

Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000029SZ010X
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: REMOVAL (2010 Corolla)		

REMOVAL

CAUTION:

Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing .

1. REMOVE STEERING WHEEL ASSEMBLY (w/ Steering Pad Switch)

HINT:

Refer to the procedures up to "Remove steering wheel assembly" .

2. REMOVE STEERING WHEEL ASSEMBLY (w/o Steering Pad Switch)

HINT:

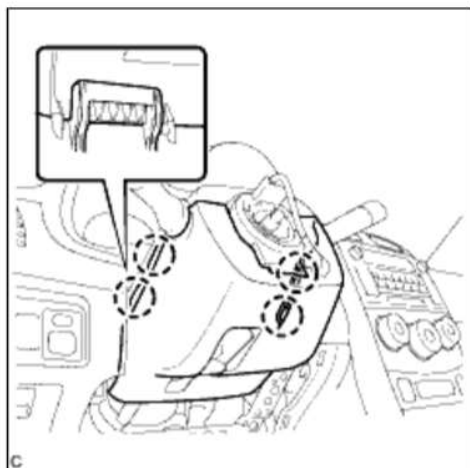
Refer to the procedures up to "Remove steering wheel assembly" .

3. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY

4. REMOVE LOWER STEERING COLUMN COVER

NOTICE:

Removing the lower steering column cover in the incorrect order will cause the lower steering column cover to break.



(a) Push the right and left sides of the lower steering column cover, and disengage the 4 claws.

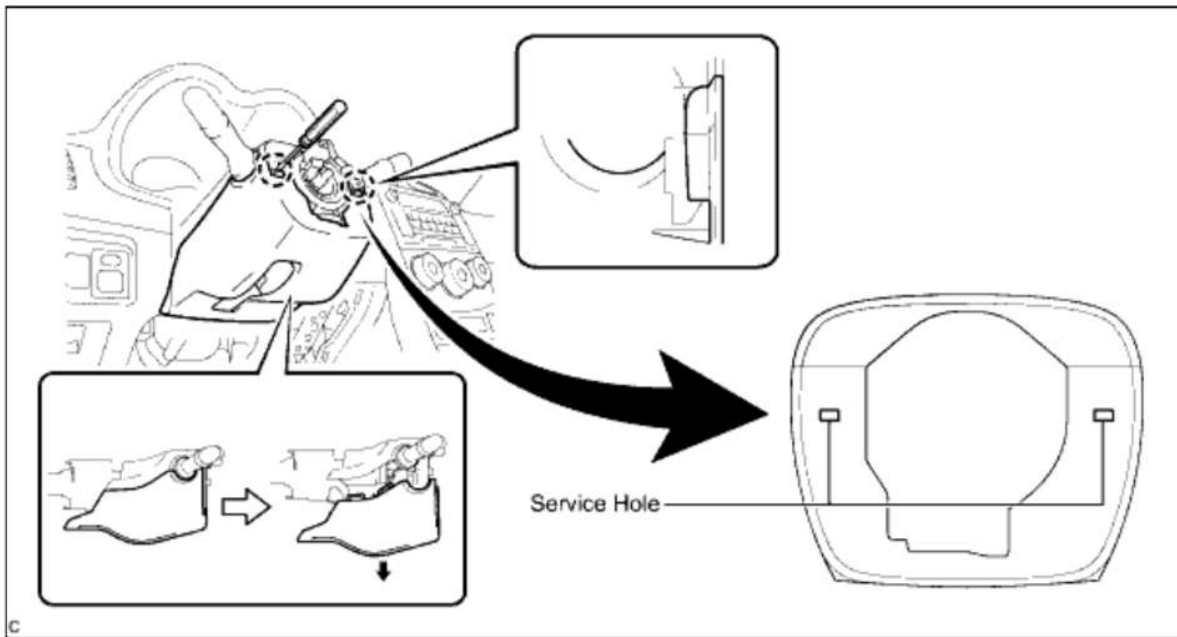
(b) Insert your fingers into the opening of the tilt lever of the lower steering column cover to disengage the claw.

HINT:

Spread the claw to disengage it.

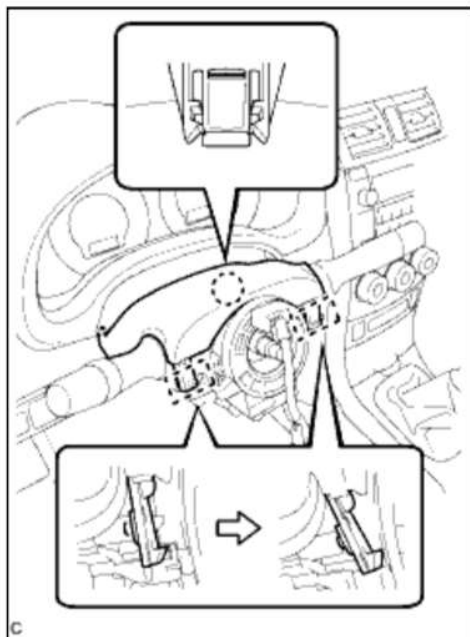


(c) Using a screwdriver, insert the tip into each service hole to disengage the 2 claws and remove the lower steering column cover as shown in the illustration.



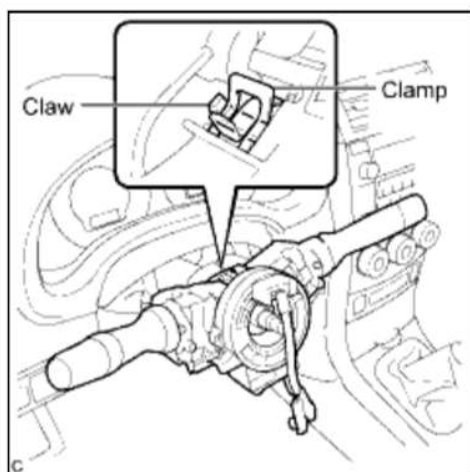
5. REMOVE UPPER STEERING COLUMN COVER

(a) Disengage the claw and the 2 pins, and remove the upper steering column cover.



6. REMOVE TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY

- (a) Disconnect the connectors from the turn signal switch assembly with spiral cable sub-assembly.



- (b) Use pliers to hold the clamp and raise the claw with a screwdriver. Remove the turn signal switch assembly with spiral cable sub-assembly from the steering column assembly.

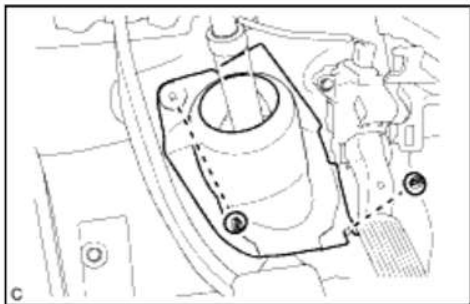
7. REMOVE UPPER INSTRUMENT PANEL SUB-ASSEMBLY

HINT:

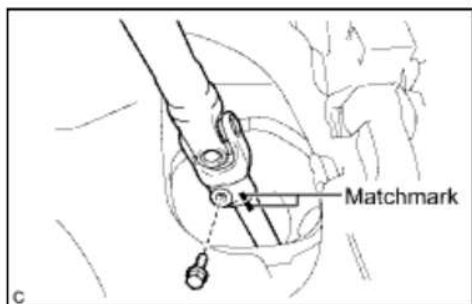
Refer to the instructions for Removal of the upper instrument panel .

8. REMOVE COLUMN HOLE COVER SILENCER SHEET

- (a) Turn back the floor carpet, and remove the 2 clips and column hole cover silencer sheet.



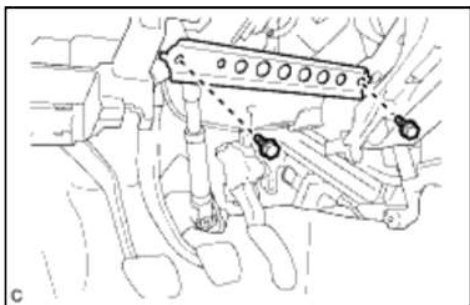
9. SEPARATE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY



(a) Put matchmarks on the No. 2 steering intermediate shaft assembly and the steering intermediate shaft.

(b) Remove the bolt and separate the No. 2 steering intermediate shaft assembly from the steering intermediate shaft.

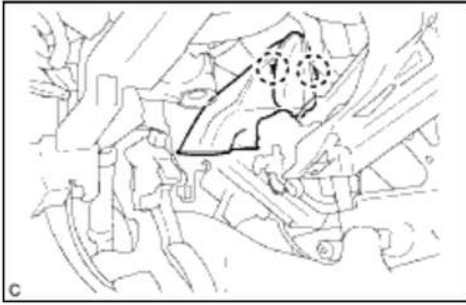
10. REMOVE INSTRUMENT PANEL SUB REINFORCEMENT



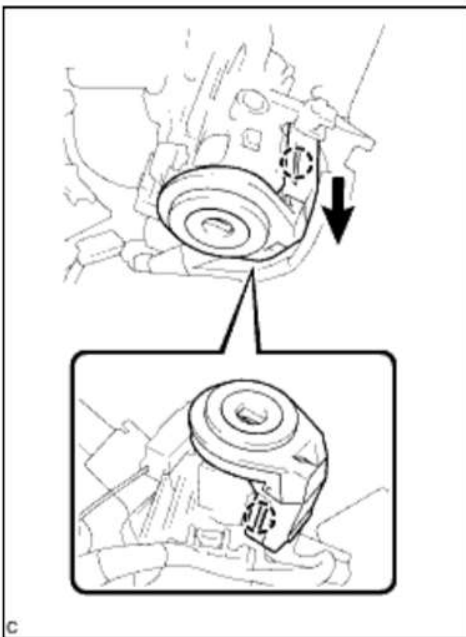
(a) Remove the 2 bolts and instrument panel sub reinforcement.

11. REMOVE NO. 3 AIR DUCT SUB-ASSEMBLY

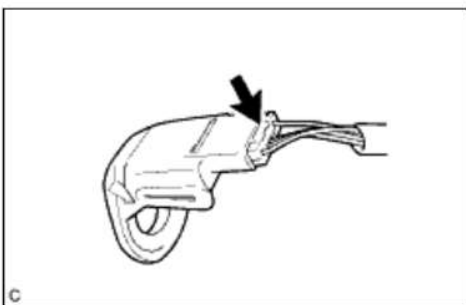
(a) Disengage the 2 claws and remove the No. 3 air duct sub-assembly.



12. REMOVE TRANSPONDER KEY AMPLIFIER (w/o Smart Key System)



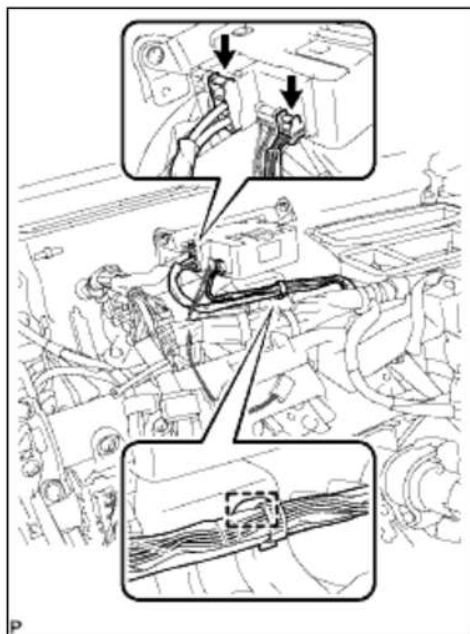
(a) Slide the transponder key amplifier to disengage the 2 claws as shown in the illustration.



(b) Disconnect the connector and remove the transponder key amplifier.

13. REMOVE STOP LIGHT SWITCH ASSEMBLY INFO

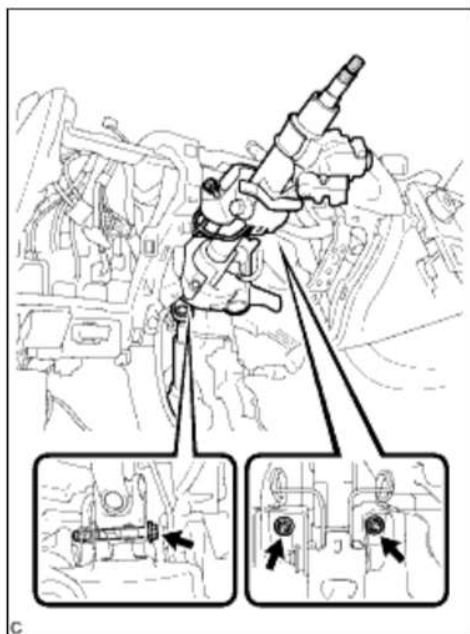
14. REMOVE STEERING POST ASSEMBLY (for 2ZR-FE)



(a) Separate the wire harness clamp from the power steering ECU assembly.

(b) Disconnect the 2 connectors from the power steering ECU assembly.

(c) Disconnect the connectors and disengage the wire harness clamps from the steering column assembly.



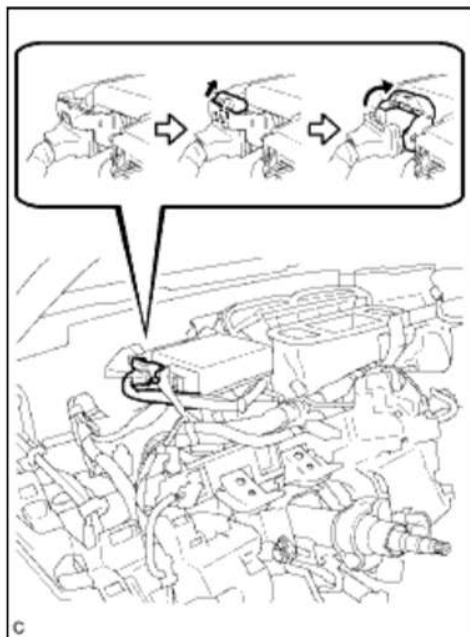
(d) Remove the bolt, 2 nuts and steering post assembly.

NOTICE:

- Do not release the tilt lever when the steering column assembly is not installed on the vehicle.
- Do not drop or strike the steering column assembly. If dropped or struck, replace it with a new one.

15. REMOVE STEERING POST ASSEMBLY (for 2AZ-FE)

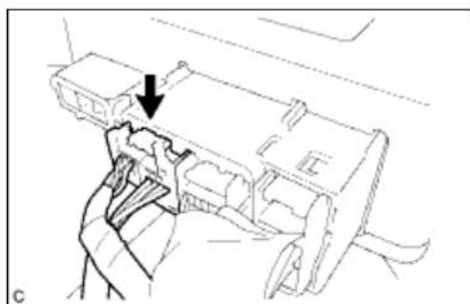
(a) Disconnect the connector from the power steering ECU



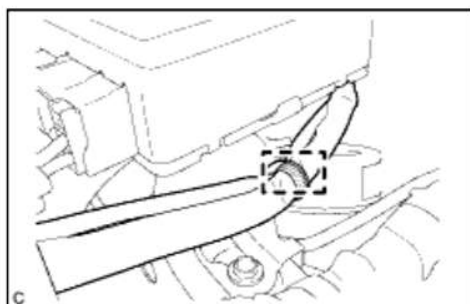
assembly.

HINT:

Pull out the lock of the lock lever, disengage the claw, and turn the lock lever to disconnect the connector, as shown in the illustration.



(b) Disconnect the connector from the power steering ECU assembly.

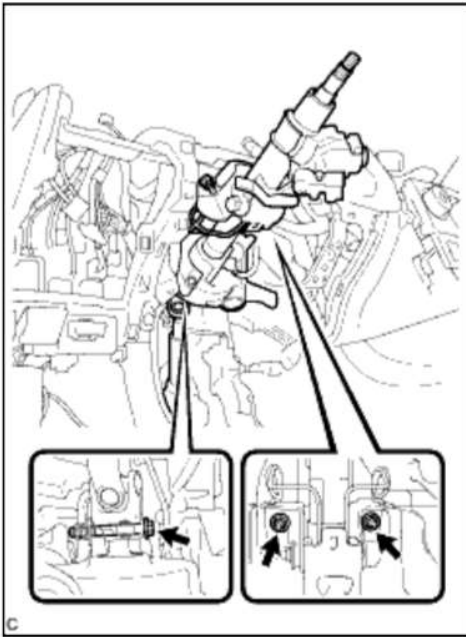


(c) Separate the wire harness clamp from the power steering ECU assembly.

(d) Remove the bolt, 2 nuts, and steering post assembly.

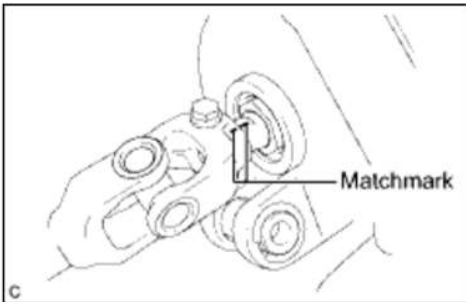
NOTICE:

- Do not release the tilt lever when the steering column assembly is not installed on the vehicle.
- Do not drop or strike the steering column assembly. If

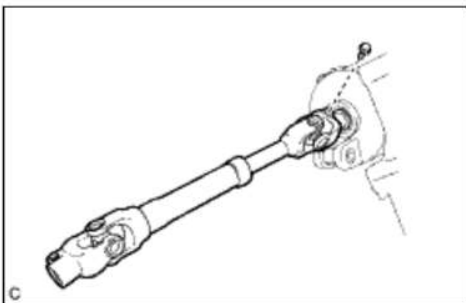


dropped or struck, replace it with a new one.

16. REMOVE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY



- (a) Put matchmarks on the No. 2 steering intermediate shaft assembly and the steering column assembly.

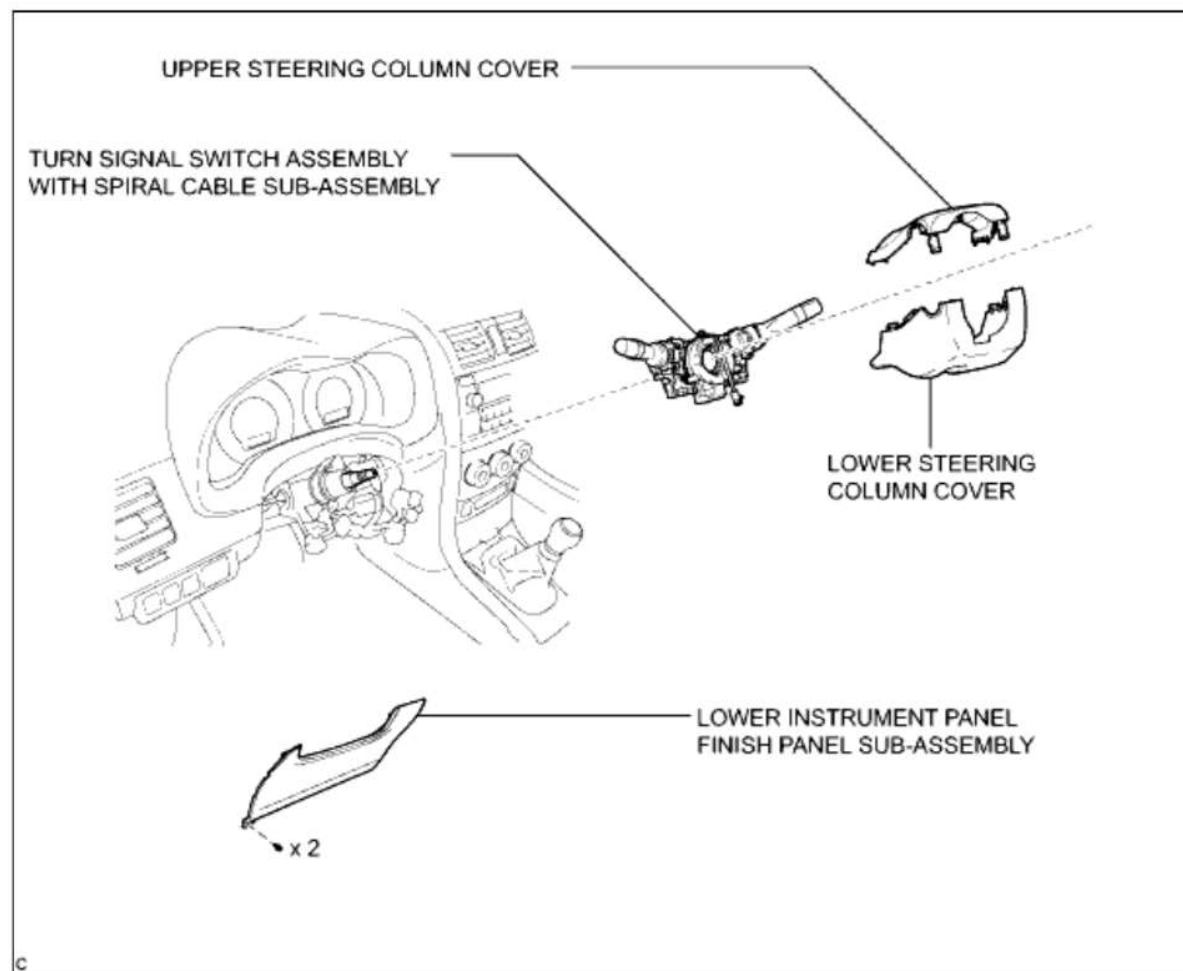


- (b) Remove the bolt and the No. 2 steering intermediate shaft assembly from the steering column assembly.

