

Part #: PT398-48171

Conflict

Do not install into Vehicles without Smart Key system.

Recommended Sequence of Application

Item#	Quantity	Description
1	1	V4 RES
2	1	V2 GBS or V5 RS3200 Plus

Kit Contents

Item#	Quantity	Description
1	1	V4 Wire Harness
2	1	RES ECU Mounting Bracket

Hardware Bag Contents

Item#	Quantity	Description
1	1	RES ECU PT398-60160-AA
2	1	RES ECU Bracket
3	2	M6 Nut
4	10	Wire Tie
5	2	Foam Tape
6	1	Vinyl Sheet
7	2	Key Tag English PT398-4209E
8	2	Key Tag Spanish PT398-4209S
9	2	Window Label English PT398-4209S
10	2	Window Label Spanish PT398-00071-SL
11	1	Engine Room Label English PT398-00070-EL
12	1	Engine Room Label Spanish PT398-00070-SL
13	1	V4 Owner's Guide


Additional Items Required For Installation


Item#	Quantity	Description
1		Hood Switch Kit (PT398-03121) NOTE: Req'd for all Vehicles without Factory Alarm (see page 6)


Recommended Tools


Personal & Vehicle Protection	Description
Safety Glasses	
Safety Gloves	(Optional)
Blankets, Parts Boxes	Blankets, Parts Boxes
Special Tools	
Techstream	Use latest version on TIS
1/4" Drive Torque Screwdriver (Req'd for Hood Switch Kit)	Included in the TPMS Tool Kit# 00002-TTPWS Toyota SST# 00002-TTPWS-03, #0 Phillips Hood Switch: 3.1 in•lbf (0.35 N•m)
Installation Tools	
Screwdriver	#2 Phillips, Flat Blade Jeweler's
Nylon Panel Removal Tool	e.g. Panel Pry Tool #1 Toyota SST# 00002-06001-01
Utility Knife	
Pliers	Needle Nose
Side Cutters	
Torque Wrench	Battery: 48 in•lbf (5.4 N•m), Hood Latch: 71 in•lbf (8 N•m), ECU: 71 in•lbf (8 N•m)
Socket	10mm, extension
Special Chemicals	
Cleaner	VDC Approved Cleaner
Glass Cleaner	Household Glass Cleaner


Legend


 **STOP:** Damage to the vehicle may occur. Do not proceed until process has been complied with.


 **OPERATOR SAFETY:** Use caution to avoid risk of injury.


 **CAUTION:** : A process that must be carefully observed in order to reduce the risk of damage to the accessory/vehicle and to ensure a quality installation.

 **TOOLS AND EQUIPMENT:** Used in Figures calls out the specific tools and equipment recommended for this process.

 **REVISION MARK:** This mark highlights a change in installation with respect to previous issue.

 **SAFETY TORQUE:** This mark indicates that torque is related to safety.

 **WIRE TIE LOCATION:** Wire Tie location number.

 **PREVIOUS WIRE TIE LOCATION:** This mark indicates a previously installed Wire Tie.

Accessory Installation Practice (read before installation)

Care must be taken when installing this accessory to ensure damage does not occur to the vehicle. The installation of this accessory should follow approved guidelines to ensure a quality installation.

These guidelines can be found in the "Accessory Installation Practices" document.

This document covers such items as:

- Vehicle Protection (use of covers and blankets, cleaning chemicals, etc.)
- Safety (eye protection, checking torque procedure, etc.)
- Vehicle Disassembly/Reassembly (panel removal, part storage, etc.)
- Electrical Component Disassembly/Reassembly (battery disconnection, connector removal, etc.)

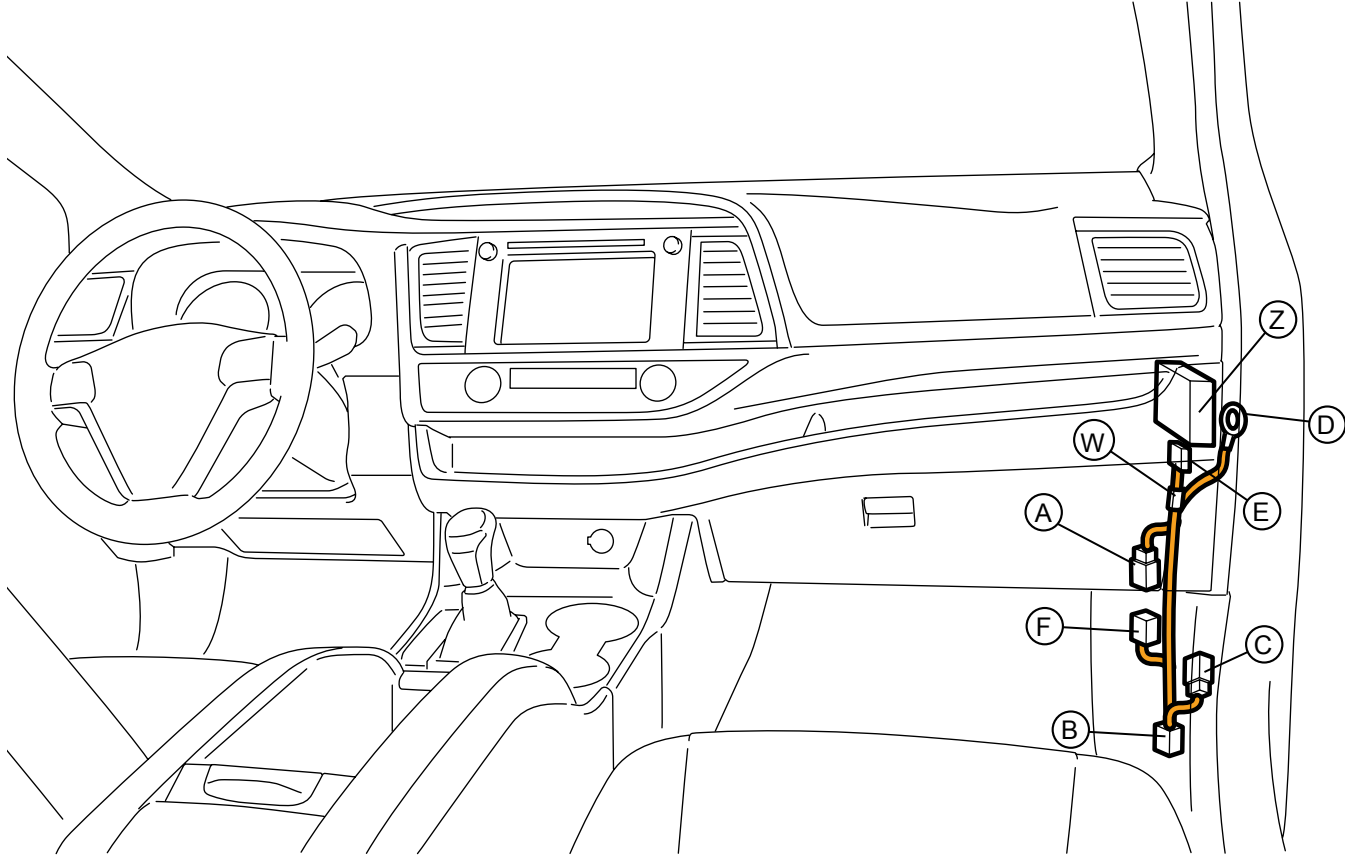
Please see your Toyota dealer for a copy of this document.

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TOYOTA Highlander RES

Wire Harness Outline*

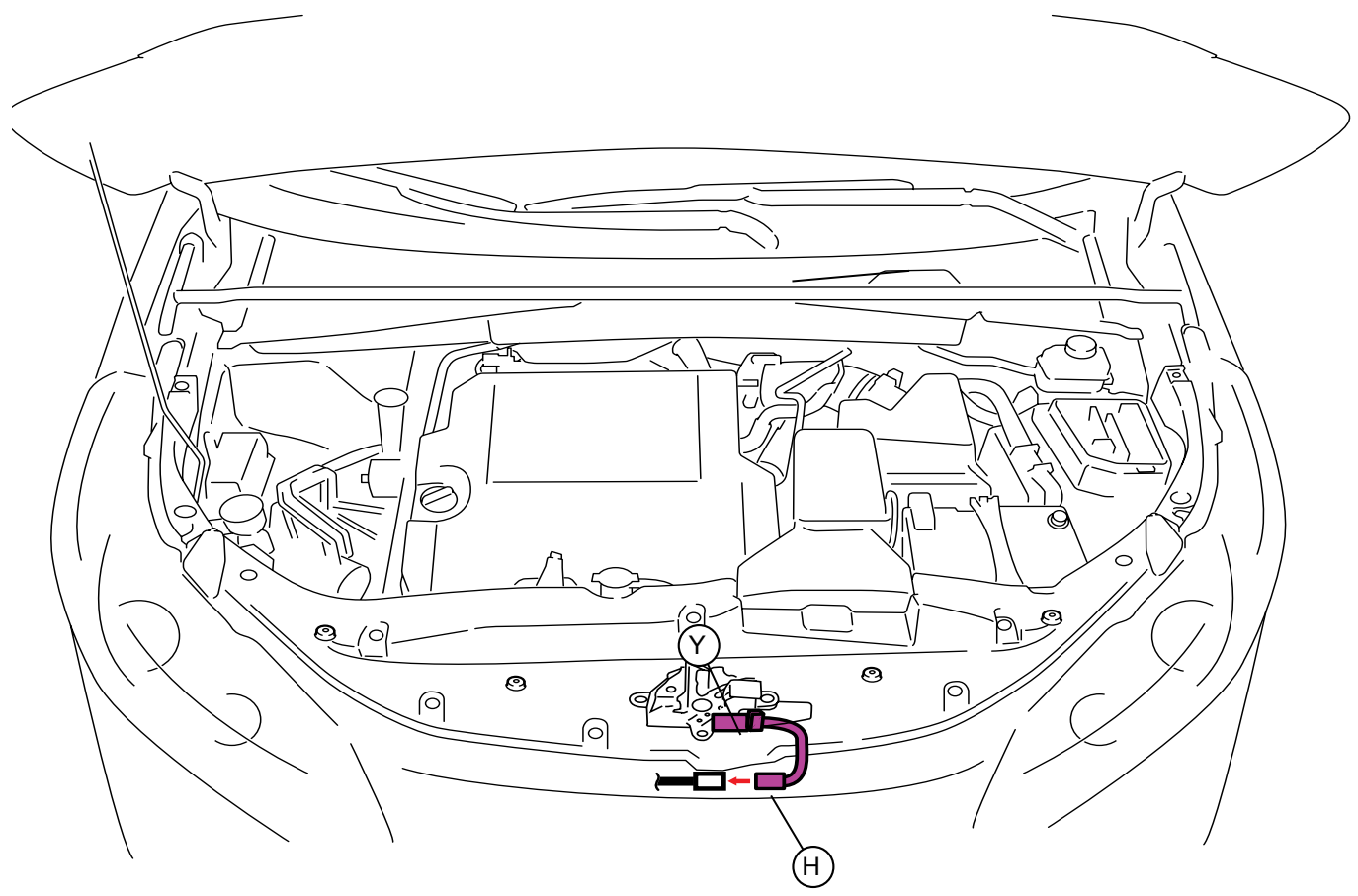


TVIP	Vehicle	Description
A		8P White
B		18P Gray
C		18P Gray
D		Ground Terminal
E	—	24P White
F	—	8P White
W	—	White Tape Marker
Z	—	RES ECU

*Color of Harness on Overview corresponds with Colored Tape near Connectors on Harness.

