

STEERING COLUMN

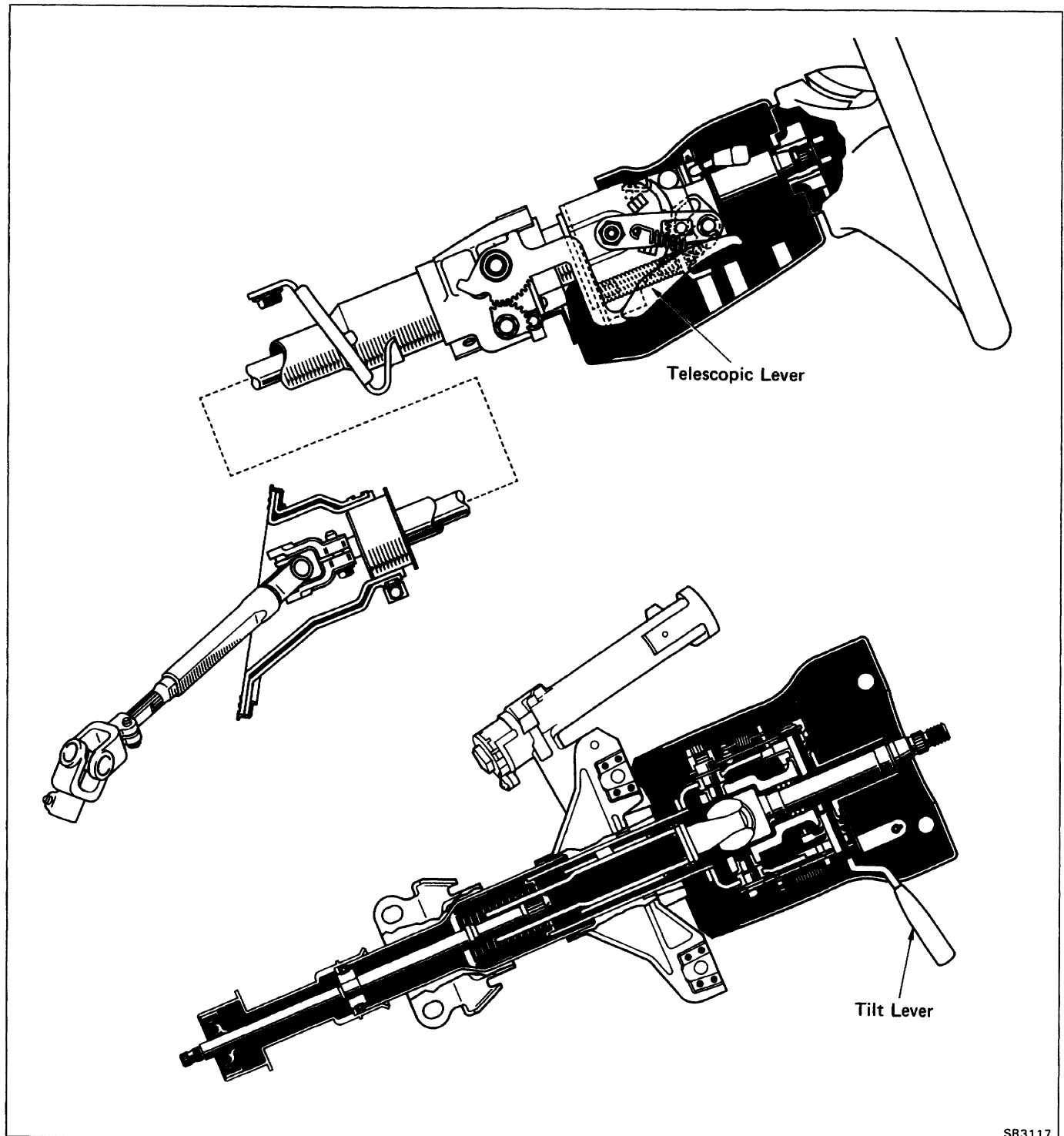
Description

TILT AND TELESCOPIC STEERING COLUMN

The tilt and telescopic steering column, can adjust the angle of the steering column up and down in 8 steps, and can adjust the steering wheel position forward and backward steplessly 40 mm (1.57 in.).

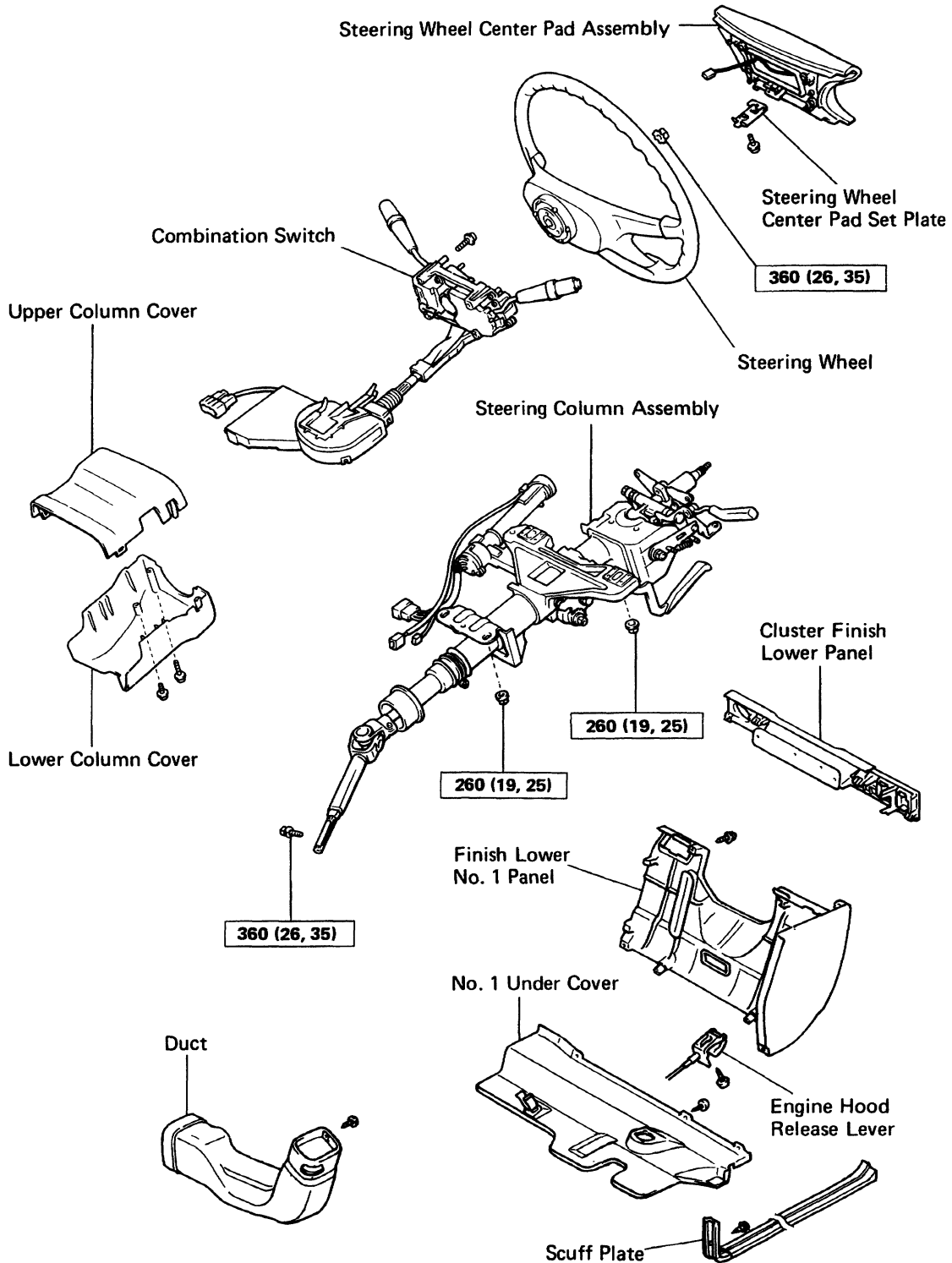
The tilt mechanism also has a tilt-up lock mechanism that locks the steering column in the top position when the steering column is tilted up.