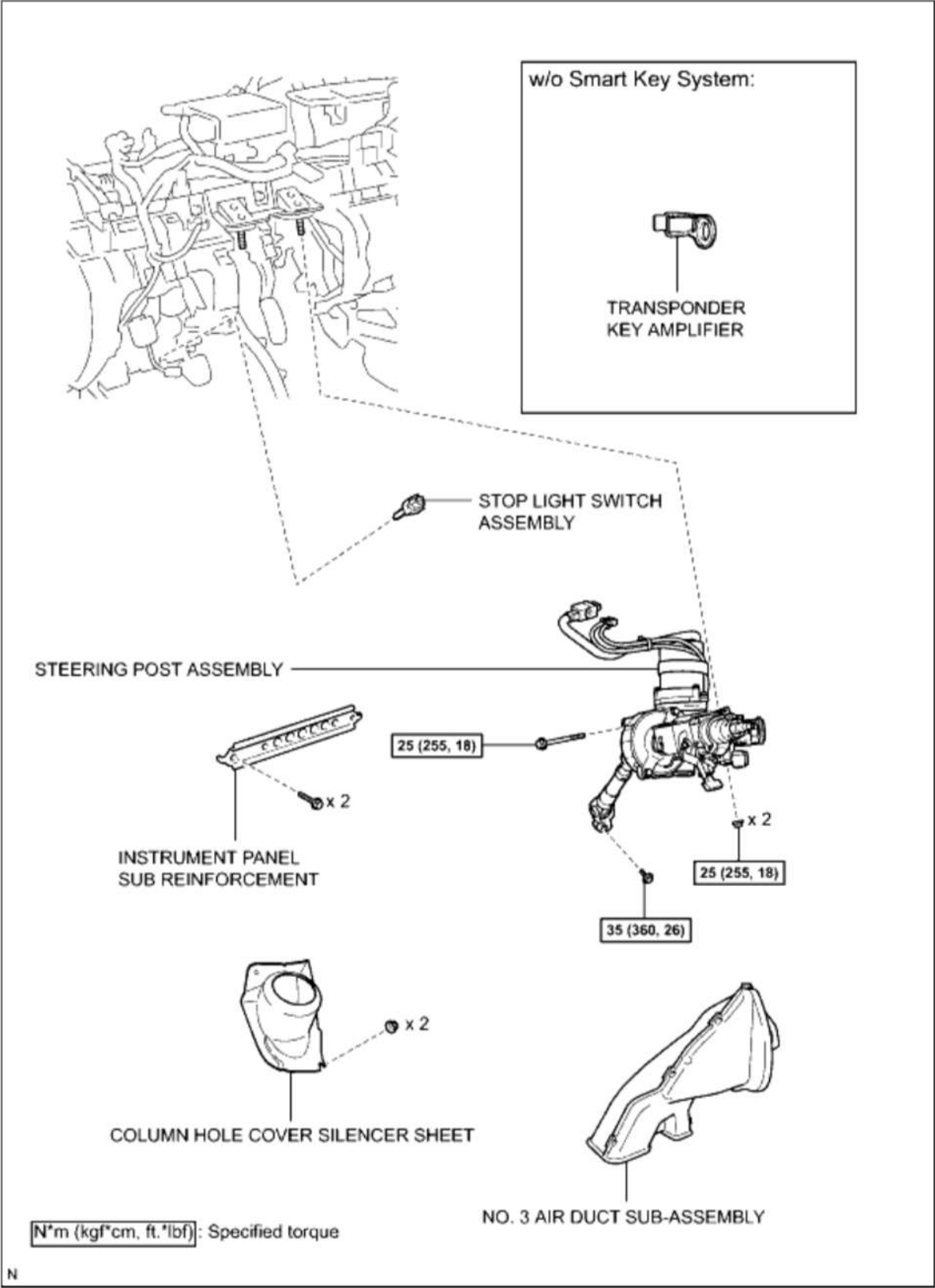
Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000029SY00SX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: COMPONENTS (2010 Corolla)		

COMPONENTS

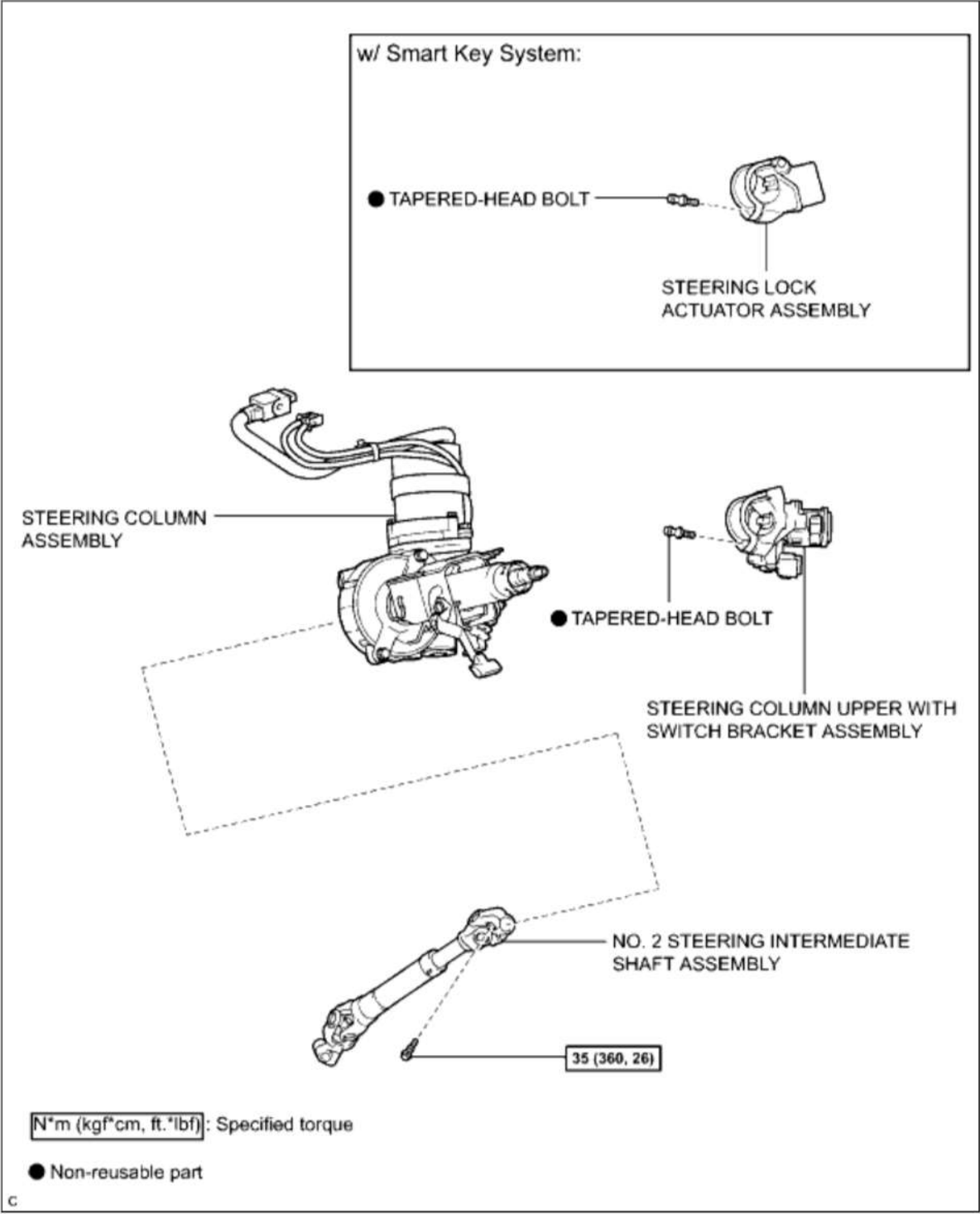
ILLUSTRATION



ILLUSTRATION



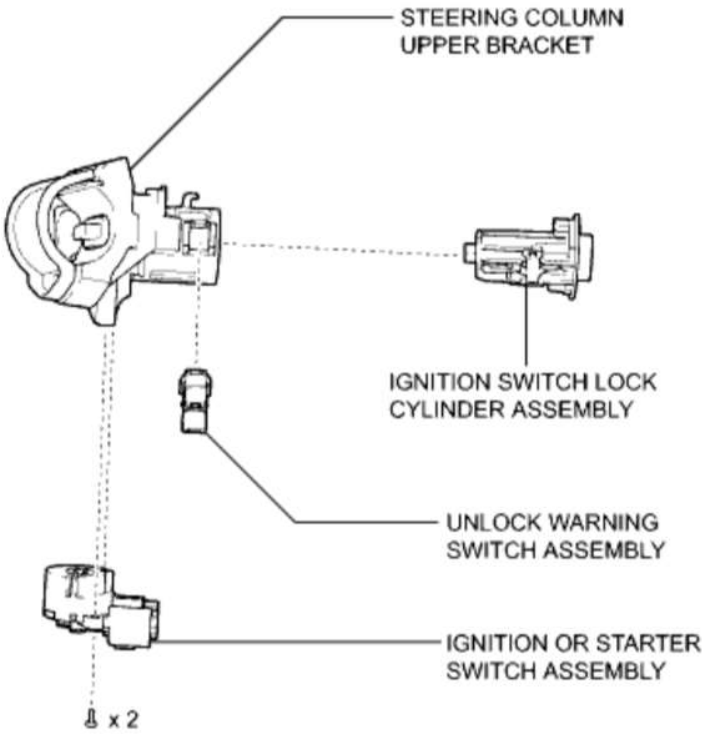
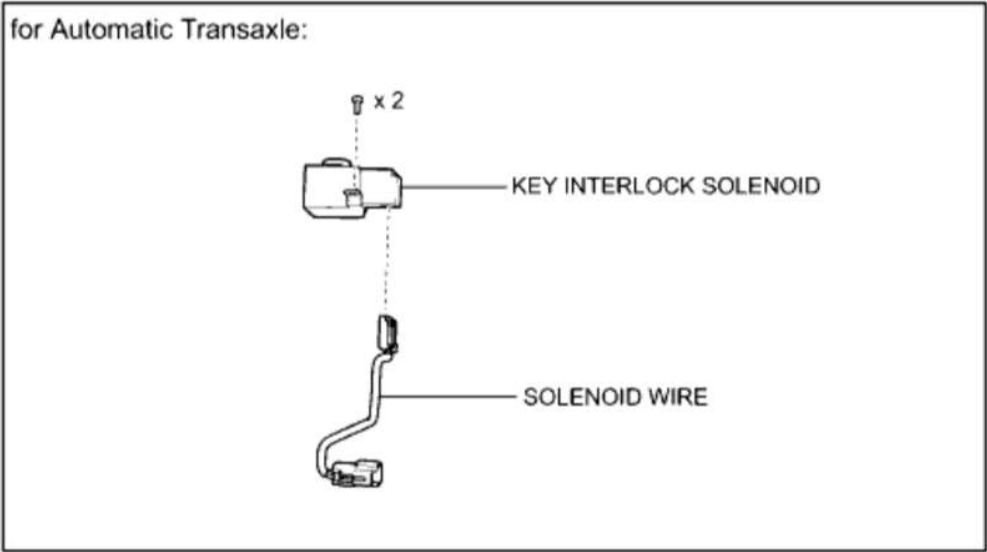
ILLUSTRATION



ILLUSTRATION

w/o Smart Key System:

for Automatic Transaxle:



C

Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000UD0033X
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: DISASSEMBLY (2010 Corolla)		

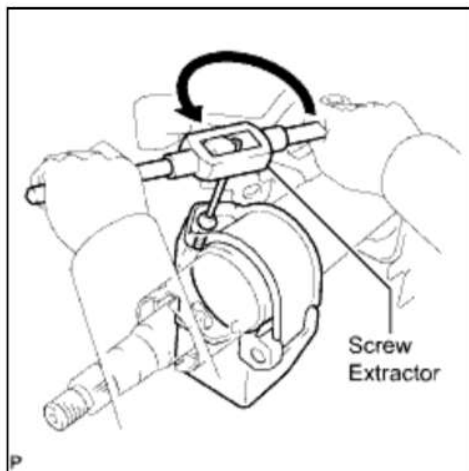
DISASSEMBLY

NOTICE:

When using a vise, do not overtighten it.

1. REMOVE STEERING LOCK ACTUATOR ASSEMBLY (w/ Smart Key System)

- (a) Secure the steering column assembly in a vise.
- (b) Using a center punch, mark the center of the tapered-head bolt.
- (c) Using a 3 to 4 mm (0.118 to 0.157 in.) diameter drill bit, drill a hole in the tapered-head bolt.

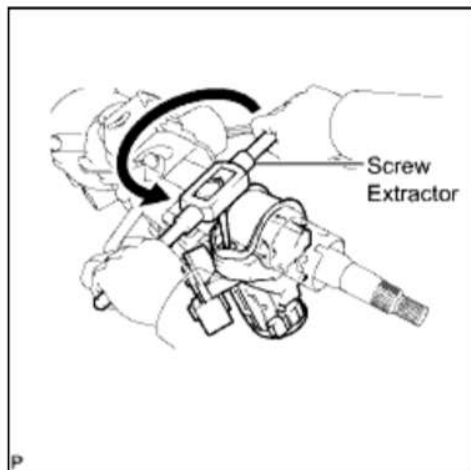


- (d) Using a screw extractor, remove the tapered-head bolt, and then remove the steering lock actuator assembly from the steering column assembly.

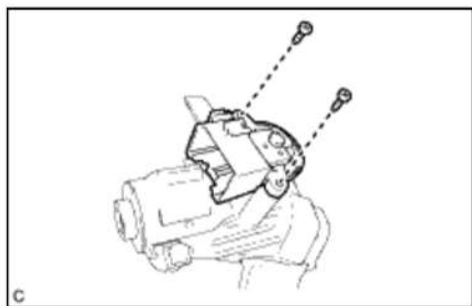
2. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY (w/o Smart Key System)

- (a) Secure the steering column assembly in a vise.
- (b) Using a center punch, mark the center of the tapered-head bolt.
- (c) Using a 3 to 4 mm (0.118 to 0.157 in.) diameter drill bit, drill a hole in the tapered-head bolt.

- (d) Using a screw extractor, remove the tapered-head bolt, and then remove the steering column upper with switch bracket assembly from the steering column assembly.

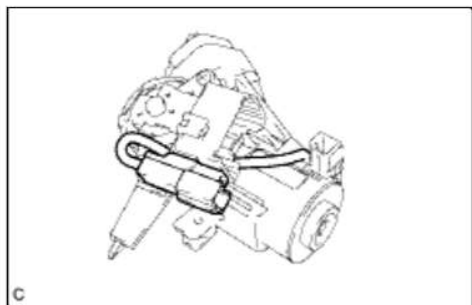


3. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY (for Manual Transaxle)



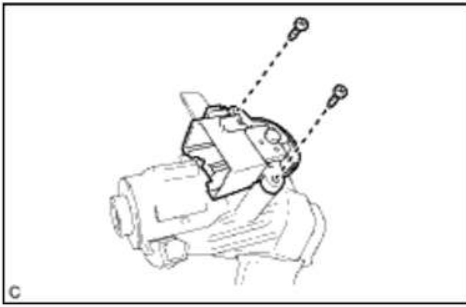
- (a) Remove the 2 screws and the ignition or starter switch assembly from the steering column upper bracket.

4. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY (for Automatic Transaxle without Smart Key System)

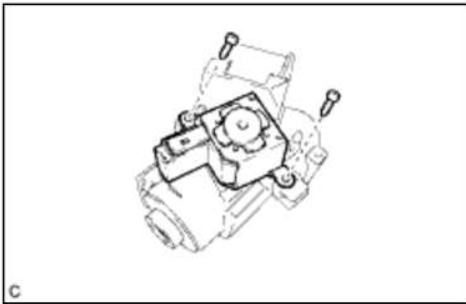


- (a) Remove the solenoid wire connector from the ignition or starter switch assembly.

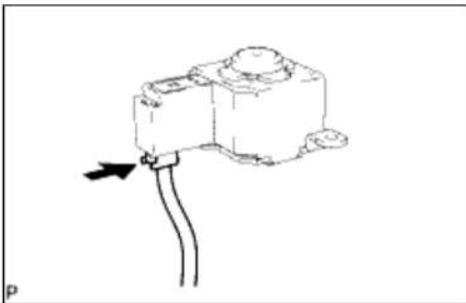
- (b) Remove the 2 screws and the ignition or starter switch assembly from the steering column upper bracket.



5. REMOVE KEY INTERLOCK SOLENOID (for Automatic Transaxle without Smart Key System)

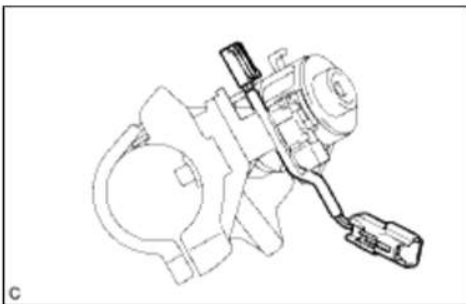


(a) Remove the 2 screws and the key interlock solenoid from the steering column upper bracket.



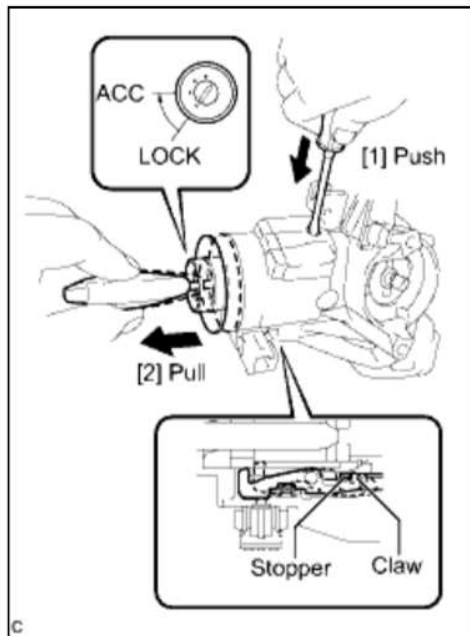
(b) Disconnect the solenoid wire connector from the key interlock solenoid.

6. REMOVE SOLENOID WIRE (for Automatic Transaxle without Smart Key System)



(a) Remove the solenoid wire from the steering column upper bracket.

7. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY (w/o Smart Key System)

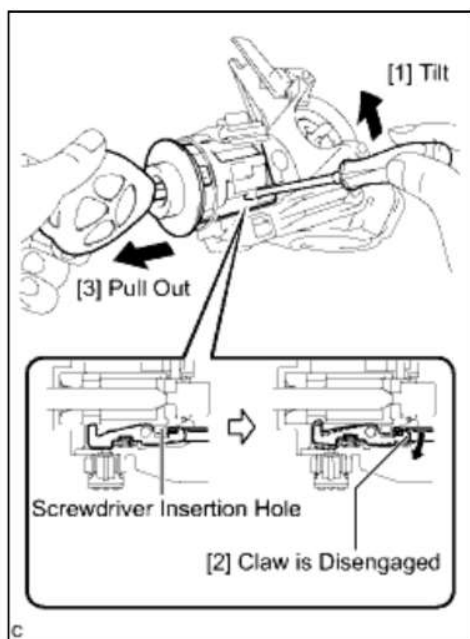


(a) Turn the ignition switch lock cylinder assembly to the ACC position.

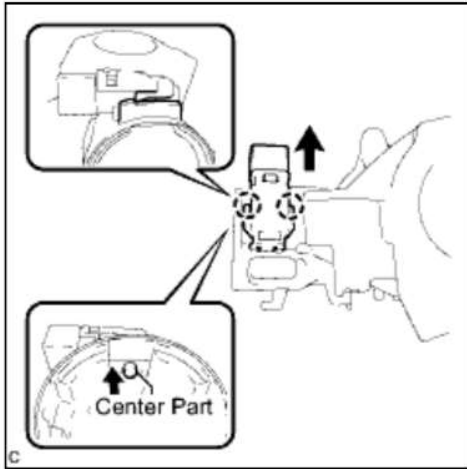
(b) Insert a screwdriver into the hole of the steering column upper with switch bracket assembly as shown in the illustration. Pull the ignition switch lock cylinder assembly until its claw contacts the stopper of the steering column upper with switch bracket assembly.

NOTICE:

Make sure to pull the ignition switch lock cylinder assembly until its claw contacts the stopper of the steering column upper with switch bracket assembly. Failure to do so will affect later work operations.



(c) Insert a screwdriver into the hole of the steering column upper with switch bracket assembly. Tilt the screwdriver as shown in the illustration to disengage the claw of the ignition switch lock cylinder assembly, and pull out the ignition switch lock cylinder assembly.

8. REMOVE UNLOCK WARNING SWITCH ASSEMBLY (w/o Smart Key System)

(a) Remove the unlock warning switch assembly by pushing up the center part and releasing the 2 claws.

HINT:

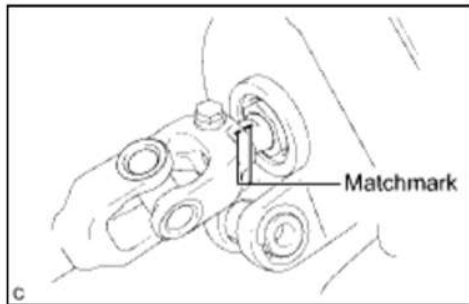
Slide the unlock warning switch in the direction shown by the arrow in the illustration to remove it.



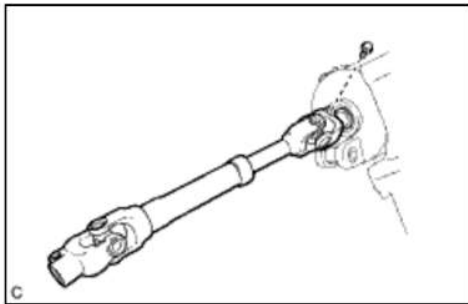
Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000029SX00ZX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: INSTALLATION (2010 Corolla)		

INSTALLATION

1. INSTALL NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY



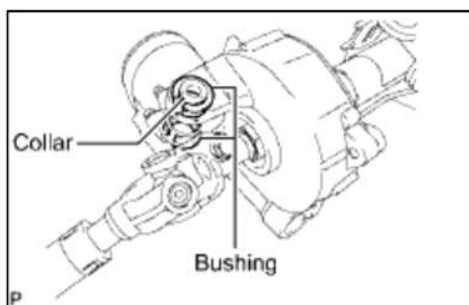
- (a) Align the matchmarks on the No. 2 steering intermediate shaft assembly and the steering column assembly.



- (b) Install the bolt.

Torque: 35 N·m (360 kgf·cm, 26ft·lbf)

2. INSTALL STEERING POST ASSEMBLY (for 2ZR-FE)



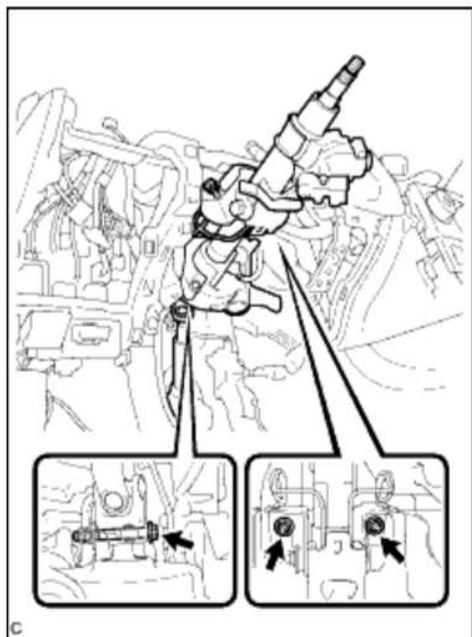
- (a) Check that the 2 bushings are securely installed to the steering column assembly.

HINT:

If the bushings are missing or damaged, replace the steering column assembly with a new one.

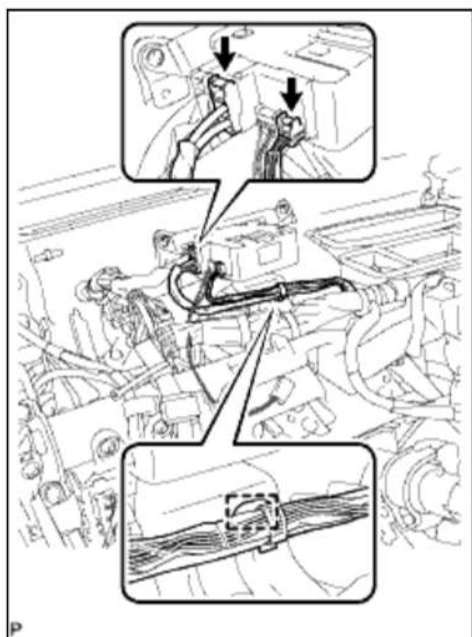
- (b) Install the steering post assembly with the bolt and 2 nuts.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

**NOTICE:**

- Do not damage the 2 bushings.
- Do not line up the bolt hole by prying on the collar or bushings. Only install the bolt in straight, without applying any force to the bushings.

(c) Connect the connectors and engage the wire harness clamps to the steering column assembly.

