

STEERING SYSTEM

PRECAUTION

1. HANDLING PRECAUTIONS FOR STEERING SYSTEM

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

2. HANDLING PRECAUTIONS FOR SRS

- (a) The vehicle is equipped with a Supplemental Restraint System (SRS) which includes a driver side airbag. Failure to carry out service procedures in the correct sequence may unexpectedly deploy the SRS and cause serious injuries. Furthermore, if a mistake is made in servicing the SRS, it may fail to operate when required. Before servicing (including installation, removal, inspection or replacement of parts), read the SRS section's "Precaution" (see page [RS-11](#)).

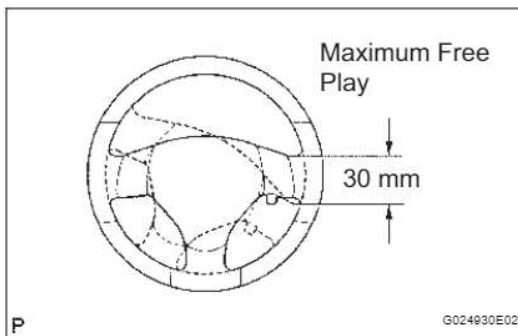
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STEERING COLUMN – STEERING SYSTEM

PROBLEM SYMPTOMS TABLE

STEERING SYSTEM

Symptom	Suspected Area	See page
Hard steering	1. Tires (Improperly inflated)	TW-3
	2. Power steering fluid level (Low)	PS-3
	3. Drive belt (Loose)	-
	4. Front wheel alignment (Incorrect)	SP-2
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	SP-26
	7. Steering column (Binding)	-
	8. Power steering vane pump	PS-11
	9. Power steering link assembly	PS-21
Poor return	1. Tires (Improperly inflated)	TW-3
	2. Front wheel alignment (Incorrect)	SP-2
	3. Steering column (Binding)	-
	4. Power Steering link assembly	PS-21
Excessive free play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	SP-26
	3. Intermediate shaft, Sliding yoke (Worn)	-
	4. Front wheel bearing (Worn)	AH-6
	5. Power steering link assembly	PS-21
Abnormal noise	1. Power steering fluid level (Low)	PS-3
	2. Steering system joints (Worn)	-
	3. Power steering vane pump	PS-11
	4. Power steering link assembly	PS-21



ON-VEHICLE INSPECTION

1. CHECK STEERING WHEEL FREE PLAY

- Stop the vehicle. Position the steering wheel in the center position with the tires pointing straight ahead.
- Turn the steering wheel gently right and left, and check the steering wheel free play.

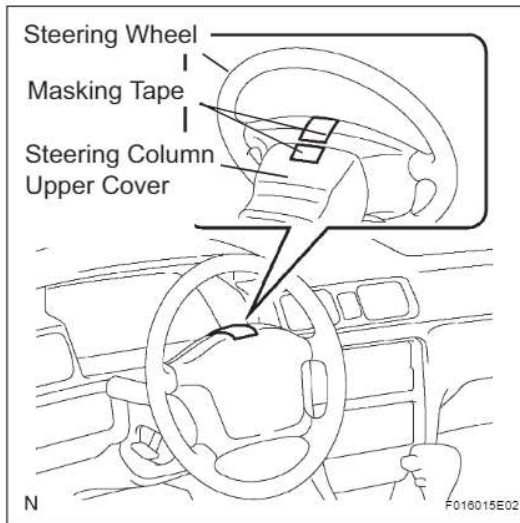
Maximum free play:

30 mm (1.18 in.)

If the free play exceeds the maximum, replace the steering intermediate shaft sub-assembly or steering link assembly.

STEERING COLUMN – STEERING SYSTEM

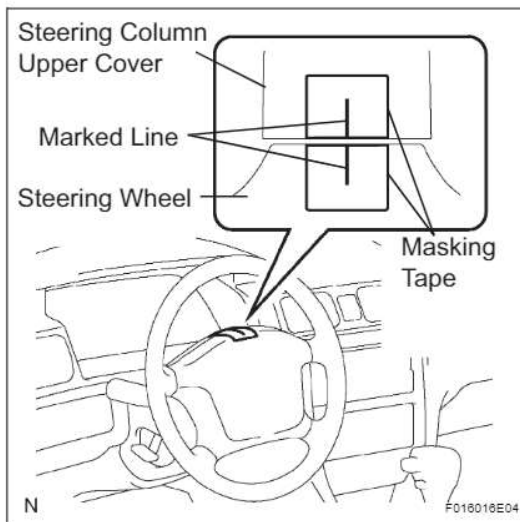
SR-3



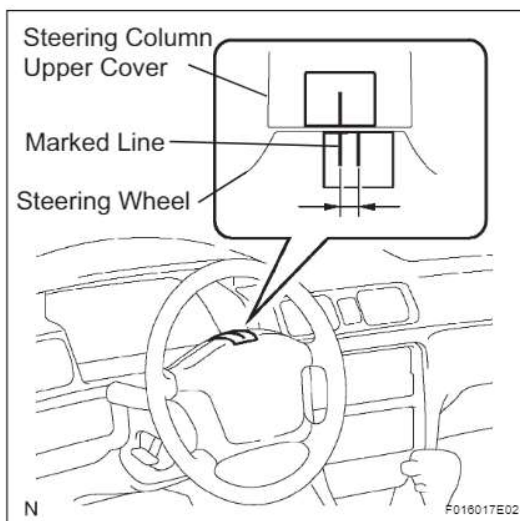
REPAIR

1. INSPECT STEERING POSITION

- Apply masking tape on the top center of the steering wheel and steering column upper cover.
- Drive the vehicle in a straight line for 100 m (3.28 ft.) at a constant speed of 56 km/h (35 mph), and hold the steering wheel to maintain the course.



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



- Rotate the steering wheel to the center position.
HINT:
Locate the center position by looking at: 1) the upper surface of the steering wheel, 2) the cover upper, and 3) the horizontal line of the "SRS Airbag" symbol imprinted on the steering pad.
- Draw a new line on the masking tape of the steering wheel as shown in the illustration.
- Measure the distance between the 2 lines on the masking tape of the steering wheel.
- Calculate the measured distance in terms of steering angle.

