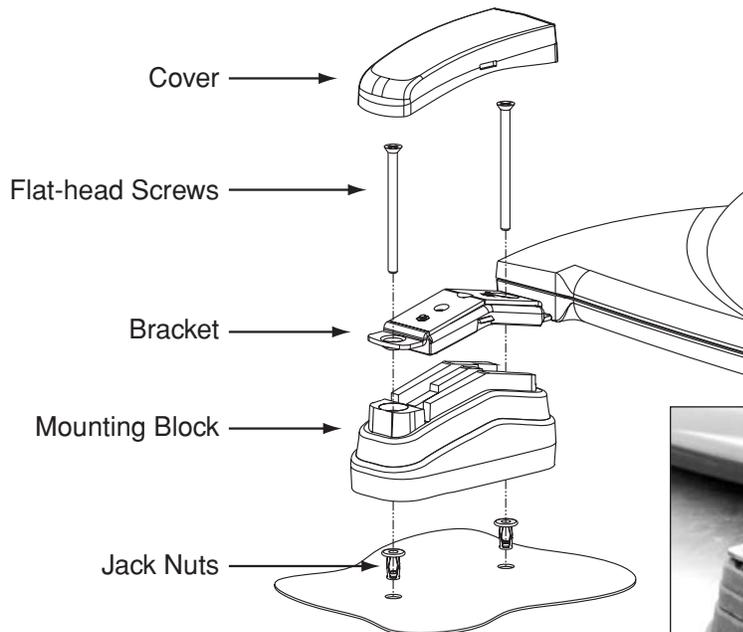
7. Position the mounting blocks back onto the roof, aligning their holes with the jack nuts.
8. Place the antenna onto the mounting blocks, aligning the bracket holes with the mounting block holes.
9. At each mounting hole, insert a ¼"-20 x 3½" hex socket screw through the antenna bracket and mounting block and into the jack nut. Tighten to secure in place.



#### WARNING

The mounting screws are prepared with a thread-locking patch. If these screws are removed after their initial installation, the patch's locking capacity will be degraded. Therefore, before reusing the mounting screws, you **MUST** apply threadlocker (Loctite 425) to the screw threads to avoid a potentially dangerous condition. Failure to apply threadlocker to the screw threads can result in unsecure mounting.

### Securing the Antenna to the Roof





*Two different sizes of covers are provided in the kitpack. Install the two larger covers on the rear brackets and the smaller covers on the front brackets.*

10. Attach a protective cover onto each bracket. The covers simply snap into place at the sides of the brackets.

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### **Attaching the Cover**



# TracVision A7

## Installation Guide

The TracVision A7 is a state-of-the-art, actively stabilized antenna system that delivers *live* satellite TV to a vehicle, even while the vehicle is moving.



This manual provides detailed instructions on the proper installation of the TracVision A7 system. Complete instructions on how to use the system are provided in the *User's Guide* and *Quick Start Guide*.



*This product must **NOT** be connected to any active monitor that is visible to the vehicle's driver while the vehicle is in motion. This product is intended for rear-seat entertainment only.*



KVH Part # 54-0350 Rev. A

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### Patent Protection

TracVision A7 is protected by EU Design #000050877-0001; US patents D493,164; 6,856,300; 6,967,619; and 6,977,614. Other patents pending.

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Some pay-per-view programs may be licensed from producers as “view-only” programs. These are copyrighted programs, and may not be copied or reproduced for any purpose without the express written permission of the copyright owner.

## Important Safety Instructions - Please Read

For your safety and protection, please read this entire Installation Guide before you install the TracVision system.

**Heed Cautions** – Be sure to follow all cautions on the product and in the installation instructions. Cautions are indicated by a ⚠ or ⚡ icon.

**Follow Instructions** – Be sure to follow all installation instructions as detailed in this manual.

The following caution appears on the back of the receiver:



Do not open the receiver's cover. Opening or removing the cover may expose you to dangerous voltage.



### Avoid Driver Distraction

**WARNING!** It is dangerous to watch television or operate the remote control while you are driving a vehicle. The TracVision A7 is designed specifically to provide entertainment to vehicle passengers and should never be connected to active video screens visible to the vehicle driver while the vehicle is in motion. Failure by the driver of a vehicle equipped with a TracVision A7 to pay full attention to traffic and road conditions could result in an accident or collision with personal injury or death resulting.



### CAUTION

To reduce the risk of fire or electrical shock, do **NOT** expose the receiver to rain or moisture and do **NOT** insert any objects into the receiver's ventilation openings.

### **Send Us Your Comments About This Manual**

If you have any comments regarding this manual, please e-mail them to [manuals@kvh.com](mailto:manuals@kvh.com). Your feedback is greatly appreciated!

### **Technical Support**

If you need technical assistance when installing the TracVision A7, please call KVH Technical Support:

Phone: **1-401-847-3327**

E-mail: [techs@kvh.com](mailto:techs@kvh.com)

### **Activation Department**

Once the TracVision A7 system is installed, the user needs to activate the receiver by calling KVH's Activation Department:

Phone: **1-866-551-8004**

(24 hours a day, 7 days a week)

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# 1 Getting Started

This section provides a basic overview of this manual and the TracVision A7 system. It also lists the items you will need to complete the installation.

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## 1-1 Using this Manual

This manual provides complete instructions for installing the TracVision A7 system. Throughout this manual, important information is marked for your attention by the following icons:



A helpful tip that either directs you to a related area within the manual or offers suggestions on getting the highest quality out of your system.



An alert to important information regarding procedures, product specifications, or product use.



Information about installation, maintenance, troubleshooting, or other mechanical issues.



An electrical safety warning to help identify electrical issues that can be a hazard to either this KVH product or a user.

## Related Documentation

The following additional documents are provided with the TracVision A7 system:

Document	Description
Receiver User's Guide	Complete operation, setup, and troubleshooting information
Quick Start Guide	Handy quick reference to basic operation
Product Registration Form	Details on registering the product with KVH
Warranty Statement	Warranty terms and conditions
Contents List	List of every supplied part
Activation Card	Information the owner needs to activate the receiver

## Who Should Install the TracVision A7 System

KVH strongly recommends that a KVH-authorized technician and an assistant install the TracVision A7 system. Installers should have experience installing electronic equipment on a vehicle and have knowledge about satellite television.

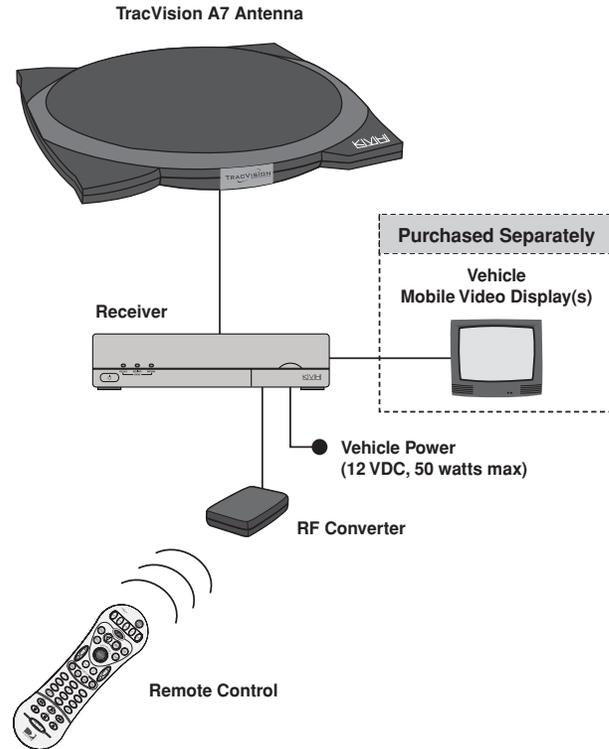


*KVH is not liable for damage (or related expenses) caused by improper installation.*

## 1-2 System Overview

A complete satellite TV system includes the TracVision A7 antenna and receiver connected to the vehicle's audio/video entertainment system. The remote control and RF (radio frequency) converter allow the user to operate the system from anywhere in the vehicle.

**TracVision A7 System Diagram (Typical Installation)**



## System Components

The TracVision A7 includes the following components:

### Antenna Unit

The antenna unit, mounted on the vehicle's roof, houses the phased array, positioning mechanisms, GPS, low noise block (LNB), and control elements within a weathertight radome. A single cable connects the antenna to the receiver inside the vehicle.



### Receiver

The receiver, mounted inside the vehicle, decodes satellite signals from the antenna unit and sends the signals to the vehicle's audio/video system. It also powers and controls the TracVision antenna.



### Remote Control

The backlit wireless RF remote control allows the user to operate the system from anywhere in the vehicle. The remote does not need to be pointed directly at the receiver for the signal to be received.



