



www.stealthhitches.com 833•694•4824

HITCH INSTALLATION INSTRUCTIONS

MAKE:
LAND ROVER

YEARS:
2018 - 2023

MODEL/TRIM:
RANGE ROVER VELAR

RACK RECEIVER KIT#: **SHR40003**

COMPATIBLE WITH TOW KIT: **SHT25024**



2" RACK RECEIVER MAXIMUM PAYLOAD: 600 LBS
MAXIMUM TOW RATING: 6000 LBS
MAXIMUM TONGUE WEIGHT: 600 LBS

UNDER VEHICLE TRIMMING:

HEAT SHIELD: **NO**
FASCIA: **YES**
GRAVEL GUARD TRIMMING: **YES**

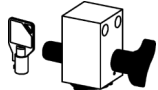


READ ALL INSTRUCTION WARNINGS AND LABELS



NO WELDING, METAL DRILLING OR VISIBLE TRIMMING REQUIRED

PARTS SUPPLIED WITH RACK RECEIVER KIT:



LATCH BLOCK & KEYS



(2) BOLTS
5/8"-11 x 5"

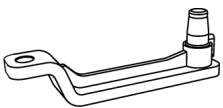


(2) 5/8"
NYLOCK NUTS



2" RACK
RECEIVER

ADDITIONAL PARTS FOR TOW KIT:



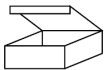
BALL MOUNT
5" RISE, LONG



CHAIN HOOKS



2" BALL



PASSIVE WIRING
KIT BOX

TOOLS REQUIRED:



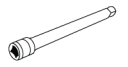
15/16" OPEN END
WRENCHES



10mm, 13mm, 21mm,
& 15/16" SOCKETS



TORQUE
WRENCH



SOCKET
EXTENSION



SAFETY GLASSES



RATCHET



FLASHLIGHT



PLASTIC
PRY TOOLS



PRY BAR



PHILLIPS HEAD
SCREWDRIVER



RATCHET
STRAP



T20 & T30
TORX



DREMEL TOOL



FILE

ADDITIONAL TOOLS FOR TOW KIT:



MULTIMETER



STRIPPER/
CRIMPING
TOOL



90 DEGREE
PICK



DRILL &
3/8" BIT



PLIERS



SILICONE



ELECTRICAL
TAPE

<THESE INSTRUCTIONS MUST BE GIVEN TO THE END USER>

NOTICE: Installation of Stealth products may or may not require the addition of a wiring harness to the vehicle.

- The Rack Receiver only product does not require adding a wiring harness.
- The Rack Receiver plus Tow Kit requires the addition of a "Passive" wiring harness to the vehicle. The passive harness "reads" the output of the vehicle's lights and translates the signals to the trailer without being connected to the vehicle computer.

INSTALLATION NOTE: In most instances, these instructions will only outline disassembly of vehicle components. Re-installation of components will require the installer to retain vehicle hardware and work through disassembly instructions in reverse order. When installation is complete, double check that all vehicle components have been replaced and are secured.

IMPORTANT SAFETY NOTICE FOR STEALTH HITCH INSTALLERS AND CUSTOMERS.

Read all installation and operating instructions along with all labels before installing or using this product. Do not perform any installation or towing procedures without fully understanding the correct tools and actions for all steps. Call for support if needed.

⚠ WARNING Failure to comply with the safety information in these instructions could result in serious injury or death.

- ⚠ Do not modify this product in any manner. Doing so could alter its integrity and lead to a loss of attachment between the trailer and the tow vehicle.
- ⚠ Adding Stealth hitch components to the chassis of any vehicle can be hazardous. There is potential for unexpected combustion of fuel, electric shock, burns, shifting or falling of unstable vehicle, damage to vehicle, injury from tool usage and many other hazards. This installation must be completed by someone who is aware of the hazards involved. This person must be knowledgeable of proper safety procedures for a vehicle modification of this nature, and for usage of the equipment required to perform the installation.
- ⚠ Without proper knowledge, towing can be a dangerous activity. Understand all the risks involved with towing before proceeding. For information on towing safety, see "**The Trailer Handbook: A Guide to Understanding Trailer and Towing Safety**" from the National Association of Trailer Manufacturers, www.NATM.com and your trailer and tow vehicle manufacturer's owner's manual.
- ⚠ Do not exceed tow or tongue rating of coupler, tow or tongue rating of hitch, or tow or weight ratings of tow vehicle or trailer. See vehicle and trailer manufacturer information for ratings. Exceeding these ratings may cause damage to towing components or loss of attachment between the trailer and vehicle.
- ⚠ While installation is being performed, check for signs of damage or excessive corrosion. Do not install hitch components over vehicle parts that are broken or have compromised structural integrity.
- ⚠ This product was designed to fit vehicles in their original, "as manufactured" condition. Compatibility with vehicles having replacement parts, or other modifications is not guaranteed. Inspect vehicle for modifications before installation of this product.
- ⚠ Some accessories, like the rack receiver, are not rated for towing. Do not use any accessories without proper knowledge of their use.
- ⚠ A visual inspection of the hitch should be performed before each use. Regularly check that all connections are secure, including those that secure the hitch to the vehicle. Check for cracks or damage to the hitch. Do not use the hitch if cracks or damage outside of normal wear is found. Using a hitch that has unsecure connections and/or cracks or damage could result in damage to the tow vehicle, trailer, towing components and loss of attachment between the tow vehicle and trailer.
- ⚠ Stealth hitches are not compatible with any weight distribution or sway control products. Adding additional products to the trailer or chassis which modifies the function of the Stealth hitch may cause hitch failure.