Reference:

1 mm (0.004 in.) = 1°

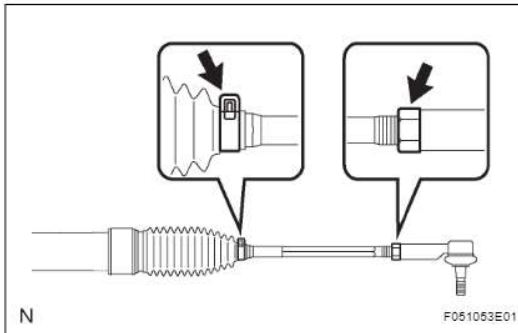
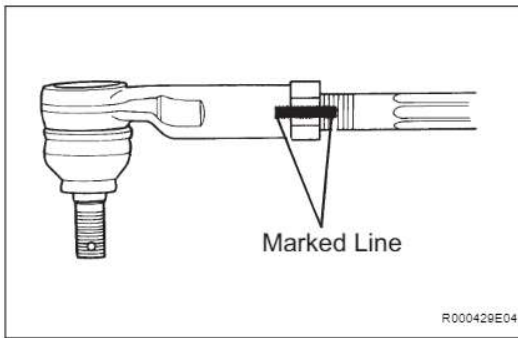
HINT:

Make a note of the steering angle.

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STEERING COLUMN – STEERING SYSTEM



2. ADJUST STEERING ANGLE

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

- (c) Remove the RH and LH boot clips from the rack boots.
- (d) Loosen the RH and LH lock nuts.
- (e) Turn the RH and LH rack ends equally in different directions according to the steering angle.

Reference:

One 360° turn of rack end (1.5 mm (0.059 in.) horizontal movement) is equal to 13° of steering angle.

- (f) Tighten the RH and LH lock nuts.

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

NOTICE:

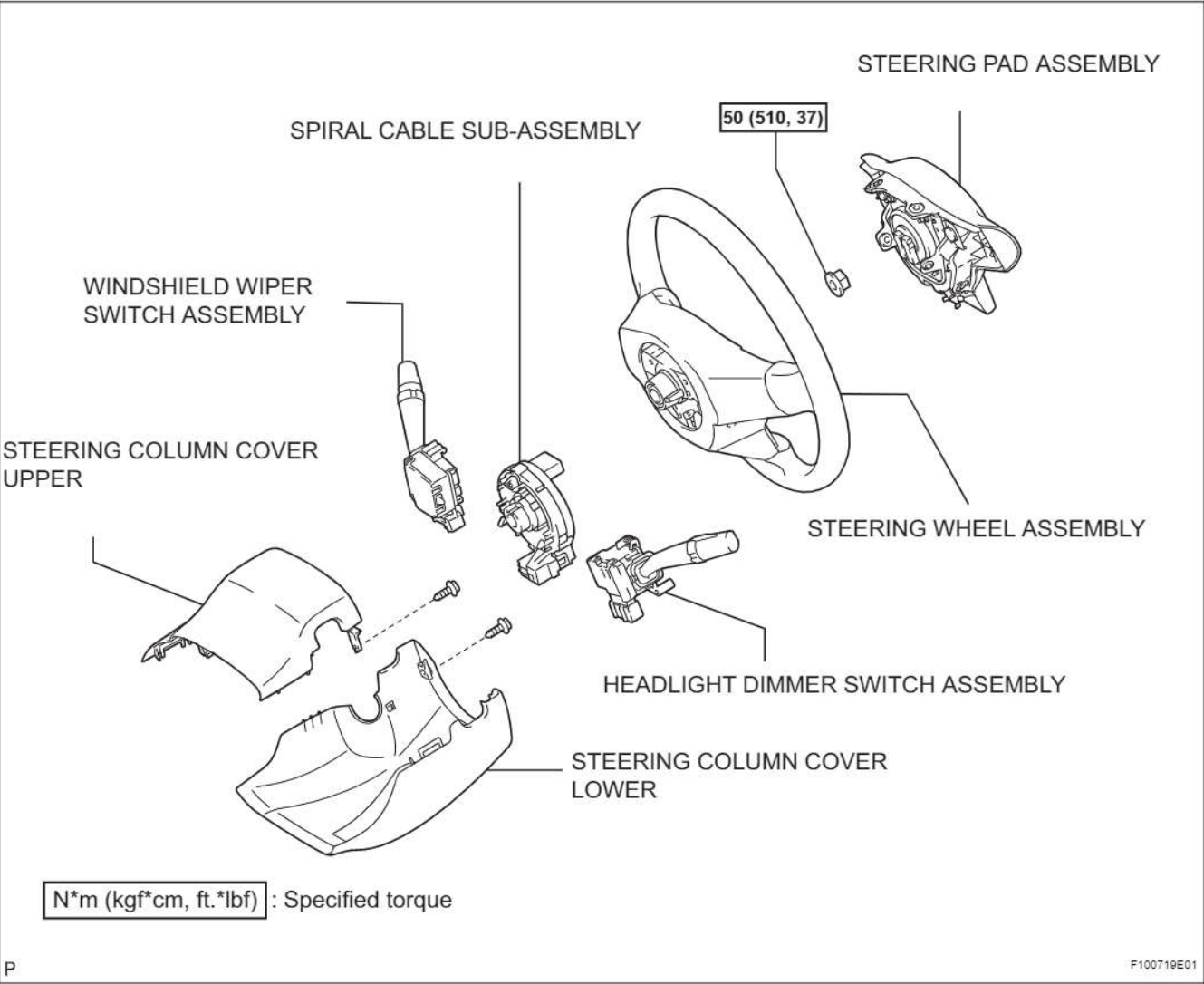
Make sure that the difference in length between the RH and LH tie rod ends and rack end screws is within 1.5 mm (0.059 in.).

- (g) Install the RH and LH boot clips.

