

# STEERING

5002J-11

## PRECAUTION

### 1. HANDLING PRECAUTIONS ON 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.

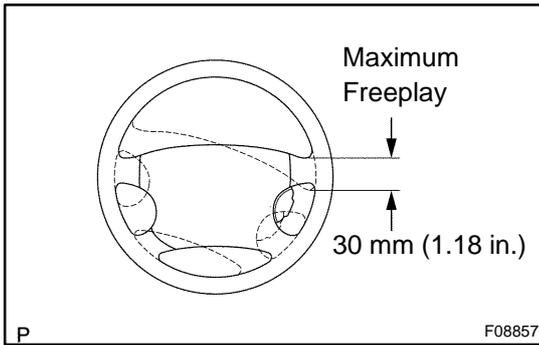
### 2. HANDLING PRECAUTIONS ON SRS AIRBAG SYSTEM

- (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 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 [60-1](#)).

## PROBLEM SYMPTOMS TABLE

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

Symptom	Suspected Area	See page
Hard steering	1. Tires (Improperly inflated)	28-1
	2. Power steering fluid level (Low)	51-3
	3. Drive belt (Loose)	51-3
	4. Front wheel alignment (Incorrect)	26-7
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	26-21
	7. Steering column (Binding)	-
	8. Power steering vane pump	51-9
	9. Power steering gear	51-19
Poor return	1. Tires (Improperly inflated)	28-1
	2. Front wheel alignment (Incorrect)	26-7
	3. Steering column (Binding)	-
	4. Power steering gear	51-19
Excessive play	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	26-21
	3. Intermediate shaft, Sliding yoke (Worn)	-
	4. Power steering gear	51-19
Abnormal noise	1. Power steering fluid level (Low)	51-3
	2. Steering system joints (Worn)	-
	3. Power steering vane pump	51-9
	4. Power steering gear	51-19

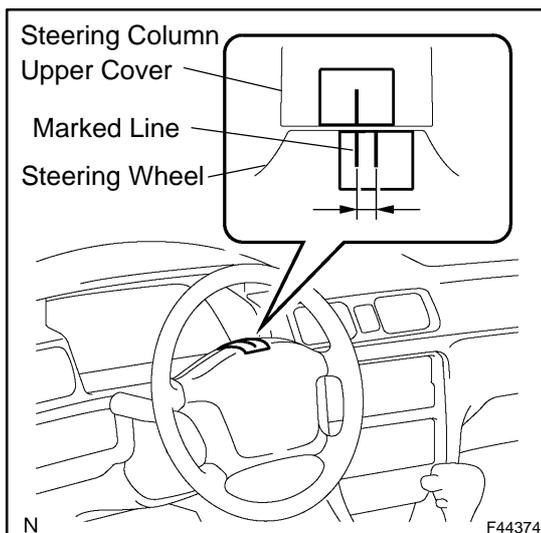
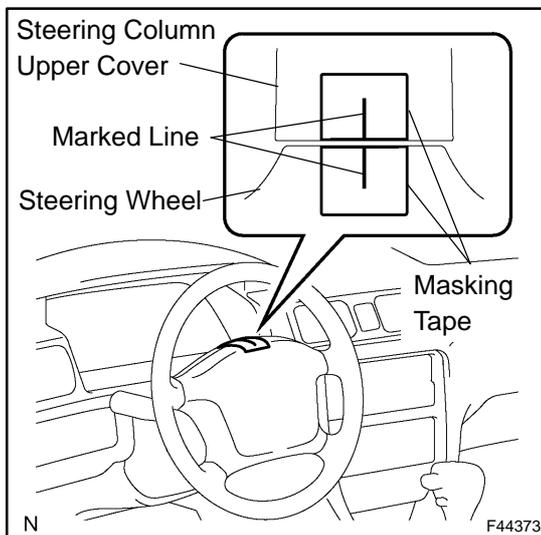
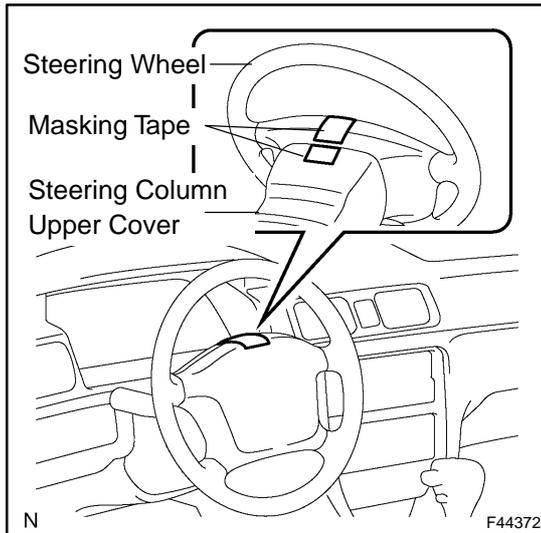


## ON-VEHICLE INSPECTION

### 1. CHECK STEERING WHEEL FREEPLAY

- (a) Park the vehicle and face the tires straight ahead.
- (b) Rock the steering wheel gently left and right with your hand, check the steering wheel freeplay.

**Maximum freeplay: 30 mm (1.18 in.)**



## 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 its straight position.

#### HINT:

Refer to the upper surface of the steering wheel, steering spoke and SRS airbag line for the straight position.

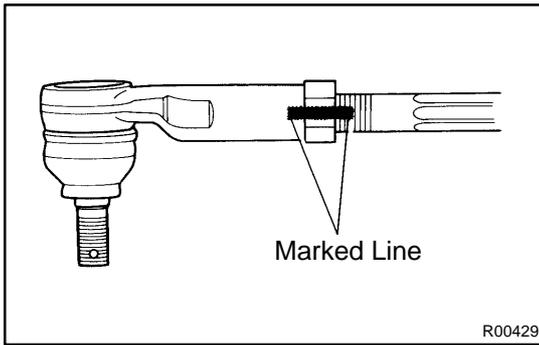
- (5) Draw a new line on the masking tape or the steering wheel as shown in the illustration.
- (6) Measure the distance between the 2 lines on the masking tape of the steering wheel.
- (7) Convert the measured distance to steering angle.

