

POWER STEERING ECU ASSY

5006Z-01

REPLACEMENT

1. PRECAUTION (See page 60-1)
2. DISCONNECT BATTERY NEGATIVE TERMINAL (See page 60-1)
3. REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.1 (See page 71-11)
4. REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.2 (See page 71-11)
5. REMOVE INSTRUMENT PANEL REGISTER ASSY CTR (See page 71-11)
6. REMOVE STEERING COLUMN COVER LWR (See page 50-9)
7. REMOVE STEERING COLUMN COVER W/INSTRUMENT CLUSTER FINISH PANEL ASSY (See page 50-9)
8. REMOVE COMBINATION METER ASSY (See page 71-11)
9. REMOVE INSTRUMENT PANEL REGISTER ASSY NO.1 (See page 71-11)
10. REMOVE INSTRUMENT PANEL REGISTER ASSY NO.2 (See page 71-11)
11. REMOVE GLOVE COMPARTMENT DOOR ASSY (See page 71-11)
12. REMOVE FRONT PILLAR GARNISH LH (See page 71-11)
13. REMOVE FRONT PILLAR GARNISH RH (See page 71-11)
14. DISCONNECT PASSENGER AIRBAG CONNECTOR (See page 71-11)
15. REMOVE INSTRUMENT PANEL SUB-ASSY UPPER W/INSTR PNL PASS L/DOOR AIR BAG ASSY (See page 71-11)

16. REMOVE POWER STEERING ECU ASSY

NOTICE:

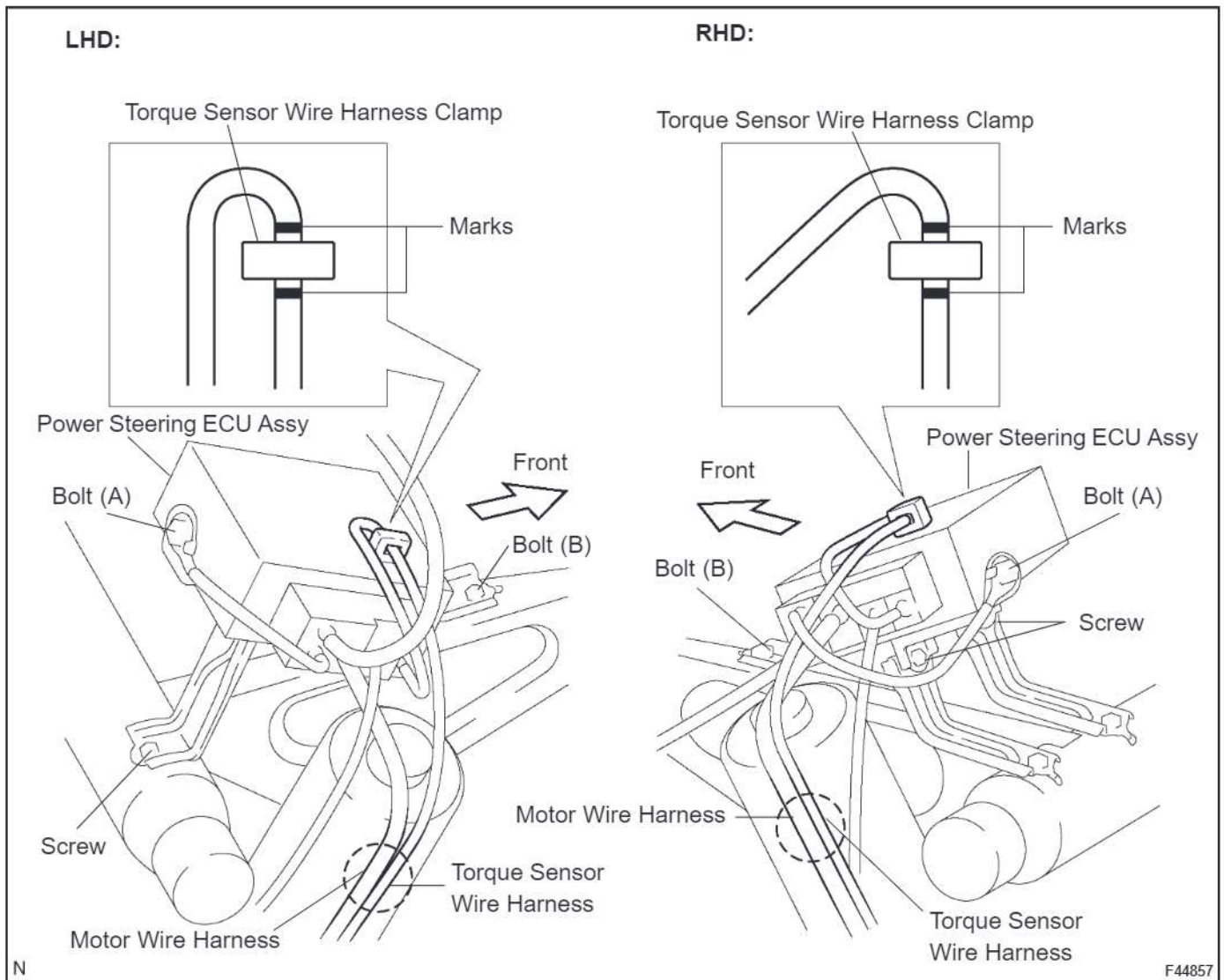
Thoroughly check the procedures for removing and installing the power steering ECU assy when replacing it. Do the same for the removing and installing the steering column assy.

- (a) Mark the clamp position on the torque sensor wire harness in order to reinstall the wire harness as shown in the illustration.
- (b) Disconnect the torque sensor wire harness from the clamp.

NOTICE:

In case the clamp will be reused, pay attention so as not to damage it.

- (c) Disconnect the 4 connectors.
- (d) LHD:
 - (1) Remove the 2 bolts, screw and power steering ECU assy.
- (e) RHD:
 - (1) Remove the 2 bolts, 2 screw and power steering ECU assy.



17. INSTALL POWER STEERING ECU ASSY

(a) LHD:

Install the power steering ECU assy with the 2 bolts and screw.

Torque:

BOLT (A): 8.0 N m (82 kgf cm, 71 in. lbf)

BOLT (B): 15.5 N m (158 kgf cm, 11 ft lbf)

(b) RHD:

Install the power steering ECU assy with the 2 bolts and 2 screws.

Torque:

BOLT (A): 8.0 N m (82 kgf cm, 71 in. lbf)

BOLT (B): 15.5 N m (158 kgf cm, 11 ft lbf)

(c) Connect the 4 connectors.

(d) Align the marks on the torque sensor wire harness with the clamp, as shown in the illustration.

NOTICE:

- ▲ When reusing the clamp, check that there is no damage on it.
- ▲ When reinstalling the wire harness, make sure there is no twist in the harness or with other wire harness.

18. CONNECT BATTERY NEGATIVE TERMINAL
19. INSPECT SRS WARNING LIGHT ([See page 05-1184](#))
20. PERFORM CALIBRATION OF TORQUE SENSOR ZERO POINT ([See page 05-1045](#))

STEERING COLUMN ASSY COMPONENTS

5006X-01

OIL Pressure Power Steering:

Steering Column Cover
w/ Instrument Cluster
Finish Panel Assy

Steering Column Cover LWR

Horn Button Assy

Steering Wheel Assy

Windshield Wiper
Switch Assy

Spiral Cable Sub-Assy

Headlamp Dimmer Switch Assy

Steering Column Assy

LHD Steering Position Type:

Steering Intermediate
Shaft Assy No.2

Floor Shift
Parking Lock Cable
Assy (A/T Transaxle)