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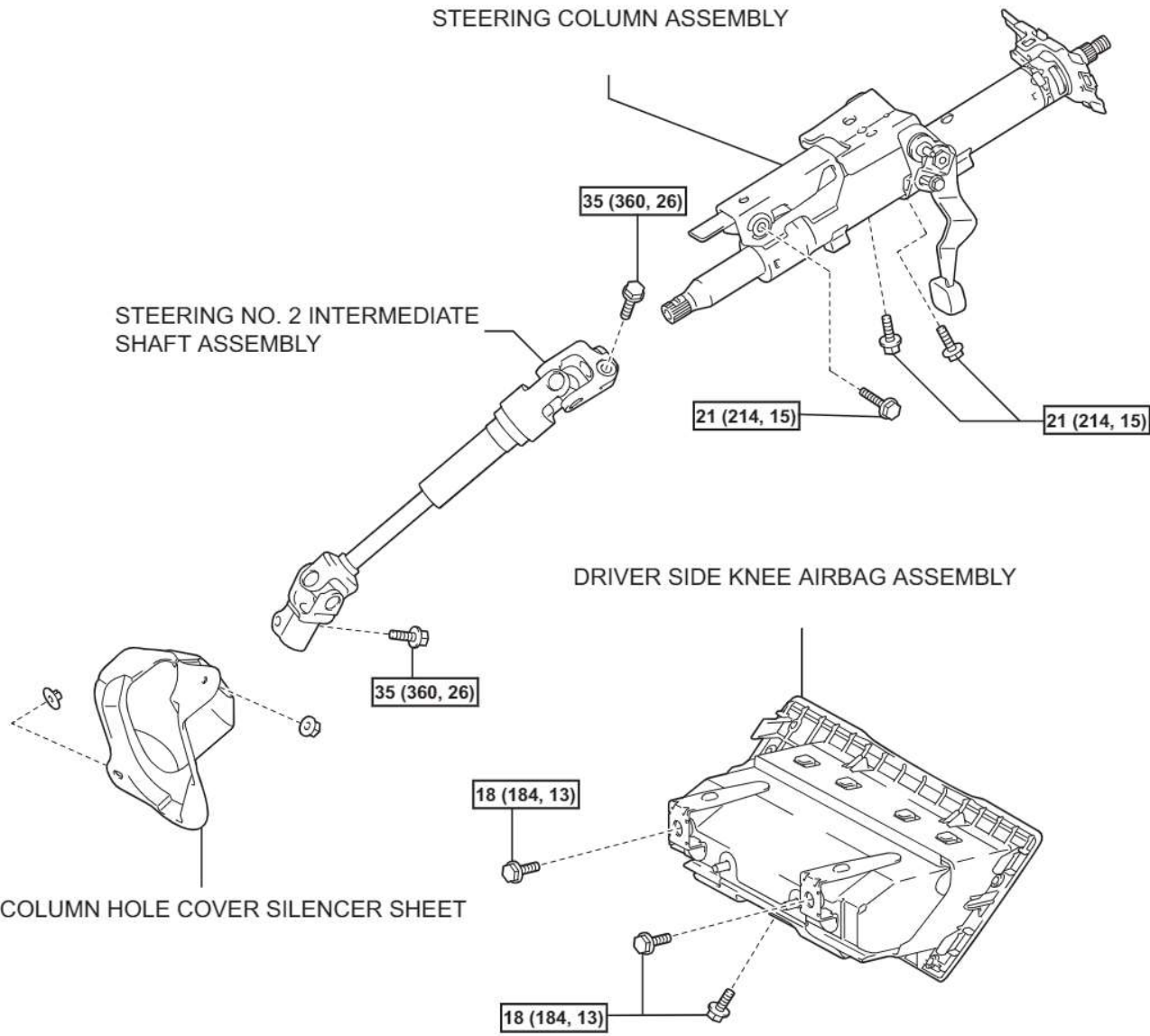
STEERING COLUMN – STEERING COLUMN ASSEMBLY

STEERING COLUMN ASSEMBLY
COMPONENTS



STEERING COLUMN – STEERING COLUMN ASSEMBLY

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

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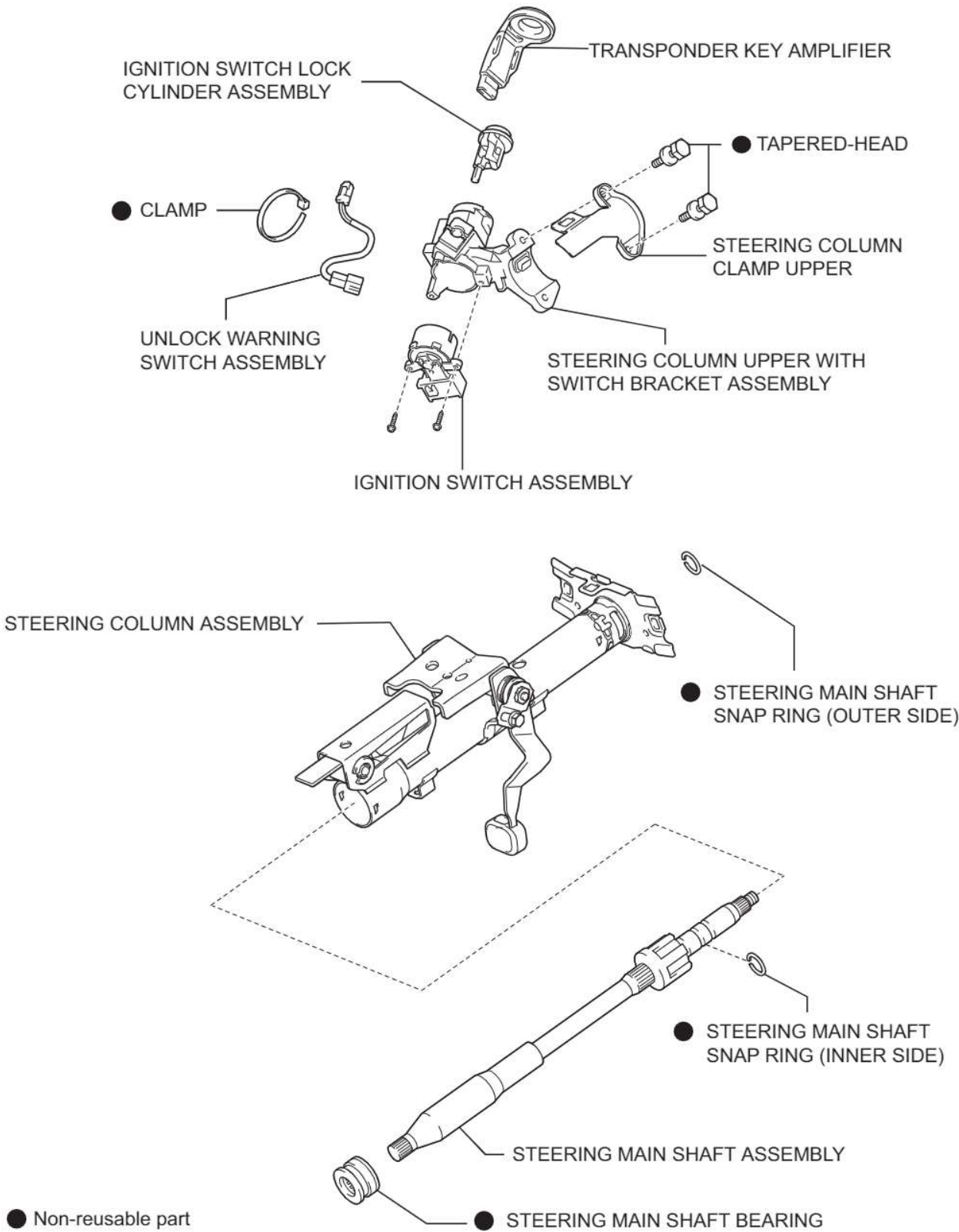
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STEERING COLUMN – STEERING COLUMN ASSEMBLY

