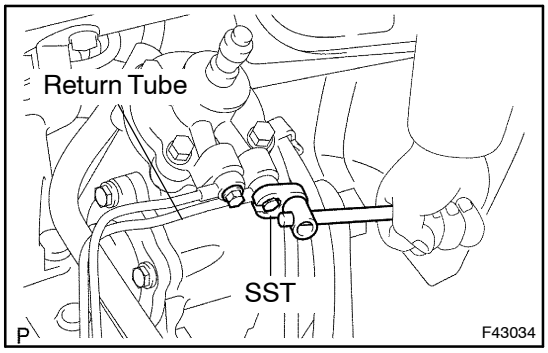
510CX–01

OVERHAUL

1. TILT UP CAB

2. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

3. REMOVE STEERING COLUMN ASSY

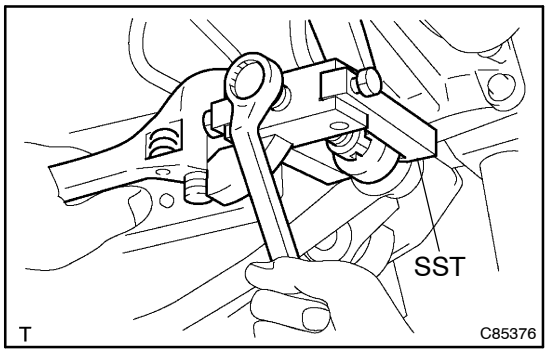


4. DISCONNECT PRESSURE FEED HOSE

(a) Using SST, remove the union bolt and 2 gaskets and disconnect the pressure feed hose.
SST 09023–12700

5. DISCONNECT STEERING GEAR OUTLET RETURN TUBE

(a) Using SST, remove the union bolt and 2 gaskets and disconnect the return tube.
SST 09023–12700

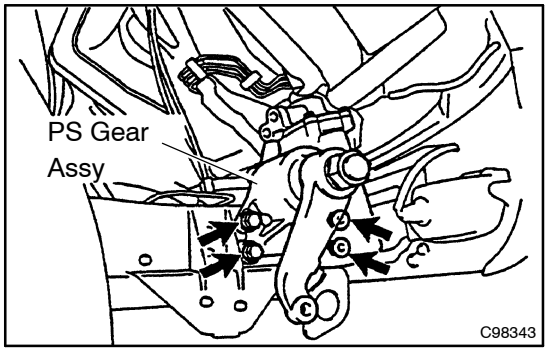


6. DISCONNECT STEERING DRAG LINK ASSY

(a) Remove the cotter pin and nut.

(b) Using SST, disconnect the drag link from the pitman arm.
SST 09628–62011

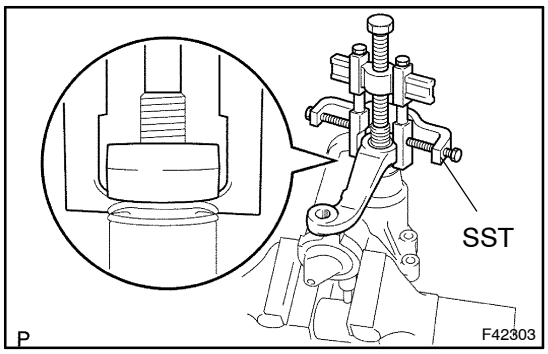
(c) Remove the nut and spring washer.



7. REMOVE POWER STEERING GEAR ASSY

(a) Remove the 2 bolts, 2 nuts, washers and power steering gear assy.

8. FIX POWER STEERING GEAR ASSY
SST 09630–00014 (09631–00142)

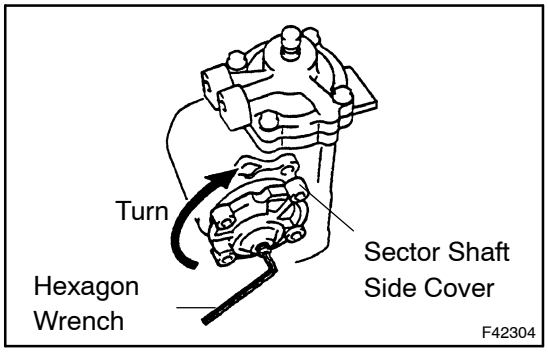


9. REMOVE PITMAN ARM

(a) Using SST, remove the pitman arm.
SST 09950–40011 (09951–04020, 09952–04010, 09953–04020, 09954–04010, 09955–04031, 09958–04011)

NOTICE:
Be careful not to damage the sector shaft dust cover.

