

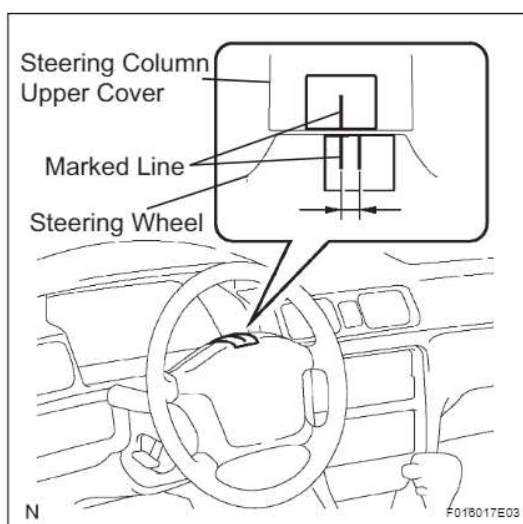
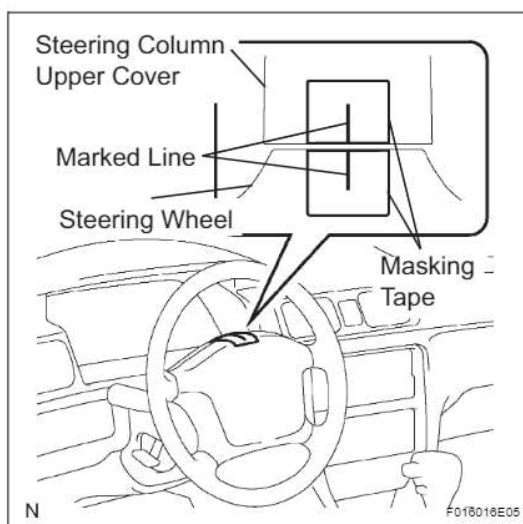
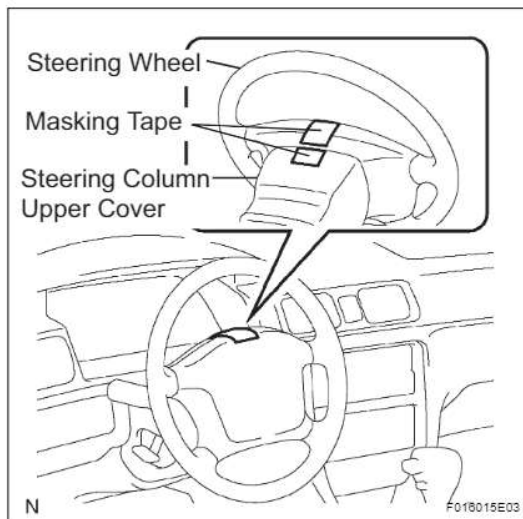
STEERING COLUMN – STEERING SYSTEM

SR-3

REPAIR

1. STEERING OFF CENTER REPAIR PROCEDURE

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



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

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

Distance:

Measured distance 1 mm (0.04 in.) =

Steering angle of approximately 1 degree.

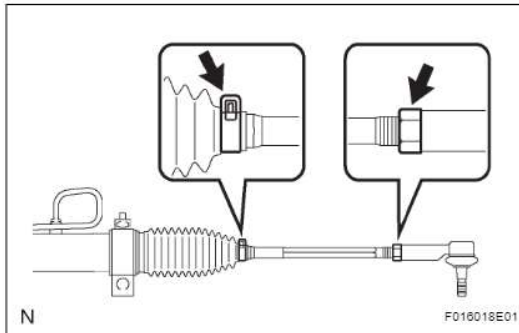
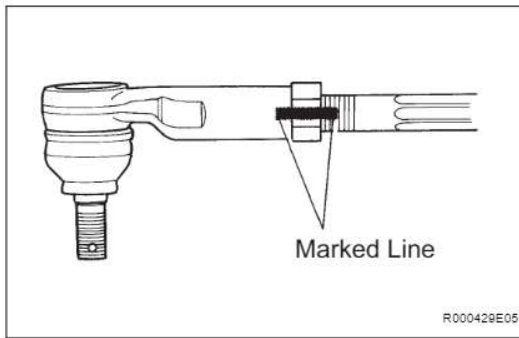
HINT:

Make a note of the steering angle.

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STEERING COLUMN – STEERING SYSTEM



(b) Adjust steering angle.

- (1) Draw a line on the RH and LH tie rod ends and rack ends respectively where it can be easily seen.
- (2) Using a paper gauge, measure the distance from the RH and LH tie rod ends to the rack end screws.