Manual Transaxle



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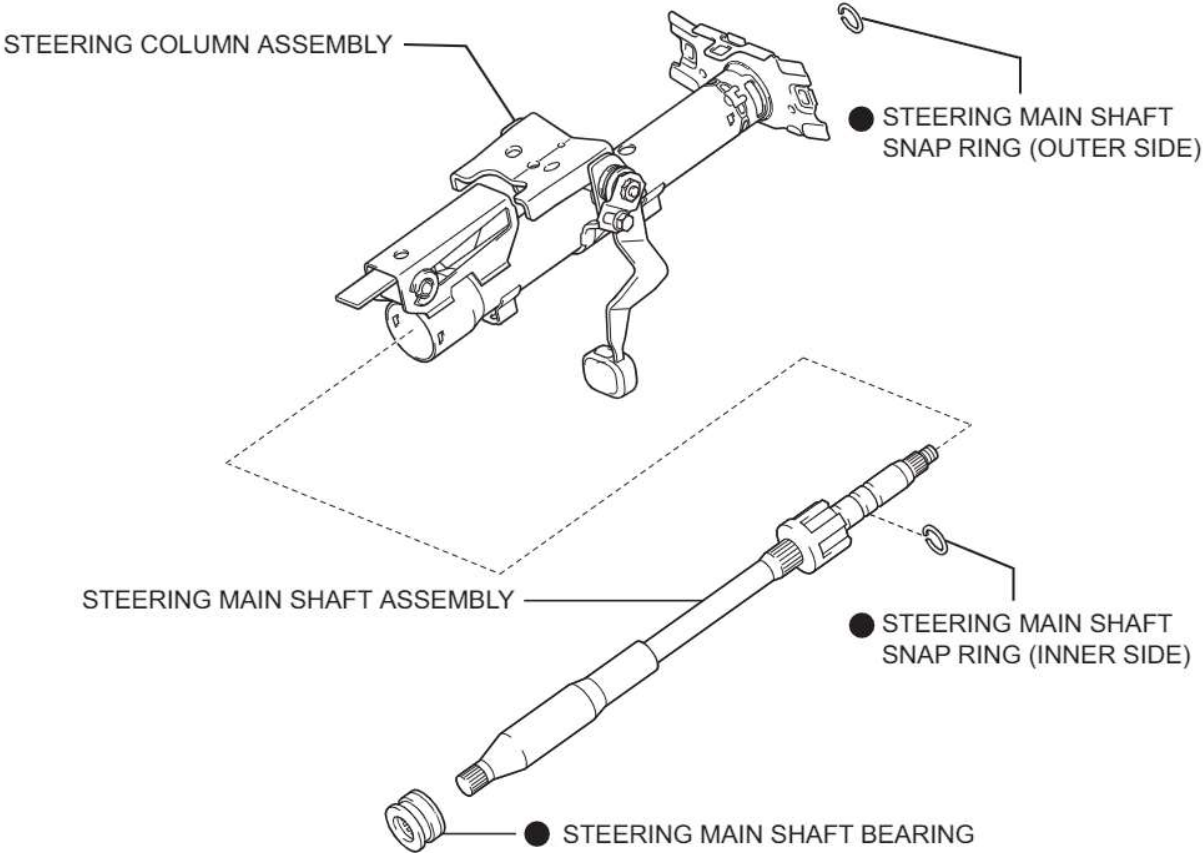
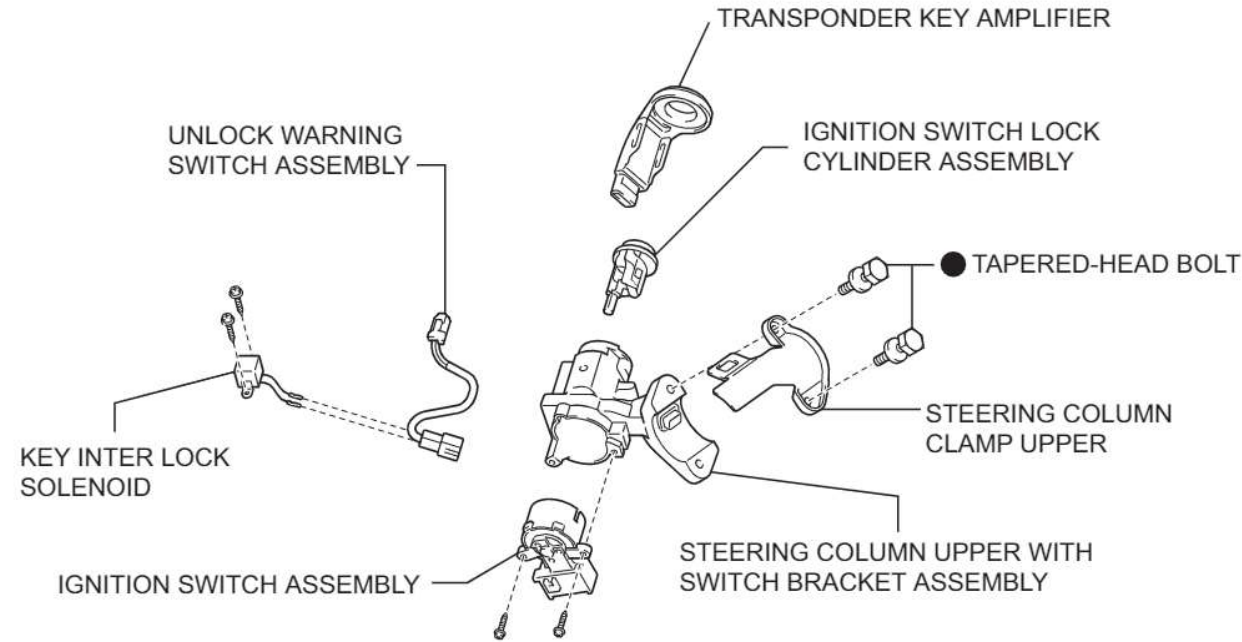
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STEERING COLUMN – STEERING COLUMN ASSEMBLY

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Automatic Transaxle



● Non-reusable part

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STEERING COLUMN – STEERING COLUMN ASSEMBLY

REMOVAL

1. PRECAUTION

(a) Refer to precaution (see page [RS-11](#)).

2. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

3. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

4. REMOVE STEERING PAD ASSEMBLY (See page [RS-345](#))

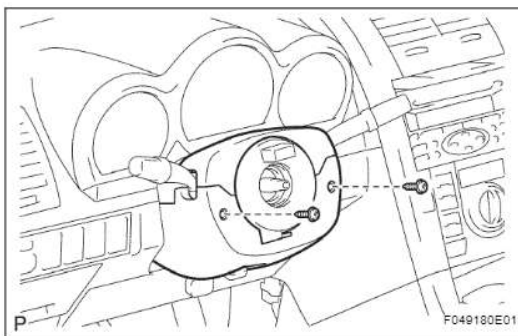
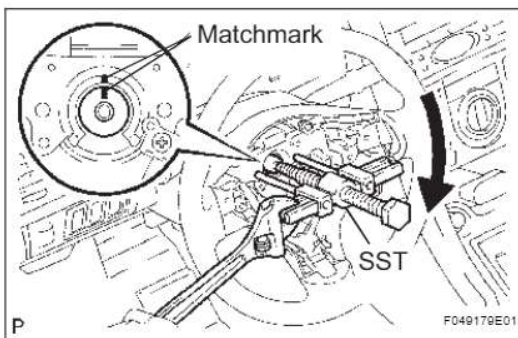
5. REMOVE STEERING WHEEL ASSEMBLY

(a) Remove the steering wheel assembly set nut.

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

(c) Using SST, remove the steering wheel.

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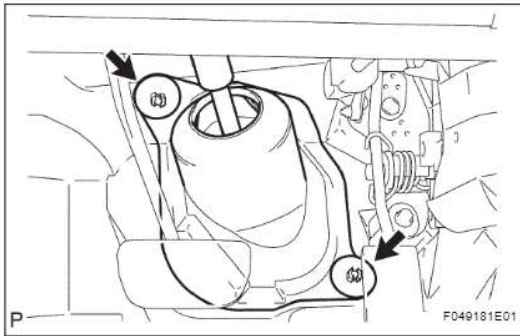
6. REMOVE STEERING COLUMN COVER

(a) Remove the 2 screws, steering column cover lower and steering column cover upper.

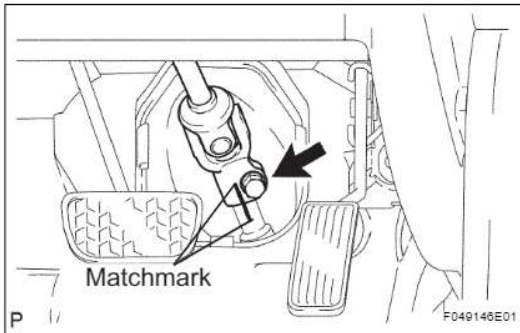
HINT:

- Tilt the steering column assembly to the lowermost position when removing the steering column upper cover.
- Tilt it to the uppermost position when removing the steering column lower cover.

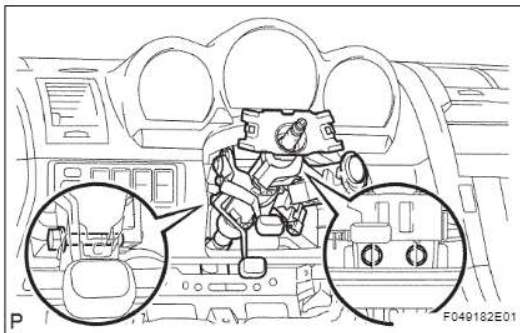
7. REMOVE SPIRAL CABLE SUB-ASSEMBLY (See page [RS-356](#))8. REMOVE HEADLIGHT DIMMER SWITCH ASSEMBLY (See page [LI-41](#))9. REMOVE WINDSHIELD WIPER SWITCH ASSEMBLY (See page [WW-12](#))10. TEST DRIVER SIDE KNEE AIRBAG ASSEMBLY (See page [RS-359](#))

STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-9****11. REMOVE COLUMN HOLE COVER SILENCER SHEET**

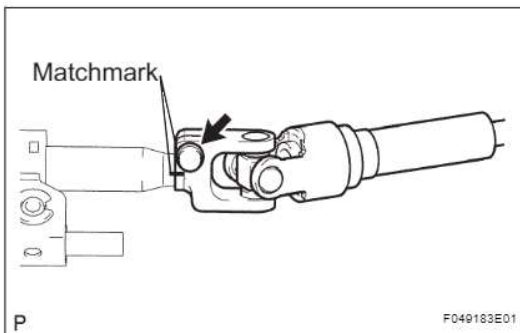
- (a) Fold back the floor carpet, and remove the 2 clips and column hole cover silencer sheet.

**12. DISCONNECT STEERING NO. 2 INTERMEDIATE SHAFT ASSEMBLY**

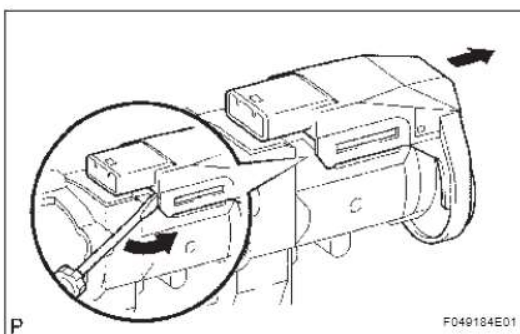
- (a) Put matchmarks on the No. 2 intermediate shaft and the intermediate shaft.
- (b) Remove bolt and disconnect the No. 2 intermediate shaft from the intermediate shaft.