Steering
Column
Protector No.1

Instrument Panel
Hole Cover

Steering
Sliding Yoke
Sub-Assy

Steering Intermediate
Shaft Assy No.2

Instrument Panel
Airbag Assy

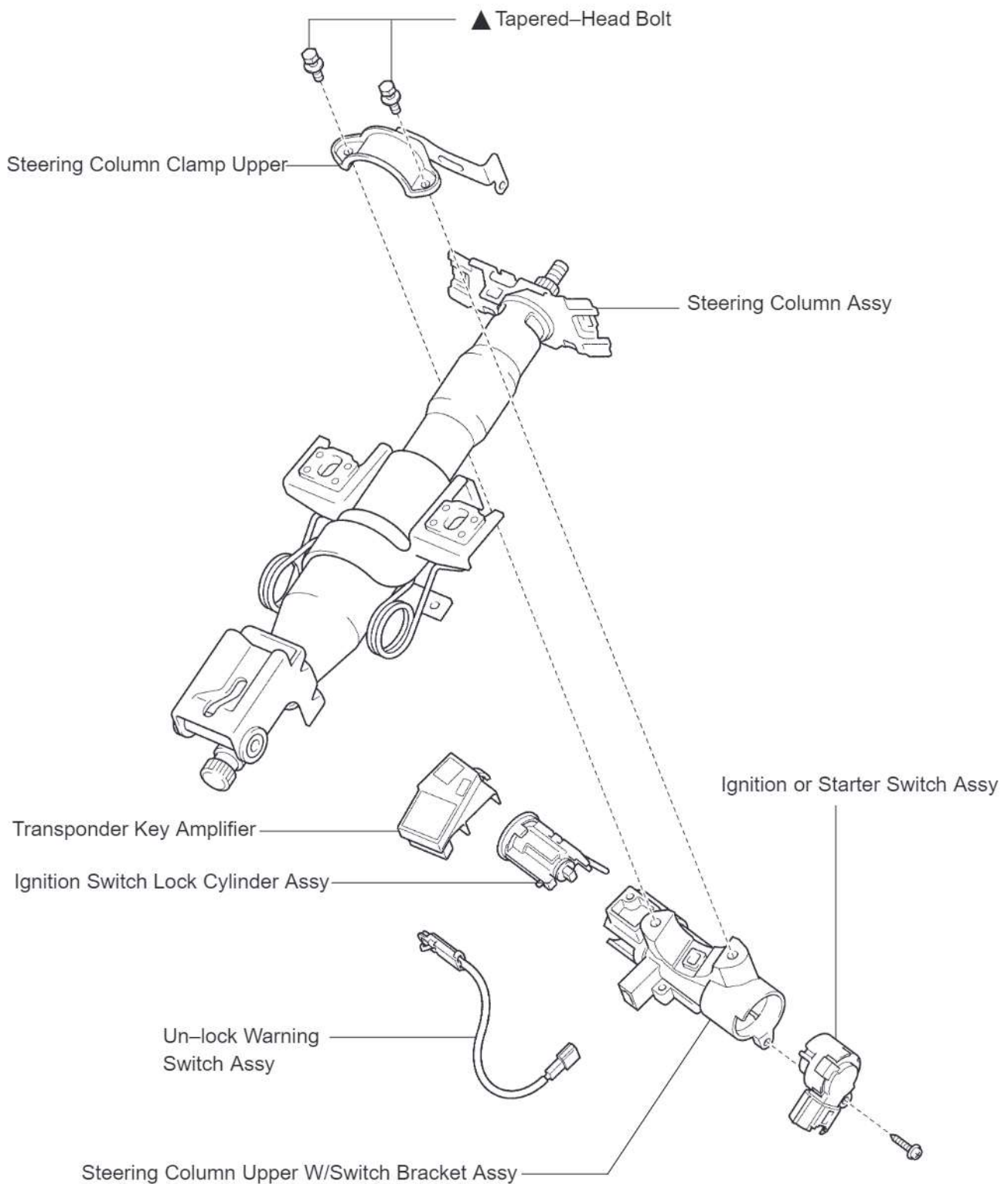
LHD Steering Position Type:

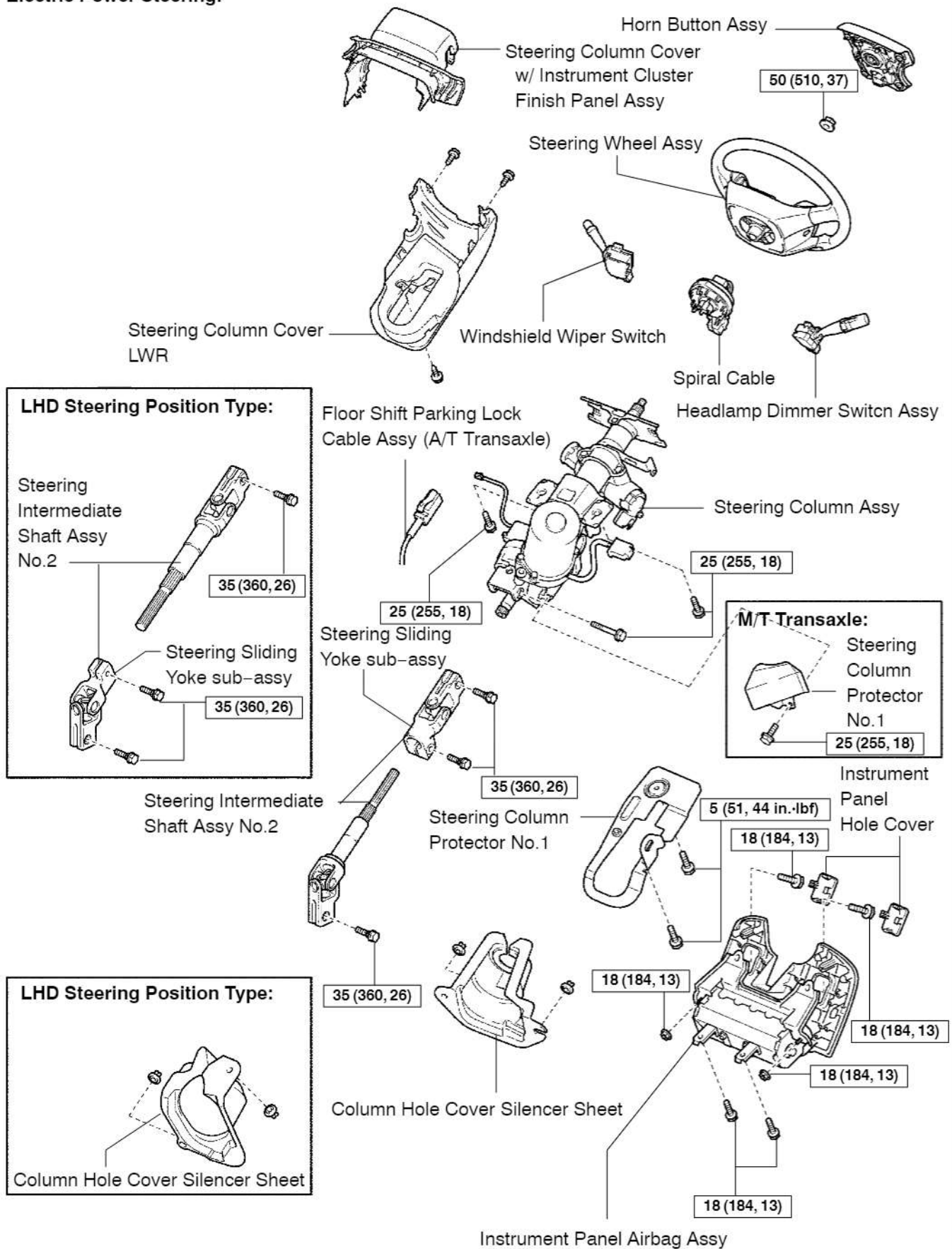
Column Hole Cover
Silencer Sheet

Column Hole Cover Silencer Sheet

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

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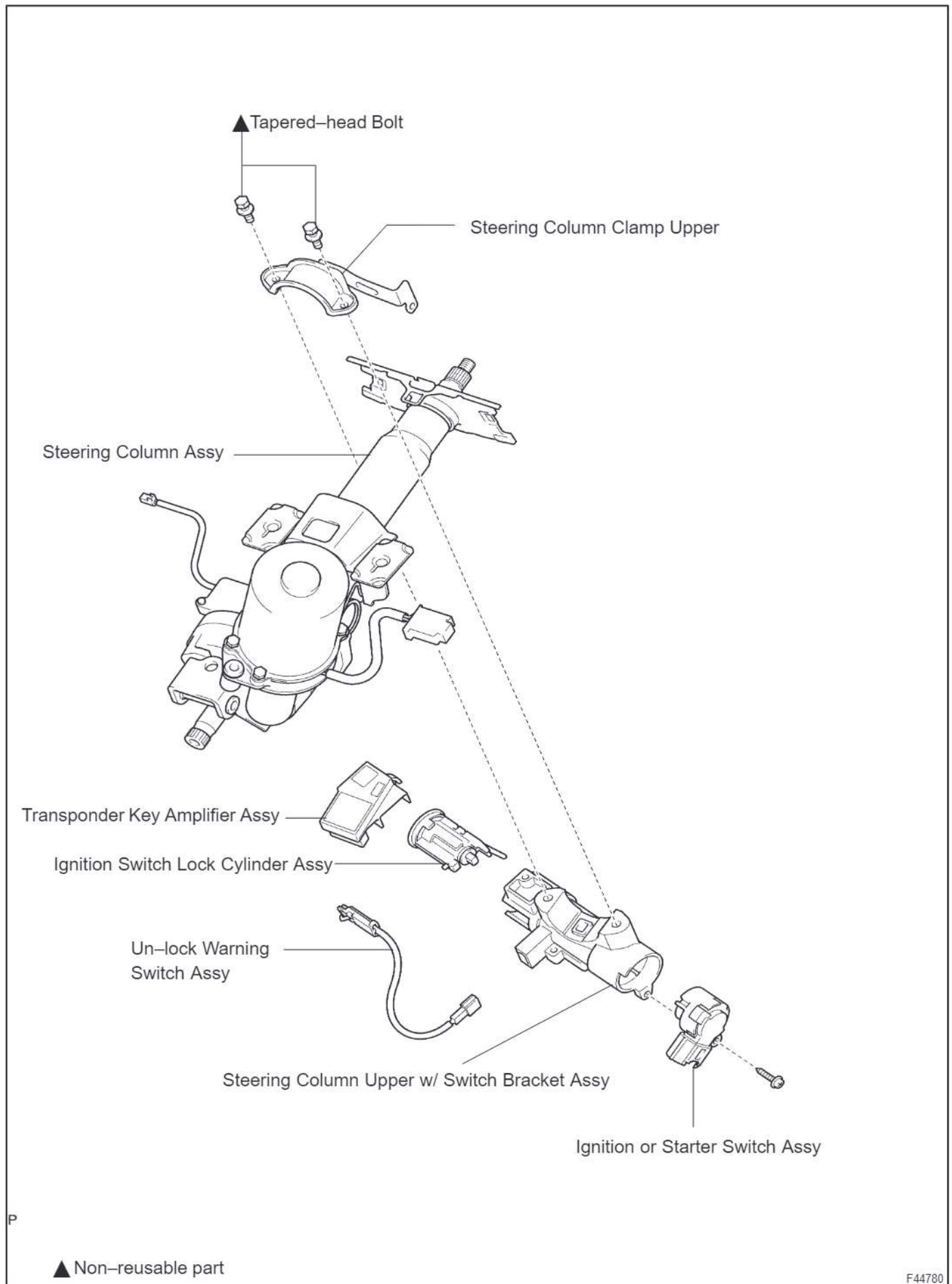


Electric Power Steering:

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

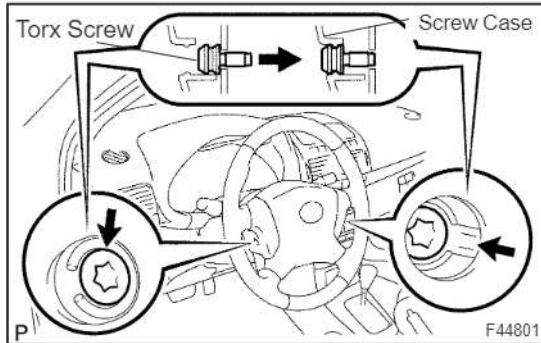
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OVERHAUL

1. PRECAUTION (See page 60-1)
2. INSPECT PLACE FRONT WHEELS FACING STRAIGHT AHEAD
3. DISCONNECT BATTERY NEGATIVE TERMINAL (See page 60-1)

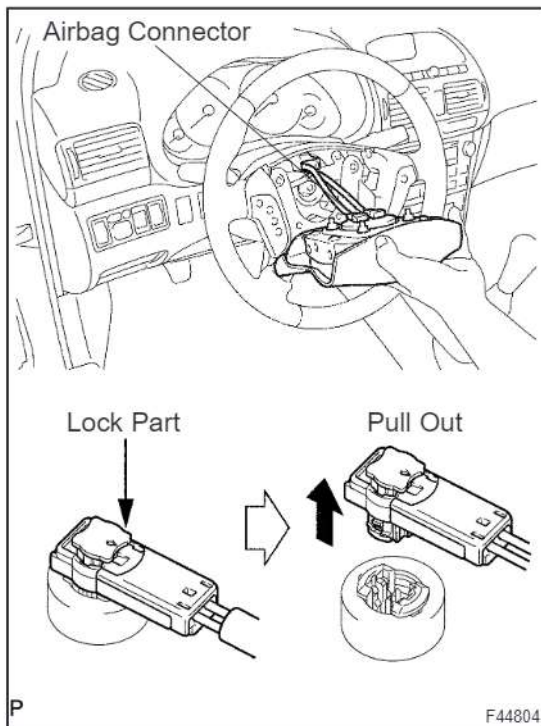


4. REMOVE HORN BUTTON ASSY

NOTICE:

If the airbag connector is disconnected with the ignition switch at ON, DTCs is recorded.

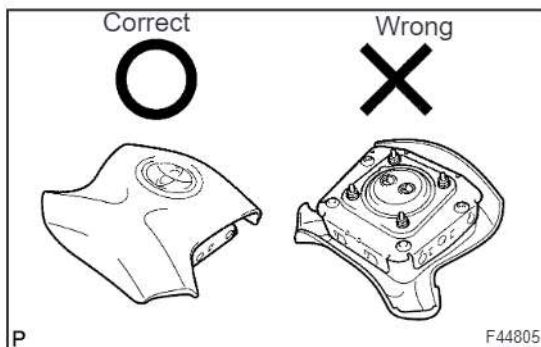
- (a) Using a torx socket wrench, loosen the 2 torx screws until the groove along the screw circumference catches on the screw case.



- (b) Pull out the horn button assy from the steering wheel and disconnect the airbag connector.
- (c) Disconnect the terminal.

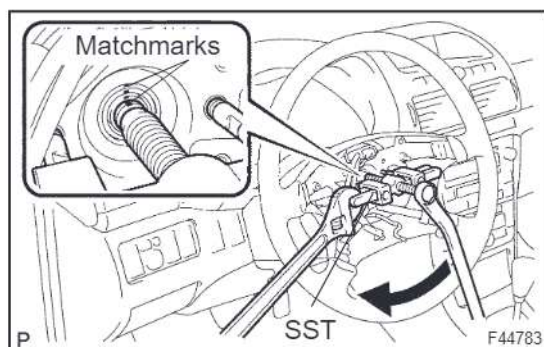
NOTICE:

When removing the horn button assy, take care not to pull the airbag wire harness.



CAUTION:

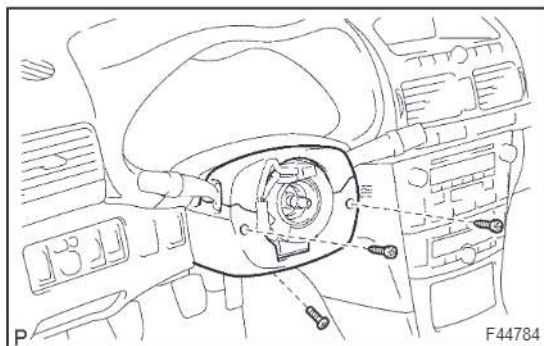
- ▲ When storing the horn button assy, keep the upper surface of the horn button assy facing upward.
- ▲ Never disassemble the horn button assy.



