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# STEERING SYSTEM

## PRECAUTION

### 1. HANDLING PRECAUTIONS FOR STEERING SYSTEM

- (a) Care must be taken when replacing parts. Incorrect replacement may affect the performance of the steering system and result in driving hazards.

### 2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

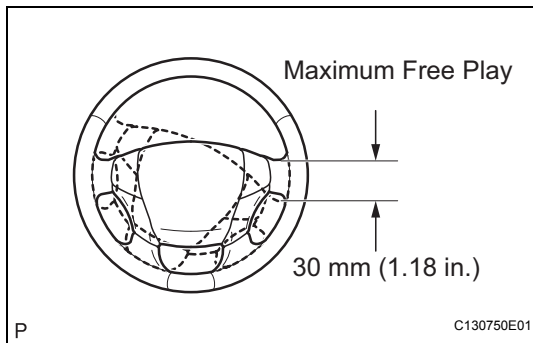
- (a) The AVALON is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operations in the correct sequence could cause the SRS airbags to unexpectedly deploy during servicing. This may cause a serious accident. Before servicing (including inspection, replacement, removal and installation of parts), be sure to read the precautionary notices for the Supplemental Restraint System (See page [RS-1](#)).

## PROBLEM SYMPTOMS TABLE

### AXLE SYSTEM

Use the table below to help determine the cause of the problem. The numbers indicate the priority of the likely causes of the problem. Check each part in order. If necessary, repair or replace the faulty parts.

Symptom	Suspected area	See page
Hard steering	1. Tires (Improperly inflated)	TW-2
	2. Power steering fluid level (Low)	PS-3
	3. Drive belt (Loose)	EM-8
	4. Front wheel alignment (Incorrect)	SP-4
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	SP-25
	7. Steering column (Binding)	SR-43
	8. Power steering vane pump	PS-12
	9. Power steering gear	PS-28
Poor return	1. Tires (Improperly inflated)	TW-2
	2. Front wheel alignment (Incorrect)	SP-4
	3. Steering column (Binding)	SR-43
	4. Power steering gear	PS-28
Excessive free play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	SP-25
	3. Intermediate shaft, Sliding yoke (Worn)	SR-39
	4. Front wheel bearing (Worn)	AH-15
	5. Power steering gear	PS-28
Abnormal noise	1. Power steering fluid level (Low)	PS-4
	2. Steering system joints (Worn)	-
	3. Power steering vane pump	PS-12
	4. Power steering gear	PS-28



## ON-VEHICLE INSPECTION

### 1. CHECK STEERING WHEEL FREE PLAY

- Stop the vehicle and align the tires facing straight ahead.
- Gently turn the steering wheel right and left by hand, and check the steering wheel free play.

#### Maximum Free Play :

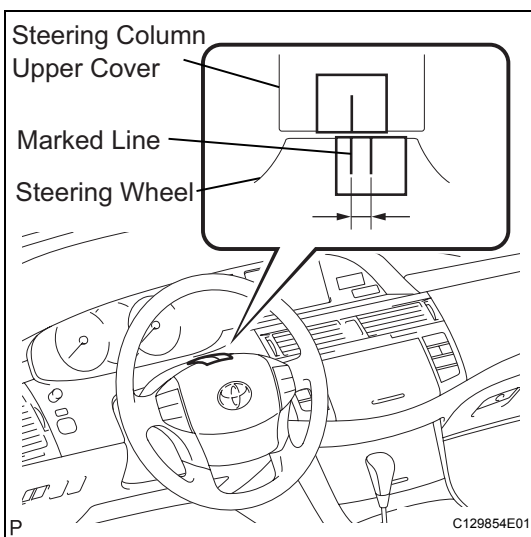
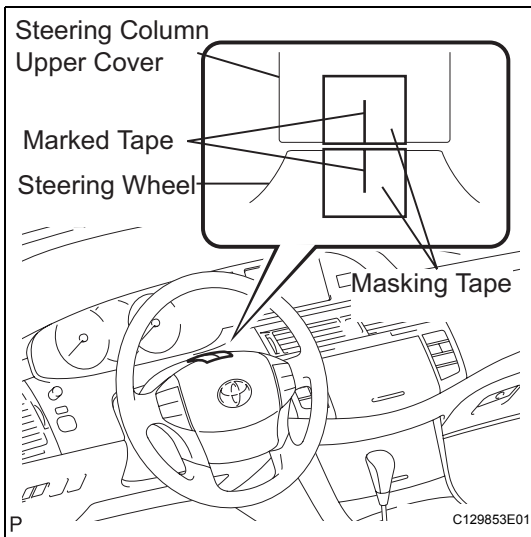
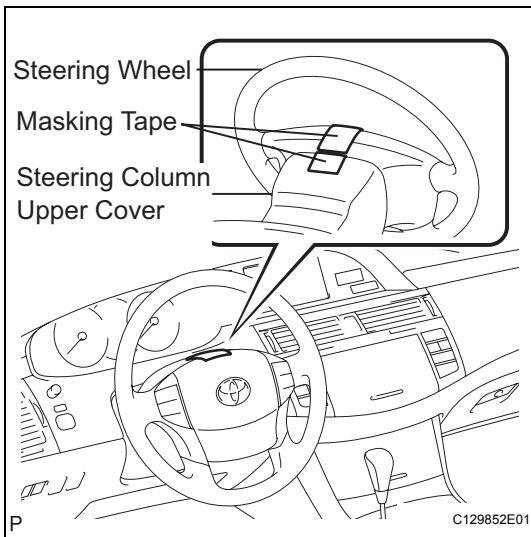
**30 mm (1.18 in.)**

If free play exceeds the maximum, replace the steering intermediate shaft assembly or steering gear.

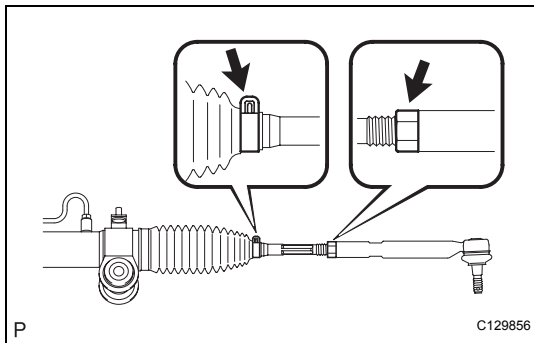
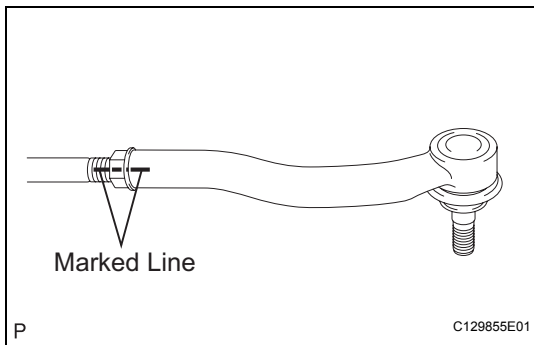
## REPAIR

### 1. STEERING OFF CENTER REPAIR PROCEDURE

- (a) Inspect steering wheel off center.
- (1) Apply masking tape on the top center of the steering wheel and steering column upper cover.
  - (2) Drive the vehicle in a straight line for 100 meters at a constant speed of 35 mph (56 km/h), and hold the steering wheel to maintain the course.



- (3) Draw a line on the masking tape as shown in the illustration.
- (4) Turn the steering wheel to the center position.  
HINT:  
Look at the upper surface of the steering wheel, steering spoke and SRS airbag line to find the center position.
- (5) Draw a new line on the masking tape on the steering wheel as shown in the illustration.
- (6) Measure the distance between the 2 lines on the masking tape on the steering wheel.
- (7) Convert the measured distance to steering angle.  
HINT:  
Measured distance 1 mm (0.04 in.) = Steering angle of approximately 1 degree  
Make a note of the steering angle.



## (b) Adjust steering angle.

(1) Draw a line on the RH and LH tie rod ends and rack ends respectively where it can be easily seen.

(2) Using a paper gauge, measure the distance from the RH and LH tie rod ends to the rack end screws.

## HINT:

- Measure both the RH and LH sides.
- Make a note of the measured values.

(3) Remove the RH and LH boot clips from the rack boots.

(4) Loosen the RH and LH lock nuts.

(5) Turn the RH and LH rack ends by the same amount (but in different directions) according to the steering angle.

## HINT:

One 360 degree turn of rack end (1.5 mm (0.059 in.) horizontal movement) equals to 12 degrees of steering angle.

(6) Tighten the RH and LH lock nuts to the specified torque.

**Torque: 74 N\*m (750 kgf\*cm, 54 ft.\*lbf)**

**NOTICE:**

**Make sure that the difference in length between the RH and LH tie rod ends and rack end screws is within 1.5 mm (0.059 in.).**

(7) Install the RH and LH boot clips.

(8) Perform steering angle sensor zero point calibration (w/ VSC).

# ELECTRIC STEERING LOCK

## PRECAUTION

### NOTICE:

When the negative (-) battery cable is disconnected, initialize the following systems after the cable is reconnected.

System Name	See Procedure
Power Window Control System	(See page <a href="#">IN-29</a> )
Sliding Roof System	

### 1. PRECAUTIONS WHEN WORKING ON ELECTRIC STEERING LOCK

- (a) After replacing the steering lock actuator assembly, perform the code registration (See page [EI-6](#))
- (b) If checking for electric steering lock DTCs or checking the data list with the engine switch off, make sure that the driver's door is open.

#### HINT:

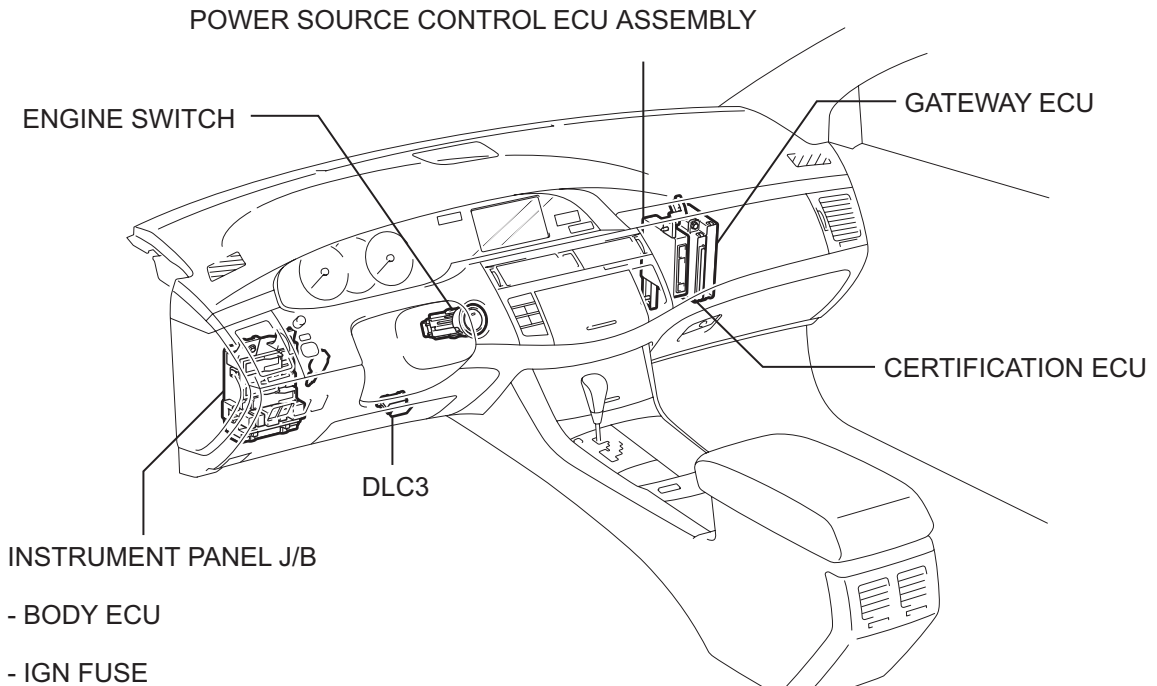
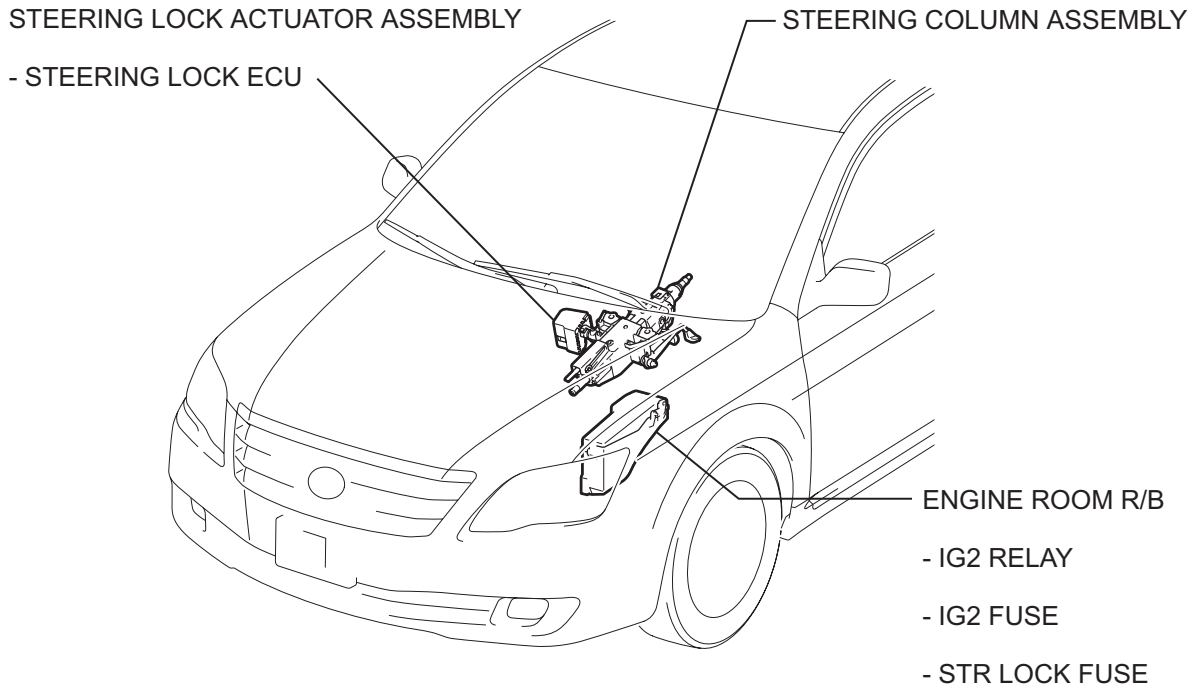
When the engine switch is off, the body ECU to which the intelligent tester is to be connected may not be working. Communication with the intelligent tester is impossible if the body ECU is not working.

- (c) If the steering lock ECU is replaced, open and close the driver's door. The engine may not start until either operation is performed.

#### HINT:

Performing the above operation causes the steering lock ECU to memorize the correct steering lock bar position.

# PARTS LOCATION



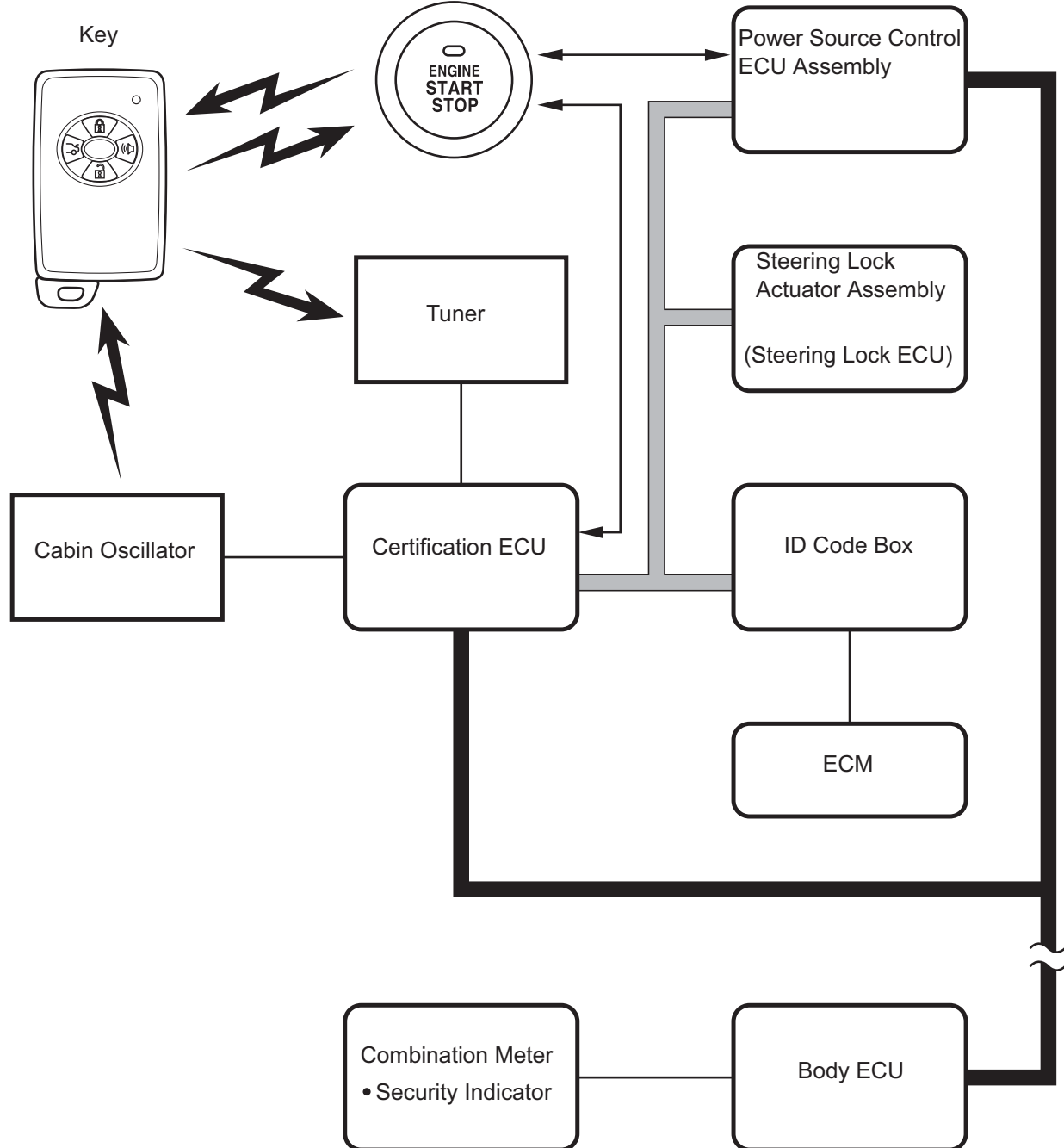
# SYSTEM DIAGRAM

## SMART KEY SYSTEM

- Immobilizer Function

Engine Switch

- Transponder Amplifier



— : BEAN

— : LIN

## Input and output signals of each ECU

Transmitting ECU (transmitter)	Receiving ECU	Signals	Communication method
Power Source Control ECU assembly	Steering Lock ECU	Power supply status (to steering lock motor)	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Sleep available status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Lock/Unlock sensor status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	steering lock status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Motor control status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Diagnostic response status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Lock/Unlock sensor malfunction	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Power supply malfunction (to steering lock motor)	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Motor driver malfunction	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Lock bar (stuck) status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Push start status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Lock/Unlock relay drive status	LIN
Steering Lock ECU	<ul style="list-style-type: none"> <li>• Certification ECU</li> <li>• Power source control ECU assembly</li> <li>• ID code box</li> </ul>	Engine start control status	LIN



## SYSTEM DESCRIPTION

### 1. DESCRIPTION

- (a) The steering lock system locks/unlocks the steering lock by activating the steering lock bar with a motor. The steering lock ECU activates the motor based on signals from the certification ECU and power source control ECU assembly.

