

18R-G ENGINE SERVICE

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CUTAWAY VIEW

Fig. 5-1

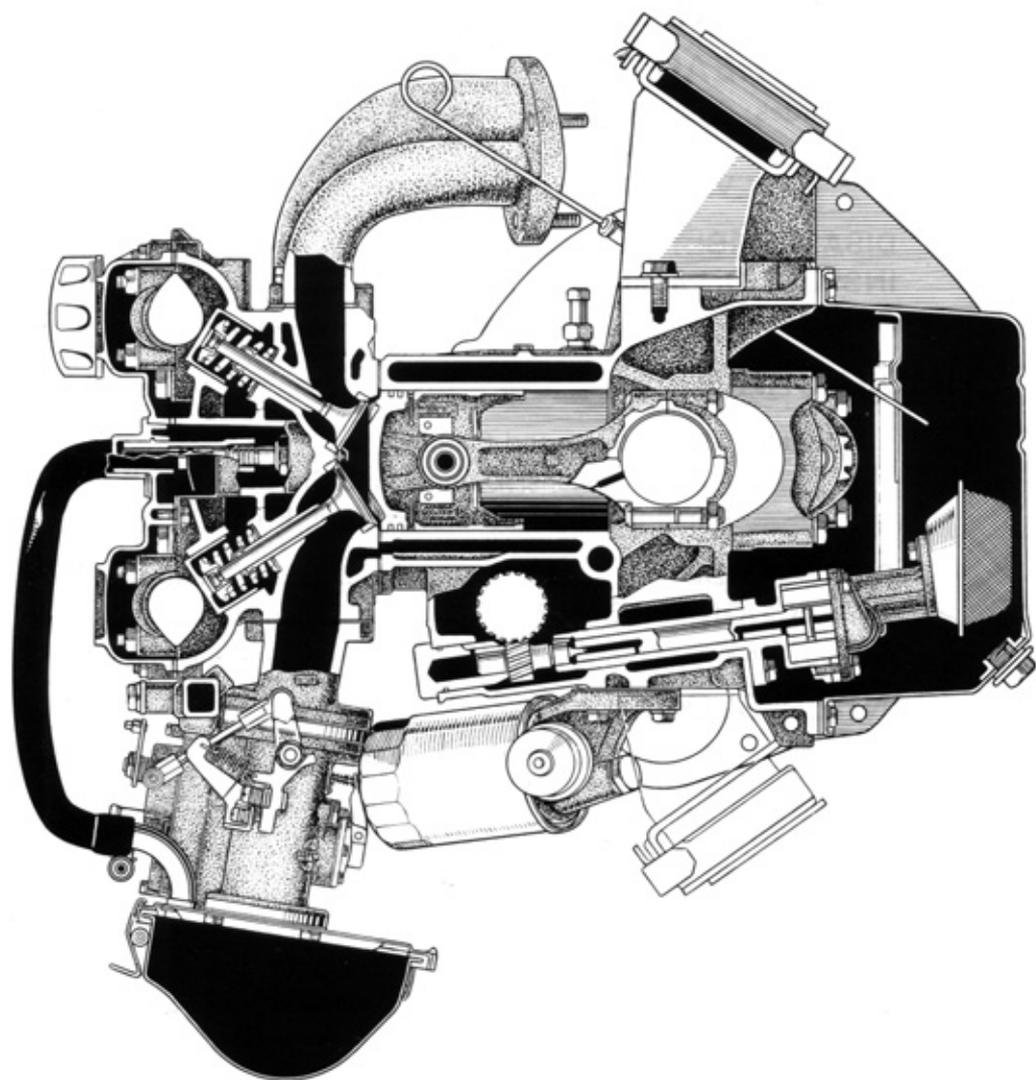
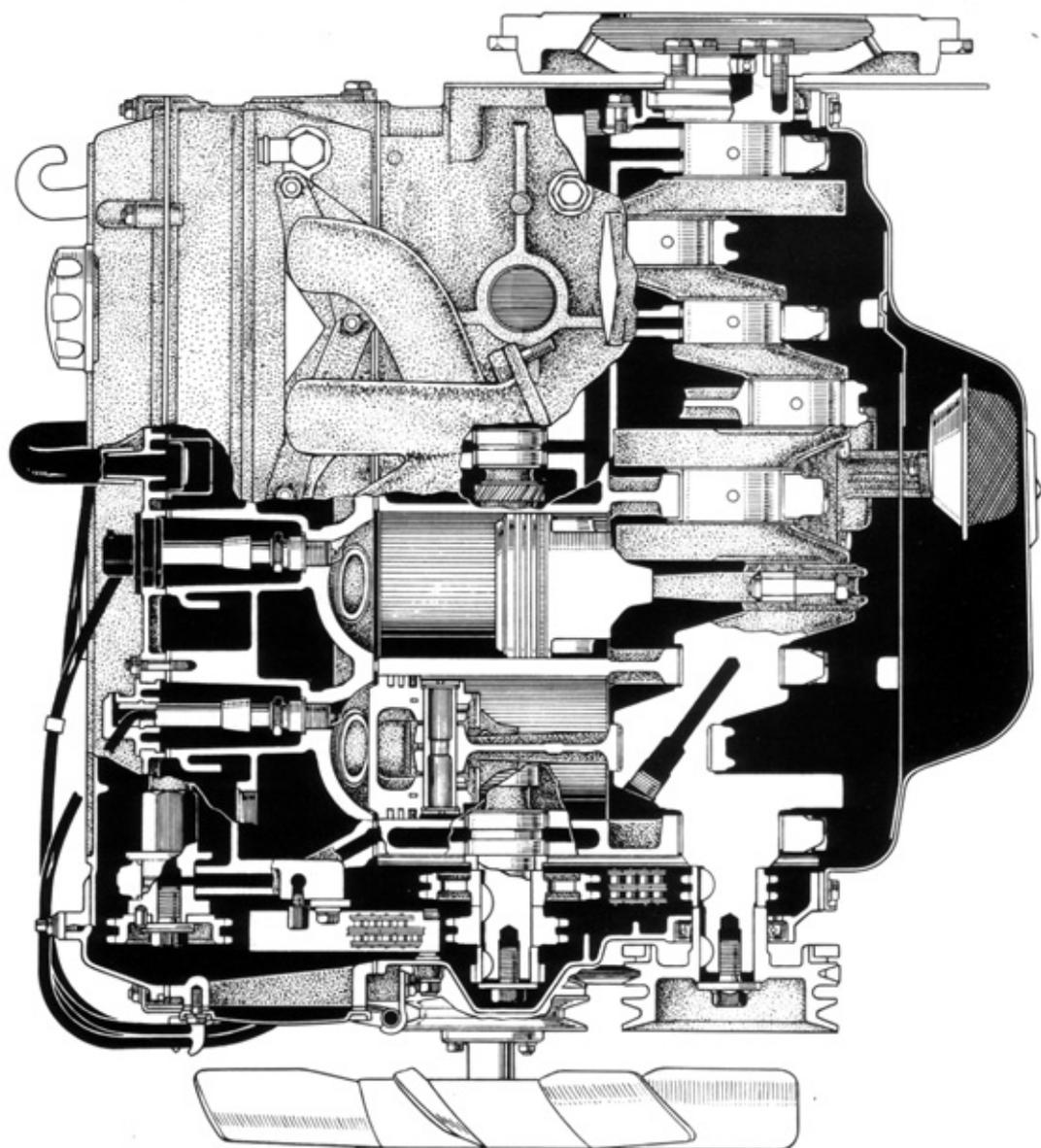


Fig. 5-2



CYLINDER HEAD

DISASSEMBLY

Disassemble in numerical order.

Fig. 5-3

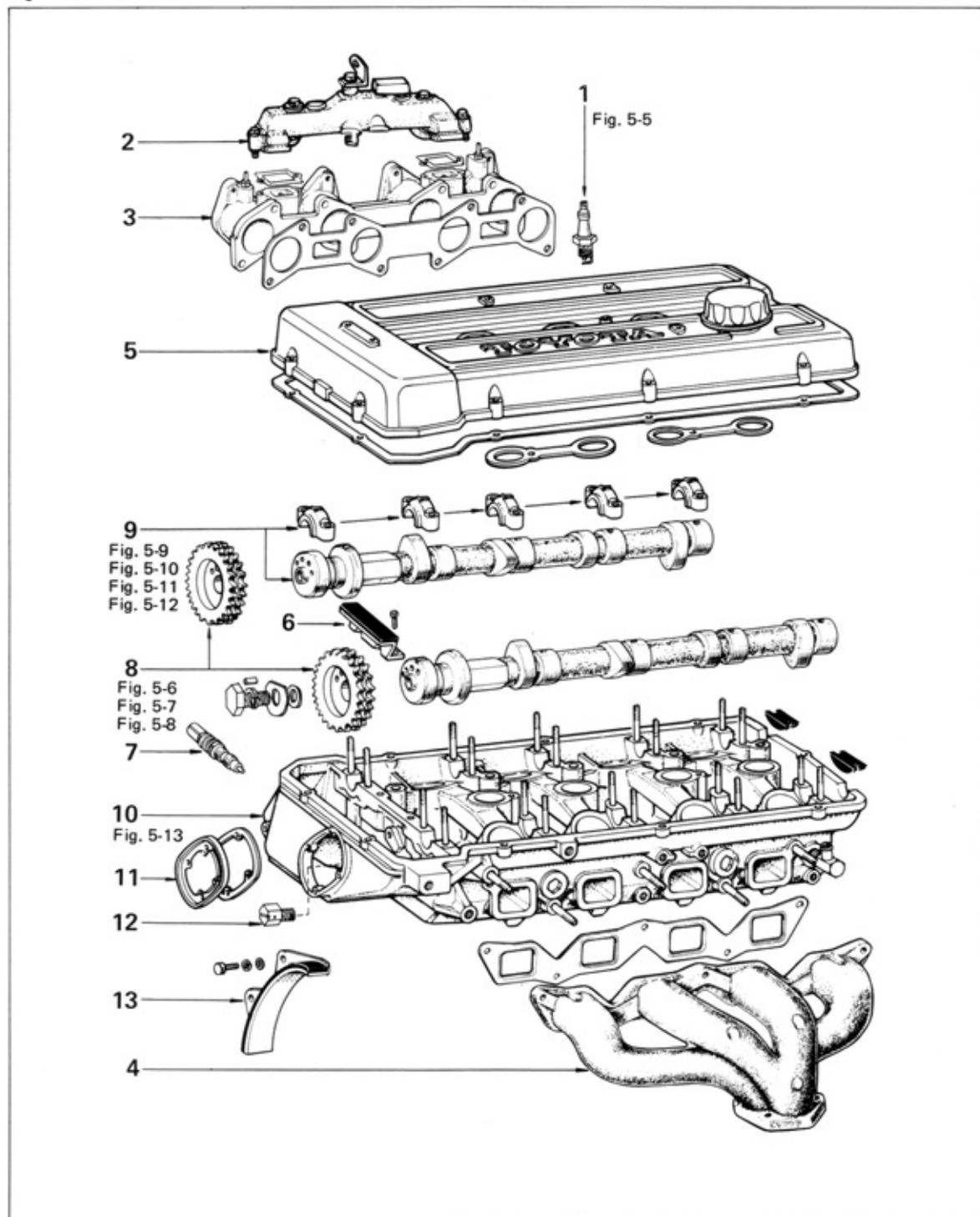
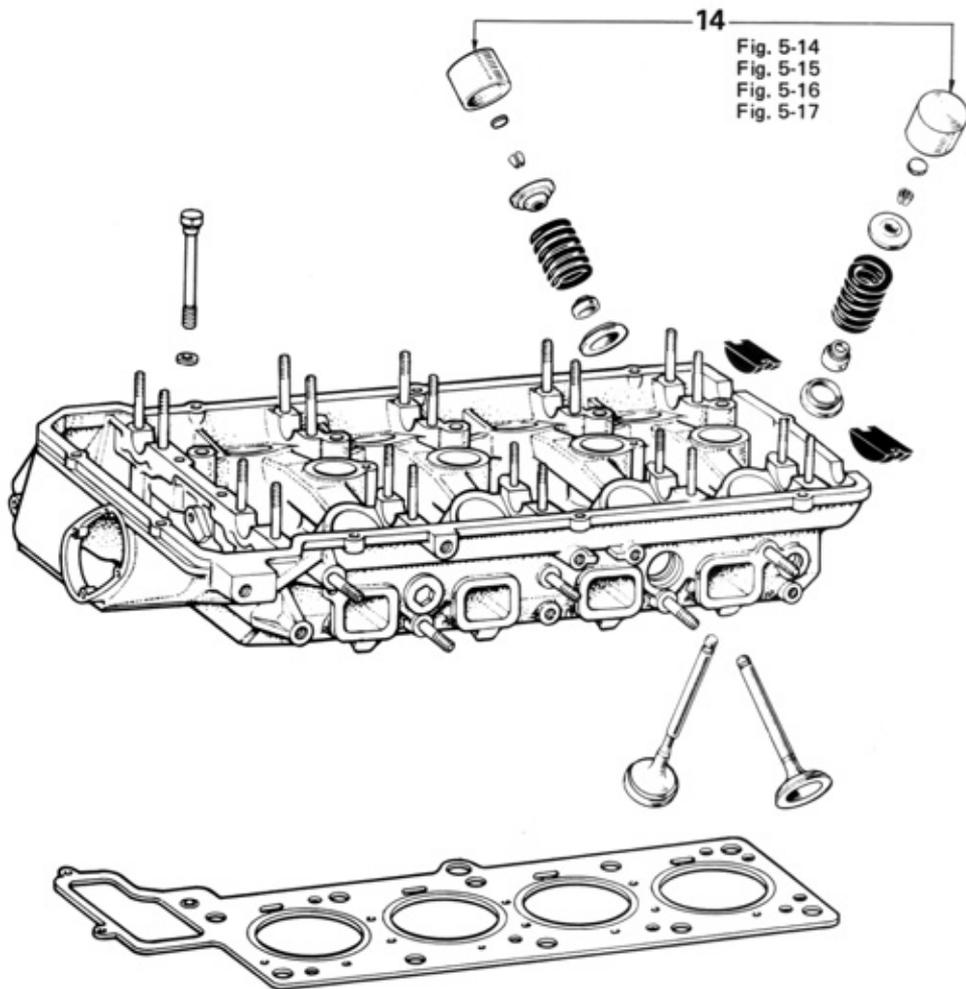
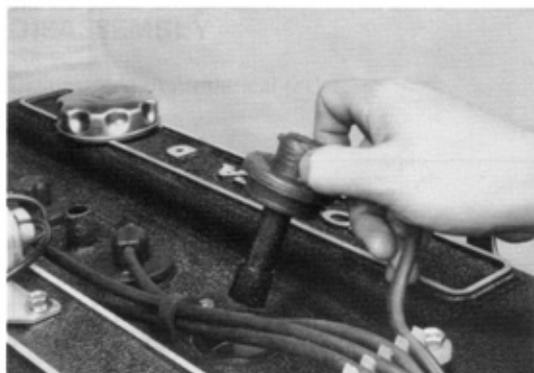


Fig. 5-4



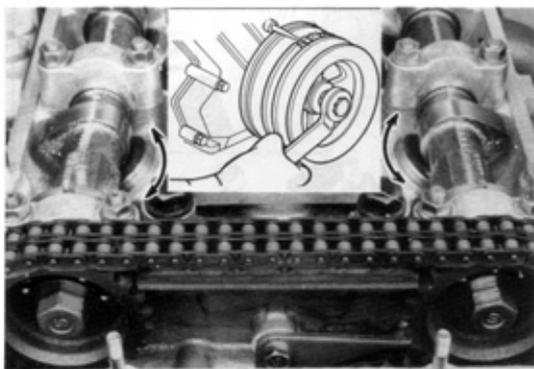
- | | | | |
|---|--------------------------------|----|--------------------------|
| 1 | Spark Plug | 8 | Camshaft Timing Gear |
| 2 | Balance Tube | 9 | Camshaft and Bearing Cap |
| 3 | Carburetor and Intake Manifold | 10 | Cylinder Head |
| 4 | Exhaust Manifold | 11 | Front Cover |
| 5 | Cylinder Head Cover | 12 | Oil Nozzle |
| 6 | No.2 Vibration Damper | 13 | No.3 Vibration Damper |
| 7 | No.2 Chain Tensioner | 14 | Valve and Spring |

Fig. 5-5



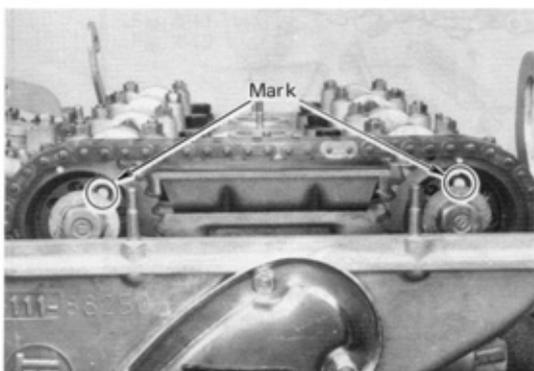
Remove carefully plug cords by pulling rubber boot.

