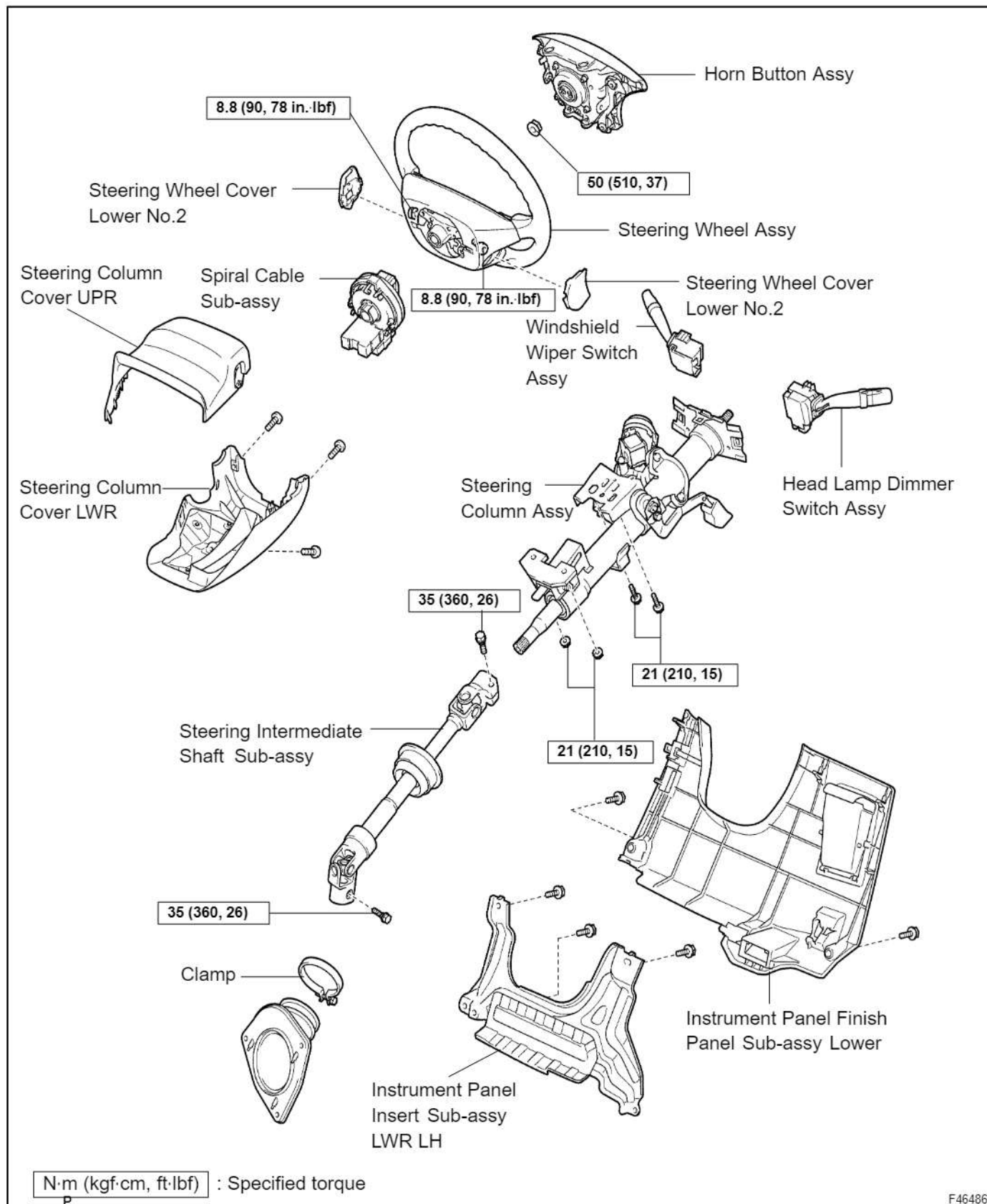
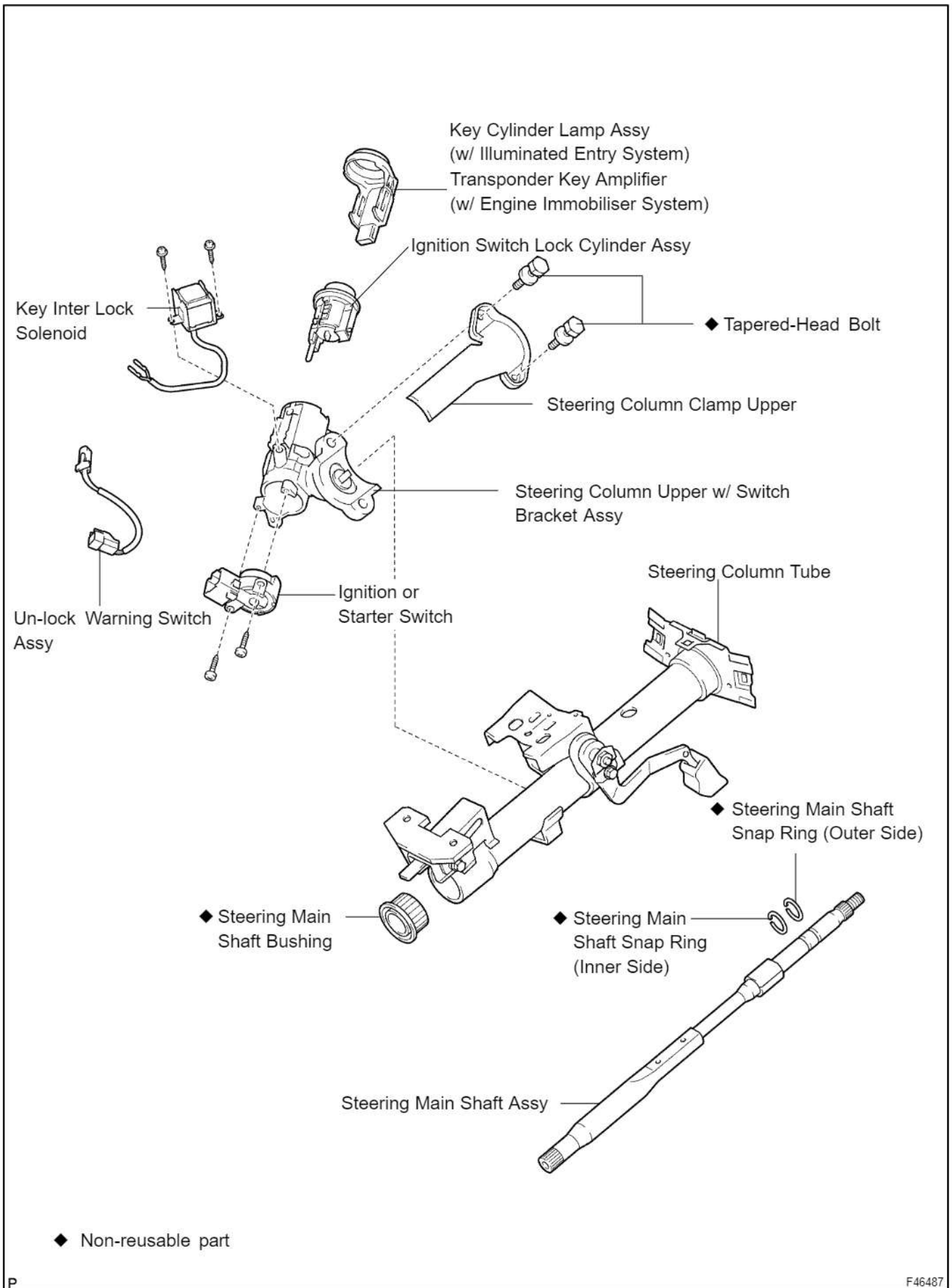