**Measured distance 1 mm (0.04 in.) = Steering angle approximately 1 deg.**

#### HINT:

Make a note of the steering angle.

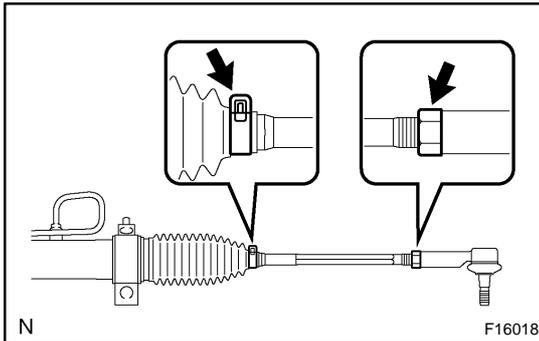
- (b) Adjust steering angle.



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

**HINT:**

- Measure the RH side and LH side.
- 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 end by the same amount (but in different directions) according to the steering angle.

**1 turn 360 deg. of rack end (1.5 mm (0.059 in.) horizontal movement) – 12 deg. of steering angle.**

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

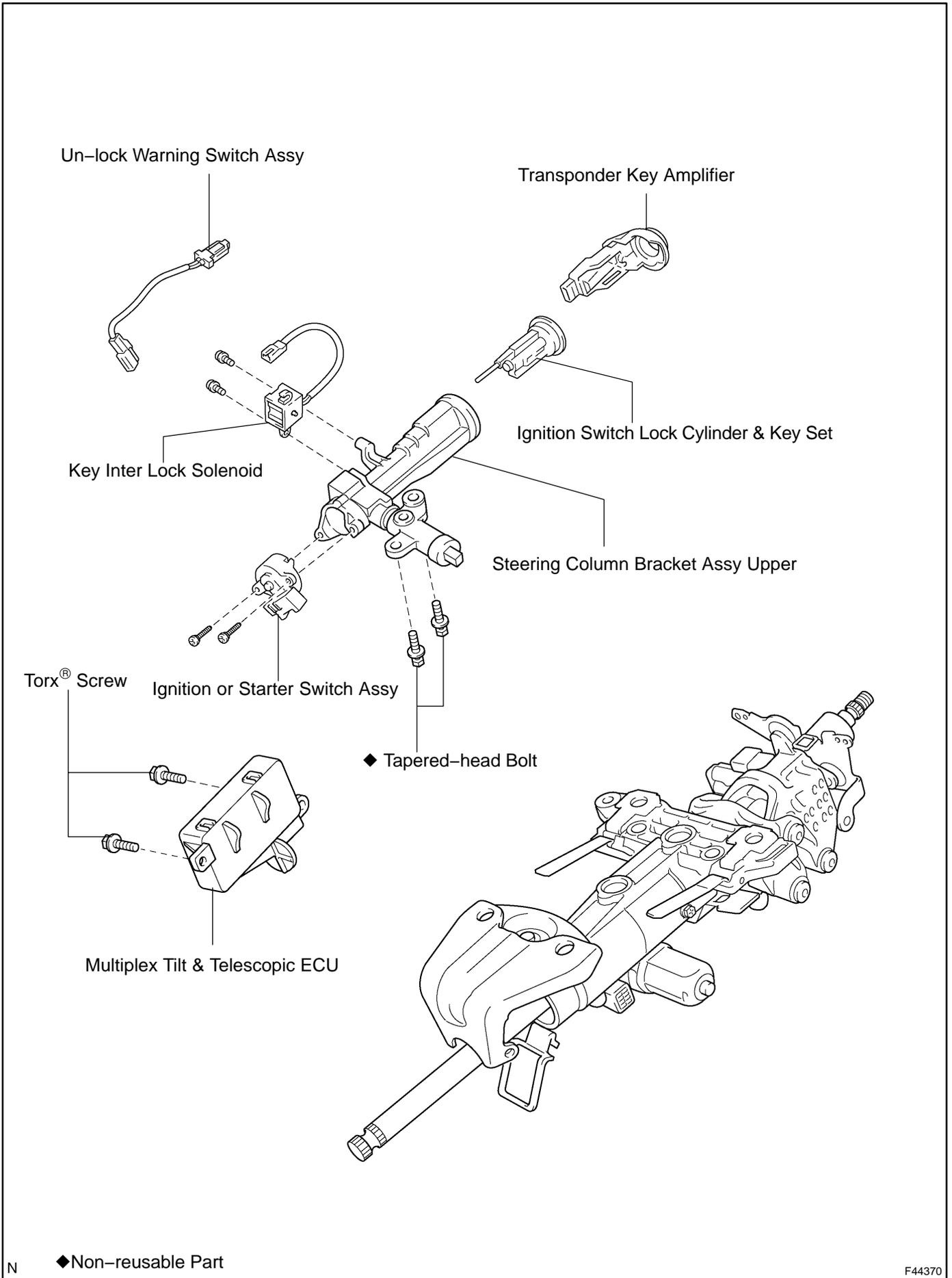
**Torque: 74 N·m (755 kgf·cm, 55 ft·lbf)**