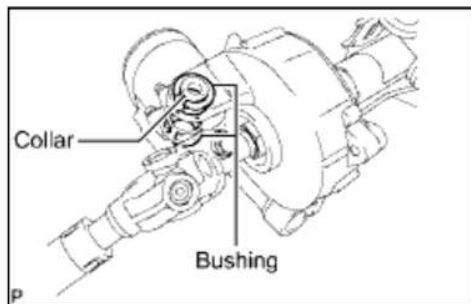


(d) Connect the 2 connectors to the power steering ECU assembly.

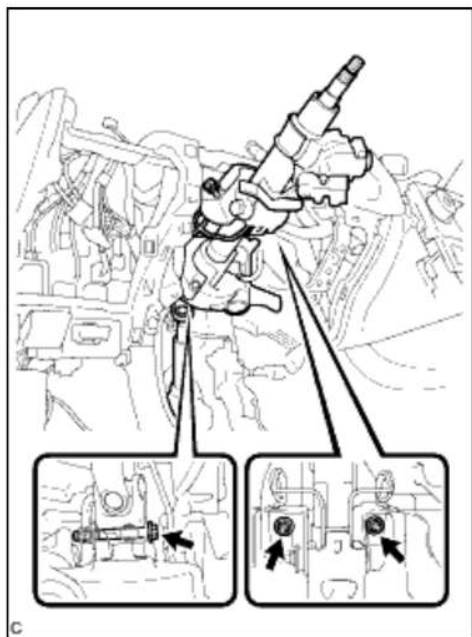
(e) Install the wire harness clamp to the power steering ECU assembly.

3. INSTALL STEERING POST ASSEMBLY (for 2AZ-FE)

(a) Check that the 2 bushings are securely installed to the steering column assembly.

**HINT:**

If the bushings are missing or damaged, replace the steering column assembly with a new one.



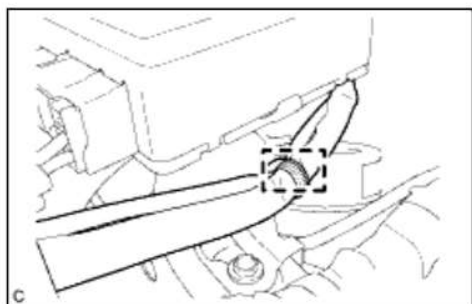
- (b) Install the steering post assembly with the bolt and 2 nuts.

Torque: 25 N·m (255 kgf·cm, 18ft·lbf)

NOTICE:

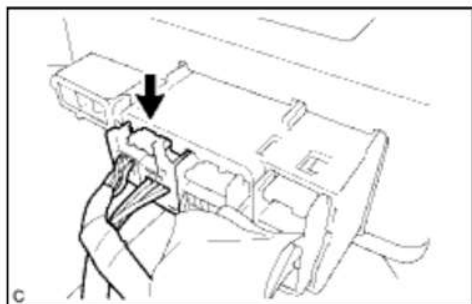
- Do not damage the 2 bushings.
- Do not line up the bolt hole by prying on the collar or bushings. Only install the bolt in straight, without applying any force to the bushings.

- (c) Connect the connectors and engage the wire harness clamps to the steering column assembly.



- (d) Engage the wire harness clamp to the power steering ECU assembly.

- (e) Connect the connector to the power steering ECU assembly.



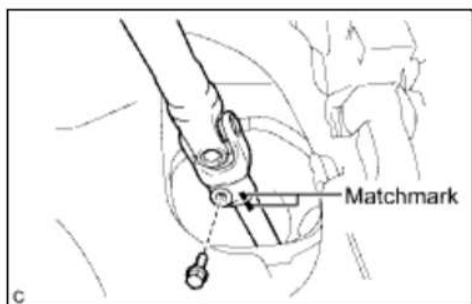
(f) Connect the connector to the power steering ECU assembly.

HINT:

Return the lock lever to the original position, engage the claw, and push in the lock of the lock lever, as shown in the illustration.

4. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD

5. CONNECT NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY



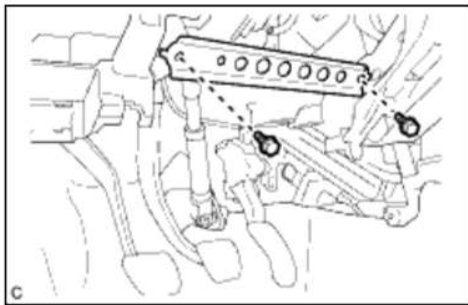
(a) Align the matchmarks on the No. 2 steering intermediate shaft assembly and the steering intermediate shaft assembly.

(b) Install the bolt.

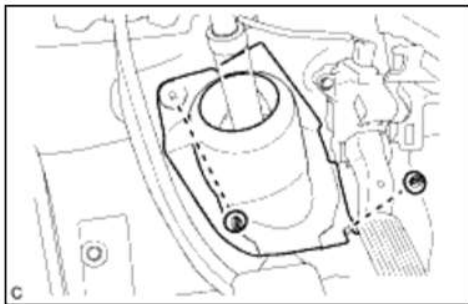
Torque: 35 N·m (360 kgf·cm, 26ft·lbf)

6. INSTALL STOP LIGHT SWITCH ASSEMBLY**7. INSTALL NO. 3 AIR DUCT SUB-ASSEMBLY**

(a) Engage the 2 claws and install the No. 3 air duct sub-assembly.

8. INSTALL INSTRUMENT PANEL SUB REINFORCEMENT

(a) Install the instrument panel sub reinforcement with the 2 bolts.

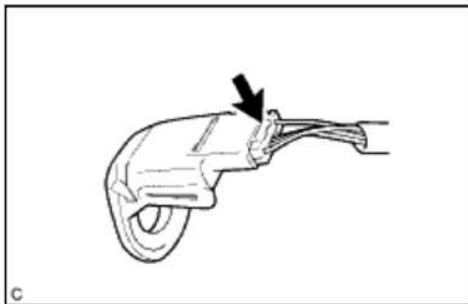
9. INSTALL COLUMN HOLE COVER SILENCER SHEET

(a) Install the column hole cover silencer sheet with the 2 clips.

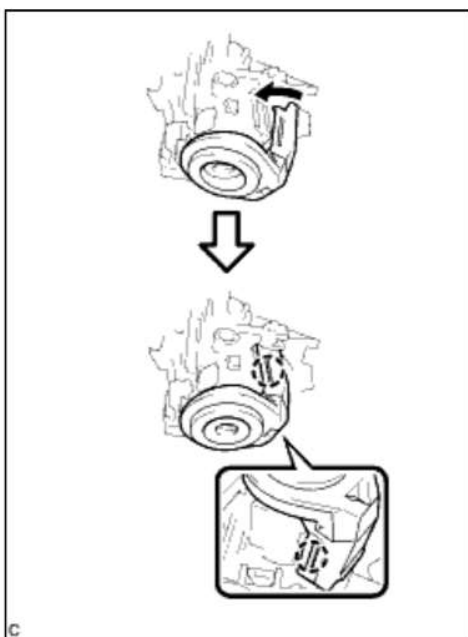
(b) Install the floor carpet.

10. INSTALL TRANSPONDER KEY AMPLIFIER (w/o Smart Key System)

(a) Connect the connector to the transponder key amplifier.



(b) Align the transponder key amplifier with the steering column upper bracket. Tilt the amplifier slightly and slide it into position.



(c) Push the transponder key amplifier, and engage the 2 claws to install the transponder key amplifier to the steering column upper bracket.

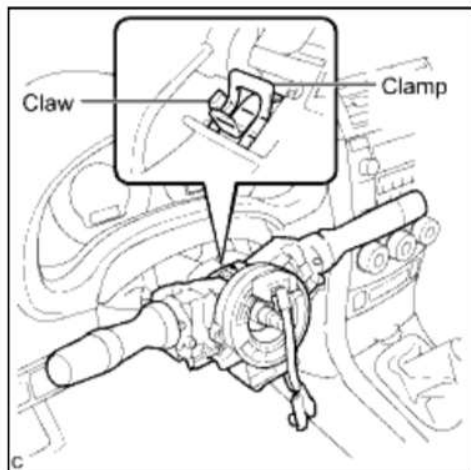
11. INSTALL UPPER INSTRUMENT PANEL SUB-ASSEMBLY

HINT:

Refer to the instructions for Installation of the upper instrument panel  .

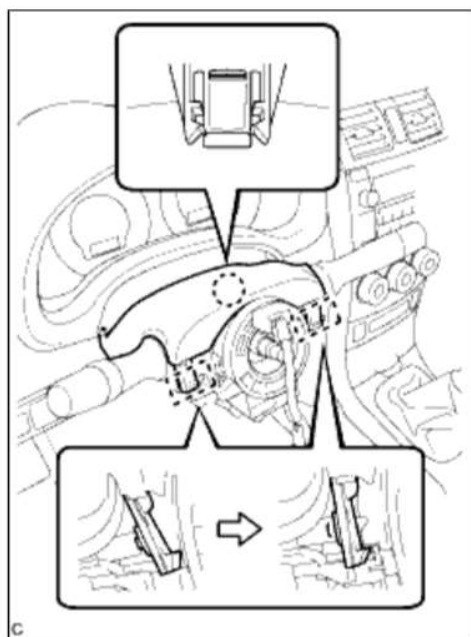
12. INSTALL TURN SIGNAL SWITCH ASSEMBLY WITH SPIRAL CABLE SUB-ASSEMBLY

(a) Using pliers, engage the claw. Install the turn signal switch assembly with spiral cable sub-assembly to the steering column assembly.



(b) Install the connectors to the turn signal switch assembly with spiral cable sub-assembly.

13. INSTALL UPPER STEERING COLUMN COVER



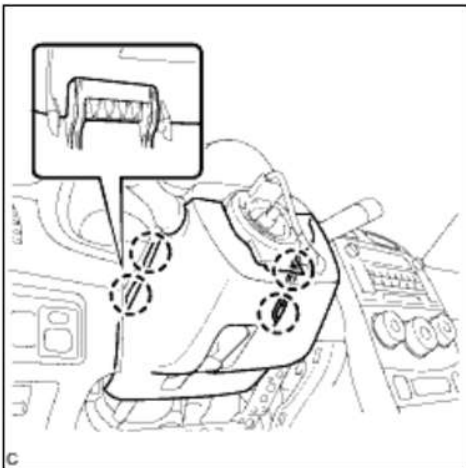
(a) Engage the claw and the 2 pins, and install the upper steering column cover.

14. INSTALL LOWER STEERING COLUMN COVER

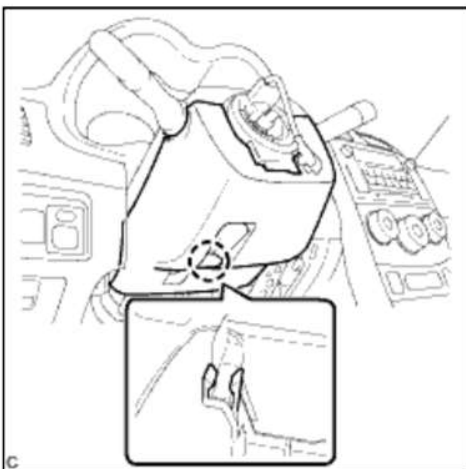
NOTICE:

If the lower steering column cover is installed in the incorrect order, it will not be possible to assemble the lower steering column cover.

(a) Engage the 2 claws to install the lower steering column cover.



(b) Engage the 4 claws.



(c) Engage the claw.

HINT:

Press the area around the claw to engage it.

15. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY



16. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD**17. ADJUST SPIRAL CABLE** **18. INSTALL STEERING WHEEL ASSEMBLY (w/ Steering Pad Switch)****HINT:**

Refer to the procedures from "Install steering wheel assembly"  .

19. INSTALL STEERING WHEEL ASSEMBLY (w/o Steering Pad Switch)**HINT:**

Refer to the procedures from "Install steering wheel assembly"  .

20. REGISTER ECU CODE**NOTICE:**

When replacing the steering lock actuator assembly, perform initialization  .

21. CALIBRATE TORQUE SENSOR ZERO POINT (for 2AZ-FE)

HINT:  .

22. CALIBRATE TORQUE SENSOR ZERO POINT (for 2ZR-FE)

HINT:  .



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000UD1033X
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: REASSEMBLY (2010 Corolla)		

REASSEMBLY

NOTICE:

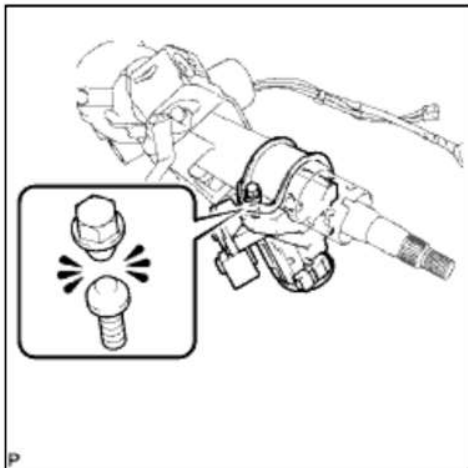
When using a vise, do not overtighten it.

1. INSTALL STEERING LOCK ACTUATOR ASSEMBLY (w/ Smart Key System)

- Secure the steering column assembly in a vise.
- Temporarily install the steering lock actuator assembly to the steering column assembly with a new tapered-head bolt.

NOTICE:

Be sure to use a new tapered-head bolt.



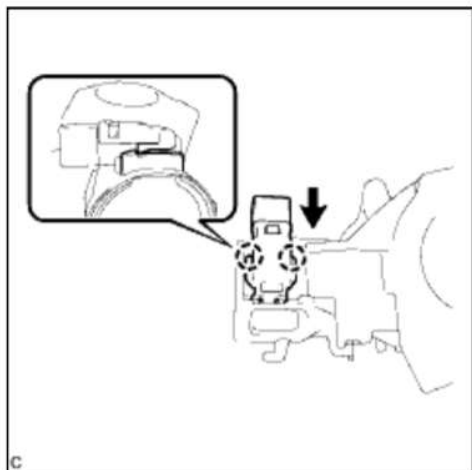
- Tighten the tapered-head bolt until the bolt heads break off.

2. INSTALL UNLOCK WARNING SWITCH ASSEMBLY (w/o Smart Key System)

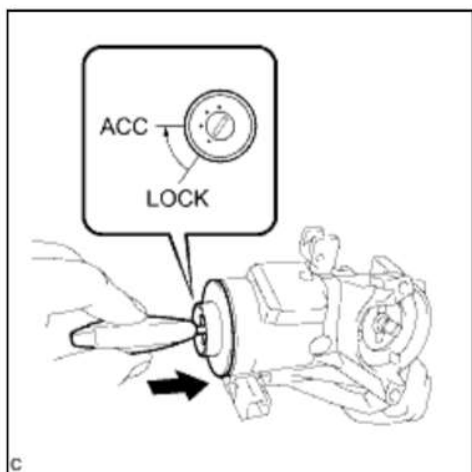
- Attach the 2 claws to install the unlock warning switch onto the steering column upper bracket.

HINT:

Slide the unlock warning switch in the direction shown by the arrow in the illustration to install it.



3. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY (w/o Smart Key System)

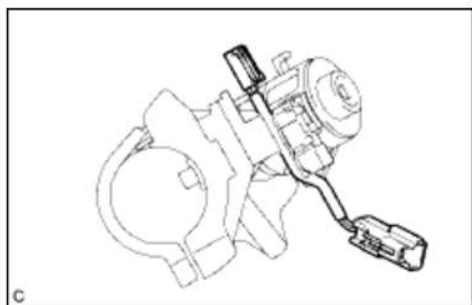


(a) Make sure that the ignition switch lock cylinder assembly is in the ACC position.

(b) Install the ignition switch lock cylinder assembly to the steering lock sub-assembly.

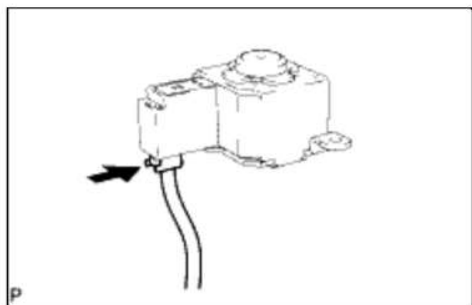
(c) Make sure that the ignition switch lock cylinder assembly is securely installed.

4. INSTALL SOLENOID WIRE (for Automatic Transaxle without Smart Key System)

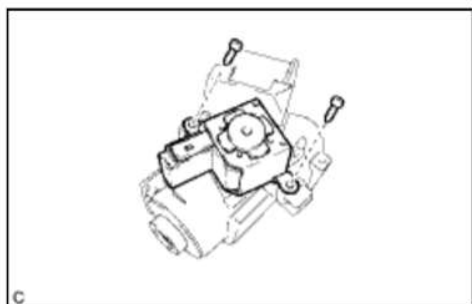


(a) Install the solenoid wire to the steering column upper bracket.

5. INSTALL KEY INTERLOCK SOLENOID (for Automatic Transaxle without Smart Key System)

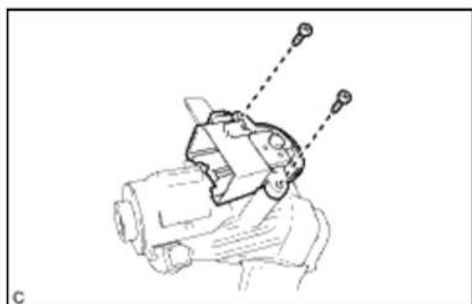


(a) Connect the solenoid wire connector to the key interlock solenoid.



(b) Install the key interlock solenoid to the steering column upper bracket with the 2 screws.

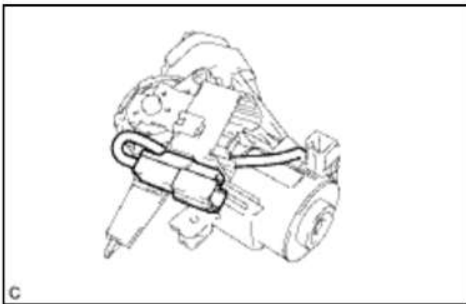
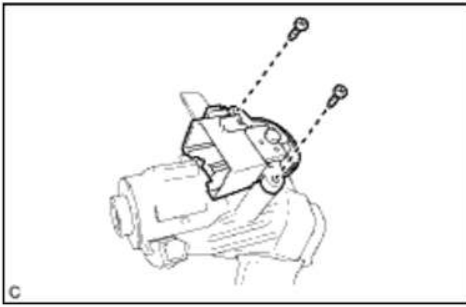
6. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY (for Manual Transaxle)



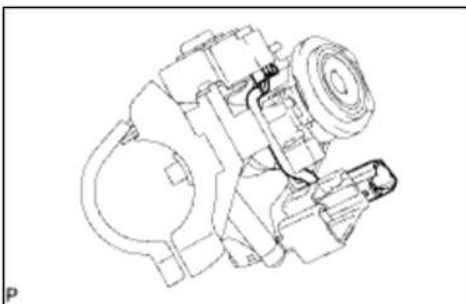
(a) Install the ignition or starter switch assembly to the steering column upper bracket with the 2 screws.

7. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY (for Automatic Transaxle without Smart Key System)

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



- (b) Install the solenoid wire connector to the ignition or starter switch assembly.



- (c) Make sure that the solenoid wire runs securely through the gap of the steering column upper bracket as shown in the illustration.

8. INSPECT STEERING LOCK OPERATION (w/o Smart Key System) INFO

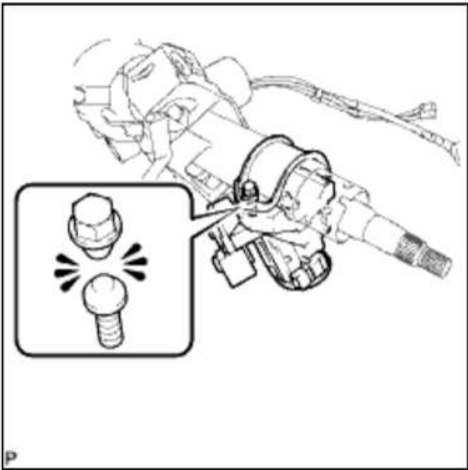
9. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY (w/o Smart Key System)

- (a) Secure the steering column assembly in a vise.
- (b) Temporarily install the steering column upper with switch bracket assembly to the steering column assembly with a new tapered-head bolt.

NOTICE:

Be sure to use a new tapered-head bolt.

- (c) Tighten the tapered-head bolt until the bolt heads break off.



Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000002W8B00SX
Title: STEERING COLUMN: STEERING COLUMN ASSEMBLY: INSPECTION (2010 Corolla)		

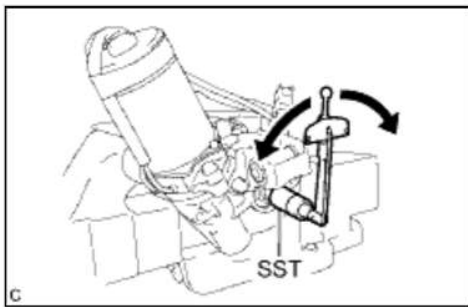
INSPECTION

NOTICE:

When using a vise, do not overtighten it.

1. INSPECT PRELOAD

(a) Secure the steering column assembly in a vise.



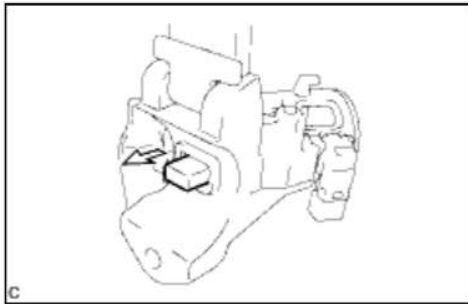
(b) Using SST, turn the main shaft and measure the preload.

SST: 09616-00011

Preload - Torque: 0.8 to 1.2 N·m (8 to 12 kgf·cm, 7 to 10 in·lbf)

If the preload is not as specified, replace the steering column assembly.

2. INSPECT STEERING LOCK OPERATION (w/o Smart Key System)

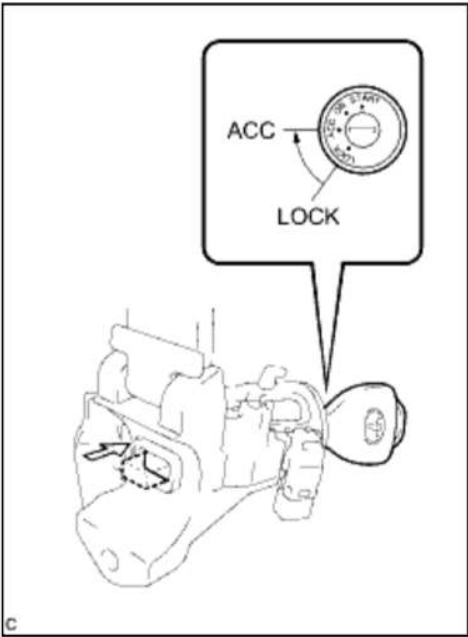


(a) Check that the steering lock mechanism is activated when the key is removed.

(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 or steering column upper with switch bracket assembly.



Last Modified: 3-10-2010	6.4 L	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWK030X
Title: STEERING COLUMN: STEERING LOCK SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. PRECAUTIONS WHEN WORKING ON STEERING LOCK SYSTEM

- (a) After replacing the steering lock actuator assembly (steering lock ECU), perform the key ID code registration.
- (b) If the steering lock actuator assembly is replaced, open and close the driver's door. The engine may not start until the driver's door is opened or closed.