**13. REMOVE STEERING COLUMN ASSEMBLY**

- (a) Disconnect the connectors and wire harness clamps from the steering column.
- (b) Remove the 3 bolts and steering column.

**DISASSEMBLY****1. REMOVE NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY**

- (a) Put matchmarks on the No. 2 intermediate shaft and steering main shaft.
- (b) Remove the bolt and No. 2 intermediate shaft.

**2. REMOVE TRANSPONDER KEY AMPLIFIER**

- (a) Pry out the claw hung onto the upper bracket by approximately 1.0 mm (0.039 in.) using a screwdriver.
- (b) Pull the transponder key amplifier towards the rear of the vehicle with the claw open.

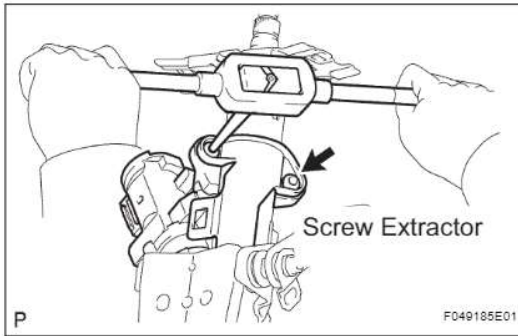
NOTICE:

Do not pull the amplifier with excessive force.

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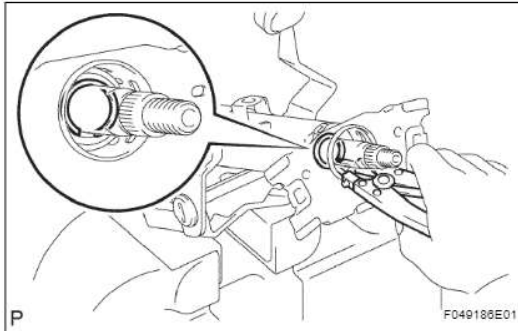
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STEERING COLUMN – STEERING COLUMN ASSEMBLY



3. REMOVE STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Using a centering punch, mark the center of the 2 tapered-head bolts.
- Using a 3 to 4 mm (0.12 to 0.6 in.) drill, drill a hole in the 2 bolt heads.
- Using a screw extractor, remove the 2 bolts, steering column upper with switch bracket assembly and steering column clamp upper.



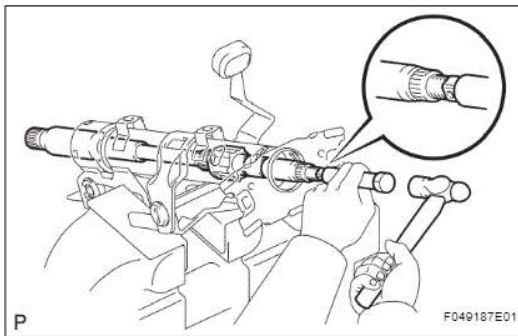
4. REMOVE STEERING MAIN SHAFT ASSEMBLY

- Secure the steering column tube in a vise. Insert aluminum plates between the steering column tube and the vise to prevent damage.

NOTICE:

Do not overtighten the vise.

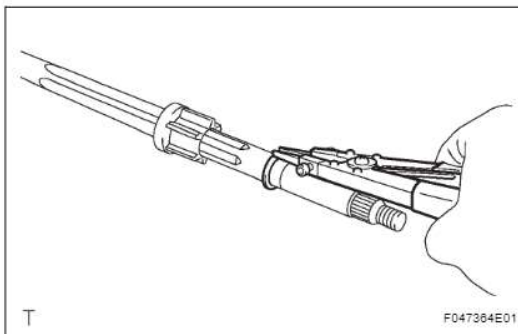
- Using a snap ring expander, remove the steering main shaft snap ring (outer side).



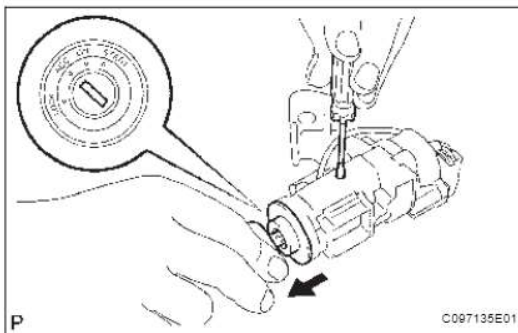
- Using a brass bar and hammer, remove the steering main shaft and steering main shaft bearing.

NOTICE:

Be careful not to drop the steering main shaft assembly.



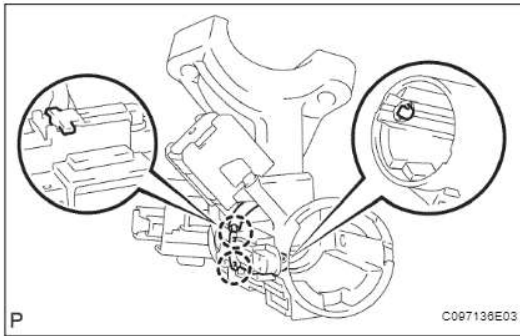
- Using a snap ring expander, remove the steering main shaft snap ring (inner side).



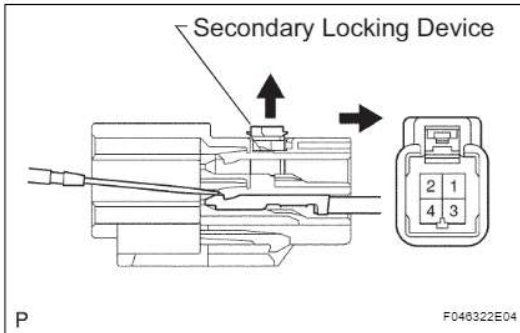
5. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- Place the ignition switch lock cylinder in the ACC position.
- Push down the stop pin with a screwdriver, and pull out the cylinder.

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STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-11****6. REMOVE UNLOCK WARNING SWITCH ASSEMBLY**

- (a) Disconnect the unlock warning switch connector from the ignition switch.
- (b) Remove the unlock warning switch by pushing up on the center part and detach the 2 claws.
- (c) Manual transaxle:
Remove the clamp from the steering column upper bracket.



- (d) Automatic transaxle:
Detach the secondary locking device.
- (e) Automatic transaxle:
Using a screwdriver, detach the locking lug of terminals 3 and 4, and pull the terminals out from the unlock warning switch connector rear side.

