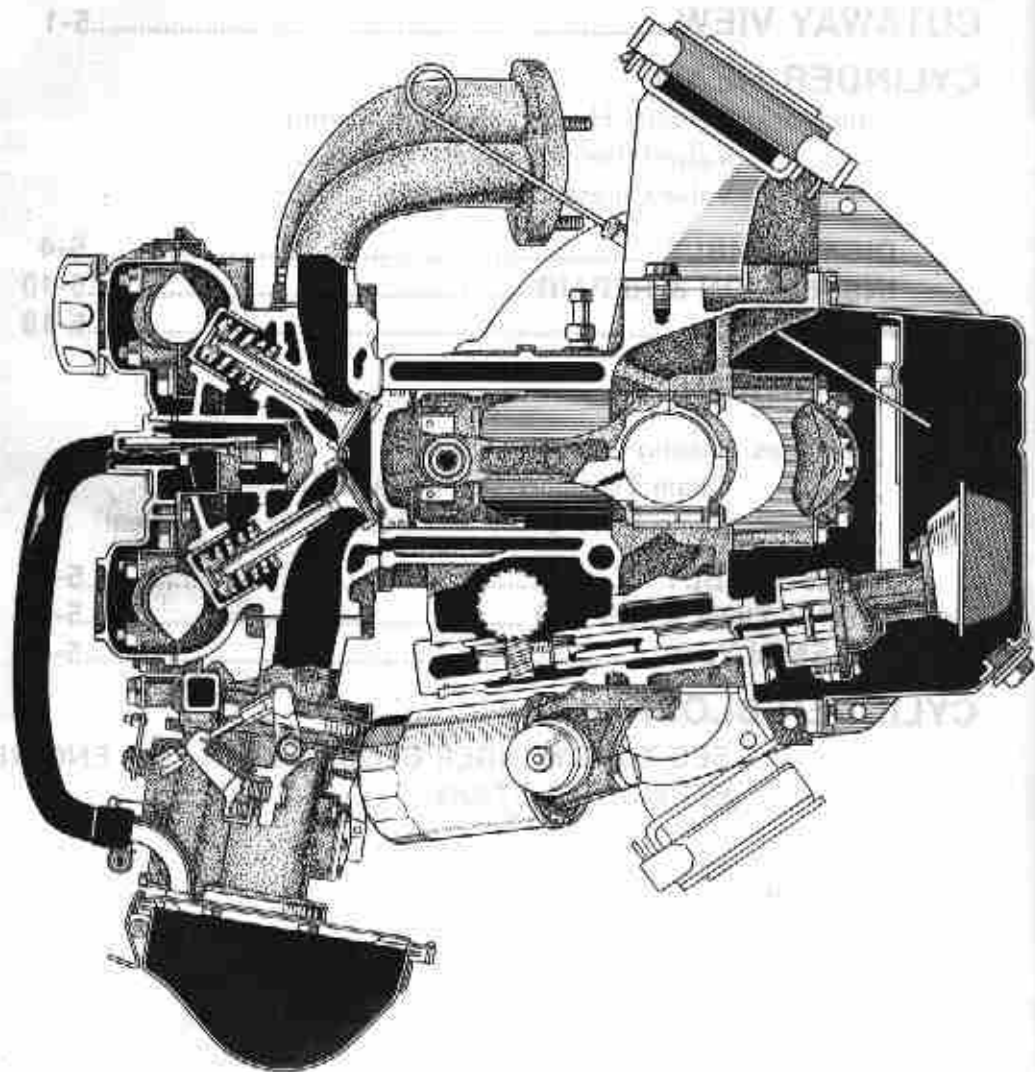


18R-G ENGINE SERVICE

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SEE TO "CYLINDER BLOCK OF 16R · 18R ENGINE SERVICE" SECTION	

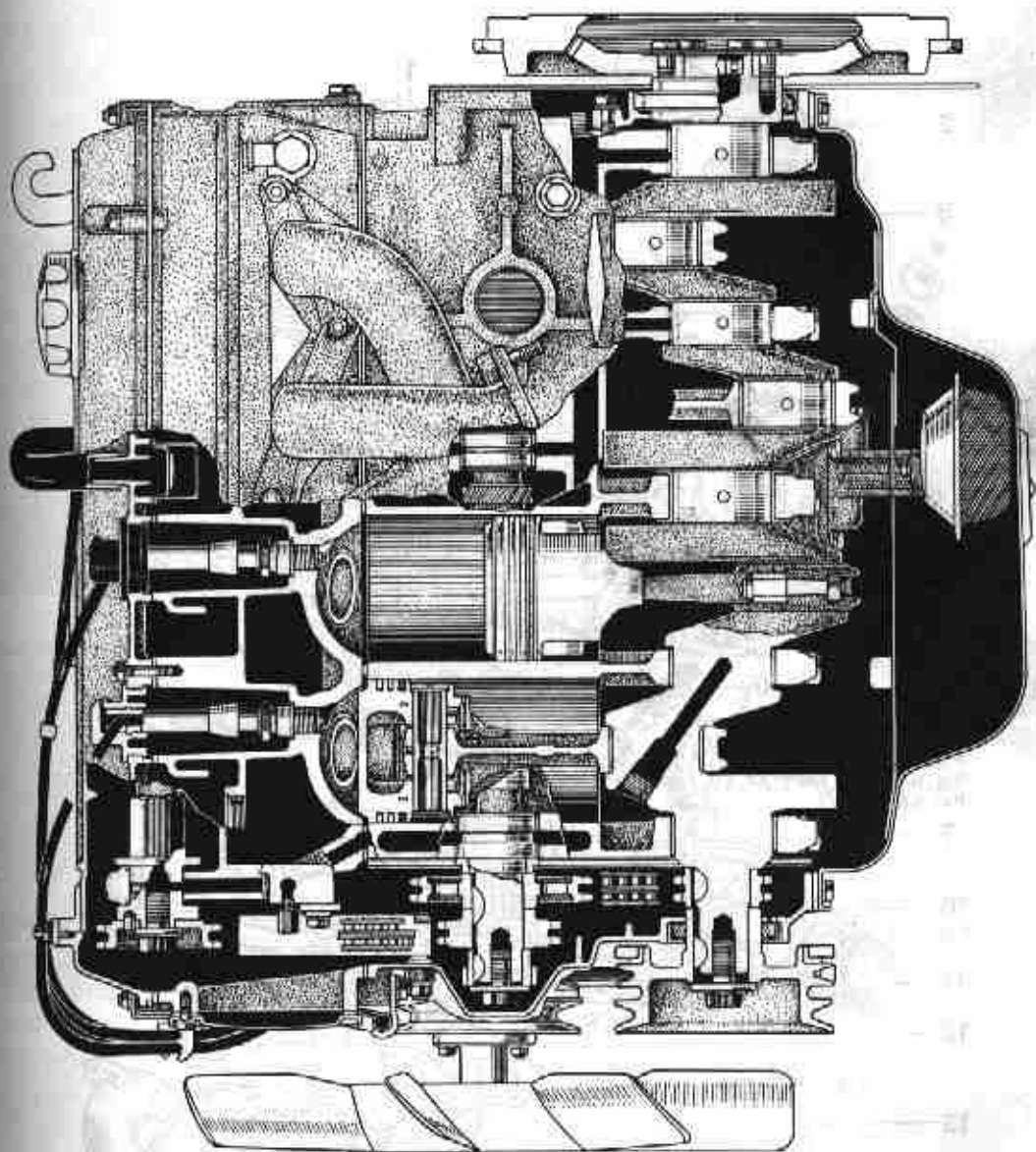
CUTAWAY VIEW

Fig. 5-1



CYLINDER HEAD
ASSEMBLY

Fig. 5-2



CYLINDER HEAD**DISASSEMBLY**

Disassemble in numerical order.