Fig. 5-6



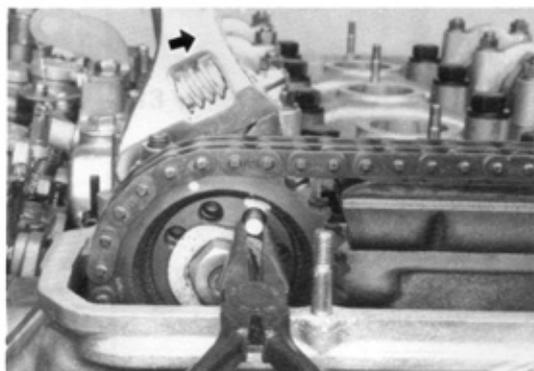
Set No.1 cylinder TDC/compression. At this time, intake and exhaust valve lifters on No.1 cylinder should be rotate.

Fig. 5-7



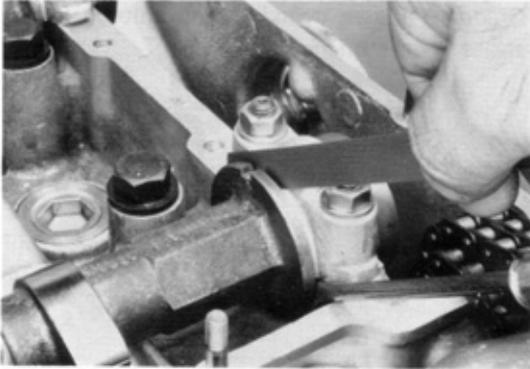
Place aligning marks between the gears and the pin holes for correct reassembly.

Fig. 5-8



It will be easier to pull out the pin if the camshaft is turned slightly in normal direction so as to provide play.

Fig. 5-9

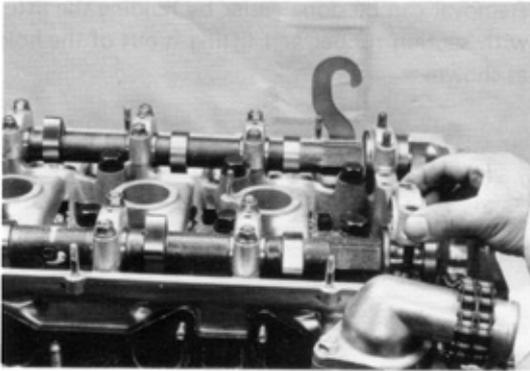


Measure camshaft thrust clearance.

Thrust clearance

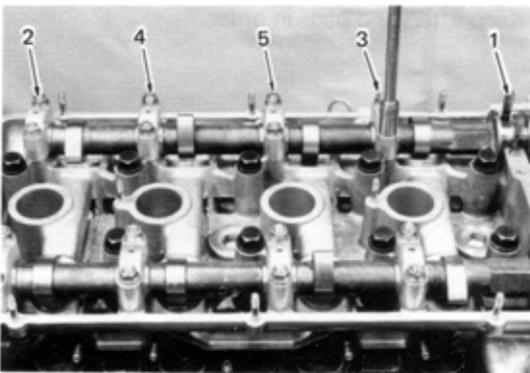
limit 0.4 mm (0.0158 in)

Fig. 5-10



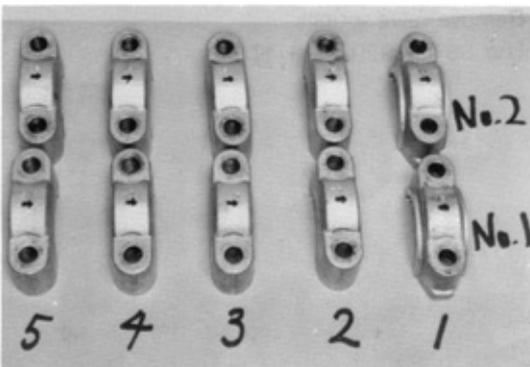
Remove No.1 bearing cap.

Fig. 5-11



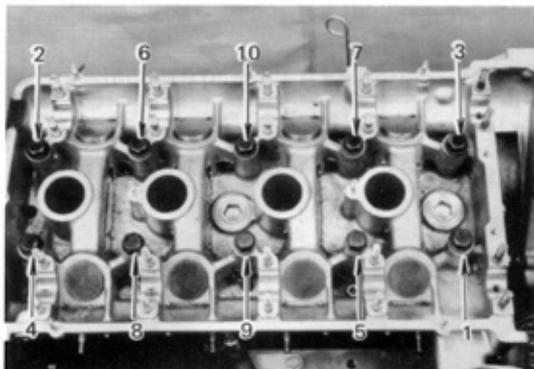
Gradually loosen the other cap nuts in 2 to 3 stages in the sequence as shown.

Fig. 5-12



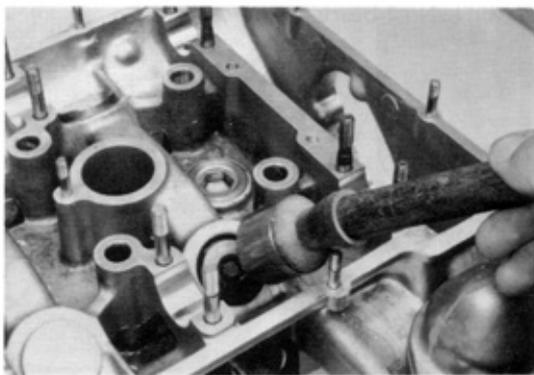
Keep bearing caps in order.

Fig. 5-13



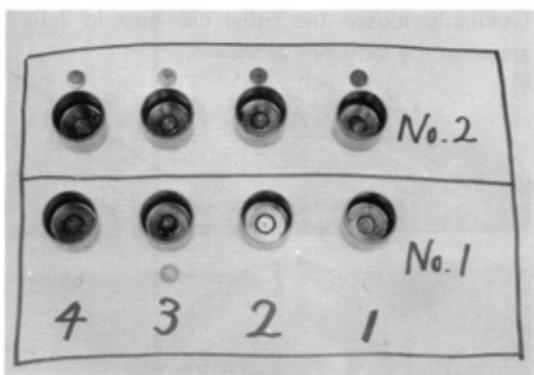
Gradually loosen cylinder head bolts in 2 to 3 stages in the sequence as shown.

Fig. 5-14



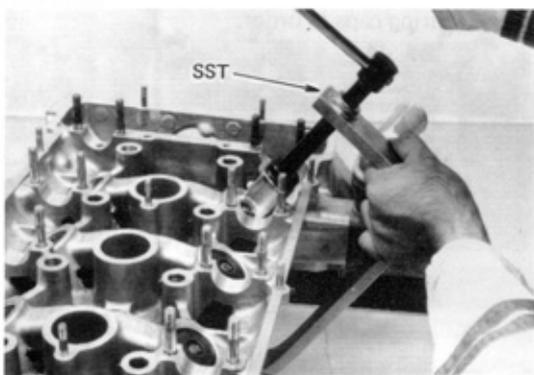
Removal can be done easier by holding the lifter with suction rubber and lifting it out of the hole as shown.

Fig. 5-15



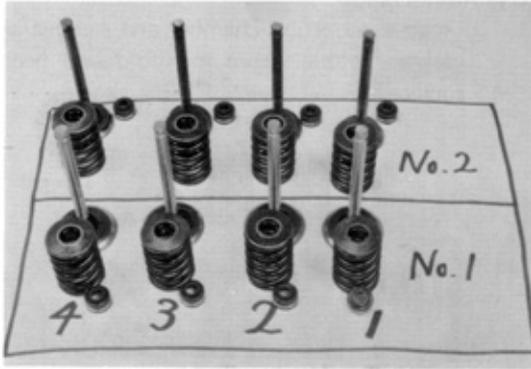
Keep lifters and pads in order.

Fig. 5-16



Remove valve springs.
Use SST [09202-43011]

Fig. 5-17



Keep valves, springs and oil seal in order.

Fig. 5-20

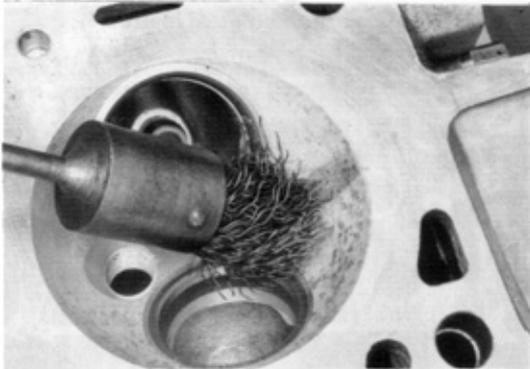


Fig. 5-21

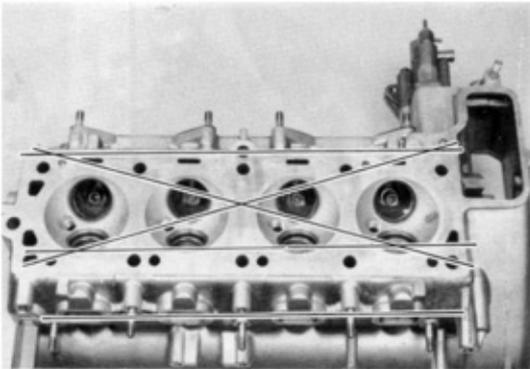


Fig. 5-22

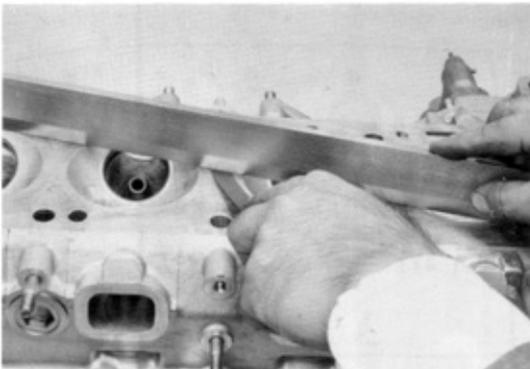
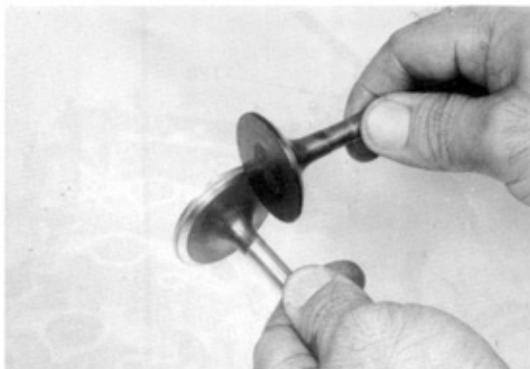


Fig. 5-23



INSPECTION & REPAIR

Cylinder Head

1. Clean combustion chamber and remove all gasket material from manifold and head surface.



2. Using a precision straight edge, check head surface for flatness.



3. If warpage exceeds limit, correct by machining or replace head.



Head surface warpage limit
0.05 mm (0.0019 in)

Maximum reface limit
0.2 mm (0.0079 in)

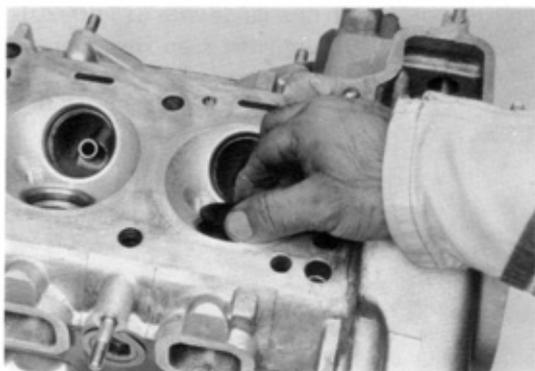
Manifold mounting surface warpage limit 0.10 mm (0.004 in)

Valve, Guide and Seat

1. Clean valves.

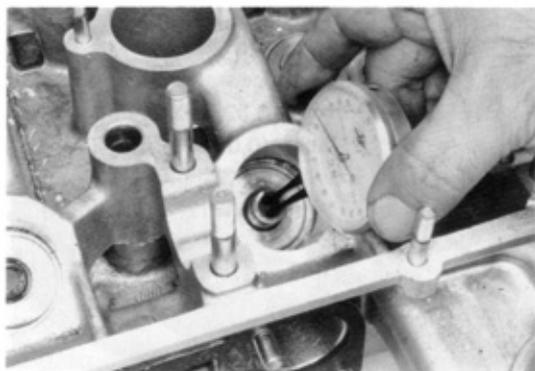


Fig. 5-24



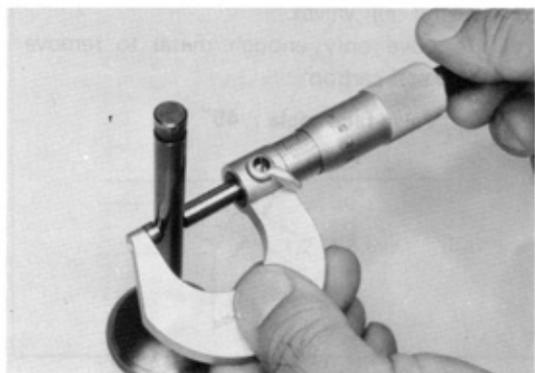
2. Quick-check valve stem and guide wear by inserting correct valve in guide and moving valve as shown.

Fig. 5-25



3. Measure valve stem oil clearance.
 - (1) Measure inside diameter of valve guide.

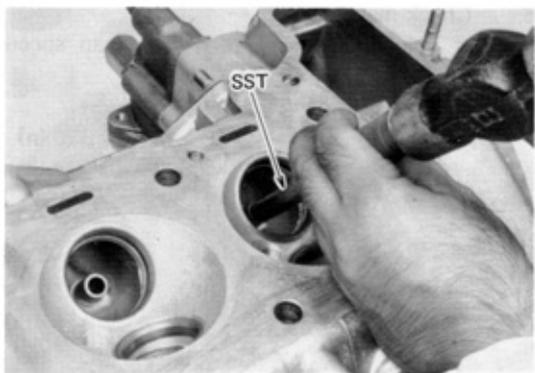
Fig. 5-26



- (2) Measure outside diameter of valve stem.

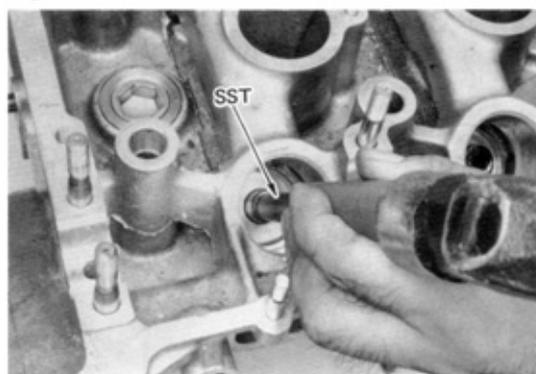
Oil clearance limit**Intake 0.08 mm (0.0032 in)****Exhaust 0.10 mm (0.0039 in)**

Fig. 5-27



4. Valve guide replacement.
 - (1) Heat cylinder head about 100°C (212°F).
 - (2) Using SST [09201-60011], drive out guide from the combustion chamber toward the top end.

Fig. 5-28



- (3) Drive in new guide with SST [09201-40010] until the snap ring contacts the cylinder head.

Fig. 5-29

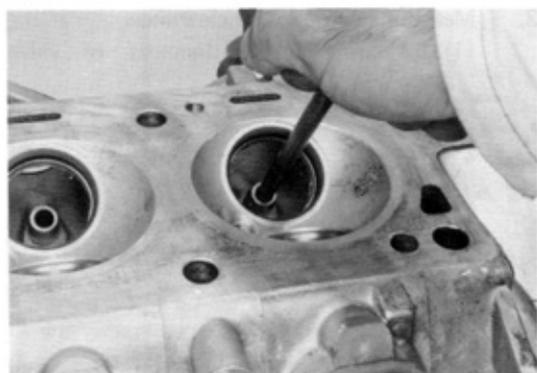


Fig. 5-30

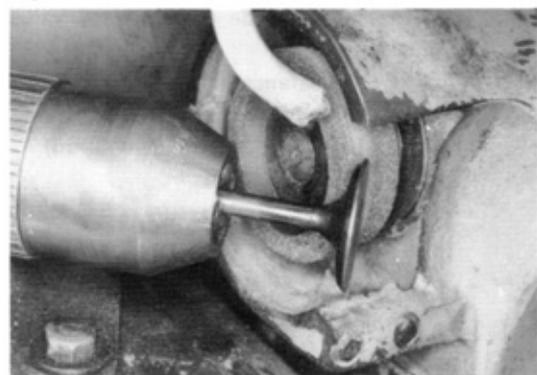
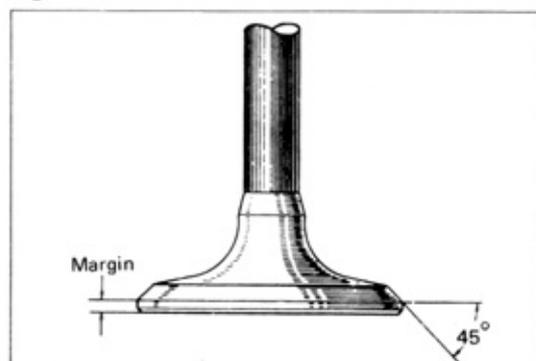


Fig. 5-31



- (4) Using a sharp 8.5 mm reamer, ream guide to obtain specified clearance.

