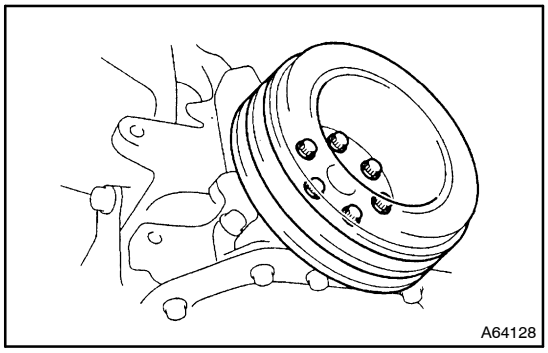
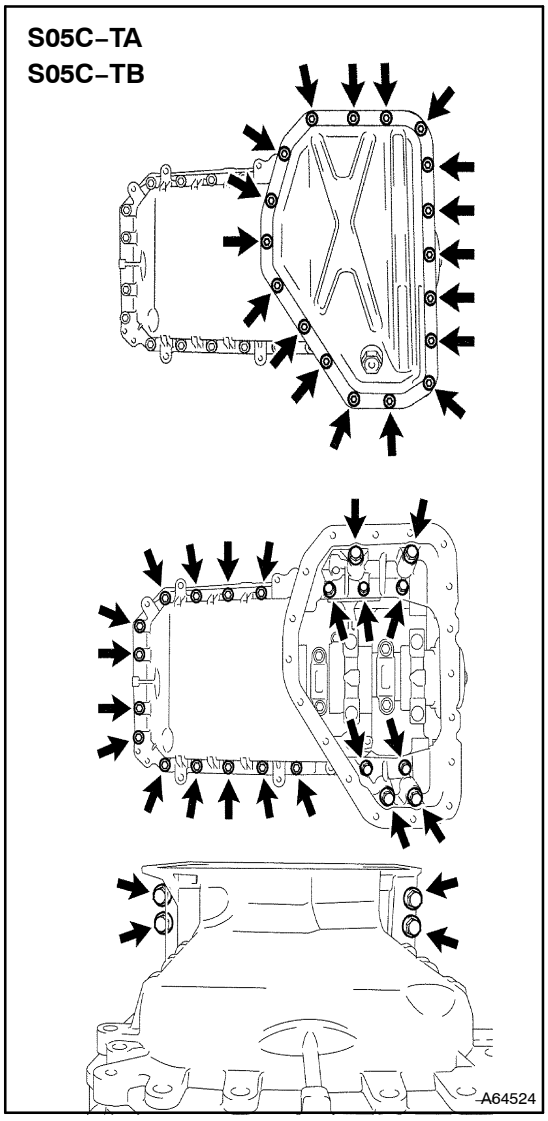
1417M–01

OVERHAUL

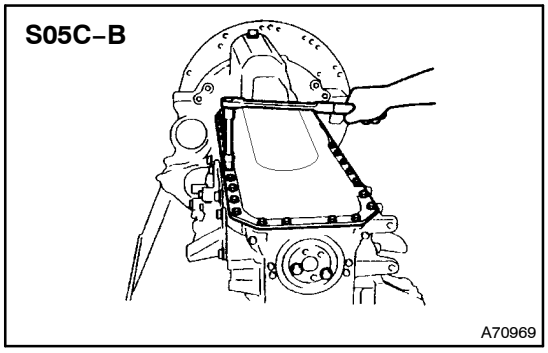


1. REMOVE CRANKSHAFT PULLEY

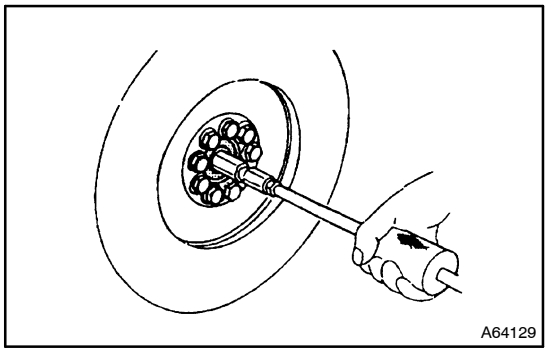


2. REMOVE OIL PAN

(a) Remove the oil pan cover.
(b) Remove the lower oil pan.
(c) Remove the upper oil pan.