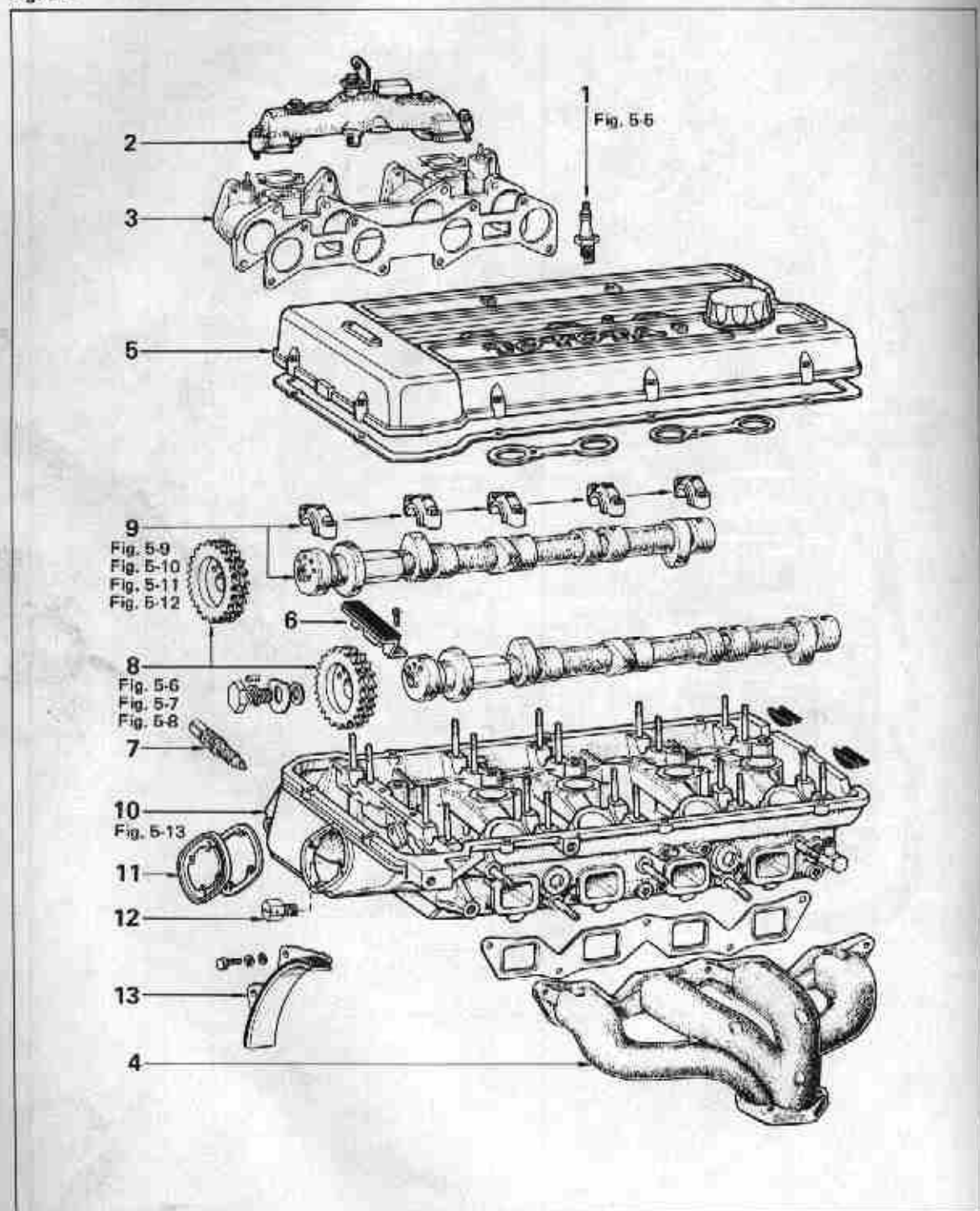
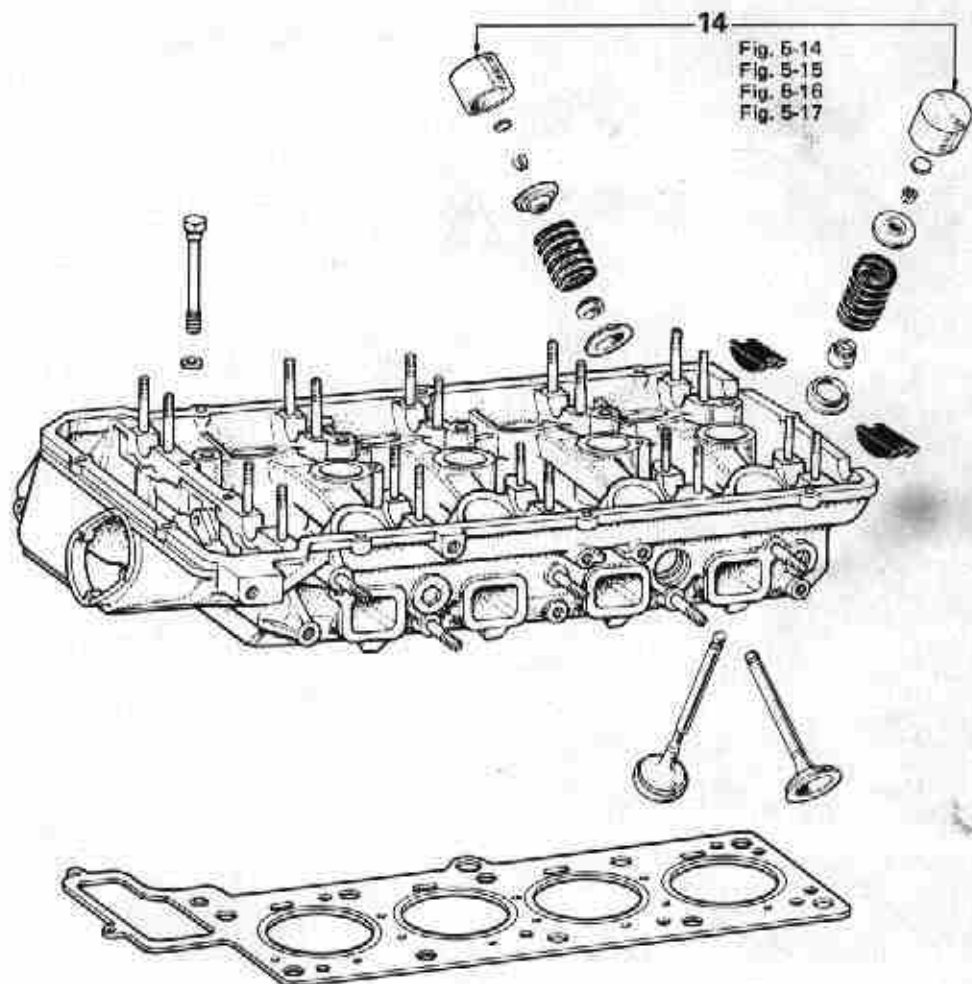
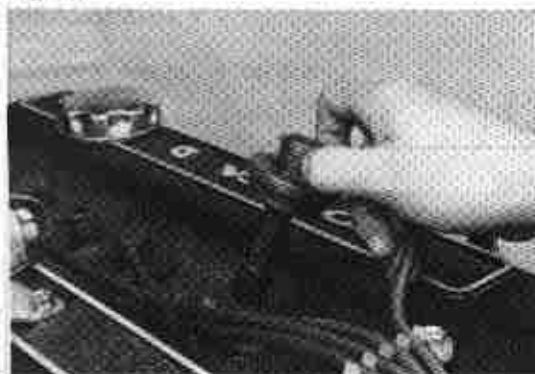
Fig. 5-3

Fig. 5-4



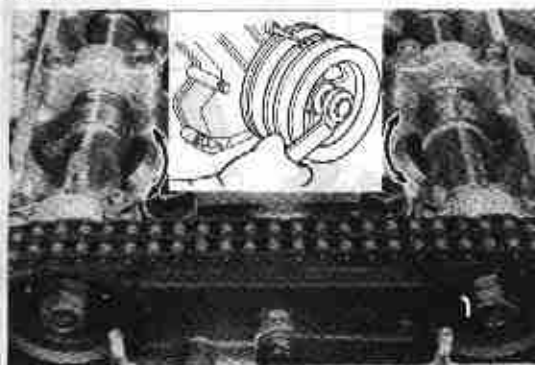
- | | | | |
|---|--------------------------------|----|--------------------------|
| 1 | Spark Plug | 8 | Camshaft Timing Gear |
| 2 | Balance Tube | 9 | Camshaft and Bearing Cap |
| 3 | Carburetor and Intake Manifold | 10 | Cylinder Head |
| 4 | Exhaust Manifold | 11 | Front Cover |
| 5 | Cylinder Head 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



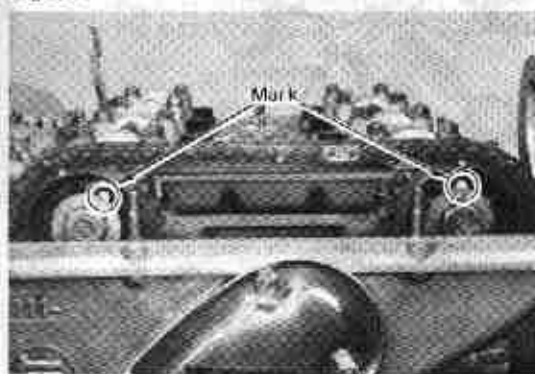
Remove the plug cords by carefully pulling on the rubber boots.

Fig. 5-6



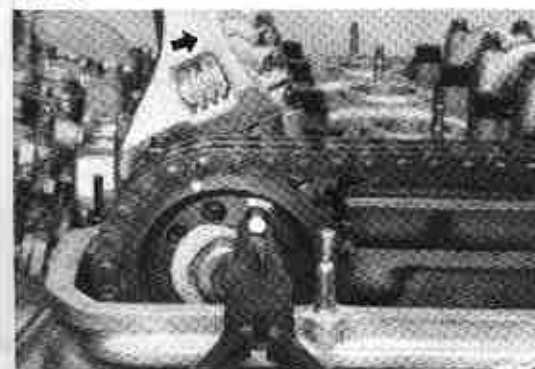
Set the No. 1 cylinder to TDC/compression. In this position, the timing slits in the flange of the camshaft are positioned upward.

Fig. 5-7



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

Fig. 5-8



Pull out the pin.

— Note —

This will be easier if the camshaft is turned slightly forward to provide some play.

Fig. 5-9



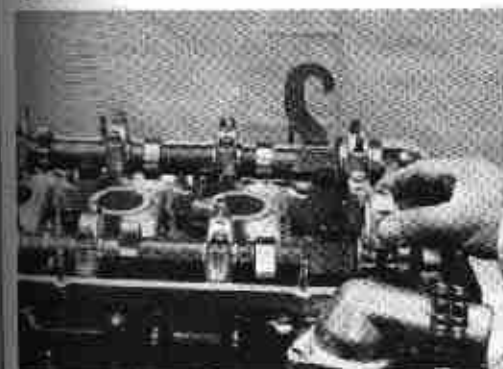
Measure camshaft thrust clearance.

Thrust clearance

limit 0.4 mm (0.0158 in)



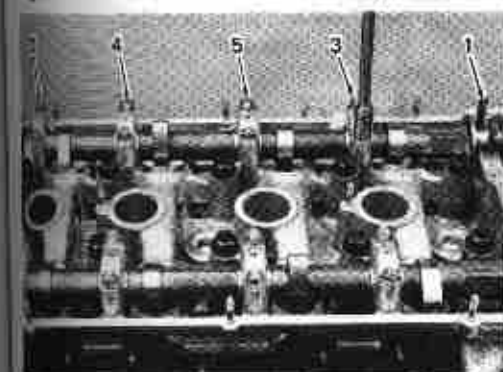
Fig. 5-10



Remove No.1 bearing cap.



Fig. 5-11



Loosen each the other cap nuts a little at a time and in the sequence shown in the figure.

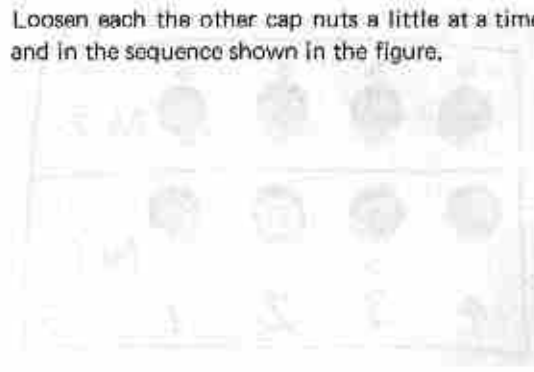
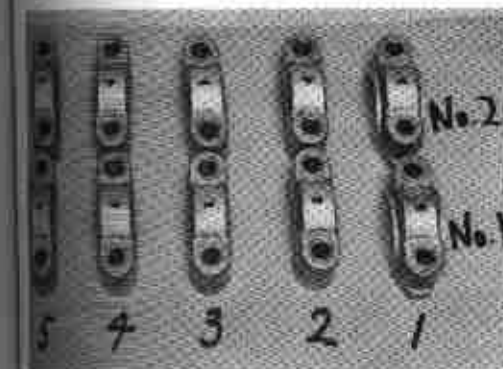


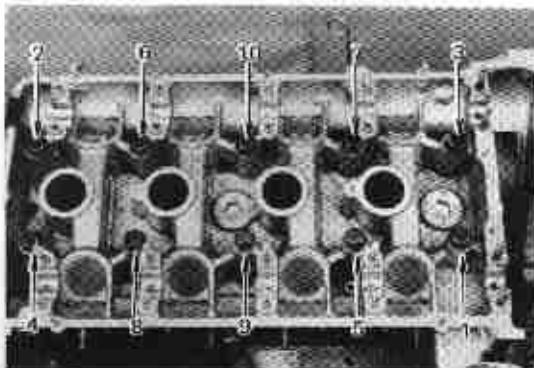
Fig. 5-12



Arrange the bearing caps in order.



Fig. 5-13



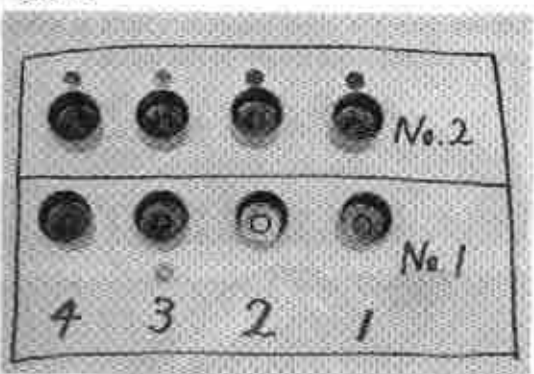
Loosen each cylinder head bolt a little at a time and in the sequence shown in the figure.