The telescopic mechanism uses the two wedge locks, like those in the current Supra.

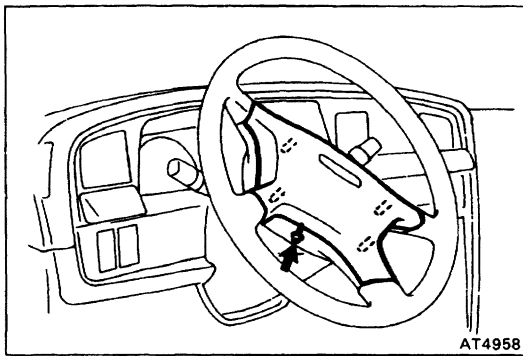


Removal and Installation of Steering Column Assembly

Remove and install the parts as shown.



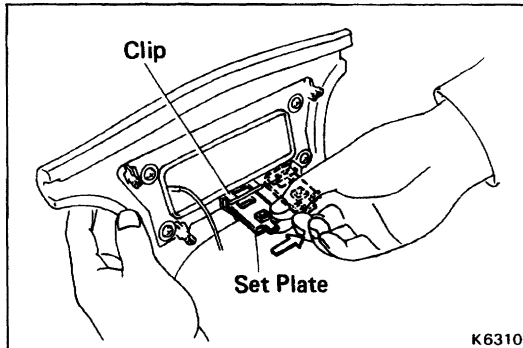
kg-cm (ft-lb, N-m) : Specified torque



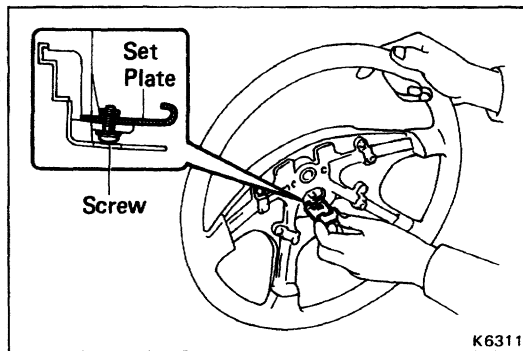
(MAIN POINT OF REMOVAL AND INSTALLATION)

1. REMOVE STEERING WHEEL CENTER PAD

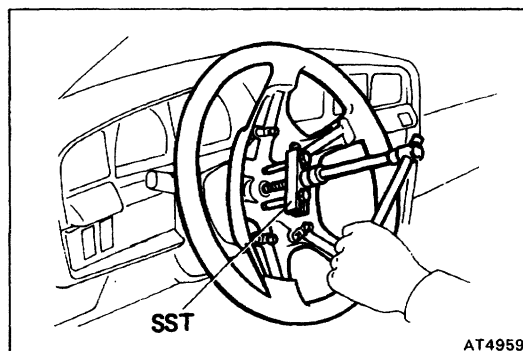
- (a) Remove the screw at the lower portion of the steering wheel center pad.
- (b) Remove the steering wheel center pad.



- (c) Disconnect the horn terminal.
- (d) Remove the steering wheel center pad set plate from clip of center pad.



- (e) Install the steering wheel pad set plate to the steering wheel with the screw.

