

STEERING

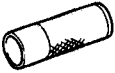
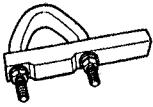
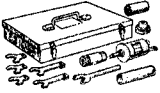
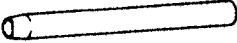
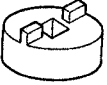
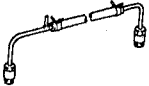
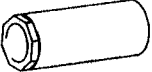
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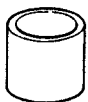
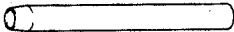
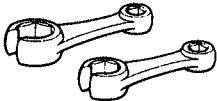
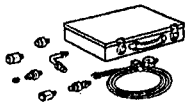
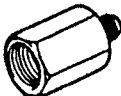
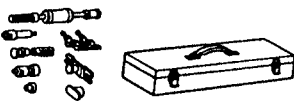
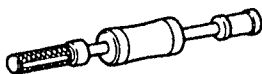
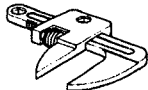
PRECAUTION

- Care must be taken to replace parts properly because they could affect the performance of the steering system and result in a driving hazard.
- The TOYOTA TACOMA is equipped with an 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 RS section.

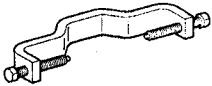
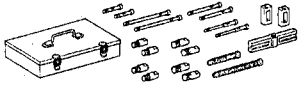
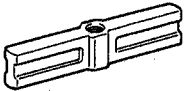
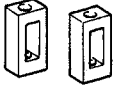
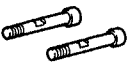
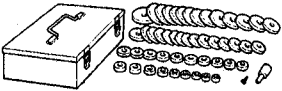
PREPARATION

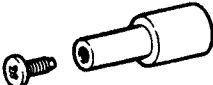
SST (SPECIAL SERVICE TOOLS)

	09608-04031	Front Hub Inner Bearing Cone Replacer	PS vane pump
	09612-00012	Rack & Pinion Steering Rack Housing Stand	Manual steering gear PS gear (2WD and 4WD)
	09612-24014	Steering Gear Housing Overhaul Tool Set	
	(09616-10010)	Steering Pinion Bearing Adjusting Socket	Manual steering gear
	09616-00010	Steering Worm Bearing Adjusting Socket	PS gear (2WD and 4WD)
	09631-00350	Steering Rack Cover 35	PS gear (4WD)
	09631-10021	Rack Stopper Wrench	Manual steering gear
	09631-10030	Oil Seal Remover	PS vane pump
	09631-12071	Steering Rack Oil Seal Test Tool	PS gear (2WD and 4WD)
	09631-20060	Bearing Guide Nut Wrench	PS gear (2WD and 4WD)

	09631-20081 Seal Ring Tool	PS gear (2WD and 4WD)
	09631-20090 Cylinder End Stopper Nut Wrench	PS gear (2WD and 4WD)
	09631-20102 Steering Rack Cover "H"	PS gear (2WD and 4WD)
	09631-22020 Power Steering Hose Nut 14 x 17 mm Wrench Set	PS gear (2WD and 4WD)
	09633-00020 Power Steering Hose Nut Wrench	PS gear (2WD and 4WD)
	09640-10010 Power Steering Pressure Gauge Set	
	(09641-01010) Gauge Assy	On-vehicle inspection
	(09641-01030) Attachment B	On-vehicle inspection
	(09641-01060) Attachment E	On-vehicle inspection
	09910-00015 Puller Set	
	(09911-00011) Puller Clamp	Tilt steering column
	(09912-00010) Puller Slide Hammer	Tilt steering column
	09922-10010 Variable Open Wrench	Manual steering gear PS gear (2WD and 4WD)
	09950-40010 Puller B Set	

STEERING — PREPARATION

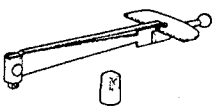
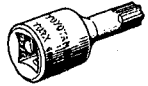
	(09957-04010) Attachment	Tilt steering column
	(09958-04010) Holder	Tilt steering column
	09950-50010 Puller C Set	
	(09951-05010) Hanger 150	Non-tilt steering column Tilt steering column
	(09952-05010) Slide Arm	Non-tilt steering column Tilt steering column
	(09953-05020) Center Bolt 150	Non-tilt steering column Tilt steering column
	(09954-05020) Claw No.2	Non-tilt steering column Tilt steering column
	09950-60010 Replacer Set	
	(09951-00180) Replacer 18	PS gear (2WD and 4WD)
	(09951-00250) Replacer 25	Manual steering gear PS gear (2WD and 4WD)
	(09951-00260) Replacer 26	PS gear (2WD and 4WD)
	(09951-00280) Replacer 28	PS gear (2WD and 4WD)
	(09951-00320) Replacer 32	PS gear (2WD and 4WD)
	(09951-00330) Replacer 33	PS gear (2WD and 4WD)

	(09951-00360) Replacer 36	PS gear (2WD and 4WD)
	(09951-00420) Replacer 42	PS gear (2WD and 4WD)
	(09951-00490) Replacer 49	PS gear (4WD)
	(09952-06010) Adapter	PS gear (2WD and 4WD)
	09950-70010 Handle Set	
	(09951-07100) Handle 100	Manual steering gear PS gear (2WD and 4WD)
	(09951-07150) Handle 150	PS gear (2WD and 4WD)
	(09951-07360) Handle 360	PS gear (2WD and 4WD)
	09960-10010 Variable Pin Wrench Set	
	(09962-01000) Variable Pin Wrench Arm Assy	PS vane pump
	(09963-01000) Pin 10	PS vane pump

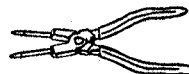
SR

RECOMMENDED TOOLS

SR128-07

	09025-00010 Torque Wrench (30 kgf-cm) .	PS vane pump Manual steering gear PS gear (2WD and 4WD)
	09042-00010 Torx Socket T30 .	Non-tilt steering column Tilt steering column

STEERING — PREPARATION

	09904-00010 Expander Set .	
	(09904-00050) No. 4 Claw	
	09905-00012 Snap Ring No.1 Expander .	
	09905-00013 Snap Ring Pliers .	

SR12B-06

EQUIPMENT

Belt tension gauge	On — vehicle inspection
Caliper gauge	PS vane pump
Calipers	PS vane pump
Dial indicator	Manual steering gear, PS gear (2WD and 4WD)
Feeler gauge	PS vane pump
Micrometer	PS vane pump
Torque wrench	

SR12A-06

LUBRICANT

Item	Capacity	Classification
Power steering fluid		
Total	0.8 liters (0.9 US qts, 0.7 Imp.qts)	ATF DEXRON® II or III

SR12B-06

SSM (SPECIAL SERVICE MATERIALS)

08833-00080 Adhesive 1344, THREE BOND 1344, LOCTITE 242 or equivalent	Manual steering gear PS gear (2WD and 4WD)
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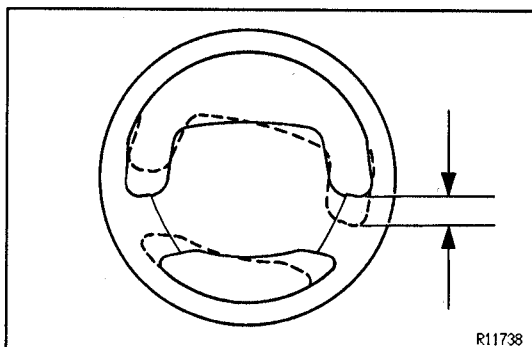
TROUBLESHOOTING

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 order. If necessary, repair or replace these parts.

See Page	SA-2	SA-3	SR-8	SR-7	—	SA-66 SA-72	—	SR-18	SR-51 SR-61 SR-76	SA-14 SA-22
Parts Name	Tires (improperly inflated)	Front wheel alignment (Incorrect)	PS fluid level (Low)	Drive belt (Loose)	Steering system joints (Worn)	Suspension arm Ball joints (Worn)	Steering column (Binding)	Universal Joint Intermediate shaft Sliding yoke } (Worn)	Steering gear	Front wheel bearing (Worn)
Trouble										
Hard steering	1	4	2	3	5	6	7		8	
Poor return	1	2					3		4	
Excessive play					1	2		3	5	4
Abnormal noise			1		2				3	

ARA940604SR2N

V06104



ON—VEHICLE INSPECTION

STEERING WHEEL FREEPLAY CHECK

SR18T-02

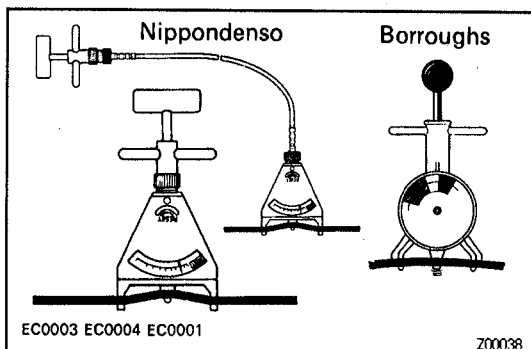
SR

With the vehicle stopped and tires pointed straight ahead, rock the steering wheel gently back and forth with light finger pressure.

Freeplay should not exceed the maximum.

	Freeplay	mm (in.)
Maximum	30	(1.18)

SR18U-05

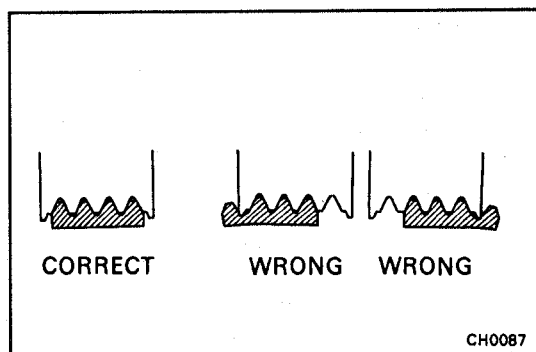


DRIVE BELT TENSION CHECK

Using a belt tension gauge, check the tension.
Belt tension gauge:

Nippondenso BTG—20 (95506—00020) or
Borroughs No.BT—33—73F

	Drive belt tension	lbf
New belt	135 — 180	
Used belt	85 — 120	

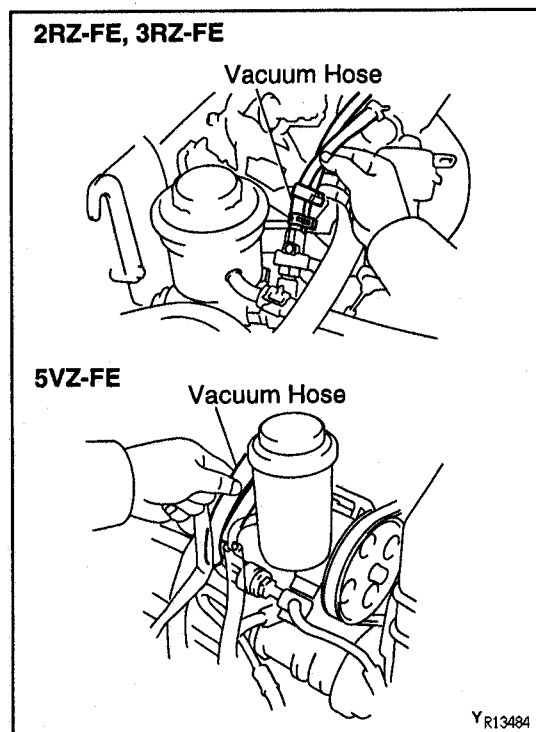


NOTICE: After installing the belt, check that it fits properly in the ribbed grooves.

HINT:

- "New belt" refers to a belt which has been less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.

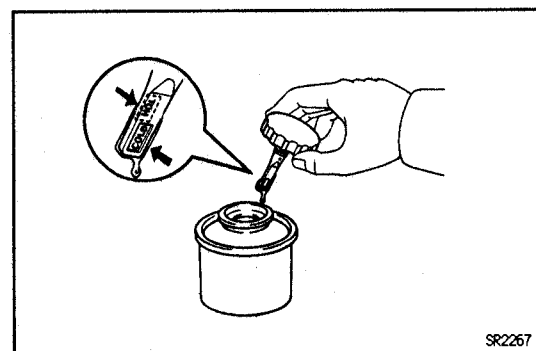
SR16V-04



IDLE—UP CHECK

1. **TURN AIR CONDITIONING SWITCH OFF**
2. **CHECK IDLE—UP**
 - (a) Start engine and run it at idle.
 - (b) Fully turn the steering wheel.
 - (c) Check that the engine rpm decreases when the vacuum hose of the air control valve is pinched.
 - (d) Check that the engine rpm increases when the hose is released.

SR16V-06



FLUID LEVEL CHECK

1. **KEEP VEHICLE LEVEL**
2. **CHECK FLUID LEVEL**

With the engine stopped, check the fluid level in the oil reservoir.

If necessary, add fluid.

Fluid:

ATF DEXRON® II or III

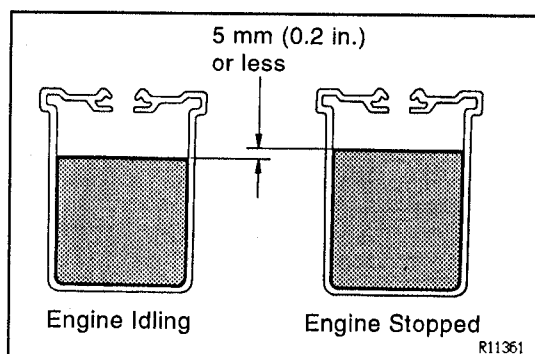
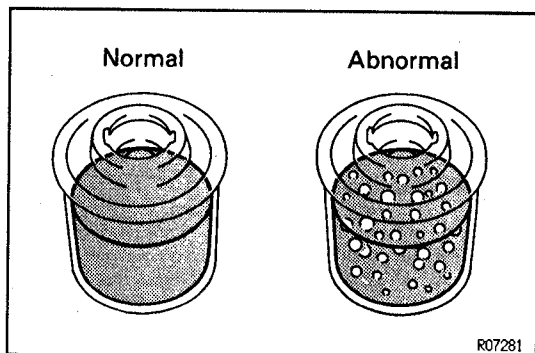
HINT: Check that the fluid level is within the **HOT LEVEL** range on the reservoir cap dipstick. If the fluid is cold, check that it is within the **COLD LEVEL** range.

3. **BOOST FLUID TEMPERATURE**

- (a) Start the engine and run it at idle.
- (b) Turn the steering wheel from lock to lock several times to boost fluid temperature.

Fluid temperature:

80°C (176°F)

**4. CHECK FOR FOAMING OR EMULSIFICATION**

If there is foaming or emulsification, bleed power steering system.

5. CHECK FLUID LEVEL RISE

- With the engine idling, measure the fluid level in the oil reservoir.
- Stop the engine.
- Wait a few minutes and remeasure the fluid level in the reservoir.

	Fluid level rise	mm (in.)
Maximum	5	(0.2)

If a problem is found, bleed power steering system.

6. CHECK FLUID LEVEL

(See page SR—8)

POWER STEERING SYSTEM BLEEDING

SR18V-05

1. CHECK FLUID LEVEL

(See page SR—8)

2. JACK UP FRONT OF VEHICLE AND SUPPORT IT WITH STANDS**3. TURN STEERING WHEEL**

With the engine stopped, turn the wheel slowly from lock to lock several times.

4. LOWER VEHICLE**5. START ENGINE**

Run the engine at idle for a few minutes.

6. TURN STEERING WHEEL

- With the engine idling, turn the wheel to left or right full lock and keep it there for 2—3 seconds, then turn the wheel to the opposite full lock and keep it there for 2—3 seconds.

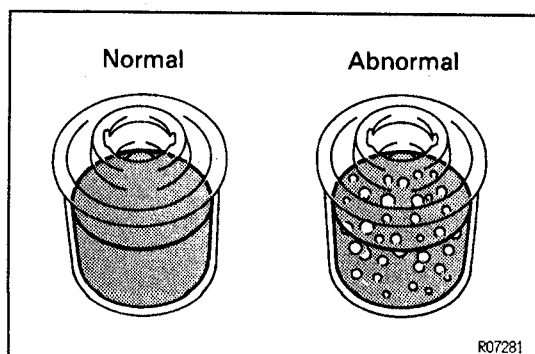
- Repeat (a) several times.

7. STOP ENGINE**8. CHECK FOR FOAMING OR EMULSIFICATION**

If the system has to be bled twice specifically because of foaming or emulsification, check for fluid leaks in the system.

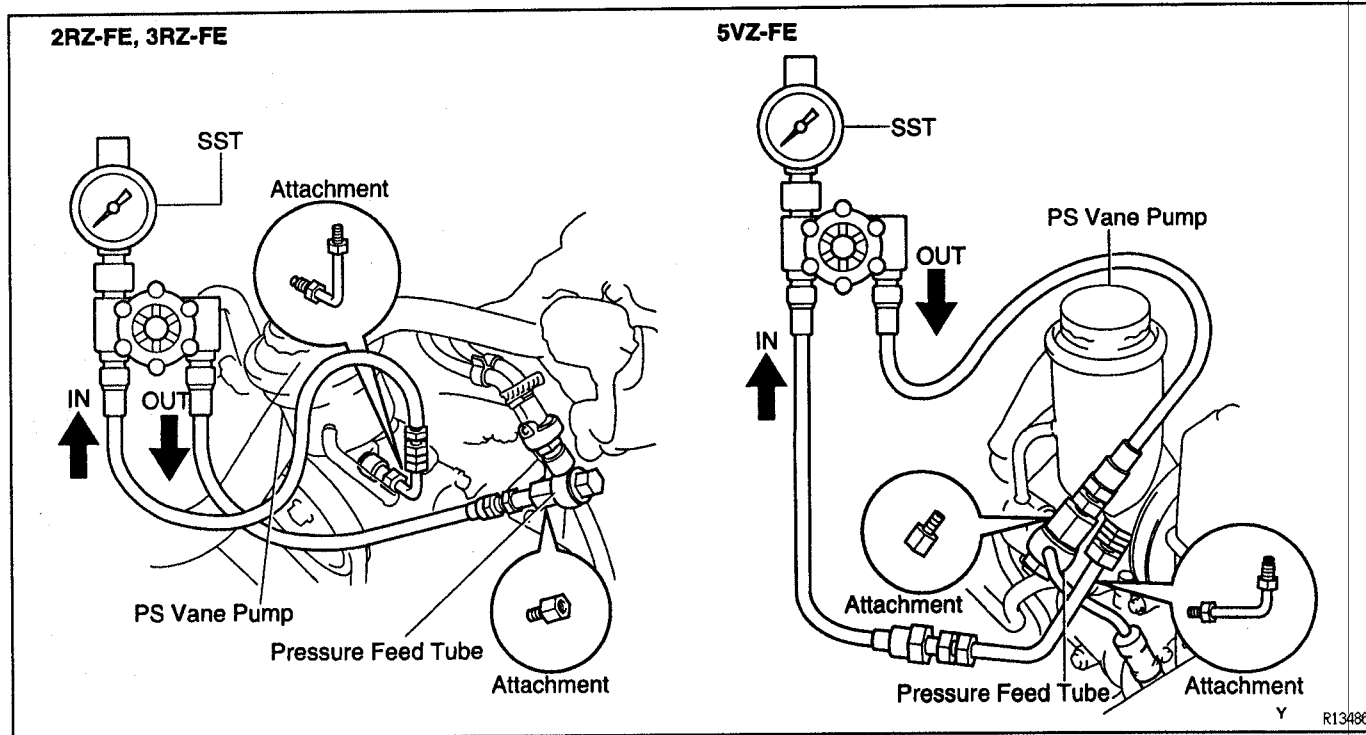
9. CHECK FLUID LEVEL

(See page SR—8)

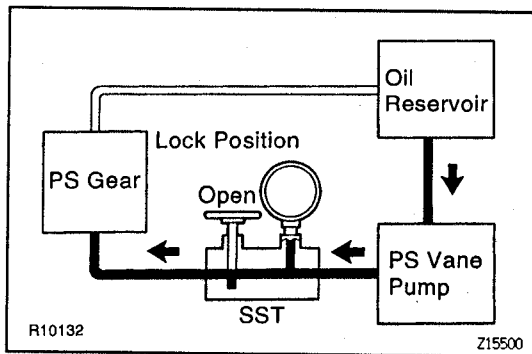
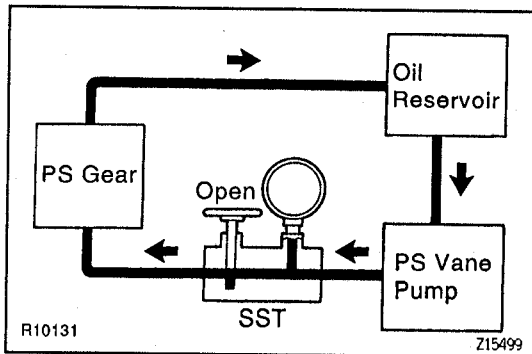
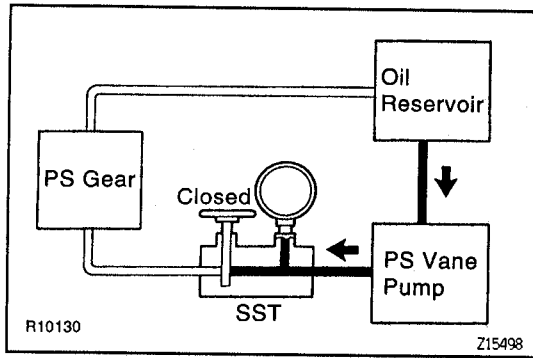


FLUID PRESSURE CHECK

1. **5VZ-FE Engine:**
REMOVE AIR CLEANER ASSEMBLY
 Loosen the 3 bolts.
 (See page SR-43)
2. **CONNECT SST**
 - (a) Disconnect the pressure feed tube from the PS vane pump.
 2RZ-FE, 3RZ-FE Engines: (See page SR-37)
 5VZ-FE Engine: (See page SR-45)
 - (b) Connect the SST, as shown below.
 SST 09640-10010 (09641-01010, 09641-01030, 09641-01060)
NOTICE: Check that the valve of the SST is in the open position.



3. **BLEED POWER STEERING SYSTEM**
 (See page SR-9)
4. **BOOST FLUID TEMPERATURE**
 - (a) Start the engine and run it at idle.
 - (b) Turn the steering wheel from lock to lock several times to boost fluid temperature.
Fluid temperature:
 80 °C (176 °F)



5. CHECK FLUID PRESSURE READING WITH VALVE CLOSED

With the engine idling, close the valve of the SST and observe the reading on the SST.

	Fluid pressure	kPa (kgf/cm ² , psi)
Minimum	8,336 (85, 1,209)	

NOTICE:

- Do not keep the valve closed for more than 10 seconds.
- Do not let the fluid temperature become too high.

6. CHECK FLUID PRESSURE READING WITH VALVE OPENED

- With the engine idling, open the valve fully.
- Measure the fluid pressure at engine speeds of 1,000 rpm and 3,000 rpm.

	Fluid pressure	kPa (kgf/cm ² , psi)
Difference	490 (5, 71) or less	

NOTICE: Do not turn the steering wheel.

7. CHECK PRESSURE READING WITH STEERING WHEEL TURNED TO FULL LOCK

With the engine idling and valve fully opened, turn the wheel to full lock.

	Fluid pressure	kPa (kgf/cm ² , psi)
Minimum	8,336 (85, 1,209)	

NOTICE:

- Do not maintain lock position for more than 10 seconds.
- Do not let the fluid temperature become too high.

8. DISCONNECT SST

- Disconnect the SST.
- Connect the pressure feed tube.
2RZ—FE, 3RZ—FE Engines: (See page SR—42)
5VZ—FE Engine: (See page SR—50)

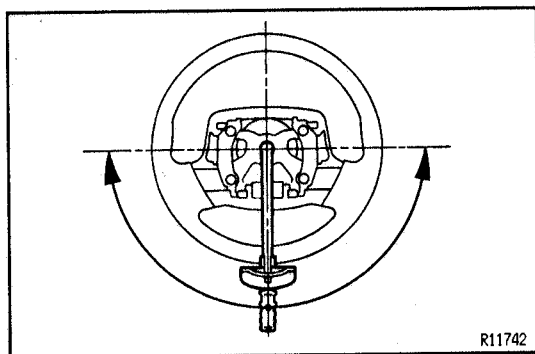
9. BLEED POWER STEERING SYSTEM

(See page SR—9)

10. 5VZ—FE Engine:

INSTALL AIR CLEANER ASSEMBLY

Tighten the 3 bolts.



STEERING EFFORT MEASUREMENT

1. CENTER STEERING WHEEL

2. MEASURE STEERING EFFORT

- (a) Remove the steering wheel pad.
(See page SR — 16)
- (b) Start the engine and run it at idle.
- (c) Measure the steering effort in both directions.

Reference:

4.9 N·m (50 kgf·cm, 43 in.-lbf)

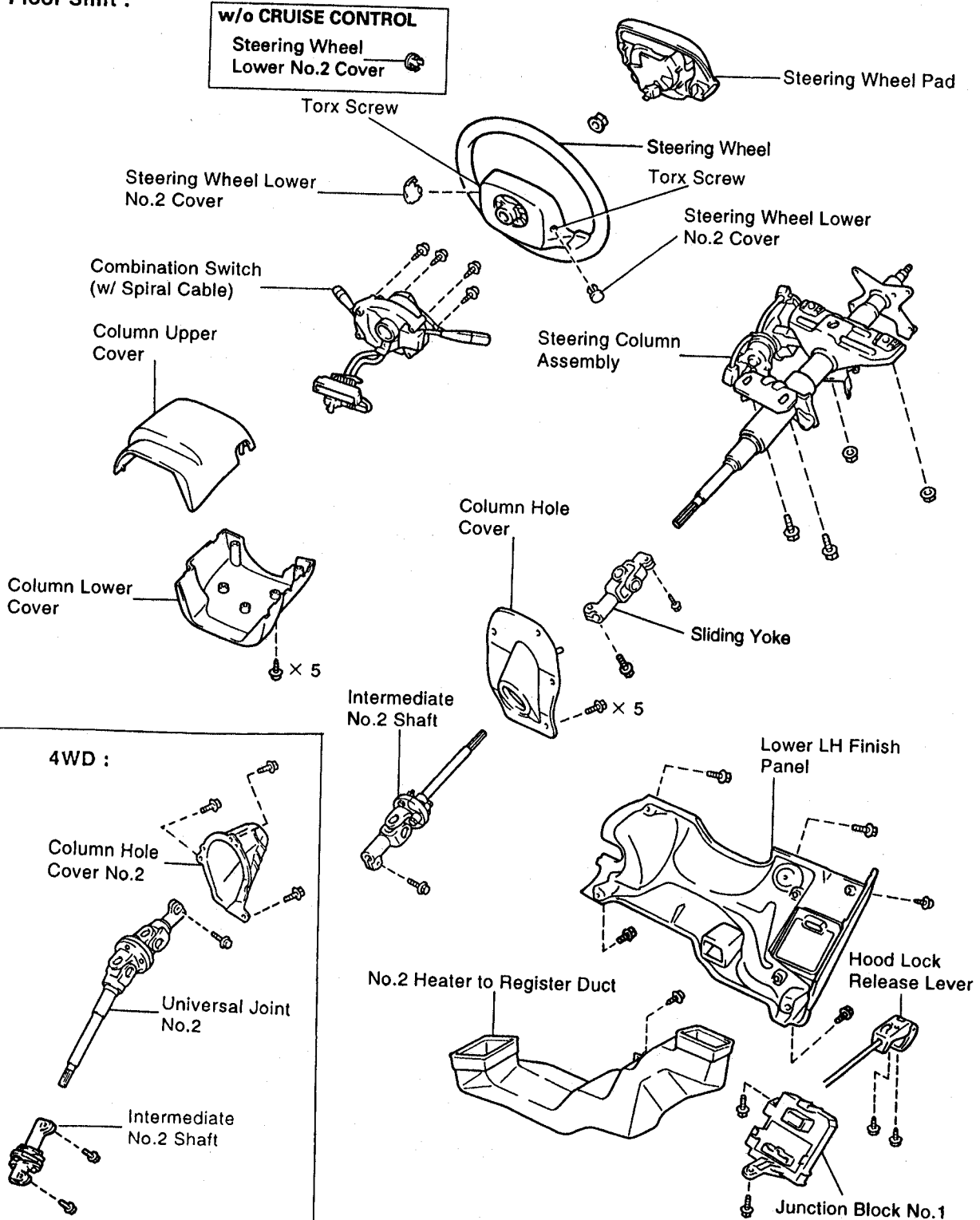
HINT: Be sure to consider the tire type, pressure and contact surface before making your diagnosis.

- (d) Torque the steering wheel set nut.
Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)
- (e) Install the steering wheel pad.
(See page SR — 24)

NON-TILT STEERING COLUMN COMPONENTS

SR103-02

Floor Shift :



4WD :

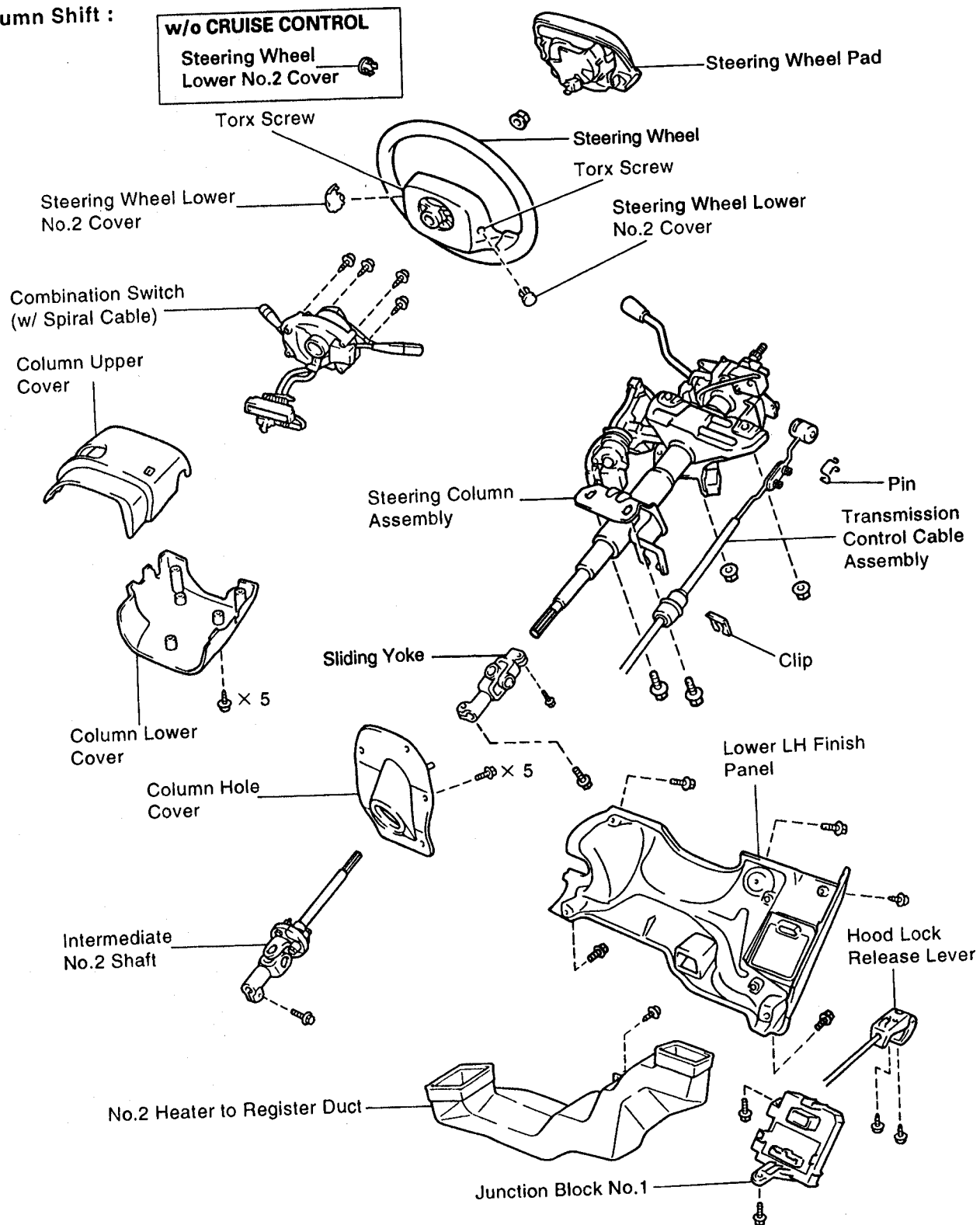
Column Hole Cover No.2

Universal Joint No.2

Intermediate No.2 Shaft

SR

Column Shift :



COMPONENTS

Column Shift (2WD):

Column Shift Lever Assembly

Turn Signal Bracket

Column Tube

Key Unlock Warning Switch

Key Interlock Solenoid

Key Cylinder

Column Tube

Column Upper Clamp

Column Upper Bracket

Ignition Switch

Main Shaft Assembly

◆ Bushing

◆ Tapered-Head Bolt

◆ Snap Ring

SR

◆ Non-reusable part

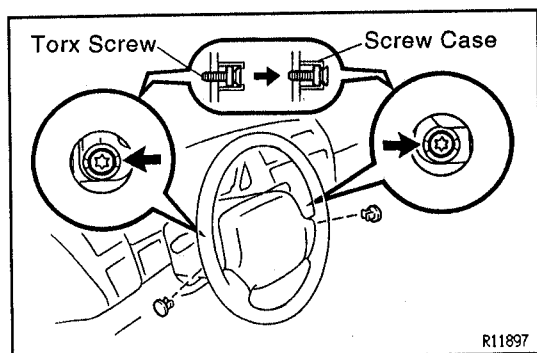
◀ Molybdenum disulphide lithium base grease

STEERING COLUMN REMOVAL

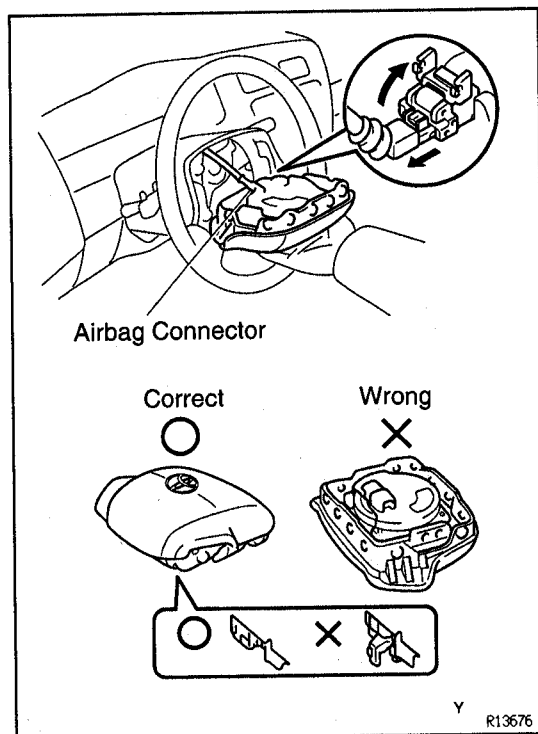
1. REMOVE STEERING WHEEL PAD

NOTICE:

- If the airbag connector is disconnected with the ignition switch at ON or ACC, DTCs will be recorded.
- Never use airbag parts from another vehicle. When replacing parts, replace with new parts.



- Place the front wheels facing straight ahead.
- Remove the 2 steering wheel lower No.2 covers.
- Using a torx socket wrench, loosen the 2 torx screws.
HINT: Loosen the screw until the groove along the screw circumference catches on the screw case.



- Pull out the wheel pad from the steering wheel and disconnect the airbag connector.

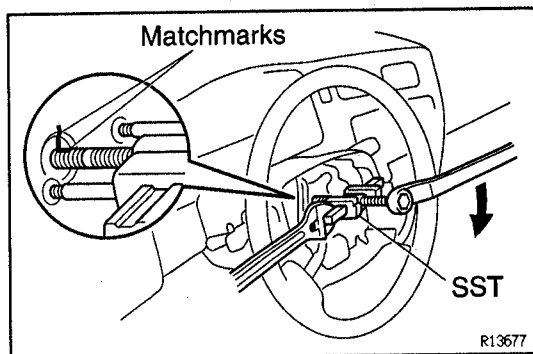
CAUTION:

- When storing the wheel pad, keep the upper surface of the pad facing upward.
- Never disassemble the wheel pad.

NOTICE: When removing the wheel pad, take care not to pull the airbag wire harness.

2. REMOVE STEERING WHEEL

- Disconnect the connector.
- Remove the steering wheel set nut.
- Place matchmarks on the steering wheel and main shaft assembly.
- Using SST, remove the wheel.
SST 09950-50010 (09951-05010, 09952-05010, 09953-05020, 09954-05020)



3. REMOVE UPPER AND LOWER COLUMN COVERS

Remove the 5 screws.