HINT:

Opening and closing the driver's door causes the steering lock actuator assembly (steering lock ECU) to memorize the correct steering lock bar position.

- (c) If checking for DTCs of the smart key system function or if 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 main body ECU may be in a sleep mode. If the main body ECU is in this sleep mode, it will not be possible for the Techstream to communicate with it. Opening and closing the driver's door will cause the ECU to exit the sleep mode.

2. PRECAUTIONS FOR STEERING LOCK ACTUATOR

NOTICE:

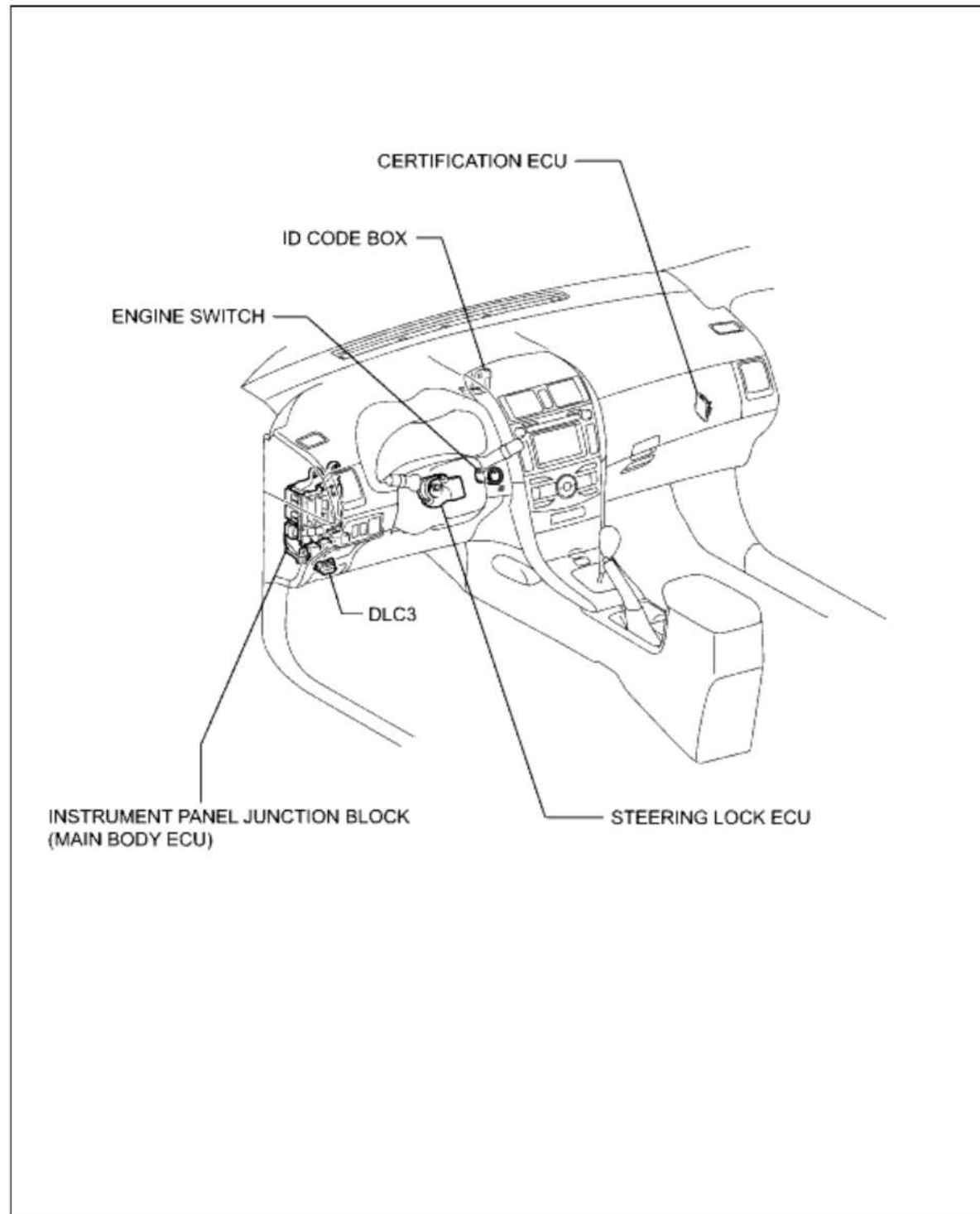
If the steering lock actuator (steering lock ECU) is replaced, open and close the driver side door with the engine switch off and the shift lever in neutral to record the current steering lock position into the steering lock ECU. If this is not performed, the engine may not start.



Last Modified: 3-10-2010	6.4 R	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWN02DX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: PARTS LOCATION (2010 Corolla)		

PARTS LOCATION

ILLUSTRATION

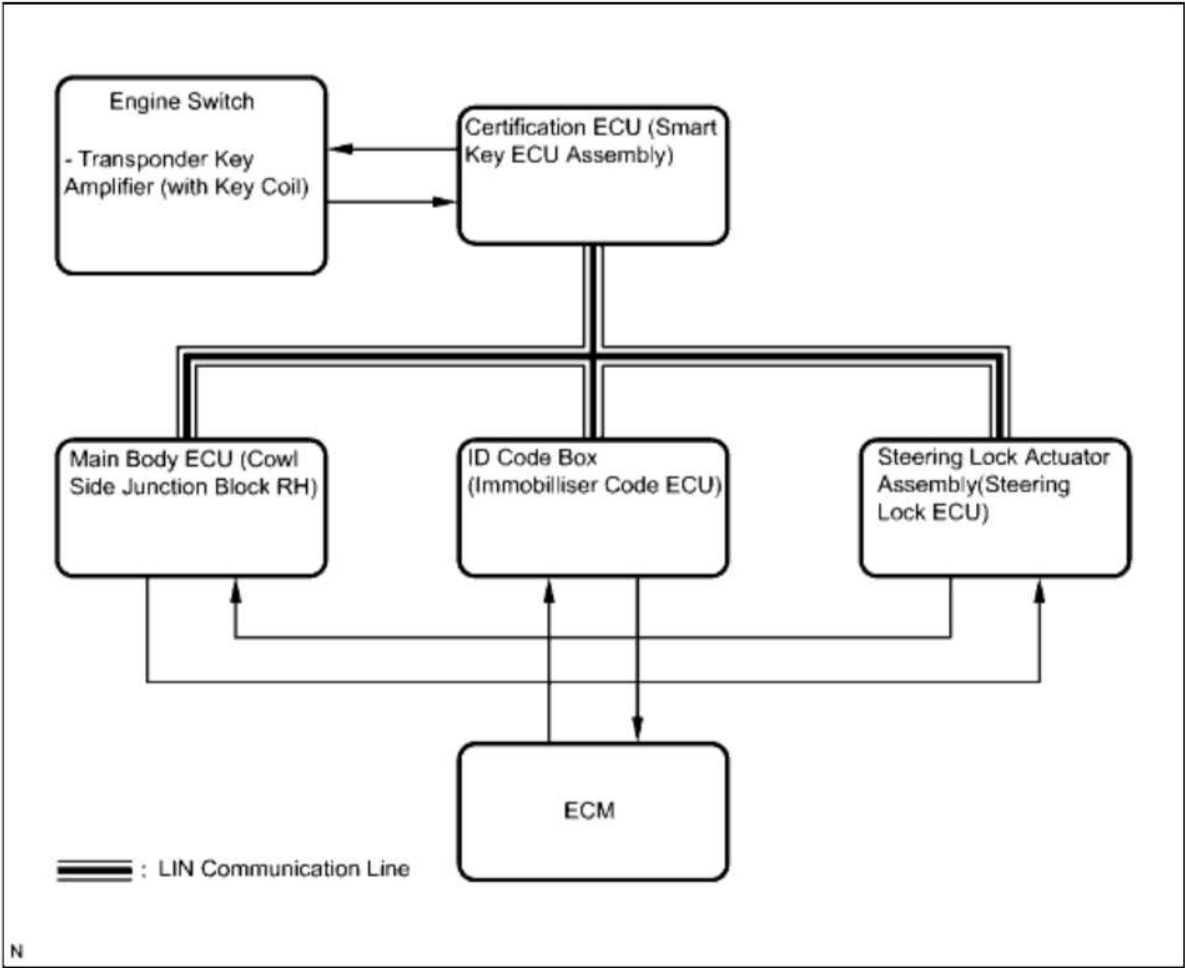




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Last Modified: 3-10-2010	6.4 U	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWU02EX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: SYSTEM DIAGRAM (2010 Corolla)		

SYSTEM DIAGRAM



Input and Output Signals of Each ECU

TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
Main Body ECU	Steering Lock ECU	Power supply status (to steering lock motor)	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Sleep available status	LIN

TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Lock/Unlock sensor status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Steering lock status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Motor control status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Diagnostic response status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Lock/Unlock sensor malfunction	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Power supply malfunction (to steering lock motor)	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Motor driver malfunction	LIN
Steering Lock ECU	• Certification ECU	Lock bar (stuck) status	LIN

TRANSMITTING ECU (TRANSMITTER)	RECEIVING ECU	SIGNAL	COMMUNICATION METHOD
	• Main Body ECU • ID Code Box		
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Push start status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Lock/Unlock relay drive status	LIN
Steering Lock ECU	• Certification ECU • Main Body ECU • ID Code Box	Engine start control status	LIN



Last Modified: 3-10-2010	6.4 D	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWL02GX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: HOW TO PROCEED WITH TROUBLESHOOTING (2010 Corolla)		

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Perform troubleshooting in accordance with the following flowchart.
- *: Use the Techstream.

1.	VEHICLE BROUGHT TO WORKSHOP
-----------	------------------------------------

NEXT



2.	INSPECT BATTERY VOLTAGE
-----------	--------------------------------

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding to the next step.

NEXT



3.	CHECK AND CLEAR DTCs*
-----------	------------------------------

NEXT



4.	PROBLEM SYMPTOM CONFIRMATION
-----------	-------------------------------------

Result:

RESULT	PROCEED TO
Symptom does not occur.	A
Symptom occurs.	B

B ► Go to step 6

A



5.	SYMPTOM SIMULATION
-----------	---------------------------

NEXT



6.	CHECK CAN COMMUNICATION SYSTEM*
-----------	--

HINT:

Check that there are no problems in the CAN communication system before troubleshooting of the steering lock system.

NEXT



7.	DTC CHECK*
-----------	-------------------

(a) Check for DTCs  .

Result:

RESULT	PROCEED TO
DTC is output.	A

RESULT	PROCEED TO
DTC is not output.	B

A ► Go to step 9

B



8.	PROBLEM SYMPTOMS TABLE
-----------	-------------------------------

Result:

RESULT	PROCEED TO
Fault is not listed in problem symptoms table.	A
Fault is listed in problem symptoms table.	B

B ► Go to step 10

A



9.	DTC CHART
-----------	------------------

NEXT



10.	CIRCUIT INSPECTION*
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NEXT



11.	PROBLEM IDENTIFICATION
-----	------------------------

NEXT



12.	REPAIR OR REPLACEMENT
-----	-----------------------

NEXT



13.	CONFIRMATION TEST*
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NEXT ► END

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Last Modified: 3-10-2010	6.4 D	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWR02DX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: SYSTEM DESCRIPTION (2010 Corolla)		

SYSTEM DESCRIPTION

1. DESCRIPTION

- (a) The steering lock system locks or unlocks the steering by activating the steering lock actuator assembly. The steering lock ECU activates the motor that is built into the actuator assembly based on signals from the certification ECU and main body ECU.
- (b) A LIN (Local Interconnect Network) is used for communication between different ECUs in this system.

2. FUNCTION OF COMPONENTS

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

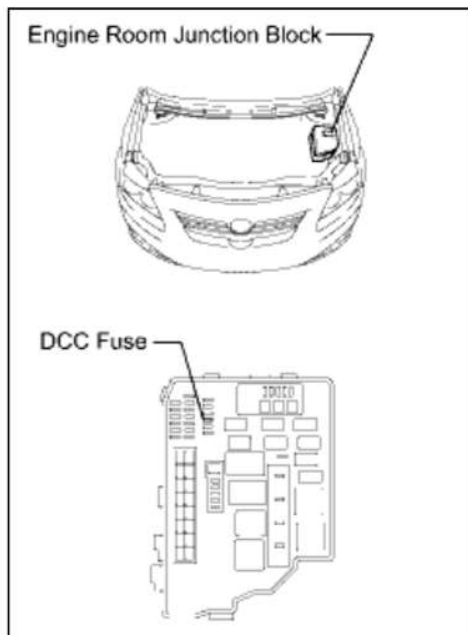
ITEM	FUNCTION
Steering lock actuator assembly	Consists of a motor, lock bar, lock and unlock position sensors, etc. Activated by the steering lock ECU.
Steering lock ECU	Included in the steering lock actuator assembly. This ECU activates the steering lock motor based on permission signals from the main body ECU and certification ECU. Detects steering lock or unlock state and transmits this status to other ECUs.
Main body ECU	Permits the steering lock ECU to supply power to activate the motor. The main body ECU and certification ECU permit engine start after receiving an unlock signal from the steering lock ECU.
Certification ECU	Orders the steering lock ECU to lock/unlock the steering. The main body ECU and certification ECU permit engine start after receiving an unlock signal from the steering lock ECU.
IG2 relay	Controlled by the main body ECU. This ECU sends IG signals to the steering lock ECU.
ID code box	Transmits command to set or cancel immobiliser to ECM based on permission signals from certification ECU.

Last Modified: 3-10-2010	6.4 D	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001PWX01PX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: INITIALIZATION (2010 Corolla)		

INITIALIZATION

HINT:

In vehicles equipped with the smart key system, the starting function may not operate after recharging or while jump-starting a discharged battery. This condition is most common if the battery voltage drops below 9 V. The following procedure has been developed to address this condition.



1. INITIALIZATION PROCEDURE

- (a) Confirm that the DCC fuse is installed.

HINT:

If the DCC fuse is not installed, install it at this time.

- (b) Move the shift lever to neutral.
 (c) Turn the engine switch off.
 (d) Open the driver's door.

HINT:

Opening the driver's door will start an initialization process between the steering lock ECU and the engine room junction block.

- (e) Depress the brake pedal.
 (f) Press the engine switch.

Last Modified: 3-10-2010	6.4 T	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWP02TX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: PROBLEM SYMPTOMS TABLE (2010 Corolla)		

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed in order of probability in the causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related the this system before inspecting the suspected areas below.

Steering Lock System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Steering wheel cannot be unlocked (the engine cannot be started).	Initialization	INFO
	Check for DTCs in the smart key system. (for Start Function)	INFO
	Check for DTCs in the engine immobiliser system. (for w/ smart key system)	INFO
	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.)	INFO
	Steering lock ECU power source circuit	INFO
	Check the input signal from the IGE terminal of the steering lock ECU.	INFO
	Replace the steering lock ECU.	INFO
Steering wheel cannot be unlocked (no steering unlock command).	Check that the S Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Check that the L Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Replace the certification ECU.	-
	Check for DTCs in the smart key system. (for Start Function)	INFO
	Check for DTCs in the engine immobiliser system. (for w/ smart key system)	INFO
	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	INFO

SYMPTOM	SUSPECTED AREA	SEE PAGE
	seconds. (If it displays NO, see "No steering lock" command in this table.)	
	Steering lock ECU power source circuit	INFO
	Check the input signal from the IGE terminal of the steering lock ECU.	INFO
	Replace the steering lock ECU.	INFO
Steering wheel cannot be locked (no steering lock command).	Courtesy light switch circuit	INFO
	Check that the S Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Check that the L Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Replace the certification ECU.	-

Smart Key System

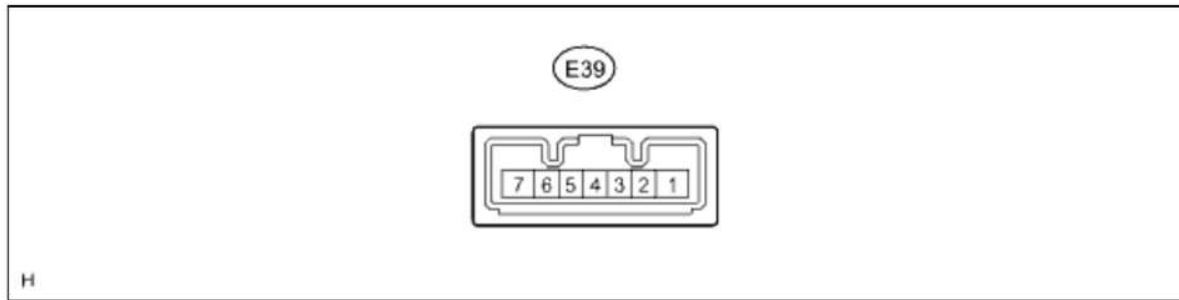
SYMPTOM	SUSPECTED AREA	SEE PAGE
Engine does not start.	Initialization	INFO
	Check for DTCs in the smart key system. (for Start Function)	INFO
	Check for DTCs in the engine immobiliser system. (for w/ smart key system)	INFO
	Check that the engine switch is turned on (IG).	-
	Check cranking operation. (If cranking operation is possible, see "Engine does not start due to the engine immobiliser" in this table.)	-
	Check Shift P Sig in the Data List of the main body ECU and confirm that the shift signal is normal.	-
	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.)	-
	Steering lock ECU power source circuit	INFO
	Check the output from the SLP terminal of the steering lock ECU.	INFO
	Check the output signal from the ST SW of the certification ECU (DTC B2275).	INFO
	Replace the main body ECU.	-

SYMPTOM	SUSPECTED AREA	SEE PAGE
Engine does not start due to the engine immobiliser.	Check that the L Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Check that the Start Rqst item in the Data List of the certification ECU displays YES. (If it displays NO, replace the certification ECU.)	-
	Check that the S Code Chk item in the Data List of the certification ECU displays OK. (If it displays NG, replace the ID code box.)	-
	Replace the ID code box.	-



Last Modified: 3-10-2010	6.4 U	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWO02DX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: TERMINALS OF ECU (2010 Corolla)		

TERMINALS OF ECU



1. STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)

TERMINAL NO. (SYMBOL)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 V
E39-2 (SGND) - Body ground	BR - Body ground*1 W-B - Body ground*2	Signal ground	Always	Below 1 V
E39-3 (IGE) - E39-1 (GND)	P - W-B*1 LG - W-B*2	Power source for driving motor	- Motor is in operation - Motor is not in operation	- Below 1 V 11 to 14 V
E39-4 (SLP1) - E39-2 (SGND)	G - BR*1 BR - W-B*2	Unlock position sensor output signal	- Steering is locked - Steering lock is released	11 to 14 V - Below 1 V
E39-5 (LIN) - E39-2 (SGND)	V - BR*1 V - W-B*2	LIN communication bus	Engine switch on (IG)	Pulse generation
E39-6 (IG2) - E39-1 (GND)	B - W-B	IG signal input	Engine switch on (IG)	11 to 14 V
E39-7 (B) - E39-1 (GND)	L - W-B	Power source	Always	11 to 14 V

HINT:

*1: TMC made

*2: NUMMI , TMMC made



Last Modified: 3-10-2010	6.4 D	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWS02HX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: DIAGNOSIS SYSTEM (2010 Corolla)		

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 Techstream 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 system circuits.

To check the DTCs, connect the Techstream to the DLC3 on the vehicle. The Techstream enables the DTCs to be cleared, the indicators to be activated, and the Data List to be checked.

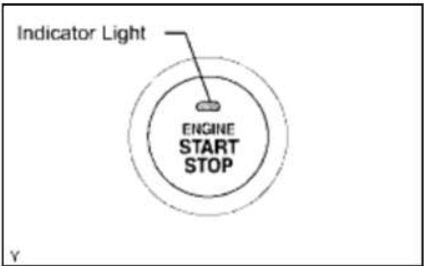
(b) The steering lock ECU diagnosis information cannot be read directly from the steering lock ECU by the Techstream. The diagnosis information from the steering lock ECU is transmitted to the Techstream via the certification ECU to the Techstream using the Controller Area Network (CAN).

2. CHECK DLC3

(a) Check the DLC3 .

3. 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	- Blinks green at 1-second intervals - 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 or right.
Malfunction in smart key system	- Blinks amber at 2-second intervals - Goes off 15 seconds after the engine switch is turned off	- There is a short in the devices activating the motor. - There is a problem in the steering	Troubleshoot by following How To Proceed With Troubleshooting  .

	while blinking	lock ECU or main body ECU.	
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4. 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 or right.
Malfunction in smart key system	"Check S/T Lock" Goes off 15 seconds after the engine switch is turned off while blinking	- There is a short in the devices activating the motor. - There is a problem in the steering lock ECU or main body ECU.	Troubleshoot by following How To Proceed With Troubleshooting  .

Last Modified: 3-10-2010	6.4 U	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWV02BX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: DATA LIST / ACTIVE TEST (2010 Corolla)		

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTICE:

In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- Turn the engine switch off.
- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Data List.
- According to the display on the Techstream, read the Data List.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Slick Sleep Cond	Steering lock ECU sleep condition / YES or NO	YES: Steering lock ECU sleep mode can be entered NO: Steering lock ECU sleep mode cannot be entered	-
Slick Start Cond	Steering lock ECU start signal / YES or NO	YES: Steering lock ECU sent a start signal NO: Steering lock ECU did not send a start signal	-
Eng Start Cond	Engine start condition / OK or NG	OK: Engine is allowed to start NG: Engine is not allowed to start	-
Sensor Value	Sensor malfunction / NG (PAST) or OK	NG (PAST): Sensor malfunction OK: No malfunction	-
Pwr Supply Shrt	Short in ECU / NG (PAST) or OK	NG (PAST): Short in ECU OK: No malfunction	-

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
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 no received	-
Lck Bar Stuck	Lock bar stuck malfunction / NG (PAST) or OK	NG (PAST): Lock bar stuck malfunction OK: No malfunction	-
Push Start Err	Smart key system function malfunction / NG (PAST) or OK	NG (PAST): Malfunction in smart key system OK: No malfunction	-
IG2	IG2 voltage / ON or OFF	ON: 10 to 14 V OFF: Below 1 V	-
IG (Lin)	LIN bus IG status / ON or OFF	ON: LIN bus IG ON status OFF: LIN bus IG OFF status	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Turn the engine switch off.
- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Active Test.
- According to the display on the Techstream, perform the Active Test.

Main Body

TESTER DISPLAY	TEST PART	CONTROL RANGE	DIAGNOSTIC NOTE
S Lock Pwr	Power supply for steering lock system	ON or OFF	-



Last Modified: 3-10-2010	6.4 D	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWT02PX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: DTC CHECK / CLEAR (2010 Corolla)		

DTC CHECK / CLEAR

1. CHECK DTC

- (a) Prepare the Techstream.
- (b) Connect the Techstream to the DLC3 at the lower part of the instrument panel.
- (c) Turn the engine switch on (IG) and turn the Techstream on.
- (d) Use the Techstream to check for DTCs, and note or print the result (see Operator's Manual for operating instructions).
- (e) Confirm the details of the DTCs .