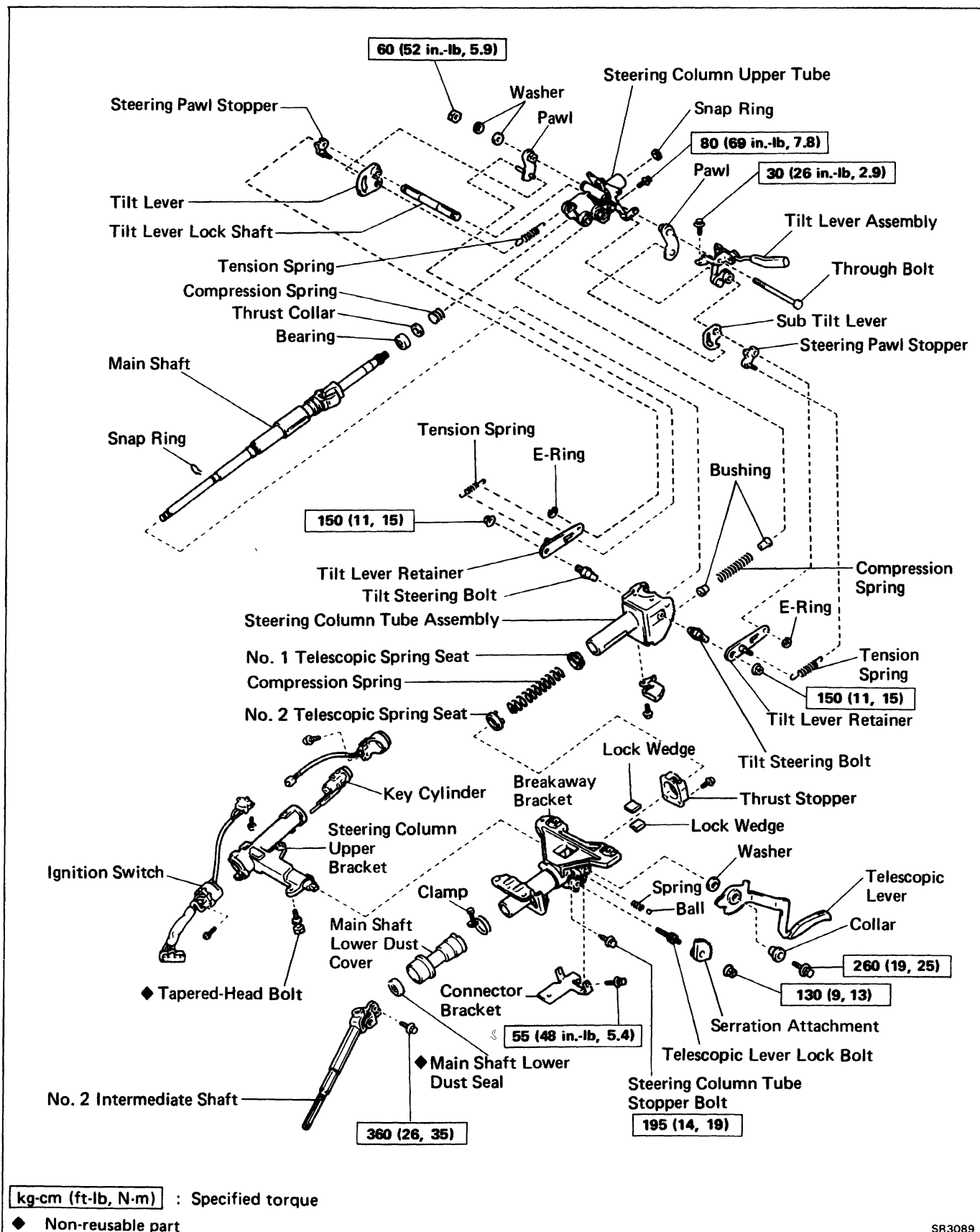


2. REMOVE STEERING WHEEL

- (a) Remove the steering wheel nut.
- (b) Using SST, remove the steering wheel.
SST 09609-2001 1

Tilt and Telescopic Steering Column COMPONENTS

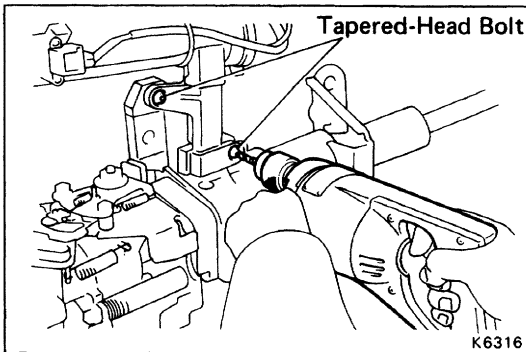
Remove and install the parts as shown.



DISASSEMBLY OF STEERING COLUMN

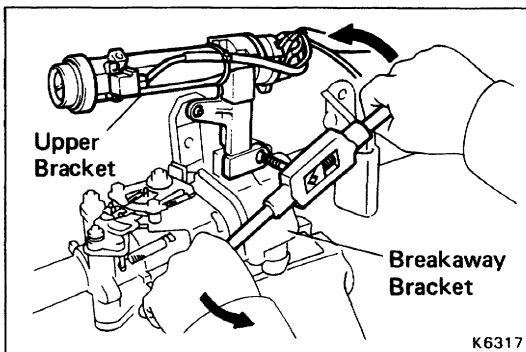
(See page SR-7)

1. REMOVE NO.2 INTERMEDIATE SHAFT
2. REMOVE MAIN SHAFT LOWER DUST COVER
3. REMOVE CONNECTOR BRACKET

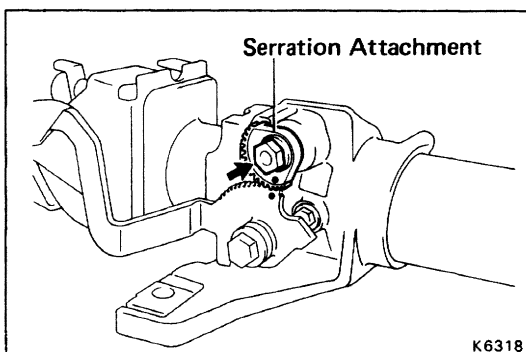


4. REMOVE STEERING COLUMN UPPER BRACKET

- (a) Using a centering punch, mark the center of the tapered-head bolts.
- (b) Using a 4 - 5 mm (0.16 - 0.20 in.) drill, drill into the tapered-head bolts.

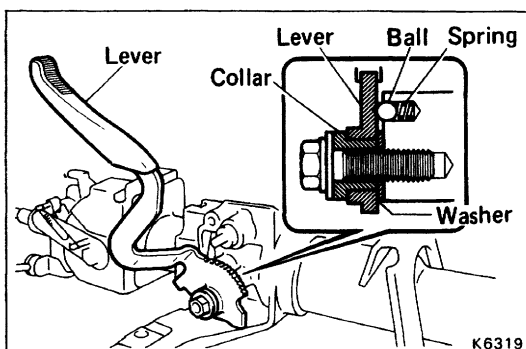


- (c) Using a screw extractor, remove the tapered-head bolts.
- (d) Remove the two bolts, and separate the upper bracket and the breakaway bracket.



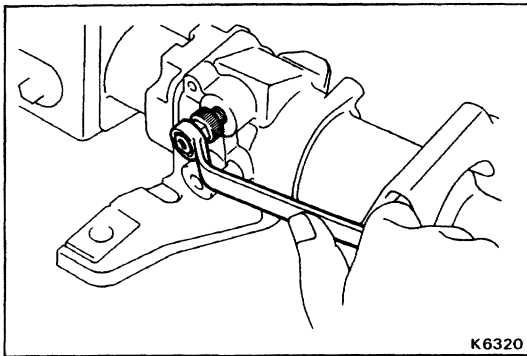
5. REMOVE TELESCOPIC LEVER SERRATION ATTACHMENT

Remove the nut and the serration attachment.