### 2. FUNCTIONS OF COMPONENTS

- (a) The steering lock ECU controls the system based on information from the following components.

Item	Function
Steering lock actuator assembly	Consists of a motor, lock, bar, lock/unlock position sensors, etc. Activated by the steering lock ECU.
Steering lock ECU	Included in the steering lock actuator assembly. Activates the steering lock motor based on permission signals from the power source control ECU and certification ECU. Detects steering lock/unlock positions and transmits the status to other ECUs.
Power source control ECU assembly	Permits the steering lock ECU to supply power to activate the motor. The power source control ECU and certification ECU permit engine start after receiving an unlock signal from the steering lock ECU.
Certification ECU assembly	Orders the steering lock ECU to lock/unlock the steering lock. The power source control ECU and certification ECU permit engine start after receiving an unlock signal from the steering lock ECU.
IG2 relay	Controlled by the power source control ECU. Sends IG signals to the steering lock ECU.

## HOW TO PROCEED WITH TROUBLESHOOTING

The intelligent tester can be used during steps 3, 7, 10 and 13.

<b>1</b>	<b>VEHICLE BROUGHT TO WORKSHOP</b>
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NEXT

<b>2</b>	<b>CUSTOMER PROBLEM ANALYSIS</b>
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NEXT

<b>3</b>	<b>CHECK AND CLEAR DTCs</b>
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NEXT

<b>4</b>	<b>PROBLEM SYMPTOM CONFIRMATION</b>
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▶	<b>SYMPTOM DOES NOT OCCUR (Go to step 5)</b>
▶	<b>SYMPTOM OCCURS (Go to step 6)</b>

<b>5</b>	<b>SYMPTOM SIMULATION</b>
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NEXT

<b>6</b>	<b>CHECK MULTIPLEX COMMUNICATION SYSTEM</b>
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HINT:  
Check that there are no problems in the multiplex communication system before troubleshooting the steering lock system.

NEXT

<b>7</b>	<b>DTC CHECK</b>
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▶	<b>DTC@IS NOT OUTPUT (Go to step 8)</b>
▶	<b>DTC IS OUTPUT (Go to step 9)</b>

**8** | **PROBLEM SYMPTOMS TABLE**



**Go to step 10**

**9** | **DTC CHART**

**NEXT**

**10** | **CIRCUIT INSPECTION**

**NEXT**

**11** | **PROBLEM IDENTIFICATION**

**NEXT**

**12** | **REPAIR OR REPLACEMENT**

**NEXT**

**13** | **CONFIRMATION TEST**

**NEXT**

**END**

## PROBLEM SYMPTOMS TABLE

### STEERING LOCK FUNCTION

Inspect the suspected areas in numerical order by referring to the corresponding pages when any of the following symptoms occurs.

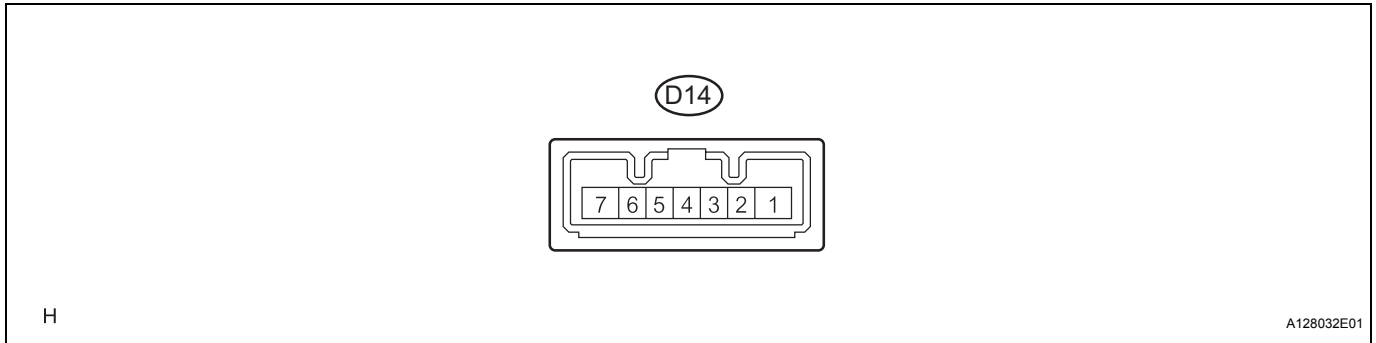
Symptom	Suspected area	See page
Steering wheel cannot be unlocked (the engine cannot be started).	1. Check for DTCs in the push button start.	ST-22
	2. Check for DTCs in the smart key system.	DL-170
	3. Check that the "LCK/UNLCK REC" item in the DATA LIST of the certification ECU displays YES within 10 seconds after starting the engine. (If it displays NO, see "No steering unlock command" in this table.)	SR-14
	4. Check the output from the IGE terminal of the steering lock ECU.	SR-11
	5. Steering lock ECU power source circuit	SR-29
	6. Replace the steering lock ECU.	SR-11
Steering wheel cannot be unlocked (no steering unlock command).	1. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	SR-14
	2. Check that the "L CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	SR-14
	3. Replace the certification ECU.	-
Steering wheel cannot be locked.	1. Check for DTCs in the push button start.	ST-22
	2. Check for DTCs in the smart key system.	DL-170
	3. With the engine switch OFF and the shift in the P position, open and close the drivers door. After that, check that the "LCK/UNLCK REC" item in the DATA LIST of the certification ECU displays YES within 10 seconds. (If it displays NO, see "No steering lock command" in this table.)	SR-14
	4. Check the output from the IGE terminal of the steering lock ECU.	SR-11
	5. Steering lock ECU power source circuit	SR-29
	6. Replace the steering lock ECU.	-
Steering wheel cannot be locked (no steering lock command).	1. Courtesy light switch circuit	LI-65
	2. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	SR-14
	3. Check that the "L CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	SR-14
	4. Replace the certification ECU.	-

**PUSH BUTTON START FUNCTION**

Symptom	Suspected area	See page
Engine does not start.	1. Check for DTCs in the push button start.	ST-22
	2. Check for DTCs in the smart key system.	DL-170
	3. Check that the engine switch is turned on.	-
	4. Check cranking operation. (If cranking operation is possible, see "Engine does not start due to the engine immobilizer" in this table.)	-
	5. Check "SHIFT P SIG" in the DATA LIST of the power source control ECU and confirm that the shift signal is normal.	ST-22
	6. Check whether the steering wheel is locked or unlocked. (If it is locked, see "Steering wheel cannot be unlocked" in the steering lock function table.)	-
	7. Check the output from the SLP terminal of the steering lock ECU.	SR-14
	8. Check the output signal from the ST SW of the certification ECU (DTC B2275).	ST-38
	9. Replace the power source control ECU.	-
Engine does not start due to the engine immobilizer.	1. Check that the "L CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the steering lock ECU or ID code box.)	ST-22
	2. Check that the "ENG START REQ" item in the DATA LIST of the certification ECU displays YES. (If it displays NO, replace the certification ECU.)	ST-22
	3. Check that the "S CODE MACH" item in the DATA LIST of the certification ECU displays OK. (If it displays NG, replace the certification ECU or ID code box.)	ST-22
	4. Replace the ID code box.	-

## TERMINALS OF ECU

### 1. STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)



H

A128032E01

Terminal No. (Symbols)	Wiring color	Terminal description	Condition	Specified condition
D14-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 V
D14-2 (SGND) - Body ground	W-B - Body ground	Signal ground	Always	Below 1 V
D14-3 (IGE) - D14-1 (GND)	BR - W-B	Power source for motor drive	<ul style="list-style-type: none"> <li>Motor is in operation</li> <li>Motor is not in operation</li> </ul>	<ul style="list-style-type: none"> <li>Below 1 V</li> <li>10 to 12 V</li> </ul>
D14-4 (SLP1) - D14-2 (SGND)	GR - W-B	Unlock position sensor output signal	<ul style="list-style-type: none"> <li>When steering is locked</li> <li>When steering lock is released</li> </ul>	<ul style="list-style-type: none"> <li>10 to 14 V</li> <li>Below 1 V</li> </ul>
D14-5 (LIN) - D14-2 (SGND)	R - W-B	LIN communication bus	Engine switch on (IG)	Pulse generation
D14-6 (IG2) - D14-1 (GND)	V - W-B	IG signal input	Engine switch on (IG)	10 to 14 V
D14-7 (B) - D14-1 (GND)	B - W-B	Power source	Always	10 to 14 V

## DIAGNOSIS SYSTEM

### 1. DESCRIPTION

#### (a) DIAGNOSTIC SYSTEM

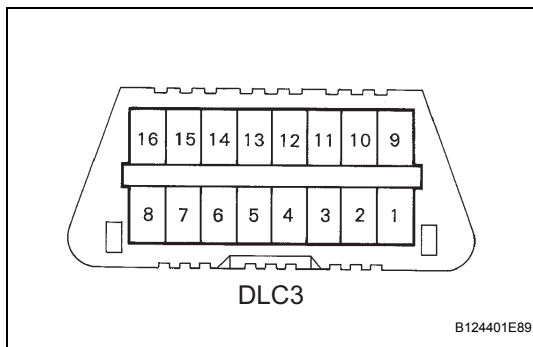
When troubleshooting a vehicle with a diagnostic system, the only difference from the usual troubleshooting procedure is connecting the intelligent tester to the vehicle and reading various data output from the vehicle's steering lock ECU. The steering lock ECU records DTCs when the computer detects a malfunction in the computer itself or in its circuits.

To check the DTCs, connect the intelligent tester to the DLC3 on the vehicle. The intelligent tester enables clearing the DTCs, activating indicators and checking the data list.

#### (b) The diagnosis information of the steering lock ECU is transmitted to the tester via the certification ECU as the steering lock ECU is not connected to the BEAN.

#### (c) Check the DLC3.

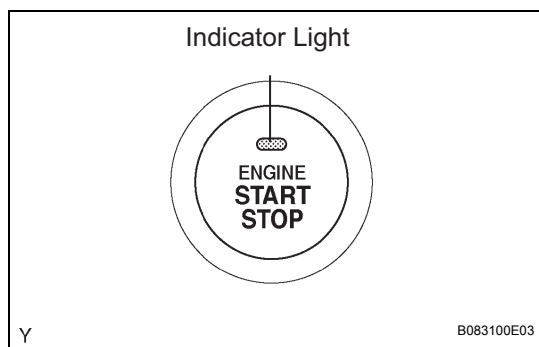
The certification ECU follows the ISO 9141-2 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



Symbols (Terminals No.)	Terminal Description	Condition	Specified Condition
SIL(7) - SG(5)	Bus "+" line	During communication	Pulse generation
CG(4) - Body ground	Chassis ground	Always	Below 1 $\Omega$
SG(5) - Body ground	Signal ground	Always	Below 1 $\Omega$
BAT(16) - Body ground	Battery positive	Always	11 to 14 V

#### HINT:

- If the display shows a communication error message after connecting the intelligent tester cable to the DLC3 and turning the engine switch on (IG), there is a problem with either the vehicle or tester.
- If communication is normal when connecting the tester to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when connecting the tester to another vehicle, the problem is probably on the tester itself, so consult the Service Department listed in the tester's operator's manual.



**2. WARNING FUNCTION OF ENGINE SWITCH INDICATOR**

- (a) The steering lock ECU blinks the LED indicator of the engine switch when any of the following problems occurs in the system.

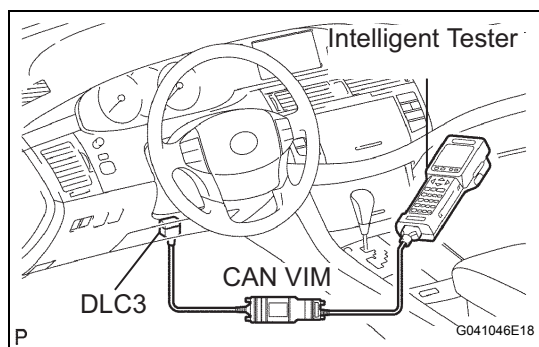
Detection item	Indicator light blink pattern	Indication status	Countermeasure
Steering lock is still not released	<ul style="list-style-type: none"> <li>• Blinks green at 1-second intervals</li> <li>• Goes off 15 seconds after blinking starts</li> </ul>	The motor operates to release the steering lock, but the steering lock cannot be released (e.g. the lock bar is stuck in the steering column).	Push the engine switch while turning the steering wheel left and right.
Malfunction in push button start function	<ul style="list-style-type: none"> <li>• Blinks amber at 2-second intervals</li> <li>• Goes off 15 seconds after the engine switch is turned off while blinking</li> </ul>	<ul style="list-style-type: none"> <li>• There is a short in the devices activating the motor.</li> <li>• There is a problem in the steering lock ECU or power source control ECU assembly.</li> </ul>	Troubleshoot by following "HOW TO PROCEED WITH TROUBLESHOOTING" (See page ST-4).

**3. WARNING FUNCTION OF COMBINATION METER**

- (a) The steering lock ECU displays a warning on the combination meter when any of the following problems occurs in the system.

Detection item	Display	Indication status	Countermeasure
Steering lock is still not released	"S/T is not Unlocked" Goes off 15 seconds after blinking starts	The motor operates to release the steering lock, but the steering lock cannot be released (e.g. the lock bar is stuck in the steering column).	Push the engine switch while turning the steering wheel left and right.
Malfunction in push button start function	"Check S/T Lock" Goes off 15 seconds after the engine switch is turned off while blinking	<ul style="list-style-type: none"> <li>• There is a short in the devices activating the motor.</li> <li>• There is a problem in the steering lock ECU or power source control ECU assembly.</li> </ul>	Troubleshoot by following "HOW TO PROCEED WITH TROUBLESHOOTING" (See page ST-4).

**DTC CHECK / CLEAR**



**1. CHECK FOR DTCs**

- (a) Prepare the intelligent tester.
- (b) Connect the intelligent tester to the DLC3 at the lower part of the instrument panel.
- (c) Turn the engine switch on (IG) and turn the intelligent tester on.
- (d) Use the intelligent tester to check for DTCs, and note or print the result (see the operator's manual for operating instructions).
- (e) Refer to DIAGNOSTIC TROUBLE CODE CHART to confirm the details of the DTCs (See page SR-15).

**2. CLEAR DTCs**

- (a) Operate the intelligent tester to clear the DTCs (see the operator's manual for operating instructions).



## DATA LIST / ACTIVE TEST

### 1. DATA LIST

#### HINT:

By accessing the DATA LIST displayed on the intelligent tester, you can perform such functions as reading the values of switches and sensors without removing any parts. Reading the DATA LIST is the first step of troubleshooting and is one method to shorten labor time.

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG) and turn the intelligent tester on.
- (c) Operate the intelligent tester according to the steps on the display and select "DATA LIST".