10. REMOVE SECTOR SHAFT DUST COVER

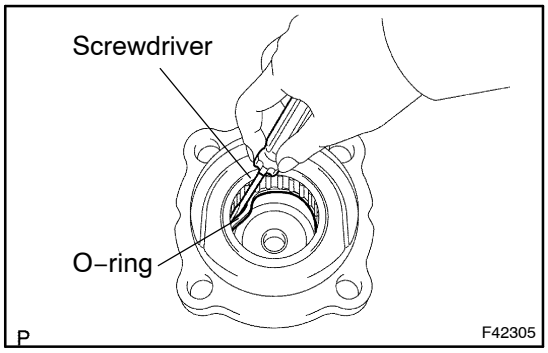


11. REMOVE SIDE COVER

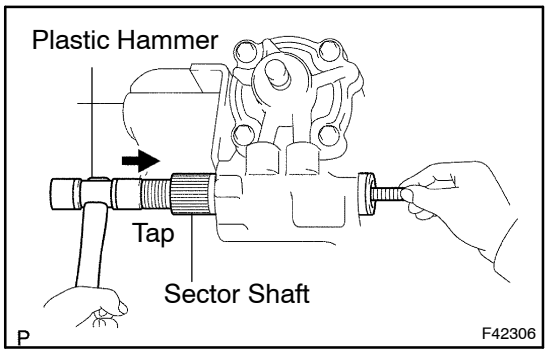
(a) Remove the sector shaft adjusting screw lock nut.

(b) Remove the 4 bolts.

(c) Using a hexagon wrench, turn the sector shaft adjusting screw clockwise until the cover comes off.

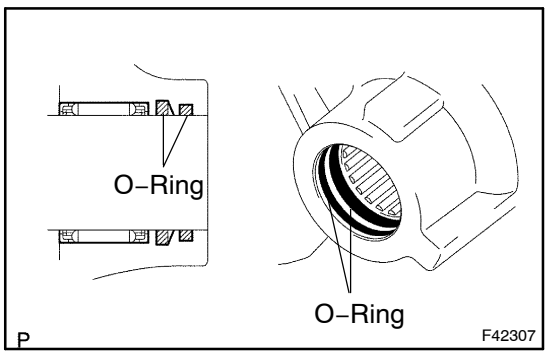


(d) Using a screwdriver, remove the back–up ring and 2 O–rings from the sector shaft side cover.



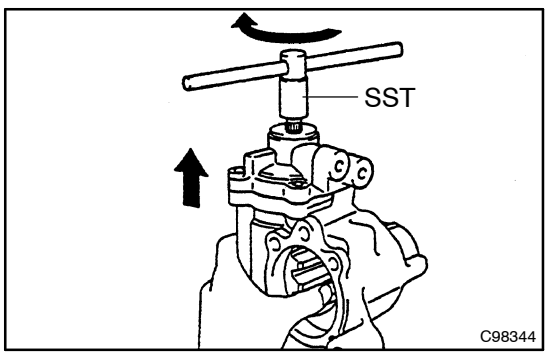
12. REMOVE SECTOR SHAFT

(a) Using a plastic hammer, tap on the sector shaft end and pull out the sector shaft, as shown in the illustration.



(b) Using a screwdriver, remove the back–up ring and 2 O–rings from the gear housing.

13. REMOVE WORM SHAFT DUST COVER



14. REMOVE POWER PISTON ASSY

(a) Remove the 4 bolts.

(b) Using SST, turn the power piston shaft clockwise until the shaft is locked. Then turn the power piston shaft counterclockwise until the end cover of the power piston assembly is separated from the gear housing while holding the power piston with your hand.

