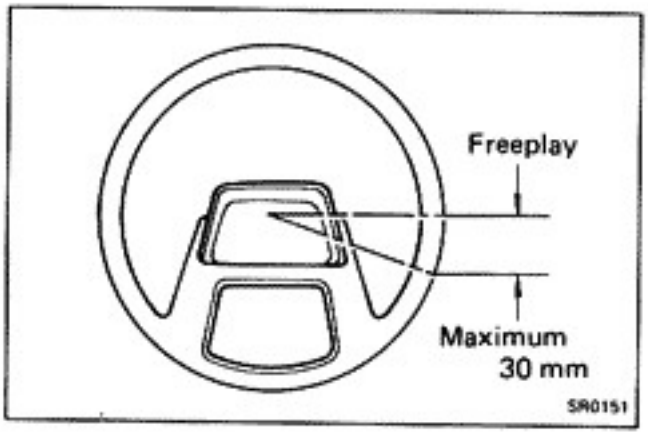
STEERING

PRECAUTIONS

Care must be taken to replace parts properly because could affect the performance of the steering system and in a driving hazard.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Pag
Hard steering	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Power steering belt loose	Tighten belt	SR-2
	Oil level in reservoir low	Check reservoir	SR-1
	Insufficient lubricant	Lubricate suspension and steering linkage	
	Excessive caster	Check front end alignment	FA-3
	Lower arm ball joints worn	Replace lower arm ball joints	FA-1
	Power steering unit faulty	Check power steering unit	SR-1
Poor return	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Insufficient lubricant	Lubricate suspension and steering linkage	
	Wheel alignment incorrect	Check front end alignment	FA-3
Excessive play	Steering gear loose	Tighten gear bolts	
	Main shaft worn	Replace main shaft	SR-5
	Lower arm ball joints worn	Replace lower arm ball joints	FA-1



ON-VEHICLE INSPECTION

1. **CHECK THAT STEERING WHEEL FREEPLAY IS CORRECT**

With the vehicle stopped and pointed straight ahead, the steering wheel gently back and forth with light fi pressure. Freeplay should not exceed the maximum li

Maximum play: 30 mm (1.18 in.)

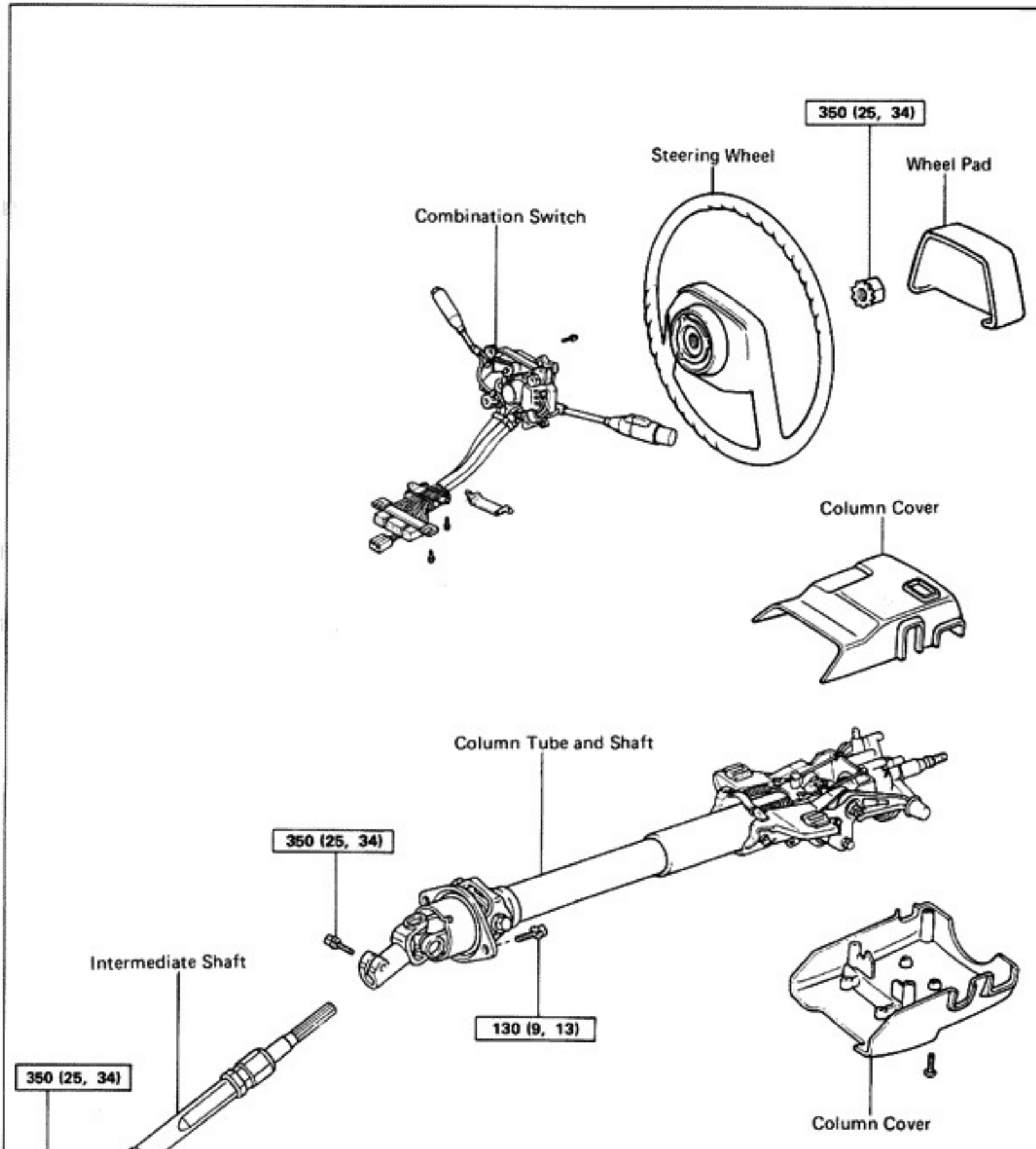
If incorrect, repair as required.

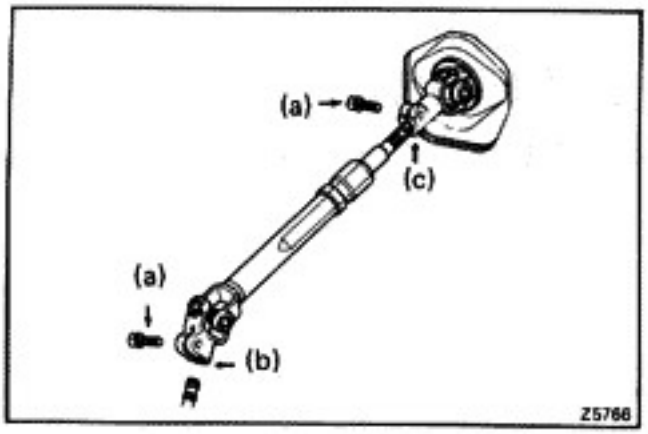
2. **CHECK STEERING LINKAGE AND GEAR HOUSI**

(a) Check the steering linkage for looseness or damag Check that:

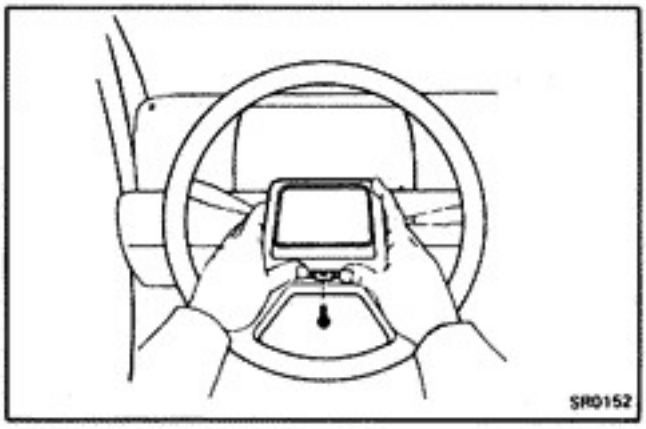
STEERING COLUMN ASSEMBLY WITH TILT STEERING

REMOVAL OF STEERING COLUMN

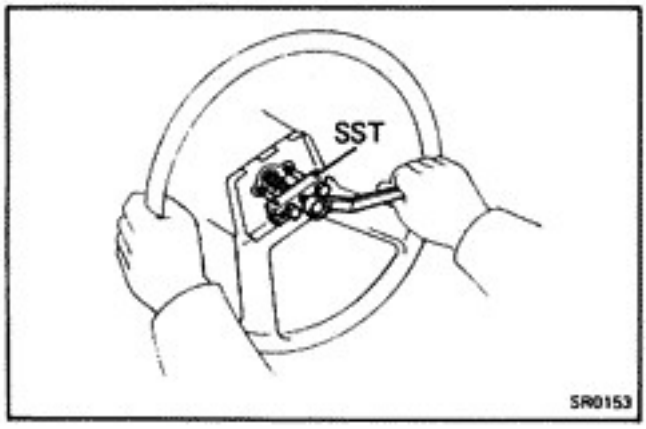




1. **REMOVE NEGATIVE CABLE FROM BATTERY**
2. **REMOVE INTERMEDIATE SHAFT**
   (a) Remove the two set bolts.
   (b) Remove the rack housing side first.
   (c) Remove the column side.

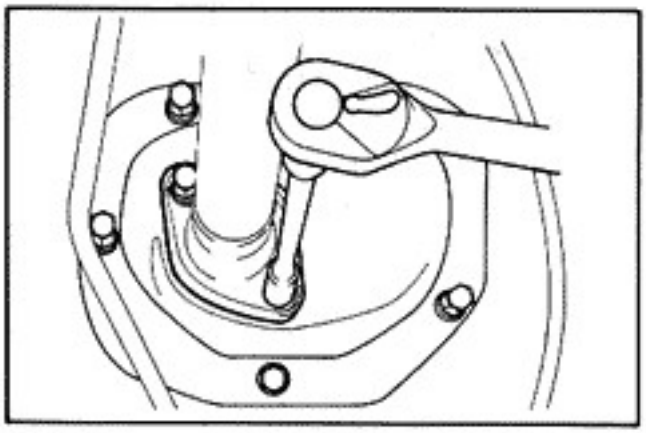


3. **REMOVE STEERING WHEEL**
   (a) Remove the screw at the lower portion of the ste wheel pad and pull the pad out upward.
   (b) Remove the steering wheel nut.



   (c) Using SST, remove the steering wheel.
   SST 09609-20011

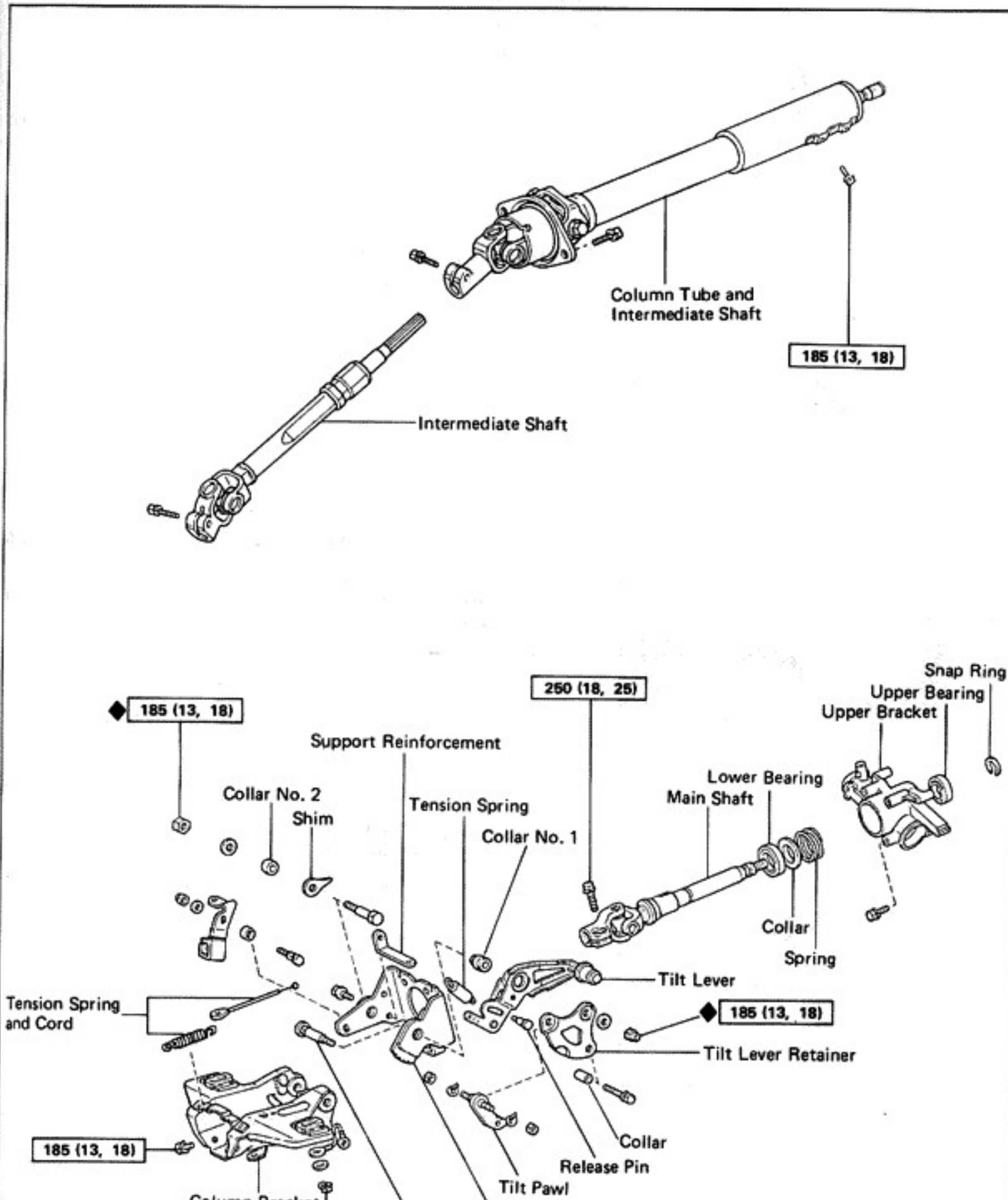
4. **REMOVE INSTRUMENT LOWER PANEL AND DUCT**
5. **REMOVE COLUMN COVER AND COMBINAT SWITCH**

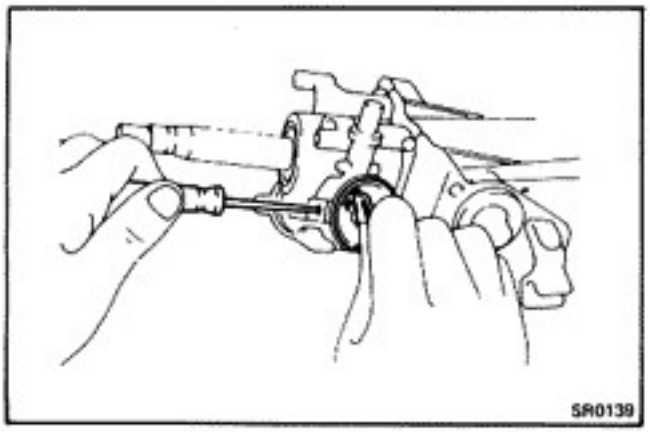


6. **REMOVE TWO MOUNTING BOLTS FROM COL HOLE COVER PLATE**
7. **REMOVE TWO COLUMN BRACKET MOUNTING N**

8. **PULL OUT COLUMN TUBE AND SHAFT**
   Turn the column tube as shown and pull out the shaft

COMPONENTS


Column Tube and Intermediate Shaft
185 (13, 18)
Intermediate Shaft
185 (13, 18)
250 (18, 25)
Snap Ring
Upper Bearing
Upper Bracket
Support Reinforcement
Collar No. 2
Shim
Tension Spring
Collar No. 1
Lower Bearing
Main Shaft
Collar
Spring
Tilt Lever
Tension Spring and Cord
185 (13, 18)
Tilt Lever Retainer
185 (13, 18)
Collar
Release Pin
Tilt Pawl



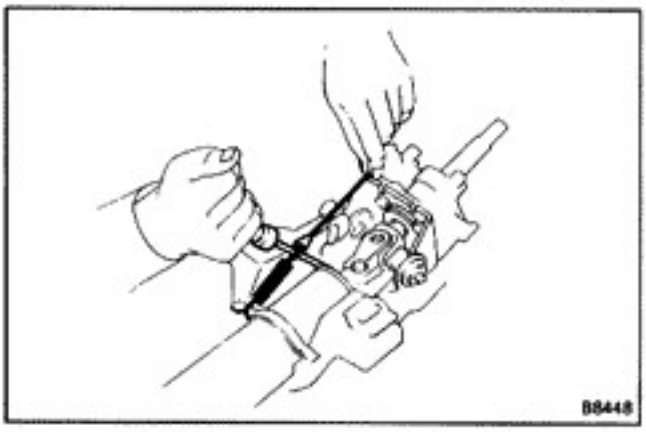
DISASSEMBLY OF STEERING COLUMN ASS AND TILT MECHANISM

(See page SR-5)

1. REMOVE IGNITION KEY CYLINDER

(a) Place the ignition key at the ACC position.

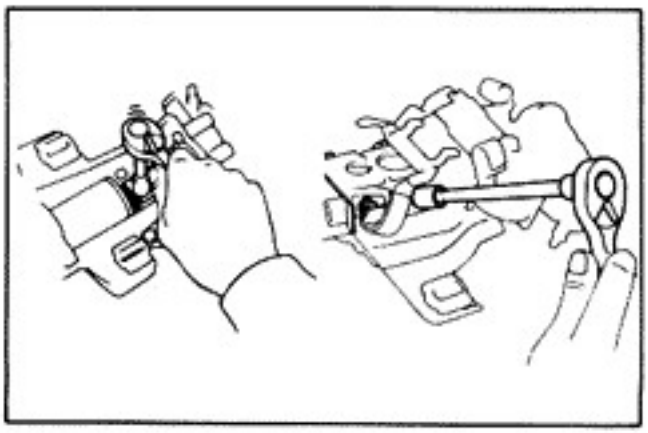
(b) Push down the stop key with a thin rod, and pull the key cylinder.



2. REMOVE TENSION SPRINGS AND CORDS

(a) Fully tilt the main shaft upward.

(b) Pry the spring and remove the cord and spring.



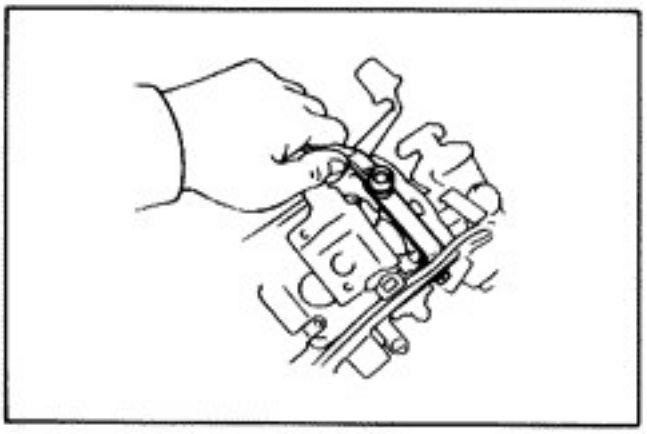
3. DISCONNECT INTERMEDIATE SHAFT AND M SHAFT

(a) Place matchmarks on the intermediate shaft and versal joint.

(b) Remove the joint bolt.

(c) Remove the four bracket bolts.

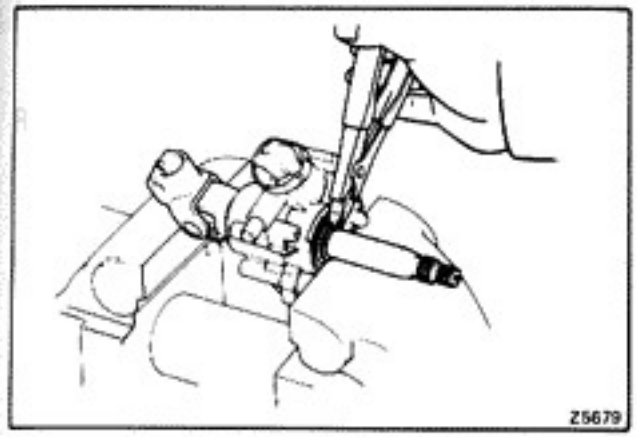
(d) Separate the tilt mechanism from the column tub



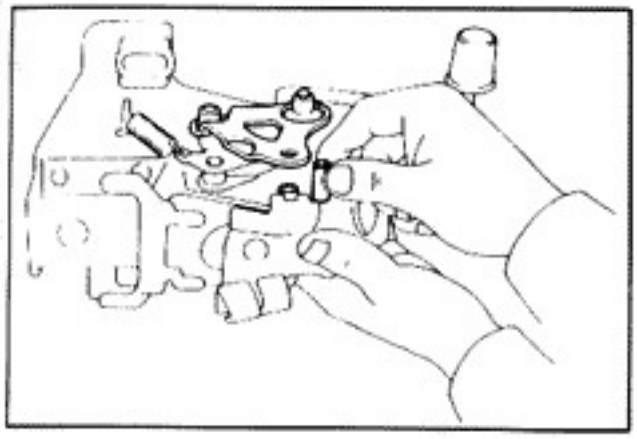
4. DISCONNECT UPPER BRACKET FROM TILT STEERING SUPPORT

(a) Remove the support reinforcement.