HINT:

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

- (3) Remove the RH and LH boot clips from the rack boots.
- (4) Loosen the RH and LH lock nuts.
- (5) Turn the RH and LH rack ends by the same amount (but in different directions) according to the steering angle.

HINT:

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

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

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

NOTICE:

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

- (7) Install the RH and LH boot clips.
- (8) Perform steering angle sensor zero point calibration (w/ VSC) (See page [BC-76](#)).

SR

STEERING SYSTEM

PRECAUTION

1. HANDLING PRECAUTIONS FOR STEERING SYSTEM

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

2. HANDLING PRECAUTIONS FOR SRS AIRBAG SYSTEM

- (a) The SOLARA is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (See page [RS-27](#)).

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STEERING COLUMN – STEERING SYSTEM

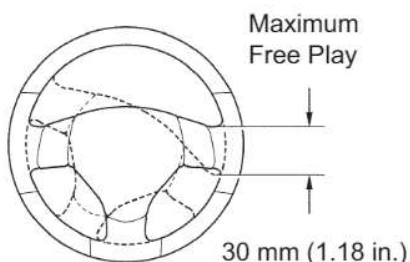
PROBLEM SYMPTOMS TABLE

HINT:

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

Steering system

Symptom	Suspected area	See page
Hard steering	1. Tires (Improperly inflated)	TW-4
	2. Power steering fluid level (Low)	PS-3
	3. Drive belt (Loose)	PS-3
	4. Front wheel alignment (Incorrect)	SP-9
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	SP-25
	7. Steering column (Binding)	-
	8. Power steering vane pump (2AZ-FE)	PS-8
	9. Power steering vane pump (3MZ-FE)	PS-17
	10. Power steering gear	PS-27
Poor return	1. Tires (Improperly inflated)	TW-4
	2. Front wheel alignment (Incorrect)	SP-9
	3. Steering column (Binding)	-
	4. Power steering gear	PS-27
Excessive free play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	PS-27
	3. Intermediate shaft, Sliding yoke (Worn)	-
	4. Front wheel bearing (Worn)	AH-5
	5. Power steering gear	PS-27
Abnormal noise	1. Power steering fluid level (Low)	PS-3
	2. Steering system joints (Worn)	-
	3. Power steering vane pump (2AZ-FE)	PS-8
	4. Power steering vane pump (3MZ-FE)	PS-17
	5. Power steering gear	PS-27



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ON-VEHICLE INSPECTION

1. CHECK STEERING WHEEL FREE PLAY

- Stop the vehicle and align the tire 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.)**

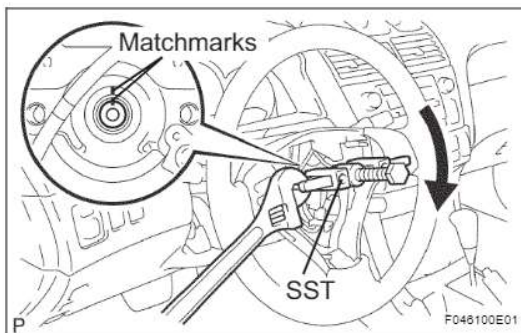
If the free play exceeds the maximum, replace the steering intermediate shaft sub-assembly or steering gear.

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STEERING COLUMN – STEERING COLUMN ASSEMBLY

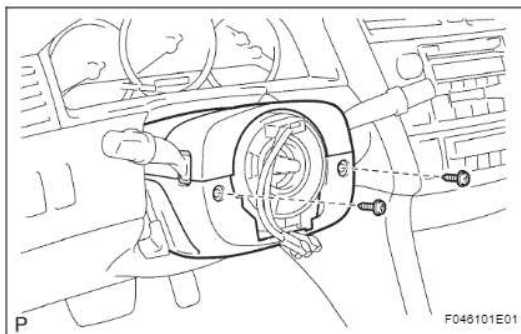
REMOVAL

1. DISCONNECT BATTERY NEGATIVE TERMINAL
2. REMOVE STEERING WHEEL COVER LOWER NO.2
3. REMOVE STEERING WHEEL COVER LOWER NO.3
4. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
5. REMOVE HORN BUTTON ASSEMBLY
HINT:
See page [RS-262](#)



6. REMOVE STEERING WHEEL ASSEMBLY
 - (a) Remove the steering wheel assembly set nut.
 - (b) Put matchmarks on the steering wheel assembly and main shaft assembly.
 - (c) Using SST, remove the steering wheel assembly.
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