2. CLEAR DTC

- (a) Operate the Techstream to clear the DTCs (see Operator's Manual for operation instructions).



Last Modified: 3-10-2010	6.4 S	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWM02PX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: DIAGNOSTIC TROUBLE CODE CHART (2010 Corolla)		

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.

Steering Lock System

DTC CODE	DETECTION ITEM	TROUBLE AREA	SEE PAGE
B2781	Open / Short in Steering Lock ECU	Steering lock actuator assembly (Steering lock ECU)	INFO
B2782	Power Source Control ECU Malfunction	1. Wire harness 2. Steering lock actuator assembly (Steering lock ECU) 3. Main body ECU	INFO
B2788	IG2 Signal Malfunction	1. IG2 relay 2. Wire harness 3. Main body ECU 4. Steering lock actuator assembly (Steering lock ECU)	INFO

Last Modified: 3-10-2010	6.4 C	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000YQZ02TX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: B2781: Open / Short in Steering Lock ECU (2010 Corolla)		

DTC	B2781	Open / Short in Steering Lock ECU
------------	--------------	--

DESCRIPTION

If the steering lock ECU determines that there is a malfunction inside the ECU, it outputs this DTC. The steering lock ECU diagnosis information cannot be read directly from the steering lock ECU by the Techstream. The diagnosis information from the steering lock ECU is transmitted to the Techstream via the certification ECU to the Techstream using the Controller Area Network (CAN).

DTC NO.	DTC DETECTING CONDITION	TROUBLE AREA
B2781	- Steering lock motor drive circuit is defective. - Both lock and unlock position sensors detect "ON".	Steering lock actuator assembly (Steering lock ECU)

INSPECTION PROCEDURE

HINT:

When the engine switch is off, the main body ECU may occasionally go into a non-active state called sleep mode. Therefore, before proceeding with the inspection, it is necessary to perform the following step to wake up the ECU:

Before starting the inspection, open the driver door with the engine switch off. Then (with the engine switch still off) open and close any door several times at 1.5-second intervals.

NOTICE:

If the steering lock actuator (steering lock ECU) is replaced, open and close the driver side door with the engine switch off and the shift lever in neutral to record the current lock position into the steering lock ECU. If this is not performed, the engine may not start.

PROCEDURE

1.	REPLACE STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)
-----------	--

HINT:

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

(a) Replace the steering lock actuator assembly .

NEXT ► **END**



Last Modified: 3-10-2010	6.4 C	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000YR002GX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: B2782: Power Source Control ECU Malfunction (2010 Corolla)		

DTC	B2782	Power Source Control ECU Malfunction
------------	--------------	---

DESCRIPTION

The steering lock ECU activates the steering lock motor by the power from the main body ECU* through the IGE circuit. This prevents the steering from being locked while the vehicle is moving.

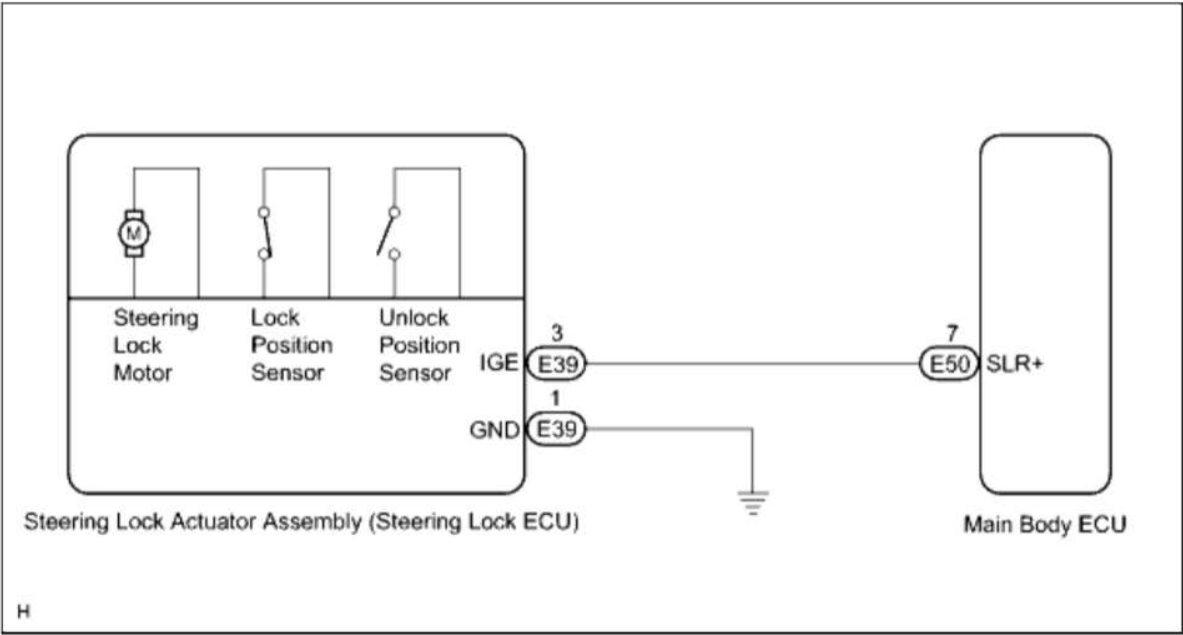
The diagnosis information of the steering lock ECU is transmitted to the Techstream via the certification ECU as the steering lock ECU is not connected to the CAN communication system.

HINT:

***: The power source control ECU is not a physical part. This code refers to the power source control function performed by the main body ECU.**

DTC NO.	DTC DETECTING CONDITION	TROUBLE AREA
B2782	Steering lock motor drive control circuit is defective.	• Wire harness • Steering lock actuator assembly (Steering lock ECU) • Main body ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

When the engine switch is off, the main body ECU may occasionally go into a non-active state called sleep mode. Therefore, before proceeding with the inspection, it is necessary to perform the following step to wake up the ECU:

Before starting the inspection, open the driver side door with the engine switch off. Then (with the engine switch still off) open and close any door several times at 1.5-second intervals.

NOTICE:
If the steering lock actuator (steering lock ECU) is replaced, open and close the driver side door with the engine switch off and the shift lever in neutral to record the current lock position into the steering lock ECU. If this is not performed, the engine may not start.

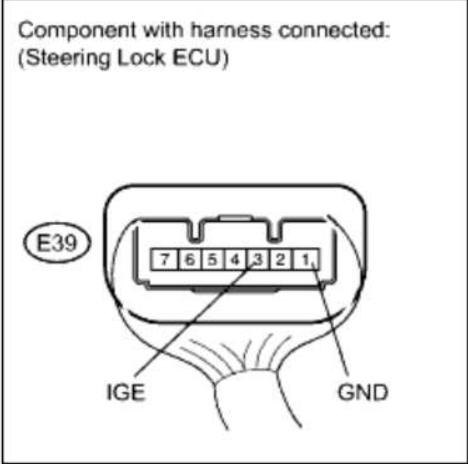
PROCEDURE

1.	INSPECT STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)
----	---

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-3 (IGE) - E39-1 (GND)	The specified condition should be checked after performing the following:	• Motor activated: Below 1 V • Motor not



	1. Turn the engine switch off 2. Turn the engine switch on (ACC or IG)	activated: 11 to 14 V
E39-3 (IGE) - E39-1 (GND)	The specified condition should be checked after performing the following: 1. Move the shift lever to P 2. Turn the engine switch off 3. Open the driver's door	• Motor activated: Below 1 V • Motor not activated: 11 to 14 V

HINT:

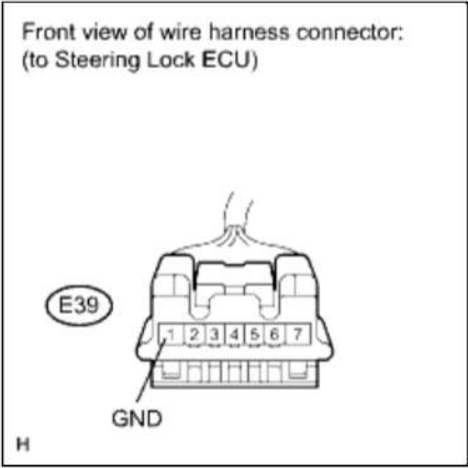
The steering lock ECU and steering lock actuator assembly are supplied as a unit.

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

OK ► **REPLACE STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)**

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

(a) Disconnect the E39 connector from the steering lock actuator assembly.



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

Standard Resistance:

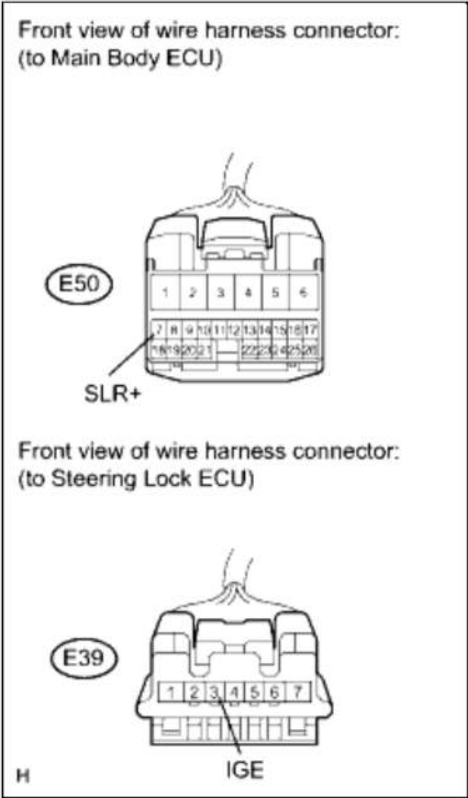
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	Always	Below 1 Ω

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK
▼

3.	CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - MAIN BODY ECU)
----	---

(a) Disconnect the E50 connector from the main body ECU.



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-3 (IGE) - E50-7 (SLR+)	Always	Below 1 Ω
E39-3 (IGE) - Body ground	Always	10 k Ω or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► REPLACE MAIN BODY ECU



Last Modified: 3-10-2010	6.4 C	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000YR102GX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: B2788: IG2 Signal Malfunction (2010 Corolla)		

DTC	B2788	IG2 Signal Malfunction
------------	--------------	-------------------------------

DESCRIPTION

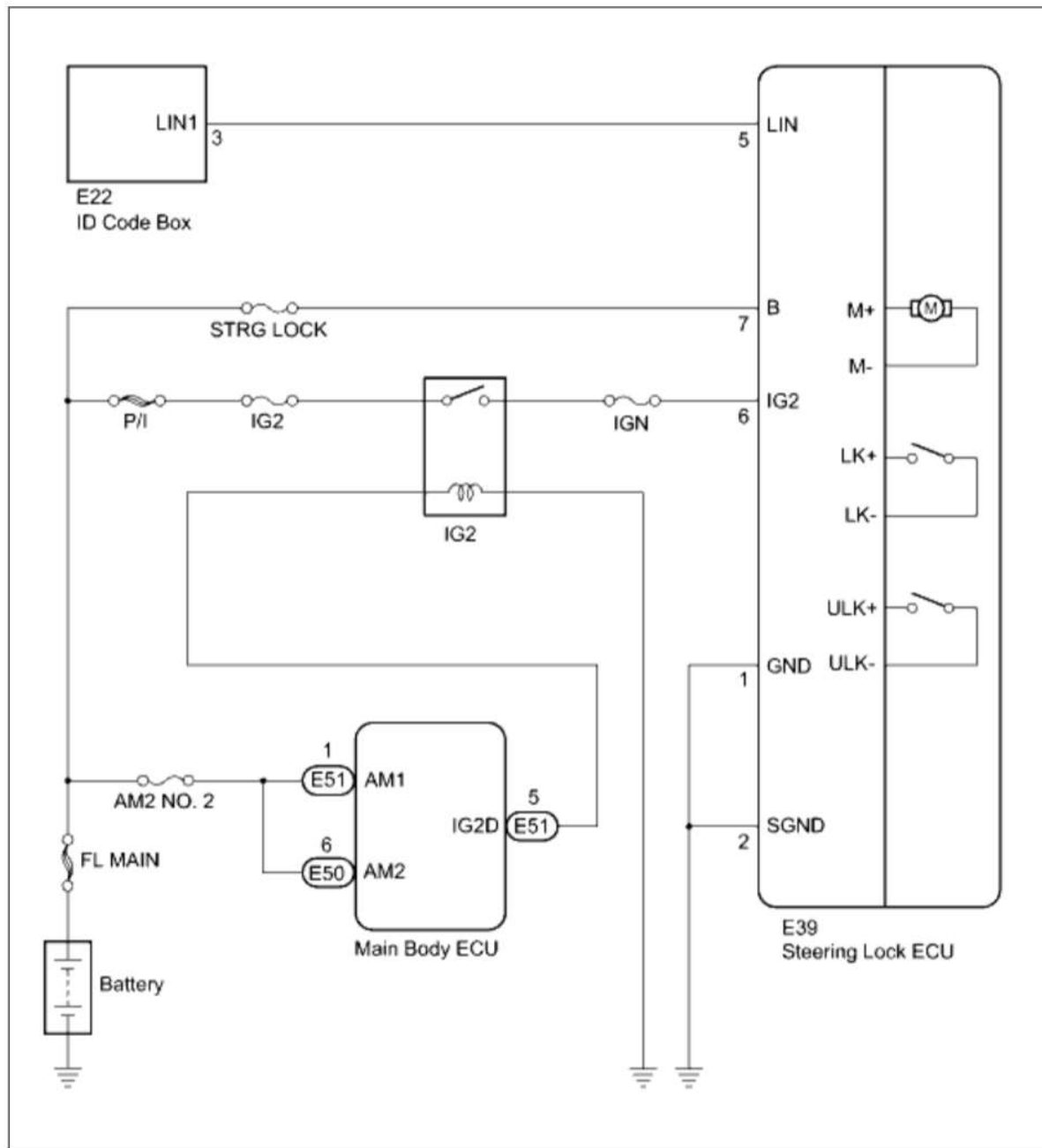
The steering lock ECU determines the on/off status of the engine switch through the IG2 signal circuit.

After receiving an IG2 relay ON signal, the steering lock ECU determines that the vehicle is moving. The steering lock ECU does not lock the steering when it receives the IG2 relay ON signal. This prevents the steering from being locked while the vehicle is moving.

The diagnosis information of the steering lock ECU is transmitted to the Techstream via the certification ECU as the steering lock ECU is not connected to the CAN communication system.

DTC NO.	DTC DETECTING CONDITION	TROUBLE AREA
B2788	Different information is obtained from IG2 signal received directly from the IG2 circuit, and from IG2 signal sent via LIN communication for a period of 1 second.	• IG2 relay • Wire harness • Main body ECU • Steering lock actuator assembly (Steering lock ECU)

WIRING DIAGRAM



INSPECTION PROCEDURE

When the engine switch is off, the main body ECU may occasionally go into a non-active state called sleep mode. Therefore, before proceeding with the inspection, it is necessary to perform the following step to wake up the ECU:

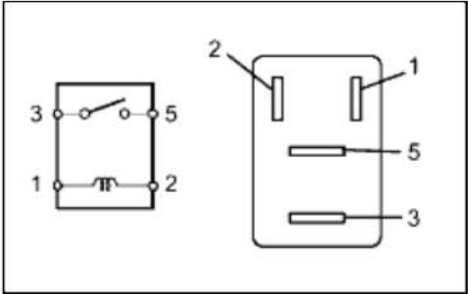
Before starting the inspection, open the driver door with the engine switch off. Then (with the engine switch still off) open and close any door several times at 1.5-second intervals.

NOTICE:

If the steering lock actuator (steering lock ECU) is replaced, open and close the driver side door with the engine switch off and the shift lever in neutral to record the current lock position into the steering lock ECU. If this is not performed, the engine may not start.

PROCEDURE

1. INSPECT NO. 2 IGNITION RELAY (IG2)



(a) Remove the IG2 relay from the engine room relay block.

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

Standard Resistance:

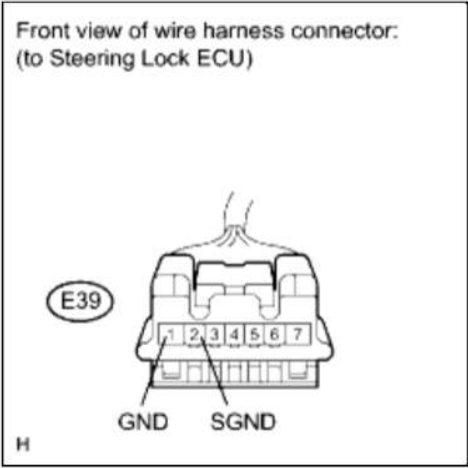
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 5	Always	10 k Ω or higher
3 - 5	When battery voltage is applied to terminals 1 and 2	Below 1 Ω

NG ► REPLACE NO. 2 IGNITION RELAY (IG2)

OK
▼

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

(a) Disconnect the E39 connector from the steering lock actuator assembly.



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

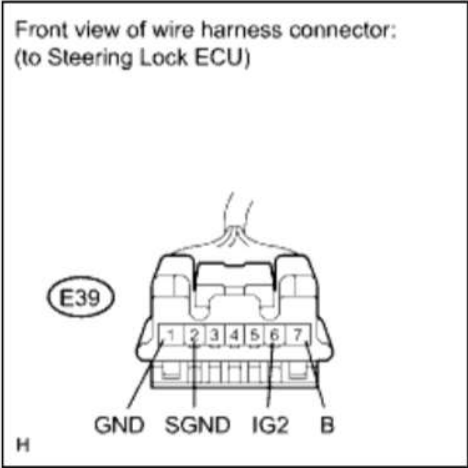
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	Always	Below 1 Ω
E39-2 (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.

Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E39-6 (IG2) - E39-1 (GND)	Engine switch on (IG)	11 to 14 V
E39-6 (IG2) - E39-2 (SGND)	Engine switch on (IG)	11 to 14 V

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

Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
*E39-6 (IG2) - E39-7 (B)	Engine switch off	10 kΩ or higher

* : This measurement is performed with the engine switch off to check for a short between IG2 and battery.

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

OK ► **REPLACE STEERING LOCK ACTUATOR ASSEMBLY
(STEERING LOCK ECU)**



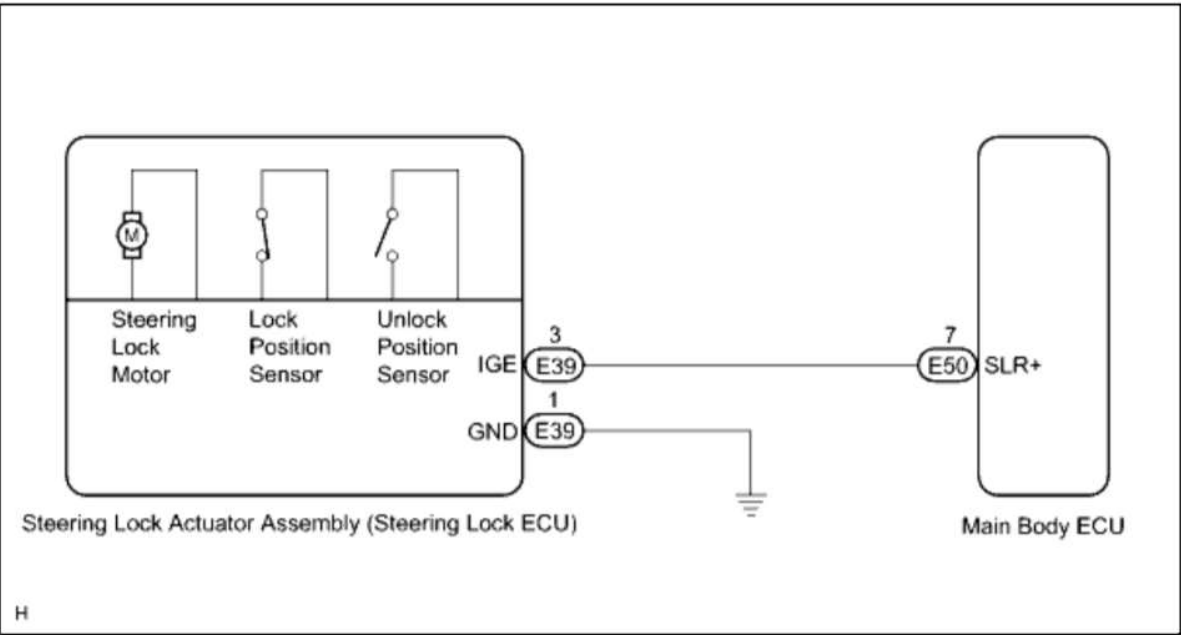
Last Modified: 3-10-2010	6.4 J	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWX02NX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: Steering Lock Motor Drive Power Circuit (2010 Corolla)		

Steering Lock Motor Drive Power Circuit

DESCRIPTION

The steering lock ECU is connected to the main body ECU and certification ECU. The steering lock ECU cannot activate the motor unless it receives permission signals from both ECUs. (The main body ECU permits the steering lock ECU to supply power to activate the motor.)

WIRING DIAGRAM



INSPECTION PROCEDURE

PROCEDURE

1.	CHECK VEHICLE CONDITION
----	-------------------------

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

Result:

CONDITION	PROCEED TO
Steering lock cannot be released	A
Steering cannot be locked	B

B ► INSPECT STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)

A



2.	READ VALUE USING TECHSTREAM
-----------	------------------------------------

- (a) Turn the engine switch off.
- (b) Connect the Techstream to the DLC3.
- (c) Turn the engine switch on (IG).
- (d) Turn the Techstream on.
- (e) Enter the following menus: Body Electrical / Smart Key / Data List.
- (f) Select the item below in the Data List, and read its value displayed on the Techstream.

Smart Key

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Lck/Unlck Rec	Steering lock command reception record / YES or NO	YES: Steering lock/unlock signal received NO: Steering lock/unlock signal not received	-

- (g) Check if a steering unlock command signal has been received.

OK:

"YES" is displayed on the Techstream display.

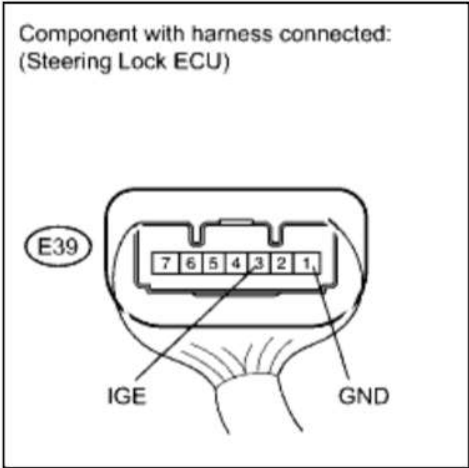
NG ► CHECK SMART KEY SYSTEM (for Start Function)

OK



3.

INSPECT STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)



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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-3 (IGE) - E39-1 (GND)	1. Engine switch off 2. Engine switch on (ACC or IG)	• Motor activated: Below 1 V • Motor not activated: 11 to 14 V

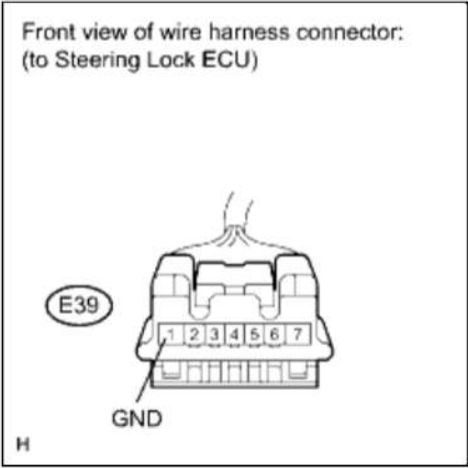
NG ► **CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - BODY GROUND)**

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

4.

