

Fig. 2-28 ① Adjusting nut

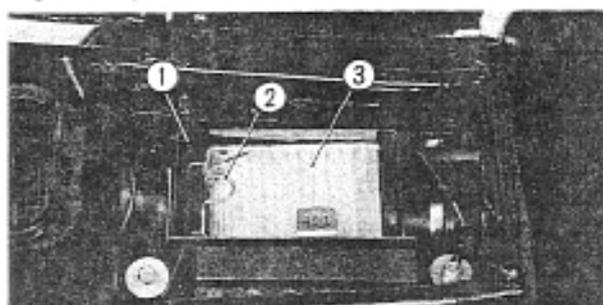


Fig. 2-29 ① Air cleaner case ② Set spring  
③ Air cleaner

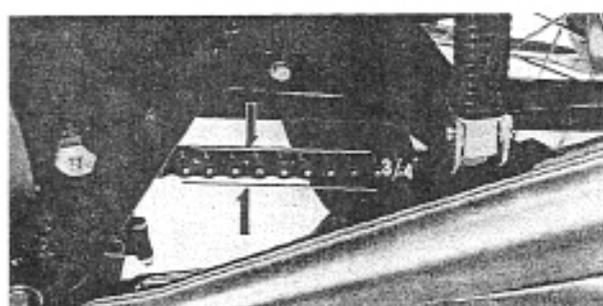


Fig. 2-30 Checking drive chain sag

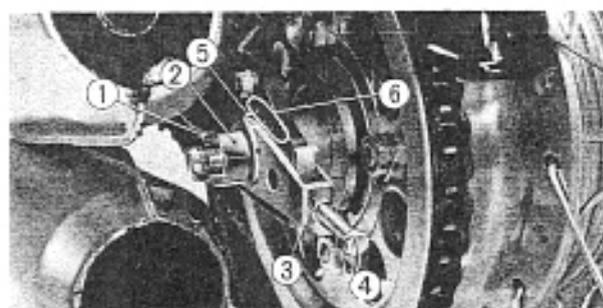


Fig. 2-31 ① Cotter pin ④ Adjusting nut  
② Axle nut ⑤ Index mark  
③ Lock nut ⑥ Side scale

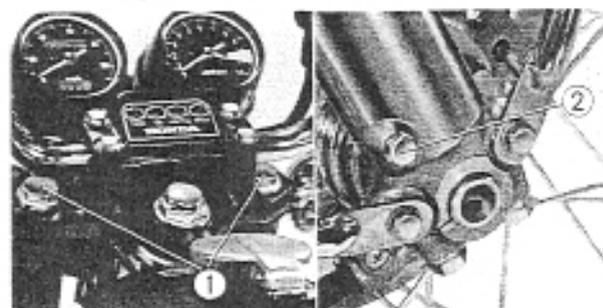


Fig. 2-32 ① Front fork bolts  
② Drain bolt

- To adjust the free travel at the tip of the pedal, turn the adjusting nut. Turning the nut clockwise (in direction "A") will decrease the free travel, and vice versa (in direction "B").  
Specified free travel: 20~30 mm (0.8~1.2 in.)

## 9. AIR CLEANER

- Open the seat.
- Remove the tool tray and air cleaner cover.
- Remove the set spring to remove the air cleaner element.
- Lightly tap the element by hand and apply a blast of compressed air from inside.
- Check the hole at the bottom of the air cleaner case for clogging.

## 10. DRIVE CHAIN

### Checking drive chain tension

- Check the chain tension by finger-depressing at a point half way between the sprockets and by measuring the sag.  
Specified sag: 20 mm (3/4 in.)

- To adjust, remove the cotter pin, loosen the axle nut and lock nut, and turn the adjusting nut in either direction.  
Upon adjustment, align the index marks on the right and left drive chain adjusters with the same notches in the side scales. Tighten the axle nut and install the cotter pin.

## 11. FRONT FORK

### Changing fork oil

- Loosen the front fork bolts and drain bolts. Drain oil out of the fork cylinders.
- Retighten the drain bolts and fill the front fork cylinders with any brand of automatic transmission fluid for motorvehicle.  
Capacity: 105 cc (3.6 ozs.) per cylinder

#### NOTE:

- \* 125 cc (4.2 ozs.) oil will be required to fill one fork when disassembled.
- \* Torque the front fork bolt to the specification.

### III. ENGINE

Courtesy of  Honda4Fun  
www.hondafour.com www.honda4fun.com

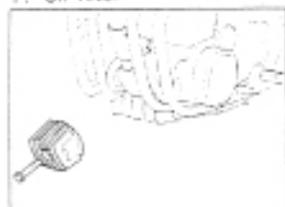
#### 1. ON-VEHICLE SERVICING

Parts to be serviced	Ref. pages
Cylinder head and camshaft	12
Cylinder and pistons	12
Oil Pump and oil filter	18
Clutch	20
Kick starter	22
Gear shift mechanism	23
Cam chain tensioner	30
Carburetor	35
Electrical system (generator and contact points)	—

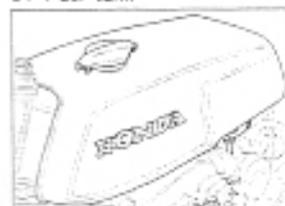
#### 2. ENGINE REMOVAL AND INSTALLATION

The preliminary works for the engine removal are shown in the diagram below. Proceed in the numerical order shown. To install, reverse the removal order.

