

KVH® TracVision® A5



Installation Guide

TracVision A5 Installation Guide Addendum

ECO #6864

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

The note on page 2.6 incorrectly states that a section of rubber, neoprene, or foam should be attached to the base of the antenna if there is less than 1" of space between the antenna and the roof. KVH no longer recommends this action because it may cause the center of the antenna to compress and possibly damage the antenna's internal parts.

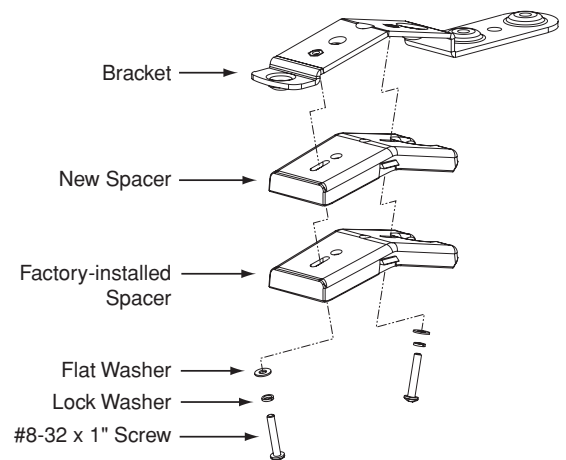
The note on page 2.6 (Step 6) has been changed as shown below:

6. With the cushions installed in the brackets, the bottom of the antenna should rest higher than 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 off the crossbars.

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 (which holds the rubber cushions) 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.

Adding a Second Spacer to the Bracket



If, after you have installed the spacers, there is less than ½" of space between the antenna and the roof, KVH recommends that you either use the optional roof mount kit or replace the roof rack with an aftermarket model that offers greater clearance. If the antenna is mounted too low, it may strike the roof when the vehicle is in motion.

TracVision A5 Installation Guide Addendum



ECO #6822

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

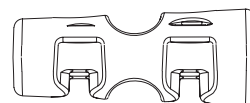
The kitpack packaged with your TracVision A5 system does not contain 16 **tapered** rubber cushions (24-0174), as described in the *Installation Guide*. These cushions are unnecessary for a proper installation. The 16 **level** rubber cushions (24-0173) supplied in the kitpack should be used in all roof rack installations.

Step 5 of *Section 2-1, "Mounting the Antenna to the Vehicle's Roof,"* has been changed to remove references to the tapered cushions:

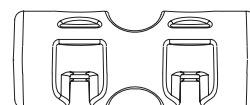
- Each bracket and retaining block (which you will attach to the bracket later) contains several pairs of pegs. These pegs allow you to place the four rubber cushions in different positions to best fit the vehicle's particular style of crossbars.

Try out the various cushion positions until you find the best fit for your installation.

Tapered Cushion - Not Supplied

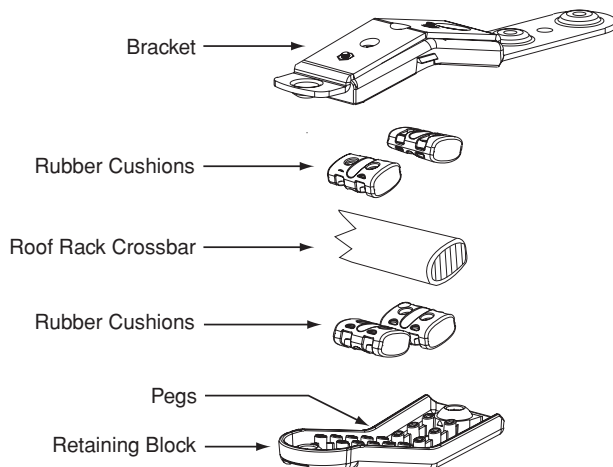


Level Cushion - Supplied



The more surface area of the cushions pressing against the top and bottom of the crossbar, the better the fit.

Positioning Rubber Cushions for Best Fit



TracVision A5 Installation Guide Addendum

ECO #6705

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

When you start up the TracVision antenna, do not move the vehicle for 20 seconds. This allows the antenna gyros to initialize properly, ensuring optimum satellite tracking performance.

4-3 Testing 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 A5 system and verify proper operation.

1. Ensure that 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 may also interrupt satellite signals. For complete details about satellite reception requirements, refer to *Section 1.3, "Receiving Satellite TV Signals,"* in the *TracVision A5 User's Guide*.

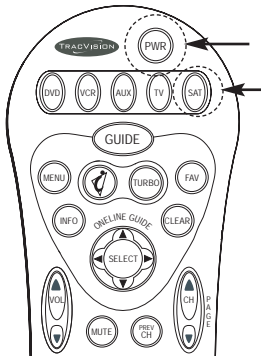


Since the TracVision antenna requires an unobstructed view of the southern sky to receive satellite signals, the system will not work when the vehicle is in a garage.

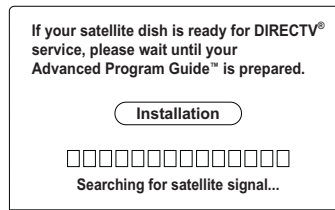
2. Apply vehicle power and turn on the vehicle's entertainment system.
3. Turn on the TracVision A5 receiver's front panel power switch. The switch's light illuminates and the receiver beeps twice.
4. Wait 30 seconds. The antenna should then power off and the receiver should beep once.

Receiver Front Panel Power Switch

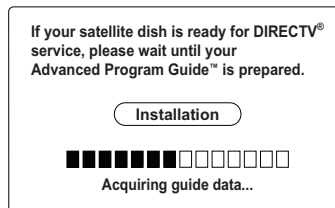




5. Press the remote control's SAT button. The button should blink red. If it doesn't, check the remote control's batteries.
6. Now press the POWER button. The receiver beeps twice to indicate that power is again applied to the antenna.
7. **Do not move the vehicle for 20 seconds. This allows the antenna gyros to initialize properly.**
8. Verify that the following appears on the TV(s):



The TracVision antenna searches for and locks onto the satellite. The receiver then starts downloading the program guide and the following message appears:



This process may take up to 60 seconds. Once the program guide has loaded, a DIRECTV programming channel appears. *Only the DIRECTV preview channels (such as channels 100 and 201) are viewable until the user activates the receiver.*

TracVision A5 Installation Guide Addendum

ECO #6670

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

Recording the Antenna Serial Number

Before installing the system, peel off the extra antenna serial number label (taped to the antenna) and affix it in the appropriate box on the activation information card that is attached to the receiver. In addition, enter the antenna serial number in the appropriate box on the first page of the *TracVision A5 User's Guide*. 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 A5 system.

TracVision A5 Installation Guide Addendum



ECO #6669

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

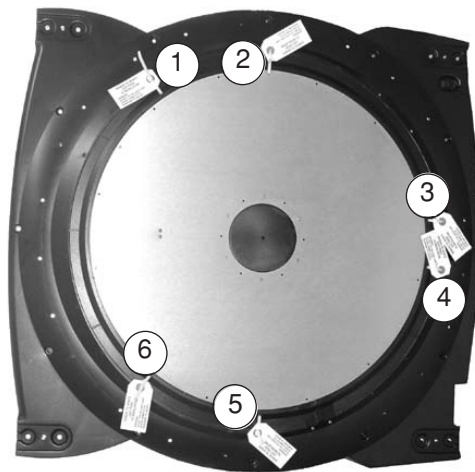
Shipping Restraints

To better prevent shipping damage, wire rope is now used instead of plastic tie-wraps to secure the antenna mechanism in place. To remove these restraints, you will need to use heavy-duty wire cutters to snip the wire.



Do not remove the restraints until you have attached the four mounting brackets to the antenna's base and are ready to place the antenna onto the vehicle. See Section 2-1, "Mounting the Antenna to the Vehicle's Roof."

Shipping Restraint Locations



TracVision A5 Installation Guide Addendum



ECO #6516

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

The RF-to-IR converter described in the manual has been replaced with a new RF converter. This new component receives RF signals from the remote control and converts them directly to digital signals, which the receiver can understand.

New RF Converter



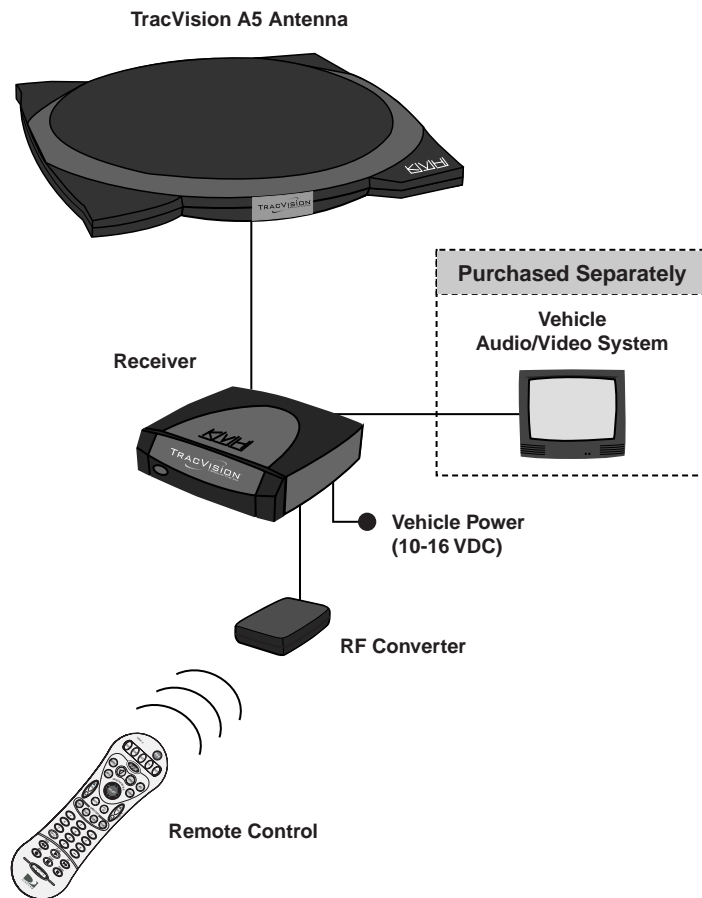
The following pages show the resulting changes to the TracVision A5 Installation Guide.

1-2 System Overview

A complete satellite TV system includes the TracVision A5 antenna and receiver connected to the vehicle's audio/video entertainment system. The remote control and **RF converter** allow the user to operate the system from anywhere in the vehicle.

(RF = Radio Frequency)

TracVision A5 System Diagram (Typical Installation)



RF Converter

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

1-3 Materials Provided

The table of provided components has been updated to list the new RF converter.