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

(a) Disconnect the E39 connector from the steering lock actuator assembly.



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

Standard Resistance:

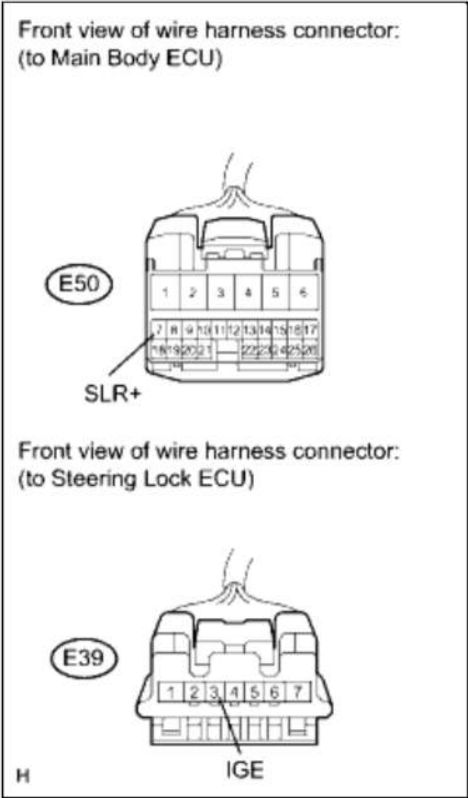
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	Always	Below 1 Ω

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK
▼

5.	CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - MAIN BODY ECU)
----	--

(a) Disconnect the E50 connector from the main body ECU.



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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-3 (IGE) - E50-7 (SLR+)	Always	Below 1 Ω
E39-3 (IGE) - Body ground	Always	10 k Ω or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

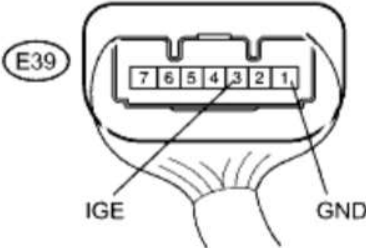
OK ► REPLACE MAIN BODY ECU

6. INSPECT STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
-------------------	-----------	---------------------

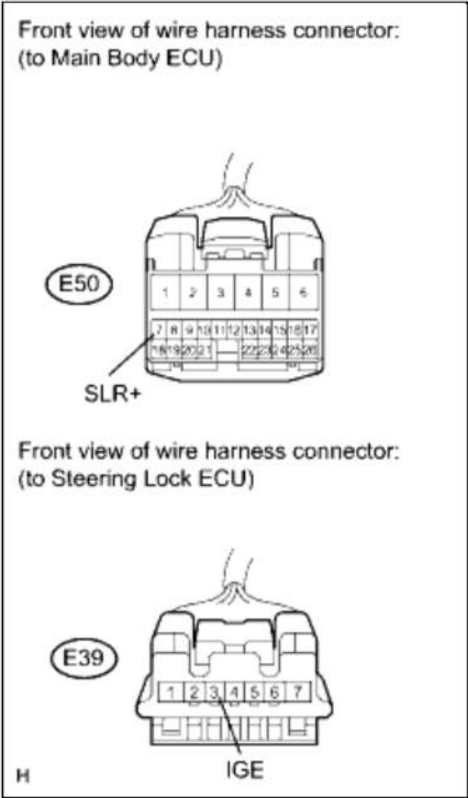
Component with harness connected: (Steering Lock ECU) 	E39-3 (IGE) - E39-1 (GND)	The specified condition should be checked after performing the following: 1. Move the shift lever to neutral 2. Turn the engine switch off 3. Open the driver's door	• Motor activated: Below 1 V • Motor not activated: 11 to 14 V
--	--------------------------------------	---	--

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK
▼

7.	CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - MAIN BODY ECU)
-----------	---

(a) Disconnect the E39 connector from the steering lock actuator assembly.



- (b) Disconnect the E50 connector from the main body ECU.
- (c) Measure the resistance according to the value(s) in the table below.
- Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-3 (IGE) - E50-7 (SLR+)	Always	Below 1 Ω
E39-3 (IGE) - Body ground	Always	10 k Ω or higher

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK ► REPLACE MAIN BODY ECU



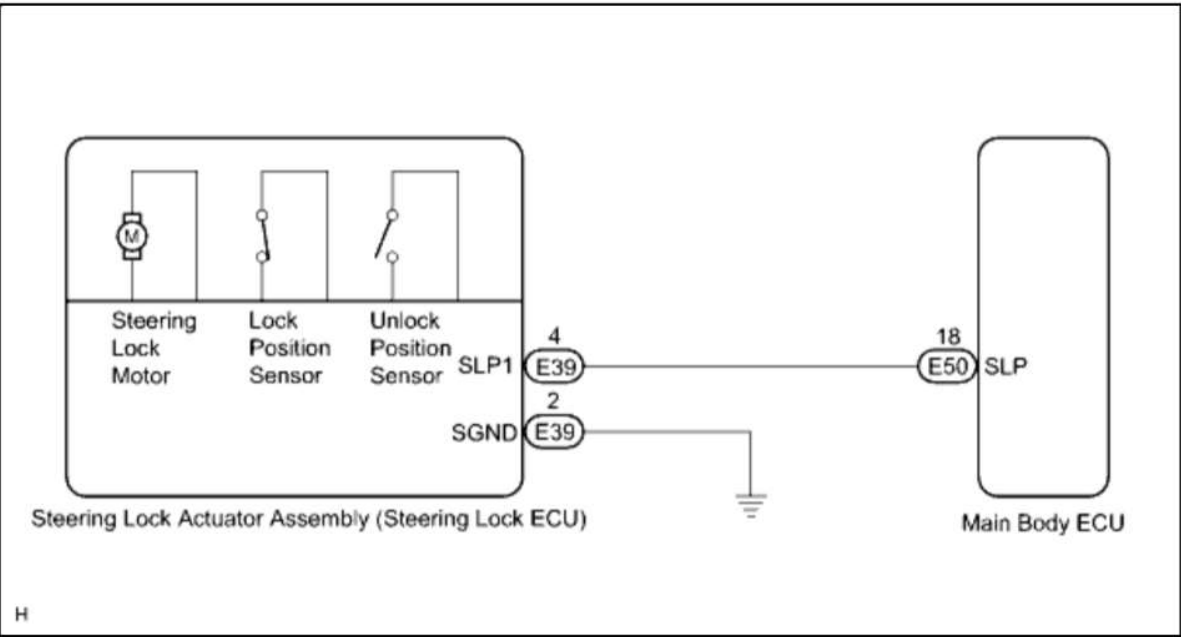
Last Modified: 3-10-2010	6.4 J	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWW02IX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: Unlock Position Sensor Signal Circuit (2010 Corolla)		

Unlock Position Sensor Signal Circuit

DESCRIPTION

The unlock position sensor is one of the components in 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 main body ECU. Receiving the signal, the ECU permits engine start. (This prevents the engine from being started with the steering locked.)

WIRING DIAGRAM

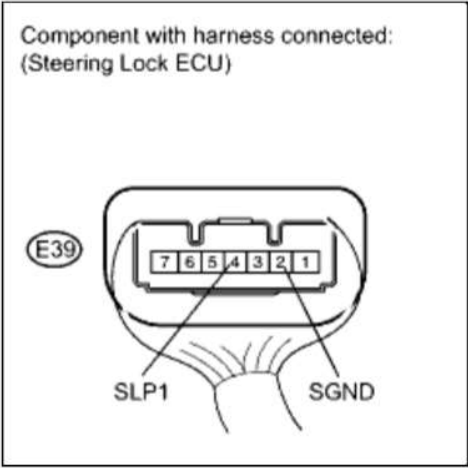


INSPECTION PROCEDURE

PROCEDURE

1.	INSPECT STEERING LOCK ACTUATOR ASSEMBLY (STEERING LOCK ECU)
----	---

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



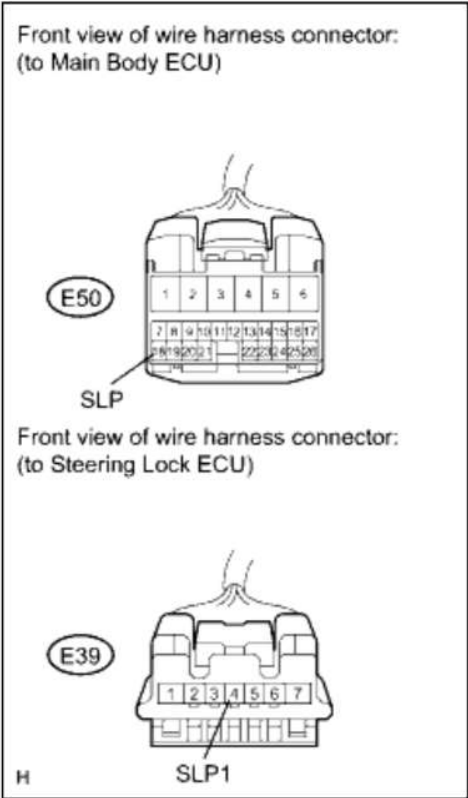
Standard Voltage:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
E39-4 (SLP1) - E39-2 (SGND)	1. Engine switch off 2. Engine switch on (ACC or IG)	Below 1 V

NG ► **CHECK SMART KEY SYSTEM (for Smart Function)**

OK
▼

2.	CHECK HARNESS AND CONNECTOR (STEERING LOCK ACTUATOR ASSEMBLY - MAIN BODY ECU)
----	--



(a) Disconnect the E39 connector from the steering lock actuator assembly.

- (b) Disconnect the E50 connector from the main body ECU.
- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-4 (SLP1) - E50-18 (SLP)	Always	Below 1 Ω
E39-4 (SLP1) - Body ground	Always	10 k Ω or higher

NG ► **REPAIR OR REPLACE HARNESS OR CONNECTOR**

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



TOYOTA

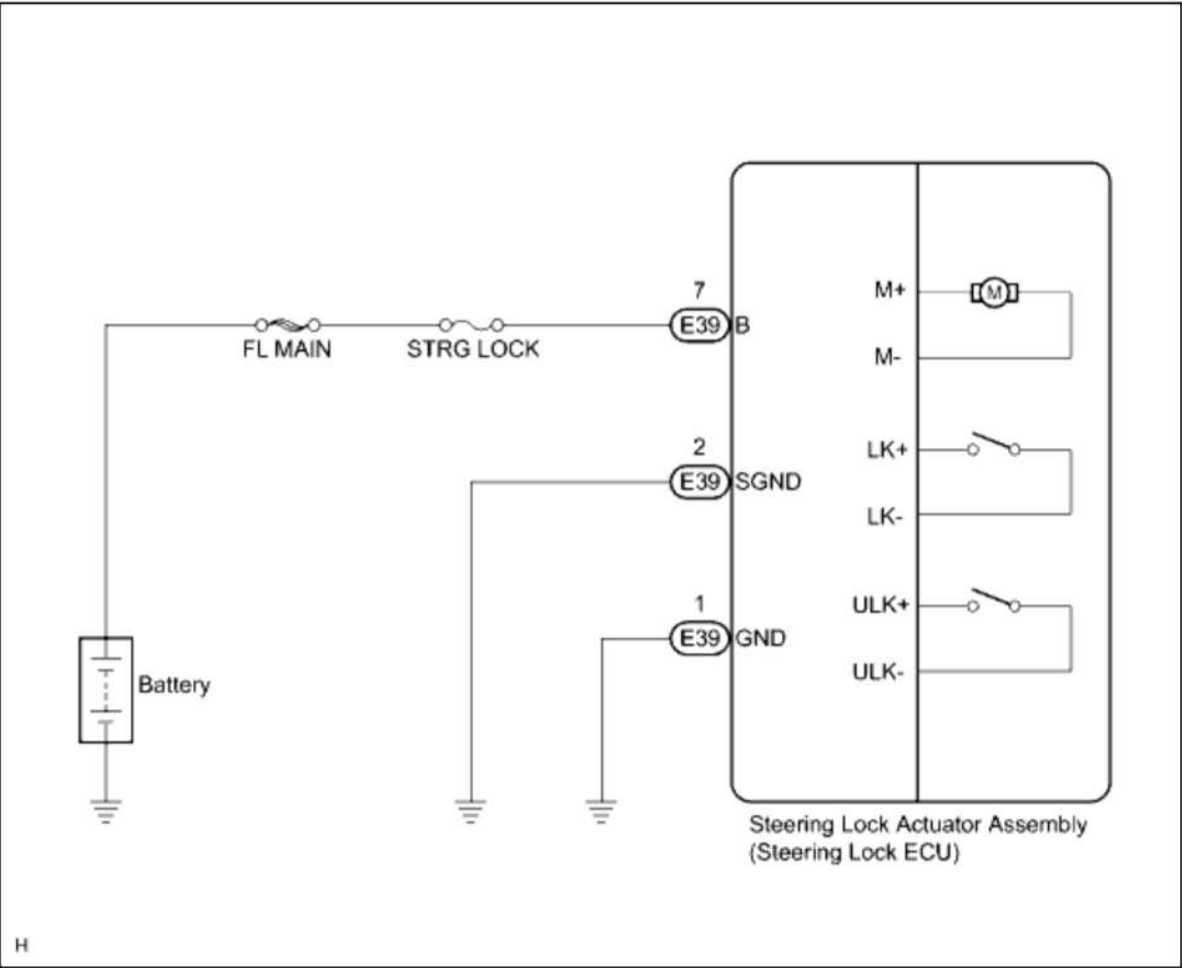
Last Modified: 3-10-2010	6.4 J	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000000XWQ02DX
Title: STEERING COLUMN: STEERING LOCK SYSTEM: Power Source Circuit (2010 Corolla)		

Power Source Circuit

DESCRIPTION

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

WIRING DIAGRAM

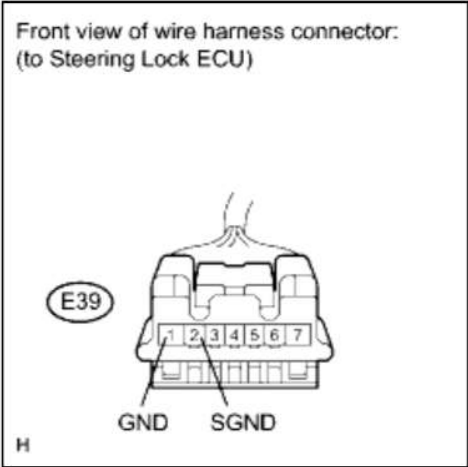


INSPECTION PROCEDURE

PROCEDURE

1.

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



(a) Disconnect the E39 connector from the steering lock actuator assembly.

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

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E39-1 (GND) - Body ground	Always	Below 1 Ω
E39-2 (SGND) - Body ground	Always	Below 1 Ω

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR

OK
▼

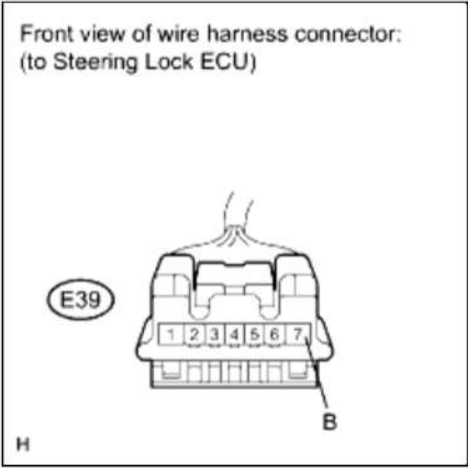
2.

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

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
-------------------	-----------	---------------------



E39-7 (B) - Body ground	Always	11 to 14 V
-------------------------	--------	------------

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

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



Last Modified: 3-10-2010	6.4 L	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001I9Z01TX
Title: STEERING COLUMN: STEERING SYSTEM: PRECAUTION (2010 Corolla)		

PRECAUTION

1. IGNITION SWITCH EXPRESSIONS

HINT:

The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this section.

EXPRESSION	SWITCH TYPE	
	IGNITION SWITCH (POSITION)	ENGINE SWITCH (CONDITION)
Ignition Switch off	LOCK	Off
Ignition Switch ACC	ACC	On (ACC)
Ignition Switch ON	ON	On (IG)
Engine Start	START	Start

2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

- (a) The vehicle is equipped with an SRS (Supplemental Restraint System). Failure to carry out service operations in the correct sequence could cause the SRS 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 [INFO](#).

3. HANDLING PRECAUTIONS FOR STEERING COLUMN

- (a) When handling the steering column assembly:
- (1) Avoid any impacts to the steering column assembly, especially to the motor or the torque sensor. Replace the steering column assembly with a new one if it is dropped or subjected to any severe impacts.
 - (2) Do not pull on any wire harness when moving the steering column assembly.
 - (3) After replacing the steering column assembly or power steering ECU assembly, calibrate torque sensor zero point [INFO](#) for 2AZ-FE, [INFO](#) for 2ZR-FE).
 - (4) Do not release the tilt lever when the steering column assembly is not installed on the vehicle.
- (b) When disconnecting or reconnecting the connectors:
- (1) When disconnecting the connectors related to the electric motor power steering system, turn the ignition switch to ON (the engine is stopped), center the steering wheel, turn the ignition switch off, and then disconnect the connectors.
 - (2) When reconnecting the connectors related to the electric motor power steering system, make sure that the ignition switch is turned off, center the steering wheel and then turn the ignition switch to ON (the engine is stopped).

NOTICE:

Do not turn the ignition switch to ON without the steering wheel centered.

- (3) If the above operations are not carried out correctly, the steering center point (zero point) will deviate, causing a difference in steering effort between right and left turns. If there is a difference in the steering effort between right and left turns, perform the torque sensor zero point calibration  for 2AZ-FE,  for 2ZR-FE).



Last Modified: 3-10-2010	6.4 T	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001IA001LX
Title: STEERING COLUMN: STEERING SYSTEM: PROBLEM SYMPTOMS TABLE (2010 Corolla)		

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, the potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Steering System

SYMPTOM	SUSPECTED AREA	SEE PAGE
Heavy steering	Front tires (Improperly inflated or unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Front suspension (Lower ball joint)	INFO
	Steering intermediate shaft	-
	Steering column	INFO
	Steering gear	INFO
	Power steering ECU (for 2AZ-FE)	INFO
	Power steering ECU (for 2ZR-FE)	INFO
Poor return	Front tires (Improperly inflated or unevenly worn)	INFO
	Front wheel alignment (Incorrect)	INFO
	Steering column	INFO
	Steering gear	INFO
	Power steering ECU (for 2AZ-FE)	INFO
	Power steering ECU (for 2ZR-FE)	INFO
No free play or excessive play	Steering intermediate shaft	-

SYMPTOM	SUSPECTED AREA	SEE PAGE
	Steering gear	INFO
Knocking (or cranking) sound occurs when steering wheel turned while power steering is in operation	Steering intermediate shaft	-
	Front suspension (Lower ball joint)	INFO
	Front axle hub (Hub bearing)	INFO
	Steering gear	INFO
Friction sound occurs when steering wheel turned during low-speed driving	Power steering motor	-
	Steering column	INFO
High-pitched sound (squealing sound) occurs when steering wheel turned slowly with vehicle stopped	Power steering motor	-
Steering wheel vibrates and noise occurs when steering wheel turned while vehicle stopped	Power steering motor	-
	Steering column	INFO

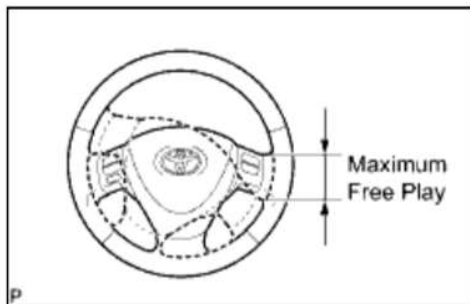


TOYOTA

Last Modified: 3-10-2010	6.4 G	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001IA101MX
Title: STEERING COLUMN: STEERING SYSTEM: ON-VEHICLE INSPECTION (2010 Corolla)		

ON-VEHICLE INSPECTION

1. CHECK STEERING WHEEL FREE PLAY



(a) Stop the vehicle and align the tires facing straight ahead.

(b) Turn the steering wheel gently right and left, and check the steering wheel free play.

Maximum free play:

30 mm (1.18 in.)

If the free play exceeds the maximum, check the steering system [INFO](#).



Last Modified: 3-10-2010	6.4 N	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM000001R4401OX
Title: STEERING COLUMN: STEERING SYSTEM: ADJUSTMENT (2010 Corolla)		

ADJUSTMENT

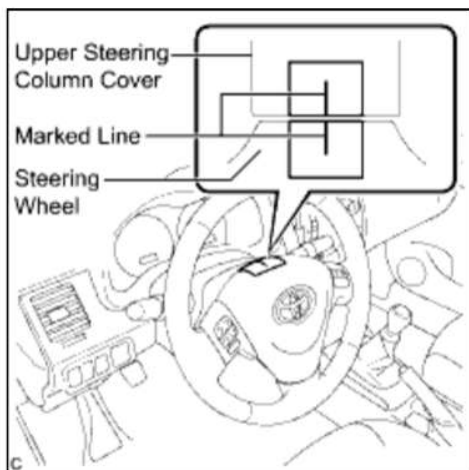
1. ADJUST STEERING WHEEL OFF CENTER

- (a) Inspect steering wheel off center.



- (1) Apply masking tape on the top center of the steering wheel and upper steering column cover.

- (2) Drive the vehicle in a straight line for 100 meters at a constant speed of 56 km/h (35 mph), while holding the steering wheel straight.

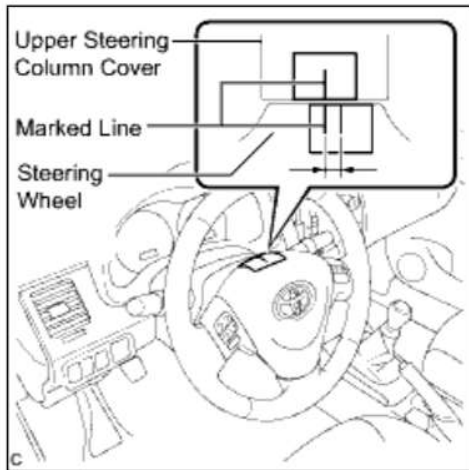


- (3) Draw a line on the masking tape as shown in the illustration.

- (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.

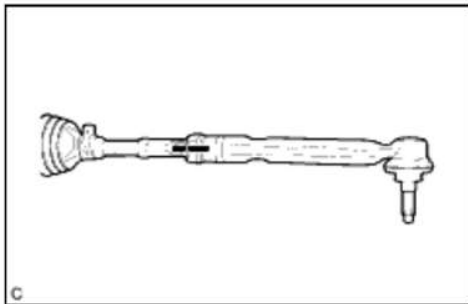
(6) Measure the distance between the 2 lines on the masking tape on the steering wheel.

(7) Convert the measured distance to steering angle.