STEERING COLUMN ASSY COMPONENTS

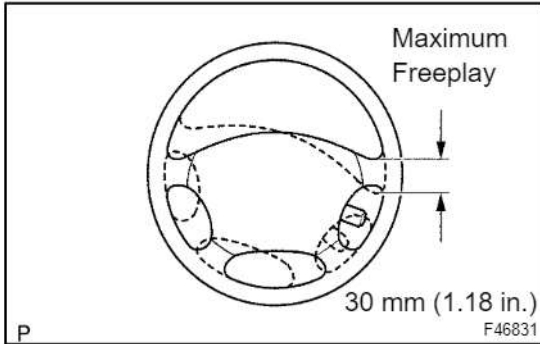
5009G-01



F46486



ON-VEHICLE INSPECTION



1. CHECK STEERING WHEEL FREEPLAY

- (a) Stop the vehicle and align the tires straight ahead.
- (b) Turn the steering wheel gently right and left, and check the steering wheel free play.

Maximum freeplay: 30 mm (1.18 in.)

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

STEERING SYSTEM

5004W-02

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

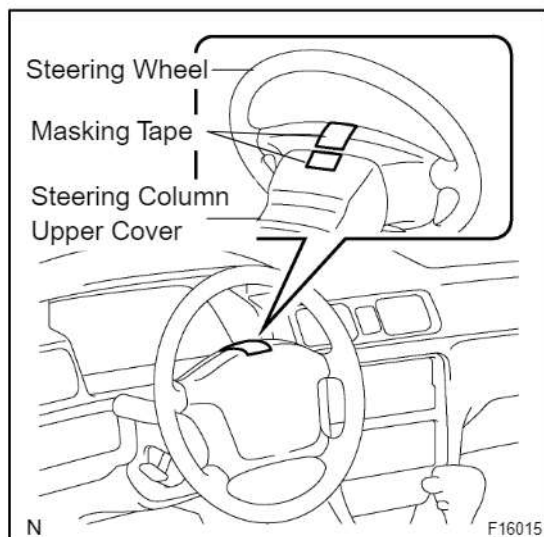
- (a) The HIGH LANDER is equipped with SRS (Supplemental Restraint System) such as the driver airbag and front passenger airbag. Failure to carry out service operation in the correct sequence could cause the SRS to unexpectedly deploy during servicing, possibly leading to a serious accident. Before servicing (including removal or installation of parts, inspection or replacement), be sure to read the precautionary notice for the supplemental restraint system (see page [60-1](#)).

