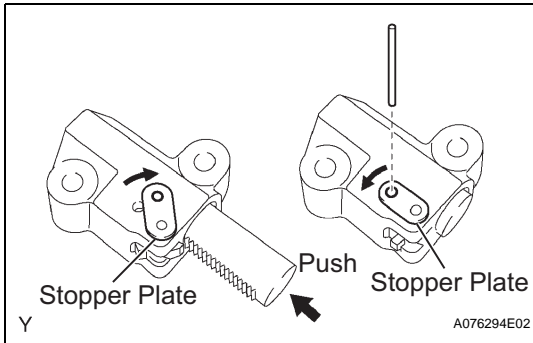


INSTALLATION

1. INSTALL CHAIN TENSIONER SLIPPER

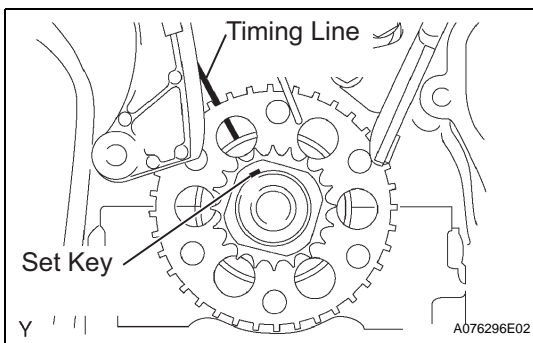
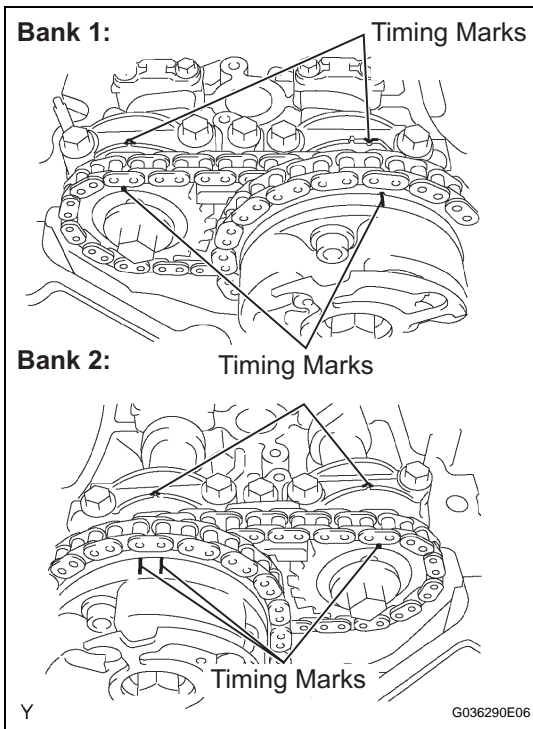
2. INSTALL NO. 1 CHAIN TENSIONER ASSEMBLY

- (a) While turning the stopper plate of the tensioner clockwise, push in the plunger of the tensioner as shown in the illustration.
- (b) While turning the stopper plate of the tensioner counterclockwise, insert a bar of ϕ 35 mm (0.138 in.) into the holes in the stopper plate and tensioner to fix the stopper plate.
- (c) Install the chain tensioner with the 2 bolts.
Torque: 10 N*m (102 kgf*cm, 7.4 ft.*lbf)

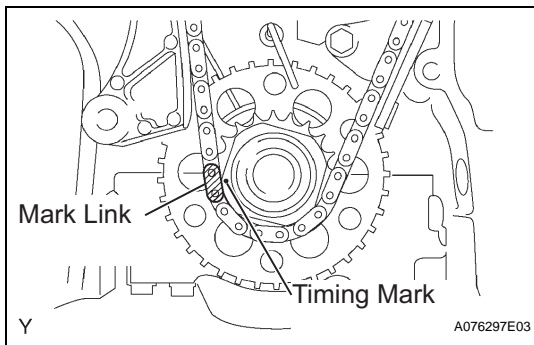


3. INSTALL CHAIN SUB-ASSEMBLY

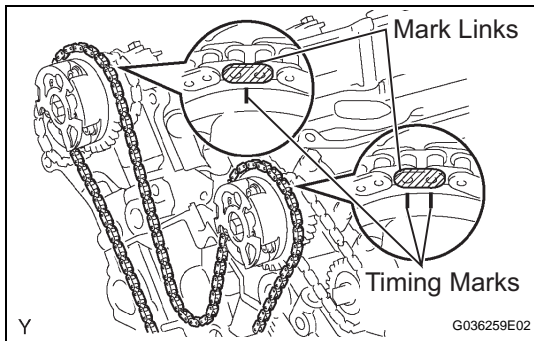
- (a) Set the No. 1 cylinder to TDC/ compression.
 - (1) Align the timing marks of the camshaft timing gears and bearing caps.