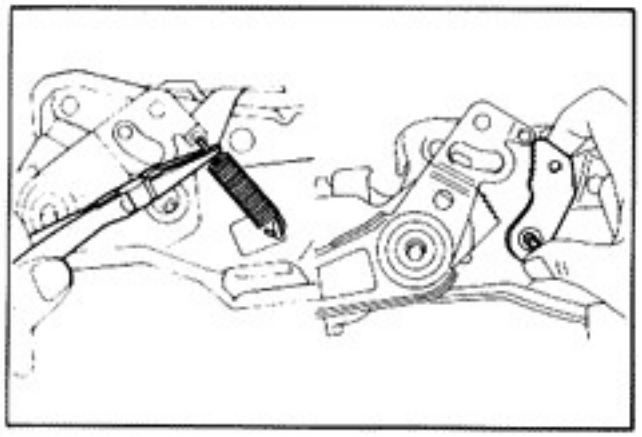
(b) Remove the three bolts and disconnect the bra from the support.



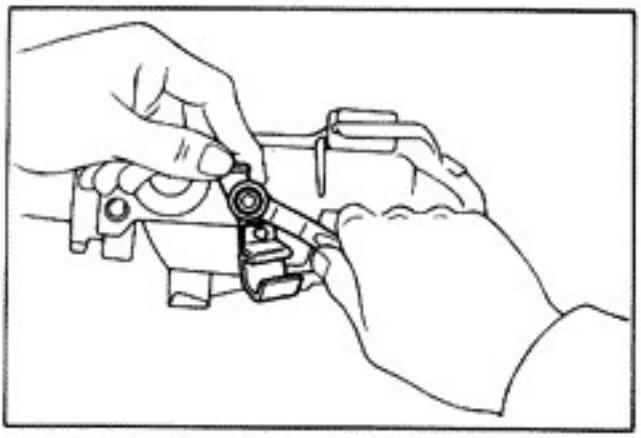
5. REMOVE MAIN SHAFT FROM UPPER BRACKE
   (a) Using a soft jaw vise and snap ring pliers, remove th snap ring.
   (b) Pull out the main shaft from the bracket.



6. DISASSEMBLE TILT STEERING SUPPORT AN COLUMN BRACKET
   (a) Remove the two nuts, bolt and retainer.
   (b) Take out the collar and release pin.

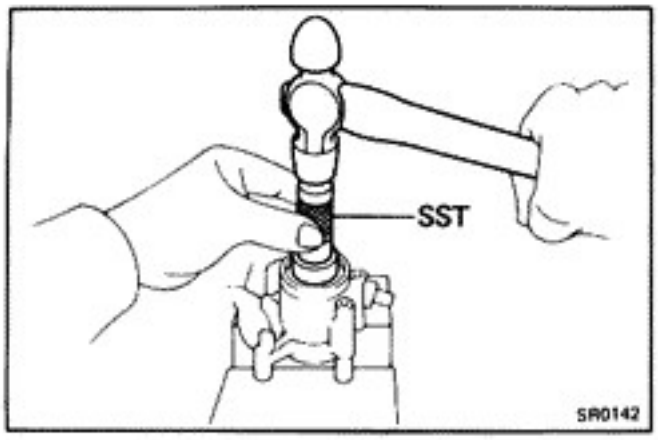


   (c) Remove the tension spring and take out the tilt paw



   (d) Remove the guide pin bolt, support bolt and shim.

   (e) Using a hammer, rèmove the serration bolt and ti lever.

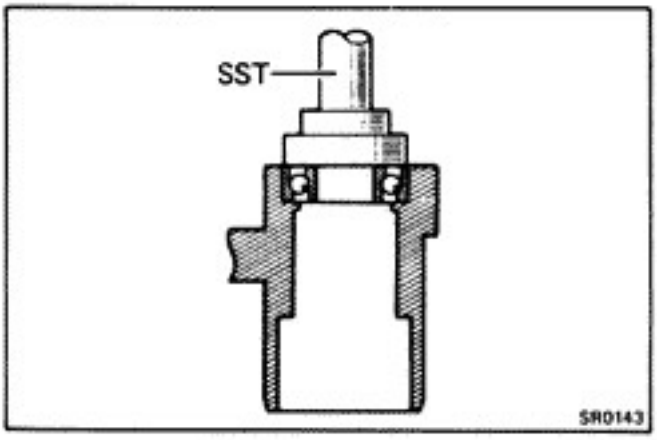


INSPECTION AND REPAIR OF STEERING COLUMN ASSEMBLY

1. IF NECESSARY, REPLACE BEARING IN UP BRACKET

(a) Using SST and a hammer, remove the bearing.

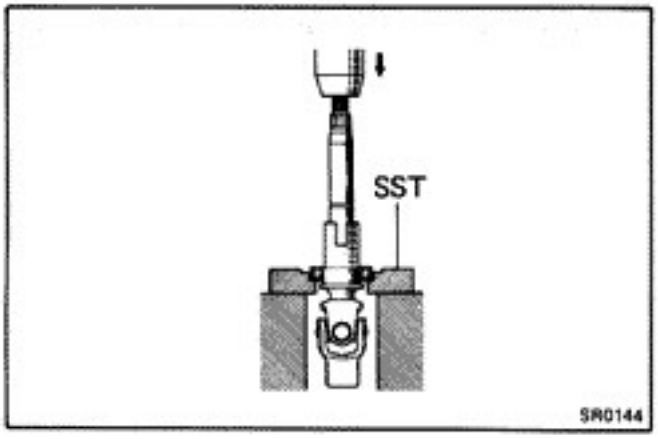
SST 09620-30010 (09623-30010)



(b) Pack MP grease into the bearing.

(c) Using SST and a hammer, drive the bearing int bracket.

SST 09620-30010 (09624-30010, 09631-00020)

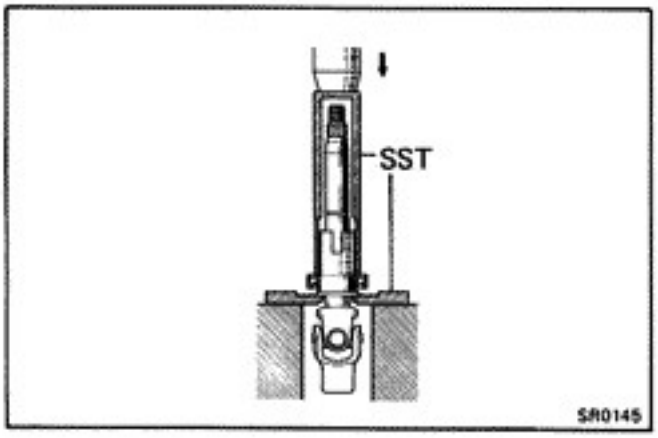


2. IF NECESSARY, REPLACE LOWER BEARING

(a) Using SST and a press, remove the lower bearing the main shaft.

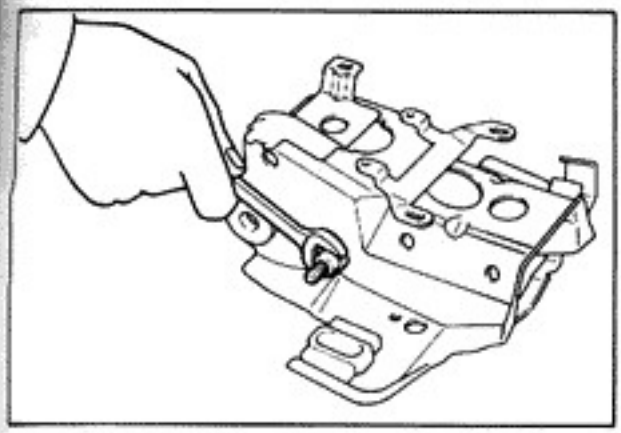
SST 09527-20011

(b) Pack MP grease into the bearing.



(c) Using SST and a press, assemble the lower be and main shaft.

SST 09236-00101 and 09612-22011



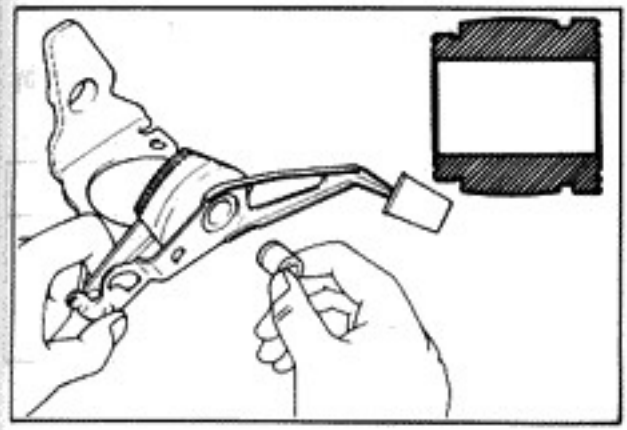
ASSEMBLY OF STEERING COLUMN ASSEMBLY AND TILT MECHANISM

(See page SR-5)

1. COAT ALL RUBBING PARTS WITH MP GREASE

2. ASSEMBLE PAWL SET BOLT

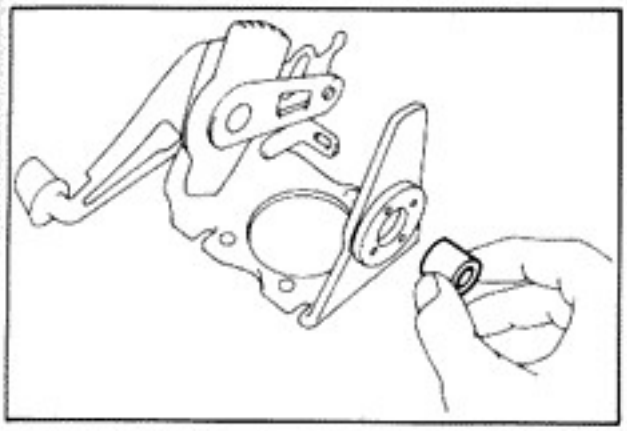
   Torque: 185 kg-cm (13 ft-lb, 18 N-m)



3. ASSEMBLE TILT LEVER TO SUPPORT

   (a) Select a collar No. 1 which will eliminate all play.

Outer diameter	mm (in.)
17.989 – 17.996	(0.7082 – 0.7085)
17.996 – 18.003	(0.7085 – 0.7088)
18.003 – 18.010	(0.7088 – 0.7091)
18.010 – 18.017	(0.7091 – 0.7093)
18.017 – 18.024	(0.7093 – 0.7096)

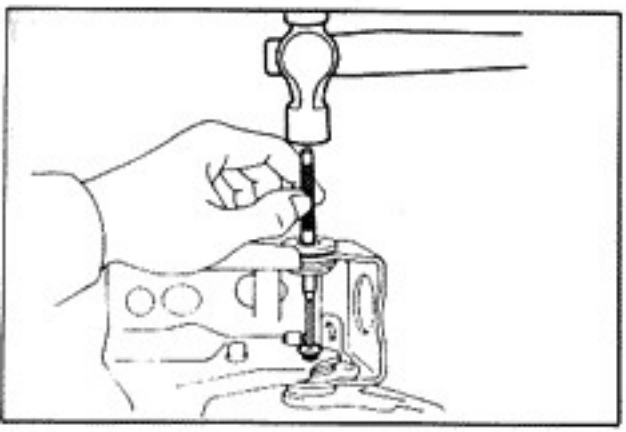


   (b) Install tilt lever and collar No. 1 to the support.

   (c) Select a collar No. 2 which will eliminate all play.

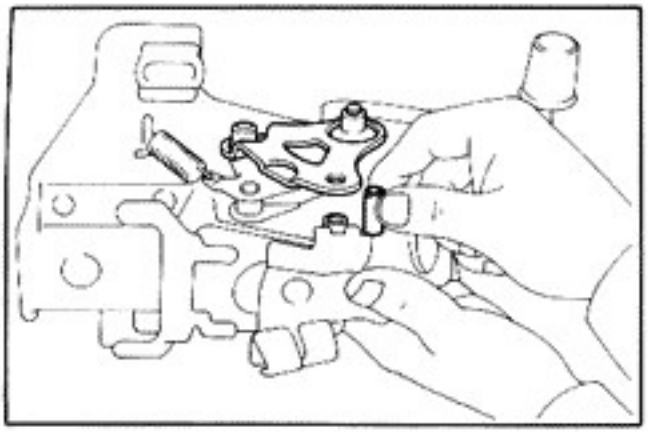
Outer diameter	mm (in.)
17.982 – 18.000	(0.7080 – 0.7087)
18.000 – 18.018	(0.7087 – 0.7094)

   (d) Install collar No. 2 to the support.



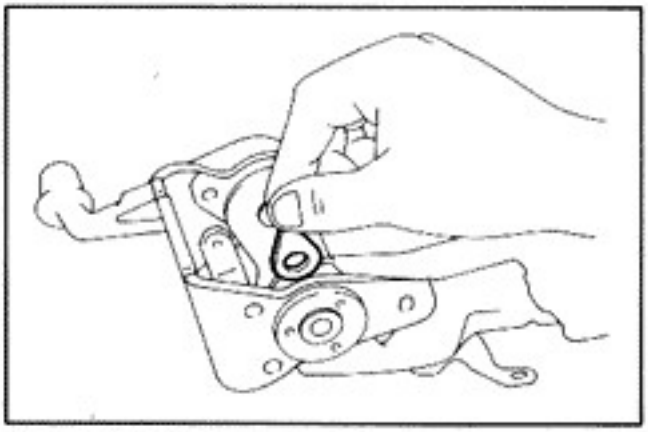
   (e) Drive the serration bolt into the support.

   (f) Install the tilt pawl, tension spring and the release pin.



(g) Assemble the collar and tilt lever retainer.

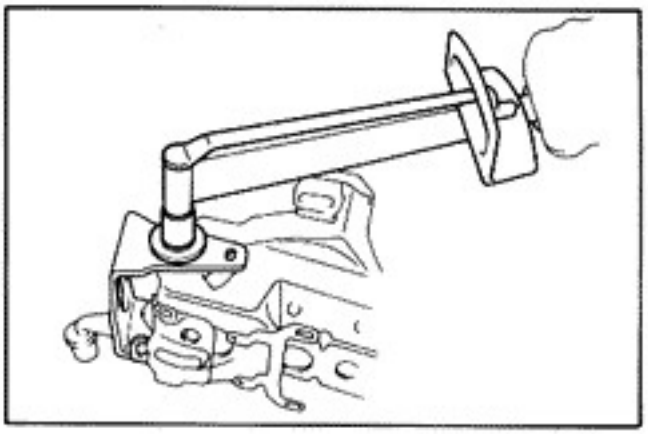
Torque: 185 kg-cm (13 ft-lb, 18 N·m)



4. INSTALL SHIM, BOLT AND NUT

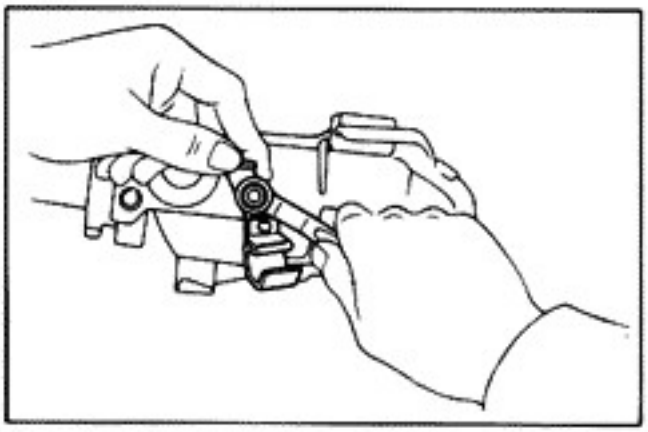
(a) Select a shim which fits snugly when pressed i hand.

Thickness	mm (in.)	Thickness	mm (in.)
0.2	(0.008)	1.4	(0.055)
0.5	(0.020)	1.8	(0.071)
0.8	(0.031)		



(b) Install the shim, bolt, washer and a lock nut.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



5. INSTALL TILT STEERING SUPPORT STOPPER B

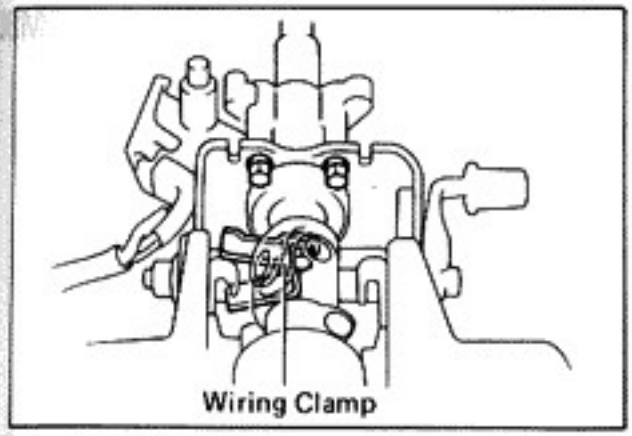
(a) Install the stopper bolt, bracket, washer and nut.

(b) Tighten the nut by holding the bracket with you gers as shown.

Torque: 100 kg-cm (7 ft-lb, 10 N·m)

6. ASSEMBLE MAIN SHAFT AND UPPER BRACKE

(a) Assemble the collar, spring and main shaft, and in them into the bracket.



7. ASSEMBLE UPPER BRACKET AND SUPPORT

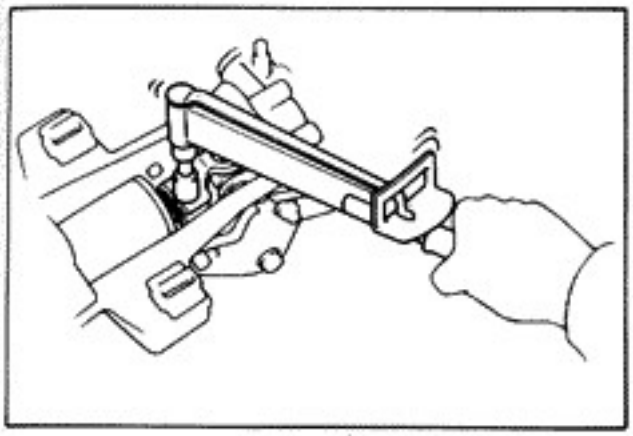
(a) Apply anaerobic adhesive and sealant [THRE BOND 1324 (Part No. 08833-00070) or equivalen to 1 or 2 threads of the bolt end.

NOTE: This adhesive will not harden while exposed to a It will act as a sealer or binding agent only when appli between of threads, etc. and air is cut off.

(b) Install the two bolts; one with a wiring clamp.

Torque: 75 kg-cm (65 in.-lb, 7.4 N·m)

(c) Install the support reinforcement.



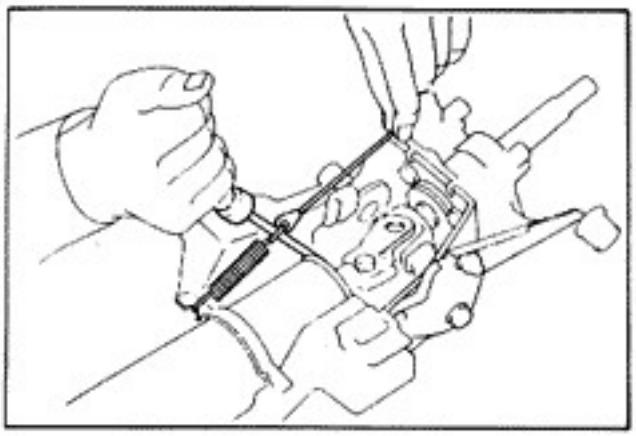
8. ASSEMBLE COLUMN BRACKET TO COLUMN TUB

Torque: 185 kg-cm (13 ft-lb, 18 N·m)

9. CONNECT MAIN SHAFT AND INTERMEDIATE SHAFT

Align the marks on the joint flange and intermediate sha and tighten the bolt.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)



10. INSTALL TWO SPRINGS AND TWO CORDS

(a) Connect the tension spring and cord, and hook th spring to the hanger.

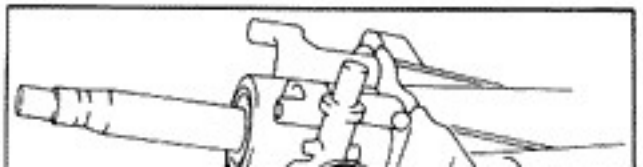
(b) Pry the spring end and hook the cord end to th support.

(c) Hook the cords to the cord guides.

11. CHECK OPERATION OF TILT STEERING LEVER AND SUPPORT

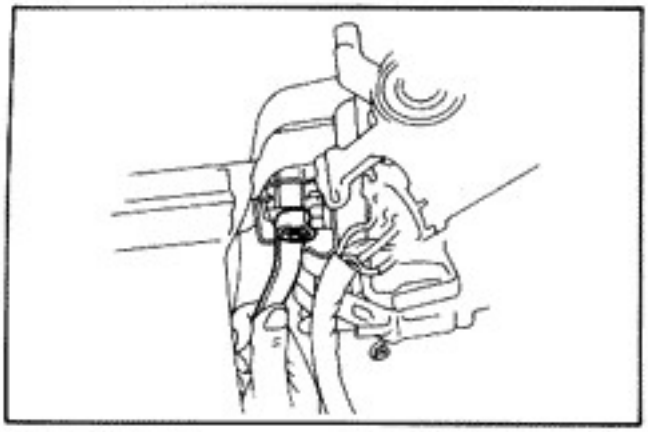
(a) Check that there is no axial or horizontal play at th end of the main shaft.

(b) Check that the main shaft lock securely in all si positions.



12. INSTALL IGNITION SWITCH

Turn the ignition key plate to the ACC position, an install the key cylinder into the upper bracket.