5. REMOVE STEERING WHEEL ASSY

- (a) Remove the steering wheel assy set nut.
- (b) Place matchmarks on the steering wheel assy and steering main shaft assy.
- (c) Using SST, remove the steering wheel assy.
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

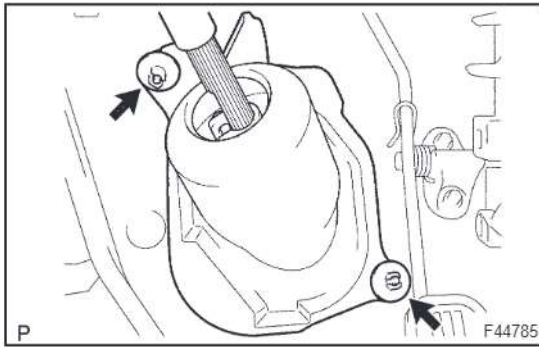
6. REMOVE INSTRUMENT PANEL UNDER COVER SUB-ASSY NO.1 (See page 71-11)
7. REMOVE INSTRUMENT PANEL HOLE COVER (See page 60-54)
8. REMOVE INSTRUMENT PANEL AIR BAG ASSY (See page 60-54)
9. REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.1 (ELECTRIC POWER STEERING) (See page 71-11)
10. REMOVE INSTRUMENT CLUSTER FINISH PANEL GARNISH NO.2 (ELECTRIC POWER STEERING) (See page 71-11)
11. REMOVE INSTRUMENT PANEL REGISTER ASSY CTR (ELECTRIC POWER STEERING) (See page 71-11)



12. REMOVE STEERING COLUMN COVER LWR

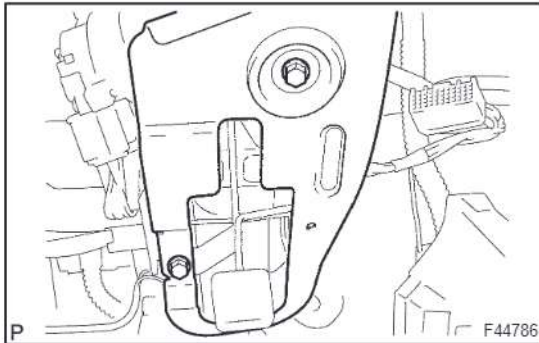
- (a) Remove the 3 screws and steering column cover LWR.

13. REMOVE STEERING COLUMN COVER W/INSTRUMENT CLUSTER FINISH PANEL ASSY
 - (a) Disengage the 2 clips and remove the steering column cover w/instrument cluster finish panel assy.
14. REMOVE COMBINATION METER ASSY (ELECTRIC POWER STEERING) (See page 71-11)
15. REMOVE INSTRUMENT PANEL REGISTER ASSY NO.1 (ELECTRIC POWER STEERING) (See page 71-11)
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20. DISCONNECT PASSENGER AIRBAG CONNECTOR (ELECTRIC POWER STEERING) (See page 71-11)
21. REMOVE INSTRUMENT PANEL SUB-ASSY UPPER W/INSTR PNL PASS L/DOOR AIR BAG ASSY (ELECTRIC POWER STEERING) (See page 71-11)
22. REMOVE HEADLAMP DIMMER SWITCH ASSY (See page 65-27)
23. REMOVE WINDSHIELD WIPER SWITCH ASSY (See page 66-24)
24. REMOVE SPIRAL CABLE SUB-ASSY (See page 60-26)



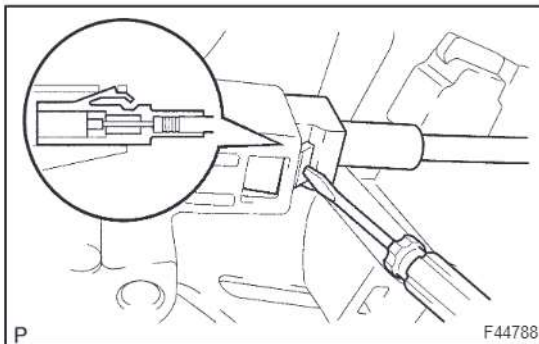
25. REMOVE COLUMN HOLE COVER SILENCER SHEET

- (a) Remove the 2 nuts and column hole cover silencer sheet.



26. REMOVE STEERING COLUMN PROTECTOR NO.1

- (a) Separate the wire harness clamp from the steering column protector No.1.
- (b) Remove the 2 bolts and steering column protector No.1.



27. DISCONNECT FLOOR SHIFT PARKING LOCK CABLE ASSY (A/T TRANSAXLE)

- (a) Turn the ignition switch to ON.
- (b) Using a screwdriver, disengage the claw and separate the floor shift parking lock cable.

28. DISCONNECT POWER STEERING ECU ASSY (ELECTRIC POWER STEERING)**NOTICE:**

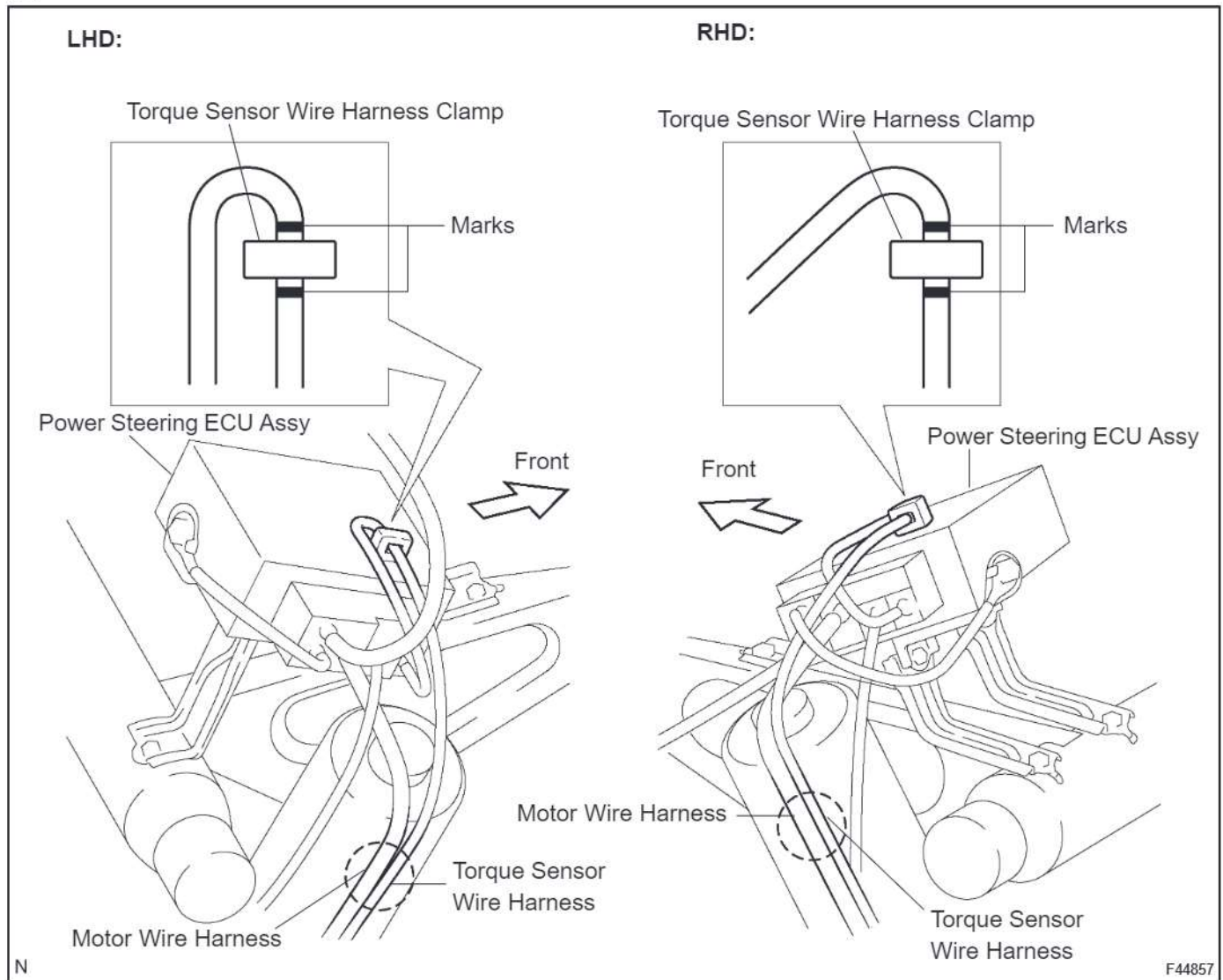
Thoroughly check the procedures for removing and installing the power steering ECU assy when replacing it. Do the same for the removing and installing the steering column assy.