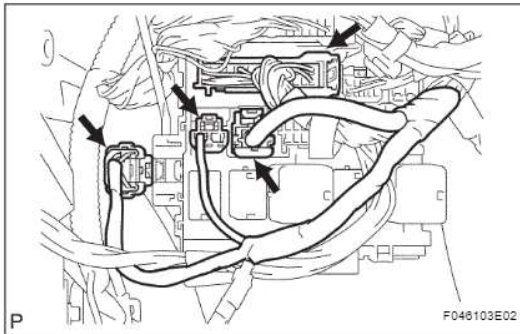
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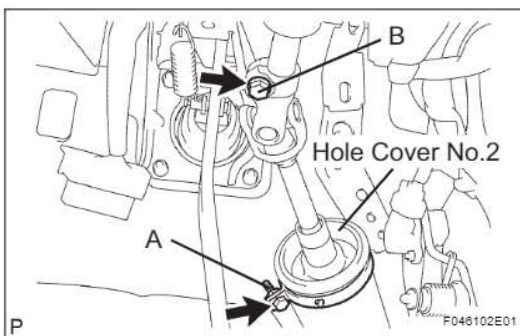
7. REMOVE STEERING COLUMN COVER LWR
 - (a) Remove the 2 screws and steering column cover LWR.
8. REMOVE STEERING COLUMN COVER
9. REMOVE TURN SIGNAL SWITCH ASSEMBLY (W/ SPIRAL CABLE SUB-ASSEMBLY)
 - (a) Remove the 3 screws and turn signal switch assembly w/ spiral cable sub-assembly.
10. REMOVE FRONT DOOR SCUFF PLATE LH
HINT:
See page [IR-4](#) coupe, [IR-9](#) convertible
11. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH
HINT:
See page [IP-6](#)
12. REMOVE INSTRUMENT PANEL FINISH LOWER PANEL LH
13. REMOVE INSTRUMENT PANEL INSERT SUB-ASSEMBLY LOWER LH
HINT:
See page [IP-6](#)
14. REMOVE INSTRUMENT PANEL FINISH PLATE
HINT:
See page [IP-6](#)
15. REMOVE INSTRUMENT PANEL FINISH PANEL LOWER
HINT:
See page [IP-6](#)

STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-7****16. REMOVE HEATER TO FOOT DUCT NO.3**

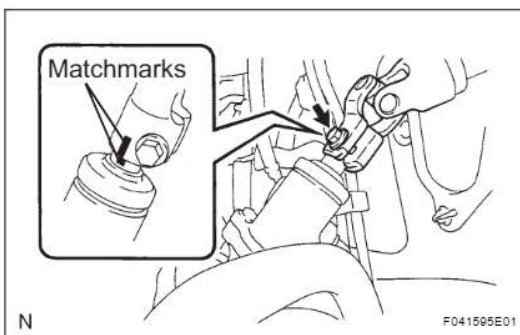
HINT:

See page [AC-122](#)**17. SEPARATE STEERING INTERMEDIATE SHAFT ASSEMBLY**

- (a) Disconnect the 4 connectors and wire harness clamp from the instrument panel junction block assembly.



- (b) Loosen bolt A and remove the clamp from the steering column hole shield.
 (c) Separate the steering column hole cover No.2 from the steering column hole shield.
 (d) Loosen bolt B on the steering intermediate shaft sub-assembly.

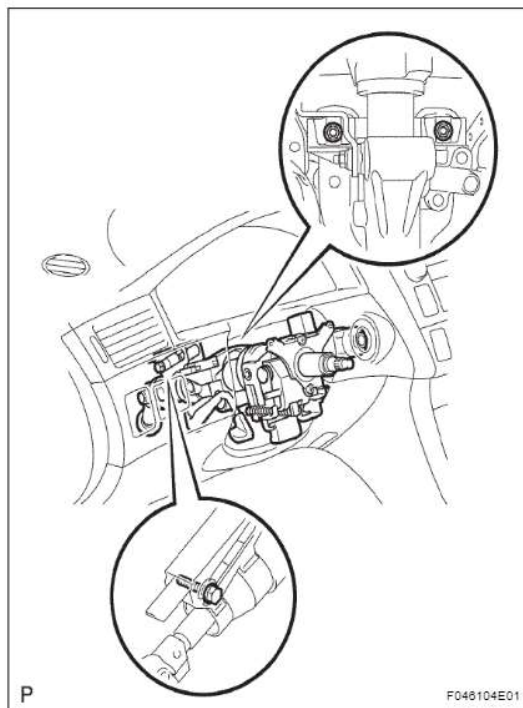


- (e) Put matchmarks on the steering intermediate shaft sub-assembly and steering gear assembly.
 (f) Remove the bolt and separate the steering intermediate shaft sub-assembly.