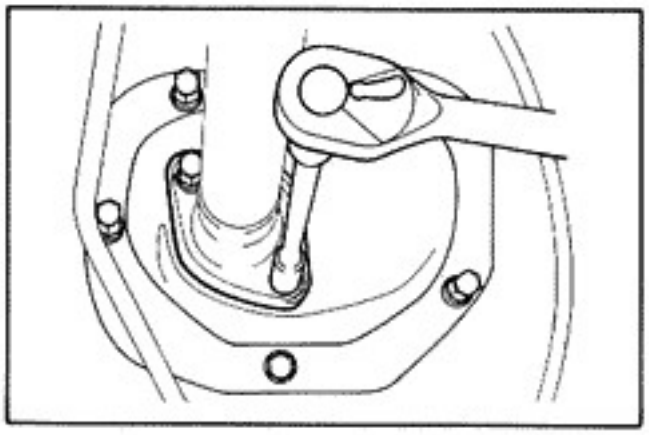


INSTALLATION OF STEERING COLUMN ASS

(See page SR-3)

1. PLACE COLUMN AND SHAFT IN INSTALLED POSITION

2. INSTALL COLUMN BRACKET MOUNTING NUTS BY HAND



3. INSTALL STEERING COLUMN HOLE COVER PLATE

   Tighten the bolts.

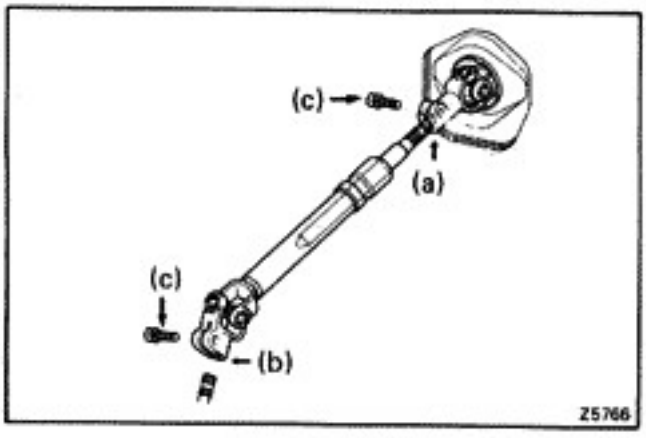
   Torque: 130 kg-cm (9 ft-lb, 13 N·m)

4. TORQUE TWO COLUMN BRACKET MOUNTING NUTS

   Torque: 250 kg-cm (18 ft-lb, 25 N·m)

5. INSTALL COMBINATION SWITCH AND COLUMN COVER

6. INSTALL AIR DUCT AND INSTRUMENT LOWER PANEL

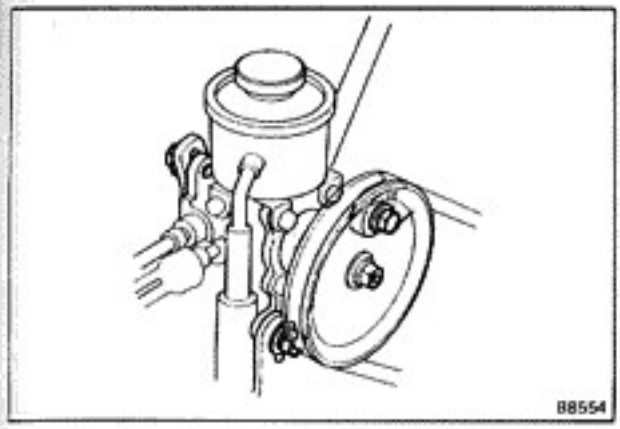


7. INSTALL INTERMEDIATE SHAFT
   (a) Install the column side first.
   (b) Install the rack housing side.
   (c) Install the two bolts and torque them.

   Torque: 350 kg-cm (25 ft-lb, 34 N·m)

8. CONNECT NEGATIVE CABLE TO BATTERY

9. INSTALL STEERING WHEEL
   (a) Position the front wheels straight ahead and in the steering wheel in the neutral position.



POWER STEERING

On-Vehicle Inspection

CHECKING DRIVE BELT TENSION

Using a belt tension gauge, check the drive belt tension.

Belt tension gauge:

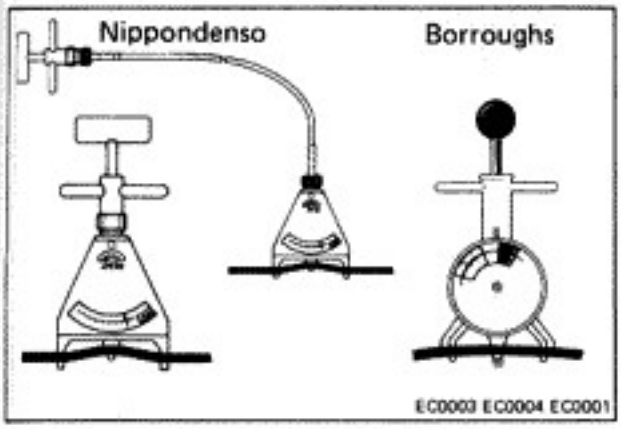
Nippondenso BTG-20 (95506-00020) or
Borroughs No. BT-33-73F

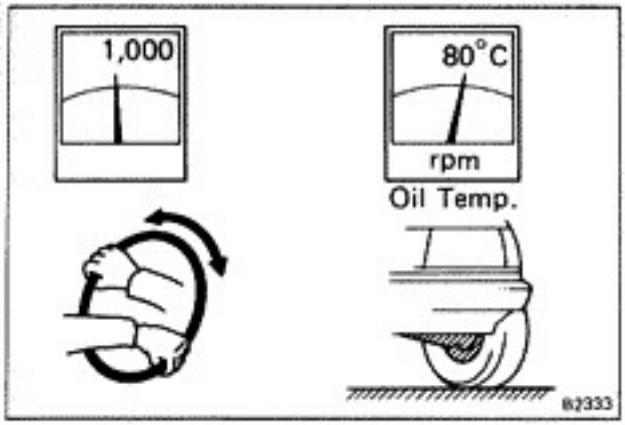
Drive belt tension:

New belt	**125 ± 25 lb**
Used belt	**80 ± 20 lb**

NOTE:

- "New belt" refers to a brand new belt which has never before been used.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.





FLUID LEVEL CHECK

1. **KEEP VEHICLE LEVEL**
2. **BOOST FLUID TEMPERATURE**

With the engine idling at 1,000 rpm or less, turn the steering wheel from lock to lock several times to boost the fluid temperature.

Fluid temperature: 80°C (176°F)

3. **CHECK FOR FOAMING OR EMULSIFICATION**

NOTE: Foaming and emulsification indicate the existence of air in the system or that the fluid level is too low.

4. **CHECK FLUID LEVEL IN RESERVOIR TANK**

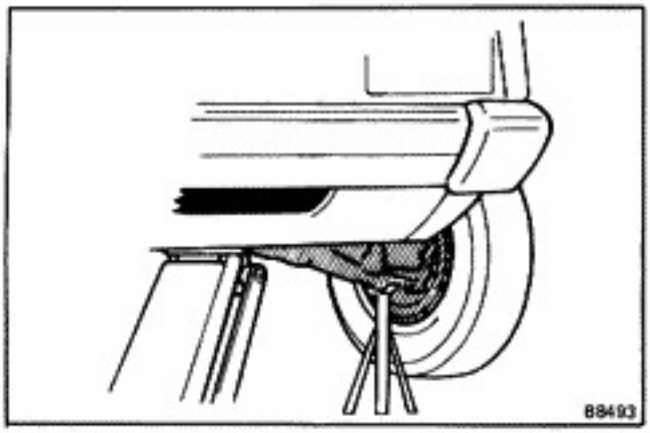
Check the fluid level and add fluid if necessary.

Fluid: ATF DEXRON® or DEXRON® II

NOTE: Check that the fluid level is within the HOT LEVEL of the dipstick. If the fluid is cold, check that it is within the COLD LEVEL of the dipstick.

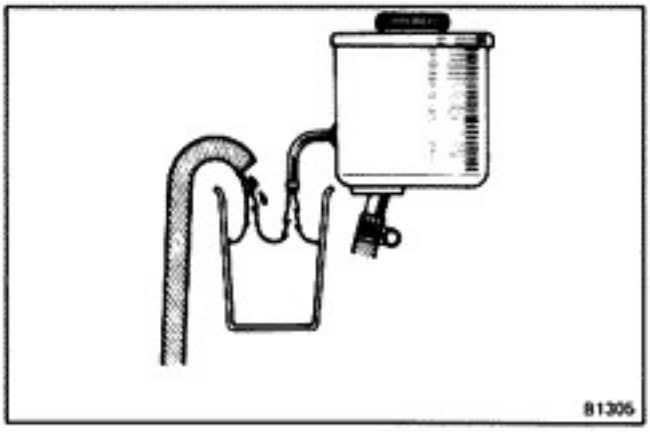
CHECK IDLE-UP

1. **WARM UP ENGINE**
2. **TURN AIR CONDITIONER SWITCH OFF**

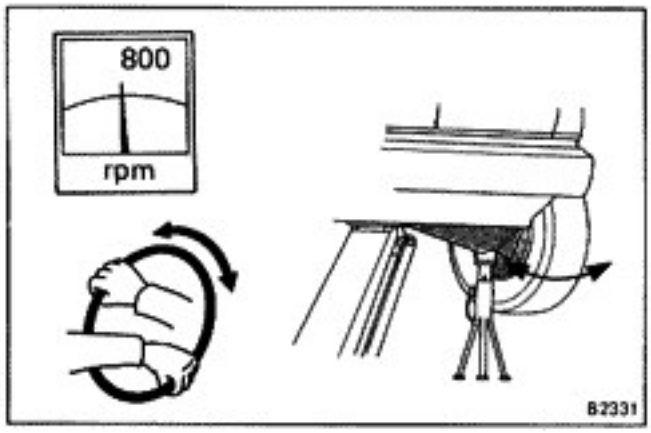


REPLACEMENT OF POWER STEERING FLUID

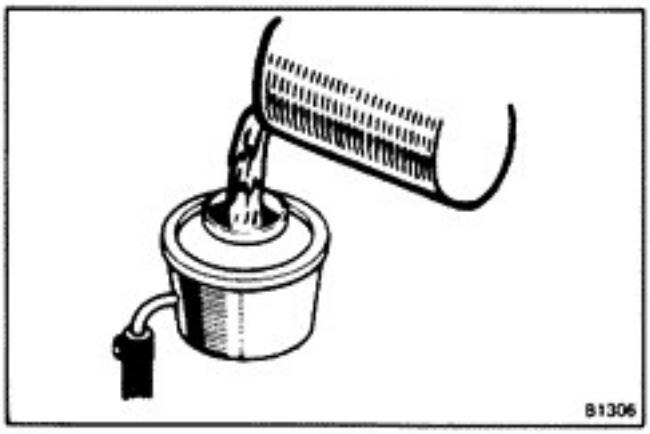
1. JACK UP FRONT OF VEHICLE AND SUPPORT WITH STANDS



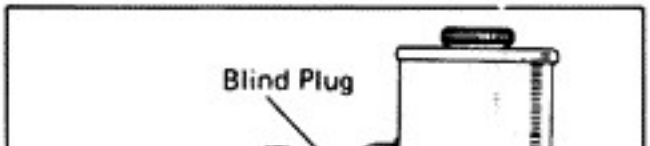
2. REMOVE FLUID RETURN HOSE FROM RESERVOIR TANK AND DRAIN FLUID INTO A CONTAINER



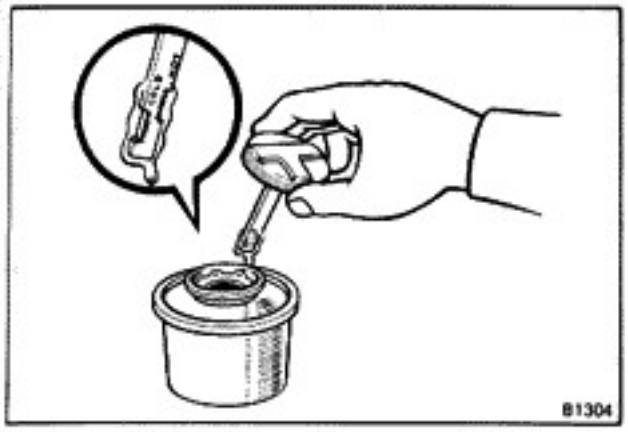
3. WITH ENGINE IDLING, TURN STEERING WHEEL FROM LOCK TO LOCK WHILE DRAINING FLUID
4. STOP ENGINE



5. FILL RESERVOIR WITH FRESH FLUID
   Fluid: ATF DEXRON® or DEXRON® II



6. START ENGINE AND RUN IT AT 1,000 RPM
   After 1 or 2 seconds, fluid will begin to discharge from return hose. Stop the engine immediately at this t



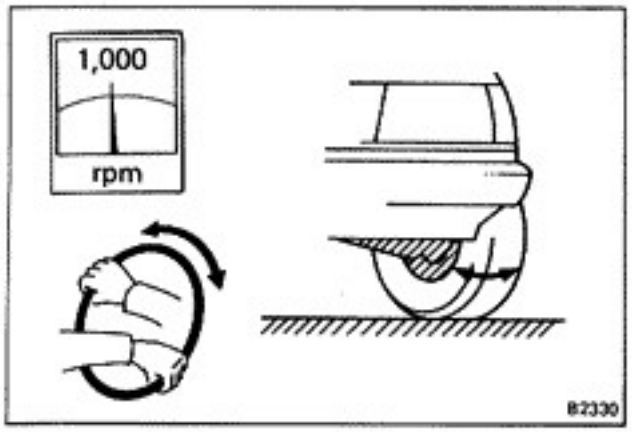
Bleeding of Power Steering System

1. CHECK FLUID LEVEL IN RESERVOIR

Check the fluid level and add fluid if necessary.

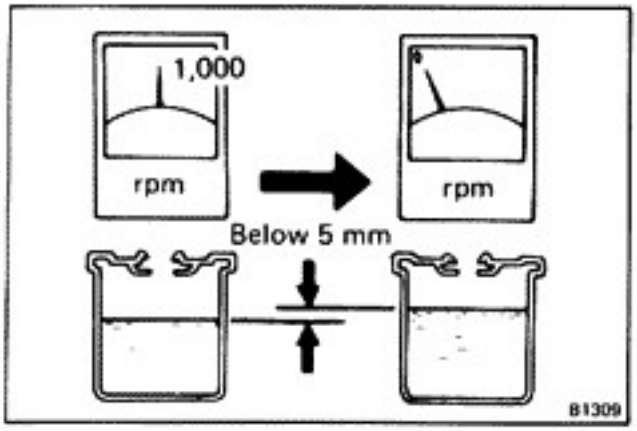
Fluid: ATF DEXRON® or DEXRON® II

NOTE: Check that the fluid level is within the HOT LEVEL of the dipstick. If the fluid is cold, check that it is within the COLD LEVEL of the dipstick.



2. START ENGINE AND TURN STEERING WHEEL FROM LOCK TO LOCK THREE OR FOUR TIMES

Run the engine at 1,000 rpm or less.

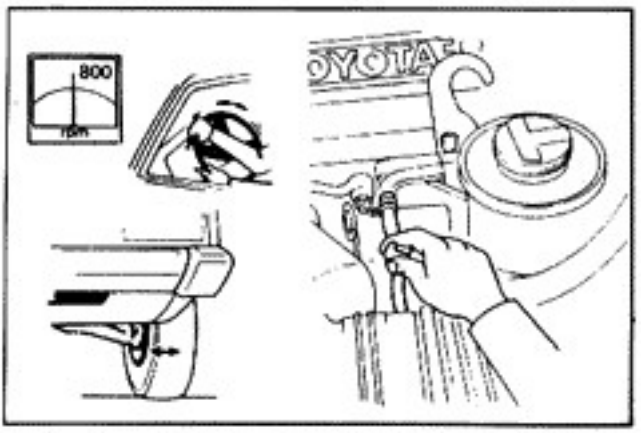


3. CHECK THAT FLUID IN RESERVOIR IS NOT FOAMY OR CLOUDY AND DOES NOT RISE OVER MAXIMUM WHEN ENGINE IS STOPPED

Measure the fluid level with the engine running. Stop the engine and measure the fluid level.

Maximum rise: 5 mm (0.20 in.)

If a problem is found, repeat steps 1 and 2. Repair the PS pump if the problem persists.



CHECK OF AIR CONTROL VALVE

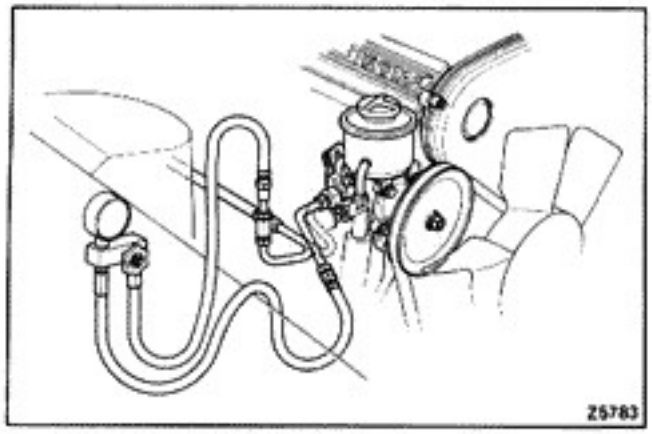
1. START ENGINE AND RUN IT AT IDLE

2. TURN STEERING WHEEL LEFT AND RIGHT

Check that the rpm does not decrease more than 50 rpm.

3. WHILE PINCHING AIR HOSE, TURN STEERING WHEEL LEFT AND RIGHT

Check that the rpm decreases about 200 rpm.



Oil Pressure Check

1. CONNECT PRESSURE GAUGE

(a) Using SST, remove the pressure line from th pump.

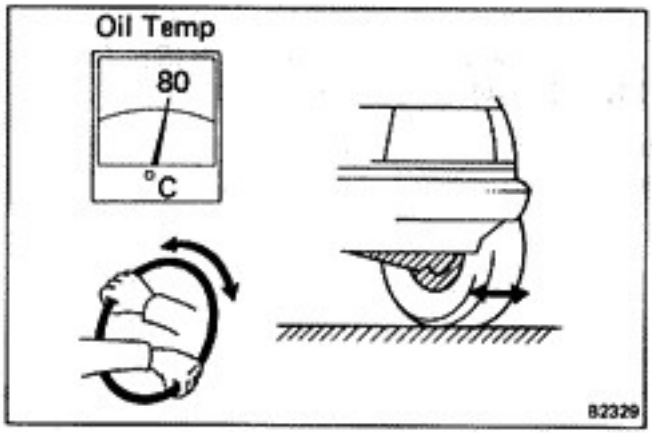
SST 09631-22020

(b) Connect the gauge side of the pressure gauge to PS pump.

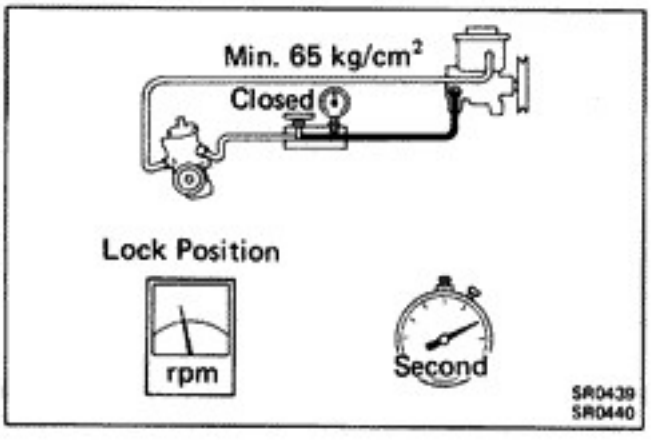
(c) Connect the valve side of the pressure gauge to pressure line.

(d) Bleed the system. Start the engine and turn the w fully in both directions two or three times.

(e) Check that the fluid level is correct.



2. CHECK THAT FLUID TEMPERATURE IS AT LEAST 80°C (176°F)



3. START ENGINE AND RUN IT AT IDLE

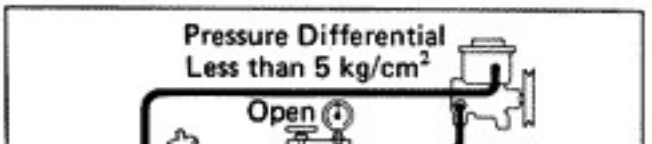
4. CHECK FLUID PRESSURE READING WITH VA CLOSED

Close the pressure gauge valve and observe the readin the gauge.

Minimum pressure: 65 kg/cm² (924 psi, 6,374 kPa)

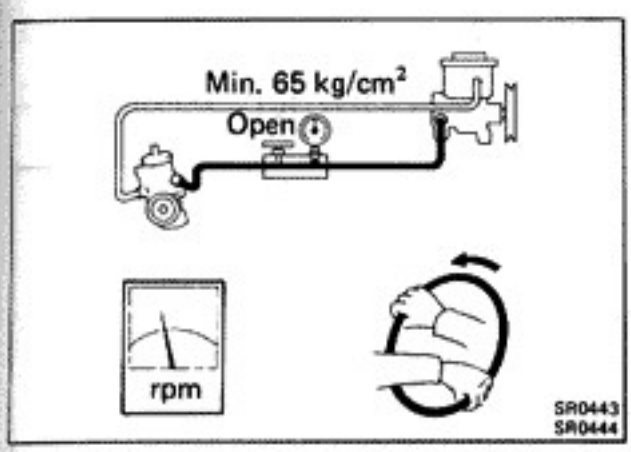
NOTE: Do not keep the valve closed for more tha seconds.

If pressure is low, repair or replace the PS pump.