Component	KVH Part #
<i>Packaged in antenna box:</i>	
Antenna unit	02-1289-01
<i>Packaged in receiver box:</i>	
Receiver	02-1287-01
RF converter	02-1344
Remote control	19-0335
TracVision A5 User's Guide	54-0208
TracVision A5 Installation Guide	54-0208-01

1-4 Planning the Installation

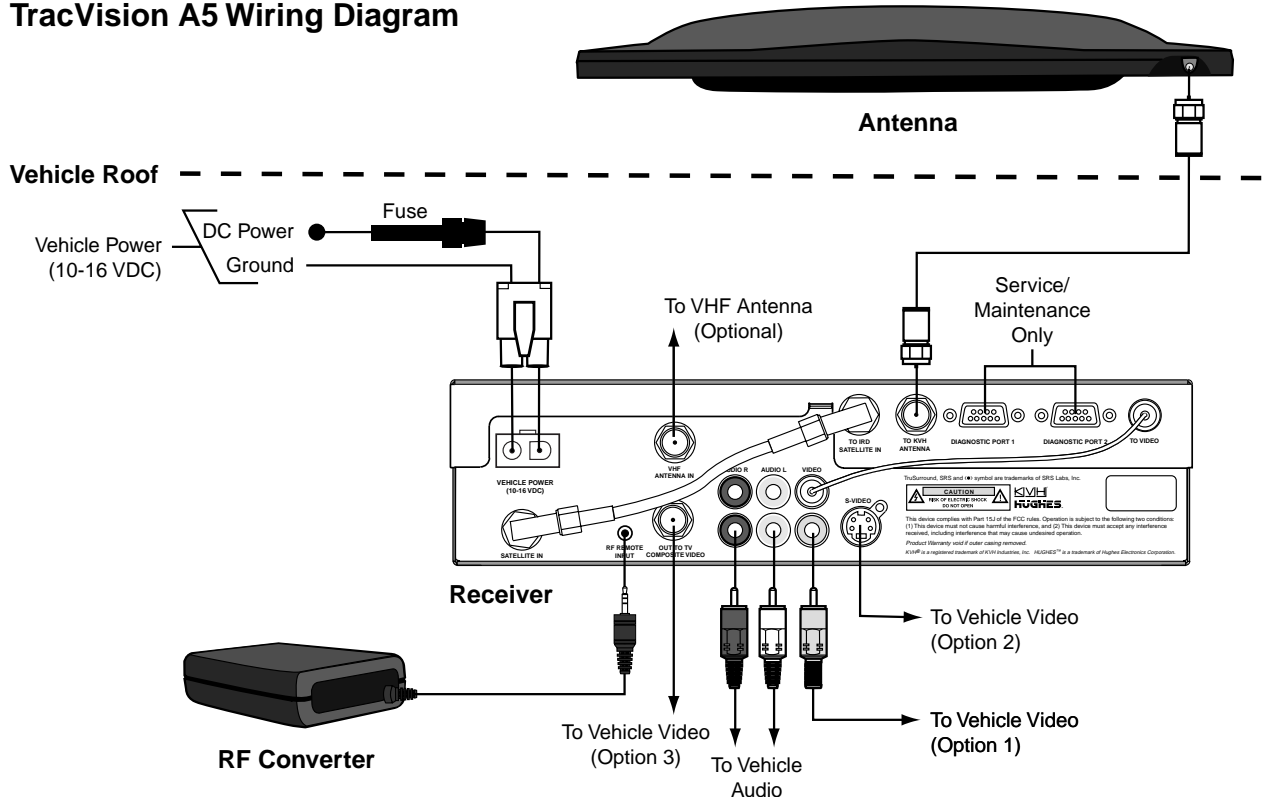
Kitpack Contents

The RF-to-IR converter cable (part # 32-0773) has been removed from the kitpack. It is no longer needed, since the new RF converter comes with an attached cable.

3-1 Wiring the Receiver

The receiver rear panel has been modified to accept the new RF converter cable. The diagram below shows the new receiver wiring.

TracVision A5 Wiring Diagram



Connecting 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's location.



The RF converter must be placed at least three feet away from the receiver. Placing the RF converter closer to the receiver may result in interference, causing the remote control to operate intermittently or not at all.

Connecting an Existing IR Input (Optional)

The optional vehicle IR adapter cable is no longer available. Use the new RF converter in all installations.

TracVision A5 Installation Guide Addendum

ECO #6423

The following information applies to Revision C of the *TracVision A5 Installation Guide* (KVH Part Number 54-0208-01).

Rubber Cushions All Black

All of the rubber cushions provided with the TracVision A5 are black in color. The level rubber cushions (described in step 5 of *Section 2-1, "Mounting the Antenna to the Vehicle's Roof,"* on page 2.5) are black, not gray, in color.

New Antenna Mounting Hardware

The ¼"-20 x 2½" tamper-resistant screws provided in the TracVision A5 kitpack differ from those described in the manual. They have a Snake Eyes® head instead of a TORX® head. The kitpack also includes a Snake Eyes bit for tightening these screws. New part numbers are noted below.

Snake Eyes Screw Head



Part	Part #	Qty.
¼"-20 x 2½" Snake Eyes screws	14-0373-40	8
Tamper-proof Snake Eyes bit	14-0379	1

The Snake Eyes screws are only necessary if you need to install a spacer underneath each antenna mounting bracket, as described in step 6 of *Section 2-1, "Mounting the Antenna to the Vehicle's Roof,"* on page 2.6. Steps 8 and 9 of *Section 2-1* are superseded by the information on the following pages.

-
8. Insert the appropriate tamper-resistant flat-head screws into each bracket's swivel nuts:

If you DID NOT install spacers in Step 6:

Insert ¼"-20 x 2" TORX screws into the bracket's swivel nuts.

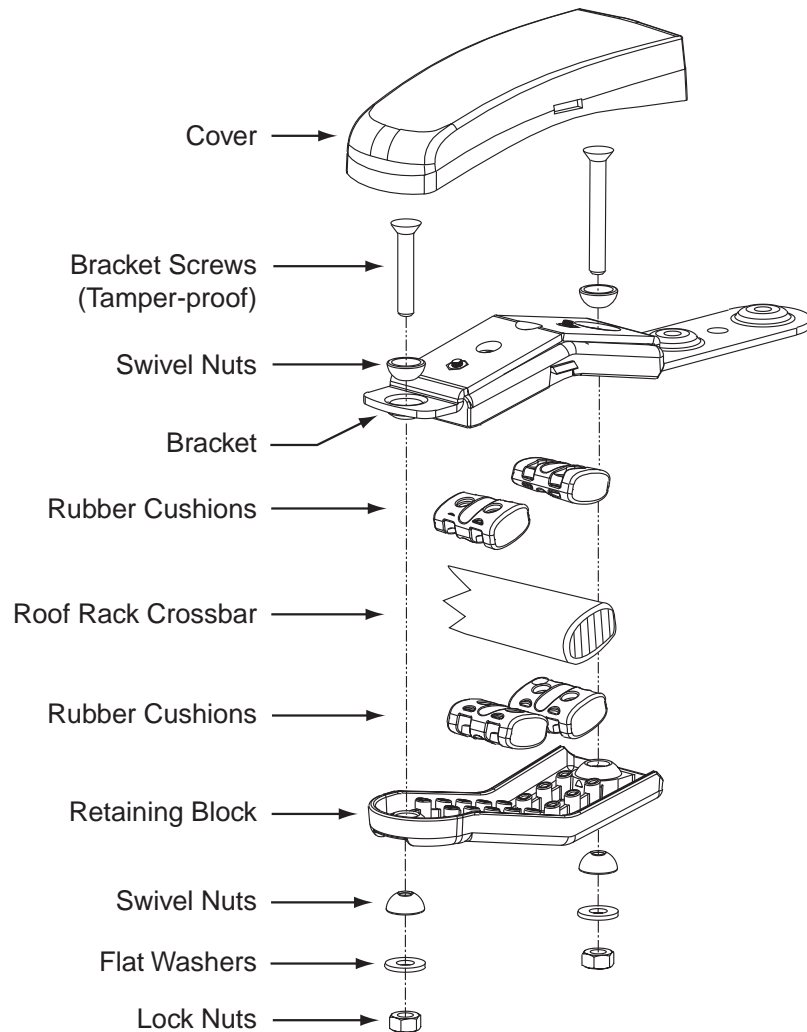
If you DID install spacers in Step 6:

Insert ¼"-20 x 2½" **Snake Eyes** screws into the bracket's swivel nuts.



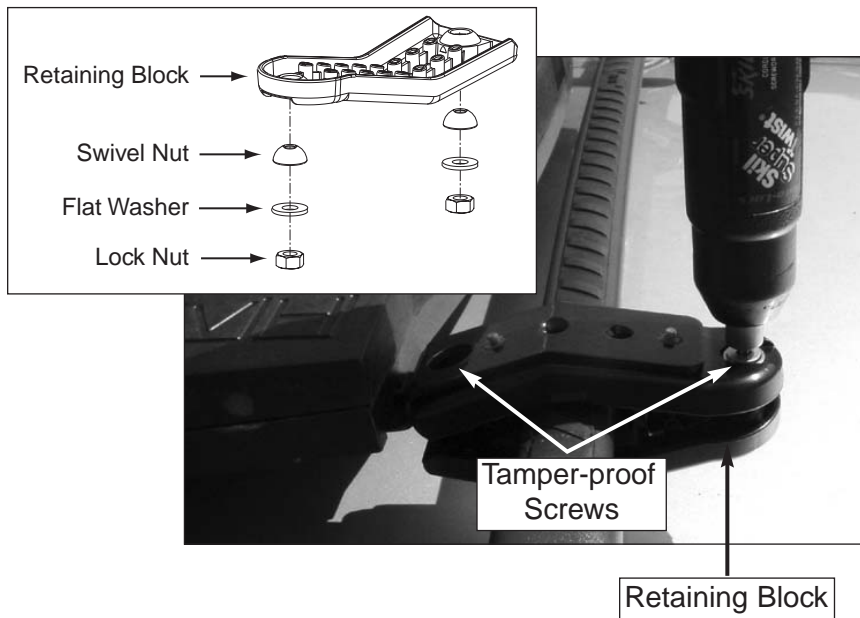
Be sure to use the tamper-resistant hardware provided in the kitpack.

Securing the Brackets to the Crossbars



9. At each bracket, position a retaining block underneath the crossbar and insert two swivel nuts, ¼" flat washers, and lock nuts into the captive holes from below. While holding this hardware in place, screw the bracket's screws into the retaining block's swivel nuts, washers, and lock nuts using a ¼" driver and the supplied T27 TORX bit or **Snake Eyes bit**, as required. After securing all four brackets to the crossbar, verify that all cushions are pressed firmly against the crossbar, providing a solid grip. Also check to make sure that all eight screws have engaged the nylon inserts in the lock nuts.

Securing the Tamper-proof Screws



TracVision A5

Installation Guide

The TracVision A5 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 A5 system. Complete instructions on how to use the system are provided in the *TracVision A5 User's 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.

[Click here to go to our state-of-the-art Customer Support web page...the fastest and easiest way to get all of your questions answered!](#)



KVH Part # 54-0208-01 Rev. C

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Patents Pending



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Note on recording programming

Most television programs and films are copyrighted. This means that someone has legal rights governing the reproduction and distribution of this material. In certain circumstances, copyright law may apply to private taping of copyrighted materials. In most cases, it is permissible to record for your personal use, as long as you do not sell the material. You must act responsibly in this area—check into the matter if you are unsure.

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 Carefully

For your safety and protection, read this entire Installation Guide before you install the TracVision system. In particular, read this safety section carefully.

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.



WARNING!

Avoid Driver Distraction

It is dangerous to watch television or operate the remote control while you are driving a vehicle. The TracVision A5 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 A5 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.

Federal Communications Commission (FCC) Regulatory Information

Declaration of Conformity – Standards to which Conformity is declared:
FCC Part 15

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible Party's Name: KVH Industries, Inc.

Address: 50 Enterprise Center, Middletown, RI 02842

Telephone: 1-401-847-3327

Trade Name: KVH

Type of Equipment: Satellite Receiver

Model Number: TracVision A5

Federal Communications Commission (FCC) – This equipment complies with Part 15 of the FCC rules.

Part 15 Compliance – This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a vehicle installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by removing and applying power to the equipment, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and the receiver.
- Connect the equipment on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced auto electronics technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio and TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC.

To meet FCC requirements, only components certified to comply with Class B limits may be attached to this device. Operation with noncertified peripherals is likely to result in interference to radio and TV reception.

To meet FCC requirements, shielded cables are required to connect the device to another Class B certified device.