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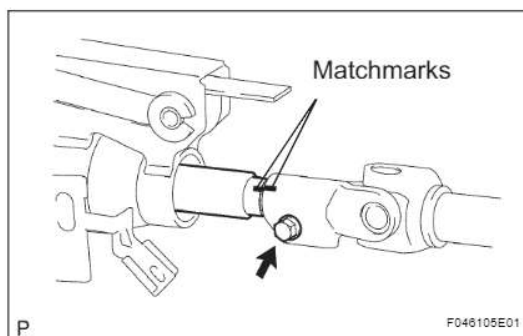
SR-8

STEERING COLUMN – STEERING COLUMN ASSEMBLY

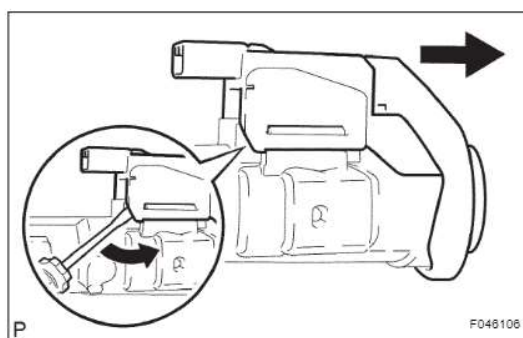
**18. REMOVE STEERING COLUMN ASSEMBLY**

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

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**DISASSEMBLY****1. REMOVE STEERING INTERMEDIATE SHAFT ASSEMBLY**

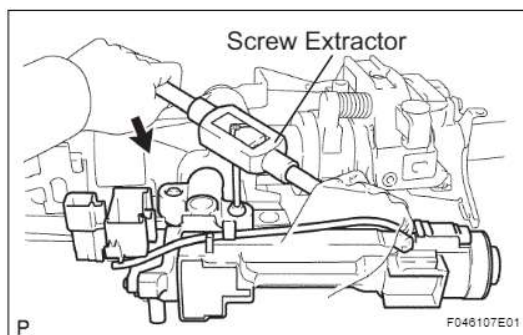
- (a) Put matchmarks on the steering intermediate shaft sub-assembly and steering main shaft assembly.
- (b) Remove the bolt and steering intermediate shaft sub-assembly.

**2. REMOVE TRANSPONDER KEY AMPLIFIER**

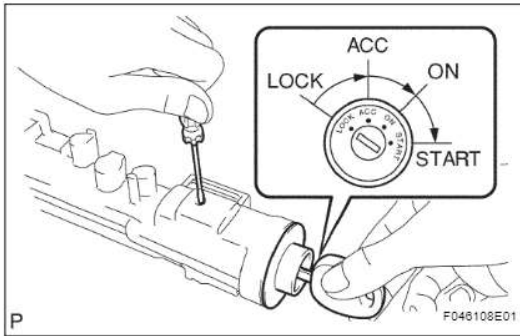
- (a) Widen the claw hung onto the upper bracket by approximately 1.0 mm (0.039 in.) using a screwdriver.
- (b) Pull the transponder key amplifier towards the rear of the vehicle with the claw open.

NOTICE:

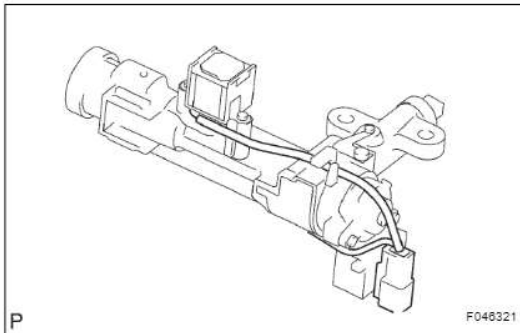
Do not use excessive force to prevent the case from being damaged.

**3. REMOVE STEERING COLUMN BRACKET ASSEMBLY UPPER**

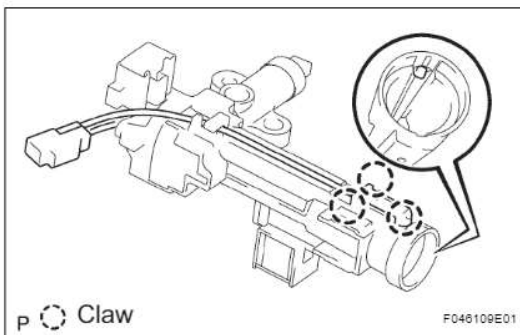
- (a) Using a centering punch, mark the center of the 2 tapered-head bolts.
- (b) Using a 3 to 4 mm (0.12 to 0.16 in.) drill, drill a hole in the 2 bolt heads.
- (c) Using a screw extractor, remove the 2 bolts and steering column upper w/ switch bracket assembly.

STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-9****4. REMOVE IGNITION SWITCH LOCK CYLINDER ASSEMBLY**

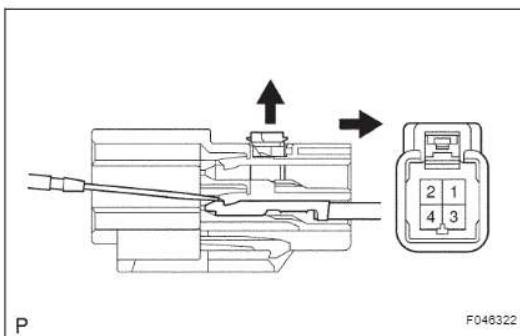
- Place the ignition switch lock cylinder assembly in the ACC position.
- Push down the stop pin with a screwdriver, and pull out the cylinder assembly.

**5. REMOVE UN-LOCK WARNING SWITCH ASSEMBLY**

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



- Remove the un-lock warning switch assembly by pushing up on the center part and disengaging the 3 claws.



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

6. REMOVE KEY INTERLOCK SOLENOID (for Automatic Transaxle)

- Remove the 2 screws and solenoid from the steering column bracket assembly.

7. REMOVE IGNITION OR STARTER SWITCH ASSEMBLY

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

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SR-10**STEERING COLUMN – STEERING COLUMN ASSEMBLY**

INSPECTION**1. INSPECT STEERING LOCK OPERATION**

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

HINT:

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

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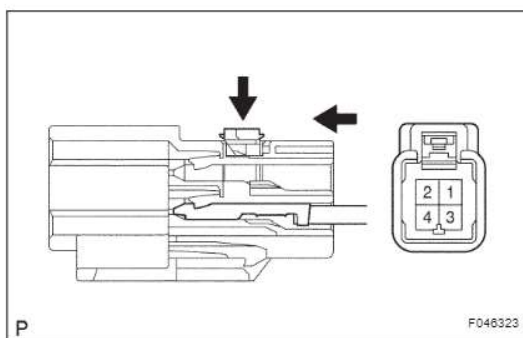
REASSEMBLY

1. INSTALL IGNITION OR STARTER SWITCH ASSEMBLY

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

2. INSTALL KEY INTERLOCK SOLENOID (for Automatic Transaxle)

- Install the solenoid to the steering column bracket assembly with the 2 screws.



3. INSTALL UN-LOCK WARNING SWITCH ASSEMBLY

- Install the un-lock warning switch assembly.
- Connect terminals 3 and 4 of the un-lock warning switch assembly connector.
- Connect the un-lock warning switch assembly connector to the ignition or starter switch assembly.

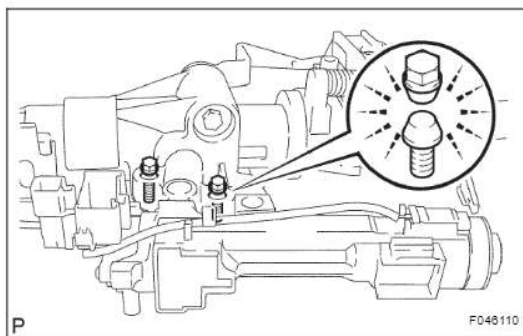
4. INSTALL IGNITION SWITCH LOCK CYLINDER ASSEMBLY

- Make sure the ignition switch lock cylinder assembly is in the ACC position.
- Install the ignition switch lock cylinder assembly.

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5. INSTALL STEERING COLUMN BRACKET ASSEMBLY UPPER

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

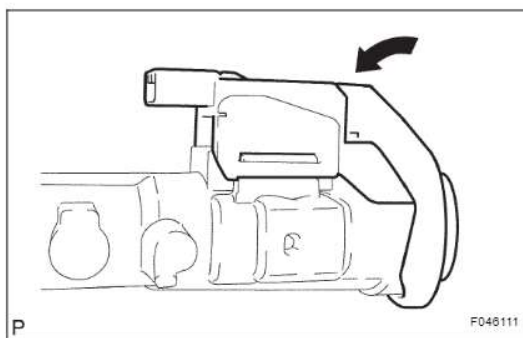


6. INSTALL TRANSPONDER KEY AMPLIFIER

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

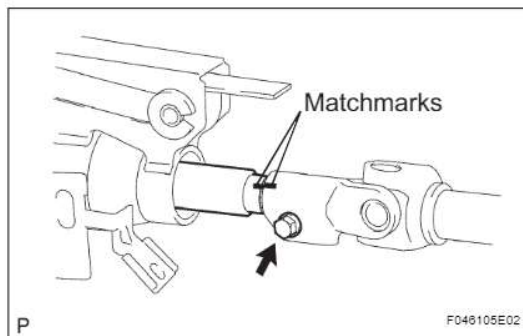
NOTICE:

Do not push the amplifier up with excessive force.