### RF Converter

The RF converter receives RF commands from the remote control, converts them to digital signals, and sends them to the receiver for processing.



## 1-3 Inspect Parts and Get Tools

1. Unpack the box and ensure it contains everything shown on the antenna and receiver Contents Lists. Carefully examine all of the supplied parts to ensure nothing was damaged in shipment. *Save the packaging in case you need to reship the system.*
2. Gather all of the tools and materials listed below. You will need these items to complete the installation.

- Hex socket drivers
- Phillips and flat-head screwdrivers
- Stepladder
- $\frac{7}{16}$ " open-end wrench
- Torque wrench
- Wire cutters
- Silicone sealant or RTV
- Measuring tape



*If you use the roof mount kit:*

- Fasteners suitable for attaching the four metal mounting plates to the vehicle's roof
- Pencil or scribe

*If you route the antenna cable through the roof:*

- Light hammer and center punch
- Drill and  $\frac{5}{32}$ " bit
- $\frac{1}{2}$ " hole saw

*If you cut the antenna cable to length:*

- LRC/Augat T1000 crimp tool  
(KVH P/N 19-0242; call (401) 847-3327 to order)

## 1-4 Prepare the Activation Card

Before you install the antenna, peel off the extra serial number label (taped to the antenna) and affix it in the appropriate box on the red Activation Card.



*Be sure to affix the extra antenna serial number label to the red Activation Card. The user will need this number to activate the receiver, and the receiver must be activated in order to watch satellite TV via the TracVision A7 system.*

### Activation Card

## TracVision® Activation

Before you can start enjoying satellite TV in your vehicle, the TracVision receiver **must be activated**.

To activate your receiver, please follow the steps below:

1. Call KVH's Activation Department at:  
**1-866-551-8004**  
(24 hours a day, 7 days a week)

You will need to provide the KVH Activation Department representative with a credit card number and the following KVH serial numbers:

Receiver Serial Number	Antenna Serial Number
R <input type="text"/>	A <input type="text"/>

Installer: Please place antenna serial number in box above.

2. The KVH representative will provide you with 4 ID numbers necessary for activation. Enter these in the boxes below:

Access Card Number	Receiver ID Number
<input type="text"/>	<input type="text"/>
DIRECTV Serial Number	Model Number
<input type="text"/>	<input type="text"/>

Please save this card for future reference.  
You will need these numbers whenever you call DIRECTV.

54-0350-04, rev. B

# 2 Installing the Antenna

This section explains how to mount the antenna to the vehicle and how to connect and route the antenna cable.

## Contents

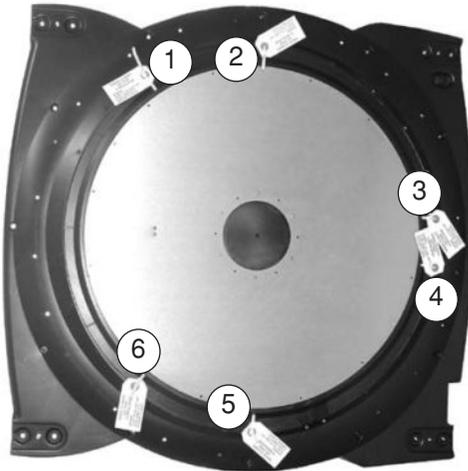
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## 2-1 Remove the Shipping Restraints

Cut and remove all of the shipping restraints from underneath the antenna. To remove the wire restraints, you will need to use heavy-duty wire cutters.

*Shipping Restraint Locations on Antenna Base*



*Removing the Shipping Restraints*

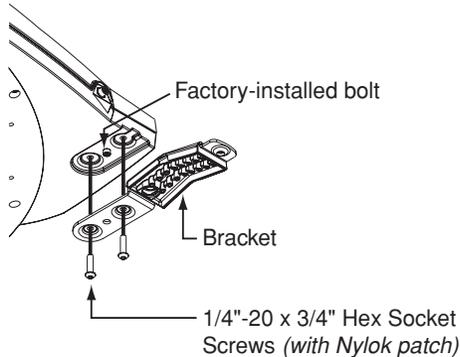


## 2-2 Mount the Antenna - Rack Mount Kit

If you are mounting the antenna to the vehicle's **roof rack**, follow the steps below. If you are mounting the antenna directly to the **roof**, skip to page 2.8. If you are mounting to a **Hummer rack**, skip to page 2.12.

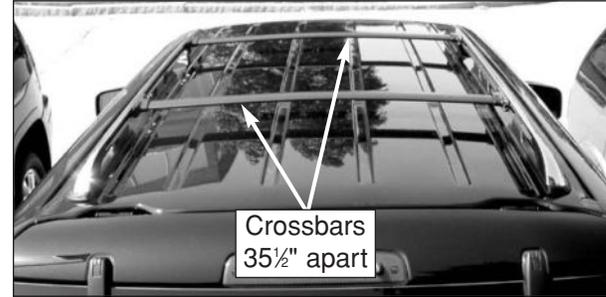
1. Attach each of the four mounting brackets to the antenna base using two 1/4"-20 x 3/4" hex socket screws. (A bolt is factory-installed in the base between the bracket holes.)

### Attaching the Mounting Brackets



2. Position the roof rack crossbars 35½" apart, measured center-to-center. Ensure that the crossbars are securely fastened to the vehicle.

### Roof Rack Crossbars



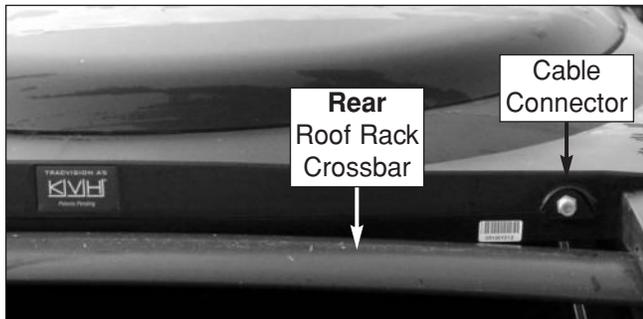
Be sure the roof rack's crossbars are secured in place and are sturdy enough to support the 48 lb antenna.

3. With an assistant's help, gently place the antenna onto the roof rack with the cable connector facing the rear of the vehicle. All four brackets should rest on top of the roof rack's crossbars.

**Placing the Antenna on the Crossbars**

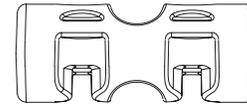


**Antenna Connector Facing Rear of Vehicle**

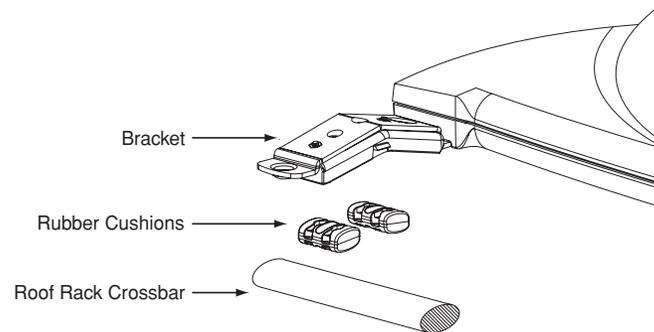


4. Each bracket contains several pairs of pegs. These pegs allow you to place two rubber cushions in different positions to best fit the vehicle's style of crossbars. Try out the various cushion positions until you find the best fit for your installation. *The more surface area of the cushions pressing against the crossbar, the better the fit.*

**Rubber Cushion**



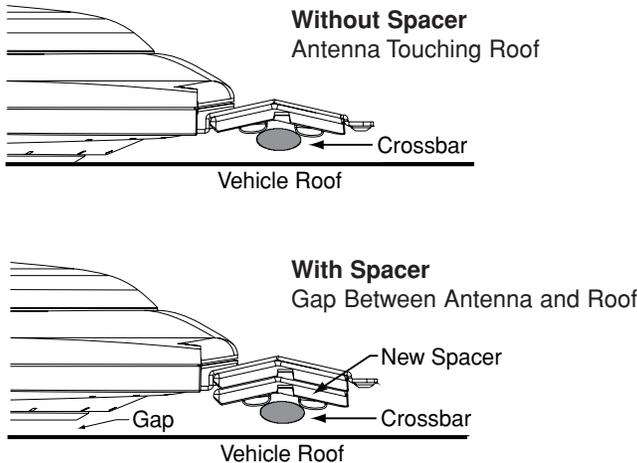
**Positioning Rubber Cushions for Best Fit**



5. With the cushions installed in the brackets, the bottom of the antenna should rest above the vehicle's roof. If the antenna's base touches the roof, you will need to add a spacer under each bracket to raise the antenna higher off the crossbars.