Fig. 5-14



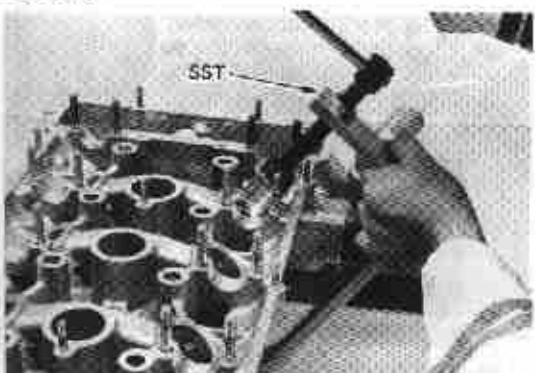
Removal can be done easier by holding the lifter with suction rubber and lifting it out of the hole as shown.

Fig. 5-15



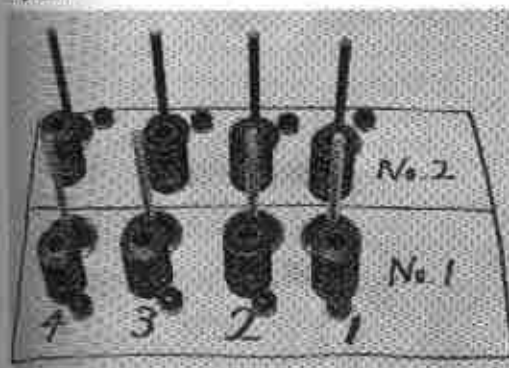
Arrange the lifters and pads in order.

Fig. 5-16



Remove the valve springs. Use SST [09202-43013].

Fig. 5-17



Arrange the valves, springs and oil seal in order.

Fig. 5-20

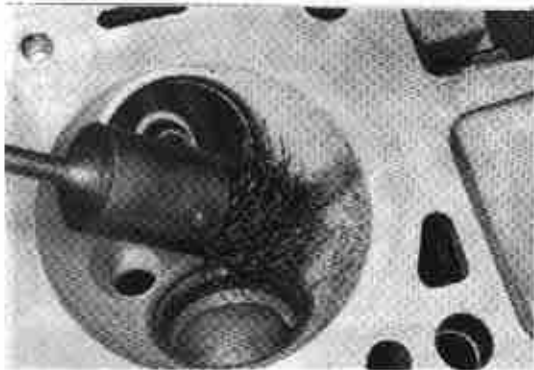


Fig. 5-21

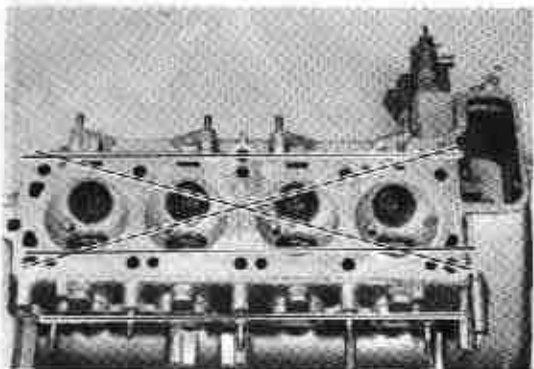
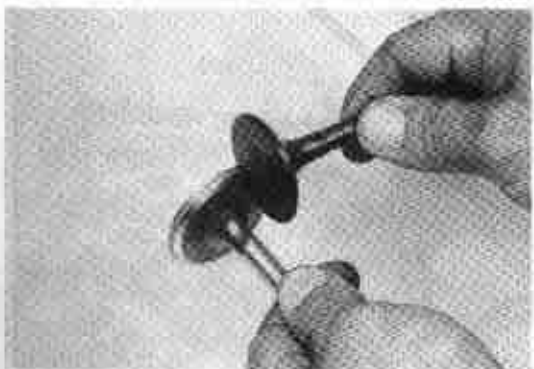


Fig. 5-22



Fig. 5-23



INSPECTION & REPAIR

Cylinder Head

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

Check the cylinder heads for cracks or excessively burnt valve surfaces.

2. Check the cylinder head surface flatness with a precision straight edge.

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

Head surface warpage limit

0.05 mm (0.002 in)

Maximum reface limit

0.2 mm (0.008 in)

Valve, Guide and Seat

1. Clean valves.

Fig. 5-24



2. Check the valve stem to valve guide clearance of each valve by inserting the valve stem into the guide and moving back and forth as is shown in the figure.

Fig. 5-25



3. Measure the valve stem oil clearance.
 - (1) Measure the inside diameter of the valve guide at several places with an inside dial gauge.

Fig. 5-26



- (2) Measure the valve stem diameter.
- (3) Calculate the clearance between the valve stem and valve guide by subtracting the difference where the clearance is the largest.

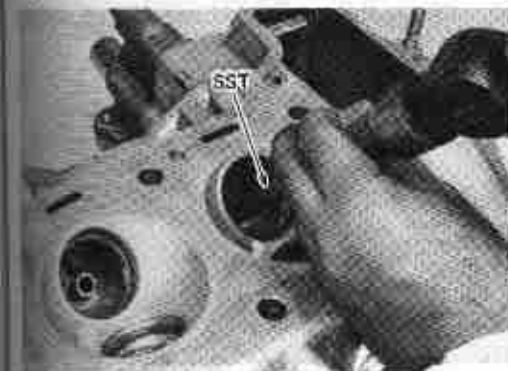
Clearance limit

Intake 0.08 mm (0.003 in)

Exhaust 0.10 mm (0.004 in)

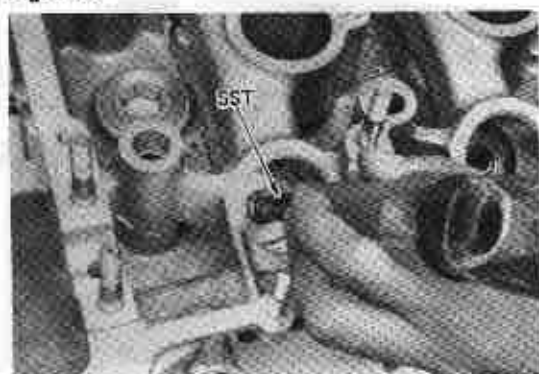
If the clearance exceeds the limit, replace both valve and guide.

Fig. 5-27



4. Valve guide replacement.
 - (1) Break the valve guide at combustion chamber.
 - (2) Heat cylinder head about 100°C (212°F).
 - (3) From the combustion chamber, drive out the guide toward the top of cylinder head with SST. SST [09201-60011]

Fig. 5-28



- (3) With SST, drive in the new guide until the snap ring contacts the cylinder head.
SST [09201-60011].

— Note —

1. Insure that the hole is clean.
2. Before inserting the guide apply a thin coat of oil to it and the guide hole.

Fig. 5-29



- (4) Ream the guide to the specified clearance with an 8.5 mm (0.33 in) reamer.

Oil clearance standard

Intake	0.025 – 0.055 mm (0.0010 – 0.0022 in)
Exhaust	0.03 – 0.06 mm (0.0012 – 0.0024 in)

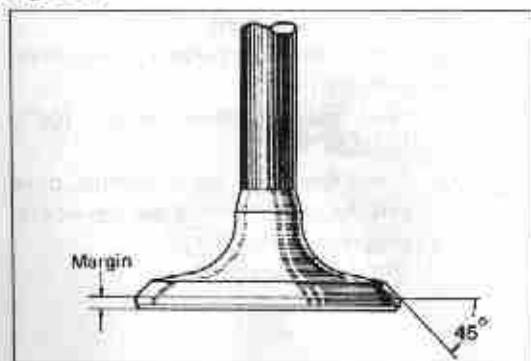
Fig. 5-30



5. Grinding valves and seals
(1) Grind all valves to remove the pits and carbon.

Valve face angle : 45.5°

Fig. 5-31



6. Check the valve head margin and replace if less than specified.

Margin limit

Intake	0.5 mm (0.020 in)
Exhaust	0.6 mm (0.024 in)

Fig. 5-32

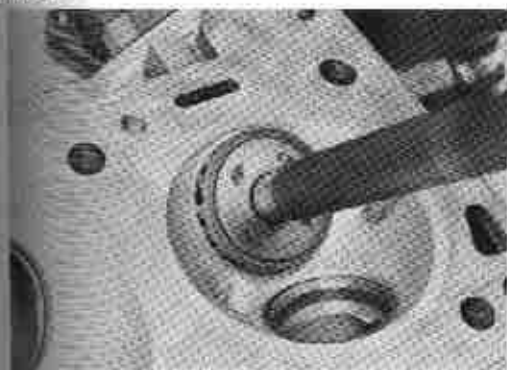


Fig. 5-33



Fig. 5-34

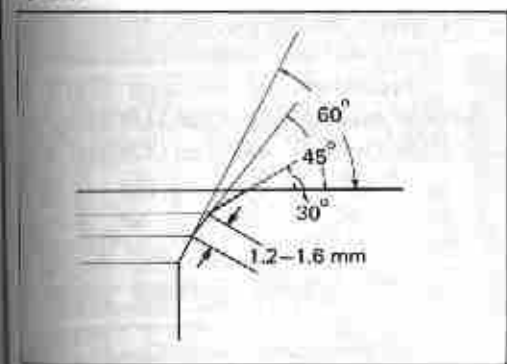


Fig. 5-35



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

8. Coat valve face with prussian 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.

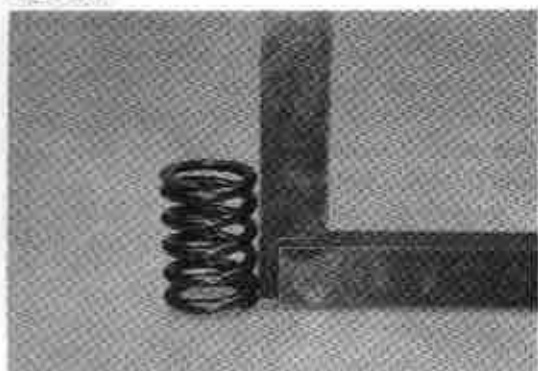
10. Check valve concentricity.
Lightly coat seat with prussian blue. Install valve and rotate. If blue appears 360° around face, valve stem and face are concentric. If not, replace valve.

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

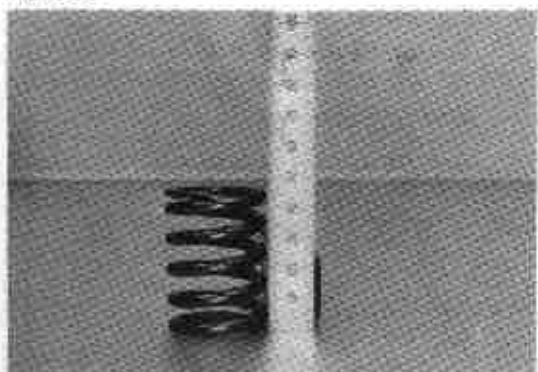


Valve Springs

1. Check the squareness of the valve spring with a steel square and surface plate. Turn the spring around slowly and observe the space between the top of the spring and the square. Replace the spring if it is out of square more than the specified limit.