HINT:

- Measured distance 1 mm (0.0394 in.) = Steering angle of approximately 1 degree.
- Make a note of the steering angle.

(b) Adjust steering angle.



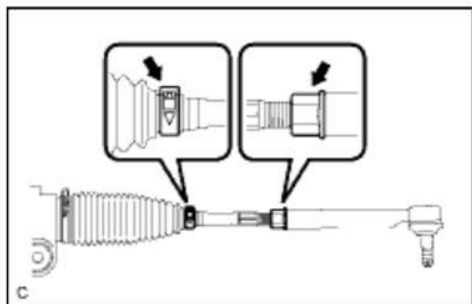
(1) Draw a line on the RH and LH tie rod ends and rack ends respectively where it can be easily seen.

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

HINT:

- Perform measurement on both 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 the rack end (1.5 mm (0.0591 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 (755 kgf·cm, 55ft·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 (0.0591 in.).

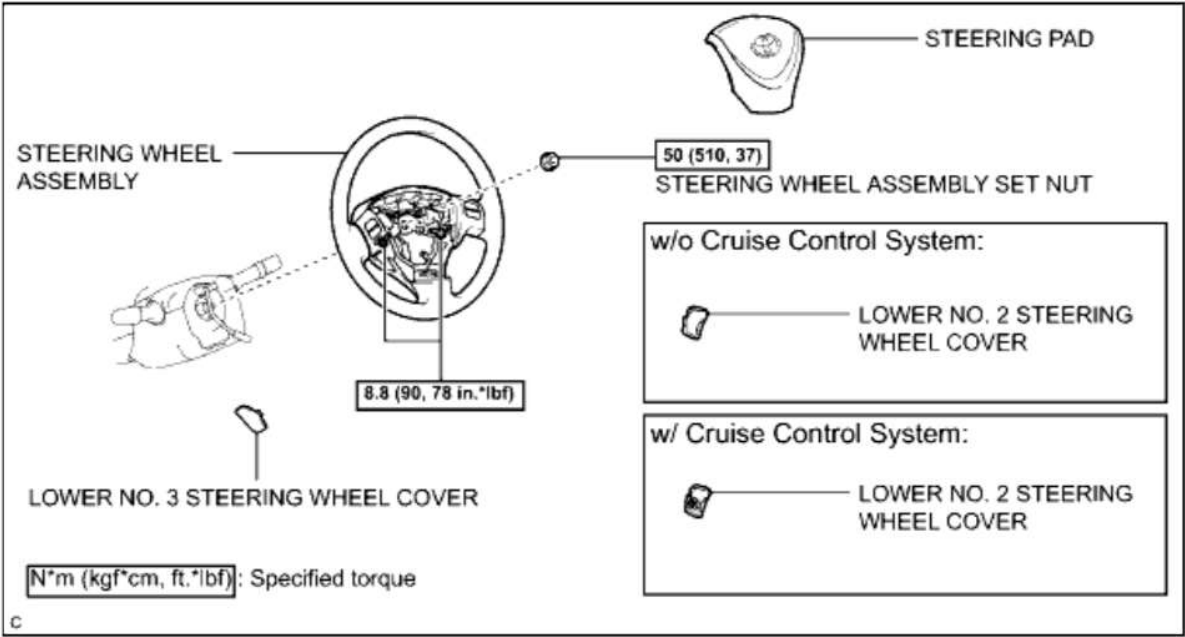
(7) Install the RH and LH boot clips.



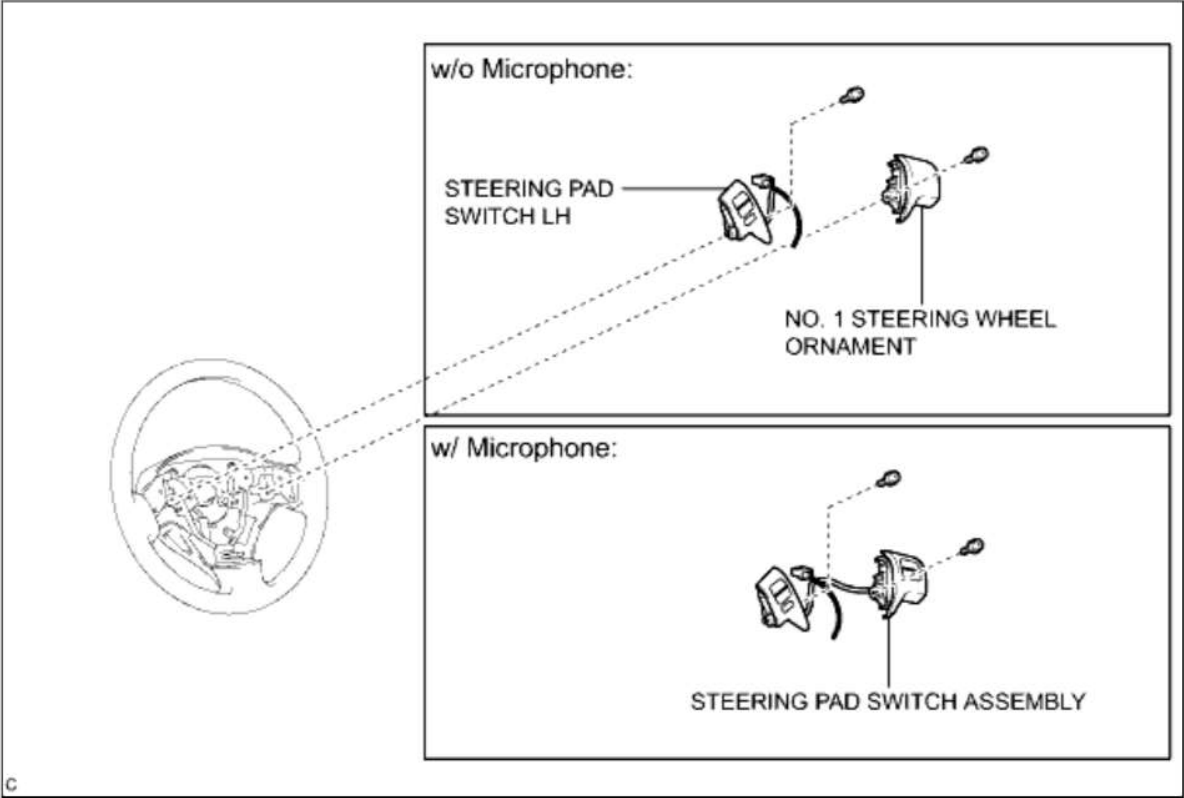
Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RS015X
Title: STEERING COLUMN: STEERING WHEEL (w/ Steering Pad Switch): COMPONENTS (2010 Corolla)		

COMPONENTS

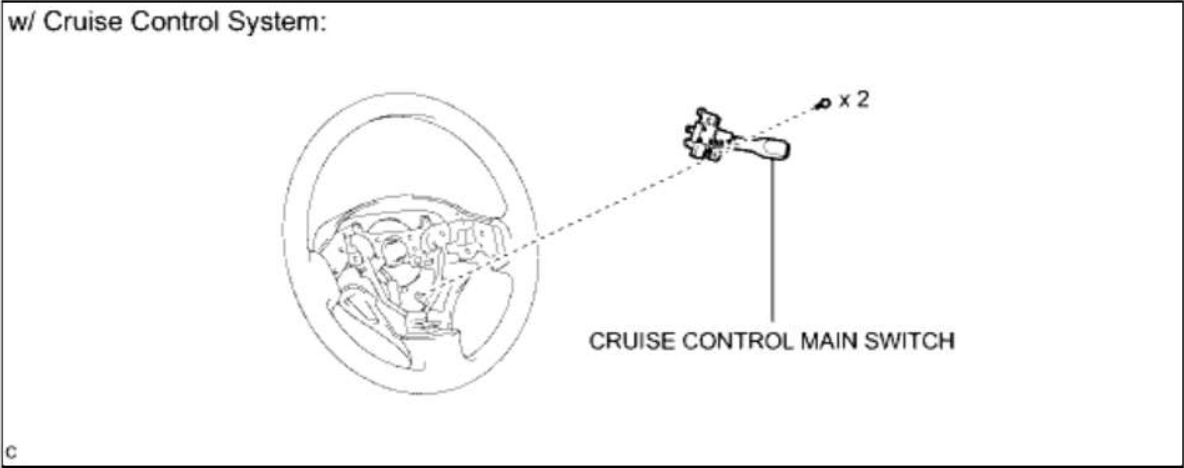
ILLUSTRATION



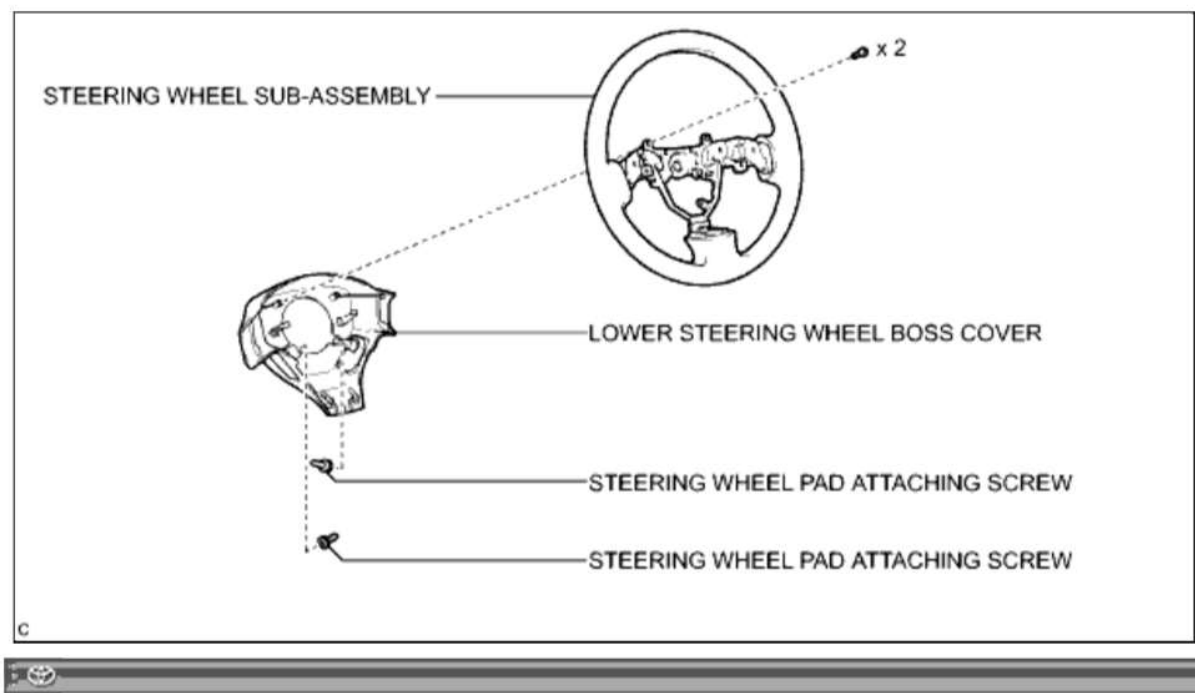
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RT017X
Title: STEERING COLUMN: STEERING WHEEL (w/ Steering Pad Switch): REMOVAL (2010 Corolla)		

REMOVAL

CAUTION:

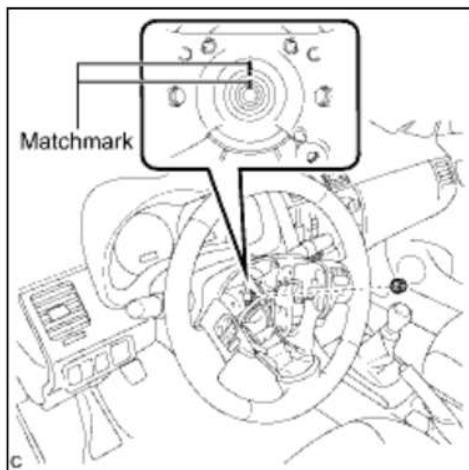
Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing .

1. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

3. REMOVE LOWER NO. 3 STEERING WHEEL COVER 
4. REMOVE LOWER NO. 2 STEERING WHEEL COVER 
5. REMOVE STEERING PAD 
6. REMOVE STEERING WHEEL ASSEMBLY



(a) Remove the steering wheel assembly set nut.

(b) Put matchmarks on the steering wheel assembly and the steering main shaft.

(c) Disconnect the connectors from the spiral cable.

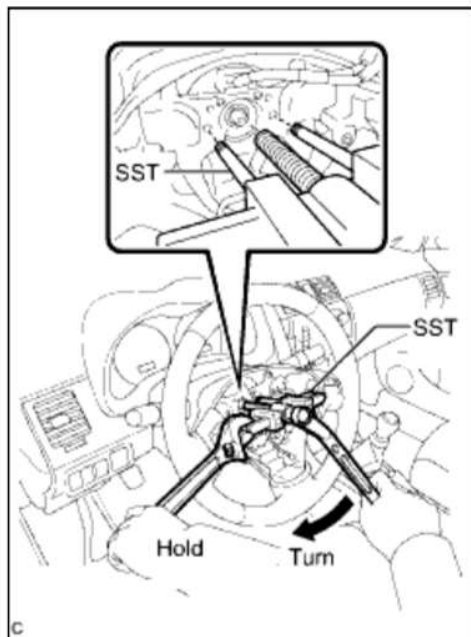
(d) Using SST, remove the steering wheel assembly.

SST: 09950-50013

09951-05010

09952-05010

09953-05020

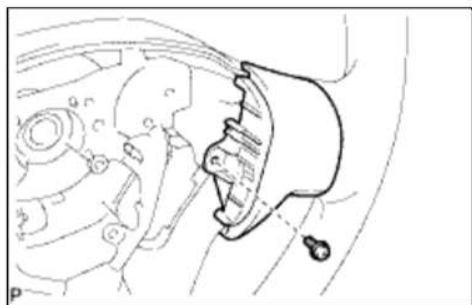


09954-05021

NOTICE:

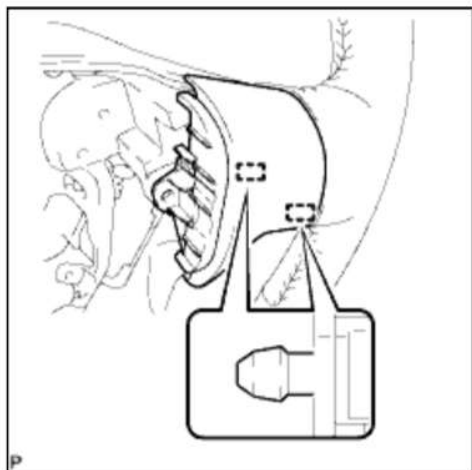
Apply a small amount of grease to the threads and tip of SST (09953-05020) before use.

7. REMOVE STEERING PAD SWITCH LH (w/o Microphone)

8. REMOVE NO. 1 STEERING WHEEL ORNAMENT (w/o Microphone)


(a) Remove the screw.

(b) Disengage the 2 pins to remove the No. 1 steering wheel ornament from the steering wheel sub-assembly.



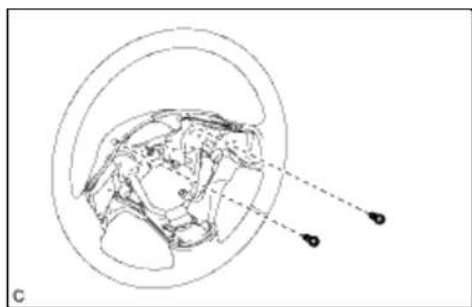
9. REMOVE STEERING PAD SWITCH ASSEMBLY (w/ Microphone)

[INFO](#)

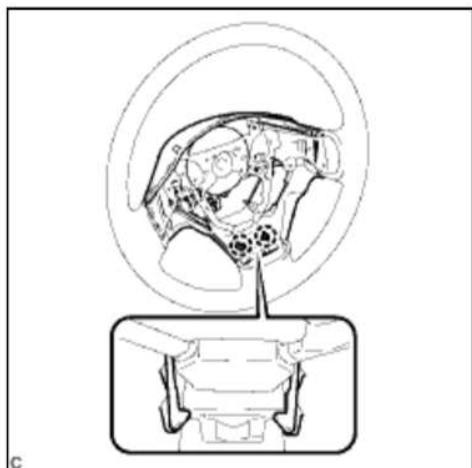
10. REMOVE CRUISE CONTROL MAIN SWITCH (w/ Cruise Control System)

[INFO](#)

11. REMOVE LOWER STEERING WHEEL BOSS COVER

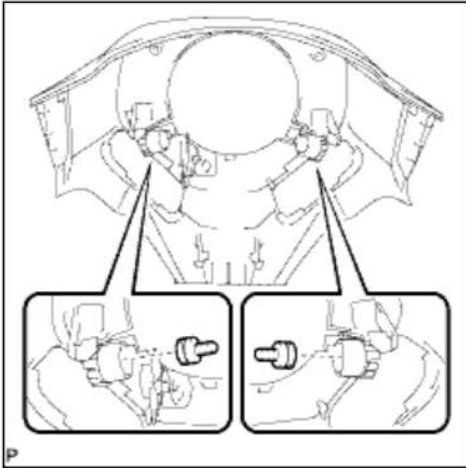


(a) Remove the 2 screws.



(b) Disengage the 2 claws to remove the lower steering wheel boss cover from the steering wheel sub-assembly.

12. REMOVE STEERING WHEEL PAD ATTACHING SCREW



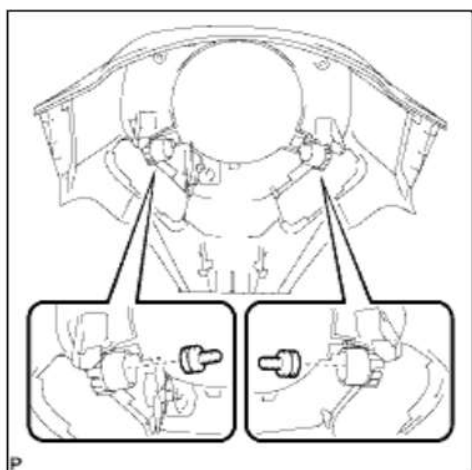
- (a) Remove the 2 steering wheel pad attaching screws from the lower steering wheel boss cover.



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RR017X
Title: STEERING COLUMN: STEERING WHEEL (w/ Steering Pad Switch): INSTALLATION (2010 Corolla)		

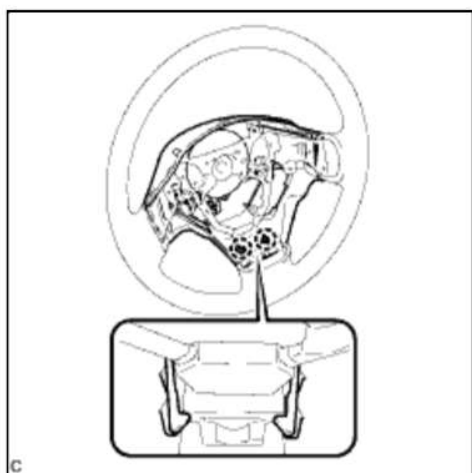
INSTALLATION

1. INSTALL STEERING WHEEL PAD ATTACHING SCREW



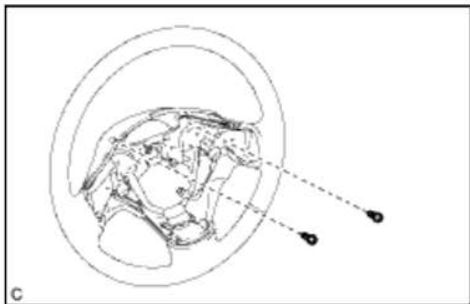
(a) Install the 2 steering wheel pad attaching screws to the lower steering wheel boss cover.

2. INSTALL LOWER STEERING WHEEL BOSS COVER



(a) Engage the 2 claws to install the lower steering wheel boss cover to the steering wheel sub-assembly.

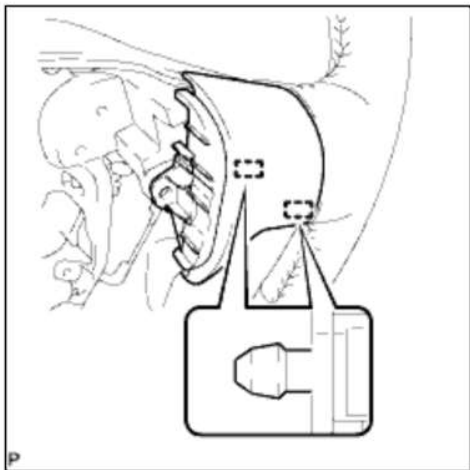
(b) Install the 2 screws.



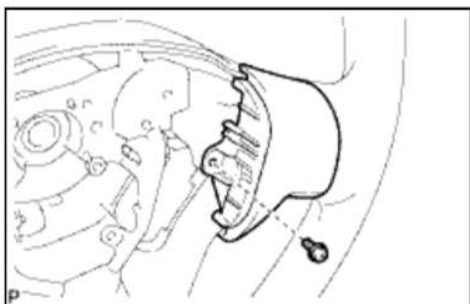
3. INSTALL CRUISE CONTROL MAIN SWITCH (w/ Cruise Control System) INFO

4. INSTALL STEERING PAD SWITCH LH (w/o Microphone) INFO

5. INSTALL NO. 1 STEERING WHEEL ORNAMENT (w/o Microphone)



(a) Engage the 2 pins to install the No. 1 steering wheel ornament to the steering wheel sub-assembly.



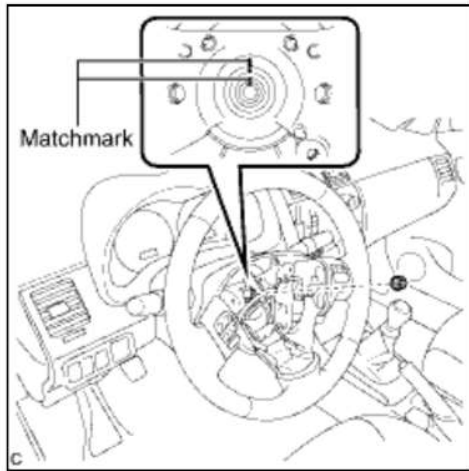
(b) Install the screw.

6. INSTALL STEERING PAD SWITCH ASSEMBLY (w/ Microphone) INFO

7. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD

8. ADJUST SPIRAL CABLE INFO

9. INSTALL STEERING WHEEL ASSEMBLY



(a) Align the matchmarks on the steering wheel assembly and steering main shaft.

(b) Install the steering wheel assembly set nut.

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

(c) Connect the connectors to the spiral cable sub-assembly.

10. INSTALL STEERING PAD

11. INSTALL LOWER NO. 3 STEERING WHEEL COVER

12. INSTALL LOWER NO. 2 STEERING WHEEL COVER

13. INSPECT STEERING WHEEL CENTER POINT

14. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

15. INSPECT STEERING PAD

16. INSPECT SRS WARNING LIGHT

HINT: .

