Kit Contents

- Service P/N: H001SVA910
  - SES ECU
    - Quantity: 1
  - Double-sided tape
    - Quantity: 1
  - Foam tape
    - Quantity: 1

- Service P/N: H001SVA820
  - Main Harness
    - Quantity: 1
  - Tie Wrap
    - Quantity: 10
  - Double-sided tape
    - Quantity: 4
  - Foam tape
    - Quantity: 1
  - Engine Room Label
    - Quantity: 1
  - Wiper Lever Tag
    - Quantity: 1
  - Key Tag
    - Quantity: 1
  - Key Ring Tag
    - Quantity: 1
  - Engine Room Label
    - Quantity: 1
  - Wiper Lever Tag
    - Quantity: 1
  - Key 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

NOT USED
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
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.
4. 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.

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**Main Harness Installation**

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

1. Route the Main Harness’s 24P Connector toward the Glove Box area.
2. 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.
8. 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.

9. Remove the Tape securing the Vehicle’s 8P and 2P Pre-Connectors.
10. 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.)

11. Connect the Main Harness's 8P Connector to the Vehicle's 8P Pre-Connector.
12. 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)
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.
Press and hold the SDI "Menu" and "C" buttons simultaneously for approximately 5 seconds to enter stand alone mode.

Plug the SDI diagnostic plug into the vehicle's diagnostic connector.

Proceed to "Registration Setup".
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.

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.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Confirmation point</th>
<th>Checking point if operation failed</th>
</tr>
</thead>
</table>
| 1. 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. | *The horn sounds once.  
*The Engine starts.  
*After the engine starts, the horn sounds once at the same time as all the front position lights, tail lights flash once.  
*All marker lights, tail lights turn on afterwards. | "Check C" on page 20 |
| 2. Press and hold the LOCK button of the vehicle’s remote for more than two seconds. | *Engine stops.  
*All marker lights, tail lights turn off. | "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. | - |
| 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. |
| 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)
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.
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.

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

Is the battery terminal connected?

Yes

No

Connect it

Is the Ignition ON?

Yes

No

Press the "ENGINE START STOP" Button twice to turn ignition ON.

Are connectors B and C on the wiring diagram (page 28) connected? Is the connector plugged in properly?

Yes

No

Connect them.

Disconnect and reconnect the connectors, and try to register again. Were you able to register?

Yes

No

The registration was successful.

Check the signal for RREG on harness checks on page 29. Was the problem solved?

Yes

No

Try to register again.

Are connectors A and F on the Wiring Diagram (page 28) connected? Is the connector plugged in properly?

Yes

No

Connect them.

Using the harness checks on page 29, please check these signals +B, GND, IG. Was problem solved?

Yes

No

Register again.

The SES ECU may have problem. Replace it, and register again. If registration failed, replace the wiring harness and register again.
Try to register again. Was it solved?

No

Check the car by using the SSM. Are there any problems found?

No

Replace the Hood Switch and register again.

Yes

Troubleshooting completed

Yes

Fix the car problem first, consult the vehicle service manual
When attempting to start using Smart Engine Start, does the car horn sound? (*)

- No
  - Go to Check C-1 (page 21).

  Did the car horn sound one time? (*)

  - Yes
  - Go to Check C-2 (page 22).

  - No
  - Go to Check C-3 (page 23).

  Did the car horn sound three times? (*)

  - Yes

  - No

  Perform operation confirmation again on "Operation Check" on page 14.

*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

Is the battery terminal connected?

Yes

No

Connect it.

Is the "ENGINE START STOP" Button (ACC and IG) OFF?

Yes

No

Press the "ENGINE START STOP" Button to turn it OFF.

Press the Unlock button, then the Lock button on the Car’s remote. Do the doors lock and hazard lights work properly?

Yes

No

See car’s repair manual. Check the remote’s battery might have run out.

Do Smart Engine Start again. Does pressing down lock button three times work as the manual describe?

Yes

No

Review how to operate Smart Engine Start and try again.

Please perform an SES registration on page 12.

Yes

No

Perform Operation Confirmation again on page 14

Are connectors A, F, H, I on the wiring diagram connected? Are the connectors plugged in properly?

Yes

No

Connect it.