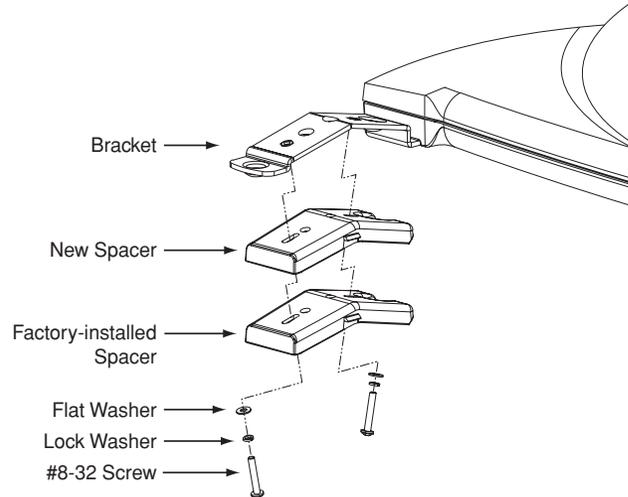
If spacers are needed, follow Steps a and b on this page to install a spacer under each bracket.

#### Using Spacers to Raise the Antenna Above the Roof



- a. Remove the #8-32 x  $\frac{3}{8}$ " screws and washers securing the factory-installed plastic spacer to the metal bracket.
- b. Insert a second spacer from the kitpack between the original spacer (which holds the rubber cushions) and the bracket. Secure both spacers to the bracket using the #8-32 x  $\frac{3}{8}$ " screws supplied in the kitpack and the original washers that you removed in Step a.

#### Adding a Second Spacer to the Bracket (If Needed)



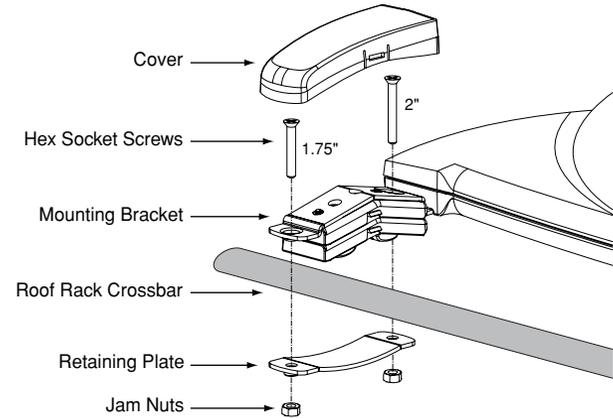


If you installed extra spacers in Step 5, and the bottom of the antenna still contacts the roof, KVH recommends that you either use the roof mount option or replace the roof rack with an aftermarket model that offers greater clearance.

6. Secure each mounting bracket to the roof rack with a retaining plate, two hex socket screws, and two jam nuts, as shown in the figure. Use a 1 $\frac{3}{4}$ " screw at the end of each bracket and use a 2" screw at the base of each bracket. **Be sure to use the supplied hardware.** After securing all four brackets to the crossbars, verify that all cushions (two within each bracket) are pressed firmly against the crossbars providing a solid grip.
7. Attach a protective cover onto each clamp. The covers simply snap into place at the sides of the brackets. *Two different sizes of covers are provided in the kitpack. Install the two larger covers on the rear brackets and the smaller covers on the front brackets.*

Proceed to Section 2-5 on page 2.16.

### Securing the Brackets to the Crossbars



### Attaching the Cover

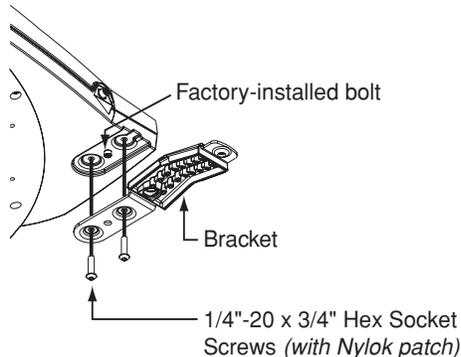


## 2-3 Mount the Antenna - Roof Mount Kit

If you are mounting the antenna directly to the roof, follow the steps below.

1. Attach each of the four mounting brackets to the antenna base using two 1/4"-20 x 3/4" hex socket screws. (A bolt is factory-installed in the base between the bracket holes.)

### Attaching the Mounting Brackets



2. Insert a nut bar into each of the metal mounting plates so that the nut bar is held suspended between the mounting plate arms. Ensure the nut bar swivels easily within the mounting plate.

### Metal Mounting Plate with Nut Bar



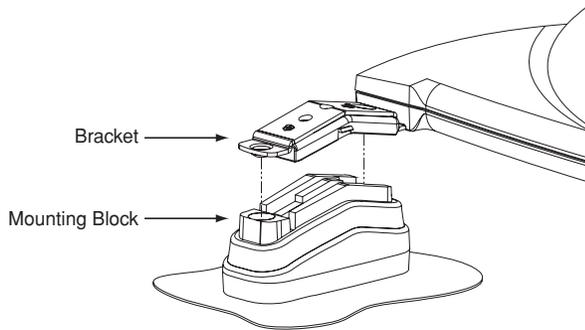
3. Lift the skirt on the four rubber mounting blocks, then place the blocks onto the mounting plates. Align with the threaded holes in the nut bar.

### Rubber Mounting Block Placed onto Mounting Plate



- With an assistant's help, position the antenna onto the centerline of the vehicle's roof with a mounting block and mounting plate under each bracket. Make sure the antenna's connector faces the rear of the vehicle.

#### **Positioning an Antenna Bracket Onto a Mounting Block**



- The bottom of the antenna should rest above the vehicle's roof. If the antenna's base is touching the roof, you will need to add a spacer under each bracket to raise the antenna higher. **If spacers are needed, STOP the installation. Call KVH at 401-847-3327 to order the Spacers Kit (P/N 72-0221). Spacer installation instructions are provided on page 2.10.**

- Make sure the antenna is positioned on the centerline of the roof in the desired location and resting firmly on the mounting blocks. With the antenna in place, mark the roof along the outside edges of the mounting plates using a pencil or scribe.
- Set aside the antenna and the mounting blocks.
- Attach the four mounting plates to the roof at the locations you outlined in Step 6. Be sure to use fasteners appropriate to the roof's construction.



*Due to the variation in RV roof construction, consult with the RV manufacturer to determine the safest fastening method.*

- Seal all fasteners with silicone sealant or equivalent.
- Place the rubber mounting blocks back onto the mounting plates.
- Place the antenna onto the mounting blocks. Align the holes in the antenna brackets with the holes in the mounting blocks.

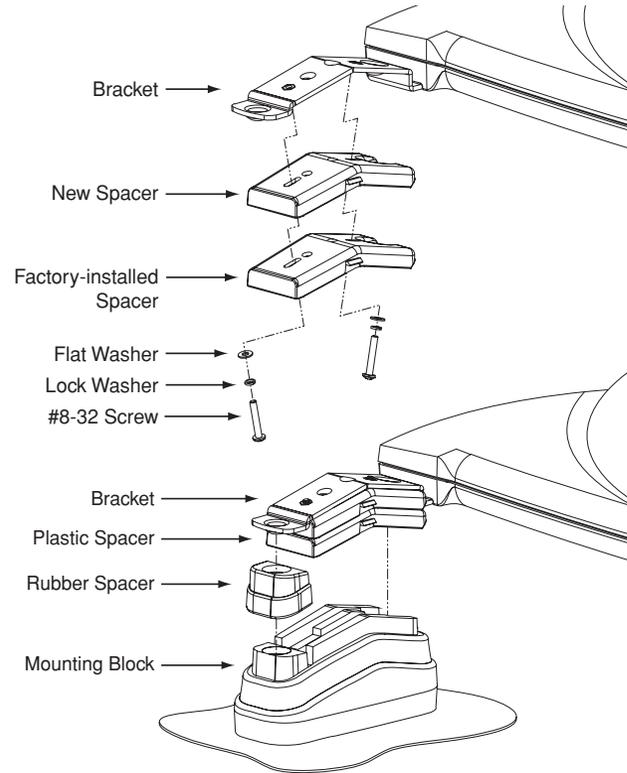
### Spacer Installation Instructions – If Necessary in Step 5

If spacers are needed to raise the antenna off the roof, follow the steps below to install a spacer under each bracket\*:

- a. Remove the #8-32 x  $\frac{3}{8}$ " screws and washers securing the factory-installed plastic spacer to the metal bracket.
- b. Insert a second spacer from the kitpack between the original spacer and the bracket. Secure both spacers to the bracket using the #8-32 x  $\frac{7}{8}$ " screws supplied in the kitpack and the original washers that you removed in Step a.
- c. Place a rubber spacer onto the end of each rubber mounting block.