PROBLEM SYMPTOMS TABLE

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

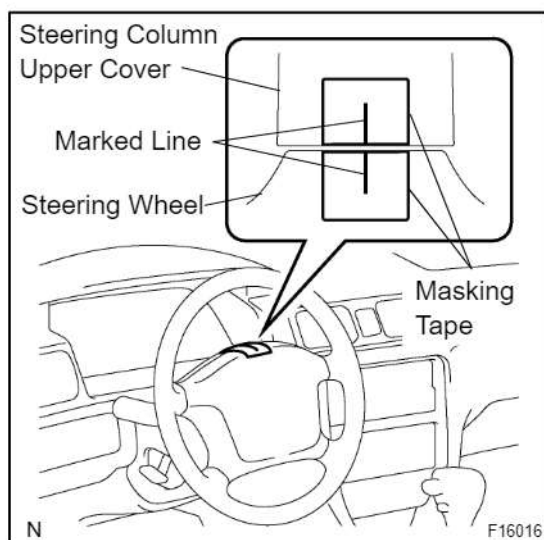
Symptom	Suspect Area	See page
Hard steering	1. Tires (Improperly inflated)	28-1
	2. Power steering fluid level (Low)	51-3
	3. Drive belt (Loose)	14-5
		14-125
	4. Front wheel alignment (Incorrect)	26-7
	5. Steering system joints (Worn)	-
	6. Suspension arm ball joints (Worn)	26-20
	7. Steering column (Binding)	-
	8. Power steering vane pump	51-8
Poor return		51-17
	9. Power steering link assy	51-28
	1. Tires (Improperly inflated)	28-1
	2. Front wheel alignment (Incorrect)	26-7
Excessive play	3. Steering column (Binding)	-
	4. Power steering link assy	51-28
	1. Steering system joints (Worn)	-
	2. Suspension arm ball joints (Worn)	26-20
	3. Intermediate shaft, Sliding yoke (Worn)	-
Abnormal noise	4. Front wheel bearing (Worn)	30-38
	5. Power steering link assy	51-28
	1. Power steering fluid level (Low)	51-3
	2. Steering system joints (Worn)	-
	3. Power steering vane pump	51-8
		51-17
	4. Power steering link assy	51-28

REPAIR

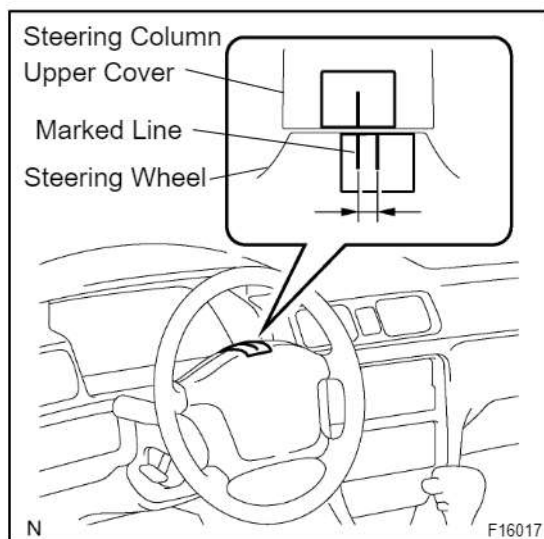


1. STEERING OFF CENTER REPAIR PROCEDURE

- (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.

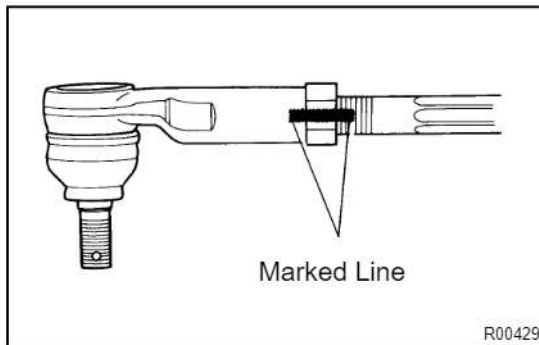
- (5) Draw a new line on the masking tape on the steering wheel as shown in the illustration.
- (6) Measure the distance between the 2 lines on the masking tape on the steering wheel.

- (7) Convert the measured distance to steering angle.
Measured distance 1 mm (0.04 in.) = Steering angle of approximately 1 degree.

HINT:

Make a note of the steering angle.

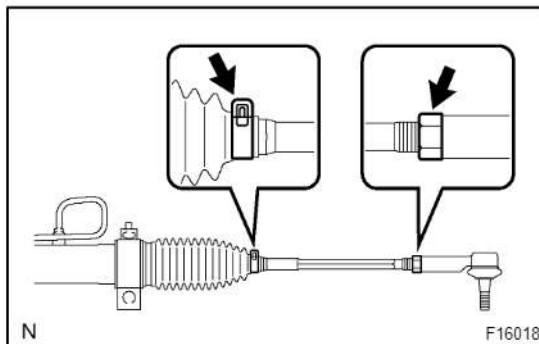
- (b) Adjust steering angle.



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

HINT:

- 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.