5. OPEN VALVE FULLY

6. CHECK AND RECORD PRESSURE READING A 1,000 RPM

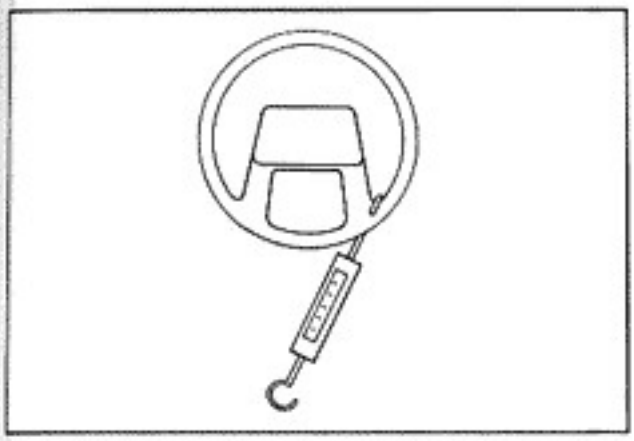


8. CHECK PRESSURE READING WITH STEERING WHEEL TURNED TO FULL LOCK

Be sure the pressure gauge valve is fully opened and th engine idling.

Minimum pressure: 65 kg/cm² (924 psi, 6,374 kPa)

If pressure is low, the gear housing has an internal leak an must be repaired or replaced.



9. MEASURE STEERING EFFORT

Center the steering wheel and run the engine at idle.

Using a scale, measure the steering effort in both direction

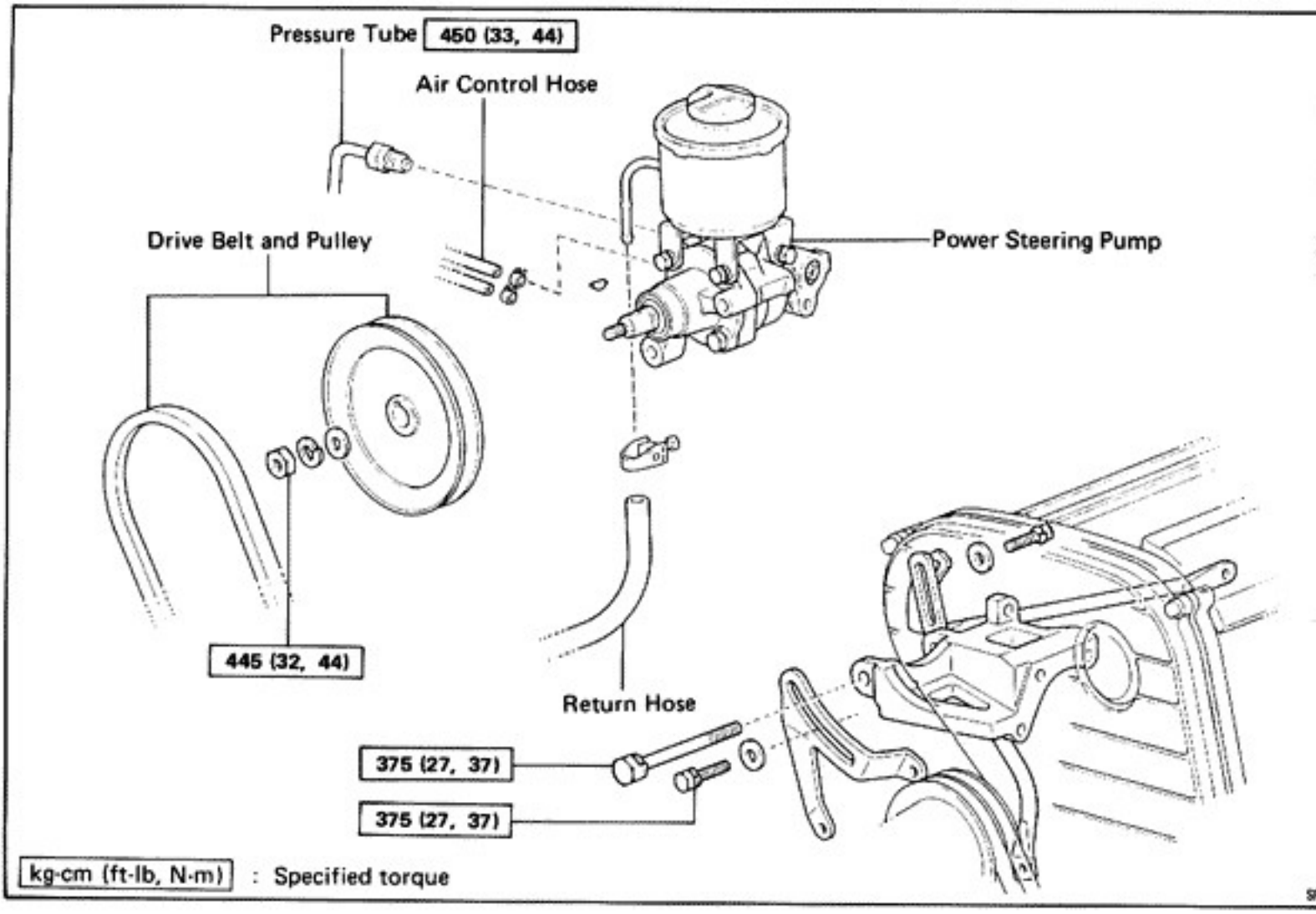
Maximum steering effort: 4 kg (8.8 lb, 39 N)

If steering effort is excessive, repair the power steerin unit.

NOTE: Be sure to consider tire type, pressure and conta surface before making your diagnosis.

Power Steering Pump

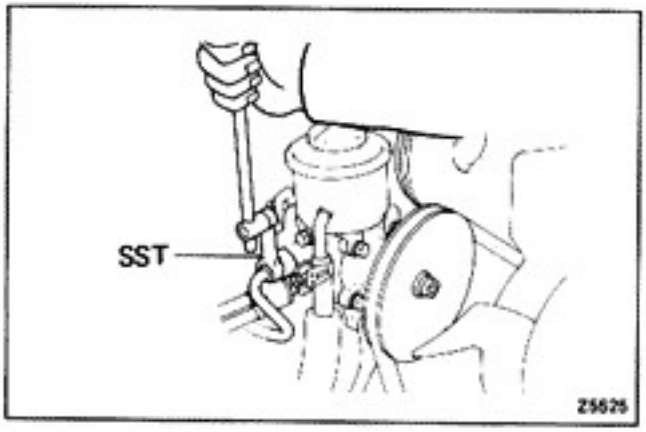
REMOVAL OF POWER STEERING PUMP



1. DISCONNECT AIR HOSES FROM AIR CONTR VALVE

2. DRAIN FLUID FROM RESERVOIR TANK

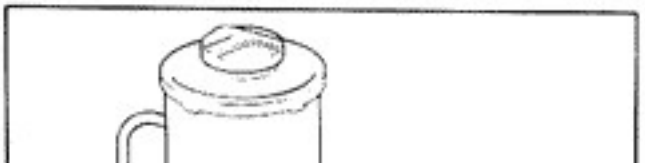
3. DISCONNECT RETURN HOSE FROM RESERVOI TANK



4. DISCONNECT PRESSURE TUBE FROM POWER STEERING PUMP

Using SST, loosen and disconnect the pressure tube.

SST 09631-22020



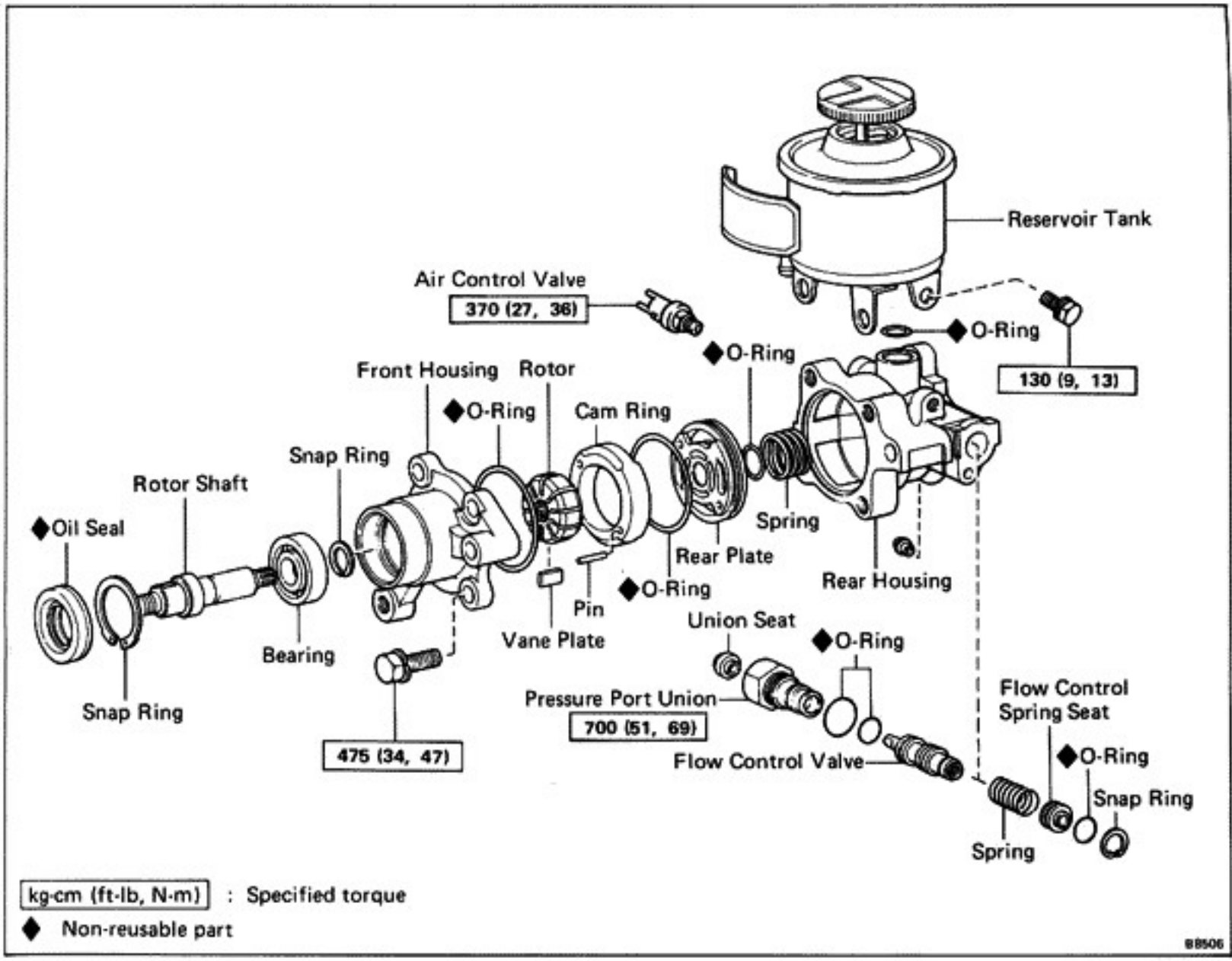
5. REMOVE DRIVE BELT AND PULLEY

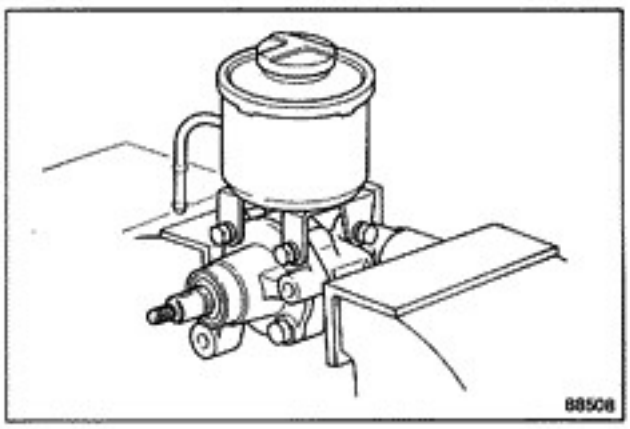
(a) Push on the drive belt to hold the pulley in place remove the pulley set nut.

(b) Remove the drive belt adjust bolt.

(c) Remove the PS pump rear mount bolt.

COMPONENTS

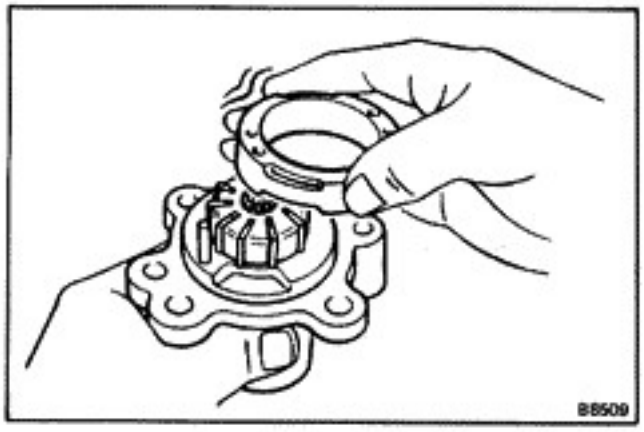




DISASSEMBLY OF POWER STEERING PUMP

1. **CLAMP POWER STEERING PUMP IN VISE**
   CAUTION: Do not tighten the vise too tight.
2. **REMOVE FRONT HOUSING SET BOLTS**
3. **REMOVE RESERVOIR TANK AND O-RING**
   Remove the two reservoir tank set bolts, reservoir tank and O-ring.

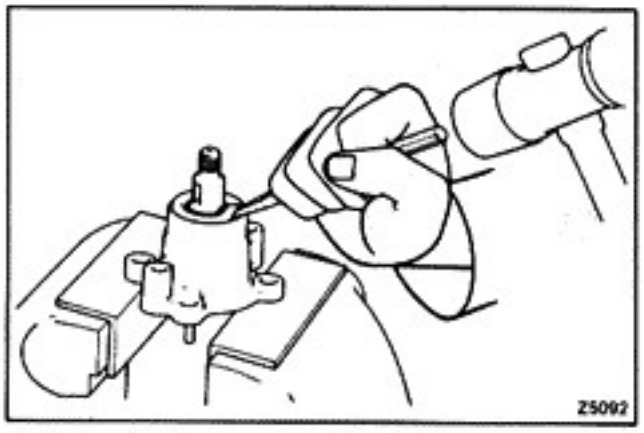
4. **REMOVE AIR CONTROL VALVE**
5. **MARK FRONT AND REAR HOUSING**
   Mark these parts to ensure correct reassembly.



7. REMOVE CAM RING, ROTOR AND VANE PLAT

CAUTION: Be careful not to scratch the cam ring, ro or vane plates.

8. REMOVE STRAIGHT PINS



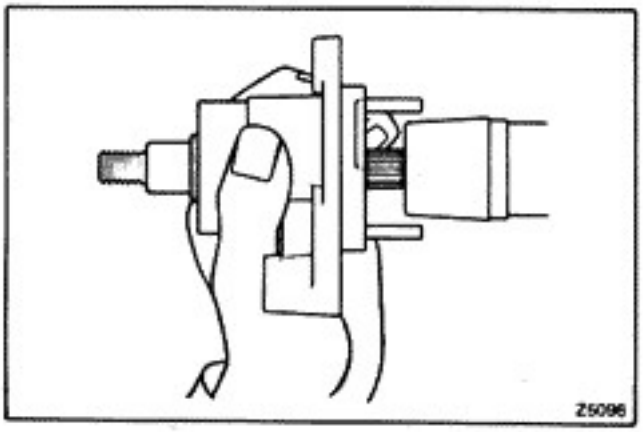
9. REMOVE ROTOR SHAFT

(a) Clamp the front housing in a vise.

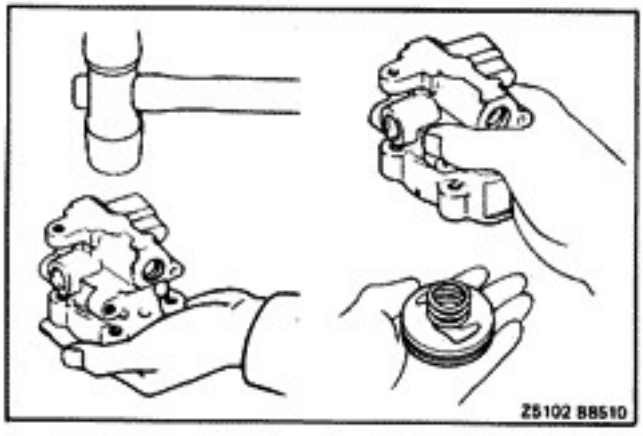
CAUTION: Do not tighten the vise too tight.

(b) Using a chisel and hammer, pry off the oil seal.

(c) Using snap ring pliers, remove the snap ring.



(d) Using a plastic hammer, lightly tap the rotor shaft of the front housing.



10. REMOVE REAR PLATE AND SPRING

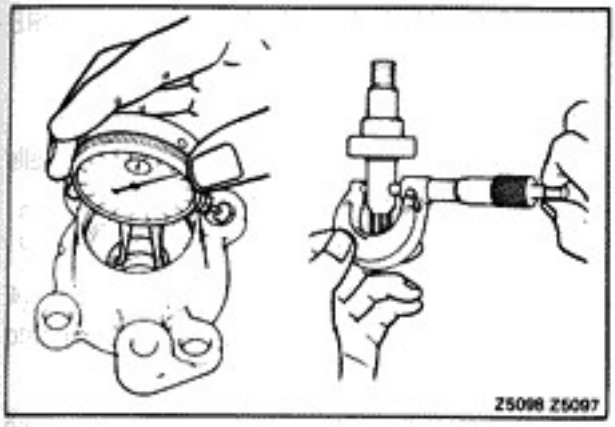
Using a plastic hammer, tap the bottom end of the housing, and remove the rear plate and spring.

CAUTION: Avoid gripping the rear plate with plier this could damage it.

11. REMOVE PRESSURE PORT UNION

12. REMOVE FLOW CONTROL VALVE AND SPRING

CAUTION: Use care not drop, scratch or nick this va



INSPECTION OF POWER STEERING PUMP

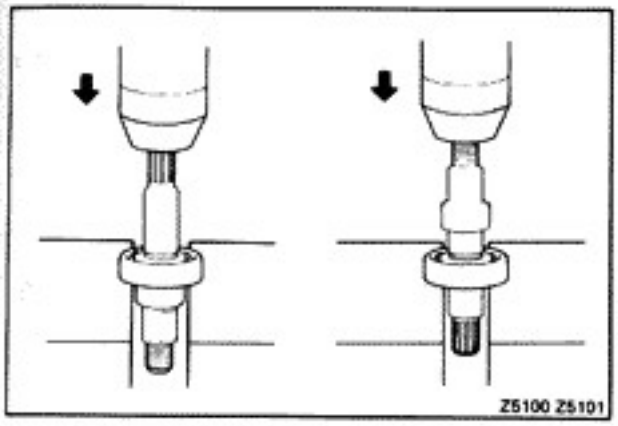
1. INSPECT BUSHING AND MEASURE BUSHING OIL CLEARANCE

(a) Check bushing for wear or damage. The bushing cannot be replaced separately.

If wear or damage is found, replace entire housing.

(b) Check the oil clearance between the bushing and rotor shaft.

Maximum oil clearance: 0.07 mm (0.0028 in.)



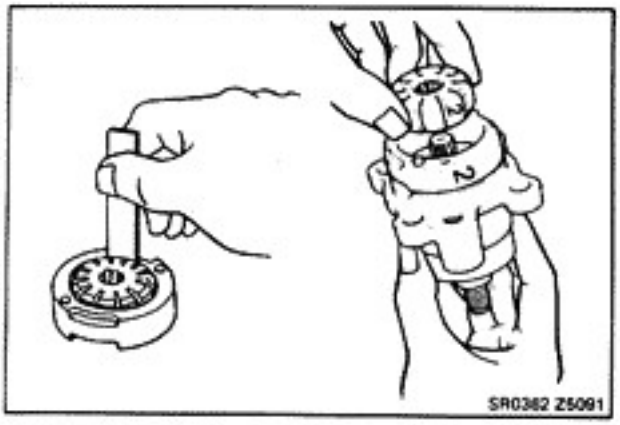
2. IF NECESSARY, REPLACE ROTOR SHAFT BEARING

(a) Using snap ring pliers, remove the snap ring.

(b) Using a press, press out the bearing.

(c) Using a press, press in the bearing.

(d) Using snap ring pliers, install the snap ring.

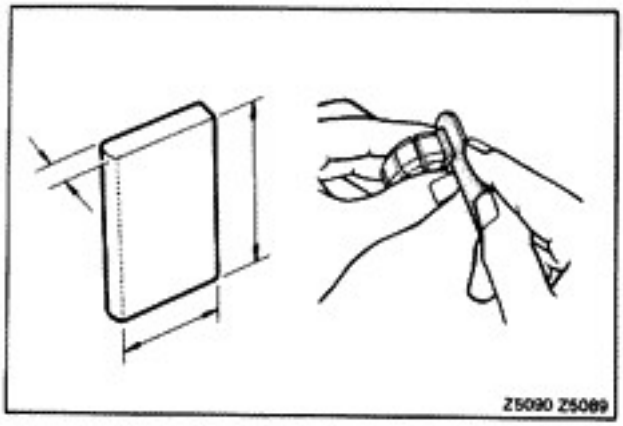


3. INSPECT ROTOR AND CAM RING

Measure the cam ring thickness. Check that the difference between the rotor and cam ring measurement is less than maximum.

Maximum difference: 0.06 mm (0.0024 in.)

If the difference is excessive, replace the cam ring with one stamped with the same letter on the rotor.



4. INSPECT AND MEASURE VANE PLATES

(a) Check the vane plates for wear or scratches.

(b) Measure the length, height and thickness of the vane plates.