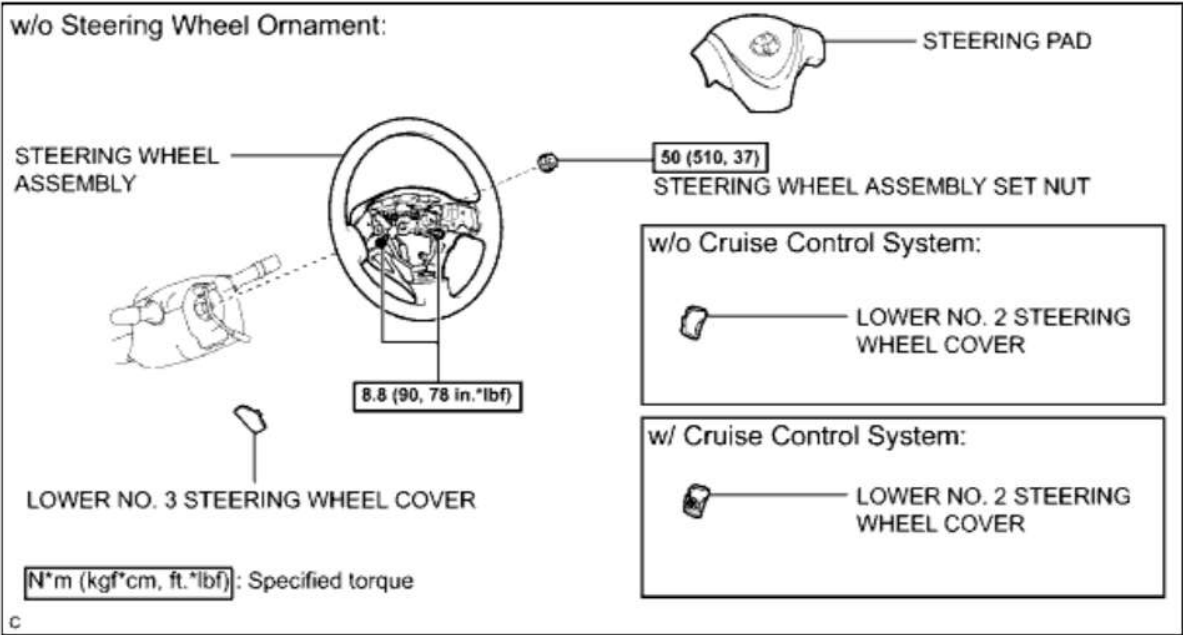


TOYOTA

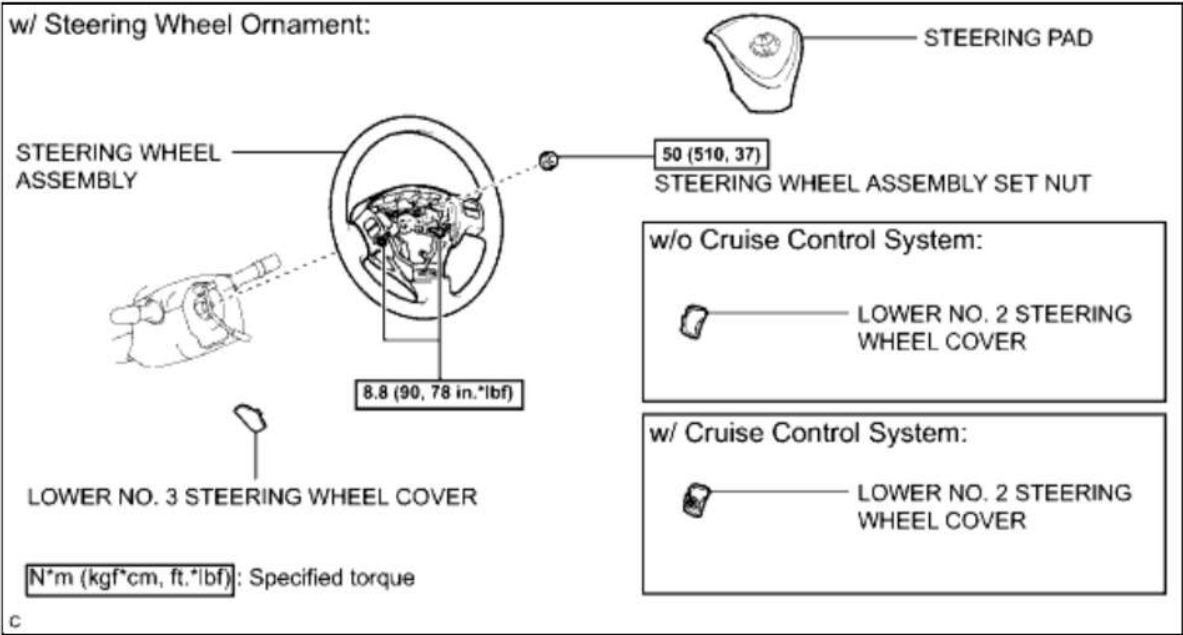
Last Modified: 3-10-2010	6.4 K	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RS018X
Title: STEERING COLUMN: STEERING WHEEL (w/o Steering Pad Switch): COMPONENTS (2010 Corolla)		

COMPONENTS

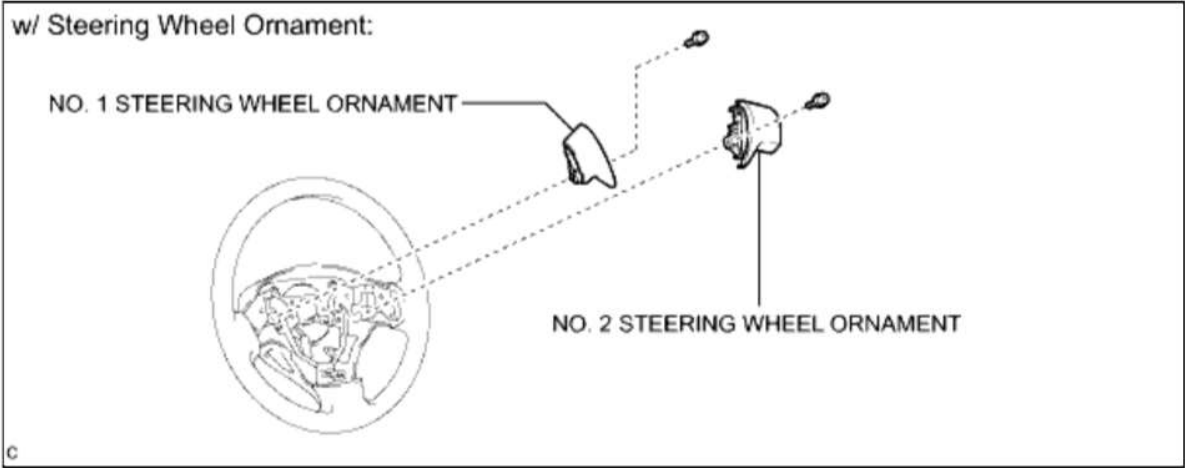
ILLUSTRATION



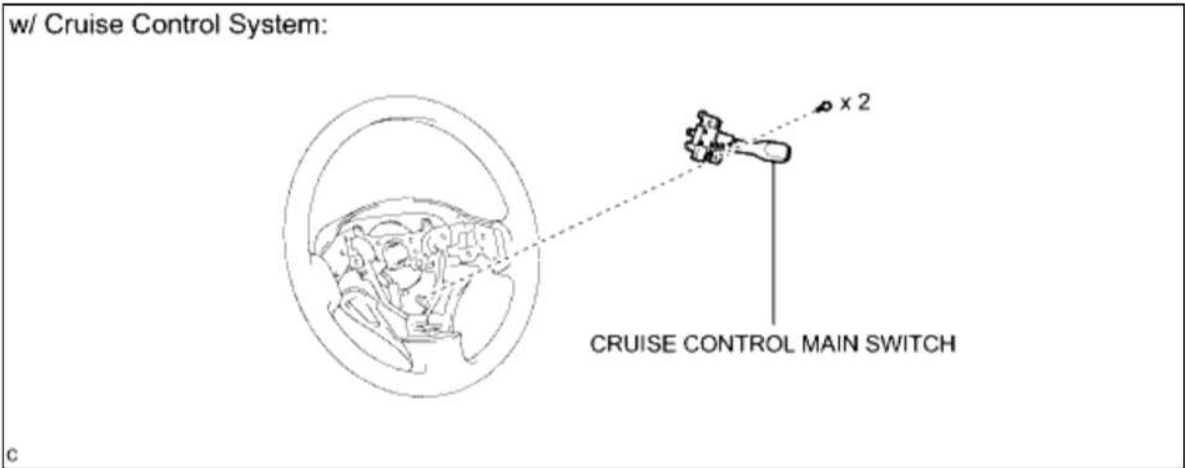
ILLUSTRATION



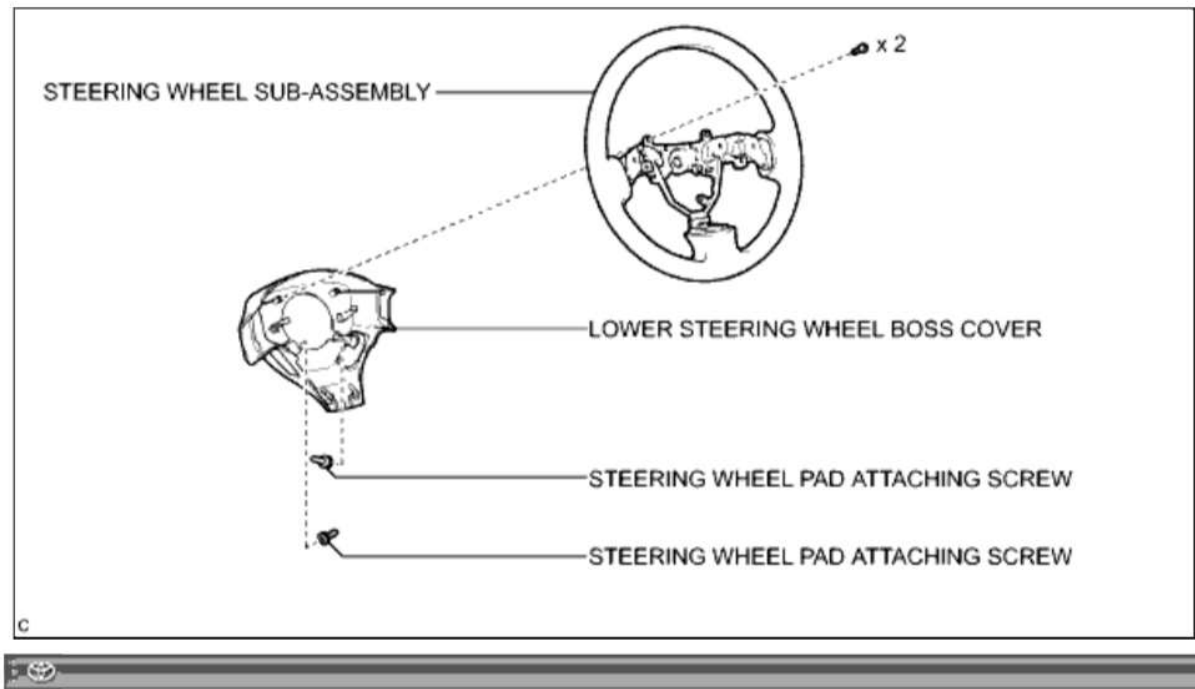
ILLUSTRATION



ILLUSTRATION



ILLUSTRATION



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RT01AX
Title: STEERING COLUMN: STEERING WHEEL (w/o Steering Pad Switch): REMOVAL (2010 Corolla)		

REMOVAL

CAUTION:

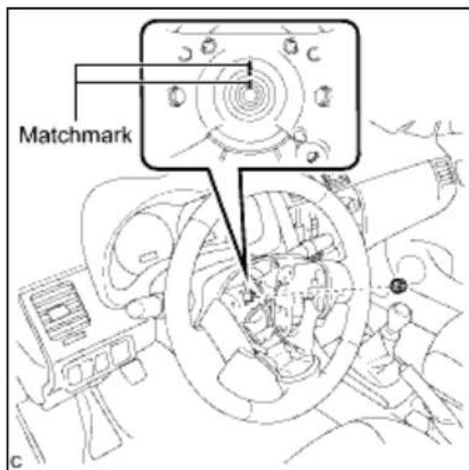
Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing .

1. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD
2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to disable the SRS system.

3. REMOVE LOWER NO. 3 STEERING WHEEL COVER 
4. REMOVE LOWER NO. 2 STEERING WHEEL COVER 
5. REMOVE STEERING PAD 
6. REMOVE STEERING WHEEL ASSEMBLY



(a) Remove the steering wheel assembly set nut.

(b) Put matchmarks on the steering wheel assembly and the steering main shaft.

(c) Disconnect the connectors from the spiral cable.

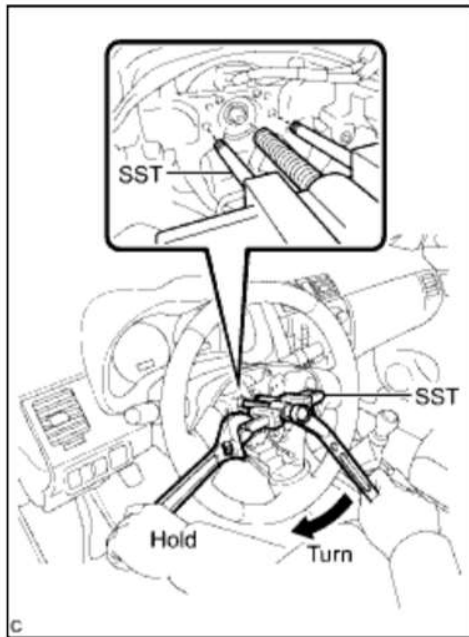
(d) Using SST, remove the steering wheel assembly.

SST: 09950-50013

09951-05010

09952-05010

09953-05020

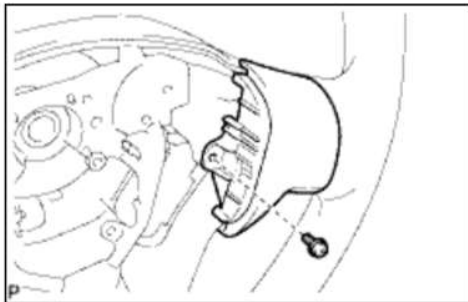


09954-05021

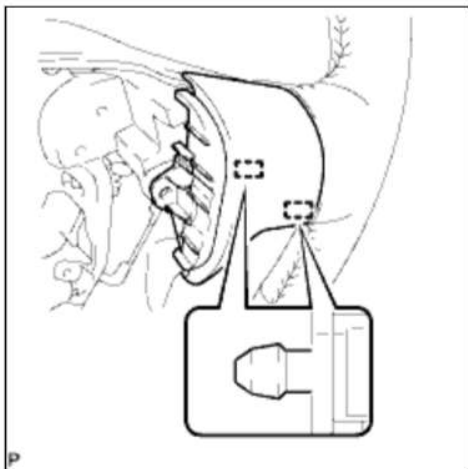
NOTICE:

Apply a small amount of grease to the threads and tip of SST (09953-05020) before use.

7. REMOVE NO. 1 STEERING WHEEL ORNAMENT (w/ Steering Wheel Ornament)



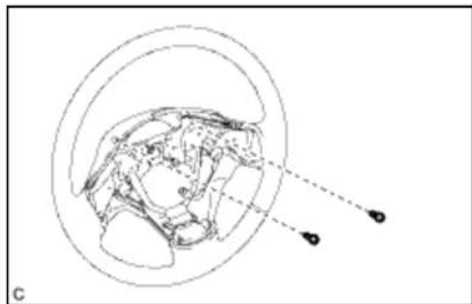
(a) Remove the screw.



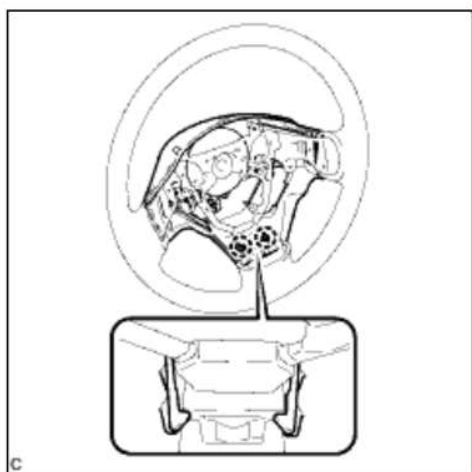
(b) Disengage the 2 pins to remove the No. 1 steering wheel ornament from the steering wheel sub-assembly.

8. REMOVE NO. 2 STEERING WHEEL ORNAMENT (w/ Steering Wheel Ornament)**HINT:**

Perform the same procedure as for the No. 1 steering wheel ornament.

9. REMOVE CRUISE CONTROL MAIN SWITCH (w/ Cruise Control System)**10. REMOVE LOWER STEERING WHEEL BOSS COVER**

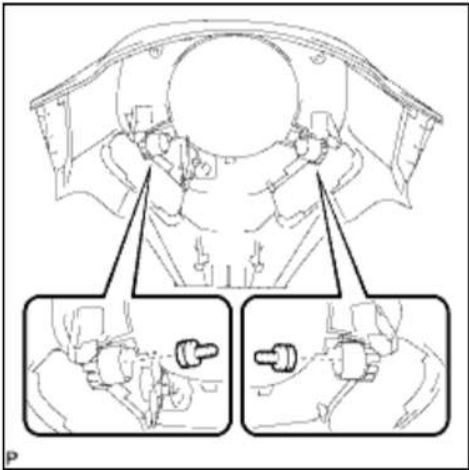
(a) Remove the 2 screws.



(b) Disengage the 2 claws to remove the lower steering wheel boss cover from the steering wheel sub-assembly.

11. REMOVE STEERING WHEEL PAD ATTACHING SCREW

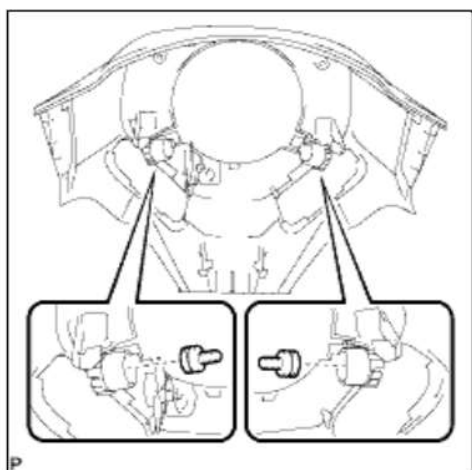
(a) Remove the 2 steering wheel pad attaching screws from the lower steering wheel boss cover.



Last Modified: 3-10-2010	6.4 A	From: 200901
Model Year: 2010	Model: Corolla	Doc ID: RM0000033RR01AX
Title: STEERING COLUMN: STEERING WHEEL (w/o Steering Pad Switch): INSTALLATION (2010 Corolla)		

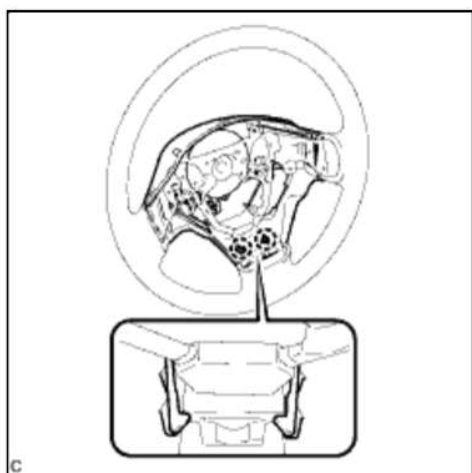
INSTALLATION

1. INSTALL STEERING WHEEL PAD ATTACHING SCREW



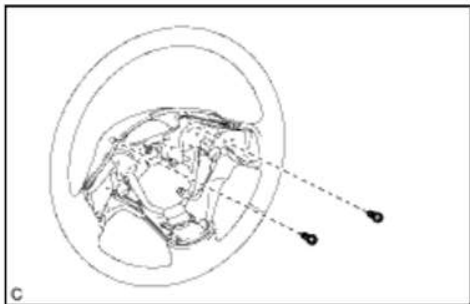
(a) Install the 2 steering wheel pad attaching screws to the lower steering wheel boss cover.

2. INSTALL LOWER STEERING WHEEL BOSS COVER



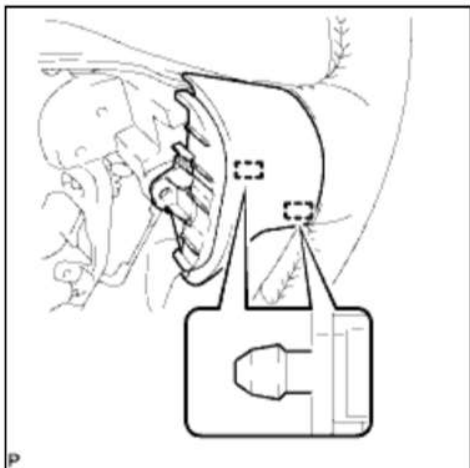
(a) Engage the 2 claws to install the lower steering wheel boss cover to the steering wheel sub-assembly.

(b) Install the 2 screws.

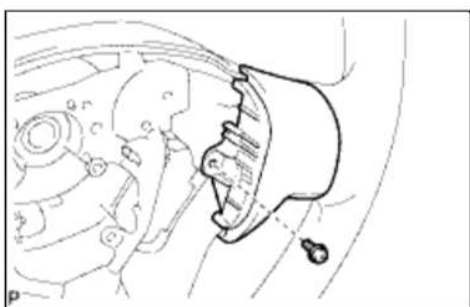


3. INSTALL CRUISE CONTROL MAIN SWITCH (w/ Cruise Control System) INFO

4. INSTALL NO. 1 STEERING WHEEL ORNAMENT (w/ Steering Wheel Ornament)



(a) Engage the 2 pins to install the No. 1 steering wheel ornament to the steering wheel sub-assembly.



(b) Install the screw.

5. INSTALL NO. 2 STEERING WHEEL ORNAMENT (w/ Steering Wheel Ornament)

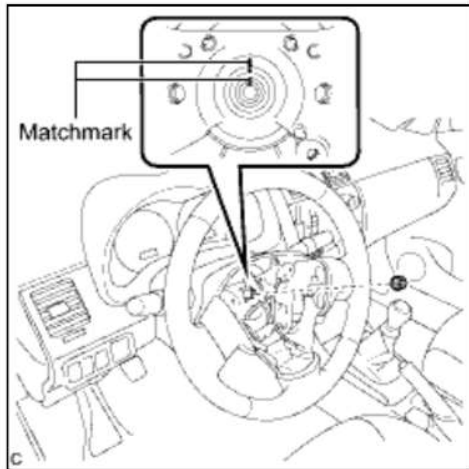
HINT:

Perform the same procedure as for the No. 1 steering wheel ornament.

6. TURN FRONT WHEELS TO FACE STRAIGHT AHEAD

7. ADJUST SPIRAL CABLE INFO

8. INSTALL STEERING WHEEL ASSEMBLY



(a) Align the matchmarks on the steering wheel assembly and steering main shaft.

(b) Install the steering wheel assembly set nut.

Torque: 50 N·m (510 kgf·cm, 37ft·lbf)

(c) Connect the connectors to the spiral cable sub-assembly.

9. INSTALL STEERING PAD INFO

10. INSTALL LOWER NO. 3 STEERING WHEEL COVER INFO

11. INSTALL LOWER NO. 2 STEERING WHEEL COVER INFO

12. INSPECT STEERING WHEEL CENTER POINT

13. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

14. INSPECT STEERING PAD INFO

15. INSPECT SRS WARNING LIGHT

HINT: INFO .



TOYOTA