Technical Support

If you need technical assistance when installing the TracVision A5, please call KVH Technical Support:

Phone: (401) 847-3327

E-mail: techs@kvh.com

Internet: www.kvh.com/help

Send Us Your Comments About This Manual

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

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1 Getting Started

This section provides a basic overview of this manual and the TracVision A5 system. It also lists the components supplied with the system.

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1-1 Using this Manual

This manual provides complete instructions for installing the TracVision A5 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.

Who Should Install the TracVision A5 System

KVH strongly recommends that a KVH-authorized technician and an assistant install the TracVision A5 system. Installers should have experience installing electronic equipment on a vehicle and have knowledge about satellite television.



Do **NOT** attempt to install the antenna by yourself. Two people are needed to lift the antenna onto the vehicle's roof.



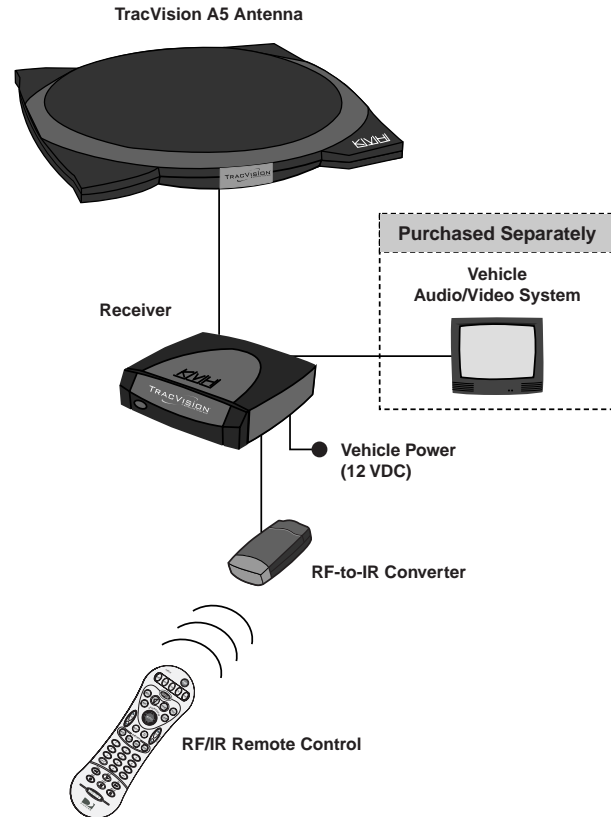
KVH is not liable for damage (or related expenses) caused by improper installation.

1-2 System Overview

A complete satellite TV system includes the TracVision A5 antenna and receiver connected to the vehicle's audio/video entertainment system. The RF/IR remote control and RF-to-IR converter allows the user to operate the system from anywhere in the vehicle.

(RF = Radio frequency; IR = Infrared)

TracVision A5 System Diagram (Typical Installation)



System Components

The TracVision A5 includes the following components:

Antenna Unit

The antenna unit, mounted onto the vehicle's roof rack, houses the phased array, positioning mechanisms, 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 supplies power to the TracVision antenna.



Remote Control

The backlit wireless RF/IR remote control allows the user to control 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-to-IR Converter

The RF-to-IR converter receives radio frequency (RF) commands from the remote control, converts them to infrared (IR) signals, and sends them to the receiver for processing.



1-3 Materials Provided

The following components are provided with the TracVision A5 system.

Component	KVH Part #
Packaged in antenna box:	
Antenna unit	02-1289-01
Packaged in receiver box:	
Receiver	02-1287-01
RF-to-IR converter	02-1293
Remote control	19-0335
<i>TracVision A5 User's Guide</i>	54-0208
<i>TracVision A5 Installation Guide</i>	54-0208-01

Initial Inspection

Carefully remove the components from their packaging and examine to ensure that nothing was damaged in shipment. *Save the packaging in case you need to ship the system someday.*

1-4 Planning the Installation

Materials and Equipment Required

To install the TracVision system, you will need the following tools and materials:

- ¼" driver
- Phillips and flat-head screwdrivers
- Stepladder
- ⅝" open-end wrench
- Wire cutters

If routing the antenna cable through the roof:

- Light hammer and center punch
- Drill and ⅝" bit
- ½" hole saw
- Silicone sealant or RTV

If cutting the antenna cable to length:

- LRC/Augat IT1000 crimp tool (*available from KVH; call (401) 847-3327 to order*)

Kitpack Contents

The kitpack that was packaged with your system contains various hardware and other materials that you will need to complete the TracVision A5 installation. Ensure that the kitpack contains all of the items listed below.

Kitpack Contents

Part	Part #	Qty.
Antenna brackets	20-0947	4
Plastic clamp spacers	30-0180	4
Retaining blocks	30-0181	4
Clamp covers (front)	30-0190	2
Clamp covers (rear)	30-0191	2
Swivel nuts	20-0980	16
Hex lock nuts	14-0065-25	8
¼" flat washers	14-0132-08	8
Rubber cushions (black)	24-0174	16
Rubber cushions (gray)	24-0173	16

Part	Part #	Qty.
#8-32 x 1" screws	14-0041-08	8
Tamper-proof TORX® T27 bit	14-0378	1
¼"-20 x 1" TORX screws	14-0361-16	12
¼"-20 x 2" TORX screws	14-0363-32	8
¼"-20 x 2½" TORX screws	14-0363-40	8
Receiver brackets	20-0931	2
#8-32 x ⅝" screws	14-0041-65	4
#6 x ½" self-drilling screws	14-0357-08	6
#8 washers	14-0226-08	4
DC power cable	32-0760	1
Antenna cable, 20 ft.	32-0778-20	1
Snap-N-Seal F-connector	23-0170	1
Audio/video cables	32-0763	1
RF-to-IR converter cable	32-0773	1
Backing plate	20-0983	1
#6-32 x ⅝" screws	14-0224-10	4

Kitpack Contents (continued)

Part	Part #	Qty.
Tie-wraps	22-0041	9
Small protective caps	24-0128	2
Large protective caps	24-0177	2
AAA batteries	15-0015	2



The antenna mounting brackets packaged with the TracVision A5 fit the vast majority of roof rack models. If the vehicle's roof rack crossbars are oversized (such as those installed on Hummers®), please call KVH at (401) 847-3327 to order a special installation kit.

Choosing the Receiver Location

Now that you've got everything you need to install the TracVision A5, locate a suitable location for mounting the receiver. The receiver should be installed in a secure, dry location away from any heat sources. Also be sure the location will allow enough open space (at least 2" around) for ventilation and cable connections. Suggested locations are under a seat or inside the trunk.

Recording the Antenna Serial Number

Before installing the antenna, peel off the extra serial number label (taped to the antenna) and affix it in the appropriate box on the first page of the *TracVision A5 User's Guide*.



Be sure to affix the extra antenna serial number label on the first page of the TracVision A5 User's Guide. 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 A5 system. See Section 4-4, "Activating the Receiver" on page 4.7 for details.

2 Installing the Antenna

This section explains how to mount the antenna to the vehicle's roof rack. It also explains how to connect and route the antenna cable.

Contents

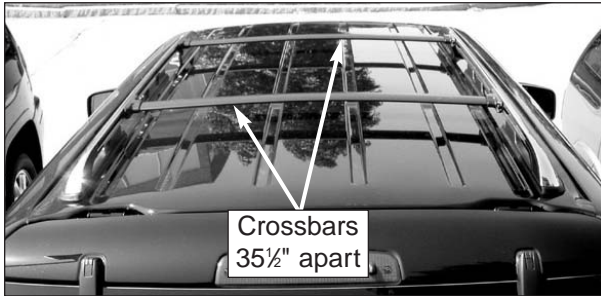
- 2-1 Mounting the Antenna to the Vehicle's Roof2.3
- 2-2 Connecting the Antenna Cable2.9

2-1 Mounting the Antenna to the Vehicle's Roof

The TracVision antenna mounts onto the vehicle's roof rack by clamping onto the crossbars. To mount the antenna, follow the steps below.

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

Roof Rack Crossbars



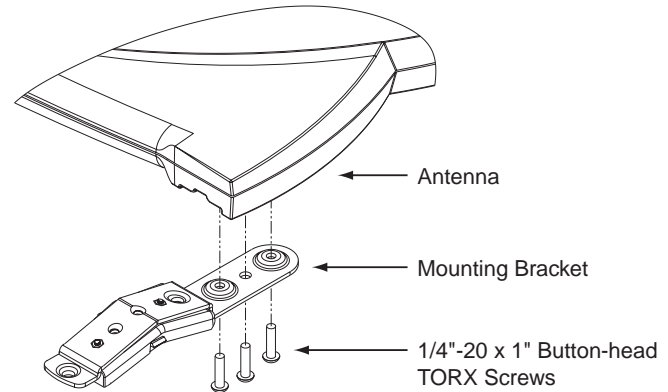
Be sure the roof rack's crossbars are secured in place and are sturdy enough to support the 48 lb antenna.

2. Underneath each of the antenna's four corners, attach a supplied mounting bracket using three ¼"-20 x 1" button-head TORX screws supplied in the kitpack. Use a ¼" driver and the supplied T27 TORX bit to tighten the screws; do not overtighten.

TORX Screw Head



Attaching Brackets to the Antenna Base

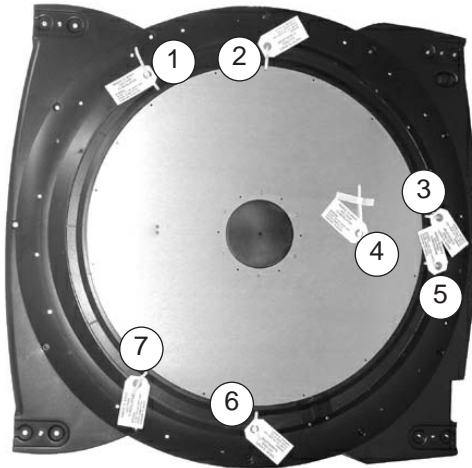


- Without tilting the antenna upside-down, cut and remove all of the tie-wrap shipping restraints located underneath the antenna.



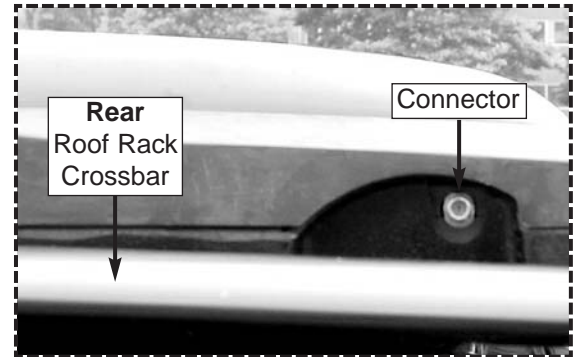
*Do **NOT** tilt the antenna on its side or upside-down once the shipping restraints are removed. Damage caused by improper handling is not covered under the KVH warranty.*

Shipping Restraint Locations



- Place the antenna onto the roof rack, with the connector facing the rear of the vehicle. All four brackets should rest on top of the roof rack's crossbars.

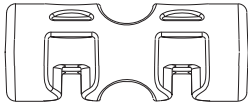
Antenna Connector Facing Rear of Vehicle



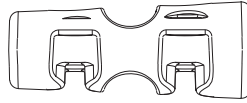
5. Each bracket and retaining block (which you will attach to the bracket later) contains several pairs of pegs. These pegs allow you to place the four rubber cushions in different positions to best fit the vehicle's particular style of crossbars.