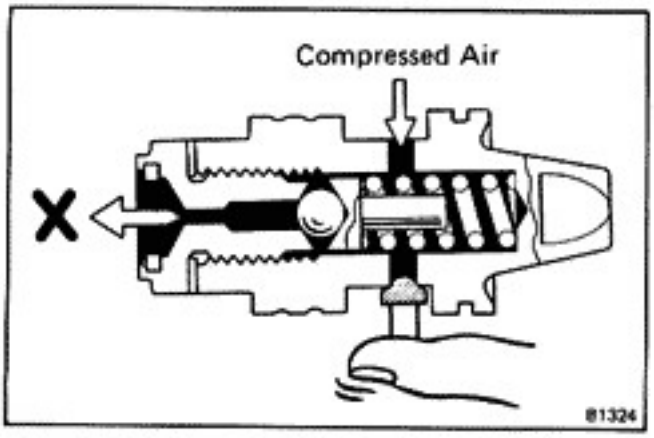
Minimum length: 14.97 mm (0.5894 in.)
Minimum height: 7.8 mm (0.307 in.)
Minimum thickness: 1.7 mm (0.067 in.)

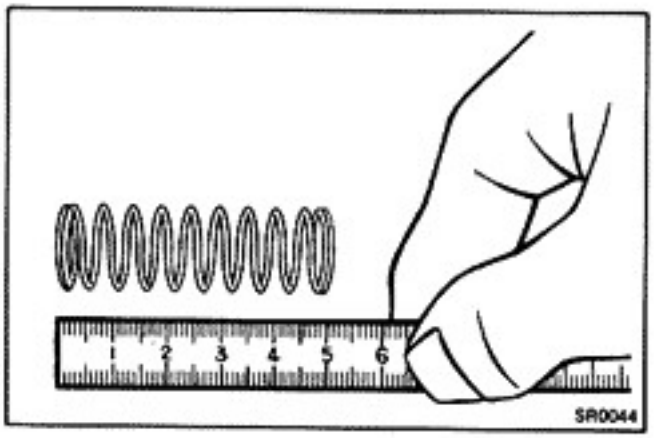
(c) Measure the clearance between the vane plate and rotor groove.

Maximum clearance: 0.06 mm (0.0024 in.)

NOTE: There are five vane lengths with the following rotor and cam ring marks:

Rotor and cam ring mark	Vane length mm (in.)
None	14.996 – 14.998 (0.5904 – 0.5905)
1	14.994 – 14.996 (0.5903 – 0.5904)





5. **INSPECT FLOW CONTROL VALVE AND MEAS SPRING**

(a) Check the flow control valve for wear or damage

(b) Apply fluid to the valve and check that it smoothly into the valve hole by its own weight.

(c) Check the flow control valve for leakage.

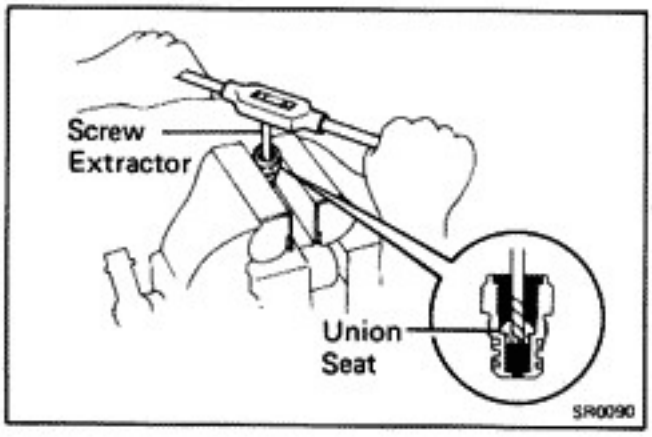
- Close one of the holes and apply compressed a or 5 kg/cm² (57 or 71 psi, 392 or 490 kPa)] the opposite side.
- Confirm that air does not come out from the hole.

If necessary, replace the valve with one stamped with same letter on the rear housing.

(d) Check that the spring is within specification.

Standard length 50.0 mm (1.969 in.)
Minimum length 47.0 mm (1.850 in.)

If the spring is not within specification, replace the spr

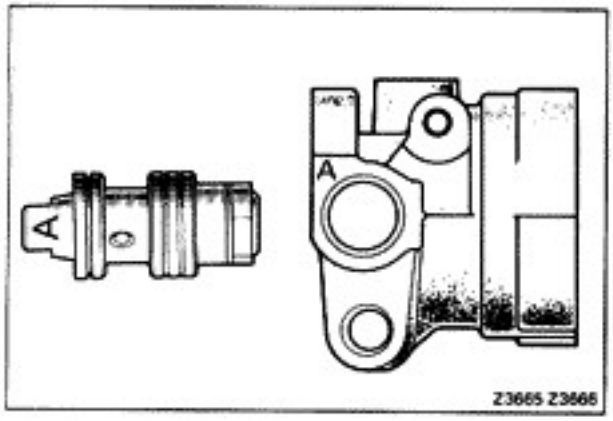


6. **IF NECESSARY REPLACE UNION SEAT**

(a) Using a screw extractor wrench, remove the u seat.

(b) Install a new floating type union seat.

NOTE: Only floating type parts are available.



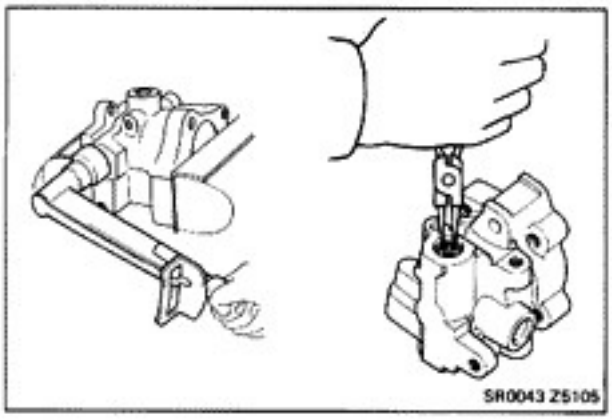
ASSEMBLY OF POWER STEERING PUMP

(See page SR-19)

1. INSTALL SPRING AND FLOW CONTROL VALVE

NOTE: Be sure the letter inscribed on the flow control valve matches the letter stamped on the rear of the pump body.

Inscribed mark: A, B, C, D, E or F



2. INSTALL PRESSURE PORT UNION

Install and torque the union.

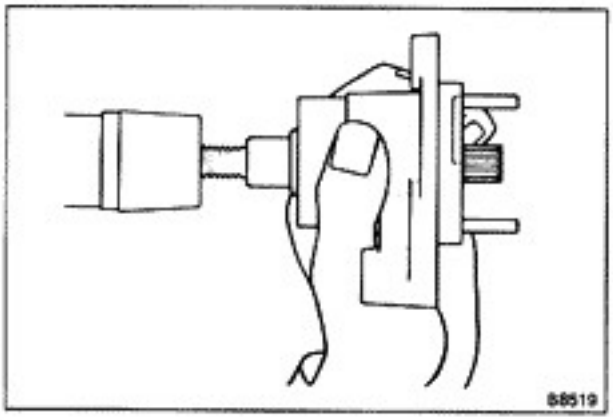
Torque: 700 kg-cm (51 ft-lb, 69 N·m)

3. INSTALL FLOW CONTROL SPRING SEAT

(a) Temporarily install a suitable bolt to the spring seat.

(b) Push in the bolt and install the snap ring with snap ring pliers.

(c) Remove the suitable bolt.

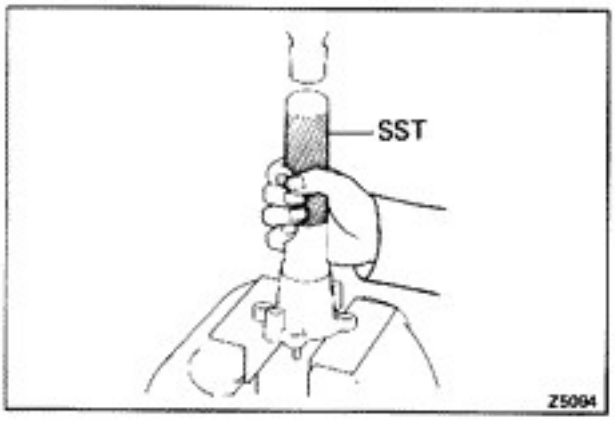


4. INSTALL ROTOR SHAFT TO FRONT HOUSING

Install the rotor shaft into the front housing by tapping it in with a plastic hammer.

5. INSTALL SNAP RING

Using snap ring pliers, install the snap ring to the front housing.



6. INSTALL OIL SEAL

(a) Apply a light coat of MP grease to a new oil seal lip.

(b) Using SST and a hammer, install the oil seal.

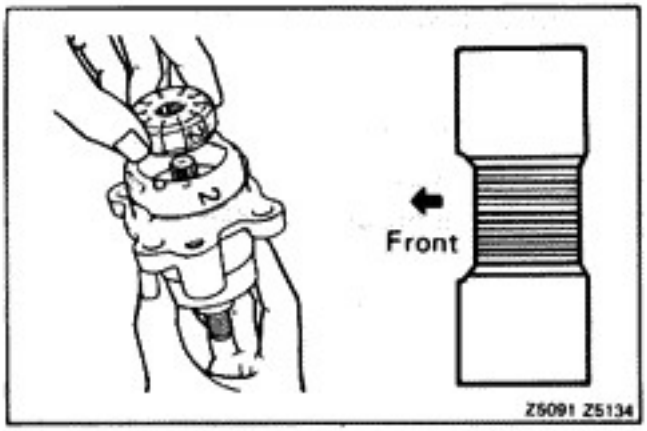
SST 09608-30012 (09608-04030)

7. INSTALL O-RING

8. INSTALL STRAIGHT PINS

9. INSTALL CAM RING

Align the fluid passages of the cam ring and front housing.

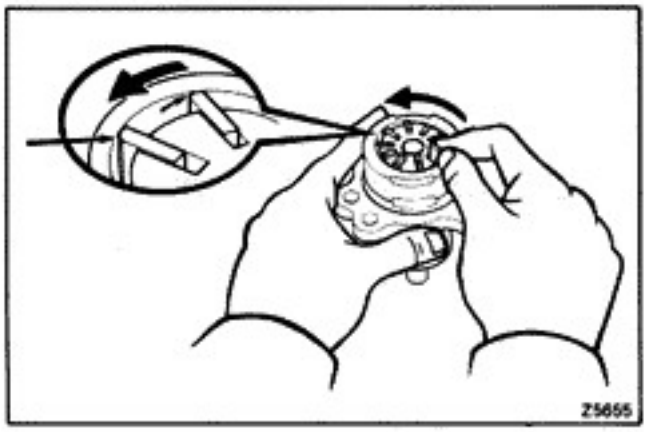


10. INSTALL ROTOR

Install the rotor with the chamfered end facing toward front.

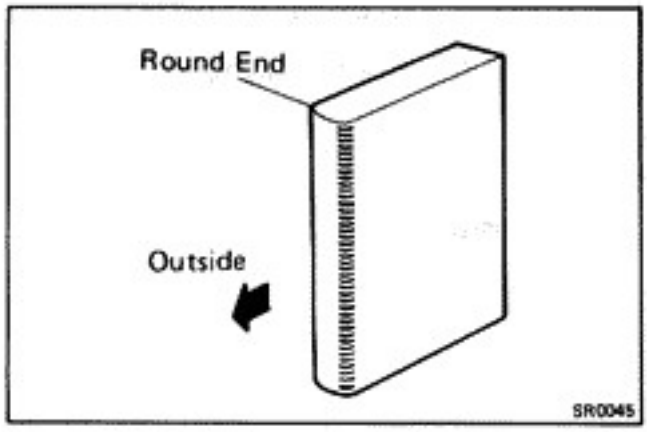
NOTE: Be sure the letters inscribed on the cam ring rotor are matching.

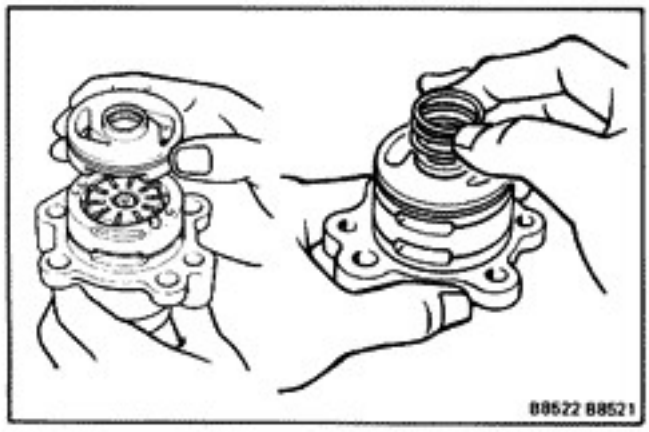
Inscribed mark: 1, 2, 3, 4 or None



11. INSTALL VANE PLATES

Install the vane plates with the round end facing outw





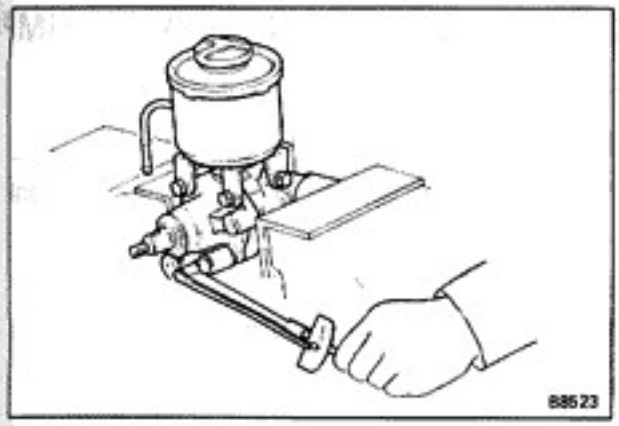
12. INSTALL REAR PLATE AND SPRING

(a) Place the rear plate on the cam ring with the pin h aligned with the pins.

(b) Place the spring on the rear plate.

13. INSTALL REAR HOUSING

(a) Align the marks on the front and rear housing, assemble them.



14. TIGHTEN FOUR HOUSING BOLTS

(a) Clamp the rear housing in a vise.

CAUTION: Do not tighten the vise too tight.

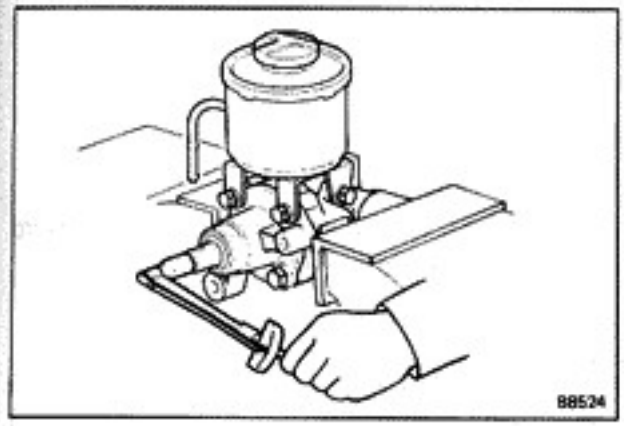
(b) Tighten the four housing bolts evenly in 3 or 4 passes.

Torque: 475 kg-cm (34 ft-lb, 47 N·m)

15. INSTALL RESERVOIR TANK

Install and torque the bolts.

Torque: 130 kg-cm (9 ft-lb, 13 N·m)



16. CHECK ROTOR SHAFT ROTATION CONDITION

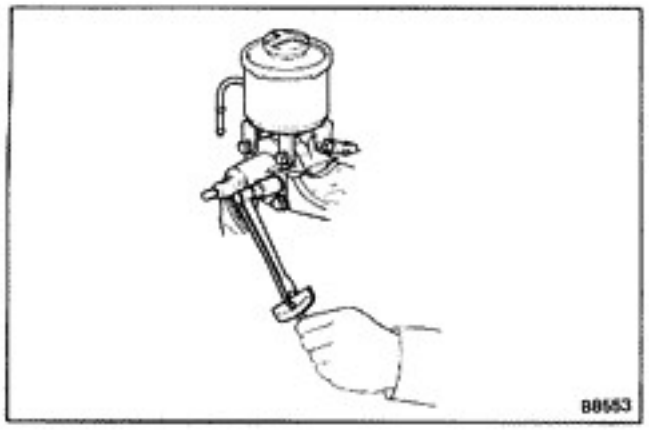
(a) Check that the rotor shaft rotates smoothly without abnormal noise.

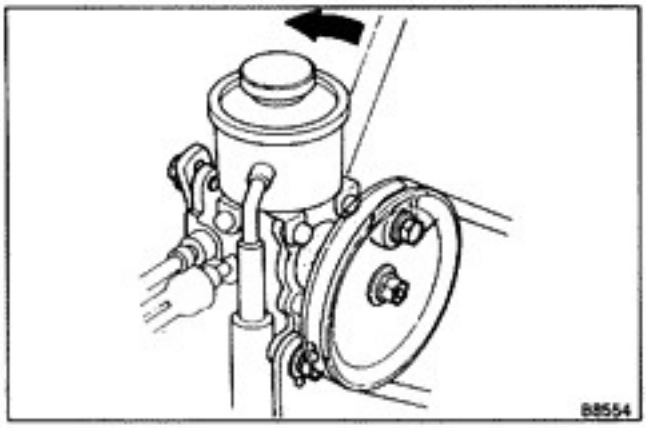
(b) Provisionally install the pulley nut and check the rotating torque.

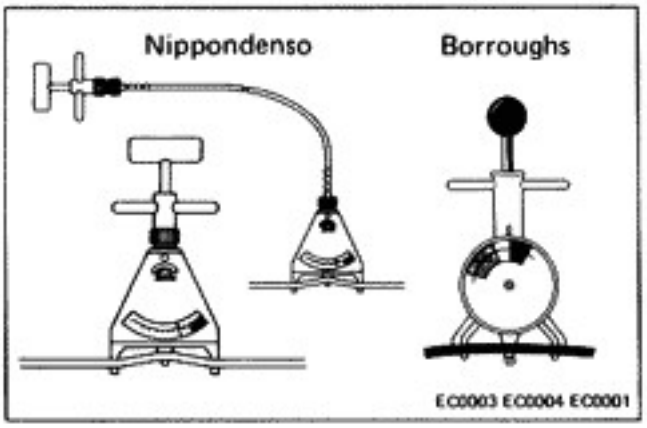
Rotating torque: Less than 2.8 kg-cm (2.4 in.-lb, 0.3 N·m)

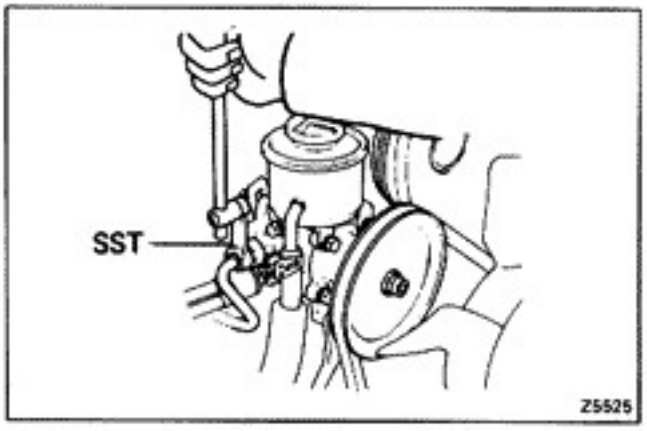
17. INSTALL AIR CONTROL VALVE

Torque: 370 kg-cm (27 ft-lb, 36 N·m)









INSTALLATION OF POWER STEERING PU

(See page SR-18)

1. INSTALL POWER STEERING PUMP

(a) Place the PS pump in position and torque the f mount bolt.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

(b) Install the drive belt adjust bolt by hand.

2. INSTALL PULLEY AND DRIVE BELT

(a) Install the woodruff key and pulley.

(b) Install the pulley set nut.

(c) Install the drive belt.

(d) Insert a bar under the PS pump and ply it upw until the belt tension is at specified value.

Belt tension gauge:
Nippondenso BTG-20 (95506-00020) or
Borroughs No. BT-33-73F

Drive belt tension:
New belt 125 ± 25 lb
Used belt 80 ± 20 lb

NOTE:
- "New belt" refers to a brand new belt which has n before been used.
- "Used belt" refers to a belt which has been used running engine for 5 minutes or more.

(e) Torque the adjust bolt.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

(f) Push down on the drive belt to hold the pulle place and torque the pulley set nut.

Torque: 445 kg-cm (32 ft-lb, 44 N·m)

(g) Install and torque the PS pump rear mount bolt.

Torque: 375 kg-cm (27 ft-lb, 37 N·m)

3. CONNECT PRESSURE TUBE TO POWER STEERI PUMP

Using SST, connect and torque the pressure tube.