**NOTICE:**

**Make sure that the difference in length between 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.





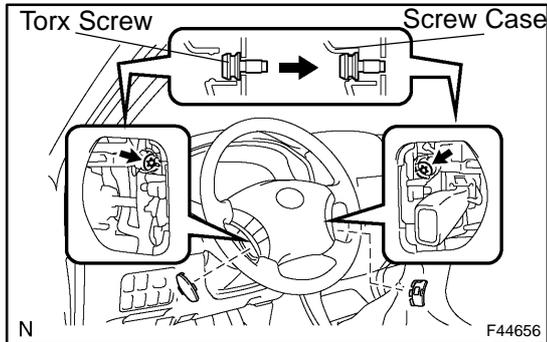
N

◆ Non-reusable Part

F44370

## OVERHAUL

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

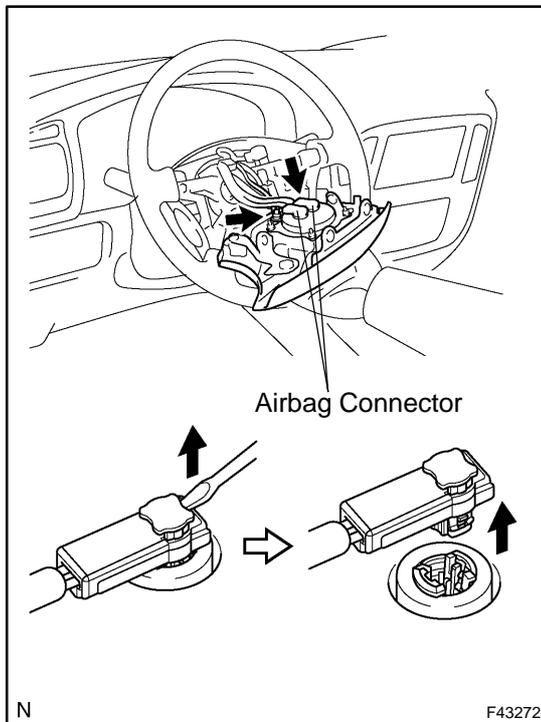


4. **REMOVE STEERING WHEEL COVER LOWER NO.3**
5. **REMOVE STEERING WHEEL COVER LOWER NO.2**
6. **REMOVE HORN BUTTON ASSY**

### NOTICE:

If the airbag connector is disconnected with the ignition switch in the ON position, DTCs will be recorded.

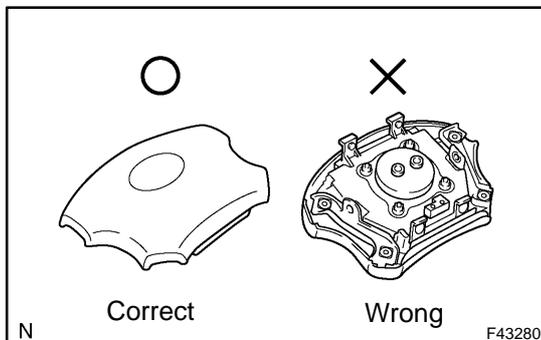
- (a) Using a torx<sup>®</sup> socket wrench (Torx<sup>®</sup> socket wrench (T=30)), loosen the 2 torx<sup>®</sup> screws until the groove along the screw circumference catches on the screw case.



### NOTICE:

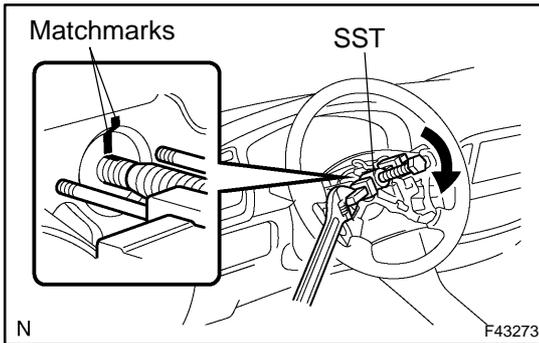
When removing the horn button assy, take care not to pull the airbag wire harness.

- (b) Pull out the horn button assy from the steering wheel assy.
- (c) Using a screwdriver, release the lock part of each of the airbag connectors and disconnect the 2 airbag connectors.
- (d) Disconnect the horn ground harness from the horn button assy.

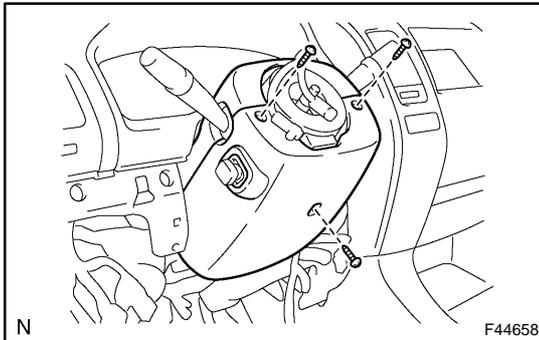


### CAUTION:

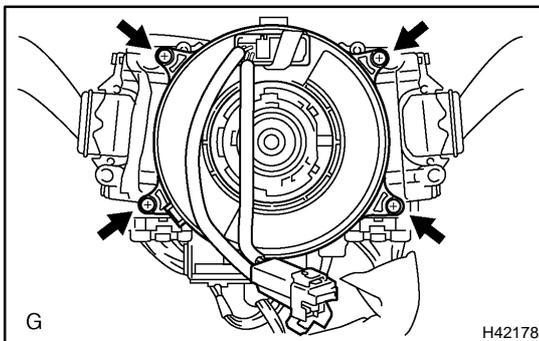
- When storing the horn button assy, keep the upper surface of the pad facing upward.
- Never disassemble the horn button assy.

**7. REMOVE STEERING WHEEL ASSY**

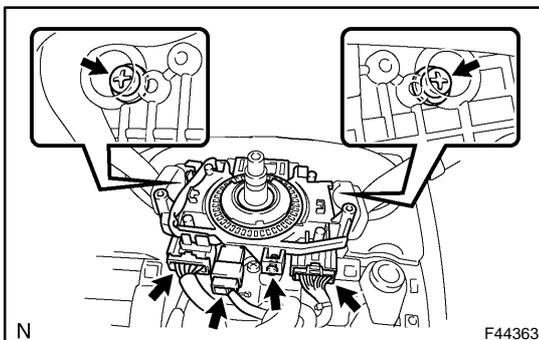
- (a) w/ Steering switch  
Disconnect the steering switch connector.
- (b) Remove the steering wheel assy set nut.
- (c) Place matchmarks on the steering wheel assy and main shaft assy.
- (d) Using SST, remove the steering wheel assy.  
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)

**8. REMOVE FRONT DOOR SCUFF PLATE LH****9. REMOVE FRONT FLOOR FOOTREST****10. REMOVE COWL SIDE TRIM BOARD LH****11. REMOVE INSTRUMENT PANEL SAFETY PAD SUB-ASSY****12. REMOVE INSTRUMENT PANEL LOWER LH****13. REMOVE SPIRAL CABLE SUB-ASSY**

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



- (b) Disconnect the 2 connectors from the spiral cable sub-assy.
- (c) Remove the 4 screws and spiral cable sub-assy.

