



# SUBARU

## Smart Engine Start

### INSTALLATION MANUAL

Genuine Part # : H001SVA900

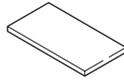
Vehicle Model : WRX

### Kit Contents

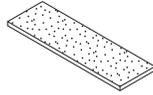
Service P/N: H001SVA910



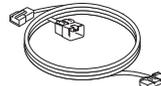
SES ECU  
Quantity: 1



Double-sided tape  
Quantity: 1



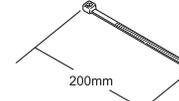
Foam tape  
Quantity: 1



Main Harness  
Quantity: 1



Sub Harness  
Quantity: 1



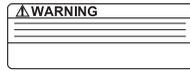
Tie Wrap  
Quantity: 10



Foam tape  
Quantity: 4



Key Tag  
Quantity: 1



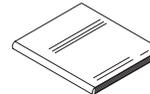
Engine Room Label  
Quantity: 1



Wiper Lever Tag  
Quantity: 1



Key Ring Tag  
Quantity: 1



Owner's Guide  
Quantity: 1

### Tools Required

Phillips Screwdriver  
 Flat Blade Screwdriver  
 10mm, 12mm Socket Wrench with Extension  
 Torque Wrench  
 Torque Screwdriver  
 10mm Offset wrench  
 Pliers  
 Volt Meter (Or Circuit Tester)

Side Cutters  
 Scissors  
 Utility Knife  
 Masking Tape  
 Electrical Tape  
 Trim Removal Tool  
 Isopropyl Alcohol  
 Cleaning Towel

### Meaning of Characters



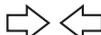
: Remove



: Install



: Disconnect



: Connect



: Location of Clip or Screw



: Tighten Torque



: Loosen

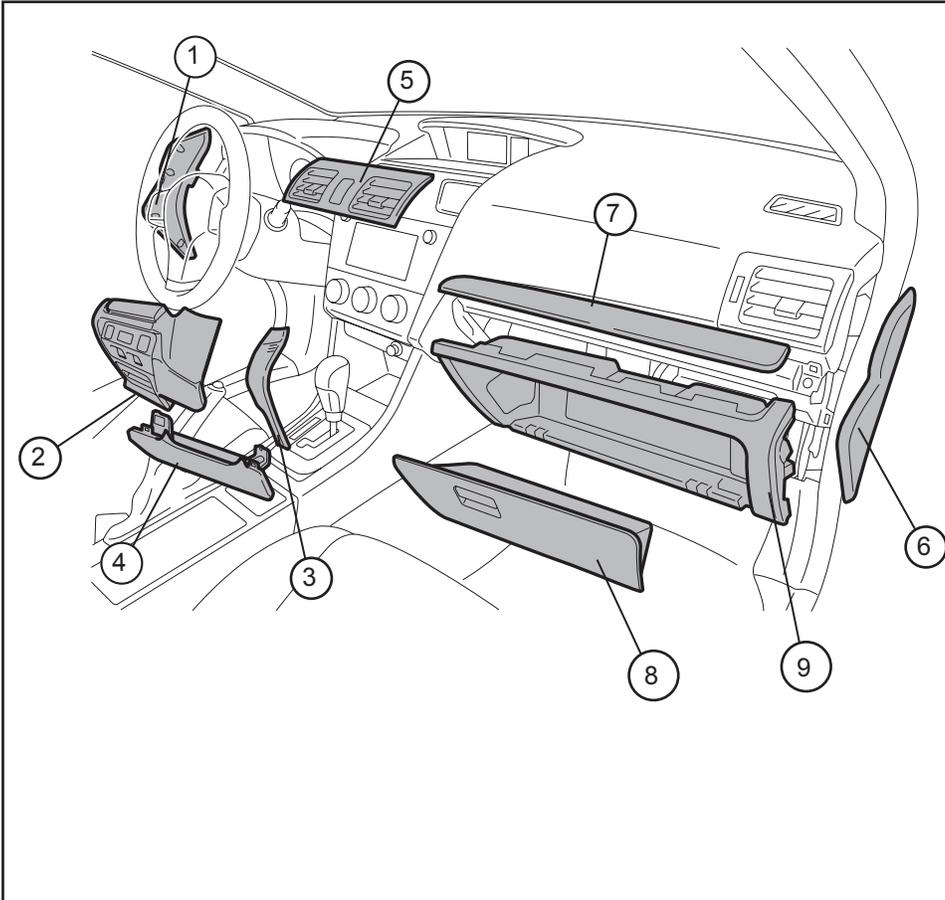


: Discard



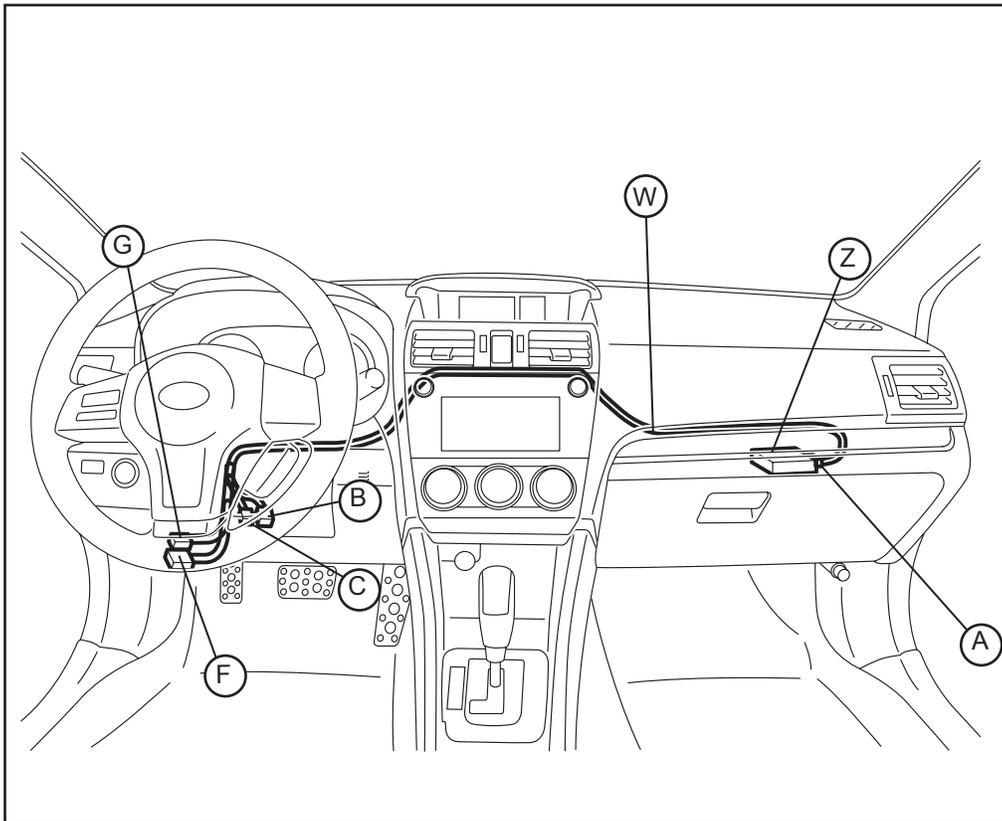
: Re-use

## Removal of Vehicle Components



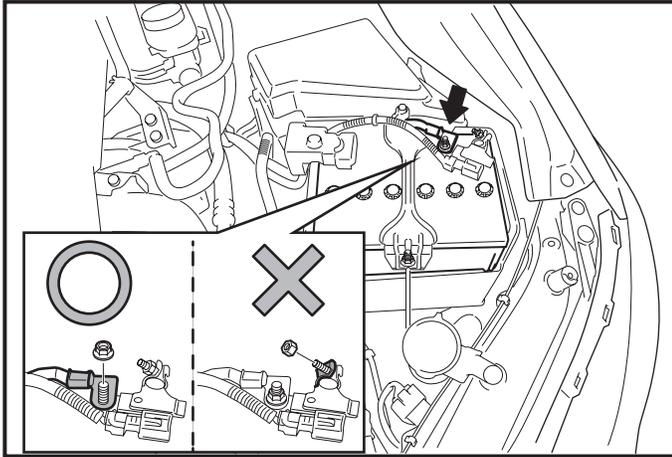
1	DS Dash Cover
2	Lower Dash Cover No.1
3	Lower Dash Cover No.2
4	DS Knee Airbag
5	Center Air Vent Assembly
6	PS Dash Cover
7	Ornament Panel
8	Glove Box
9	Glove Box Inner Cover

## Wiring Outline



A	24P White
B	1P White
C	1P White
F	8P White
G	2P White
Z	SES ECU
W	White Tape Marker

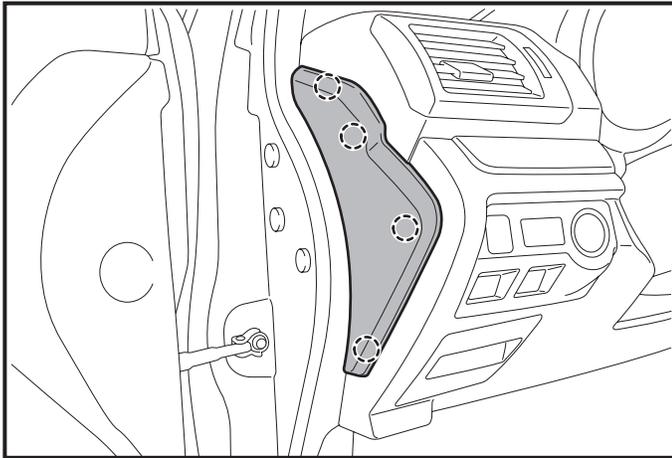
## Vehicle Disassembly



1. Place the Vehicle in Park with the Parking Brake set.
2. Disconnect the Negative Battery Terminal.

### Note

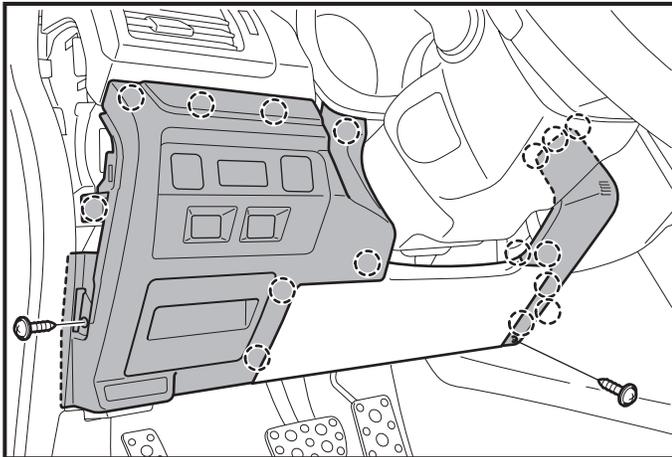
- Do not touch the Positive Battery Terminal with the Negative Terminal.
- Note the Battery Cable Position as it will be reinstalled in the same position.
- Wait at least 30 seconds after disconnecting the Negative Battery Terminal before disconnecting the Airbag Connector.
- After the work with battery disconnected, some vehicle system should be reconfigured. See service manual.



3. Remove the Driver's Side Dash Cover.
  - Disengage 4 Clips.

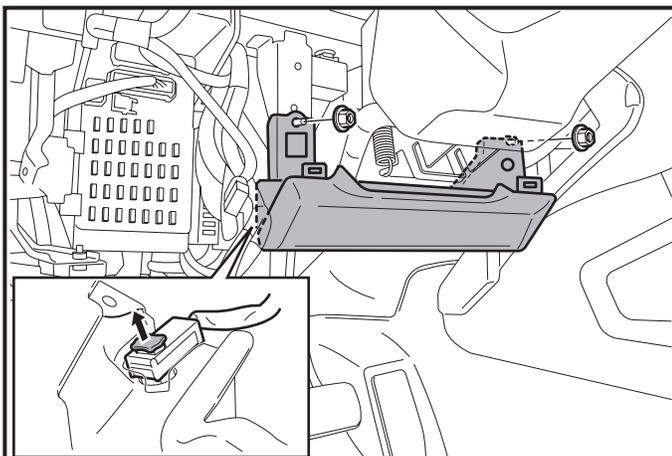
### Note

- Disengage and remove cover from the bottom first and work upward.



4. Remove the Lower Dash Cover No.1.
  - Remove 1 Screw.
  - Disengage 8 Clips.
  - Disconnect Vehicle connectors.

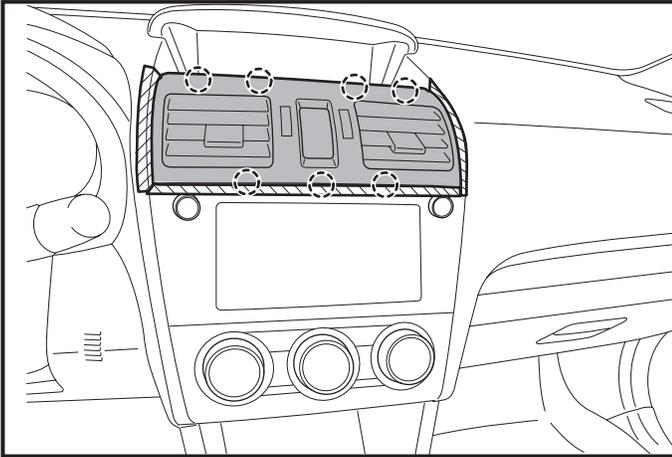
5. Remove the Lower Dash Cover No.2.
  - Remove 1 Screw.
  - Disengage 8 Clips by pulling both the top and bottom of the panel simultaneously.