SST 09616–00011

NOTICE:

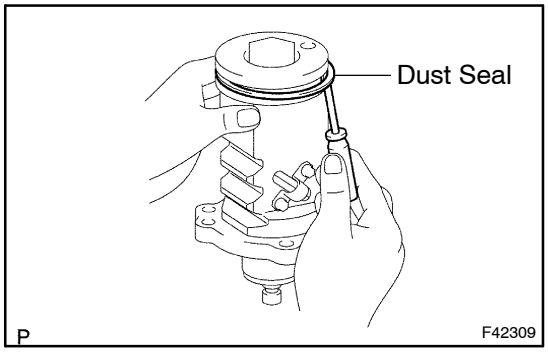
Do not leave the end cover separate from the gear housing cover more than 60 mm (2.36 in.).

(c) While holding the power piston, pull out the power piston.

(d) Using a screwdriver, remove the dust seal from the power piston.

NOTICE:

Be careful not to damage the power piston sub–assy.

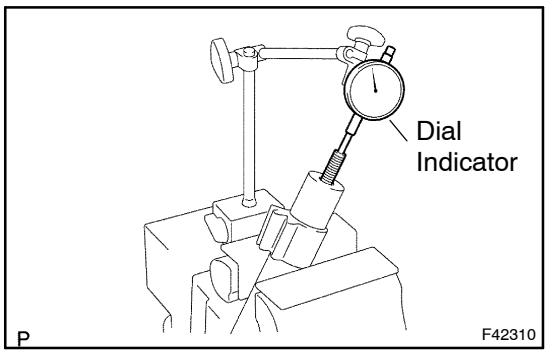


15. INSPECT SECTOR SHAFT

(a) Using a dial indicator, measure the thrust clearance.

Maximum thrust clearance: 0.15 mm (0.0059 in.)

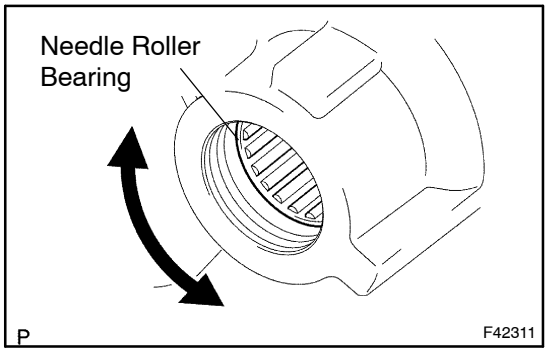
If the clearance is greater than the maximum, adjust the thrust clearance of the sector shaft.



16. INSPECT GEAR HOUSING BEARING

(a) Check the rotating condition of the needle roller bearing and check for abnormal noise.

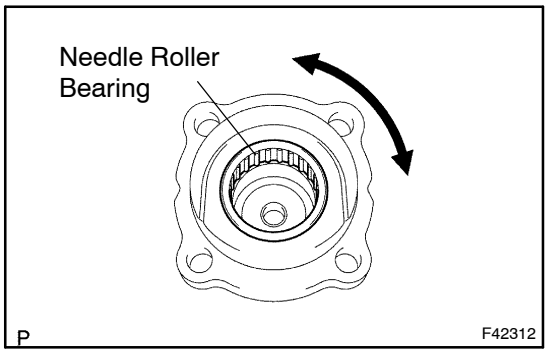
If the bearing is worn or damaged, replace the gear housing.

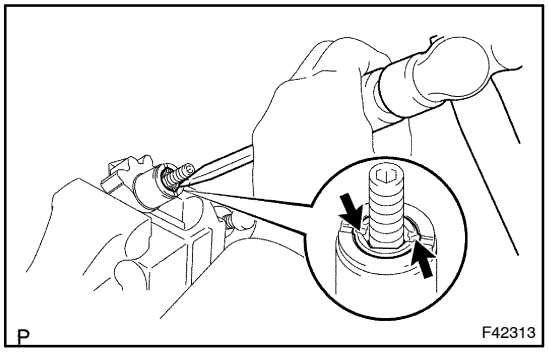


17. INSPECT SECTOR SHAFT SIDE COVER BEARING

(a) Check the rotating condition of the needle roller bearing and check for abnormal noise.