SST 09631-22020

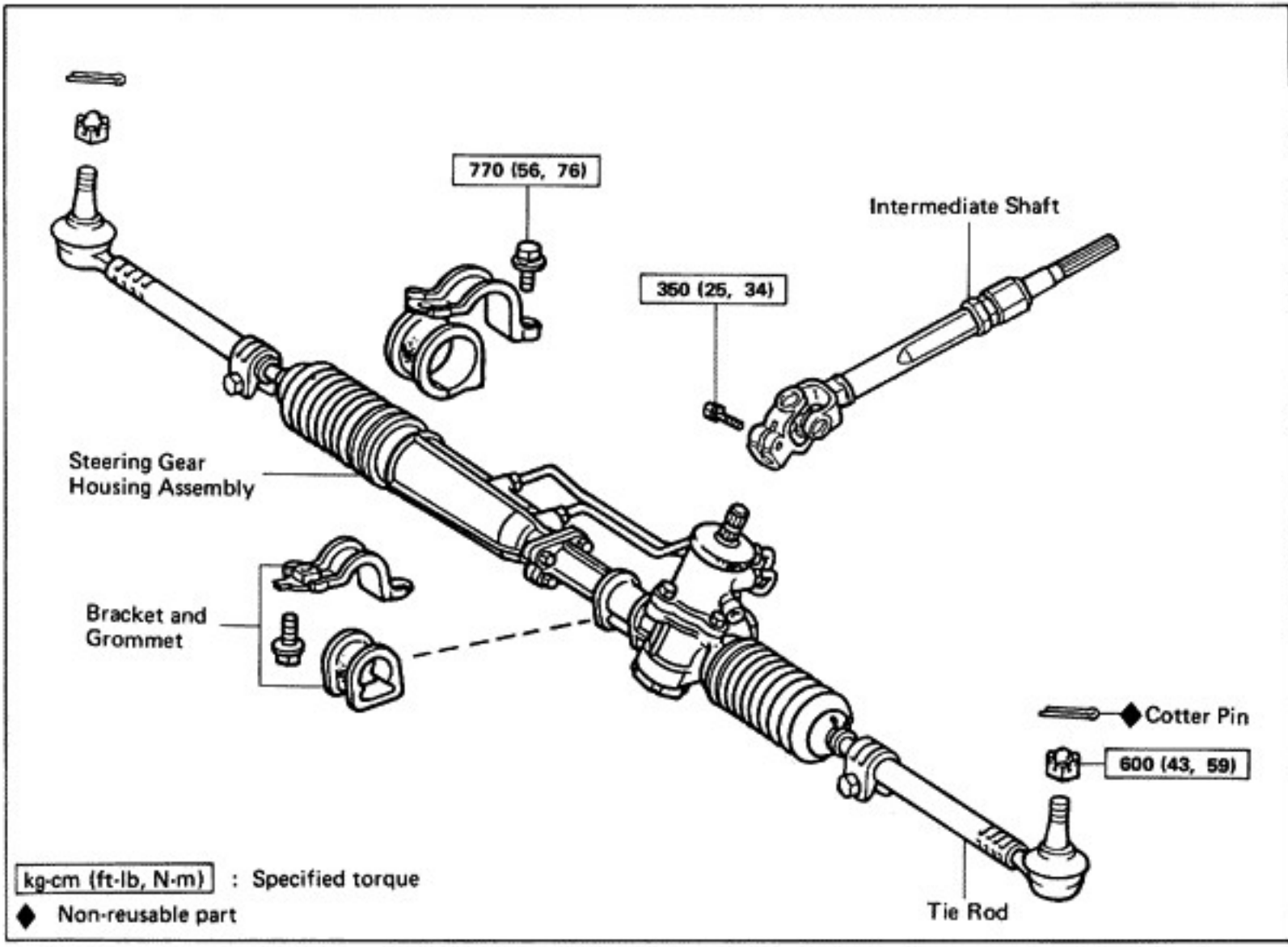
Torque: 450 kg-cm (33 ft-lb, 44 N·m)

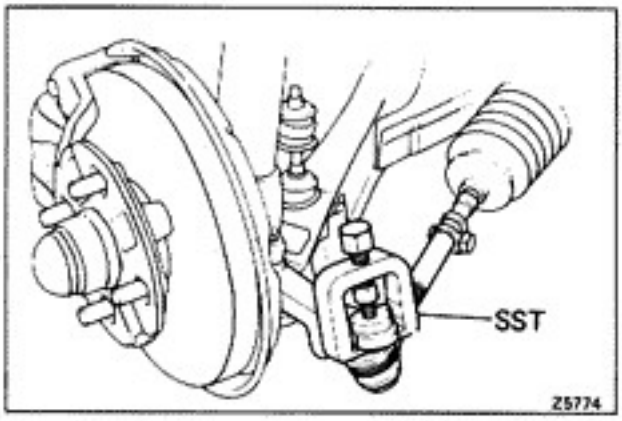
4. CONNECT RETURN HOSE TO RESERVOIR TA

5. CONNECT AIR HOSES TO AIR CONTROL VALV

Gear Housing

REMOVAL OF GEAR HOUSING





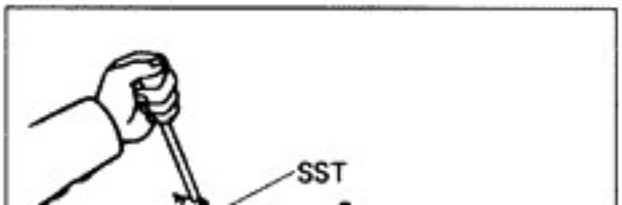
1. **REMOVE INTERMEDIATE SHAFT**
(See step 2 on page SR-4)

2. **DISCONNECT TIE ROD END**

(a) Remove the cotter pin and nut holding the knuckle arm to the tie rod.

(b) Using SST, disconnect the knuckle arm from the tie rod.

SST 09611-22012

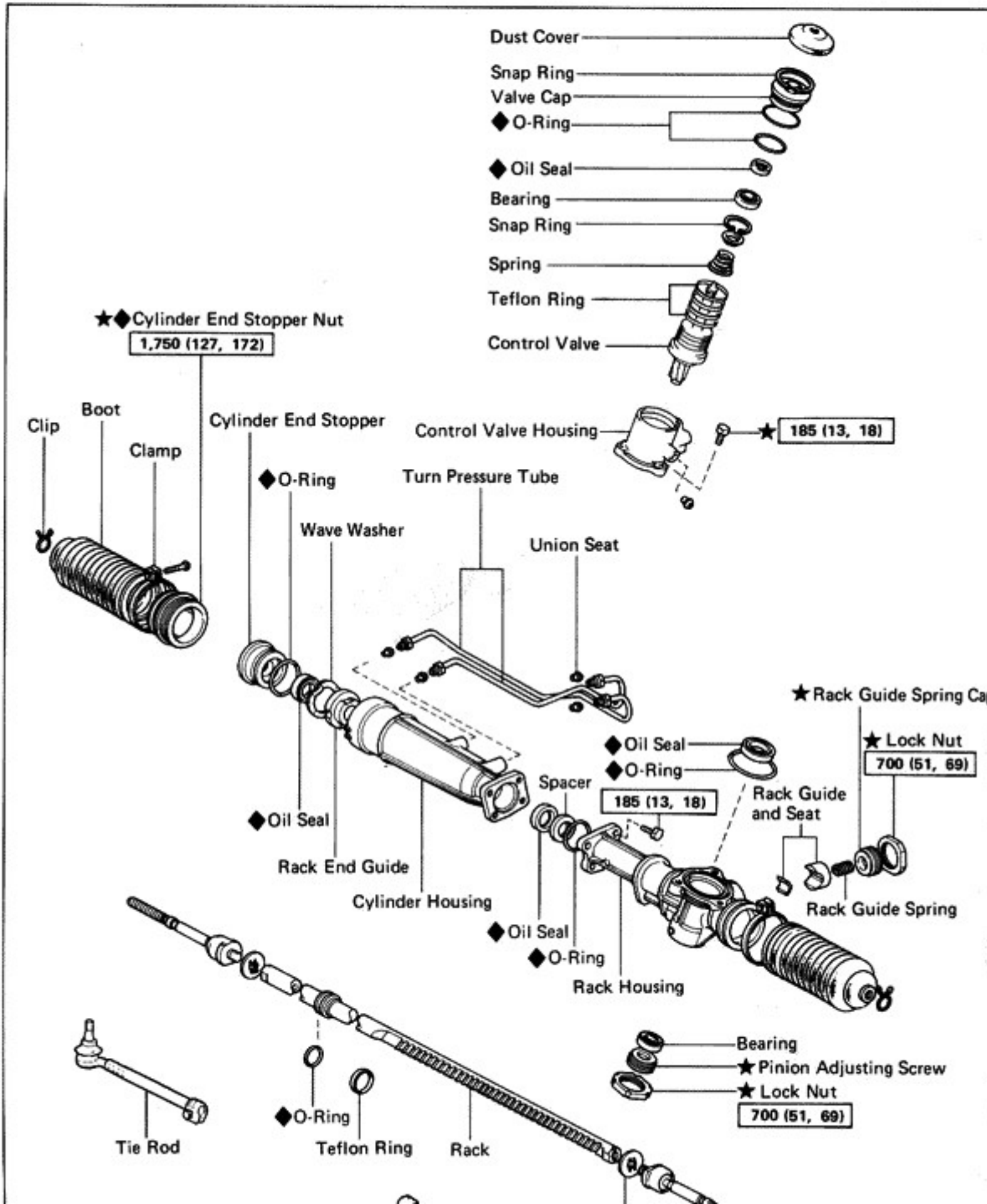


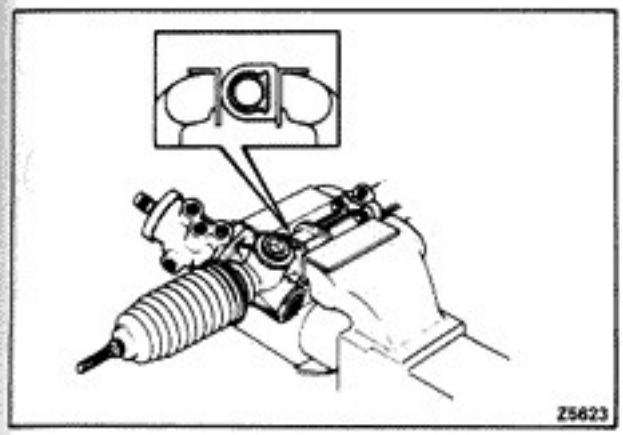
3. **DISCONNECT RETURN LINE AND PRESSURE LINE**

Using SST, disconnect return and pressure lines. Use a container to catch the power steering fluid.

SST 09631-22020

COMPONENTS


Dust Cover
Snap Ring
Valve Cap
◆O-Ring
◆Oil Seal
Bearing
Snap Ring
Spring
Teflon Ring
Control Valve
★◆Cylinder End Stopper Nut
1,750 (127, 172)
Clip
Boot
Clamp
Cylinder End Stopper
◆O-Ring
Wave Washer
Turn Pressure Tube
Union Seat
Control Valve Housing
★ 185 (13, 18)
◆Oil Seal
Rack End Guide
Cylinder Housing
◆Oil Seal
◆O-Ring
185 (13, 18)
Spacer
Rack Guide and Seat
★Rack Guide Spring Ca
★Lock Nut
700 (51, 69)
Rack Guide Spring
◆Oil Seal
◆O-Ring
Rack Housing
Tie Rod
◆O-Ring
Teflon Ring
Rack
Bearing
★Pinion Adjusting Screw
★Lock Nut
700 (51, 69)



DISASSEMBLY OF GEAR HOUSING

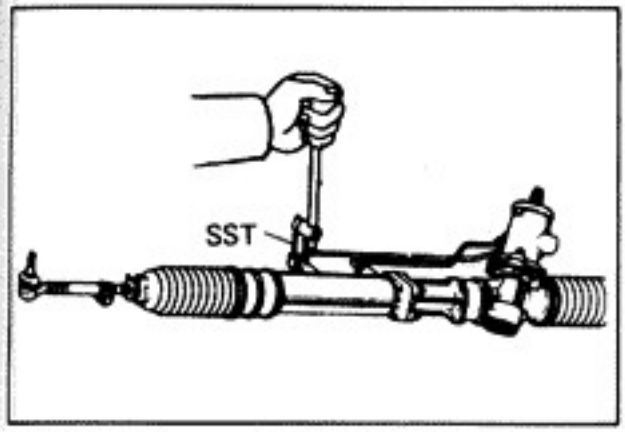
(See page SR-27)

1. CLAMP GEAR HOUSING IN VISE

NOTE:

(1) The rack housing is made of aluminum, so always use soft jaws on the vise and clamp onto the part shown in the figure.

(2) If clamping onto the center tube, wrap a piece of cloth around it and be careful not to damage the tube.

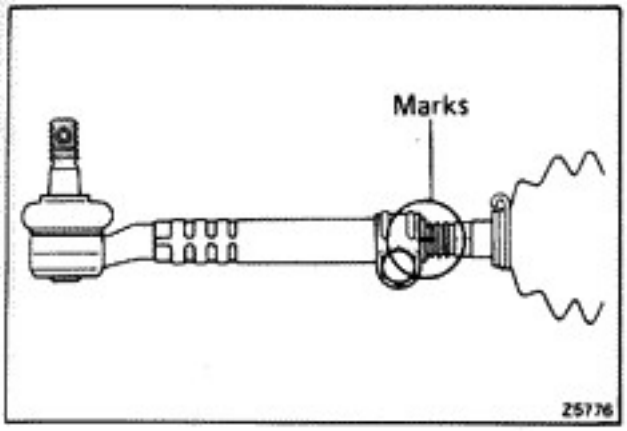


2. REMOVE TURN PRESSURE RIGHT AND LEFT TUBES AND UNION SEATS

(a) Using SST, remove the turn pressure tubes.

SST 09631-22020

(b) Remove the union seats.

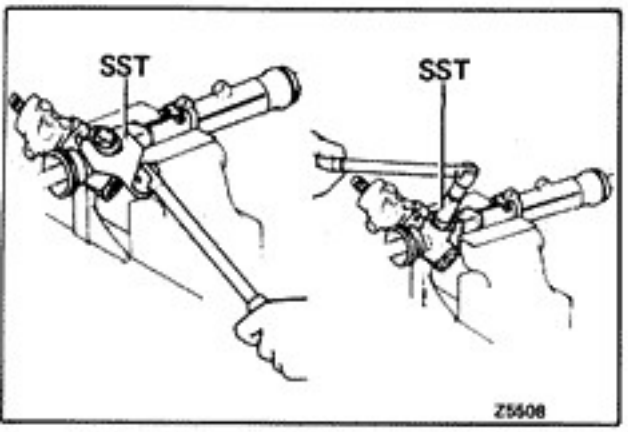


3. REMOVE TIE ROD ENDS

(a) Place matchmarks on the tie rod end and rack end.

(b) Loosen the clamp and remove the tie rod end from the rack end.

4. REMOVE RACK BOOTS



5. REMOVE RACK GUIDE SPRING CAP LOCK NUT

Using SST, remove the rack guide spring cap lock nut.

SST 09612-24012 (09617-24020)

6. REMOVE RACK GUIDE SPRING CAP

Using SST, remove the rack guide spring cap.

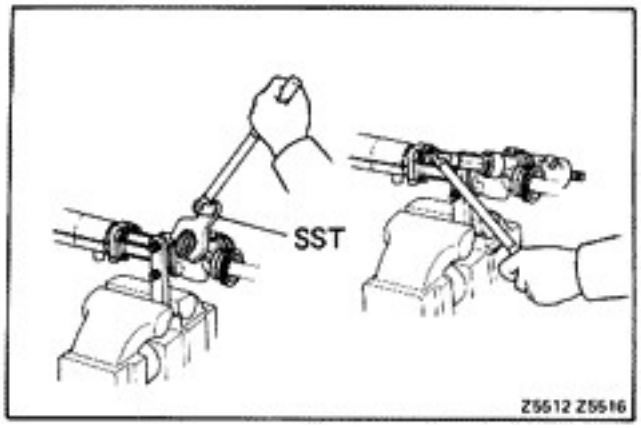
SST 09612-24012 (09612-10021)

7. REMOVE RACK GUIDE SPRING

8. REMOVE RACK GUIDE AND SEAT

9. REMOVE DUST COVER

10. REMOVE CONTROL VALVE HOUSING



11. REMOVE PINION ADJUSTING SCREW LOCK NUT

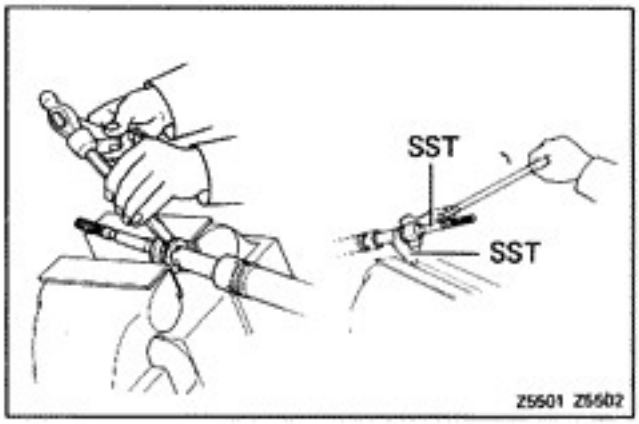
Using SST, remove the pinion adjusting lock nut.

SST 09612-24012 (09617-24020)

12. REMOVE PINION ADJUSTING SCREW

Using SST, remove the pinion adjusting screw.

SST 09612-24012 (09612-10021)



13. REMOVE RACK ENDS AND CLAW WASHER

(a) Unstake the claw washer.

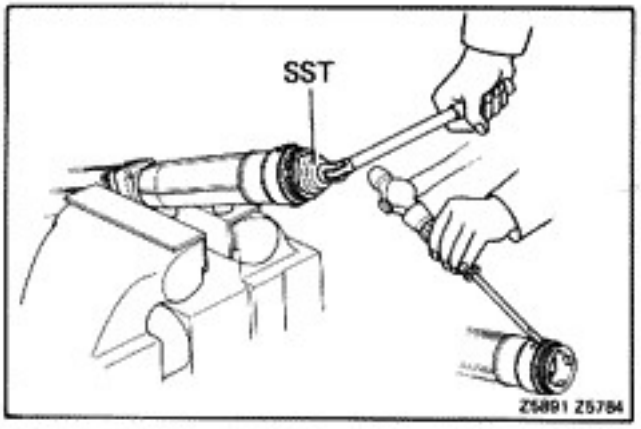
CAUTION: Avoid any impact to the rack.

(b) Using SST, remove the rack ends.

SST 09612-24012 (09617-22030, 09617-24010)

NOTE: Mark the left and right rack ends.

(c) Remove the claw washer.



14. REMOVE CYLINDER END STOPPER NUT

(a) Unstake the staked part of cylinder housing.

(b) Using SST, remove the cylinder end stopper nut.

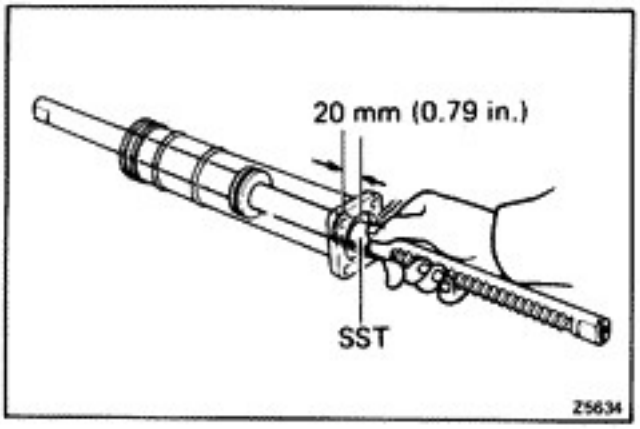
SST 09630-24013 (09631-24060)

15. REMOVE RACK HOUSING

(a) Remove the four bolts.

(b) Remove the rack housing.

(c) Remove the O-ring.

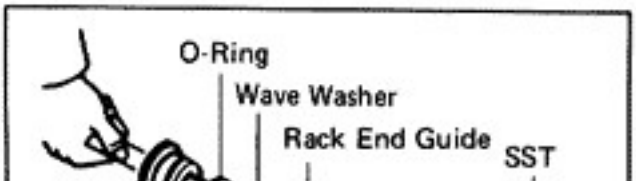


16. REMOVE SPACER FROM RACK HOUSING

17. REMOVE STEERING RACK WITH CYLINDER END STOPPER, O-RING, RACK END GUIDE AND WAVE WASHER FROM CYLINDER HOUSI

(a) Insert SST into the cylinder housing until oil seal

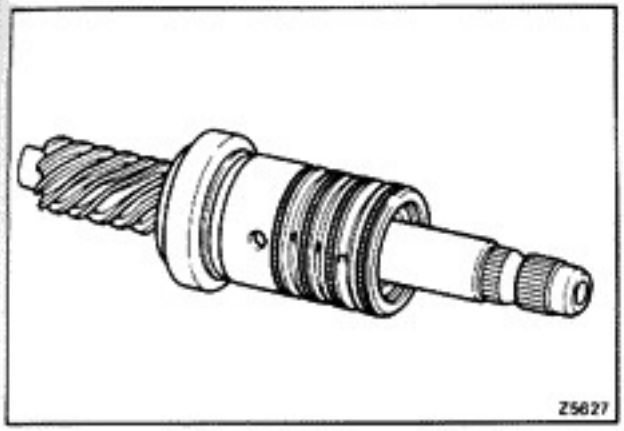
SST 09630-24013 (09631-24041)



(b) Remove the steering rack with the stopper, O-
wave washer and rack end guide.

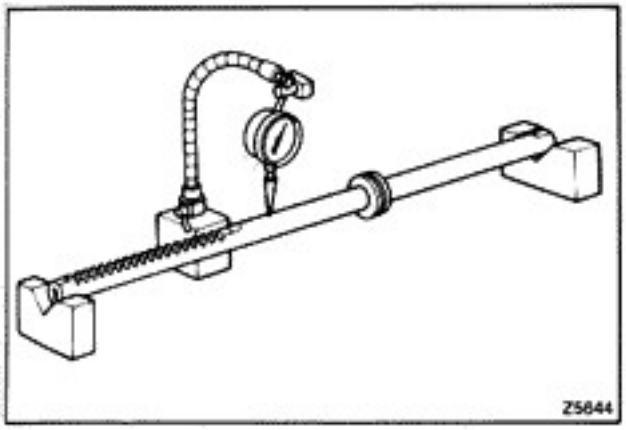
(c) Remove each part from the rack.

(d) Remove SST from rack housing.