- (a) Mark the clamp position on the torque sensor wire harness in order to reinstall the wire harness as shown in the illustration.
- (b) Disconnect the torque sensor wire harness from the clamp.

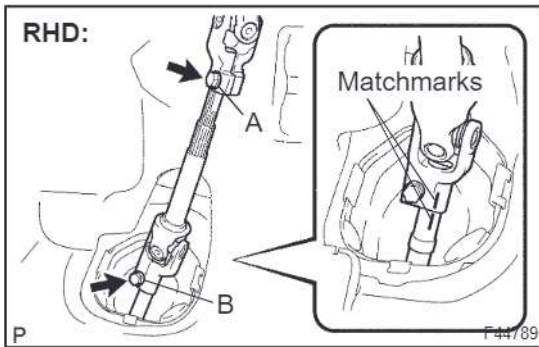
NOTICE:

In case the clamp will be reused, pay attention so as not to damage it.

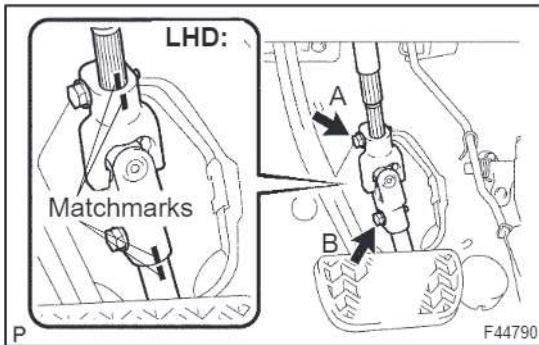
- (c) Disconnect the 2 connectors.

**29. REMOVE STEERING COLUMN ASSY**

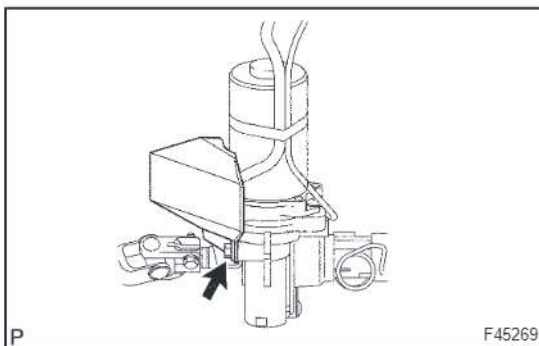
- (a) Disconnect the wire harness and wire harness clamps.
- (b) Loosen the 3 steering column assy set bolts.



- (c) RHD:
Place matchmarks on the intermediate shaft assy No. 2 and steering intermediate shaft.
- (d) RHD:
Loosen the bolt A and remove the bolt B, then disconnect the intermediate shaft assy No.2.



- (e) LHD:
Place matchmarks on the steering sliding yoke sub-assy and steering intermediate shaft.
- (f) LHD:
Loosen the bolt A and remove the bolt B, then disconnect the steering sliding yoke sub-assy.



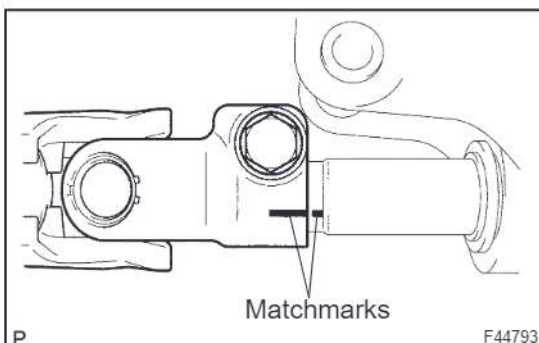
- (g) RHD, M/T:
Remove the bolt and protector.
- (h) Remove the 3 bolts and steering column assembly.

30. REMOVE STEERING INTERMEDIATE SHAFT ASSY NO.2 (RHD STEERING POSITION TYPE)

- (a) Remove the bolt A and steering intermediate shaft assy No. 2.

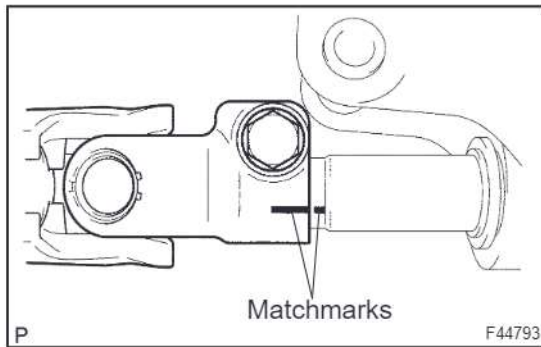
31. REMOVE STEERING SLIDING YOKE SUB-ASSY (LHD STEERING POSITION TYPE)

- (a) Remove the bolt A and steering sliding yoke sub-assy.



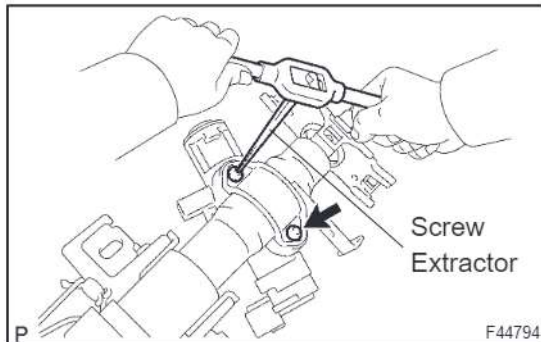
32. REMOVE STEERING SLIDING YOKE SUB-ASSY (RHD STEERING POSITION TYPE)

- (a) Place matchmarks on the steering sliding yoke sub-assy and steering main shaft.
- (b) Remove the bolt and steering sliding yoke sub-assy.
- (c) W/VSC:
Remove the steering sensor ([See page 32-65](#)).



33. REMOVE STEERING INTERMEDIATE SHAFT ASSY NO.2 (LHD STEERING POSITION TYPE)

- Place matchmarks on the steering intermediate shaft assy No. 2 and steering main shaft.
- Remove the bolt and steering intermediate shaft assy No. 2.
- W/VSC:
Remove the steering sensor (See page 32-65).

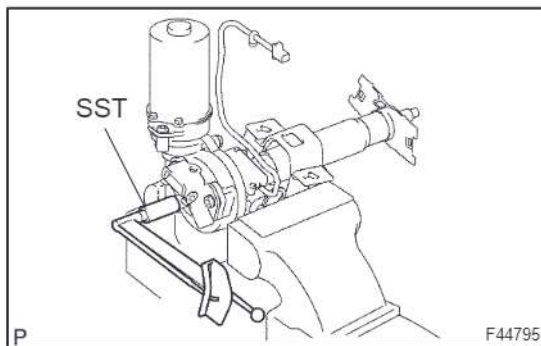


34. REMOVE STEERING COLUMN UPPER W/SWITCH BRACKET ASSY

- Using a centering punch, mark the center of the 2 tapered-head bolts.
- Using a 3 – 4 mm (0.12 – 0.16 in.) drill, drill into the 2 bolts.
- Using a screw extractor, remove the 2 bolts and steering column upper with switch bracket assy.

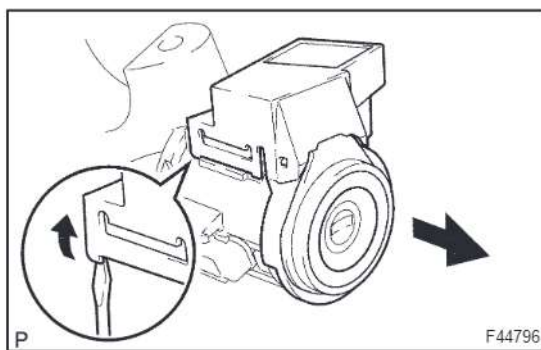
NOTICE:

Do not give the strong force to the motor part.