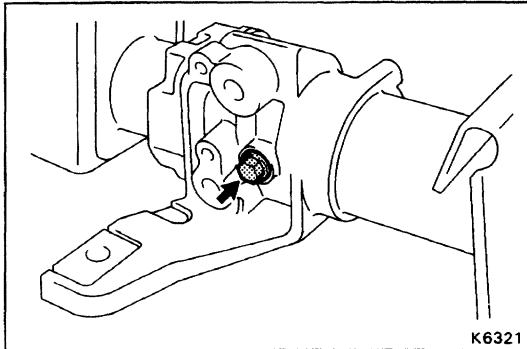
6. REMOVE TELESCOPIC LEVER

- (a) Remove the bolt, collar, lever and washer.
- (b) Remove the ball and compression spring.



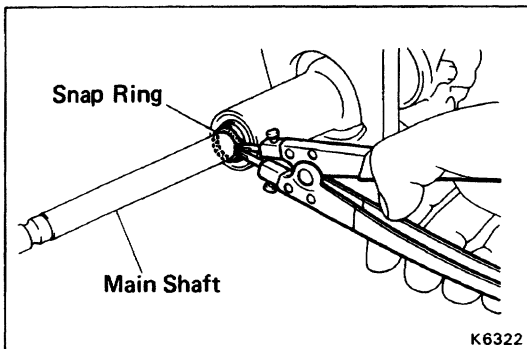
7. REMOVE TELESCOPIC LEVER LOCK BOLT

Install a double nut on the lock bolt, then remove the lock bolt.

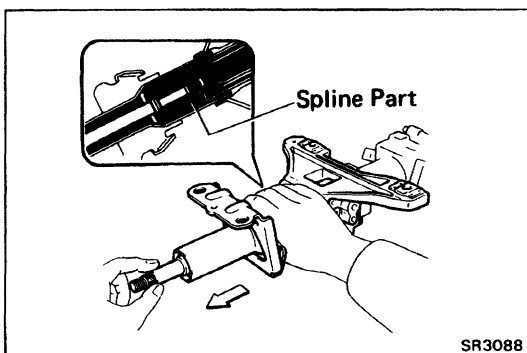


8. REMOVE BREAKAWAY BRACKET

(a) Remove the steering column tube stopper bolt.



(b) Using snap ring pliers, remove the snap ring from the main shaft.

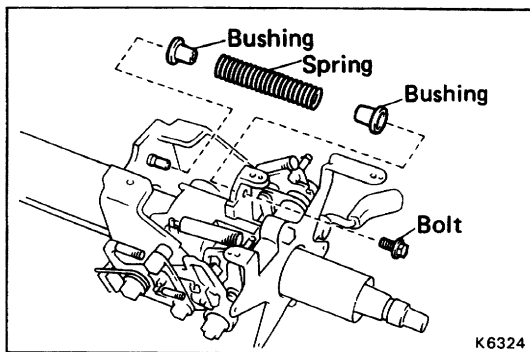


(c) Remove the breakaway bracket from the main shaft.
Be careful the spline part of the main shaft does not come loose.

9. REMOVE TWO LOCK WEDGES FROM BREAKAWAY BRACKET

10. REMOVE NO.1 AND NO.2 TELESCOPIC SPRING SEATS AND COMPRESSION SPRING FROM BREAKAWAY BRACKET

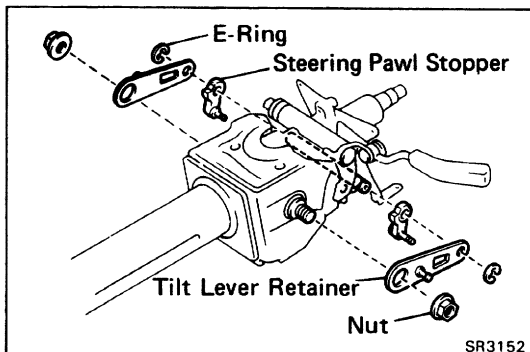
11. REMOVE STEERING SHAFT THRUST STOPPER FROM BREAKAWAY BRACKET



12. REMOVE COMPRESSION SPRING AND TWO BUSHINGS

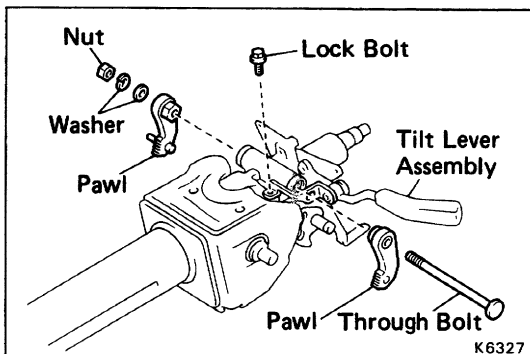
- (a) Remove the bolt and spring from steering column upper tube.
- (b) Remove the two bushings from spring.

13. REMOVE THREE TENSION SPRINGS



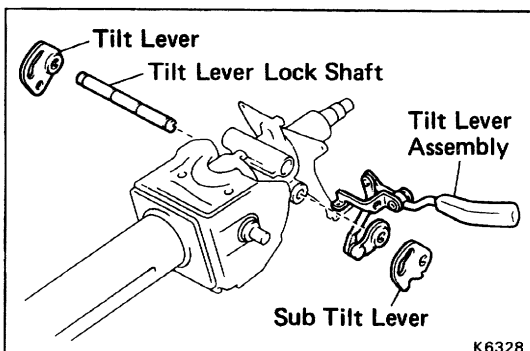
14. REMOVE TILT LEVER RETAINERS AND TILT STEERING PAWL STOPPERS

- (a) Remove the E-rings from both sides of tilt lever lock shaft.
- (b) Remove the nuts from both sides of tilt steering bolts.
- (c) Remove two tilt lever retainers and two steering pawl stoppers.



15. REMOVE STEERING TILT PAWLS

- (a) Remove the nut, washers, pawls and through bolt.
- (b) Remove the tilt lever assembly lock bolt.