NOTICE: Installation of hitch requires removal of vehicle parts and interaction with vehicular electronics. Before installation, check the condition of body panels and note any locations where panels are not flush. Check the electronic functions of the vehicle, such as: headlights, taillights, turn signals, cameras, backup sensors, Parking Distance Controller (PDC), foot activated cargo access, etc. It is the responsibility of the installer to restore the fit and function of the vehicle.

GAIN ACCESS TO MOUNTING AREA



1. Open the vehicle cargo area. Locate (2) plastic rivets on the sides of the rear hatch. The rivets may be screw type head or push type. Use a Phillips head screwdriver if they are screw type, otherwise use plastic pry tools to remove the rivets.



10mm
SOCKET

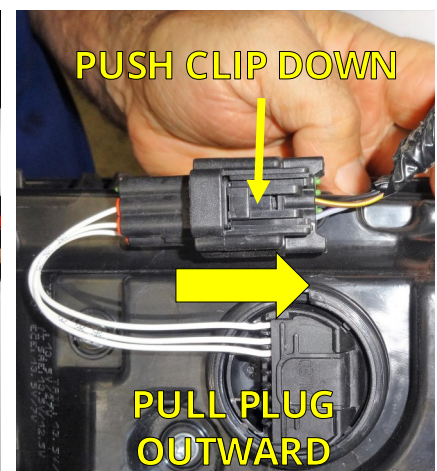


T30 TORX

2. Remove both taillight covers. Use a plastic pry tool to pry plastic cover inward to remove. Remove (2) screws behind each taillight cover, as shown.



3. Slide the taillights sideway to remove. A plastic pry tool can be used to help if the light does not slide freely. Disconnect the light plug by pushing down on the clip and pulling the plug outward.



GAIN ACCESS TO MOUNTING AREA CONTINUED



PHILLIPS HEAD
SCREWDRIVER



T20 TORX

4. Inside the wheel well, locate and remove (4) Phillips head screws (yellow arrows). Loosen (2) T20 Torx screws (green arrows) and remove the mud flap. Move the wheel well liner to gain access to (2) screws (red arrows). Remove the screws.



PLASTIC
PRY TOOLS

5. Use a plastic pry tool to remove the plastic fascia trim piece. Unclip (6) clips securing the plastic trim piece.



90 DEGREE
PICK

6. Remove (4) plastic push pin rivets that secure the rear fascia. Save the rivets for reinstallation.



GAIN ACCESS TO MOUNTING AREA CONTINUED



PHILLIPS HEAD
SCREWDRIVER

7. At the rear of the vehicle, remove (2) screws securing the gravel guard.



10mm
SOCKET

8. Underneath the vehicle, remove (2) or (3) screws from the gravel guard.



PLASTIC
PRY TOOLS

9. The fascia is clipped to the vehicle body directly behind the wheel wells. Pull outward on the fascia to expose the first clip in the seam. With a plastic pry tool, push down on the exposed clip to disconnect. Continue to pull outward on the fascia and disconnect clips as they are exposed. Continue applying outward and rearward pressure until all the clips are released. Repeat on other side and rear of vehicle.



GAIN ACCESS TO MOUNTING AREA CONTINUED

10. This step requires a partner. Pull the fascia rearward enough to access the (2) sensor plugs on the driver side. Unplug the sensor plugs. Remove the fascia completely.

NOTICE: Carefully remove the fascia and place on a blanket or pad.



13mm
SOCKET

-or-



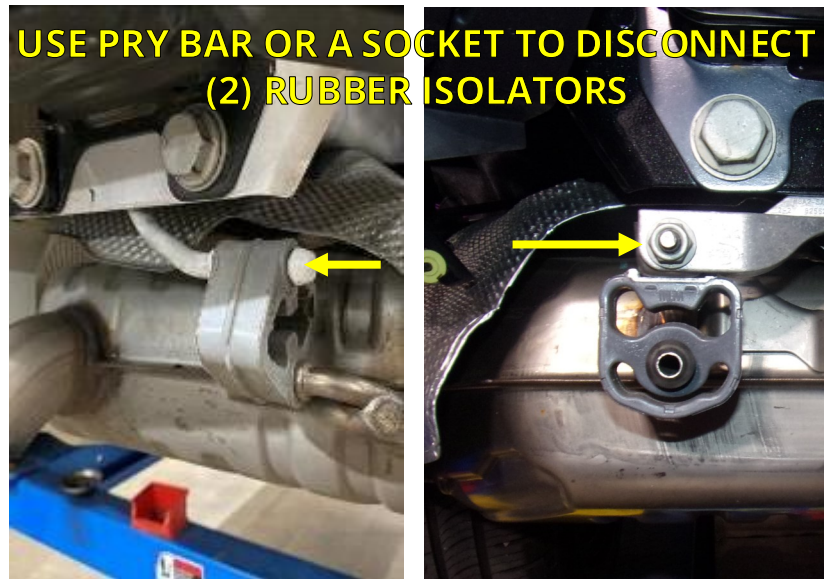
PRY BAR



RATCHET
STRAP

11. Locate the exhaust brackets under the rear of the vehicle. Use a ratchet strap to support the exhausts. Depending on the vehicle configuration, there may be rubber isolators (left image) or a nut (right image) holding the exhaust. Use a pry bar or 13mm socket to disconnect the exhaust.

NOTE: If using a pry bar, spray lubricant on the rubber isolator connection point to ease removal.