- (2) Using the crankshaft pulley set bolt, turn the crankshaft to align the crankshaft set key with the timing line of the cylinder block.



- (b) Align the yellow mark link with the timing mark of the crankshaft timing link.



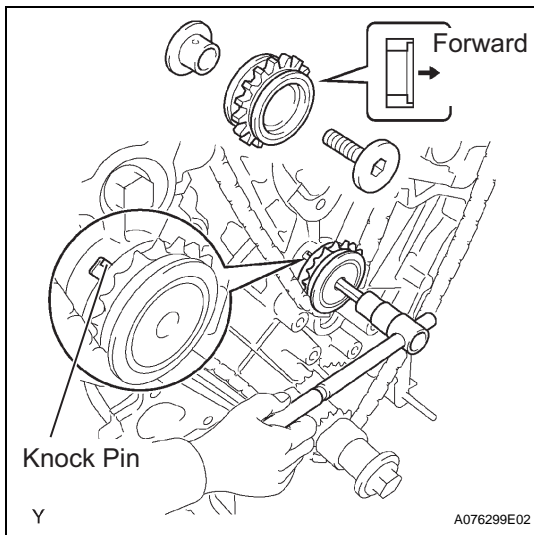
- (c) Align the orange mark links with the timing marks of the camshaft timing gears, and install the chain.

4. INSTALL NO. 2 CHAIN VIBRATION DAMPER

- (a) Install the 2 No. 2 chain vibration dampers.

5. INSTALL IDLE SPROCKET ASSEMBLY

- (a) Apply a light coat of engine oil to rotating surface of the No. 1 idle gear shaft.



- (b) Temporarily install the No. 1 idle gear shaft together with the No. 2 idle gear shaft with the knock pin of the No. 1 idle gear shaft and the knock pin groove of the cylinder block are aligned.

NOTICE:

Orient the idle gear shafts correctly.

- (c) Using a 10 mm hexagon wrench, tighten the No. 2 idle gear shaft.

Torque: 60 N*m (612 kgf*cm, 44 ft.*lbf)

- (d) Remove the bar from the chain tensioner.

6. INSTALL TIMING GEAR CASE OR TIMING CHAIN CASE OIL SEAL (See page [EM-163](#))

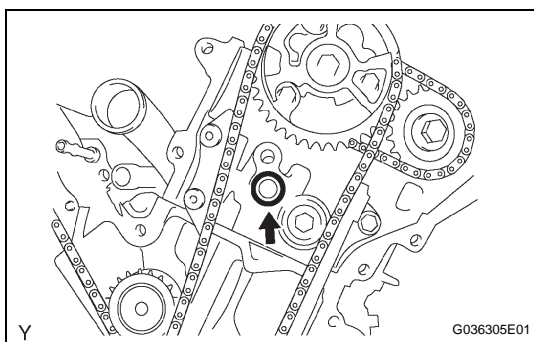
7. INSTALL TIMING CHAIN OR BELT COVER SUB-ASSEMBLY

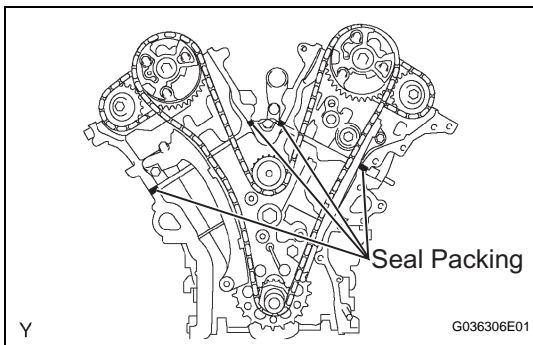
- (a) Remove any old packing (FIPG) material.

HINT:

Do not drop any oil on the contact surfaces of the timing chain cover, cylinder head and cylinder block.