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

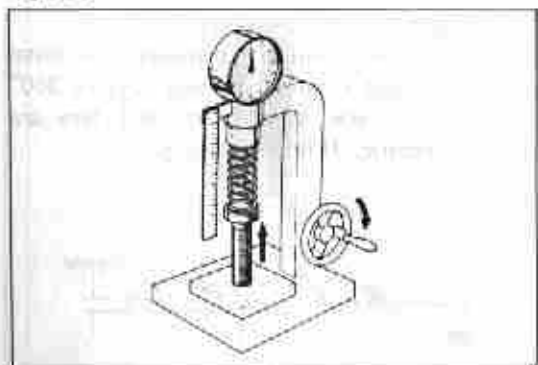
Fig. 5-38



2. Measure the spring free height. Replace springs that do not meet specification.

Free height
Inner 45.9 mm (1.807 in)
Outer 47.4 mm (1.866 in)

Fig. 5-39



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

Installed length
Inner 36.5 mm 1.347 in
Outer 39.0 mm 1.535 in

Installed tension
STD Inner 7.3 kg 16.1 lb
Outer 23.7 kg 52.3 lb
Limit Inner 6.7 kg 14.8 lb
Outer 21.8 kg 48.1 lb

Fig. 5-40



Fig. 5-41



Fig. 5-42

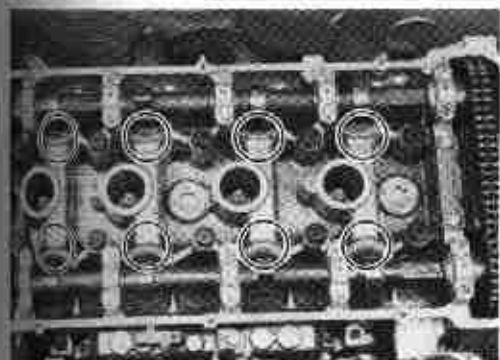
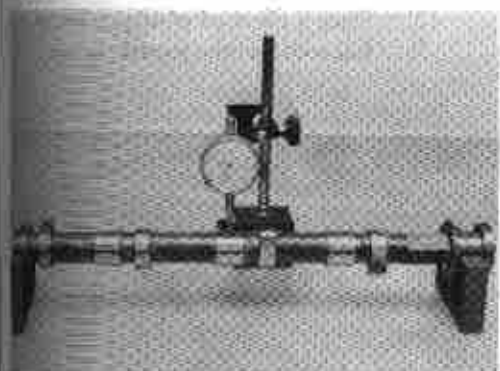


Fig. 5-43

**Valve Lifter**

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



- (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)**

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")

**Camshaft and Bearing**

1. Check the camshaft for runout. Replace camshaft if it exceeds limit.

Limit 0.03 mm (0.0012 in)

Fig. 5-44

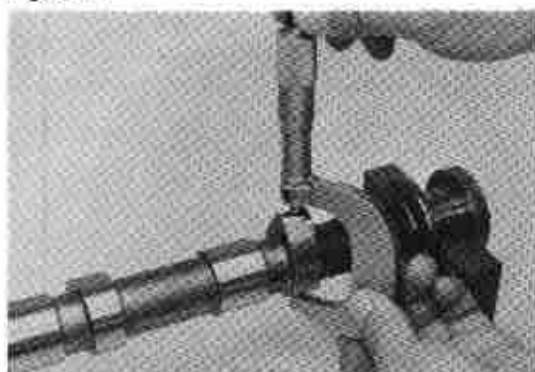


Fig. 5-45

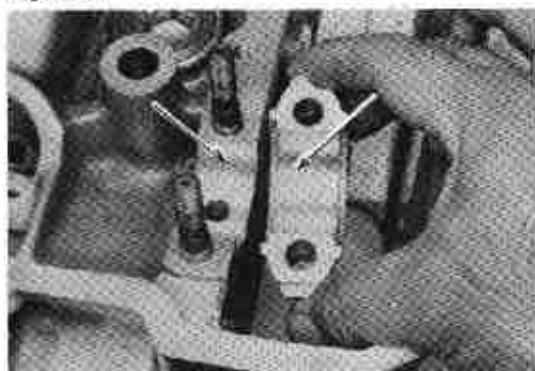


Fig. 5-46

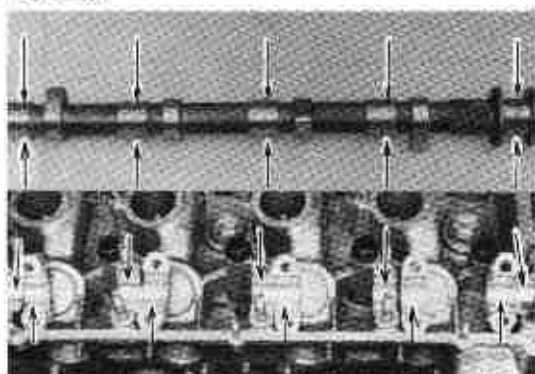


Fig. 5-47



2. Measure the cam lobe height and check for wear. If wear exceeds the limit, replace the camshaft.

Height limit (intake, exhaust)
45.0 mm (1.77 in)



3. Check bearing for flaking or scoring.



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



- (2) Place a piece of plastigage across the full width of the journal surface.

5-4-1

Fig. 5-48



Fig. 5-49



Fig. 5-50



Fig. 5-51



Fig. 5-48



- (3) Install the bearing cap and tighten bolts to specified torque.

**Torque 1.2 – 1.8 kg-m
(8.7 – 13.0 ft-lb)**

– Note –

Do not turn camshaft while plastigage is in place.

- (4) Remove the bearing cap.

Fig. 5-49



- (5) With the plastigage scale, measure the width of the plastigage at its widest point. If clearance exceeds the specification limit, adjust with a suitable bearing size.

Oil clearance

Limit 0.15 mm (0.0059 in)

Standard 0.03 – 0.07 mm

(0.0012 – 0.0028 in)

Fig. 5-50



Manifolds

1. Inspect the cylinder head contacting surfaces for warpage and replace the manifold if it exceeds the limit.

Warpage limit 0.1 mm (0.0039 in)

Fig. 5-51



2. Inspect the cylinder head contacting surfaces for warpage and replace the manifold if it exceeds the limit.

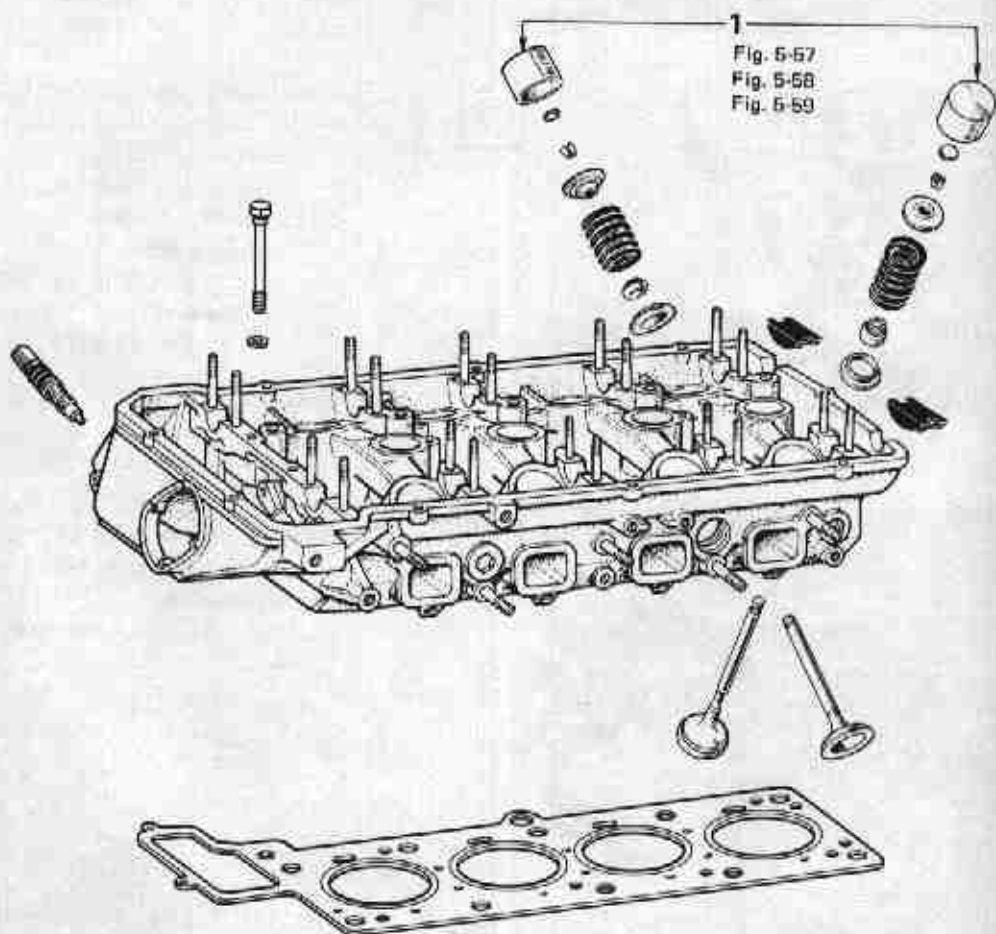
Warpage limit 0.1 mm (0.0039 in)

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

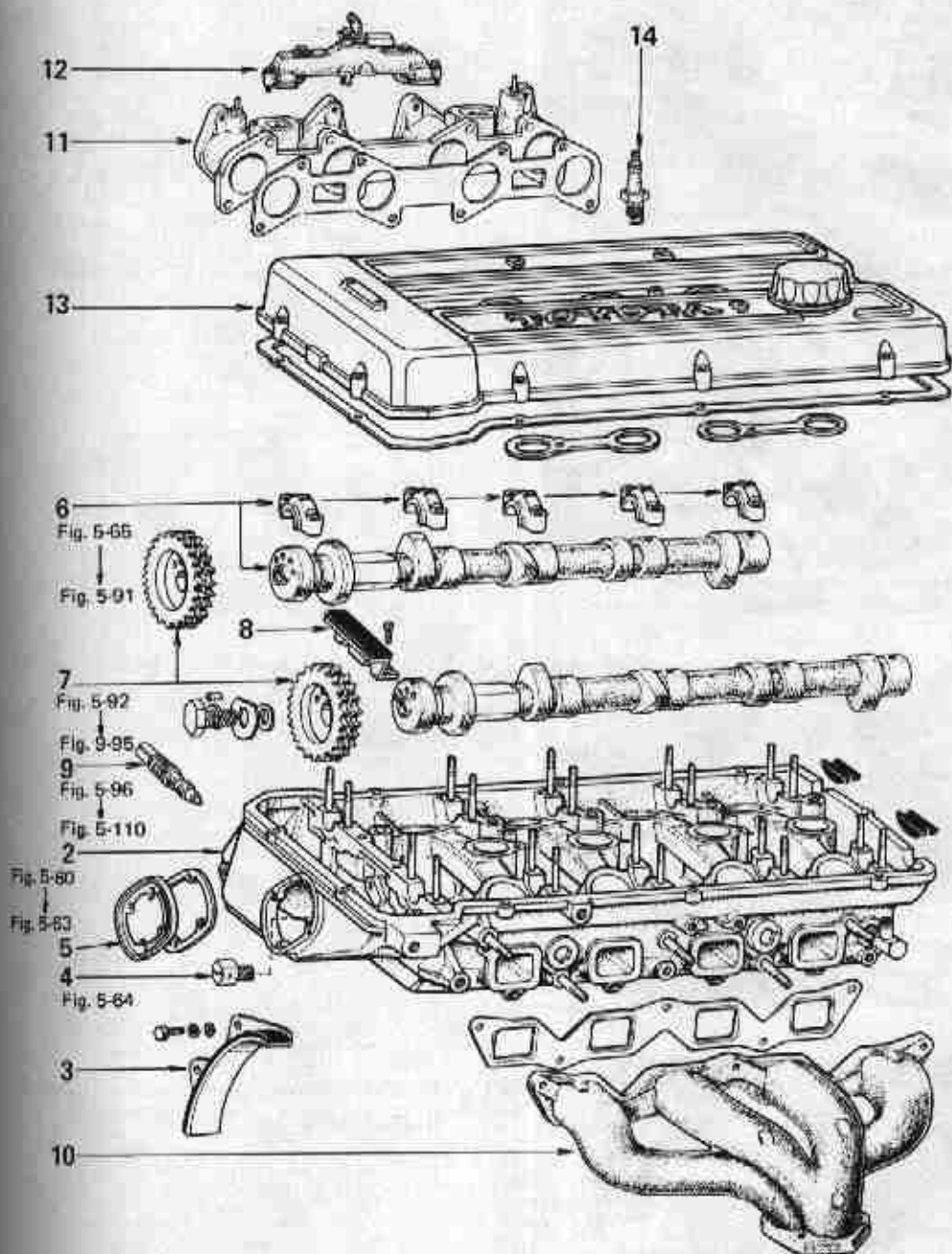


Fig. 5-57



Install oil seal by hand.