4. REMOVE LOWER LH FINISH PANEL

(a) Remove the 2 screws and disconnect the hood lock release lever from the panel.

(b) Remove the 4 panel set bolts and screw.

5. REMOVE NO. 2 HEATER TO REGISTER DUCT

Remove the screw.

6. REMOVE COMBINATION SWITCH WITH SPIRAL CABLE

(a) Disconnect the 2 connectors.

(b) Disconnect the airbag connector.

(c) Remove the 4 screws.

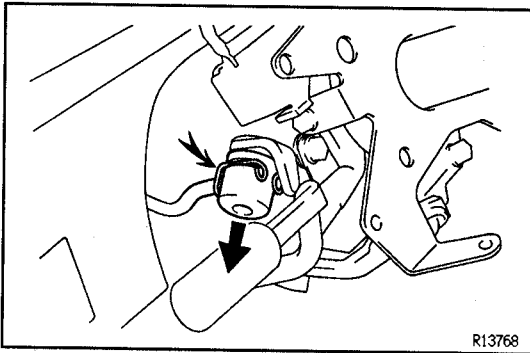
7. REMOVE SPIRAL CABLE

(See page BE—11)

NOTICE: Do not disassemble the cable or apply oil to it.

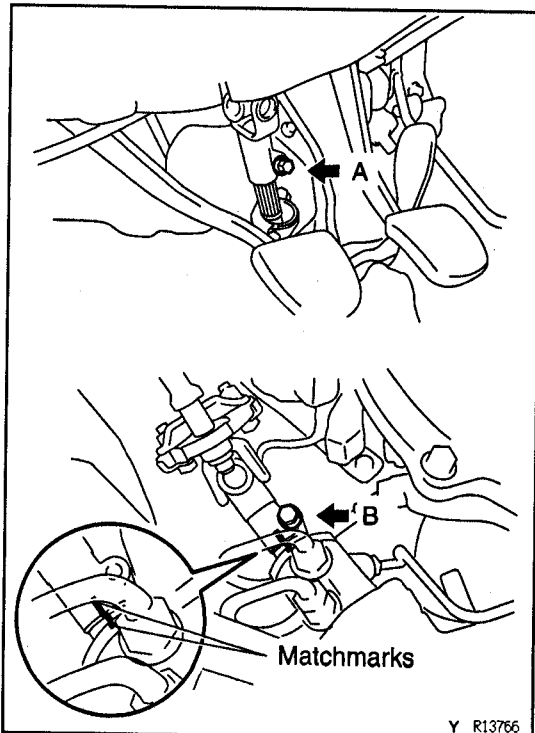
8. DISCONNECT JUNCTION BLOCK NO.1

Remove the 2 bolts and disconnect the junction block No. 1.

**9. COLUMN SHIFT (2WD):****DISCONNECT TRANSMISSION CONTROL CABLE ASSEMBLY**

(b) Remove the pin and clip.

(c) Disconnect the cable assembly from the column shift lever assembly.

**10. 2WD:****REMOVE COLUMN HOLE COVER**

Remove the 5 bolts.

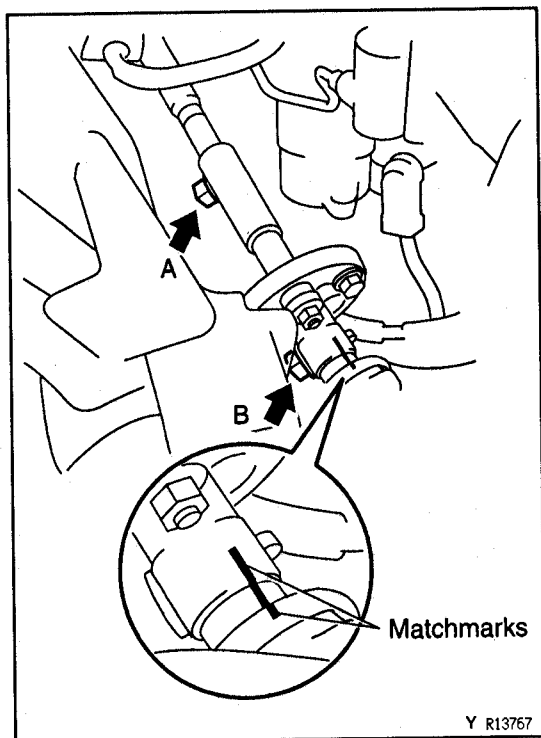
11. 2WD:**DISCONNECT INTERMEDIATE NO. 2 SHAFT**

(a) Place matchmarks on the intermediate No. 2 shaft and control valve shaft.

(b) Loosen bolt A and remove bolt B.

12. 2WD:**REMOVE INTERMEDIATE NO. 2 SHAFT**

Remove the bolt A.



13. 4WD:
REMOVE 3 COLUMN HOLE COVER NO. 2 SET BOLTS

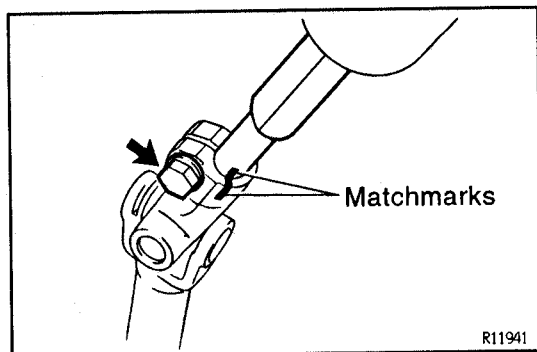
14. 4WD:
DISCONNECT INTERMEDIATE NO.2 SHAFT

- (a) Place matchmarks on the intermediate No.2 shaft and control valve shaft.
- (b) Loosen bolt A and remove bolt B.

15. 4WD:
REMOVE INTERMEDIATE NO. 2 SHAFT
Remove the bolt A.

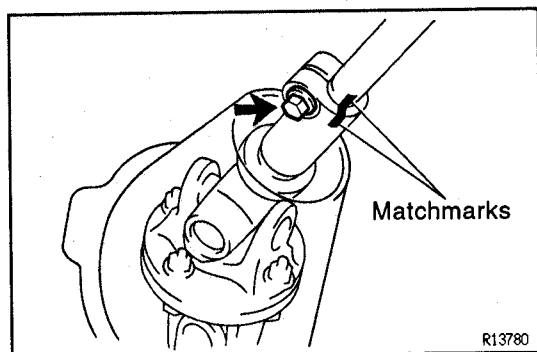
16. REMOVE STEERING COLUMN ASSEMBLY

- (a) **FLOOR SHIFT:**
Disconnect the 2 connectors.
COLUMN SHIFT:
Disconnect the 3 connectors.
- (b) Remove the 2 column assembly set bolts and nuts.



17. 2WD:
REMOVE SLIDING YOKE

- (a) Place matchmarks on the sliding yoke and main shaft assembly.
- (b) Remove the bolt.



18. 4WD:
REMOVE UNIVERSAL JOINT NO. 2

- (a) Place matchmarks on the universal joint No.2 and main shaft assembly.
- (b) Remove the bolt.

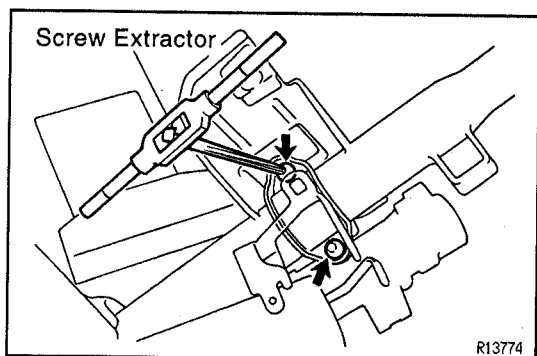
19. 4WD:
REMOVE COLUMN HOLE COVER NO.2
Remove the cover No.2 from the universal joint No.2.

NON—TILT STEERING COLUMN DISASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

- (a) Using a centering punch, mark the center of the 2 tapered-head bolts.



- (b) Using a 3—4 mm (0.12—0.16 in.) drill, drill into the 2 bolts.

- (c) Using a screw extractor, remove the 2 bolts.

2. REMOVE MAIN SHAFT ASSEMBLY

- (a) Using snap ring pliers, remove the snap ring from the shaft assembly.

- (b) Using a plastic hammer, tap out the shaft assembly from the column tube.

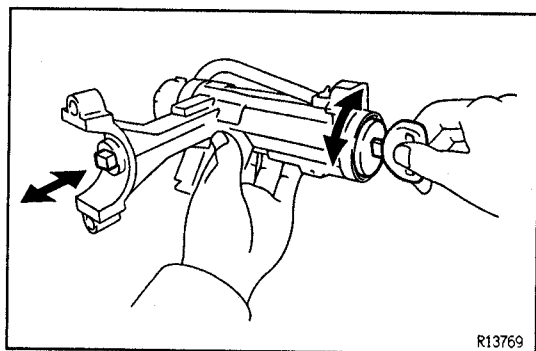
- (c) Using snap ring pliers, remove the snap ring from the shaft assembly.

3. COLUMN SHIFT (2WD): REMOVE TURN SIGNAL BRACKET

Remove the 3 bolts.

4. COLUMN SHIFT (2WD): REMOVE COLUMN SHIFT LEVER ASSEMBLY

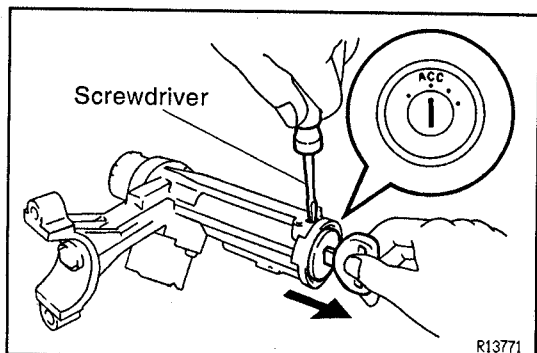
Remove the 3 bolts.



STEERING COLUMN INSPECTION AND REPLACEMENT

1. INSPECT STEERING LOCK OPERATION

Check that the steering lock mechanism operates properly.

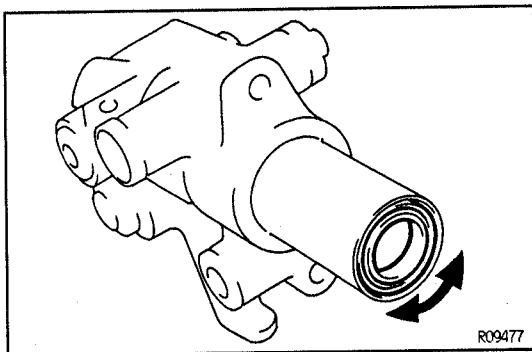
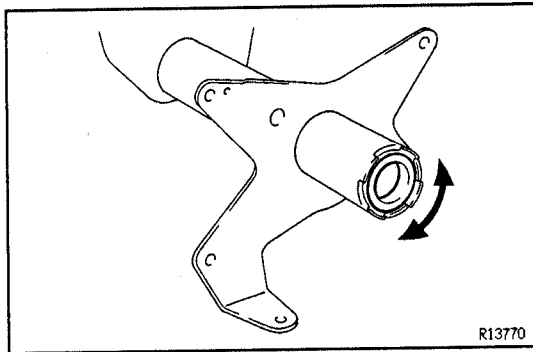


2. IF NECESSARY, REPLACE KEY CYLINDER

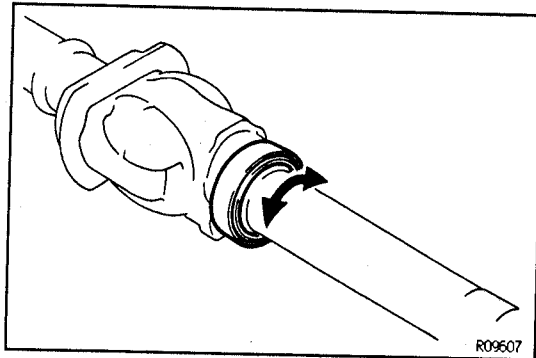
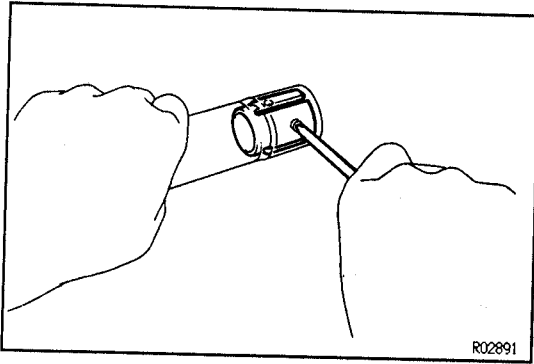
- (a) Place the ignition key at the ACC position.
(b) Push down the stop pin with a screwdriver, and pull out the key cylinder.
(c) Install a new key cylinder.

HINT: Make sure the ignition key is at the ACC position.

3. **INSPECT IGNITION SWITCH**
(See page BE—4)
4. **IF NECESSARY, REPLACE IGNITION SWITCH**
 - (a) Remove the 2 screws.
 - (b) Install a new switch with the 2 screws.
5. **INSPECT KEY UNLOCK WARNING SWITCH**
(See page BE—5)
6. **M/T:**
IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH
 - (a) Remove the 2 screws.
 - (b) Install a new switch with the 2 screws.
7. **A/T:**
INSPECT KEY INTERLOCK SOLENOID
A43D: (See page AT—31)
A340E,F: (See page AT—31)
8. **A/T:**
IF NECESSARY, REPLACE KEY UNLOCK WARNING SWITCH WITH KEY INTERLOCK SOLENOID
 - (a) Remove the 4 screws.
 - (b) Install a new switch and solenoid with the 4 screws.
9. **NON—TILT STEERING COLUMN:**
INSPECT BEARING
Check the bearing rotation condition and check for abnormal noise.
If the bearing is worn or damaged, replace the column tube.



10. **TILT STEERING COLUMN:**
INSPECT BEARING
Check the bearing rotation condition and check for abnormal noise.
If the bearing is worn or damaged, replace the column upper tube.



11. EXCEPT TILT STEERING COLUMN (NASTECH): IF NECESSARY, REPLACE BUSHING

- (a) **TILT STEERING COLUMN:**
Using snap ring pliers, remove the snap ring.
- (b) Using a screwdriver, depress the projections on the bushing to release the bushing, then remove the bushing from the column tube.
- (c) Coat the inside of new bushing with molybdenum disulphide lithium base grease.
- (d) Align the projections on the bushing with the holes in the column tube. Install the bushing until the projections are firmly engaged in the holes in the tube.
- (e) **TILT STEERING COLUMN:**
Using snap ring pliers, install a new snap ring.

12. TILT STEERING COLUMN: INSPECT BEARING

Check the bearing rotation condition and check for abnormal noise.

If the bearing is worn or damaged, replace the bearing.

NON—TILT STEERING COLUMN ASSEMBLY

SR1DQ-02

NOTICE: When using a vise, do not overtighten it.

1. COLUMN SHIFT (2WD):

INSTALL COLUMN SHIFT LEVER ASSEMBLY

Torque the 3 bolts.

Torque: 8 N·m (82 kgf·cm, 71 in.-lbf)

2. COLUMN SHIFT (2WD):

INSTALL TURN SIGNAL BRACKET

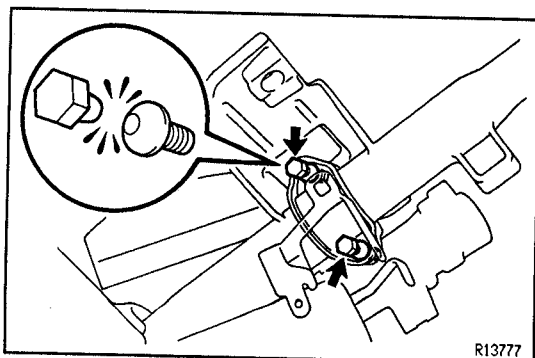
Torque the 3 bolts.

Torque: 2 N·m (20 kgf·cm, 17 in.-lbf)

3. INSTALL MAIN SHAFT ASSEMBLY

- (a) Using snap ring pliers, install a new snap ring to the shaft assembly.
- (b) Install the shaft assembly to the column tube.
- (c) Using snap ring pliers, install a new snap ring to the shaft assembly.

SR

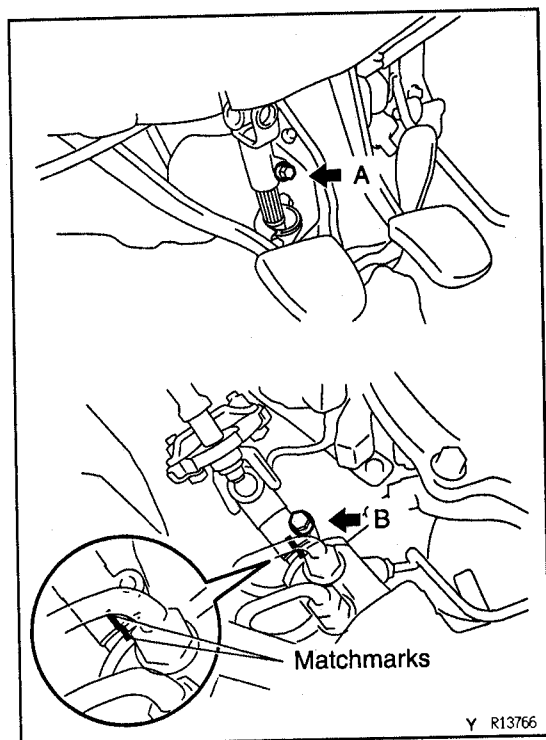


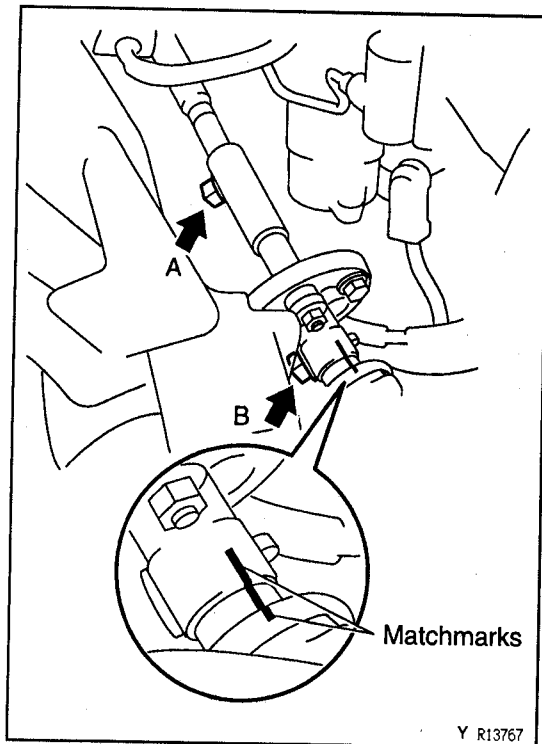
4. INSTALL COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP

Tighten the 2 new tapered-head bolts until the bolts head break off.

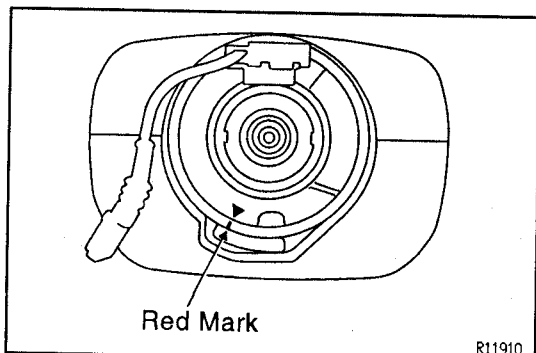
STEERING COLUMN INSTALLATION

1. **2WD:**
INSTALL SLIDING YOKE
 - (a) Align the matchmarks on the sliding yoke and main shaft assembly.
 - (b) Torque the bolt.
Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)
2. **4WD:**
INSTALL COLUMN HOLE COVER NO. 2
Install the cover No. 2 to the universal joint No. 2.
3. **4WD:**
INSTALL UNIVERSAL JOINT NO. 2
 - (a) Align the matchmarks on the universal joint No. 2 and main shaft assembly.
 - (b) Torque the bolt.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
4. **INSTALL STEERING COLUMN ASSEMBLY**
 - (a) Torque the 2 column assembly set bolts and nuts.
Torque: 26 N·m (260 kgf·cm, 19 ft·lbf)
 - (b) **FLOOR SHIFT:**
Connect the 2 connectors.
COLUMN SHIFT:
Connect the 3 connectors.
5. **2WD:**
INSTALL INTERMEDIATE NO. 2 SHAFT
Temporarily tighten the bolt A.
6. **2WD:**
CONNECT INTERMEDIATE NO. 2 SHAFT
 - (a) Align the matchmarks on the intermediate No. 2 shaft and control valve shaft.
 - (b) Torque the bolt B.
Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)
 - (c) Torque the bolt A.
Torque: 36 N·m (367 kgf·cm, 27 ft·lbf)
7. **2WD:**
INSTALL COLUMN HOLE COVER
Torque the 5 bolts.
Torque: 8 N·m (82 kgf·cm, 71 in·lbf)





8. **4WD:**
INSTALL INTERMEDIATE NO. 2 SHAFT
Temporarily tighten the bolt A.
9. **4WD:**
CONNECT INTERMEDIATE NO. 2 SHAFT
 - (a) Align the matchmarks on the intermediate No. 2 shaft and control valve shaft.
 - (b) Torque the bolt B.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
 - (c) Torque the bolt A.
Torque: 35 N·m (360 kgf·cm, 26 ft·lbf)
10. **4WD:**
TORQUE 3 COLUMN HOLE COVER NO. 2 SET BOLTS
Torque the 3 bolts.
Torque: 8 N·m (82 kgf·cm, 71 in·lbf)
11. **COLUMN SHIFT (2WD):**
CONNECT TRANSMISSION CONTROL CABLE ASSEMBLY
 - (a) Connect the cable assembly to column shift lever assembly.
 - (b) Install the pin and clip.
 - (c) Connect the junction block No. 1 with the 2 bolts.
12. **INSTALL SPIRAL CABLE**
(See page BE-11)
13. **INSTALL COMBINATION SWITCH WITH SPIRAL CABLE**
 - (a) Tighten the 4 screws.
 - (b) Connect the airbag connector.
 - (c) Connect the 2 connectors.
14. **INSTALL NO. 2 HEATER TO REGISTER DUCT**
Tighten the screw.
15. **INSTALL LOWER LH FINISH PANEL**
 - (a) Tighten the 4 panel set bolts and screw.
 - (b) Connect the hood lock release lever with the 2 screws.
16. **INSTALL UPPER AND LOWER COLUMN COVERS**
Tighten the 5 screws.



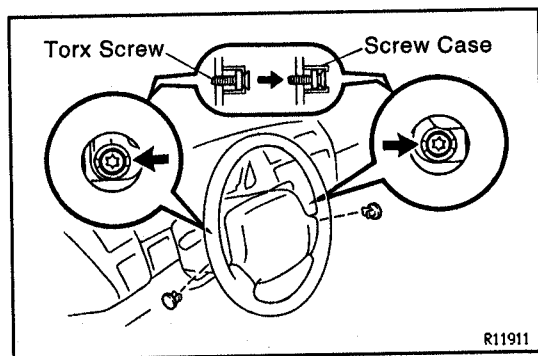
17. **CENTER SPIRAL CABLE**
 - (a) Check that the front wheels are facing straight ahead.
 - (b) Turn the cable counterclockwise by hand until it becomes harder to turn the cable.
 - (c) Then rotate the cable clockwise about 3 turns to align the red mark.
HINT: The cable will rotate about 3 turns to either left or right of the center.

18. INSTALL STEERING WHEEL

- (a) Align the matchmarks on the wheel and main shaft assembly.
- (b) Torque the wheel set nut.
Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)
- (c) Connect the connector.

19. INSTALL STEERING WHEEL PAD**NOTICE:**

- Make sure the wheel pad is installed to the specified torque.
- If the wheel pad has been dropped, or there are cracks, dents or other defects in the case or connector, replace the wheel pad with a new one.
- When installing the wheel pad, take care that the wirings do not interfere with other parts and are not pinched between other parts.



- (a) Connect the airbag connector.
- (b) Install the wheel pad after confirming that the circumference groove of the torx screw is caught on the screw case.

NOTICE:

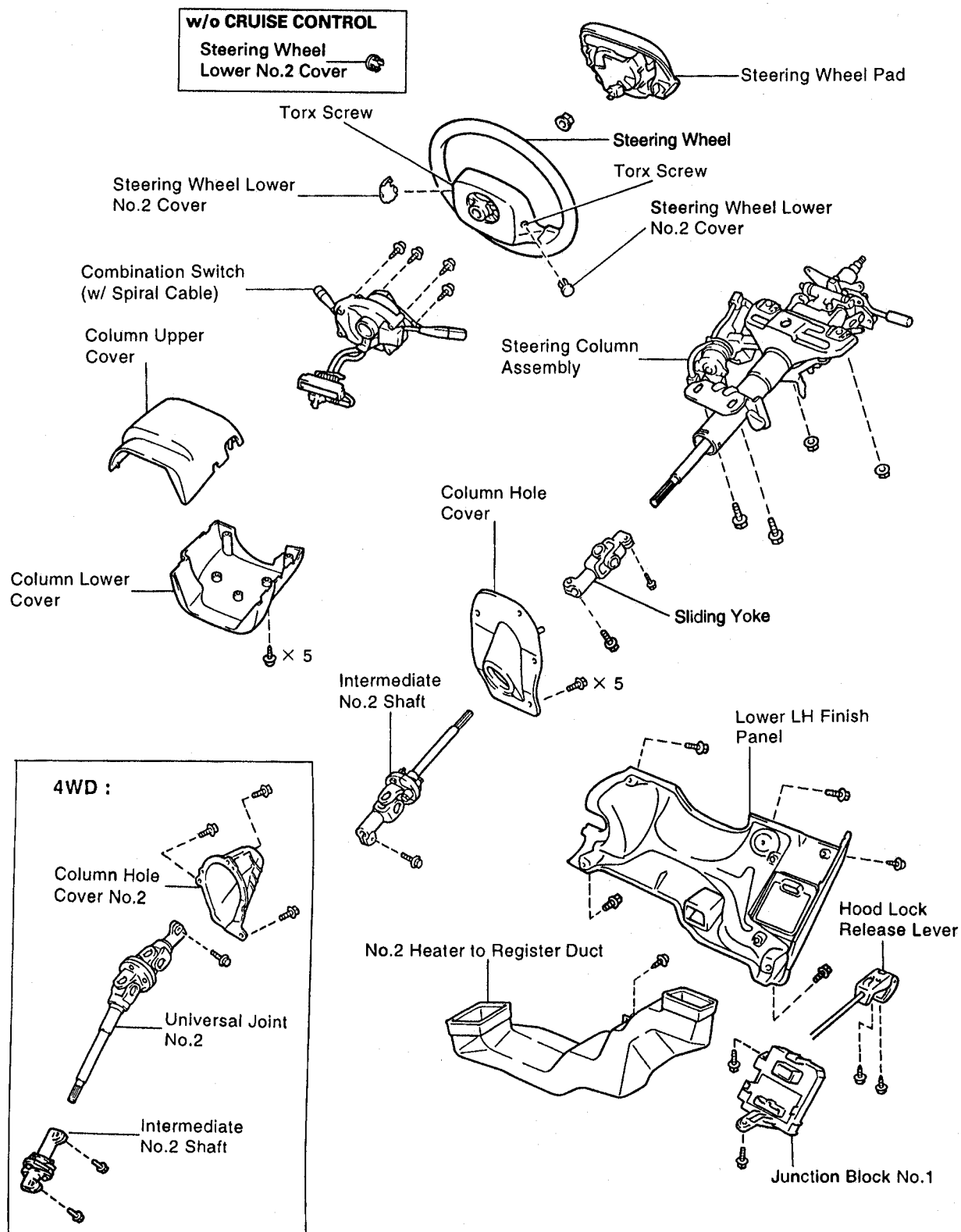
COLUMN SHIFT (2WD): Take care that the spiral cable does not touch the dynamic damper of the steering wheel.

- (c) Using a torx socket wrench, torque the 2 screws.
Torque: 9.0 N·m (90 kgf·cm, 78 in·lbf)
- (d) Install the 2 steering wheel lower No.2 covers.

20. CHECK STEERING WHEEL CENTER POINT

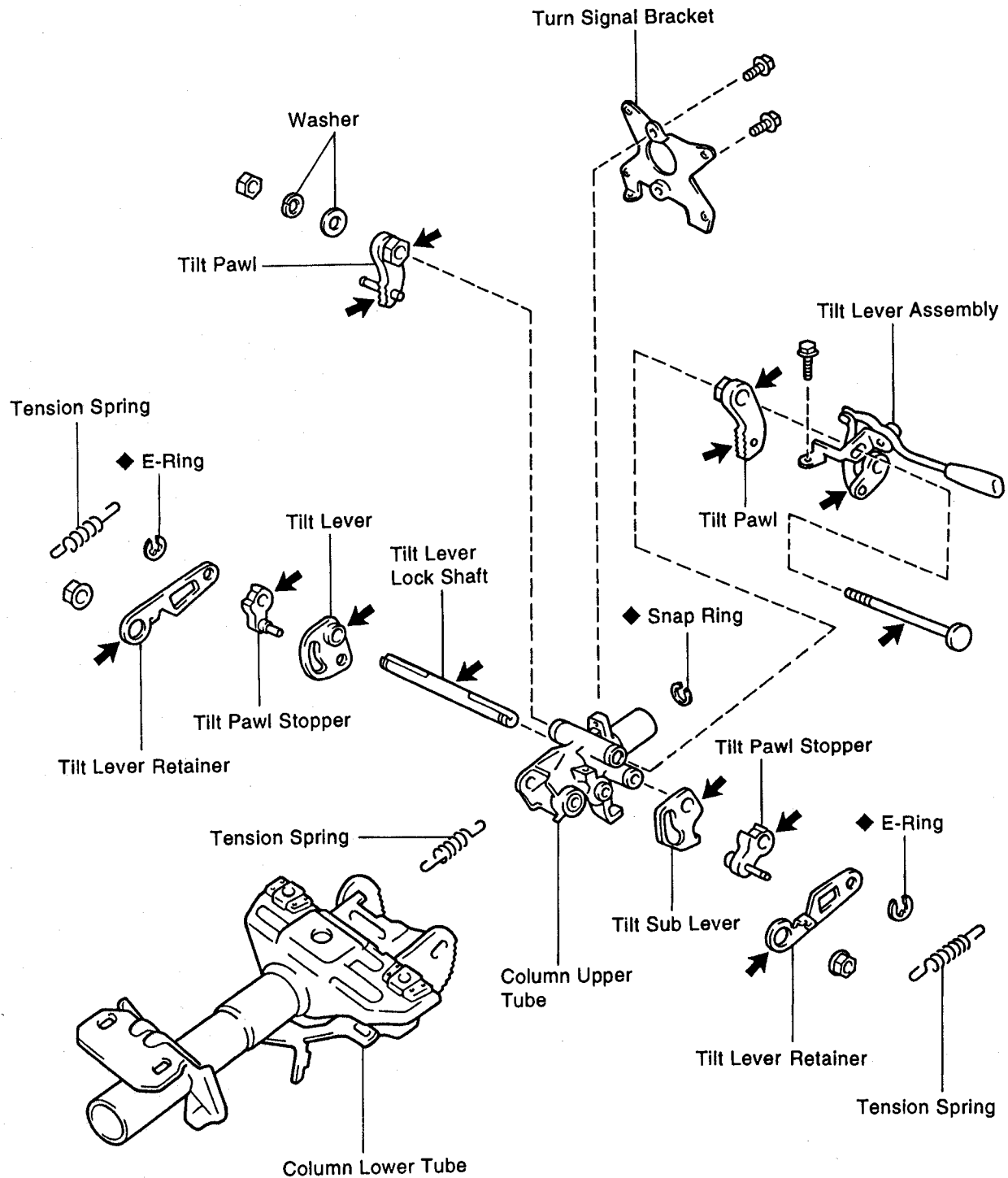
TILT STEERING COLUMN COMPONENTS

SR1DJ-02



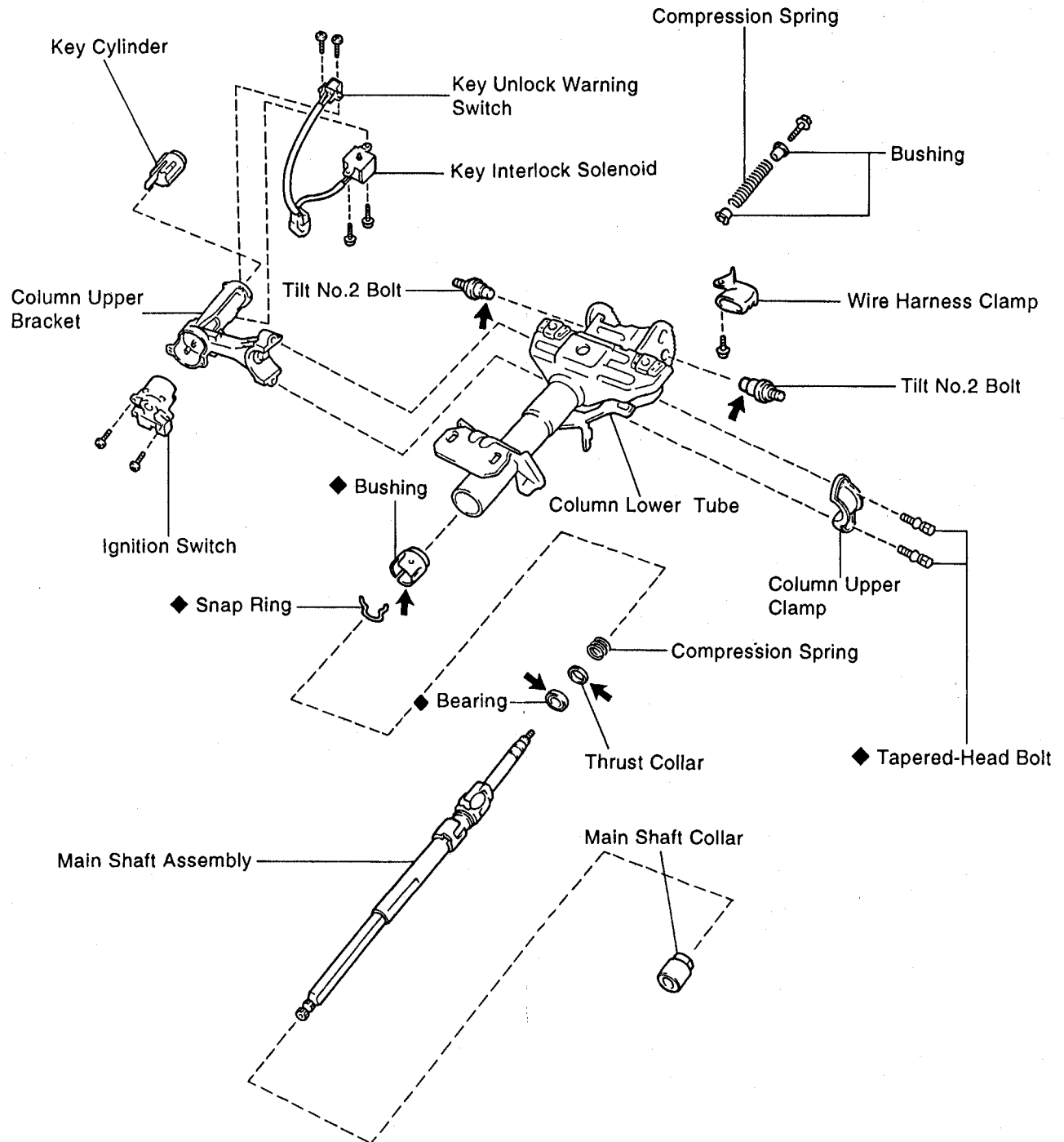
SR

COMPONENTS



SR

- ◆ Non-reusable part
- ← Molybdenum disulphide lithium base grease



◆ Non-reusable part

← Molybdenum disulphide lithium base grease

SR

TILT STEERING COLUMN REMOVAL

(See page SR-16)

TILT STEERING COLUMN DISASSEMBLY**NOTICE:** When using a vise, do not overtighten it.