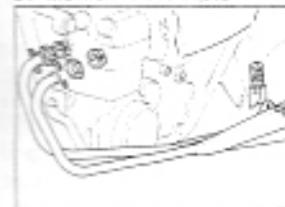
1. Oil filter



2. Fuel tank



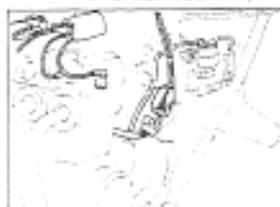
3. Muffler Foot rests



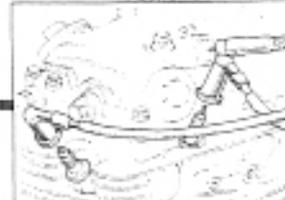
4. L. crankcase cover



5. Drive chain

6. Ignition coil/Starter cable/  
Wire harness coupler

7. Throttle cable

8. Spark plug caps  
Tachometer cable

9. Clutch cable

10. Carburetor  
Air cleaner chamber

11. Hanger bolts

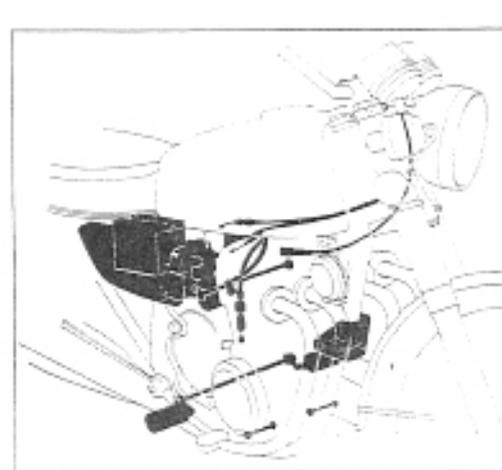
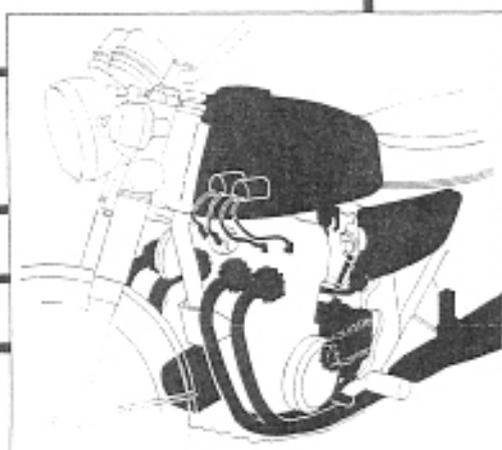
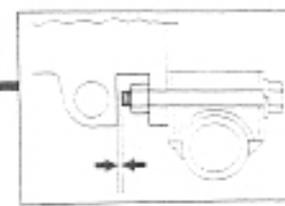
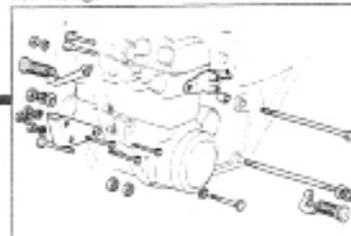
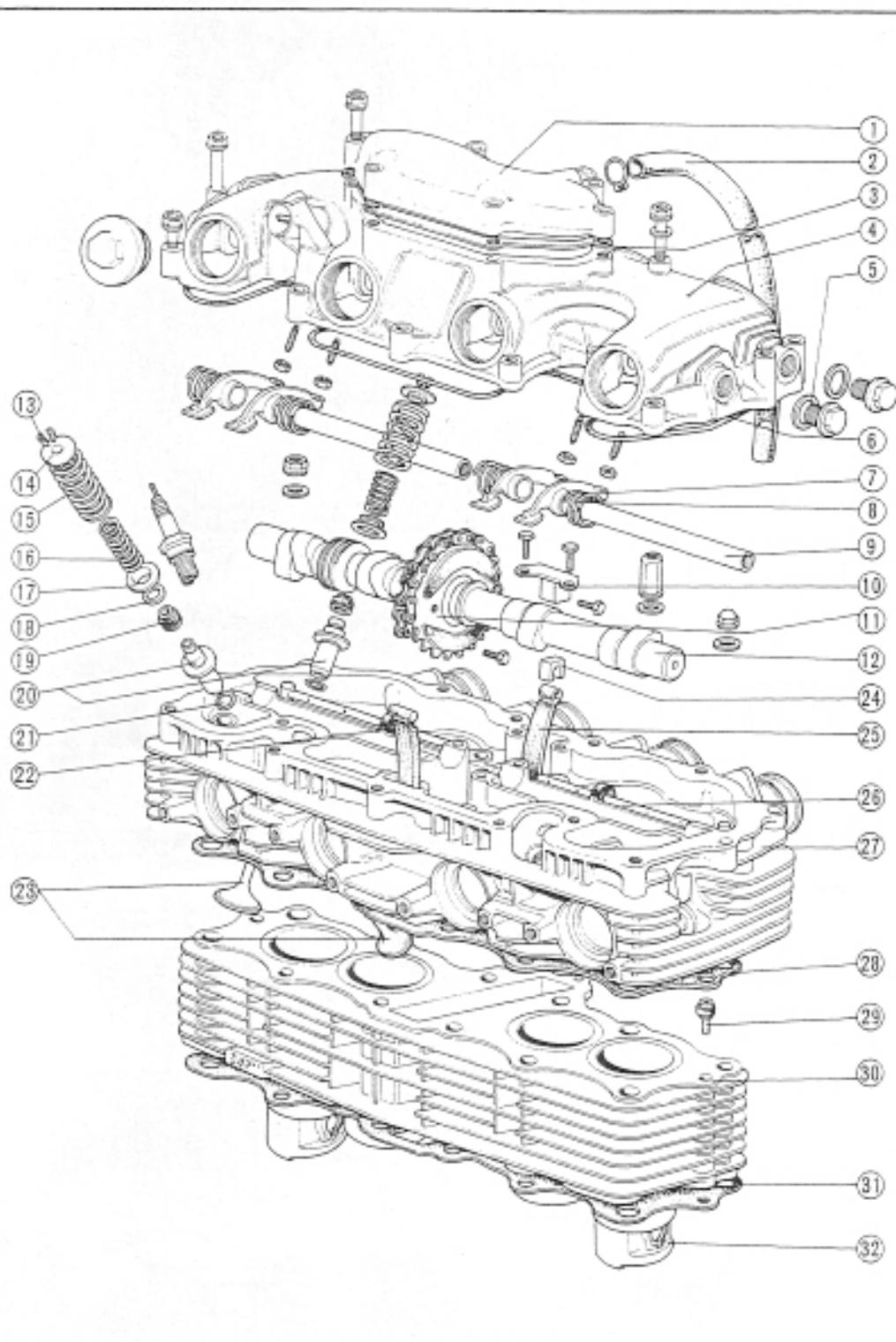