16. REMOVE TILT LEVER ASSEMBLY, TILT LEVER LOCK SHAFT, TILT LEVER AND SUB TILT LEVER

17. REMOVE STEERING COLUMN UPPER TUBE FROM STEERING COLUMN TUBE ASSEMBLY

- (a) Set SST, the nut (10 mm diameter, 1.25 mm pitch), plate washer (36 mm outer diameter) and bolt (10 mm diameter, 1.25 mm pitch, 50 mm length) as shown. And then remove the two tilt steering bolts. SST 09910-00015 (09911-00011, 09912-00010)

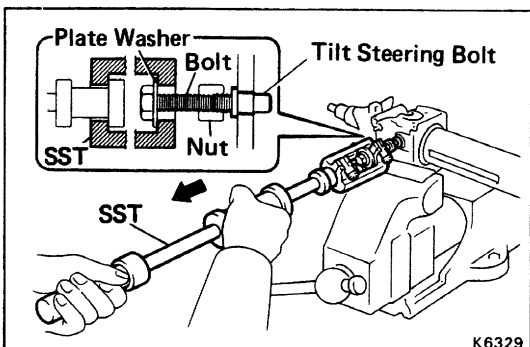
(Reference) Nut 90170-10004

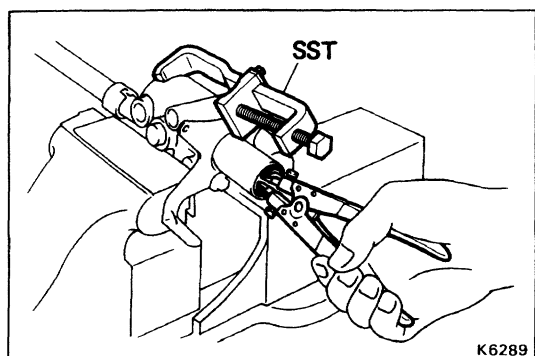
Plate washer 90201-10201

Bolt 91111-51050

- (b) Remove the steering column upper tube from steering column tube assembly

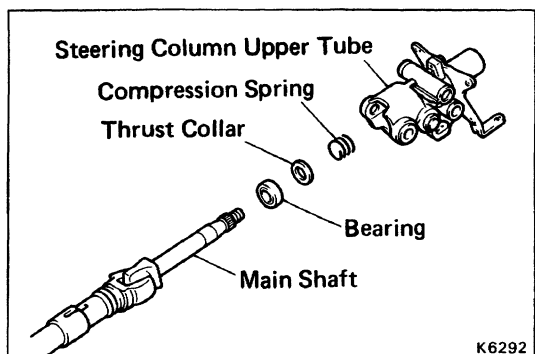
HINT: Avoid bending the universal joint 20° or more as the joint part will come loose.



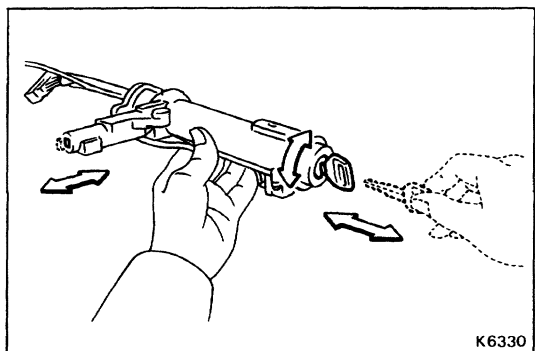


18. REMOVE MAIN SHAFT FROM STEERING COLUMN UPPER TUBE

- (a) Using SST to hold the main shaft, remove the snap ring with snap ring pliers.
SST 09950-20017



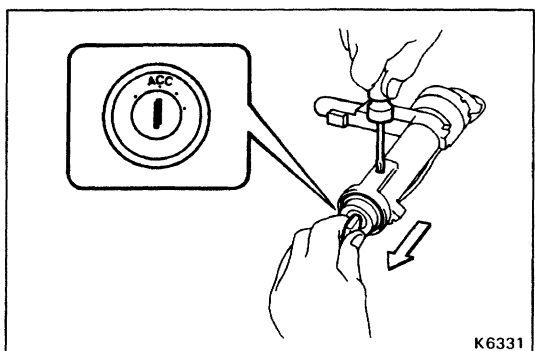
- (b) Remove the main shaft from steering column upper tube.
- (c) Remove the compression spring, thrust collar and bearing.



INSPECTION AND REPLACEMENT OF TILT AND TELESCOPIC STEERING COLUMN ASSEMBLY

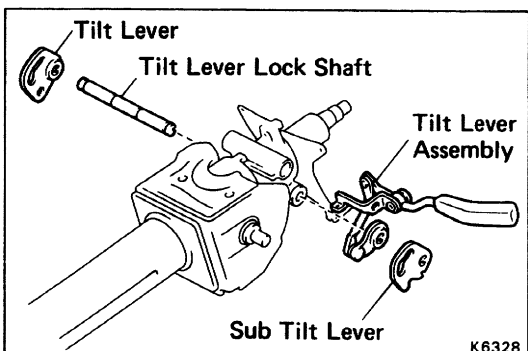
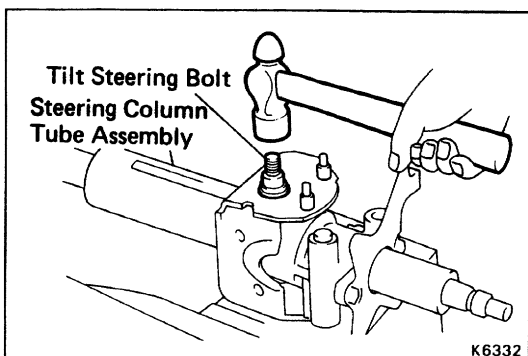
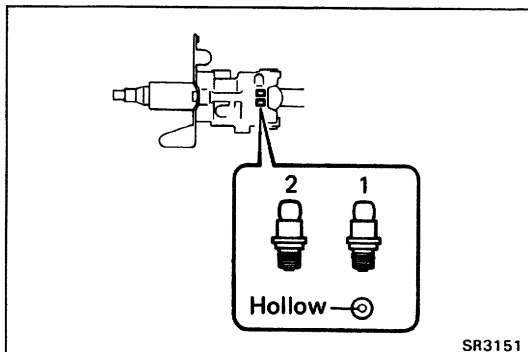
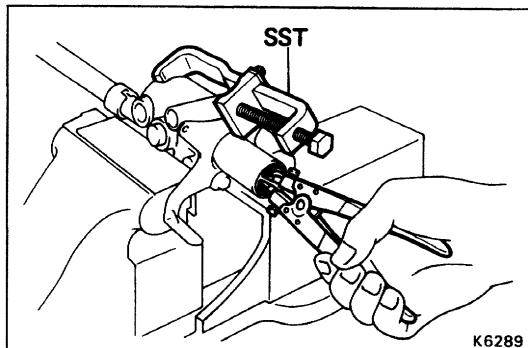
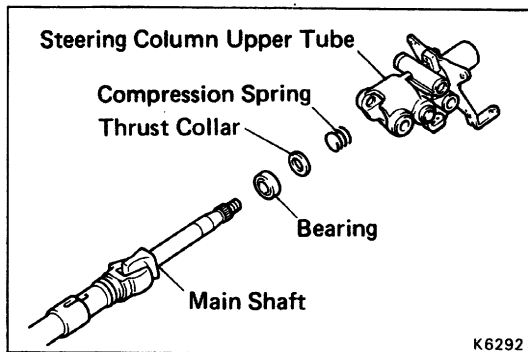
1. INSPECT KEY CYLINDER