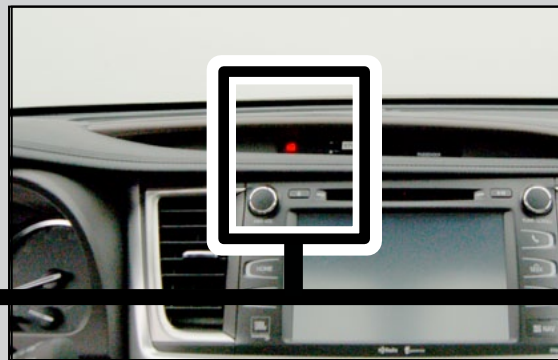
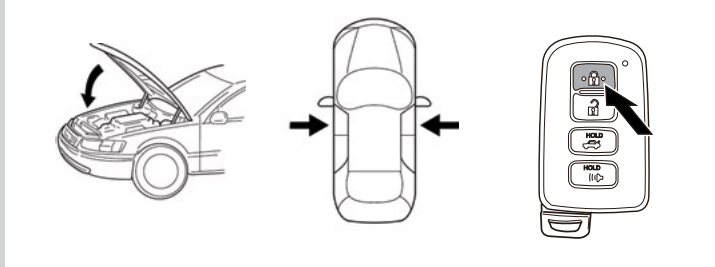
TVIP	Vehicle	Description
Y	—	Hood Switch
H		2P Connector


TOYOTA Highlander without Factory Alarm



Confirm the following:

Before beginning, close the Hood and the Doors. Press the remote control's lock button.

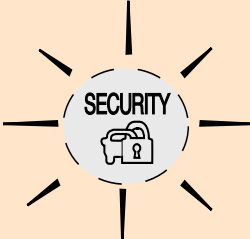


 SECURITY

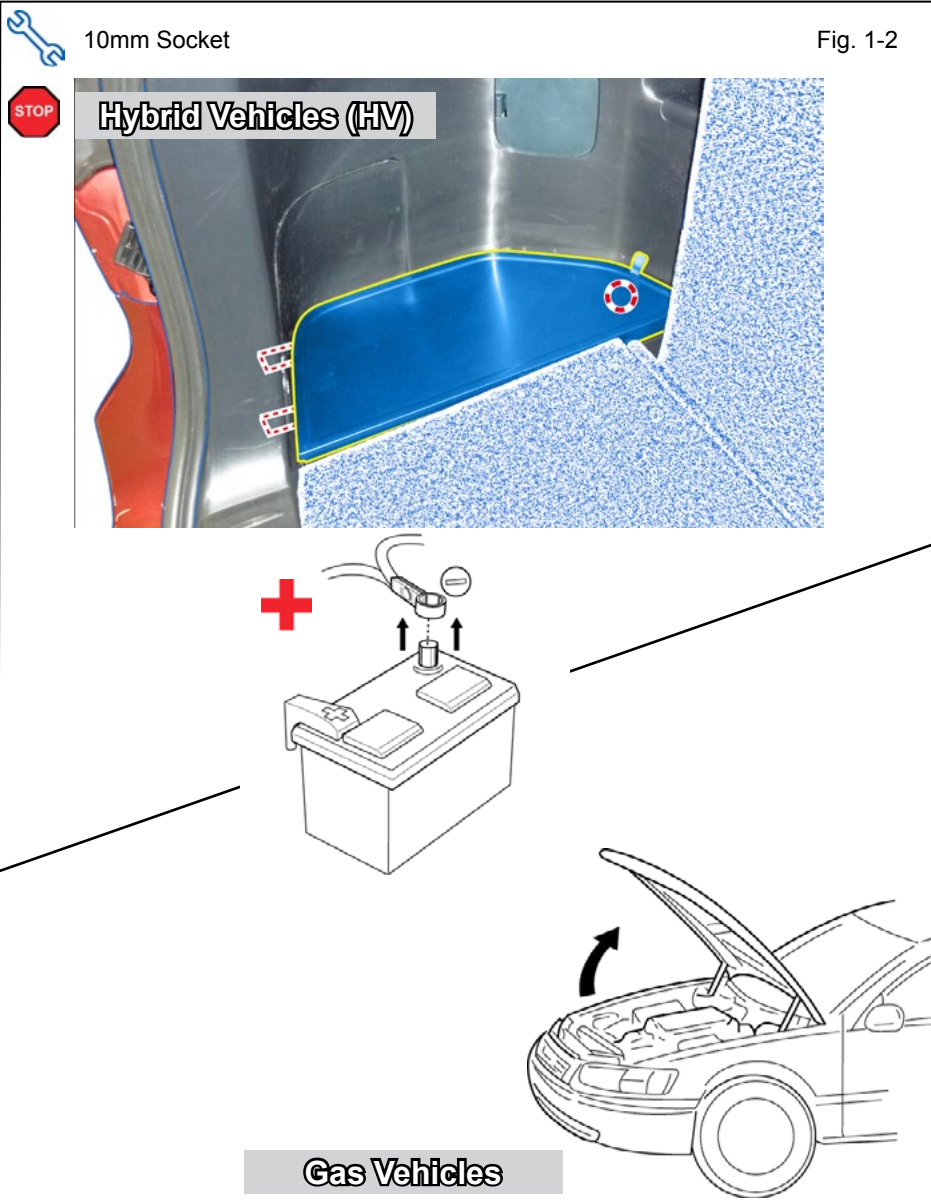
Security LED Turns ON solid for 30 Seconds then starts blinking

WITH Factory Alarm
(Vehicle has Hood Switch)

Security LED starts blinking Immediately

 SECURITY

WITHOUT Factory Alarm
(Vehicle does not have Hood Switch)



b. Place the Vehicle in Park with the Parking Brake set.

• **For Hybrid Vehicles the battery is in the Luggage Compartment.**

c. Remove the DS Luggage Side Cover. (for HV only)

• **For Gas Vehicles the battery is in the Engine Compartment.**

d. Disconnect the Negative Battery Terminal.

- Note the Battery Cable Position as it will be re-installed in the same position.

+ **CAUTION:** Do not touch the Positive Terminal.

STOP **NOTE:** If Vehicle is equipped with Factory Alarm, skip to Section 3 on Page 12.

Vehicles Without Factory Alarm ONLY

2. Hood Switch Installation.

a. Remove 1 Clip and rotate the passenger side Engine Cover.

**Vehicles Without
Factory Alarm ONLY**

b. Remove 1 Clip and rotate the driver side Engine Cover.

c. Remove the Engine Cover.

- Remove 7 Clips.

d. Dislodge the Hood Lock Assembly.

- Remove Bolt Cover.
- Remove 3 Bolts.

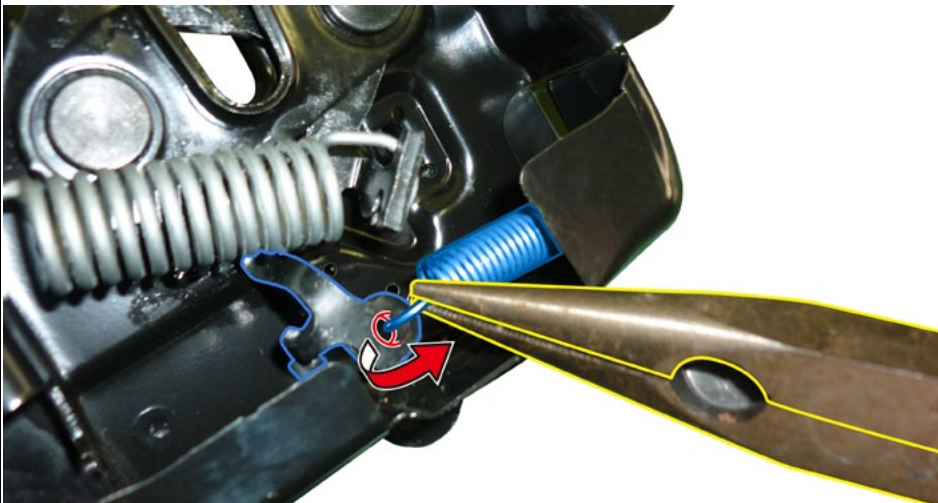
**Vehicles Without
Factory Alarm ONLY**

- e. Remove the Hood Lock Cable from the Hood Lock Assembly.
- f. Remove the Hood Lock Assembly.

- g. Release the Spring from the Hood Lock.

 Needle Nose Pliers

Fig. 2-6






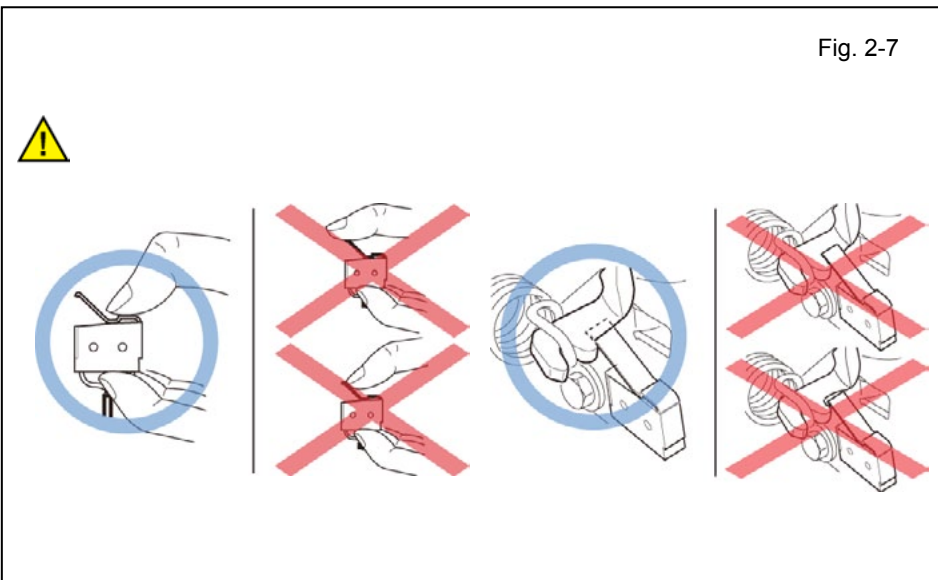
-  Make sure to hold the Hood Switch by its sides.
-  Make sure the Hood Switch Lever is positioned properly.
-  If the Hood Switch is Broken RES will not function.

Fig. 2-7



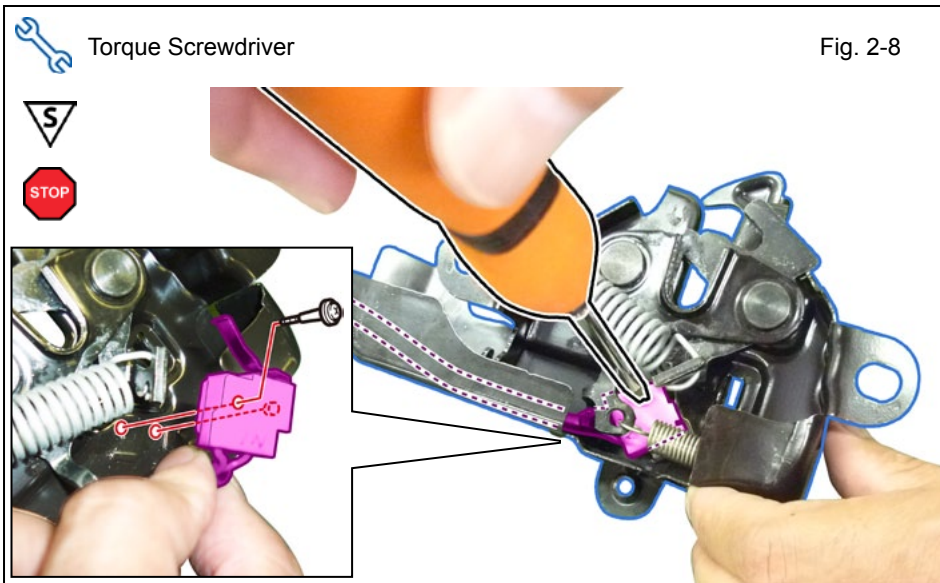


Fig. 2-8

**Vehicles Without
Factory Alarm ONLY**

h. Install the Hood Switch with the Switch Lever underneath the Hood Lock Trigger Lever.