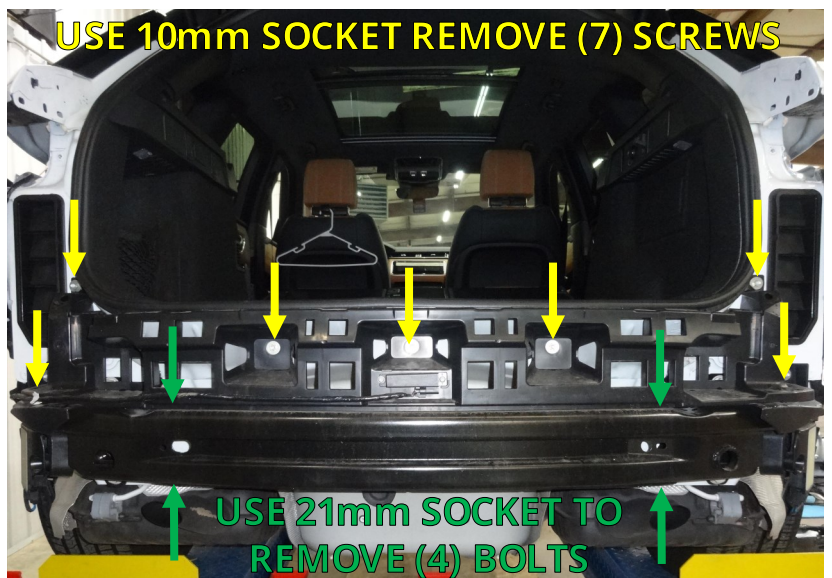
10mm
SOCKET



21mm
SOCKET

12. Use a socket to remove (7) screws from the plastic panel and remove the panel. Remove two foam inserts and discard.

13. There are four bolts securing the factory reinforcement beam to the vehicle. Remove the (2) inner bolts securing the factory reinforcement beam on each side. Do not remove the (2) outer bolts on each side. Save the bolts for hitch install.

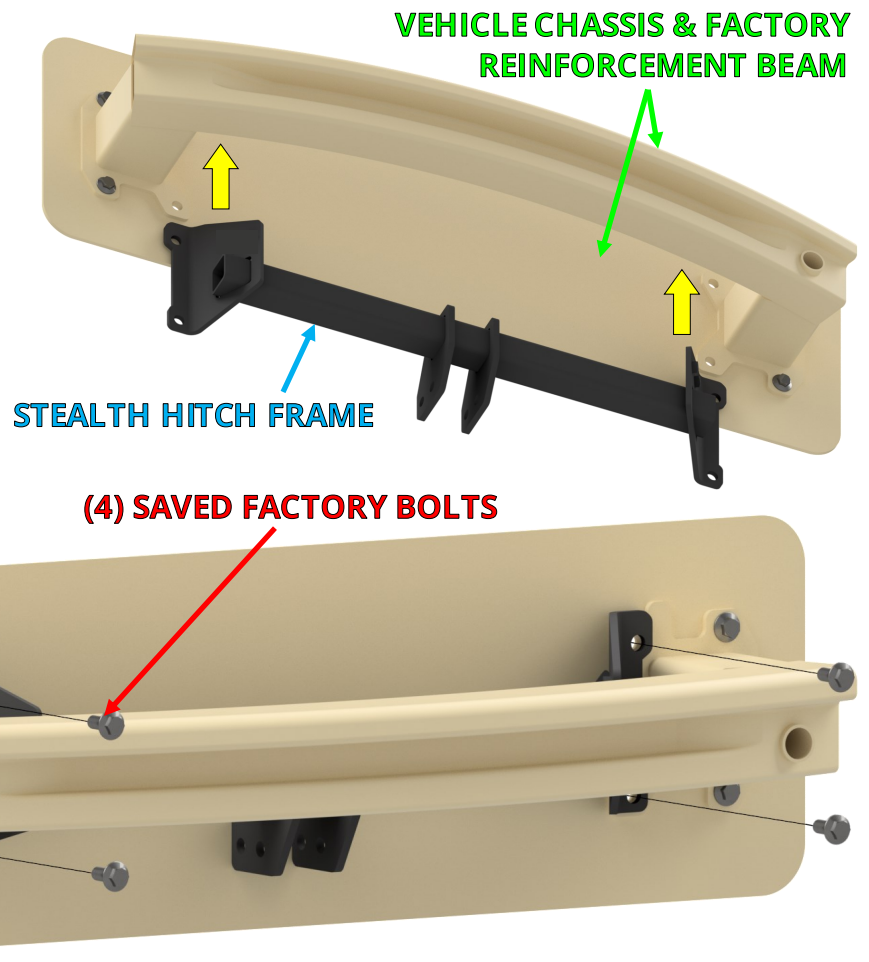


INSTALL STEALTH HITCH FRAME



21mm
SOCKET

14. Lower the exhaust with the ratchet strap so the Stealth hitch frame can be slid into position. Slide the Stealth hitch frame between the factory reinforcement beam extensions. The hitch frame will be mounted partially ON TOP of the factory reinforcement beam base plate. Align the two holes on each side of the hitch frame with the inner holes of the factory reinforcement beam. Replace the (4) factory bolts and hand tighten the bolts.



TORQUE
WRENCH



10mm
SOCKET



21mm
SOCKET

15. Use a Torque wrench to tighten the (4) inner factory bolts to 125 ft.-lbs.
16. Reattach the plastic panel, removed in Step 12, to the vehicle and replace the (7) screws.