7. REMOVE KEY INTER LOCK SOLENOID (for Automatic Transaxle)

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

8. REMOVE IGNITION SWITCH ASSEMBLY

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

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SR-12

STEERING COLUMN – STEERING COLUMN ASSEMBLY

REASSEMBLY**1. INSTALL IGNITION SWITCH ASSEMBLY**

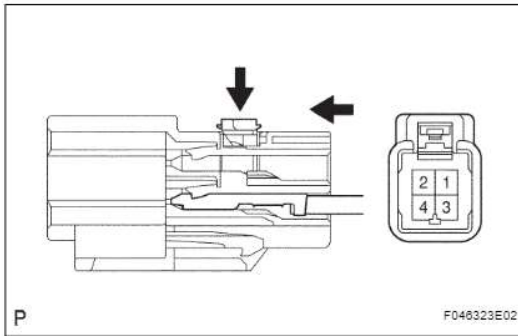
- (a) Install the starter switch assembly to the steering column upper bracket with the 2 screws.

2. INSTALL KEY INTER LOCK SOLENOID (for Automatic Transaxle)

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

3. INSTALL UNLOCK WARNING SWITCH ASSEMBLY

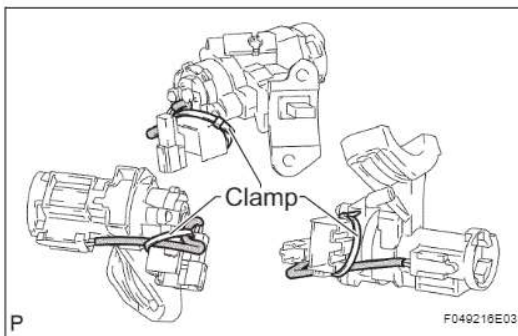
- (a) Install the unlock warning switch.
 (b) Automatic transaxle:
 Connect terminals 3 and 4 of the unlock warning switch connector.
 (c) Connect the unlock warning switch connector to the ignition switch.



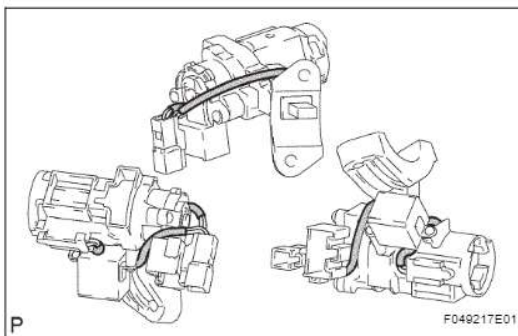
- (d) Manual transaxle:
 Secure the unlock warning switch wire harness to the steering column upper bracket with a new clamp as shown in the illustration.

NOTICE:

Do not overtighten the clamp when securing the wire harness as the wire harness could be cut.



- (e) Automatic transaxle:
 Secure the unlock warning switch wire harness to the steering column upper bracket as shown in the illustration.

**4. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY**

- (a) Make sure the ignition switch lock cylinder is in the ACC position.
 (b) Install the ignition switch lock cylinder.

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.

STEERING COLUMN – STEERING COLUMN ASSEMBLY

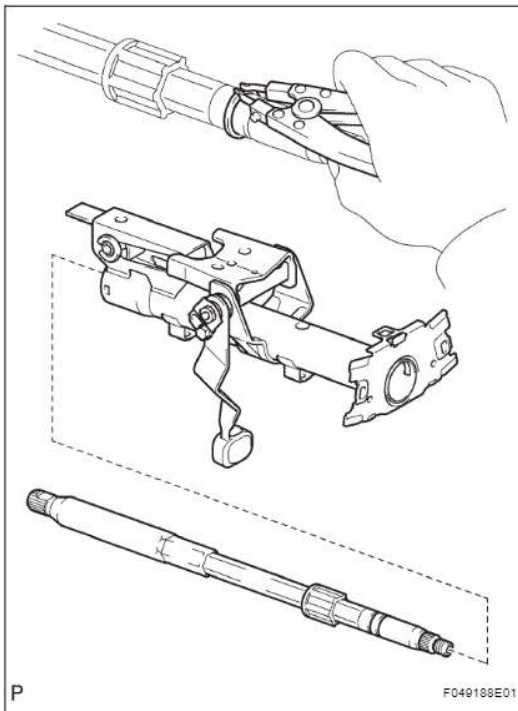
SR-13

6. INSPECT STEERING COLUMN TUBE SUB-ASSEMBLY

- (a) Check that the steering column tube bearing rotates smoothly without looseness in the axial direction or any irregular noise.

HINT:

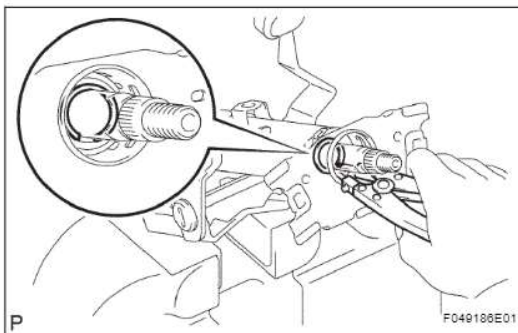
Replace the steering column if the bearing does not rotate as specified.

**7. INSTALL STEERING MAIN SHAFT ASSEMBLY**

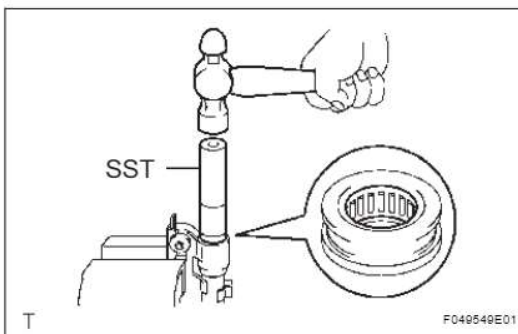
- (a) Using a snap ring expander, install a new steering main shaft snap ring (inner side) to the steering main shaft.
- (b) Install the steering main shaft to the steering column tube.
- (c) Secure the steering column tube in a vise. Insert aluminum plates between the steering column tube and the vise to prevent damage.

NOTICE:

- Do not apply excessive force to the steering column tube bracket when holding the steering column tube in a vise.
- Do not drop the steering main shaft.



- (d) Using a snap ring expander, install a new steering main shaft snap ring (outer side) to the steering main shaft assembly.