If the vehicle's crossbars are relatively straight from end to end, use the gray (level) rubber cushions. If the vehicle's crossbars are more sloped in shape (curved at the sides), use the black (tapered) rubber cushions, with the narrow ends facing the center of the crossbar.

Level Cushion



Tapered Cushion

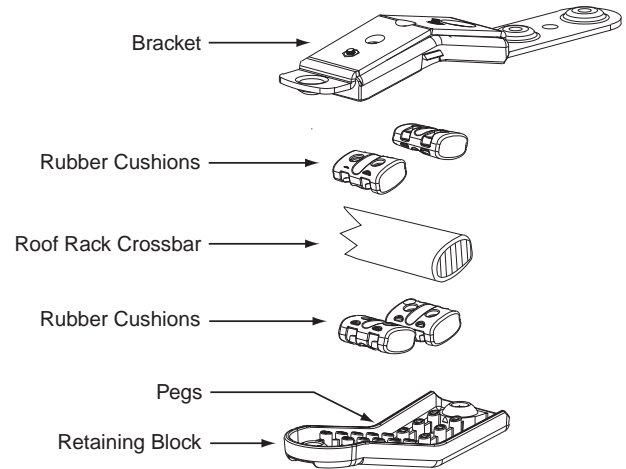


Try out the various cushion positions until you find the best fit for your installation.



The more surface area of the cushions pressing against the top and bottom of the crossbar, the better the fit.

Positioning Rubber Cushions for Best Fit

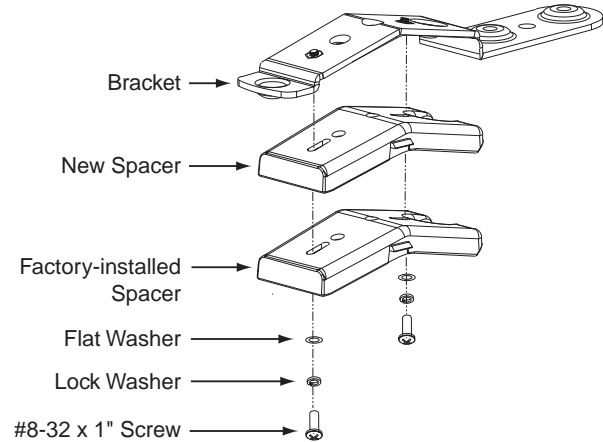


6. With the cushions installed in the brackets, the bottom of the antenna should rest higher than 1" above the vehicle's roof. If the antenna's base is less than 1" from the roof, you will need to add a spacer under each bracket to raise the antenna higher off the crossbars.

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 (*which holds the rubber cushions*) 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.

Adding a Second Spacer to the Bracket (If Needed)



If, after installing the additional spacers, there is still less than 1" of space between the antenna and the roof, KVH recommends that you attach a wide (at least 7" diameter) section of rubber, neoprene, or foam to the center of the antenna's base to protect the roof.

7. At each bracket, insert two swivel nuts into the captive holes from above.
8. Insert the appropriate TORX flat-head screws into each bracket's swivel nuts:

If you DID NOT install spacers in Step 6:

Insert ¼"-20 x 2" TORX screws into the bracket's swivel nuts.

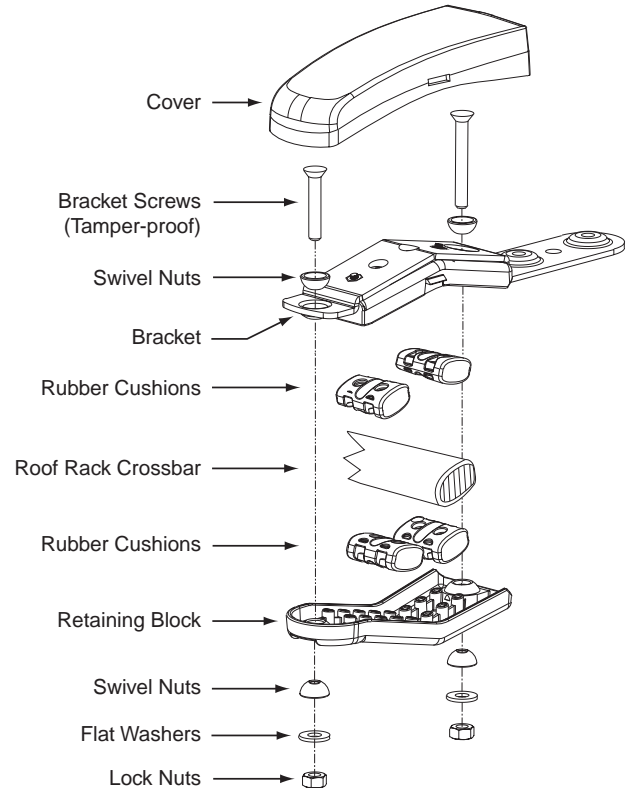
If you DID install spacers in Step 6:

Insert ¼"-20 x 2½" TORX screws into the bracket's swivel nuts.



Be sure to use the tamper-resistant TORX hardware provided in the kitpack.

Securing the Brackets to the Crossbars

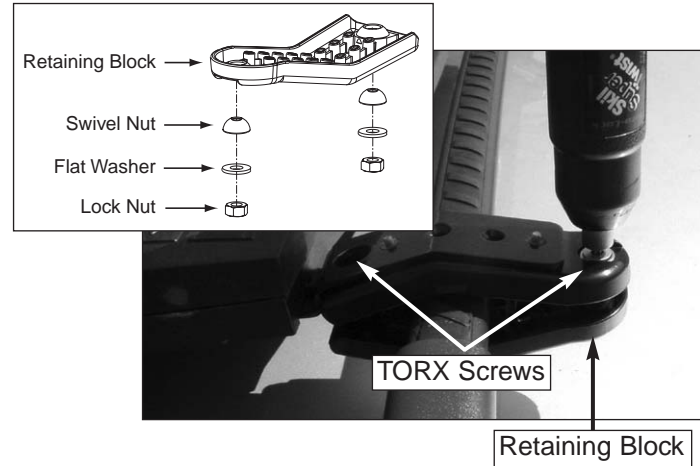


9. At each bracket, position a retaining block underneath the crossbar and insert two swivel nuts, ¼" flat washers, and lock nuts into the captive holes from below. While holding this hardware in place, screw the bracket's screws into the retaining block's swivel nuts, washers, and lock nuts using a ¼" driver and the supplied T27 TORX bit. After securing all four brackets to the crossbar, verify that all cushions are pressed firmly against the crossbar, providing a solid grip. Also check to make sure that all eight screws have engaged the nylon inserts in the lock nuts.
10. 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.

Securing the TORX Screws

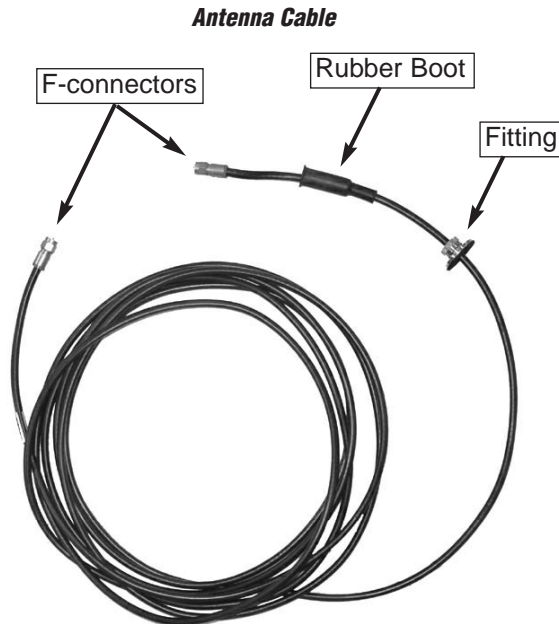


Attaching the Cover



2-2 Connecting the Antenna Cable

After mounting the antenna to the vehicle's roof, you need to 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

If the gap in the vehicle's hatch hinge is wide enough when closed to allow the antenna cable to pass without pinching it, 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 drill-through option. *Installers often prefer the professional appearance of the drill-through option.*

Follow the instructions for your selected option:

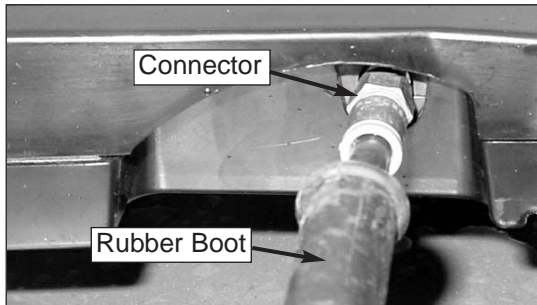
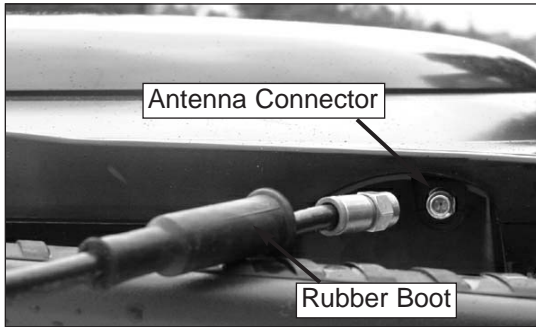
Through the RoofPage 2.10

Behind the HatchPage 2.14

Option 1 - Routing the Cable Through the Roof

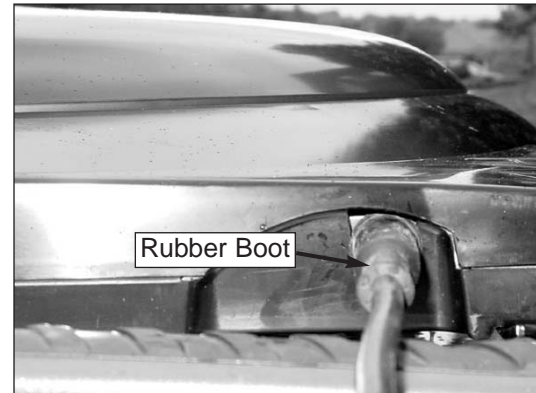
1. Using a $\frac{1}{16}$ " wrench, connect the end of the cable with the rubber boot to the antenna's connector.

Connecting the Antenna Cable to the Antenna



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

Rubber Boot, Installed



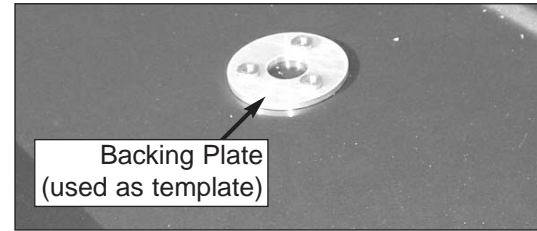
- Choose a location on the roof for the $\frac{1}{2}$ "-diameter cable access hole. Inside the vehicle, remove the headliner to access the underside of the roof where you will be cutting out the hole.



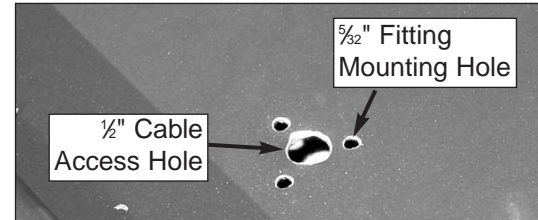
Techniques for removing the headliner vary from vehicle to vehicle. Only a trained automotive installer should remove the headliner. KVH is not liable for damage caused by improper headliner removal.