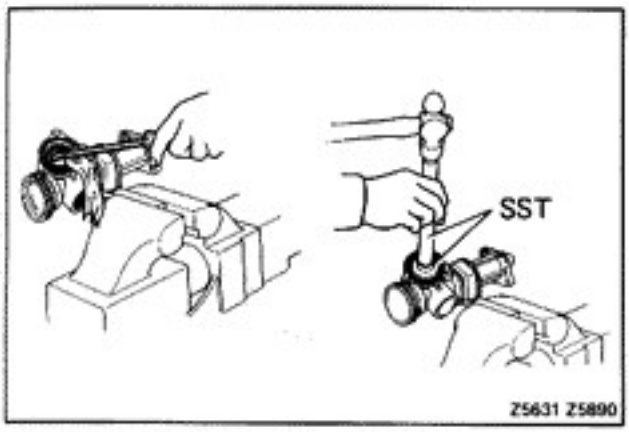
INSPECTION OF GEAR HOUSING

1. INSPECTION CONTROL VALVE
   (a) Remove the control valve with pinion from the yok housing.
   (b) If necessary, replace the control valve assembly.



2. INSPECT STEERING RACK RUNOUT

   Runout: Limit 0.3 mm (0.012 in.)

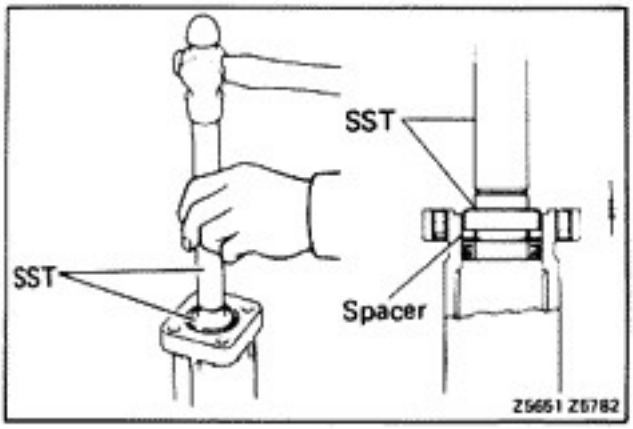


REPLACEMENT OF GEAR HOUSING

IF NECESSARY, REPLACE FOLLOWING PARTS:

1. OIL SEAL FOR RACK HOUSING
   (a) Remove the oil seal with a screwdriver.
   (b) Using SST, install the new oil seal.

   SST 09620-30010 (09631-00020)
   SST 09630-24013 (09631-24070)

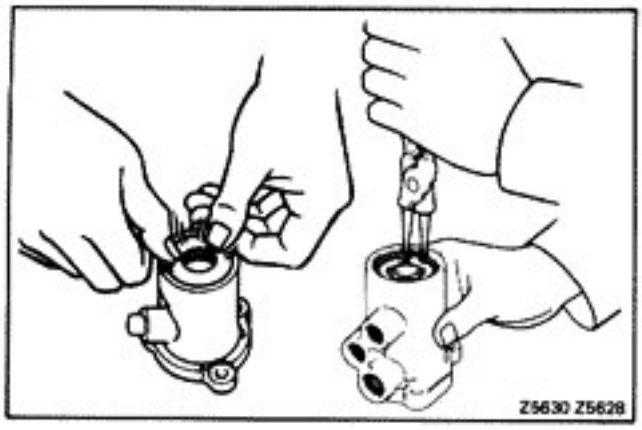


2. OIL SEAL FOR CYLINDER HOUSING
   (a) Using SST, drive out the oil seal.
   (b) Using SST and a hammer, install a new oil seal.

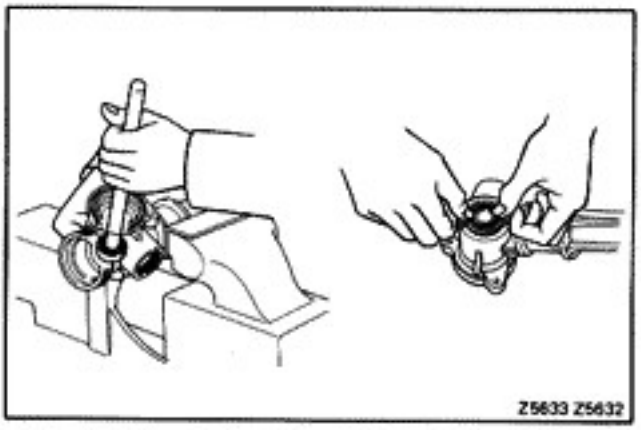
   SST 09620-30010 (09625-30010, 09631-00020)

   - Install the new oil seal.
   - Place the spacer on the oil seal.
   - Drive in the oil seal over the spacer until the roun surface of SST is flush with housing surface.

3. OIL SEAL AND BEARING FOR CONTROL VALVE HOUSING
   (a) Remove the snap ring.
   (b) Remove the bearing and oil seal with brass bar.

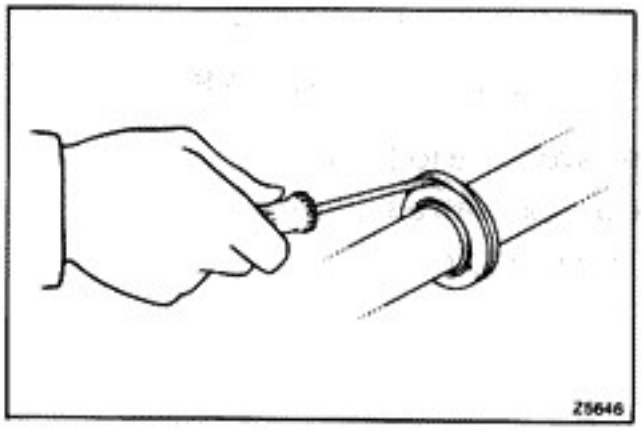


(c) Install the new bearing and oil seal.
(d) Install the snap ring.



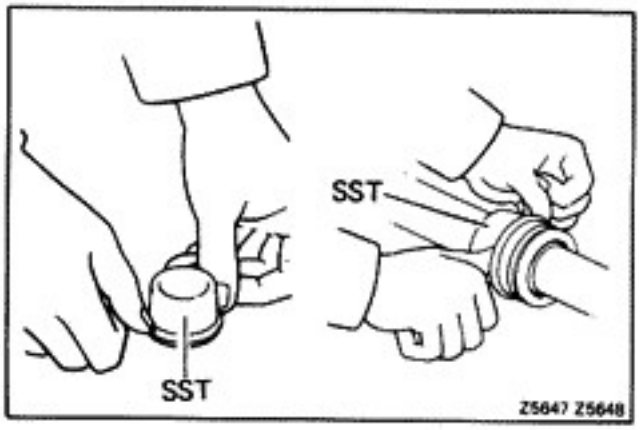
4. PINION LOWER BEARING

(a) Remove the bearing with brass bar.
(b) Install a new bearing.



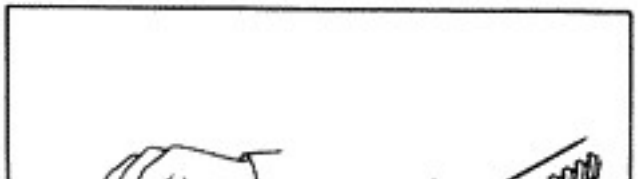
5. TEFLON RING AND O-RING

(a) Remove the teflon ring and O-ring.
(b) Install a new O-ring.

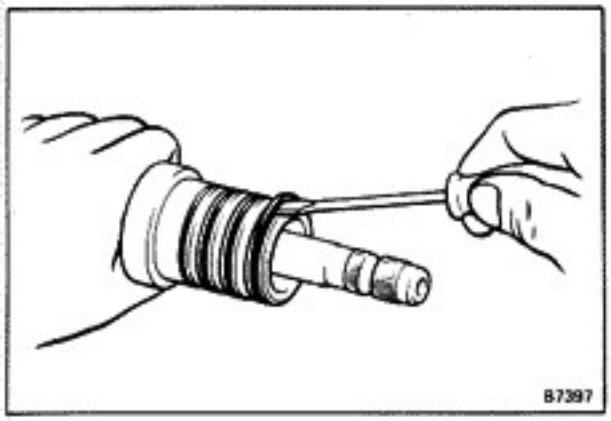


(c) Install a new teflon ring to SST and install i
the steering rack.

SST 09630-24013 (09631-24020)



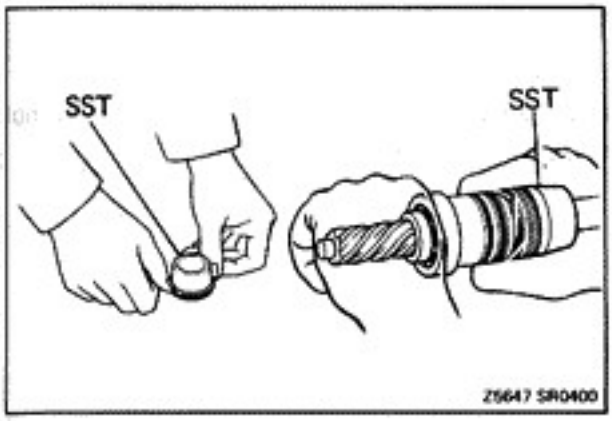
(d) Coat the teflon ring with power steering fluid
snug it down with your fingers.
(e) Carefully slide the tapered end of SST over the te
ring to seat the ring.



6. TEFLON RING FOR CONTROL VALVE

(a) Remove the teflon rings.

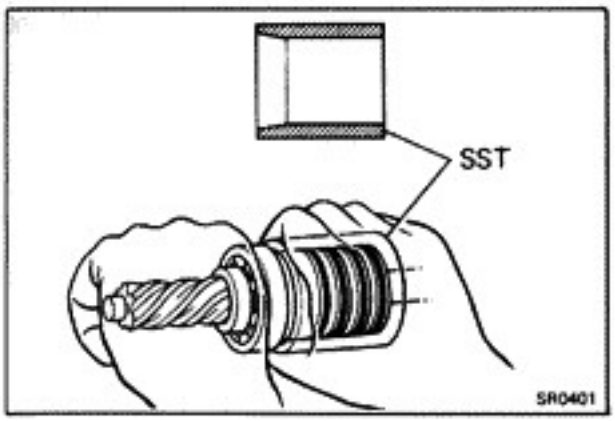
CAUTION: Be careful not to damage the control valve.



(b) Install a new teflon ring to SST and install it to the control valve.

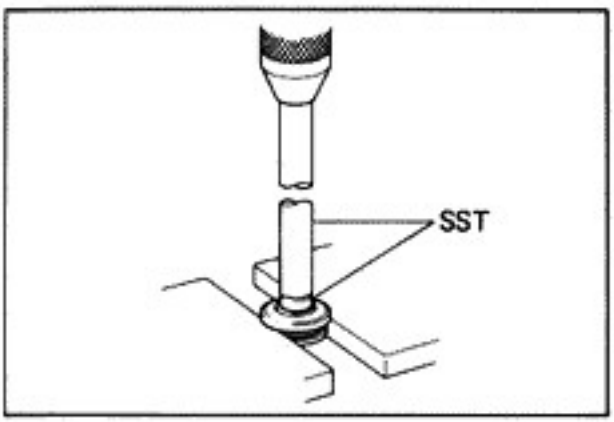
SST 09630-24013 (09631-24020)

(c) Coat the teflon ring with power steering fluid and snug it down with your fingers.



(d) Carefully slide the tapered end of the SST over the teflon ring to seat the ring.

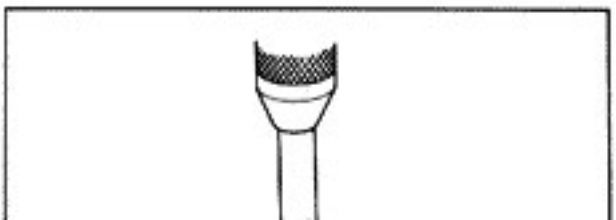
SST 09630-24013 (09631-24030)



7. OIL SEAL AND BEARING FOR VALVE CAP

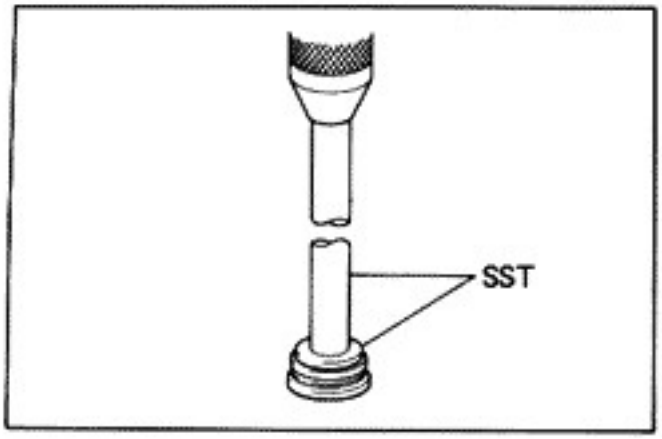
(a) Using SST, press out the oil seal and bearing from the valve cap.

SST 09620-30010 (09631-00020)
09630-24013 (09620-24010)



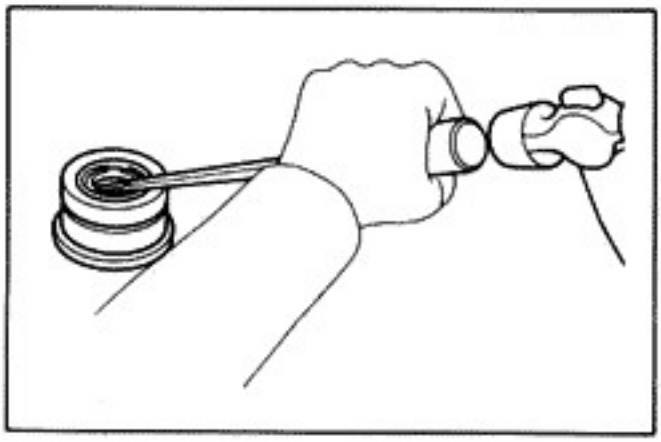
(b) Using SST, press the oil seal into the valve cap.

SST 09620-30010 (09631-00020)
09630-24013 (09620-24020)



(c) Using SST, press the bearing into the valve cap.

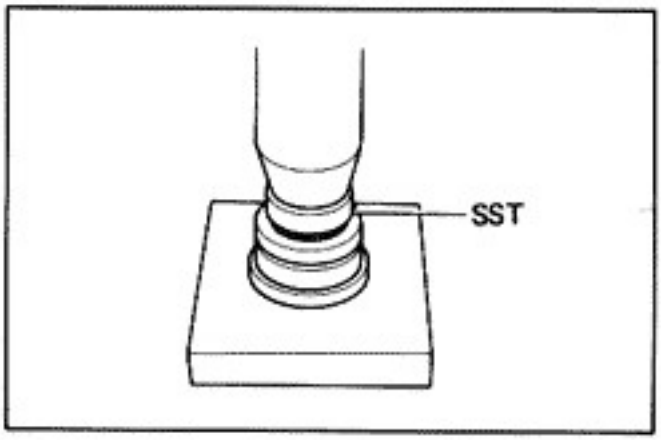
SST 09620-30010 (09631-00020)
09630-24013 (09620-24030)



8. OIL SEAL FOR CYLINDER END STOPPER

(a) Tap out the oil seal from the cylinder end stoppe

CAUTION: When tapping out the oil seal, be carefu to damage the inside of cylinder end stopper.



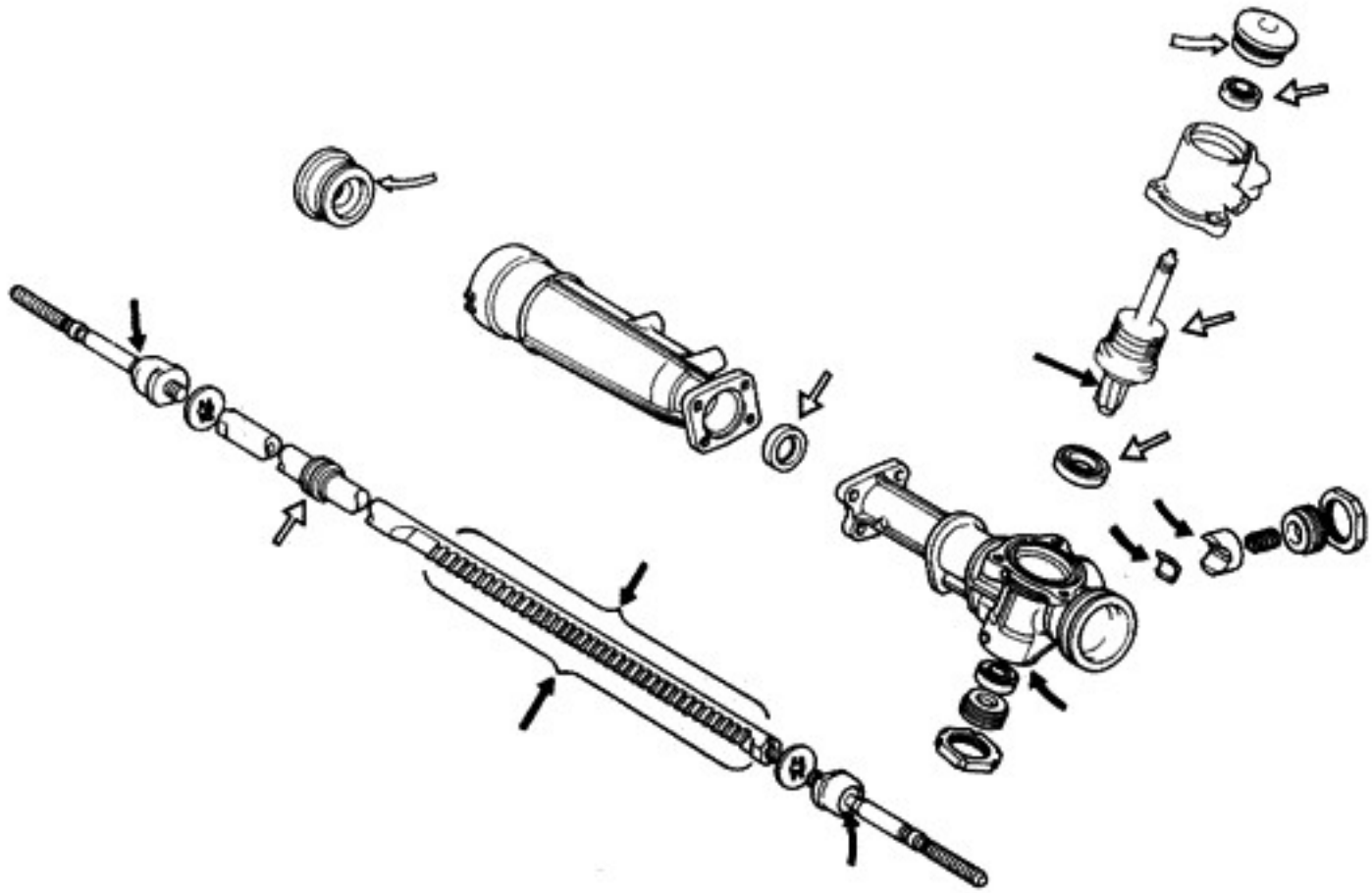
(b) Using SST, press the oil seal into the cylinde stopper.

SST 09631-20040

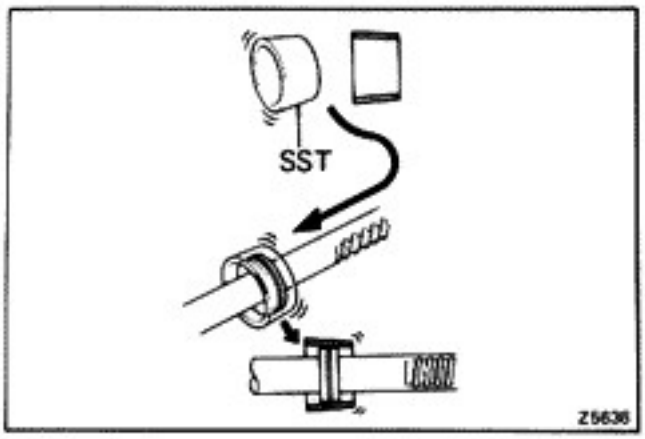
ASSEMBLY OF GEAR HOUSING

(See page SR-27)

1. COAT POWER STEERING FLUID ON FOLLOWING PARTS:



←: Molybdenum Disulphide Lithium Base Grease
⇦: Power Steering Fluid



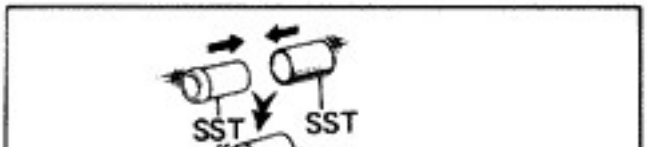
2. INSTALL SEAT AND SPACER

3. INSTALL STEERING RACK ASSEMBLY

(a) Insert SST into a new teflon ring of the piston.

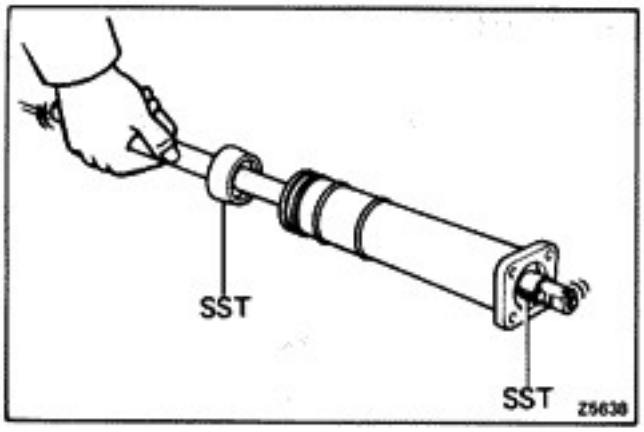
SST 09630-24013 (09631-24030)

NOTE: Protect the teflon ring from damage.