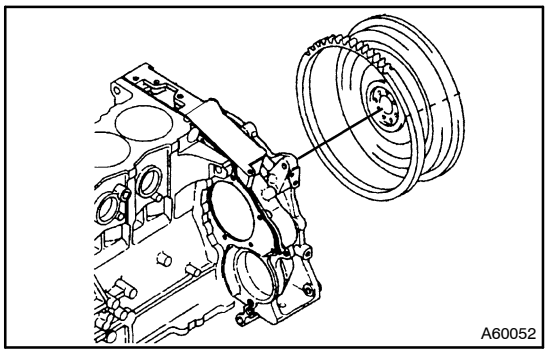
3. REMOVE OIL PAN AND OIL STRAINER



4. REMOVE FLYWHEEL SUB–ASSY

(a) Remove the pilot bearing.

(b) S05C–TB:
Remove the crankshaft position sensor from the flywheel housing.

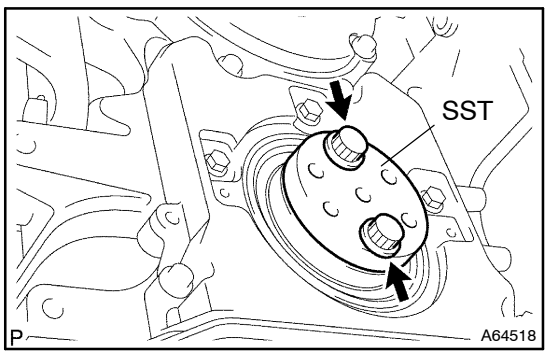


(c) Remove the flywheel mounting bolts.

(d) Hold a copper rod through the starter hole against the flywheel, and drive the rod lightly with a hammer to remove the flywheel from the crankshaft while rotating the crankshaft.

NOTICE:

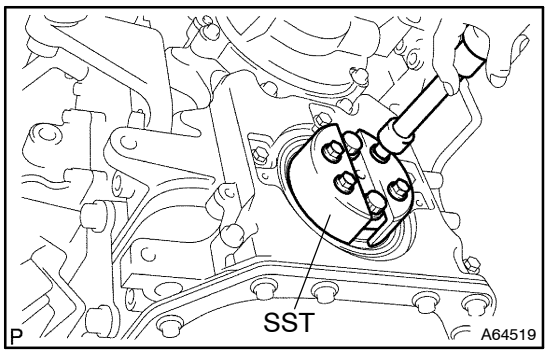
The flywheel is heavy. When removing, be careful not to drop it on your feet.



5. REMOVE CRANKSHAFT OIL SEAL

(a) Using SST, remove the crankshaft oil seals.
SST S0942–01731 (Front), S0942–01742 (Rear)

(1) Place SST (plate) at the crankshaft end with the crank pulley mounting bolts (front) or the flywheel mounting bolts (rear).

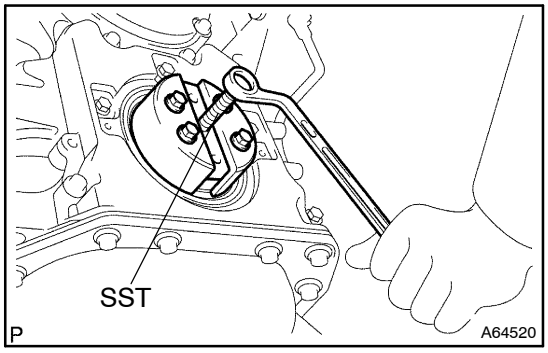


(2) Install SST (hook) to the crankshaft end with the supplied bolt.