#### Certification ECU:

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
SENSOR VALUE	Sensor malfunction/NG (PAST) or OK	NG (PAST): Sensor malfunction OK: No malfunction	-
PWR SUPPLY SHORT	Short in ECU/NG (PAST) or OK	NG (PAST): Short in ECU OK: No malfunction	-
PWR SUPPLY OPEN	Open in ECU/NG (PAST) or OK	NG (PAST): Open in ECU OK: No malfunction	-
MTR DRIVER SHRT	Short in driver ECU/NG (PAST) or OK	NG (PAST): Short in driver ECU OK: No malfunction	-
MTR DRIVER OPEN	Open in driver ECU/NG (PAST) or OK	NG (PAST): Open in driver ECU OK: No malfunction	-
LCK/UNLCK REC	Steering lock command reception record/YES or NO	YES: Steering lock/unlock signal received NO: Steering lock/unlock signal not received	-
LCK BAR STUCK	Lock bar stuck malfunction/NG (PAST) or OK	NG (PAST): Lock bar stuck malfunction OK: No malfunction	-
PUSH START ERR	Push button start function malfunction/NG (PAST) or OK	NG (PAST): Malfunction in push button start OK: No malfunction	-
IG2 (LINER)	IG2 status/ON or OFF	ON: 10 to 14 V OFF: Below 1 V	-
IG (LIN)	LIN bus start-up status/ON or OFF	ON: LIN bus started-up OFF: LIN bus not started-up	-

### 2. ACTIVE TEST

#### HINT:

Performing the ACTIVE TEST in one of the methods to shorten labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG) and turn the intelligent tester on.
- (c) Following the display on the intelligent tester, perform the "ACTIVE TEST".

#### Certification ECU:

Item	Test Details	Diagnostic Note
SECURITY INDIC	Security Indicator/ON or OFF	-

## DIAGNOSTIC TROUBLE CODE CHART

If a trouble code is displayed during the DTC check, check the parts listed for that code in the table below and proceed to the appropriate page.

**HINT:**

The steering lock ECU does not store DTCs regarding the past problems.

DTC No.	Detection Item	Trouble Area	See page
B2781	Open / Short in Steering Lock ECU	Steering lock actuator assembly (Steering lock ECU)	<a href="#">SR-16</a>
B2782	Power ECU Malfunction	<ol style="list-style-type: none"> <li>1. Wire harness</li> <li>2. Steering lock actuator assembly (Steering lock ECU)</li> <li>3. Power source control ECU assembly</li> </ol>	<a href="#">SR-17</a>
B2788	IG2 Signal Malfunction	<ol style="list-style-type: none"> <li>1. IG2 relay</li> <li>2. Wire harness</li> <li>3. Power source control ECU assembly</li> <li>4. Steering lock actuator assembly (Steering lock ECU)</li> </ol>	<a href="#">SR-20</a>

<b>DTC</b>	<b>B2781</b>	<b>Open / Short in Steering Lock ECU</b>
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**DESCRIPTION**

If the steering lock ECU determines that there is a malfunction inside the ECU, it outputs this DTC. Diagnostic communication between the steering lock ECU and the intelligent is performed via the certification ECU as the steering lock ECU is not connected to the BEAN.

DTC No.	DTC Detecting Condition	Trouble Area
B2781	<ul style="list-style-type: none"> <li>• Steering lock motor drive circuit is defective.</li> <li>• Both lock and unlock position sensors detect "ON".</li> </ul>	Steering lock actuator assembly (Steering lock ECU)

**INSPECTION PROCEDURE**

<b>1</b>	<b>REPLACE STEERING LOCK ACTUATOR ASSEMBLY</b>
----------	--

**HINT:**

The steering lock ECU and steering lock actuator assembly supplied as a unit.

- (a) Replace the steering lock actuator assembly (See page [SR-41](#)).

**NEXT**

<b>RECONFIRM DTC</b>
----------------------

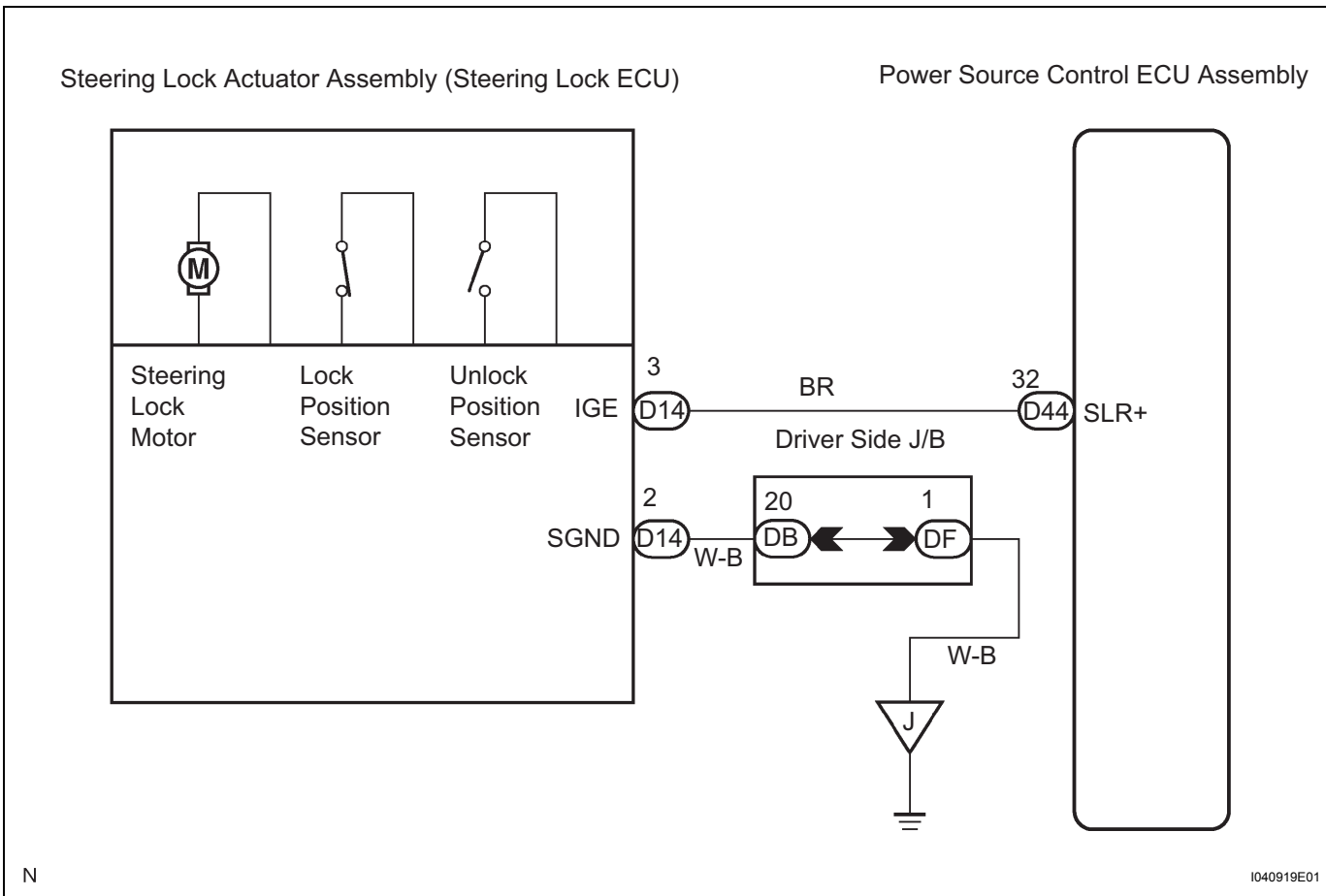
<b>DTC</b>	<b>B2782</b>	<b>Power Source Control ECU Malfunction</b>
------------	--------------	---

**DESCRIPTION**

The power source control ECU controls the power supply to activate the steering lock motor. This prevents the steering from being locked while the vehicle is moving.

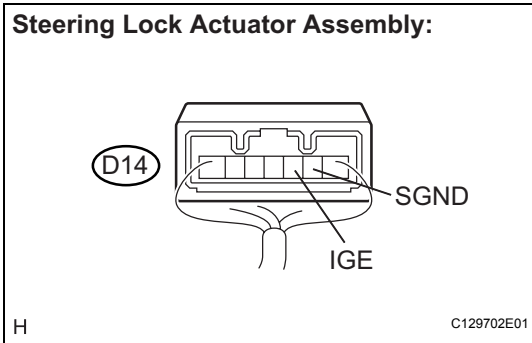
DTC No.	DTC Detecting Condition	Trouble Area
B2782	Steering lock motor drive control circuit is defective.	<ul style="list-style-type: none"> <li>Wire harness</li> <li>Steering lock actuator assembly (Steering lock ECU)</li> <li>Power source control ECU assembly</li> </ul>

**WIRING DIAGRAM**



**INSPECTION PROCEDURE**

**1 INSPECT STEERING LOCK ACTUATOR ASSEMBLY**



(a) Measure the voltage according to the value(s) in the table below.

**Voltage**

Tester connection (Symbols)	Condition	Specified condition
D14-3 (IGE) - D14-2 (SGND)	<ol style="list-style-type: none"> <li>1. Engine switch off</li> <li>2. Turn the engine switch on (ACC or IG)</li> </ol>	<ul style="list-style-type: none"> <li>• Motor active: Below 1 V</li> <li>• Motor not active: 10 to 12 V</li> </ul>
D14-3 (IGE) - D14-2 (SGND)	<ol style="list-style-type: none"> <li>1. Adjust the shift lever to the P position</li> <li>2. Turn the engine switch off</li> <li>3. Open the driver's door</li> </ol>	<ul style="list-style-type: none"> <li>• Motor active: Below 1 V</li> <li>• Motor not active: 10 to 12 V</li> </ul>

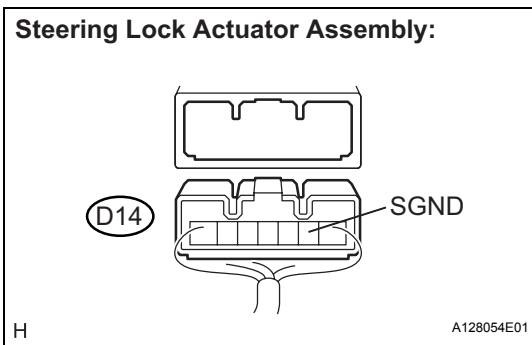
**HINT:**

The steering lock ECU and steering lock actuator assembly are supplied as a unit.

**OK** → **REPLACE STEERING LOCK ACTUATOR ASSEMBLY**

**NG**

**2 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND))**



(a) Disconnect the D14 connector from the steering lock actuator assembly.  
 (b) Measure the resistance according to the value(s) in the table below.

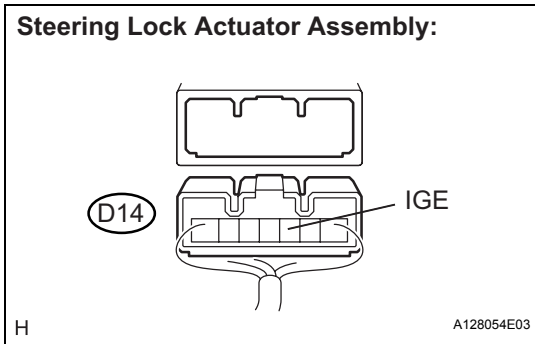
**Resistance**

Tester connection (Symbols)	Condition	Specified condition
D14-2 (SGND) - Body ground	Always	Below 1 Ω

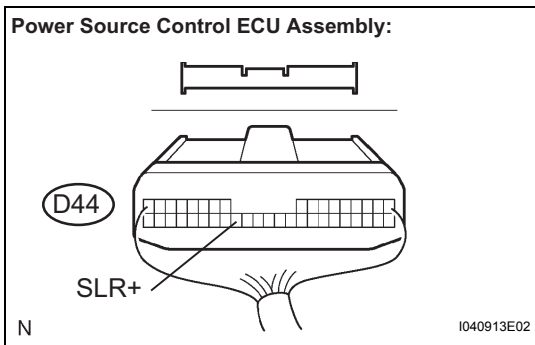
**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**3 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - POWER SOURCE CONTROL ECU)**



(a) Disconnect the D44 connector from the power source control ECU assembly.



(b) Measure the resistance according to the value(s) in the table below.

**Voltage**

Tester connection (Symbols)	Condition	Specified condition
D14-3 (IGE) - D44-32 (SLR+)	Always	Below 1 Ω
D14-3 (IGE) - Body ground	Always	10 kΩ or higher

**NG**

**REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

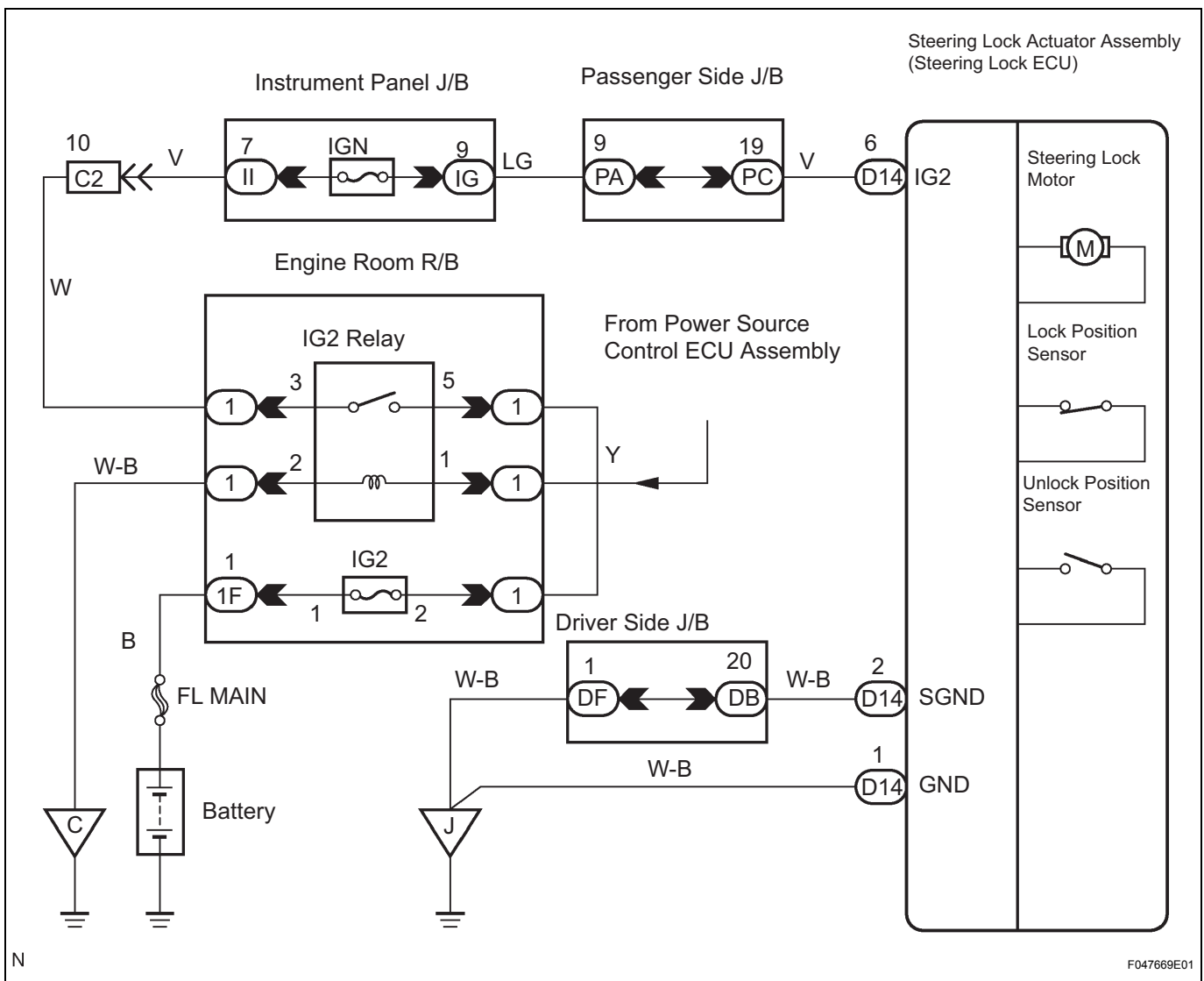
<b>DTC</b>	<b>B2788</b>	<b>IG2 Signal Malfunction</b>
------------	--------------	-------------------------------

**DESCRIPTION**

The steering lock ECU receives IG2 relay signals. Receiving the signals, the steering lock ECU determines that the vehicle is moving. The steering lock ECU does not lock the steering when it receives an IG2 relay ON signal (to prevent the steering from being locked while the vehicle is moving).

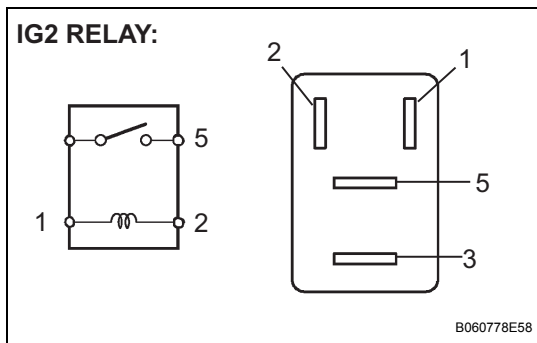
DTC No.	DTC Detecting Condition	Trouble Area
B2788	Different information is obtained from IG2 signals received directly from the IG2 circuit, and from IG2 signals sent via LIN communication for a period of 1 second.	<ul style="list-style-type: none"> <li>IG2 relay</li> <li>Wire harness</li> <li>Power source control ECU assembly</li> <li>Steering lock actuator assembly (Steering lock ECU)</li> </ul>

**WIRING DIAGRAM**



**INSPECTION PROCEDURE**

**1 INSPECT IG2 RELAY**



- (a) Remove the IG2 relay from the engine room R/B.
- (b) Measure the resistance according to the value(s) in the table below.