SR-12

STEERING COLUMN – STEERING COLUMN ASSEMBLY



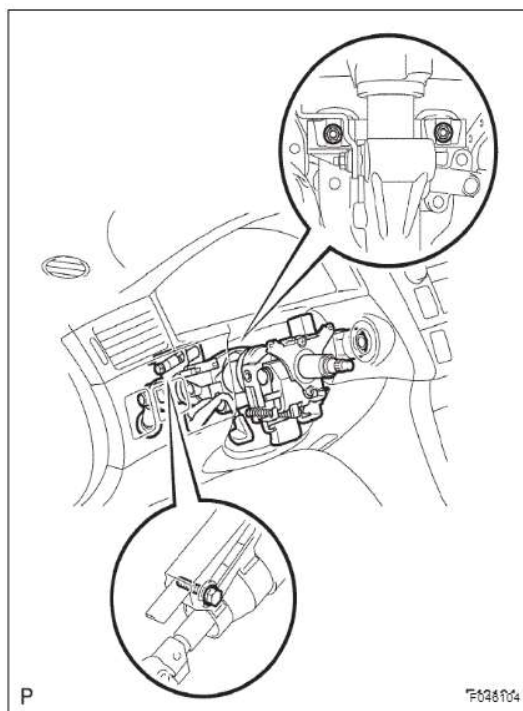
7. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the steering intermediate shaft sub-assembly and the steering main shaft assembly.
- Temporarily install the steering intermediate shaft sub-assembly with the bolt.

INSTALLATION

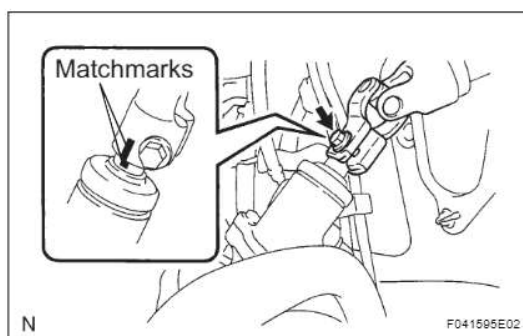
1. INSTALL STEERING COLUMN ASSEMBLY

- Install the steering column assembly with the bolt and 2 nuts.
Torque: 21.0 N*m (210 kgf*cm, 15 ft.*lbf)
- Connect the connectors.
- Install the wire harness clamps to the steering column tube.

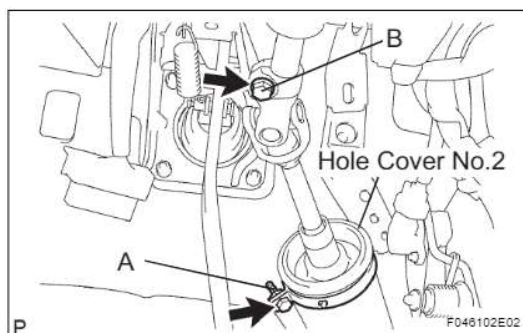


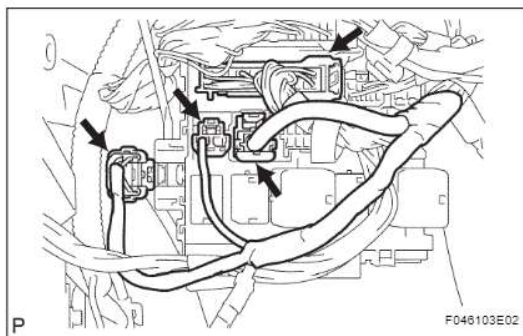
2. INSTALL STEERING INTERMEDIATE SHAFT ASSEMBLY

- Align the matchmarks on the intermediate shaft sub-assembly and the steering gear assembly.
- Install the bolt.
Torque: 35.0 N*m (360 kgf*cm, 26 ft.*lbf)



- Tighten bolt B on the intermediate shaft sub-assembly.
Torque: 35.0 N*m (360 kgf*cm, 26 ft.*lbf)
- Install the steering column hole cover No.2 to the steering column hole shield.
- Connect the clamp to the steering column hole shield and tighten bolt A.



STEERING COLUMN – STEERING COLUMN ASSEMBLY**SR-13**

- (f) Connect the 4 connectors and install the wire harness clamp to the instrument panel junction block assembly.