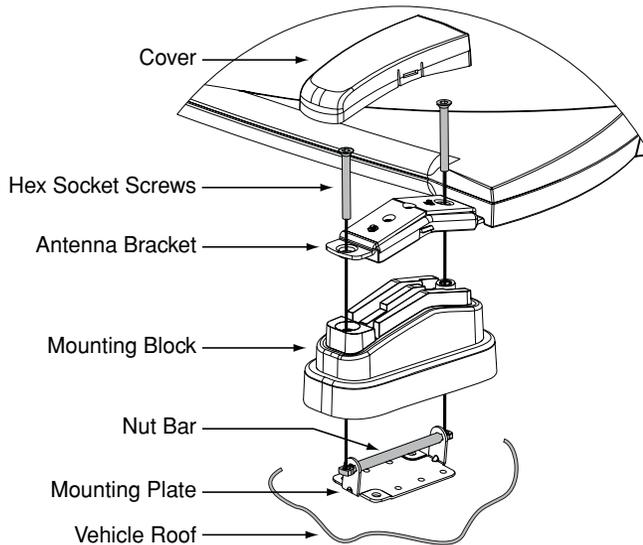
\* Requires Spacers Kit (KVH P/N 72-0221).

### Adding Spacers (If Needed for Extra Height)



12. At each bracket, insert two of the supplied  $\frac{1}{4}$ "-20 hex socket screws through the antenna bracket and mounting block and into the mounting plate's nut bar. **If you added a spacer as explained on page 2.10, use the  $2\frac{1}{2}$ " screws supplied in the Spacers Kit. Otherwise, use the  $2\frac{1}{4}$ " screws supplied in the roof mount kit.** Tighten the screws to secure in place.

### ***Securing the Antenna to the Roof***



54-0350

13. Flip down the skirt on each rubber mounting block to hide the mounting plates.
14. Attach a protective cover onto each bracket. The covers simply snap into place at the sides of the brackets.



*Two different sizes of covers are provided in the kitpack. Install the two larger covers on the rear brackets and the smaller covers on the front brackets.*

### ***Attaching the Cover***



*Proceed to Section 2-5 on page 2.16.*

## 2-4 Mount the Antenna - Hummer® Mount Kit

If you are mounting the antenna to a Hummer roof rack, follow the appropriate steps in this section for your particular Hummer model:

**Hummer H2** .....See below

**Hummer H3** .....See page 2.14

### Hummer H2 Mounting Instructions

1. Position the roof rack crossbars 39½" apart, measured center-to-center. Ensure that the crossbars are securely fastened to the vehicle.

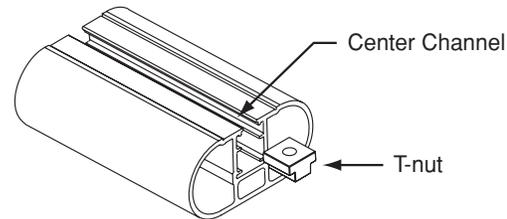


*Be sure the roof rack's crossbars are secured in place.*

2. Unlock and remove the end caps from both ends of the crossbars.

3. Remove the long rubber strips that run along the top of the crossbars. Be sure to save these strips for future use.
4. At each crossbar, insert two T-nuts into the center channel and slide the nuts along the channel.

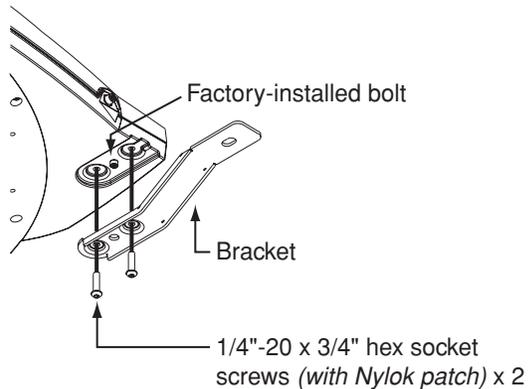
#### **Inserting T-nuts in Crossbar Center Channel**



5. Reinstall the end caps that you removed in Step 2.

- Attach each of the four mounting brackets to the antenna base using two of the supplied  $\frac{1}{4}$ "-20 x  $\frac{3}{4}$ " hex socket screws. Tighten the screws; but do not overtighten. (A bolt is factory-installed in the base between the bracket holes.)

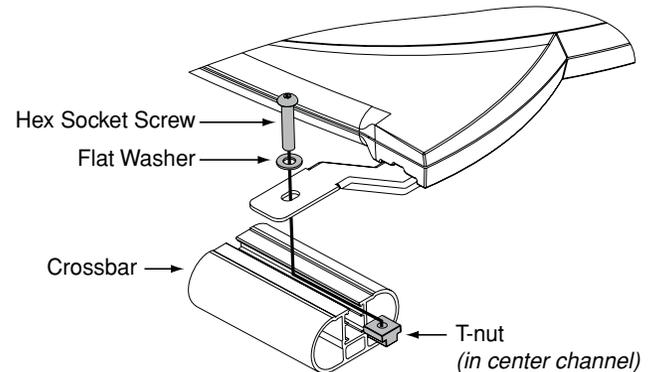
#### Attaching Brackets to the Antenna Base



- With an assistant's help, gently place the antenna onto the center of the roof rack, with the cable connector facing the rear of the vehicle. All four brackets should rest on top of the roof rack's crossbars.

- Position the T-nuts in the crossbars so that they line up with the holes in the antenna mounting brackets.
- At each bracket, place a  $\frac{3}{8}$ " flat washer on a  $\frac{3}{8}$ "-16 x 1" hex socket screw and insert the screw through the bracket's mounting hole and into the T-nut in the crossbar. Tighten the screws, but do not exceed 20 ft-lbf (240 in-lbf) of torque.

#### Securing the Antenna Brackets to the Crossbars



Proceed to Section 2-5 on page 2.16.

## Hummer H3 Mounting Instructions

1. Position the roof rack crossbars 35" apart, measured center-to-center. Ensure that the crossbars are securely fastened to the vehicle.



*Be sure the roof rack's crossbars are seated in the rack's detents and are locked in place.*

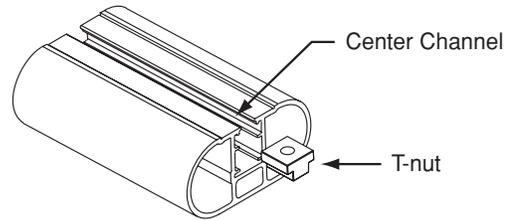
2. Unlock and remove the end caps from both ends of the crossbars.
3. Remove the four tie-down anchors from the roof rack. Save the anchors for future use.

### **Roof Rack Tie-down Anchors – Remove**



4. Remove the long rubber strips that run along the top of the crossbars. Be sure to save these strips for future use.
5. At each crossbar, insert two T-nuts into the center channel and slide the nuts along the channel.

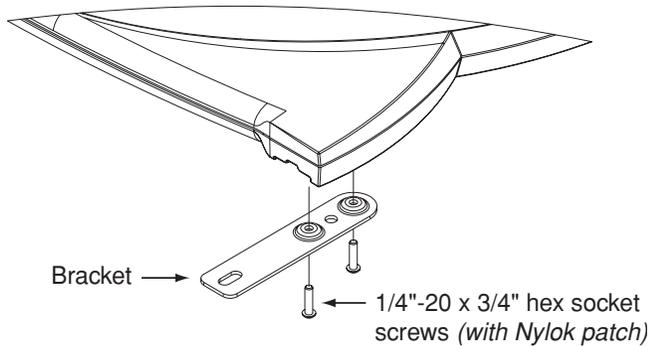
### **Inserting T-nuts in Crossbar Center Channel**



6. Reinstall the end caps that you removed in Step 2.

- Attach each of the four mounting brackets to the antenna base using two of the supplied  $\frac{1}{4}$ "-20 x  $\frac{3}{4}$ " hex socket screws. Tighten the screws; but do not overtighten. (A bolt is factory-installed in the base between the bracket holes.)

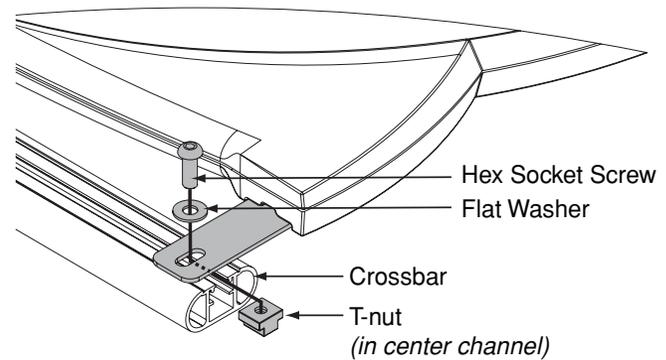
**Attaching Brackets to the Antenna Base**



- With an assistant's help, gently place the antenna onto the center of the roof rack, with the cable connector facing the rear of the vehicle. All four brackets should rest on top of the roof rack's crossbars.