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)

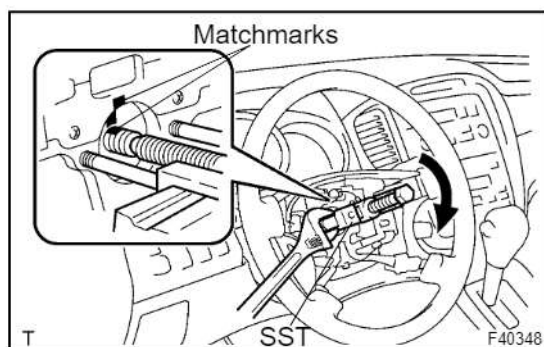
NOTICE:

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.

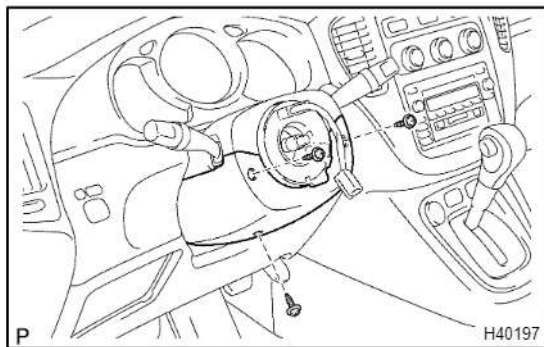
OVERHAUL

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.2 (SEE PAGE 60-17)
5. REMOVE HORN BUTTON ASSY (SEE PAGE 60-17)



6. REMOVE STEERING WHEEL ASSY

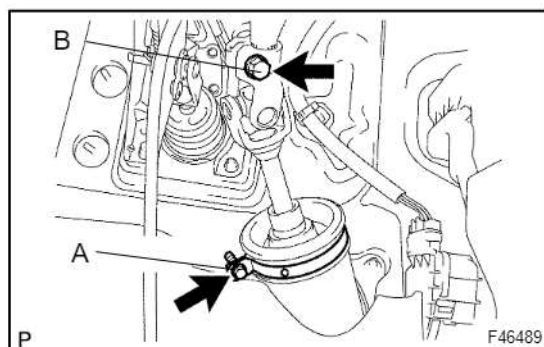
- (a) Remove the steering wheel assy set nut.
- (b) Place matchmarks on the steering wheel assy and main shaft assy.
- (c) Using SST, remove the steering wheel assy.
SST 09950-50013 (09951-05010, 09952-05010, 09953-05020, 09954-05021)



7. REMOVE STEERING COLUMN COVER LWR

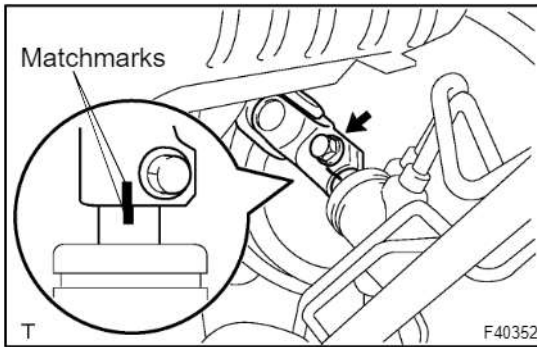
- (a) Remove the 3 screws and steering column cover LWR.

8. REMOVE STEERING COLUMN COVER UPR
9. REMOVE SPIRAL CABLE SUB-ASSY (SEE PAGE 60-26)
10. REMOVE HEADLAMP DIMMER SWITCH ASSY (SEE PAGE 65-25)
11. REMOVE WINDSHIELD WIPER SWITCH ASSY (SEE PAGE 66-16)
12. REMOVE INSTRUMENT PANEL FINISH PANEL SUB-ASSY LOWER (SEE PAGE 71-10)
13. REMOVE INSTRUMENT PNL INSERT SUB-ASSY LWR LH (SEE PAGE 71-10)

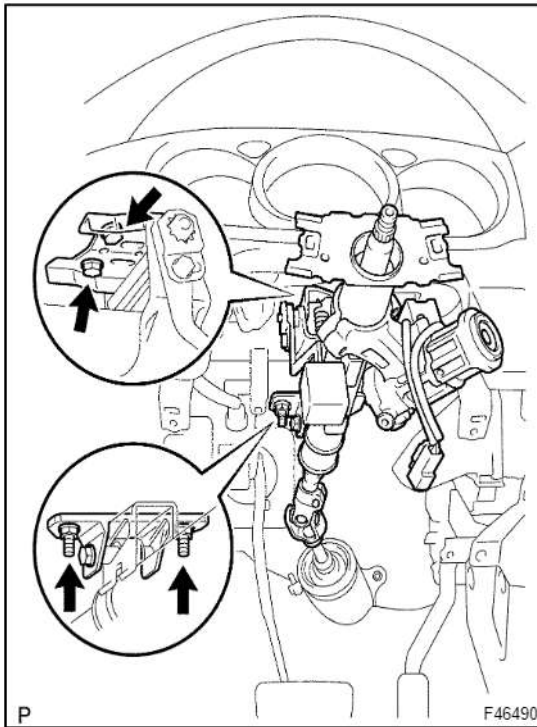


14. SEPARATE STEERING INTERMEDIATE SHAFT SUB-ASSY

- (a) Loosen the bolt A and remove the clamp from the steering intermediate shaft sub-assy.
- (b) Loosen the bolt B.