3. PLACE FRONT WHEELS FACING STRAIGHT AHEAD**4. CHECK KEY INTERLOCK OPERATION**

HINT:

If there is abnormality, replace the key interlock solenoid.

5. CENTER SPIRAL CABLE

HINT:

See page [RS-271](#)**6. INSTALL STEERING WHEEL ASSEMBLY**

- (a) Align the matchmarks on the steering wheel assembly and the steering main shaft assembly.
- (b) Install the steering wheel assembly with the set nut.
Torque: 50 N*m (510 kgf*cm, 37 ft.*lbf)
- (c) Connect the connector.

7. INSPECT HORN BUTTON ASSEMBLY

HINT:

See page [HO-3](#)**8. INSTALL HORN BUTTON ASSEMBLY****9. INSPECT STEERING WHEEL CENTER POINT**

HINT:

When the steering wheel is not properly centered, remove and refit to center.

10. CONNECT BATTERY NEGATIVE TERMINAL**11. INSPECT SRS WARNING LIGHT**

HINT:

See page [RS-30](#)**12. PERFORM INITIALIZATION**

HINT:

- See page [IN-24](#)
- When disconnecting the negative battery terminal, it is necessary to initialize other systems.

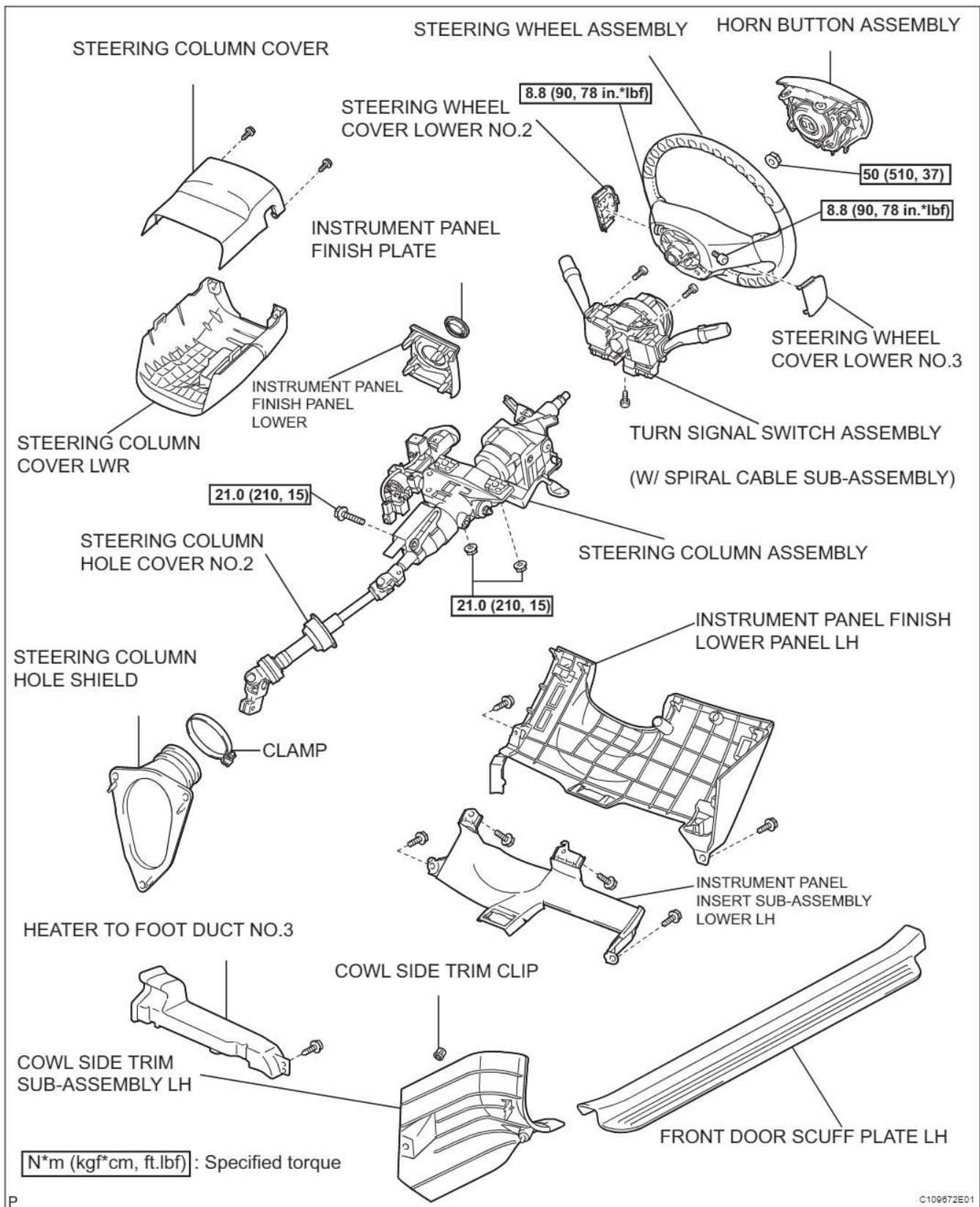
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SR-4