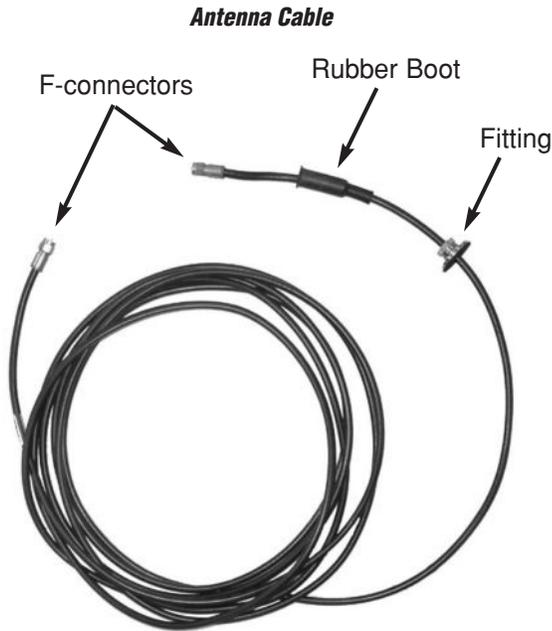
- Position the T-nuts in the crossbars so that they line up with the holes in the antenna mounting brackets.
- At each bracket, place a  $\frac{3}{8}$ " flat washer on a  $\frac{3}{8}$ "-16 x 1" hex socket screw and insert the screw through the bracket's mounting hole and into the T-nut in the crossbar. Tighten the screws, but do not exceed 20 ft-lbf (240 in-lbf) of torque.

**Securing the Antenna Brackets to the Crossbars**



## 2-5 Connect the Antenna Cable

Now that you have mounted the antenna to the vehicle's roof, connect the supplied antenna cable (see below) to the antenna and route the cable inside the vehicle.



There are two options for passing the cable into the vehicle:

Option 1 - Through the roof

Option 2 - Behind the hatch (SUVs and minivans)

If the gap in the vehicle's hatch hinge is wide enough when closed to allow the antenna cable to pass without pinching it, maintaining a 3" bend radius, you can insert the antenna cable through the gap and into the vehicle. If the gap is too narrow, you will need to use the roof-through option. *Installers often prefer the professional appearance of the drill-through option.*

Follow the instructions for your selected option:

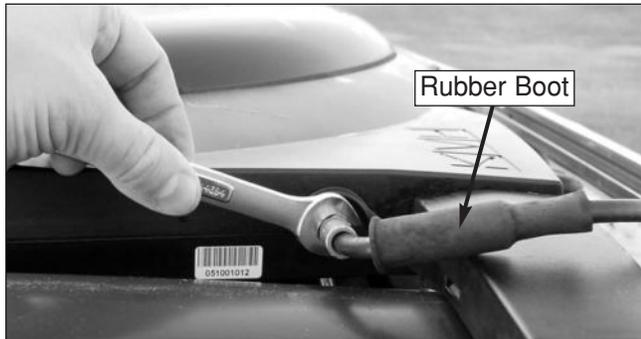
**Through the Roof . . . . .Page 2.17**

**Behind the Hatch . . . . .Page 2.20**

## Option 1 - Route the Cable Through the Roof

1. Connect the antenna cable to the antenna. Hand-tighten, then tighten with a  $\frac{7}{16}$ " wrench for  $\frac{1}{4}$  turn to ensure an electrical and weatherproof connection.

### Connecting the Antenna Cable to the Antenna



2. Slide the rubber sealing boot up the cable until it covers the antenna cable connector. This boot will help protect the connector from the elements.

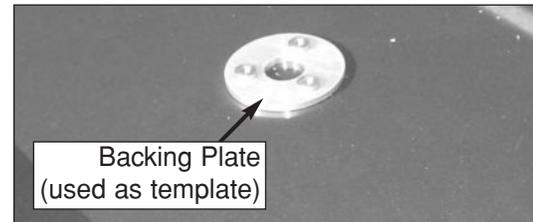
3. Choose a location on the roof for the  $\frac{1}{2}$ "-diameter cable access hole. Inside the vehicle, remove the headliner to access the underside of the roof where you will be cutting out the hole.



*Techniques for removing the headliner vary from vehicle to vehicle. Only a trained automotive installer should remove the headliner. KVH is not liable for damage caused by improper headliner removal.*

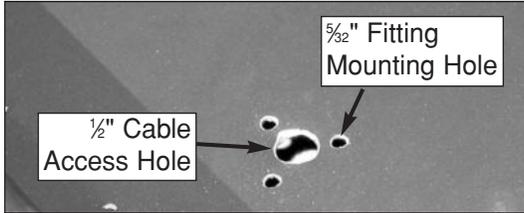
4. Using a  $\frac{1}{2}$ " hole saw, cut out the cable access hole in the vehicle's roof and smooth the edges of the hole to protect the cable.
5. Center the backing plate over the cable access hole to locate the three fitting mounting holes. Use a center punch to mark the hole locations.

### Locating the Fitting Mounting Holes



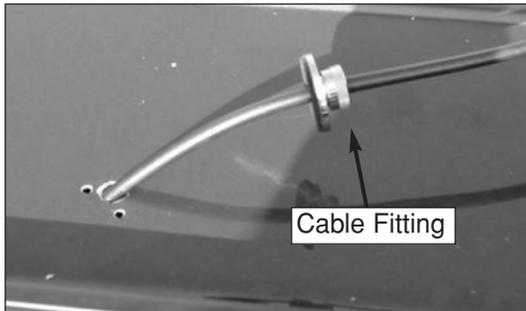
- Set aside the backing plate, then use a  $\frac{5}{32}$ " drill bit to drill the three fitting mounting holes.

**Cable Access Hole and Fitting Mounting Holes**



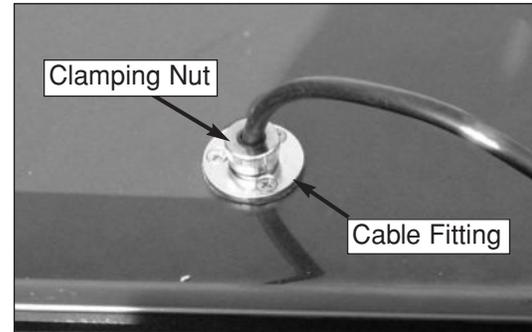
- Insert the antenna cable into the access hole. Inside the vehicle, pass the cable through the backing plate and route the cable to the receiver.

**Cable Routed Into Vehicle Through Access Hole**



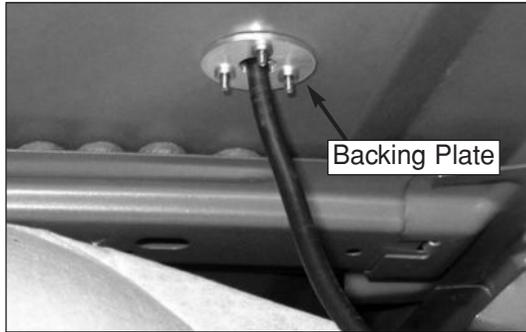
- Move the fitting down the cable until it covers the cable access hole, flush to the vehicle's roof. Line up the fitting's three mounting holes with the three  $\frac{5}{32}$ " holes drilled in the roof. Apply silicone sealant or RTV to the holes and insert the #6-32 x  $\frac{5}{8}$ " screws supplied in the kitpack.

**Fitting Mounted to Roof**



9. Secure the #6-32 x 5/8" screws to the backing plate inside the vehicle.

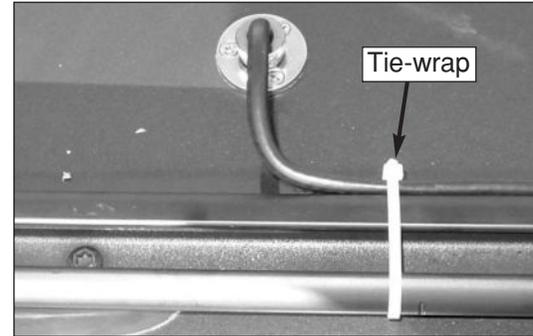
**Backing Plate (Inside Vehicle)**



10. Hand-tighten the fitting's clamping nut onto the cable until you're unable to move the cable back and forth, ensuring a watertight seal.