Torque: Tighten the Screw to 3.1 in•lbf (0.35 N•m).

NOTE: Do not reuse the Screw once it is already installed. The effect of the adhesive becomes weak if used again.

i. Route the Hood Switch Harness underneath the Hood Lock Cable Lever.

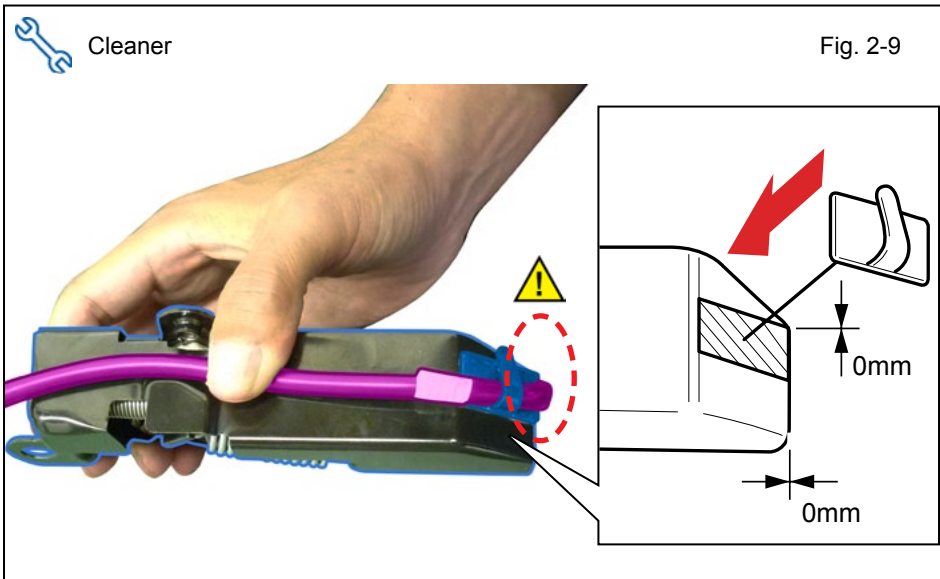


Fig. 2-9

j. Using VDC approved cleaner and cleaning method, clean the indicated area underneath the Hood Lock Assembly.

k. Attach the Clamp underneath the Hood Lock Assembly.

l. Secure the Hood Switch Harness using the Clamp.

CAUTION: Do not overstress the Hood Switch Harness.

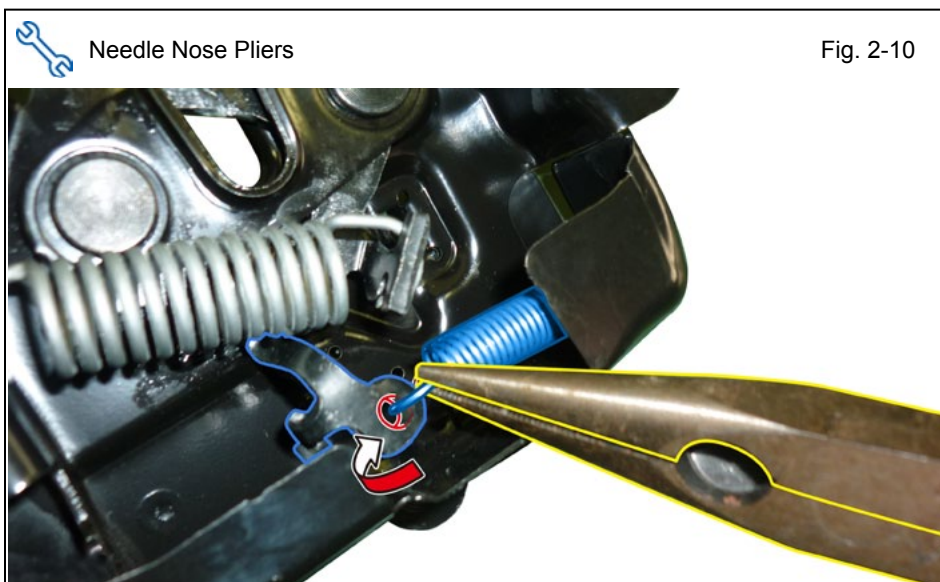


Fig. 2-10

m. Reinstall the Spring to the Hood Lock.

**Vehicles Without
Factory Alarm ONLY**

n. Reinstall the Hood Lock Cable to the Hood Lock Assembly.

o. Reinstall the Hood Lock Assembly.



Torque: Tighten the 3 Bolts to 71 in•lbf (8.0 N•m).

p. Reinstall the Bolt Cover.

q. Disconnect and discard the Dummy Connector from the Vehicle's Pre-Connector.

r. Connect the Hood Switch Harness Connector to the Vehicle's Pre-Connector.

3. Vehicle Disassembly

- a. Remove the Passenger's Side Step Cover.

- b. Remove the Passenger's Side Cowl Cover.
 - Remove 1 Nut.

- c. Remove the Passenger's Side Dash Cover.



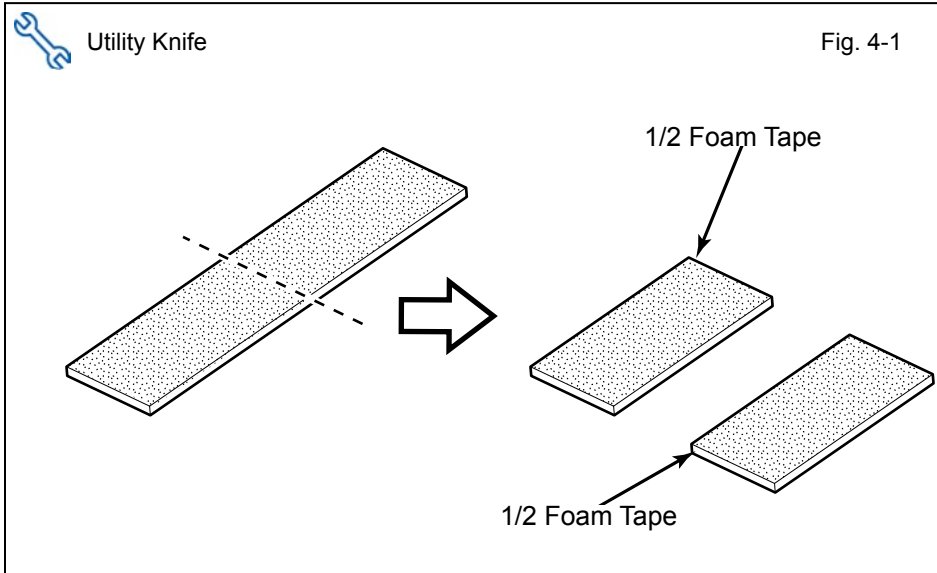
d. Remove the Glove Box Under Cover.

e. Remove 2 Bolts from the bottom of the Glove Box.

f. Open the Glove Box.
g. Dislodge the Glove Box.

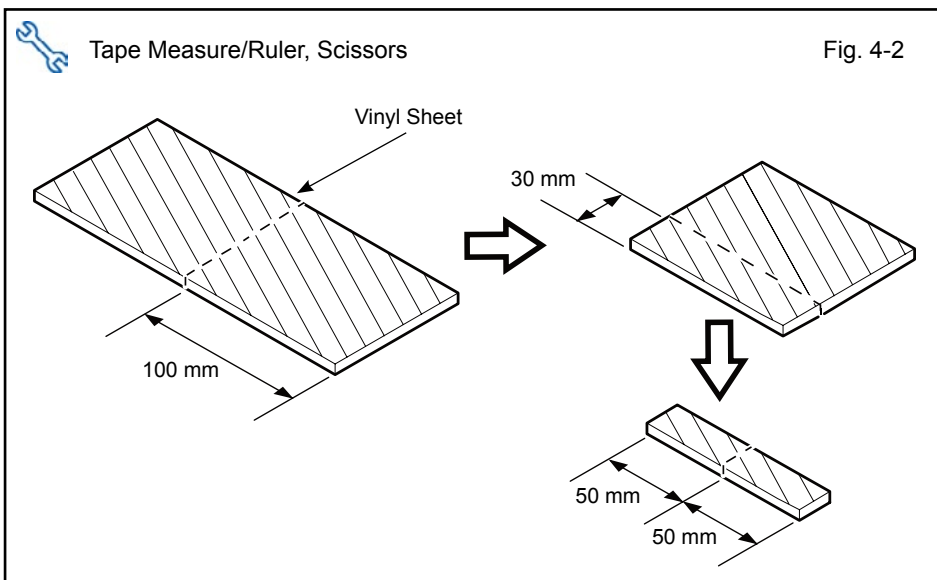
- Remove 3 Screws.

- h. Disconnect the Vehicle's Connectors.
- i. Remove the Vehicle clamp from the Glove Box.
- j. Remove the Glove Box.