- (b) Install a new O-ring onto the bank 2 cylinder head as shown in the illustration.

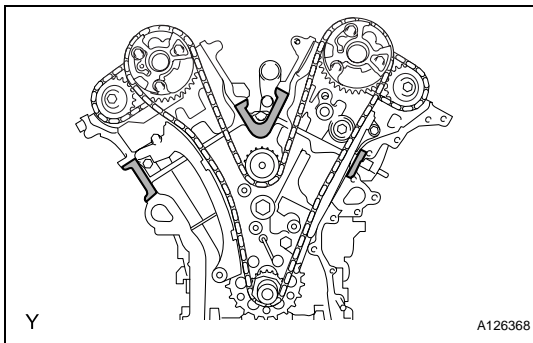




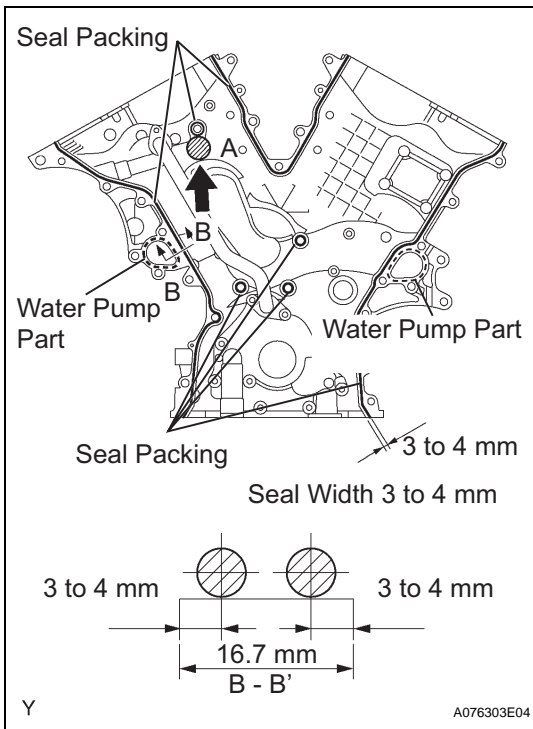
- (c) Apply continuous beads of seal packing (diameter 3 to 4 mm (0.12 to 0.16 in.)) to the 4 locations shown in the illustration.

Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or the equivalent



- (d) Keep the seal surface between the cylinder block and the cylinder head shown in the illustration free of oil before installing the chain cover.



- (e) Apply continuous beads of seal packing (diameter 3 to 4 mm (0.12 to 0.16 in.)) to the timing chain cover as shown in the illustration.

Seal packing:**Water pump part:**

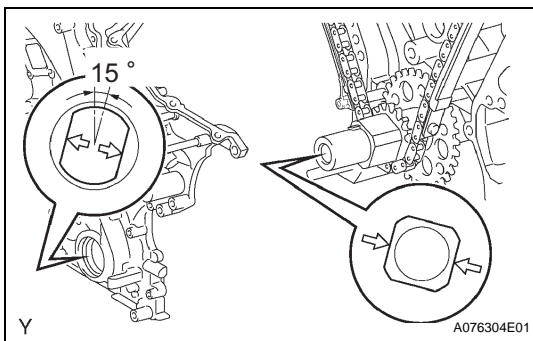
Toyota Genuine Seal Packing 1282B, Three Bond 1282B or the equivalent

Other parts:

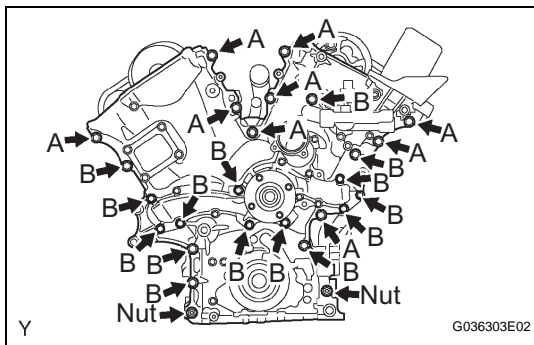
Toyota Genuine Seal Packing Black, Three Bond 1207B or the equivalent

NOTICE:

- Install the timing chain cover within 3 minutes of applying the seal packing. The timing chain cover bolts and nuts must be tightened within 15 minutes of the installation. Otherwise the seal packing must be removed and reapplied.
- Do not apply seal packing to portion A shown in the illustration.