1. **REMOVE WIRE HARNESS CLAMP**
Remove the screw.
2. **REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP**
(See page SR-19)
3. **REMOVE 3 TENSION SPRINGS**
4. **REMOVE TURN SIGNAL BRACKET**
Remove the 2 bolts.
5. **REMOVE COMPRESSION SPRING**
 - (a) Remove the bolt with the spring.
 - (b) Remove the 2 bushings from the spring.
6. **REMOVE 2 TILT LEVER RETAINERS**
 - (a) Remove the E-ring from the tilt lever lock shaft.
 - (b) Remove the nut and retainer.
7. **REMOVE 2 TILT PAWL STOPPERS**
8. **REMOVE 2 TILT PAWLS**
 - (a) Remove the tilt lever assembly set bolt.
 - (b) Remove the nut and bolt.
 - (c) Remove the 2 washers.
9. **REMOVE TILT SUB LEVER AND TILT LEVER**
10. **REMOVE TILT LEVER ASSEMBLY**
11. **REMOVE TILT LEVER LOCK SHAFT**
12. **REMOVE COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY**

- (a) Set SST, the nut (10 mm nominal diameter, 1.25 mm pitch), plate washer (36 mm outer diameter) and bolt (10 mm nominal diameter, 1.25 mm pitch, 50 mm length), as shown in the illustration.

SST 09910-00015 (09911-00011, 09912-00010)

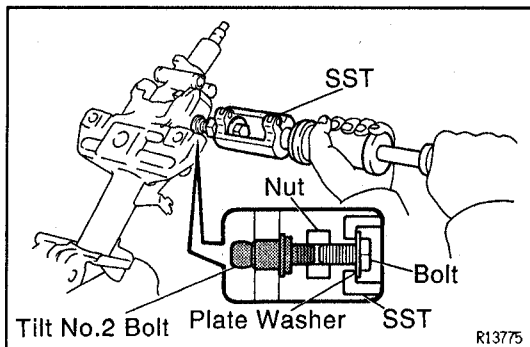
Reference

Nut: 90170-10004

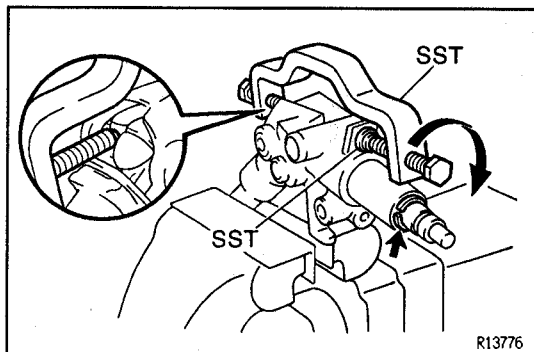
Plate washer: 90201-10201

Bolt: 91111-51050

- (b) Remove the 2 tilt No.2 bolts by using the sliding hammer on SST.
- (c) Remove the upper tube with the shaft assembly from the lower tube.
- (d) Remove the main shaft collar from the shaft assembly.



SR

**13. REMOVE MAIN SHAFT ASSEMBLY**

- (a) Using SST, compress the compression spring.
SST 09950-40010 (09957-04010, 09958-04010)
NOTICE: Do not bend the universal joint of the main shaft more than 20°.
- (b) Using snap ring pliers, remove the snap ring.
- (c) Remove the main shaft from the column upper tube.
- (d) Remove the compression spring and thrust collar.

TILT STEERING COLUMN INSPECTION AND REPLACEMENT

SR1DN-01

(See page SR-19)

TILT STEERING COLUMN ASSEMBLY

SR1MC-01

NOTICE: When using a vise, do not overtighten it.**1. COAT WITH MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE**

(See pages SR-26 and 27)

2. INSTALL MAIN SHAFT ASSEMBLY

- (a) Install the thrust collar and compression spring to the main shaft.
- (b) Install the main shaft into the column upper tube.
- (c) Using SST, compress the compression spring.
SST 09950-40010 (09957-04010, 09958-04010)
NOTICE: Do not bend the universal joint of the main shaft more than 20°.

- (d) Using snap ring pliers, install a new snap ring.

3. SELECT 2 TILT NO.2 BOLTS

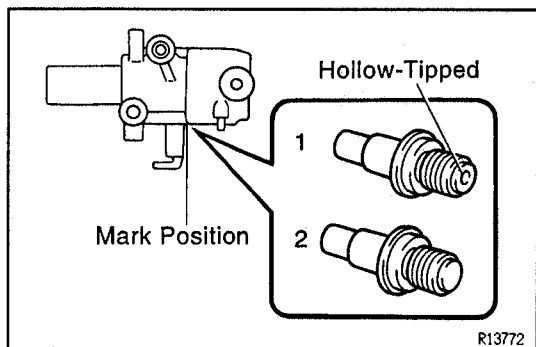
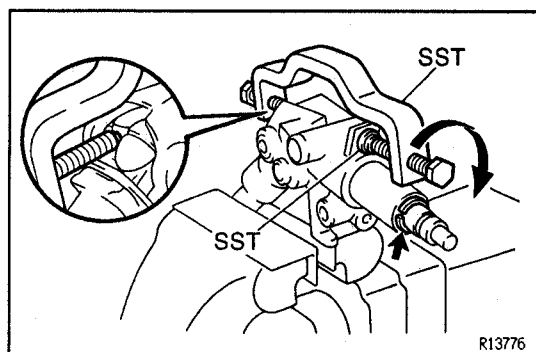
Select the bolt with the hollow-tipped thread end and when the column upper tube mark is 1, and select the bolt with the plain thread end when the mark is 2.

NOTICE: Select the bolt type to match each number marked in the squares on the upper tube.**4. INSTALL COLUMN UPPER TUBE WITH MAIN SHAFT ASSEMBLY**

- (a) Install the main shaft collar to the main shaft.
- (b) Install the upper tube with the main shaft assembly to the column lower tube.
- (c) Using a plastic hammer, drive in the 2 tilt No.2 bolts.
- (d) Check that the upper tube turns smoothly.

5. INSTALL TILT LEVER LOCK SHAFT**6. INSTALL TILT LEVER ASSEMBLY**

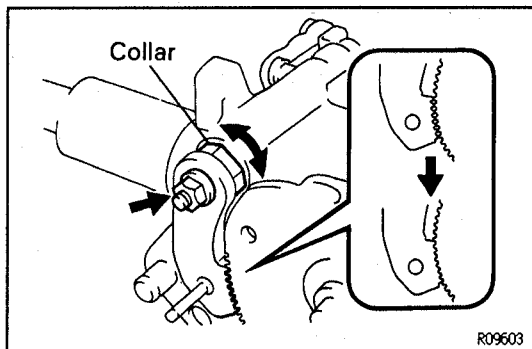
Temporarily tighten the bolt.

7. INSTALL TILT SUB LEVER AND TILT LEVER

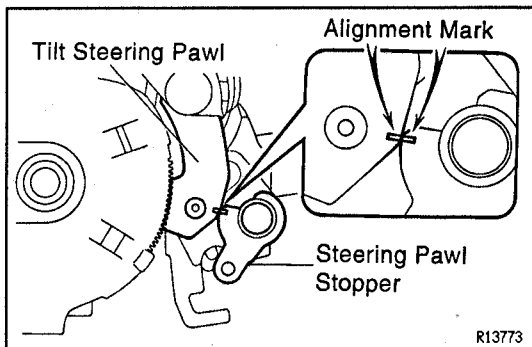
SR

8. INSTALL 2 TILT PAWLS

- (a) Install the pawl to the column upper tube and temporarily install the 2 washers with the bolt and nut.
HINT: Install the pawl pin into the long hole of the tilt lever/ tilt sub lever.
- (b) Torque the tilt lever assembly set bolt.
Torque: 2 N·m (20 kgf·cm, 17 in.-lbf)

**9. ENGAGE AND ADJUST 2 TILT PAWLS**

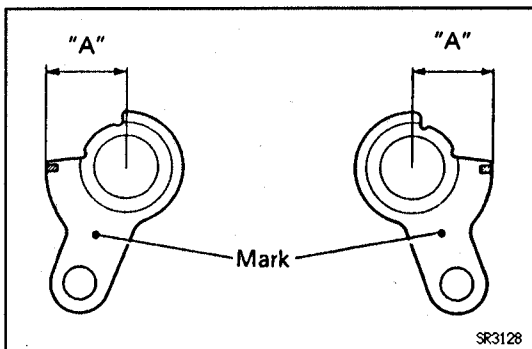
- (a) Engage the tilt sub lever side pawl to the center of the ratchet.
- (b) While turning the tilt lever side collar, engage the tilt lever side pawl to the ratchet completely.
- (c) Torque the nut.
Torque: 6 N·m (61 kgf·cm, 53 in.-lbf)
- (d) Check that the pawls rotate smoothly.

**10. SELECT 2 TILT PAWL STOPPERS**

- (a) With the tilt pawl and ratchet engaged, install the pawl stopper.
- (b) Check that the alignment marks on the stopper and pawl align when the stopper is lightly rotated to the pawl side.
- (c) If the alignment marks do not align, select pawl stopper according to the following table.

Tilt lever side	Tilt sub lever side	Dimension "A" mm (in.)
11	A	12.65–12.75 (0.4980–0.5020)
12	B	12.55–12.65 (0.4941–0.4980)
13	C	12.45–12.55 (0.4902–0.4941)
14	D	12.35–12.45 (0.4862–0.4902)
15	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.



11. INSTALL 2 TILT PAWL STOPPERS**12. INSTALL 2 TILT LEVER RETAINERS**

- (a) Install the tilt lever retainer and torque the nut.
Torque: 15 N·m (153 kgf·cm, 11 ft·lbf)

- (b) Install a new E—ring.

13. INSTALL COMPRESSION SPRING

- (a) Install the 2 bushings to the compression spring.

- (b) Install the spring with the bolt.
Torque: 8 N·m (82 kgf·cm, 71 in·lbf)

14. INSTALL TURN SIGNAL BRACKET

Torque the 2 bolts.

Torque: 5.7 N·m (58 kgf·cm, 51 in·lbf)

15. INSTALL 3 TENSION SPRINGS**16. INSTALL COLUMN UPPER BRACKET AND
COLUMN UPPER CLAMP**

(See page SR—21)

17. INSTALL WIRE HARNESS CLAMP

Tighten the screw.

18. CHECK TILT STEERING OPERATION

- (a) Check that there is no axial play at the end of the main shaft.
- (b) With the main shaft in the neutral position, pull the tilt lever and check that the main shaft rises to the uppermost position.
- (c) Lower the main shaft, and check that it locks in the lowermost position.

TILT STEERING COLUMN INSTALLATION

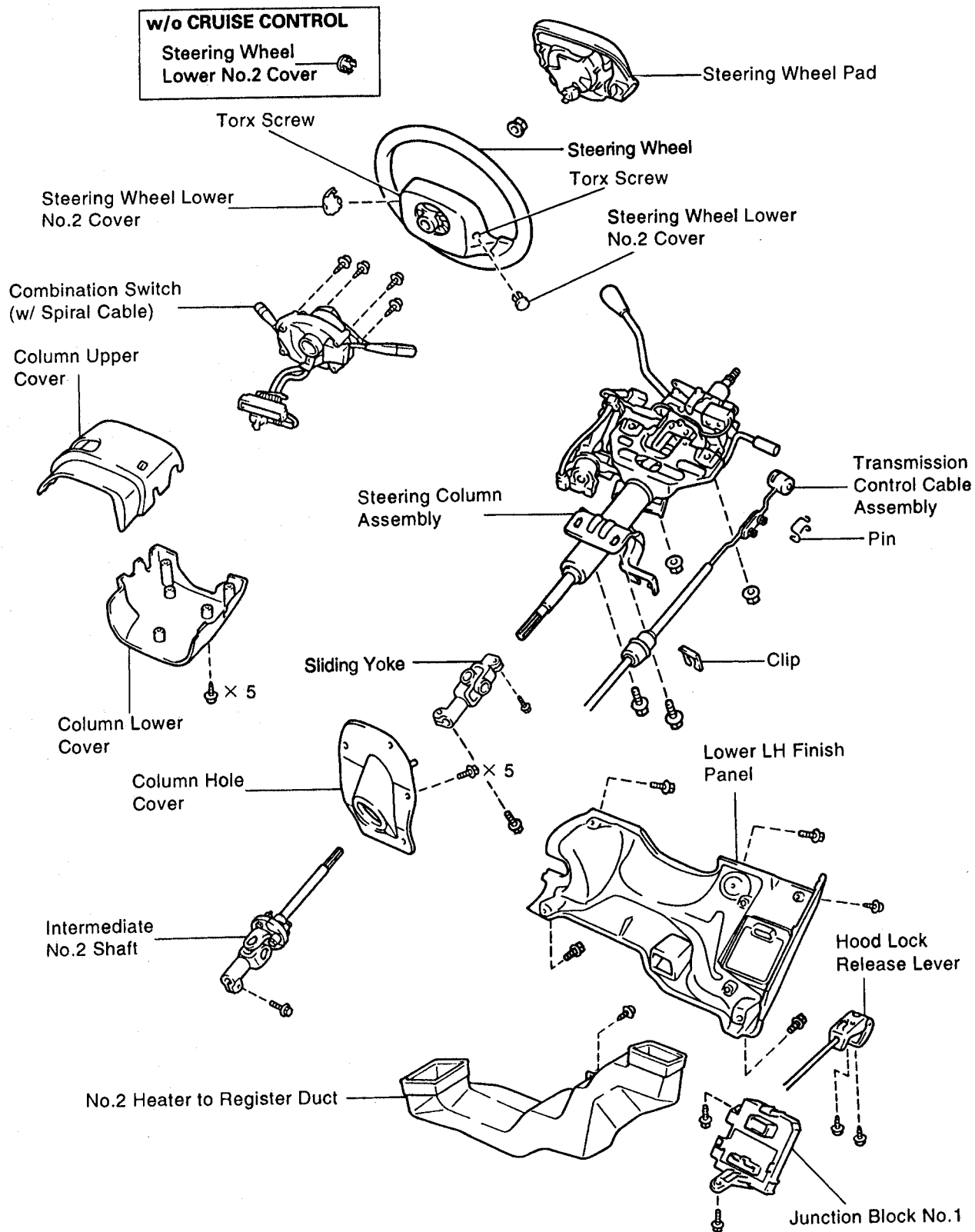
(See page SR—22)

SR100-01

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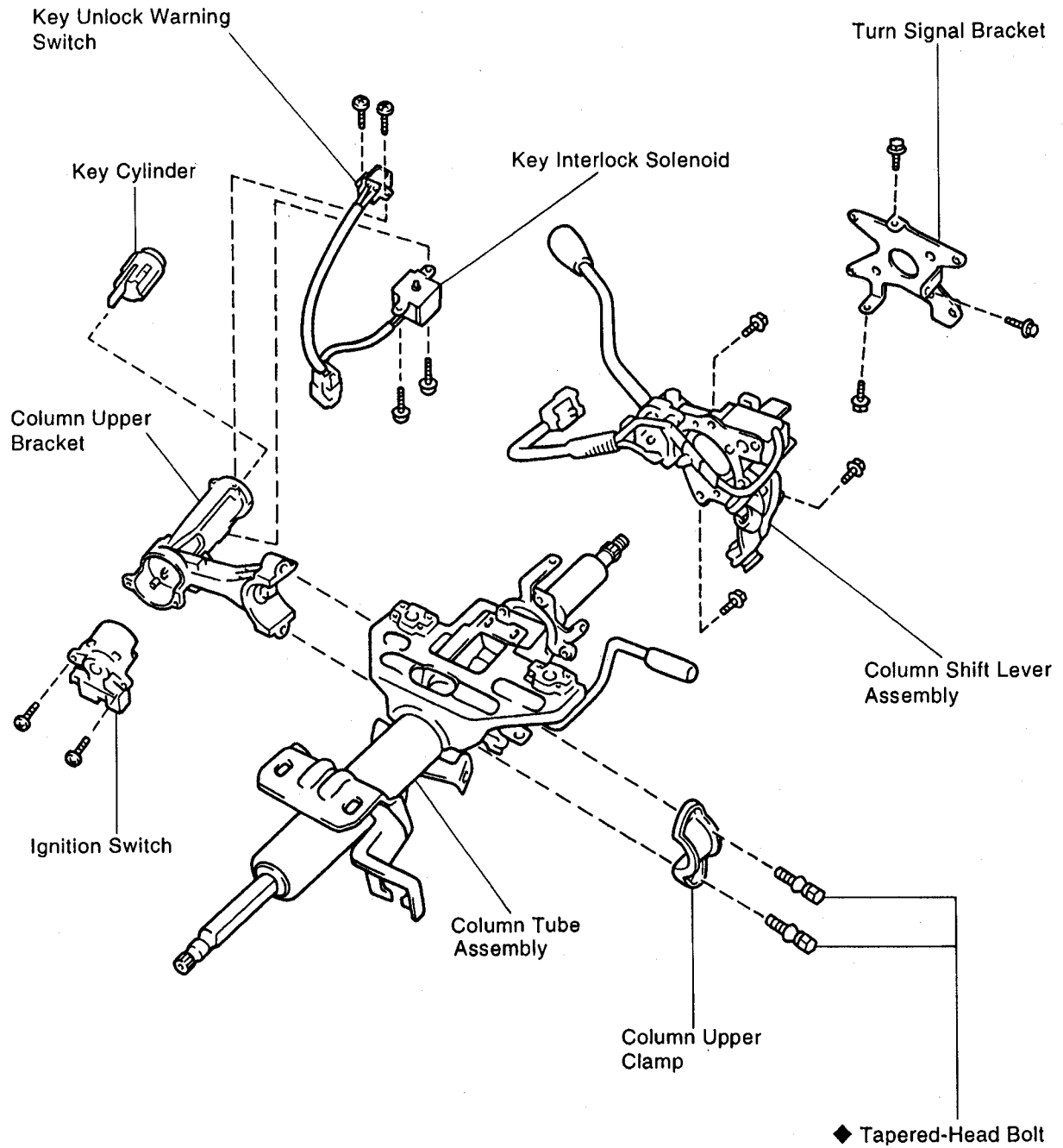
TILT STEERING COLUMN (NASTECH) COMPONENTS

SR1DR-02



W00475

COMPONENTS



SR

TILT STEERING COLUMN REMOVAL

SR1DT-01

(See page SR-16)

TILT STEERING COLUMN DISASSEMBLY

SR1DU-02

NOTICE:

- Do not disassemble the column tube assembly.
- When using a vise, do not overtighten it.

1. **REMOVE COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP**
(See page SR-19)
2. **REMOVE TURN SIGNAL BRACKET**
Remove the 3 bolts.
3. **REMOVE COLUMN SHIFT LEVER ASSEMBLY**
Remove the 3 bolts.

TILT STEERING COLUMN INSPECTION AND REPLACEMENT

SR1DV-01

(See page SR-19)

TILT STEERING COLUMN ASSEMBLY

SR1DW-02

NOTICE: When using a vise, do not overtighten it.

1. **INSTALL COLUMN SHIFT LEVER ASSEMBLY**
Torque the 3 bolts.
Torque: 9.3 N·m (95 kgf·cm, 83 in.·lbf)
2. **INSTALL TURN SIGNAL BRACKET**
Torque the 3 bolts.
Torque: 3.4 N·m (35 kgf·cm, 31 in.·lbf)
3. **INSTALL COLUMN UPPER BRACKET AND COLUMN UPPER CLAMP**
(See page SR-21)

TILT STEERING COLUMN INSTALLATION

SR1DX-01

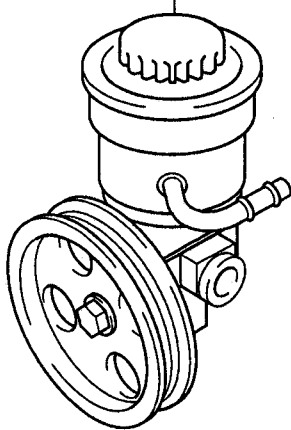
(See page SR-22)

POWER STEERING VANE PUMP (2RZ—FE, 3RZ—FE) COMPONENTS

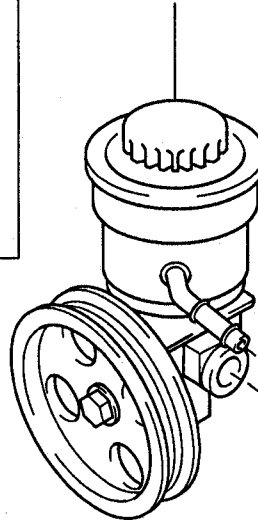
SR19E-02

3RZ-FE Engine:

PS Vane Pump Assembly



PS Vane Pump Assembly

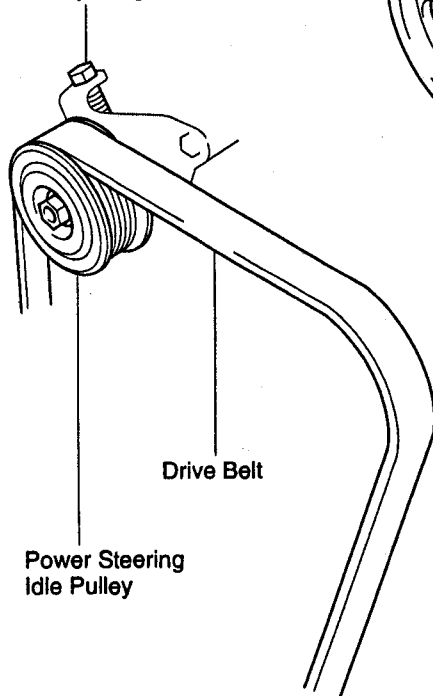


Vacuum Hose

Air Control Valve

Return Hose

Belt Adjusting Bolt



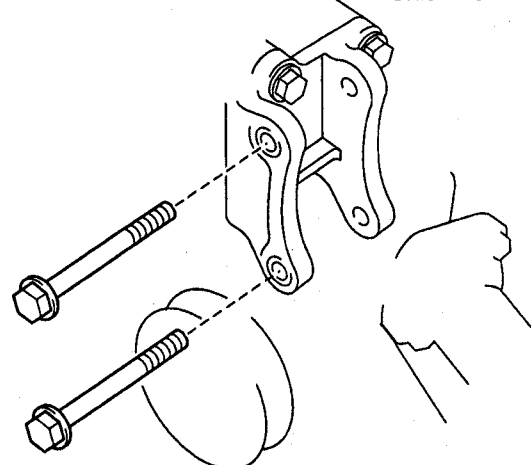
Drive Belt

Power Steering
Idle Pulley

◆ Gasket

Pressure Feed Tube

Union Bolt



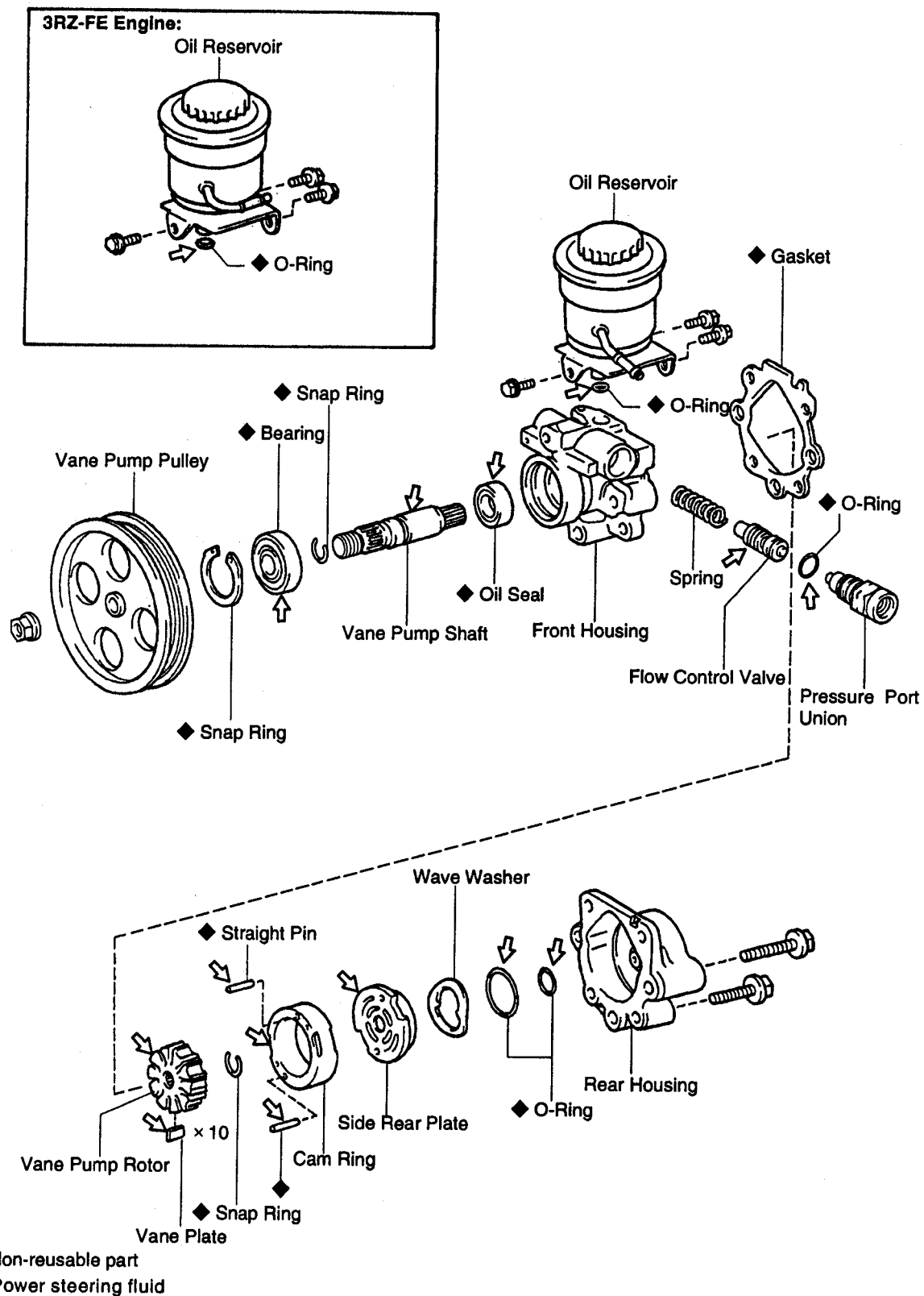
◆ Non-reusable part

Y

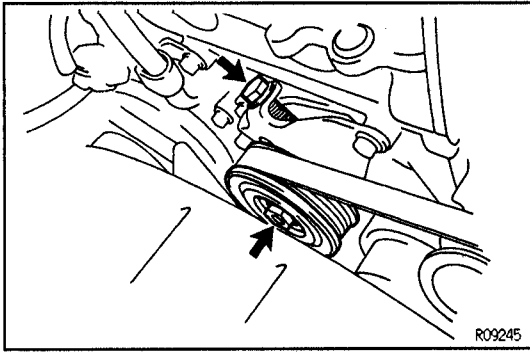
R13488

SR

COMPONENTS



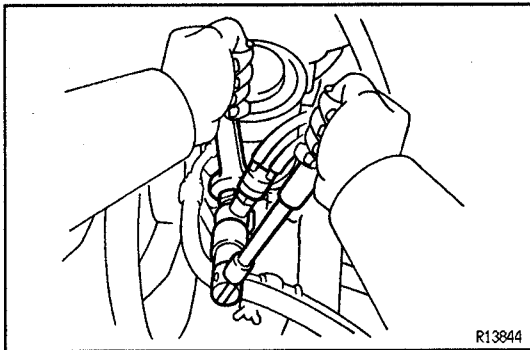
SR



POWER STEERING VANE PUMP REMOVAL

1. REMOVE DRIVE BELT

- Loosen the power steering idle pulley set bolt.
- Loosen the belt adjusting bolt.



2. DISCONNECT PRESSURE FEED TUBE

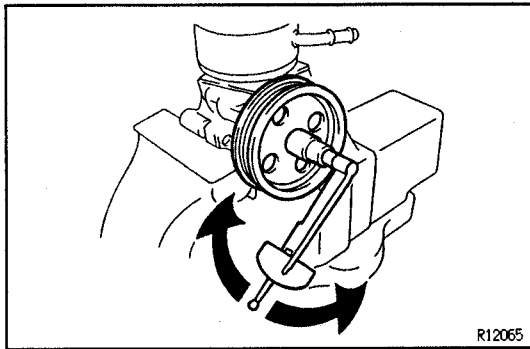
Using a spanner (24 mm) to hold the pressure port union, remove the union bolt and 2 gaskets.

3. DISCONNECT RETURN HOSE

NOTICE: Take care not to spill fluid on the drive belt.

4. REMOVE PS VANE PUMP ASSEMBLY

Remove the 2 pump assembly set bolts.



POWER STEERING VANE PUMP DISASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. MEASURE PS VANE PUMP ROTATING TORQUE

- Check that the pump rotates smoothly without abnormal noise.
- Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.25 N·m (2.5 kgf·cm, 2.2 in.-lbf) or less

2. REMOVE VANE PUMP PULLEY

Using SST to stop the pulley rotating, remove the pulley set nut.

SST 09960-10010 (09962-01000, 09963-01000)

3. REMOVE OIL RESERVOIR

- Remove the 3 bolts and oil reservoir.
- Remove the O-ring from the oil reservoir.

4. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

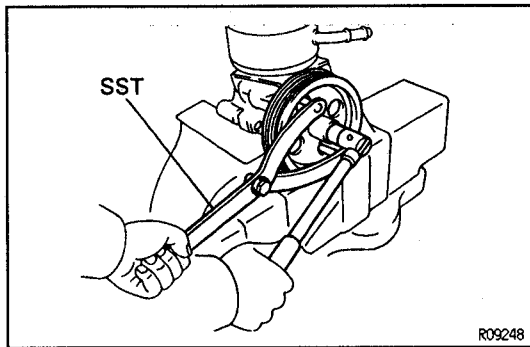
Remove the O-ring from the union.

5. REMOVE REAR HOUSING

- Remove the 2 bolts and rear housing.
- Remove the 2 O-rings from the housing.

6. REMOVE WAVE WASHER

7. REMOVE SIDE REAR PLATE



8. REMOVE CAM RING, VANE PLATES AND VANE PUMP ROTOR

- (a) Remove the 10 plates.

NOTICE: Take care not to drop the plate.

- (b) Using a screwdriver, remove the snap ring from the vane pump shaft.

9. REMOVE STRAIGHT PINS

Remove the 2 pins from the front housing.

10. REMOVE GASKET

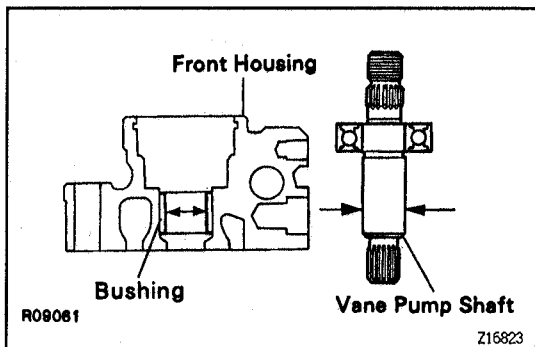
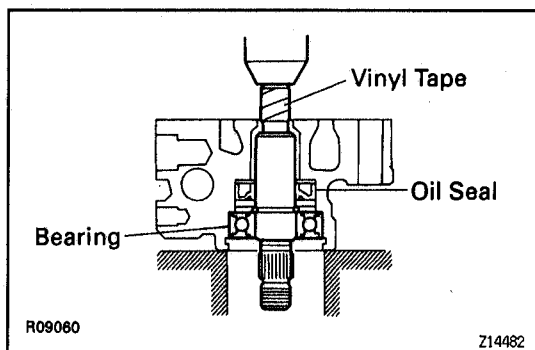
11. REMOVE VANE PUMP SHAFT WITH BEARING

- (a) Using snap ring pliers, remove the snap ring from the front housing.

- (b) Wind vinyl tape on the serrated part of the vane pump shaft.

- (c) Using a press, press out the shaft with the bearing.

NOTICE: Be careful not to damage the oil seal lip.



POWER STEERING VANE PUMP INSPECTION AND REPLACEMENT

SR1CK-02

NOTICE: When using a vise, do not overtighten it.

1. CHECK OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

Using a micrometer and caliper gauge, measure the oil clearance.

	Clearance	mm (in.)
Standard	0.03—0.05 (0.0012—0.0020)	
Maximum	0.07 (0.0028)	

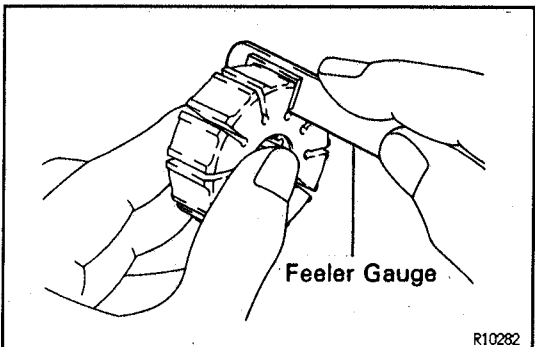
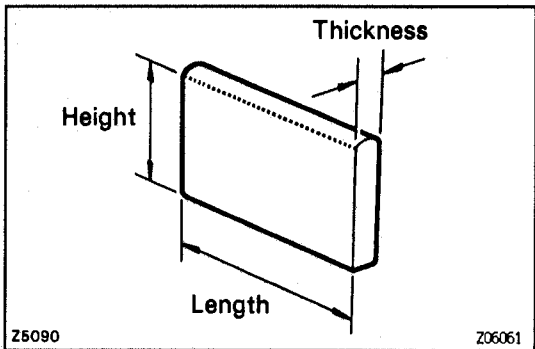
2. INSPECT VANE PUMP ROTOR AND VANE PLATES

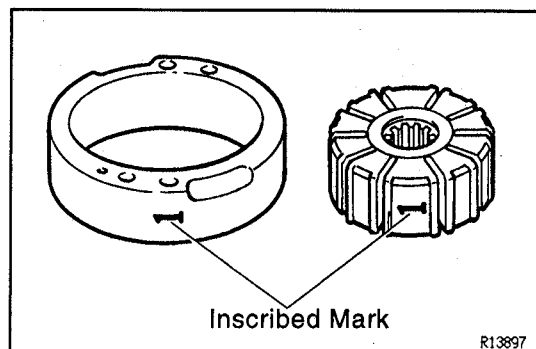
Using a micrometer, measure the height, thickness and length of the 10 plates.

	Minimum	mm (in.)
Height	8.6 (0.339)	
Thickness	1.397 (0.05500)	
Length	14.991 (0.59020)	

- (b) Using a feeler gauge, measure the clearance between the rotor groove and plate.

	Oil clearance	mm (in.)
Maximum	0.035 (0.00138)	





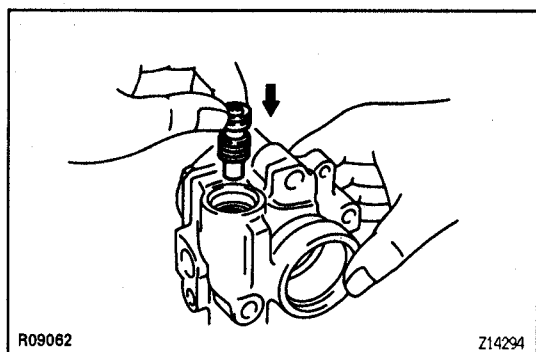
If it is more than the maximum, replace the plate and/or rotor with one having the same mark stamped on the cam ring.

Inscribed mark:

1, 2, 3, 4 or None

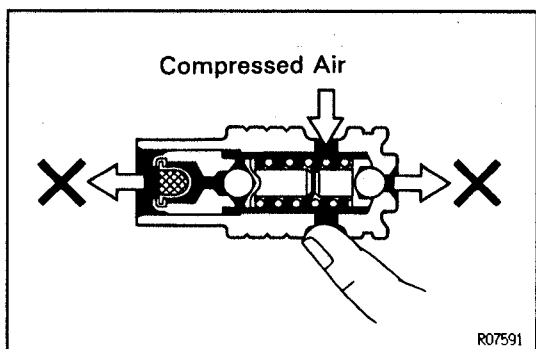
HINT: There are 5 vane plate lengths with the following rotor and cam ring marks:

Rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345-26010	14.999-15.001 (0.59051-0.59059)
1	44345-26020	14.997-14.999 (0.59043-0.59051)
2	44345-26030	14.995-14.997 (0.59035-0.59043)
3	44345-26040	14.993-14.995 (0.59027-0.59035)
4	44345-26050	14.991-14.993 (0.59020-0.59027)

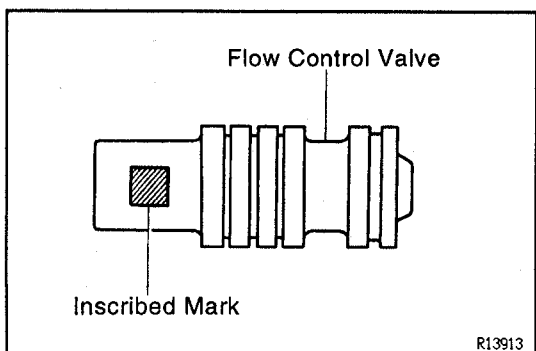


3. INSPECT FLOW CONTROL VALVE

- (a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.