Fig. 5-58



Assemble the valve spring and install the retainers.

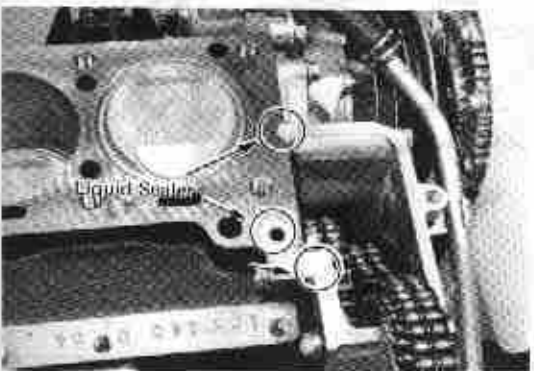
Use SST [09202-43012].

Fig. 5-59



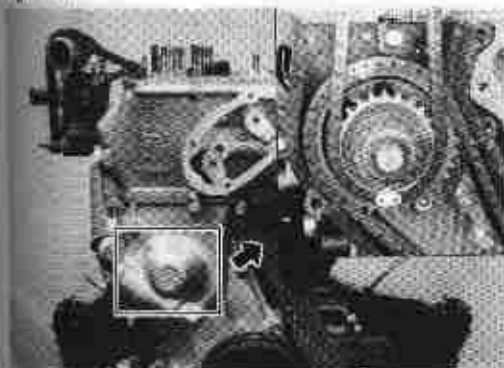
Tap the valve stems lightly to assure proper fit.

Fig. 5-60



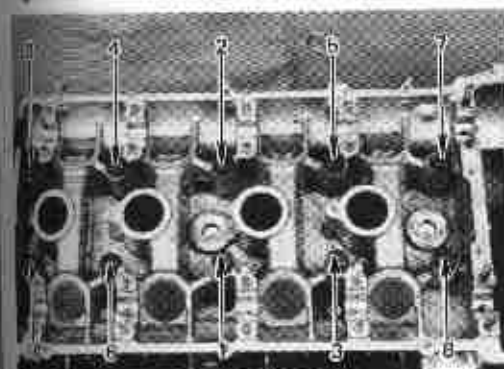
Apply a coat of sealer to the cylinder head, around the holes in the block, and in the vicinity of the timing chain cover and cylinder block.

Fig. 5-61



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

Fig. 5-62



Tighten each cylinder head bolt a little at a time to the specified torque in the sequence shown in the figure.

Fig. 5-63



Tighten head bolts to specified torque.

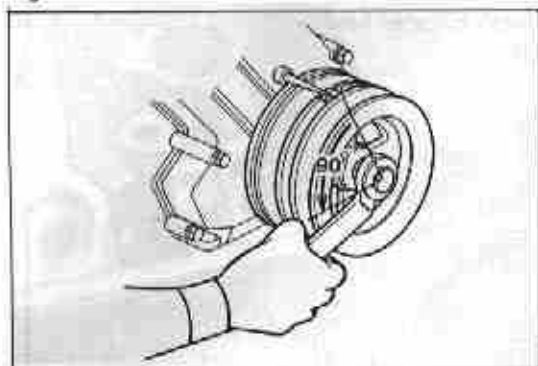
Torque 7.2 – 8.8 kg-m (52.1 – 63.7 ft-lb)

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

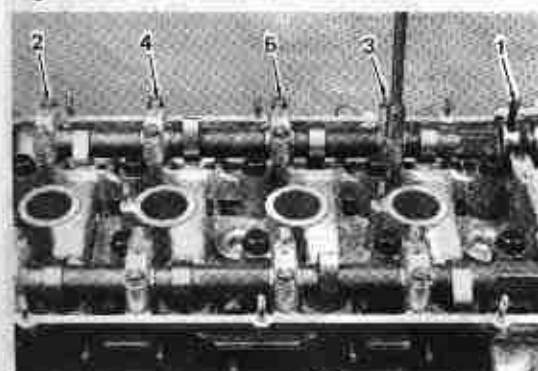
1. Position the camshaft so that the slit in the front end will point upward.

Fig. 5-67



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

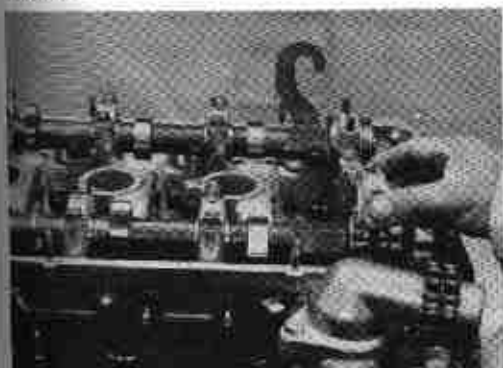
Fig. 5-68



3. Tighten each cap nuts a little at a time to the specified torque in the sequence shown in the figure.

Torque 1.6 – 2.2 kg-m
(12 – 15 ft-lb)

Fig. 5-69



4. Then, install No.1 bearing cap.

Fig. 5-70



5. Tighten cap nuts to specified torque:
Torque 1.6 – 2.2 kg-m (12 – 15 ft-lb)

Fig. 5-71



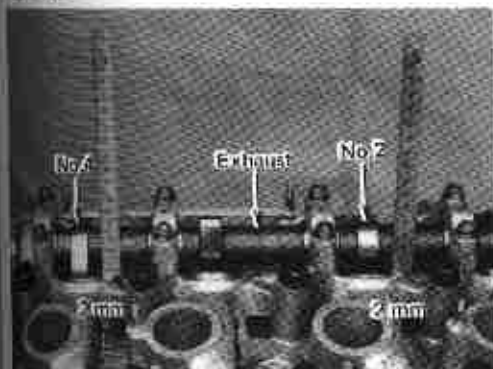
6. Check camshaft thrust clearance.

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 intake side 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.

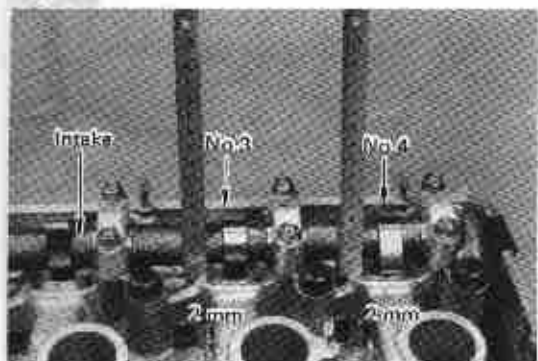
Intake valve clearance

0.24 – 0.34 mm

(0.0094 – 0.0134 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.

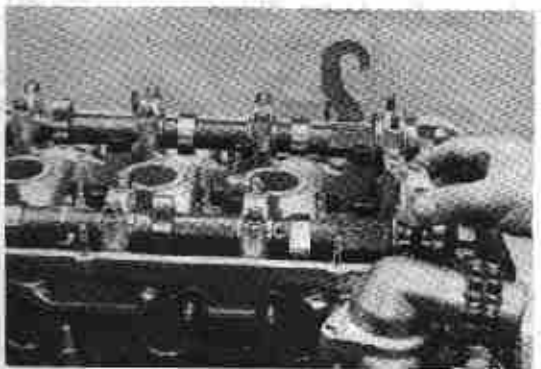
Exhaust valve clearance

0.29 – 0.39 mm

(0.0114 – 0.0154 in)

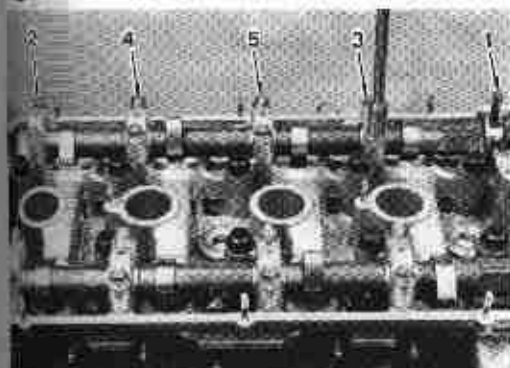
If outside the specified value and record the results.

Fig. 5-76



2. Remove No.1 bearing cap.

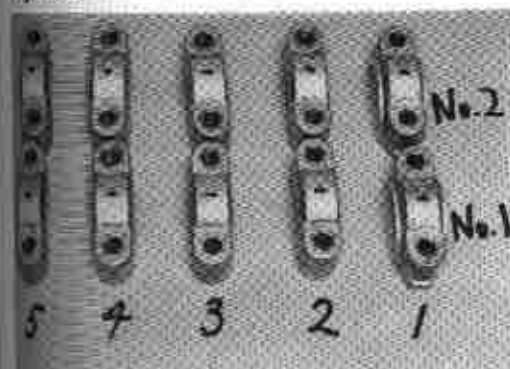
Fig. 5-77



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



Fig. 5-78



4. Arrange the bearings and caps in order.

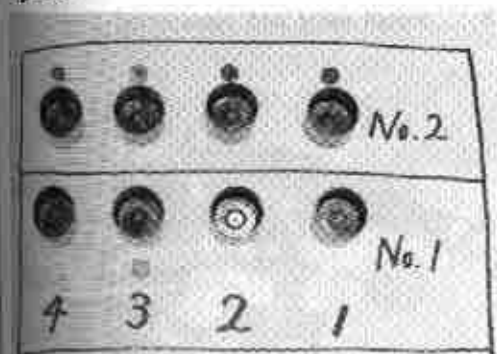
Fig. 5-79



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



Fig. 5-80



6. Arrange the valves and adjusting pads in order.



Fig. 5-81

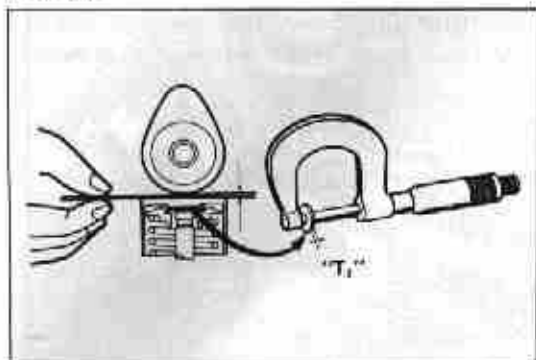


Fig. 5-82



Fig. 5-82

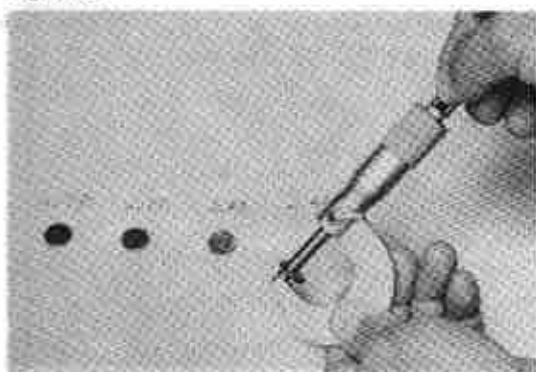


Fig. 5-83



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 measure.