35. INSPECT STEERING COLUMN ASSY (ELECTRIC POWER STEERING)

- Using SST and a torque wrench, check the rotating torque.
SST 09616-00011
Rotating torque (1 turn for 2 sec.):
0.4 – 1.1 N m (4 – 11 kgf cm, 3.5 – 9.5 in. lbf)

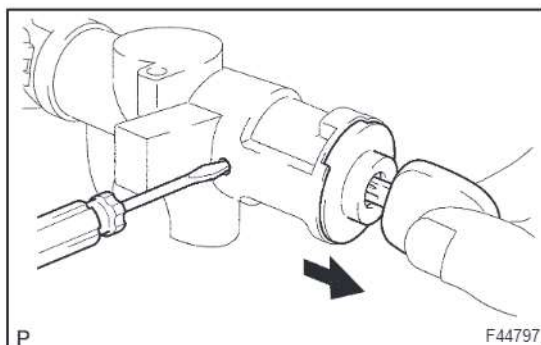


36. REMOVE TRANSPONDER KEY AMPLIFIER

- Widen the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.
- Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

NOTICE:

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



37. REMOVE IGNITION SWITCH LOCK CYLINDER ASSY

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

38. REMOVE UN-LOCK WARNING SWITCH ASSY

- (a) Slide the unlock warning switch assy out of the steering column upper bracket.

39. REMOVE IGNITION OR STARTER SWITCH ASSY

- (a) Remove the 2 screws and ignition or starter switch assy.

40. INSTALL IGNITION OR STARTER SWITCH ASSY

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

41. INSTALL UN-LOCK WARNING SWITCH ASSY

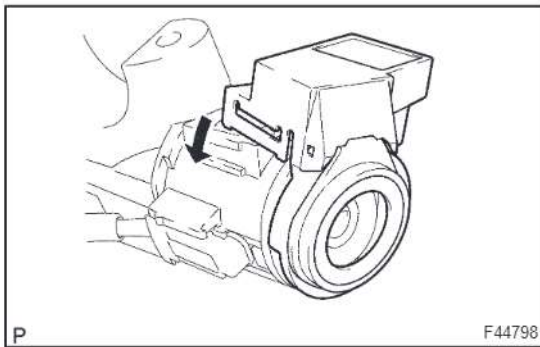
- (a) Install the un-lock warning switch assy.
 (b) Connect the un-lock warning switch assy connector to the ignition or starter switch assy.

42. INSTALL IGNITION SWITCH LOCK CYLINDER ASSY

- (a) Make sure of the ignition switch lock cylinder assy at the ACC position.
 (b) Install the ignition switch lock cylinder assy.

43. INSPECT STEERING LOCK OPERATION

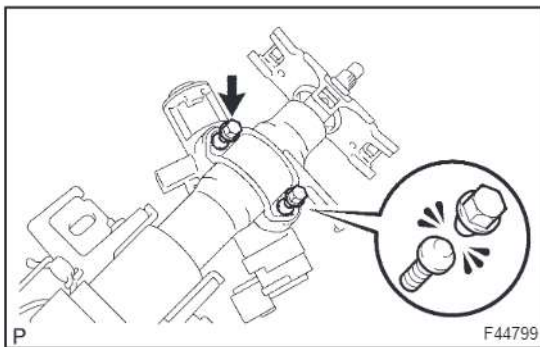
- (a) Check that the steering lock mechanism is activated when removing the key.
 (b) Check that the steering lock mechanism is deactivated when inserting the key and turning it to ACC position.

**44. INSTALL TRANSPONDER KEY AMPLIFIER**

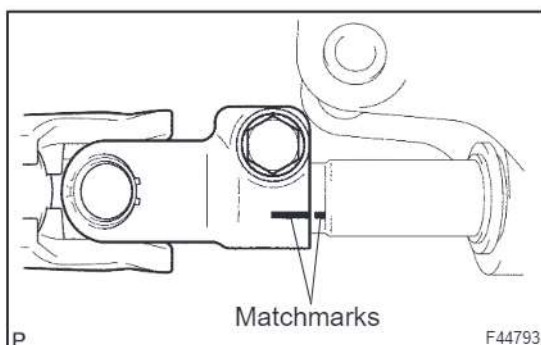
- (a) Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
 (b) Push the transponder key amplifier up and connect it to the upper bracket.

NOTICE:

Take care not to push the amplifier up with excessive force to prevent it from being damaged.

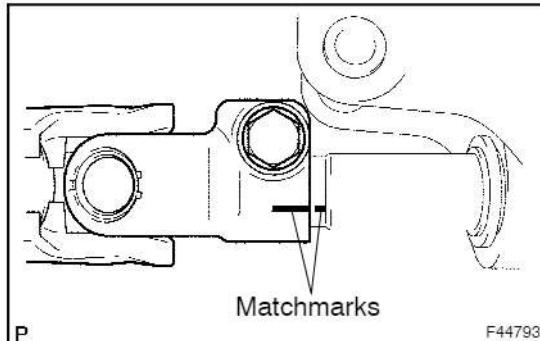
**45. INSTALL STEERING COLUMN UPPER W/SWITCH BRACKET ASSY**

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

**46. INSTALL STEERING SLIDING YOKE SUB-ASSY (RHD STEERING POSITION TYPE)**

- (a) W/VSC:
 Install the steering sensor ([See page 32-65](#)).
 (b) Align matchmarks on the steering sliding yoke and steering main shaft.
 (c) Oil Pressure Power Steering
 (1) Install the steering sliding yoke with the bolt.
Torque: 28 N m (286 kgf cm, 21 ft lbf)

- (d) Electric Pressure Power Steering
 (1) Install the steering sliding yoke with the bolt.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)



47. INSTALL STEERING INTERMEDIATE SHAFT ASSY NO.2 (LHD STEERING POSITION TYPE)

- (a) W/VSC:
 Install the steering sensor ([See page 32-65](#)).
 (b) Align matchmarks on the steering intermediate shaft assy No. 2 and steering main shaft.
 (c) Oil Pressure Power Steering
 (1) Install the steering intermediate shaft assy No. 2 with the bolt.

Torque: 28 N·m (286 kgf·cm, 21 ft·lbf)

- (d) Electric Pressure Power Steering
 (1) Install the steering intermediate shaft assy No. 2 with the bolt.

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

48. INSTALL STEERING INTERMEDIATE SHAFT ASSY NO.2 (RHD STEERING POSITION TYPE)

- (a) Temporarily install the steering intermediate shaft assy No. 2 with the bolt A.

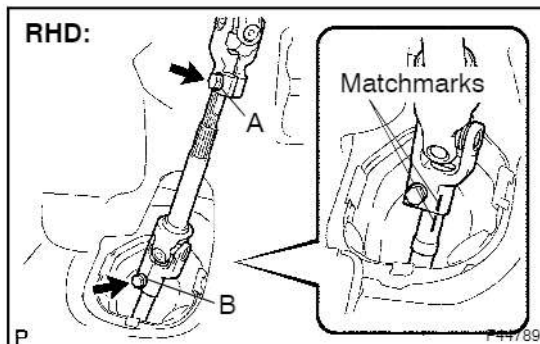
49. INSTALL STEERING SLIDING YOKE SUB-ASSY (LHD STEERING POSITION TYPE)

- (a) Temporarily install the steering sliding yoke with the bolt A.

50. INSTALL STEERING COLUMN ASSY

- (a) Install the steering column assembly with the 3 bolts.

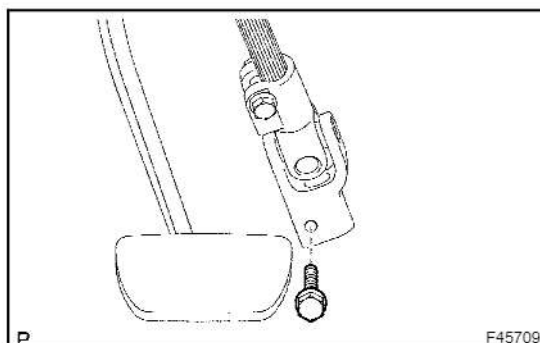
Torque: 25 N·m (255 kgf·cm, 18 ft·lbf)



- (b) RHD:
 Align the matchmarks on the intermediate shaft assy No. 2 and steering intermediate shaft.