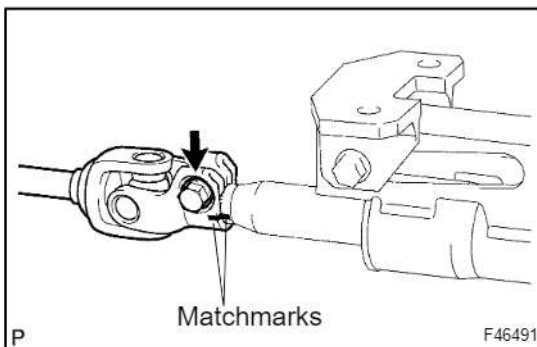


- (c) Place matchmarks on the steering intermediate shaft sub-assy and steering gear assy.
- (d) Remove the bolt and separate the steering intermediate shaft sub-assy.



15. REMOVE STEERING COLUMN ASSY

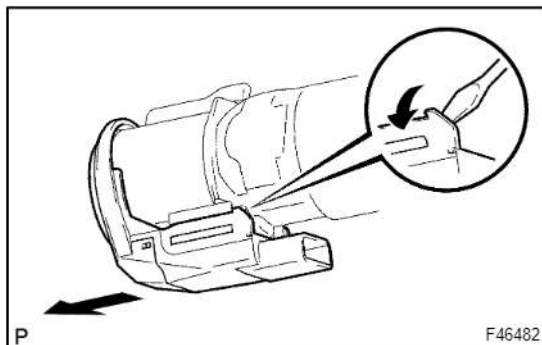
- (a) Separate the connectors and wire harness clamps.
- (b) Remove the 2 bolts, 2 nuts and steering column assy from the instrument panel reinforcement assy.



16. REMOVE STEERING INTERMEDIATE SHAFT SUB-ASSY

- (a) Place matchmarks on the steering intermediate shaft sub-assy and steering shaft.
- (b) Remove the bolt and steering intermediate shaft sub-assy.

17. REMOVE KEY CYLINDER LAMP ASSY (W/ ILLUMINATED ENTRY SYSTEM)

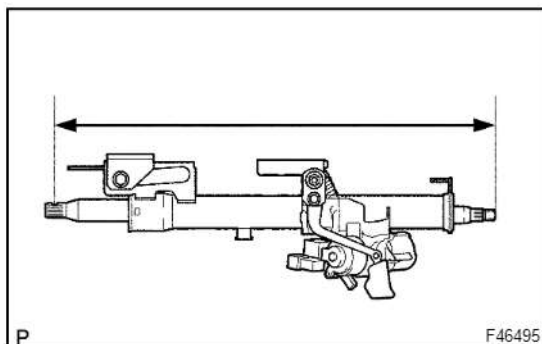


18. REMOVE TRANSPONDER KEY AMPLIFIER (W/ ENGINE IMMOBILISER SYSTEM)

- 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.

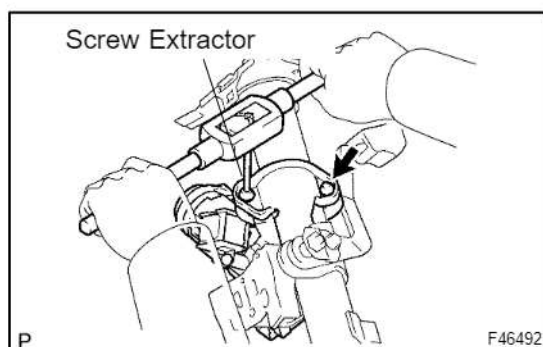
NOTICE:

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



19. INSPECT STEERING MAIN SHAFT ASSY

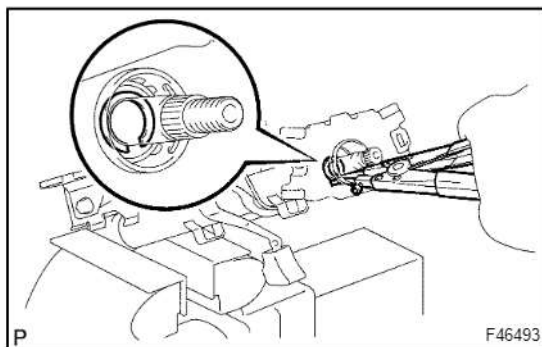
- Measure the steering main shaft length.
Standard length: 504.5 ± 1 mm (19.862 ± 0.039 in.)
If the length is out of specification, replace the steering column assy with a new one.



20. REMOVE STEERING COLUMN UPPER W/SWITCH BRACKET ASSY

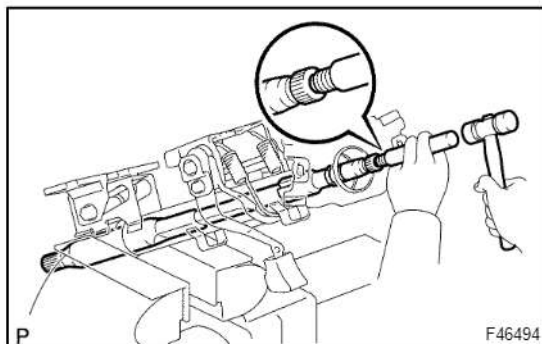
- Using a centering punch, mark the center of the 2 tapered-head bolts.
- Using a 3 to 4 mm (0.12 to 0.16 in.) drill, drill in to the 2 bolts.
- Using a screw extractor, remove the 2 bolts and steering column upper w/ switch bracket assy.