MOUNT LATCH BLOCK



15/16"
SOCKET



15/16" OPEN
END WRENCH



TORQUE
WRENCH

17. Installation of the latch block varies depending on which kit you are installing.

- **Rack Receiver Kit:** Install the latch block with (2) 5/8"-11 x 5" bolts and (2) 5/8" nylock nuts. Tighten each bolt to 150 ft.-lbs.
- **Tow Kit:** Retrieve C-bracket from wiring harness kit box. Install the latch block, (2) chain hooks, and C-bracket with (2) 5/8"-11 x 5" bolts and (2) 5/8" nylock nuts. Tighten each bolt to 150 ft.-lbs.

NOTICE: Keys are packaged within the latch block, remove keys and store in safe location.

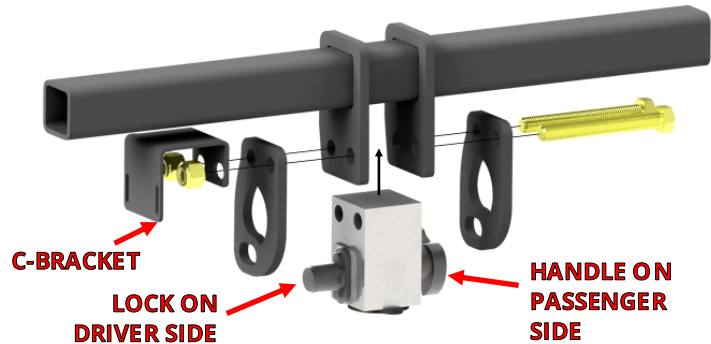
RACK RECEIVER KIT INSTALL

DRIVER SIDE

PASSENGER SIDE



TOW KIT INSTALL



IF INSTALLING A RACK RECEIVER KIT, SKIP TO STEP 32.
IF INSTALLING A TOW KIT, CONTINUE TO STEP 18.

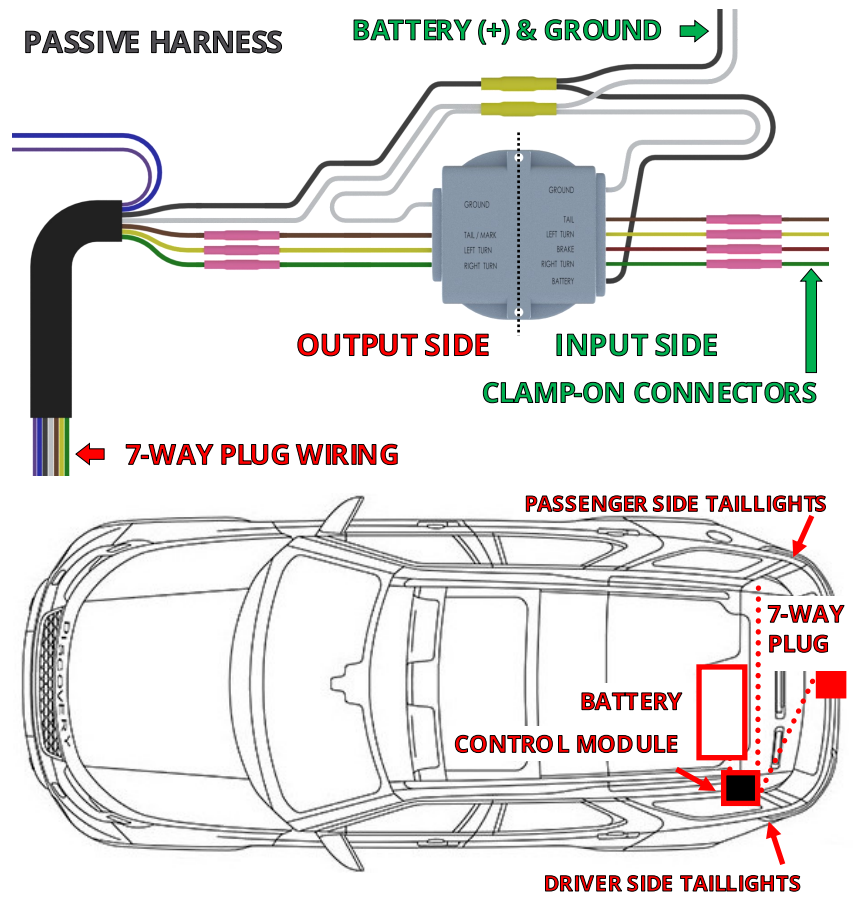
INSTALL PASSIVE WIRING KIT

#	DESCRIPTION	QTY
1	7-WAY WIRING HARNESS • FUSE HOLDER & FUSE • CONTROL MODULE & WIRES	1
2	ADHESIVE FOAM STRIP	2
3	5/8" LONG PHILLIPS SCREWS	4
4	#10 LOCK NUT	4
5	FORK TERMINAL	1
6	CLAMP-ON CONNECTORS	5
7	CABLE TIE - 8"	8
8	CABLE TIE - 14"	3
9	C-BRACKET	1
10	MOUNTING BRACKET	1
11	7-WAY HOUSING	1
12	7-POLE TO 4-POLE ADAPTER	1



18. Locate the wiring kit box. Review the contents of the box against the list above to check for missing components. The passive wiring kit uses a control module to manage the functions of the trailer lighting. The module has an "input" side that receives power from the vehicle's battery and signals from the vehicle's taillights. The "output" side of the module delivers this information to the 7-way plug. The control module is connected to the vehicle's battery and taillight wiring as outlined in the next steps.

NOTICE: Do not allow electrical system to become disconnected from power or ground. Doing so may interrupt electrical systems.