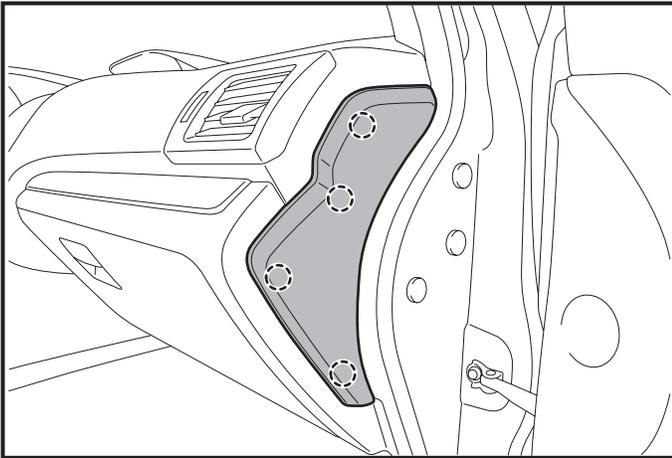
6. Remove the Driver's Side Knee Airbag carefully.
  - Remove 2 Nuts.
  - Hold Airbag as to prevent tension on the Harness.
  - Disengage the Yellow Connector Lock by using a pick tool to lift upward.
  - Use a Panel removal tool to carefully lift upward to unplug the Airbag Connector.

### Note

- Wait at least 30 seconds after disconnecting the Negative Battery Terminal before disconnecting the Airbag Connector.



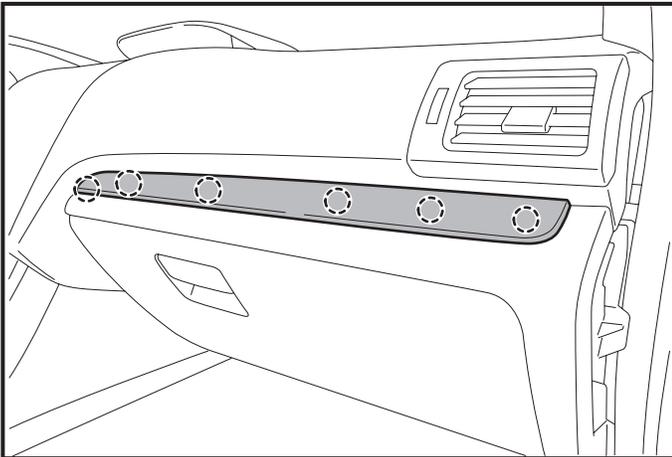
7. Remove the Center Air Vent assembly.
  - Apply Protective tape.
  - Disengage 7 Clips.
  - Disconnect Vehicle connector.



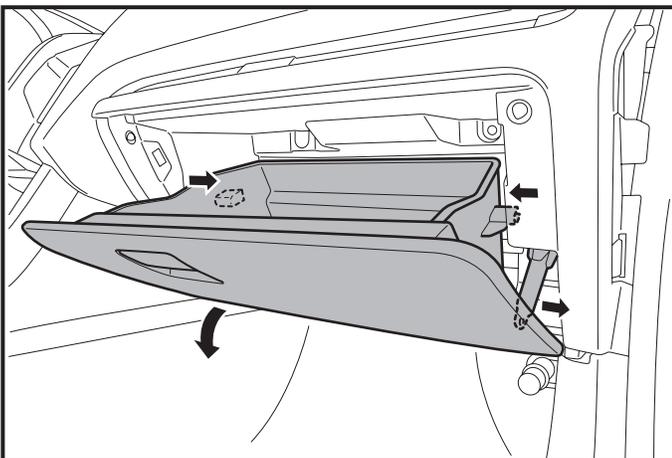
8. Remove the Passenger's Side Dash Cover.
  - Disengage 4 Clips.

**Note**

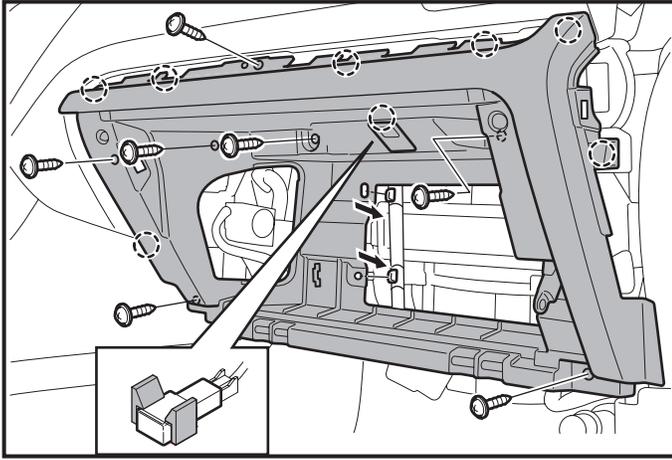
- Disengage and remove cover from the bottom first and work upward.



9. Remove the Ornament Panel.
  - Disengage 6 Clips.

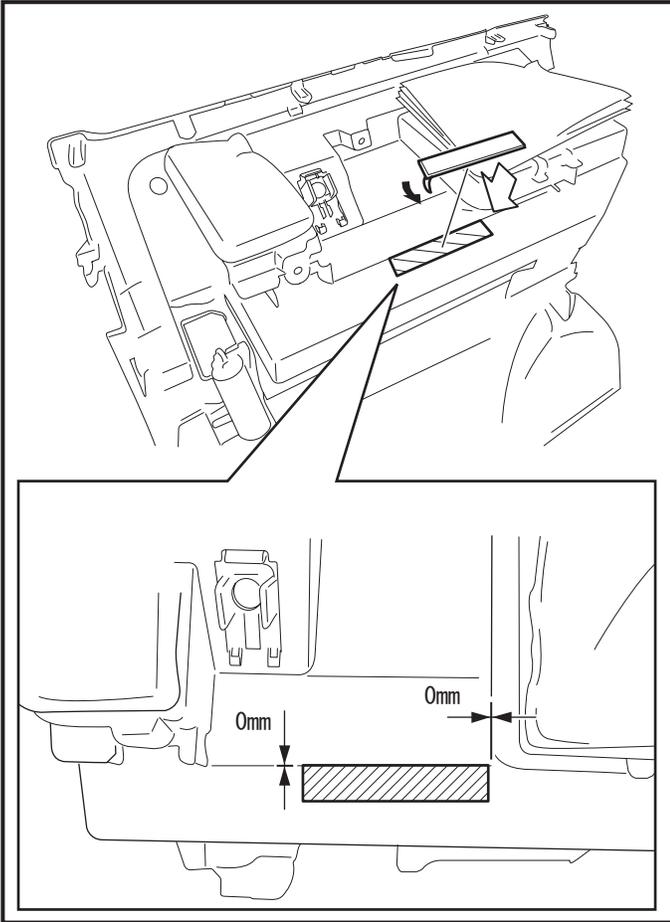


10. Open the Glove Box.
11. Dislodge the Glove Box.



12. Remove the Lamp Pocket Cover.
  - Disengage 1 Clip.
13. Remove the Pocket Lamp from Lamp Pocket Cover.
  - Disconnect Vehicle connectors.
14. Remove the Glove Box Inner Cover.
  - Remove 7 Screws.
  - Disengage 7 Clips.
  - Disengage 2 vehicle harness Clips.

## Installation Procedure

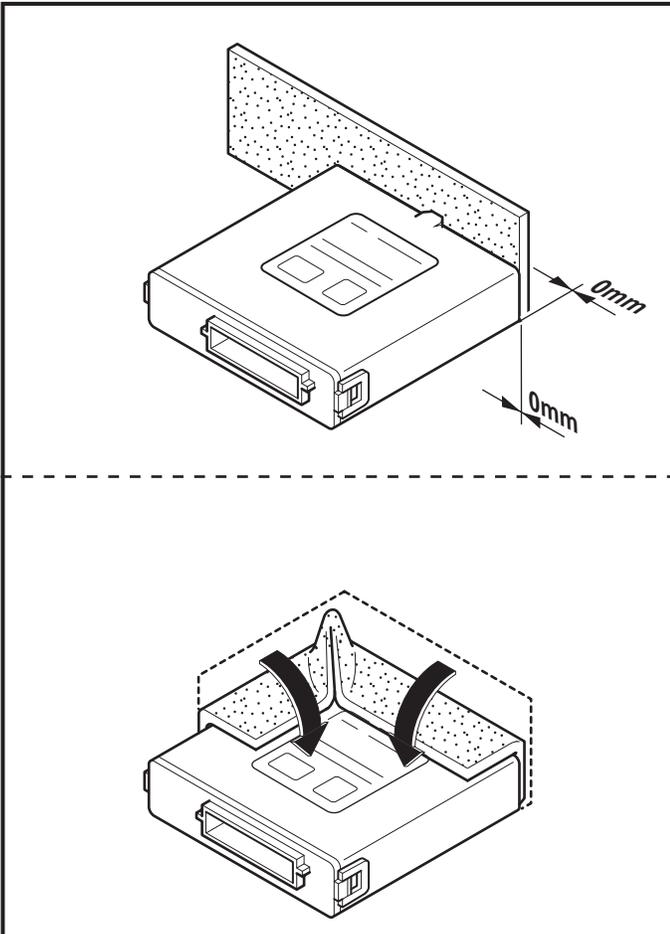


### SES ECU Preparation and Installation

1. Clean the area indicated on the topside of the Glove Box Inner Cover.
2. Attach the Double-Sided tape to the Glove Box Inner Cover as shown.

#### **⚠ Note**

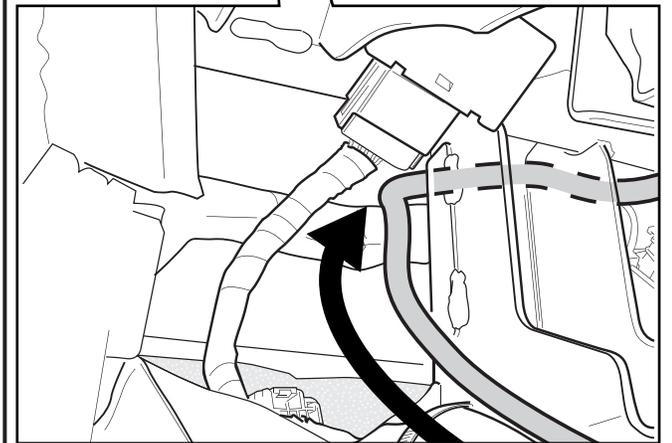
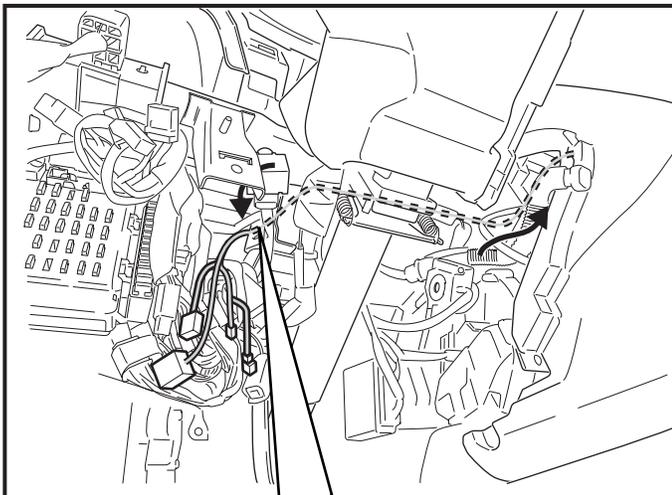
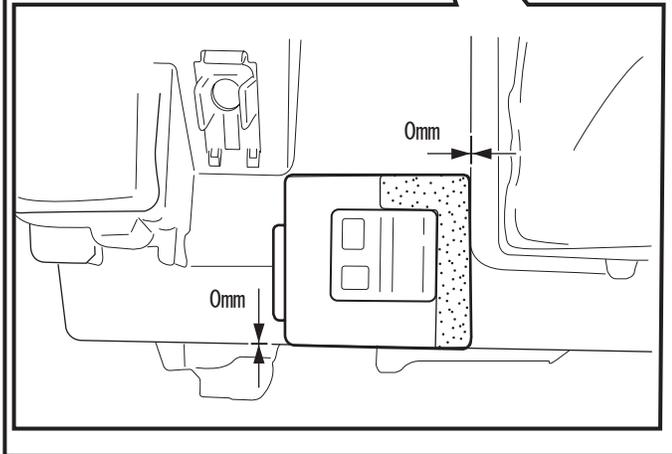
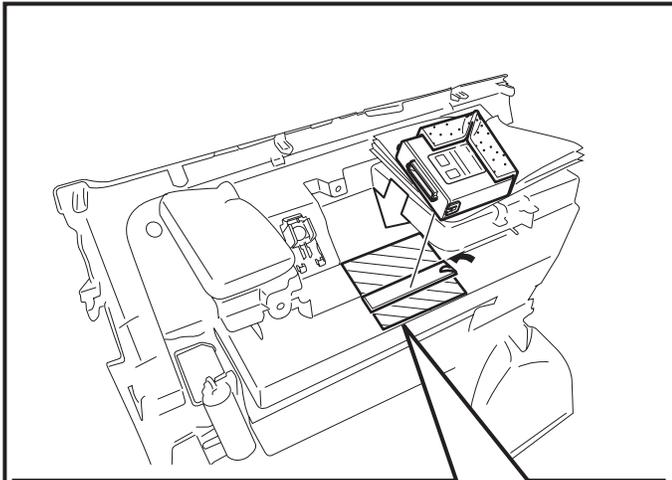
- Clean attachment surface using isopropyl alcohol and cleaning towel.
- To achieve maximum bond strength of Tape, the attachment surface temperature must be between 68°F-110°F (20°C-43°C) upon application.
- Verify that the Double-sided tape is firmly attached.