Oil clearance standard

Intake 0.02 – 0.05 mm
(0.0008 – 0.0020 in)

Exhaust 0.03 – 0.06 mm
(0.0012 – 0.0024 in)

5. Grind all valves.
Remove only enough metal to remove pits and carbon.

Valve face angle : 45°

6. Check margin.
If valve head margin is less than specification, replace valve.

Margin limit

Intake 0.5 mm (0.020 in)

Exhaust 0.6 mm (0.024 in)

Fig. 5-32

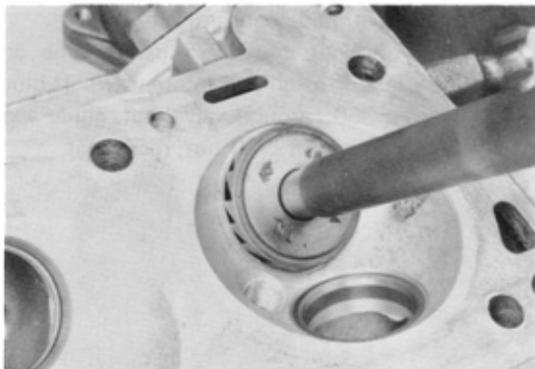


Fig. 5-33



Fig. 5-34

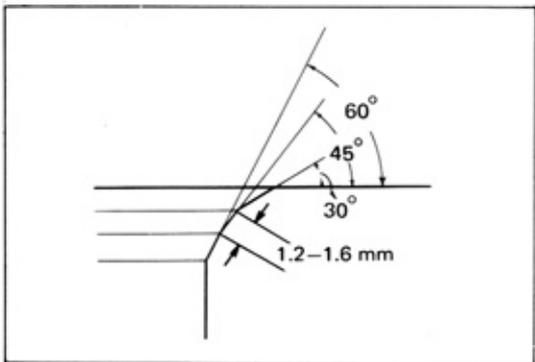


Fig. 5-35



7. Resurface valve seats with 45° carbide cutter.
Remove only enough metal to clean seat.



8. Coat valve face with prussion blue or white lead. Locate contact point on valve by rotating valve against seat.

— Note —

Seat contact should be in middle of valve face with following width:

Intake 1.2 – 1.6 mm (0.047 – 0.063 in)

Exhaust 1.2 – 1.6 mm (0.047 – 0.063 in)

9. Correct seat position.
To correct seating that is too high, use 30° and 45° cutters. If seating is too low, use 60° and 45° cutters.



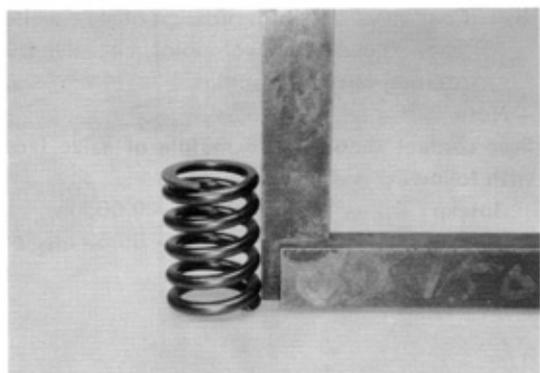
10. Check valve concentricity.
Lightly coat seat with prussian blue. Install valve and rotate. If blue appears 360° around face, valve stem and face are concentric. If not, replace valve.

Fig. 5-36



11. Check seat/guide concentricity. Apply a light coat of prussian blue on valve face. Install and rotate valve. If blue appears 360° around valve seat, guide and seat are concentric. If not, recut seat.

Fig. 5-37

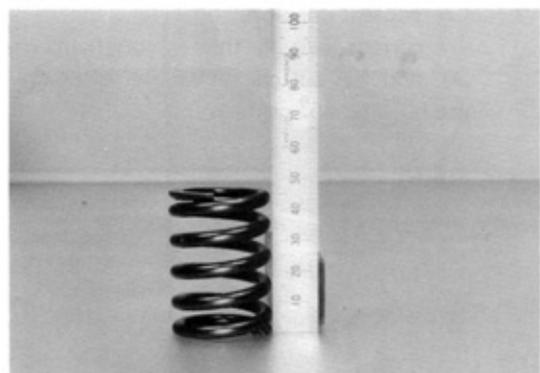


Valve Spring

1. Check squareness of valve springs with steel square. If spring is out of square more than limit, replace.

Squareness Limit (intake, exhaust)
1.6 mm (0.063 in)

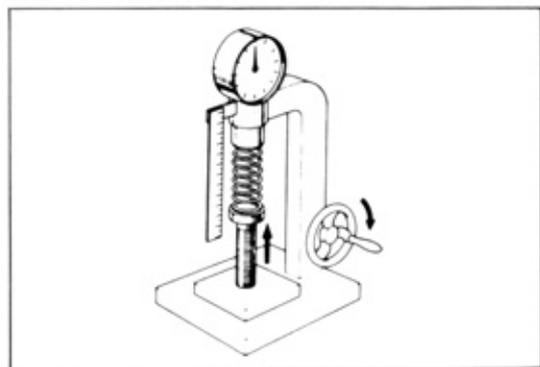
Fig. 5-38



2. Measure free height of all springs. Replace any spring that is out of specification.

Free height (intake, exhaust)
Standard 45.6 mm (1.795 in)

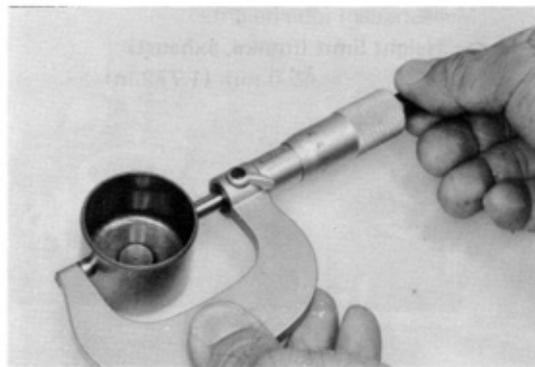
Fig. 5-39



3. Using a spring tester, measure tension of each spring at the specified installed height. Replace any spring that does not meet specification.

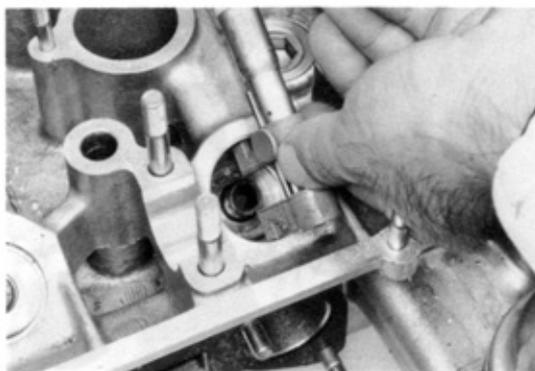
Installed load (intake, exhaust)
Limit 29.5 kg (65.0 lb)
Standard 35.0 kg (77.2 lb)
Installed height
39.0 mm (1.58 in)

Fig. 5-40

**Valve Lifter**

1. Measure valve lifter oil clearance.
 - (1) Measure outside diameter of lifter.

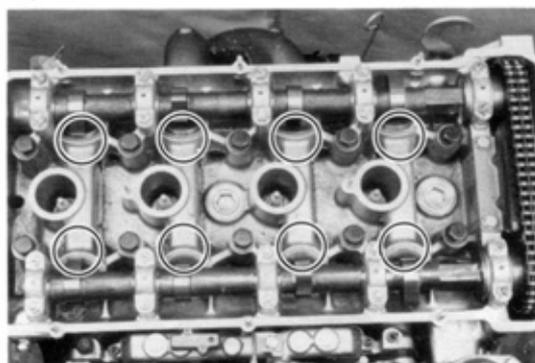
Fig. 5-41



- (2) Measure inside diameter of cylinder head.

Oil clearance limit**0.1 mm (0.004 in)****Standard 0.02 – 0.03 mm****(0.008 – 0.0012 in)**

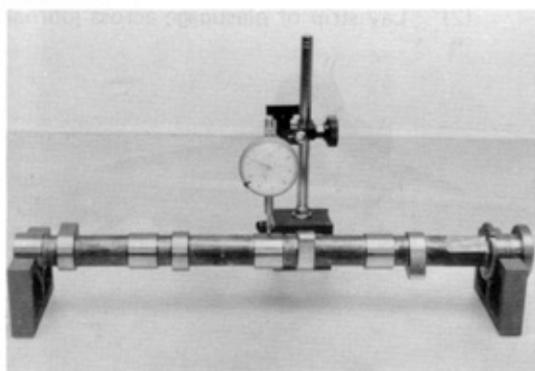
Fig. 5-42



2. Valve lifter selective fits.

Fit Code (Paint)	Cylinder Head Valve Sleeve Bore	Valve Lifter Outside Diameter
Black	37.951–37.957 mm (1.4941–1.4944")	37.925–37.931 mm (1.4931–1.4933")
Blue	37.957–37.963 mm (1.4944–1.4946")	37.931–37.937 mm (1.4933–1.4936")
Yellow	37.963–37.969 mm (1.4946–1.4948")	37.937–37.943 mm (1.4936–1.4938")
Red	37.969–37.975 mm (1.4948–1.4951")	37.943–37.949 mm (1.4938–1.4941")

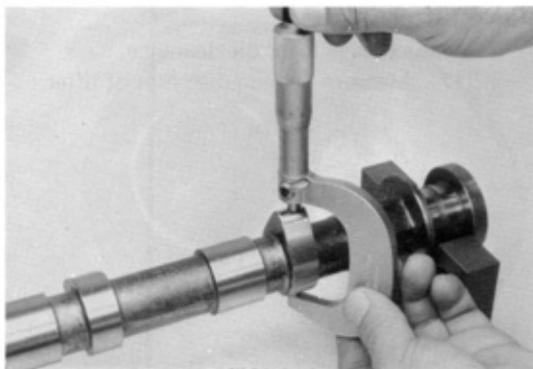
Fig. 5-43

**Camshaft and Bearing**

1. Check camshaft for runout.

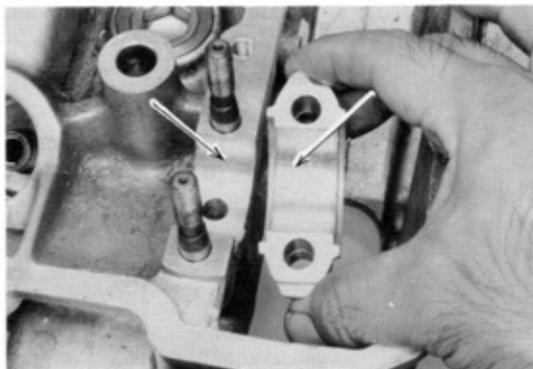
Runout limit 0.03 mm (0.0012 in)

Fig. 5-44



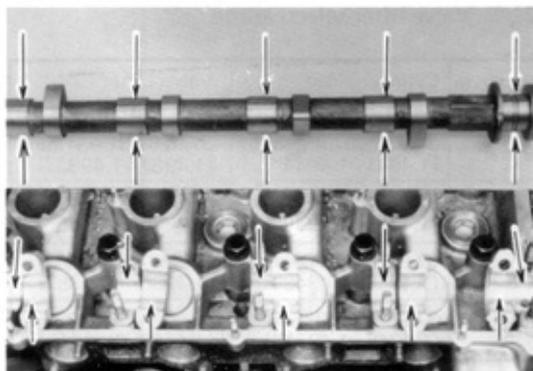
2. Measure cam lobe height.
Height limit (intake, exhaust)
45.0 mm (1.772 in)

Fig. 5-45



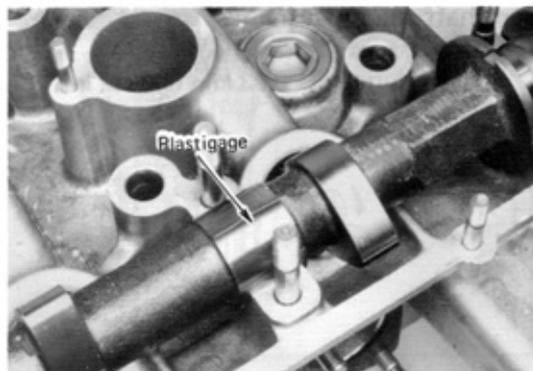
3. Check bearing for flaking or scoring.

Fig. 5-46



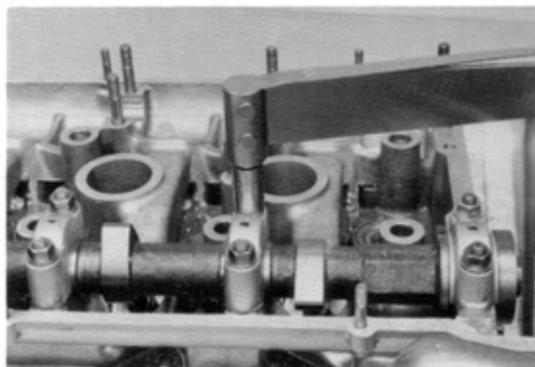
4. Measure camshaft oil clearance.
 (1) Clean bearing and camshaft.

Fig. 5-47



- (2) Lay strip of plastigage across journal.

Fig. 5-48

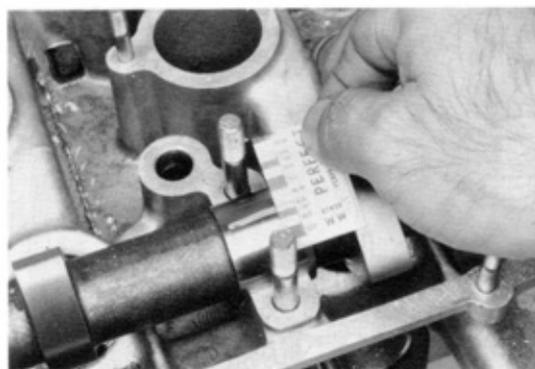


- (3) Tighten cap nuts to specified torque.

Torque 1.7 – 2.3 kg-m
(12.3 – 16.6 ft-lb)

- (4) Remove cap.

Fig. 5-49



- (5) Measure plastigage at its widest point. If clearance is not within specification, replace bearing.