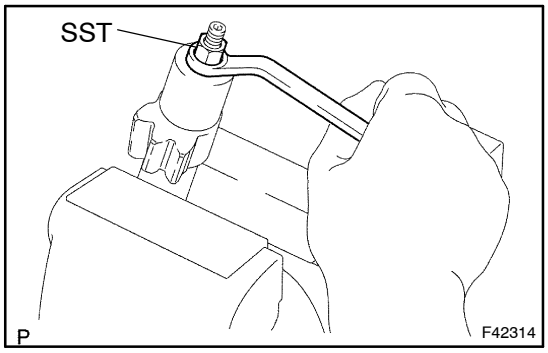
If the bearing is worn or damaged, replace the sector shaft side cover.





18. ADJUST SECTOR SHAFT THRUST CLEARANCE

(a) Using a chisel and a hammer, unstake the back–up ring.



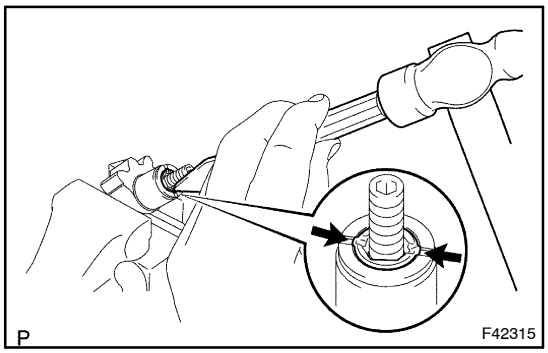
(b) Using SST, remove the lock nut.
SST 09630–00014 (09631–00051)

(c) Using a hexagon wrench, adjust the adjusting screw to the correct thrust clearance.

(d) Using SST, tighten the lock nut.
SST 09630–00014 (09631–00051)

(e) Using a dial indicator, measure the thrust clearance.
Maximum thrust clearance: 0.15 mm (0.0059 in.)

If the clearance is greater than the maximum, adjust it again.

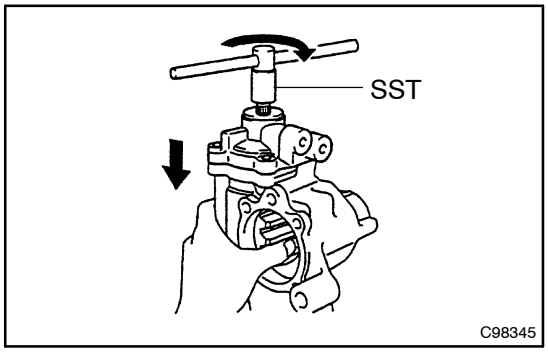


(f) Stake the back–up ring.

19. INSTALL CONTROL VALVE SUB–ASSY AND BALLS

(a) Coat the power piston with power steering fluid.

(b) Snug the dust seal down with the piston ring compressor for 5 – 7 minutes.

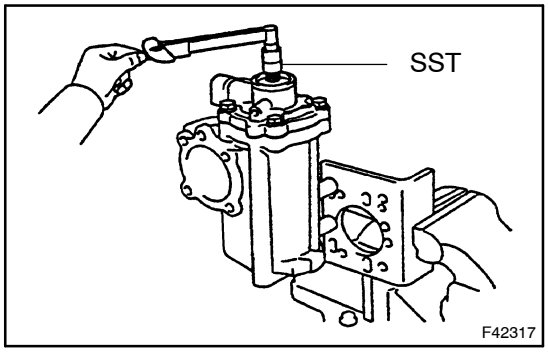


20. INSTALL POWER PISTON ASSY

(a) Mount the gear housing on SST and a clamp vise.
SST 09630–00014 (09631–00142), 09616–00011

(b) Install the power piston assembly while holding the power piston with your hand.