3. Attach the Foam Tape to the SES ECU as shown.

#### **⚠ Note**

- Clean attachment surface using isopropyl alcohol and cleaning towel.



- Attach the SES ECU to the topside of the Glove Box Inner Cover as shown.

**⚠ Note**

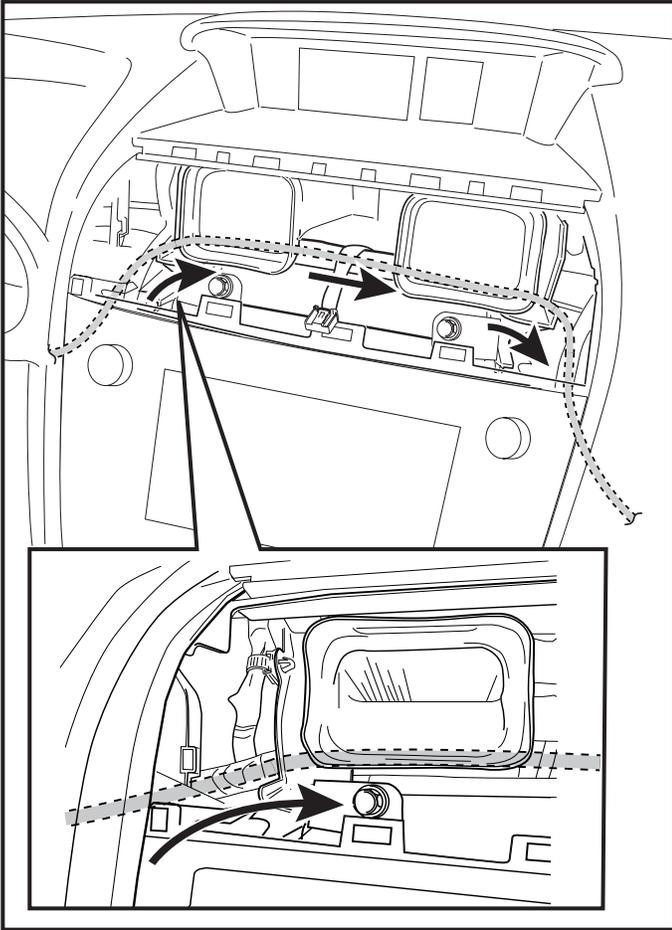
- Clean attachment surface using isopropyl alcohol and cleaning towel.
- To achieve maximum bond strength of Tape, the attachment surface temperature must be between 68°F-110°F (20°C-43°C) upon application.
- Verify that the SES ECU is firmly attached.

**Main Harness Installation**

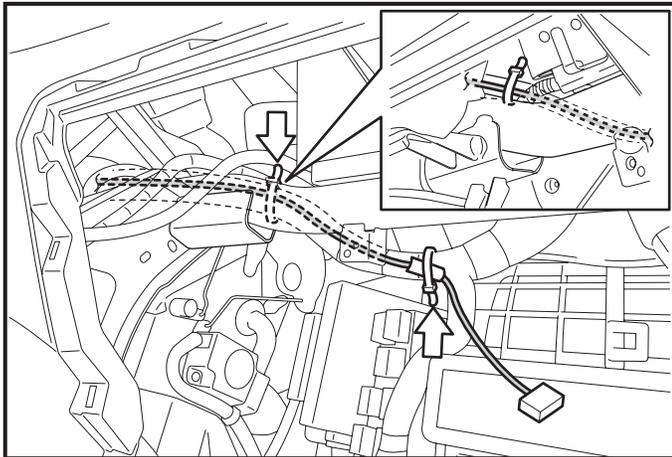
**⚠ Note**

- Use caution when installing the Main Harness. Be sure to route and attach harness away from sharp metal surfaces.

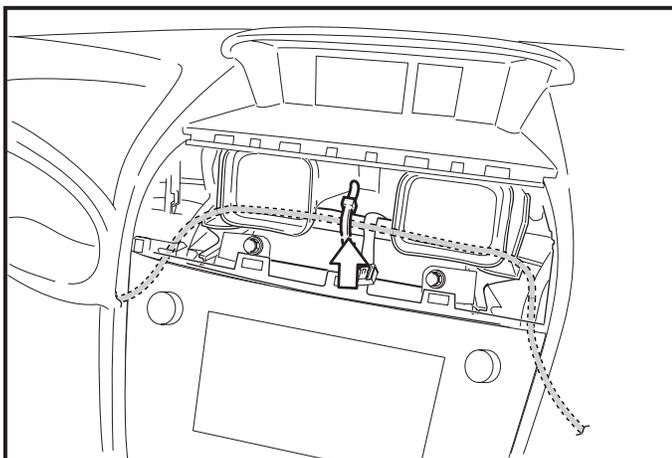
- Route the Main Harness's 24P Connector toward the Glove Box area.
- Route the Main Harness's 8P and 2P Connectors toward the J/B area.



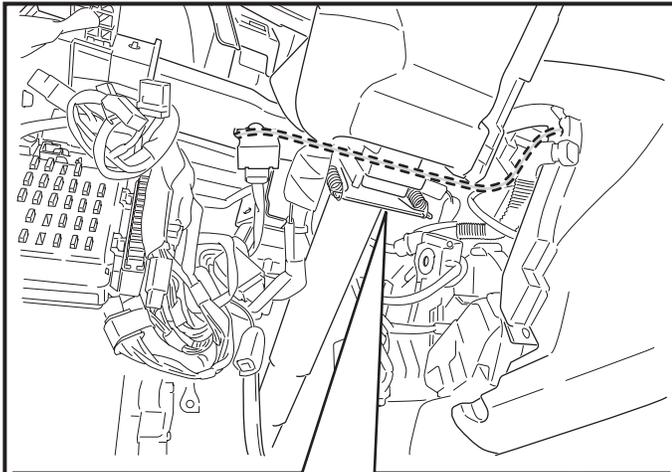
3. Route the Main Harness's 24P Connector along the Vehicle Harness behind the Vehicle Bracket.
4. Route the Main Harness's 24P Connector toward the Glove Box area.



5. Secure the Main Harness White Marker to the Vehicle Harness using 1 Tie Wrap.
6. Secure the Main Harness to the Vehicle Harness using 1 Tie Wrap.



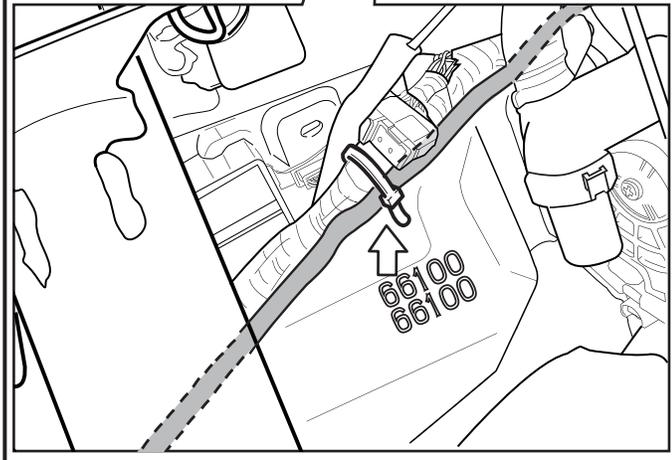
7. Secure the Main Harness to the Vehicle Harness using 1 Tie Wrap.



- Secure the Main Harness to the Vehicle Harness using 1 Tie Wrap.

**⚠ Note**

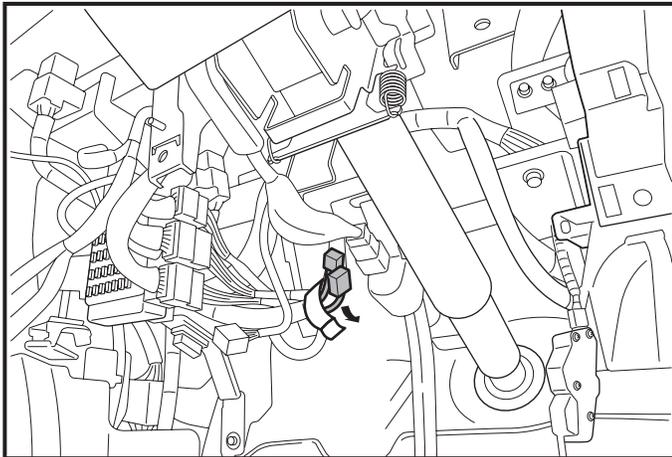
- Ensure routing of main harness does not interfere with climate control mechanism. The main harness must be secured to the vehicle harness with no slack in this area.



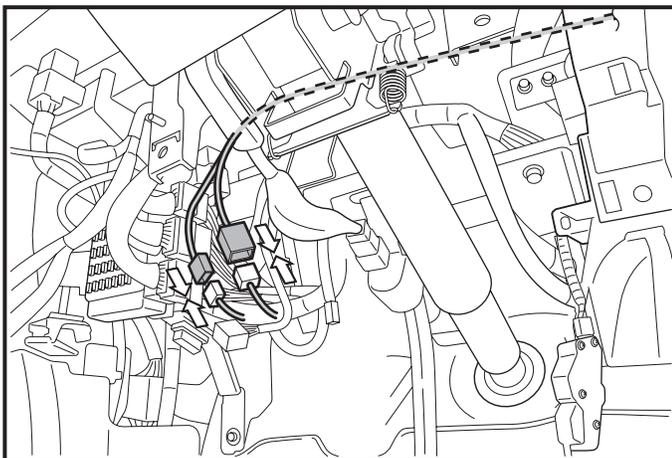
- Remove the Tape securing the Vehicle's 8P and 2P Pre-Connectors.
- Disconnect the Wire Jumper connector from the Vehicle's 2P Pre-Connector.

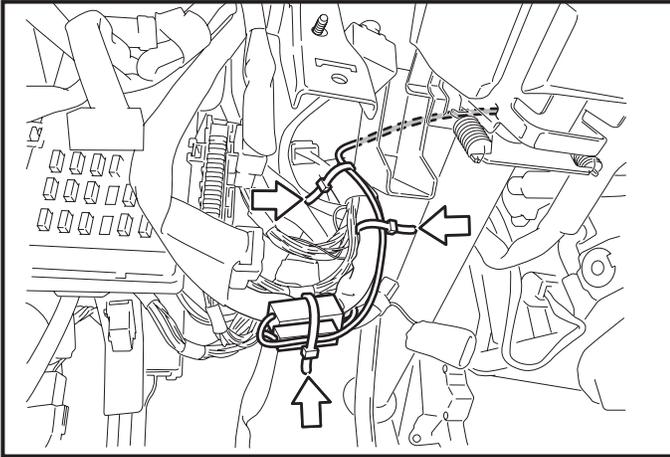
**⚠ Note**

- Discard the Wire Jumper connector. (This is used for the power window interrupt circuit.)



- Connect the Main Harness's 8P Connector to the Vehicle's 8P Pre-Connector.
- Connect the Main Harness's 2P Connector to the Vehicle's 2P Pre-Connector.

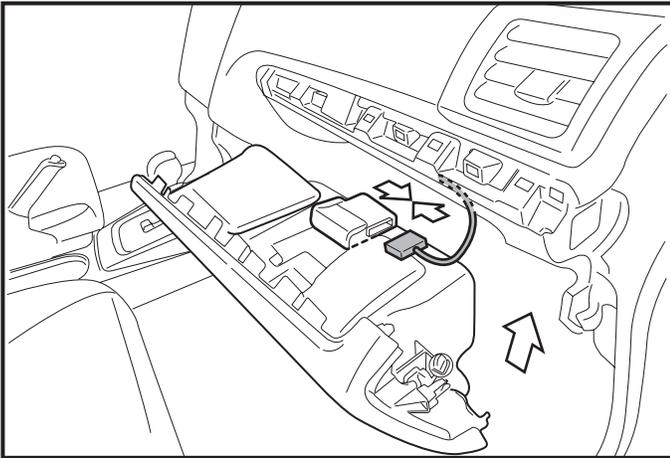




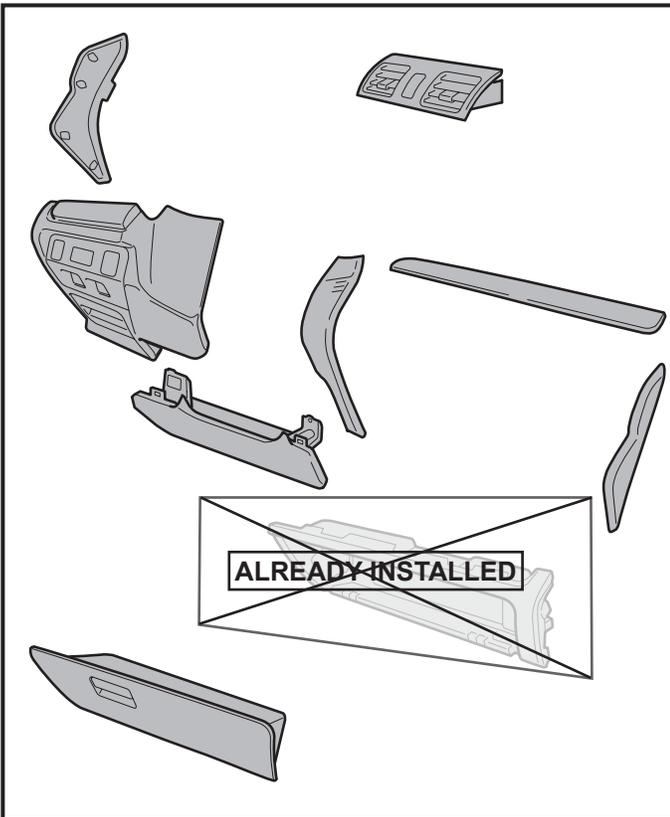
13. Secure the Main Harness to the Vehicle Harness using 2 Tie Wraps.
14. Secure the 8P and 2P Connector to the Vehicle Harness using 1 Tie Wrap.