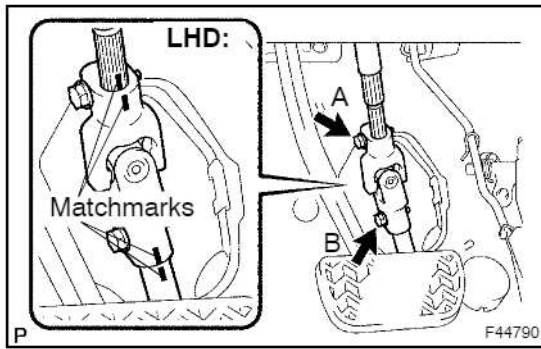
- (c) RHD:
 Install the bolt B and tighten the bolt A.

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

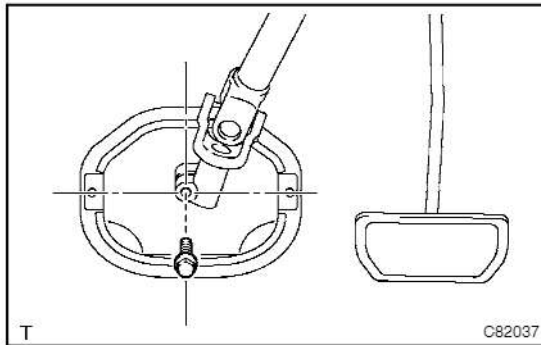


HINT:

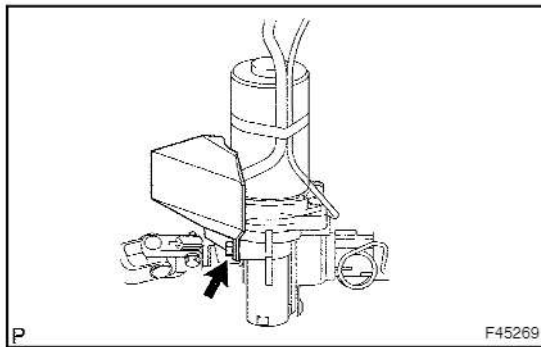
When replacing the intermediate shaft assy No. 2 with a new one, set the front tires in the straight ahead position and make the bolt hole for the intermediate shaft assy No. 2 and extension face straight rearward as illustrated, and install the bolt.



- (d) LHD:
Align matchmarks on the sliding yoke and steering intermediate shaft.
- (e) LHD:
Install the bolt B and tighten the bolt A.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)

**HINT:**

When replacing the sliding yoke with a new one, set the front tires in the straight ahead position and make the bolt hole for the yoke and extension face straight rearward as illustrated, and install the bolt.



- (f) RHD, M/T:
Install the protector with the bolt.
Torque: 25 N·m (255 kgf·cm, 18 ft·lbf)

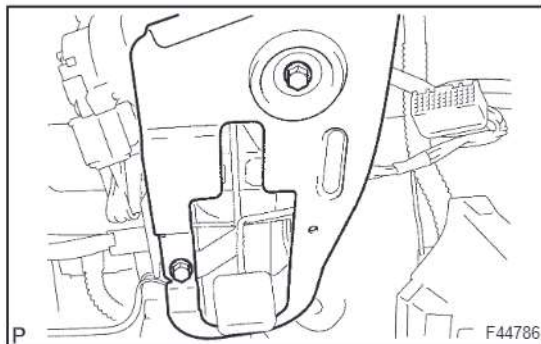
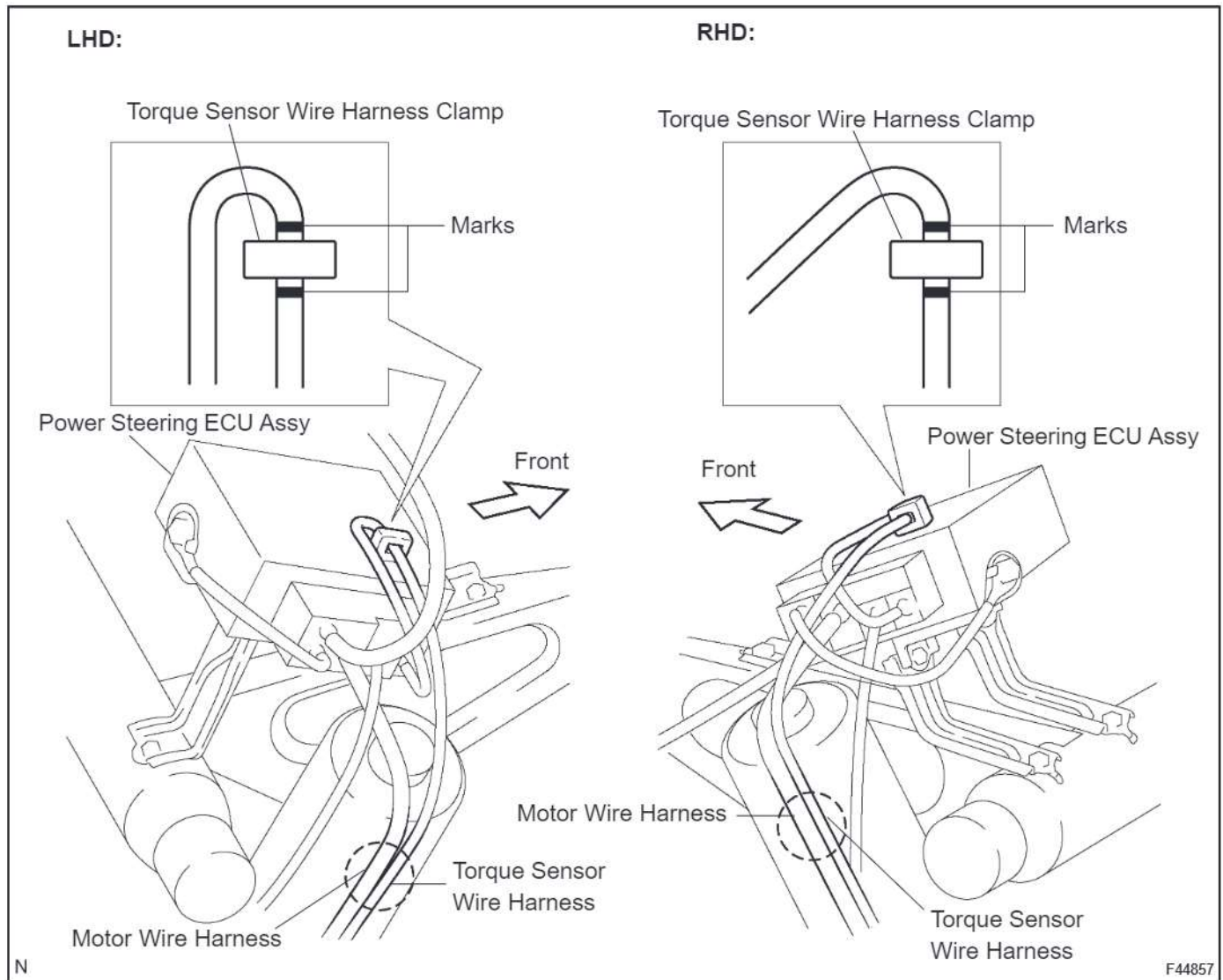
51. INSTALL FLOOR SHIFT PARKING LOCK CABLE ASSY (A/T TRANSAXLE)(See page 40-74)

52. CONNECT POWER STEERING ECU ASSY (ELECTRIC POWER STEERING)

- Connect the 2 connectors.
- Align the marks on the torque sensor wire harness with the clamp, as shown in the illustration.