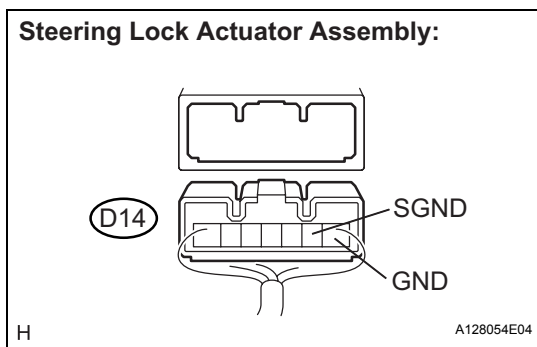
**Resistance**

Tester connection	Specified condition
3 - 5	10 kΩ or higher
3 - 5	Below 1 Ω (when battery voltage is applied to terminals 1 and 2)

**NG** → **REPLACE IG2 RELAY**

**OK**

**2 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND)**



- (a) Disconnect the D14 connector from the steering lock actuator assembly.
- (b) Measure the resistance according to the value(s) in the table below.

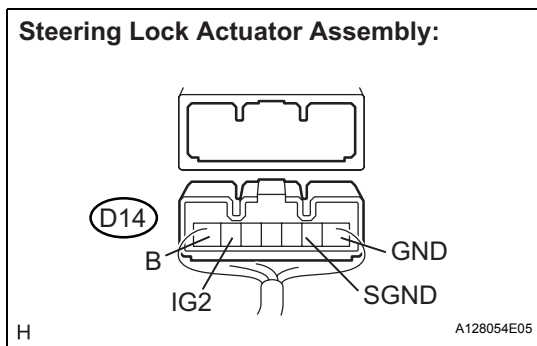
**Resistance**

Tester connection (Symbols)	Condition	Specified condition
D14-1 (GND) - Body ground	Always	Below 1 Ω
D14-2 (SGND) - Body ground	Always	Below 1 Ω

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**3 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BATTERY)**



- (a) Measure the voltage according to the value(s) in the table below.

**Voltage**

Tester connection (Symbols)	Condition	Specified condition
D14-6 (IG2) - D14-1 (GND)	Engine switch on (IG)	10 to 14 V
D14-6 (IG2) - D14-2 (SGND)	Engine switch on (IG)	10 to 14 V

- (b) Measure the resistance according to the value(s) in the table below.



**Resistance**

Tester connection (Symbols)	Condition	Specified condition
*D14-6 (IG2) - D14-7 (B)	Engine switch off	10 k $\Omega$ or higher

\*: This measurement is performed with the engine switch off to check for a battery voltage short in the IG2 circuit.

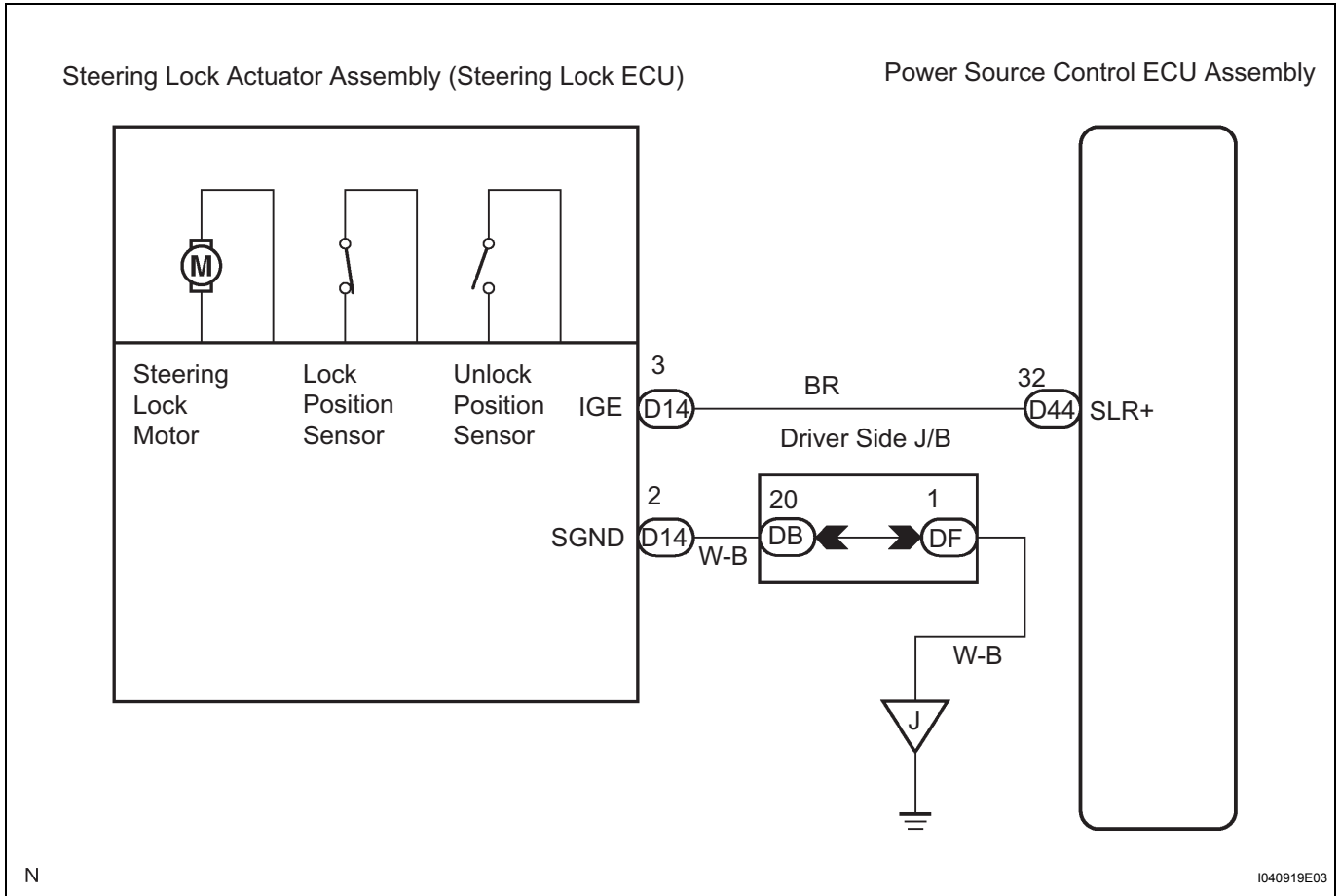
**OK****REPLACE STEERING LOCK ACTUATOR ASSEMBLY****NG****REPAIR OR REPLACE HARNESS OR CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BATTERY)**

# Steering Lock Motor Drive Power Circuit

## DESCRIPTION

The steering lock ECU is connected to the power source control ECU assembly and certification ECU. The steering lock ECU cannot activate the motor unless it obtains permission from both the ECUs. (The power source control ECU assembly permits the steering lock ECU to supply power to activate the motor.)

## WIRING DIAGRAM



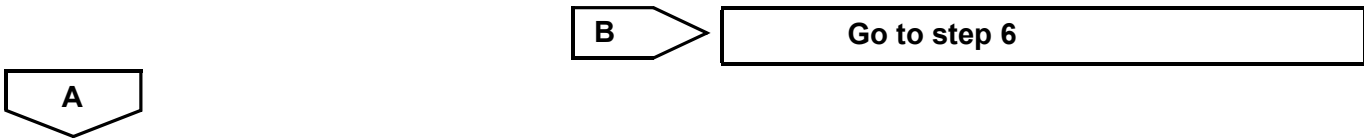
## INSPECTION PROCEDURE

<b>1</b>	<b>CHECK CONDITION</b>
----------	------------------------

(a) Check the problem symptom of the steering lock system.

### Result

Condition	Proceed to
Steering lock cannot be released	<b>A</b>
Steering cannot be locked	<b>B</b>



**SR**

**2 READ VALUE OF INTELLIGENT TESTER**

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the engine switch on (IG), and turn the intelligent tester on.
- (c) Select the item below in the Data List, and read its value displayed on the intelligent tester.

**Certification ECU:**

Item	Measurement Item / Range (Display)	Normal Condition
LCK / UNLCK REC	Steering lock command reception record / YES or NO	YES: Steering lock / unlock signal received NO: Steering lock / unlock signal no received

- (d) Check if steering unlock command reception is confirmed.

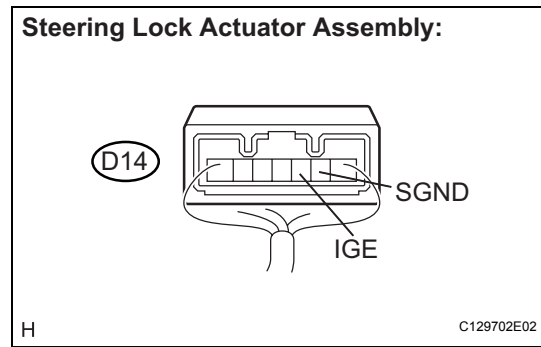
**OK:**

**"YES" is displayed on the tester display.**

**NG** → **CHECK SMART KEY SYSTEM**

**OK**

**3 INSPECT STEERING LOCK ACTUATOR ASSEMBLY**



- (a) Measure the voltage according to the value(s) in the table below.

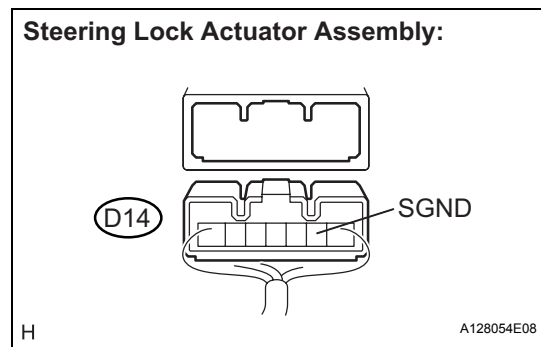
**Voltage**

Tester Connection (Symbols)	Condition	Specified Condition
D14-3 (IGE) - D14-2 (SGND)	1. Engine switch off 2. Turn the engine switch on (ACC or IG)	<ul style="list-style-type: none"> <li>• Motor active: Below 1 V</li> <li>• Motor not active: 10 to 12 V</li> </ul>

**OK** → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

**NG**

**4 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND)**



- (a) Disconnect the D14 connector from the steering lock actuator assembly.
- (b) Measure the resistance according to the value(s) in the table below.

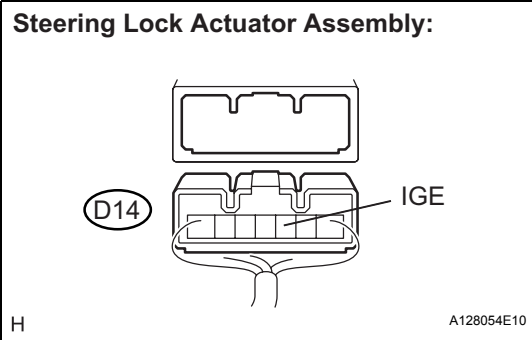
**Resistance**

Tester Connection (Symbols)	Condition	Specified Condition
D14-2 (SGND) - Body ground	Always	Below 1 Ω

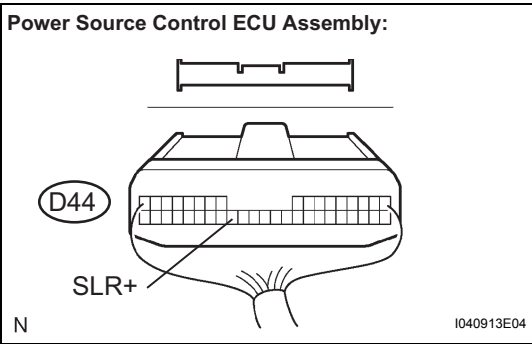
**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

**5 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - POWER SOURCE CONTROL ECU)**



(a) Disconnect the D44 connector from the power source control ECU assembly.



(b) Measure the resistance according to the value(s) in the table below.

**Resistance**

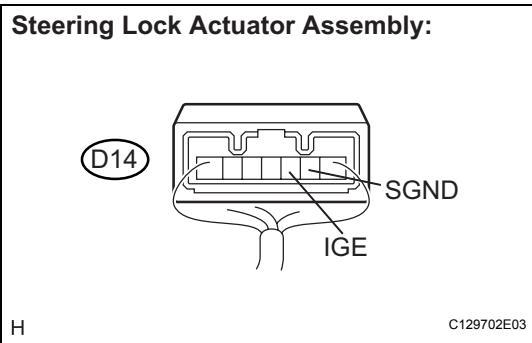
Tester Connection (Symbols)	Condition	Specified Condition
D14-3 (IGE) - D44-32 (SLR+)	Always	Below 1 Ω
D14-3 (IGE) - Body ground	Always	10 kΩ or higher

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

**REPLACE POWER SOURCE CONTROL ECU ASSEMBLY**

**6 INSPECT STEERING LOCK ACTUATOR ASSEMBLY**



(a) Measure the voltage according to the value(s) in the table below.

**Voltage**

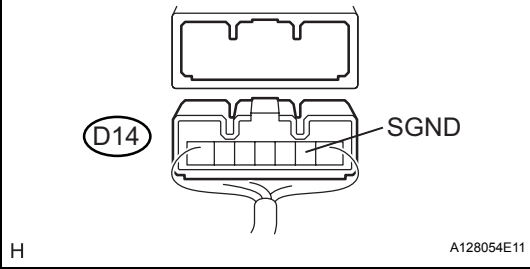
Tester Connection (Symbols)	Condition	Specified Condition
D14-3 (IGE) - D14-2 (SGND)	<ol style="list-style-type: none"> <li>Adjust the shift lever to the P position</li> <li>Turn the engine switch off</li> <li>Open the driver side door</li> </ol>	<ul style="list-style-type: none"> <li>Motor active: Below 1 V</li> <li>Motor not active: 10 to 12 V</li> </ul>

OK PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

NG

**7 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND)**

Steering Lock Actuator Assembly:



- (a) Disconnect the D14 connector from the steering lock actuator assembly.
- (b) Measure the resistance according to the value(s) in the table below.

**Resistance**

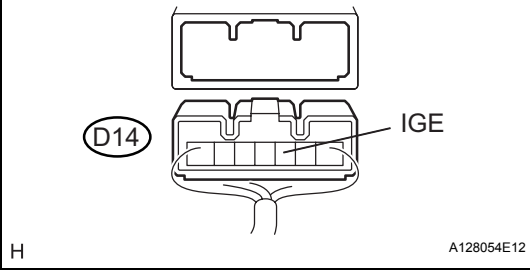
Tester Connection (Symbols)	Condition	Specified Condition
D14-2 (SGND) - Body ground	Always	Below 1 Ω

**NG** REPAIR OR REPLACE HARNESS OR CONNECTOR

**OK**

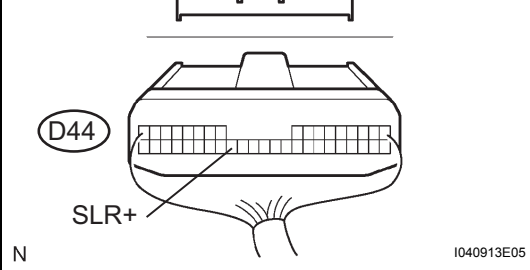
**8 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - POWER SOURCE CONTROL ECU)**

Steering Lock Actuator Assembly:



- (a) Disconnect the D44 connector from the power source control ECU assembly.

Power Source Control ECU Assembly:



- (b) Measure the resistance according to the value(s) in the table below.

**Resistance**

Tester Connection (Symbols)	Condition	Specified Condition
D14-3 (IGE) - D44-32 (SLR+)	Always	Below 1 Ω
D14-3 (IGE) - Body ground	Always	10 kΩ or higher

**NG** REPAIR OR REPLACE HARNESS OR CONNECTOR

**SR**

**OK**

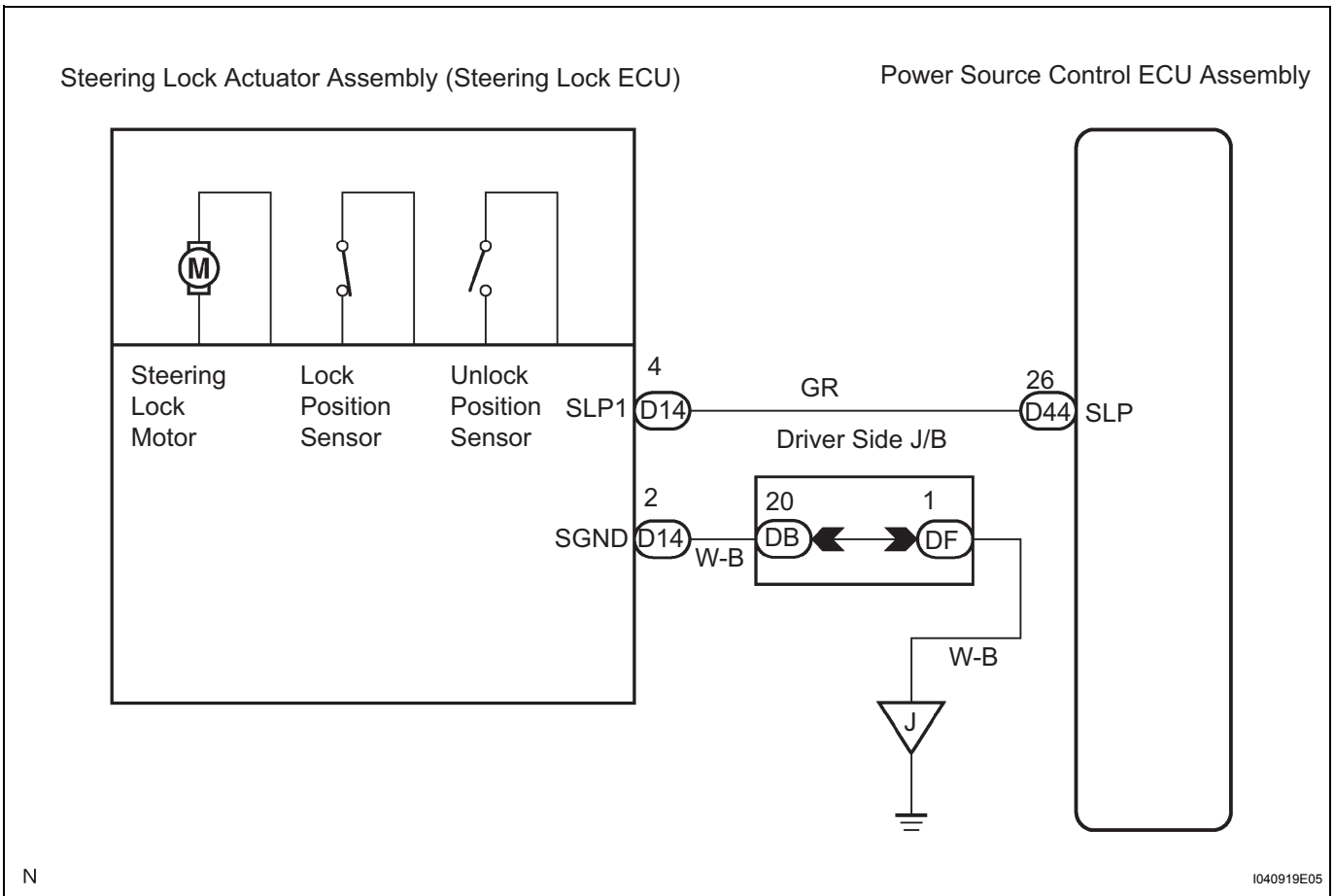
**REPLACE POWER SOURCE CONTROL ECU ASSEMBLY**

# Unlock Position Sensor Signal Circuit

## DESCRIPTION

The unlock position sensor is one of the components comprising the steering lock actuator. The sensor switch contact closes when the steering lock is released. The steering lock release signal is then sent to the power source control ECU assembly. Receiving the signal, the ECU permits engine start. (This prevents the engine from being started with the steering locked.)