**14. REMOVE TURN SIGNAL SWITCH ASSY**

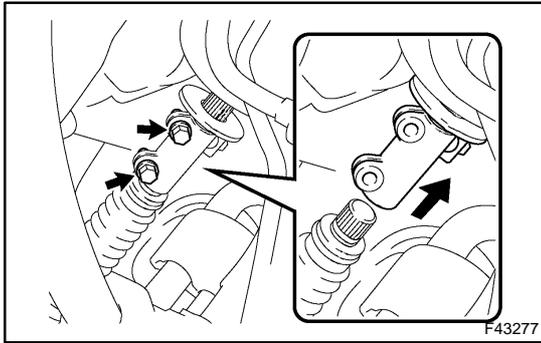
- (a) Disconnect the 3 connectors.
- (b) Remove the 3 screws and turn signal switch assy.

**15. REMOVE ENGINE UNDER COVER SUB-ASSY NO.1**

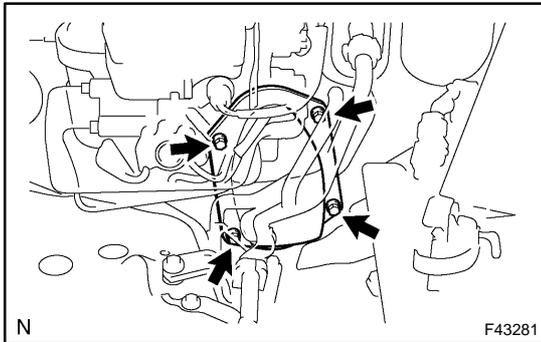
- (a) Remove the 4 bolts and engine under cover sub-assy No.1.

**16. REMOVE ENGINE UNDER COVER ASSY REAR**

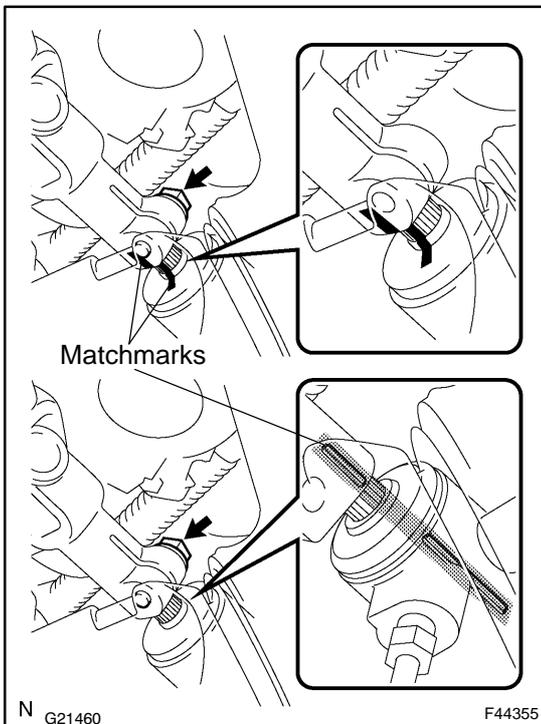
- (a) Remove the 4 bolts and engine under cover assy rear.

**17. REMOVE STEERING SLIDING YOKE**

- (a) Remove the 2 bolts from the steering sliding yoke.  
 (b) Slide the steering sliding yoke up and separate it from the steering intermediate shaft sub-assy No.2.  
 (c) Pull down the steering sliding yoke from the steering intermediate shaft assy to remove.

**18. REMOVE STEERING INTERMEDIATE SHAFT COVER**

- (a) Remove the 4 bolts and steering intermediate shaft cover.

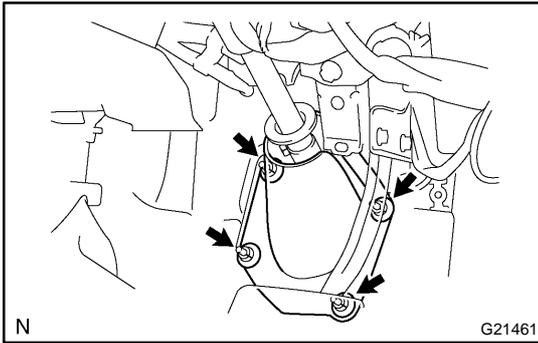
**19. REMOVE STEERING INTERMEDIATE SHAFT NO.2**

- (a) Put the matchmarks on the power steering gear assy and steering intermediate shaft sub-assy No.2.  
 (b) Remove the bolt and intermediate shaft sub-assy No.2 from the power steering gear assy.

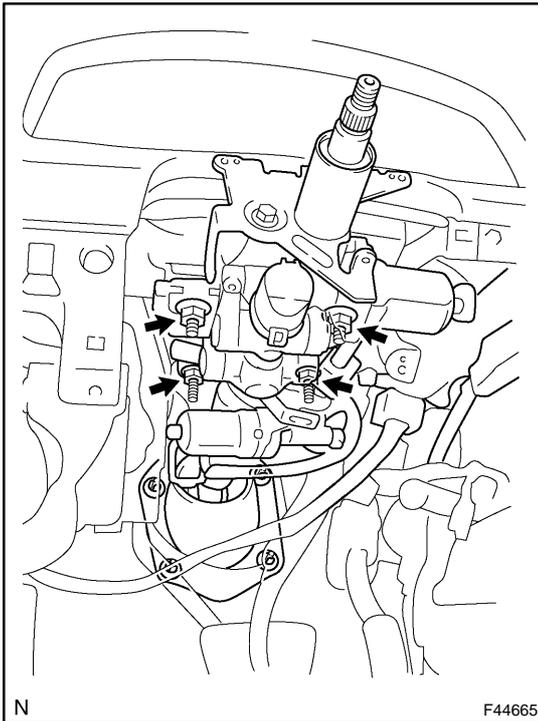
**HINT:**

When replacing the gear box with a new one, be sure to align the matchmarks with the protrusion to install.