Oil clearance

Limit 0.15 mm (0.0059 in)
Standard 0.05 – 0.09 mm
(0.0020 – 0.0035 in)

Fig. 5-50

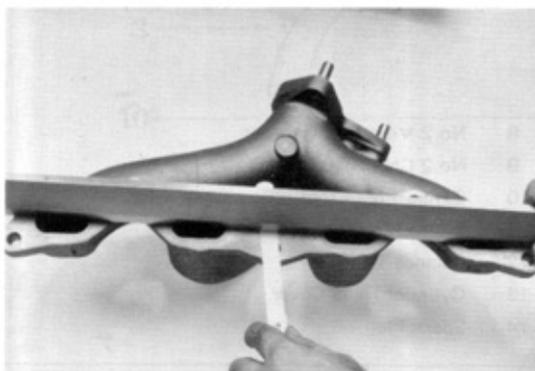


Manifolds

1. Inspect surfaces contacting cylinder head for warpage, and replace if warped over the limit.

Warpage limit 0.1 mm (0.004 in)

Fig. 5-51



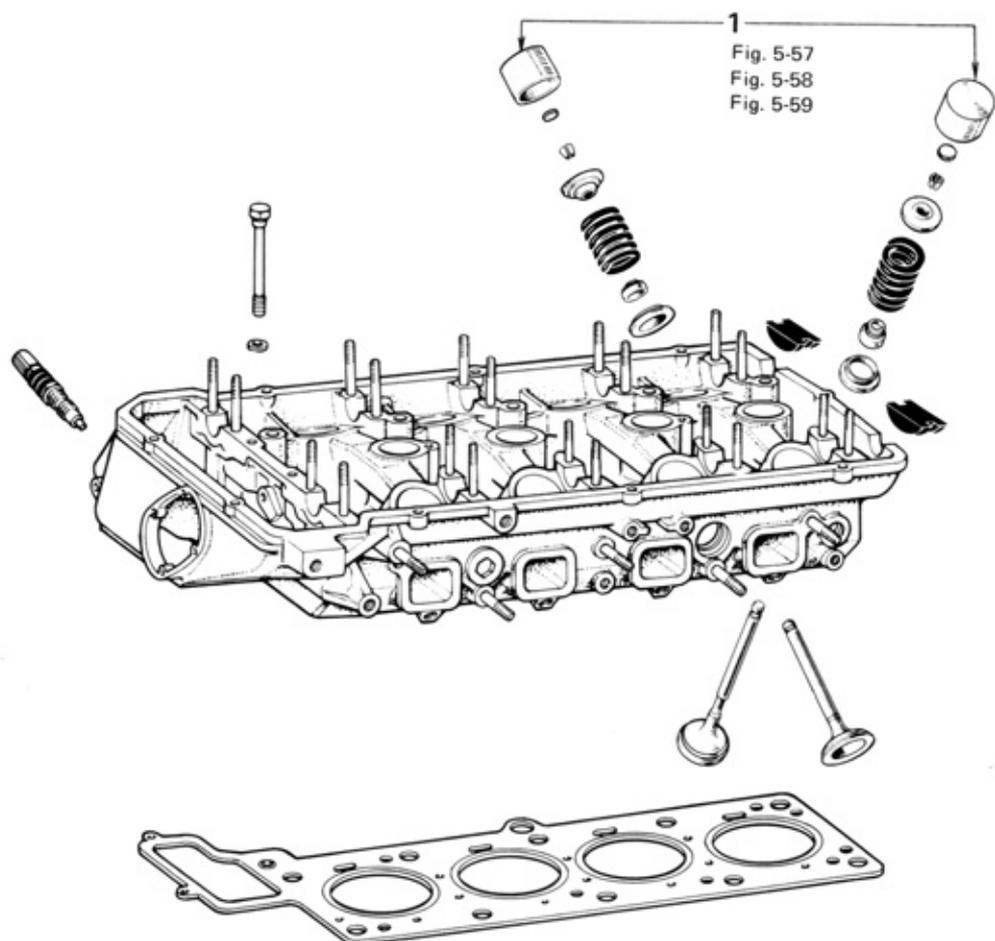
Warpage limit 0.1 mm (0.004 in)

ASSEMBLY

Assemble in numerical order.

Fig. 5-55

- Thoroughly clean the parts to be assembled.
- Apply clean engine oil on the sliding and rotating surfaces of the parts before assembly.



- | | | | |
|---|--------------------------|----|--------------------------------|
| 1 | Valve and Spring | 8 | No.2 Vibration Damper |
| 2 | Cylinder Head | 9 | No.2 Chain Tensioner |
| 3 | No.3 Vibration Damper | 10 | Exhaust Manifold |
| 4 | Oil Nozzle | 11 | Intake Manifold and Carburetor |
| 5 | Front Cover | 12 | Balance Tube |
| 6 | Camshaft and Bearing Cap | 13 | Cylinder Head Cover |
| 7 | Camshaft Timing Gear | 14 | Spark Plug |

Fig. 5-56

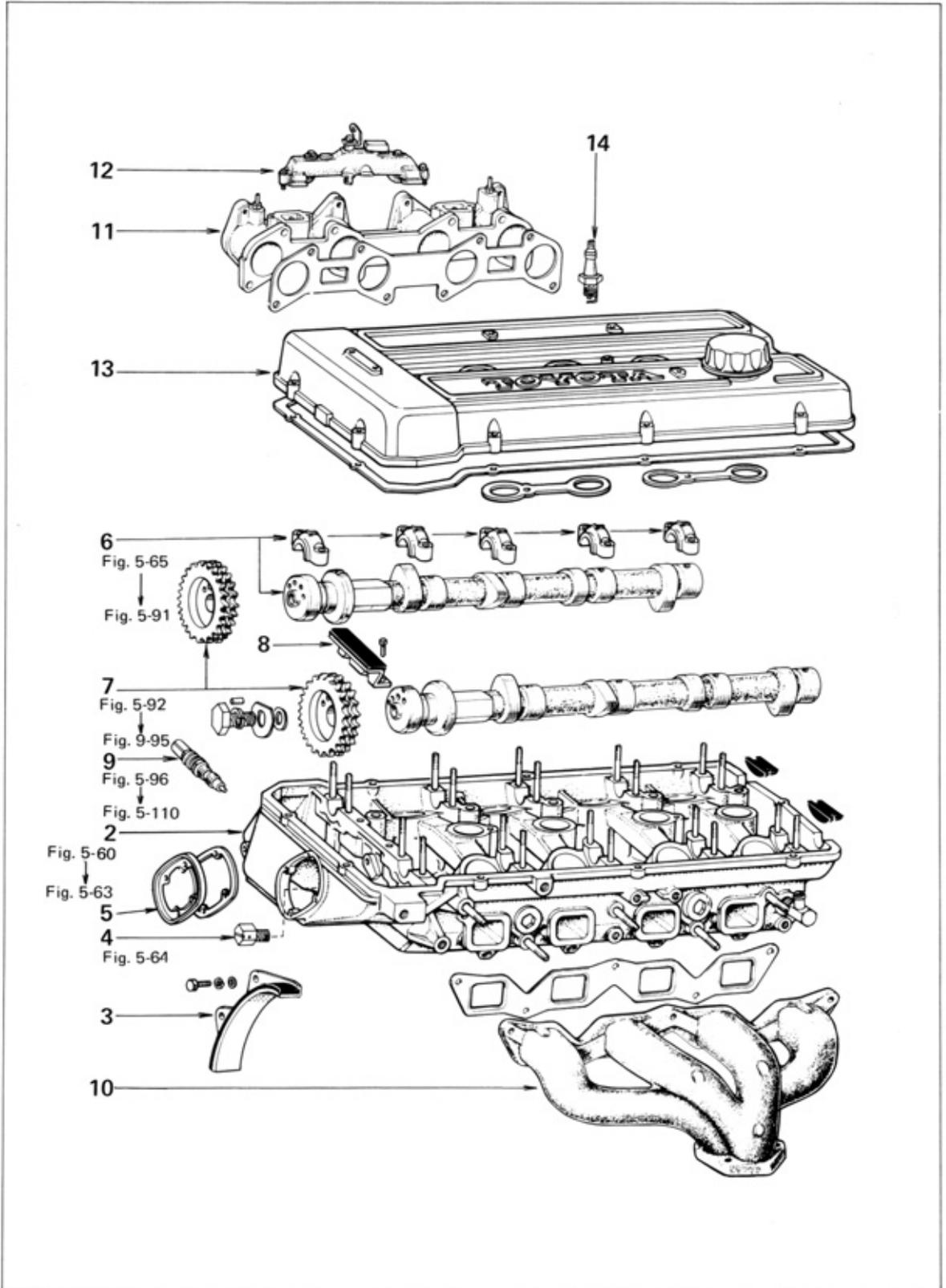
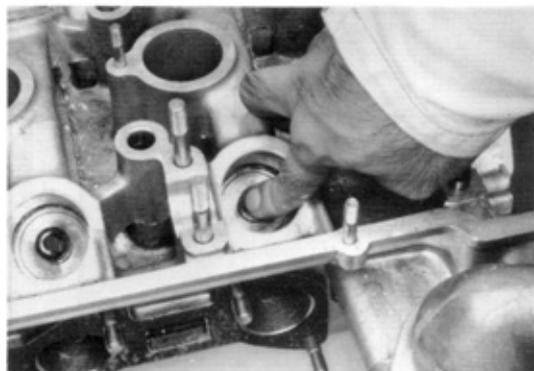
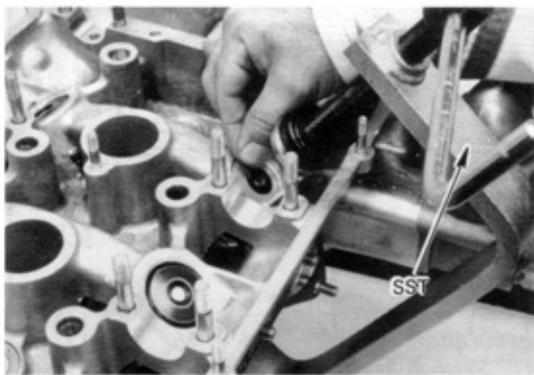


Fig. 5-57



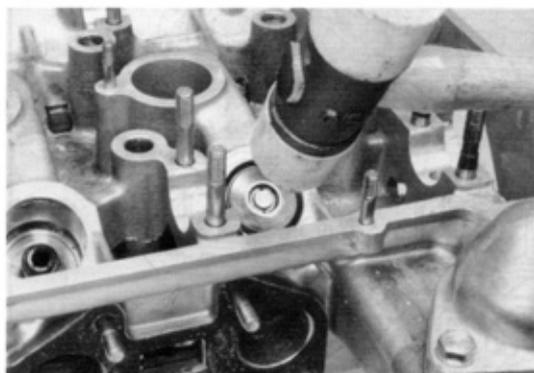
Install oil seal by hand.

Fig. 5-58



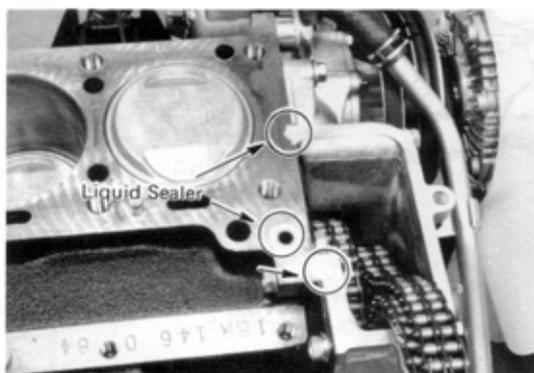
Compress the valve spring with SST [09202-43010] and install retainer locks.

Fig. 5-59



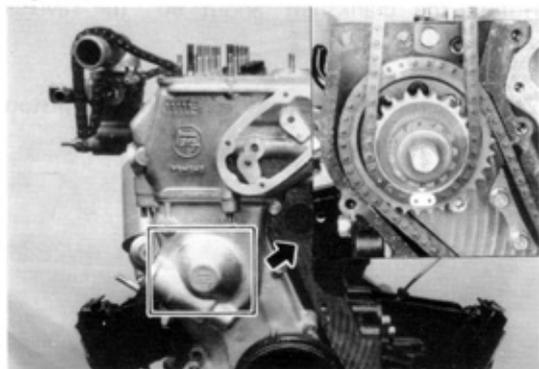
After assembling valve spring, tap stem lightly to assure proper fit.

Fig. 5-60



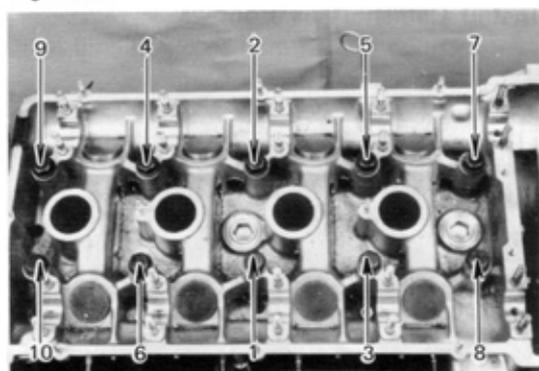
Apply liquid sealer to three points on cylinder head and install gasket.

Fig. 5-61



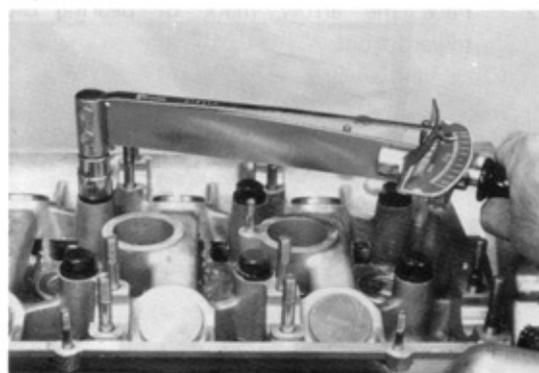
Install cylinder head with No.2 chain will not fall off.

Fig. 5-62



Gradually tighten cylinder head bolts in 2 to 3 stages in the sequence as shown.

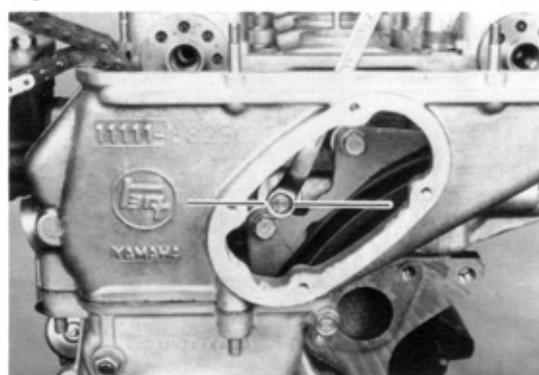
Fig. 5-63



Tighten head bolts to specified torque.

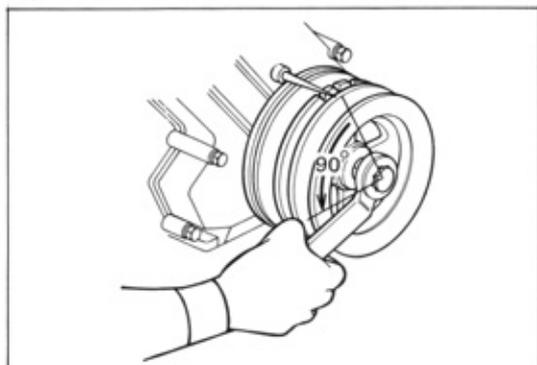
Torque 7.2 – 8.8 kg-m (52.1 – 63.7 ft-lb)

Fig. 5-64



Install the oil nozzle with its slot positioned horizontally.

Fig. 5-65

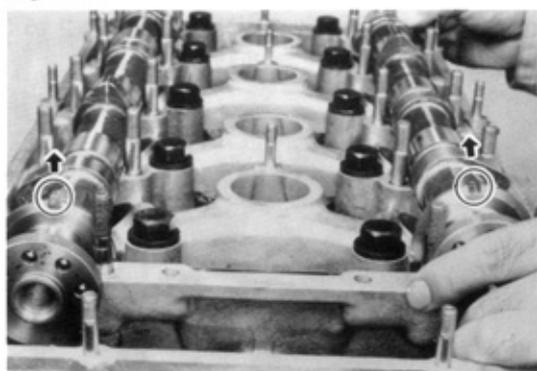


Rotate the crankshaft about 90° the reverse direction.

— Note —

Lower piston to prevent interference of piston head and valve.

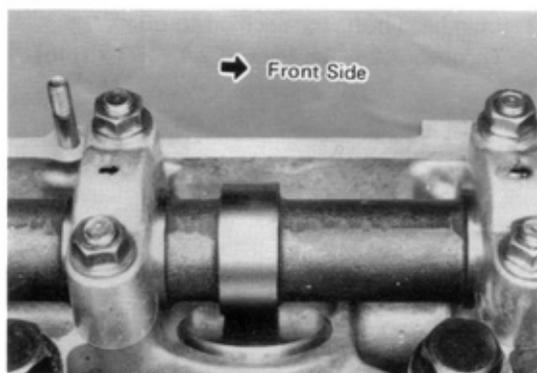
Fig. 5-66



Install Camshaft as Follows

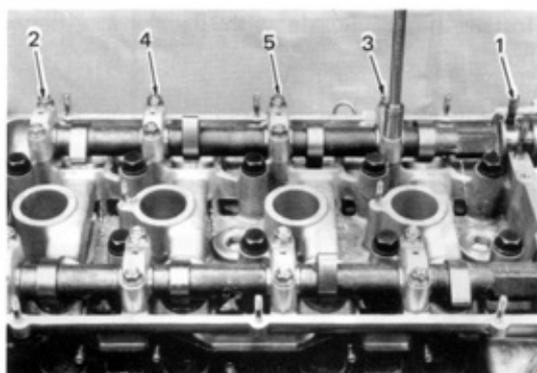
1. Position the camshaft so that the slit in the front end will point upward.

Fig. 5-67



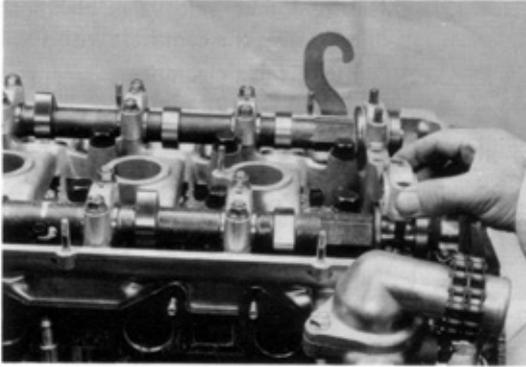
2. Face the arrow mark of bearing cap toward front.