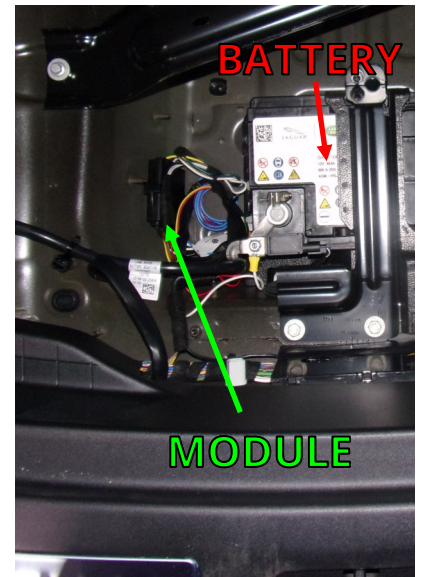
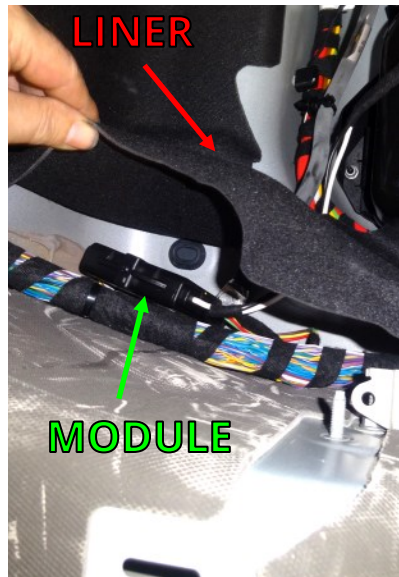


INSTALL WIRING KIT CONTINUED

19. In the rear cargo area, lift up and remove the floor panel then remove the spare tire.



20. Retrieve the control module from the wiring kit box. Use supplied adhesive foam strips to mount the control module onto the rear cargo area. Depending on the construction of your vehicle the module may be placed in the driver side rear corner, behind the liner, or near the battery



DRILL &
3/8" BIT

21. Locate the grommet, shown in the image, on the driver side of the rear wall of the vehicle. Remove the grommet and drill a 3/8" hole through it. Route the output harness, and the yellow, green, and brown input wires through the grommet. Pass the wires from inside to the outside of the vehicle. Replace the grommet.



INSTALL WIRING KIT CONTINUED



PLIERS



MULTIMETER

22. On the outside of the passenger side of the vehicle, separate the wire loom to gain access to wires. Use clamp-on connectors to connect the brown and green input wires to wires in the harness. (As shown in reference table on next page.) Use electrical tape to tape up the connectors and loom. Secure wires with cable ties.

NOTE: Vehicles may have different wire colors than those shown. Verify circuits (wire colors) with multimeter.



PLIERS



MULTIMETER

23. On the outside on the driver side of the vehicle, separate the wire loom to gain access to the wires. Use a clamp-on connector to connect the yellow input wire to wires in the harness. (As shown in reference table on next page.) Use electrical tape to tape up the connectors and loom. Secure wires with cable ties.

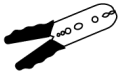


CLAMP-ON CONNECTOR COLOR REFERENCE TABLE

SIGNAL INPUT WIRES			POWER & GROUND WIRES		
FUNCTION	HARNES	VEHICLE			
LEFT TURN	YELLOW	WHITE/GREEN	12V+ (POWER)	BLACK	BATTERY (+)
RIGHT TURN	GREEN	GREY/PURPLE	GROUND	WHITE	BATTERY (-)
MARKER	BROWN	BROWN/YELLOW			
BRAKE	RED	Do not connect the red brake wire. This vehicle does not utilize a separate brake circuit. The brake signal is sent down the left and right turn circuits simultaneously.			
REVERSE	PURPLE	For use with trailer reverse lights or to disable the trailer brakes when backing with surge brakes. To connect, isolate vehicle's reverse light circuit and connect the purple wire from the trailer wiring harness to vehicle reverse light circuit. Trailers rarely have reverse lights or surge brakes.			
ELECTRIC BRAKE	BLUE	Only used when a hard wired brake controller is mounted inside the vehicle and your trailer has electric brakes. See brake controller instructions for this wire.			

NOTE: If two colors are listed, the first color is the dominant color.

INSTALL WIRING KIT CONTINUED



STRIPPER/
CRIMPING
TOOL



10mm
SOCKET

24. Route the power and ground wires to the battery. Locate the fork terminal supplied in the wiring kit box. Trim excess ground wire length. Crimp the fork terminal to the ground wire. Connect the ground wire to the negative battery terminal (-).

25. Locate the fuse holder supplied in the wiring kit box. Remove the fuse from fuse holder. Trim excess power wire length. Crimp fuse lead to power wire. Connect fuse ring terminal to the positive battery terminal (+).



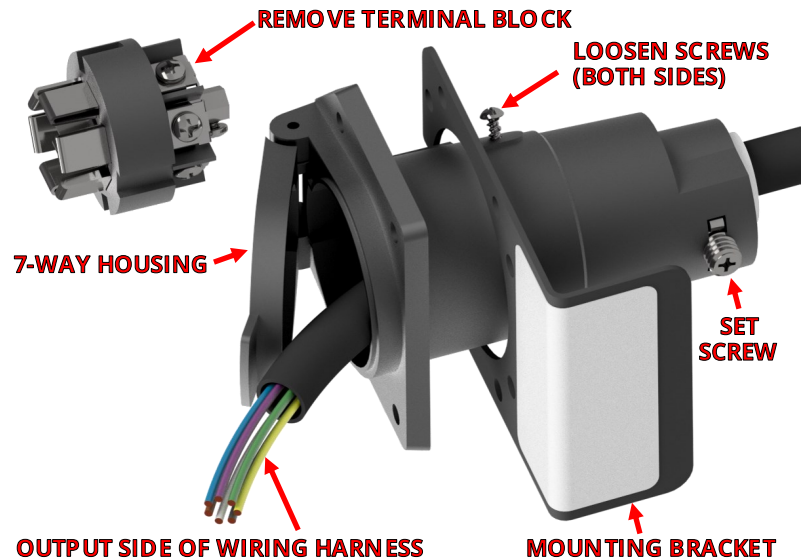
NOTICE: Loosen battery terminals just enough to install wiring, so vehicle wiring does not lose ground or power.