- (f) Align the key way of the oil pump drive rotor with the rectangular portion of the crankshaft timing gear, and slide the timing chain cover into place.



- (g) Install the timing chain cover with the 24 bolts and 2 nuts. Tighten the bolts and nuts uniformly in several steps.

Torque: 23 N*m (235 kgf*cm, 17 ft.*lbf)

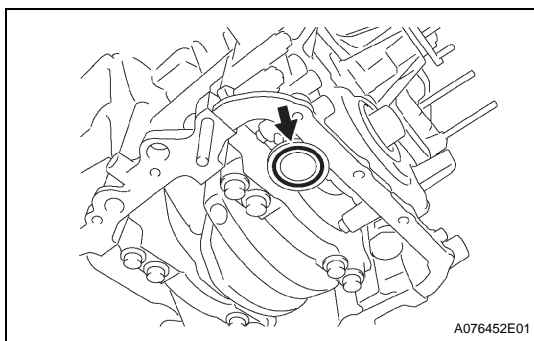
NOTICE:

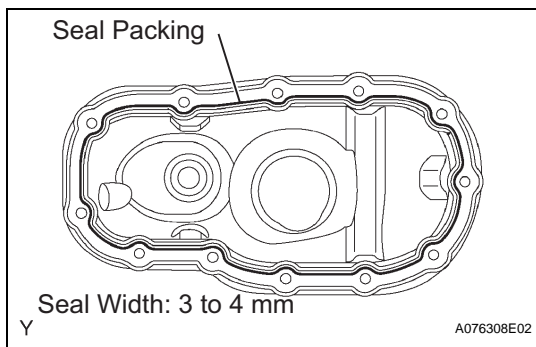
Pay attention not to wrap the chain and slipper over the timing chain cover seal line.

Each bolt length is as follows

Bolt	Length
A	25 mm (0.98 in.)
B	55 mm (2.17 in.)

8. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY LH (See page [EM-57](#))
9. INSTALL CYLINDER HEAD COVER SUB-ASSEMBLY (See page [EM-58](#))
10. INSTALL WATER INLET (See page [CO-9](#))
11. INSTALL VVT SENSOR (See page [ES-417](#))
12. INSTALL CAMSHAFT TIMING OIL CONTROL VALVE ASSEMBLY (See page [ES-415](#))
13. INSTALL IGNITION COIL ASSEMBLY (See page [IG-8](#))
14. INSTALL INTAKE AIR SURGE TANK (See page [FU-17](#))
15. INSTALL NO. 2 SURGE TANK STAY (See page [FU-19](#))
16. INSTALL NO. 1 SURGE TANK STAY (See page [FU-19](#))
17. INSTALL OIL BAFFLE PLATE (See page [FU-19](#))
18. INSTALL THROTTLE BODY BRACKET (See page [FU-19](#))
19. INSTALL AIR CLEANER ASSEMBLY (See page [ES-431](#))
20. INSTALL OIL PAN SUB-ASSEMBLY
 - (a) Remove any old packing (FIPG) material.
HINT:
Do not drop any oil on the contact surfaces of the cylinder block, rear oil seal and oil pan.
 - (b) Install a new O-ring onto the oil pump.





- (b) Apply a continuous bead of seal packing (diameter 3 to 4 mm (0.12 to 0.16 in.)) as shown in the illustration.

Seal packing:

Toyota Genuine Seal Packing Black, Three Bond 1207B or the equivalent

NOTICE:

Install the No. 2 oil pan within 3 minutes of applying the seal packing. Tighten the No. 2 oil pan bolts and nuts within 15 minutes of installing the No. 2 oil pan. Otherwise, the seal packing must be removed and reapplied.