- (b) Check the flow control valve for leakage. Close one of the holes and apply compressed air 392-490 kPa (4-5 kgf/cm², 57-71 psi) into the opposite side, and confirm that air does not come out from the end hole.

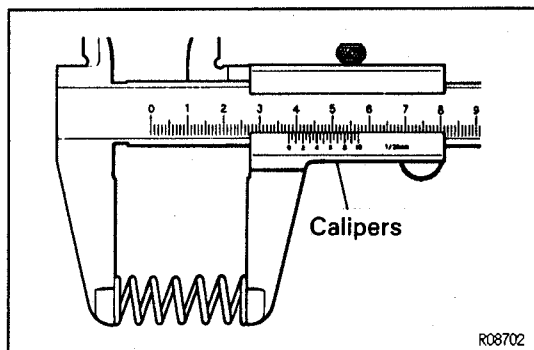


If necessary, replace the valve.

NOTICE: Install a new valve with the same inscribed mark as the old one.

Inscribed mark:

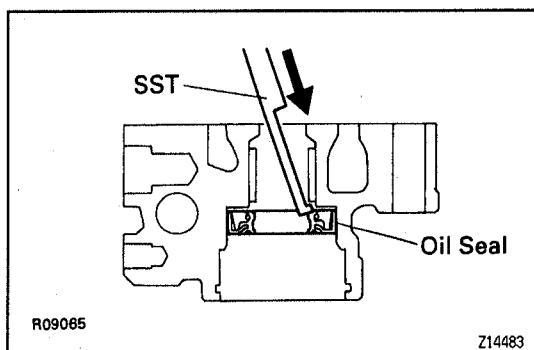
A, B, C, D, E or F

**4. INSPECT SPRING**

Using calipers, measure the free length of the spring.

	Free length	mm (in.)
Minimum	33.2	(1.307)

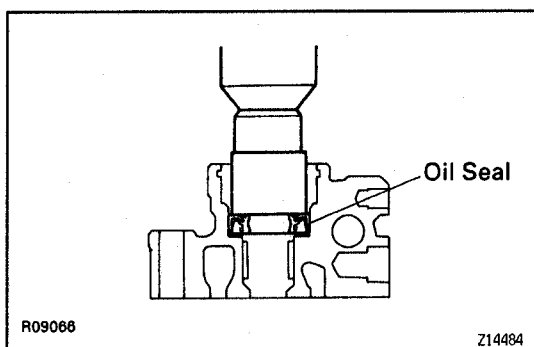
If it is not within specification, replace the spring.

**5. IF NECESSARY, REPLACE OIL SEAL**

- (a) Using SST, tap out the oil seal from the front housing.

SST 09631-10030

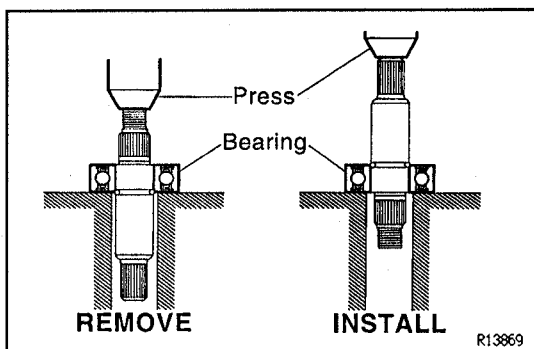
NOTICE: Be careful not to damage the bushing of the front housing.



- (b) Coat a new oil seal lip with power steering fluid.

- (c) Using a socket wrench (24 mm), press in the oil seal.

NOTICE: Make sure you install the oil seal facing the correct direction.

**6. IF NECESSARY, REPLACE BEARING**

- (a) Press out the bearing from the vane pump shaft.

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

NOTICE: Be careful not to damage the shaft.

- (c) Using snap ring pliers, install a new snap ring to the shaft.

NOTICE: Be careful not to damage the shaft.

- (d) Coat a new bearing with power steering fluid.

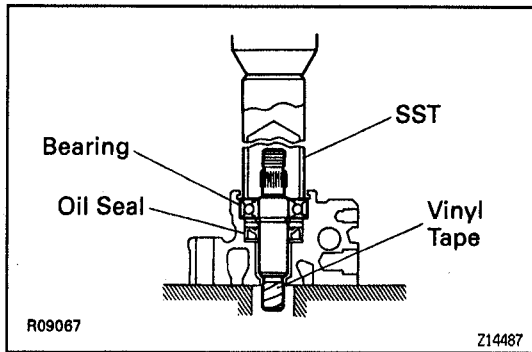
- (e) Press in the bearing to the shaft.

POWER STEERING VANE PUMP ASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. COAT WITH POWER STEERING FLUID

(See page SR-36)

**2. INSTALL VANE PUMP SHAFT WITH BEARING**

- (a) Wind vinyl tape on the serrated part of the vane pump shaft.
- (b) Using SST, press in the shaft with the bearing.
SST 09608—04031

NOTICE: Be careful not to damage the oil seal.

- (c) Using snap ring pliers, install a new snap ring to the front housing.

3. INSTALL STRAIGHT PINS

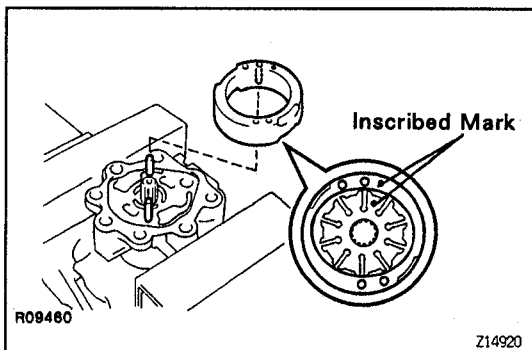
Using a plastic hammer, tap in 2 new pins to the front housing.

NOTICE: Be careful not to damage the pins.

4. INSTALL CAM RING

Install the ring with the inscribed mark facing outward.

HINT: Align the holes of the cam ring with the straight pins.

**5. INSTALL VANE PUMP ROTOR**

- (a) Install the rotor with the inscribed mark facing outward.

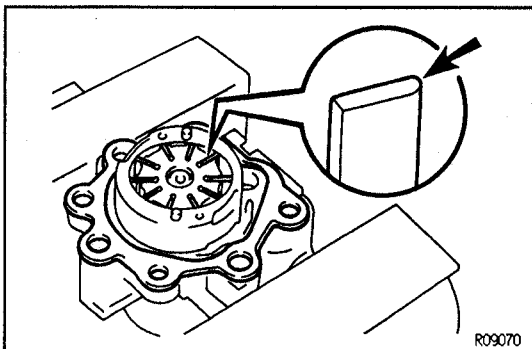
- (b) Install a new snap ring to the vane pump shaft.

6. INSTALL VANE PLATES AND GASKET

- (a) Install the 10 plates with the round end facing outward.

- (b) Install a new gasket on the front housing.

NOTICE: Be careful the direction of the gasket.

**7. INSTALL SIDE REAR PLATE**

Align the holes of the side rear plate and straight pins, and install the rear plate.

8. INSTALL WAVE WASHER

Install the wave washer so that its protrusions fit into the slots in the side rear plate.

9. INSTALL REAR HOUSING

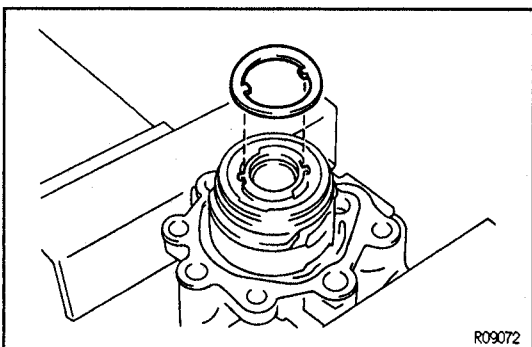
- (a) Coat 2 new O—rings with power steering fluid.
- (b) Install the 2 O—rings to the housing.
- (c) Torque the 2 bolts.

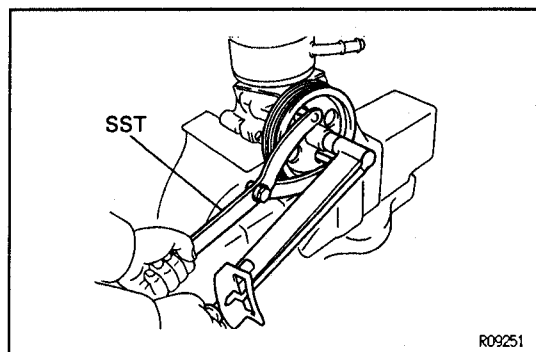
Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)

10. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

- (a) Install the valve facing the correct direction.
(See page SR—36)
- (b) Coat a new O—ring with power steering fluid.
- (c) Install the O—ring to the union.
- (d) Torque the union.

Torque: 83 N·m (850 kgf·cm, 61 ft·lbf)



**11. INSTALL OIL RESERVOIR**

- (a) Coat a new O—ring with power steering fluid and install it to the oil reservoir.
- (b) Install the oil reservoir with the 3 bolts.

Torque:

Front side bolt: 13 N·m (130 kgf·cm, 9 ft·lbf)

Rear side bolts: 24 N·m (240 kgf·cm, 17 ft·lbf)

12. INSTALL VANE PUMP PULLEY

Using SST to stop the pulley rotating, torque the nut.
SST 09960—10010 (09962—01000, 09963—01000)

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

13. MEASURE PS VANE PUMP ROTATING TORQUE

(See page SR—37)

POWER STEERING VANE PUMP INSTALLATION

SR19L—04

1. INSTALL PS VANE PUMP ASSEMBLY

Torque the 2 pump assembly set bolts.

Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

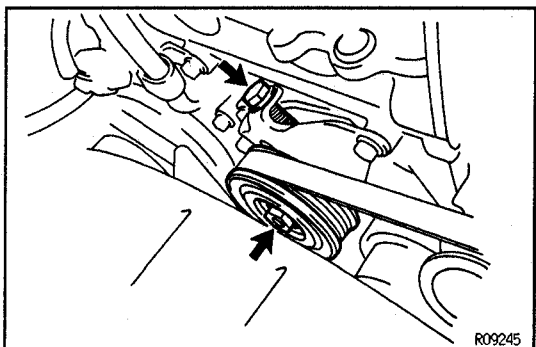
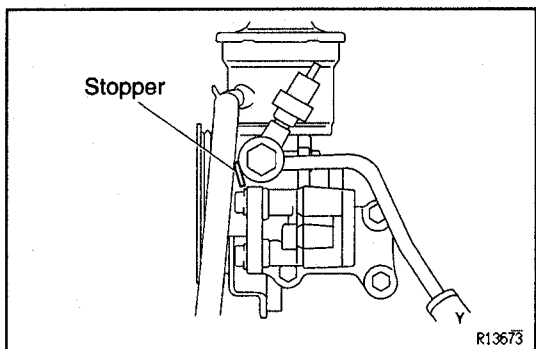
2. CONNECT RETURN HOSE**3. CONNECT PRESSURE FEED TUBE**

Torque the union bolt with a new gasket on each side of the tube.

Torque: 47 N·m (475 kgf·cm, 34 ft·lbf)

HINT: Make sure the stopper of the tube is touching the PS pump body as shown, then torque the union bolt.

SR

**4. INSTALL DRIVE BELT**

- (a) Tightening the belt adjusting bolt and adjust drive belt tension.

(See page SR—7)

- (b) Torque the power steering idle pulley set nut.

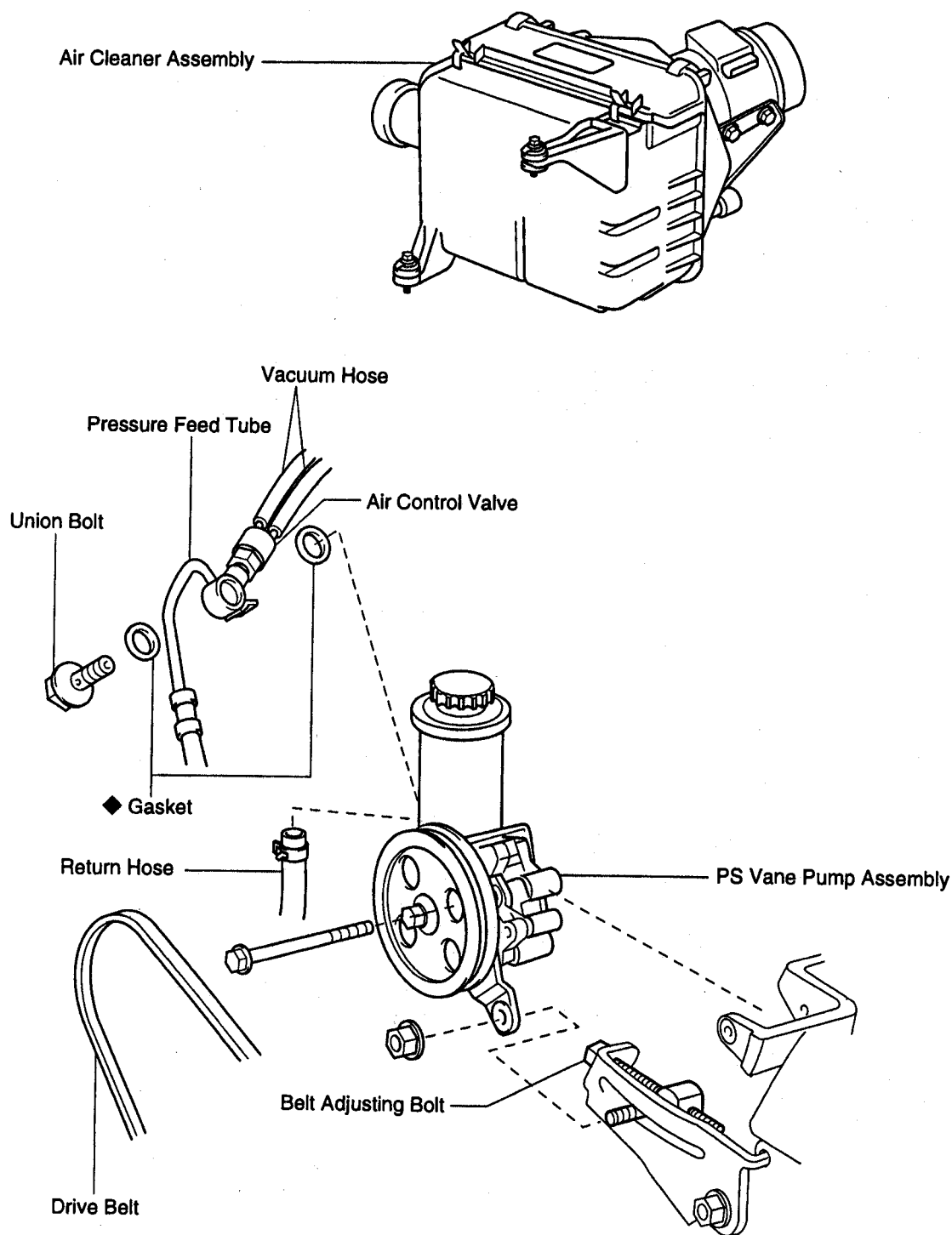
Torque: 39 N·m (400 kgf·cm, 29 ft·lbf)

5. BLEED POWER STEERING SYSTEM

(See page SR—9)

POWER STEERING VANE PUMP (5VZ—FE) COMPONENTS

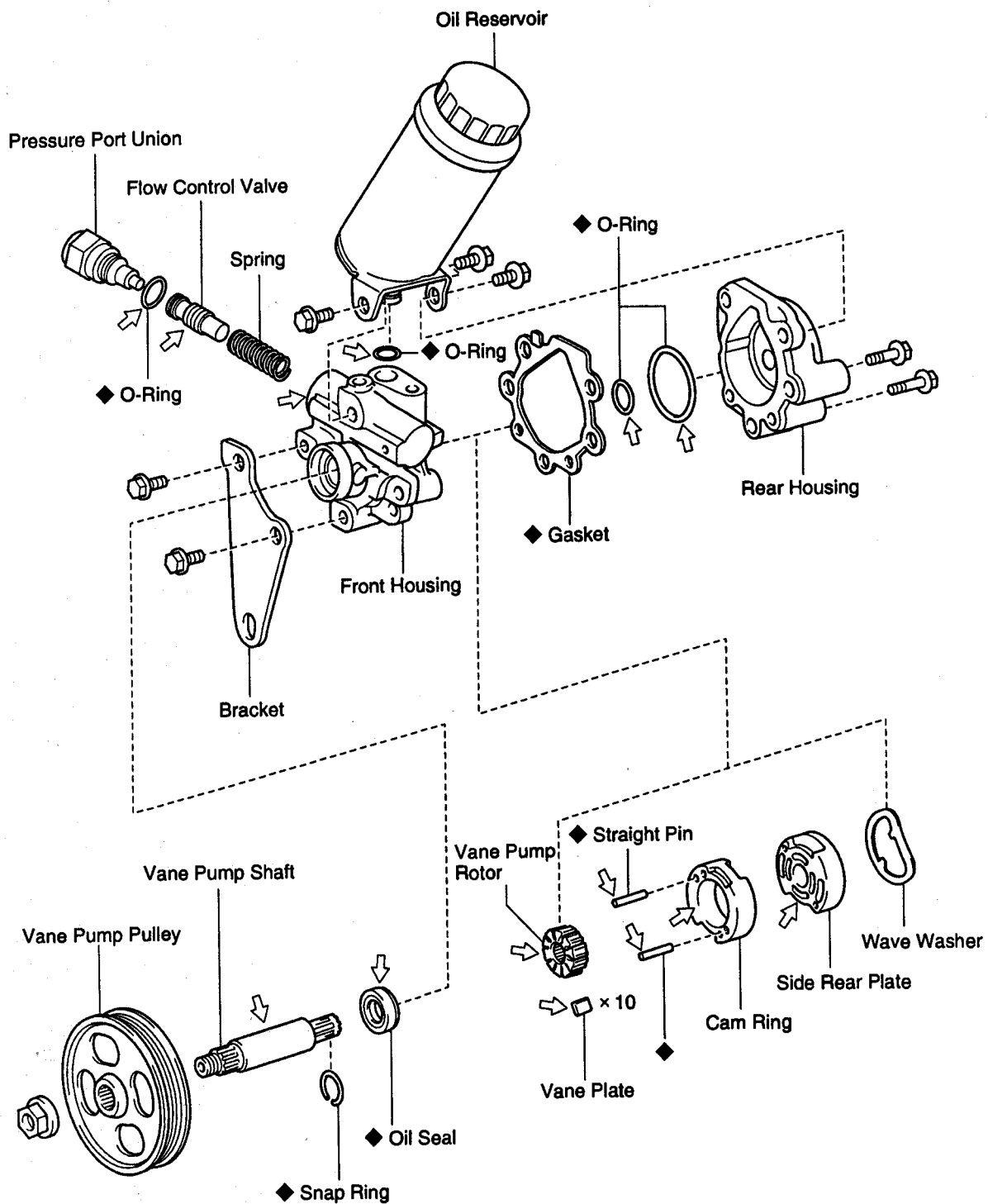
SR197-03



◆ Non-reusable part

SR

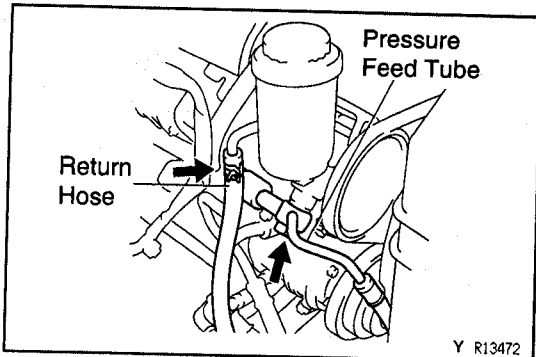
COMPONENTS



◆ Non-reusable part
 ⇐ Power steering fluid

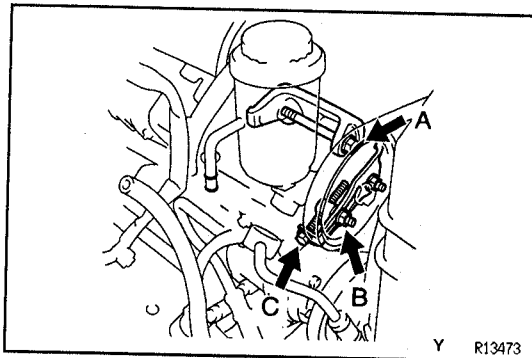
Y

R13871

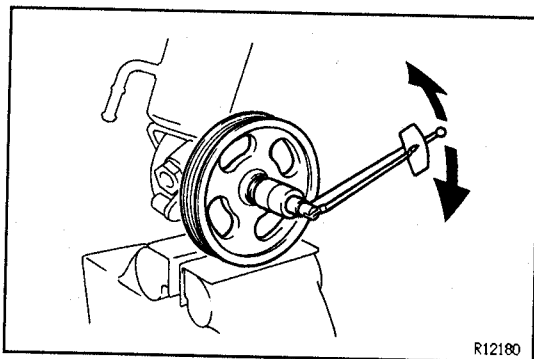


POWER STEERING VANE PUMP REMOVAL SR100-02

1. **REMOVE AIR CLEANER ASSEMBLY**
Loosen the 3 bolts.
2. **DISCONNECT RETURN HOSE**
NOTICE: Take care not to spill fluid on the drive belt.
3. **DISCONNECT PRESSURE FEED TUBE**
Remove the union bolt and 2 gaskets, and disconnect the tube from the PS vane pump assembly.



4. **REMOVE DRIVE BELT**
 - (a) Loosen the bolt A and nut B.
 - (b) Loosen the bolt C.
5. **REMOVE PS VANE PUMP ASSEMBLY**
Remove the bolt A and nut B.



POWER STEERING VANE PUMP DISASSEMBLY SR19A-04

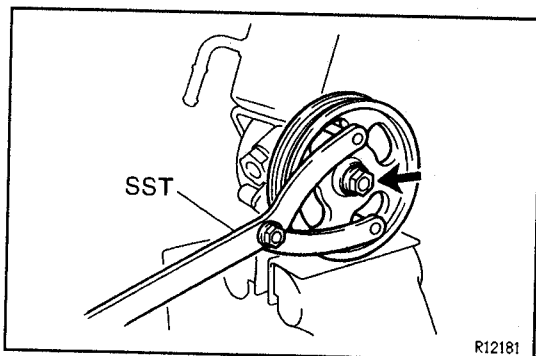
NOTICE: When using a vise, do not overtighten it.

1. **MEASURE PS VANE PUMP ROTATING TORQUE**
 - (a) Check that the pump rotates smoothly without abnormal noise.
 - (b) Using a torque wrench, check the pump rotating torque.

Rotating torque:

0.27 N·m (2.8 kgf·cm, 2.4 in.-lbf) or less

2. **REMOVE VANE PUMP PULLEY**
Using SST to stop the pulley rotating, remove the pulley set nut.
SST 09960-10010 (09962-01000, 09963-01000)
3. **REMOVE OIL RESERVOIR**
 - (a) Remove the 3 bolts and oil reservoir.
 - (b) Remove the O-ring from the oil reservoir.
4. **REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING**
Remove the O-ring from the union.
5. **REMOVE BRACKET**
Remove the 2 bolts.
6. **REMOVE REAR HOUSING**
 - (a) Remove the 2 bolts.
 - (b) Remove the 2 O-rings from the housing.
7. **REMOVE WAVE WASHER**
8. **REMOVE SIDE REAR PLATE**



9. REMOVE GASKET

10. REMOVE CAM RING, VANE PLATES AND VANE PUMP ROTOR

- (a) Remove the 10 plates.
NOTICE: Take care not to drop the plate.
- (b) Using a screwdriver, remove the snap ring from the vane pump shaft.

11. REMOVE VANE PUMP SHAFT

12. REMOVE STRAIGHT PINS

Remove the 2 pins from the front housing.

SR109-04

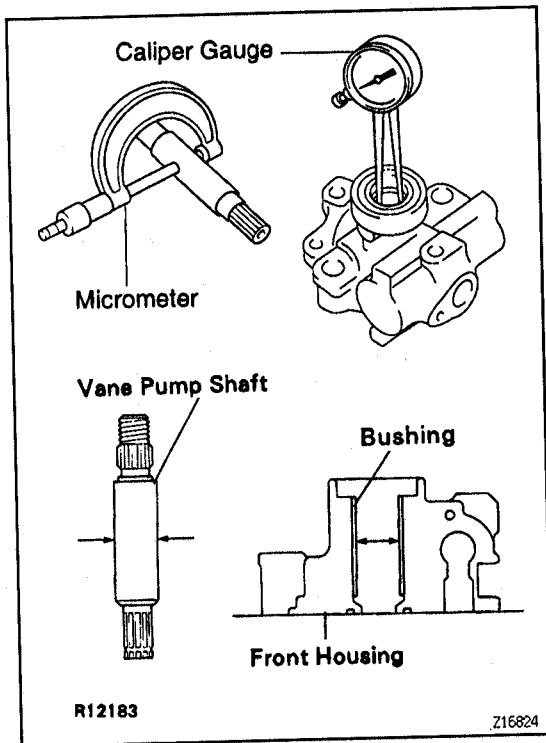
POWER STEERING VANE PUMP INSPECTION AND REPLACEMENT

NOTICE: When using a vise, do not overtighten it.

1. CHECK OIL CLEARANCE BETWEEN VANE PUMP SHAFT AND BUSHING

Using a micrometer and caliper gauge, measure the oil clearance.

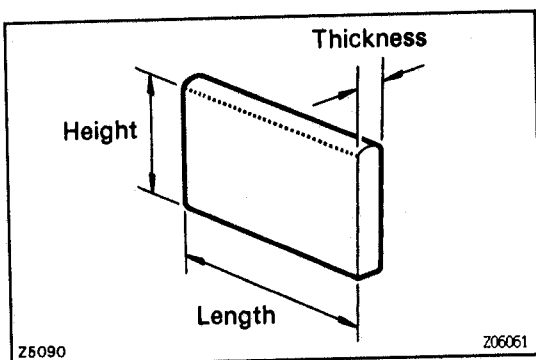
	Oil clearance	mm (in.)
Standard	0.03 — 0.05 (0.0012 — 0.0020)	
Maximum	0.07 (0.0028)	



2. INSPECT VANE PUMP ROTOR AND VANE PLATES

- (a) Using a micrometer, measure the height, thickness and length of the 10 plates.

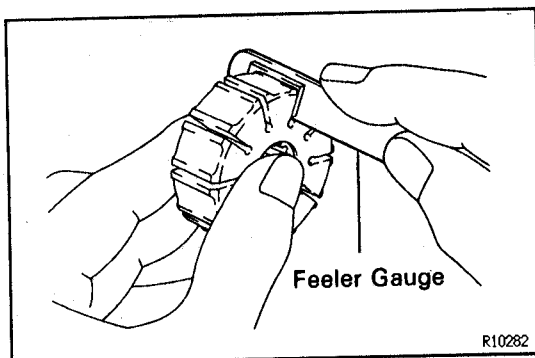
	Minimum	mm (in.)
Height	8.6 (0.339)	
Thickness	1.397 (0.05500)	
Length	14.991 (0.59020)	

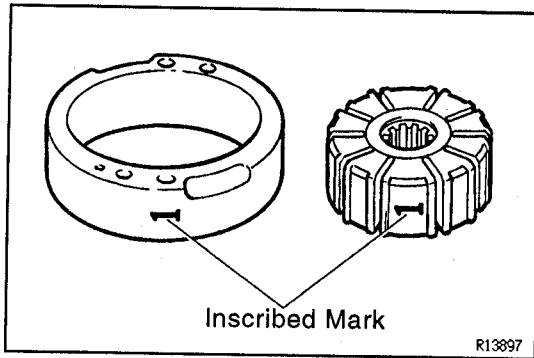


- (b) Using a feeler gauge, measure the clearance between the rotor groove and plate.

	Clearance	mm (in.)
Maximum	0.035 (0.00138)	

If it is more than the maximum, replace the plate and/or rotor with one having the same mark stamped on the cam ring.



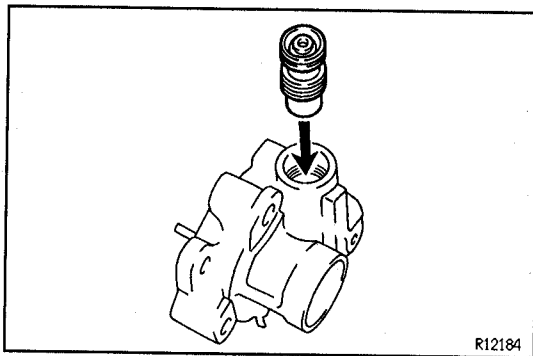


Inscribed mark:

1, 2, 3, 4 or None

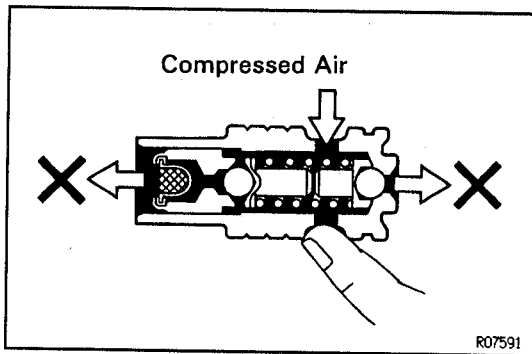
HINT: There are 5 vane plate lengths with the following rotor and cam ring marks:

Rotor and cam ring mark	Vane plate part number	Vane plate length mm (in.)
None	44345-26010	14.999-15.001 (0.59051-0.59059)
1	44345-26020	14.997-14.999 (0.59043-0.59051)
2	44345-26030	14.995-14.997 (0.59035-0.59043)
3	44345-26040	14.993-14.995 (0.59027-0.59035)
4	44345-26050	14.991-14.993 (0.59020-0.59027)



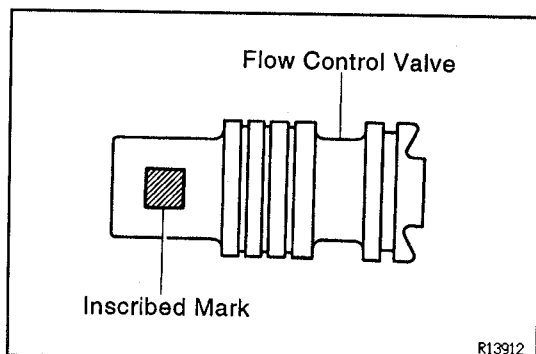
3. INSPECT FLOW CONTROL VALVE

- (a) Coat the valve with power steering fluid and check that it falls smoothly into the valve hole by its own weight.



- (b) Check the flow control valve for leakage. Close one of the holes and apply compressed air 392-490 kPa (4-5 kgf/cm², 57-71 psi) into the opposite side, and confirm that air does not come out from the end holes.

SR

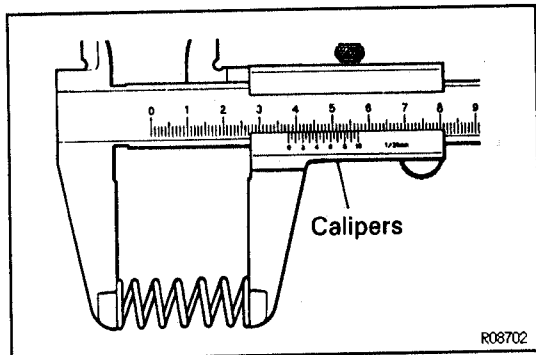


If necessary, replace the valve.

NOTICE: Install a new valve with the same inscribed mark as the old one.

Inscribed mark:

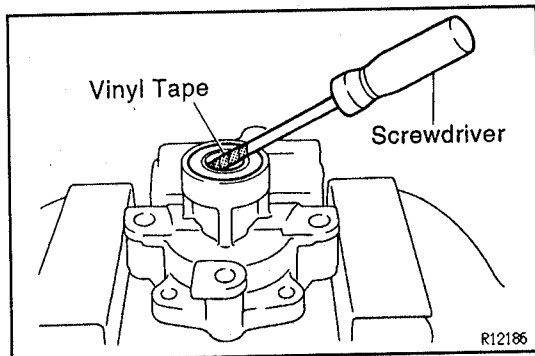
A, B, C, D, E or F

**4. INSPECT SPRING**

Using calipers, measure the free length of the spring.

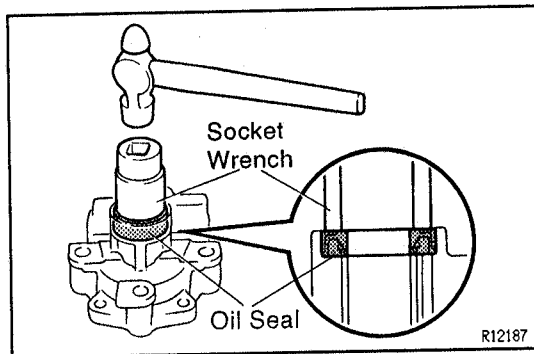
	Free length	mm (in.)
Minimum	33.2	(1.307)

If it is not within specification, replace the spring.

**5. IF NECESSARY, REPLACE OIL SEAL**

- (a) Using a screwdriver with vinyl tape wound around its tip, remove the oil seal.

NOTICE: Be careful not to damage the bushing of the front housing.



- (b) Coat a new oil seal lip with power steering fluid.

- (c) Using a socket wrench (24 mm) and hammer, tap in the oil seal.

NOTICE: Make sure you install the oil seal facing the correct direction.

SR19C-06

POWER STEERING VANE PUMP ASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. COAT WITH POWER STEERING FLUID

(See page SR-44)

2. INSTALL STRAIGHT PINS

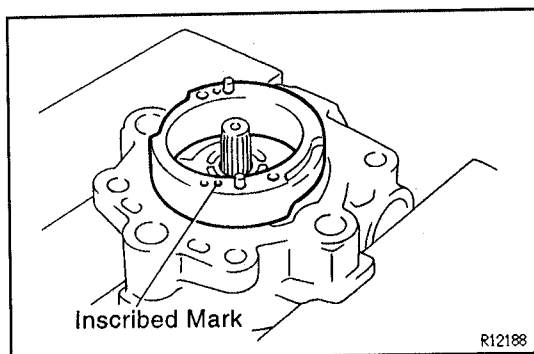
Using a plastic hammer, tap in 2 new pins to the front housing.

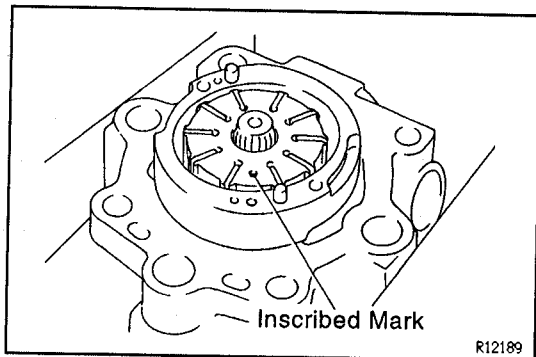
NOTICE: Be careful not to damage the pins.

3. INSTALL VANE PUMP SHAFT**4. INSTALL CAM RING**

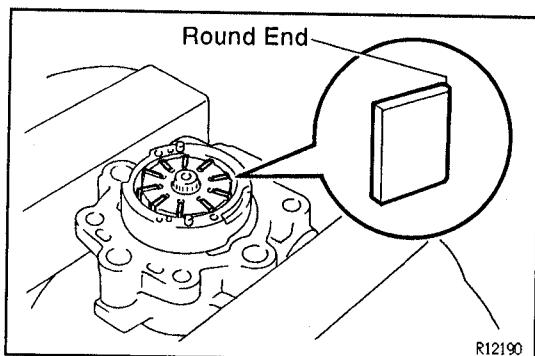
Install the ring with the inscribed mark facing outward.

HINT: Align the holes of the cam ring with the straight pins.

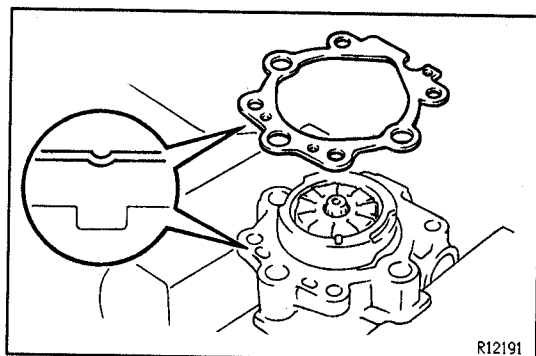


**5. INSTALL VANE PUMP ROTOR**

- (a) Install the rotor with the inscribed mark facing outward.
- (b) Install a new snap ring to the vane pump shaft.