**⚠ Note**

- The Smart Engine Start ID must be registered first, so do not secure the 1P Connectors yet.



15. Connect the Main Harness's 24P White Connector to the SES ECU.
16. Reinstall the Glove Box Inner Cover.



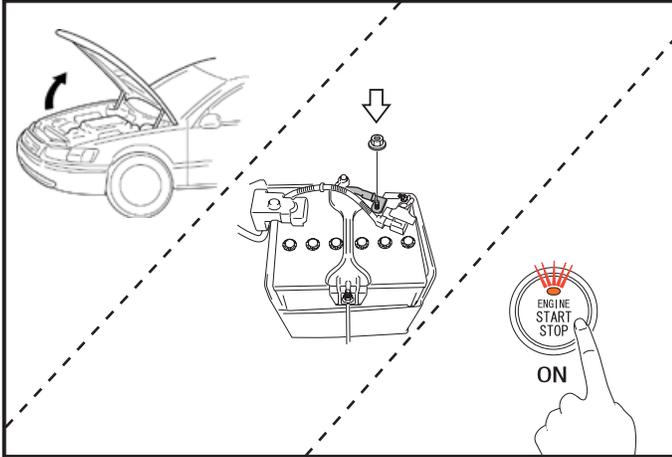
17. Finish reassembling the Vehicle.

**⚠ Note**

- Verify that panels fit together properly, with no uneven gaps.
- Verify that all Connectors are plugged in.

- **Tighten the Knee Airbag Nuts to 7.5 N·m (0.8 kgf·m, 5.5 ft-lb)**

## Registration Procedure

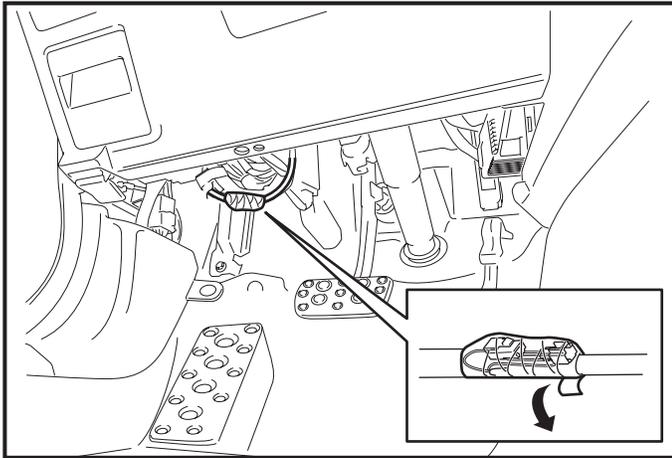


1. Open the Hood and leave it open throughout the registration procedure.
  - Doors can remain open during registration.
2. Temporarily reconnect the Negative Battery Cable.

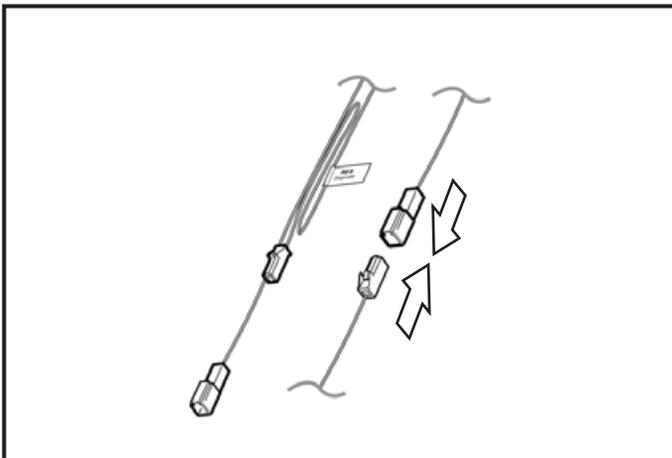
### **⚠ Note**

- Do not touch the Positive Battery Terminal with the Negative Battery Terminal.

3. With foot off the brake pedal, Press the "ENGINE START STOP" button twice to switch the ignition on.



4. Remove the Tape securing the Main Harness's 1P SES Diagnostic Connectors.

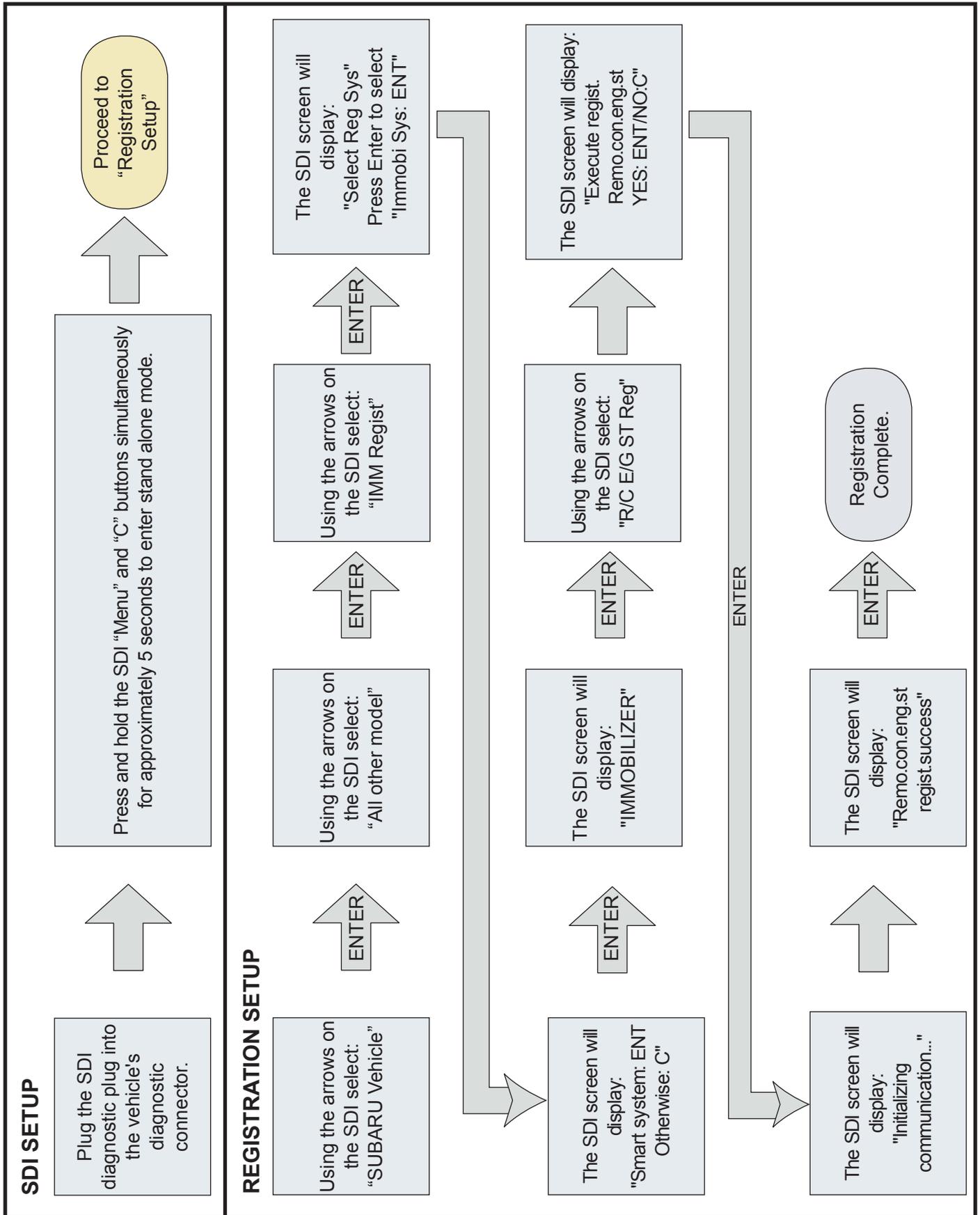


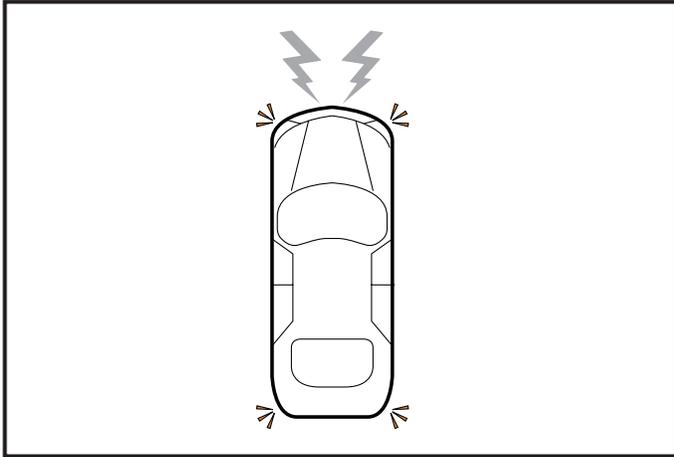
5. Connect the 1P SES Diagnostic Connectors.
6. Register the SES ECU using the procedure on the next page.

# SYSTEM REGISTRATION for SDI

## Note

For registration by DST-i SSM, reference immobilizer registration Manual.

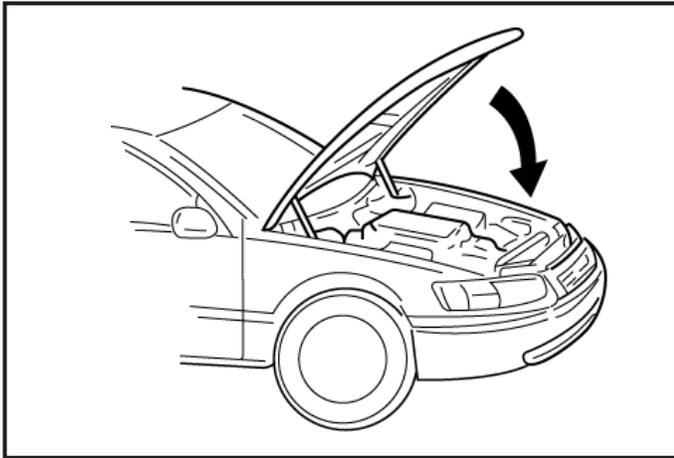




7. Once Registration is complete, look for the hazard light to flash once and horn sound once simultaneously.

**⚠ Note**

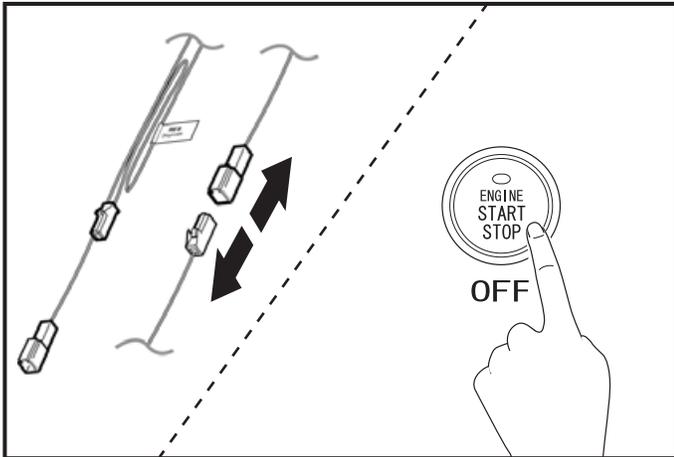
- If not, ID registration has failed. Please see Check A in Troubleshooting. ("Check A" on page 18)



8. Close the Hood.
9. Look for the hazard lights to flash once and horn sound once simultaneously.

**⚠ Note**

- If not, please see Check B in Troubleshooting. ("Check B" on page 19)



10. Disconnect the 1P SES Diagnostic Connectors.
11. Switch the "ENGINE START STOP" Button to OFF.

# Operation Check

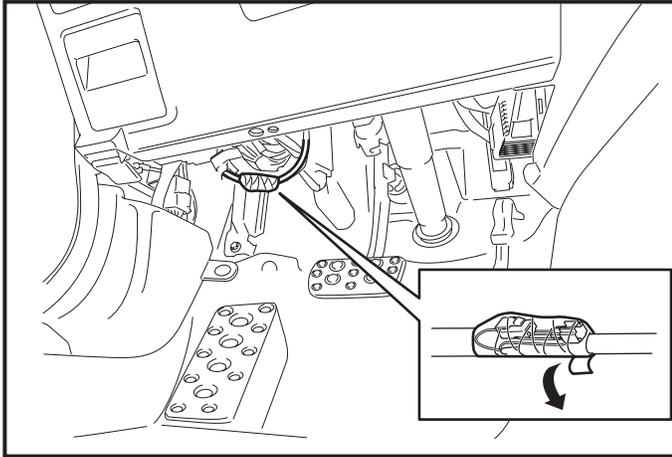
## 1. Confirmation of the Installation.