WIRE 7-WAY PLUG



PHILLIPS HEAD
SCREWDRIVER

26. Locate the 7-way housing. Use a screwdriver to loosen (2) screws. Remove 7-way round terminal block. Place the mounting bracket onto the 7-way housing as shown. Use a screwdriver to loosen the set screw at the bottom of the 7-way housing. Route output side wires of the wiring harness through the 7-way housing.



Please follow instructions below very carefully. Incorrect wiring of the 7-way receptacle causes the vast majority of wiring problems.



PHILLIPS HEAD
SCREWDRIVER

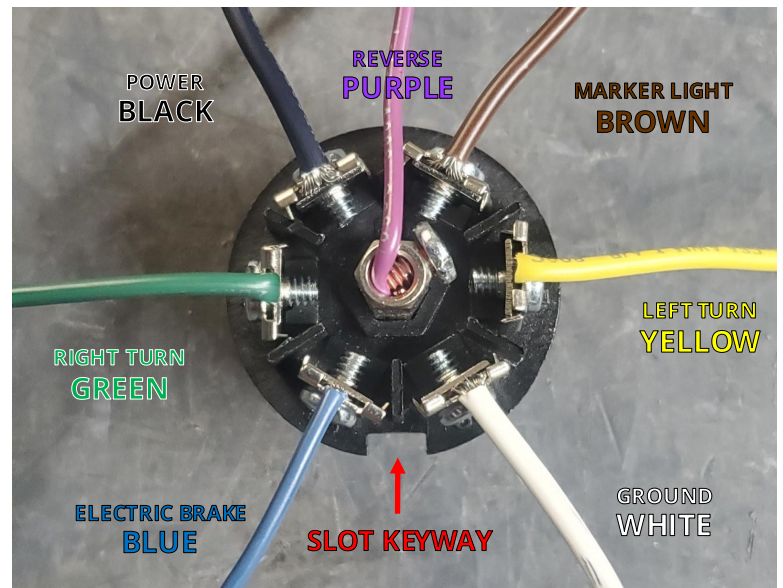


STRIPPER/
CRIMPING
TOOL

27. Locate the slot keyway. Starting from the keyway going **clockwise**, attach the wires as follows:

- Blue
- Green
- Black
- Brown
- Yellow
- White
- Purple (middle)

NOTICE: Markings on the receptacle may not match the correct wire configuration. Please disregard and follow the instruction above.



TEST 7-WAY HARNESS WIRING



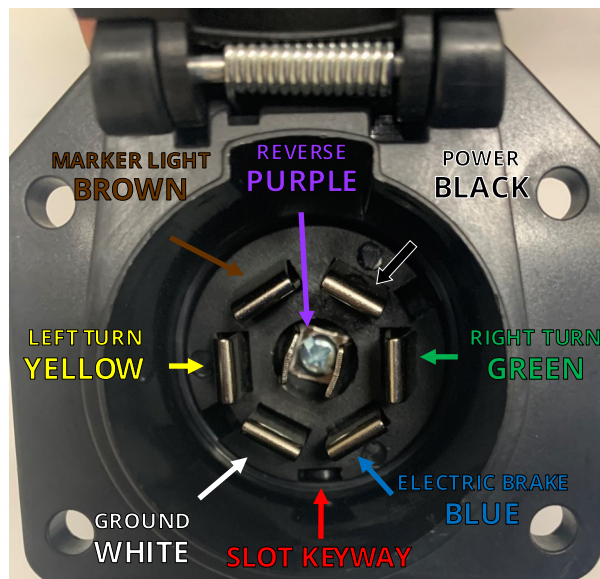
PHILLIPS HEAD
SCREWDRIVER



MULTIMETER

28. Put the 7-way receptacle back together. While everything is still accessible, you should test the wiring to make sure everything is connected properly and in working order. **Replace the 20 Amp fuse into the fuse holder located near the power supply.**

NOTE: *Taillights will need to be temporarily plugged in during testing.*



- Start by connecting the multimeter negative probe to the ground blade on the 7-way receptacle.
- Next, connect the multimeter positive probe to the power blade on the 7-way receptacle and check for 12 volts.
- Once that is confirmed, move the positive probe to the left turn blade on the 7-way receptacle and check for 12 volts when the vehicle left turn blinker is active. You should see it pulse.
- Next, move the positive probe to the right turn blade and check for 12 volts when the right turn blinker is active. You should see it pulse.
- Next, move the positive probe to the marker/taillights. With the vehicle lights on you should see 12 volts constant.
- Lastly, with the brake depressed, move the positive probe to the left turn blade where you should see 12 volts constant. Move the probe to the right turn blade where you should also see 12 volts constant.