**6. INSTALL VANE PLATES**

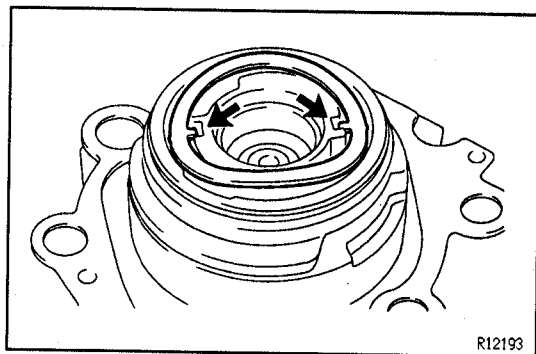
Install the 10 plates with the round end facing outward.

**7. INSTALL GASKET**

Install a new gasket on the front housing.
NOTICE: Be careful the direction of the gasket.

8. INSTALL SIDE REAR PLATE

Align the 2 straight pins and holes of the plate.

**9. INSTALL WAVE WASHER**

Install the washer so that its protrusions fit into the slots in the side rear plate.

10. INSTALL REAR HOUSING

- (a) Coat 2 new O—rings with power steering fluid.
- (b) Install the 2 O—rings to the housing.
- (c) Torque the 2 bolts.

Torque: 24 N·m (240 kgf·cm, 17 ft·lbf)

11. INSTALL SPRING, FLOW CONTROL VALVE AND PRESSURE PORT UNION

- (a) Install the valve facing the correct direction.
(See page SR—44)
- (b) Coat a new O—ring with power steering fluid.
- (c) Install the O—ring to the union.
- (d) Torque the union.

Torque: 83 N·m (850 kgf·cm, 62 ft·lbf)

12. INSTALL BRACKET

Torque the 2 bolts.

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

13. INSTALL OIL RESERVOIR

(a) Coat a new O—ring with power steering fluid and install it to the oil reservoir.

(b) Install the oil reservoir with the 3 bolts.

Torque:

Front side bolt: 13 N·m (130 kgf·cm, 9 ft·lbf)

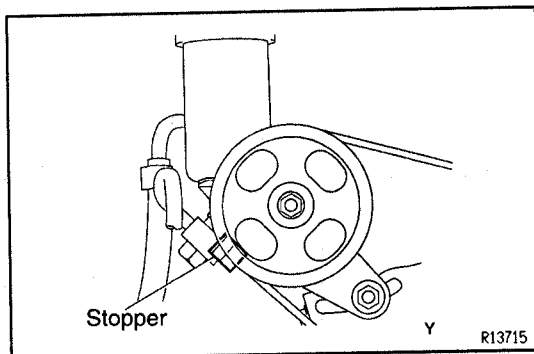
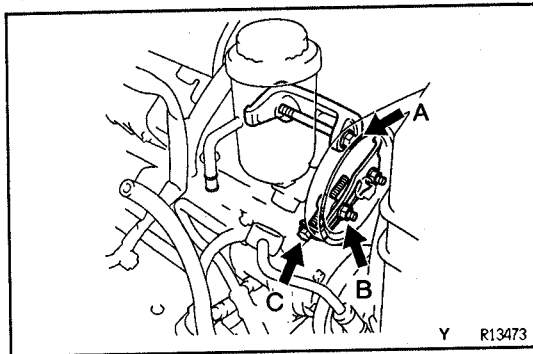
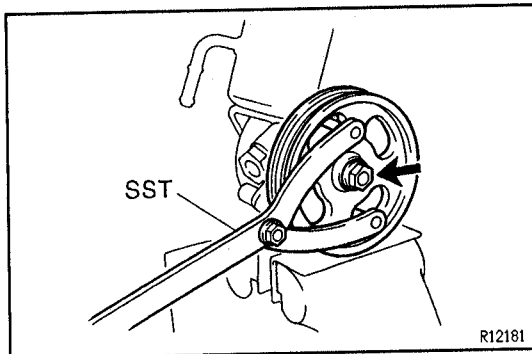
Rear side bolts: 24 N·m (240 kgf·cm, 17 ft·lbf)

14. INSTALL VANE PUMP PULLEY

Using SST to stop the pulley rotating, torque the nut.

SST 09960—10010 (09962—01000, 09963—01000)

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

15. MEASURE PS VANE PUMP ROTATING TORQUE
(See page SR—45)**POWER STEERING VANE PUMP INSTALLATION****1. INSTALL PS VANE PUMP ASSEMBLY**

Temporarily tighten the bolt A and nut B.

2. INSTALL DRIVE BELT(a) Tightening the bolt C, adjust drive belt tension.
(See page SR—7)

(b) Torque the bolt A and nut B.

Torque: 43 N·m (440 kgf·cm, 32 ft·lbf)

3. CONNECT PRESSURE FEED TUBE

Torque the union bolt with a new gasket on each side of the tube.

Torque: 47 N·m (475 kgf·cm, 34 ft·lbf)

HINT: Make sure the stopper of the tube is touching the PS pump body as shown, then torque the union bolt.

4. CONNECT RETURN HOSE**5. INSTALL AIR CLEANER ASSEMBLY**

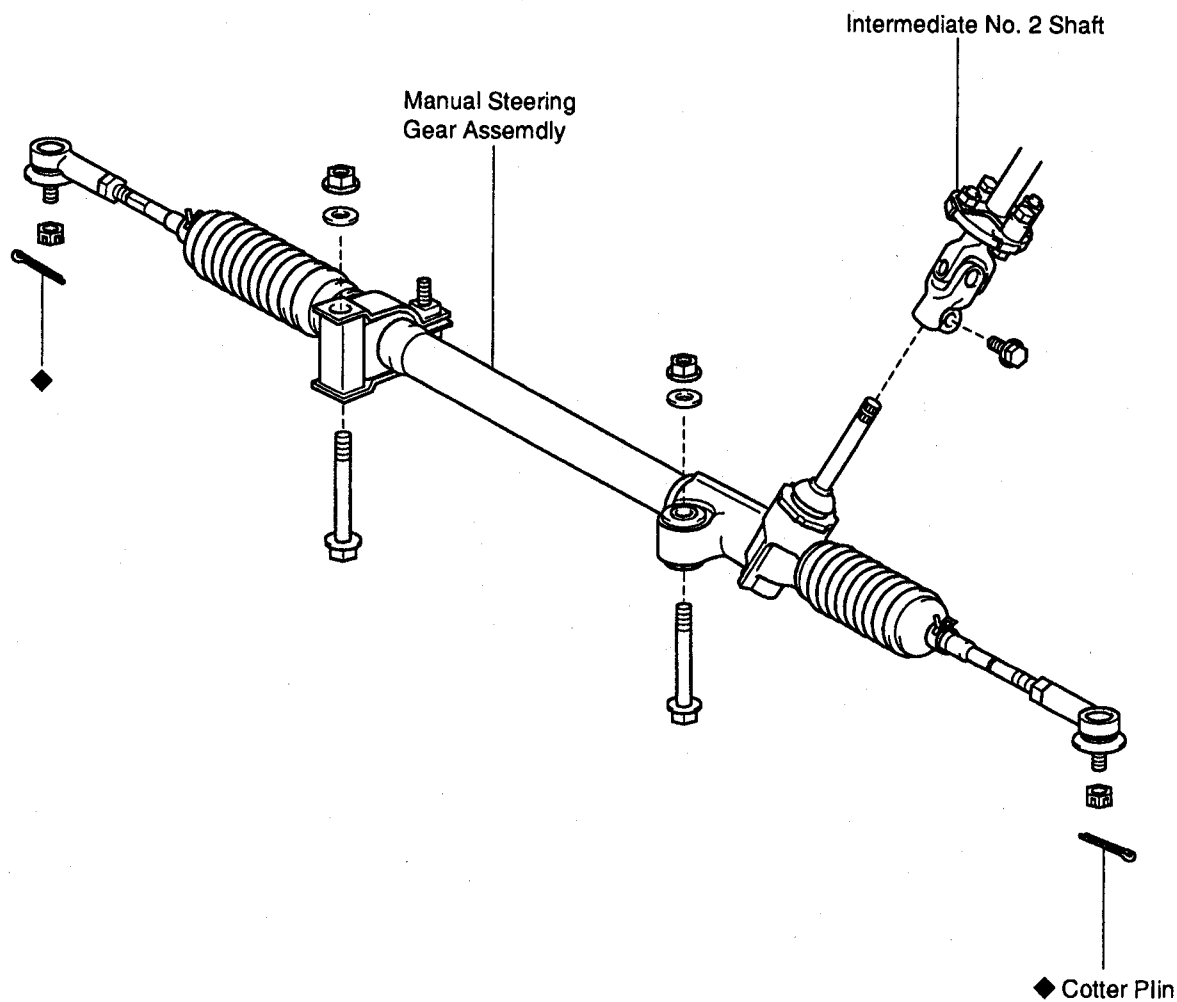
Tighten the 3 bolts.

6. BLEED POWER STEERING SYSTEM

(See page SR—9)

MANUAL STEERING GEAR COMPONENTS

SR1CQ-01

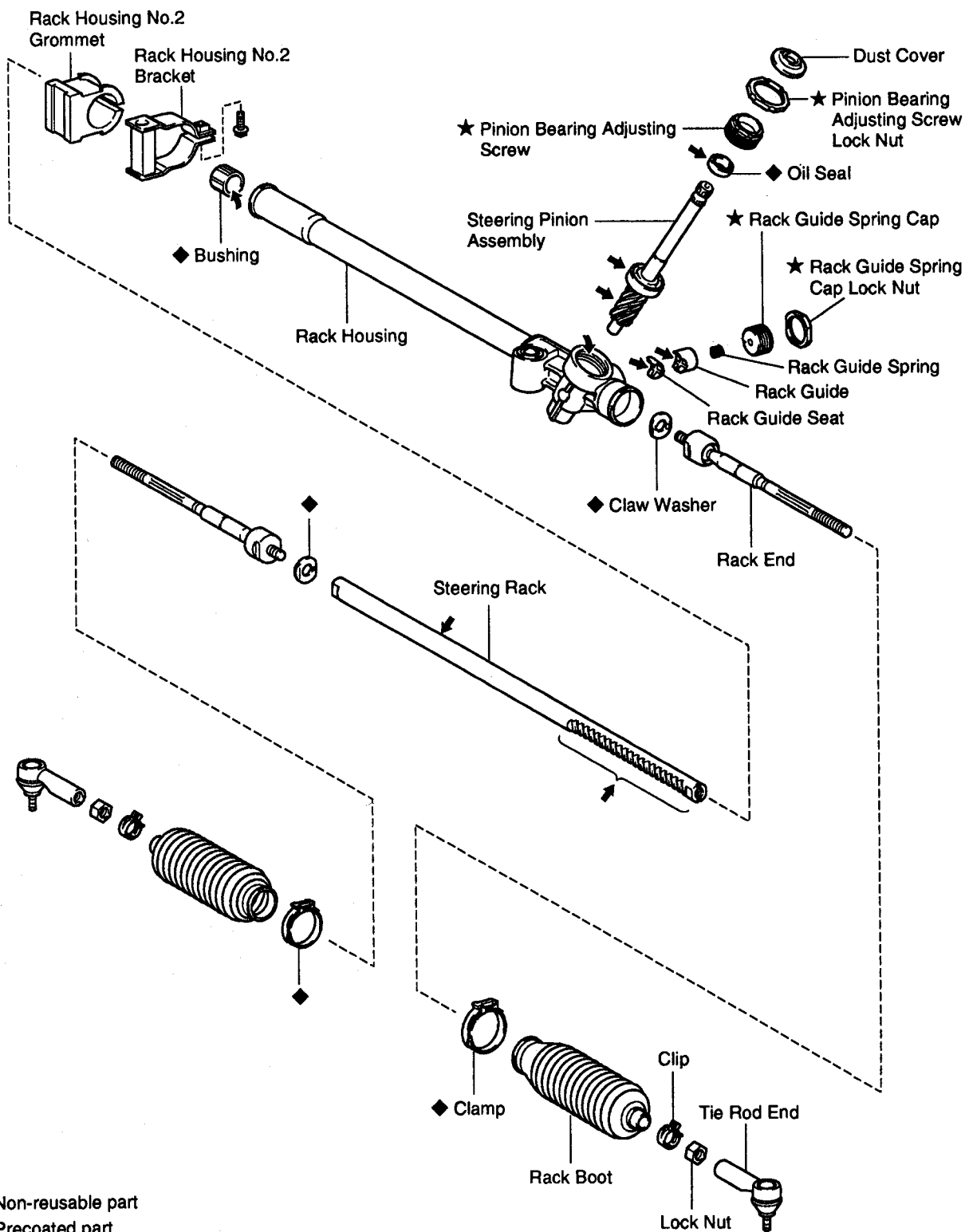


◆ Non-reusable part

Y

R13795

COMPONENTS



SR

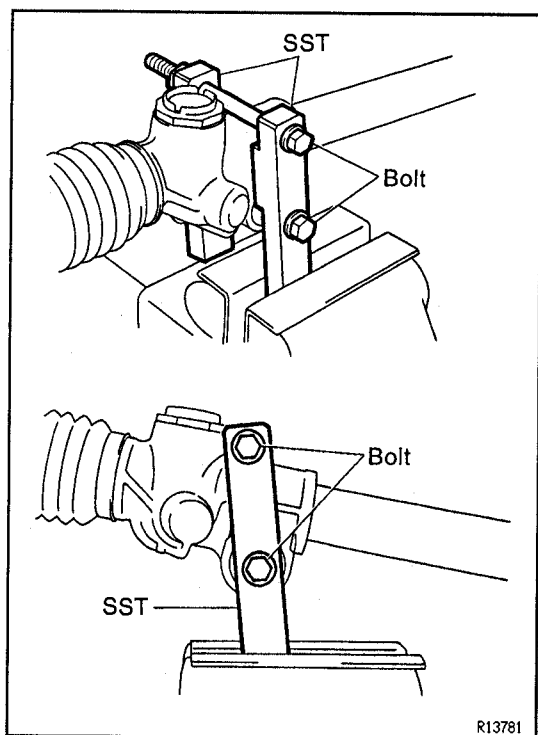
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R13796

MANUAL STEERING GEAR REMOVAL

SR1CB-02

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. REMOVE STEERING WHEEL PAD
(See page SR-16)
3. REMOVE STEERING WHEEL
(See page SR-16)
4. DISCONNECT RH AND LH TIE ROD ENDS
(See page SA-70)
5. DISCONNECT INTERMEDIATE NO. 2 SHAFT
(See page SR-17)
6. REMOVE MANUAL STEERING GEAR ASSEMBLY
Remove the 2 gear assembly set bolts, nuts and washers.

**MANUAL STEERING GEAR DISASSEMBLY**

SR1CT-01

NOTICE: When using a vise, do not overtighten it.

1. **SECURE MANUAL STEERING GEAR IN VISE**
Using SST and 2 bolts, secure the gear assembly in a vise, as shown in the illustration.
SST 09612-00012

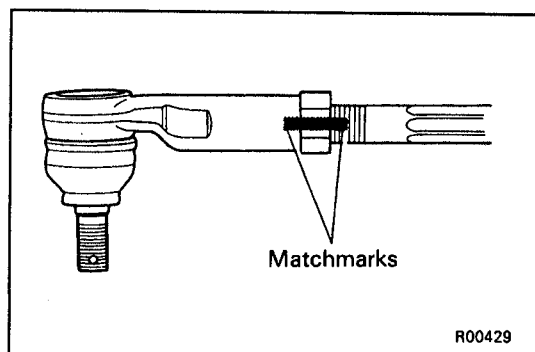
Reference:

Bolt: 90105-10017

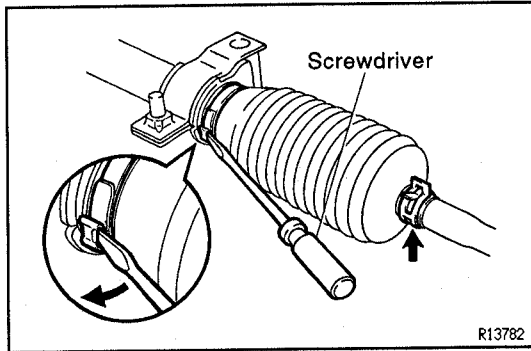
Nut: 90170-10198

HINT: Use 2 of the same type of SST.

SR



2. **REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS**
Place matchmarks on the tie rod end and rack end.

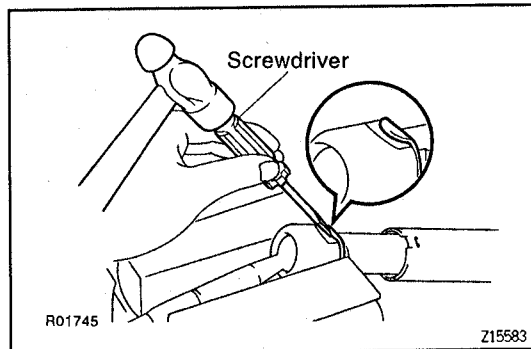


3. REMOVE RH AND LH CLIPS, RACK BOOTS AND CLAMPS

Using a screwdriver, loosen the clamp.

NOTICE:

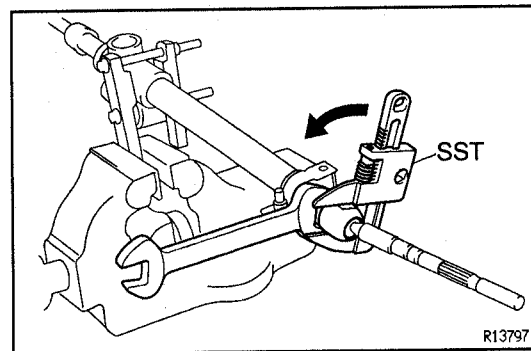
- Be careful not to damage the boot.
- Mark the RH and LH boots.



4. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

(a) Using a screwdriver and hammer, unstake the washer.

NOTICE: Avoid any impact to the steering rack.



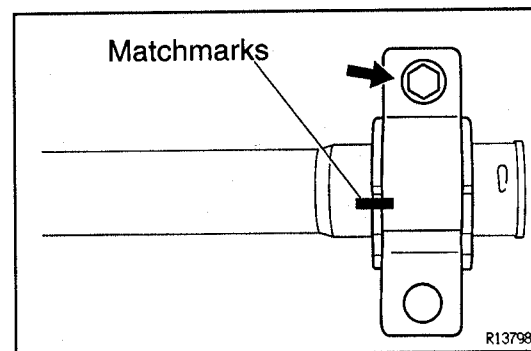
(b) Using a spanner to hold the steering rack steady, and using SST, remove the rack end.

SST 09922-10010

NOTICE:

- Use SST 09922-10010 in the direction shown in the illustration.
- Mark the RH and LH rack ends.

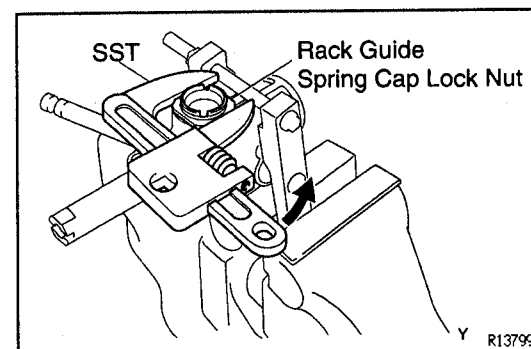
SR



5. REMOVE RACK HOUSING NO. 2 BRACKET AND GROMMET

(a) Place matchmarks on the bracket and rack housing.

(b) Remove the bolt.

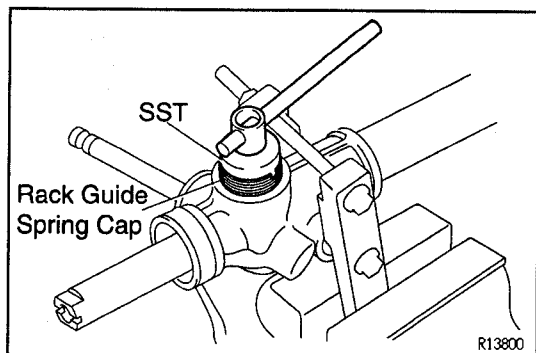


6. REMOVE RACK GUIDE SPRING CAP LOCK NUT

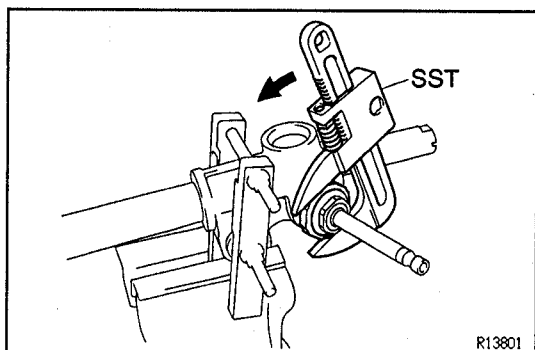
Using SST, remove the nut.

SST 09922-10010

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

**7. REMOVE RACK GUIDE SPRING CAP, RACK GUIDE SPRING, RACK GUIDE AND RACK GUIDE SEAT**

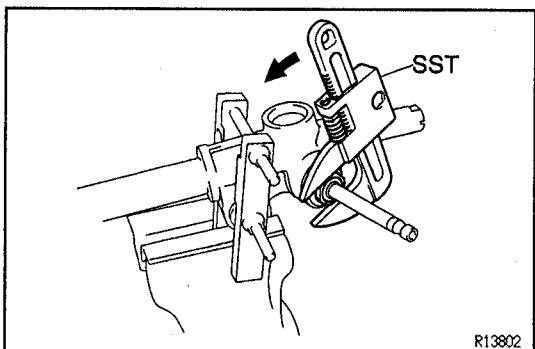
- (a) Using SST, remove the cap.
SST 09631-10021
- (b) Remove the seat from the guide.

**8. REMOVE DUST COVER****9. REMOVE PINION BEARING ADJUSTING SCREW LOCK NUT**

Using SST, remove the nut.

SST 09922-10010

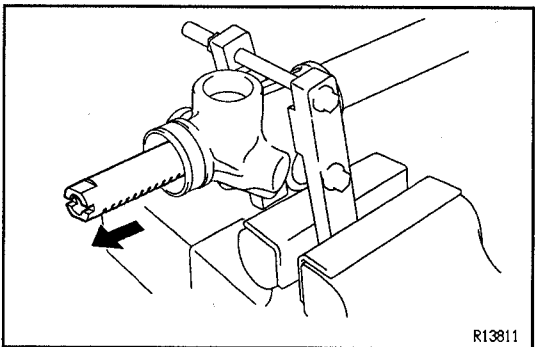
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

**10. REMOVE PINION BEARING ADJUSTING SCREW**

Using SST, remove the screw.

SST 09922-10010

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

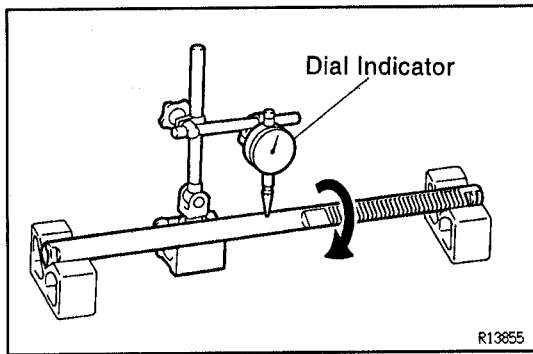
**11. REMOVE STEERING PINION ASSEMBLY**

- (a) Fully pull the steering rack from the pinion housing side of the rack housing and align the cutout portion of the rack with the pinion assembly.
- (b) Remove the pinion assembly from the rack housing.

12. REMOVE STEERING RACK

Remove the rack from the rack housing without revolving it.

NOTICE: Remove the rack from the steering pinion housing side of the rack housing, as shown.



MANUAL STEERING GEAR INSPECTION AND REPLACEMENT

NOTICE: When using a vise, do not overtighten it.

1. INSPECT STEERING RACK

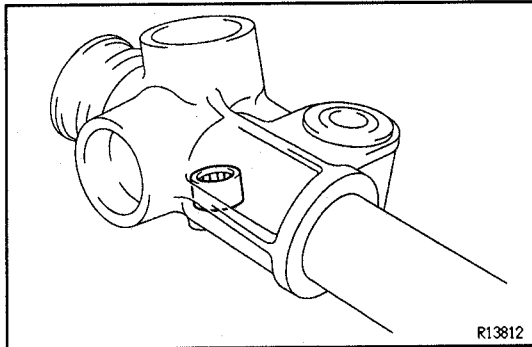
- (a) Using a dial indicator, check the rack for runout and for teeth wear and damage.

	Runout	mm (in.)
Maximum	0.30 (0.0118)	

- (b) Check the back surface for wear and damage.

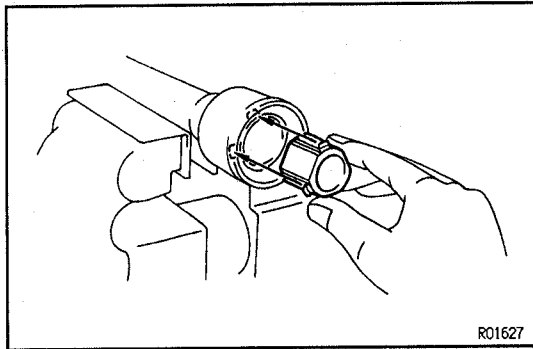
2. INSPECT BEARING

- (a) Check the needle roller bearing for pitmarks or damage. If faulty, replace the rack housing.
(b) Apply molybdenum disulphide lithium base grease to the inside of the bearing.



3. IF NECESSARY, REPLACE BUSHING

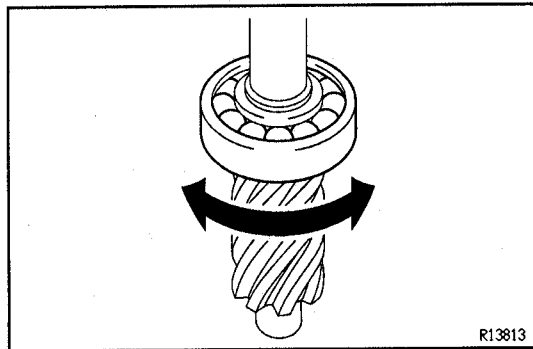
- (a) Using a screwdriver, loosen the 3 claws of the bushing, and remove the bushing from the rack housing.
(b) Coat a new bushing with molybdenum disulphide lithium base grease.
(c) Install the bushing into the rack housing, making sure to align with the 3 holes.



4. INSPECT BEARING

Check the bearing rotation condition and check for abnormal noise.

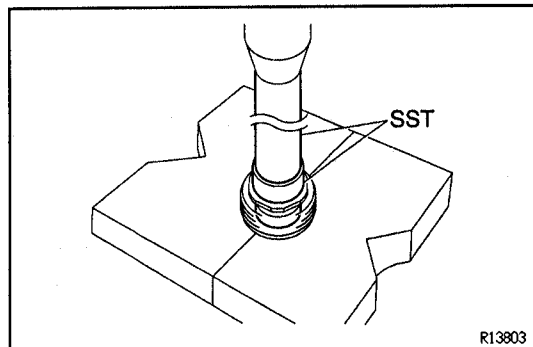
If the bearing is worn or damaged, replace the steering pinion assembly.

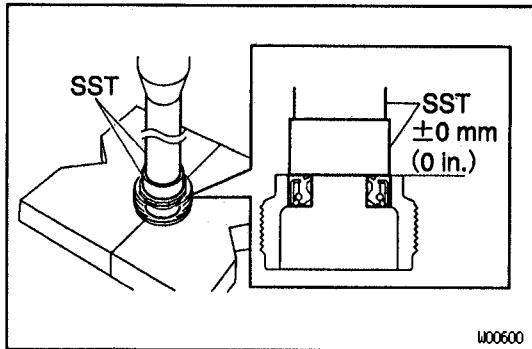


5. IF NECESSARY, REPLACE OIL SEAL

- (a) Using SST, press out the oil seal from the pinion bearing adjusting screw.

SST 09950-60010 (09951-00250),
09950-70010 (09951-07100)



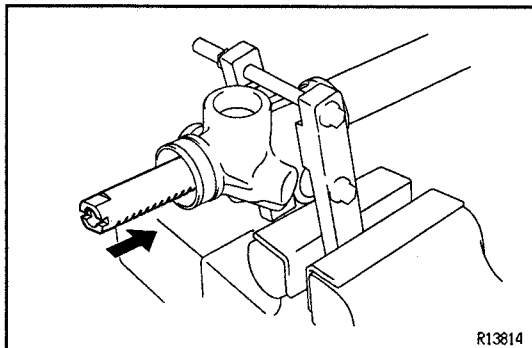


- (b) Coat a new oil seal lip with molybdenum disulphide lithium base grease.
- (c) Using SST and a press, press in the oil seal until its surface is flush with the pinion bearing adjusting screw.

SST 09950-60010 (09951-00250),

09950-70010 (09951-07100)

NOTICE: Make sure you install the oil seal facing the correct direction.



MANUAL STEERING GEAR ASSEMBLY

091146-03

NOTICE: When using a vise, do not overtighten it.

1. COAT WITH MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE

(See page SR-52)

2. INSTALL STEERING RACK

- (a) Install the rack into the rack housing.

NOTICE: Install the rack to the steering pinion housing side of the rack housing as shown.

- (b) Set the rack notched side so that the pinion can be positioned inside.

3. INSTALL STEERING PINION ASSEMBLY

- (a) Line up the cutout portion of the steering rack with the pinion assembly.

- (b) Install the pinion assembly into the rack housing.

HINT:

- Ensure that the pinion end is securely located in the bearing of the rack housing.
- Do not engage the pinion teeth with the rack teeth.

4. INSTALL PINION BEARING ADJUSTING SCREW

- (a) Apply sealant to 2 or 3 threads of the screw.

Sealant:

Part No.08833-00080, THREE BOND 1344,

LOCTITE 242 or equivalent

- (b) Using SST, install the screw.

SST 09922-10010

Torque: 17 N·m (174 kgf·cm, 13 ft·lbf)

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).

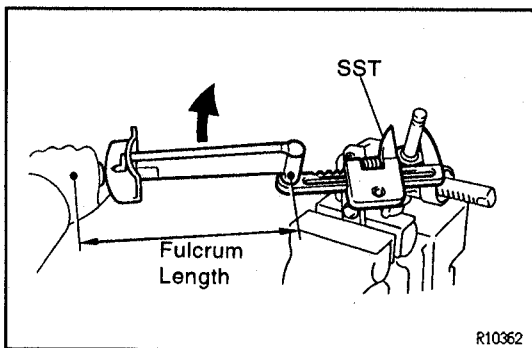
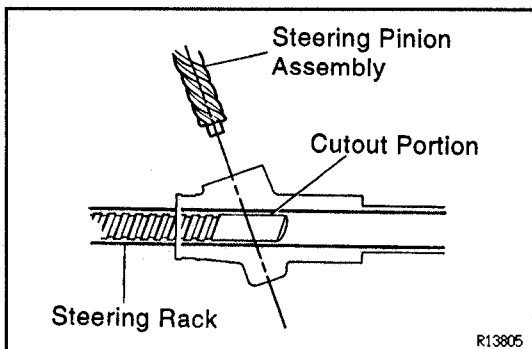
5. INSTALL PINION BEARING ADJUSTING SCREW LOCK NUT

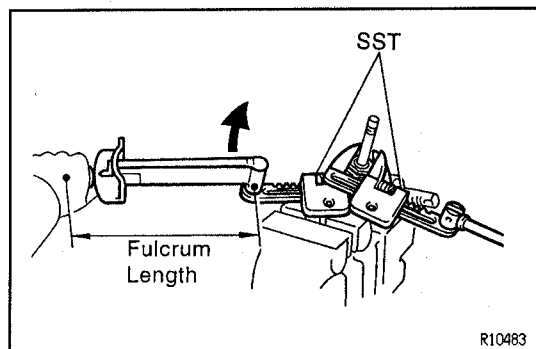
- (a) Apply sealant to 2 or 3 threads of the nut.

Sealant:

Part No.08833-00080, THREE BOND 1344,

LOCTITE 242 or equivalent





- (b) Using SST to stop the pinion bearing adjusting screw, and using SST, torque the nut.
 SST 09922-10010
 Torque: 88 N·m (894 kgf·cm, 65 ft·lbf)
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 425 mm (16.73 in.).

6. INSTALL DUST COVER

7. INSTALL RACK GUIDE SEAT, RACK GUIDE, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

- (a) Install the seat to the guide.
 (b) Apply sealant to 2 or 3 threads of the cap.

Sealant:

Part No.08833-00080, THREE BOND 1344,
 LOCTITE 242 or equivalent

- (c) Temporarily install the cap.

8. ADJUST TOTAL PRELOAD

- (a) Using SST, torque the rack guide spring cap.
 SST 09631-10021

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

- (b) Using SST, while gradually loosening the rack guide spring cap, measure and adjust the preload.
 SST 09612-24014 (09616-10010),
 09631-10021

Preload (turning):

1.3 N·m (13 kgf·cm, 11.3 in·lbf) or less

HINT:

- When measuring the preload, measure in several places and check that the values are within standard.
- Make sure that the pinion teeth engage with the rack teeth.

9. INSTALL RACK GUIDE SPRING CAP LOCK NUT

- (a) Apply sealant to 2 or 3 threads of the nut.

Sealant:

Part No.08833-00080, THREE BOND 1344,
 LOCTITE 242 or equivalent

- (b) Using SST to stop the rack guide spring cap rotating, and using SST, torque the nut.

SST 09631-10021, 09922-10010

Torque: 50 N·m (513 kgf·cm, 37 ft·lbf)

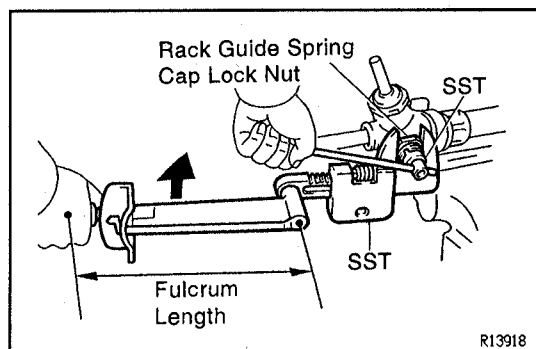
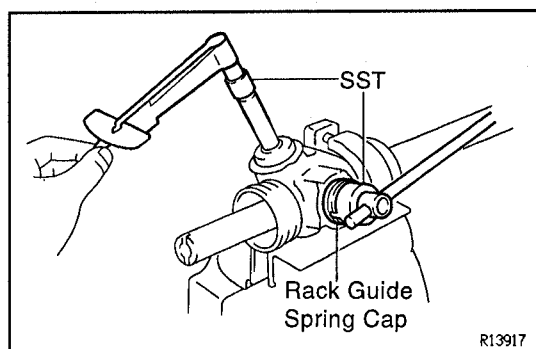
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

- (c) Recheck the total preload.

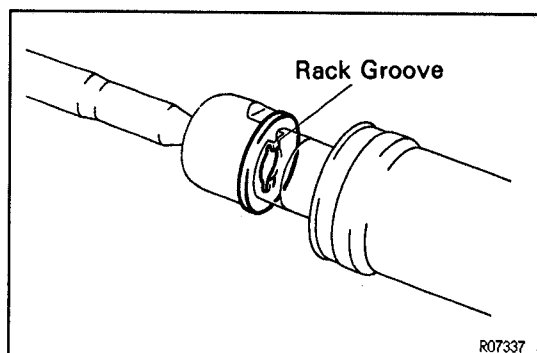
Preload (turning):

1.3 N·m (13 kgf·cm, 11.3 in·lbf) or less

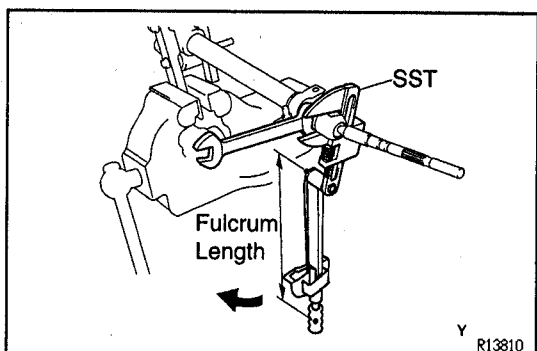


10. INSTALL RACK HOUSING NO.2 BRACKET AND GROMMET

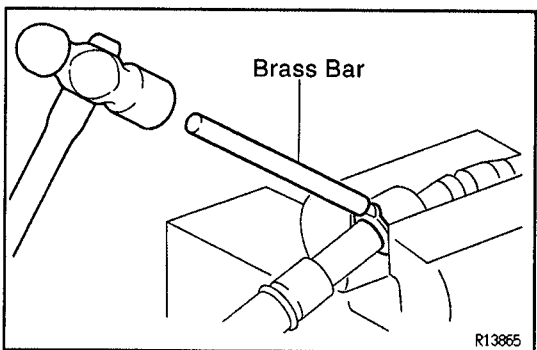
- (a) Align the matchmarks on the bracket and rack housing.
- (b) Torque the bolt.
Torque: 61 N·m (620 kgf·cm, 45 ft·lbf)

**11. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS**

- (a) Install a new washer, and temporarily tighten the rack end.
HINT: Align the claws of the washer with the steering rack grooves.