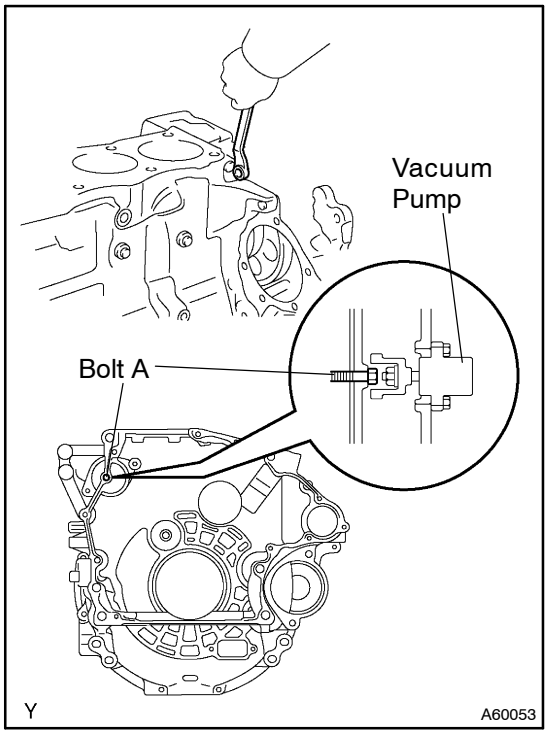
HINT:

Engage the hook with the oil seal notch.

(3) Remove the bolt installed in step (1).



(4) Install SST (center bolt) and tighten it to remove the oil seal.



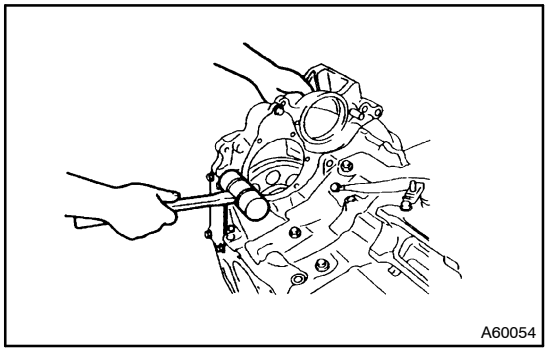
6. REMOVE FLYWHEEL HOUSING

(a) Remove the 2 front mounting bolts of the flywheel housing.

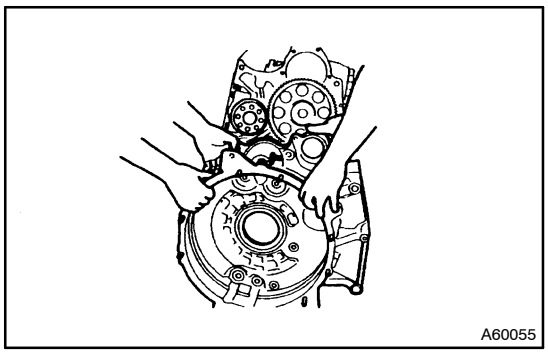
(b) Remove the rear mounting bolts of the flywheel housing.

HINT:

Before removing the flywheel housing, remember to loosen the bolt A.

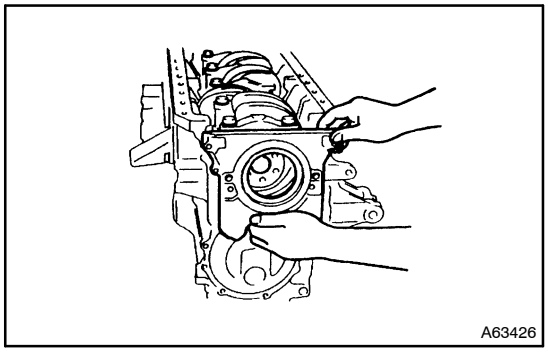


(c) Using a plastic–faced hammer, remove the flywheel housing by it lightly striking.

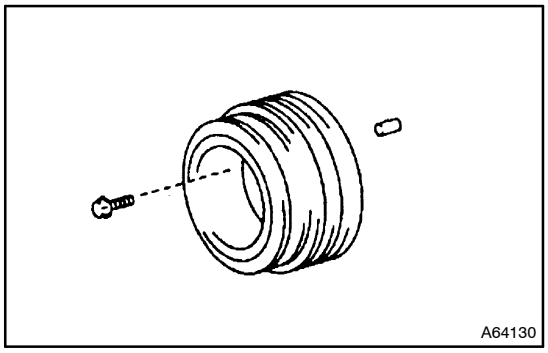


CAUTION:

The flywheel housing is heavy. When removing, be careful not to drop it on your feet.