Fig. 5-68



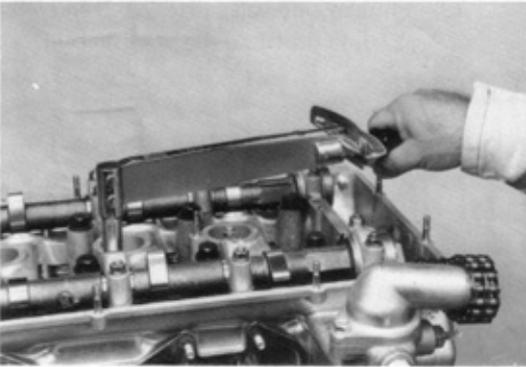
3. Gradually tighten No.2 — No.5 bearing cap bolts in 3 to 4 stages in the sequence as shown.

Fig. 5-69



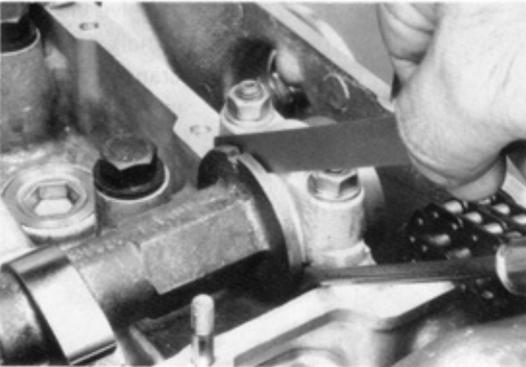
4. Then, install No.1 bearing cap.

Fig. 5-70



5. Tighten cap nuts to specified torque.
Torque 1.7 – 2.3 kg-m (12.3 – 16.6 ft-lb)

Fig. 5-71



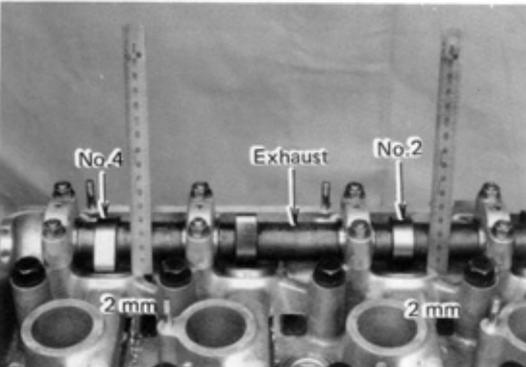
6. Check camshaft thrust clearance.

Thrust clearance

Limit 0.4 mm (0.0158 in)

**Standard 0.15 – 0.35 mm
 (0.0059 – 0.0138 in)**

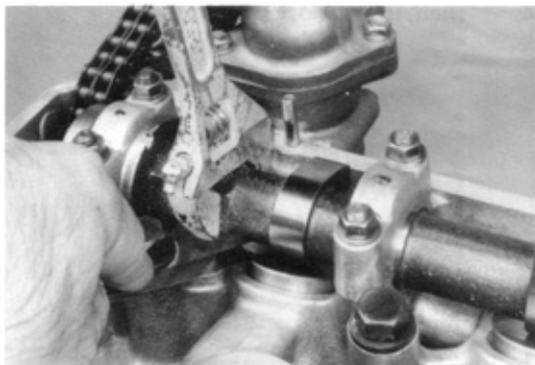
Fig. 5-72



Adjust The Valve Clearance

1. Measure the valve clearance.
 (1) Exhaust side valve lifter No.2 and No.4 should protrude the same amount.
(approx. 2 mm)

Fig. 5-73

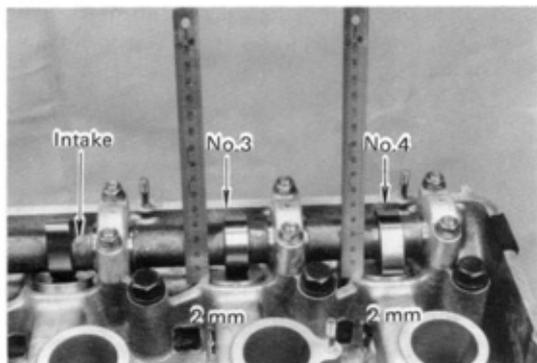


- (2) Measure intake side valve clearance while turning the camshaft with tool.

Intake valve clearance
0.26 – 0.32 mm
(0.010 – 0.013 in)

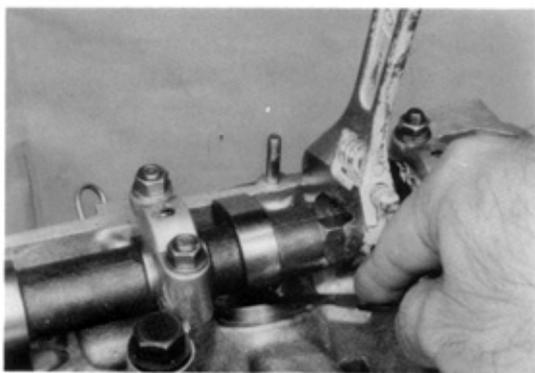
If outside the specified value and record the results.

Fig. 5-74



- (3) Intake side valve lifter No.3 and No.4 should protrude the same amount.

Fig. 5-75

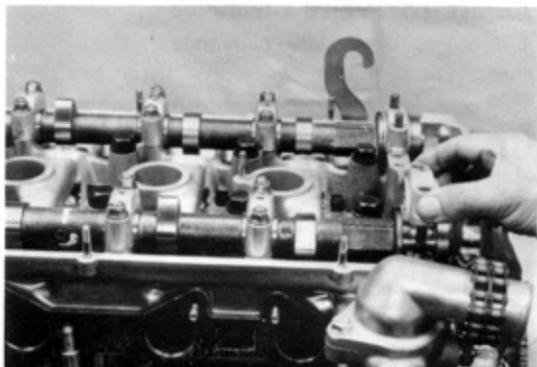


- (4) Measure exhaust side valve clearance while turning the camshaft with tool.

Exhaust valve clearance
0.31 – 0.37 mm
(0.012 – 0.015 in)

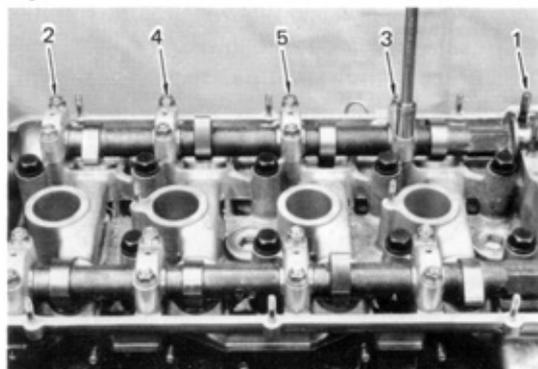
If outside the specified value and record the results.

Fig. 5-76



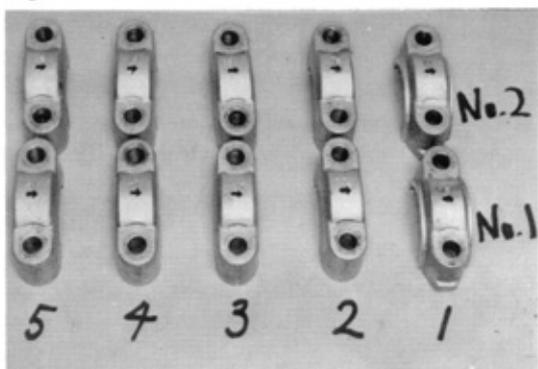
2. Remove No.1 bearing cap.

Fig. 5-77



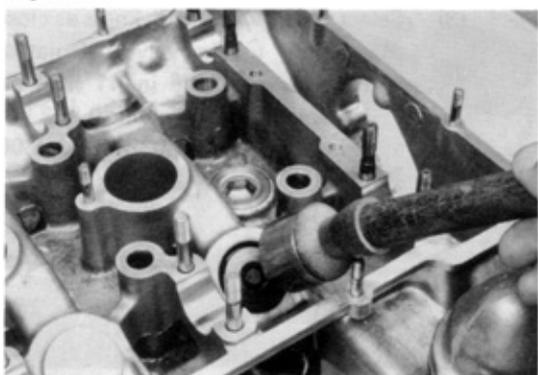
3. Gradually loosen the other cap nuts in 2 to 3 stages in the sequence as shown.

Fig. 5-78



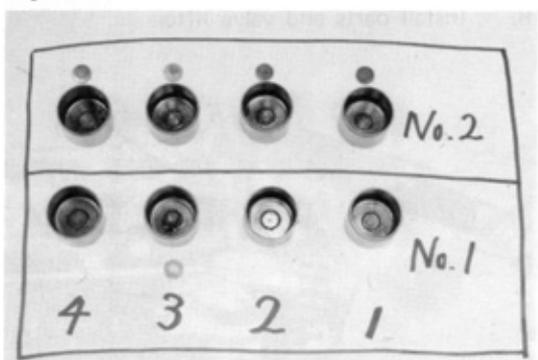
4. Keep bearings and caps in order.

Fig. 5-79



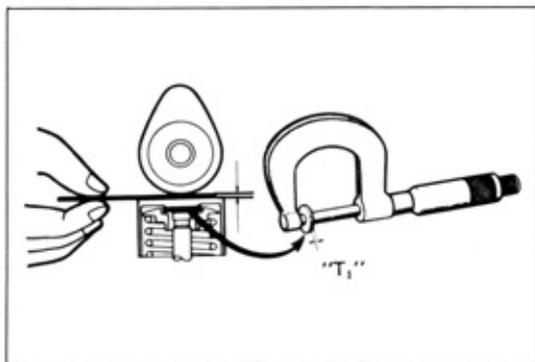
5. Remove valve lifter when valve clearance is not within specified value.

Fig. 5-80



6. Keep valves and adjusting pads in order.

Fig. 5-81

**Intake Side**

$$\text{New Pad Thickness} \\ = T_1 + (A - 0.29 \text{ mm})$$

Exhaust Side

$$\text{New Pad Thickness} \\ = T_1 + (A - 0.34 \text{ mm})$$



7. Select a new pad that will give the specified valve clearance as follows.
- (1) Measure the pad that was off with a micrometer.

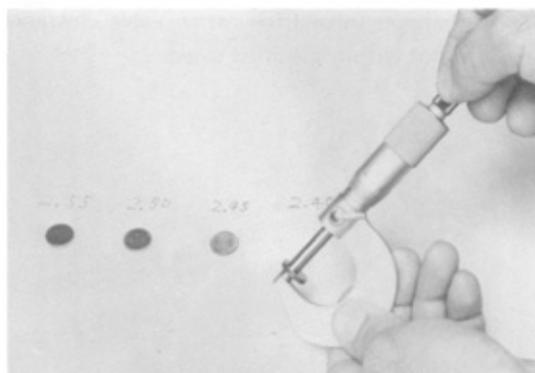


- (2) Calculate thickness of new pad so valve clearance comes within specified valve.

T_1 Thickness of pad used.

A Valve clearance measured.

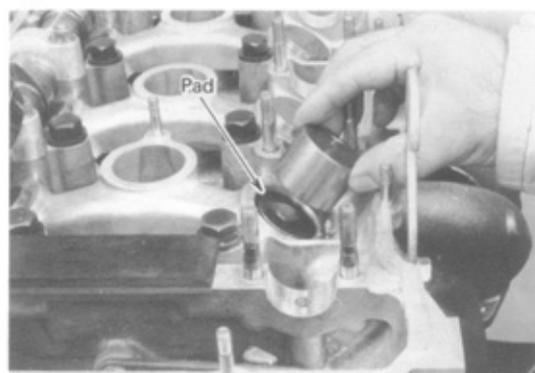
Fig. 5-82



- (3) Select a pad with a thickness as close as possible to the valve calculated.

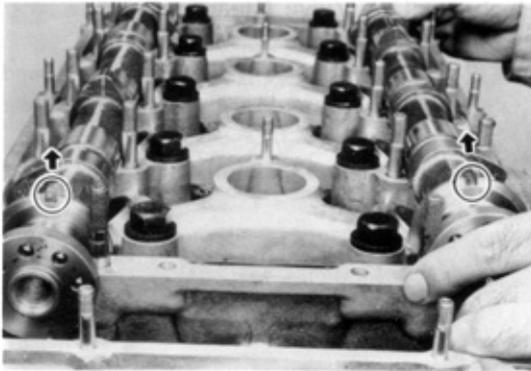
Pads are available in 41 sizes, in increments of 0.05 mm (0.002 in), from 1.00 mm (0.039 in) to 3.00 mm (0.118 in).

Fig. 5-83



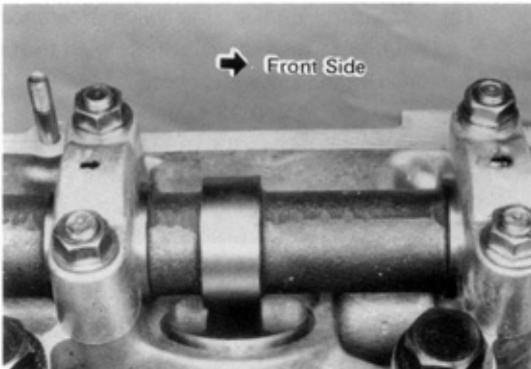
8. Install parts and valve lifter.

Fig. 5-84

**Install Camshaft as Follows**

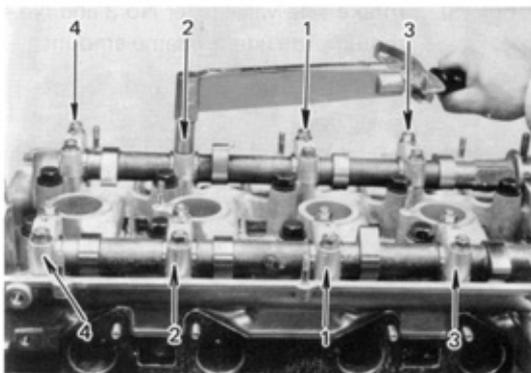
1. Position the camshaft so that the slit in the front end will point upward.

Fig. 5-85



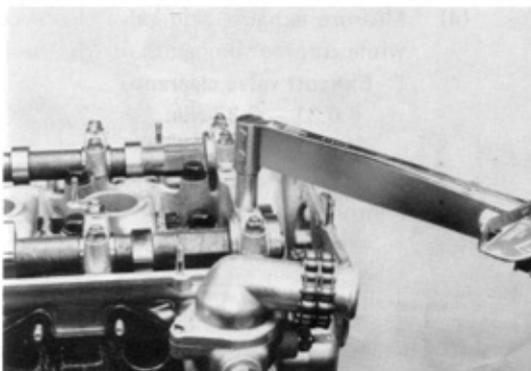
2. Face the arrow mark of bearing cap toward front.

Fig. 5-86



3. Gradually tighten No.2 — No.5 bearing cap bolts in 3 to 4 stages in the sequence as shown.

Fig. 5-87



4. Then, install No.1 bearing cap. Tighten cap nuts to specified torque.

Torque 1.7 — 2.3 kg-m
(12.3 — 16.6 ft-lb)

Fig. 5-88

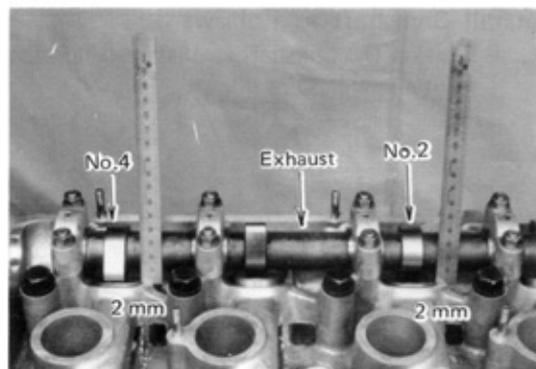


Fig. 5-89

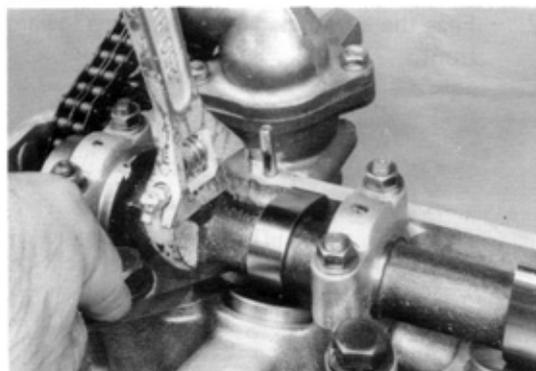


Fig. 5-90

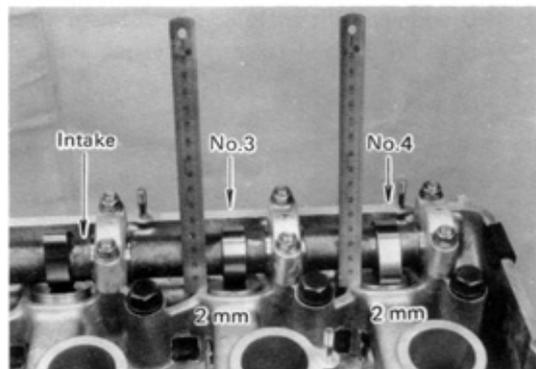
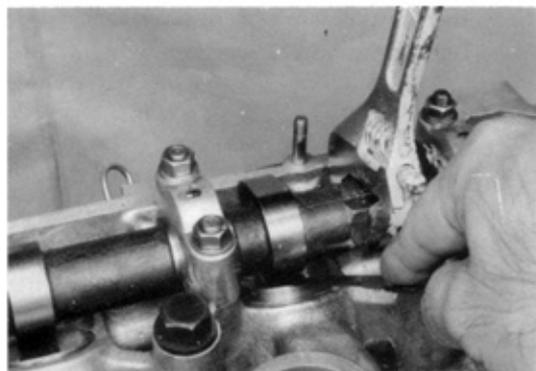


Fig. 5-91



Recheck The Valve Clearance

1. Measure the valve clearance.
 - (1) Exhaust side valve lifter No.2 and No.4 should protrude the same amount.

(approx. 2 mm)



- (2) Measure intake side valve clearance while turning the camshaft with tool.