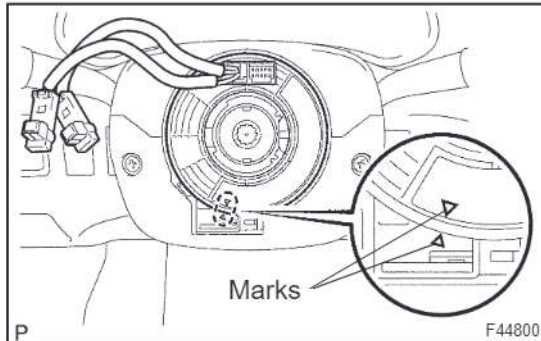
NOTICE:

- ▲ When reusing the clamp, check that there is no damage on it.
- ▲ When reinstalling the wire harness, make sure there is no twist in the harness or with other wire harness.

**53. INSTALL STEERING COLUMN PROTECTOR NO.1**

- Install the steering column protector with the 2 bolts.
Torque: 5 N m (51 kgf cm, 44 ft lbf)
- Connect the wire harness clamp to the steering column protector No.1.

54. INSTALL INSTRUMENT PANEL AIR BAG ASSY (See page 60-54)
55. INSTALL COLUMN HOLE COVER SILENCER SHEET
56. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
57. INSTALL SPIRAL CABLE SUB-ASSY (See page 60-26)



58. CENTER SPIRAL CABLE

- (a) Check that the front wheels are facing straight ahead.
- (b) Turn the cable counterclockwise by hand until it becomes harder to turn.
- (c) Then rotate the cable clockwise about 2.5 turns to align the marks.

HINT:

The cable will rotate about 2.5 turns to either left or right of the center.

59. INSTALL STEERING WHEEL ASSY

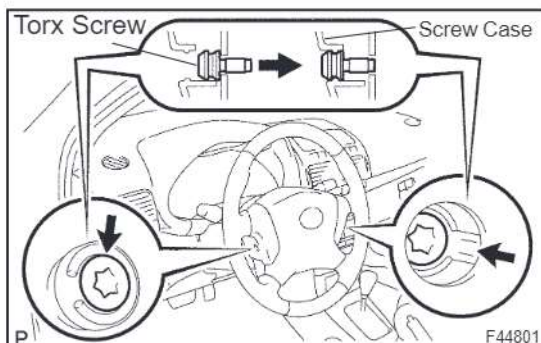
- (a) Align matchmarks on the steering wheel and main shaft assembly.
- (b) Install the steering wheel set nut.
Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)
- (c) Connect the connector.

60. INSTALL HORN BUTTON ASSY

NOTICE:

- ▲ Never use airbag parts from another vehicle. When replacing parts, replace with new ones.
- ▲ Make sure the horn button assy is installed with the specified torque.
- ▲ If the horn button assy has been dropped, or there are cracks, dents or other defects in the case or connector, replace the horn button assy with a new one.
- ▲ When installing the horn button assy, take care that the wirings do not interfere with other parts and that they are not pinched between other parts.

- (a) Connect the terminal.
- (b) Connect the airbag connector.
- (c) Install the steering horn button assy after confirming that the circumference groove of the torx screws is caught on the screw case.
- (d) Using a torx socket wrench, torque the 2 screws.
Torque: 8.8 N·m (90 kgf·cm, 78 in·lbf)



61. STEERING WHEEL CENTER POINT
62. CONNECT BATTERY NEGATIVE TERMINAL
63. INSPECT SRS WARNING LIGHT (See page 05-1184)
64. PERFORM CALIBRATION OF TORQUE SENSOR ZERO POINT (ELECTRIC POWER STEERING)
(See page 05-1045)

STEERING SYSTEM

5000C-14

PRECAUTION

1. HANDLING PRECAUTIONS ON STEERING SYSTEM

- (a) Be careful to replace the parts properly because they could affect the performance of the steering system and result in a driving hazard.

2. HANDLING PRECAUTIONS ON SRS AIRBAG SYSTEM

- (a) The vehicle 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 notices in the supplemental restraint system ([See page 60-1](#)).

3. HANDLING PRECAUTIONS ON STEERING COLUMN

- (a) Do not give an impact to the steering column assy, especially the motor and the torque sensor. If a great impact is given (dropping it to the floor, etc.), replace it with a new one.
- (b) When removing the steering column assy, do not pull the harness.
- (c) When having replaced the steering column assy and/or the ECU, calibrate the zero point of the steering torque sensor.
- (d) In the case of disconnecting a connector related to the power steering system, turn the ignition switch ON, set the steering wheel in the straight-ahead position and turn the ignition switch OFF before disconnecting the connector.
- (e) In the case of connecting a connector related to the power steering system, make sure that the ignition switch is OFF at first. After connecting the connector, set the steering wheel assy in the straight-ahead position, and then turn the ignition switch ON.

NOTICE:

Never turn on the ignition switch when the steering wheel assy is set in order than the straight-ahead position.

- (f) If the above operation is not done, the zero point of the steering torque sensor is shifted away from the proper position, making difference in the steering effort between right and left. If this happens, perform the zero point calibration of the steering torque sensor ([See page 05-1042](#)).

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help you find the cause of the problem. The numbers indicate the likelihood of the cause in the descending order. Check each part in the order shown. Repair or replace these parts as necessary.

Oil pressure power steering:

Symptom	Suspect Area	See page
Hard steering	11. Tires (Improperly inflated)	28-1
	12. Power steering fluid level (Low)	51-4
	13. Drive belt (Loose)	51-4
	14. Front wheel alignment (Incorrect)	26-6
	15. Steering system joints (Worn)	–
	16. Suspension arm ball joints (Worn)	26-24
	17. Steering column (Binding)	–
	18. Power steering vane pump	51-9
	19. Power steering gear	51-19 51-36
Poor return	1. Tires (Improperly inflated)	28-1
	2. Front wheel alignment (Incorrect)	26-6
	3. Steering column (Binding)	–
	4. Power steering gear	51-36
Excessive play	1. Steering system joints (Worn)	–
	2. Suspension arm ball joints (Worn)	26-24
	3. Intermediate shaft, Sliding yoke (Worn)	–
	4. Front wheel bearing (Worn)	30-22
	5. Power steering gear	51-36
Abnormal noise	1. Power steering fluid level (Low)	51-4
	2. Steering system joints (Worn)	–
	3. Power steering vane pump	51-9
	4. Power steering gear	51-19 51-36

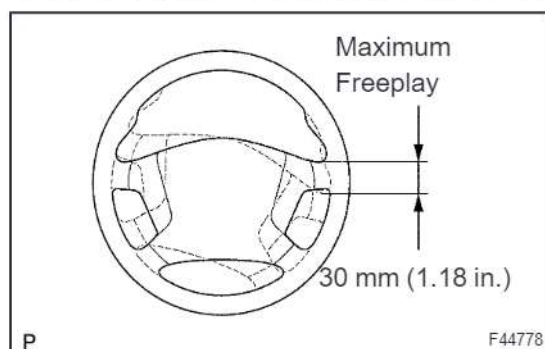
Electric power steering:

Symptom	Suspect Area	See page
Hard steering	1. Tires (Improperly inflated)	28-1
	2. Front wheel alignment (Incorrect)	26-6
	3. Steering system joints (Worn)	–
	4. Suspension arm ball joints (Worn)	26-24
	5. Steering column (Binding)	–
	6. Steering column (Electric power steering)	50-9
Poor return	1. Tires (Improperly inflated)	28-1
	2. Front wheel alignment (Incorrect)	26-6
	3. Steering column (Binding)	–
	4. Steering column (Electric power steering)	50-9
Excessive play	1. Steering system joints (Worn)	–
	2. Suspension arm ball joints (Worn)	26-24
	3. Intermediate shaft, Sliding yoke (Worn)	–
	4. Front wheel bearing (Worn)	30-22
	5. Steering column (Electric power steering)	50-9
Abnormal noise	1. Steering system joints (Worn)	–
	2. Steering column (Electric power steering)	50-9

HINT:

When the problem occurs on the Electric Power Steering system, refer to the DI section ([See page 05-1042](#)).

ON-VEHICLE INSPECTION



1. CHECK STEERING WHEEL FREEPLAY

- (a) Stop the vehicle and face the tires straight ahead.
- (b) Rock the steering wheel gently up and down with a finger lightly, check the steering wheel freeplay.

Maximum freeplay: 30 mm (1.18 in.)