A63426

7. REMOVE OIL SEAL RETAINER


A64130

8. INSPECT CRANKSHAFT PULLEY

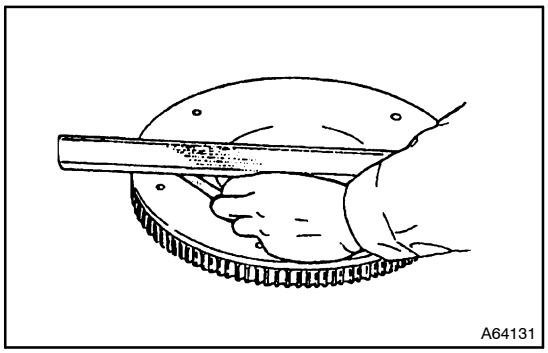
HINT:

Clean the torsional damper with a commercial cleaning agent before the inspection.

Use a cleaning agent that does not damage gum.

(a) Check if there are any cracks in the damper rubber section.

If the cracks are excessive, replace the pulley.


A64131

9. INSPECT FLYWHEEL SUB–ASSY

(a) Check the friction surface for damage.

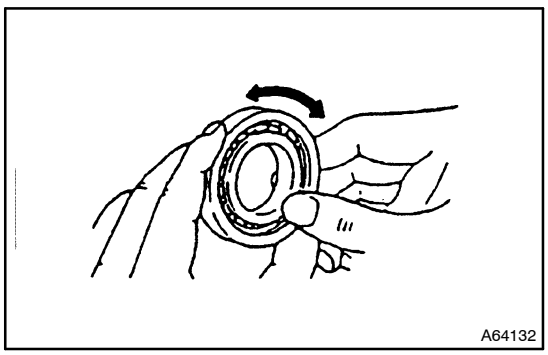
(b) Check the friction surface for distortion.

(c) Grinding and replacement should be performed as necessary.

Maximum deflection: 0.04 mm (0.0016 in.)

Grind limit: 1.00 mm (0.0394 in.)

If the flywheel is ground over the limit, replace it with a new one.


A64132

10. INSPECT PILOT BEARING

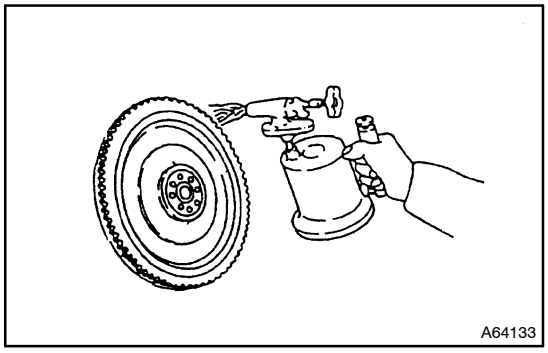
(a) Rotate the bearing lightly by hand, and check whether there is any abnormal noise or clatter and whether the balls run smoothly.

If there is any fault, replace the pilot bearing.

11. INSPECT FLYWHEEL RING GEAR

(a) Visually check the flywheel ring gear.

If damage such as wear and scratches is excessive, replace the part.



12. REMOVE FLYWHEEL RING GEAR

(a) Using a torch, heat the ring gear evenly to about 200°C (392°F) with a torch. Insert the ring gear periphery lightly, using a cushion bar to remove the gear.

CAUTION:

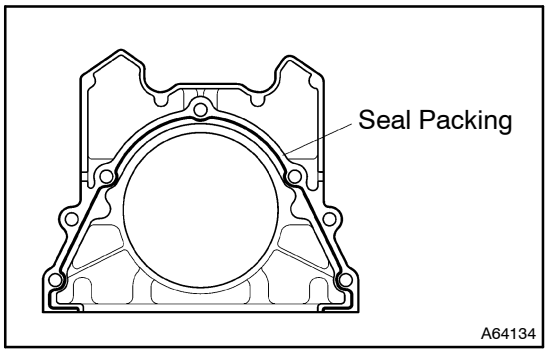
Never touch the ring gear or flywheel with your bare hands when they are hot.

13. INSTALL FLYWHEEL RING GEAR

(a) Using a torch, heat the ring gear evenly to about 200°C (392°F) with a touch. Insert the ring gear into the flywheel so that the chamfered side is facing upward.

NOTICE:

Do not overheat the ring gear.