STEERING COLUMN – STEERING COLUMN ASSEMBLY

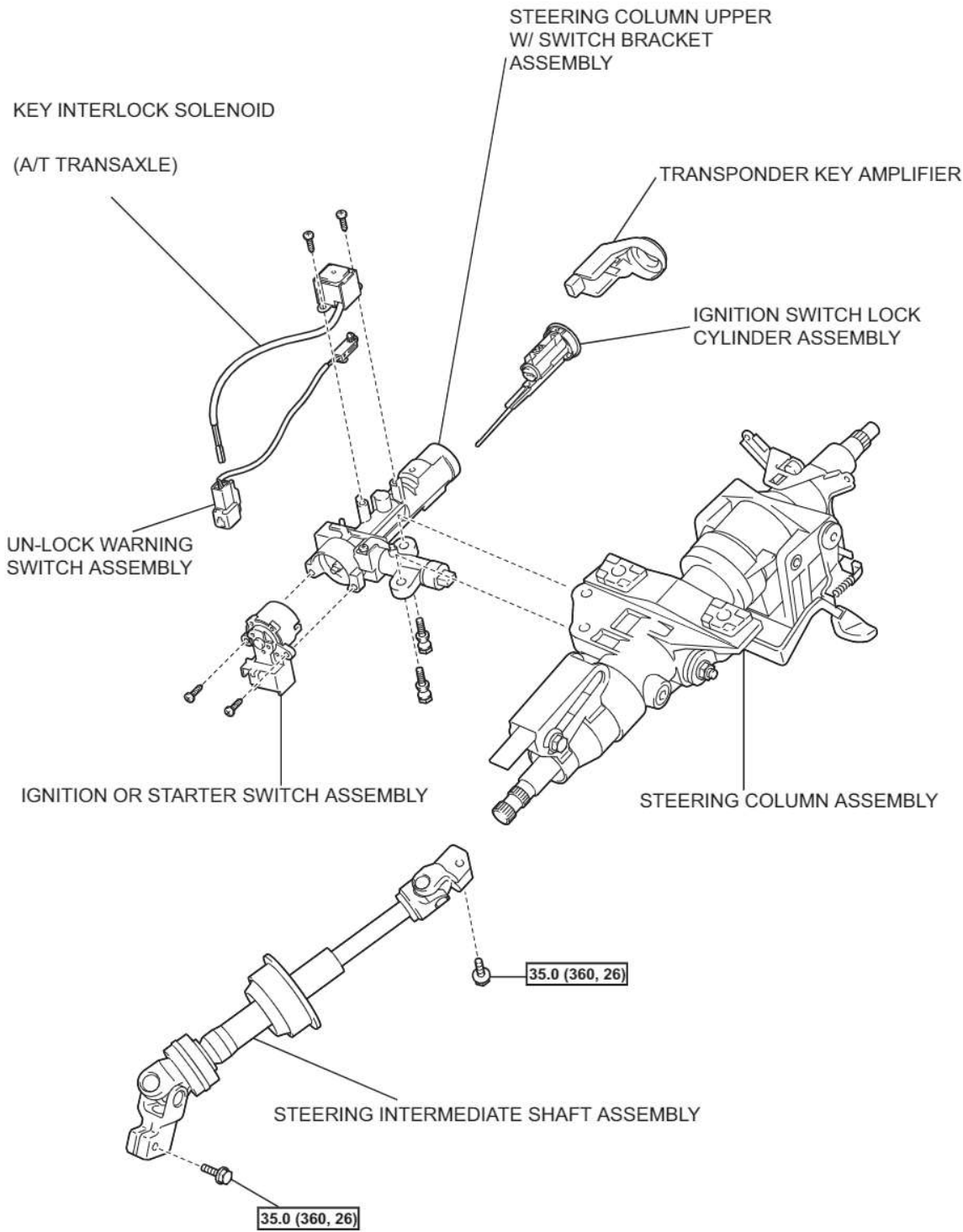
STEERING COLUMN ASSEMBLY

COMPONENTS



STEERING COLUMN – STEERING COLUMN ASSEMBLY

SR-5



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

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