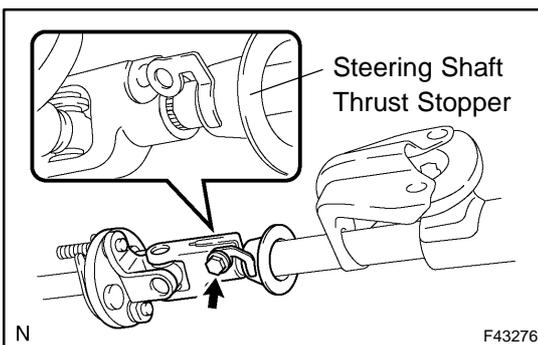
- (c) Align the notch with the protrusion of the gear box to make a matchmarks on the intermediate shaft No.2.

**20. REMOVE STEERING COLUMN HOLE COVER**

- (a) Remove the heater to register duct.
- (b) Remove the 4 clips and steering column hole cover.

**21. REMOVE TILT STEERING GEAR ASSY W/MOTOR**

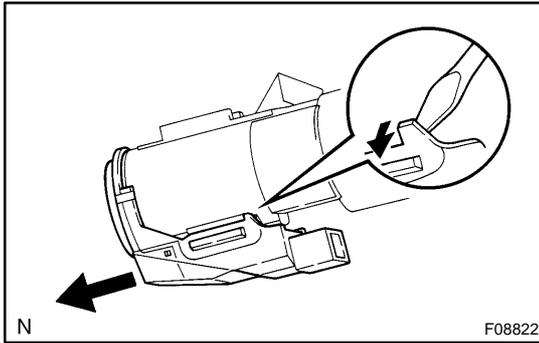
- (a) Disconnect each of the connectors from the steering column assy.
- (b) Disconnect the wire harness from the steering column assy.
- (c) Remove the 4 steering column set nuts.
- (d) Pull out the steering column assy with the intermediate shaft assy.

**22. REMOVE STEERING INTERMEDIATE SHAFT ASSY**

- (a) Remove the bolt and separate the steering shaft thrust stopper from the steering intermediate shaft assy.
- (b) Pull out the intermediate shaft assy and steering shaft thrust stopper from the tilt steering gear assy.

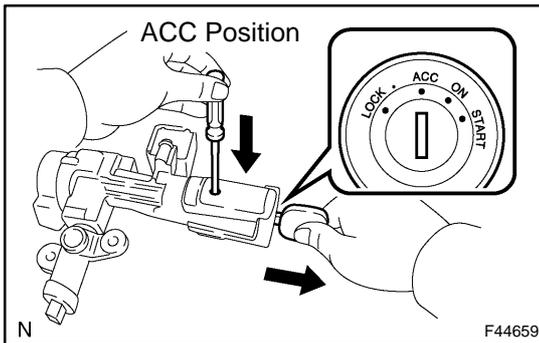
**23. REMOVE STEERING COLUMN BRACKET ASSY UPPER**

- (a) Using a 3 mm (0.12 in.) pin punch, mark the center of the 2 tapered-head bolts.
- (b) Using a 4 - 5 mm (0.12 - 0.16 in.) drill, drill a hole into the 2 tapered-head bolts.
- (c) Using a screw extractor, remove the 2 tapered-head bolts, steering column bracket assy upper, steering column upper clamp.

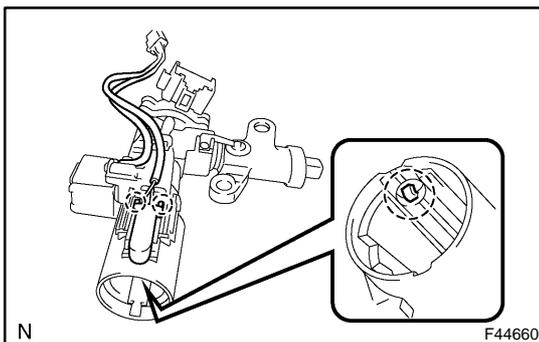
**24. REMOVE TRANSPONDER KEY AMPLIFIER****NOTICE:**

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

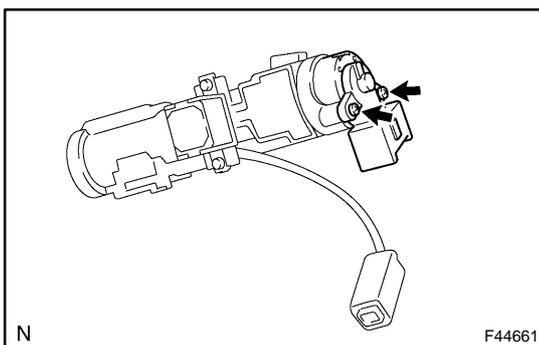
- (a) Expand the claw hung on the upper bracket by approx. 1.0 mm (0.039 in.) using a screwdriver.
- (b) Pull the transponder key amplifier toward the rear of the vehicle with the claw open.

**25. REMOVE IGNITION SWITCH LOCK CYLINDER & KEY SET**

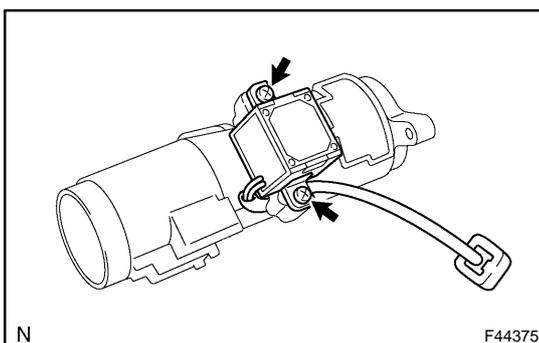
- (a) Place the ignition switch lock cylinder & key set at the ACC position.
- (b) Push down the stop pin with a screwdriver and pull out the ignition switch lock cylinder & key set.

**26. REMOVE UN-LOCK WARNING SWITCH ASSY**

- (a) Disconnect the un-lock warning switch assy connector from the ignition or starter switch assy.
- (b) Remove the un-lock warning switch assy toward the rear of the vehicle by pushing up the center part.