21. REMOVE STEERING COLUMN CLAMP UPPER



22. REMOVE STEERING MAIN SHAFT ASSY

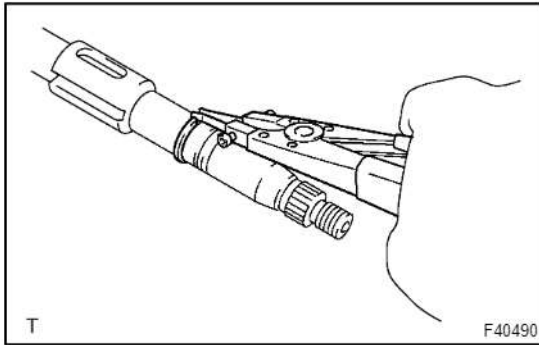
- Using a snap ring expander, remove the steering main shaft snap ring (outer side).



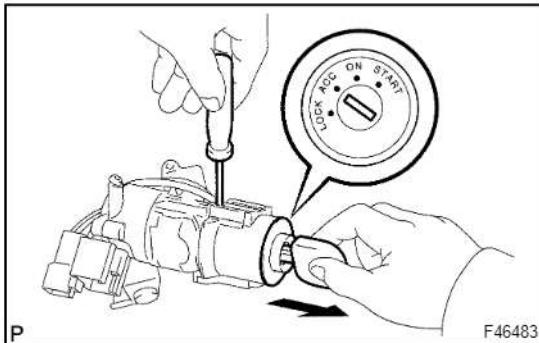
- Using a brass bar and a hammer, remove the steering main shaft assy and steering main shaft bushing.

NOTICE:

Be careful not to drop the steering main shaft assy.

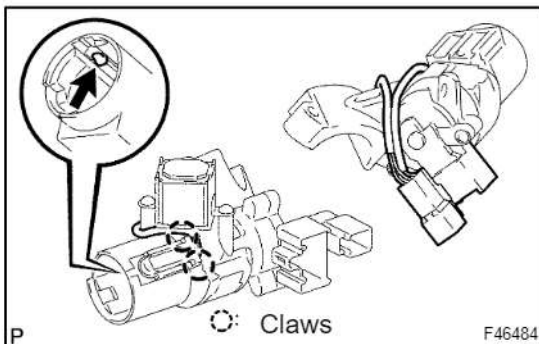


- (c) Using a snap ring expander, remove the steering main shaft snap ring (inner side).



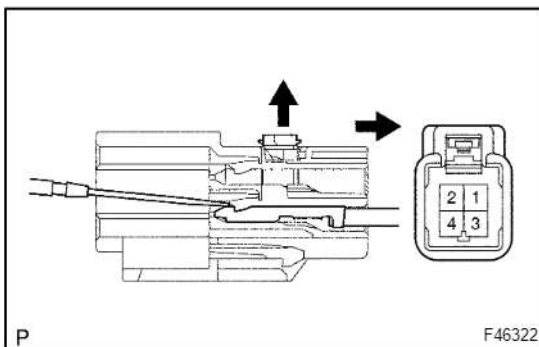
23. REMOVE IGNITION SWITCH LOCK CYLINDER ASSY

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



24. REMOVE UN-LOCK WARNING SWITCH ASSY

- (a) Separate the un-lock warning switch assy connector from the ignition or starter switch assy.
(b) Remove the un-lock warning switch assy by pushing up the center part and releasing the 2 claws.



- (c) Disengage the secondary locking device.
(d) Using a small screwdriver, disengage the locking lug of the terminals 2 and 4, and pull the terminals out from the un-lock warning switch assy rear side.

25. REMOVE KEY INTER LOCK SOLENOID

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

26. REMOVE IGNITION OR STARTER SWITCH ASSY

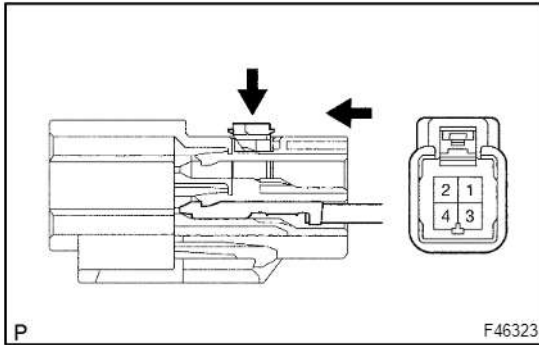
- (a) Remove the 2 screws and ignition or starter switch assy from the steering column bracket assy UPR.

27. INSTALL IGNITION OR STARTER SWITCH ASSY

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

28. INSTALL KEY INTER LOCK SOLENOID

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

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

- (a) Install the un-lock warning switch assy.
- (b) Connect the terminals 2 and 4 of the un-lock warning switch assy connector.
- (c) Connect the un-lock warning switch assy connector to the ignition or starter switch assy.