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

Locating the Fitting Mounting Holes

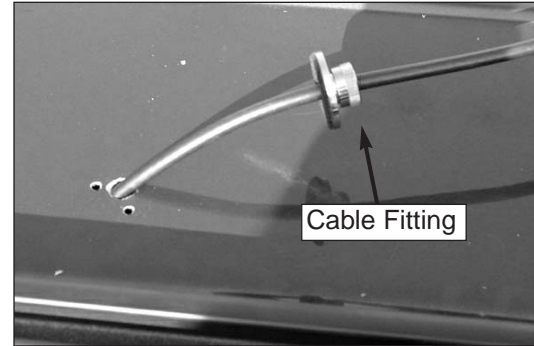


Cable Access Hole and Fitting Mounting Holes

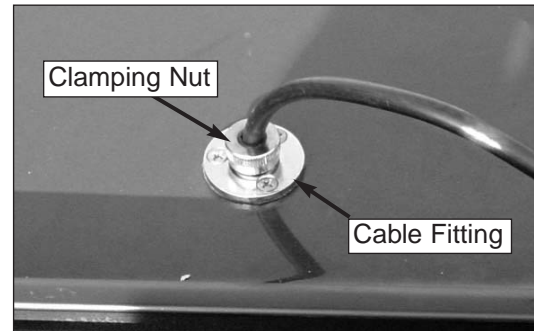


7. Insert the antenna cable into the access hole. Inside the vehicle, pass the cable through the backing plate and route the cable to the receiver.
8. Move the fitting down the cable until it covers the cable access hole, flush to the vehicle's roof. Line up the fitting's three mounting holes with the three $\frac{5}{32}$ " holes drilled in the roof. Apply silicone sealant or RTV to the holes and insert the #6-32 x $\frac{3}{8}$ " screws supplied in the kitpack.

Cable Routed Into Vehicle Through Access Hole



Fitting Mounted to Roof

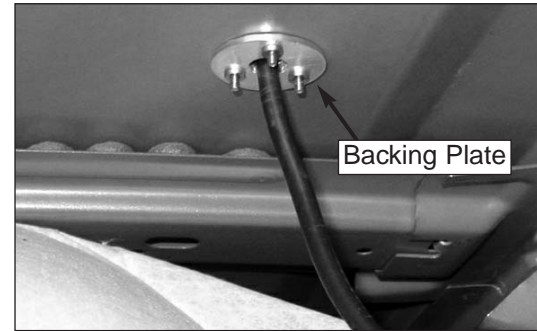


- Secure the #6-32 x $\frac{5}{8}$ " screws to the backing plate inside the vehicle.
- Hand-tighten the fitting's clamping nut onto the cable until you're unable to move the cable back and forth, ensuring a watertight seal.
- Using the supplied tie-wraps (or equivalent), secure the antenna cable to the roof rack, if necessary.

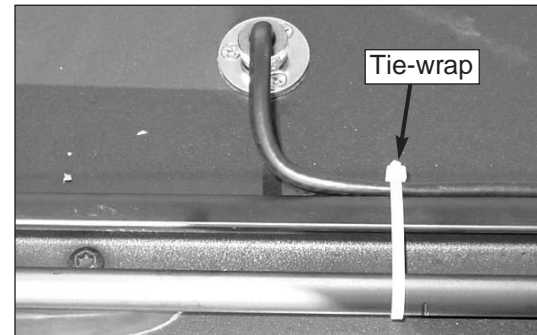


Do not kink the cable. Maintain a bend radius of at least four inches. A tighter bend may disrupt the TV signal and degrade performance.

Backing Plate (Inside Vehicle)



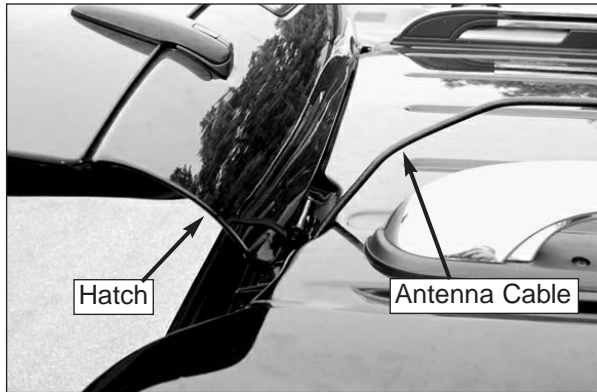
Securing the Cable to the Roof Rack



Option 2 - Routing the Cable Behind the Hatch

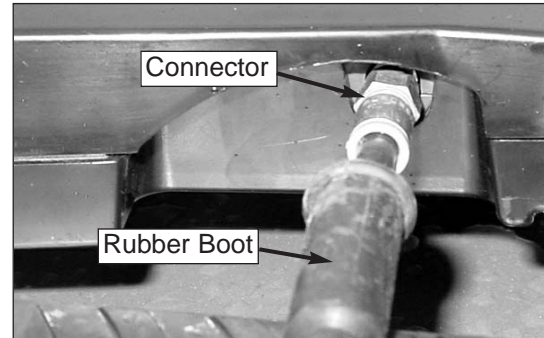
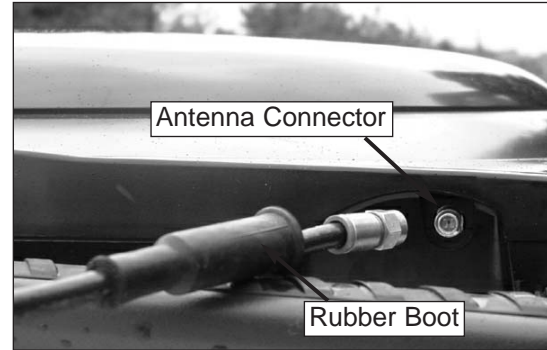
1. Move the steel fitting down the length of the antenna cable to the end opposite the rubber boot. You'll need to connect the end of the cable with the rubber boot to the antenna. *You will not need to use the fitting; simply keep it attached to the end of the cable inside the vehicle.*
2. Starting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

Cable Routed Behind Rear Hatch



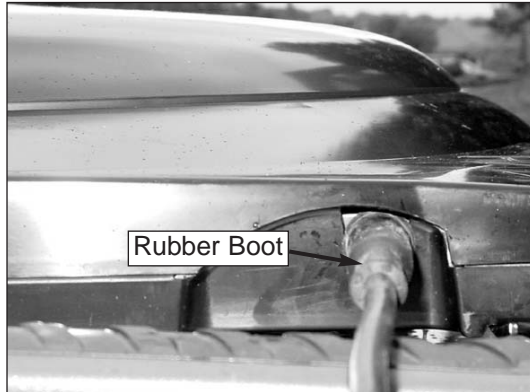
3. Using a $\frac{7}{16}$ " wrench, connect the cable to the antenna's connector.

Connecting the Antenna Cable to the Antenna



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

Rubber Boot, Installed



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



Do not kink the cable. Maintain a bend radius of at least four 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 receiver and how to mount the receiver inside the vehicle.

Contents

3-1	Wiring the Receiver	3.3
3-2	Mounting the Receiver	3.12

3-1 Wiring the Receiver

Now that you've installed the antenna, you need to connect the following cables to the receiver inside the vehicle:

- Antenna cable
- RF-to-IR converter cable
or
Vehicle IR adapter cable (*not supplied*)



To order a vehicle IR adapter cable, please call KVH at (401) 847-3327.

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

The diagram on the following page shows the receiver's rear panel connections. Refer to this figure when connecting cables to the receiver.

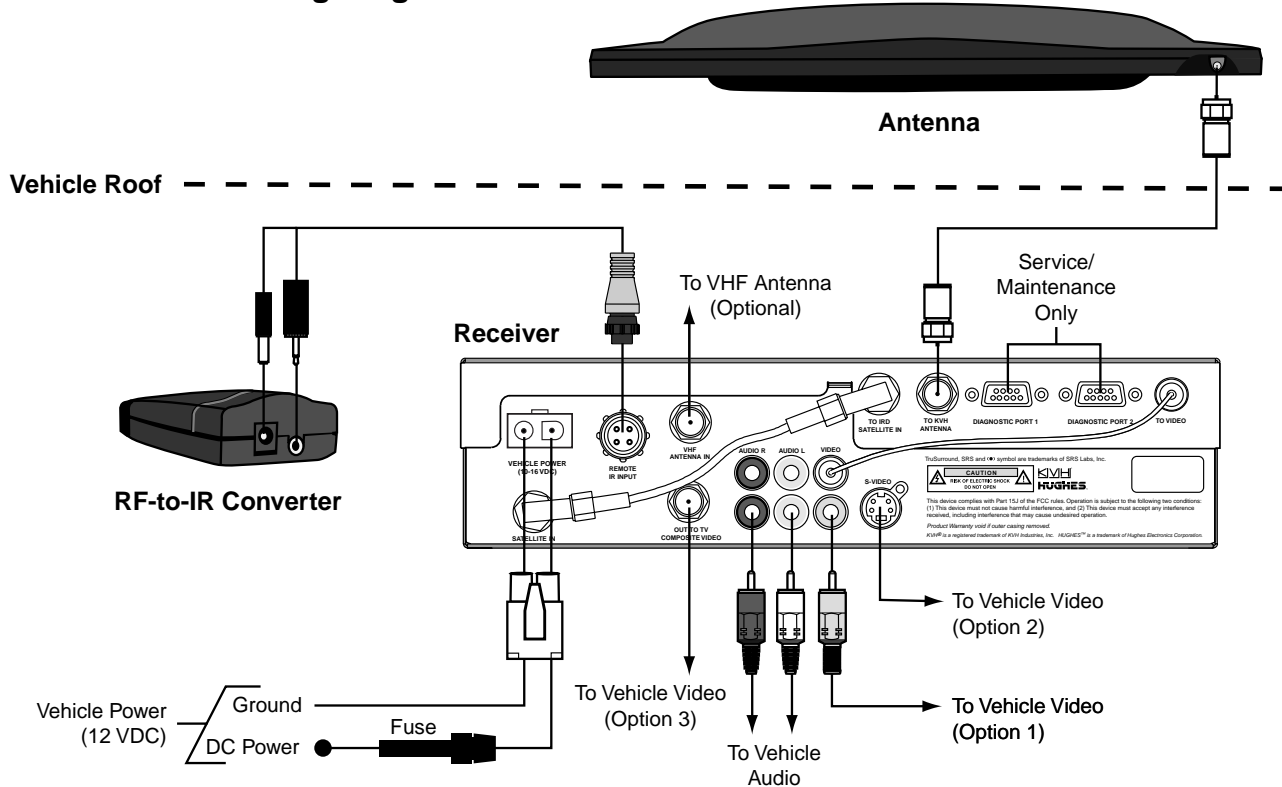


The procedures in this section are intended for a basic wiring configuration. If the vehicle's entertainment system is wired differently, use these procedures as a guide and connect the cables as needed to suit the vehicle's particular configuration.



DO NOT disconnect the two short cables that connect from one jack to another on the receiver's rear panel. The system will not work if either of these cables are removed.

TracVision A5 Wiring Diagram



Preparing the Antenna Cable

At this point, the antenna cable should already be connected to the antenna and routed to the receiver. If you **DO NOT** need to cut the end of the antenna cable, and you wish to simply coil the excess cable inside the vehicle, skip to "Connecting the Antenna Cable" on page 3.7.

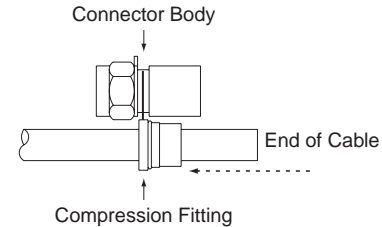
If you **DO** need to cut the antenna cable to the desired length, follow the steps below.