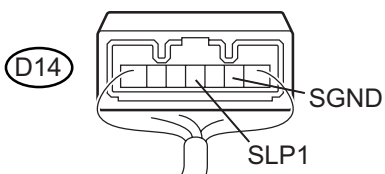
## WIRING DIAGRAM



## INSPECTION PROCEDURE

### 1 INSPECT STEERING LOCK ACTUATOR ASSEMBLY

Steering Lock Actuator Assembly:



(a) Measure the voltage according to the value(s) in the table below.

#### Voltage

Tester Connection (Symbols)	Condition	Specified Condition
D14-4 (SLP1) - D14-2 (SGND)	1. Engine switch off 2. Turn the engine switch on (ACC or IG)	Below 1 V

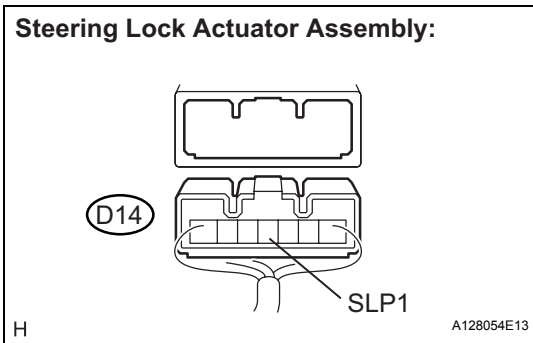
OK

CHECK PUSH BUTTON START SYSTEM

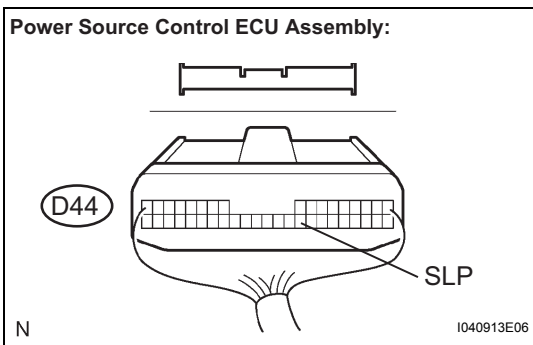
SR

NG

**2 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - POWER SOURCE CONTROL ECU)**



(a) Disconnect the D14 connector from the steering lock actuator assembly.



(b) Disconnect the D44 connector from the power source control ECU.

(c) Measure the resistance according to the value(s) in the table below.

**Resistance**

Tester Connection (Symbols)	Condition	Specified Condition
D14-4 (SLP1) - D44-26 (SLP)	Always	Below 1 Ω
D14-4 (SLP1) - Body ground	Always	10 kΩ or higher

NG

**REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

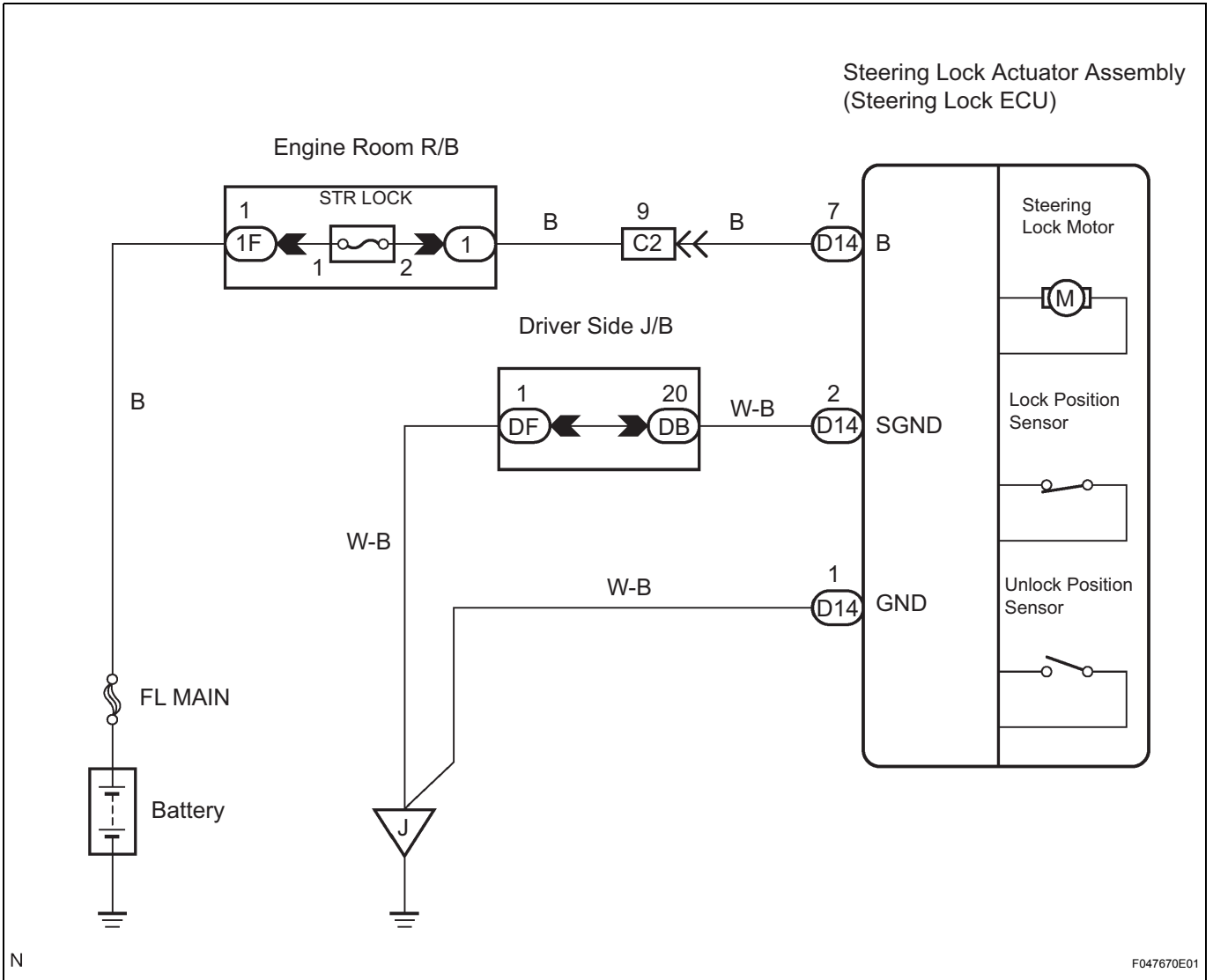
**REPLACE STEERING LOCK ACTUATOR ASSEMBLY**

**Power Source Circuit**

**DESCRIPTION**

This circuit supplies power source voltage from the battery to terminal B of the steering lock ECU. This is used as power source for the CPU, motor, communication, and peripheral circuits.

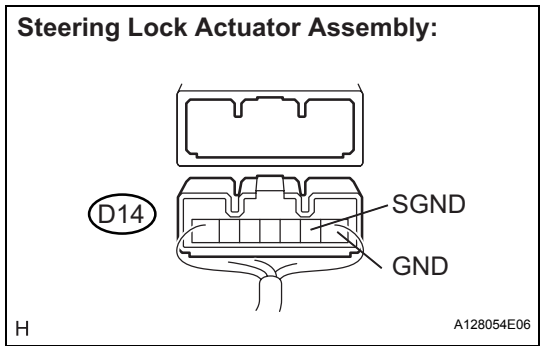
**WIRING DIAGRAM**





**INSPECTION PROCEDURE**

**1 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND)**



- (a) Disconnect the D14 connector from the steering lock actuator assembly.
- (b) Measure the resistance according to the value(s) in the table below.

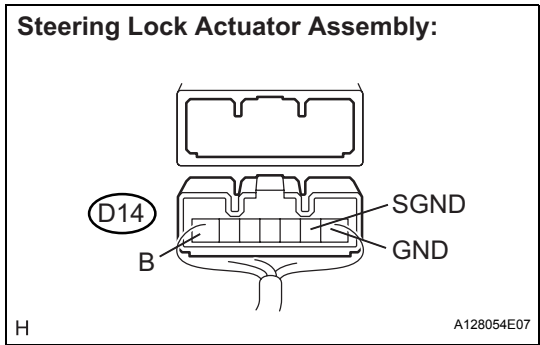
**Resistance**

Tester connection (Symbols)	Condition	Specified condition
D14-1 (GND) - Body ground	Always	Below 1 Ω
D14-2 (SGND) - Body ground	Always	Below 1 Ω

**NG** → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

**OK**

**2 CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BATTERY)**



- (a) Measure the voltage according to the value(s) in the table below.

**Voltage**

Tester connection (Symbols)	Condition	Specified condition
D14-7 (B) - D14-1 (GND)	Always	10 to 14 V
D14-7 (B) - D14-2 (SGND)	Always	10 to 14 V

**OK** → **PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE**

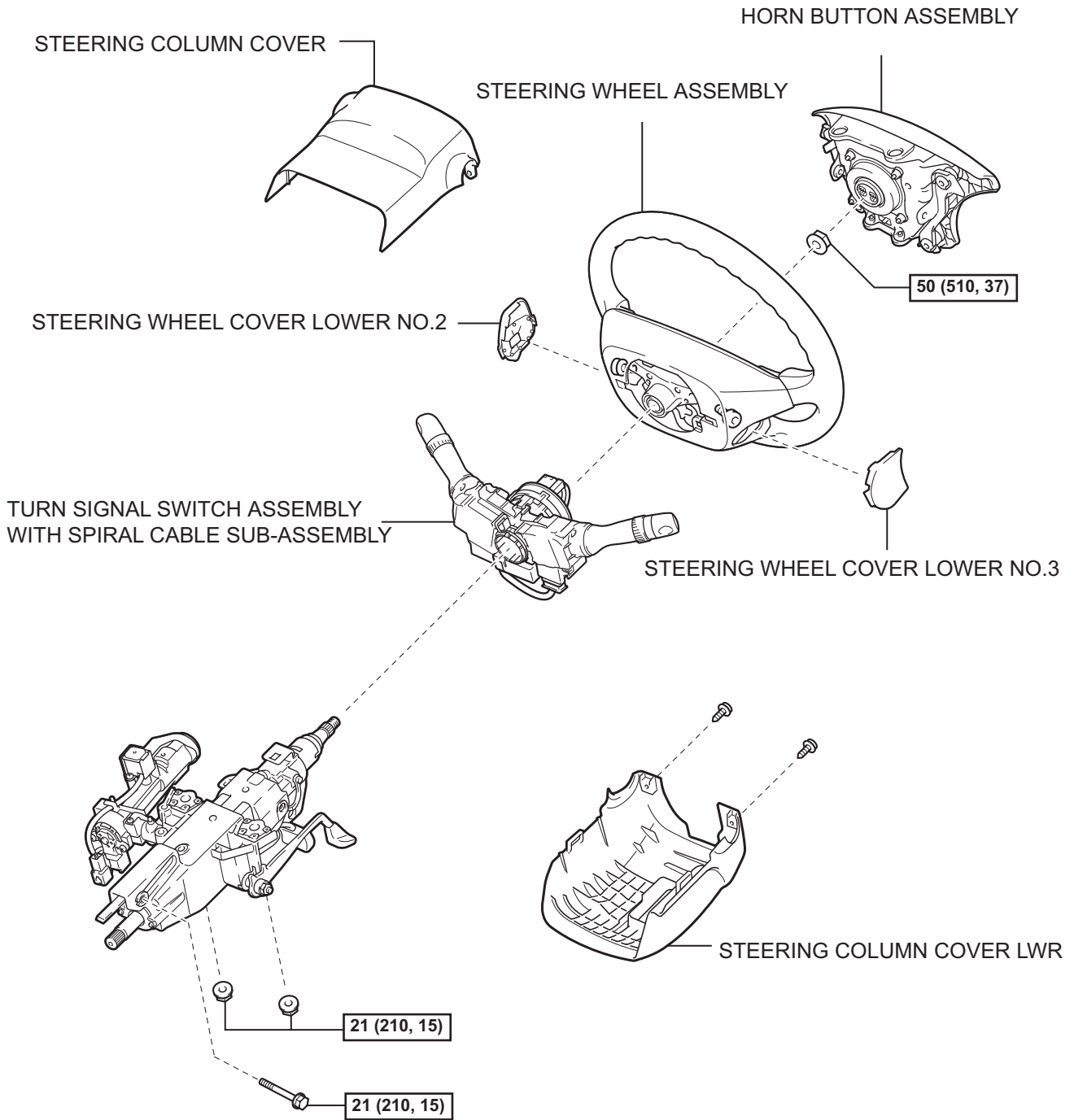
**NG**

**REPAIR OR REPLACE HARNESS OR CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BATTERY)**

# STEERING COLUMN ASSEMBLY

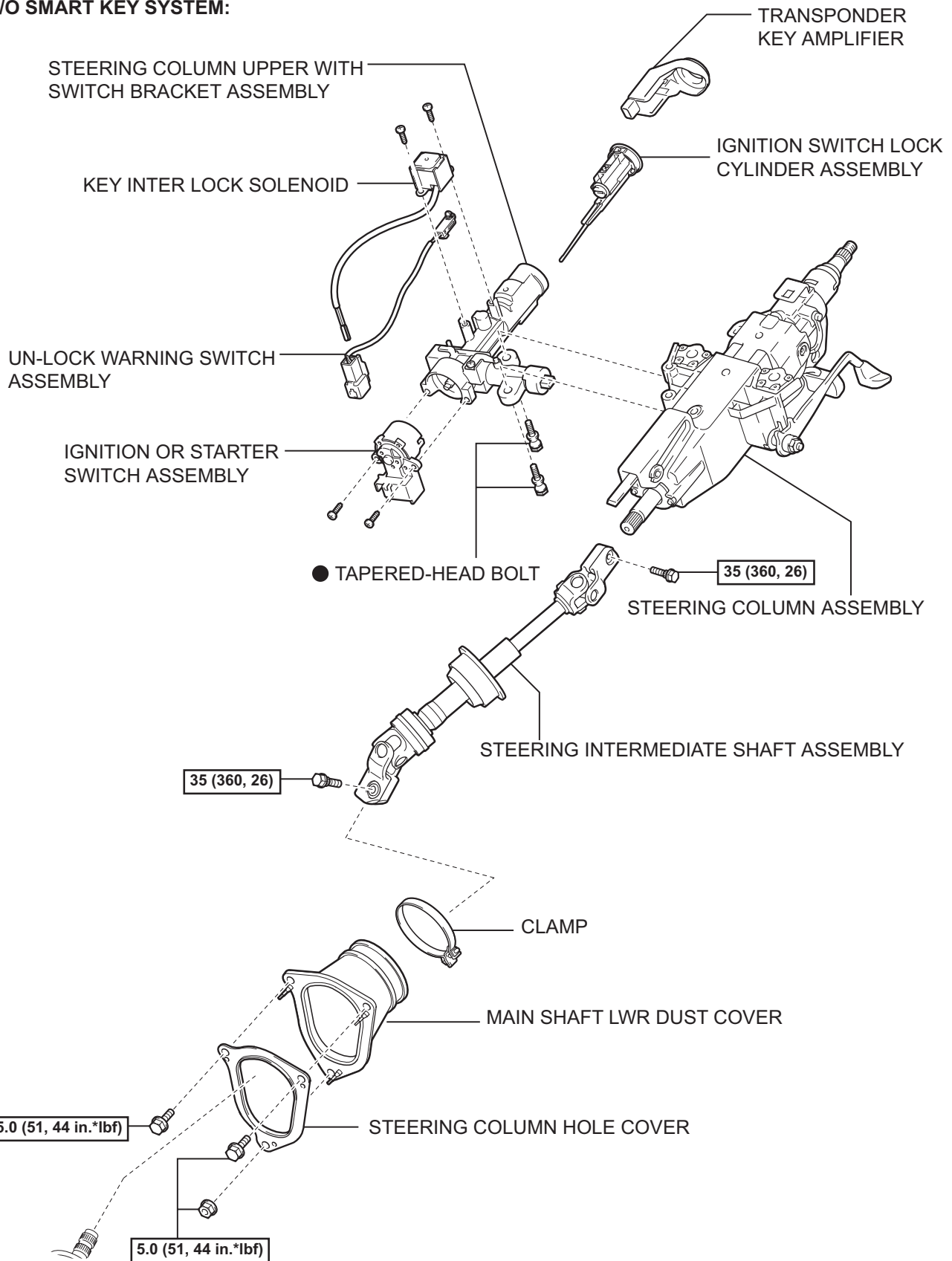
## COMPONENTS

WITHOUT SMART KEY SYSTEM:



**N\*m (kgf\*cm, ft.\*lbf)** : Specified torque

W/O SMART KEY SYSTEM:

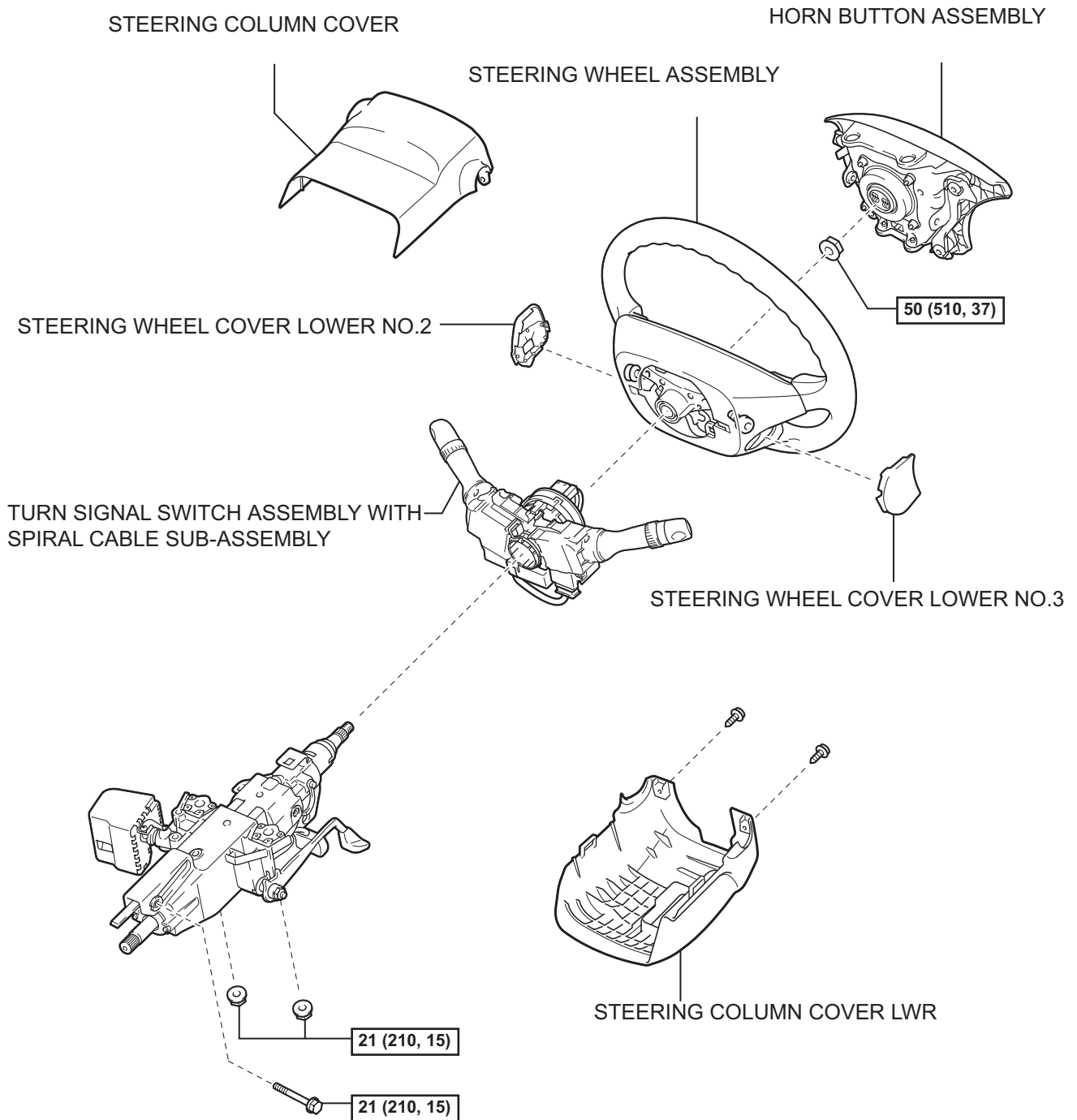


N\*m (kgf\*cm, ft.\*lbf) : Specified torque

● Non-reusable part

SR

W/ SMART KEY SYSTEM:

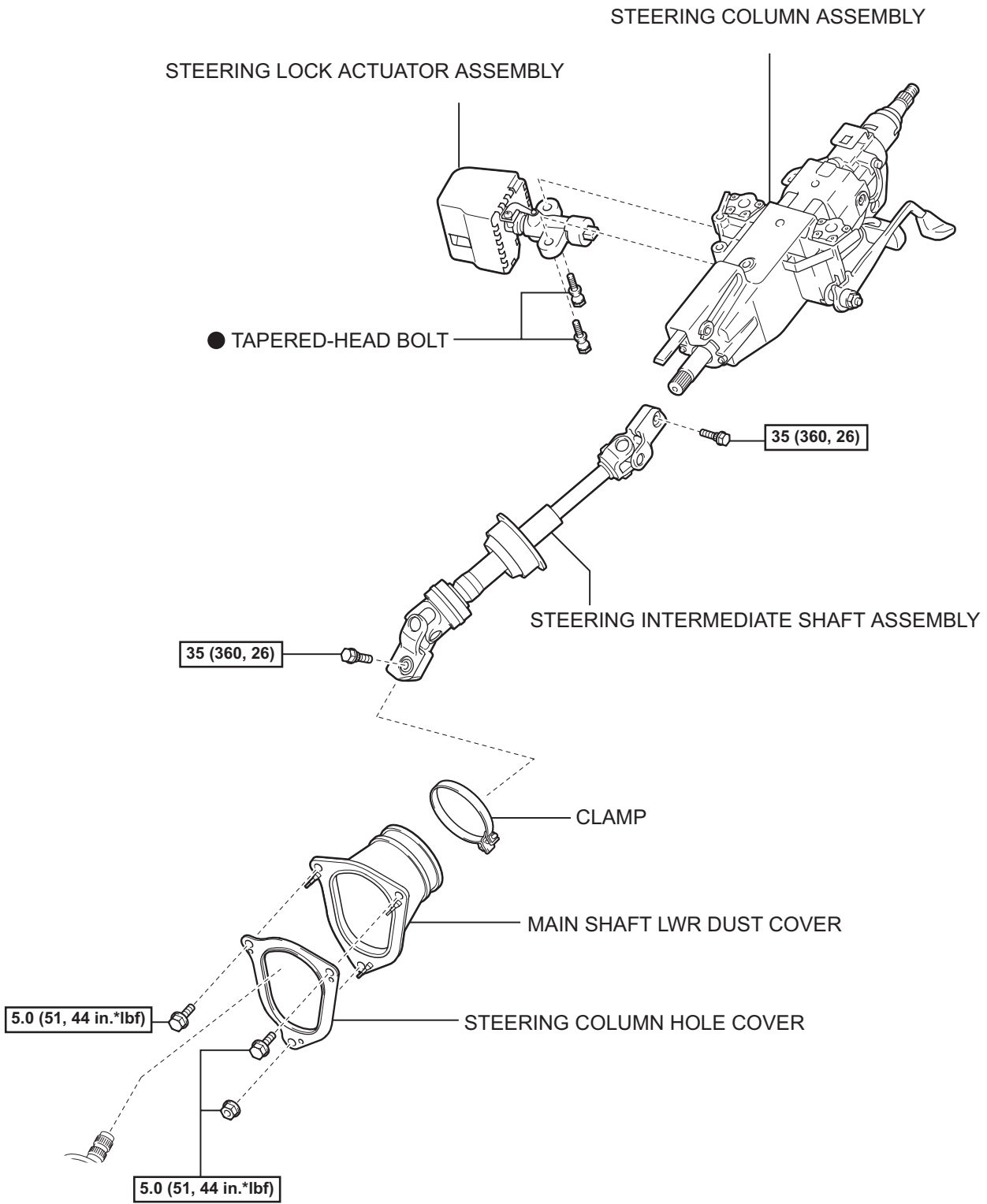


**N\*m (kgf\*cm, ft.\*lbf)** : Specified torque

P

SR

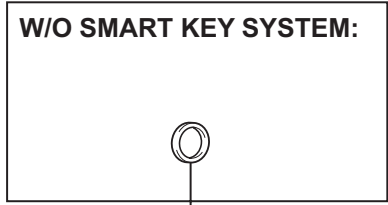
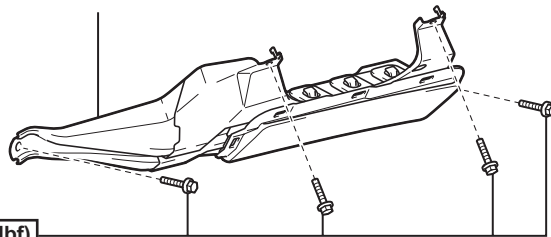
W/ SMART KEY SYSTEM:



**N\*m (kgf\*cm, ft.\*lbf)** : Specified torque      ● Non-reusable part

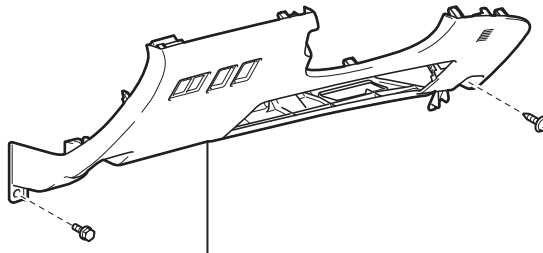
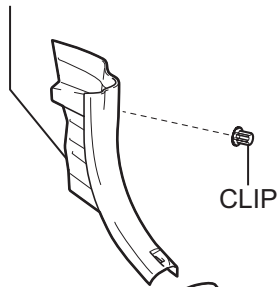
SR

INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1

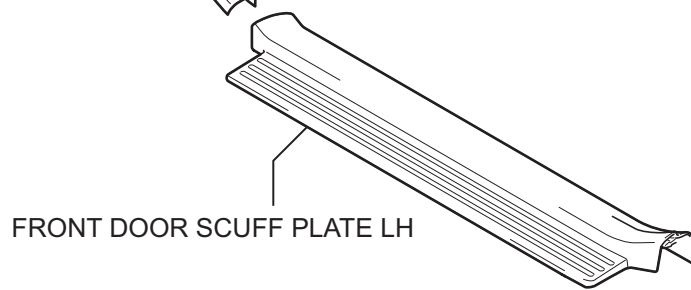


INSTRUMENT PANEL FINISH PLATE

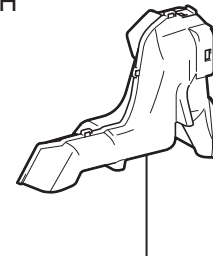
COWL SIDE TRIM SUB-ASSEMBLY LH



INSTRUMENT PANEL FINISH LOWER PANEL LH



FRONT DOOR SCUFF PLATE LH

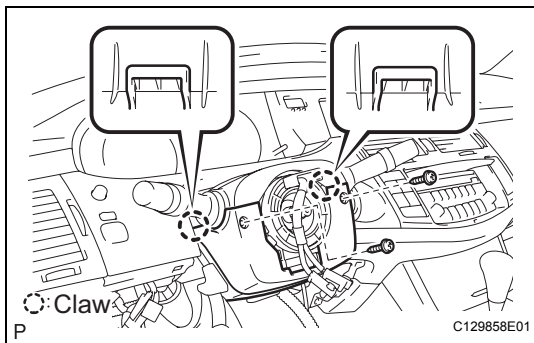
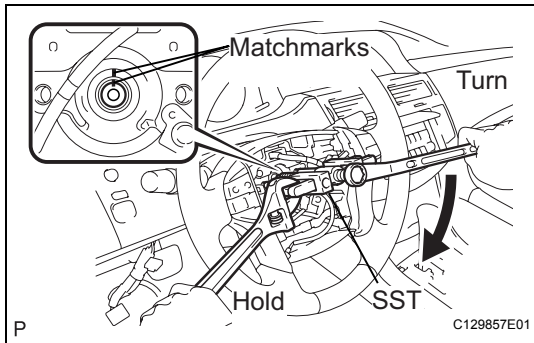


AIR DUCT SUB-ASSEMBLY NO.1

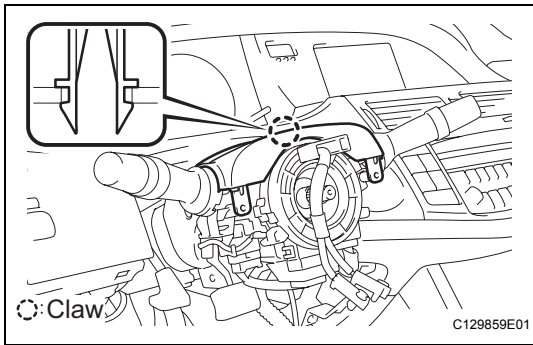
N\*m (kgf\*cm, ft.\*lbf) : Specified torque

## REMOVAL

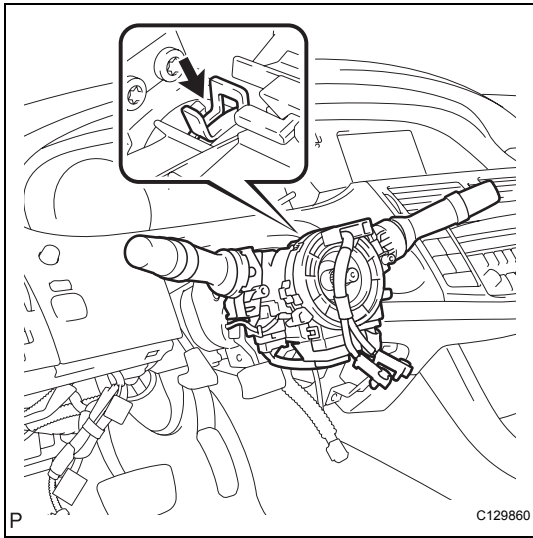
1. PRECAUTION
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL
3. REMOVE FRONT DOOR SCUFF PLATE LH
4. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH
5. REMOVE INSTRUMENT PANEL FINISH LOWER PANEL LH
6. REMOVE INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1  
HINT:  
(See page RS-328)
7. REMOVE STEERING WHEEL COVER LOWER NO.2  
(See page RS-304)
8. REMOVE STEERING WHEEL COVER LOWER NO.3  
(See page RS-304)
9. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
10. REMOVE HORN BUTTON ASSEMBLY (See page RS-304)
11. REMOVE STEERING WHEEL ASSEMBLY
  - (a) Remove the steering wheel assembly set nut.
  - (b) Put matchmarks on the steering wheel assembly and main shaft assembly.
  - (c) Using SST, remove the steering wheel assembly.  
**SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)**



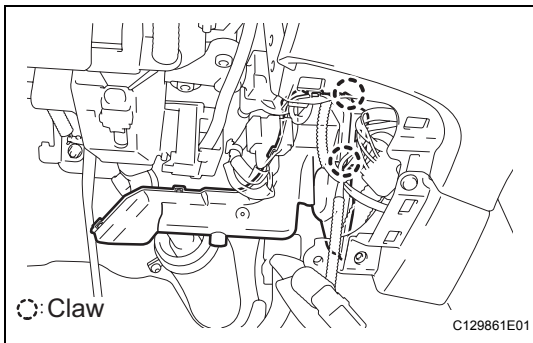
12. REMOVE STEERING COLUMN COVER LWR
  - (a) Remove the 2 screws.
  - (b) Disengage the 2 claws to remove the steering column cover LWR.

**13. REMOVE STEERING COLUMN COVER**

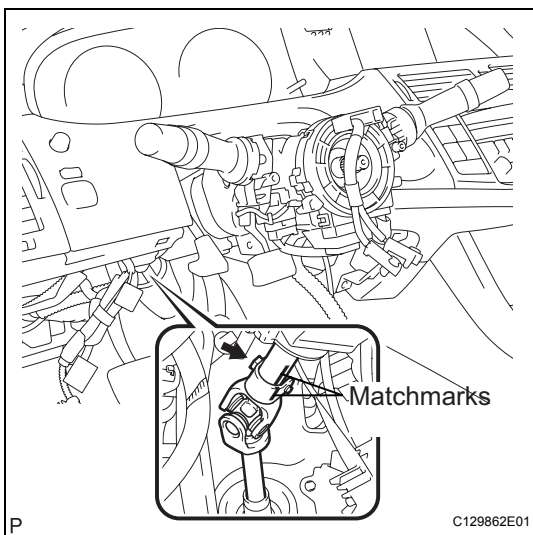
- (a) Disengage the claw and remove the steering column cover.

**14. REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY**

- (a) Disconnect the connectors from the turn signal switch assembly w/ spiral cable sub-assembly .
- (b) Remove the clamp and the turn signal switch assembly w/ spiral cable sub-assembly from the steering column assembly.