14. INSTALL OIL SEAL RETAINER

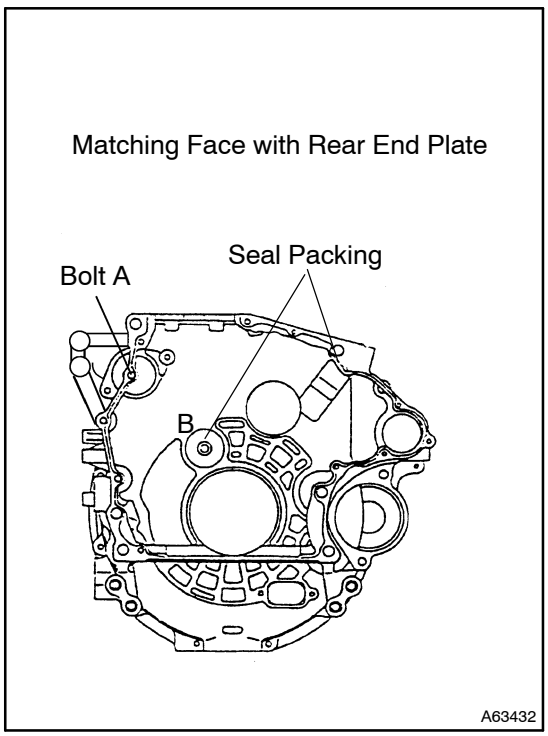
(a) Clean the cylinder block mounting surface of the oil seal retainer.

(b) Apply seal packing to the oil seal retainer, then install it to the cylinder block within 20 minutes.

Seal packing: Part No. 08826–00080 or equivalent

Coating width: 1.5 – 2.5 mm (0.059 – 0.098 in.)

If more than 20 minutes have elapsed, clean off the seal packing completely and reapply the seal packing.



15. INSTALL FLYWHEEL HOUSING

(a) Clean the rear end plate mounting surface of the flywheel housing.

(b) Apply seal packing to the flywheel housing, then install it to the rear end plate within 20 minutes.

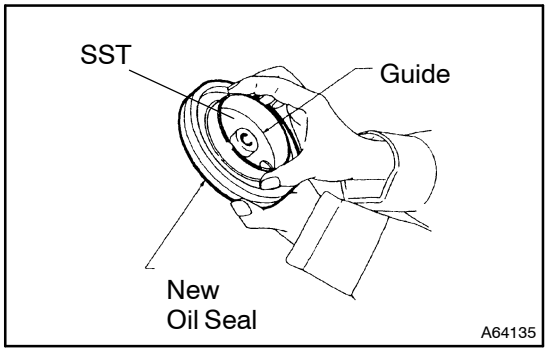
Seal packing: Part No. 08826–00080 or equivalent

Coating width: 1.5 – 2.5 mm (0.059 – 0.098 in.)

If more than 20 minutes have elapsed, clean off the seal packing completely and reapply the seal packing.

NOTICE:

Before installing the flywheel, remember to tighten the bolt A. Be sure to apply seal packing to the flywheel housing. Be sure to assemble the stud bolt on the block side. The flywheel is heavy. When installing, be careful not to drop it on your feet.

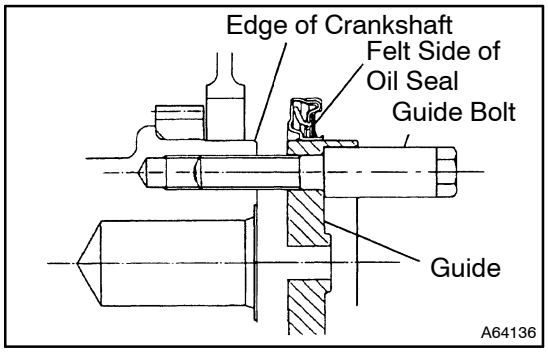


16. INSTALL CRANKSHAFT OIL SEAL

(a) Clean the edges and surface of the crankshaft and SST.

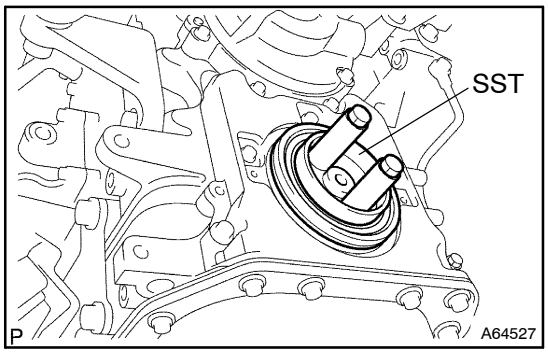
(b) Insert a new crankshaft oil seal into SST (guide of oil seal press).