Before operation confirmation, review the Installation Instructions and make sure that all connections are correct. To make sure that everything in the vehicle is working properly, you can check by connecting the Subaru SSM. If it has problems, you will need to fix them first.

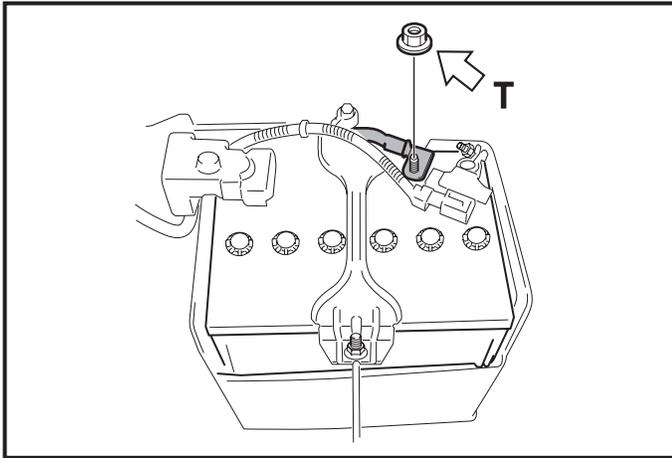
## 2. Operation Confirmation

Close the hood, place shift lever in park [P] with parking brake set, turn off lighting switch, turn "ENGINE START STOP" Button to OFF get out of the car, and close all of the doors.

	Operation	Confirmation point	Checking point if operation failed
1	<p>Press the LOCK button of the vehicle's remote twice within two seconds, then press and hold the LOCK button for more than three seconds.</p>  <p>The diagram shows three 'Lock' buttons with padlock icons. The first two are grouped under a box labeled 'Press Twice within 2s'. The third is preceded by the word 'Then' and is under a box labeled 'Press &amp; Hold 3s'.</p>	<ul style="list-style-type: none"> <li>·The horn sounds once.</li> <li>·The Engine starts.</li> <li>·After the engine starts, the horn sounds once at the same time as all the front position lights, tail lights flash once.</li> <li>·All marker lights, tail lights turn on afterwards.</li> </ul>	"Check C" on page 20
2	Press and hold the LOCK button of the vehicle's remote for more than two seconds.	<ul style="list-style-type: none"> <li>·Engine stops.</li> <li>·All marker lights, tail lights turn off.</li> </ul>	"Check E" on page 25
3	Sit inside the vehicle and close the door, then perform step 1 again to Smart Engine Start.	·Refer to Step 1.	-
4	Push the automatic window switch.	·The window does not open.	Check wiring diagram for connection of connector G with signal specification for PWI on pages 36-37.
5	Pull the hood release lever and fully open hood while the engine is running.	·Engine stops.	Check signal specification for HOOD on page 37.
6	Close the hood, press the "ENGINE START STOP" Button to IG-ON, and push the automatic window switch.	·The window opens.	Check wiring diagram for connection of connector G with signal specification for PWI on pages 36-37.
7	After reassembly of the vehicle, perform function checks on all electrical components that were disconnected during the installation of this accessory.	·It works correctly.	Confirm that all connectors are plugged in properly.



12. Secure the 1P SES ECU Diagnostic Connectors using Electrical Tape.



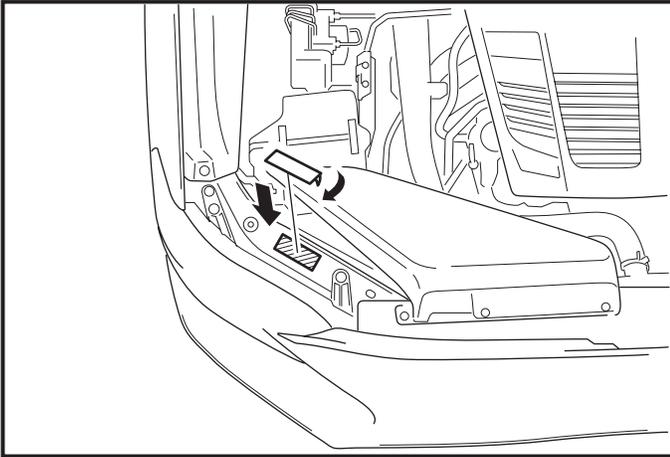
13. Position the Negative Battery Cable at the original factory position.

**⚠ Note**

• Do not touch the Positive Battery Terminal with the Negative Terminal.

• Tighten the Nut to 7.5 N·m (0.8 kgf·m, 5.5 ft-lb)

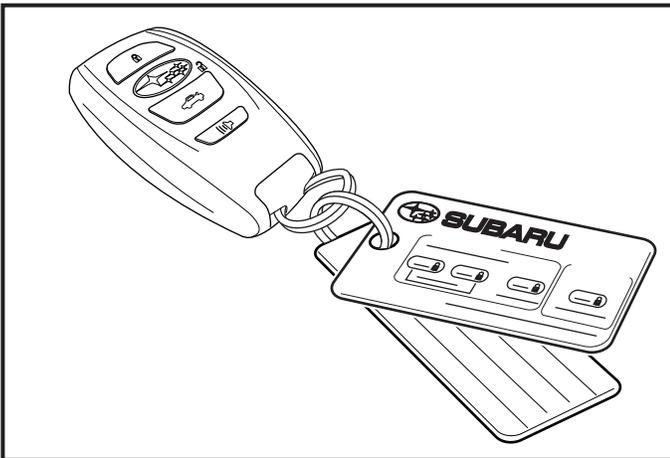
## Tags and Labels



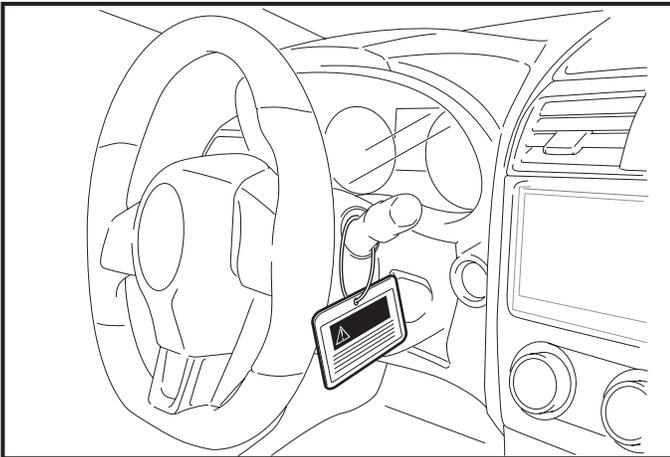
1. Attach the Engine Room Label as shown.

### **Note**

- Clean attachment surface using isopropyl alcohol and cleaning towel.
- To achieve maximum bond strength of Tape, the attachment surface temperature must be between 68°F-110°F (20°C-43°C) upon application.



2. Attach the Key Tag and the Key Ring Tag.



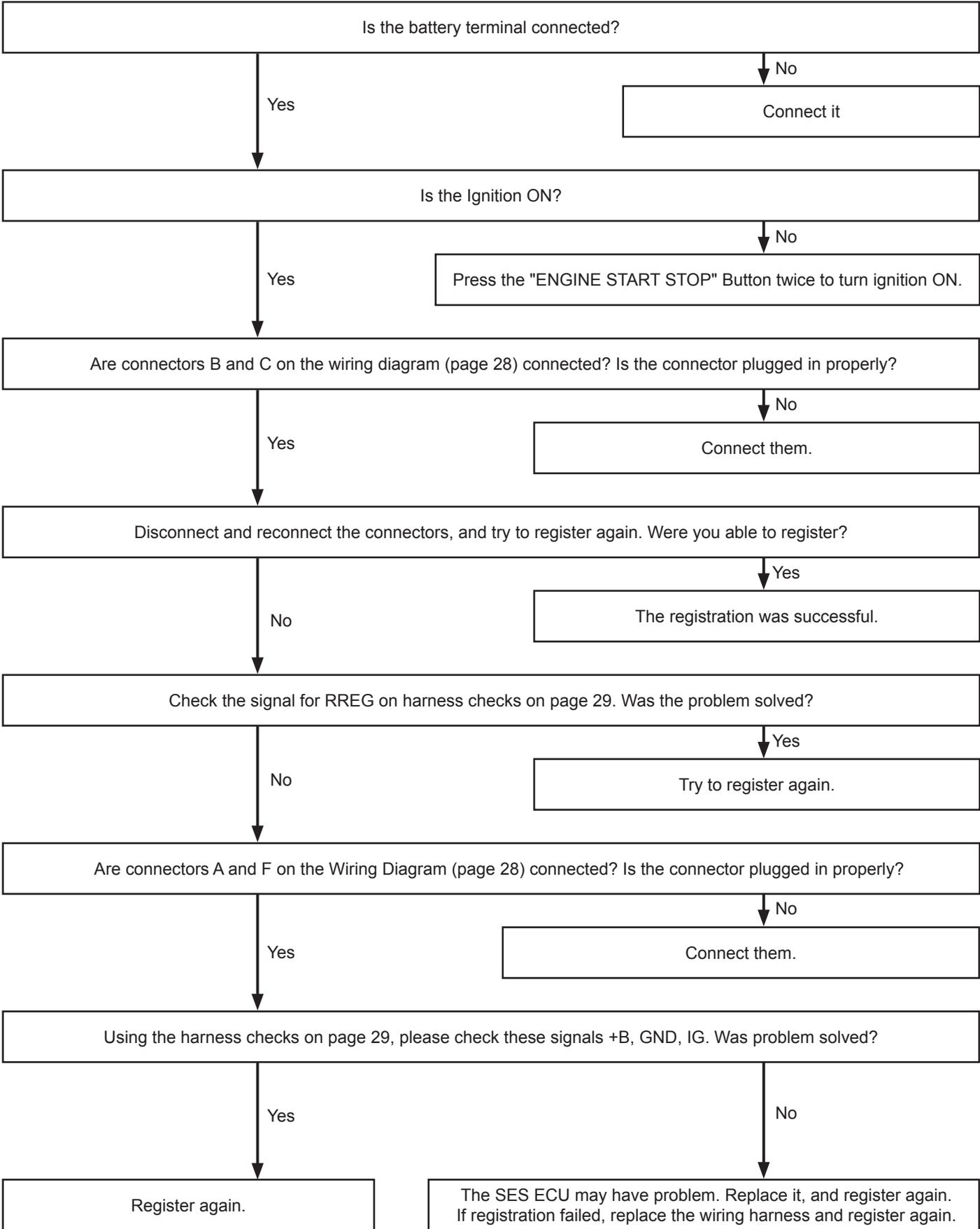
3. Attach the Wiper lever Tag as shown.

## Troubleshooting

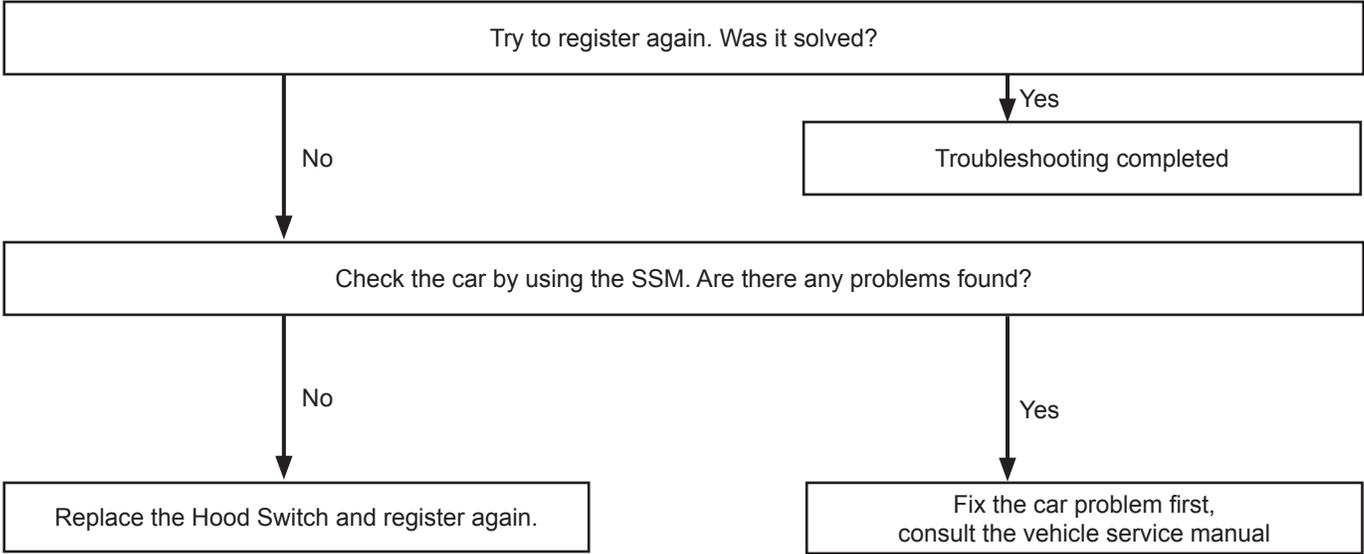
Before reviewing this troubleshooting, connect the Subaru SSM to the Vehicle and make sure that everything on the Vehicle side is working properly. If you come across any problems, you will need to fix them first.