Intake Side

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

Exhaust Side

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



- (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).



8. Install parts and valve lifter.

Fig. 5-84

**Install Camshaft as Follows**

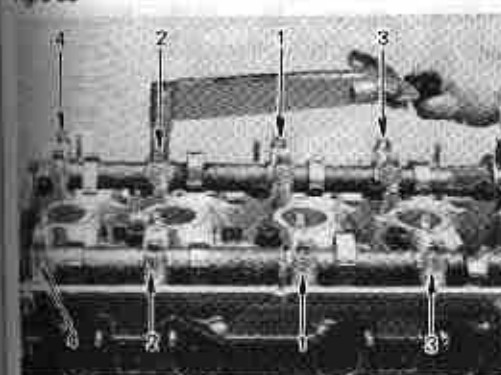
1. Position the camshaft so that the slit in the front end will point upward.

Fig. 5-85



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

Fig. 5-86



3. Tighten each cylinder head bolt a little at a time to the specified torque in the sequence shown in the figure.

Torque 1.6 – 2.2 kg-m
(12 – 15 ft-lb)

Fig. 5-87



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

Torque 1.6 – 2.2 kg-m
(12 – 15 ft-lb)

Fig. 5-88

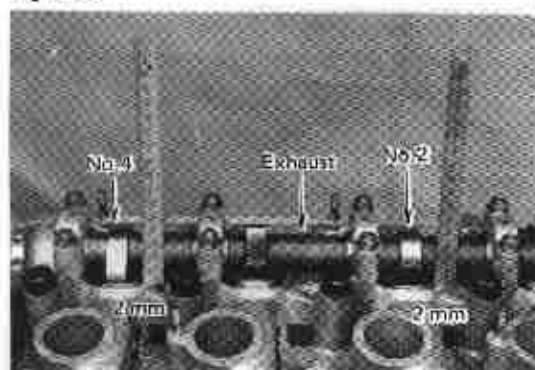


Fig. 5-89



Fig. 5-90

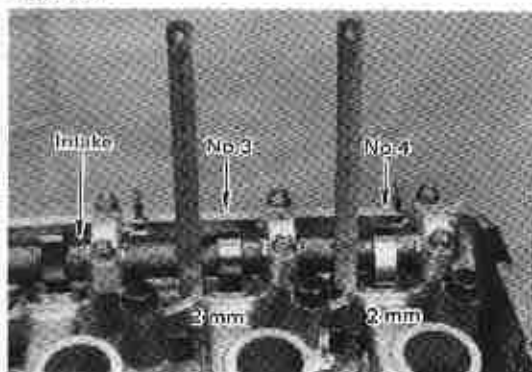
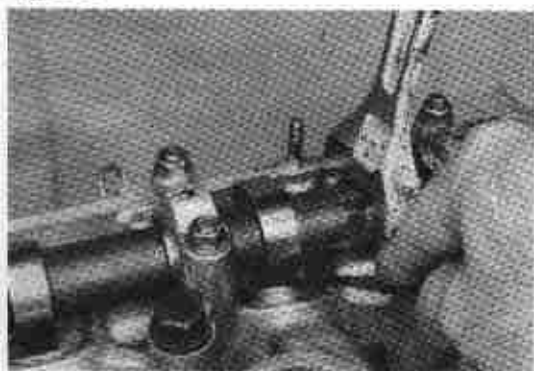


Fig. 5-91



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

0.24 – 0.34 mm

(0.0094 – 0.0134 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.

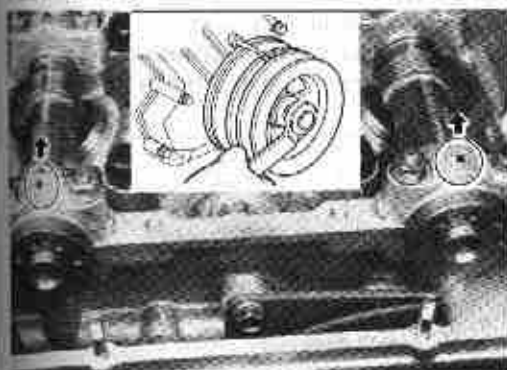
Exhaust valve clearance

0.29 – 0.39 mm

(0.0114 – 0.0154 in)

If outside the specified value, choose another pad.

Fig. 5-92



Set the No.1 cylinder to TDC/compression. In this position, the timing slits in the flange of the camshaft are positioned upward.

Fig. 5-93



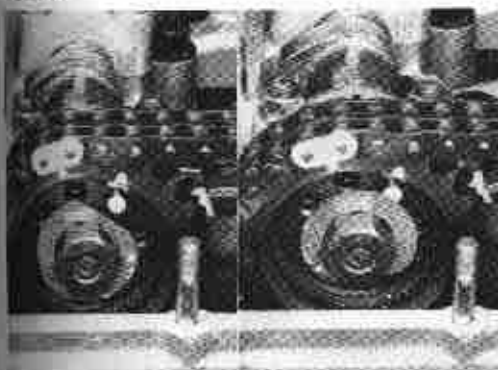
Install the No.2 chain with its mark aligned with the gear mark.

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



Fig. 5-97

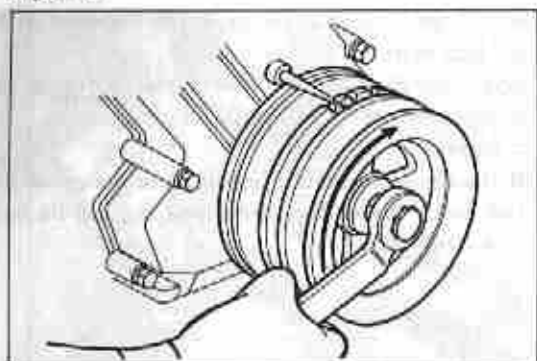


Fig. 5-98



Fig. 5-99



Adjust No.2 chain tensioner:

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



Adjust Valve Timing

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

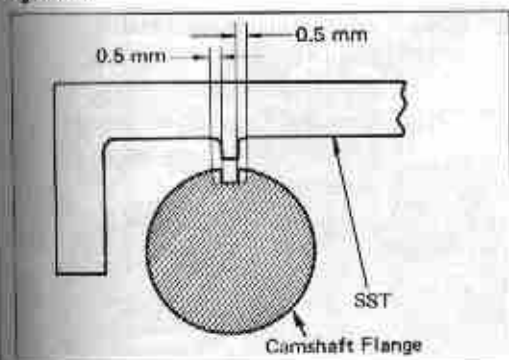


2. Check the No.1 camshaft valve timing with SST [09248-27010].



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

Fig. 5-100



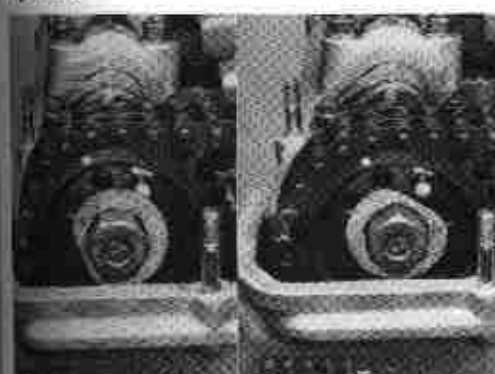
4. Valve timing permissible, error:
 $\pm 2^\circ$ Camshaft rotation angle.
 ± 0.5 mm Camshaft flange outer perimeter.
 Adjust valve timing if it is off.

Fig. 5-101



5. Loosen the camshaft mounting bolt.

Fig. 5-102



6. Rotate the washer until the pin head is completely exposed.

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

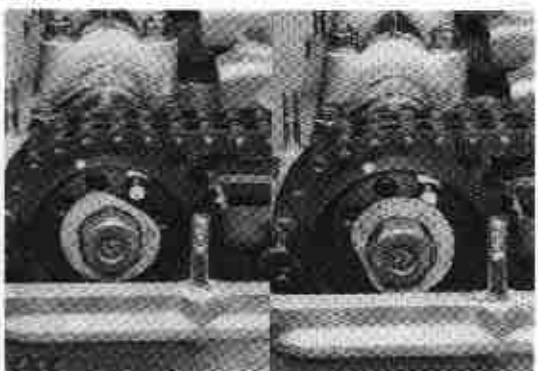
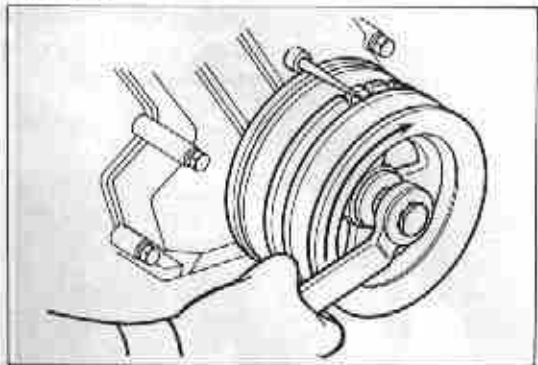


Fig. 5-107



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. Assemble the rockers and shaft.
- (1) Assemble the rocker shaft and No.1 support as shown in the figure.