(c) Install the 4 bolts.
Torque: 88.2 N·m (900 kgf·cm, 65 ft·lbf)



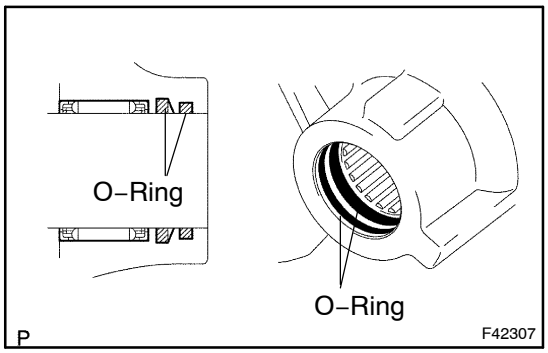
(d) Using SST and a torque wrench, check the power piston rotating torque.
SST 09616–00011
Rotating torque:
0.35 – 1.0 N·m (3.6 – 10.2 kgf·cm, 3.1 – 8.9 in.·lbf)

If the rotating torque is not within the range or the difference between clockwise and counterclockwise rotating torque is over 0.4 N·m (4 kgf·cm, 3.5 in.·lbf), replace the power piston assembly.

21. INSTALL WORM SHAFT DUST COVER

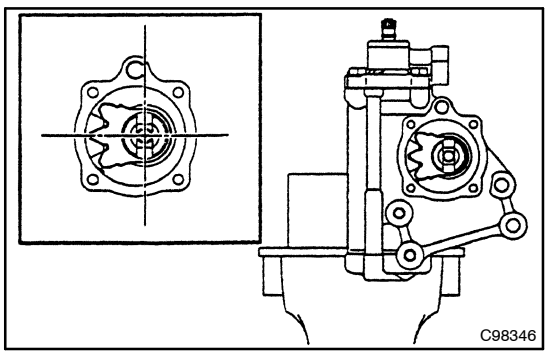
22. INSTALL SECTOR SHAFT AND SECTOR SHAFT SIDE COVER

(a) Coat 4 new O–rings and 2 back–up rings with power steering fluid.
(b) Install the 2 O–rings and back–up ring to the side cover.
(c) Coat 2 new O–rings with power steering fluid.

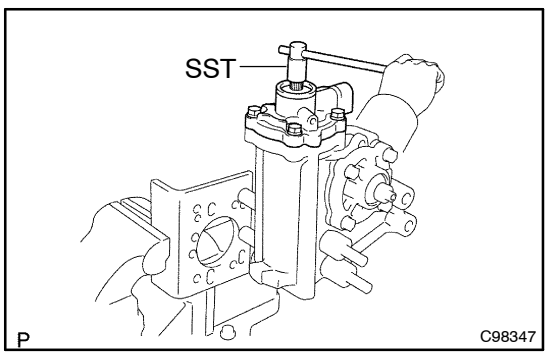


(d) Install the 2 O–rings to the gear housing, as shown in the illustration.

NOTICE:
Make sure that the back–up rings face to the correct direction.

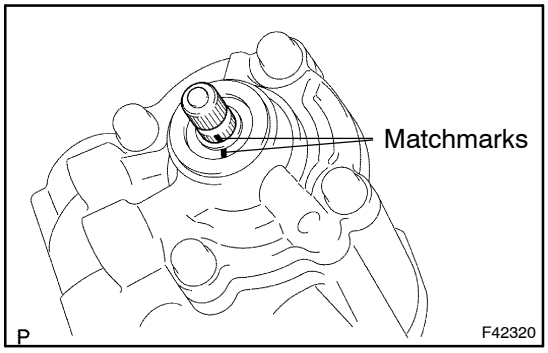


(e) Set the power piston in the center of the shaft.
(f) Install and push the sector shaft into the gear housing so that the center teeth mesh each other.
(g) Install the sector shaft side cover with the 4 bolts.
Torque: 88 N·m (898 kgf·cm, 65 ft·lbf)

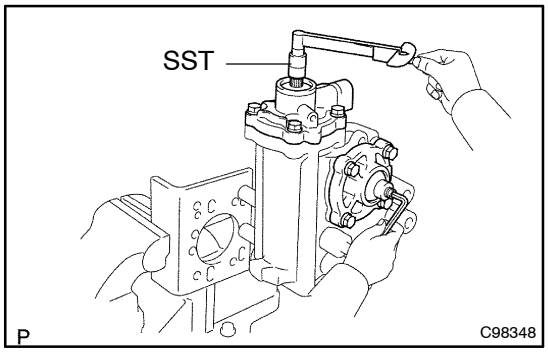


23. DETERMINE CENTER POSITION

(a) Using SST, turn the power piston shaft to the full lock position in both directions and determine the exact center.
SST 09616–00011



(b) Align the matchmarks on the power piston shaft and the end cover of the power piston assembly inorder to show the neutral position.