No.	Problem	Go to
1	During SES ECU registration, the immobilizer failed to register.	Check A (page 18)
2	During SES ECU registration, car horn doesn't sound after closing the hood.	Check B (page 19)
3	When starting vehicle with Smart Engine Start, engine doesn't start.	Check C (page 20)
4	After starting vehicle with Smart Engine Start, engine stops.	Check D (page 24)
5	After starting vehicle with Smart Engine Start, engine won't stop.	Check E (page 25)

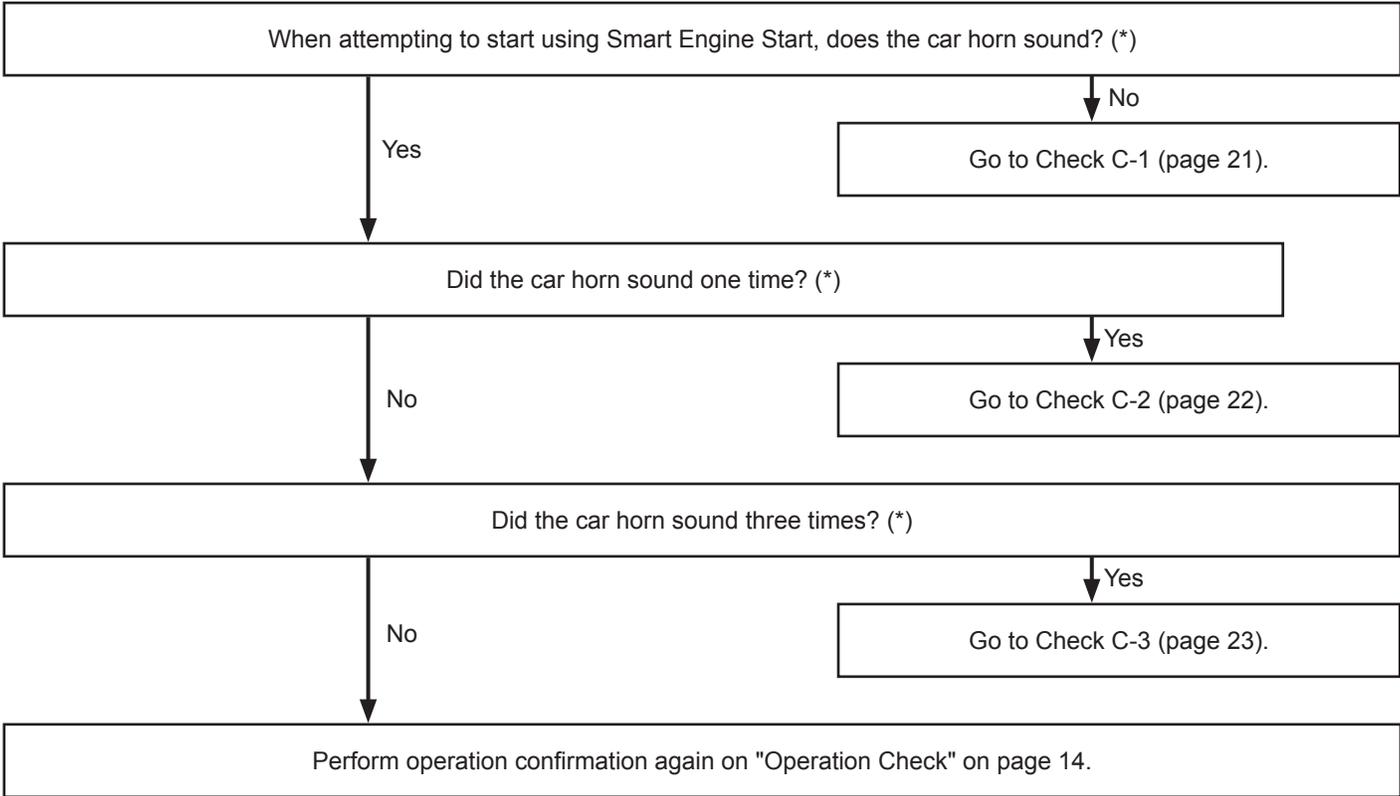
Check A



Check B



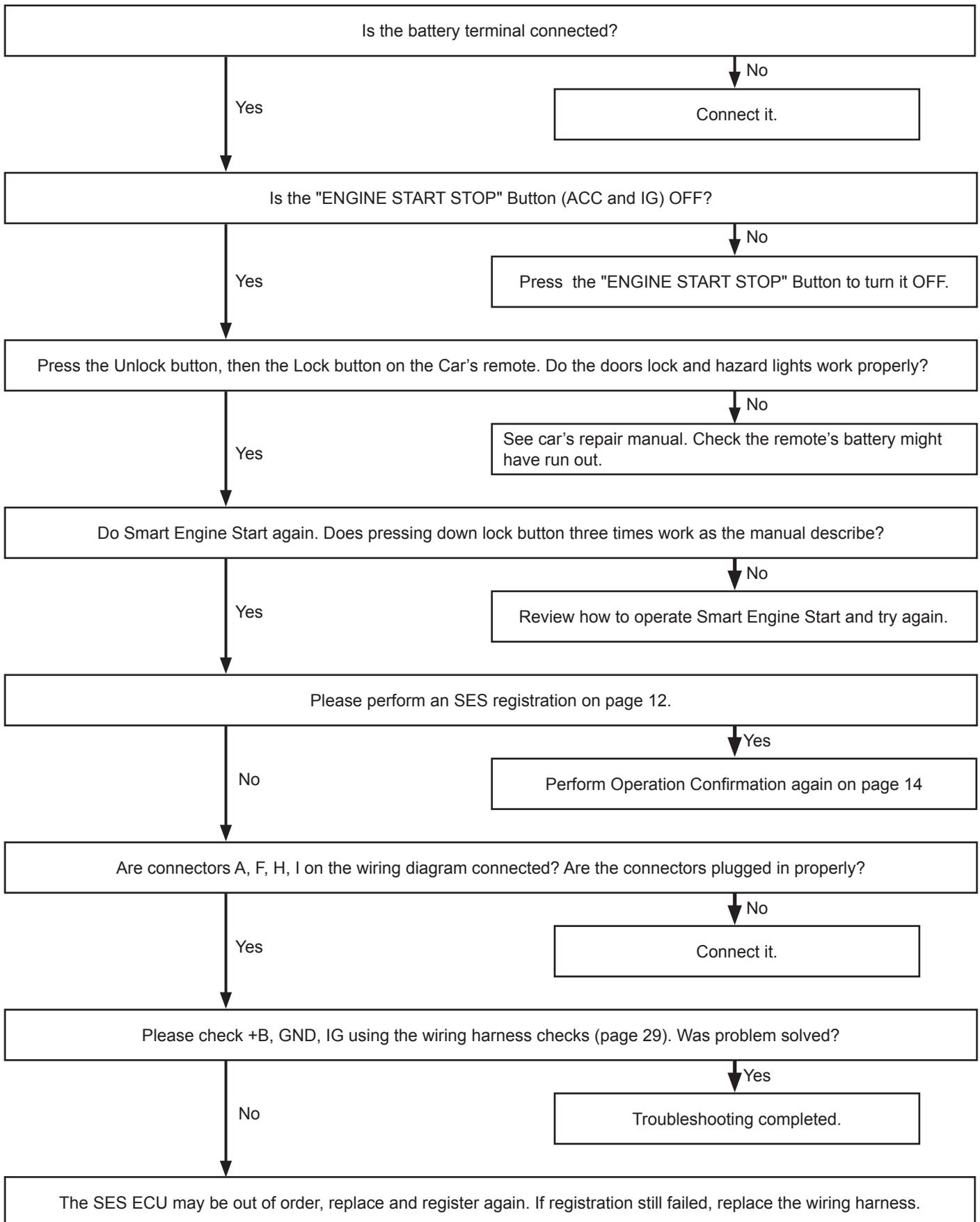
Check C



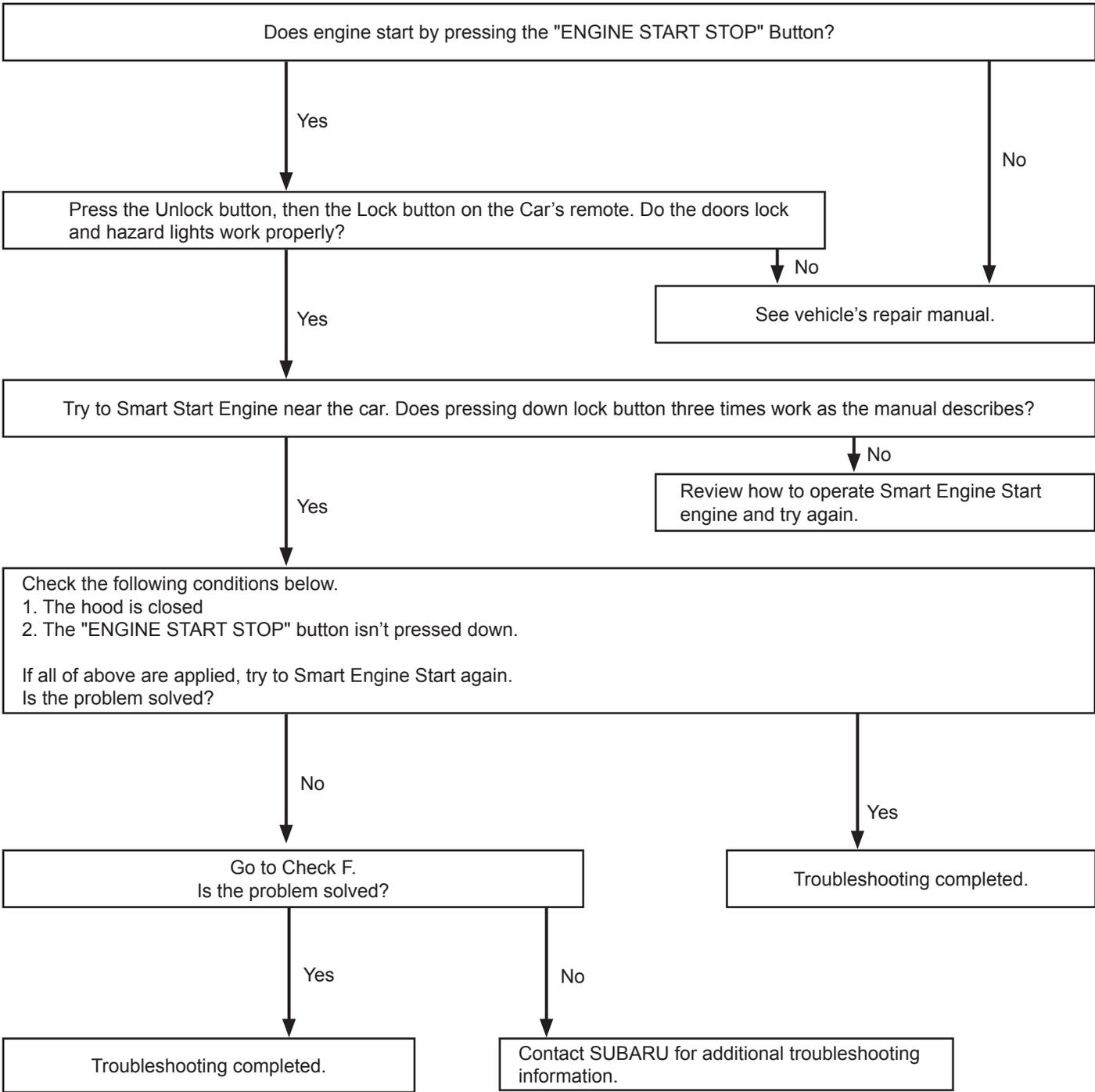
**\*Notice for Car Finder Function.**

When you press the lock button on the wireless remote control three times, the car horn sounds for Car Finder function. Please exclude these horn sounds from above problems. Car Finder function makes the car horn sound and the hazard light flashes three times.

Check C-1



Check C-2



### Check C-3

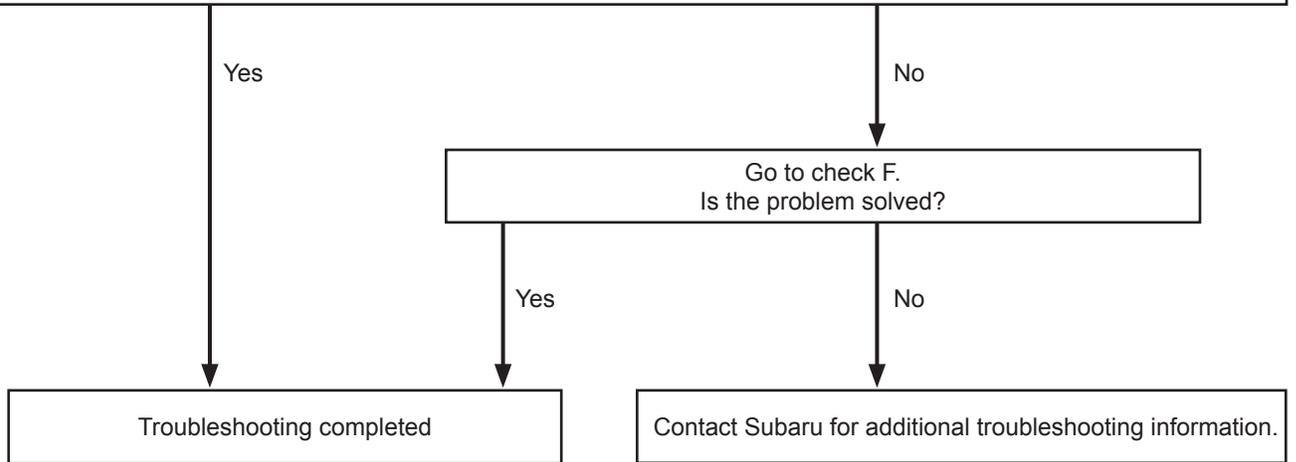
Check the following conditions below.