PHILLIPS HEAD
SCREWDRIVER

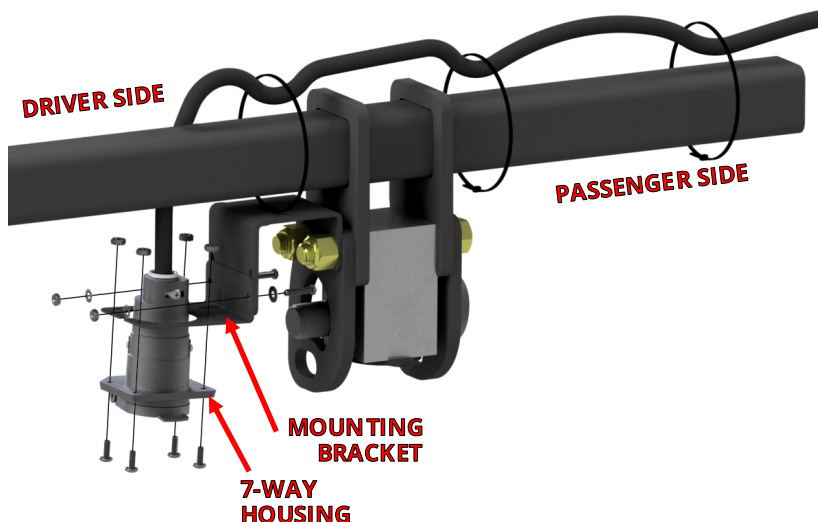


SILICONE

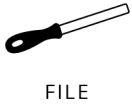
29. Attach the mounting bracket and 7-way housing to the Stealth hitch frame as shown. Secure harness to Stealth hitch frame with cable ties.

30. Secure all wires and wiring components. Use the remaining cable ties to secure wiring so that it is not loose and will not interfere with replacement of the fascia. Wiring should not be visible once the vehicle is reassembled.

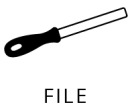
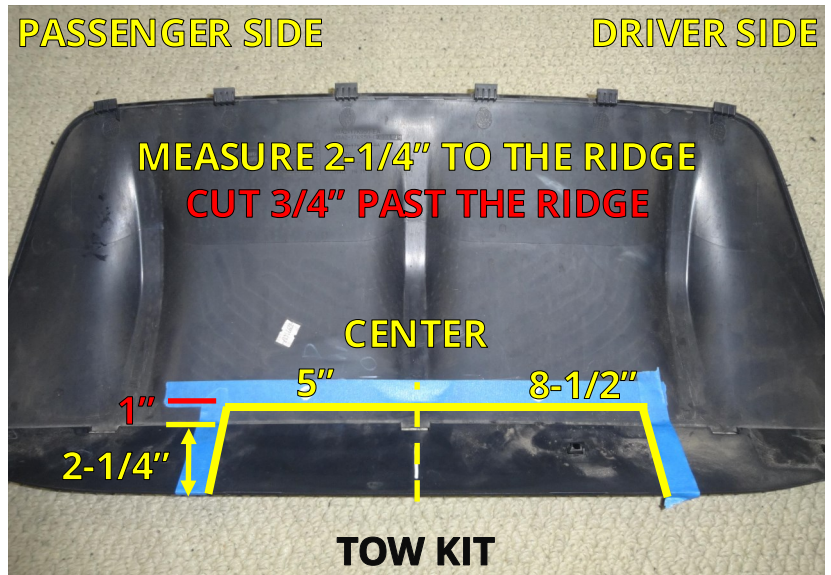
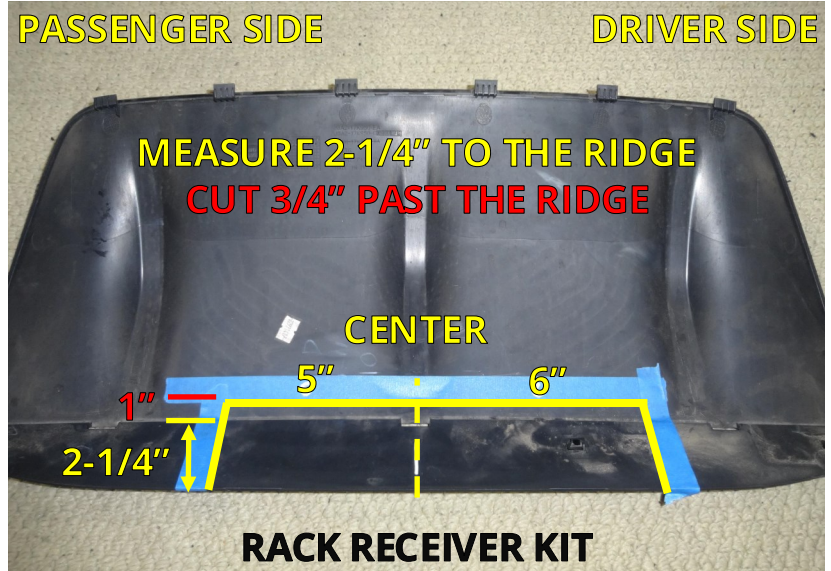
31. Use silicone to waterproof the grommet.



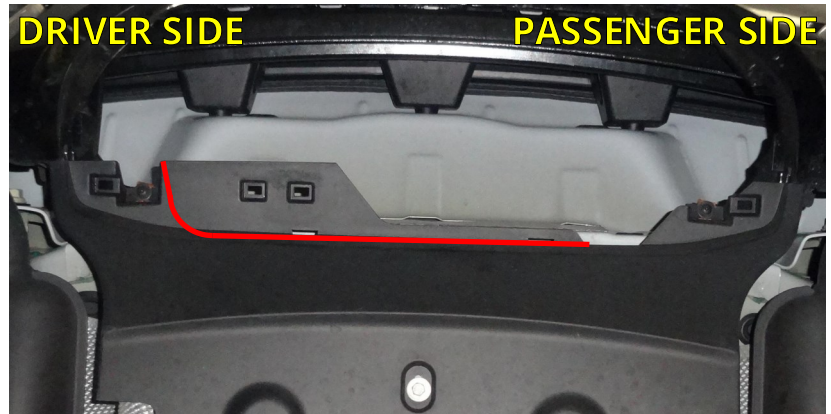
GAIN ACCESS TO MOUNTING AREA CONTINUED



32. Cut out the removable fascia panel with a Dremel tool. The access hole necessary varies depending on which kit you are installing. Follow indicated template. Use a file to smooth out the cut.