Check that the steering lock mechanism operates properly.



2. IF NECESSARY, REPLACE KEY CYLINDER

- (a) Place the ignition key at the ACC position.
- (b) Push down the stop key with a thin rod, and pull out the key cylinder.
- (c) Make sure the ignition key is at the ACC position.
- (d) Install new key cylinder.



ASSEMBLY OF TILT AND TELESCOPIC STEERING COLUMN

(See page SR-7)

1. COAT ALL RUBBING PARTS WITH MP GREASE
2. INSTALL MAIN SHAFT TO STEERING COLUMN UPPER TUBE

- (a) Install the main shaft to the bearing, thrust collar and compression spring.
- (b) Install the main shaft to the steering column upper tube.

HINT: Avoid bending the universal joint 20° or more as the joint part will come loose.

- (e) Using SST to hold the main shaft, install the snap ring with snap ring pliers.
SST 09950-20017

3. SELECT TILT STEERING BOLT AND STEERING COLUMN UPPER TUBE

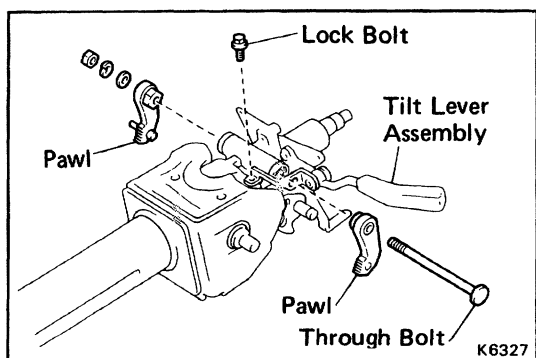
Select the bolt with the plain thread end when the tube mark is 2, and the bolt with the hollow-tipped thread end when the mark is 1.

4. INSTALL MAIN SHAFT TO STEERING COLUMN UPPER TUBE

- (a) Install the main shaft to the steering column tube assembly.
- (b) Using a hammer, drive in the tilt steering bolts.

5. INSTALL TILT LEVER LOCK SHAFT, TILT LEVER, SUB TILT LEVER AND TILT LEVER ASSEMBLY

- (a) Install the tilt lever lock shaft to the steering column upper tube.
- (b) Install the tilt lever, sub tilt lever and tilt lever assembly.



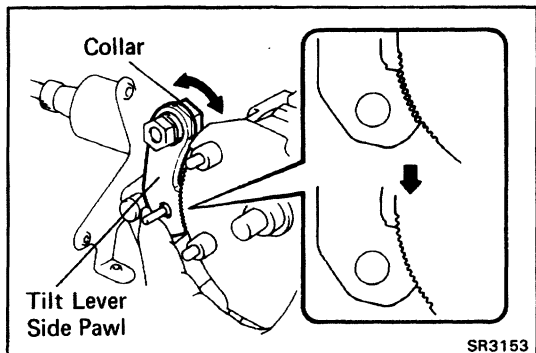
6. INSTALL TWO TILT STEERING PAWLS

- (a) Install the two pawls and tilt lever assembly to the steering column upper tube with the through bolt, and temporarily tighten the nut.

HINT: Install the pawl pin into the long hole of the tilt lever and sub tilt lever.

- (b) Tighten the tilt lever assembly with lock bolt.

Torque: 30 kg-cm (26 in.-lb, 2.9 N-m)



7. ENGAGE AND ADJUST TILT STEERING PAWL

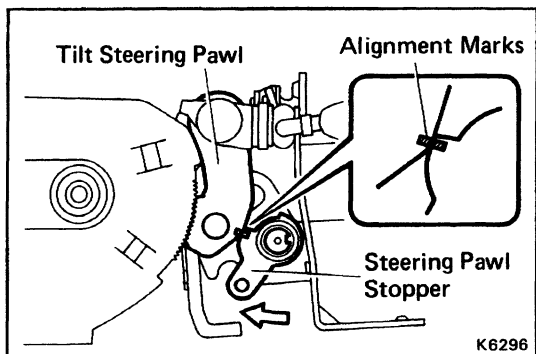
- (a) Engage the sub tilt lever side pawl to the center of the ratchet.

- (b) While turning the tilt lever side collar, completely engage the tilt lever side pawl to the ratchet.

- (c) Tighten the nut.

Torque: 60 kg-cm (52 in.-lb, 5.9 N-m)

- (d) Check that the pawl rotates smoothly.



8. SELECT STEERING PAWL STOPPERS FOR BOTH SIDES

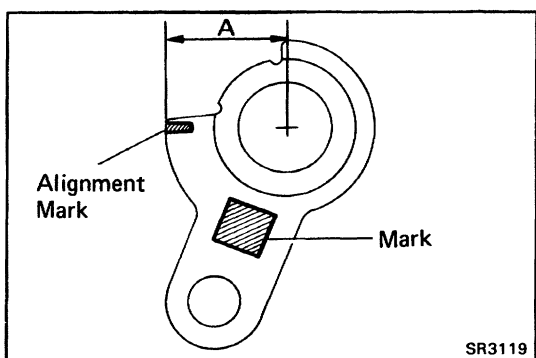
- (a) With the steering lock pawl and the ratchet engaged, select and install two tilt steering pawl stoppers.