(The Smart Engine Start only has 20min. of total run time. Open and close one of the doors to reset the SES clock.)

1. The brake pedal isn't pressed.
2. The shift lever is placed in "P".
3. All doors are closed (incl. tailgate).
4. The IG/ACC are OFF.
5. SES registration was successful.

If all the above conditions applies, try to Smart Engine Start again.

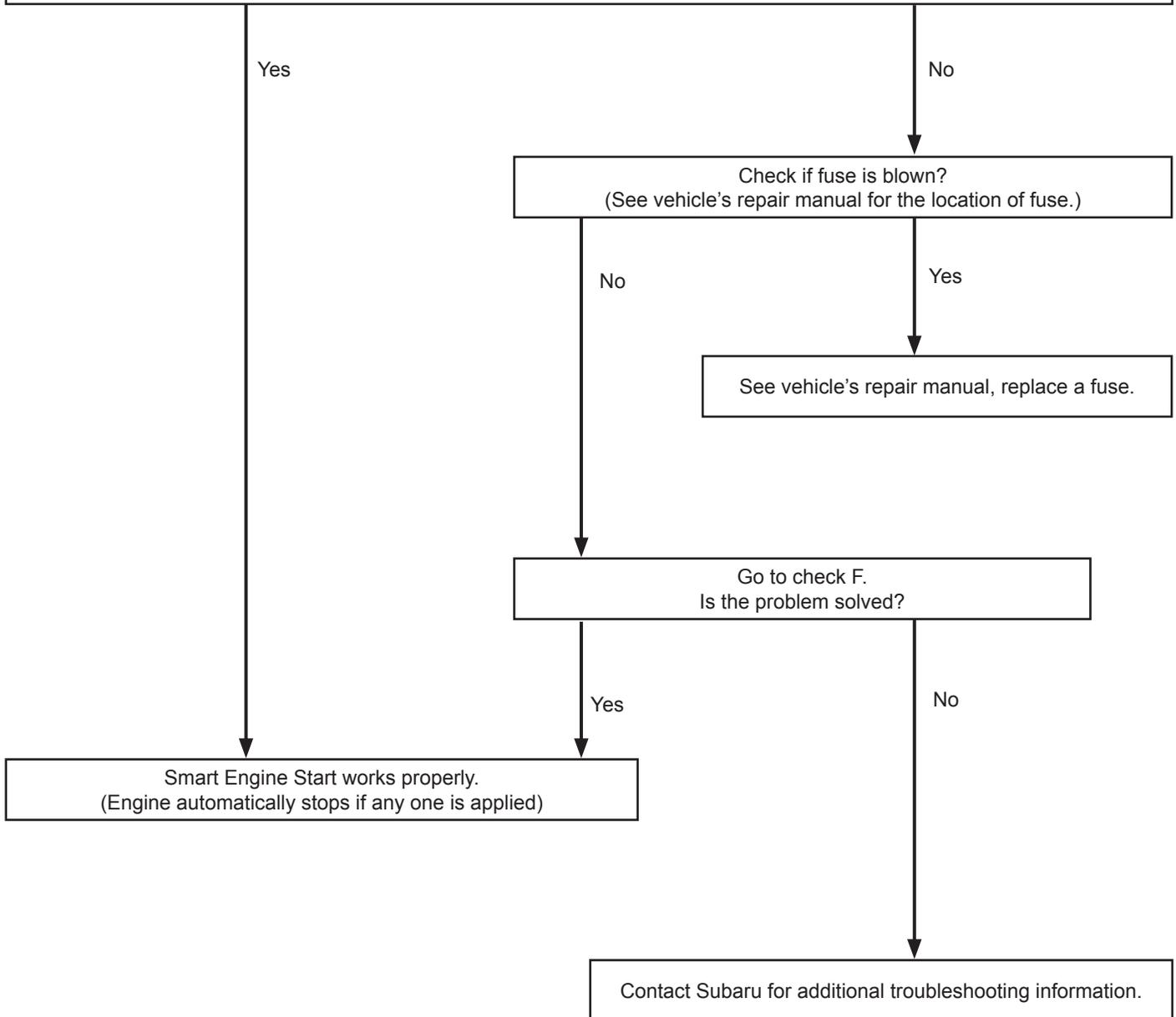
Does Smart Engine Start work properly?



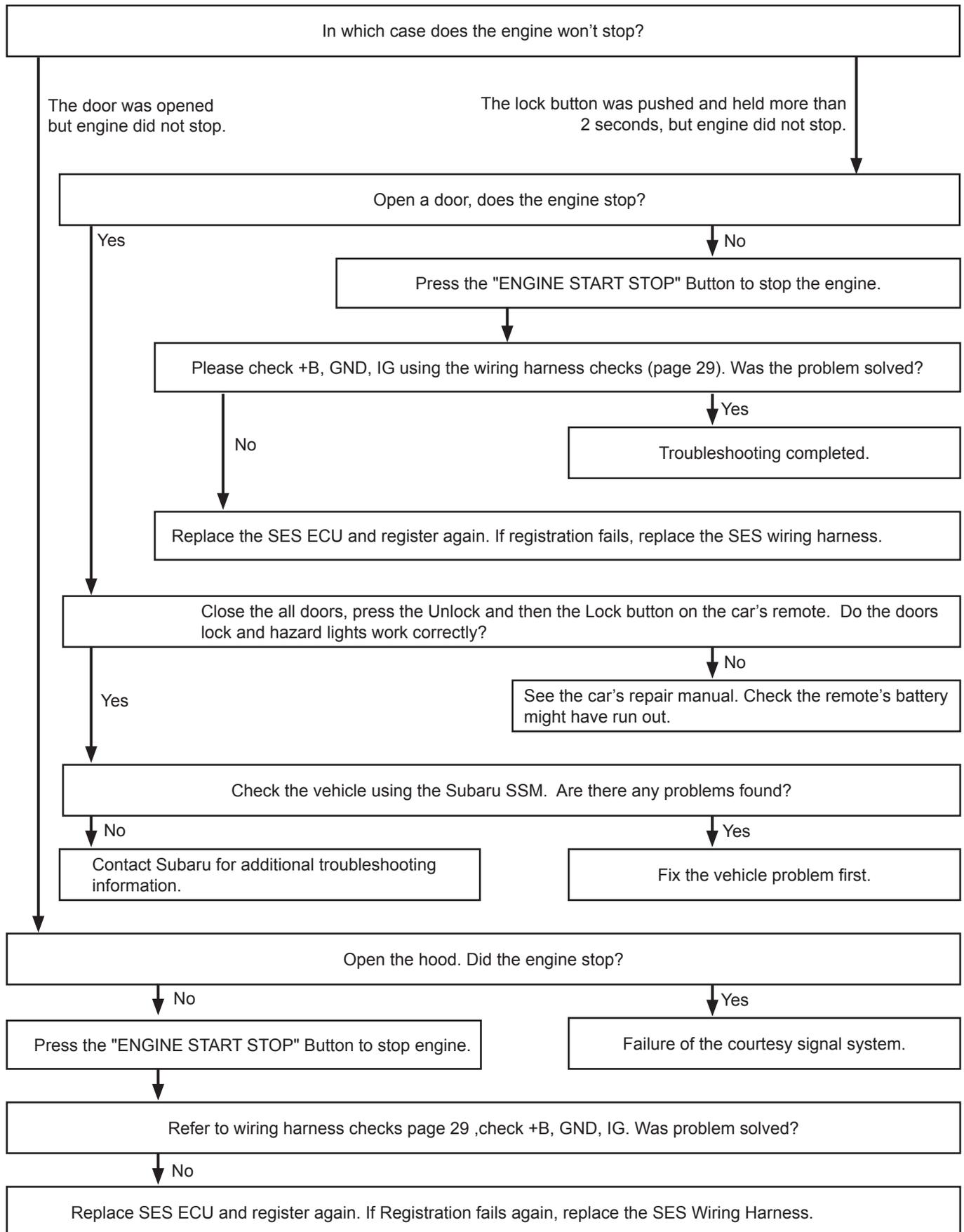
## Check D

Check if any one of the following conditions applies, while remote engine start was running.

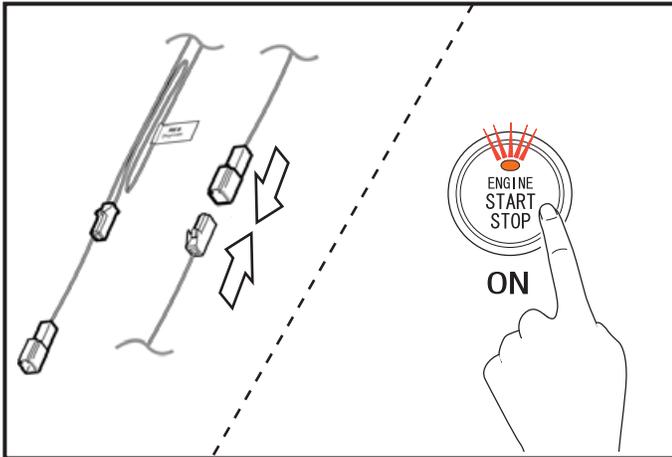
1. The "ENGINE START STOP" button was pressed.
2. The brake pedal was pressed.
3. Any door was opened. (incl. tailgate)
4. The hood was opened.
5. The Smart Engine Start Run-time has expired or has passed the 20 min total Run-time.
6. The shift lever was placed in other than "P".
7. The engine speed exceeded 3000rpm (Was the Accelerator pressed?)
8. The Lock button on the remote was pressed more than 2 seconds.



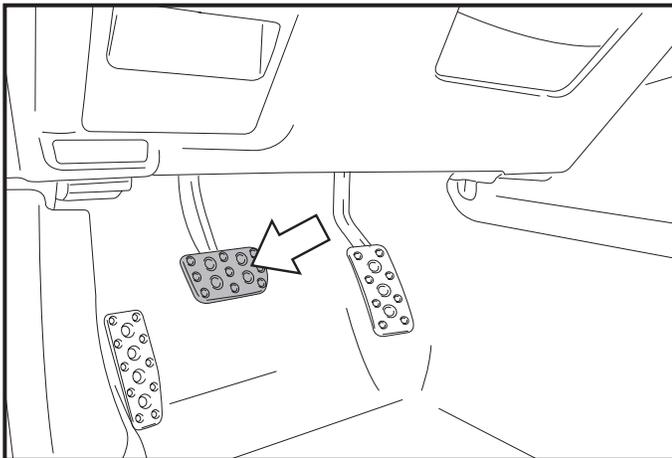
Check E



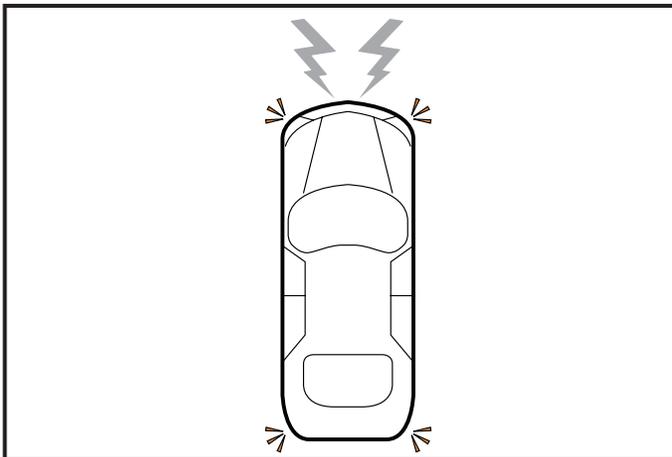
Check F (SES simple diagnosis check)



1. Connect the 1P SES Diagnostic Connectors.
2. Press the "ENGINE START STOP" Button twice to switch ignition ON and wait for 3 seconds.