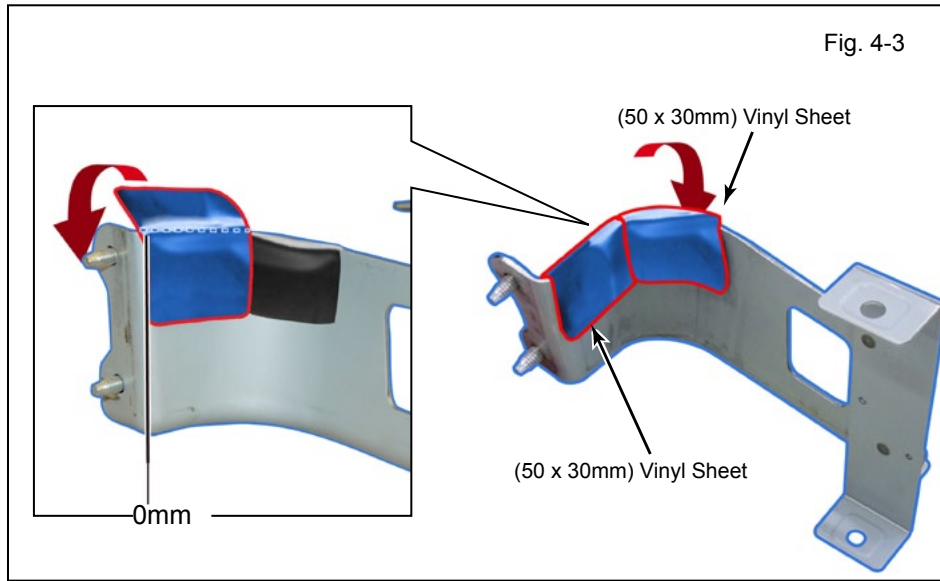


4. RES ECU Preparation and Installation.

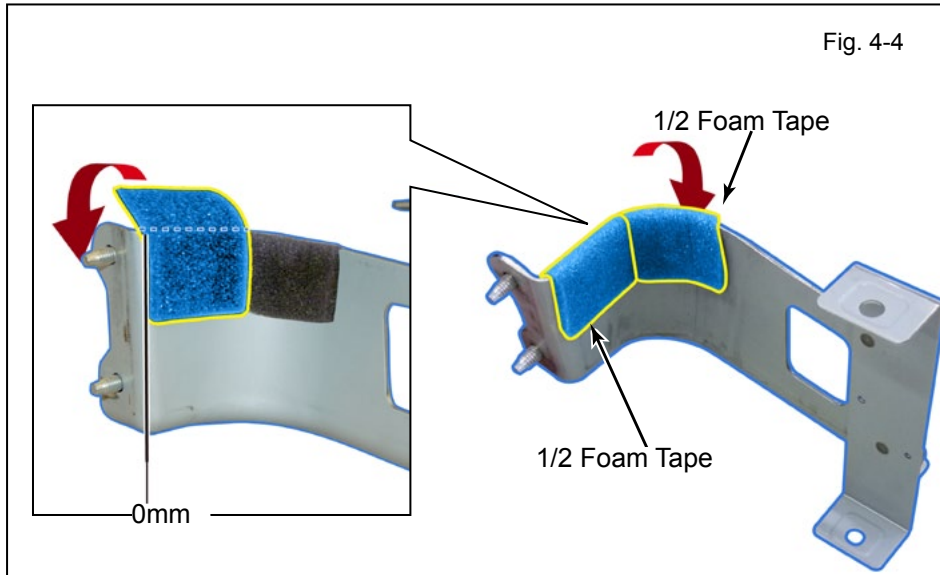
- a. Cut the Foam Tape into 1/2 pieces.



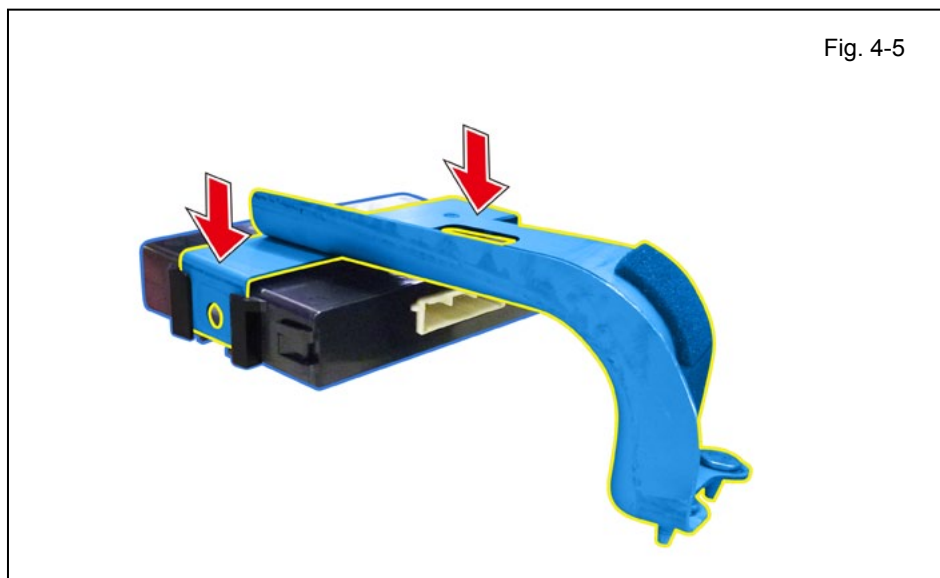
- b. Cut the Vinyl Sheet in half, then cut 1 (100 x 30mm) pieces from the 1 half piece as shown.
- c. Cut one of the remaining pieces in half to form 2 (50 x 30mm) as shown.



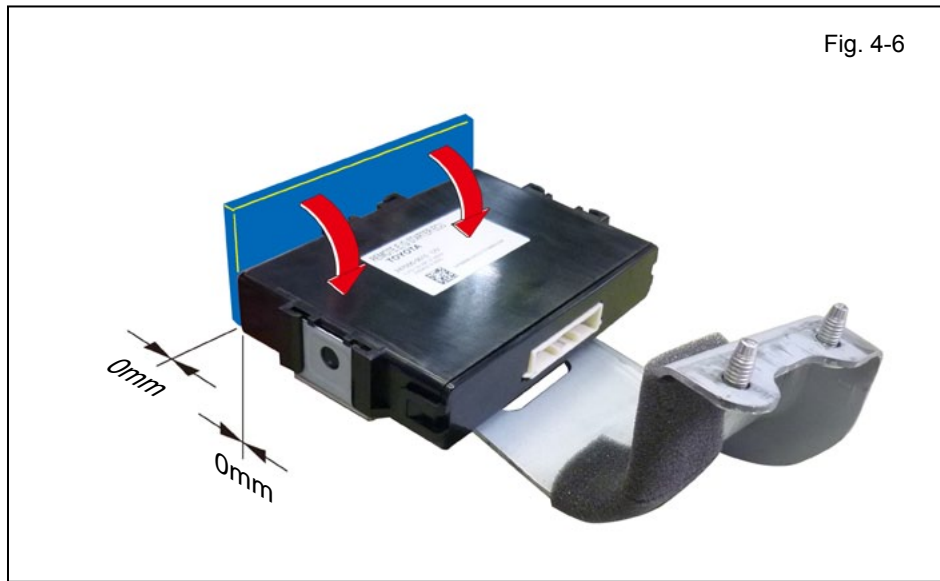
- d. Use VDC approved cleaner to clean the RES ECU Bracket.
- e. Attach the 2 (50 x 30mm) Vinyl Sheets to the RES ECU Bracket.



- f. Attach the 1/2 Foam Tapes over the Vinyl Sheets on the RES ECU Bracket.



- g. Attach the RES ECU Bracket to the RES ECU.



- h. Attach the Foam Tape to the RES ECU.



- i. Plug in the V4 White 24P Connector to the RES ECU.

- j. Install the RES ECU using and the V4 Ground Wire Terminal using the supplied Nuts.



NOTE: Verify that these Nuts are tightened securely.

Torque: Tighten the Nuts to 8 N•m (71 in•lbf).

5. V4 Harness Installation.

V4 ONLY



NOTE: If V2 (GBS) is installed in the vehicle, skip to page 19 for V4/V2 Add-On (steps l-z).

a. Remove the Tape securing the Vehicle's 8P Pre-Connector.

b. Connect the V4 White 8P Connector to the Vehicle's 8P Pre-Connector.

c. Secure the V4 Harness's White Tape Marker to the Vehicle Harness using 1 Wire Tie (#1). (Fig. 5-3)

V4 ONLY

- d. Secure the 8P Connectors to the Vehicle Harness using 1 Wire Tie (#2). (Fig. 5-4)



NOTE: Place the 8P Connector in reference to the illustration.

- e. Secure the V4 Harness to the Vehicle Harness using 1 Wire Tie (#3). (Fig. 5-4)



NOTE: Rotate the ratchet end on Wire Ties (#2, #3) toward the rear of the Vehicle.

- f. Route the V4 Harness toward the Passenger side Cowl area.

- g. Disconnect the Vehicle's Gray 18P Connector from the Connector Block.

- h. Connect the Vehicle's Gray 18P Connector to the V4 18P Connector.

V4 ONLY

- i. Plug in the V4 Gray 18P Connector to the Vehicle Connector Block.

- j. Secure the V4 Harness to the Vehicle Harness using 1 Wire Tie (#4). (Fig. 5-8)



NOTE: Place the 8P Connector in reference to the illustration.

- k. Secure the 18P Connectors to the Vehicle Harness using 1 Wire Tie (#5). (Fig. 5-9)



NOTE: Rotate the ratchet end on Wire Tie (#5)



CAUTION: Do not secure to the Airbag Harness.



NOTE: Place the 18P Connector in reference to the illustration.



NOTE: Skip to Section 6 (p. 23) for Registration Preparation.

V4/V2 Add-on Only

l. Cut the Wire Tie securing the V2 8P Connector.

m. Disconnect the Vehicle's 8P Pre-Connector from the V2 8P Connector.

n. Secure the V4 Harness's White Tape Marker to the Vehicle Harness using 1 Wire Tie (#1). (Fig. 5-12)

V4/V2 Add-on Only

r. Cut the Wire Tie securing the V2 Gray 18P Connector.

s. Disconnect the Vehicle's Gray 18P Connector from the V2 18P Connector.

t. Connect the V4 Gray 18P Connector to the V2 Gray 18P Connector.

u. Connect the Vehicle's 18P Gray Connector to the V4 Gray 18P Connector.

V4/V2 Add-on Only

- v. Secure the V4 8P Connector to the Vehicle Harness with 1 Wire Tie (#2). (Fig. 5-19)
- w. Secure the V4 8P Harness to the Vehicle Harness with 1 Wire Tie (#3). (Fig. 5-19)
- x. Secure the V2 8P Connector to the Vehicle Harness with 1 Wire Tie (#4). (Fig. 5-19)



CAUTION: Reduce stress on Wire Tie (#4) and the 8P Connector's wire as shown.



NOTE: Rotate the ratchet end on Wire Ties (#2, #3, #4) toward the rear of the Vehicle.



NOTE: Place the V2 8P Connector in reference to the illustration.

- y. Secure the V2 Harness to the Vehicle Harness using 1 Wire Tie (#5). (Fig. 5-20)

- z. Secure the V4 Harness to the V2 Harness and Vehicle Harness using 1 Wire Tie (#6). (Fig. 5-21)



CAUTION: Do not secure to the Airbag Harness.

- aa. Secure the V4 18P Connector to the V2 18P Connector and Vehicle Harness using 1 Wire Tie (#7). (Fig. 5-21)



NOTE: Rotate the ratchet end on Wire Ties (#6, #7) toward the rear of the Vehicle.