11. Using the supplied tie-wraps (or equivalent), secure the antenna cable to the roof rack, if necessary.

**Securing the Cable to the Roof Rack**

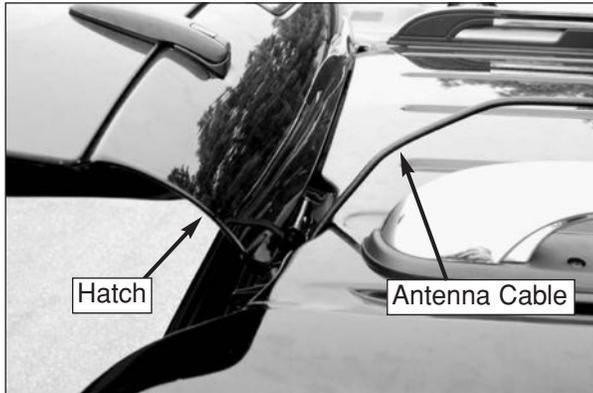


*Do not kink the cable. Maintain a bend radius of at least three inches. A tighter bend may disrupt the TV signal and degrade performance.*

## Option 2 - Route the Cable Behind the Hatch

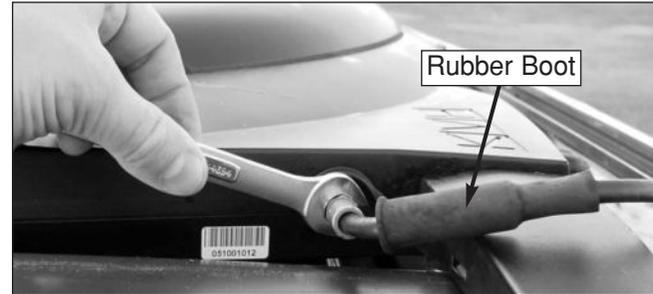
1. Move the steel fitting down the length of the antenna cable to the end opposite the rubber boot. You'll need to connect the end of the cable with the rubber boot to the antenna. *You will not need to use the fitting; simply keep it attached to the end of the cable inside the vehicle.*
2. Starting from inside the vehicle, pass the antenna cable through the gap in the hatch hinge.

### **Cable Routed Behind Rear Hatch**



3. Connect the antenna cable to the antenna. Hand-tighten, then tighten with a  $\frac{3}{16}$ " wrench for  $\frac{1}{4}$  turn to ensure an electrical and weatherproof connection.

### **Connecting the Antenna Cable to the Antenna**



4. Slide the rubber sealing boot up the cable until it covers the antenna cable connector. This boot will help protect the connector from the elements.
5. Using the supplied tie-wraps (or equivalent), secure the cable to the roof rack, if necessary.



*Do not kink the cable. Maintain a bend radius of at least three inches. A tighter bend may disrupt the TV signal and degrade performance.*

# 3 Installing the Receiver

This section explains how to connect all system cables to the mobile receiver and how to mount the receiver inside the vehicle.

## Contents

---

3-1	Choose the Receiver Location .....	3.3
3-2	Wire the Receiver .....	3.3
3-3	Mount the Receiver .....	3.10
3-4	Install Batteries in the Remote .....	3.10

### 3-1 Choose the Receiver Location

Now that you've installed the antenna, you need to find a suitable location inside the vehicle for installing the receiver. The receiver should be installed in an area that meets the following requirements:

- Dry
- Well-ventilated
- Away from heat sources
- Allows enough open space (at least 2" around) for ventilation and cable connections

### 3-2 Wire the Receiver

For the TracVision system to work, you will need to connect the following cables to the receiver:

- Antenna cable
- RF converter cable
- Audio/video (A/V) cables
- DC power cable



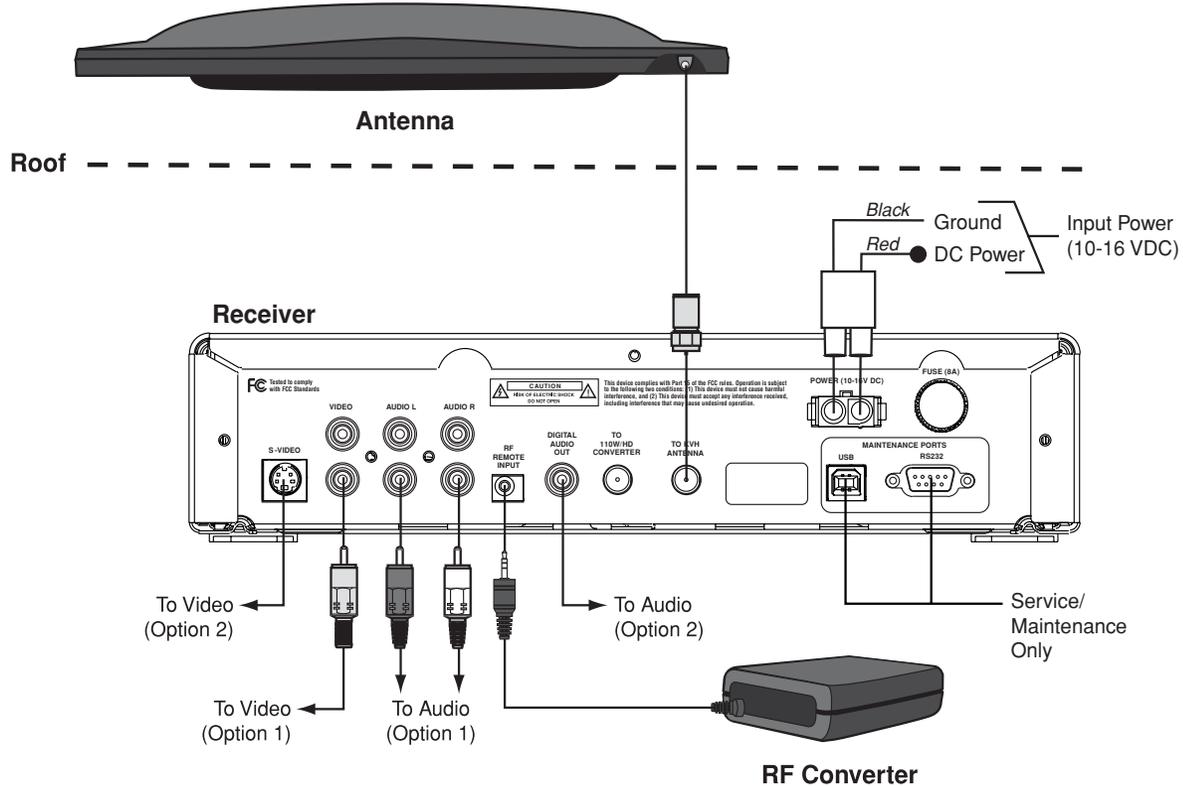
*The procedures in this section are intended for a basic wiring configuration. If the vehicle's entertainment system is wired differently, use these procedures as a guide and connect the cables as needed to suit the vehicle's particular configuration.*



*This section explains how to wire a single TracVision mobile receiver. For details on connecting additional receivers, refer to Appendix A in the TracVision Mobile Receiver User's Guide.*

---

# TracVision A7 Wiring Diagram



## Prepare the Antenna Cable

The antenna cable should already be connected to the antenna and routed to the receiver. If the cable is too long, you may either coil the excess cable inside the vehicle or cut the end of the cable to the desired length. If you choose to cut the cable, use an LRC/Augat T1000 crimp/strip tool to attach the supplied Snap-N-Seal® F-connector to the end of the cable. Since the antenna cable carries data, power, and communications, the integrity of this cable and its connections is very important.

**Augat Tool**



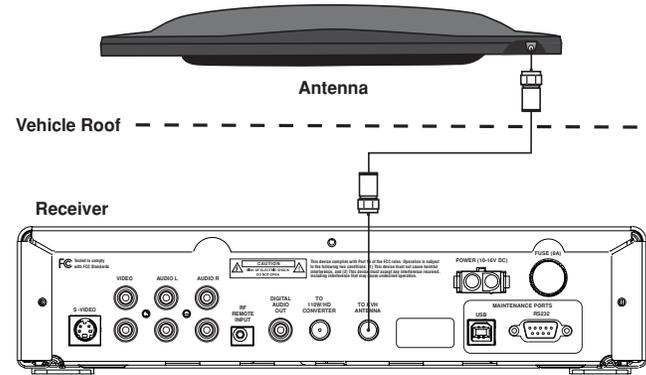
If you do not have an LRC/Augat T1000 tool (KVH P/N 19-0242), please order one from KVH at 401-847-3327.



**Do not** use a screw-on, push-on, or twist-on connector. Low-quality connectors will degrade system performance and KVH's warranty does not cover repairs resulting from the use of such connectors.