**27. REMOVE IGNITION OR STARTER SWITCH ASSY**

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

**28. REMOVE KEY INTER LOCK SOLENOID**

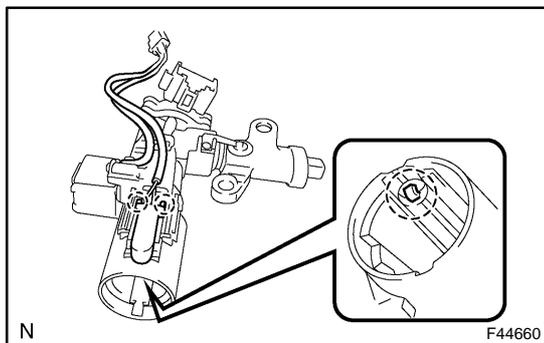
- (a) Remove the 2 screws and key inter lock solenoid from the steering column bracket assy upper.

**29. INSTALL KEY INTER LOCK SOLENOID**

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

**30. INSTALL IGNITION OR STARTER SWITCH ASSY**

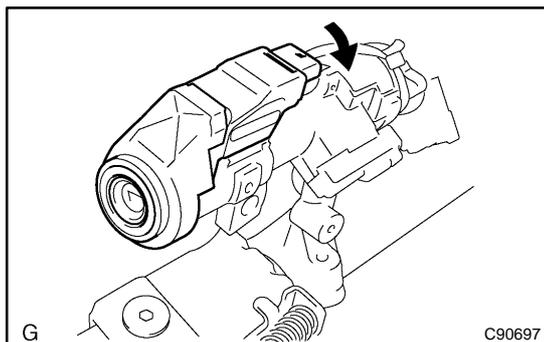
- (a) Install the ignition or starter switch assy to the steering column bracket assy upper with 2 screws.

**31. INSTALL UN-LOCK WARNING SWITCH ASSY**

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

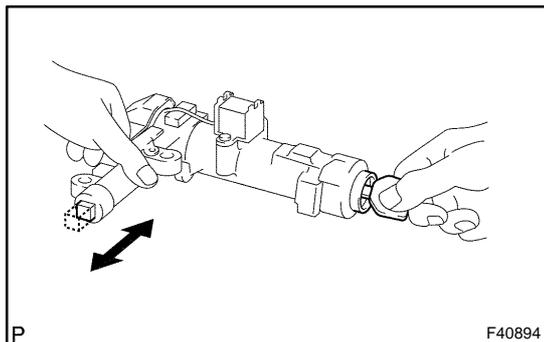
**32. INSTALL IGNITION SWITCH LOCK CYLINDER & KEY SET**

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

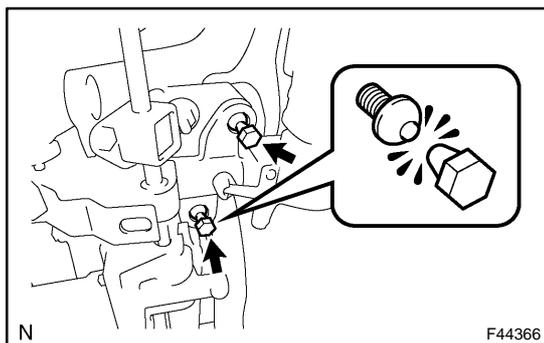
**33. INSTALL TRANSPONDER KEY AMPLIFIER****NOTICE:**

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

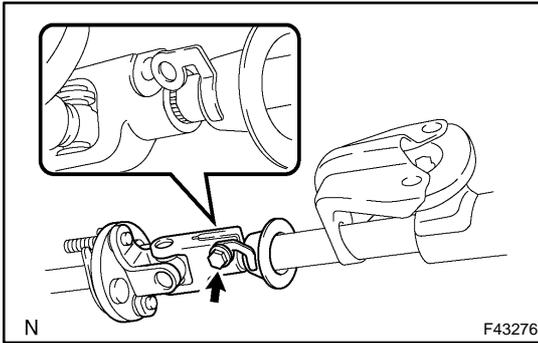
- (a) Align the transponder key amplifier with the installation position of the upper bracket with the amplifier inclined.
- (b) Push up the transponder key amplifier and connect it to the upper bracket.

**34. INSPECT STEERING LOCK OPERATION**

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

**35. INSTALL STEERING COLUMN BRACKET ASSY UPPER**

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

**36. INSTALL STEERING INTERMEDIATE SHAFT ASSY**

- (a) Install the steering intermediate shaft assy and steering shaft thrust stopper to the tilt steering gear assy with the bolt.

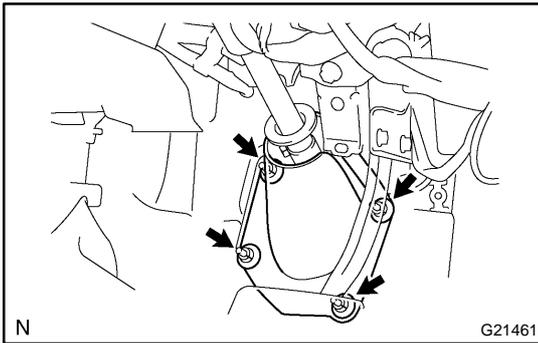
**Torque: 36 N·m (370 kgf·cm, 26 ft·lbf)**

**37. INSTALL TILT STEERING GEAR ASSY W/MOTOR**

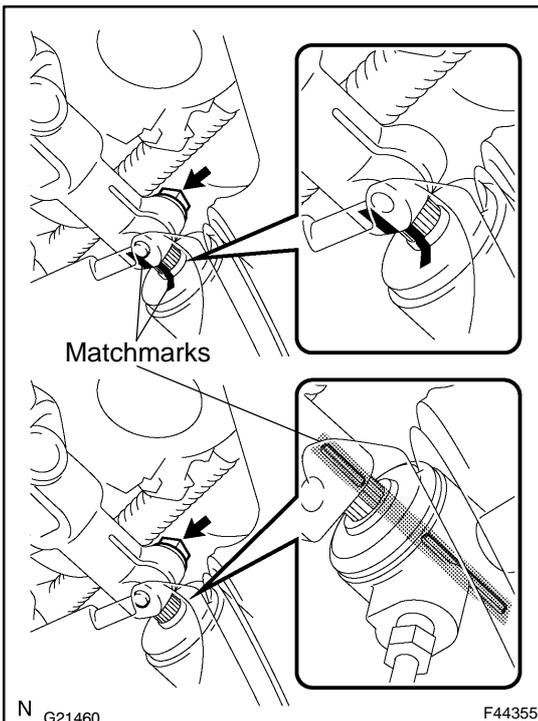
- (a) Install the steering column assy with the steering intermediate shaft assy with the 4 steering column set nuts.