- (b) Check that the alignment marks on the stopper and pawl align when the stopper is rotated to the pawl side.

- (c) If the alignment marks do not align, select tilt steering pawl stoppers according to the following table.

Tilt [ever side	Sub tilt lever side	Dimension "A"	mm (in.)
1	A	12.65 - 12.75	(0.4980 - 0.5020)
2	B	12.55 - 12.65	(0.4941 - 0.4980)
3	C	12.45 - 12.55	(0.4902 - 0.4941)
4	D	12.35 - 12.45	(0.4862 - 0.4902)
5	E	12.25 - 12.35	(0.4823 - 0.4862)

- (d) After selecting the stoppers, check that on both sides the pawl and ratchet are fully engaged.

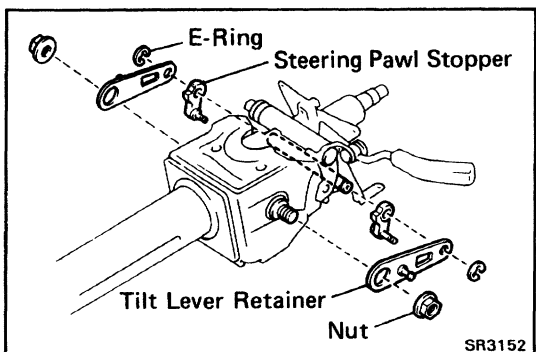


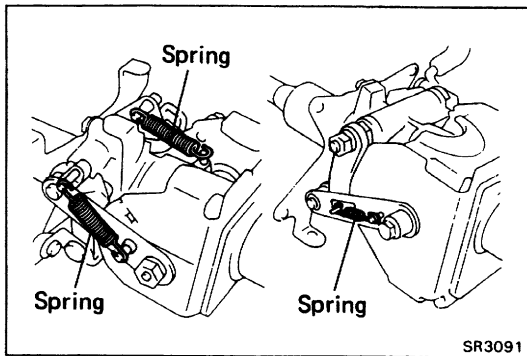
9. INSTALL TWO TILT LEVER RETAINERS AND TWO TILT STEERING PAWL STOPPERS

- (a) Install the two tilt steering pawl stoppers, two tilt lever retainers.

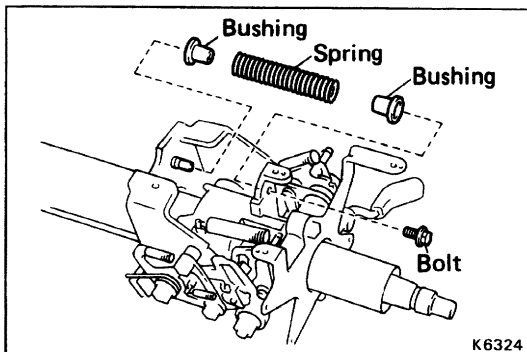
- (b) Install the two nuts and two E-rings.

Torque: 150 kg-cm (11 ft-lb, 15 N-m)





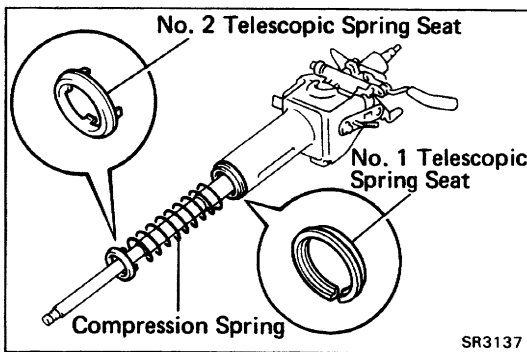
10. INSTALL THREE TENSION SPRINGS



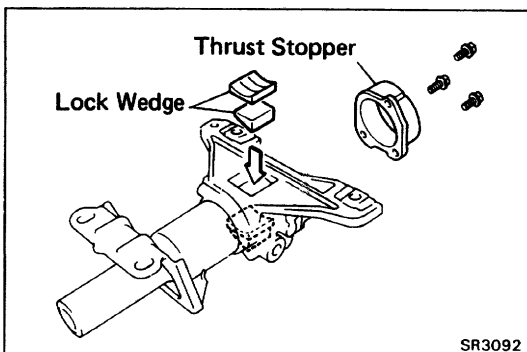
11. INSTALL COMPRESSION SPRING AND TWO BUSHING

- (a) Install the two bushings.
- (b) Install the compression spring.
- (c) Install the bolt.

Torque: 80 kg-cm (69 in.-lb, 7.8 N-m)



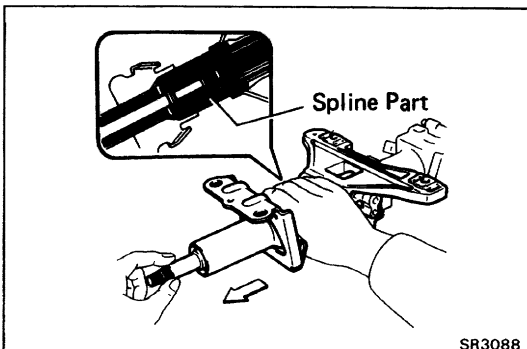
12. INSTALL NO. 1 AND NO.2 TELESCOPIC SPRING SEATS AND COMPRESSION SPRING



13. INSTALL TWO LOCK WEDGES TO BREAKAWAY BRACKET

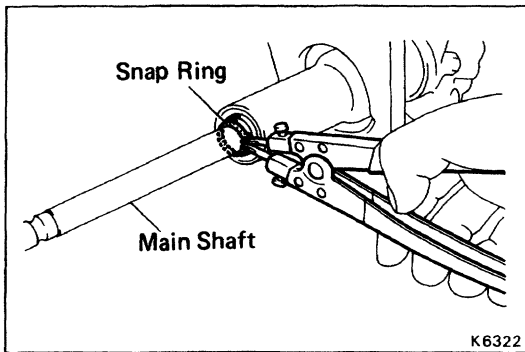
NOTICE: Make sure that no grease gets on the lock wedges.