## Connect the Antenna Cable

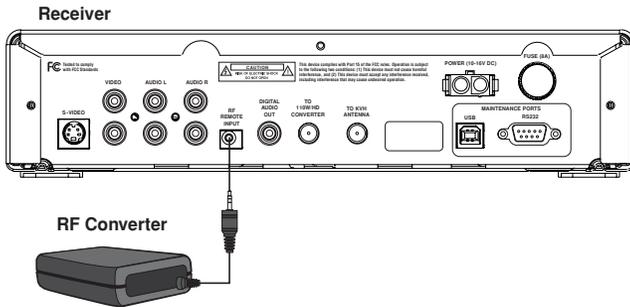
Connect the antenna cable to the “To KVH Antenna” jack on the receiver’s rear panel. Screw the connector down securely.



## Connect the RF Converter Cable

To connect the RF converter cable, follow the steps below.

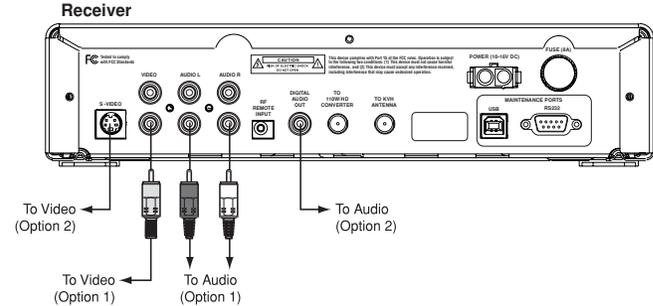
1. Connect the RF converter cable to the “RF Remote Input” jack on the receiver’s rear panel.



2. Place the RF converter at least three feet away from the receiver and other electronic devices. And do not place the RF converter behind a metal structure. *Otherwise, the remote control might not operate properly due to interference.* Velcro is provided in the kitpack to mount the RF converter to a structure inside the vehicle.

## Connect the Audio/Video Cables

The receiver kit includes standard audio/video cables with RCA-type connectors for connecting the receiver to your vehicle’s entertainment system. The receiver also includes S-Video and digital audio jacks, which you may use instead. Follow the procedures on the next page for your desired type of connections.



*If the entertainment system has only a coaxial input available, you will need an RF modulator (Radio Shack model 15-2526 or equivalent).*

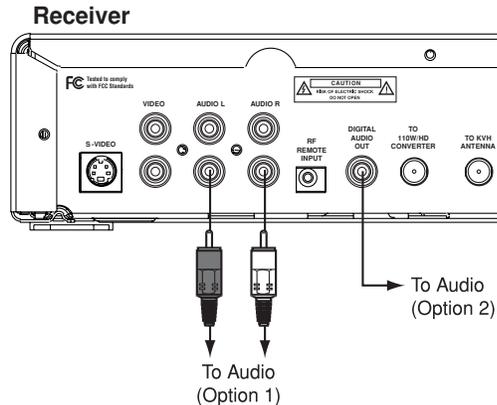
## Connect the Audio Cables

### Option 1 – Standard Audio Cables (cables included)

Connect the red and white audio cables to the receiver's "Audio L" and "Audio R" jacks. The jacks are color-coded. Connect the other ends to the entertainment system's audio inputs. *If only one audio input jack is available, connect the white cable and leave the red cable disconnected.*

### Option 2 – Digital Audio Cable (cable not included)

Connect your digital audio cable to the receiver's "Digital Audio Out" jack. Connect the other end to the entertainment system's digital audio input.



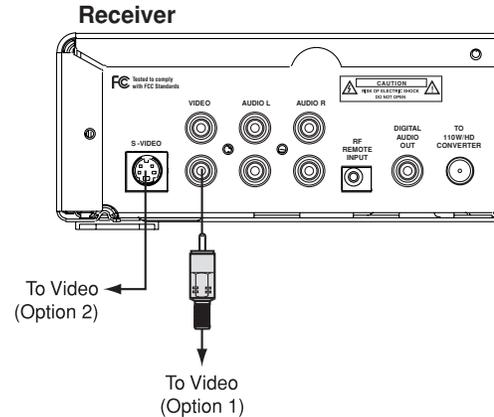
## Connect the Video Cable

### Option 1 – Standard Video Cable (cable included)

Connect the yellow video cable to the receiver's "Video" jack. The jack is color-coded. Connect the other end to the entertainment system's video input.

### Option 2 – S-Video Cable (cable not included)

Connect your S-Video cable to the receiver's "S-Video" jack. Connect the other end to the entertainment system's S-Video input.



## Connect the Power Cable

Now that you've connected all other cables to the receiver, follow the steps below to connect the power cable.

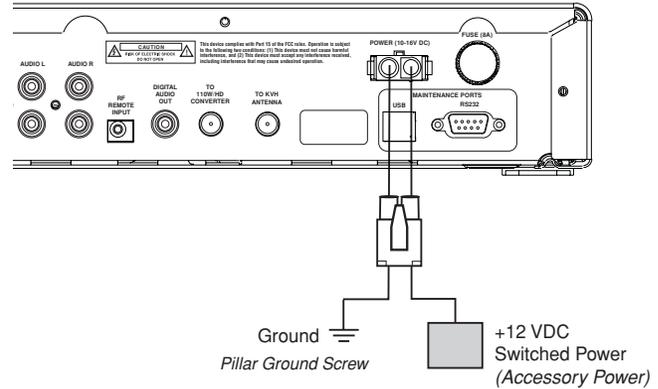
1. Remove the key from the ignition and remove the negative lead from the vehicle's battery.



*Before connecting the receiver power cable, be sure that vehicle power is turned off and power is disconnected from the circuit.*

2. Connect the receiver power cable's red (positive) wire to +12 VDC switched (accessory) power. *With the vehicle running and the receiver turned on, power at the receiver must measure at least 11 VDC.*
3. Connect the receiver power cable's black (negative) wire to its own dedicated chassis ground (such as a pillar ground screw) within 18" of the receiver. The black wire must make contact between the metal of the ground screw and the metal of the vehicle frame.

### Power Wiring (Preferred)



4. Plug the other end of the power cable into the "Power" jack on the receiver's rear panel.
5. Reconnect vehicle power.



*Do not connect the receiver power cable directly to the vehicle's battery without following the special instructions on the following page.*

## Connect the Power Cable to the Battery (Alternative Wiring Option, Only If Necessary)

If you are unable to connect the receiver power cable to switched (accessory) power as described on the previous page, you may wire the receiver to battery power if you follow the minimum requirements listed below.

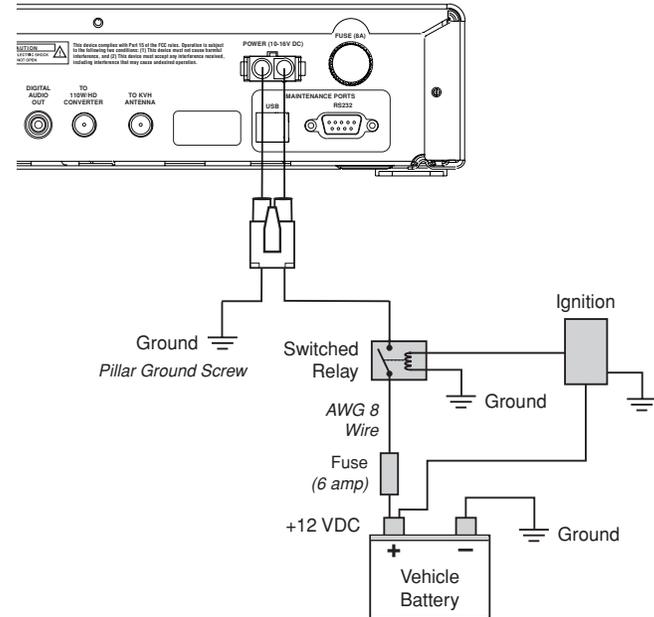
- Install a protective fuse (6 amps) within 18" of the battery.
- Install a relay, switched from the ignition, between the battery and the receiver.
- Use fire-resistant AWG 8 wire from the relay to the battery.



### **Bus, Limo, and RV Installations**

*If vehicle power fluctuates or is noisy, KVH recommends that you use an AC/DC power supply (KVH P/N 72-0206-01) to provide stable power to the receiver.*

### **Power Wiring (Alternative Option)**



### 3-3 Mount the Receiver

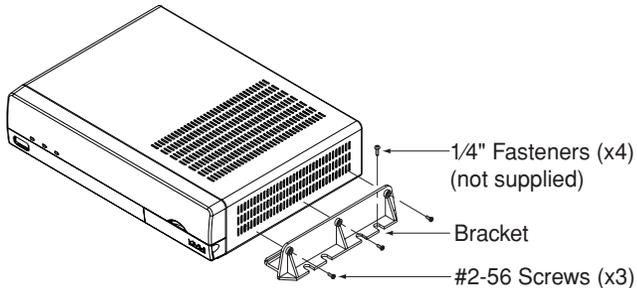
Once all cables are connected, mount the receiver inside the vehicle.