Intake valve clearance

0.26 – 0.32 mm

(0.010 – 0.013 in)

If outside the specified value, choose another pad.



- (3) Intake side valve lifter No.3 and No.4 should protrude the same amount.



- (4) Measure exhaust side valve clearance while turning the camshaft with tool.

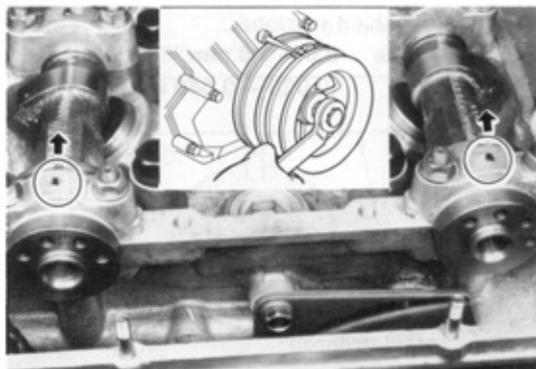
Exhaust valve clearance

0.31 – 0.37 mm

(0.012 – 0.015 in)

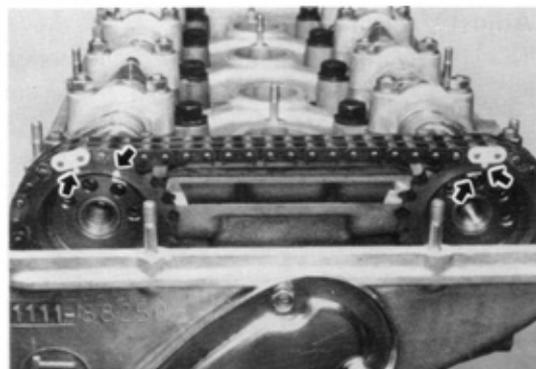
If outside the specified value, choose another pad.

Fig. 5-92



Position the No.1 and No.2 camshaft slit vertically upward with SST [09248-27010]. Set to the No.1 cylinder to TDC/compression.

Fig. 5-93



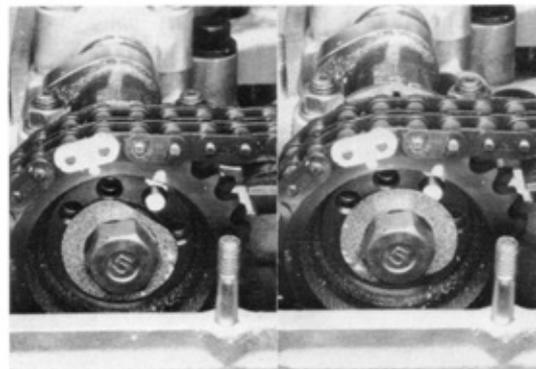
Install the No.2 chain with its mark aligned with the gear mark.

Align camshaft pin hole and gear pin hole to position before disassembly and insert pin.

— Note —

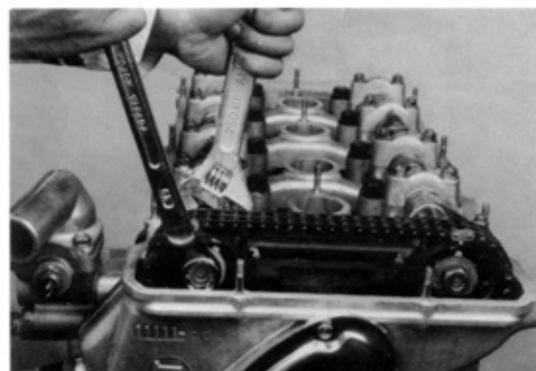
If the pin holes do not line up, turn the camshaft and make the nearest holes line up, but do not turn more than 45°.

Fig. 5-94



Hold the pin with the washer.

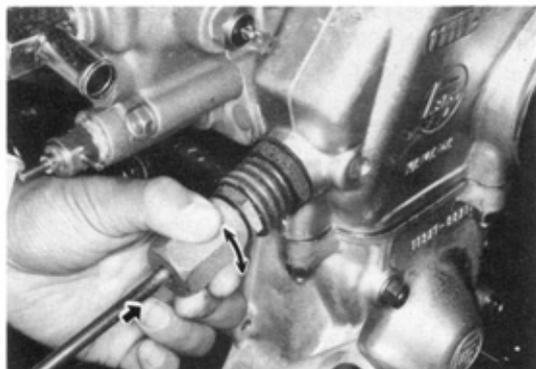
Fig. 5-95



Turn the crankshaft slightly in normal direction, until there is no slack in the pins, gears, and camshafts, and then tighten the bolts to specified torques.

Torque 7.0 – 8.0 kg-m (50.6 – 57.8 ft-lb)

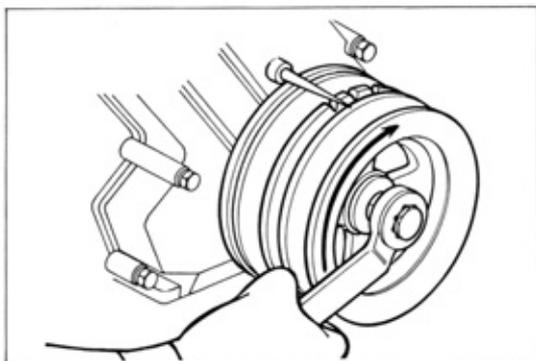
Fig. 5-96



Adjust No.2 chain tensioner.

Back stroke 0.5 – 1.0 mm
(0.020 – 0.040 in)

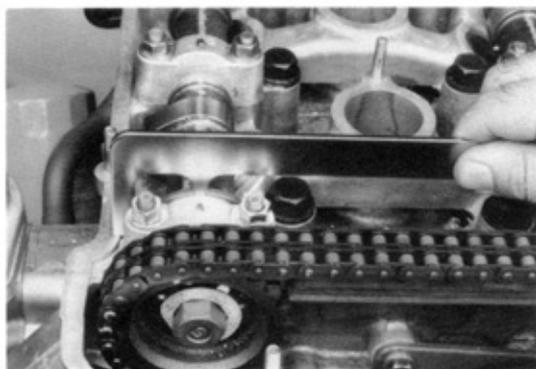
Fig. 5-97



Adjust Valve Timing

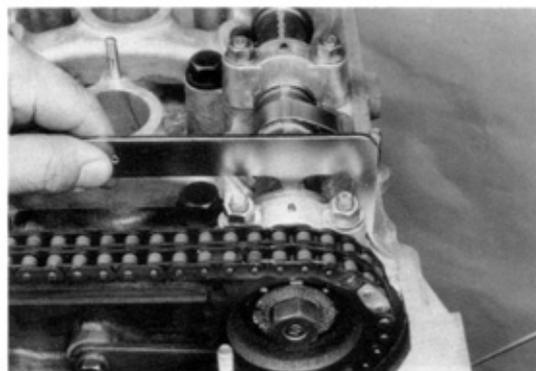
1. Rotate the crankshaft 720° in normal direction until No.1 cylinder TDC/compression.

Fig. 5-98



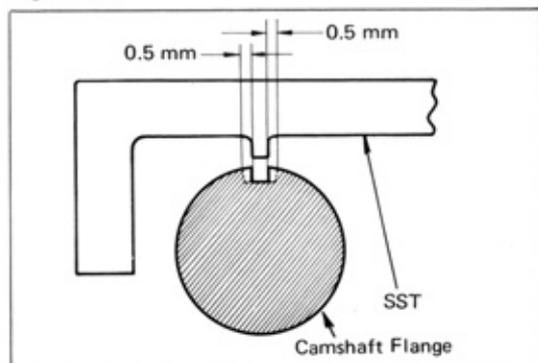
2. Check the No.1 camshaft valve timing with SST [09248-27010].

Fig. 5-99



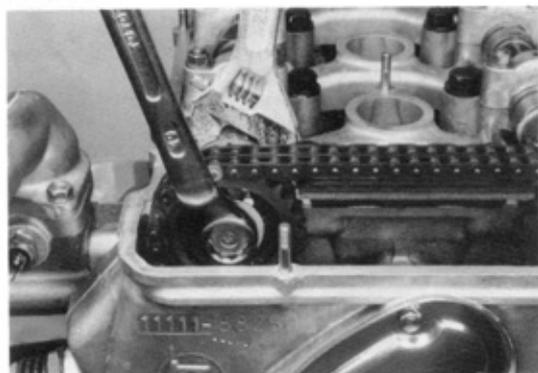
3. Check the No.2 camshaft valve timing with SST [09248-27010].

Fig. 5-100



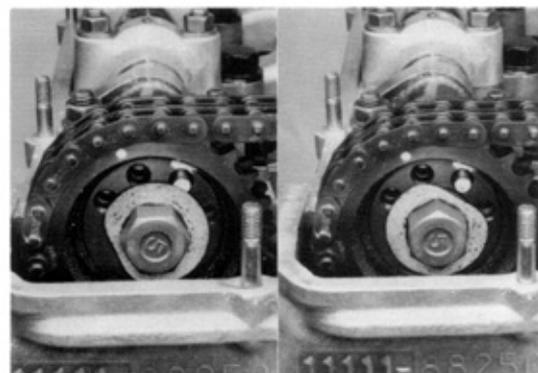
4. Valve timing permissible, error.
 $\pm 2^\circ$ Camshaft rotation angle.
 ± 0.5 mm Camshaft flange outer perimeter.
 Adjust valve timing if it is off.

Fig. 5-101



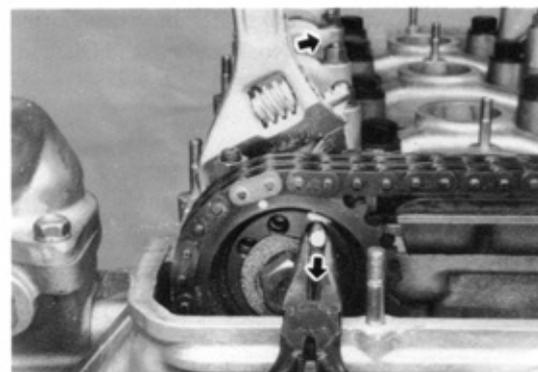
5. Loosen the camshaft mounting bolt.

Fig. 5-102



6. Shift the washer.

Fig. 5-103



7. It will be easier to pull out the pin if the camshaft is turned slightly in the forward direction so as to provide play.

Fig. 5-104

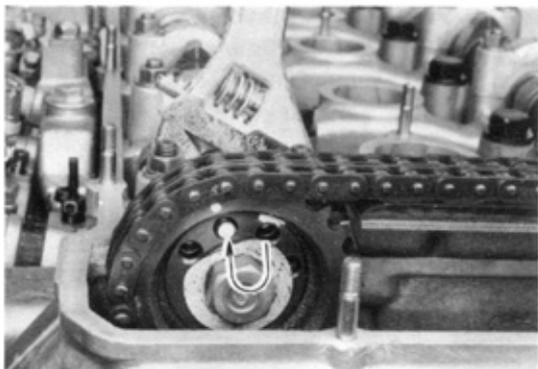


Fig. 5-105

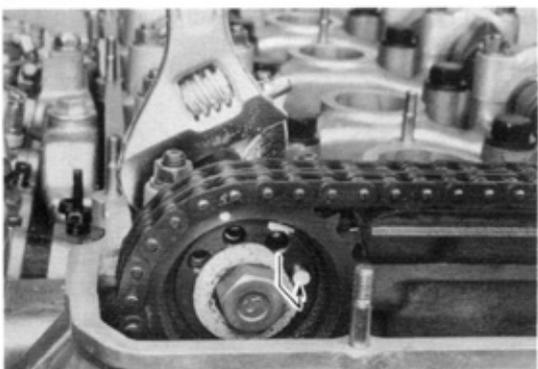


Fig. 5-106

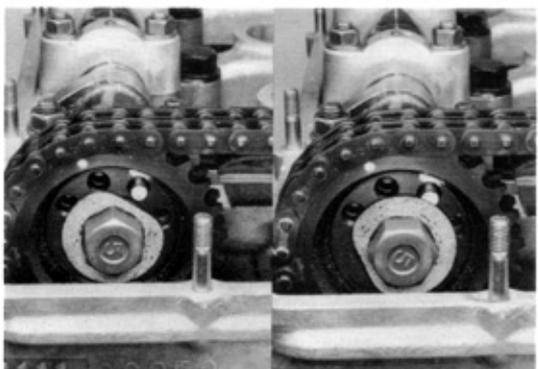
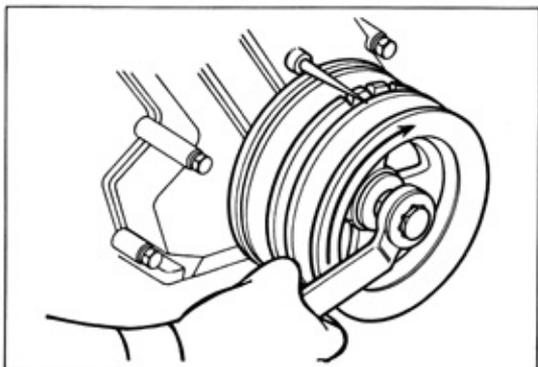


Fig. 5-107



8. When valve timing is advanced.
 - (1) Align with pin hole in counter-clockwise direction.
 - (2) Turn the camshaft so that its slit will be lined up with the adjust gauge and reinsert the pin.

9. When valve timing is retarded.
 - (1) Align with hole pin in clockwise direction.
 - (2) Turn the camshaft so that its slit will be lined up with the adjust gauge and reinsert the pin.

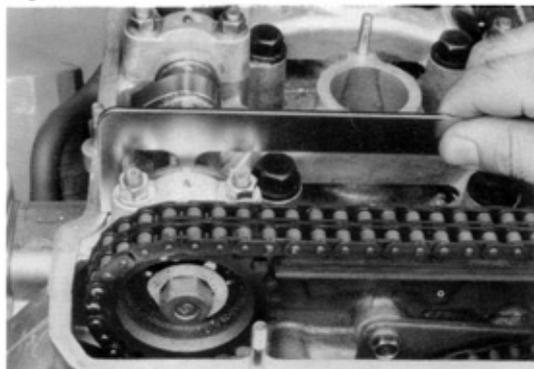


10. Hold the pin with the washer and tighten the bolt.



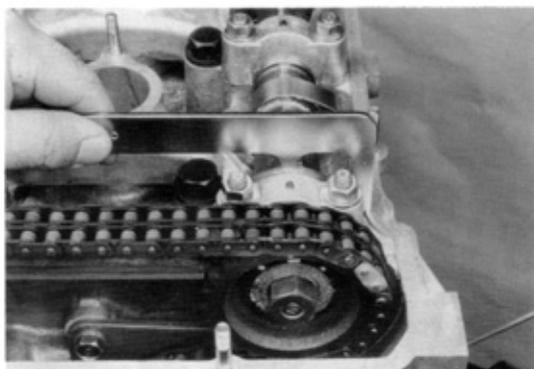
11. Rotate the crankshaft in the normal direction until No.1 cylinder TDC/compression.