Fig. 5-108



12. Recheck the No.1 camshaft valve timing. Use SST (09248-27010). The camshaft and SST protrusion should line up.

Fig. 5-109



13. Recheck the No.2 camshaft valve timing. Use SST (09248-27010). The camshaft slit and SST protrusion should line up.

Fig. 5-110



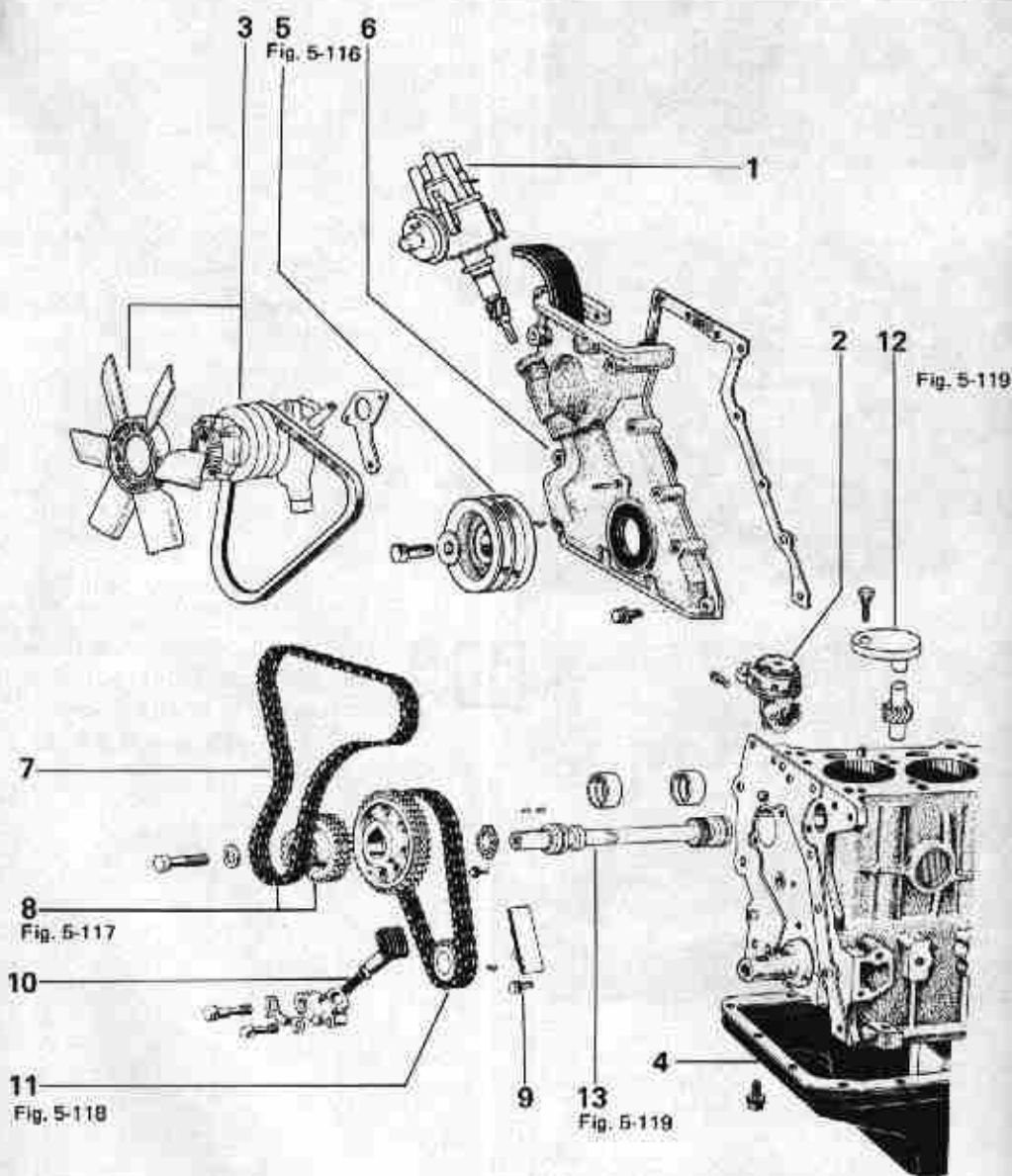
14. Hold the camshaft with a wrench and tighten the camshaft mounting bolt.

Torque 7.0 – 8.0 kg-m
(50.6 – 57.9 ft-lb)

TIMING CHAIN**DISASSEMBLY**

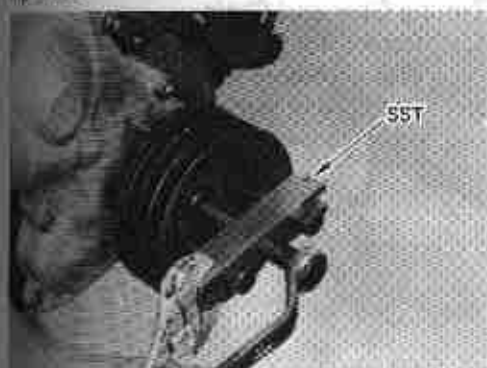
Disassemble in numerical order.

Fig. 5-115



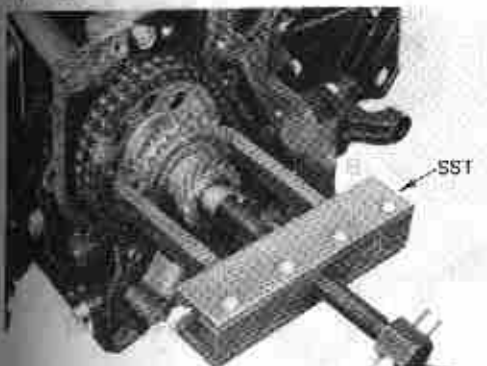
- | | | |
|-----------------------|---|--------------------------------|
| 1. Distributor | 6. Timing Chain Cover | 10. No.1 Chain Tensioner |
| 2. Fuel Pump | 7. No.2 Timing Chain | 11. No.1 Timing Chain and Gear |
| 3. Fan and Water Pump | 8. Distributor Drive Gear and Camshaft Drive Gear | 12. Oil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

Fig. 5-116



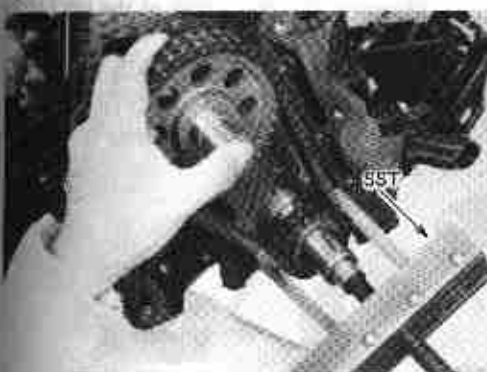
Remove the crankshaft pulley with SST, SST [09213-31021].

Fig. 5-117



Remove the camshaft drive gear with SST, SST [09213-36020].

Fig. 5-118



Attach the SST to the two gears and slide out both gears and chains as a unit, SST [09213-36020].

Fig. 5-119



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

Fig. 5-120

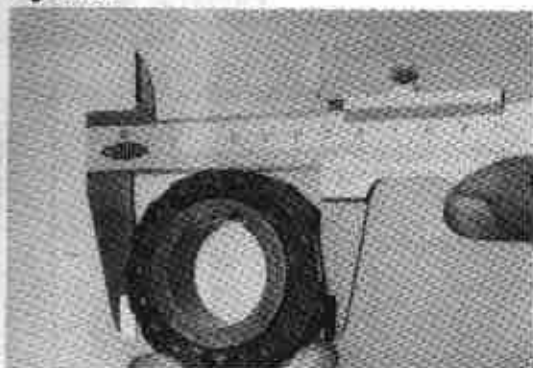


Fig. 5-121

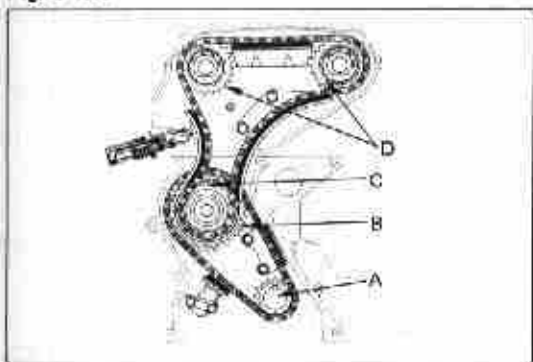


Fig. 5-122



Fig. 5-123



INSPECTION AND REPAIR Timing Gear and Chain



1. Inspect the gears and chains for cracks, wear or chipped teeth.
2. Measure the gear for wear in the method shown in the figure.



If measurement is below limit, replace gears and chain.

Wear limit

- A : Crankshaft gear
60.0 mm (2.362 in)
- B : Pump drive shaft gear
114.5 mm (4.503 in)
- C : Camshaft drive gear
78.2 mm (3.079 in)
- D : Camshaft timing gear
78.2 mm (3.079 in)



3. Measure the elongation of the No.1 timing chain.

Elongation limit

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



4. Measure the 17-link elongation of the No.2 timing chain. Replace the chain if over the elongation limit.

- Elongation limit (at 17-links)
147 mm (5.79 in)

Fig. 5-124

**No.1 Chain Tensioner**

Check the body and plunger for wear and measure the tensioner head as shown in the figure. If worn down over the limit, replace as a unit.

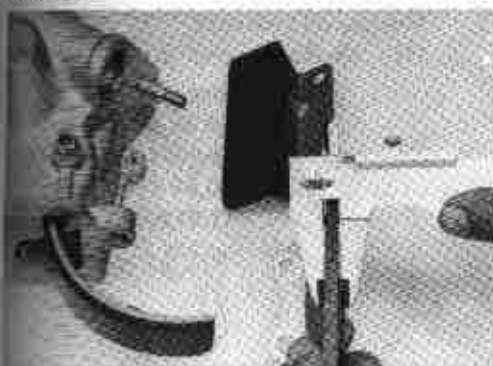
Wear limit **11.5 mm (0.453 in)**

Fig. 5-125

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

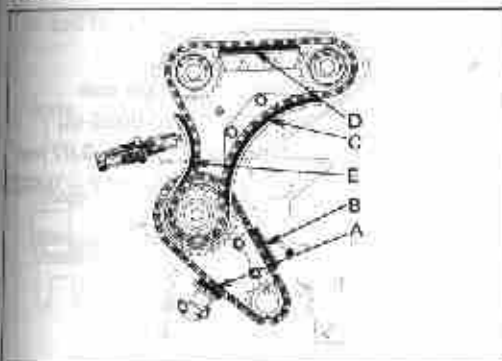
1. Immerse plunger in engine oil and work so as to remove the air.
2. Press plunger with thumb, 10 mm (0.39 in) stroke should take 3 seconds or more.

Fig. 5-126

**Chain Damper and Slipper**

Inspect chain dampers for wear. Measure each damper.

Fig. 5-127

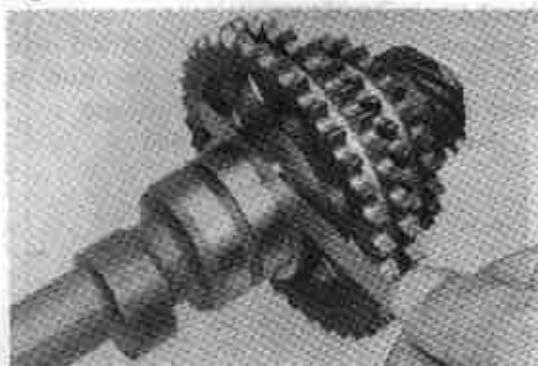


If either is visibly worn or measures less than limit, replace units.

Wear limit

- A : No.1 chain tensioner**
11.5 mm (0.453 in)
- B : No.1 chain damper**
5.0 mm (0.197 in)
- C : No.3 chain damper**
6.5 mm (0.256 in)
- D : No.2 chain damper**
5.5 mm (0.217 in)
- E : Chain tensioner slipper**
7.5 mm (0.295 in)

Fig. 5-128

**Timing Gear and Thrust Plate**

Measure thrust clearance.

If it exceeds limit, replace thrust plate.