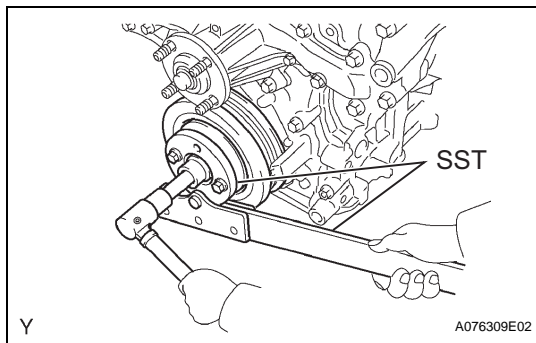
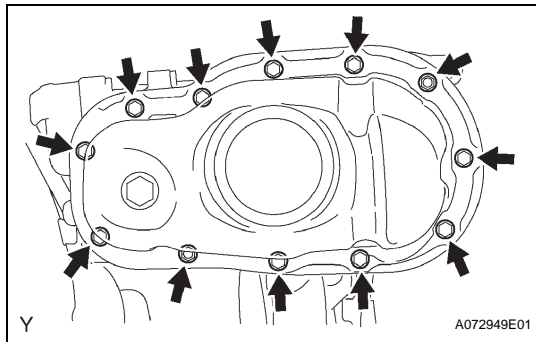
- (c) Install the No. 2 oil pan with the 10 bolts and 2 nuts. Tighten the bolts and nuts uniformly in several steps.

Torque: Bolt

9.0 N*m (92 kgf*cm, 80 in.*lbf)

Nut

10 N*m (102 kgf*cm, 7.4 in.*lbf)

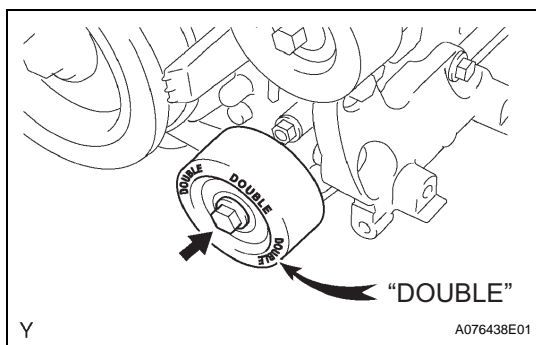


23. INSTALL CRANKSHAFT PULLEY

- (a) Using SST, install the pulley set bolt.

SST 09213-54015 (91651-60855), 09330-00021

Torque: 250 N*m (2,549 kgf*cm, 184 ft.*lbf)



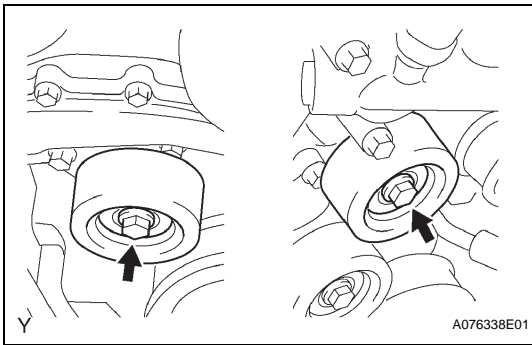
24. INSTALL NO. 1 IDLER PULLEY SUB-ASSEMBLY

- (a) Install the idler pulley with the bolt.

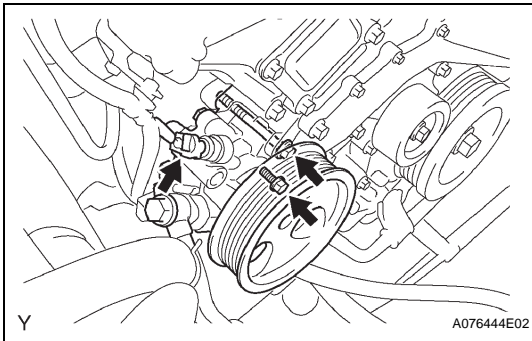
Torque: 39 N*m (398 kgf*cm, 29 ft.*lbf)

HINT:

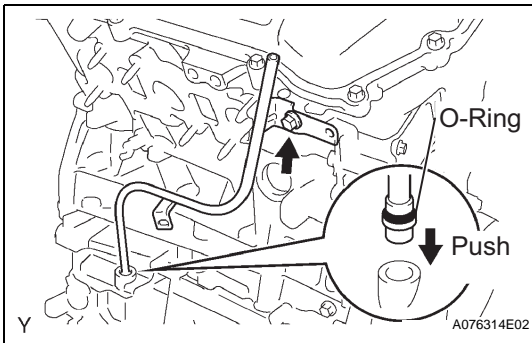
DOUBLE is marked on the No. 1 idler pulley to distinguish it from the No. 2 idler pulley.