**Torque: 26 N·m (270 kgf·cm, 20 ft·lbf)**

- (b) Connect the wire harness to the steering column assy.  
 (c) Connect each of the connectors to the steering column assy.

**38. INSTALL STEERING COLUMN HOLE COVER**

- (a) Install the steering column hole cover with the 4 clips.  
 (b) Install the heater to register duct to the heater unit.

**39. INSTALL STEERING INTERMEDIATE SHAFT NO.2**

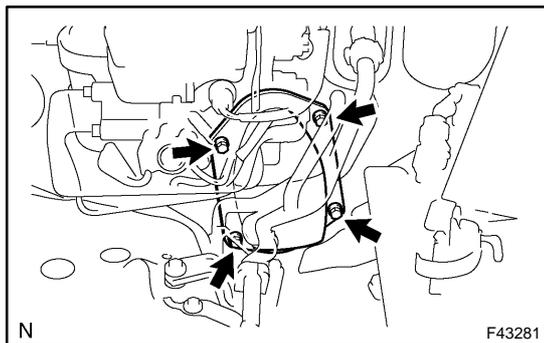
- (a) Align the matchmarks on the power steering gear assy and steering intermediate shaft No.2.  
 (b) Install the steering intermediate shaft No.2 to the steering gear box with the bolt.

**Torque: 36 N·m (370 kgf·cm, 26 ft·lbf)**

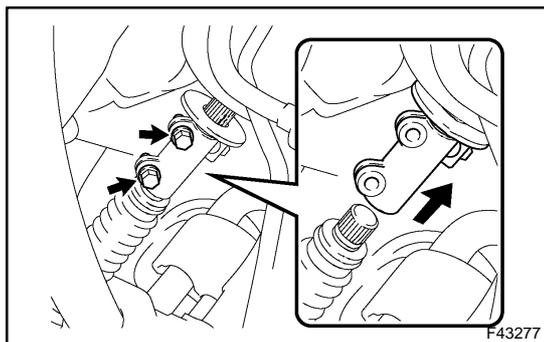
**HINT:**

When replacing the gear box with a new one, be sure to align the matchmarks with the protrusion to install.

- (c) Align the notch on the power steering gear box assy and steering intermediate shaft No.2.  
 (d) Install the steering intermediate shaft No.2 to the steering gear box with the bolt.



- 40. INSTALL STEERING INTERMEDIATE SHAFT COVER**  
 (a) Install the steering intermediate shaft cover with the 4 bolts.  
**Torque: 5 N·m (50 kgf·cm, 44 in·lbf)**



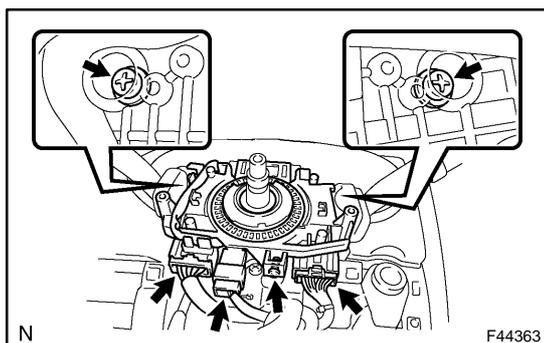
- 41. INSTALL STEERING SLIDING YOKE**  
 (a) Install the steering sliding yoke to the steering column assy and slide it upward.  
 (b) Install the steering sliding yoke to the intermediate shaft No.2 with the 2 bolts.  
**Torque: 36 N·m (370 kgf·cm, 26 ft·lbf)**

**42. INSTALL ENGINE UNDER COVER ASSY REAR**

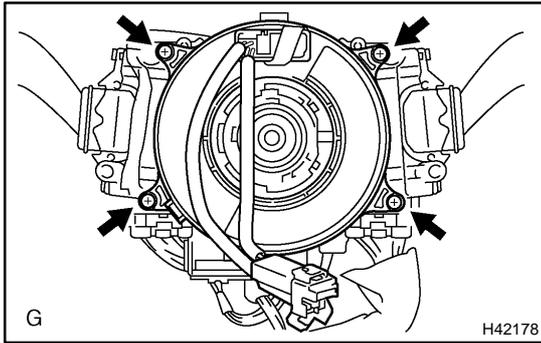
- (a) Install the engine under cover assy rear with the 4 bolts.  
**Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)**

**43. INSTALL ENGINE UNDER COVER SUB-ASSY NO.1**

- (a) Install the engine under cover sub-assy No.1 with the 4 bolts.  
**Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)**



- 44. INSTALL TURN SIGNAL SWITCH ASSY**  
 (a) Install the turn signal switch assy with the 3 screws.  
 (b) Connect the 3 connectors to the turn signal switch assy.

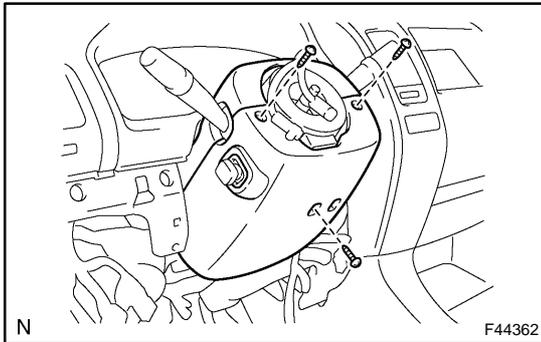
**45. INSTALL SPIRAL CABLE SUB-ASSY**

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

**HINT:**

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

- (d) Install the spiral cable with the 4 screws.
- (e) Connect the 2 connectors to the spiral cable sub-assy.