**15. REMOVE AIR DUCT SUB-ASSEMBLY NO.1**

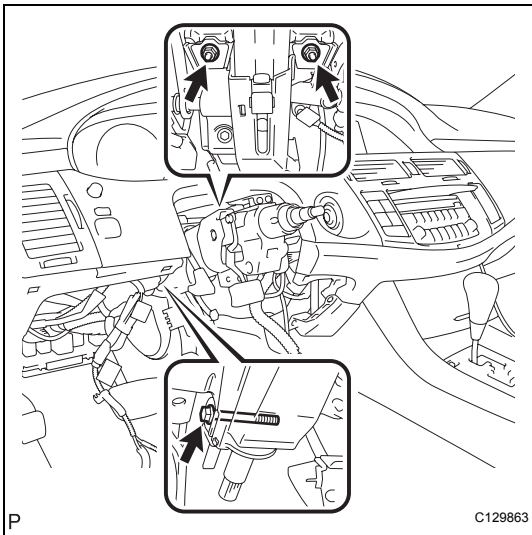
- (a) Disengage the 2 claws and remove the air duct sub-assembly No.1.

**16. SEPARATE STEERING INTERMEDIATE SHAFT ASSEMBLY**

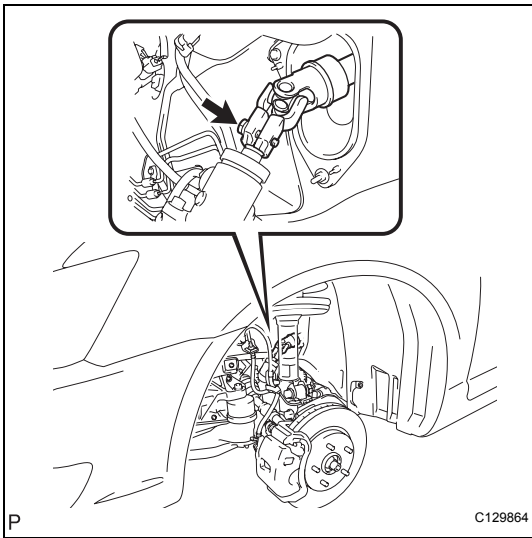
- (a) Put matchmarks on the steering intermediate shaft assembly and steering column assembly.
- (b) Remove the bolt and separate the steering intermediate shaft assembly from the steering column assembly.

**17. REMOVE INSTRUMENT PANEL FINISH PLATE**



**18. REMOVE STEERING COLUMN ASSEMBLY**

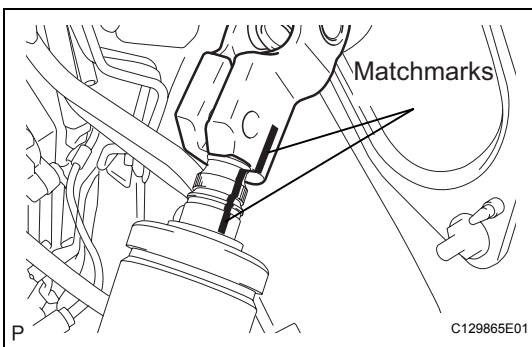
- (a) Disconnect the connectors and wire harness clamps from the steering column assembly.
- (b) Remove the bolt, 2 nuts and steering column assembly.

**19. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY**

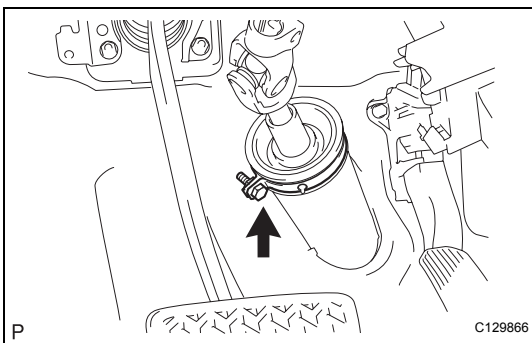
- (a) Remove the bolt, and then slide the steering intermediate shaft assembly No.2.

**NOTICE:**

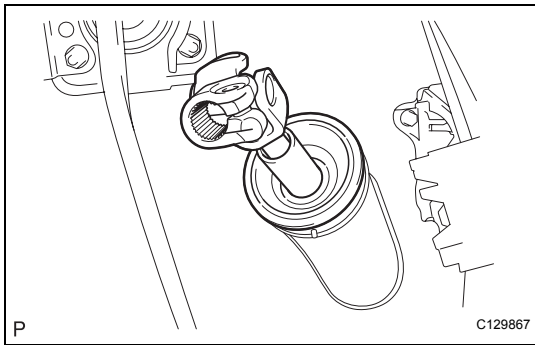
**Do not separate the steering intermediate shaft assembly.**



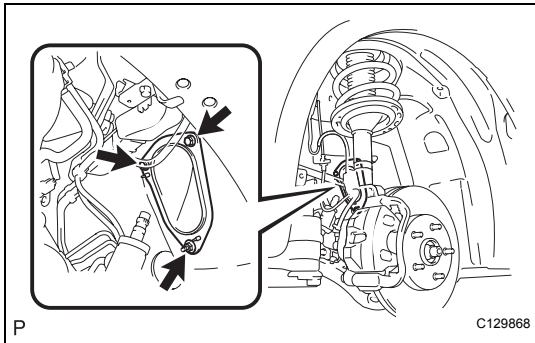
- (b) Put matchmarks on the steering intermediate shaft assembly and power steering gear assembly.
- (c) Separate the intermediate shaft assembly from the power steering gear assembly.



- (d) Remove the clamp from the steering column hole shield.

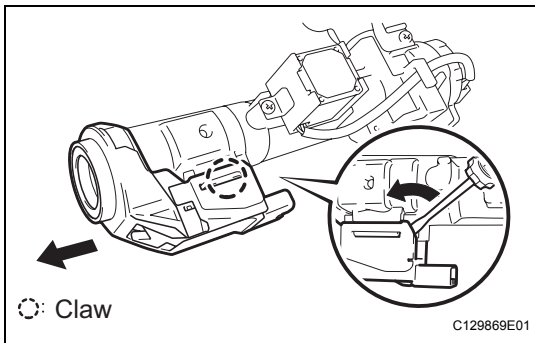


- (e) Remove the steering intermediate shaft assembly.



**20. REMOVE STEERING COLUMN HOLE COVER**

- (a) Remove the nut, 2 bolts and steering column hole cover sub-assembly.  
 (b) Remove the steering column hole cover.



**DISASSEMBLY**

**1. REMOVE TRANSPONDER KEY AMPLIFIER**

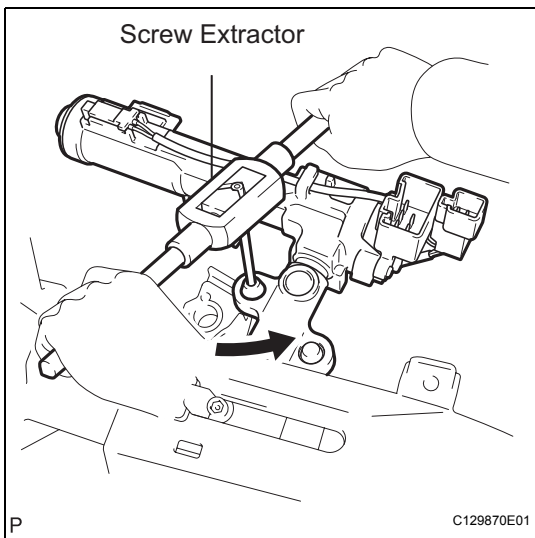
- (a) Widen the claws hanging onto the upper bracket by approximately 1.0 mm (0.039 in.) using a screwdriver.  
 (b) Pull out the transponder key amplifier with the claw open.

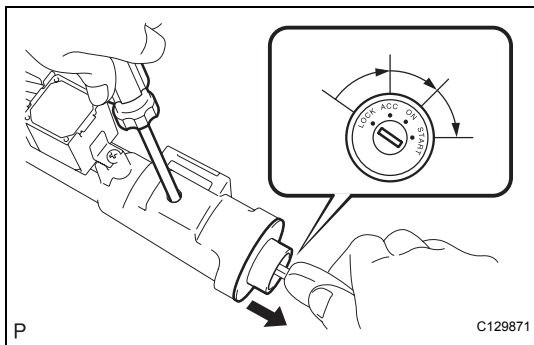
**NOTICE:**

**Using excessive force may damage the case.**

**2. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY**

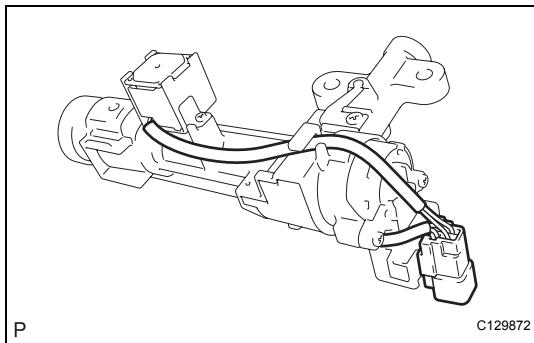
- (a) Using a center punch, mark the center of the 2 tapered-head bolts.  
 (b) Using a 3 to 4 mm (0.12 to 0.16 in.) drill, drill a hole in the 2 bolts.  
 (c) Using a screw extractor, remove the 2 bolts and steering column upper w/ switch bracket assembly from the steering column assembly.





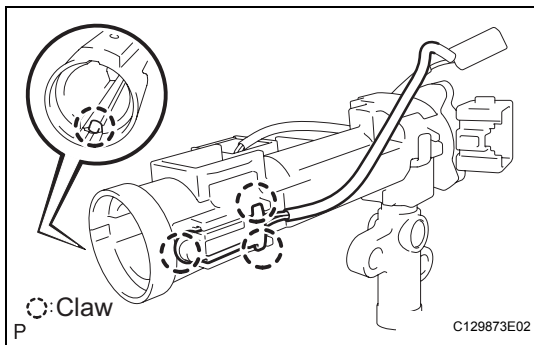
### 3. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- (a) Put the ignition switch lock cylinder assembly in the ACC position.
- (b) Push down the stop pin with a screwdriver, and pull out the ignition switch lock cylinder assembly.

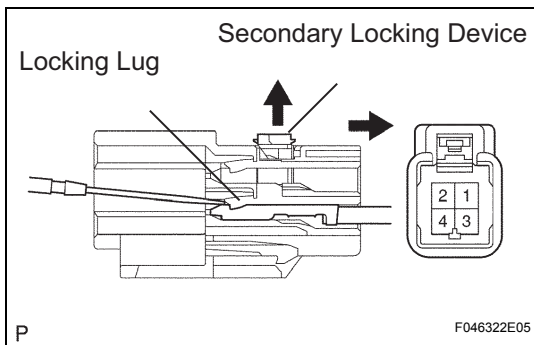


### 4. REMOVE UN-LOCK WARNING SWITCH ASSEMBLY

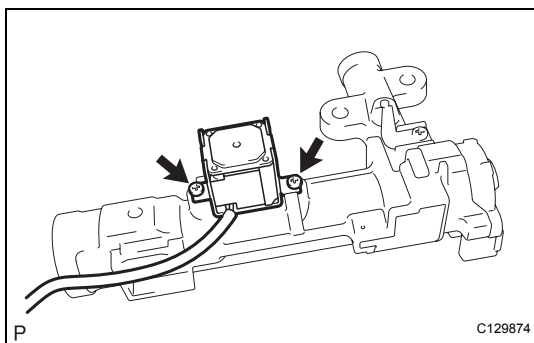
- (a) Separate the un-lock warning switch assembly connector from the ignition or starter switch assembly.



- (b) Remove the un-lock warning switch assembly by pushing up the claw of the center part and releasing the 2 claws.

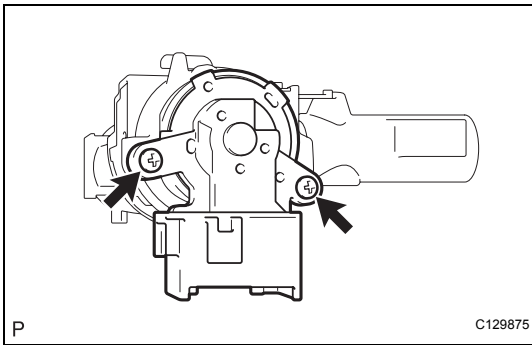


- (c) Disengage the secondary locking device.
- (d) Using a screwdriver, disengage the locking lug of terminals 3 and 4, and pull the terminals out from the rear side of the un-lock warning switch assembly connector.



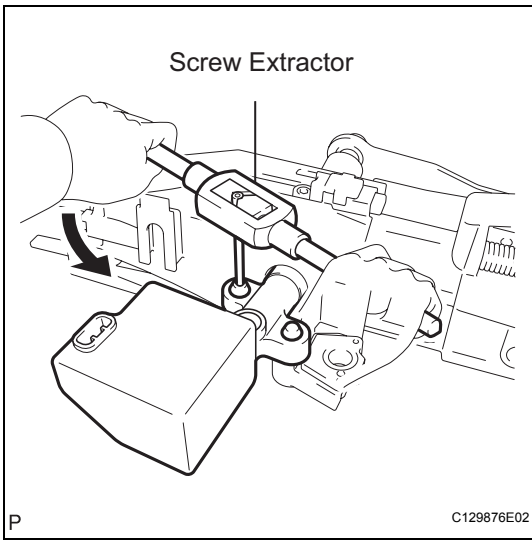
### 5. REMOVE KEY INTER LOCK SOLENOID

- (a) Remove the 2 screws and key inter lock solenoid from the steering column upper w/ switch bracket assembly.



## 6. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY

- (a) Remove the 2 screws and ignition or starter switch assembly from the steering column upper w/ switch bracket assembly.



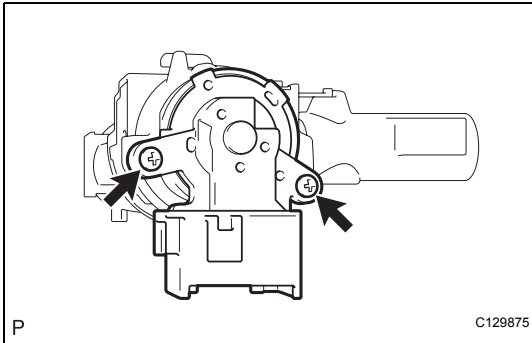
## 7. REMOVE STEERING LOCK ACTUATOR ASSEMBLY

- (a) Using a center punch, mark the center of the 2 tapered-head bolts.
- (b) Using a 3 to 4 mm (0.12 to 0.16 in.) drill, drill a hole in the 2 bolts.
- (c) Using a screw extractor, remove the 2 bolts and steering lock actuator assembly from the steering column assembly.

## REASSEMBLY

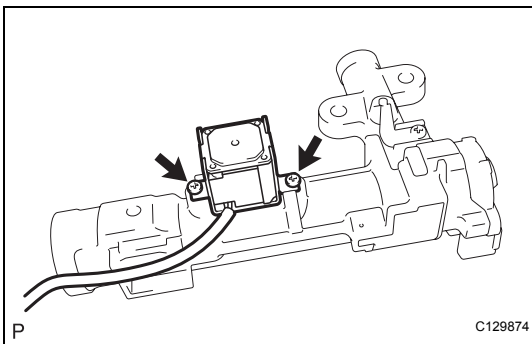
### 1. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY

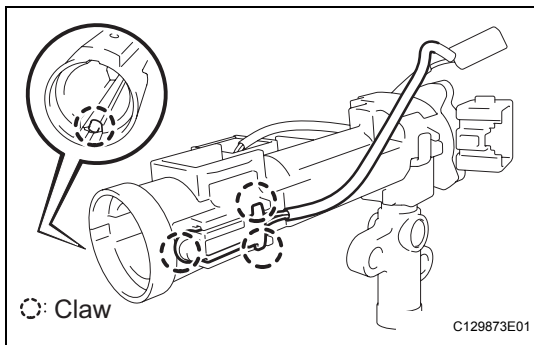
- (a) Install the ignition or starter switch assembly to the steering column upper w/ switch bracket assembly with the 2 screws.



### 2. INSTALL KEY INTER LOCK SOLENOID

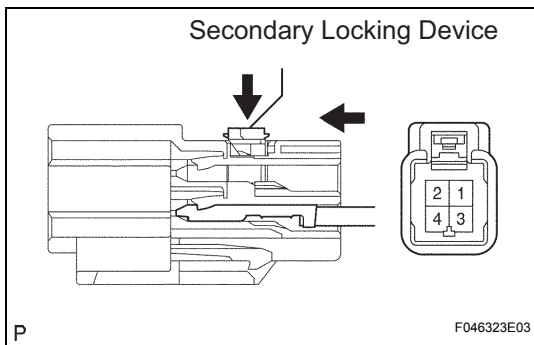
- (a) Install the key inter lock solenoid to the steering column upper w/ switch bracket assembly with the 2 screws.





### 3. INSTALL UN-LOCK WARNING SWITCH ASSEMBLY

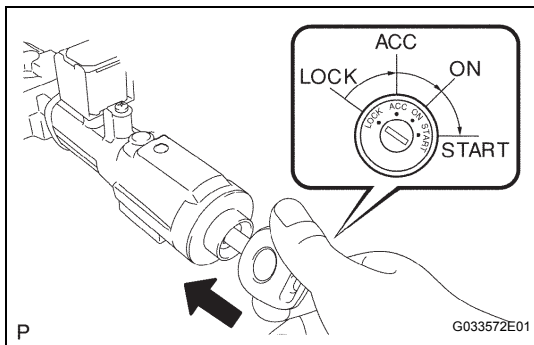
(a) Install the un-lock warning switch assembly.