- (b) Using a spanner to hold the steering rack steady, and using SST, torque the rack end.
SST 09922-10010
Torque: 61 N·m (621 kgf·cm, 45 ft·lbf)
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.
HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).



- (c) Using a brass bar and hammer, stake the washer.
NOTICE: Avoid any impact to the rack.

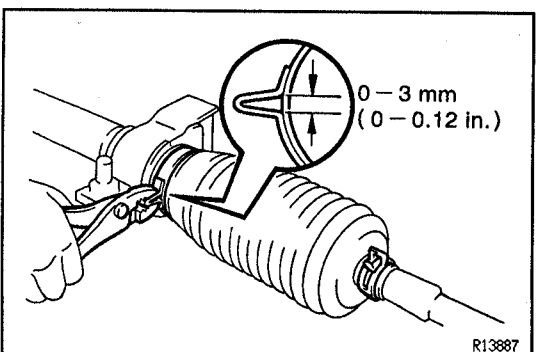
SR

12. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

- (a) Install the rack boot.
NOTICE: Be careful not to damage or twist the boot.
- (b) Tighten a new clamp, as shown in the illustration.

13. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

- (a) Screw the lock nut and tie rod end onto the rack end until the matchmarks are aligned.
- (b) After adjusting toe-in, torque the nut.
(See page SA-2)
Torque: 47 N·m (480 kgf·cm, 35 ft·lbf)

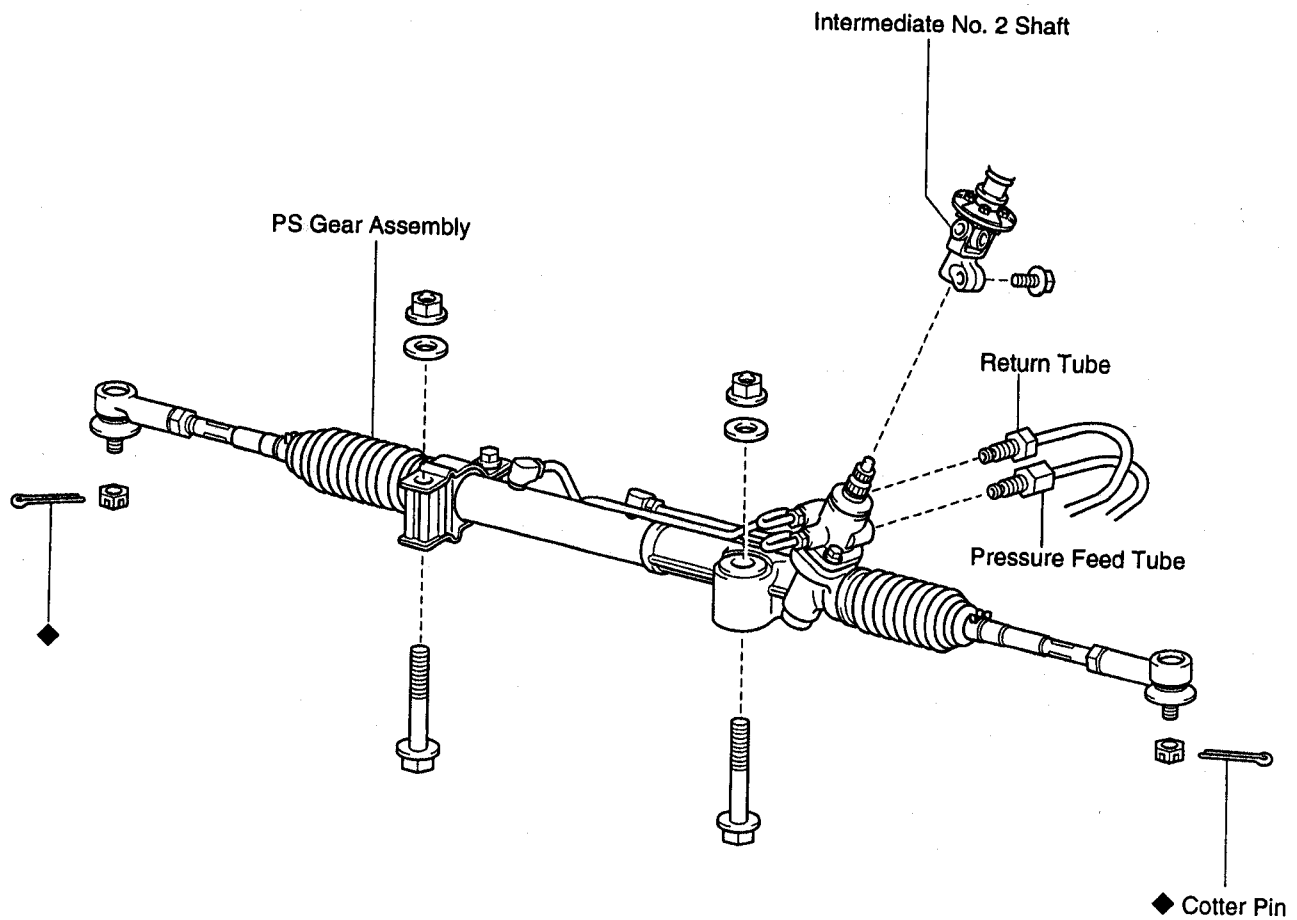


MANUAL STEERING GEAR INSTALLATION

- 1. INSTALL MANUAL STEERING GEAR ASSEMBLY**
Torque the 2 gear assembly set bolts, nuts and washers.
Torque: 201 N·m (2,050 kgf·cm, 148 ft·lbf)
- 2. CONNECT INTERMEDIATE NO. 2 SHAFT**
(See page SR-22)
- 3. CONNECT RH AND LH TIE ROD ENDS**
(See page SA-70)
- 4. POSITION FRONT WHEELS FACING STRAIGHT AHEAD**
HINT: Do it with the front of the vehicle jacked up.
- 5. CENTER SPIRAL CABLE**
(See page SR-23)
- 6. INSTALL STEERING WHEEL**
 - (a) Align the matchmarks on the wheel and steering column main shaft.
 - (b) Temporarily tighten the wheel set nut.
 - (c) Connect the connector.
- 7. CHECK STEERING WHEEL CENTER POINT**
- 8. TORQUE STEERING WHEEL SET NUT**
Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)
- 9. INSTALL STEERING WHEEL PAD**
(See page SR-24)
- 10. CHECK FRONT WHEEL ALIGNMENT**
(See page SA-2)

POWER STEERING GEAR (2WD) COMPONENTS

SR1CX-01



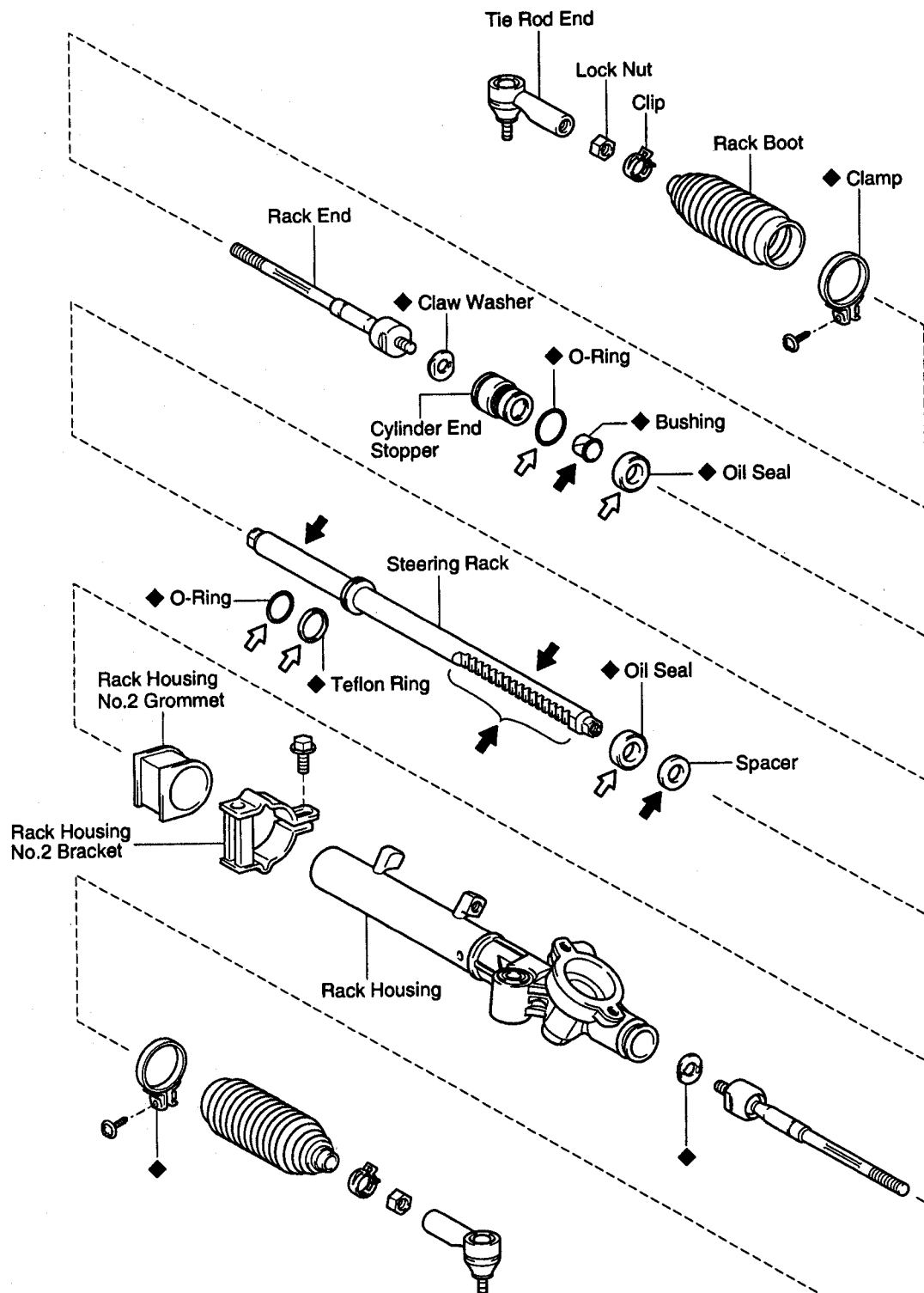
SR

◆ Non-reusable part

Y

R13738

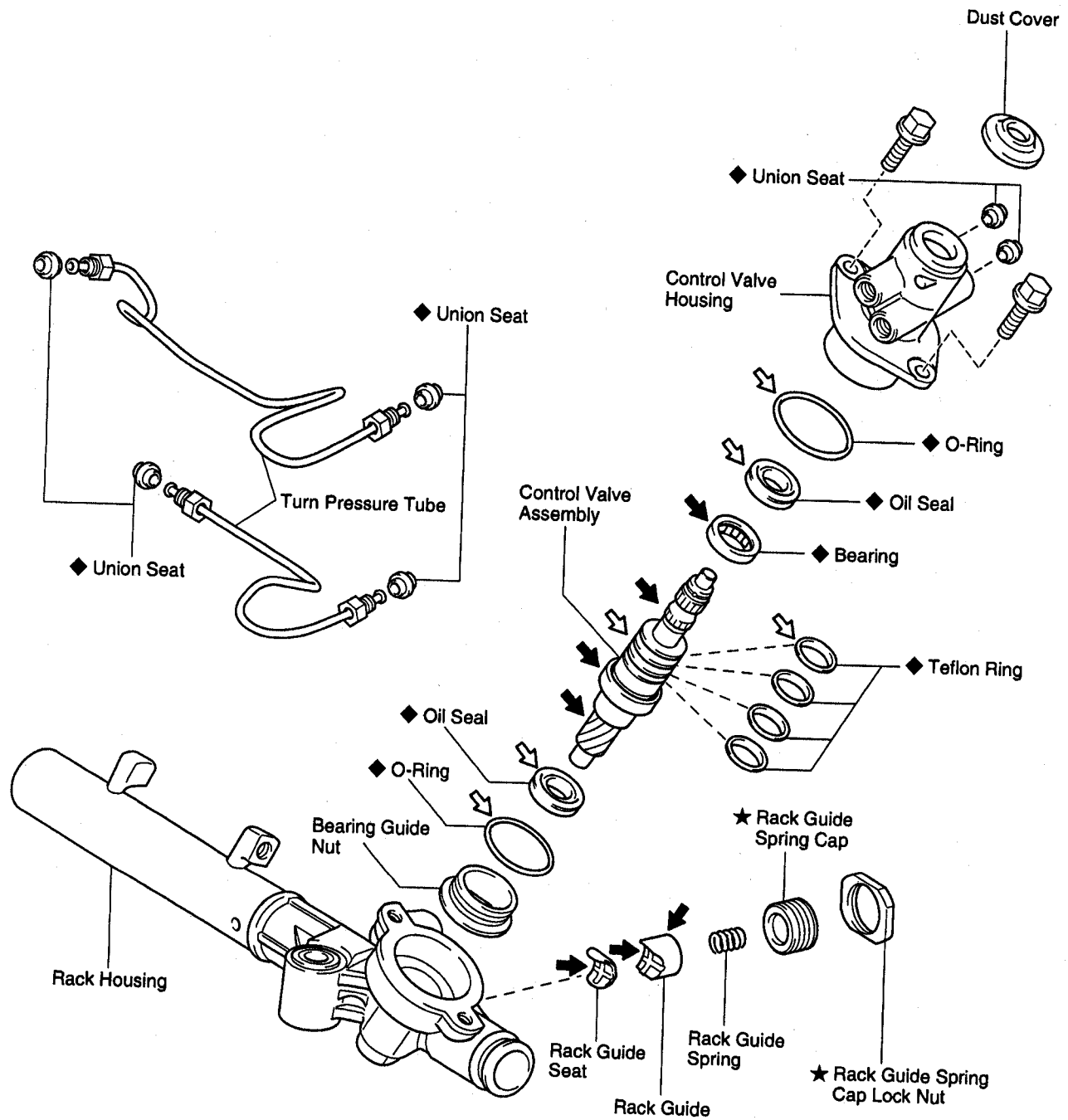
COMPONENTS



- ◆ Non-reusable part
- ← Molybdenum disulphide lithium base grease
- ↔ Power steering fluid

Y

W00446



- ◆ Non-reusable part
- ★ Precoated part
- ↔ Molybdenum disulphide lithium base grease
- ⇨ Power steering fluid

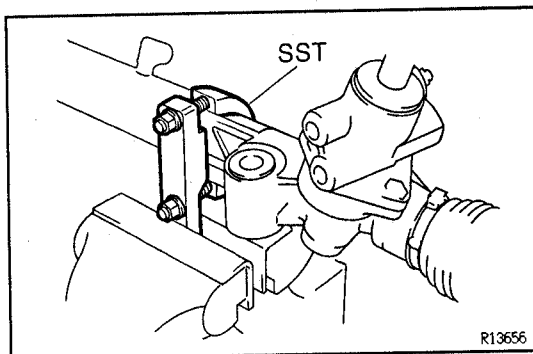
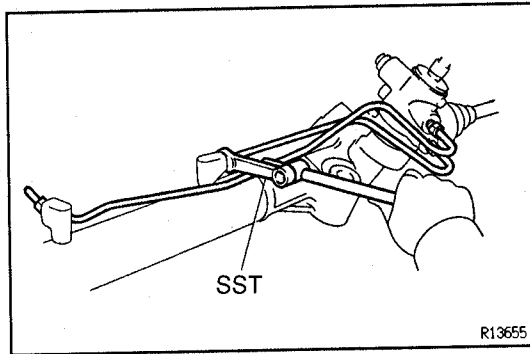
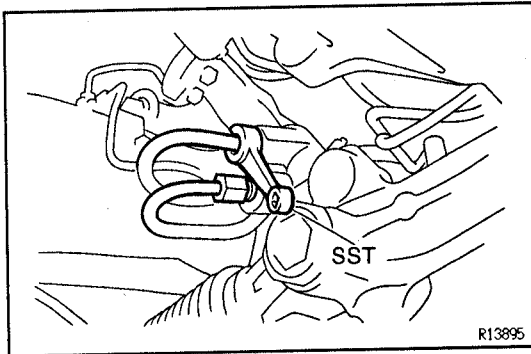
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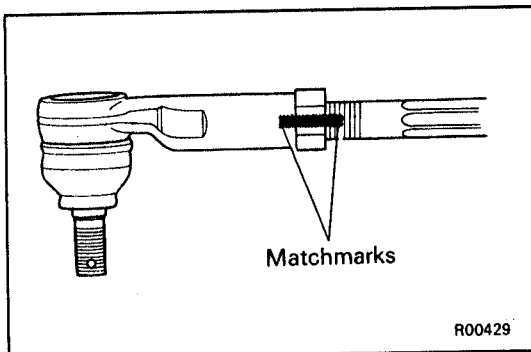
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POWER STEERING GEAR REMOVAL

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. REMOVE STEERING WHEEL PAD
(See page SR-16)
3. REMOVE STEERING WHEEL
(See page SR-16)
4. DISCONNECT RH AND LH TIE ROD ENDS
(See page SA-70)
5. DISCONNECT INTERMEDIATE NO. 2 SHAFT
(See page SR-17)
6. REMOVE PRESSURE FEED TUBE AND RETURN TUBE
Using SST, disconnect the tube.
SST 09631-22020
7. REMOVE PS GEAR ASSEMBLY
Remove the 2 gear assembly set bolts, nuts and washers.



SR

**POWER STEERING GEAR DISASSEMBLY**

SR1M8-01

NOTICE: When using a vise, do not overtighten it.

1. REMOVE 2 TURN PRESSURE TUBES
 - (a) Using SST, remove the tube.
SST 09633-00020
 - (b) Remove the union seat from the rack housing.
 - (c) Remove the union seat from the control valve housing.
2. SECURE PS GEAR ASSEMBLY IN VISE
Using SST, secure the gear assembly in a vise.
SST 09612-00012

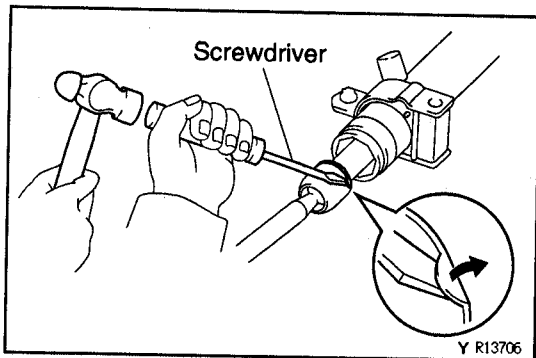
3. REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS

Place matchmarks on the tie rod end and rack end.

4. REMOVE RH AND LH CLIPS, RACK BOOTS AND CLAMPS

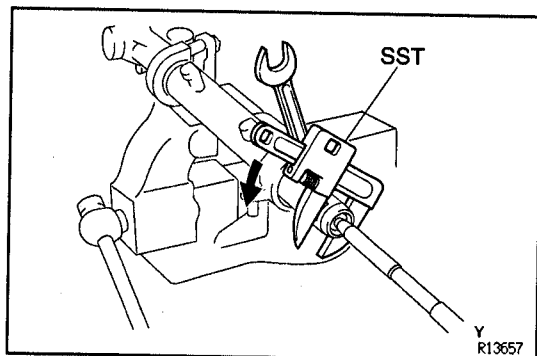
NOTICE:

- Be careful not to damage the boot.
- Mark the RH and LH boots.



5. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

- (a) Using a screwdriver and hammer, unstake the washer.
NOTICE: Avoid any impact to the steering rack.

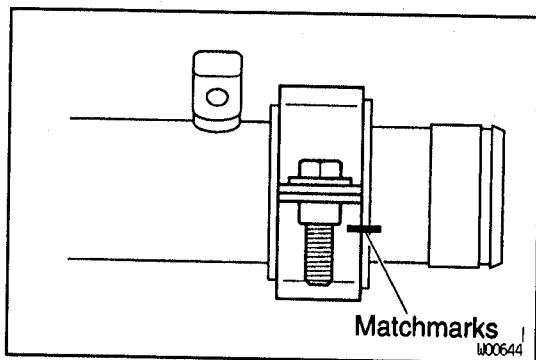


- (b) Using a spanner to hold the steering rack steady, and using SST, remove the rack end.

SST 09922-10010

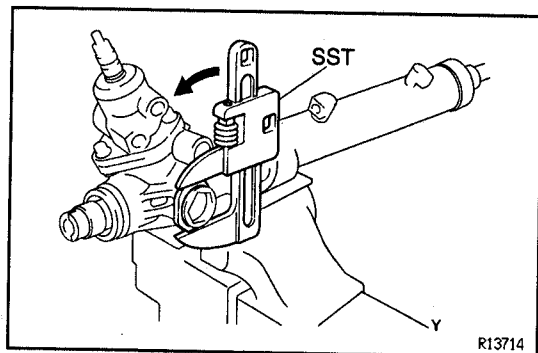
NOTICE:

- Use SST 09922-10010 in the direction shown in the illustration.
- Mark the RH and LH rack ends.



6. REMOVE RACK HOUSING NO. 2 BRACKET AND GROMMET

- (a) Place matchmarks on the bracket and rack housing.
(b) Remove the bolt.



7. REMOVE RACK GUIDE SPRING CAP LOCK NUT

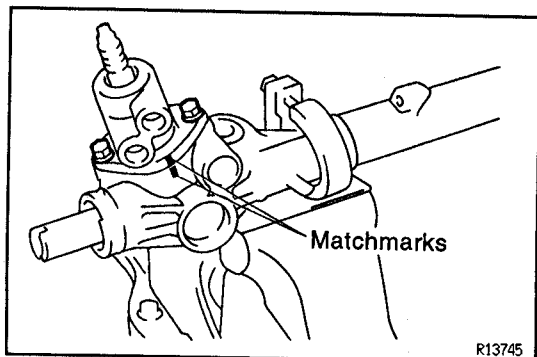
Using SST, remove the nut.

SST 09922-10010

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

8. REMOVE RACK GUIDE SPRING CAP

Using a hexagon wrench (24 mm), remove the cap.



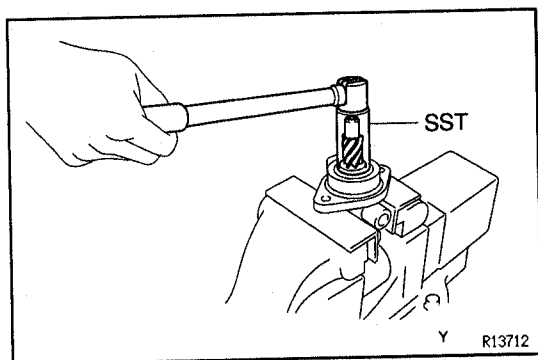
9. REMOVE RACK GUIDE SPRING, RACK GUIDE AND RACK GUIDE SEAT

Remove the seat from the guide.

10. REMOVE DUST COVER

11. REMOVE CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

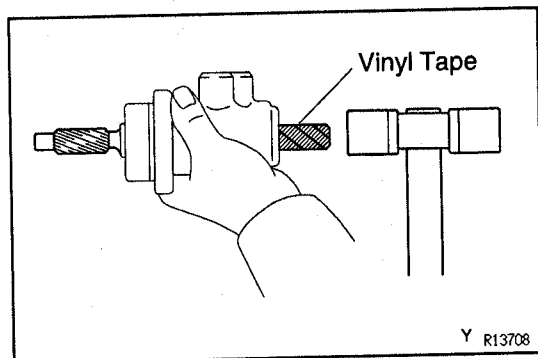
- (a) Place matchmarks on the valve housing and rack housing.
(b) Remove the 2 bolts.



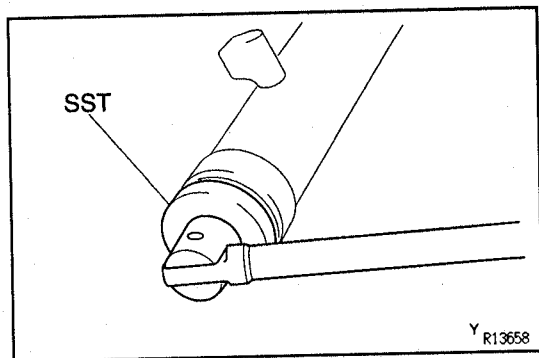
- (c) Pull out the control valve assembly with the valve housing.
- (d) Remove the O—ring from the rack housing.

12. REMOVE CONTROL VALVE ASSEMBLY

- (a) Using SST, loosen the bearing guide nut.
SST 09631—20060

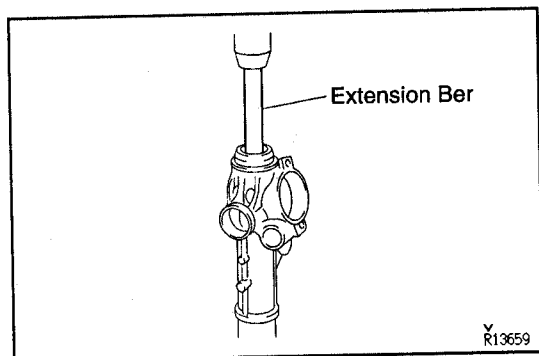


- (b) Wind vinyl tape to the control valve shaft.
- (c) Using a plastic hammer, tap out the valve assembly with the nut from the control valve housing.
NOTICE: Be careful not to damage the oil seal lip.
- (d) Remove the nut from the valve assembly.
NOTICE: Be careful not to damage the oil seal lip.
- (e) Remove the O—ring from the nut.



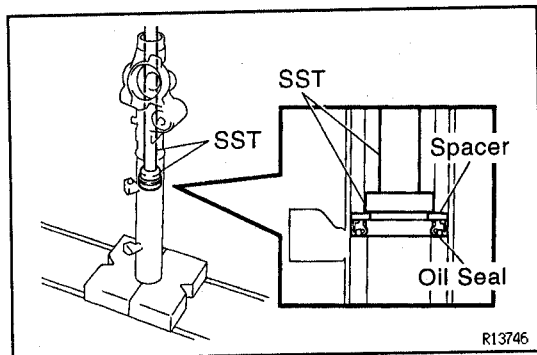
13. REMOVE CYLINDER END STOPPER

- (a) Using SST, remove the stopper.
SST 09631—20090
- (b) Remove the O—ring from the stopper.



14. REMOVE STEERING RACK AND OIL SEAL

- (a) Using an extension bar and socket wrench, press out the rack and oil seal.
NOTICE: Take care not to drop the rack.
- (b) Remove the oil seal from the rack.



15. REMOVE OIL SEAL AND SPACER

Using SST, press out the oil seal and spacer.
SST 09950—60010 (09951—00280),
09950—70010 (09951—07360)

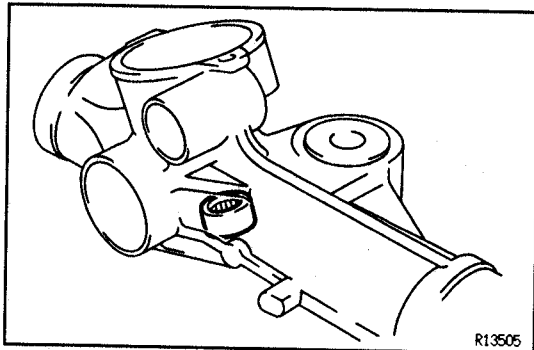
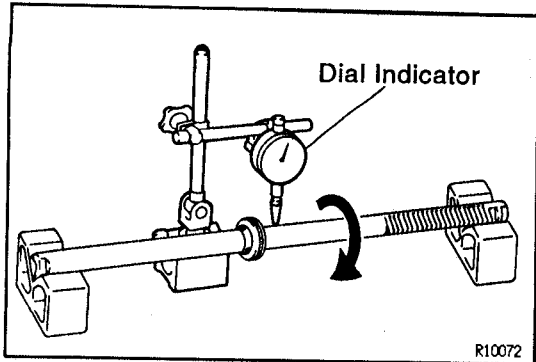
POWER STEERING GEAR INSPECTION AND REPLACEMENT

1. INSPECT STEERING RACK

- (a) Using a dial indicator, check the rack for runout and for teeth wear and damage.

2WD and 4WD:

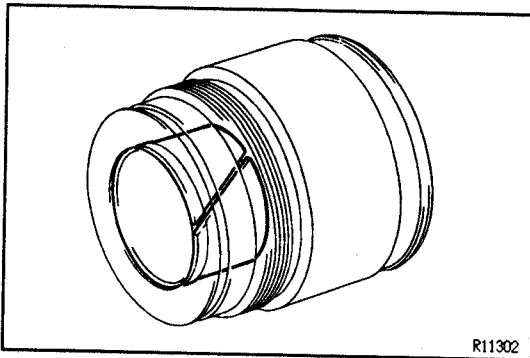
	Runout	mm (in.)
Maximum	0.30	(0.0118)



- (b) Check the back surface for wear and damage.

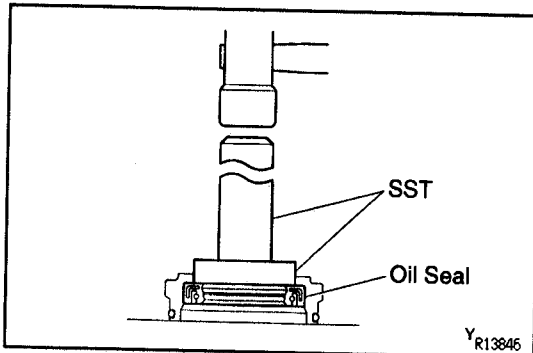
2. INSPECT BEARING

- (a) Check the needle roller bearing for pitmarks or damage. If faulty, replace the rack housing.
- (b) Apply molybdenum disulphide lithium base grease to the inside of the bearing.



3. INSPECT BUSHING

- (a) Check the inside of the bushing of the cylinder end stopper for cracks. If faulty, replace the bushing.
- (b) Apply molybdenum disulphide lithium base grease to the inside of the bushing.



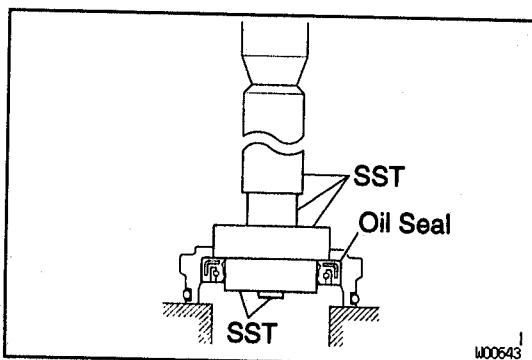
4. IF NECESSARY, REPLACE OIL SEAL

- (a) Using SST and a hammer, tap out the oil seal from the bearing guide nut.

SST 09950-60010 (09951-00320),

09950-70010 (09951-07100)

SR



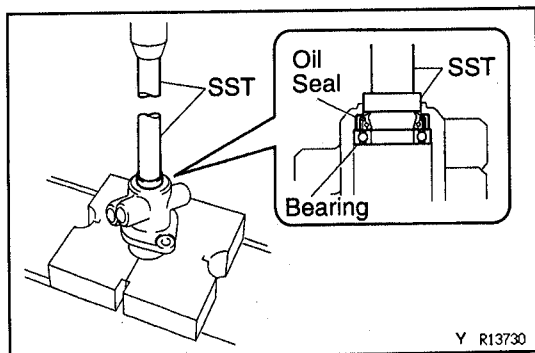
- (b) Coat a new oil seal lip with power steering fluid.

- (c) Using SST, press in the oil seal.

SST 09950-60010 (09951-00280, 09951-00360, 09952-06010),

09950-70010 (09951-07100)

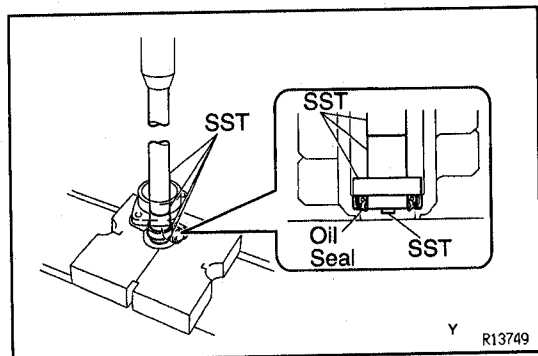
NOTICE: Make sure you install the oil seal facing the correct direction.



5. IF NECESSARY, REPLACE OIL SEAL AND BEARING

- (a) Using SST, press out the oil seal and bearing from the control valve housing.

SST 09950-60010 (09951-00260),
09950-70010 (09951-07150)



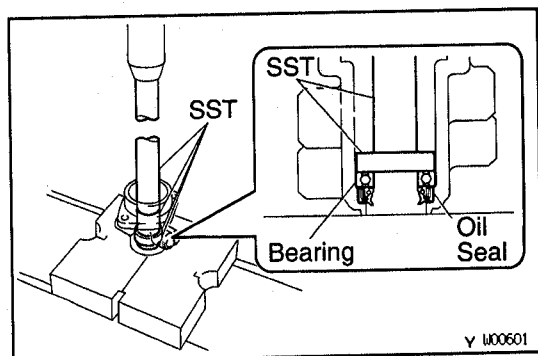
- (b) Coat a new oil seal lip with power steering fluid.

- (c) Using SST, press in the oil seal.

SST 09950-60010 (09951-00180, 09951-00330,
09952-06010),

09950-70010 (09951-07150)

NOTICE: Make sure you install the oil seal facing the correct direction.



- (d) Coat a new bearing with molybdenum disulphide lithium base grease.

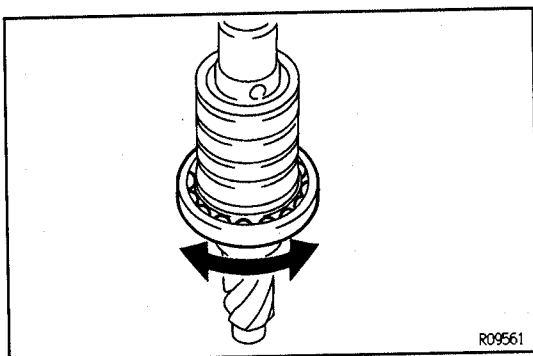
- (e) Using SST, press in the bearing.

SST 09950-60010 (09951-00330),
09950-70010 (09951-07150)

6. INSPECT BEARING

Check the bearing rotation condition and check for abnormal noise.

If the bearing is worn or damaged, replace the control valve assembly.

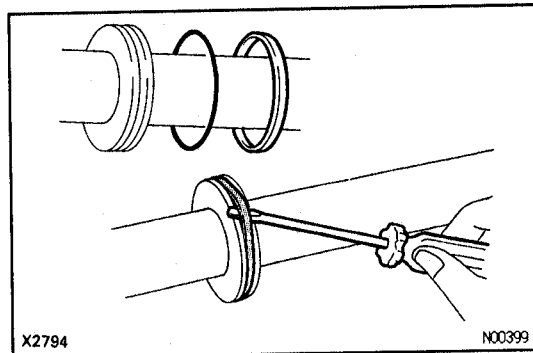


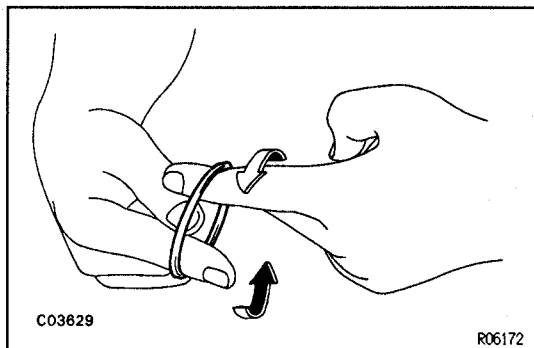
7. IF NECESSARY, REPLACE TEFLON RING AND O-RING

- (a) Using a screwdriver, remove the teflon ring and O-ring from the steering rack.