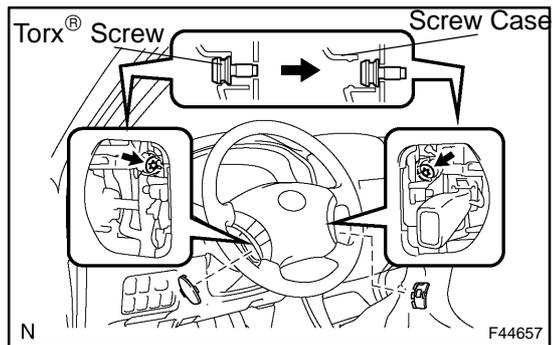
- (f) Install the steering column cover upper and lower with the 3 screws.

**46. INSTALL INSTRUMENT PANEL LOWER LH****47. INSTALL INSTRUMENT PANEL SAFETY PAD SUB-ASSY****48. INSTALL COWL SIDE TRIM BOARD LH****49. INSTALL FRONT FLOOR FOOTREST****50. INSTALL FRONT DOOR SCUFF PLATE LH****51. INSTALL STEERING WHEEL ASSY**

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

**52. 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 to 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 are not pinched between other parts.



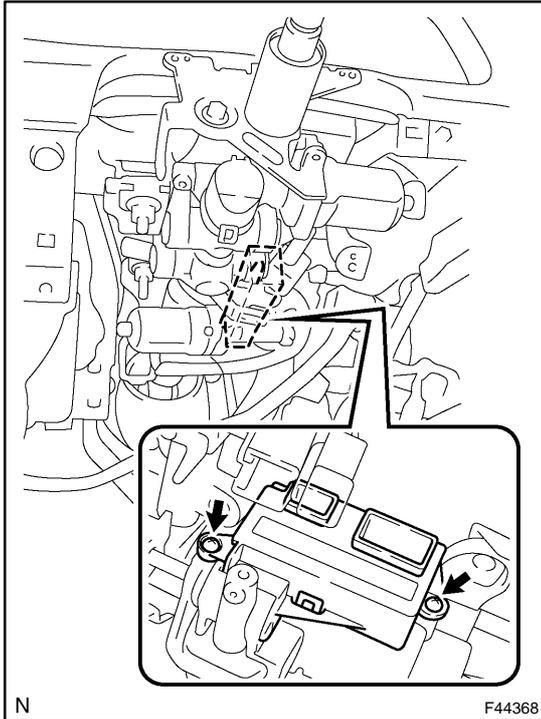
- Connect the horn ground harness to the horn button assy.
- Connect the 2 airbag connectors.
- Install the horn button assy after confirming that the circumference groove of torx<sup>®</sup> screw is caught on the screw case.
- Using a torx<sup>®</sup> socket wrench (Torx<sup>®</sup> socket wrench (T=30)), torque the 2 screws.  
**Torque: 8.8 N·m (90 kgf·cm, 78 in.-lbf)**

- 53. INSTALL STEERING WHEEL COVER LOWER NO.2**
- 54. INSTALL STEERING WHEEL COVER LOWER NO.3**
- 55. CHECK FRONT WHEELS FACING STRAIGHT AHEAD**
- 56. INSTALL BATTERY NEGATIVE TERMINAL**
- 57. INSPECT SRS WARNING LIGHT(See page [05-1213](#))**

# MULTIPLEX TILT & TELESCOPIC ECU REPLACEMENT

5005N-03

1. REMOVE INSTRUMENT PANEL SAFETY PAD SUB-ASSY
2. REMOVE INSTRUMENT PANEL LOWER LH



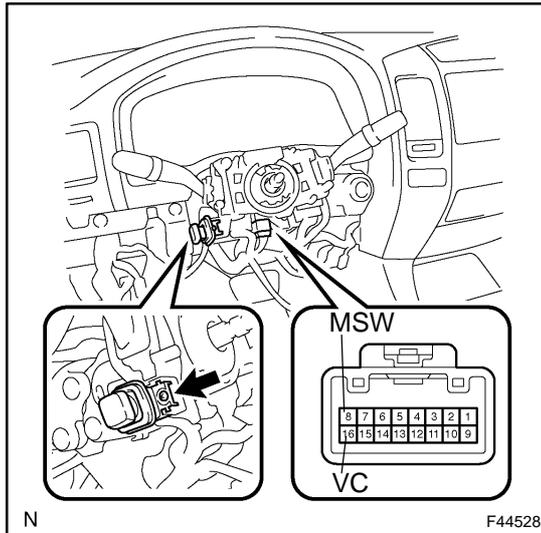
3. REMOVE MULTIPLEX TILT & TELESCOPIC ECU
  - (a) Remove the 2 screws and multiplex tilt & telescopic ECU.

4. INSTALL MULTIPLEX TILT & TELESCOPIC ECU
  - (a) Install the multiplex tilt & telescopic ECU with the 2 torx<sup>®</sup> screws.
5. INSTALL INSTRUMENT PANEL LOWER LH
6. INSTALL INSTRUMENT PANEL SAFETY PAD SUB-ASSY

# TILT & TELESCOPIC MANUAL SWITCH REPLACEMENT

50050-02

1. REMOVE STEERING COLUMN COVER
2. REMOVE TURN SIGNAL SWITCH ASSY
  - (a) Remove the 3 screws and turn signal switch assy.



3. REMOVE TILT & TELESCOPIC MANUAL SWITCH
  - (a) Disconnect the turn signal switch connector from the turn signal switch.
  - (b) Pull out the harness VC and MSW from the connector.
  - (c) Remove the screw and tilt & telescopic manual switch.

4. INSTALL TILT & TELESCOPIC MANUAL SWITCH
  - (a) Install the harness VC and MSV to the connector.
  - (b) Connect the connector to the switch assy.
  - (c) Install the tilt & telescopic manual switch assy with the screw.
5. INSTALL TURN SIGNAL SWITCH ASSY
  - (a) Install the turn signal switch assy with the 3 screws.
6. INSTALL STEERING COLUMN COVER