6. Registration Preparation.

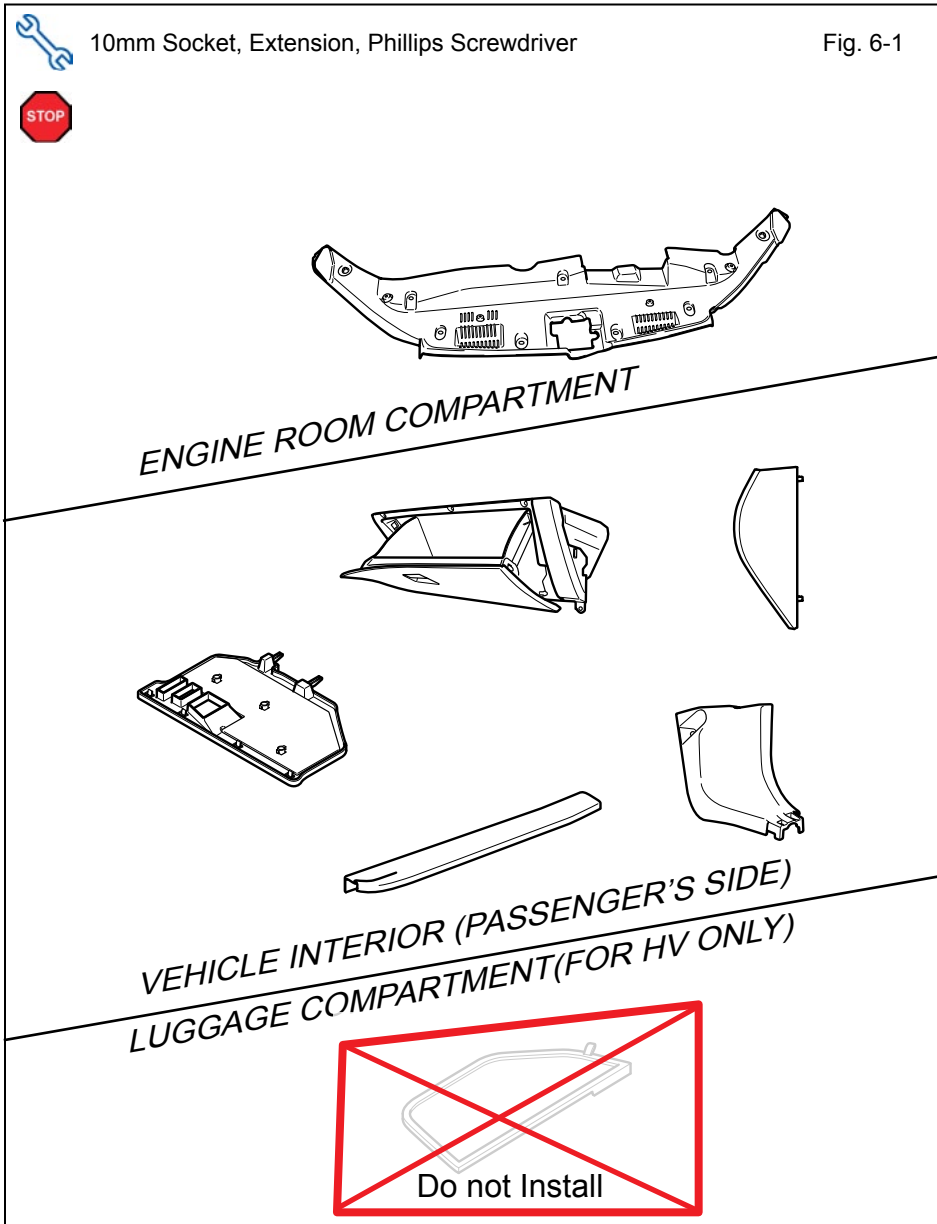
- a. Reassemble the Vehicle except for the passenger side Luggage Side Cover.

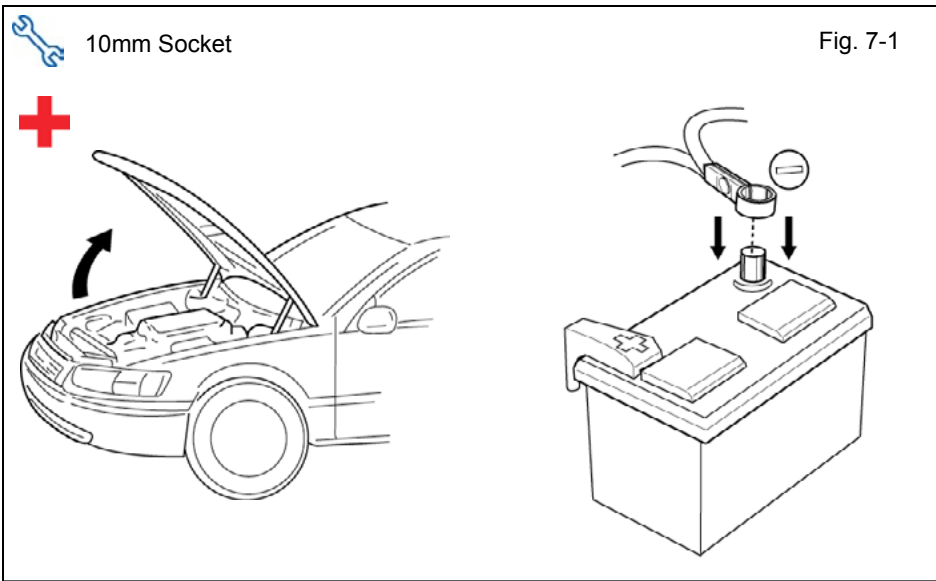


VERIFY: That panels fit together properly, with no uneven gaps.



VERIFY: That all Connectors are plugged in.

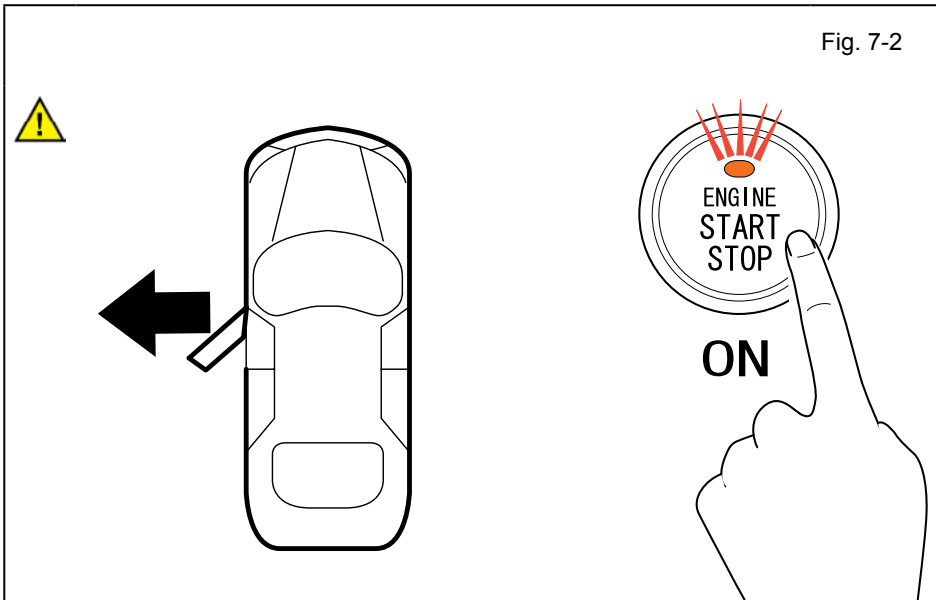




7. Registration.

- a. Open the Hood.
- b. Temporarily reconnect the Negative Battery Cable.

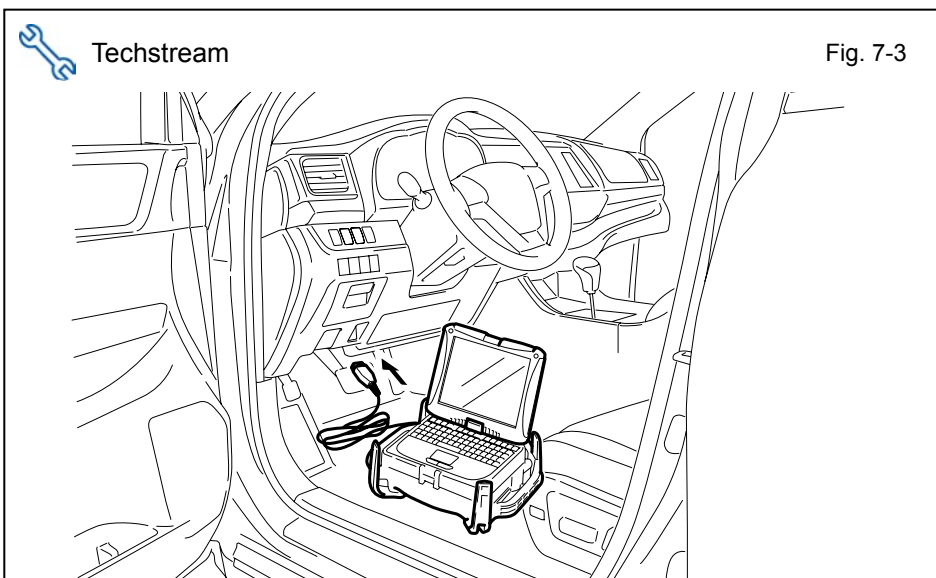
+ **CAUTION:** Do not touch the Positive Terminal.



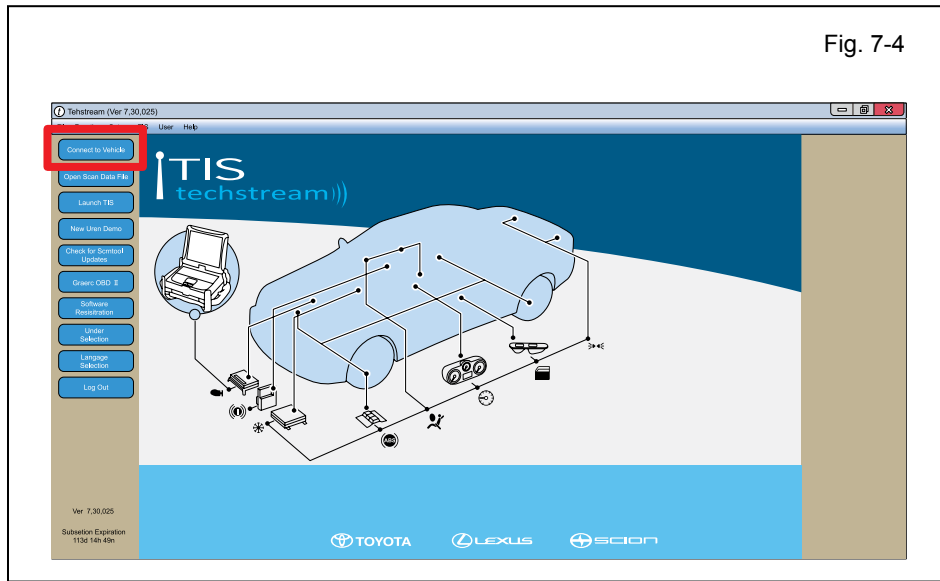
- c. Open the Driver's Side Door.

! **CAUTION:** Leave the Door open until the registration is completed.

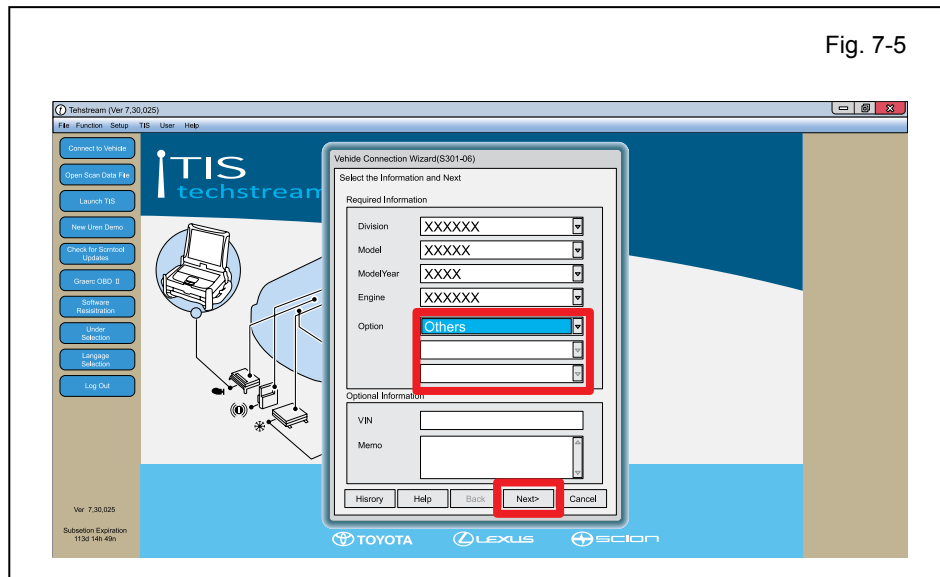
- d. With the Smart Key in your possession, press the "Engine Start Stop" Button twice to select the Ignition "ON" position.