SST S0940–71030 (Front), S0940–71040 (Rear)



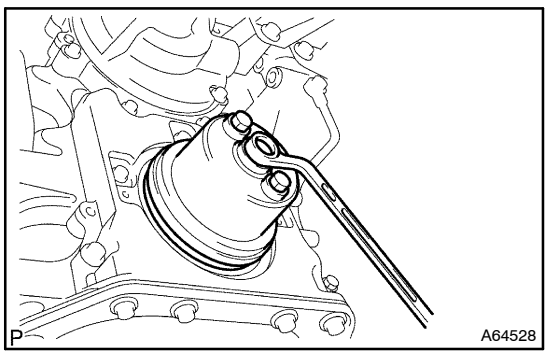
HINT:

Pay attention to the orientation of the oil seal (The felt side should face the outside of the cylinder block).



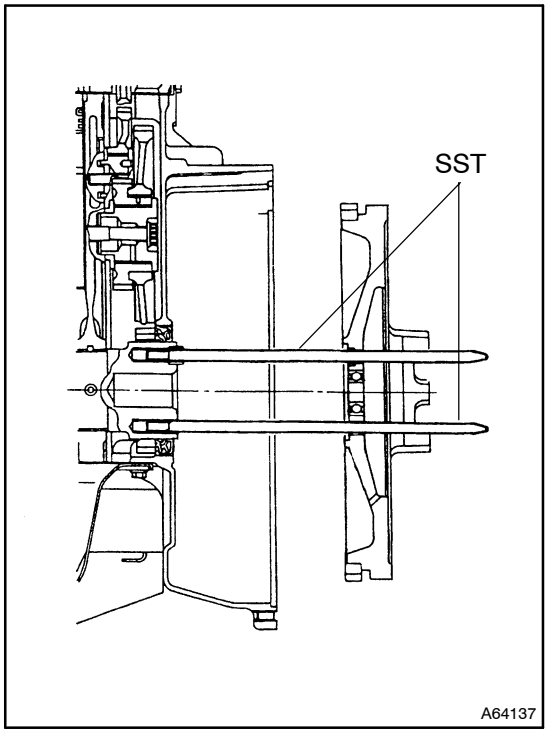
(c) Apply a little amount of engine oil to the seal portion of the shaft oil seal.

(d) Attach SST (oil seal press guide) with the oil seal onto the crankshaft with SST (attached guide bolt).



(e) Insert the oil seal press by adjusting the oil seal press hole to the guide bolt.

(f) Press the crankshaft oil seal inside by attaching the accompanying center bolt onto the oil seal press and tighten it until it stops.



17. INSTALL FLYWHEEL SUB–ASSY

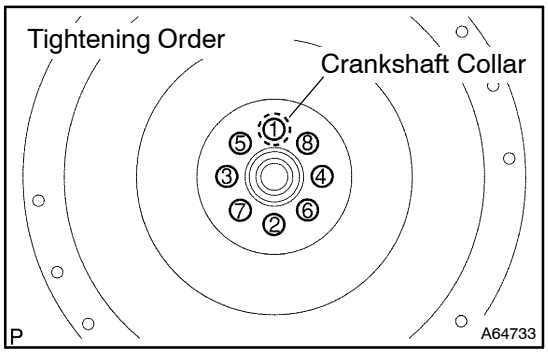
(a) Make sure that there are no burns or dirt on the contact surface or in the threaded hole of the crankshaft or flywheel.

(b) Insert SST into the crankshaft.
SST S0948–11340

HINT:
Place one guide bar on one side of the collar knock and another on the opposite side of the collar knock.

(c) Insert the flywheel slowly until it contacts the collar knock in order to prevent impact on the guide bar. Adjust the position, then insert it completely.

CAUTION:
The flywheel is heavy. When installing, be careful not to drop it on your feet.