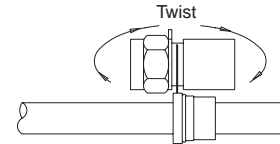
To ensure a proper connection, you **MUST** use an LRC/Augat IT1000 crimp/strip tool to attach the supplied Snap-N-Sea® F-connector to the end of the cable. **Do not** use a screw-on, push-on, twist-on, or any other over-the-counter connector. Such low-quality connectors **WILL** degrade system performance and KVH does not warrant their use. If you do not have an LRC/Augat IT1000 tool, please order one from KVH at (401) 847-3327.

1. Cut the antenna cable to the desired length. Be sure the cable will reach the receiver rear panel while allowing plenty of slack.

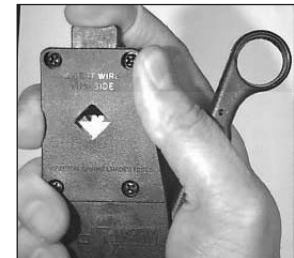
2. Slide the F-connector assembly's compression fitting onto the raw cable before beginning connector termination.



3. Twist and break off the connector body.



4. Push down the wire-stripping blade on the Augat tool so that you can insert the antenna cable.



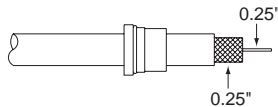
5. Insert the antenna cable into the tool. Be sure to insert the cable in the correct side, as noted on the tool. Let the blade clamp down on the cable.



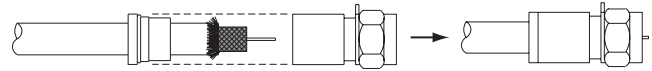
6. The cable should extend just slightly beyond the tool body. Twist the tool around the cable for 3 or 4 complete turns.



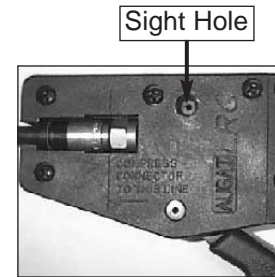
7. Hold the cable while pulling the tool so that it strips off the cable jacket. The end of the cable should now look like the figure below.



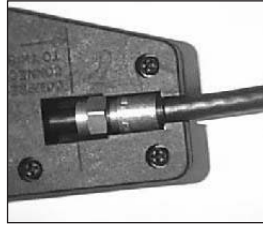
8. Fold the braid over the cable jacket, then slide the connector body onto the prepared cable and slide the compression fitting up into the connector body. Put the Snap-N-Seal ring up the cable, wide end first, then push the connector onto the cable until the foam is even with the bottom of the inside of the connector's threaded end. The body of the connector should easily push up under the foil and braid of the cable.



9. Move the handle away from the tool and put the cable with the connector in the tool cavity. Be sure the cable's center conductor is straight.



10. Pull the lever toward the tool until you feel it “snap” as the ring is forced into the connector, making a weather-tight seal. A white indicator will appear in the sight hole (*shown in the previous figure*) when the seal is achieved.



11. The F-connector is now installed on the cable and ready for use!



Connecting the Antenna Cable

Connect the antenna cable to the “To KVH Antenna” jack on the receiver’s rear panel. Screw the connector down securely, but don’t use excessive force; finger-tight is sufficient.

Connecting the RF-to-IR Converter Cable

The RF-to-IR converter's "Y" cable supplies 8 VDC power to the converter and relays remote control signals to the receiver. To connect the cable, follow the steps below.

1. Connect the forked end of the cable to the RF-to-IR converter's rear panel jacks.
2. Connect the other end of the cable to the "Remote IR Input" jack on the receiver's rear panel.
3. Place the RF-to-IR converter at least three feet away from the receiver's location.

RF-to-IR Converter Rear Panel



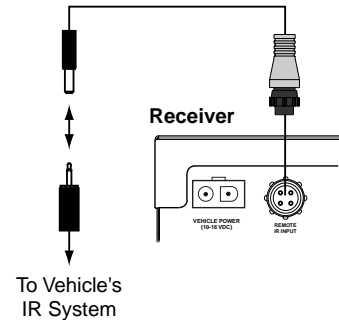
The RF-to-IR converter **MUST** be placed at least three feet away from the receiver. Placing the RF-to-IR converter closer to the receiver may result in IR interference, causing the remote control to operate intermittently or not at all.

Connecting an Existing IR Input (Optional)

If you prefer, instead of the RF-to-IR converter, you can connect an existing IR input (such as a TV screen's IR eye) to the receiver.

1. Connect the desired IR input to the adapter cable (*not supplied* – order from KVH).
2. Connect the other end of the adapter cable to the "Remote IR Input" jack on the receiver's rear panel.

Vehicle IR Adapter Cable (Not Supplied)



If you choose this option, you will need to aim the remote control at the IR eye whenever you use the remote control. The receiver will not be able to receive RF signals from the remote control.

Connecting the Audio/Video Cables

The TracVision A5 kitpack includes standard audio/video (A/V) cables with RCA-type connectors for connecting the receiver to the vehicle's entertainment system. However, the receiver's rear panel also offers an S-video jack and a composite video jack, if needed. Follow the procedure below for your particular installation. If you need to connect a VCR or DVD player to the vehicle's entertainment system, see the alternate wiring instructions in the next section, "Connecting a VCR or DVD Player."

Option 1 - RCA-type A/V Jacks (*very good picture quality*)

Option 2 - S-Video Jack (*best picture quality*)

Option 3 - RF Coaxial Connector (*good picture quality*)

Option 1 - RCA-type A/V Jacks (*very good picture quality*)

If the vehicle's entertainment system has standard RCA-type A/V jacks, follow the steps below.

1. Connect the supplied audio/video cables to the lower "Audio R," "Audio L," and "Video" jacks on the receiver's rear panel.
2. Connect the other ends of the audio/video cables to the entertainment system's audio and video inputs. *If the system has only one audio input jack, connect the audio cable that is connected to the receiver's "Audio L" jack.*

Option 2 - S-Video Jack (*best picture quality*)

If the vehicle's entertainment system has a high-quality S-Video jack, follow the steps below.

1. Connect an S-Video cable (*not supplied*) to the "S-Video" jack on the receiver's rear panel.
2. Connect the other end of the S-Video cable to the entertainment system's S-Video input.

3. Connect two of the supplied audio/video cables (with the red and white connectors) to the “Audio R” and “Audio L” jacks on the receiver’s rear panel.
4. Connect the other ends of the audio cables to the entertainment system’s audio inputs. *If the system has only one audio input jack, connect the audio cable that is connected to the receiver’s “Audio L” jack.*

Option 3 - RF Coaxial Connector *(good picture quality)*

If the entertainment system has just an RF (coaxial) connector and is equipped with a built-in TV tuner, follow the steps below.

1. Connect an RF cable (*not supplied*) to the “Out to TV” jack on the receiver’s rear panel.
2. Connect the other end of the RF cable to the entertainment system’s VHF/UHF or RF input.

Connecting a VCR or DVD Player *(Optional)*

To connect a VCR or DVD player to the vehicle’s TracVision-equipped entertainment system, follow the steps below.

1. Connect the VCR/DVD player to the TracVision A5 receiver:

If the VCR has RCA-type A/V connectors:

- a. Connect the supplied audio/video cables to the lower “Audio R,” “Audio L,” and “Video” jacks on the receiver’s rear panel.
- b. Connect the other ends of the audio/video cables to the VCR’s audio and video inputs. *If the VCR has only one audio input jack, connect the audio cable that is connected to the receiver’s “Audio L” jack.*

If the VCR only has an RF (coaxial) connector:

- a. Connect an RF cable (*not supplied*) to the “Out to TV” jack on the receiver’s rear panel.
- b. Connect the other end of the RF cable to the VCR’s VHF/UHF or RF input.

2. Connect the VCR/DVD player to the vehicle's entertainment system:

If the entertainment system and VCR have RCA-type A/V connectors:

Connect a set of audio/video cables from the VCR's audio and video output jacks to the entertainment system's audio and video inputs.

If the entertainment system or VCR only has an RF (coaxial) connector:

Connect an RF cable from the VCR's VHF/UHF or RF output jack to the entertainment system's VHF/UHF or RF input.

Connecting a VHF Antenna (Optional)

If you need to connect an existing VHF antenna to the vehicle's TracVision-equipped entertainment system, simply connect the cable to the receiver's "VHF Antenna In" jack.

Connecting the Power Cable

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

1. Ensure that vehicle power is turned off.
2. Disconnect vehicle power by either removing the positive lead from the vehicle's battery or removing the appropriate vehicle fuse.



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

3. Connect the receiver's power cable to the vehicle's switched (accessory) power via the fuse box. Connect the red wire to the +12 VDC supply; connect the black wire to ground. **DO NOT** connect the system directly to the vehicle's battery – the TracVision system will drain the battery.

4. Plug the other end of the power cable into the "Vehicle Power" jack on the receiver's rear panel.
5. Reconnect the battery lead or vehicle fuse that you removed in Step 2.

3-2 Mounting the Receiver

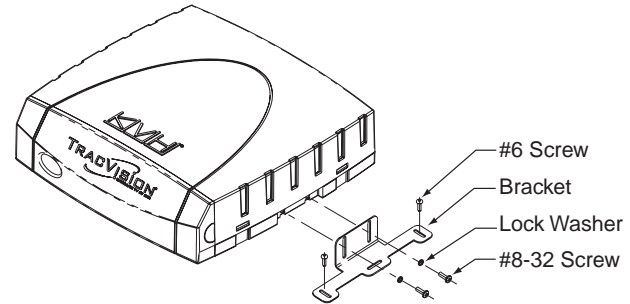
Once all cables are connected, mount the receiver inside the vehicle.



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 #8-32 x $\frac{5}{16}$ " screws and lock washers, attach the two L-shaped brackets to the sides of the receiver.
2. Using the #6 x $\frac{1}{2}$ " self-drilling screws, secure the receiver brackets to the mounting surface.

Mounting the Receiver



4 Completing the Installation

This section explains how to turn on and test the TracVision A5 system. It also explains how to activate the receiver for DIRECTV® programming and how to program the remote control.

Contents

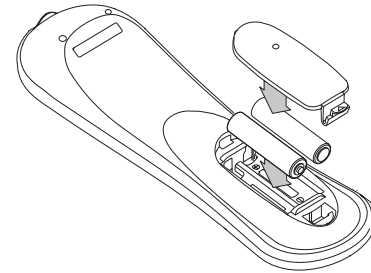
4-1	Installing the Remote Control Batteries	4.3
4-2	Post-installation Checklist	4.4
4-3	Testing the System	4.6
4-4	Activating the Receiver	4.7
4-5	Programming the Remote Control to Operate Other Components (<i>Optional</i>)	4.8

4-1 Installing the Remote Control Batteries

To install the remote control's batteries, follow the steps below.

1. Remove the battery compartment cover, located on the back of the remote control.
2. Insert two "AAA"-size batteries as shown, observing the correct polarity.
3. Replace the battery compartment cover.