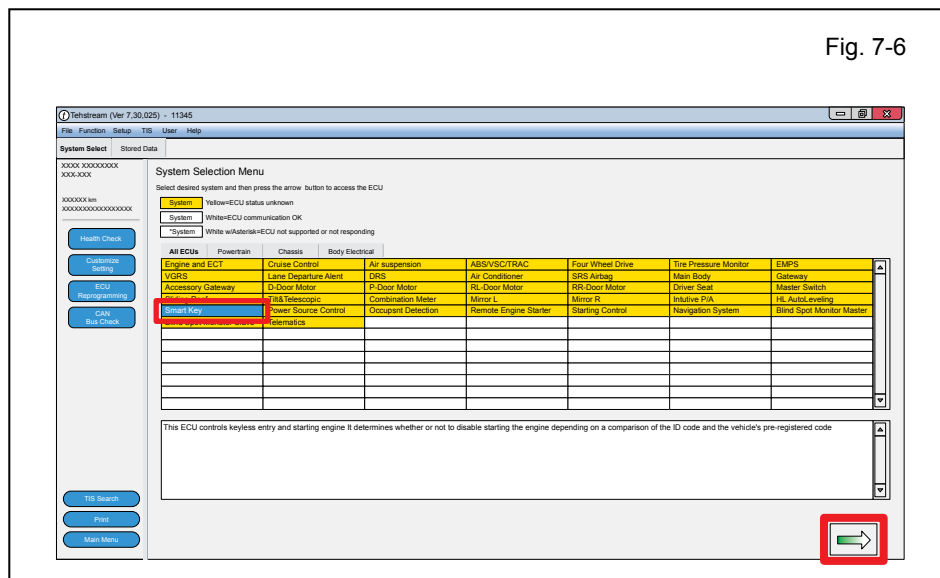
- e. Connect the Techstream Notebook to the Vehicle's Diagnostic Port.



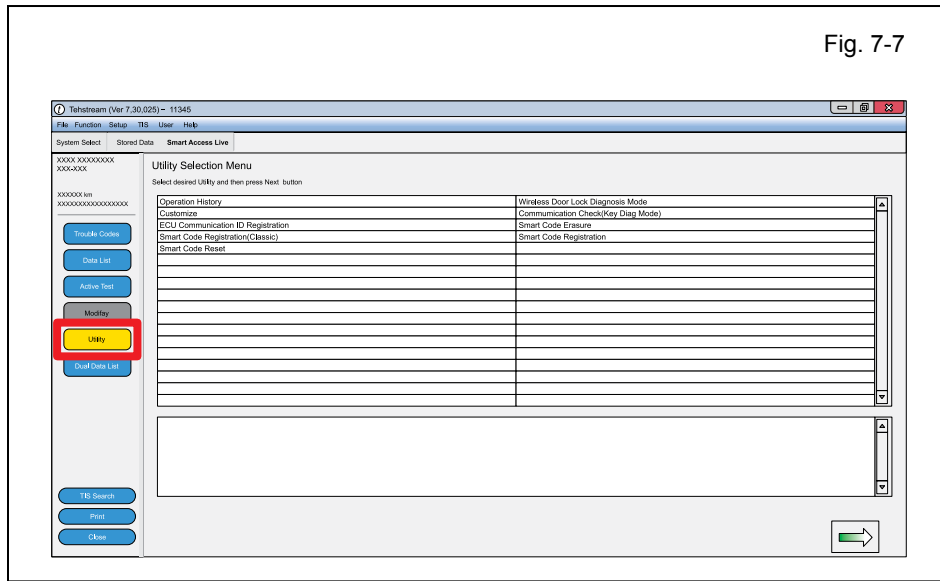
- f. Start the TIS Techstream Application by clicking on the shortcut located on the Desktop.
- g. Click “Connect to Vehicle.”



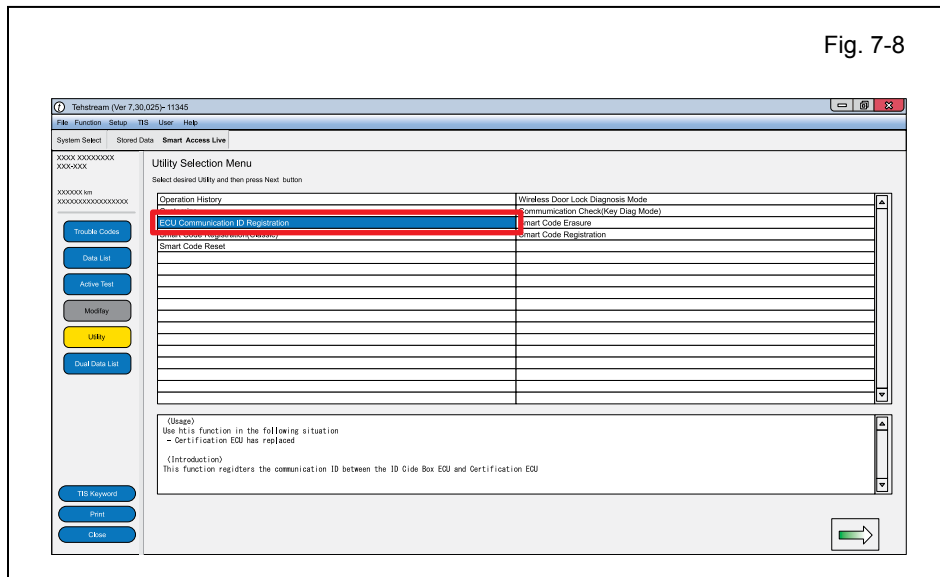
- h. Confirm that the information displayed on the Vehicle Connection Wizard is correct for the vehicle. If not verify that the Techstream is properly connected.
- i. Select option that applies to the Vehicle.
- j. Click “Next>.”



- k. Select “Smart Key.”
- l. Click  .

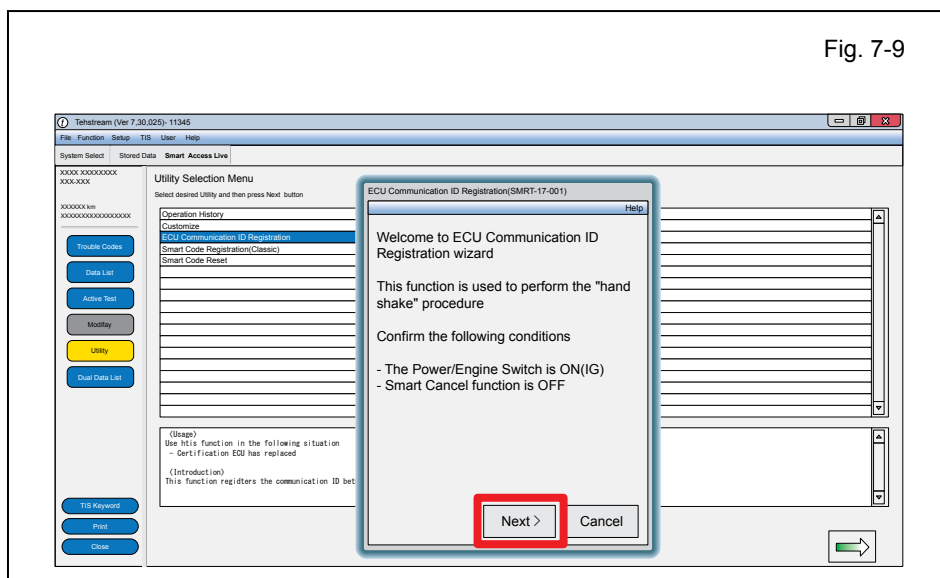


m. Click on "Utility."



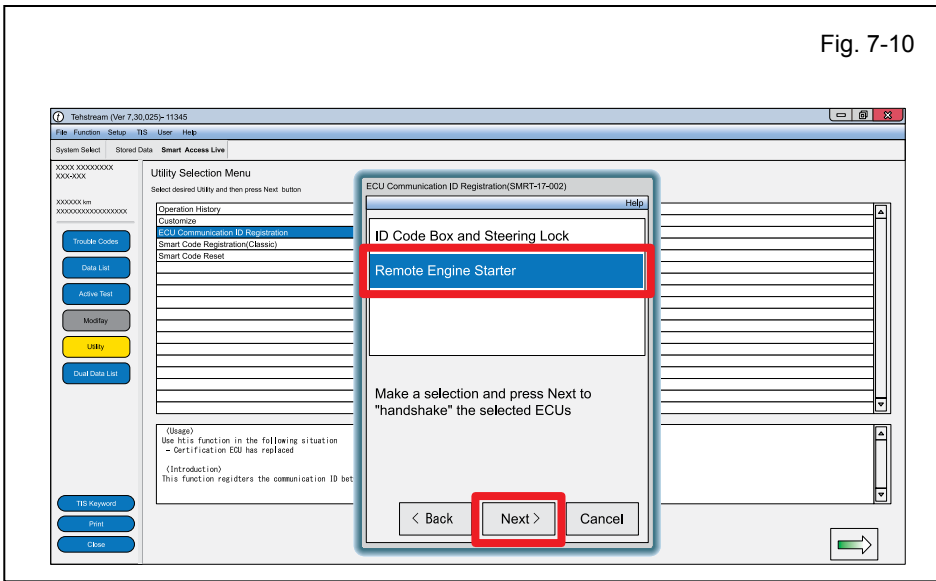
n. Select "ECU Communication ID Registration."

o. Click .



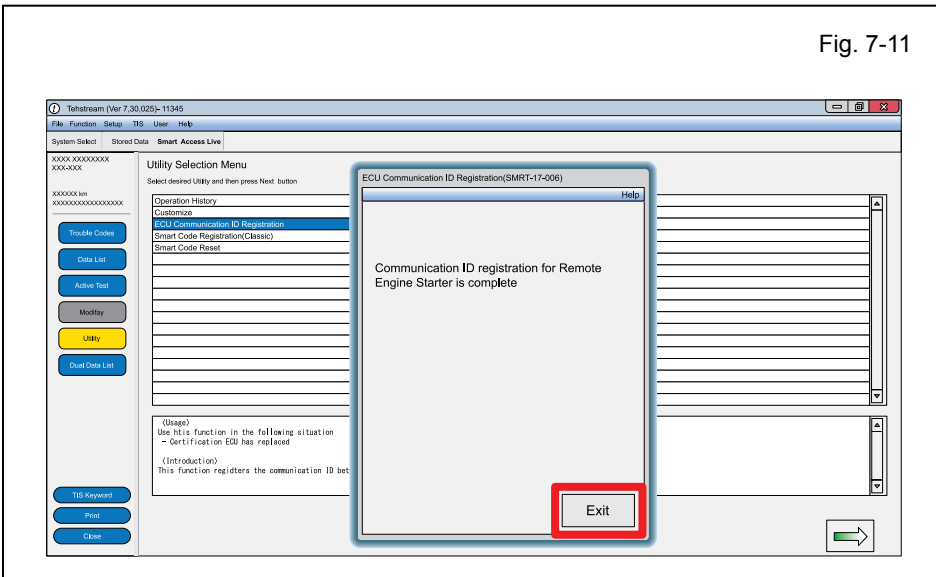
p. Click "Next>."