(b) Connect terminals 3 and 4 of the un-lock warning switch assembly connector.

(c) Engage the secondary locking device.

(d) Connect the un-lock warning switch assembly connector to the ignition or starter switch assembly.

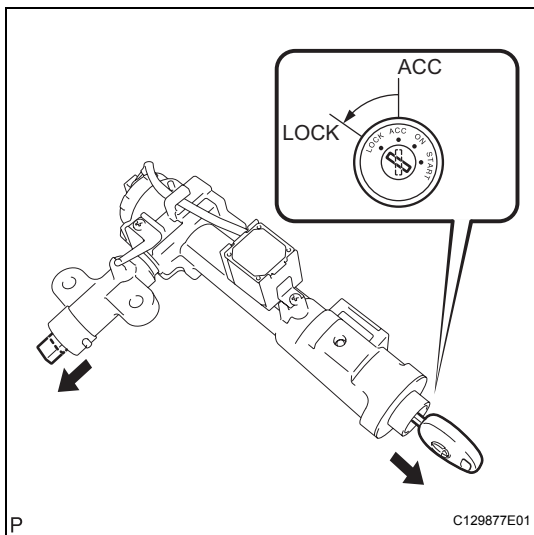


### 4. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY

(a) Make sure the ignition switch lock cylinder assembly is in the ACC position.

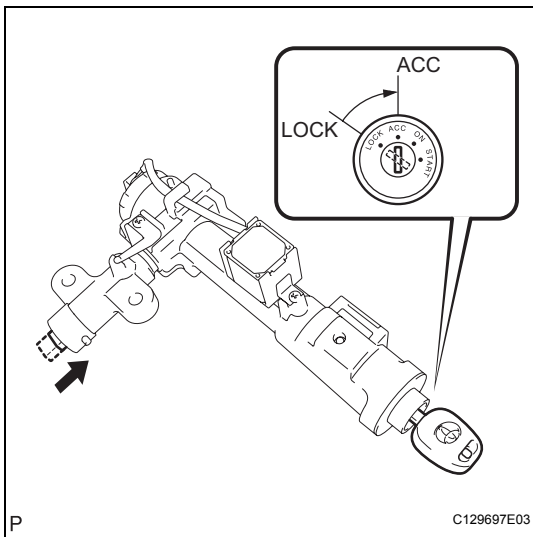
(b) Install the ignition switch lock cylinder assembly.

(c) Make sure that the ignition switch lock cylinder assembly is securely installed.



### 5. INSPECT STEERING LOCK OPERATION

(a) Check that the steering lock mechanism is activated when the key is removed.



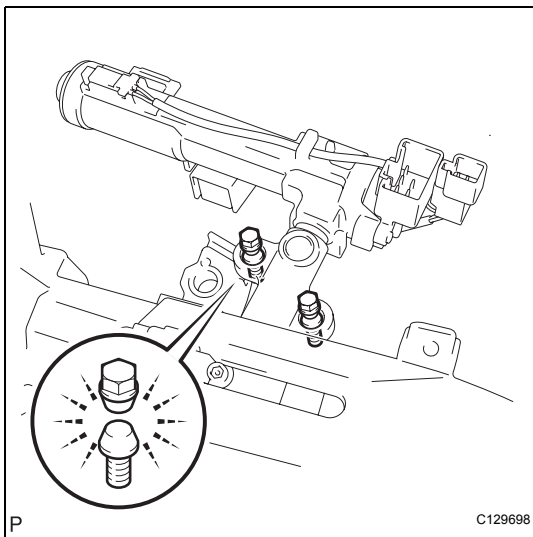
- (b) Check that the steering lock mechanism is deactivated when the key is inserted and turned to the ACC position.

HINT:

If there is any abnormality, replace the ignition switch lock cylinder assembly.

#### 6. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- (a) Temporarily install the steering column upper w/ switch bracket assembly with 2 new tapered-head bolts.
- (b) Tighten the 2 tapered-head bolts until the bolt heads break off.

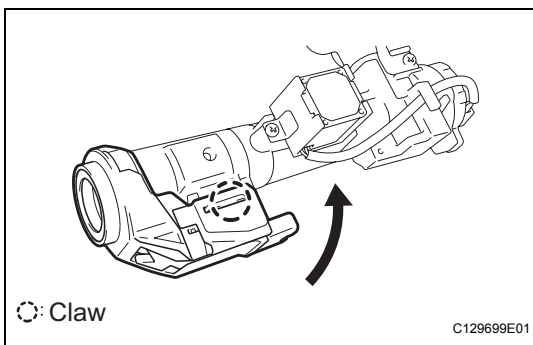


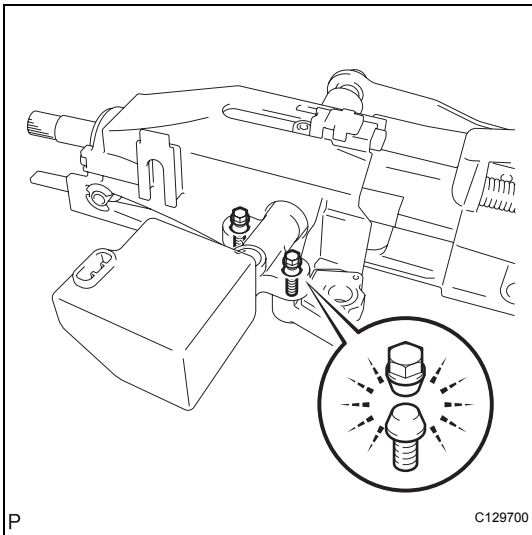
#### 7. INSTALL TRANSPONDER KEY AMPLIFIER

- (a) Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
- (b) Push the transponder key amplifier up and install it to the upper bracket.

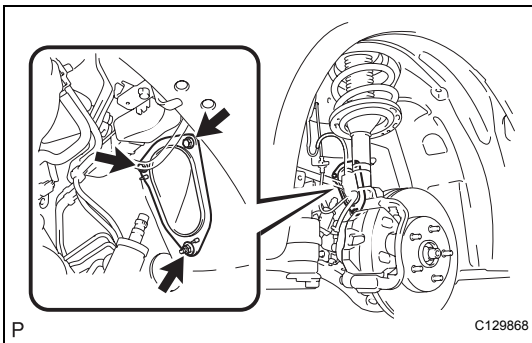
**NOTICE:**

**Do not push the amplifier up with excessive force.**



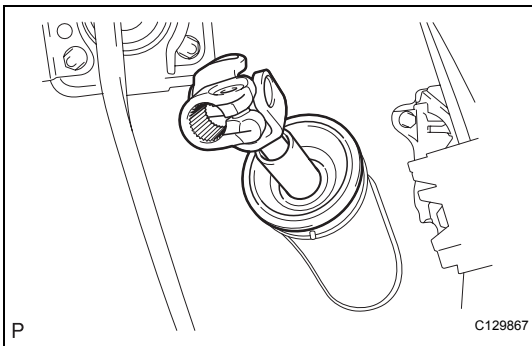


- 8. INSTALL STEERING LOCK ACTUATOR ASSEMBLY**
- Temporarily install the steering lock actuator assembly with 2 new tapered-head bolts.
  - Tighten the 2 tapered-head bolts until the bolt heads break off.

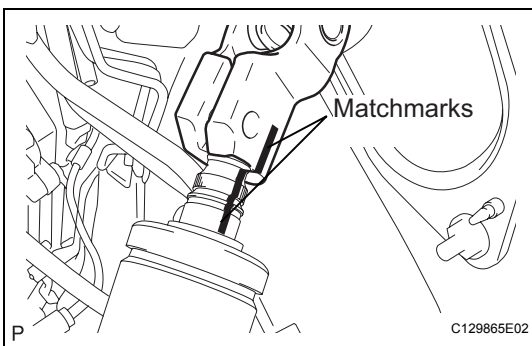


## INSTALLATION

- 1. INSTALL STEERING COLUMN HOLE COVER**
- Install the steering column hole cover to the main shaft LWR dust cover.
  - Install the steering column hole cover sub-assembly with the nut and 2 bolts.  
**Torque: 5.0 N\*m (51 kgf\*cm, 44 ft.\*lbf)**

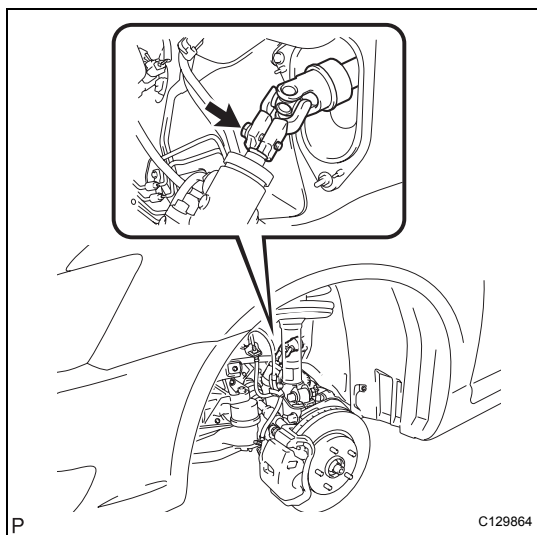


- 2. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY**
- Install the steering intermediate shaft assembly.

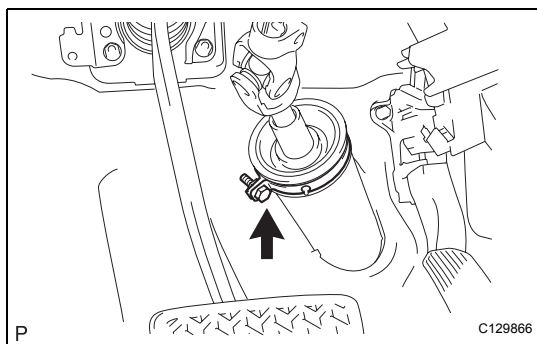


- Align the matchmarks on the steering intermediate shaft assembly and the power steering gear assembly.

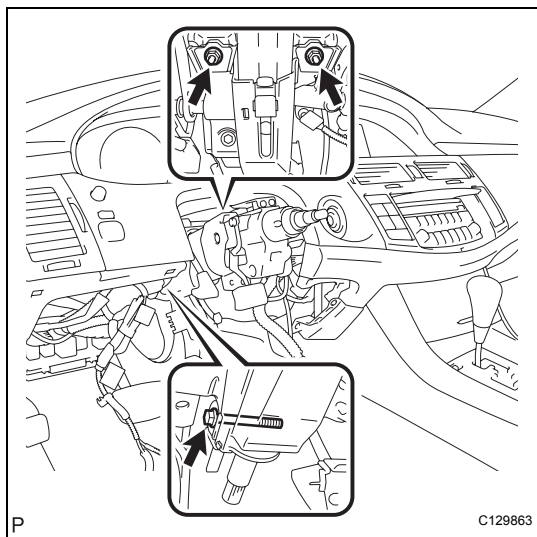




- (c) Install the bolt.  
**Torque: 35 N\*m (360 kgf\*cm, 26 ft.\*lbf)**



- (d) Install the clamp to the steering column hole shield with the bolt.

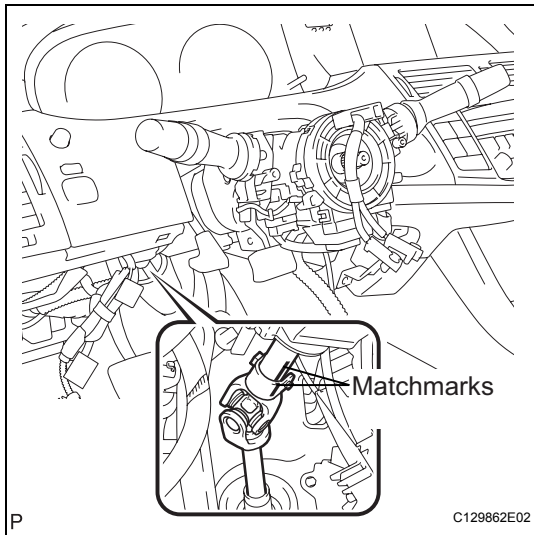


**3. INSTALL STEERING COLUMN ASSEMBLY**

- (a) Install the steering column assembly with the bolt and 2 nuts.  
**Torque: 21 N\*m (210 kgf\*cm, 15 ft.\*lbf)**
- (b) Connect the connectors.
- (c) Install the wire harness clamps to the steering column assembly.

**4. INSTALL INSTRUMENT PANEL FINISH PLATE**

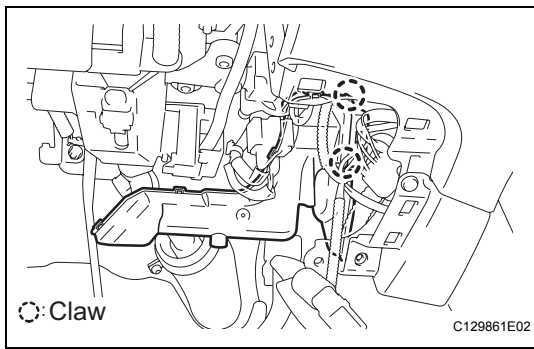




### 5. CONNECT STEERING INTERMEDIATE SHAFT ASSEMBLY

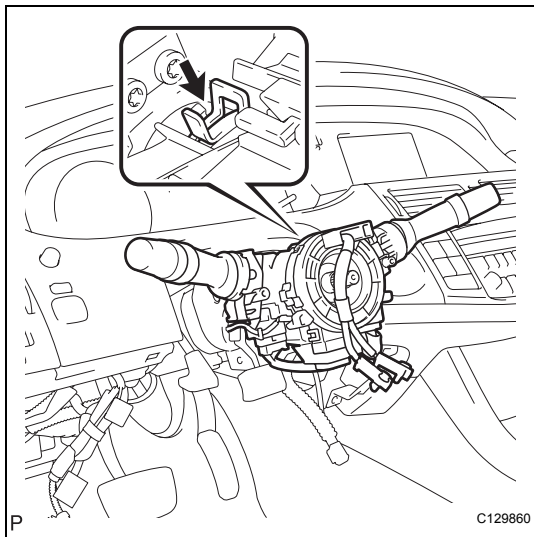
- (a) Align the matchmarks on the intermediate shaft assembly and the steering column assembly.
- (b) Install the bolt.

**Torque: 35.0 N\*m (360 kgf\*cm, 26 ft.\*lbf)**



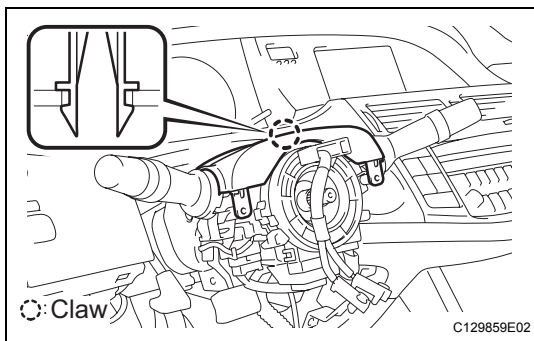
### 6. INSTALL AIR DUCT SUB-ASSEMBLY NO.1

- (a) Engage the 2 claws to install the air duct sub-assembly No.1.



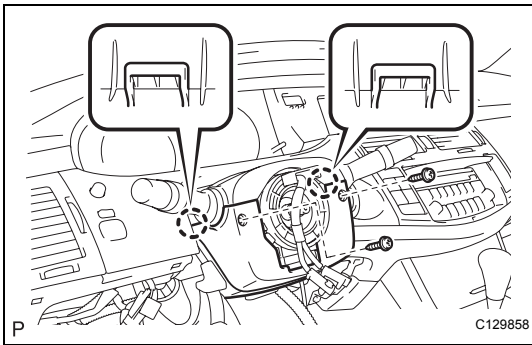
### 7. INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY

- (a) Install the turn signal switch assembly w/ spiral cable sub-assembly to the steering column assembly with the clamp.
- (b) Install the connectors to the turn signal switch assembly w/ spiral cable sub-assembly.



### 8. INSTALL STEERING COLUMN COVER

- (a) Engage the claw to install the steering column cover.



9. **INSTALL STEERING COLUMN COVER LWR**
  - (a) Install the steering column cover LWR with the 2 screws.
10. **PLACE FRONT WHEELS FACING STRAIGHT AHEAD**
11. **CHECK KEY INTERLOCK OPERATION**

HINT:  
If there is any abnormality, replace the key interlock solenoid.
12. **CENTER SPIRAL CABLE**
13. **INSTALL STEERING WHEEL ASSEMBLY**
  - (a) Align the matchmarks on the steering wheel assembly and the steering main shaft assembly.
  - (b) Install the steering wheel assembly with the set nut.  
**Torque: 50 N\*m (510 kgf\*cm, 37 ft.\*lbf)**
  - (c) Connect the connector.
14. **INSTALL HORN BUTTON ASSEMBLY (See page RS-305)**
15. **INSTALL STEERING WHEEL COVER LOWER NO.2 (See page RS-305)**
16. **INSTALL STEERING WHEEL COVER LOWER NO.3 (See page RS-305)**
17. **INSTALL INSTRUMENT PANEL AIR BAG ASSEMBLY LOWER NO.1 (See page RS-330)**
18. **INSTALL INSTRUMENT PANEL FINISH LOWER PANEL LH**
19. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH**
20. **INSTALL FRONT DOOR SCUFF PLATE LH**
21. **INSPECT STEERING WHEEL CENTER POINT**

HINT:  
When the steering wheel is not properly centered, remove and refit to center.
22. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
23. **INSPECT SRS WARNING LIGHT**
24. **PERFORM INITIALIZATION**

HINT:  
Some systems need initialization when disconnecting the cable from the negative battery terminal.