Fig. 5-108



12. Recheck the No.1 camshaft valve timing with SST [09248-27010]. Camshaft slit and SST protrusion should match up.

Fig. 5-109



13. Recheck the No.2 camshaft valve timing with SST [09248-27010]. Camshaft slit and SST protrusion should match up.

Fig. 5-110



14. **Tightening torque**
7.0 – 8.0 kg-m (50.6 – 57.9 ft-lb)

TIMING CHAIN**DISASSEMBLY**

Disassemble in numerical order.

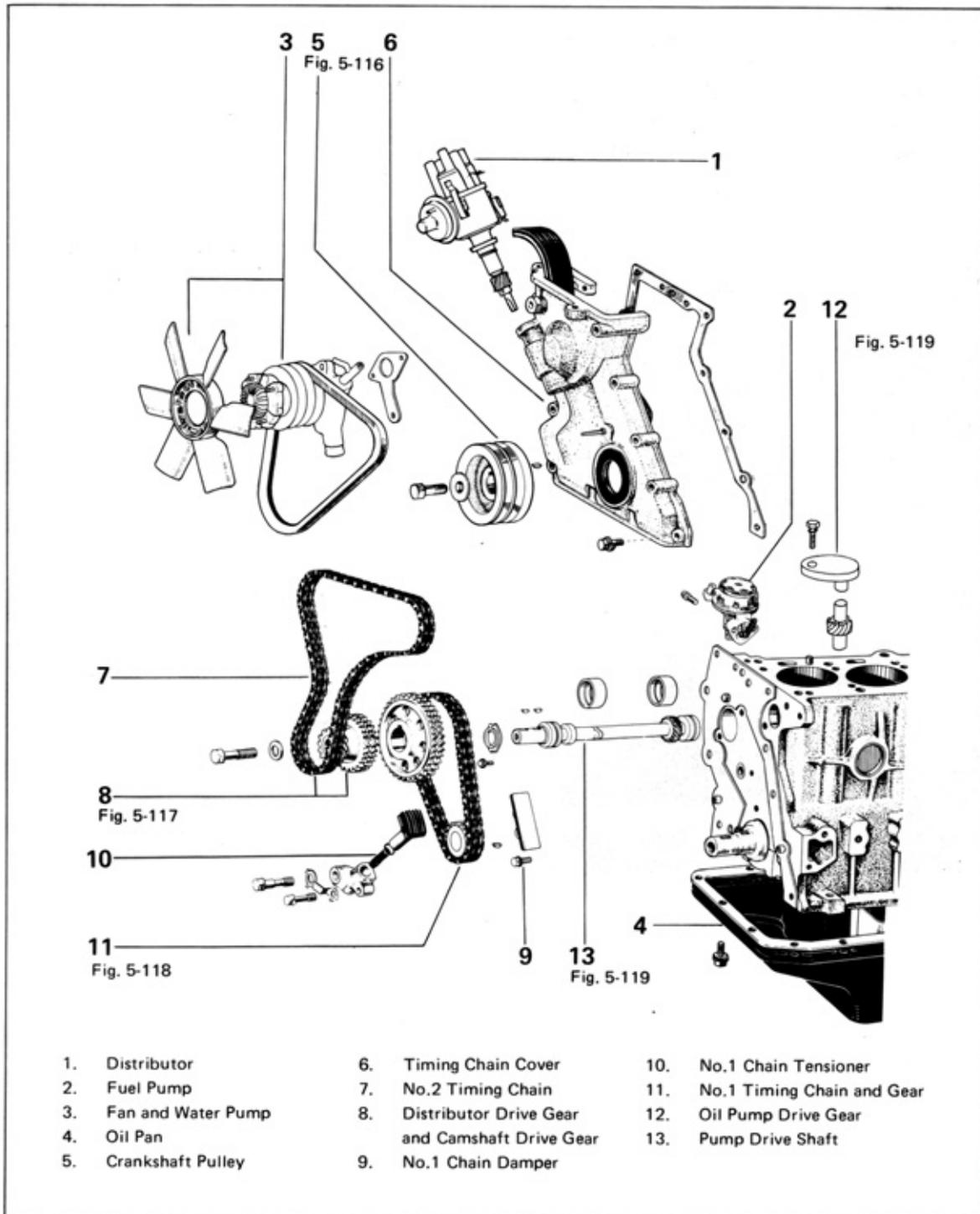
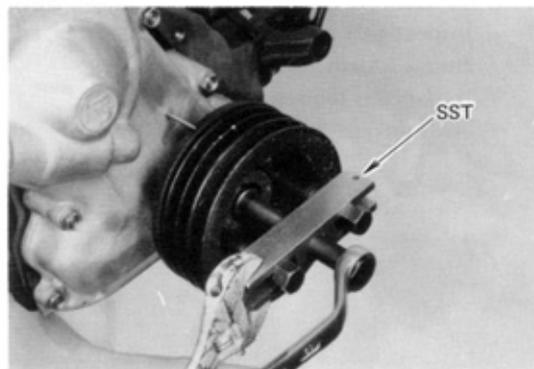
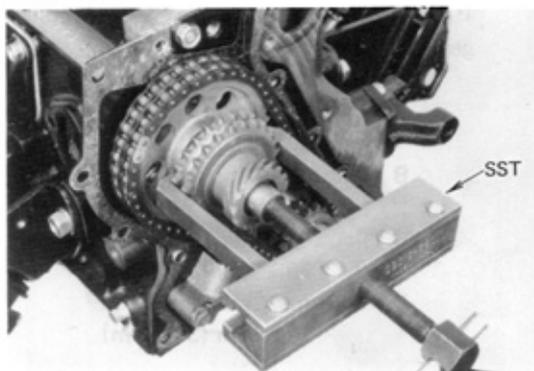
Fig. 5-115

Fig. 5-116



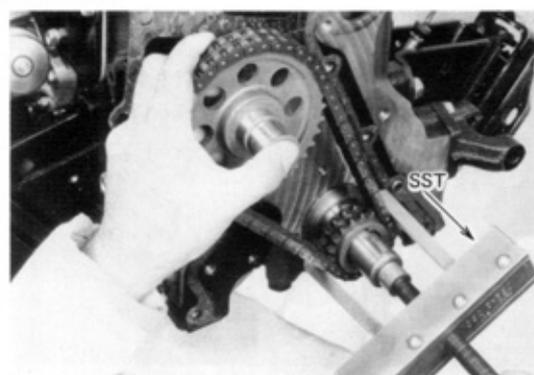
Pull out crankshaft pulley.
Use SST [09213-31021].

Fig. 5-117



Pull out distributor drive gear and camshaft drive gear.
Use SST [09213-36010].

Fig. 5-118



When removing these gears, hook the SST alternately on the two gears and pull them out uniformly.

Fig. 5-119



Remove pump driveshaft from cylinder block before removing pump driveshaft gear.

Fig. 5-120

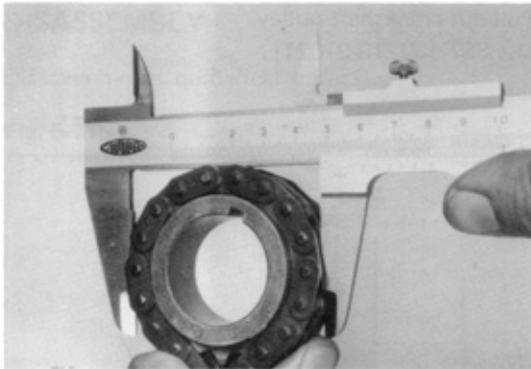


Fig. 5-121

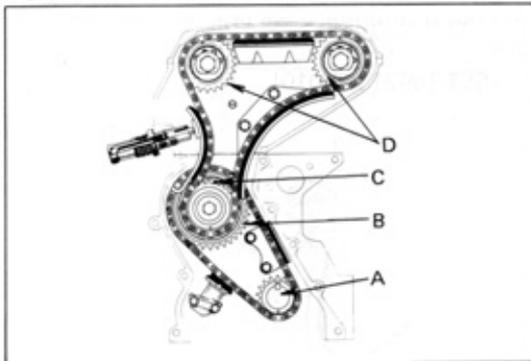


Fig. 5-122

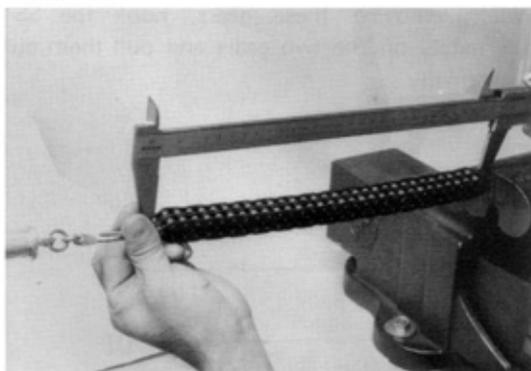


Fig. 5-123



INSPECTION AND REPAIR

Timing Gear and Chain



1. Inspect gear and chain for cracks, wear, and chipped teeth.
If damaged replace gears and chain.
2. Measure gear for wear as shown.

If measurement is below limit, replace gears and chain.

Wear limit

- A : Crankshaft gear
60.0 mm (2.362 in)
- B : Pump driveshaft gear
114.5 mm (4.508 in)
- C : Camshaft drive gear
78.2 mm (3.079 in)
- D : Camshaft timing gear
78.2 mm (3.079 in)



3. Measure No.1 timing chain for elongation.

Elongation limit

- 291.4 mm (11.47 in)
- tension at 5 kg (11 lb)

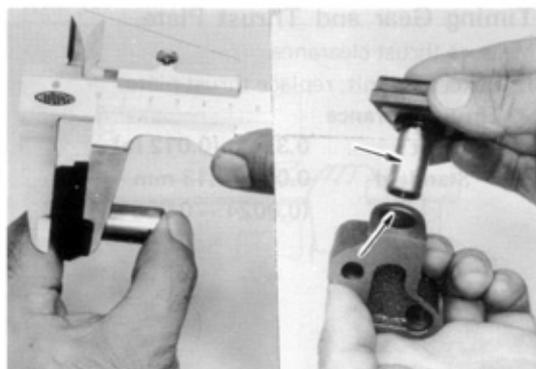


4. Measure No.2 timing chain for elongation. Measure the length of 17 links with the chain stretched tight with the force of one hand.

Make the same measurements at more than three other places selected at random.

- Elongation limit (at 17 links)**
147 mm (5.787 in)

Fig. 5-124

**No.1 Chain Tensioner**

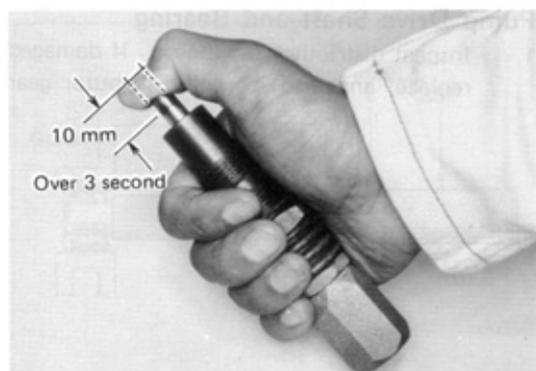
Inspect body and plunger for wear.
Measure tensioner head as shown.



If worn below limit, replace unit.

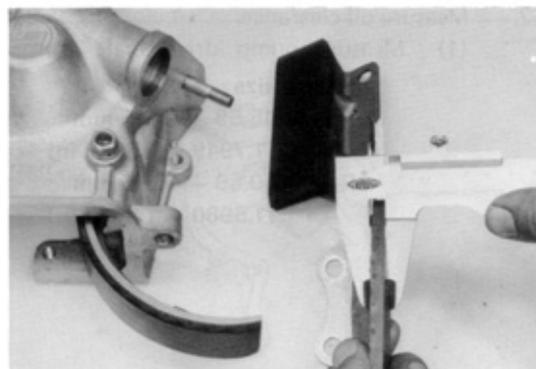
Wear limit 11.5 mm (0.453 in)

Fig. 5-125

**No.2 Chain Tensioner****Air Seal Test**

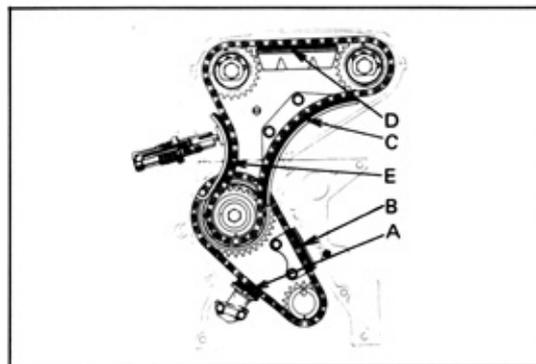
1. Immerse plunger in engine oil and work so as to remove the air.
2. Press plunger with thumb ; 10 mm (0.39 in) stroke should take 3 seconds or more.

Fig. 5-126

**Chain Damper and Slipper**

Inspect chain dampers for wear. Measure each damper.

Fig. 5-127

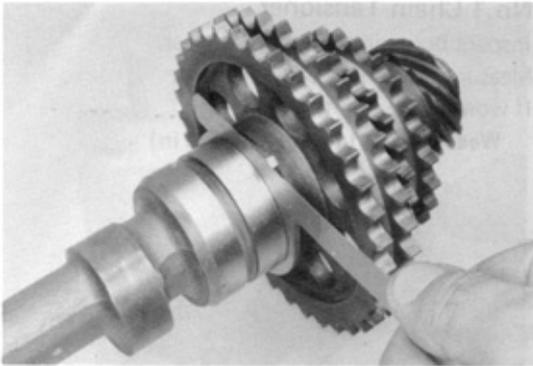


If either is visibly worn or measures less than limit, replace units.

Wear limit

- | | |
|------------------------------------|--------------------------|
| A : No.1 chain tensioner | 11.5 mm (0.45 in) |
| B : No.1 chain damper | 5.0 mm (0.20 in) |
| C : No.3 chain damper | 6.5 mm (0.26 in) |
| D : No.2 chain damper | 5.5 mm (0.22 in) |
| E : Chain tensioner slipper | 7.5 mm (0.30 in) |

Fig. 5-128

**Timing Gear and Thrust Plate**

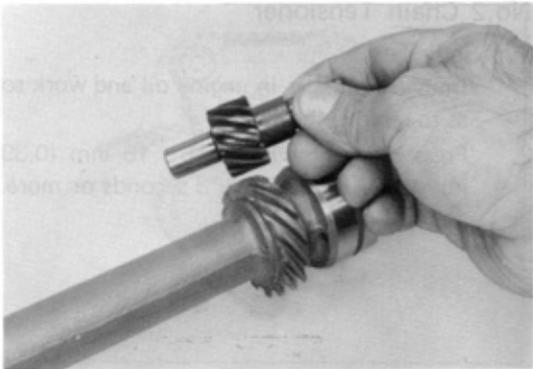
Measure thrust clearance.

If it exceeds limit, replace thrust plate.

Thrust clearance

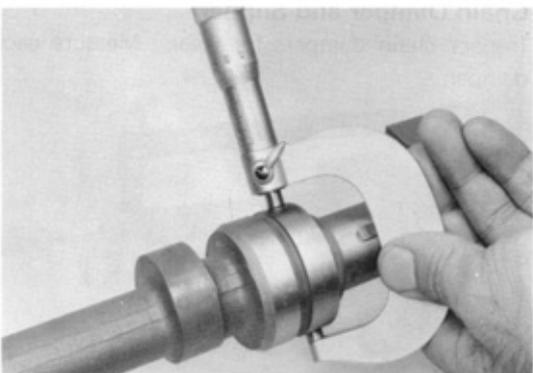
Limit	0.3 mm (0.012 in)
Standard	0.06 – 0.13 mm (0.0024 – 0.0051 in)

Fig. 5-129

**Pump Drive Shaft and Bearing**

1. Inspect distributor drive gear. If damaged, replace, and also inspect distributor gear.

Fig. 5-130

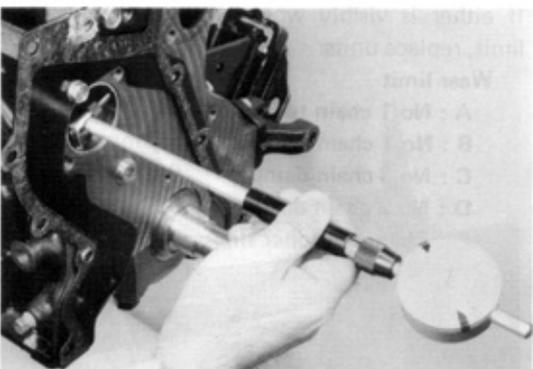


2. Measure oil clearance.
 - (1) Measure pump drive shaft journal.

Finished size

Front	45.59 – 45.75 mm (1.7949 – 1.8012 in)
Rear	40.59 – 40.75 mm (1.5980 – 1.6043 in)

Fig. 5-131

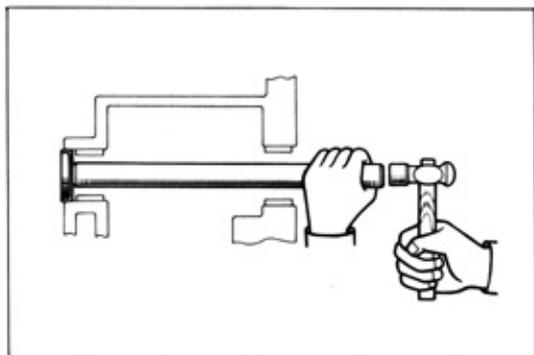


- (2) Measure inner diameter of bearing.