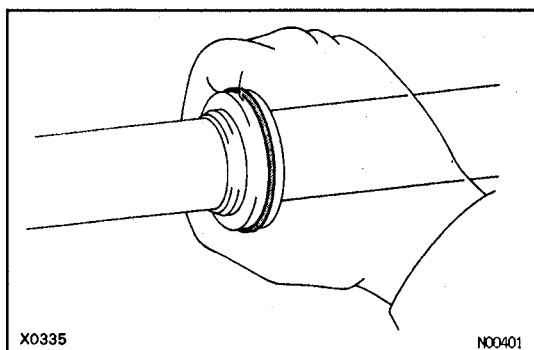
NOTICE: Be careful not to damage the groove for the ring.

- (b) Coat a new O-ring with power steering fluid and install it.

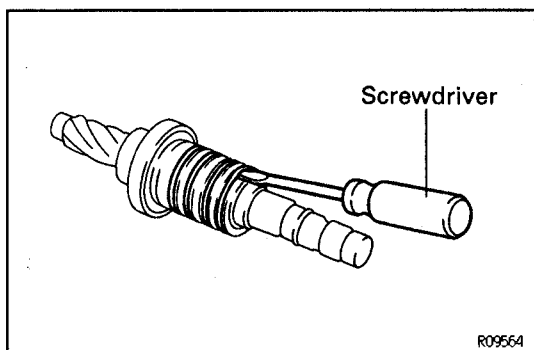




- (c) Expand a new teflon ring with your fingers.
NOTICE: Be careful not to overexpand the ring.

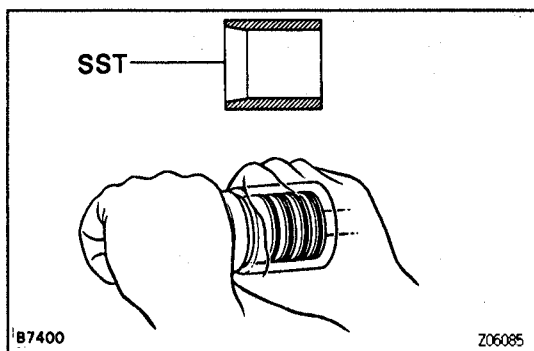


- (d) Coat the ring with power steering fluid.
 (e) Install the ring to the rack, and snug it down with your fingers.



8. IF NECESSARY, REPLACE TEFLON RINGS

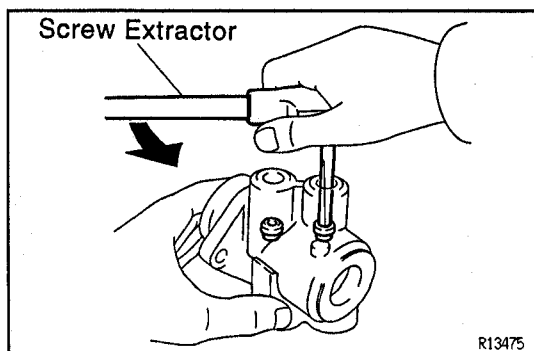
- (a) Using a screwdriver, remove the 4 rings from the control valve assembly.
NOTICE: Be careful not to damage the grooves for the ring.
 (b) Expand 4 new rings with your fingers.
NOTICE: Be careful not to overexpand the ring.
 (c) Coat the rings with power steering fluid.



- (d) Install the rings to the control valve assembly, and snug them down with your fingers.
 (e) Carefully slide the tapered end of SST over the rings to seat them.

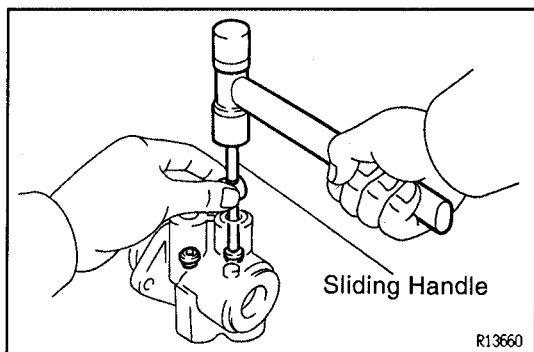
SST 09631 – 20081

NOTICE: Be careful not to damage the rings.



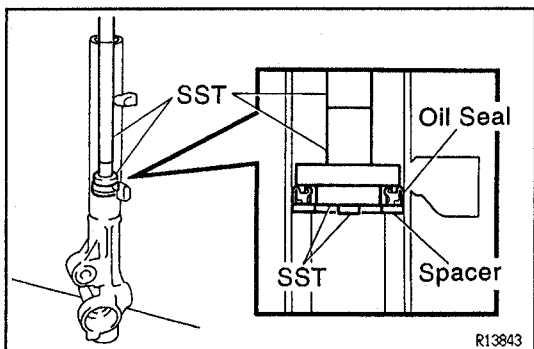
9. IF NECESSARY, REPLACE UNION SEATS

- (a) Using a screw extractor, remove the 2 seats from the control valve housing.



- (b) Using a plastic hammer and sliding handle, lightly tap in 2 new seats.

NOTICE: Before installing the union seat, remove dust sticking to the control valve housing.



POWER STEERING GEAR ASSEMBLY

SR1M9-01

NOTICE: When using a vise, do not overtighten it.

1. **COAT WITH POWER STEERING FLUID OR MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE**
(See pages SR-62 and 63)

2. **INSTALL SPACER AND OIL SEAL**

- (a) Coat a new oil seal lip with power steering fluid.
- (b) Using SST, press in the oil seal and spacer.

SST 09950-60010 (09951-00250, 09951-00420, 09952-06010),
09950-70010 (09951-07360)

NOTICE:

- Make sure you install the oil seal facing the correct direction.
- Take care that the oil seal does not get reversed as you install it.

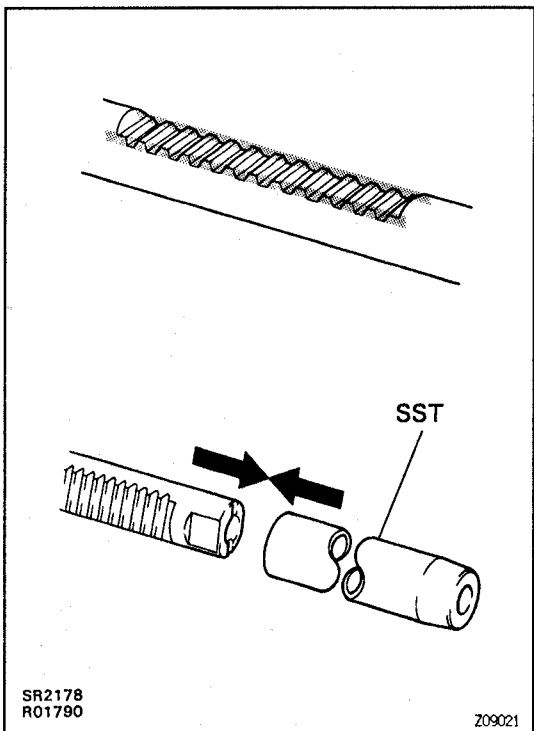
3. **INSTALL STEERING RACK**

- (a) Install SST to the rack.

SST 09631-20102

HINT: If necessary, scrape the burrs off the rack teeth end and burnish.

- (b) Coat SST with power steering fluid.
- (c) Install the rack into the rack housing.
- (d) Remove the SST.



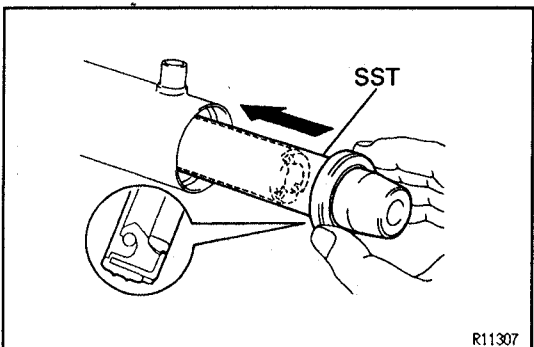
4. **INSTALL OIL SEAL**

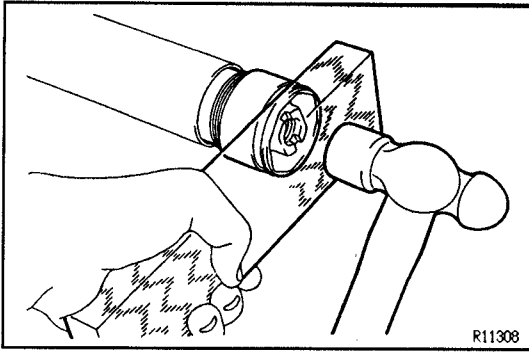
- (a) Install SST to the steering rack opposite end.
SST 09631-20102

- (b) Coat SST with power steering fluid.
- (c) Coat a new oil seal lip with power steering fluid.
- (d) Install the oil seal by pushing it onto the SST without tilting.

NOTICE: Make sure you install the oil seal facing the correct direction.

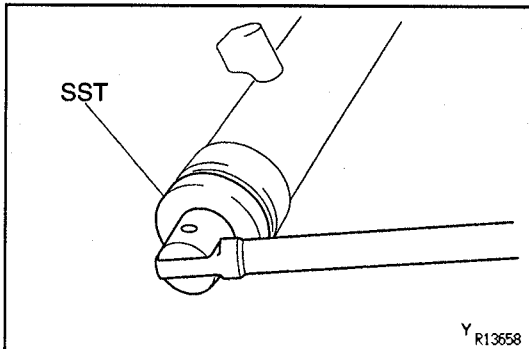
- (e) Remove the SST.



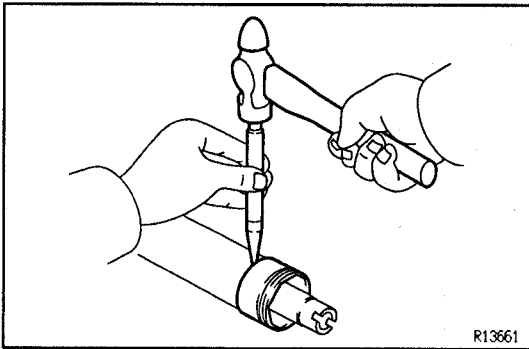


5. INSTALL CYLINDER END STOPPER

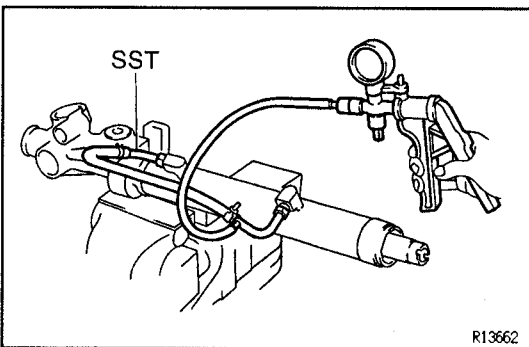
- (a) Coat a new O—ring with power steering fluid, and install it to the stopper.
- (b) Using a wooden block and hammer, drive in the stopper until it is tightly installed.



- (c) Using SST, torque the stopper.
SST 09631 – 20090
Torque: 59 N·m (600 kgf·cm, 43 ft·lbf)



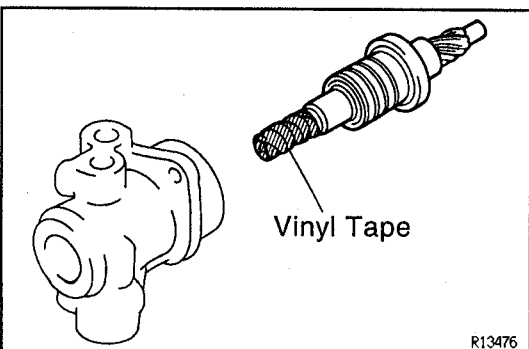
- (d) Using a punch and hammer, stake the rack housing.



6. AIR TIGHTNESS TEST

- (a) Install SST to the unions of the rack housing.
SST 09631 – 12071
- (b) Apply 53 kPa (400 mmHg, 15.75 in.Hg) of vacuum for about 30 seconds.
- (c) Check that there is no change in the vacuum.
If there is change in the vacuum, check the installation of the oil seals.

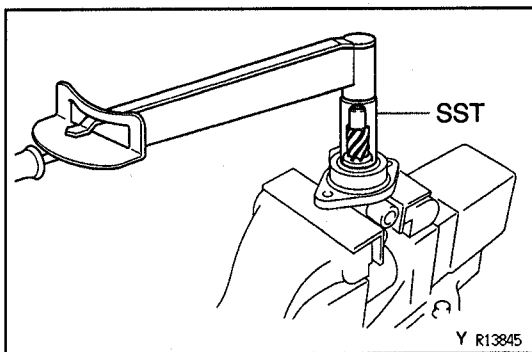
SR



7. INSTALL CONTROL VALVE ASSEMBLY

- (a) Coat the teflon rings with power steering fluid.
- (b) To prevent oil seal lip damage, wind vinyl tape on the serrated part of the control valve shaft.
- (c) Push the valve assembly into the control valve housing.

NOTICE: Be careful not to damage the teflon rings and oil seal lip.



- (d) Coat a new O-ring with power steering fluid, and install it to the bearing guide nut.

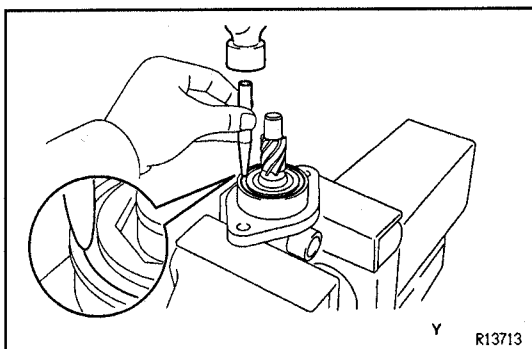
- (e) Using SST, torque the nut.

SST 09631-20060

Torque:

2WD and 4WD: 25 N·m (250 kgf·cm, 18 ft·lbf)

NOTICE: Be careful not to damage the oil seal lip.



- (f) Using a punch, stake the nut.

8. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

- (a) Coat a new O-ring with power steering fluid, and install it to the valve housing.

- (b) Align the matchmarks on the valve housing and rack housing, and install the valve housing with the valve assembly to the rack housing.

- (c) Torque the 2 bolts.

Torque:

2WD and 4WD: 18 N·m (185 kgf·cm, 13 ft·lbf)

9. INSTALL DUST COVER

10. INSTALL RACK GUIDE SEAT, RACK GUIDE, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

- (a) Install the seat to the guide.

- (b) Apply sealant to 2 or 3 threads of the cap.

Sealant:

Part No. 08833-00080, THREE BOND 1344,

LOCTITE 242 or equivalent

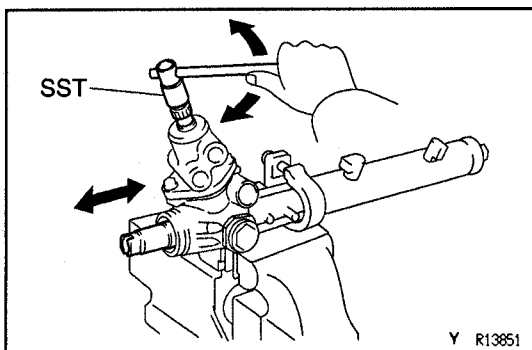
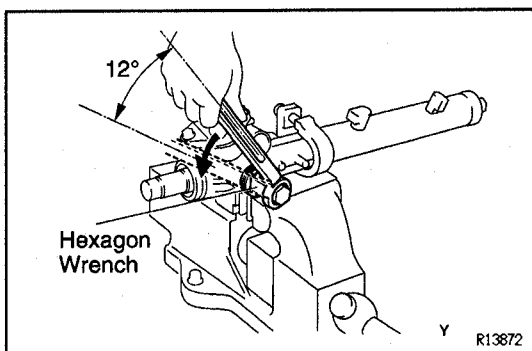
- (c) Temporarily install the cap.

11. ADJUST TOTAL PRELOAD

- (a) Using a hexagon wrench (24 mm), torque the rack guide spring cap.

Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

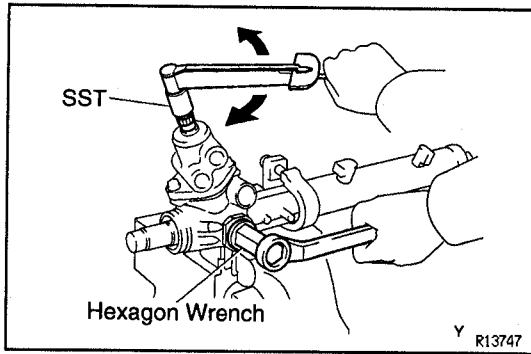
- (b) Using a hexagon wrench (24 mm), return the cap 12°.



- (c) Using SST, turn the control valve shaft right and left 1 or 2 times.

SST 09616-00010

- (d) Using a hexagon wrench (24 mm), loosen the cap until the rack guide spring is not functioning.

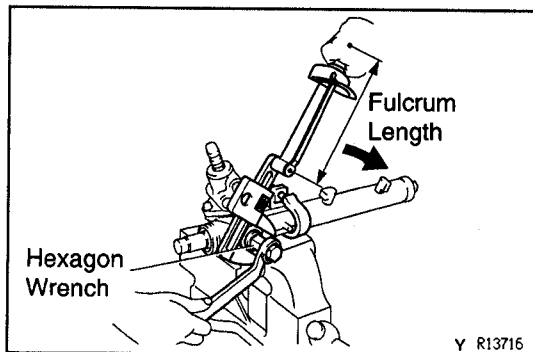


- (e) Using SST and a torque wrench, tighten the cap until the preload is within specification.

SST 09616-00010

Preload (turning):

0.5–1.6 N·m (5–16.5 kgf·cm, 4.3–14.3 in.-lbf)



12. INSTALL RACK GUIDE SPRING CAP LOCK NUT

- (a) Apply sealant to 2 or 3 threads of the nut.

Sealant:

Part No.08833-00080, THREE BOND 1344,
LOCTITE 242 or equivalent

- (b) Using a hexagon wrench (24 mm) to hold the rack guide spring cap and using SST, torque the nut.
SST 09922-10010

Torque: 50 N·m (513 kgf·cm, 37 ft-lbf)

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

- (c) Recheck the total preload.

Preload (turning):

0.5–1.6 N·m (5–16.5 kgf·cm, 4.3–14.3 in.-lbf)

13. INSTALL RACK HOUSING NO. 2 BRACKET AND GROMMET

- (a) Align the matchmarks on the bracket and rack housing.

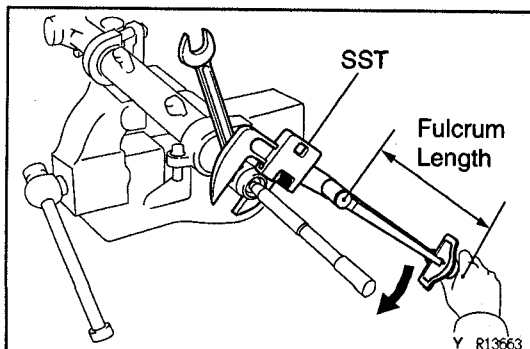
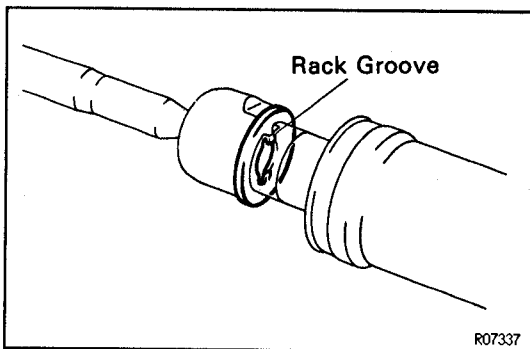
- (b) Torque the bolt.

Torque: 39 N·m (400 kgf·cm, 29 ft-lbf)

14. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS

- (a) Install a new washer, and temporarily tighten the rack end.

HINT: Align the claws of the washer with the steering rack grooves.



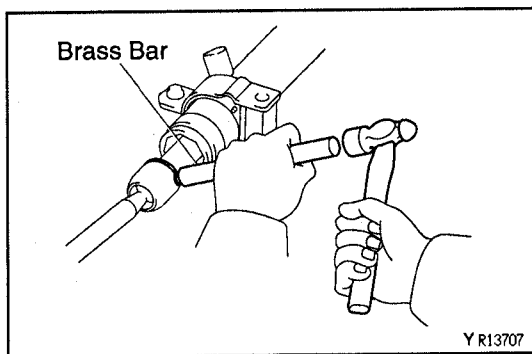
- (b) Using a spanner to hold the steering rack steady, and using SST, torque the rack end.

SST 09922-10010

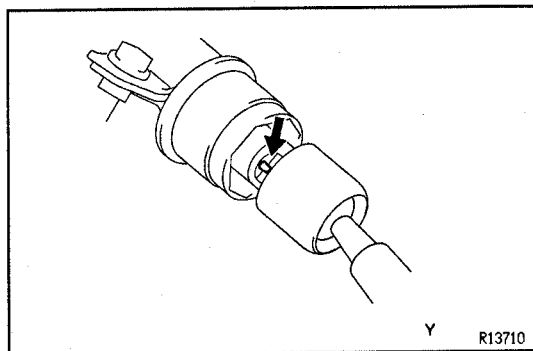
Torque: 75 N·m (762 kgf·cm, 55 ft-lbf)

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

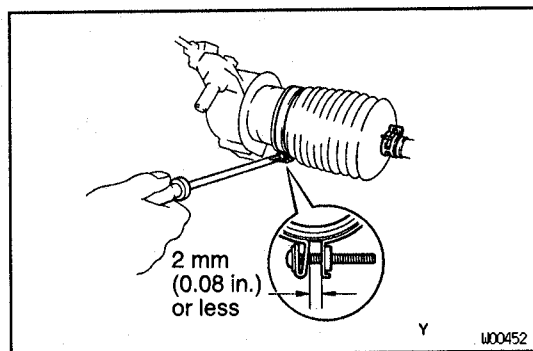


- (c) Using a brass bar and hammer, stake the washer.
NOTICE: Avoid any impact to the rack.



15. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

- (a) Ensure that the tube hole is not clogged with grease.
HINT: If the tube hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel is turned.



- (b) Install the boot.
NOTICE: Be careful not to damage or twist the boot.
 (c) Tighten a new clamp, as shown in the illustration.

SR

16. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

- (a) Screw the lock nut and tie rod end onto the rack end until the matchmarks are aligned.
 (b) After adjusting toe-in, torque the nut.
 (2WD: See page SA-2)
 (4WD: See page SA-8)

Torque:

2WD: 54 N·m (550 kgf·cm, 40 ft·lbf)

4WD: 55 N·m (560 kgf·cm, 41 ft·lbf)

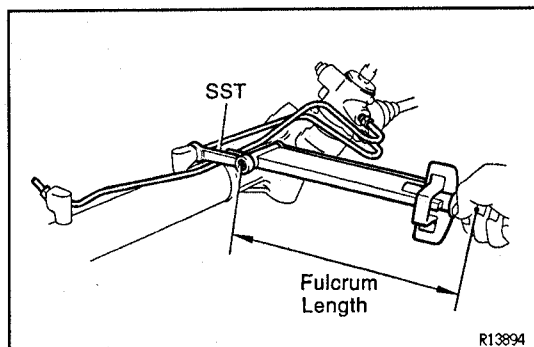
17. INSTALL 2 TURN PRESSURE TUBES

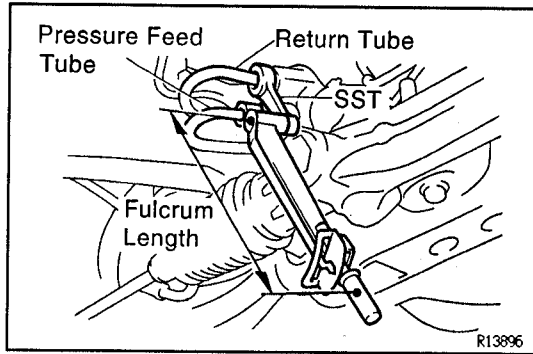
- (a) Install a new union seat to the rack housing.
 (b) Install a new union seat to the control valve housing.
 (c) Using SST, install the tube.

SST 09633-00020

Torque: 20 N·m (203 kgf·cm, 15 ft·lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).





POWER STEERING GEAR INSTALLATION

1. INSTALL PS GEAR ASSEMBLY

Torque the 2 gear assembly set bolts, nuts and washers.

Torque: 201 N·m (2,050 kgf·cm, 148 ft·lbf)

2. CONNECT PRESSURE FEED TUBE AND RETURN TUBE

Using SST, connect the tube.

SST 09631-22020

Torque:

Pressure feed tube: 36 N·m (365 kgf·cm, 26 ft·lbf)

Return tube: 40 N·m (405 kgf·cm, 29 ft·lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).

3. CONNECT INTERMEDIATE NO. 2 SHAFT

(See page SR-22)

4. CONNECT RH AND LH TIE ROD ENDS

(See page SA-70)

5. POSITION FRONT WHEELS FACING STRAIGHT AHEAD

HINT: Do it with the front of the vehicle jacked up.

6. CENTER SPIRAL CABLE

(See page SR-23)

7. INSTALL STEERING WHEEL

(a) Align the matchmarks on the wheel and steering column main shaft.

(b) Temporarily tighten the wheel set nut.

(c) Connect the connector.

8. BLEED POWER STEERING SYSTEM

(See page SR-9)

9. CHECK STEERING WHEEL CENTER POINT

10. TORQUE STEERING WHEEL SET NUT

Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)

11. INSTALL STEERING WHEEL PAD

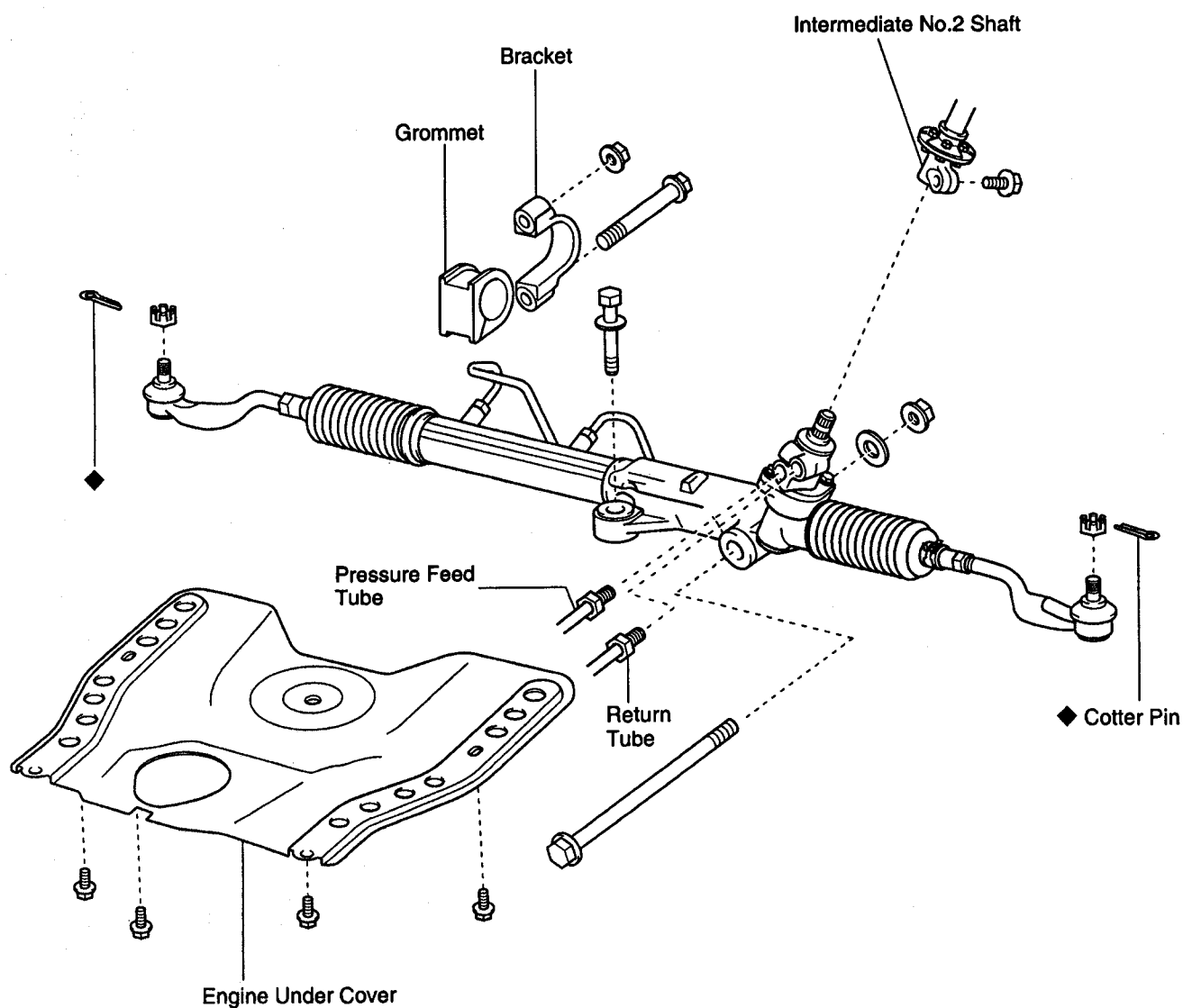
(See page SR-24)

12. CHECK FRONT WHEEL ALIGNMENT

(See page SA-2)

POWER STEERING GEAR (4WD) COMPONENTS

SR1D4-01

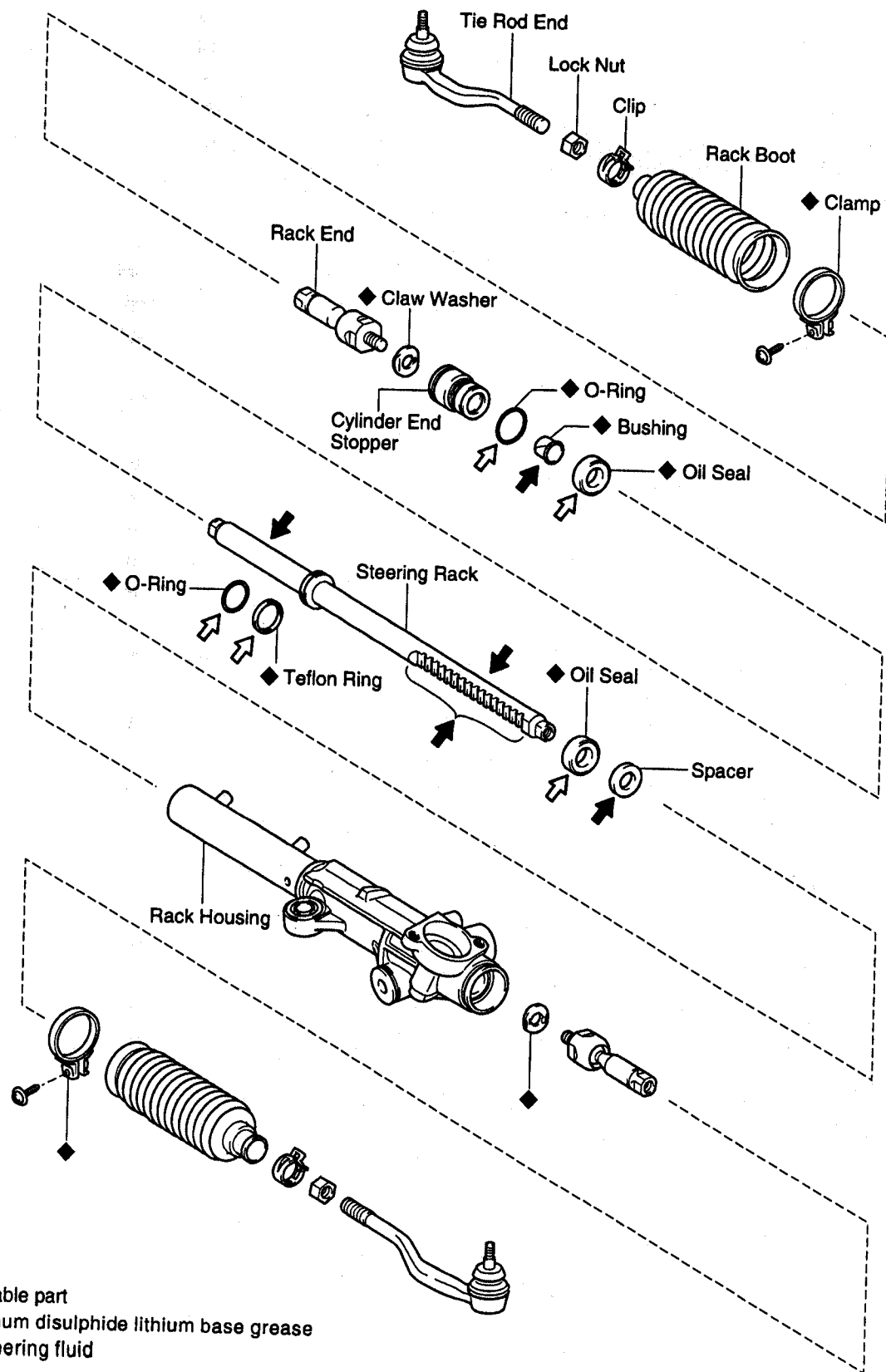


◆ Non-reusable part

Y R13741

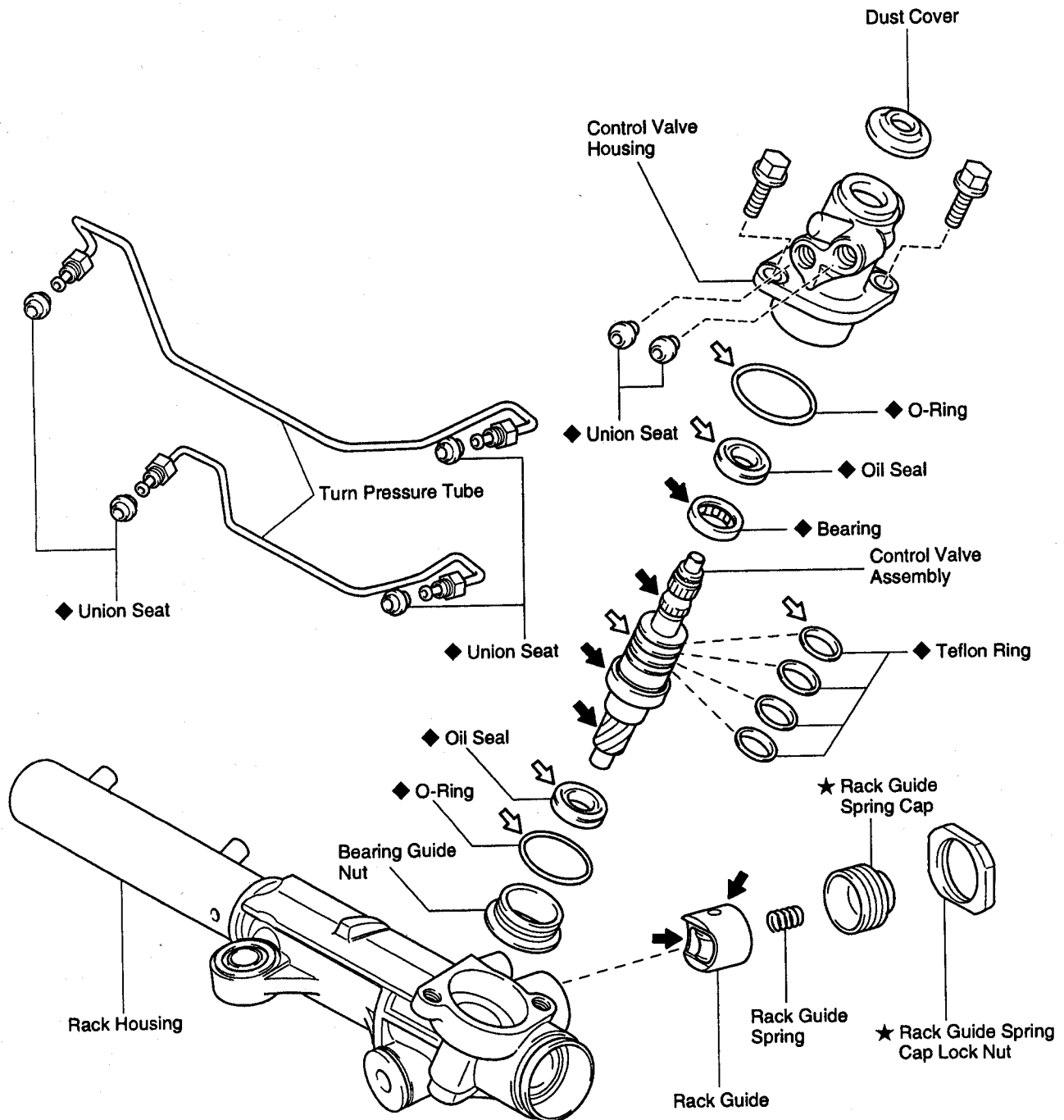
COMPONENTS

SR105-02



SR

Y
W00448

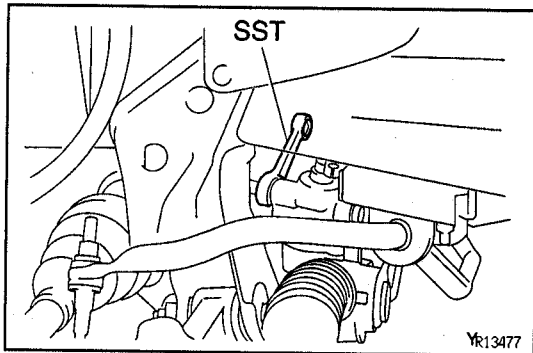


Y

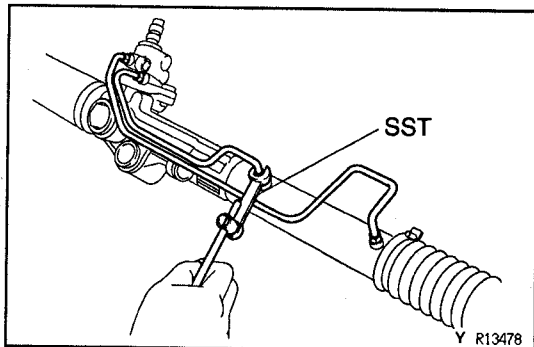
W00449

POWER STEERING GEAR REMOVAL

1. PLACE FRONT WHEELS FACING STRAIGHT AHEAD
2. REMOVE STEERING WHEEL PAD
(See page SR-16)
3. REMOVE STEERING WHEEL
(See page SR-16)
4. REMOVE ENGINE UNDER COVER
Remove the 4 bolts.
5. DISCONNECT RH AND LH TIE ROD ENDS
(See page SA-85)
6. DISCONNECT INTERMEDIATE NO. 2 SHAFT
(See page SR-18)

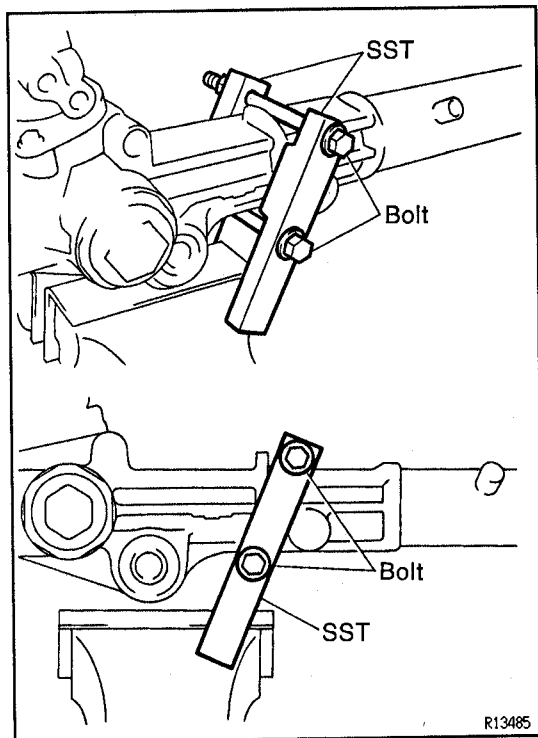


7. DISCONNECT PRESSURE FEED AND RETURN TUBES
Using SST, disconnect the tube.
SST 09631-22020
8. REMOVE PS GEAR ASSEMBLY
 - (a) Remove the bolt and nut from the bracket.
 - (b) Remove the 2 set bolts and nut.
9. REMOVE BRACKET AND GROMMET

**POWER STEERING GEAR DISASSEMBLY**

NOTICE: When using a vise, do not overtighten it.