30. INSTALL IGNITION SWITCH LOCK CYLINDER ASSY

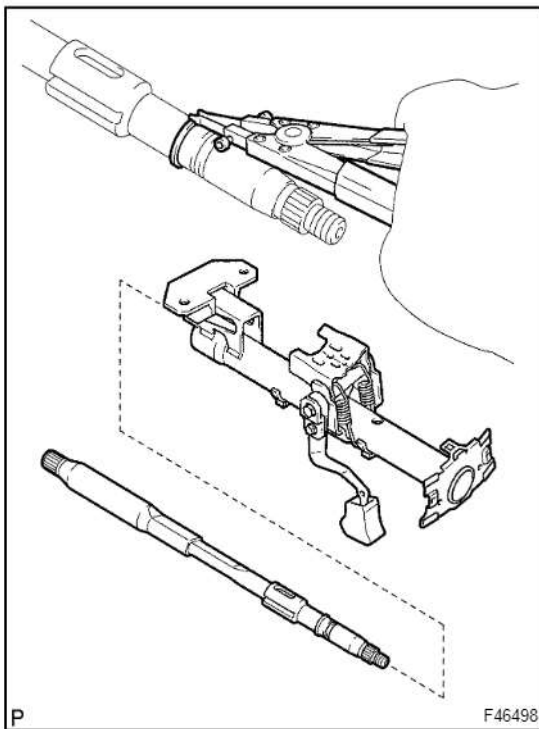
- (a) Make sure the ignition switch lock cylinder assy at the ACC position.
- (b) Install the ignition switch lock cylinder assy.

31. INSPECT STEERING LOCK OPERATION

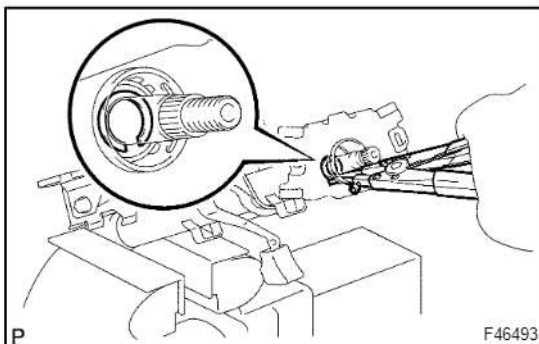
- (a) Check that the steering lock mechanism is activated when removing the key.
- (b) Check that the steering lock mechanism is deactivated when inserting the key and turning it to ACC position.

HINT:

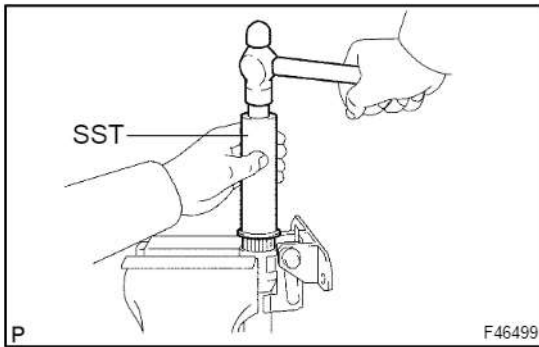
If there is any abnormality, replace the ignition switch lock cylinder assy.

**32. INSTALL STEERING MAIN SHAFT ASSY**

- (a) Using a snap ring expander, install a new steering main shaft snap ring (inner side) to the steering main shaft assy.
- (b) Install the steering main shaft assy to the steering column tube.

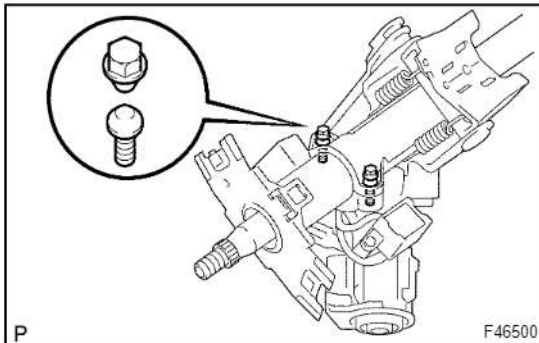


- (c) Using a snap ring expander, install a new steering main shaft snap ring (outer side) to the steering main shaft assy.



33. INSTALL STEERING MAIN SHAFT BUSH

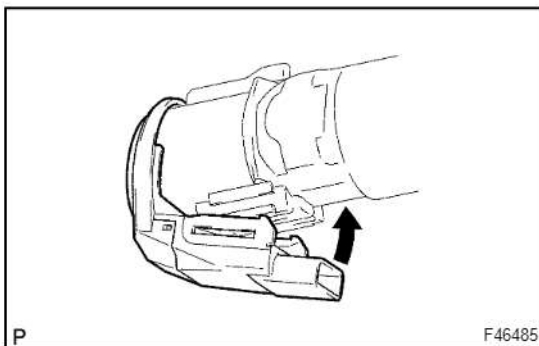
- (a) Using SST and a hammer, install a new steering main shaft bushing.
SST 09608-06041



34. INSTALL STEERING COLUMN UPPER W/SWITCH BRACKET ASSY

- (a) Temporarily install the steering column upper w/ 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.