14. INSTALL STEERING SHAFT THRUST STOPPER TO BREAKAWAY BRACKET

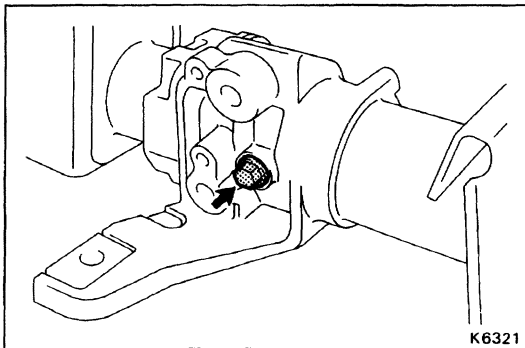


15. INSTALL BREAKAWAY BRACKET

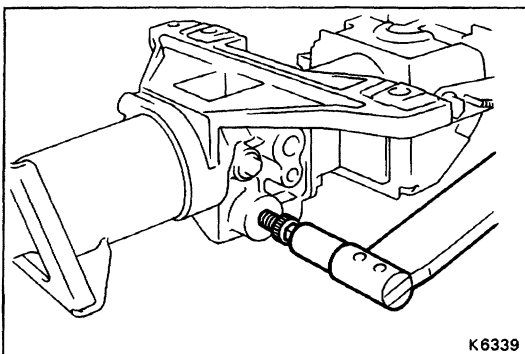
- (a) Install the breakaway bracket to the main shaft.
Be careful that the spline part of the main shaft does not separate.



- (b) Using snap ring pliers, install the snap ring to the main shaft.

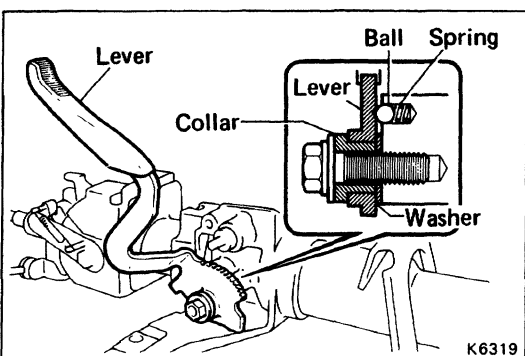


- (c) Install the steering column tube stopper bolt.
Torque: 195 kg-cm (14 ft-lb, 19 N-m)



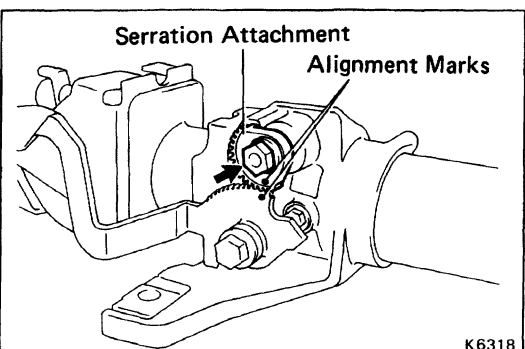
16. INSTALL TELESCOPIC LEVER LOCK BOLT

- (a) Pull the steering column tube away from the breakaway bracket and facing the body installation surface of the breakaway bracket upward, temporarily install the lock bolt.
- (b) Install a double nut on the lock bolt.
Torque to 160 kg-cm (12 ft-lb, 16 N-m), loosen once, then torque again to 75 kg-cm (65 in.-lb, 7.4 N-m).



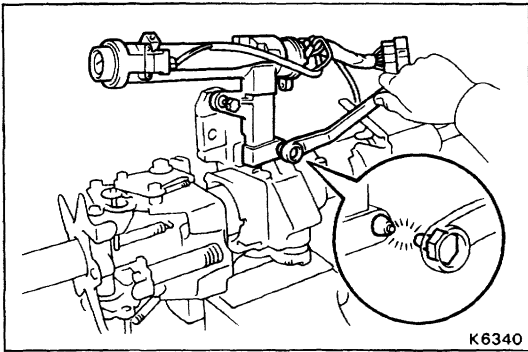
17. INSTALL TELESCOPIC LEVER

- (a) Install the compression spring and ball.
- (b) Install the washer, lever, collar and bolt.
Torque: 260 kg-cm (19 ft-lb, 25 N-m)

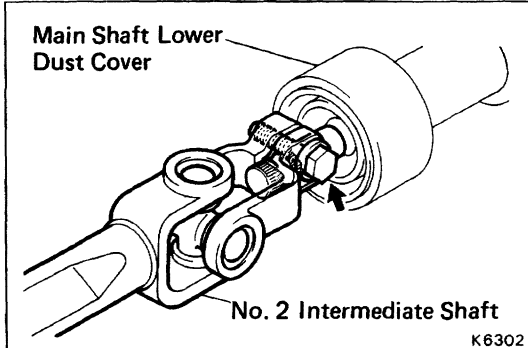


18. INSTALL TELESCOPIC LEVER SERRATION ATTACHMENT

- (a) Rotate the telescopic lever until it touches the breakaway bracket.
- (b) Install the serration attachment so that the Alignment marks on the telescopic lever and the serration attachment align.
Torque: 130 kg-cm (9 ft-lb, 13 N-m)

**19. INSTALL STEERING COLUMN UPPER BRACKET**

- (a) Install the steering column upper bracket with the two new tapered-head bolts.
- (b) Tighten the tapered-head bolt until the bolt head breaks off.

**20. INSTALL CONNECTOR BRACKET**

Torque: 55 kg-cm (48 in.-lb, 5.4 N-m)

21. INSTALL MAIN SHAFT LOWER DUST COVER**22. INSTALL NO.2 INTERMEDIATE SHAFT**

Torque: 360 kg-cm (26 in.-lb, 35 N-m)

23. CHECK TILT OPERATION

- (a) Operate the tilt lever and check that there is no looseness when the steering column upper tube is set to each position.
- (b) Check that no matter what position the steering column upper tube is in, it moves to the uppermost position when the tilt lever is operated.
- (c) Check that when the steering column upper tube is pushed downward from the condition in (b), it locks in the uppermost position with no looseness.
- (d) Check that when the tilt lever is operated and the steering column upper tube is lowered to the lowermost position, the tube locks at the lowermost position and there is no looseness.

24. CHECK TELESCOPIC OPERATION

- (a) Check that there is no axial play when the lever is turned fully counterclockwise.
- (b) Check that the main shaft moves smoothly when the lever is turned clockwise.