1. REMOVE 2 TURN PRESSURE TUBES
 - (a) Using SST, remove the tube.
SST 09633-00020
 - (b) Remove the union seat from the rack housing.
 - (c) Remove the union seat from the control valve housing.



2. SECURE PS GEAR ASSEMBLY IN VISE

Using SST and 2 bolts, secure the gear assembly in a vise, as shown in the illustration.

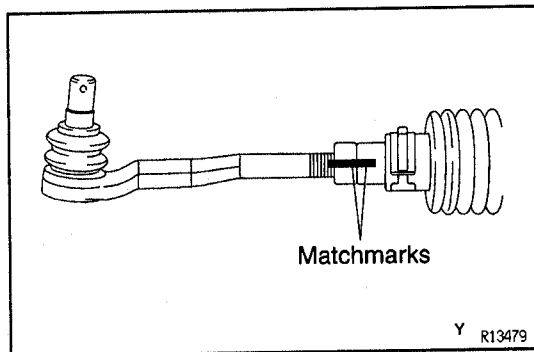
SST 09612-00012

Reference:

Bolt: 90105-10346

Nut: 90170-10198

HINT: Use 2 of the same type of SST.



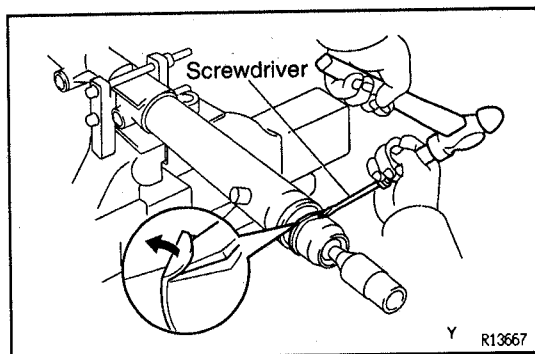
3. REMOVE RH AND LH TIE ROD ENDS AND LOCK NUTS

Place matchmarks on the tie rod end and rack end.

4. REMOVE RH AND LH CLIPS, RACK BOOTS AND CLAMPS

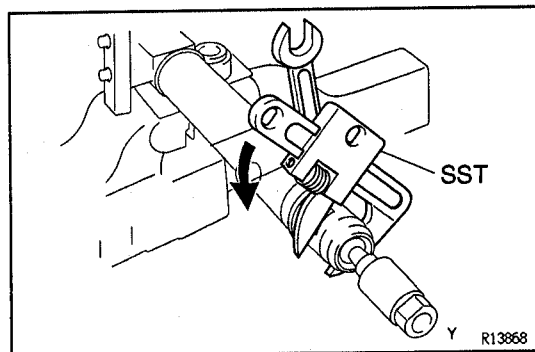
NOTICE:

- Be careful not to damage the boot.
- Mark the RH and LH boots.



5. REMOVE RH AND LH RACK ENDS AND CLAW WASHERS

- (a) Using a screwdriver and hammer, unstake the washer.
NOTICE: Avoid any impact to the steering rack.

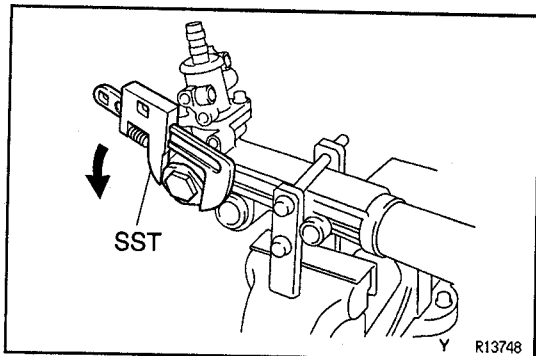


- (b) Using a spanner to hold the steering rack steady, and using SST, remove the rack end.

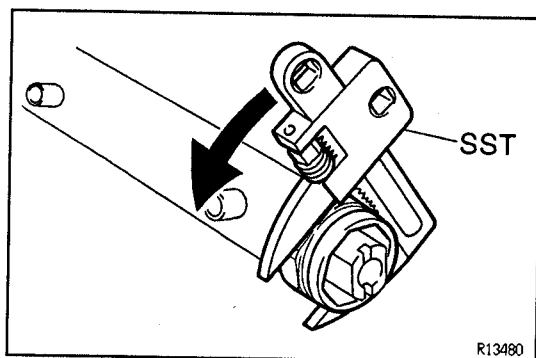
SST 09922-10010

NOTICE:

- Use SST 09922-10010 in the direction shown in the illustration.
- Mark the RH and LH rack ends.



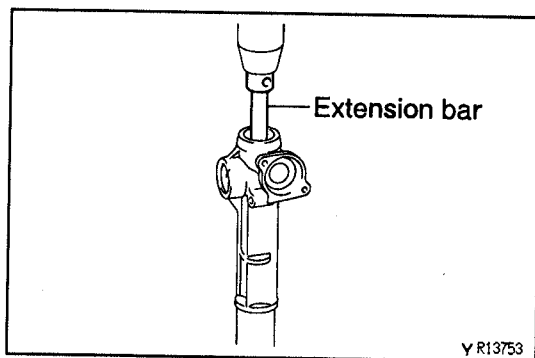
6. **REMOVE RACK GUIDE SPRING CAP LOCK NUT**
Using SST, remove the nut.
SST 09922-10010
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.
7. **REMOVE RACK GUIDE SPRING CAP**
8. **REMOVE RACK GUIDE SPRING AND RACK GUIDE**
9. **REMOVE DUST COVER**
10. **REMOVE CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY**



- (See page SR-65)
11. **REMOVE CONTROL VALVE ASSEMBLY**
(See page SR-66)

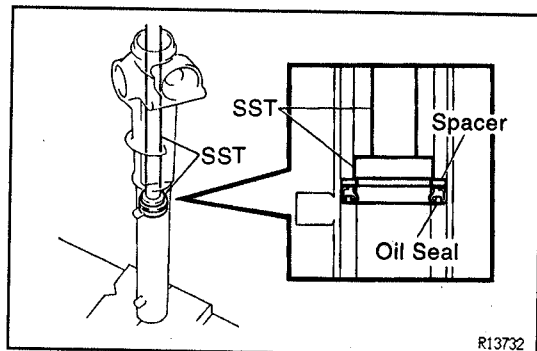
12. **REMOVE CYLINDER END STOPPER**

- (a) Using SST, remove the stopper.
SST 09922-10010
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.
- (b) Remove the O-ring from the stopper.



13. **REMOVE STEERING RACK AND OIL SEAL**

- (a) Using an extension bar and socket wrench, press out the rack and oil seal.
NOTICE: Take care not to drop the rack.
- (b) Remove the oil seal from the rack.



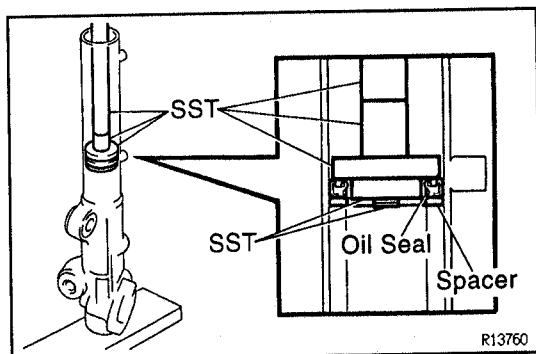
14. **REMOVE OIL SEAL AND SPACER**

- Using SST, press out the oil seal and spacer.
SST 09950-60010 (09951-00360),
09950-70010 (09951-07360)

SR

**POWER STEERING GEAR INSPECTION
AND REPLACEMENT**
(See page SR-67)

SR108-01



POWER STEERING GEAR ASSEMBLY

NOTICE: When using a vise, do not overtighten it.

1. **COAT WITH POWER STEERING FLUID OR MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE**
(See pages SR-77 and 78)

2. **INSTALL SPACER AND OIL SEAL**

- (a) Coat a new oil seal lip with power steering fluid.
- (b) Using SST, press in the oil seal and spacer.
SST 09951-60010 (09951-00330, 09951-00490, 09952-06010),
09951-70010 (09951-07360)

NOTICE:

- Make sure you install the oil seal facing the correct direction.
- Take care that the oil seal does not get reversed as you install it.

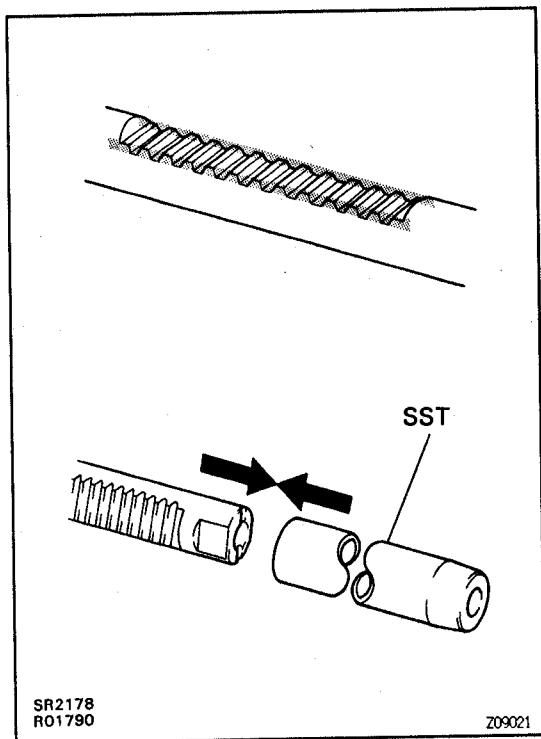
3. **INSTALL STEERING RACK**

- (a) Install SST to the rack.

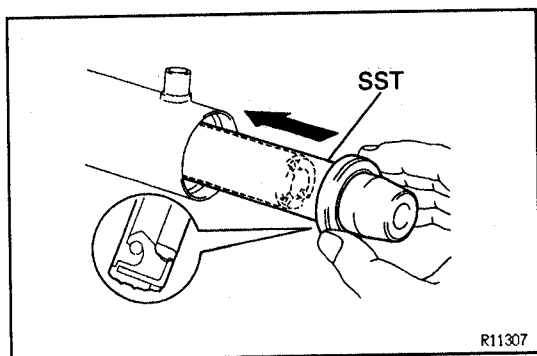
SST 09631-00350

HINT: If necessary, scrape the burrs off the rack teeth end and burnish.

- (b) Coat SST with power steering fluid.
- (c) Install the rack into the rack housing.
- (d) Remove the SST.

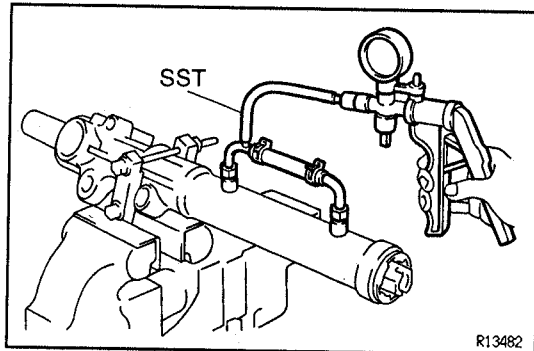
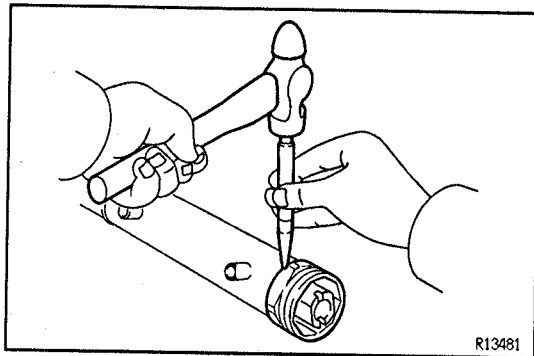
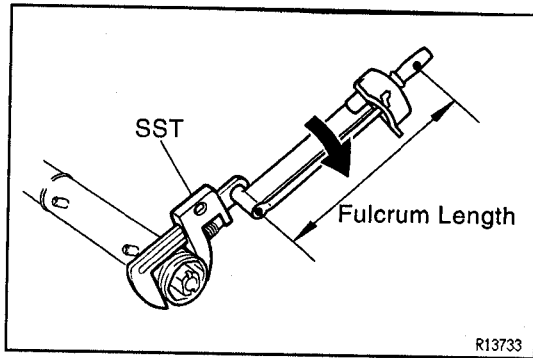


SR



4. **INSTALL OIL SEAL**

- (a) Install SST to the steering rack opposite end.
SST 09631-00350
- (b) Coat SST with power steering fluid.
- (c) Coat a new oil seal lip with power steering fluid.
- (d) Install the oil seal by pushing it onto the SST without tilting.
NOTICE: Make sure you install the oil seal facing the correct direction.
- (e) Remove the SST.



5. INSTALL CYLINDER END STOPPER

- (a) Coat a new O-ring with power steering fluid, and install it to the stopper.

- (b) Using SST, torque the stopper.

SST 09922-10010

Torque: 59 N·m (597 kgf·cm, 43 ft·lbf)

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).

- (c) Using a punch and hammer, stake the rack housing.

6. AIR TIGHTNESS TEST

- (a) Install SST to the unions of the rack housing.

SST 09631-12071

- (b) Apply 53 kPa (400 mmHg, 15.75 in.Hg) of vacuum for about 30 seconds.

- (c) Check that there is no change in the vacuum. If there is change in the vacuum, check the installation of the oil seals.

7. INSTALL CONTROL VALVE ASSEMBLY

(See page SR-71)

8. INSTALL CONTROL VALVE HOUSING WITH CONTROL VALVE ASSEMBLY

(See page SR-72)

9. INSTALL DUST COVER

10. INSTALL RACK GUIDE, RACK GUIDE SPRING AND RACK GUIDE SPRING CAP

- (a) Apply sealant to 2 or 3 threads of the cap.

Sealant:

Part No. 08833-00080, THREE BOND 1344,
LOCTITE 242 or equivalent

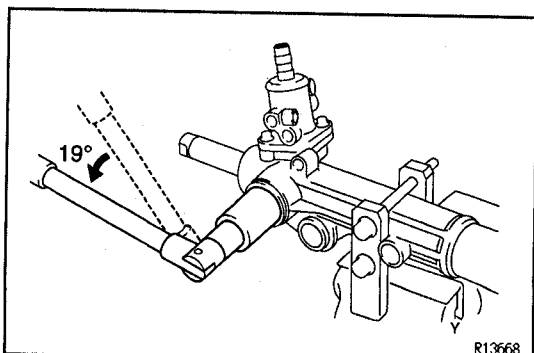
- (b) Temporarily install the cap.

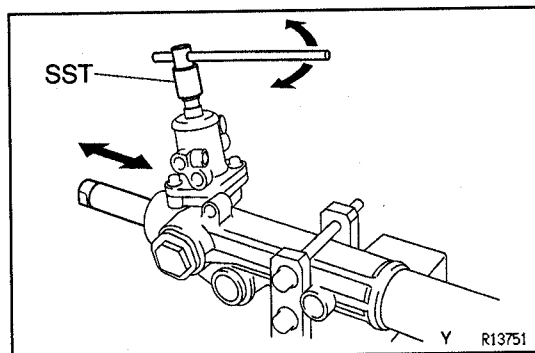
11. ADJUST TOTAL PRELOAD

- (a) Torque the rack guide spring cap.

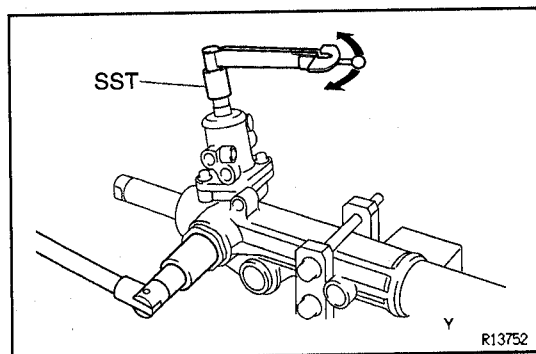
Torque: 25 N·m (250 kgf·cm, 18 ft·lbf)

- (b) Return the cap 19°.

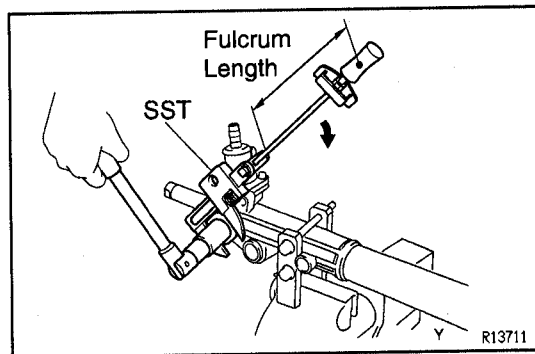




- (c) Using SST, turn the control valve shaft right and left 1 or 2 times.
SST 09616-00010
- (d) Loosen the cap until the rack guide spring is not functioning.



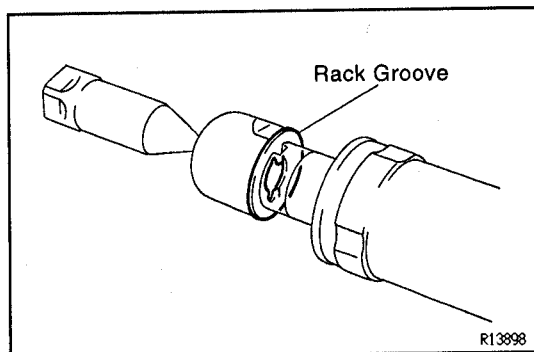
- (e) Using SST and a torque wrench, tighten the cap until the preload is within specification.
SST 09616-00010
Preload (turning):
0.5-1.6 N·m (5-16.5 kgf·cm, 4.3-14.3 in.-lbf)



12. INSTALL RACK GUIDE SPRING CAP LOCK NUT

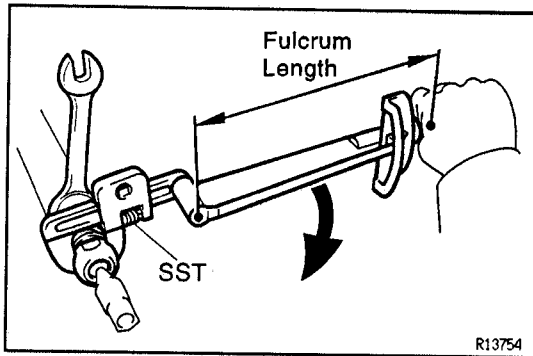
- (a) Apply sealant to 2 or 3 threads of the nut.
Sealant:
Part No.08833-00080, THREE BOND 1344,
LOCTITE 242 or equivalent
- (b) Holding the rack guide spring cap rotating, and using SST, torque the nut.
SST 09922-10010
Torque: 51 N·m (521 kgf·cm, 38 ft·lbf)
NOTICE: Use SST 09922-10010 in the direction shown in the illustration.
HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).
- (c) Recheck the total preload.
Preload (turning):
0.5-1.7 N·m (4.7-17.2 kgf·cm, 4.1-14.9 in.-lbf)

SR



13. INSTALL RH AND LH CLAW WASHERS AND RACK ENDS

- (a) Install a new washer, and temporarily tighten the rack end.
HINT: Align the claws of the washer with the steering rack grooves.



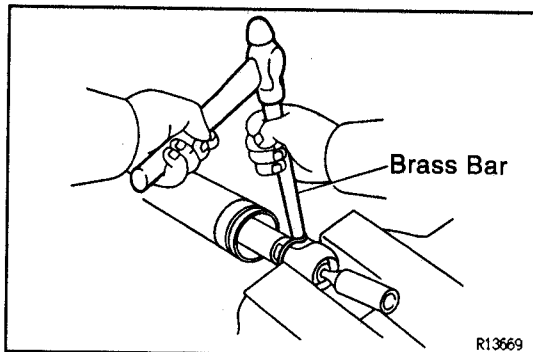
- (b) Using a spanner to hold the steering rack steady, and using SST, torque the rack end.

SST 09922-10010

Torque: 76 N·m (770 kgf·cm, 56 ft·lbf)

NOTICE: Use SST 09922-10010 in the direction shown in the illustration.

HINT: Use a torque wrench with a fulcrum length of 345 mm (13.58 in.).



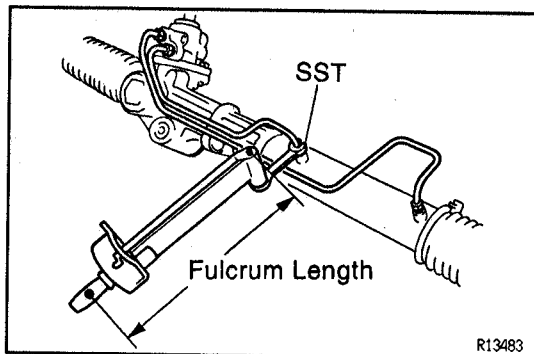
- (c) Using a brass bar and hammer, stake the washer.
NOTICE: Avoid any impact to the rack.

14. INSTALL RH AND LH RACK BOOTS, CLAMPS AND CLIPS

(See page SR-74)

15. INSTALL RH AND LH TIE ROD ENDS AND LOCK NUTS

(See page SR-74)



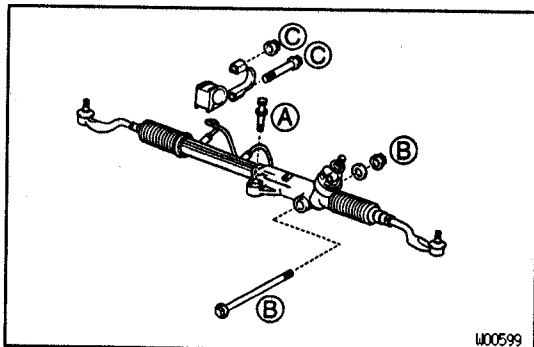
16. INSTALL 2 TURN PRESSURE TUBES

- (a) Install a new union seat to the rack housing.
(b) Install a new union seat to the control valve housing.
(c) Using SST, install the tube.

SST 09633-00020

Torque: 20 N·m (203 kgf·cm, 15 ft·lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).



POWER STEERING GEAR INSTALLATION SR1DA-02

1. INSTALL GROMMET AND BRACKET

2. INSTALL PS GEAR ASSEMBLY

- (a) Torque the gear assembly set bolt.

Bolt ① Torque: 167 N·m (1,700 kgf·cm, 123 ft·lbf)

- (b) Torque the gear assembly set bolt and nut.

Bolt ② Torque: 191 N·m (1,950 kgf·cm, 141 ft·lbf)

- (c) Torque the bolt and nut to the bracket.

Bolt ③ Torque: 167 N·m (1,700 kgf·cm, 123 ft·lbf)

3. CONNECT PRESSURE FEED AND RETURN TUBES

Using SST, connect the tube.

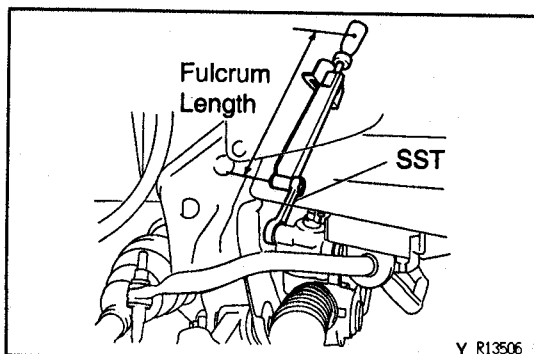
SST 09631-22020

Torque:

Pressure feed tube: 36 N·m (365 kgf·cm, 26 ft·lbf)

Return tube: 40 N·m (405 kgf·cm, 29 ft·lbf)

HINT: Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).



4. **CONNECT INTERMEDIATE NO. 2 SHAFT**
(See page SR-23)
5. **CONNECT RH AND LH TIE ROD ENDS**
(See page SA-85)
6. **POSITION FRONT WHEEL FACING STRAIGHT AHEAD**
HINT: Do it with the front of the vehicle jacked up.
7. **CENTER SPIRAL CABLE**
(See page SR-23)
8. **INSTALL STEERING WHEEL**
 - (a) Align the matchmarks on the wheel and steering column main shaft.
 - (b) Temporarily tighten the wheel set nut.
 - (c) Connect the connector.
9. **BLEED POWER STEERING SYSTEM**
(See page SR-9)
10. **CHECK STEERING WHEEL CENTER POINT**
11. **TORQUE STEERING WHEEL SET NUT**
Torque: 35 N·m (357 kgf·cm, 26 ft·lbf)
12. **INSTALL STEERING WHEEL PAD**
(See page SR-24)
13. **CHECK FRONT WHEEL ALIGNMENT**
(See page SA-8)
14. **INSTALL ENGINE UNDER COVER**
Tighten the 4 bolts.

SERVICE SPECIFICATIONS

SERVICE DATA

SR0VC-05

ON—VEHICLE INSPECTION		
Steering wheel freeplay	Maximum	30 mm (1.18 in.)
2RZ—FE, 3RZ—FE and 5VZ—FE:		
Drive belt tension	New belt	135—180 lbf
Drive belt tension	Used belt	85—120 lbf
Oil level rise	Maximum	Below 5 mm (0.20 in.)
2WD and 4WD:		
Oil pressure at idle speed with valve closed	Minimum	8,336 kPa (85 kgf/cm ² , 1,209 psi)
Steering effort at idle speed	Maximum	4.9 N·m (50 kgf·cm, 43 in.-lbf)
TILT STEERING COLUMN		
Pawl stopper mark		
	11 or A	12.85—12.75 mm (0.4980—0.5020 in.)
	12 or B	12.55—12.65 mm (0.4941—0.4980 in.)
	13 or C	12.45—12.55 mm (0.4902—0.4941 in.)
	14 or D	12.35—12.45 mm (0.4862—0.4902 in.)
	15 or E	12.25—12.35 mm (0.4823—0.4862 in.)
PS VANE PUMP		
2RZ—FE and 3RZ—FE:		
Pump shaft and front housing bushing oil clearance	STD	0.03—0.05 mm (0.0012—0.0020 in.)
Pump shaft and front housing bushing oil clearance	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	8.6 mm (0.339 in.)
Vane plate thickness	Minimum	1.397 mm (0.05500 in.)
Vane plate length	Minimum	14.991 mm (0.59020 in.)
Vane plate and pump rotor groove clearance	Maximum	0.033 mm (0.00130 in.)
Vane plate length	Pump rotor and cam ring mark	
	None	14.999—15.001 mm (0.59051—0.59059 in.)
	1	14.997—14.999 mm (0.59043—0.59051 in.)
	2	14.995—14.997 mm (0.59035—0.59043 in.)
	3	14.993—14.995 mm (0.59027—0.59035 in.)
	4	14.991—14.993 mm (0.59020—0.59027 in.)
Flow control valve spring length	Minimum	33.2 mm (1.307 in.)
Pump rotating torque	Maximum	0.25 N·m (2.5 kgf·cm, 2.2 in.-lbf) or less
5VZ—FE:		
Pump shaft and front housing bushing oil clearance	STD	0.03—0.05 mm (0.0012—0.0020 in.)
Pump shaft and front housing bushing oil clearance	Maximum	0.07 mm (0.0028 in.)
Vane plate height	Minimum	8.6 mm (0.339 in.)
Vane plate thickness	Minimum	1.397 mm (0.05500 in.)
Vane plate length	Minimum	14.991 mm (0.59020 in.)
Vane plate and pump rotor groove clearance	Maximum	0.033 mm (0.00130 in.)
Vane plate length	Pump rotor and cam ring mark	
	None	14.999—15.001 mm (0.59051—0.59059 in.)
	1	14.997—14.999 mm (0.59043—0.59051 in.)
	2	14.995—14.997 mm (0.59035—0.59043 in.)
	3	14.993—14.995 mm (0.59027—0.59035 in.)
	4	14.991—14.993 mm (0.59020—0.59027 in.)

SR

Flow control valve spring length	Minimum	33.2 mm (1.307 in.)
Pump rotating torque	Maximum	0.27 N·m (2.8 kgf·cm, 2.4 in.-lbf) or less
MANUAL STEERING GEAR		
Steering rack runout	Maximum	0.3 mm (0.0118 in.)
Total preload	Turning	1.3 N·m (13 kgf·cm, 11.3 in.-lbf) or less
PS GEAR		
2WD:		
Steering rack runout	Maximum	0.3 mm (0.0118 in.)
Total preload	Turning	0.5–1.6 N·m (5–16.5 kgf·cm, 4.3–14.3 in.-lbf)
4WD:		
Steering rack runout	Maximum	0.3 mm (0.0118 in.)
Total preload	Turning	0.5–1.7 N·m (4.7–17.2 kgf·cm, 4.1–14.9 in.-lbf)

BROVD-06

TORQUE SPECIFICATIONS

Part tightened		N·m	kgf·cm	ft·lbf
STEERING COLUMN				
Steering wheel set nut		35	357	26
Steering wheel pad set screw (Torx screw)		9.0	90	78 in.-lbf
Steering column assembly set nut and bolt		26	260	19
Main shaft assembly x Sliding yoke	2WD	36	367	27
Sliding yoke x Intermediate No.2 shaft	2WD	36	367	27
Control valve shaft x Intermediate No.2 shaft	2WD	36	367	27
Main shaft assembly x Universal joint No.2	4WD	35	360	26
Universal joint No.2 x Intermediate No.2 shaft	4WD	35	360	26
Control valve shaft x Intermediate No.2 shaft	4WD	35	360	26
NON-TILT STEERING COLUMN:				
Column shift lever assembly x Column tube	Column shift	8	82	71 in.-lbf
Turn signal bracket set bolt	Column shift	2	20	17 in.-lbf
Column hole cover x Body	2WD	8	82	71 in.-lbf
Column hole cover No.2 set bolt	4WD	8	82	71 in.-lbf
TILT STEERING COLUMN:				
Tilt lever assembly set bolt		2	20	17 in.-lbf
Turn signal bracket set bolt		5.7	58	51 in.-lbf
Tilt sub lever side pawl set bolt x nut		6	61	53 in.-lbf
Tilt lever retainer set nut		15	153	11
Compression spring set bolt		8	82	71 in.-lbf
TILT STEERING COLUMN (NASTECH):				
Column shift lever assembly x Column tube		9.3	95	83 in.-lbf
Turn signal bracket set bolt		3.4	35	31 in.-lbf
PS VANE PUMP				
2RZ-FE, 3RZ-FE and 5VZ-FE:				
Union bolt x Pressure feed tube		47	475	34
Pressure port union x Pump housing		83	850	61
Bracket x Pump assembly	5VZ-FE	43	440	32
Oil reservoir set bolt	Front	13	130	9
	Rear	24	240	17
Vane pump pulley set nut		43	440	32
Vane pump assembly with bracket set bolt and nut	5VZ-FE	43	440	32
Vane pump assembly set bolt	2RZ-FE, 3RZ-FE	39	400	29

Part tightened	N-m	kgf-cm	ft-lbf
Rear housing set bolt	24	240	17
MANUAL STEERING GEAR			
Pinion bearing adjusting screw	17 (25)	174 (250)	13 (18)
Pinion bearing adjusting screw lock nut	88 (113)	894 (1,150)	65 (83)
Rack guide spring cap	25	250	18
Rack guide spring cap lock nut	50 (69)	513 (700)	37 (51)
Rack housing No.2 bracket set bolt	61	620	45
Rack x Rack end	61 (83)	621 (850)	45 (62)
Tie rod end lock nut	54	550	40
Manual steering gear assembly x Body	201	2,050	148
Sliding yoke x Intermediate No.2 shaft	36	367	27
Pinion shaft x Intermediate No.2 shaft	36	367	27
PS GEAR			
2WD:			
Cylinder end stopper	59	600	43
Bearing guide nut	25	250	18
Control housing set bolt	18	185	13
Rack guide spring cap	25	250	18
Rack guide spring cap lock nut	50 (60)	513 (700)	37 (51)
Rack housing No.2 bracket set bolt	39	400	29
Rack x Rack end	75 (103)	762 (1,050)	55 (76)
Tie rod end lock nut	54	550	40
Turn pressure tube union nut	20 (25)	203 (250)	15 (18)
PS gear assembly set bolt	201	2,050	148
Pressure feed tube x Control valve housing	36 (45)	365 (450)	26 (33)
Return tube x Control valve housing	40 (49)	405 (500)	29 (36)
Sliding yoke x Intermediate No.2 shaft	36	367	27
Control valve shaft x Intermediate No.2 shaft	36	367	27
Steering wheel set nut	35	357	26
4WD:			
Cylinder end stopper	59 (78)	597 (800)	43 (58)
Rack guide spring cap lock nut	51 (60)	521 (700)	38 (51)
Rack x Rack end	76 (103)	770 (1,050)	56 (76)
Tie rod end lock nut	55	560	41
Turn pressure tube union nut	20 (25)	203 (250)	15 (18)
PS gear assembly set bolt	167	1,700	123
PS gear assembly set bolt and nut	191	1,950	141
Bracket x Body	167	1,700	123
Pressure feed tube x Control valve housing	36 (45)	365 (450)	26 (33)
Return tube x Control valve housing	40 (49)	405 (500)	29 (36)
Universal joint No.2 x Intermediate No.2 shaft	35	360	26
Control valve shaft x Intermediate No.2 shaft	35	360	26
Steering wheel set nut	35	357	26

(): For use without SST

SR