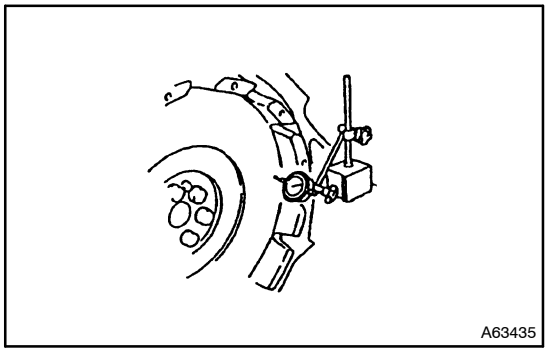


(d) Apply clean engine oil to the threads of the flywheel bolt and the flywheel bolt seat. Be sure to tighten 2 or 3 threads provisionally by hand. Then, tighten the flywheel bolts (6) with a low–torque impact wrench.

(e) Pull out the guide bar and tighten the remaining 2 flywheel bolts provisionally as in step (d).

(f) Tighten the flywheel bolts in the order shown in the illustration.
Torque: 186 N·m (1,900 kgf·cm, 137 ft·lbf)

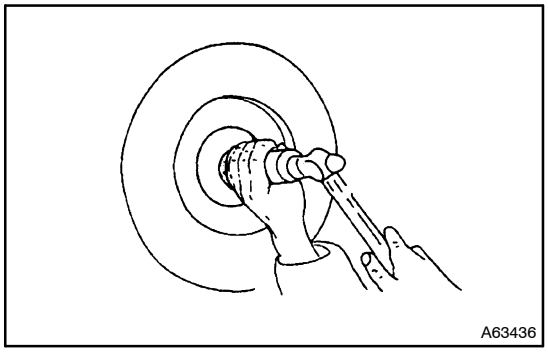
(g) Loosen all the bolts and tighten them again.
Torque: 186 N·m (1,900 kgf·cm, 137 ft·lbf)



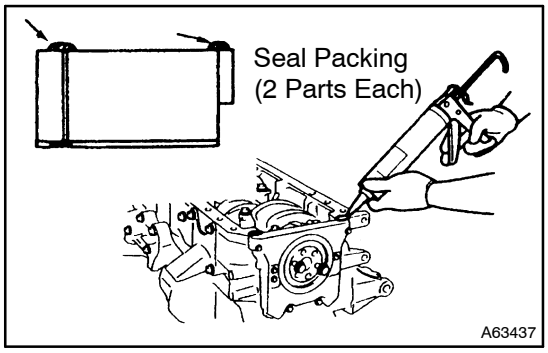
(h) Measure the sliding surface play of the flywheel.

(1) Using a dial gauge, measure the runout of the flywheel.
Maximum runout: 0.15 mm (0.0059 in.)

If the runout is greater than the maximum, resurface the sliding surface.

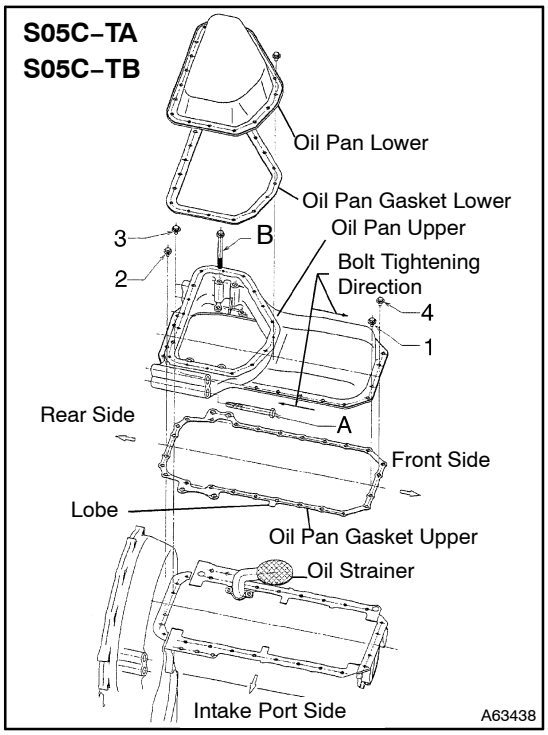


(i) Install the pilot bearing.
(j) S05C–TB:
Install the crankshaft position sensor.