*Do not block the receiver's ventilation openings. These openings ensure reliable operation of the receiver and protect it from overheating.*

1. Using the supplied #2-56 x ¼" screws, attach the two L-shaped brackets to the sides of the receiver.
2. Using appropriate ¼" fasteners for your installation, secure the receiver brackets to the mounting surface.

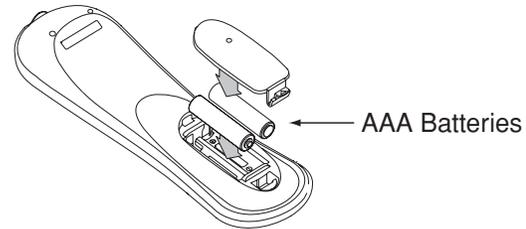
#### **Mounting the Receiver**



### 3-4 Install Batteries in the Remote

The receiver comes with an RF/IR remote control. Insert two AAA batteries in the remote control's battery compartment. Be sure to observe the correct polarity.

#### **Remote Control Batteries**



# 4 Completing the Installation

This section explains how to turn on and test the TracVision A7 system. It also lists important information the owner needs to know.

## Contents

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4-1	Post-installation Checklist .....	4.3
4-2	Test the System .....	4.5
4-3	Educate the Customer .....	4.7

## 4-1 Post-installation Checklist

Congratulations! You've completed the TracVision A7 installation. Before you turn on and test the system, please make certain that you have completed the following important steps:

Step	Page #	Done?
You affixed the antenna serial number label to the red Activation Card.	1.7	<input type="checkbox"/>
You removed the antenna's shipping restraints from below.	2.3	<input type="checkbox"/>
You attached the mounting brackets to the antenna using the supplied hardware.	2.4, 2.8, 2.13, 2.15	<input type="checkbox"/>
<b>Rack or Hummer Mount:</b> You verified the roof rack crossbars are securely fastened to the vehicle and are sturdy enough for the antenna.	2.4, 2.12, 2.14	<input type="checkbox"/>
<b>Rack Mount:</b> You positioned the rubber cushions within the antenna mounting brackets to best fit the vehicle's crossbars.	2.5	<input type="checkbox"/>
<b>Rack or Roof Mount:</b> You allowed enough clearance between the antenna and the roof.	2.6,2.9	<input type="checkbox"/>
<b>Roof Mount:</b> You attached the mounting plates to the roof using appropriate fasteners and sealed them to prevent leakage.	2.9	<input type="checkbox"/>
<b>Hummer Mount:</b> You inserted the supplied T-nuts into the center channel of the crossbars.	2.12, 2.14	<input type="checkbox"/>

<b>Step</b>	<b>Page #</b>	<b>Done?</b>
You secured the antenna to the vehicle using the supplied hardware.	2.7, 2.11, 2.13 2.15	<input type="checkbox"/>
After connecting the antenna cable to the antenna, you installed the rubber boot over the connector.	2.17, 2.20	<input type="checkbox"/>
If you routed the antenna cable through the roof, you used the supplied fitting and backing plate and sealed the holes.	2.18	<input type="checkbox"/>
If you cut the antenna cable, you used an LRC/Augat T1000 tool to attach the supplied F-connector to the end of the cable.	3.5	<input type="checkbox"/>
You connected the antenna cable to the receiver.	3.5	<input type="checkbox"/>
You connected the RF converter to the receiver and placed it 3 feet away from the receiver and not behind a metal structure.	3.6	<input type="checkbox"/>
You connected high-quality audio/video cables from the receiver to the vehicle's entertainment system.	3.6	<input type="checkbox"/>
You connected the receiver's power cable to +12 VDC switched (accessory) power and did not connect other devices to the same circuit.	3.8	<input type="checkbox"/>
You mounted the receiver in a dry location away from any heat sources and allowed plenty of room for ventilation.	3.10	<input type="checkbox"/>
<b>Receiver Location:</b>		
You installed two "AAA" batteries in the remote control.	3.10	<input type="checkbox"/>

## 4-2 Test the System

Now all you need to do is turn the system on and ensure everything works properly. Follow the steps below to turn on the TracVision A7 system and verify proper operation.

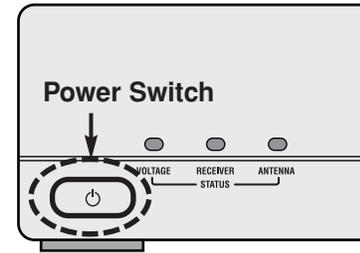
1. Ensure the antenna has a clear view of the satellite. The antenna requires an unobstructed view of the southern sky to receive satellite TV signals. Trees, buildings, highway overpasses, etc., can block satellite signals. Heavy rain or snow might also interrupt satellite signals. For complete details about satellite reception requirements, refer to *Section 1-3, "Receiving Satellite TV Signals,"* in the *User's Guide*.



*Since the TracVision antenna requires an unobstructed view of the southern sky to receive satellite signals, the system will not work when the vehicle is in a garage.*

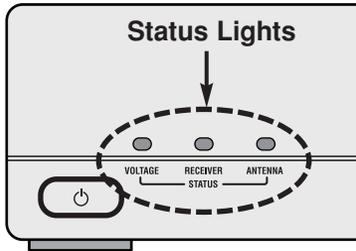
2. Apply vehicle power and turn on the vehicle's entertainment system.
3. Turn on the power switch on the front of the TracVision mobile receiver.

**Receiver Power Switch**



4. Wait while the antenna searches the sky for the satellite. Within a few minutes, all three status lights on the front of the receiver should be lit green. If any of these lights are not green, refer to Section 10-4, "System Status Lights," in the User's Guide for troubleshooting details.

### Receiver Status Lights



5. A progress bar will appear on the TV, indicating that the receiver is downloading the program guide. Once the guide is loaded, verify that you can view the DIRECTV® preview channel (100).

### Program Guide Load Progress Bar

If your satellite dish is ready for DIRECTV® service, please wait until your Advanced Program Guide™ is prepared.

Installation



Acquiring guide data...



Only the DIRECTV® preview channels (such as channels 100 and 201) are viewable until the owner activates the receiver.

## 4-3 Educate the Customer

Be sure to give the manuals to the owner and explain how to use the product. The owner also needs to know the following:

- The antenna must have a clear view of the southern sky to receive satellite TV. Common causes of blockage include trees, buildings, overpasses, and mountains. The TracVision antenna will not work inside a garage.
  - Heavy rain or snow may temporarily interrupt reception.
  - The antenna should be cleaned regularly. Dirt buildup on the radome can affect reception.
  - Make sure the user knows the new height of his/her vehicle, measured from the road to the top of the antenna, so that he/she can avoid parking garages and overpasses that are too low.
  - **It is dangerous to watch TV while driving a vehicle.** The TracVision system is intended as a passenger entertainment product.
- The owner needs to register the system for product warranty validation. Refer to the Product Registration Form for details or visit: **[www.kvh.com/register](http://www.kvh.com/register)**.
  - Refer to the *Quick Start Guide* and the *User's Guide* for complete operation instructions.
  - If the owner removes the antenna from the roof, then later needs to reinstall it, the owner must apply threadlocker (Loctite 425) to the threads of the mounting screws to avoid a potentially dangerous condition. The mounting screws are prepared with a thread-locking patch that will degrade if the screws are removed. **Failure to apply threadlocker to the screws during reinstallation can result in unsecure mounting.**
  - Be sure to give the owner the red Activation Card, which has information required for activating the mobile receiver. The receiver must be activated before it can receive satellite TV programming. To activate, the owner needs to call KVH's Activation Department toll-free at **1-866-551-8004** (24 hours a day, 7 days a week).

# Appendix A

## System Specifications

### Physical Characteristics

Power	10-16 volts DC, 50 watts
Antenna Dimensions	30.5" wide x 5.3" high
Antenna Weight	48 lbs
Receiver Dimensions	11" wide x 9" long x 2.5" high
Receiver Weight	4 lbs

### Pointing System

Elevation Range	31° to 57°
Azimuth Range	Unlimited
Wind Force	100 mph
Stabilization	2-axis, actively gyro-stabilized

### Environmental

Operating Temperature	-13°F to +131°F (-25°C to +55°C)
Storage Temperature	-20°F to +140°F (-29°C to +60°C)
Humidity	to 100 percent

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**KVH Industries, Inc.** 50 Enterprise Center • Middletown, RI 02842-5279 U.S.A. • Phone: (401) 847-3327 • Fax: (401) 849-0045 • E-mail: [info@kvh.com](mailto:info@kvh.com)