**25. INSTALL NO. 2 IDLER PULLEY SUB-ASSEMBLY**

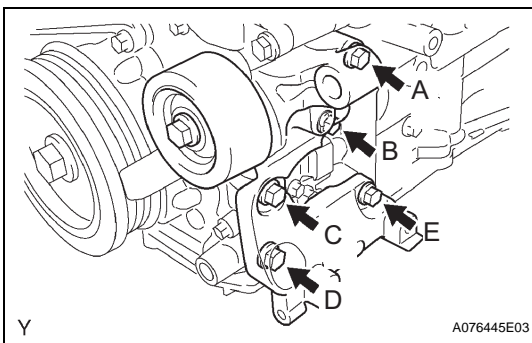
- (a) Install the 2 No. 2 idler pulleys with the 2 bolts.
Torque: 54 N*m (551 kgf*cm, 40 ft.*lbf)

**26. INSTALL VANE PUMP ASSEMBLY**

- (a) Install the vane pump with the 2 bolts.
Torque: 43 N*m (438 kgf*cm, 32 ft.*lbf)
NOTICE:
Do not hit the pulley with other parts when installing the vane pump.
- (b) Connect the power steering pressure switch connector.

**27. INSTALL OIL LEVEL GAUGE GUIDE**

- (a) Install a new O-ring onto the oil level gauge guide.
 (b) Apply a light coat of engine oil to the O-ring.
 (c) Push the oil level gauge guide end into the guide hole in the oil pan.
 (d) Install the oil level gauge guide with the bolt.
Torque: 9.0 N*m (92 kgf*cm, 80 in.*lbf)
 (e) Install the oil level gauge guide.

**28. INSTALL V-RIBBED BELT TENSIONER ASSEMBLY**

NOTICE:
The bolt in position A is not reusable.

HINT:

Each bolt length is as follows:

Position	Length
A	70 mm (2.76 in.)
B, C, D and E	33 mm (1.30 in.)

- (a) Use a new bolt in position A.
 (b) Finger-tighten the bolts in positions A and E and install the bracket.
 (c) Tighten the bolts in positions A and E.
Torque: 36 N*m (267 kgf*cm, 27 ft.*lbf)
 (d) Tighten the bolts in positions B, C and D.
Torque: 36 N*m (267 kgf*cm, 27 ft.*lbf)

29. INSTALL COOLER COMPRESSOR ASSEMBLY (See page [ES-421](#))**30. INSTALL GENERATOR ASSEMBLY**

Refer to the procedures up to "INSTALL GENERATOR ASSEMBLY" (See page [CH-17](#))

- 31. INSTALL FAN**
Refer to the procedures up to "INSTALL FAN PULLEY"
(See page [CO-17](#)).
- 32. INSTALL FRONT DIFFERENTIAL CARRIER ASSEMBLY (for 4WD)**
Refer to the procedures up to "INSTALL FRONT DIFFERENTIAL CARRIER ASSEMBLY" (See page [DF-42](#)).
- 33. INSTALL POWER STEERING LINK ASSEMBLY (for 2WD)**
Refer to the procedures up to "INSTALL POWER STEERING LINK ASSEMBLY" (See page [PS-30](#)).
- 34. INSTALL POWER STEERING LINK ASSEMBLY (for 4WD)**
Refer to the procedures up to "INSTALL POWER STEERING LINK ASSEMBLY" (See page [PS-49](#)).
- 35. INSTALL BATTERY**
- 36. ADD ENGINE COOLANT (See page [CO-3](#))**
- 37. ADD ENGINE OIL (See page [LU-5](#))**
- 38. ADD POWER STEERING FLUID**
- 39. BLEED POWER STEERING FLUID (See page [PS-2](#))**
- 40. ADD DIFFERENTIAL OIL (for 4WD)**
- 41. INSPECT DIFFERENTIAL OIL (for 4WD) (See page [DF-3](#))**
- 42. CHECK FOR ENGINE COOLANT LEAKAGE (See page [CO-4](#))**
- 43. CHECK FOR ENGINE OIL LEAKAGE**
- 44. CHECK FOR POWER STEERING FLUID LEAKAGE**
- 45. CHECK FOR DIFFERENTIAL OIL LEAKAGE**
- 46. INSPECT AND ADJUST FRONT WHEEL ALIGNMENT (See page [SP-2](#))**