Fig. 7-10



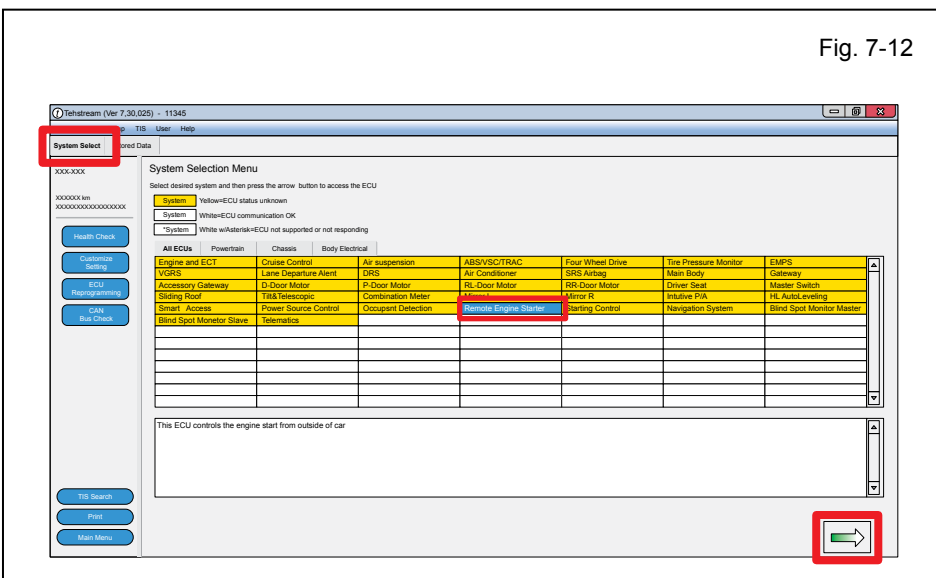
- q. Select "Remote Engine Starter."
- r. Click "Next>."


Fig. 7-11

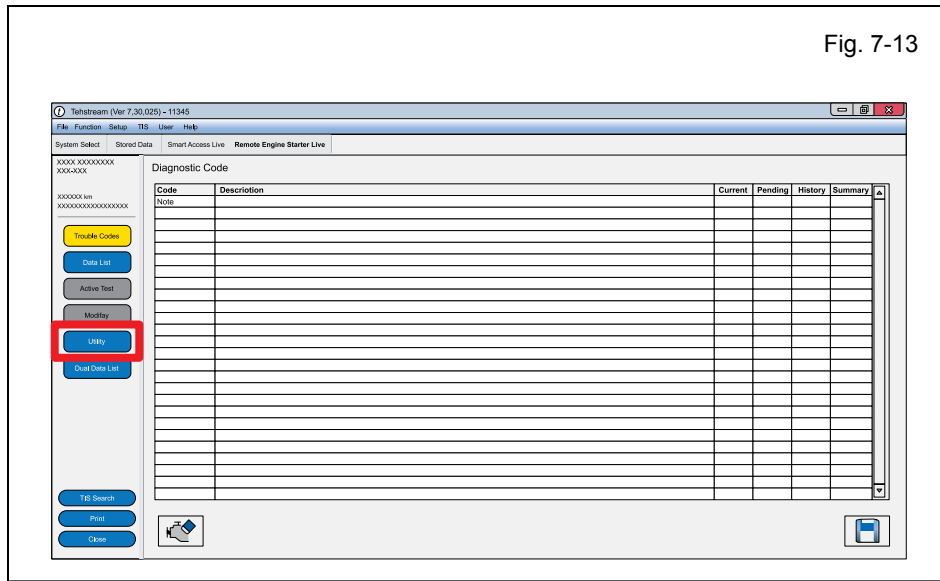


- CONFIRM:** That the ECU Communication ID was completed successfully.
- s. Click "Exit."

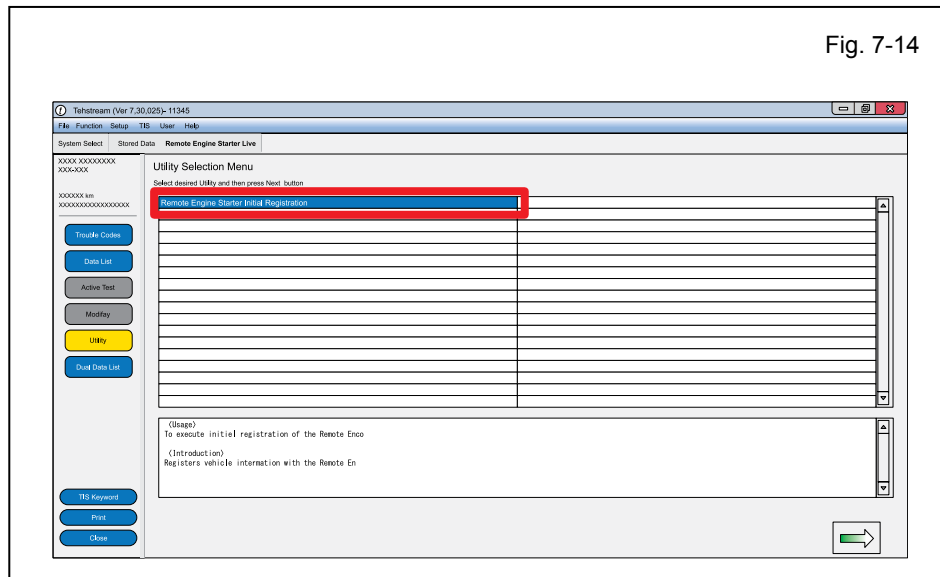
Fig. 7-12



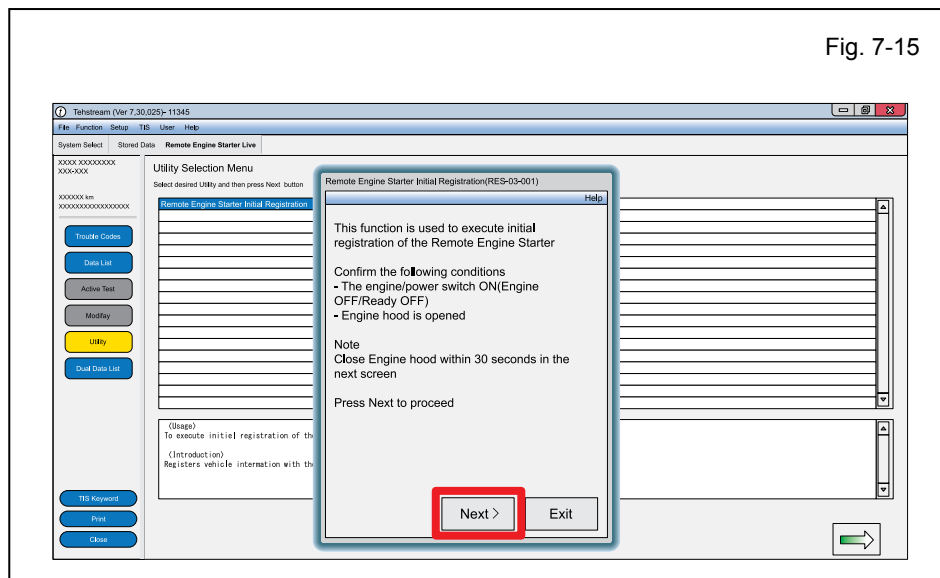
- t. Click on "System Select" tab.
- u. Select "Remote Engine Starter."
- v. Click .



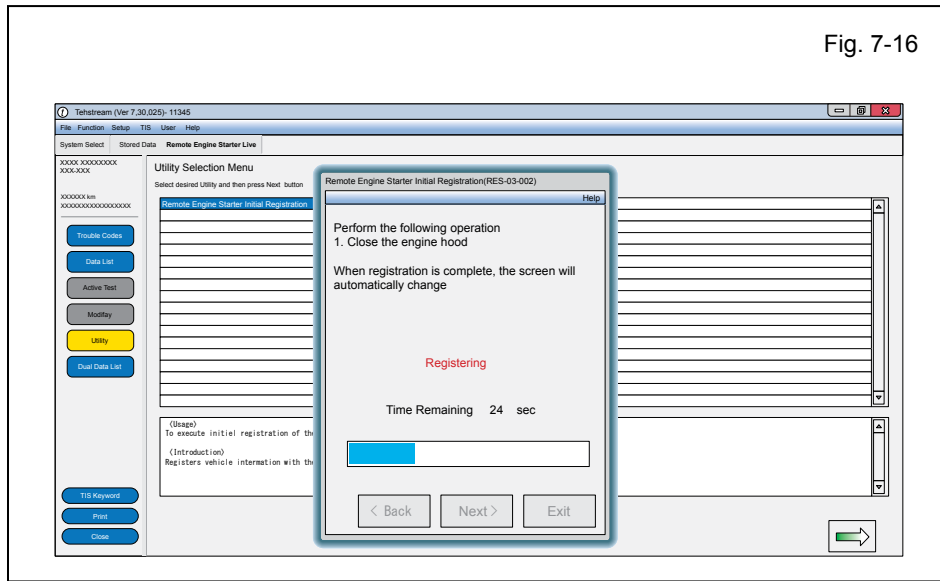
w. Click on "Utility."



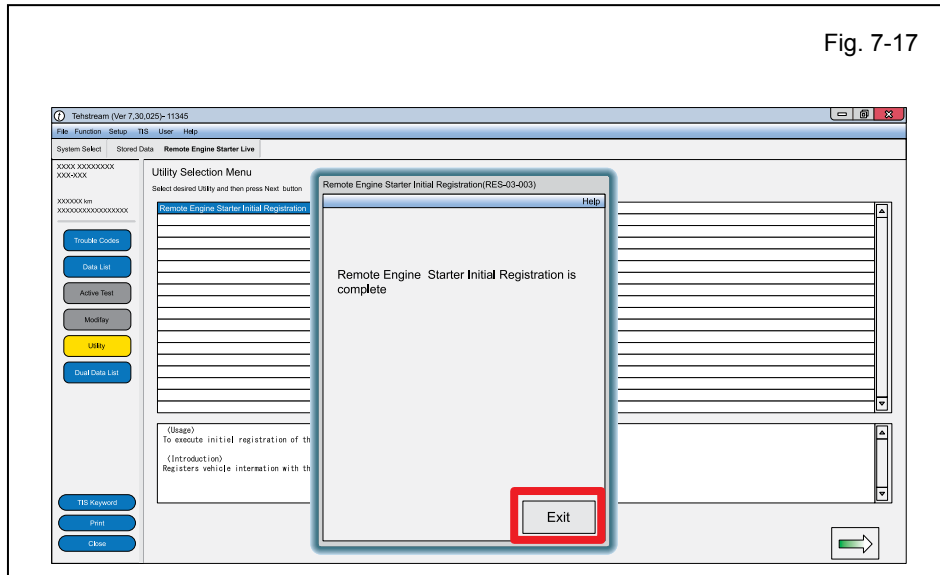
x. Select "Remote Engine Starter Initial Registration."