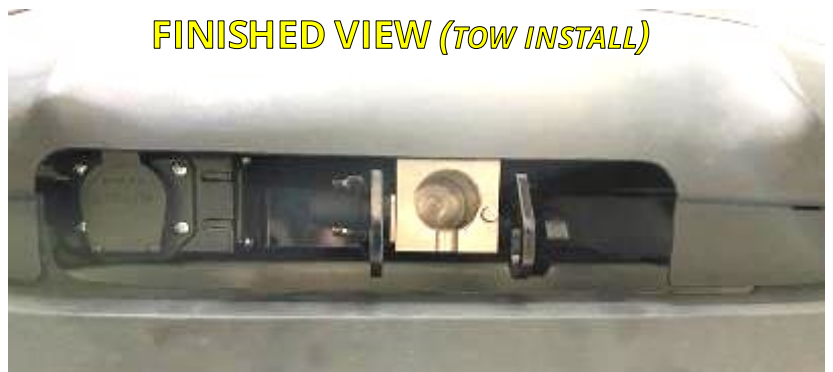
33. Cut out the gravel guard panel with a Dremel tool. Use a file to smooth out the cut.



REINSTALL VEHICLE COMPONENTS

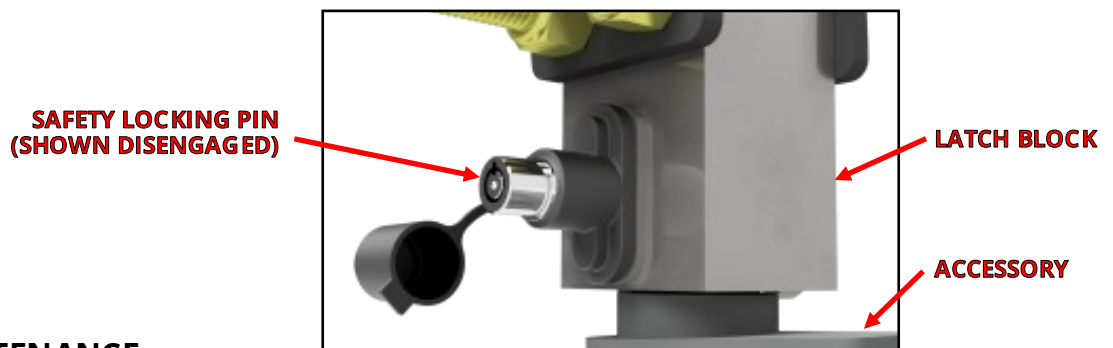
34. Reattach and secure the fascia, taillights, and other vehicle components in reverse order. Refer to Steps 1-10 and 19.

NOTICE: Remember to plug in the electrical sensor plugs in Step 10 before reinstalling the fascia.



FINAL VEHICLE EXAMINATION

35. Examine the body panels to ensure that they are in a pre-installation condition. Test the electronic functions of the vehicle. Correct any inconsistencies.
36. Ensure that hitch components work properly.
 - **Verify that the lock works correctly.** Push in the safety lock on the latch block then unlock with key. The lock should slide back out with the key when unlocked.
 - **Verify that each accessory can be installed correctly.** Use the following steps to install and remove each accessory that will be used with the hitch. (*Rack Receiver* and *Ball Mount* if purchased.)
 1. Prepare latching mechanism. Turn handle clockwise if needed.
 2. Firmly insert "post" of accessory into latch block until handle releases indicating that the accessory is latched.
 3. Push in the safety locking pin until it fully engages. The locking pin prevents the handle from turning when pushed in, and confirms that the block is securely latched onto the accessory. The safety locking pin will not depress if the accessory is not fully latched.
 4. Use key to release safety locking pin.
 5. While holding on to the accessory, rotate handle clockwise to release and remove the accessory.
 - **Verify that no part of the accessories come into contact with the body of the vehicle.**



PRODUCT USE AND MAINTENANCE

NOTICE: *If the hitch is being installed by a professional, the installer is responsible for training the end user in the use and maintenance of the product.*

- **Accessory installation procedure:**
 1. Prepare latching mechanism. Turn handle clockwise if needed.
 2. Firmly insert "post" of accessory into latch block until handle spins counter-clockwise indicating that the accessory is latched.
 3. Always depress the safety locking pin and check that it has fully engaged.
- **Never use any accessory with the safety lock disengaged.** Until the safety locking pin is engaged, the handle is able to turn. A fully engaged safety locking pin is confirmation that the accessory is properly latched into the latch block.
- **Never use the rack receiver for towing.** The rack receiver accessory is only to be used with payload carrying products, such as bike racks or luggage racks.
- **Before each use, give the post of the accessory a light coating of lithium based grease.**
- **Before each use, inspect the hitch to ensure that all bolted connections are secure and that no cracks or damage are present.** Do not tow with the hitch if cracks or damage outside of normal wear is found.
- **Remove the Stealth accessories from the latch block after each use.** Do not leave accessories plugged in for extended periods of time.