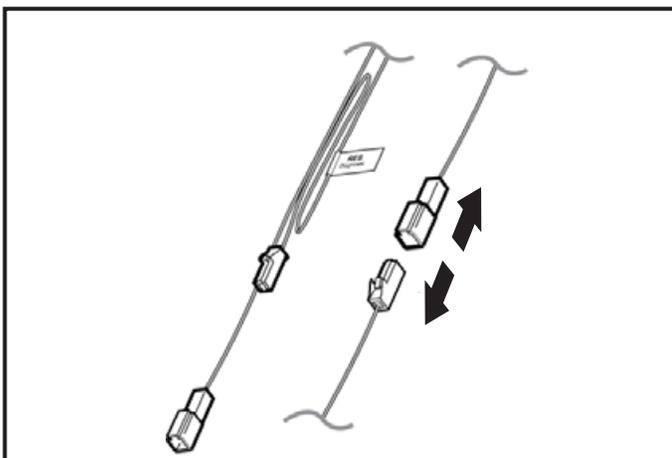


3. Press down the brake pedal once.



4. Look for the car horn to sound (parking lights flash the same number of times).

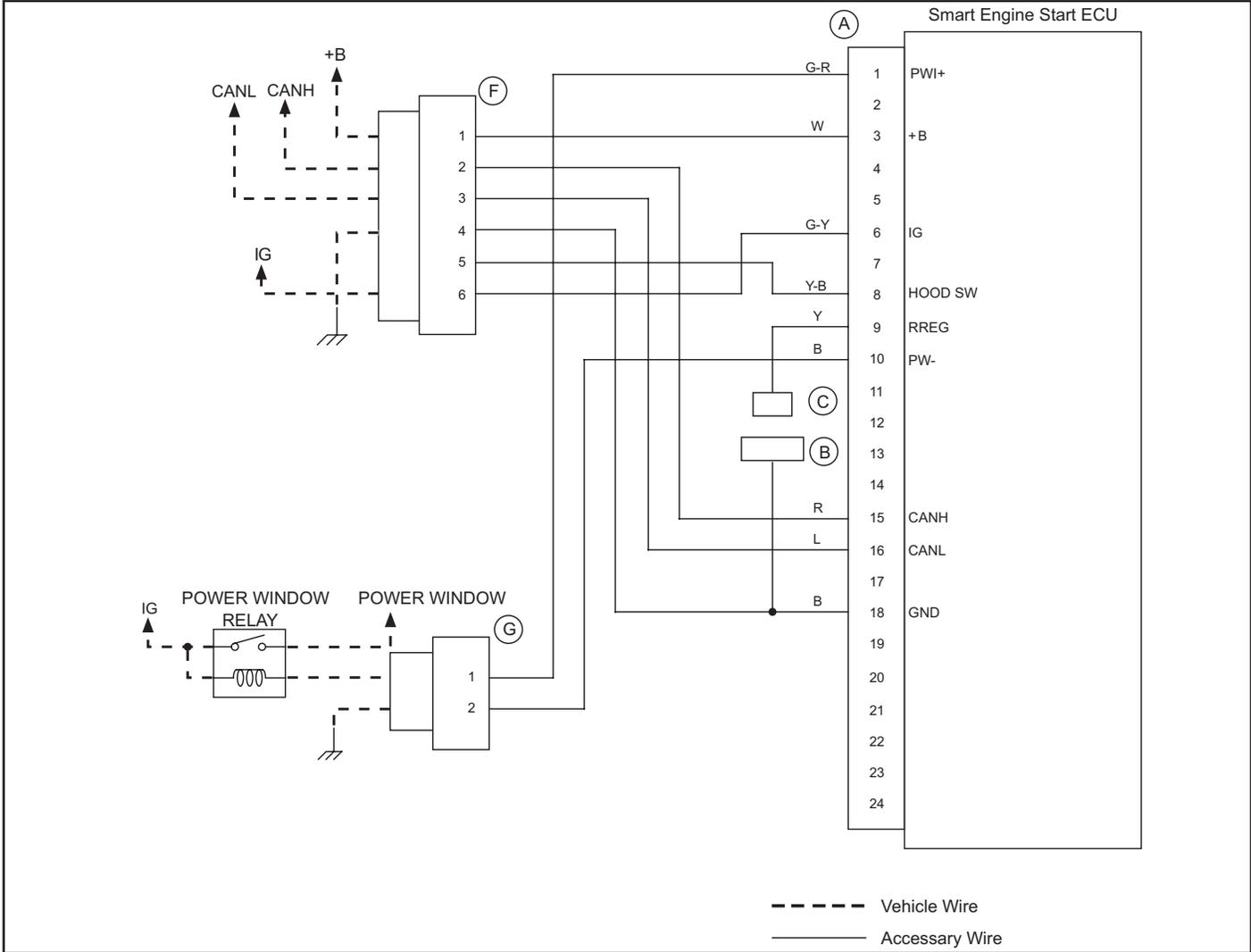
Record the number of times the car horn sounds, and check the table on next page for the possible cause of Engine Stop. Be aware that pressing the brake pedal again makes the car horn sound. Make sure to wait until the car horn stops before pressing the pedal again.



5. Disconnect the 1P SES diagnostic connectors (Disconnecting deletes the causes of the problem).

Horn sounds	Cause of Engine Stop	Item to check	Related ECU
0	No cause happened.	-	-
1	The hood is open	1. The hood is open. 2. OEM hood switch failure, check vehicle service manual.	-
2	The "ENGINE START STOP" Button is turned ON.	1. Make sure "ENGINE START STOP" button is off. 2. Failure of the push-start signal system.	SMART
	The shift lever is placed in other than "P"	1. The shift lever is placed in other than "P". 2. Failure of the shift position signal system.	
	The immobilizer cannot be cancelled.	1. Is SES registered? 2. The Smart ECU may have a problem.	
3	Engine speed goes up.	1. Accelerator is pressed. 2. Abnormality of the revolutions signal system.	EGI BIU
	A door is open.	1. A door is open. 2. Tailgate is open. 3. Failure of the courtesy signal system.	BIU
	The brake is pressed.	1. The brake pedal is pressed. 2. Failure of the brake lights signal system.	BIU
	Car speed is detected.	1. The car is moving. 2. Failure of the vehicle speed signal system.	BIU

# Wiring Diagram



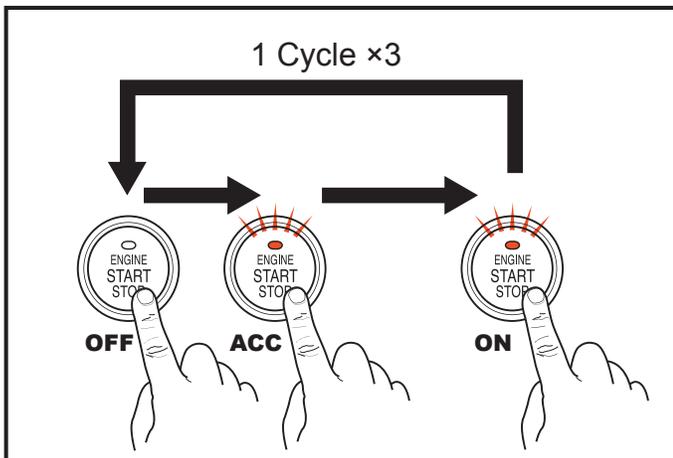
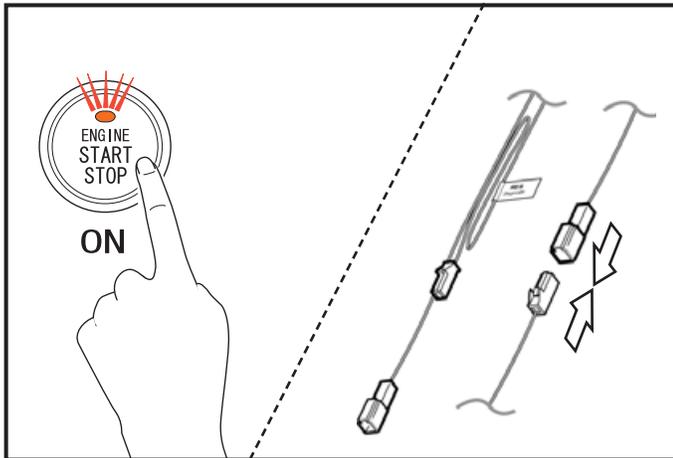
# Connectors

A	B	C
F	G	

## List of wiring harness checks

Check name	Type	Tester		Check condition	Normalcy	Estimation abnormality point when NOT normal
		+	-			
+B	Voltage	A3	Earth	always	10~14V	Harness
GND	→	A18	Earth	always	Conduction	Harness
IG	Voltage	A6	Earth	Push-start ACC→ON	0V→10~14V	Harness
RREG	→	A9	Earth	Connector B,C Non-connection→connection	No Conduction→Conduction	Harness
PWI	Voltage	A1	Earth	Push-start ACC→ON	0V→10~14V	Harness
	→	A10	Earth	always	Conduction	Harness

## Engine Run-Time Changing Procedure



### ⚠ Note

- If registration of the Smart Engine Start ID is not completed, the Smart Engine Start will not operate.
- The Engine Run-time settings must adhere to state, provincial, and local laws and regulations.

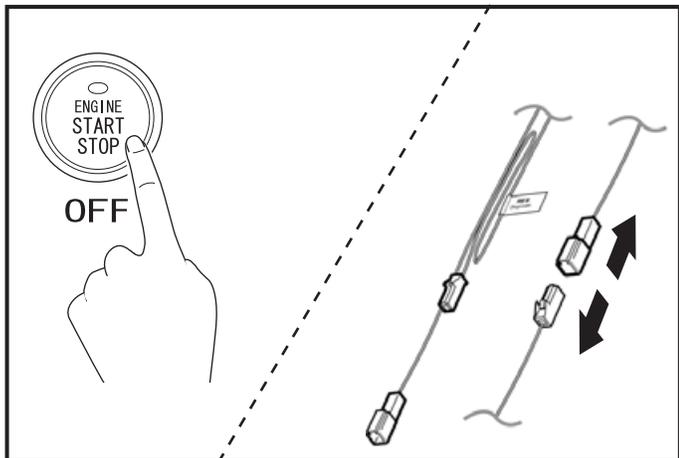
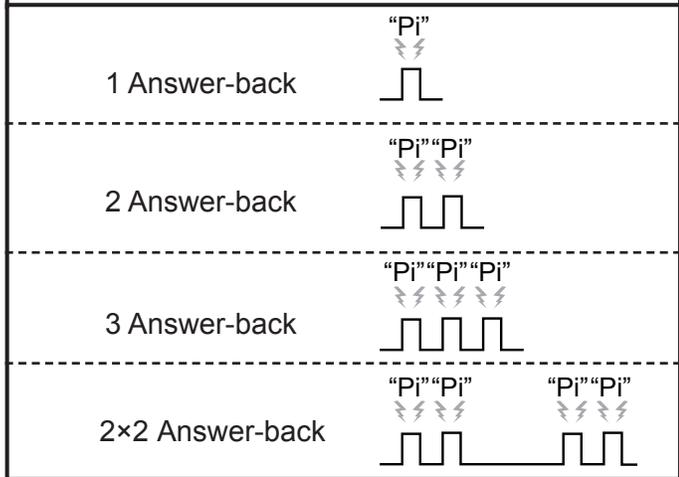
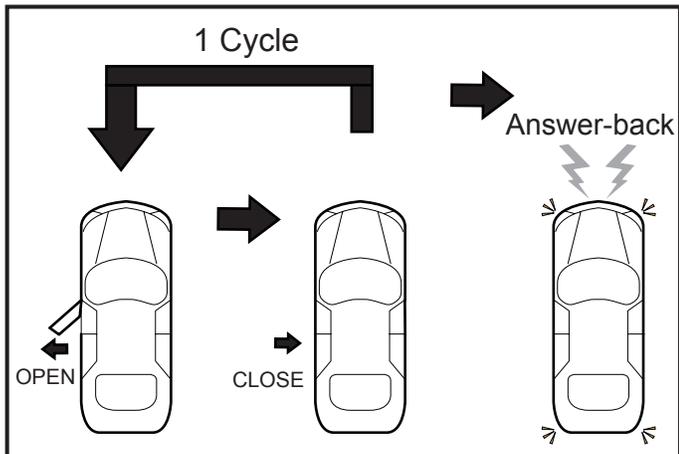
1. Press the "ENGINE START STOP" Button twice to switch ignition ON.
2. Connect the 1P SES Diagnostic Connectors.
3. Cycle the "ENGINE START STOP" Button from OFF → ACC → IG ON 3 times, and check the number of answer-back.

\* The number of answer-back (simultaneous Hazard Lights flash and Horn sound) will correspond to the current Engine Run-Time.

- \* 1 answer-back : 3 minutes Engine Run-time
- \* 2 answer-backs : 5 minutes Engine Run-time
- \* 3 answer-backs : 10 minutes Engine Run-time
- \* 2×2 answer-back : 15 minutes Engine Run-time

### ⚠ Note

- The initial Engine Run-Time setting is 15 minutes.



4. Open and close the Driver's Side Door to change the Engine Run-time setting.

**The Engine Run-time will change as follows depending on the number of times the Driver's Side Door is opened and closed (1 Cycle).**

- \* 1 Cycle - 1 answer-back: 3 minutes Engine Run-time
- \* 2 Cycle - 2 answer-backs: 5 minutes Engine Run-time
- \* 3 Cycle - 3 answer-backs: 10 minutes Engine Run-time
- \* 4 Cycle - 2x2 answer-backs: 15 minutes Engine Run-time

\* If you perform 5 Cycles or more, the Engine Run-time setting and answer-back will continually repeat the above 1 to 4 pattern.

**Note**

- Wait until the answer-back horn stops sounding for setting to complete before opening the door.

5. Switch the "ENGINE START STOP" Button to OFF.
6. Disconnect the 1P SES Diagnostic Connectors.
7. Secure the 1P SES Diagnostic Connectors using Electrical Tape.