Please check +B, GND, IG using the wiring harness checks (page 29). Was problem solved?

Yes

No

Troubleshooting completed.

The SES ECU may be out of order, replace and register again. If registration still failed, replace the wiring harness.
**Check C-2**

**Does engine start by pressing the "ENGINE START STOP" Button?**

Yes → **Press the Unlock button, then the Lock button on the Car’s remote. Do the doors lock and hazard lights work properly?**

Yes → See vehicle's repair manual.

No → **Try to Smart Start Engine near the car. Does pressing down lock button three times work as the manual describes?**

Yes → Review how to operate Smart Engine Start engine and try again.

No → Check the following conditions below.
1. The hood is closed
2. The "ENGINE START STOP" button isn’t pressed down.

If all of above are applied, try to Smart Engine Start again.

Is the problem solved?

No

**Go to Check F.**

Is the problem solved?

Yes → Troubleshooting completed.

No → Troubleshooting completed.

Yes → Contact SUBARU for additional troubleshooting information.
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?

Yes

No

Go to check F.
Is the problem solved?

Yes

Troubleshooting completed

No

Contact Subaru for additional troubleshooting information.
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 if fuse is blown?
(See vehicle's repair manual for the location of fuse.)

See vehicle's repair manual, replace a fuse.

Go to check F.
Is the problem solved?

Smart Engine Start works properly.
(Engine automatically stops if any one is applied)

Contact Subaru for additional troubleshooting information.
In which case does the engine won’t stop?

The door was opened but engine did not stop.

The lock button was pushed and held more than 2 seconds, but engine did not stop.

Open a door, does the engine stop?

Yes

Press the "ENGINE START STOP" Button to stop the engine.

Please check +B, GND, IG using the wiring harness checks (page 29). Was the problem solved?

No

Troubleshooting completed.

Replace the SES ECU and register again. If registration fails, replace the SES wiring harness.

Close the all doors, press the Unlock and then the Lock button on the car’s remote. Do the doors lock and hazard lights work correctly?

Yes

See the car’s repair manual. Check the remote’s battery might have run out.

No

Check the vehicle using the Subaru SSM. Are there any problems found?

Yes

Fix the vehicle problem first.

No

Contact Subaru for additional troubleshooting information.

Open the hood. Did the engine stop?

Yes

Failure of the courtesy signal system.

No

Press the "ENGINE START STOP" Button to stop engine.

Refer to wiring harness checks page 29, check +B, GND, IG. Was problem solved?

No

Replace SES ECU and register again. If Registration fails again, replace the SES Wiring Harness.
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).
<table>
<thead>
<tr>
<th>Horn sounds</th>
<th>Cause of Engine Stop</th>
<th>Item to check</th>
<th>Related ECU</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No cause happened.</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
| 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 |
### Engine Run-Time Changing Procedure

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

- **Note**: The initial Engine Run-Time setting is 15 minutes.

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### List of wiring harness checks

<table>
<thead>
<tr>
<th>Check name</th>
<th>Type</th>
<th>Tester</th>
<th>Check condition</th>
<th>Normalcy</th>
<th>Estimation abnormality point when NOT normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>+B</td>
<td>Voltage</td>
<td>A3</td>
<td>Earth</td>
<td>always</td>
<td>10~14V</td>
</tr>
<tr>
<td>GND</td>
<td></td>
<td>A18</td>
<td>Earth</td>
<td>always</td>
<td>Conduction</td>
</tr>
<tr>
<td>IG</td>
<td>Voltage</td>
<td>A6</td>
<td>Earth</td>
<td>Push-start ACC→ON</td>
<td>0V→10~14V</td>
</tr>
<tr>
<td>RREG</td>
<td></td>
<td>A9</td>
<td>Earth</td>
<td>Connector B,C Non-connection→connection</td>
<td>No Conduction→Conduction</td>
</tr>
<tr>
<td>PWI</td>
<td>Voltage</td>
<td>A1</td>
<td>Earth</td>
<td>Push-start ACC→ON</td>
<td>0V→10~14V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A10</td>
<td>Earth</td>
<td>always</td>
<td>Conduction</td>
</tr>
</tbody>
</table>
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 - 2×2 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.

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.