Remote Control Batteries



4-2 Post-installation Checklist

Congratulations! You've completed the TracVision A5 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 on the first page of the <i>TracVision A5 User's Guide</i> .	1.8	<input type="checkbox"/>
You verified the vehicle's roof rack crossbars are securely fastened to the vehicle and are sturdy enough to support the antenna.	2.3	<input type="checkbox"/>
You removed the antenna's shipping restraints.	2.4	<input type="checkbox"/>
You positioned the rubber cushions within the antenna mounting brackets/retaining blocks to best fit the vehicle's crossbars.	2.5	<input type="checkbox"/>
If the antenna's base rested closer than 1" above the vehicle's roof, even after you installed an additional spacer under each bracket, you attached a rubber or foam mat to the antenna's base.	2.6	<input type="checkbox"/>
You secured the antenna mounting brackets to the crossbars using the appropriate tamper-proof TORX hardware.	2.7	<input type="checkbox"/>
After connecting the antenna cable to the antenna, you installed the rubber boot over the connector.	2.10, 2.14	<input type="checkbox"/>

Step	Page #	Done?
If you routed the antenna cable through the roof, you used the supplied fitting and backing plate and sealed the holes.	2.12	<input type="checkbox"/>
You did not disconnect the two short cables pre-connected on the receiver's rear panel.	3.3	<input type="checkbox"/>
If you cut the antenna cable, you used an LRC/Augat IT1000 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.	3.7	<input type="checkbox"/>
You connected the RF-to-IR converter to the receiver and placed it 3 feet away from the receiver. (Or you connected an existing IR input to the receiver via the optional adapter cable.)	3.8	<input type="checkbox"/>
You connected the audio/video cables from the receiver to the vehicle's entertainment system.	3.9	<input type="checkbox"/>
You connected the receiver's power cable to switched (accessory) power.	3.11	<input type="checkbox"/>
You mounted the receiver in a dry location away from any heat sources and allowing plenty of room for ventilation. <div data-bbox="147 799 915 880" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Receiver Location: </div>	3.12	<input type="checkbox"/>
You installed two "AAA"-size batteries in the remote control.	4.3	<input type="checkbox"/>

4-3 Testing 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 A5 system and verify proper operation.

1. Ensure that 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 may also interrupt satellite signals. For complete details about satellite reception requirements, refer to *Section 1.3, "Receiving Satellite TV Signals,"* in the *TracVision A5 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.

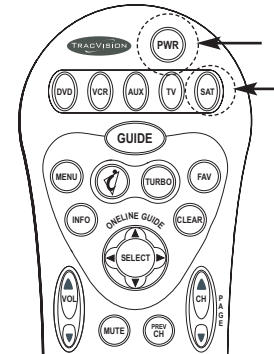
2. Apply vehicle power and turn on the vehicle's entertainment system.

3. Turn on the TracVision A5 receiver's front panel power switch. The switch's light illuminates and the receiver beeps twice.

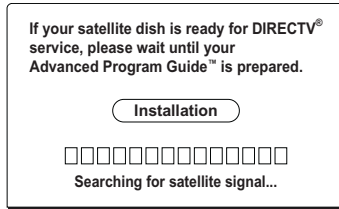
Receiver Front Panel Power Switch



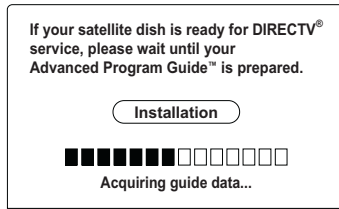
4. Wait 30 seconds. The antenna should then power off and the receiver should beep once.
5. Press the remote control's SAT button. The button should blink red. If it doesn't, check the remote control's batteries.
6. Now press the POWER button. The receiver beeps twice to indicate that power is again applied to the antenna.



- Verify that the following appears on the TV(s):



The TracVision antenna searches for and locks onto the satellite. The receiver then starts downloading the program guide and the following message appears:



This process may take up to 60 seconds. Once the program guide has loaded, a DIRECTV programming channel appears. *Only the DIRECTV preview channels (such as channels 100 and 201) are viewable until the user activates the receiver.*

4-4 Activating the Receiver

Before the customer can start watching satellite TV via the TracVision A5, the receiver must be activated. To activate the receiver, the customer needs to follow the steps below:

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



The customer must have his/her credit card and system serial numbers handy when calling to activate. The serial numbers are noted on the first page of the TracVision A5 User's Guide. The receiver cannot be activated without these numbers.

- After activation is complete, KVH's Activation Department will provide an access card number and receiver ID number. Enter these numbers in the associated boxes on page v of the *TracVision A5 User's Guide*.

4-5 Programming the Remote Control to Operate Other Components *(Optional)*

In addition to controlling the TracVision A5 receiver, the remote control may be programmed to operate other vehicle components, such as the TV, VCR, DVD player, or other components. To program the remote control, choose either of the following programming options:

Option 1 - Code Scanning (*see page 4.9*)

Option 2 - Code Entry (*see page 4.10*)



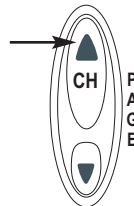
To use the code entry method, you'll need to know the correct manufacturer's device codes for each component you want to operate. Code scanning may be more time-consuming, but you don't need to know manufacturer's control codes.

Option 1 - Code Scanning

1. Keep the remote control aimed at the IR input (or “eye”) for the component you want to control. For example, if you want to program the remote control to operate the TV, keep the remote aimed at the TV’s IR input (many in-vehicle TVs come with an IR eye built into the screen).
2. Press and hold the remote control’s component button (for example, TV).
3. At the same time, press the MUTE button for two seconds.
4. Release both buttons.

The component button should light and remain lit. If it doesn’t remain lit, repeat Steps 1 through 4 above.

5. Repeatedly press the upper part of the CHANNEL (CH) button.



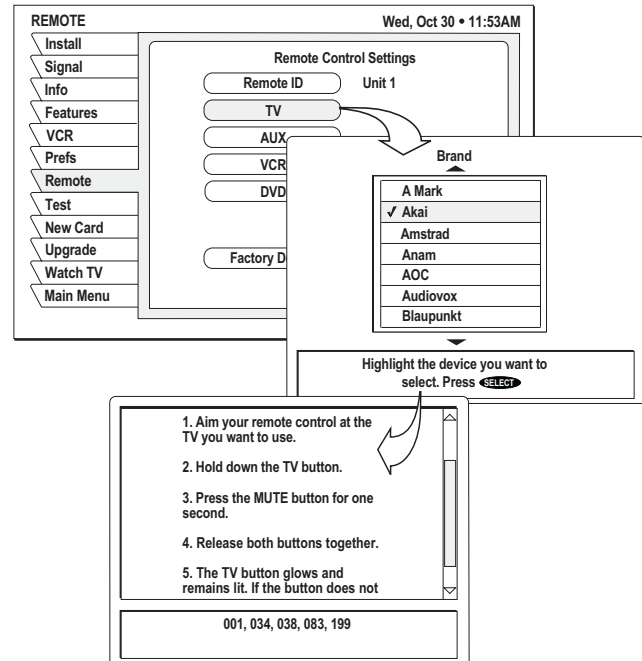
6. Continue pressing the CHANNEL (CH) button to step through the codes until the component turns off, indicating that you have found the correct device code. *If you accidentally pass a code that responds or realize you may not have been aiming the remote control at the component, repeatedly press the lower part of the CHANNEL (CH) button to step backward through the codes.*
7. Press the remote control’s POWER button to verify that you have found the proper code. The correct code will turn the component on and off.
8. Press the component button again to lock in the code (in this example, the TV button).

Option 2 - Code Entry

1. Find the device code(s) for the component. You can find this code either by looking in *Appendix B on page A.5* or by following the steps below to check the receiver's database:
 - a. Press the MENU button to access the main menu.
 - b. From the main menu, highlight the **System Setup** tab and press SELECT.
 - c. Highlight the **Remote** tab to access Remote Control Settings.
 - d. Highlight the desired type of component (**TV**, **AUX**, **VCR**, or **DVD**) and press SELECT.
 - e. Highlight the component's manufacturer from the brand name list and press SELECT.

A list of codes for the selected component appears along with step-by-step programming instructions.

Finding the Component's Device Code



Keep your remote control aimed at the component you want to control throughout the remainder of this procedure.

2. Press and hold the remote control's component button (for example, TV).
3. At the same time, press the MUTE button for two seconds.
4. Release both buttons.

The component button should light and remain lit. If it doesn't remain lit, follow Steps 2 through 4 above.

5. Using the remote control's numeric keypad, enter a device code.
6. After entering a code, press the remote control's POWER button to test it. The correct code will turn the component on and off. If several codes are listed for the component's type and brand, try each of them until you find the code that turns the component on/off. If none of these codes work, try the code scanning method described on page 4.9.
7. Press the component button again to lock in the code (in this example, the TV button).

Appendices

This section provides a list of system specifications and a list of device codes for programming the remote control.

Contents

A	System Specifications	A.3
B	Manufacturer Device Codes	A.5
	Warranty	A.17

Appendix A

System Specifications

Physical Characteristics

Power	9-16 volts DC, 50 watts
Antenna Dimensions	30.5" wide x 5.3" high
Antenna Weight	48 lbs
Receiver Dimensions	11.7" wide x 11.4" long x 3" high
Receiver Weight	4.3 lbs

Pointing System

Elevation Range	31° to 57°
Azimuth Range	Unlimited
Turn/Track Rate	45° per second
Wind (EME) 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

Appendix B

Manufacturer Device Codes

Use the following codes to program the TracVision A5 remote control to operate other in-vehicle components. See *Section 4-5, "Programming the Remote Control to Operate Other Components," on page 4.8* for details.

VCR Brands and Remote Control Codes

VCR Brand	Code Number(s)
Admiral	025 053
Adventura	034
Aiko	117
Aiwa	034 101
Akai	016 043 046 124 125 146
American Action	117
American High	031
Ampro	072

VCR Brand	Code Number(s)
Anam	031
Asha	040
Audio Dynamics	012 023 039 043
Audiovox	101
Beaumarck	040
Broksonic	025 035 037 044 129 152
Calix	101
Canon	028 031
Capehart	108
CCE	024 117
Cineral	117
Citizen	101 117
Colt	024
Craig	003 024 101 040 135
Curtis Mathes	031 041 156
Cybernex	040
Daewoo	005 007 010 065 108 110 112 116 117 119
Daytron	108
DBX	012 023 039 043

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VCR Brand	Code Number(s)
Dimensia	156
Dynatech	034 053
Electrohome	059 101
Electroponic	101
Emerson	006 017 025 027 029 031 034 035 036 037 044 046 101 117 129 131 138 152 153 157
Fisher	003 008 009 010
Fuji	031
Funai	034
Garrard	034
GE	031 040 053 063 072 107 109 126 144 147 151 156
GO Video	040 132 136
Goldstar/LG	001 101 012 114 123
Harley Davidson	034
Harman Kardon	012 045
Harwood	024
Hitachi	001 026 034 063 137 150 156
Hughes	001
HQ	034

VCR Brand	Code Number(s)
Instantreplay	031
JCL	031
JCPenney	001 012 031 040 066 101 156
Jensen	043
JVC	048 050 043 130 060 012 031 150 055 158
KEC	101 117
Kenwood	014 023 034 047 048
KLH	024
Kodak	031 101
Lloyd	034
Logik	024
LXI	034 003 009 017 101
Magin	040
Magnasonic	117
Magnavox	067 031 034 041 064 068 154 160
Marantz	012 023 031 067 069
Marta	101
Matsui	027 030
Matsushita	031

VCR Brand	Code Number(s)
MEI	031
Memorex	003 010 014 025 031 034 040 053 072 101 102 134 139
MGA	045 046 059
MGN Technology	040
Minolta	001 156
Mitsubishi	001 045 046 053 059 061 162
Motorola	031 053
MTC	034 040
Multitech	024 034
NEC	012 023 039 043 048
Nikko	101
Noblex	040
Nordmende	043
Olympus	031
Optimus	053 101
Optonica	053 054
Orion	025
Panasonic	031 066 070 133 160 161