Thrust clearance

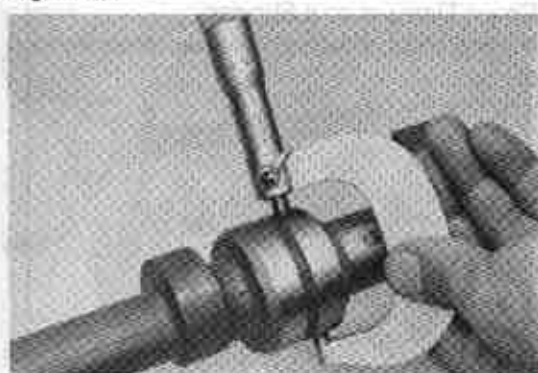
Limit	0.3 mm (0.012 in)
Standard	0.06 – 0.13 mm (0.0024 – 0.0051 in)

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	45.96 – 45.98 mm (1.8094 – 1.8102 in)
Rear	40.96 – 40.98 mm (1.6126 – 1.6134 in)

Fig. 5-131

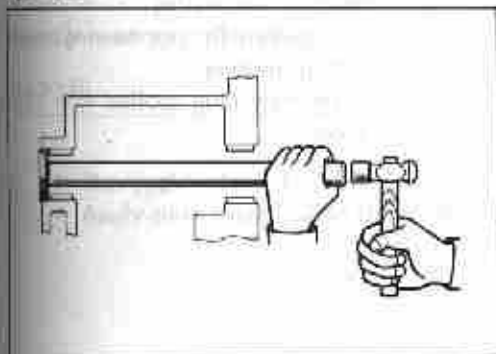


- (2) Measure inner diameter of bearing.

Oil clearance

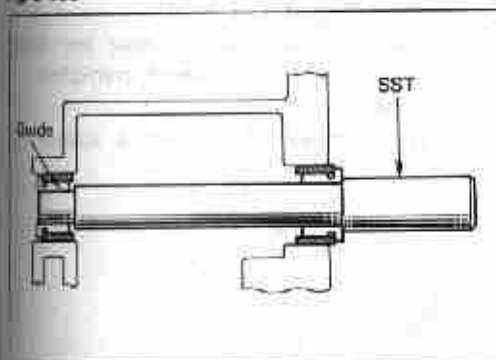
Limit	0.08 mm (0.0032 in)
Standard	0.03 – 0.07 mm (0.0012 – 0.0028 in)

Fig. 5-132



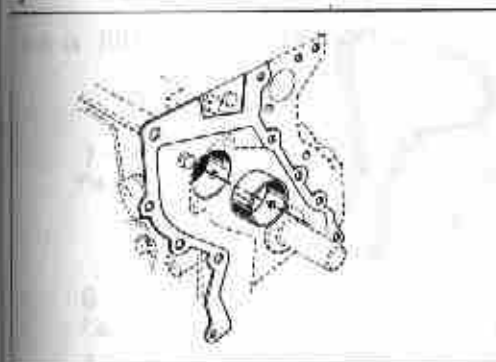
3. Bearing replacement.
(1) Drive out plug from cylinder block.

Fig. 5-133



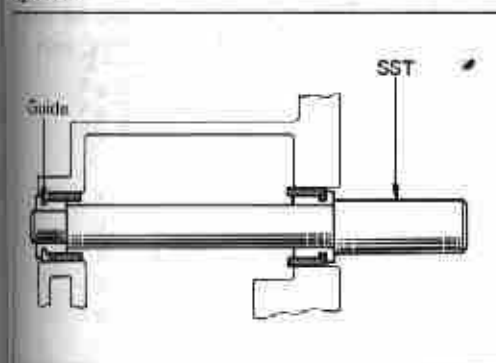
- (2) Remove front bearing.
Use SST [09233-33010] as shown.

Fig. 5-134



- (3) Align bearing oil hole.

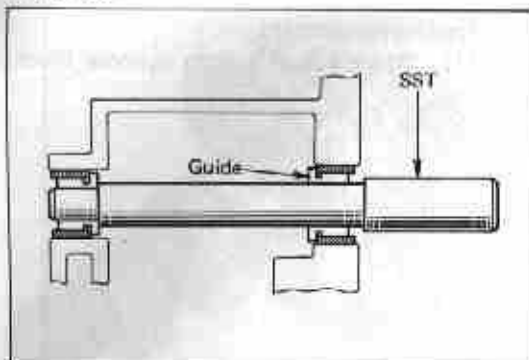
Fig. 5-135



- (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



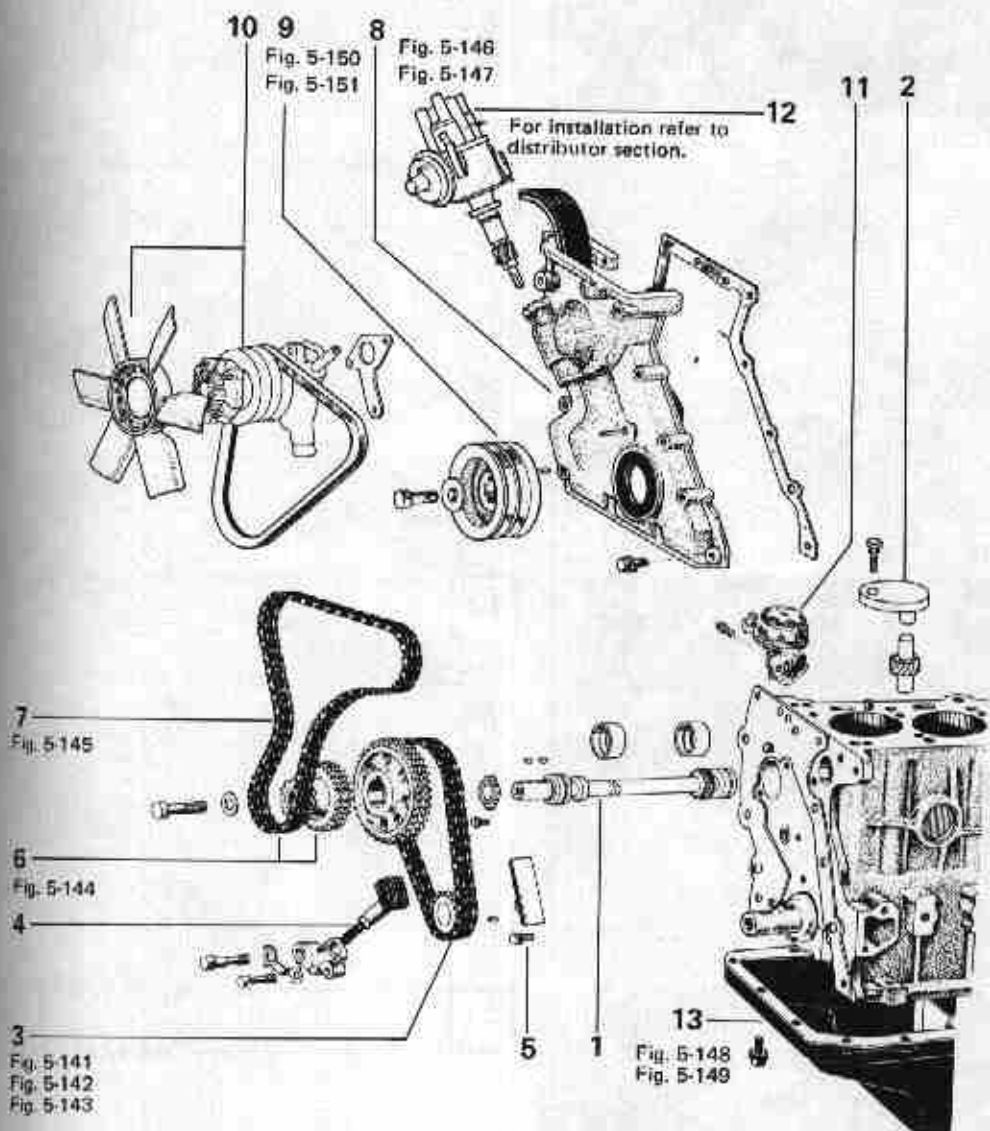
- (3) After driving in the seal, be sure to coat the seal lip lightly with MP grease.

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

Fig. 5-141



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

Fig. 5-142



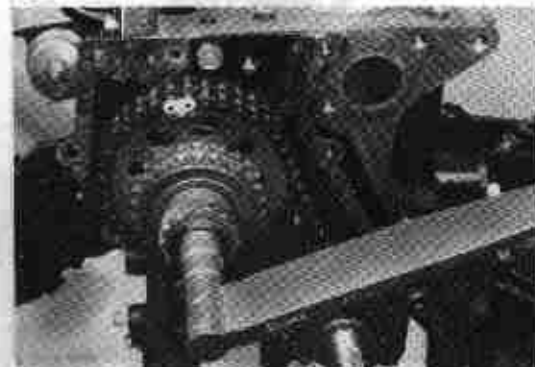
Assemble the crankshaft gear and pump drive shaft gear to the No. 1 chain so that their respective marks are aligned.

Fig. 5-143



Drive in two gears simultaneously to shafts.

Fig. 5-144

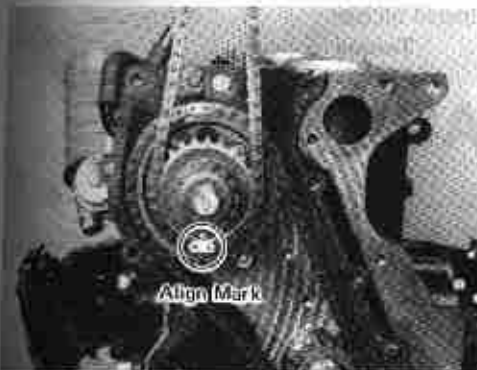


Tighten camshaft drive gear bolt.

Torque

6.0–7.0 kg-m (43.4–50.6 ft-lb)

Fig. 5-145



Align the No. 2 chain and gear matchmarks and install.

Fig. 5-146



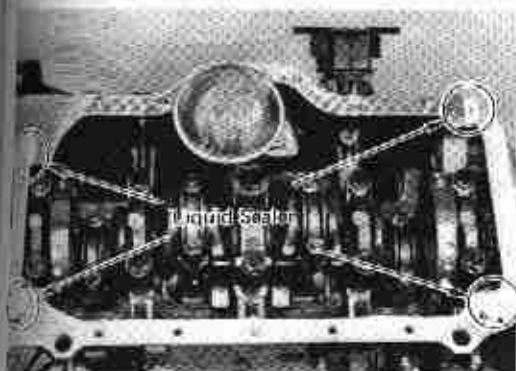
Be careful not to drop the chain inside the housing.

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 sealer to the areas indicated in the figure.

Fig. 5-149



Install oil pan.

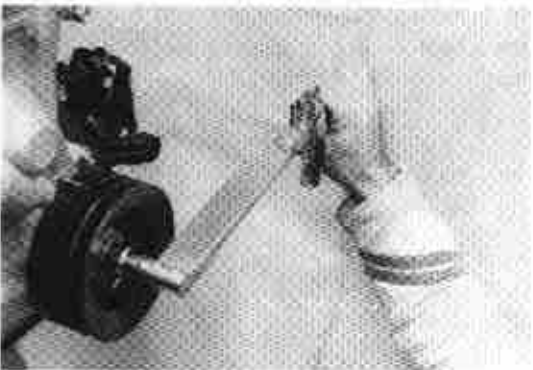
Torque**0.4–0.8 kg-m (2.9–5.8 ft-lb)**

Fig. 5-150



Drive in crankshaft pulley with SST (09214-60010).

Fig. 5-151



Tighten claw nut.

Torque**12 – 15 kg-m (87 – 108 ft-lb)**