Oil clearance

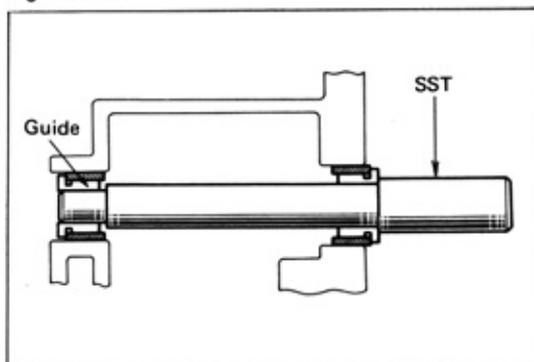
Limit	0.08 mm (0.0032 in)
Standard	0.03 – 0.07 mm (0.0008–0.0024 in)

Fig. 5-132



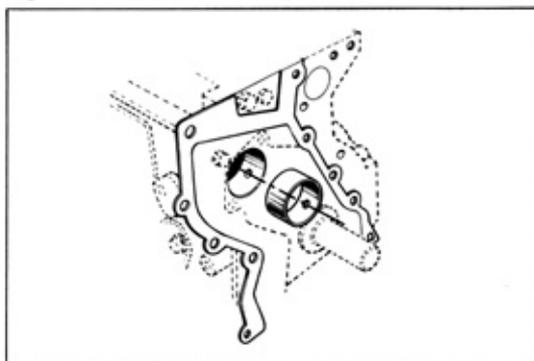
3. Bearing replacement.
 (1) Drive out plug from cylinder block.

Fig. 5-133



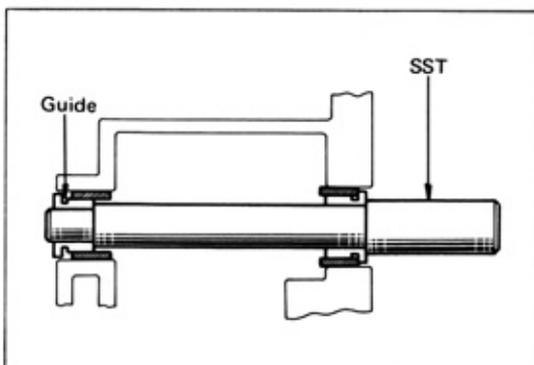
- (2) Remove front bearing.
 Use SST [09233-33010] as shown.

Fig. 5-134



- (3) Align bearing oil hole.

Fig. 5-135



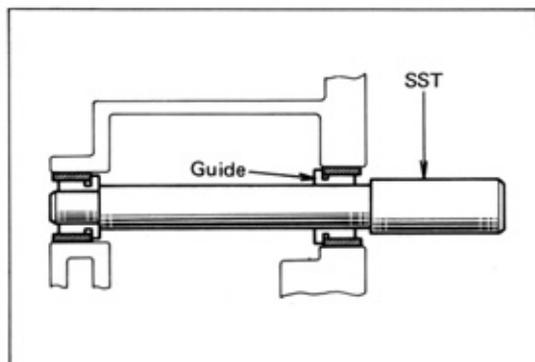
- (4) Install front bearing.
 Use SST [09233-33010] as shown.

Bearing fitting tolerance

0.02 – 0.06 mm

(0.0008 – 0.0024 in)

Fig. 5-136



- (5) Remove rear bearing.
Replacement for rear bearing as same as front bearing.
- (6) Install new plug applied with liquid sealer.

Fig. 5-137



Crankshaft Front Oil Seal

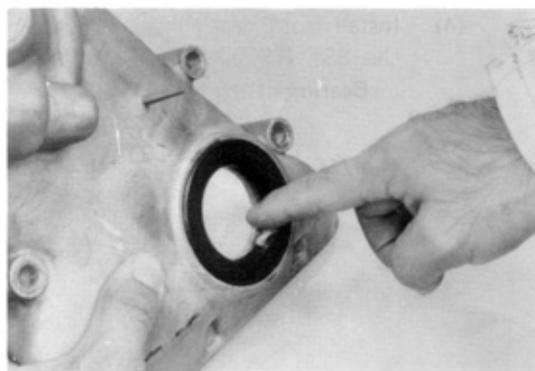
1. Inspect oil seal lip for wear and deformation, and also inspect crankshaft.
2. Oil seal replacement.
 - (1) Remove oil seal with a screwdriver.

Fig. 5-138



- (2) Install new oil seal.
Use SST [09223-50010] as shown.

Fig. 5-139



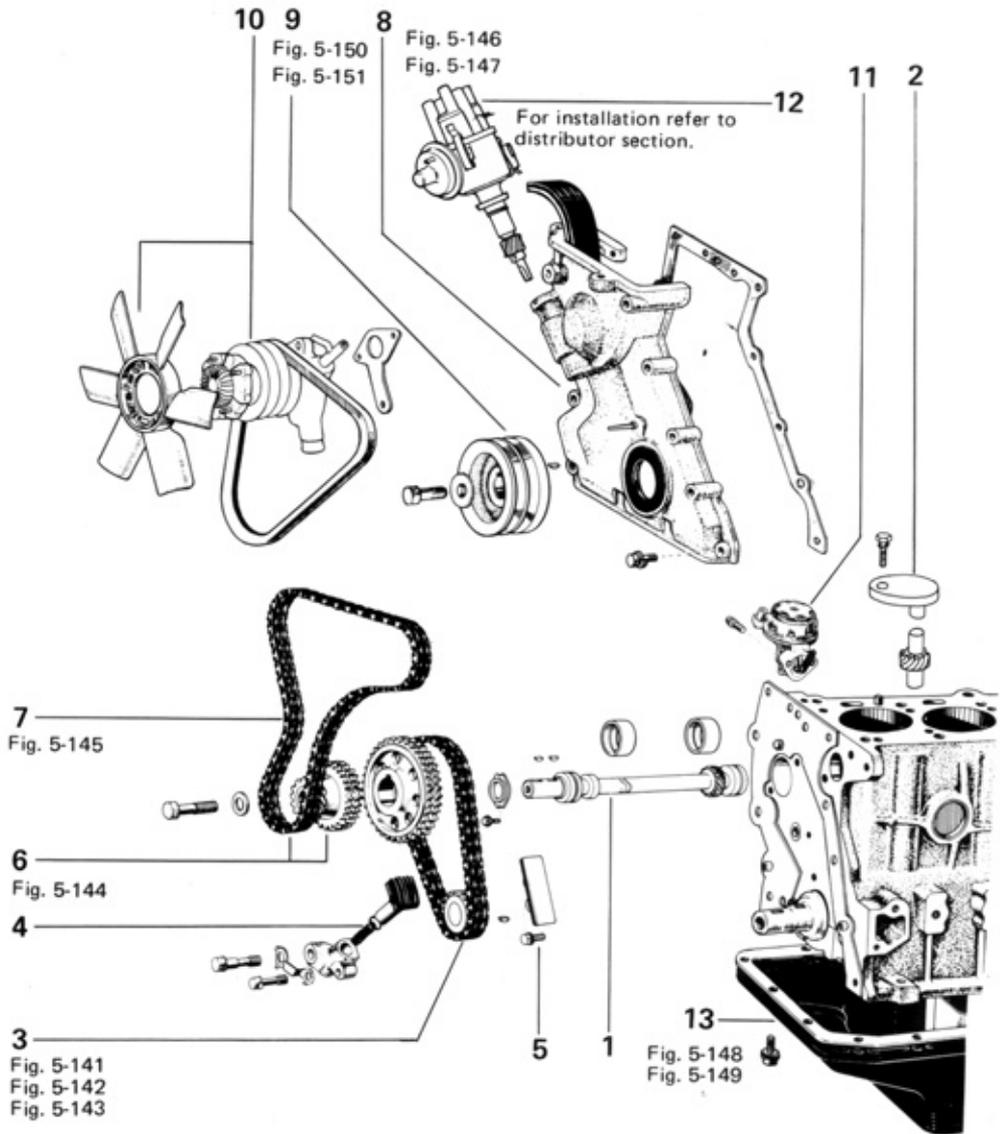
- (3) After driving in the seal, be sure to coat the seal lip lightly with MP grease.

ASSEMBLY

Assemble in numerical order.

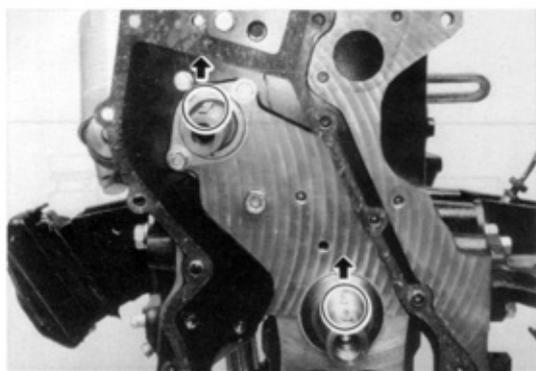
Fig. 5-140

- Thoroughly clean the parts to be assembled.
- Apply clean engine oil on the sliding and rotating surfaces of the parts before assembly.



- | | | |
|-------------------------------|---|------------------------|
| 1. Pump Drive Shaft | 6. Distributor Drive Gear and Camshaft Drive Gear | 10. Water Pump and Fan |
| 2. Oil Pump Drive Gear | 7. No.2 Timing Chain | 11. Fuel Pump |
| 3. No.1 Timing Chain and Gear | 8. Timing Gear Cover | 12. Distributor |
| 4. No.1 Chain Tensioner | 9. Crankshaft Pulley | 13. Oil Pan |
| 5. No.1 Chain Damper | | |

Fig. 5-141



Set the crankshaft keyway and the pump drive shaft keyway vertically upward.

Fig. 5-142



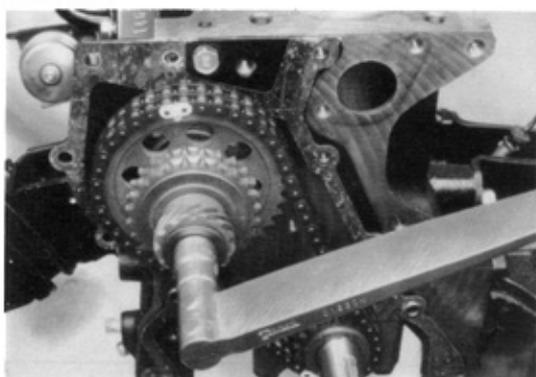
Assemble the crankshaft gear and pump drive shaft gear to the No. 1 chain so that their respective marks are aligned.

Fig. 5-143



Drive in two gears simultaneously to shafts.

Fig. 5-144

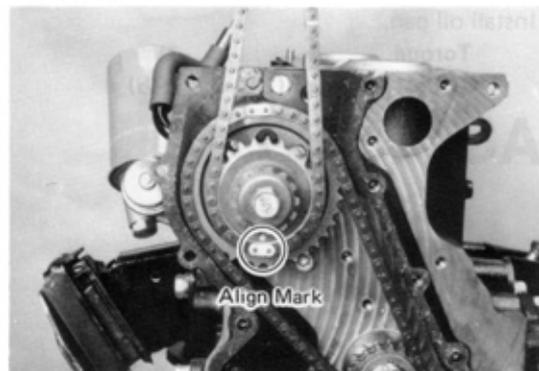


Tighten camshaft drive gear bolt.

Torque

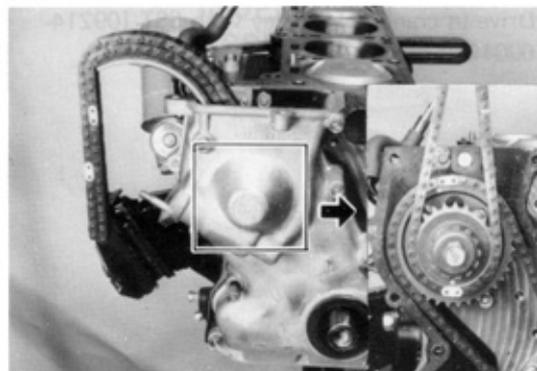
6.0–7.0 kg-m (43.4–50.6 ft-lb)

Fig. 5-145



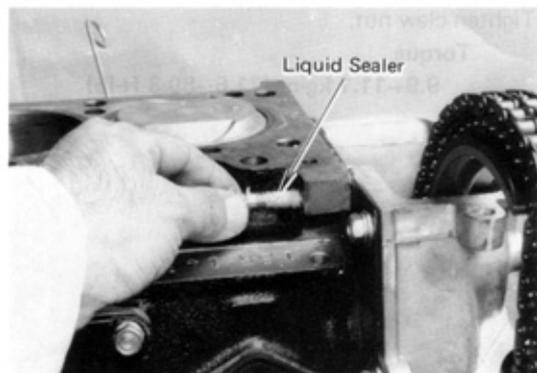
Install No. 2 chain aligned with the chain and gear marks.

Fig. 5-146



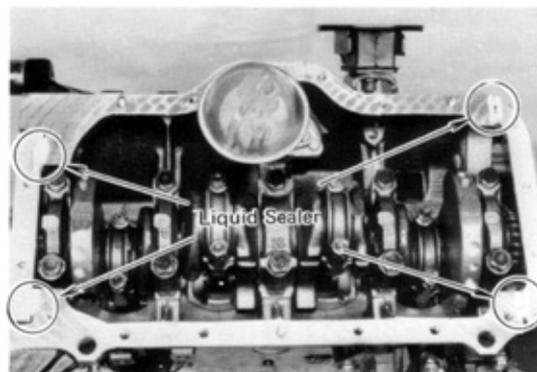
Be careful not to fall the No. 2 chain into the cover.

Fig. 5-147



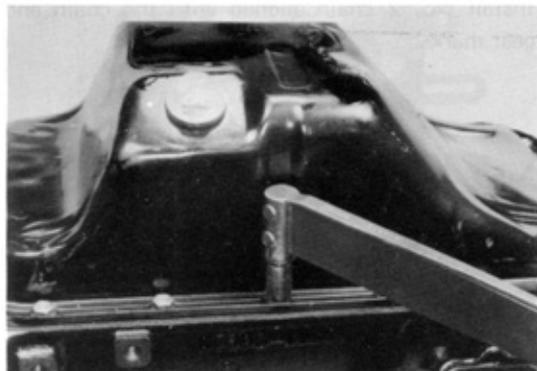
In installing the upper right bolt for mounting the chain cover, insert seal washer and apply liquid sealer on the threads.

Fig. 5-148



Apply liquid sealer as shown.

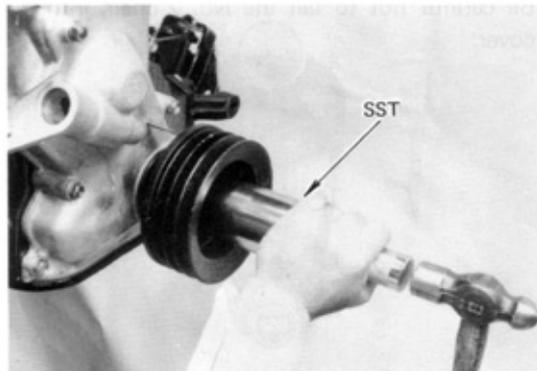
Fig. 5-149



Install oil pan.

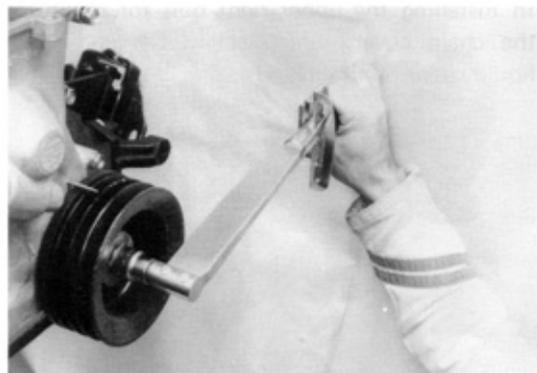
Torque**0.4–0.8 kg-m (2.9–5.8 ft-lb)**

Fig. 5-150



Drive in crankshaft pulley with SST [09214-60010].

Fig. 5-151



Tighten claw nut.

Torque**9.9–11.1 kg-m (71.6–80.3 ft-lb)**