VCR Brand	Code Number(s)
Pentax	001 031 063 156
Philco	025 031 034 067
Philips	031 034 054 067 071 101
Pilot	101
Pioneer	001 021 048
Portland	108
Profitronic	040
Protec	024
Quartz	002 014
Quasar	031 066 070 133 160 161
Radio Shack	034 123
Radix	101
Randex	101
RCA	001 031 034 040 041 053 107 109 140 144 147 151 156
Realistic	003 008 010 014 031 034 040 053 054 101
Rico	058 078
Salora	014
Samsung	032 040 102 104 107 109 112 113 115 120 122 125 159

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VCR Brand	Code Number(s)
Sanky	053
Sansui	022 025 034 043 048 135
Sanyo	003 010 007 014 040 102 134
Scott	017 037 044 112 129 131 159
Sears	001 003 008 009 010 014 017 031 034 081 101
Sharp	031 054 053 143
Shintom	024
Shogun	040
Signature	034
Singer	024
Sony	003 031 032 034 052 056 057 058 155
Soundesign	034
STS	001
Sylvania	031 034 059 067
Symphonic	034
Tandy	010 034
Tatung	023 039 043
Teac	023 034 039 043
Technics	031 070

VCR Brand	Code Number(s)
Teknica	031 019 034 101
Thomas	034
TMK	040
Toshiba	001 008 042 047 059 082 112 131
Totevision	040 101
Unitech	040
Vector Research	012
Video Concepts	012 034 046
Videosonic	040
Wards	001 003 017 024 031 034 040 053 054 131
Westinghouse	024 025
XR-1000	024 031 034
Yamaha	012 034 039 043
Zenith	025 034 048 056 058 072 080 101

TV Brands and Remote Control Codes

TV Brand	Code Number(s)
Admiral	072 081 096 160 161
Aiko	103
Akai	070 146
Alaron	028
A Mark	112 143
America Action	043
Amstrad	052
Anam	043 054 056 080 112
AOC	004 058 070 112
Audiovox	043 076 103 120
Baysonic	043
Bell&Howell	072
Blaupunkt	088
Bradford	043
Brooksonic	096
Cairn	206
Candle	002 003 004 070
Capehart	058

TV Brand	Code Number(s)
Carver	164
CCE	001 004 024
Celebrity	001
Cetronic	043
Cineral	103 120
Citizen	002 003 004 043 070 101 103 143
Classic	043
Concerto	004
Contec	043 050 051
Coronado	143
Craig	043 054 191
Crosley	164
Crown	043 143
Curtis Mathes	004 011 070 072 081 101 120 143 164
CXC	043
Daewoo	004 016 043 044 076 103 114 120 127 128 136 143 192
Daytron	004 143
Denon	011

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TV Brand	Code Number(s)
Dumont	004 073
Dynasty	043
Dynatech	062
Electroband	001
Electrohome	024 076 120 143
Emerson	004 005 028 043 047 048 050 051 070 076 096 120 143 151 153 154 155 191
Fisher	007 057
Fujitsu	028 198 210 211
Funai	028 043 052
Futuretech	043
GE	004 008 009 034 056 070 073 074 081 120 130 145 155 160 165 161 167
Gibraltar	004 073
Goldstar/LG	004 106 110 112 119 127 143 193
Gradiente	004 038 106
Grunpy	028 043
Hall Mark	004
Harley Davidson	028
Harvard	043

TV Brand	Code Number(s)
Hitachi	004 007 009 010 011 012 023 072 075 143 158
Harman Kardon	164
Infinity	164
Inteq	073
JBL	164
JCB	001
JCPenney	004 008 009 024 030 065 070 101 143 156 160
Jensen	013
JVC	001 034 038 083 199 208
KEC	043
Kenwood	001 070
Kloss	002 059
KMC	143
KTV	043 070 143 154
Lodgenet	072
Loewe	209 211
Logik	072
Luxman	004
LXI	007 015 052 081 160 164

TV Brand	Code Number(s)
Magnavox	003 004 022 059 060 061 063 064 070 094 127 160 164
Majestic	072
Marantz	070 164
Matsui	164
Matsushita	080
Megatron	-
Memorex	004 007 028 072 096
Metz	088
MGA	004 024 024 028 042 070
Midland	073
Minerva	088
Minutz	008
Mitsubishi	004 024 028 040 042 081 146 214
Motorola	081
MTC	070 004 062 101
Multitech	043
NAD	015 025
NEC	004 016 019 024 040 056 070 130 134

TV Brand	Code Number(s)
Nikei	043
Nikko	103
NTC	103
Onking	043
Onwa	043
Optimus	080
Optonica	019 081
Orion	028 096 201 202 203 204 205
Panasonic	034 056 080 164 212
Philco	003 004 024 056 059 060 063 064 070 164
Philips	164 093 038 005 059 127 070 003 004 213
Pioneer	025 070 004 018 023 190
Portland	004 143 065 103
Prism	034
Proscan	160 161 167 145 065
Proton	004 058 112 143 171 173
Quasar	034 056 080 164
Radio Shack	004 019 043 127 143

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TV Brand	Code Number(s)
RCA	160 161 156 165 065 070 004 023 024 056 074 081 152 167 145
Realistic	007 019 043 047
Runco	073 130
Sampo	004 070 058 207
Samsung	101 004 050 089 105 160 127 143 133 215
Sansei	120
Sansui	096
Sanyo	007 020 053 057 082
Scotch	004
Scott	004 028 043 048 143
Sears	004 007 015 028 030 052 057 082 094 143 160 164 167
Seleco	200
Semivox	043
Semp	015
Sharp	004 014 019 022 028 081 143
Siemens	088
Signature	072
Sony	001 079 126

TV Brand	Code Number(s)
Soundesign	003 004 028 043
Spectricon	112
Squareview	052
SSS	004 043
Starlight	043
Supre Macy	002
Supreme	001
Sylvania	003 044 059 060 063 064 070 127 160 164
Symphonics	194 052
Tandy	081
Tatung	056 062
Technics	034 080
Technol Ace	028
Techwood	004
Teknika	002 003 004 024 028 043 072 101 103 143 164
Telerent	072
Tera	173
TMK	004
TNCI	073

TV Brand	Code Number(s)
Toshiba	015 030 007 040 062 101
Universal	008 009
Video Concepts	146
Vidikron	164
Vidtech	004
Wards	004 008 009 019 028 060 061 063 064 072 074 143 164 165
Westinghouse	120 076
Yamaha	004 070
York	004
Yupiteru	043
Zenith	011 072 073 095 096 103
Zonda	112

AUX Brands and Remote Control Codes

AUX Brand	Code Number(s)
Adcom	146 149 227 244
AMC	083 084
Arcam	100
Audio File	093 098
Audio Technica	221
Aiwa	111 114 117 156 170 199 203 219 231 241 254
Akal	181 233
Anam	180
Bose	064 137 219
B & K	150 152
Carver	013 098 107 126 129 160 163 220 245 249
Clarion	151 169
Denon	101 133 191 202 208 246 247
Englightened Audio	078 153
Fisher	107 129 157 163 176
Fosgate Audionics	228 248
GE	123 216
Harmon Kardon	073 195 248 249

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AUX Brand	Code Number(s)
Haitai	119
Hitachi	088
JCPenney	109 154 178
Jensen	099
Jerrold	141
JVC	112 198 252
Kenwood	096 104 119 125 148 151 163 171 173 242
Krell	223
Lexicon	215 250
Luxman	066 120 205 229
LXI	123 177
Magnavox	126 162 185 186 224 228
Marantz	074 105 126 128 139 155 162 186 232
McIntosh	251
Mondial	069 225
MCS	178
Mitsubishi	253
Meridian	013 067
NAD	128

AUX Brand	Code Number(s)
Nakamichi	072 212 234 235
Niles	236
Onkyo	094 115 116 209 211 255
Optimus	121 125 140 181
Panasonic	131 144 187 200
Parasound	085 086 090
Philips	126 136 186 197
Pioneer	081 093 138 165 189 195 230 243
Quasar	131 187
RCA	109 166 213
Realistic	103 122 123 124 172 174 177 179 180 194
Rotel	204 218 239
Sansui	075 126 139 196 197 214
Sanyo	129 157
Samsung	068
Scott	180 190
Sharp	096 125 151 161 169 182 193
Sherwood	089 127
Sony	097 117 147 183 188 192 200 237 238 253

AUX Brand	Code Number(s)
Soundstream	197
Starcom	141
Symphonic	124
Teac	062 102 159 180
Technics	131 165 184 187 200 202 208
Toshiba	175
Wards	163
Yamaha	092 120 125 166 169 216 240
Zenith	061 222

DVD Brands and Remote Control Codes

DVD Brand	Code Number(s)
Alpine	009
Apex Digital	075 076
Arcam	065
Cyberhome	087
Daewoo	087
Denon	030 226
GE	035 036
Goldstar/LG	028 041
Harmon Kardon	217
Hitachi	011
Hiteker	076
JVC	031
Kenwood	070
Magnavox	008 038 042
Marantz	006 007
McIntosh	071
Mitsubishi	032
NAD	077

DVD Brand	Code Number(s)
Onkyo	207
Optimus	034
Panasonic	003 039
Philips	006 007 038 042 063
Pioneer	005 010 034
Proceed	002
Proscan	035 036
RCA	035 036
Samsung	029 040 095
Sharp	004
Sony	037 080
Technics	003
Theta Digital	034
Toshiba	001 038 082 091 206
Yamaha	039 079
Zenith	028 041

DVD-Laser Disc Brands and Remote Control Codes

DVD-Laser Disc Brand	Code Number(s)
California Audio	047
Denon	043 044
Fisher	047
Kenwood	060
Magnavox	048 057
Mitsubishi	057
NAD	057
Panasonic	047 051 054
Philips	048
Pioneer	055 057
Quasar	047
RCA	046
Sanyo	052
Sharp	060
Sony	050 053
Technics	047 051 054
Toshiba	060
Yamaha	045 059

KVH Industries Limited Warranty - TracVision A5

Limited Warranty on Hardware

KVH Industries, Inc. warrants the KVH product purchased against defects in materials for a period of ONE (1) year and against factory labor costs for a period of ONE (1) year from the date of original retail purchase by the original purchaser. It is the customer's responsibility to verify the date of purchase by providing a copy of a dated sales receipt for the KVH product under warranty with the warranty claim. If this date cannot be verified, the warranty period will begin 30 days after the date of manufacture of the original product purchased.

If you discover a defect, KVH will, at its option, repair, replace or refund the purchase price of the product at no charge to you, provided you return it during the warranty period, transportation charges prepaid, to the factory direct. Please attach your name, address, telephone number, a description of the problem and a copy of the bill of sale or sales receipt as proof of date of original retail purchase, to each product returned to warranty service.

This Limited Warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication or has been modified without the written permission of KVH; if any KVH serial number has been removed or defaced; or if any factory-sealed part of the system has been opened without authorization.

Return Authorization

A Return Material Authorization is required prior to returning the product to KVH Industries. Please call our Technical Support Department at +1 401 847-3327 or send an e-mail to techs@kvh.com to obtain the RMA number. Write the number in large, clear characters on the outside of the box. To avoid confusion and misunderstandings, shipments without an RMA number clearly visible on the outside box will be refused and returned to you at your expense. If possible, use the original box and packing material to protect the equipment from damage in shipment. KVH assumes no responsibility for warranty shipments from the customer to the factory if not shipped in the manner prescribed above.

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If any implied warranty, including implied warranties of merchantability and fitness for a particular purpose, cannot be excluded under applicable law, then such implied warranty shall be limited in duration to ONE (1) YEAR from the date of the original retail purchase of this product by the original purchaser.

Some states/countries do not allow the exclusion or limitation of implied warranties or liability for incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state/country to state/country.

TRACVISION

SATELLITE TV BY KVH

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