18. INSTALL OIL PAN

(a) Make sure that there is no deformation, impact marks or foreign particles on the mounting surface and stiffener surface of the upper oil pan.
(b) Place a guide pin of 70 mm (2.76 in.) or longer in the cylinder block.
(c) Apply seal packing to the front and back ends of the cylinder block lower surface.
Seal packing: Part No. 08826–00080 or equivalent
Coating width: 1.5 – 2.5 mm (0.059 – 0.098 in.)



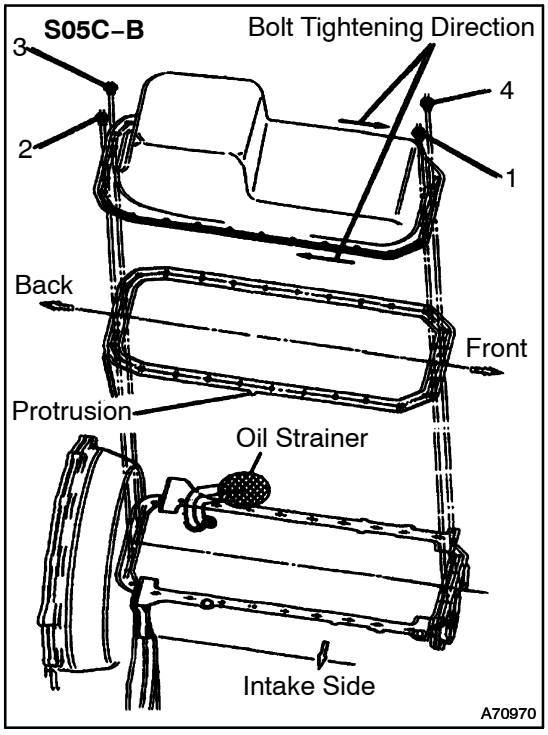
(d) Install the upper oil pan gasket so that the protrusion will be on the flywheel housing side and the print seal surface will be on the cylinder block side.
(e) Install the upper oil pan.

HINT:

- Install the upper oil pan along the guide pin.
- If more than 20 minutes have elapsed, clean off the seal packing.

(f) Tighten the upper oil pan installation bolts in the order 1 – 2 – 3 – 4 as shown in the illustration.
Torque: 28.5 N·m (290 kgf·cm, 21 ft·lbf)
(g) Make sure that there is no deformation, impact marks or foreign particles on the mounting surface and stiffener surface of the lower oil pan.
(h) Finish tightening the bolts in the order shown in the illustration.
Torque: 28.5 N·m (290 kgf·cm, 21 ft·lbf)

HINT:
Make sure that the washer is not on the flange.



(i) Install the upper oil pan gasket so that the protrusion will be on the flywheel housing side and the print seal surface will be on the cylinder block side.

(j) Install the upper oil pan.

HINT:

- Install the upper oil pan along the guide pin.
- If more than 20 minutes have elapsed, clean off the seal packing.

(k) Tighten the upper oil pan installation bolts in the order 1 – 2 – 3 – 4 as shown in the illustration.

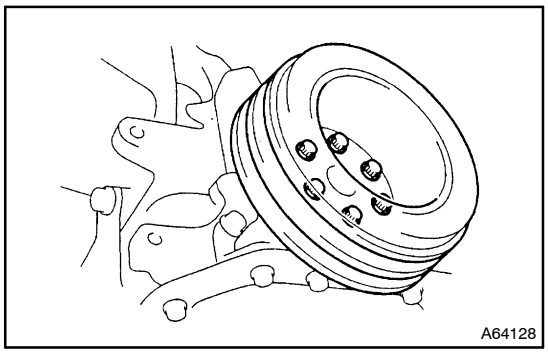
Torque: 28.5 N·m (290 kgf·cm, 21 ft·lbf)

(l) Finish tightening the bolts in the order shown in the illustration.

Torque: 28.5 N·m (290 kgf·cm, 21 ft·lbf)

HINT:

Make sure that the washer is not on the flange.



19. INSTALL CRANKSHAFT PULLEY

(a) Apply clean engine oil to the threads of the crankshaft pulley bolt. Be sure to tighten 2 or 3 threads provisionally by hand. Then, tighten the crankshaft pulley 6 bolts with a low–torque impact wrench.

(b) Tighten the crankshaft pulley bolts.

(c) Loosen all the bolts and tighten them again.

Torque: 108 N·m (1,100 kgf·cm, 80 ft·lbf)