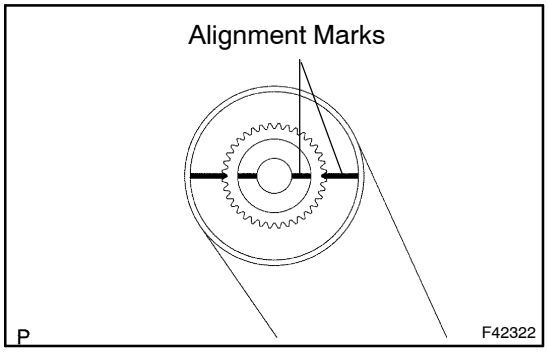
24. INSPECT TOTAL PRELOAD

(a) Using a torque wrench, install SST in the power piston shaft.
SST 09616–00011

(b) Using a hexagon wrench, turn the sector shaft adjusting screw until the preload becomes within the specified range.
Preload (turning):
0.2 – 0.4 N·m (2 – 4 kgf·cm, 1.7 – 3.5 in.·lbf)

(c) Using a hexagon wrench, hold the adjusting screw and install the lock nut.
Torque: 98 N·m (1,000 kgf·cm, 72 ft·lbf)

(d) Recheck the total preload.
Preload (turning):
0.2 – 0.4 N·m (2 – 4 kgf·cm, 1.7 – 3.5 in.·lbf)



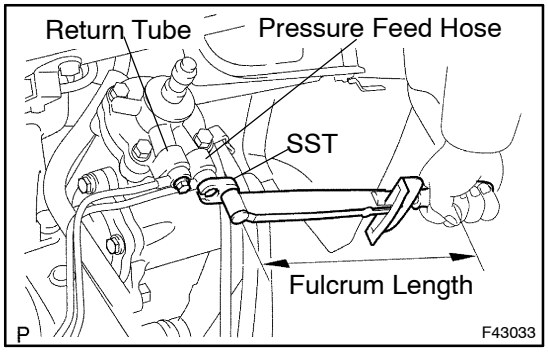
25. INSTALL PITMAN ARM

(a) Align the alignment marks on the sector shaft and the pitman arm.

(b) Install the spring washer and nut.
Torque: 340 N·m (3,468 kgf·cm, 251 ft·lbf)

26. INSTALL POWER STEERING GEAR ASSY

(a) Install the power steering gear with the 2 bolts, 2 nuts and washers.
Torque: 180 N·m (1,836 kgf·cm, 133 ft·lbf)



27. INSTALL STEERING GEAR OUTLET RETURN TUBE

(a) Using SST, connect the return tube and install the union bolt with 2 new gaskets.
SST 09023–12700
Torque:
42 N·m (430 kgf·cm, 31 ft·lbf)
36 N·m (367 kgf·cm, 27 ft·lbf) when using SST

HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value will be effective if the SST is parallel to a torque wrench.

28. INSTALL PRESSURE FEED HOSE

(a) Using SST, connect the pressure feed hose and install the union bolt with 2 new gaskets.
SST 09023–12700
Torque:
42 N·m (430 kgf·cm, 31 ft·lbf)
36 N·m (367 kgf·cm, 27 ft·lbf) when using with SST

HINT:

- Use a torque wrench with a fulcrum length of 300 mm (11.81 in.).
- This torque value will be effective if that the SST is parallel to a torque wrench.

29. INSTALL STEERING DRAG LINK ASSY

(a) Connect the drag link to the pitman arm.
(b) Install the nut and a new cotter pin.
Torque:
4 ton (6 hub bolts) model: 195 N·m (2,000 kgf·cm, 145 ft·lbf)
2 ton (5 hub bolts) model: 152 N·m (1,550 kgf·cm, 112 ft·lbf)

30. INSTALL STEERING COLUMN ASSY

31. BLEED POWER STEERING FLUID

32. CHECK POWER STEERING FLUID LEAKAGE

33. TILT DOWN CAB