(b) Insert SST into a new oil seal of the cylinder housin

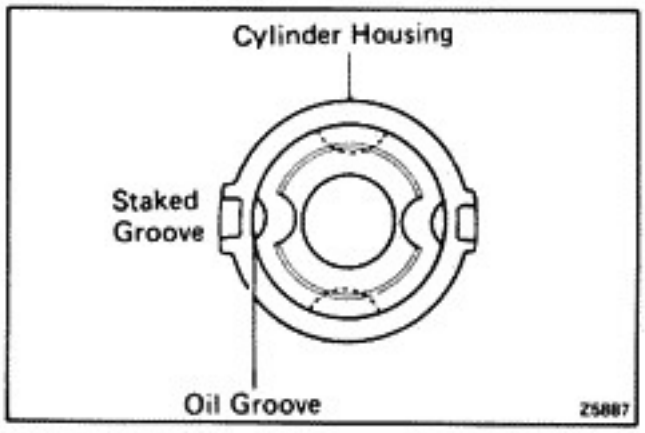
- Install one SST into the other.
- Insert two SST into the oil seal.



(c) Install the steering rack to the cylinder housing.

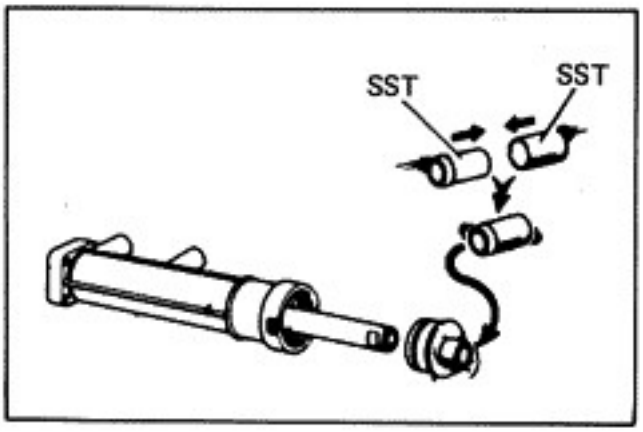
(d) Remove SST.

SST 09630-24013 (09631-24030, 09631-24041)



4. INSTALL RACK END GUIDE AND WAVE WASH

Install the rack end guide with oil groove facing tow the staked groove.



5. INSTALL CYLINDER END STOPPER WITH O-RI

(a) Insert SST to the oil seal of the cylinder end stop

- Install one SST into the other.
- Install two SST into the oil seal.
- Remove one SST from the other.

(b) Install the cylinder end stopper to the cylir housing.

(c) Remove SST.

SST 09630-24013 (09631-24041, 09631-24050)

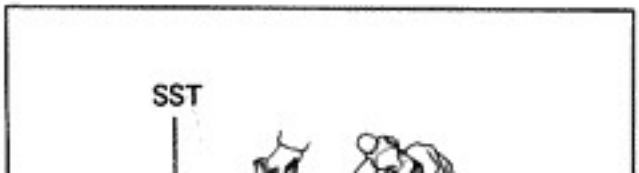
6. INSTALL RACK HOUSING TO CYLINDER HOUSING

NOTE: Make sure that the O-ring, spacer and seal installed between the rack housing and the cylinder h ing.

(a) Install the rack housing.

(b) Install the four bolts and torque them.

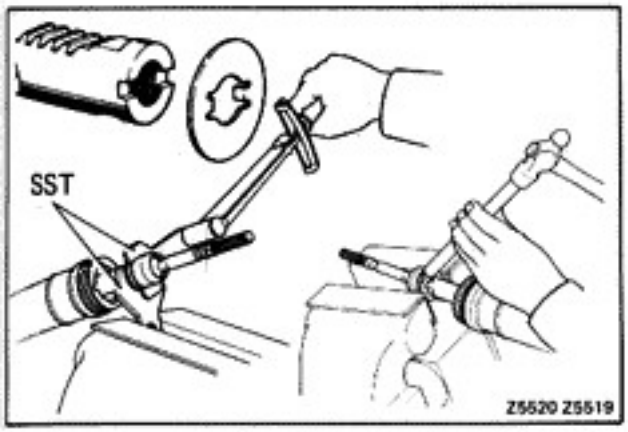
Torque: 185 kg-cm (13 ft-lb, 18 N·m)



7. INSTALL CYLINDER END STOPPER NUT

(a) Coat liquid sealer onto the screw surface of the nut.

(b) Install the cylinder end stopper nut with SST



8. INSTALL CLAW WASHER AND RACK ENDS

(a) Install the claw washer.

NOTE: Align the claw of the claw washer with the rack groove.

(b) Tighten the rack end and torque it with SST.

SST 09612-24012 (09617-22030, 09617-24010)

Torque: 1,050 kg-cm (76 ft-lb, 103 N·m)

(c) Stake the claw washer.

9. INSTALL CONTROL VALVE ASSEMBLY INTO CONTROL VALVE HOUSING

10. INSTALL CONTROL VALVE SPRING SEAT

11. INSTALL COMPRESSION SPRING

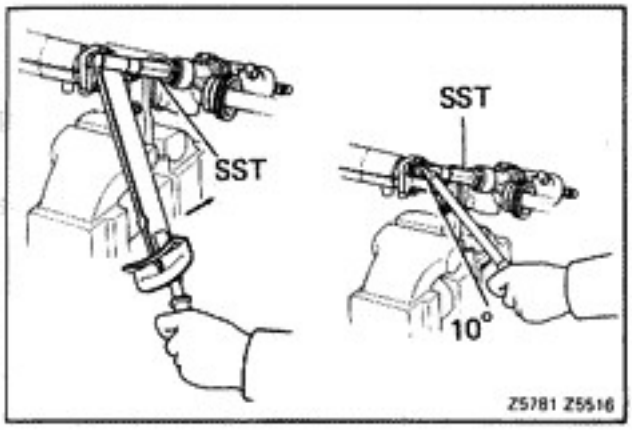
12. INSTALL O-RING AND CONTROL VALVE HOUSING TO RACK HOUSING

(a) Align the marks on the control housing and rac housing.

(b) Coat liquid sealer onto the screw surface of the bol

(c) Install the three bolts and torque them.

Torque: 185 kg-cm (13 ft-lb, 18 N·m)



13. ADJUST CONTROL VALVE SHAFT PRELOAD

(a) Coat liquid sealer onto the screw surface of the bolt.

(b) Tighten the pinion adjusting screw and torque wit SST.

SST 09612-24012 (09612-10021)

Torque: 150 kg-cm (11 ft-lb, 15 N·m)

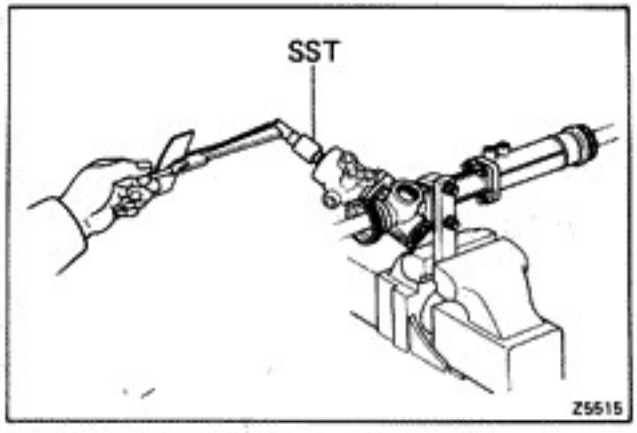
(c) Return the pinion adjusting screw 10°.

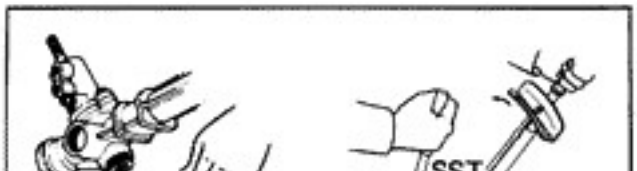
(d) Using SST, measure the preload.

SST 09616-00010

Preload (turning): 4.5 – 6.5 kg-cm (3.9 – 5.6 in.-lb, 0.4 – 0.6 N·m)

If incorrect, readjust.

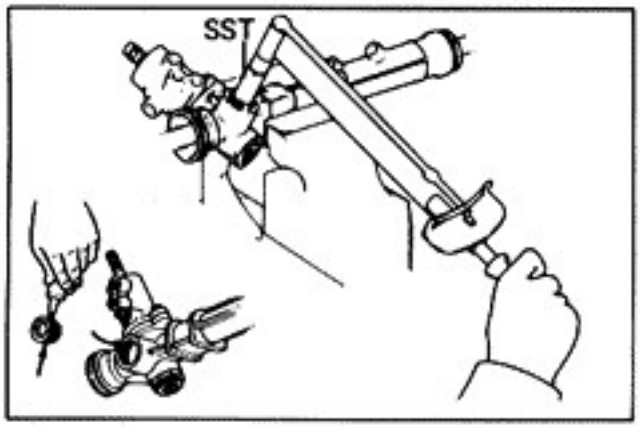




14. INSTALL PINION ADJUSTING SCREW LOCK NUT

(a) Coat liquid sealer onto the lock nut and gear housing contact surfaces.

(b) Install the pinion adjusting screw lock nut and torque it with SST.



15. INSTALL SEAT AND RACK GUIDE

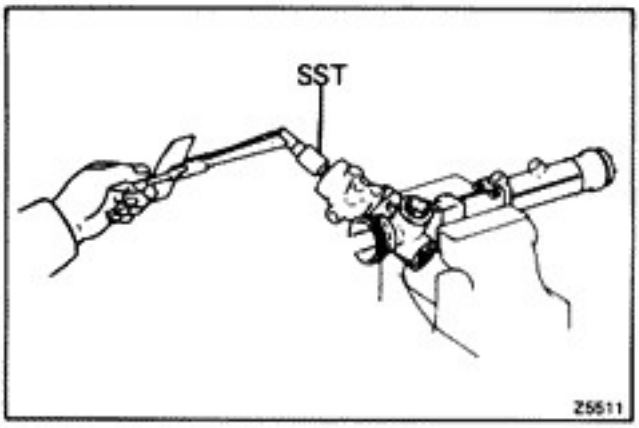
16. INSTALL RACK GUIDE SPRING AND CAP

(a) Install the rack guide spring.

(b) Coat liquid sealer onto the screw surface of the ca

(c) Using SST, install the rack guide spring cap.

SST 09612-24012 (09612-10021)



17. ADJUST TOTAL PRELOAD

(a) Tighten the rack guide spring cap with SST torque it.

Torque: 250 kg-cm (18 ft-lb, 25 N·m)

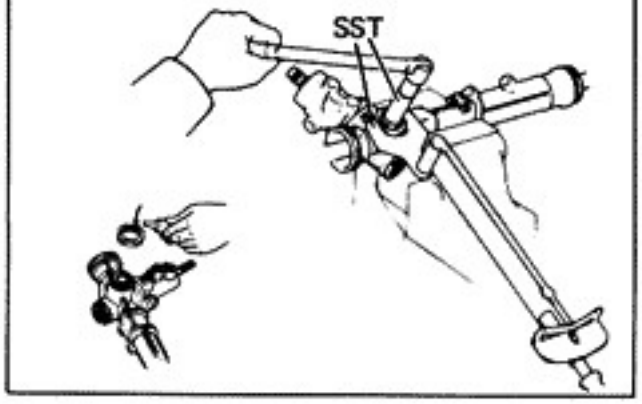
(b) Using SST, return the rack guide spring cap 90°.

(c) Using SST, measure the preload.

SST 09616-00010

Preload (turning): 9 – 12 kg-cm (7.8 – 10.4 in.-lb, 0.9 – 1.2 N·m)

If incorrect, readjust.



18. INSTALL RACK GUIDE SPRING CAP LOCK NU

(a) Coat liquid sealer onto the lock nut and gear hou contact surfaces.

(b) Tighten the rack guide spring cap lock nut and to it with SST.

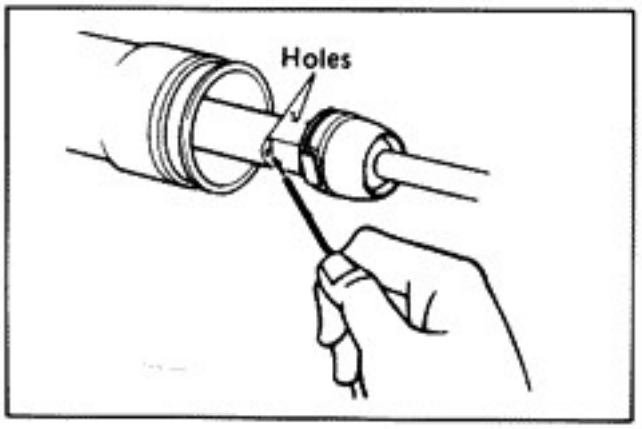
SST 09612-24012 (09612-10021, 09617-24020)

Torque: 700 kg-cm (51 ft-lb, 69 N·m)

(c) Recheck the total preload.

If incorrect, readjust.

Preload (turning): 9 – 12 kg-cm (7.8 – 10.4 in.-lb, 0.9 – 1.2 N·m)

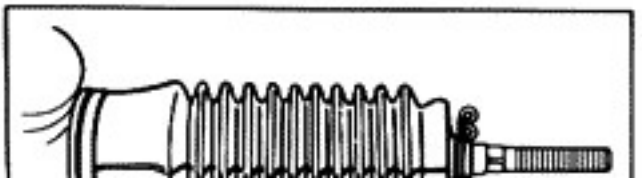


19. INSTALL DUST COVER

20. INSTALL RACK BOOTS, CLAMPS AND CLIPS

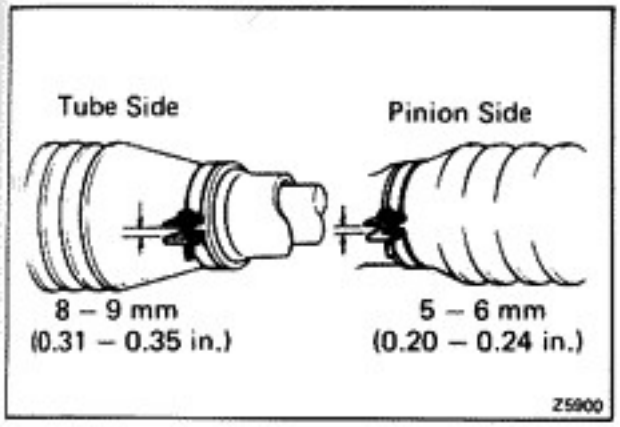
(a) Insure that the tube hole is not clogged with greas

NOTE: If the tube hole is clogged, the pressure in the boot will change after it is assembled and the ha turned.

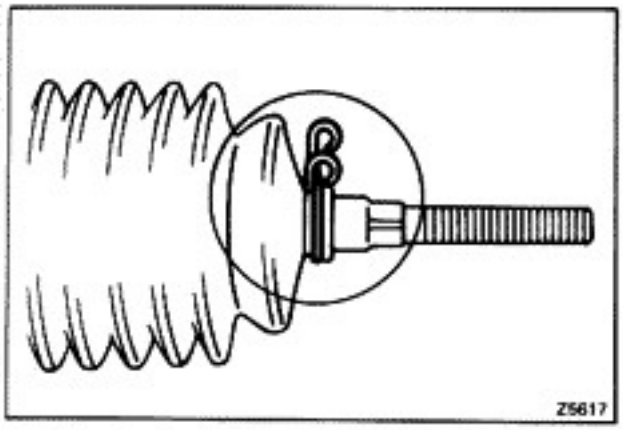


(b) Install boots.

NOTE: As the left and right boots are different, be ca not to interchange them.



(c) Install the rack boot clamps as shown in the figure.



(d) Install rack boot clips.

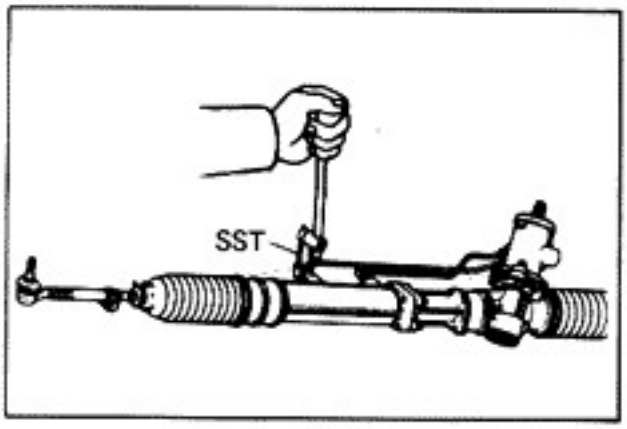
NOTE: Face the open ends outward, as shown, to avoid damage to the boots.

21. INSTALL TIE ROD

(a) Align the marks on the tie rod and rack end.

(b) Tighten the nuts and torque them.

Torque: 175 kg-cm (13 ft-lb, 17 N·m)



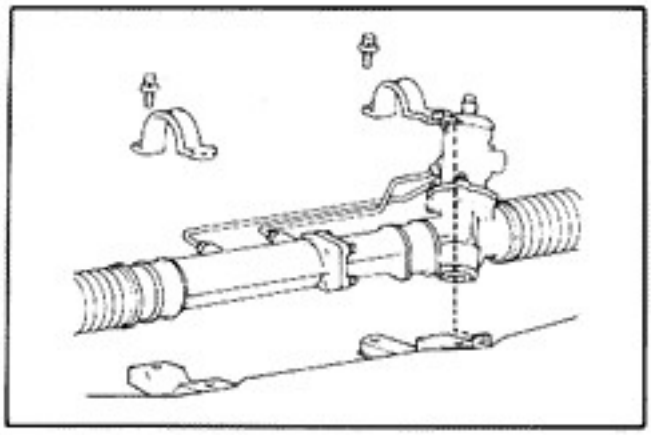
22. INSTALL RIGHT AND LEFT TURN PRESSURE TUBES

(a) Install the union seats.

(b) Using SST, tighten the tubes and torque them.

SST 09631-22020

Torque: 300 kg-cm (22 ft-lb, 29 N·m)



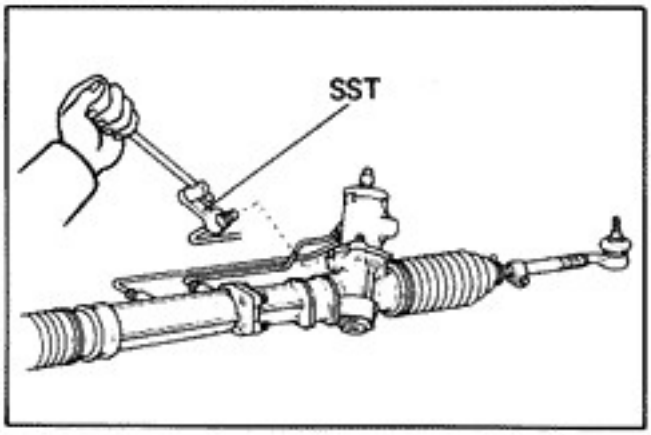
INSTALLATION OF GEAR HOUSING

(See page SR-26)

1. INSTALL GEAR HOUSING ASSEMBLY

NOTE: Be careful not to damage the boots. Install bolts and torque them.

Torque: 770 kg-cm (56 ft-lb, 76 N-m)



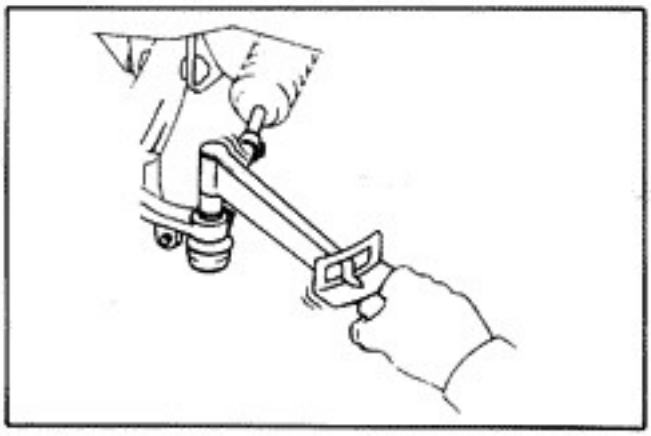
2. CONNECT RETURN AND PRESSURE LINE

(a) Install the union seat.

(b) Using SST, connect the pressure line and torque it

SST 09631-22020

Torque: 390 kg-cm (28 ft-lb, 38 N-m)

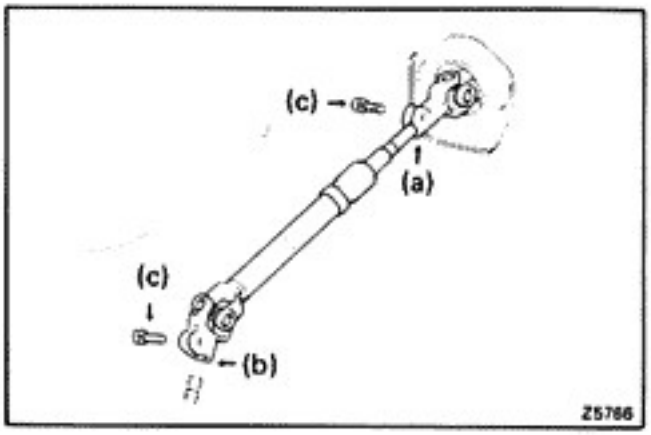


3. CONNECT TIE ROD ENDS

(a) Install the tie rod end set nut and torque it.

Torque: 600 kg-cm (43 ft-lb, 59 N-m)

(b) Install the new cotter pin.



4. INSTALL INTERMEDIATE SHAFT

(a) Install the column side first.

(b) Install the rack housing side.

(c) Install the two bolts and torque them.

Torque: 350 kg-cm (25 ft-lb, 34 N-m)

5. FILL WITH POWER STEERING FLUID

(See page SR-14)

6. BLEED SYSTEM (See page SR-15)