**8. INSTALL STEERING MAIN SHAFT BEARING**

- (a) Hold the steering column tube in a vise between aluminum plates.

NOTICE:

Do not apply excessive force to the steering column tube bracket when holding the steering column tube in a vise.

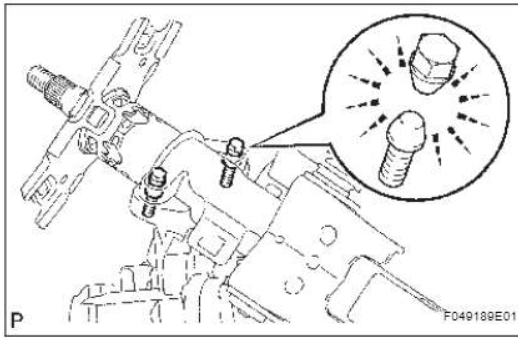
- (b) Using SST and hammer, tap in a new steering main shaft bearing to the steering column tube.

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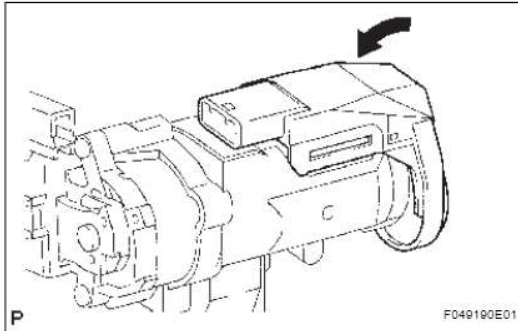
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STEERING COLUMN – STEERING COLUMN ASSEMBLY



9. INSTALL STEERING COLUMN UPPER WITH SWITCH BRACKET ASSEMBLY

- Temporarily install the steering column upper with switch bracket and steering column upper clamp with 2 new tapered-head bolts.
- Tighten the 2 tapered-head bolts until the bolt heads break off.

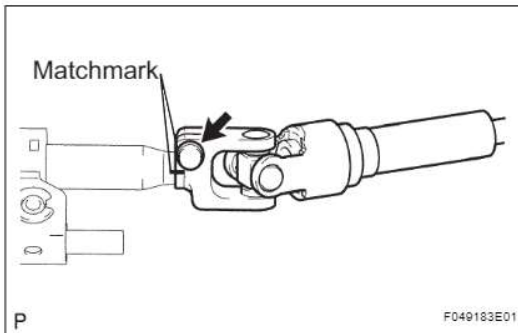


10. INSTALL TRANSPONDER KEY AMPLIFIER

- Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
- Push on the transponder key amplifier and install it to the upper bracket.

NOTICE:

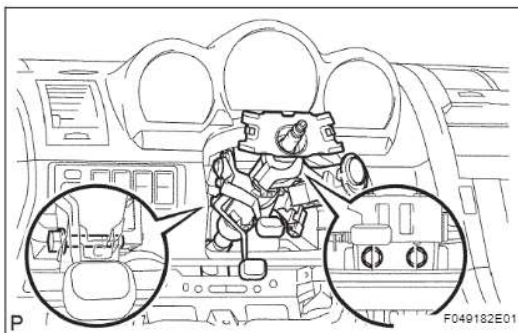
Do not push the amplifier with excessive force.



11. INSTALL NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the No. 2 intermediate shaft and the steering main shaft and install them with the bolt.

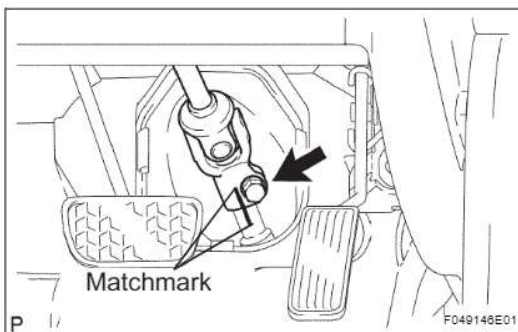
Torque: 35 N*m (360 kgf*cm, 26 ft.*lbf)



INSTALLATION

1. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column with the 3 bolts.
Torque: 21 N*m (214 kgf*cm, 15 ft.*lbf)
- Connect each connector and clamp the wire harness to the steering column bracket.



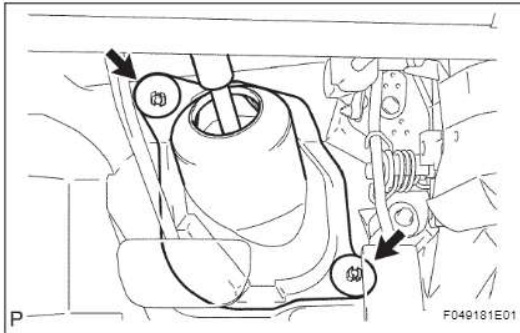
2. CONNECT NO. 2 STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the No. 2 intermediate shaft and the intermediate shaft and install them with bolt.

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

3. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

4. INSTALL SPIRAL CABLE SUB-ASSEMBLY (See page [RS-356](#))

STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-15**

5. **INSPECT SPIRAL CABLE SUB-ASSEMBLY** (See page [RS-356](#))
6. **INSTALL COLUMN HOLE COVER SILENCER SHEET**
 - (a) Install the column hole cover silencer sheet with the 2 clips. Then return the carpet to its original position.
7. **INSTALL DRIVER SIDE KNEE AIRBAG ASSEMBLY** (See page [RS-359](#))
8. **INSTALL WINDSHIELD WIPER SWITCH ASSEMBLY** (See page [WW-13](#))
9. **INSTALL HEADLIGHT DIMMER SWITCH ASSEMBLY** (See page [LI-42](#))
10. **INSTALL STEERING COLUMN COVER**
11. **INSTALL STEERING WHEEL ASSEMBLY**
 - (a) Align the matchmarks on the steering wheel and steering main shaft.
 - (b) Install the steering wheel with the set nut.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)
12. **INSPECT STEERING WHEEL CENTER POINT**
13. **INSTALL STEERING PAD ASSEMBLY** (See page [RS-346](#))
14. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**
15. **PERFORM INITIALIZATION**
 - (a) Perform initialization (see page [IN-23](#)).
NOTICE:
Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.
16. **INSPECT STEERING PAD ASSEMBLY**
 - (a) Inspect steering pad (see page [RS-342](#)).
17. **INSPECT SRS WARNING LIGHT**
 - (a) Inspect SRS warning light (see page [RS-11](#)).

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