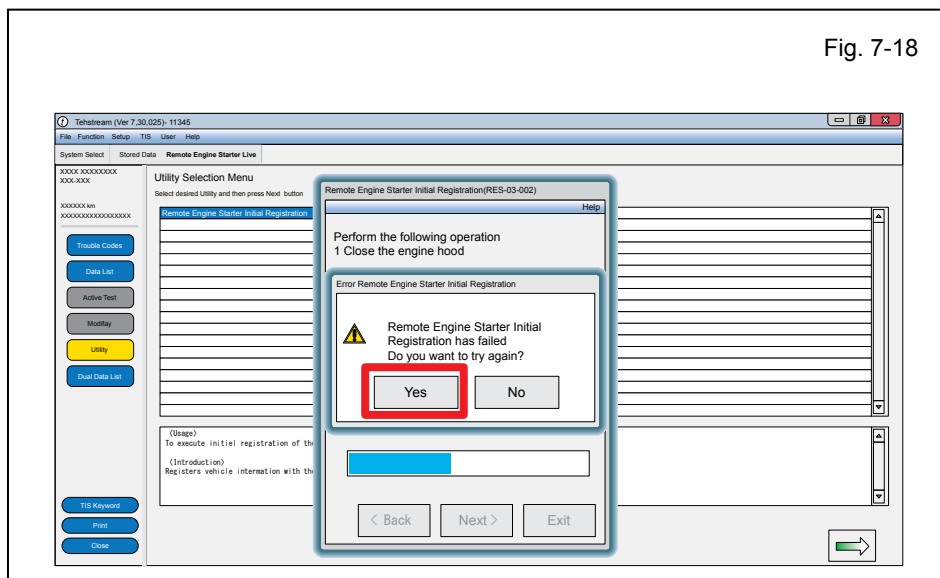
y. Click "Next>."



- z. Close the Hood within 30 seconds.

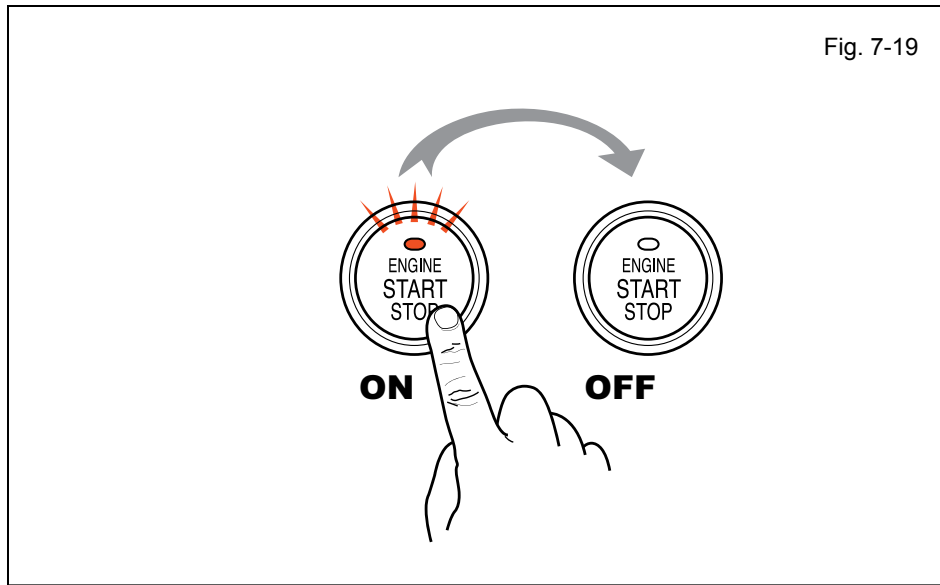


- aa. Click "Exit."



IF THIS PROCEDURE FAILED

- Click "Yes."
- Start again from step y.



- ab. Press the “ENGINE START STOP” Button once to switch the ignition off.

8. Complete the Installation.

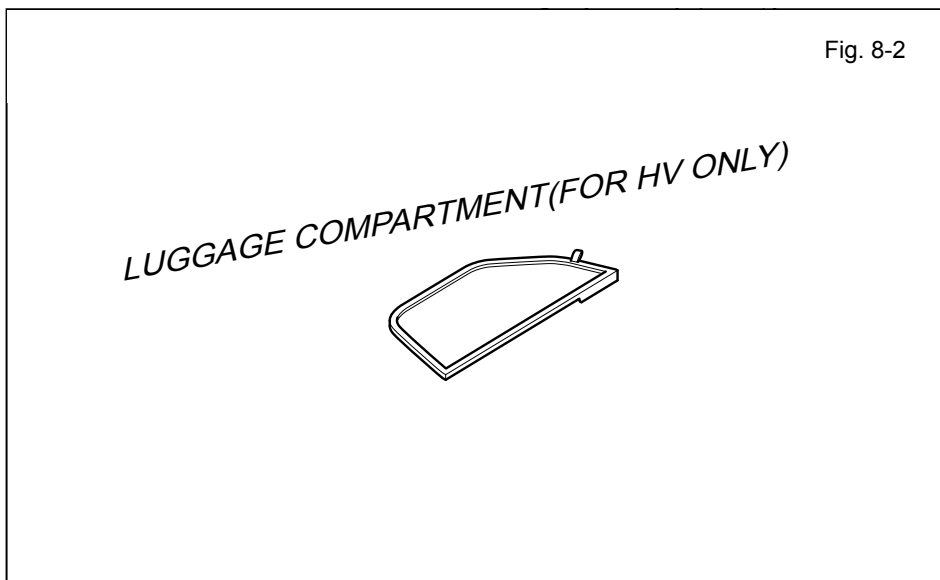
- For Hybrid Vehicles the battery is in the Luggage Compartment.
- For Gas Vehicles the battery is in the Engine Compartment.
 - a. Position the Negative Battery Cable at the original factory position.



Torque: Tighten the Nut to 48 in•lbf (5.4 N•m)



CAUTION: Do not touch the positive terminal.



- b. Finish reassembling the Vehicle.
- c. Clean up and Remove trash.
- d. Sealed in its protective bag, place the Owner’s Manual in the Glove Box.



9. Tag and Labels.

- For US Vehicles use the English Tags and Labels, and discard the Spanish Tags and Labels.
- For Mexico Vehicles use the Spanish Tags and Labels, and discard the English Tags and Labels.
- a. Using VDC approved cleaner and cleaning method, clean the area indicated in the Underside of the Hood.
- b. Attach the Engine Room Label as shown.



CAUTION: Do not touch the adhesive surface.



- c. Attach the Key Tag.

REPEAT: Step 9c on the other Smart Key.

- d. Use Household Glass Cleaner to clean the inside of the Front Door Window.
- e. Use a piece of Clear Tape to lift the Label off its protective backing.



CAUTION: Do not touch the adhesive surface.

- f. Attach the Label as shown.



NOTE: Make sure to Align according to Etching or Other Label.

REPEAT: Steps 9d-9f on the other Front Door Window.

Accessory Function Checks

Close the hood, enter the vehicle and close all doors. Place the shift lever in the “P” (Park) position, set the parking brake and make sure the Vehicle is off.

Perform		Look For
1	Press the remote control’s lock button twice within 2 seconds, then press and hold the lock button for 3 seconds.	The hazard lights flash after 3 seconds. The engine starts. The hazard lights flash repeatedly for 10 seconds.
2	With the engine running, pull the hood release handle.	The engine stops. The hazard lights flash once. The security alarm triggers. (Only if equipped with OE Factory Alarm, not Genuine Accessory alarm, and only if armed)

Vehicle Appearance Check

Perform		Look For
<input type="checkbox"/>	After accessory installation and removal of protective cover(s), perform a visual inspection of the vehicle.	Ensure no damage (including scuffs and scratches) was caused during the installation process. (For PPO installations, refer to TMS Accessory Quality Shipping Standard.)









Vehicle Function Checks

Function	Function
----------	----------

Enter the Vehicle

<input type="checkbox"/> Dome/Courtesy Lights	<input type="checkbox"/> Horn
---	-------------------------------

Start the Vehicle

<input type="checkbox"/> Panel/Switch Illumination	<input type="checkbox"/> Gauges
<input type="checkbox"/> Check Engine Light <i>If the warning light remains on, it may indicate a system malfunction.</i> 	<input type="checkbox"/> ABS Light (if equipped) <i>If the warning light remains on, it may indicate a system malfunction.</i> 
<input type="checkbox"/> Lamp Failure Sensor <i>If the warning light remains on, it may indicate a system malfunction.</i> 	<input type="checkbox"/> Track/Skid Control Light (if equipped) <i>If the warning light remains on, it may indicate a system malfunction.</i> 
<input type="checkbox"/> Seat Belt Warning Light <i>If the warning light remains on, it may indicate a system malfunction.</i> 	<input type="checkbox"/> Tire Pressure Monitoring System (TPMS). <i>Prior to TPMS activation and Pre-delivery Service (PDS) of the Vehicle the TPMS light will blink when IG is turned on.</i> <i>After TPMS activation and PDS of the Vehicle the TPMS light will illuminate for a few seconds and go off when IG is turned on.</i> 
<input type="checkbox"/> Air Bag Warning Light <i>If the warning light remains on, it may indicate a system malfunction.</i> 	
<input type="checkbox"/> Cruise Control Light (if equipped) 	

Using a Mirror or Assistant check the following.

<input type="checkbox"/> Trunk/Tailgate/Bed Lights (if equipped)	<input type="checkbox"/> Tail Lights
<input type="checkbox"/> Brake Lights	<input type="checkbox"/> Daytime Running Lights (if equipped)
<input type="checkbox"/> Backup Lights	<input type="checkbox"/> Marker Lights
<input type="checkbox"/> Clearance Sonar (if equipped)	<input type="checkbox"/> Turn Signal Lights

Stop the Engine, Place the Vehicle's IG in the ON position.

<input type="checkbox"/> Hazard Lights	<input type="checkbox"/> Power Back Door/Hatch (if equipped)
<input type="checkbox"/> Head Light	<input type="checkbox"/> Fog Lights (if equipped)
<input type="checkbox"/> High Beams	<input type="checkbox"/> Accessory Controls/Illumination (if equipped)
<input type="checkbox"/> Power Side Mirrors (if equipped)	<input type="checkbox"/> Convenience Memory Settings (if equipped)
<input type="checkbox"/> Power Sliding Door (if equipped)	<input type="checkbox"/> Rear Sunshade (if equipped)

CHECKLIST – these points **MUST** be checked to ensure a quality installation.

REMOTE ENGINE STARTER (RES)

Function		Function	
<input type="checkbox"/>	Front Wiper/Washer	<input type="checkbox"/>	Rear Wiper/Washer (if equipped)
<input type="checkbox"/>	Power Sun/Moon Roof (if equipped)	<input type="checkbox"/>	Rollover Side Curtain Air Bag Switch (RSCA) (if equipped)
<input type="checkbox"/>	Clock (if equipped)	<input type="checkbox"/>	Navigation System (if equipped)
<input type="checkbox"/>	Audio/Video (if equipped)	<input type="checkbox"/>	USB Connections (if equipped)
<input type="checkbox"/>	Steering Wheel Audio Control (if equipped)	<input type="checkbox"/>	HVAC
<input type="checkbox"/>	Front Windshield Defogger (if equipped)	<input type="checkbox"/>	Rear Window Defogger (if equipped)
<input type="checkbox"/>	Side Mirror Defogger (if equipped)	<input type="checkbox"/>	Accessory Power Socket (if equipped)
<input type="checkbox"/>	Massage Seats (if equipped)	<input type="checkbox"/>	Heated/Vented Seats (if equipped)
<input type="checkbox"/>	Glove Box Light (if equipped)	<input type="checkbox"/>	Trunk or Back Door/Hatch Cancel Switch (if equipped)
<input type="checkbox"/>	Power Locks (if equipped)	<input type="checkbox"/>	Power Windows (if equipped)
<input type="checkbox"/>	Power Seats (if equipped)	<input type="checkbox"/>	Key Sensor Buzzer