35. INSTALL KEY CYLINDER LAMP ASSY (W/ ILLUMINATED ENTRY SYSTEM)

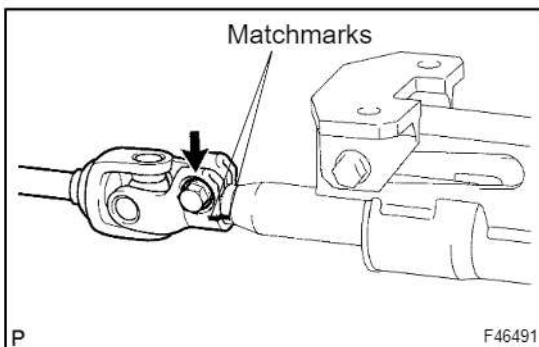


36. INSTALL TRANSPONDER KEY AMPLIFIER (W/ ENGINE IMMOBILISER SYSTEM)

- (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.

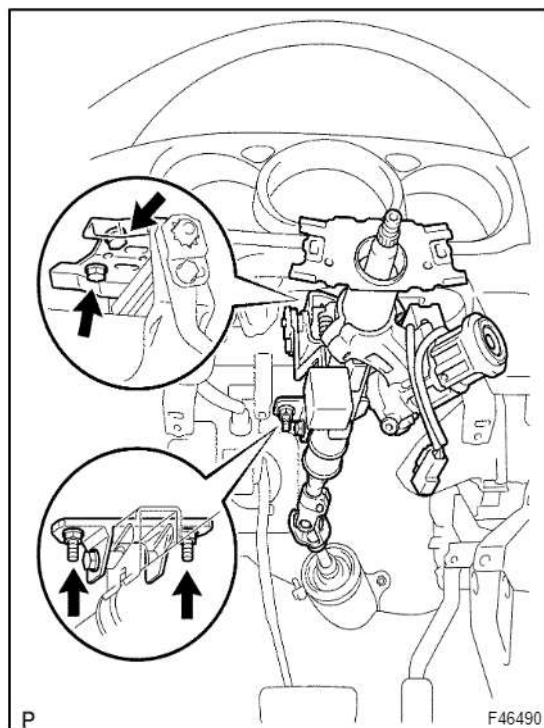
NOTICE:

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

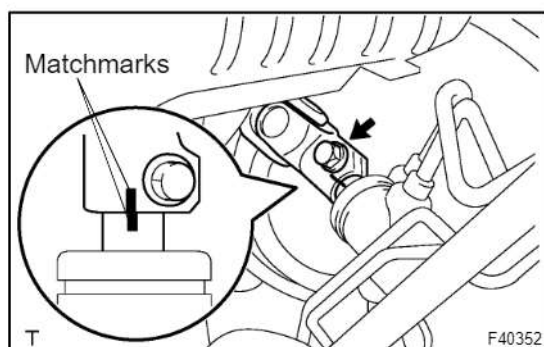


37. TEMPORARILY TIGHTEN STEERING INTERMEDIATE SHAFT SUB-ASSY

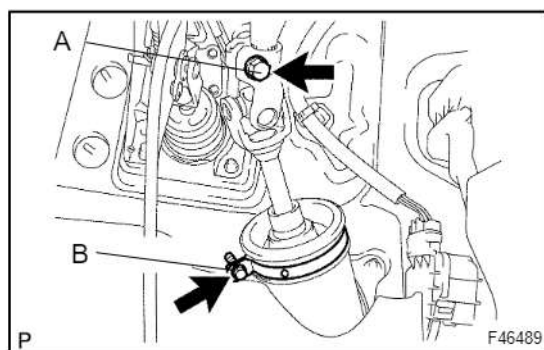
- (a) Align the matchmarks on the steering intermediate shaft sub-assy and steering main shaft assy.
- (b) Temporarily install the steering intermediate shaft sub-assy with the bolt.

**38. INSTALL STEERING COLUMN ASSY**

- (a) Install the steering column assy with the 2 bolts and nuts.
Torque: 21 N·m (210 kgf·cm, 15 ft·lbf)
- (b) Connect the connectors.
- (c) Connect the wire harness clamps to the steering column tube.

**39. CONNECT STEERING INTERMEDIATE SHAFT SUB-ASSY**

- (a) Align the matchmarks on the intermediate shaft sub-assy and steering gear assy.
- (b) Install the bolt.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)



- (c) Tighten the bolt A.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
- (d) Connect the clamp to the steering intermediate shaft sub-assy and tighten the bolt B.

40. PLACE FRONT WHEELS FACING STRAIGHT AHEAD**41. INSPECT SPIRAL CABLE SUB-ASSY (SEE PAGE 60-26)****42. INSTALL SPIRAL CABLE SUB-ASSY (SEE PAGE 60-26)****43. CENTER SPIRAL CABLE (SEE PAGE 60-26)****44. INSTALL STEERING COLUMN COVER UPR****45. INSTALL STEERING COLUMN COVER LWR**

- (a) Install the steering column cover LWR with the 3 screws.

46. INSTALL STEERING WHEEL ASSY

- (a) Align the matchmarks on the steering wheel assy and steering main shaft assy.
- (b) Install the steering wheel assy set nut.

Torque: 50 N·m (510 kgf·cm, 37 ft·lbf)

- (c) Connect the connector.

47. INSTALL HORN BUTTON ASSY (SEE PAGE 60-17)**48. CONNECT BATTERY NEGATIVE TERMINAL****49. INSPECT SRS WARNING LIGHT (SEE PAGE 05-1207)**