Fig. 3-1

Use specified hanger bolts (10x75mm) at lower crankcase front. Be sure to install spring washer

CYLINDER HEAD, CAMSHAFT, CYLINDER AND PISTONS



- ① Breather cover
- ② Breather tube
- ③ Breather cover packing
- ④ Cylinder head cover
- ⑤ Sealing bolts (four)
- ⑥ Cylinder head cover packing
- ⑦ Valve rocker arms (eight)
- ⑧ Rocker arm side springs (eight)
- ⑨ Rocker arm shafts (four)
- ⑩ Cam chain tensioner holder
- ⑪ Cam sprocket
- ⑫ Camshaft
- ⑬ Valve cotters (sixteen)
- ⑭ Valve spring retainers (eight)
- ⑮ Outer valve springs (eight)
- ⑯ Inner valve springs (eight)
- ⑰ Outer seats (eight)
- ⑱ Inner seats (eight)
- ⑲ Valve stem seals (eight)
- ⑳ Intake and exhaust valve guides (four each)
- ㉑ O-rings (eight), 10×1.6
- ㉒ Cam chain guide
- ㉓ Intake and exhaust valves (four each)
- ㉔ Tensioner dampers (two)
- ㉕ Tensioner slipper
- ㉖ Oil pipes (two)
- ㉗ Cylinder head
- ㉘ Cylinder head gasket
- ㉙ Oil control orifice valves (two)
- ㉚ Cylinder
- ㉛ Cylinder packing
- ㉜ Pistons (four)

Fig. 3-2

**Disassembly**

1. Open the seat. Remove the fuel tank.
  2. Remove the ignition coils.
  3. Remove the breather cover.
  4. Disconnect the tachometer cable.
  5. Remove the eight tappet hole caps and loosen the rocker arm adjusting screws. Then remove the cylinder head cover. To remove the rocker arm shaft, remove the cap nut and screw a 10 mm (pitch 1.25 mm) bolt in the shaft.
  6. Remove the muffler.
  7. Remove the four spark plug caps and remove Nos. 2 and 3 spark plugs.
  8. Remove the cam chain tensioner holder and remove the cam chain tensioner slipper.
  9. Remove the point cover.
  10. Hand-rotate the crankshaft at the special nut until one of the cam sprocket knock bolts comes upward, and remove the bolt. Further rotate the crankshaft a full turn to remove another bolt.
  11. Remove the cam sprocket from the camshaft and remove the cam chain.
  12. Pull out the camshaft from the right side.
- NOTE:**  
Hold the cam chain with wire or the like to prevent the chain from falling in the crankcase.
13. Remove the air cleaner element and loosen the air cleaner chamber retaining screw.

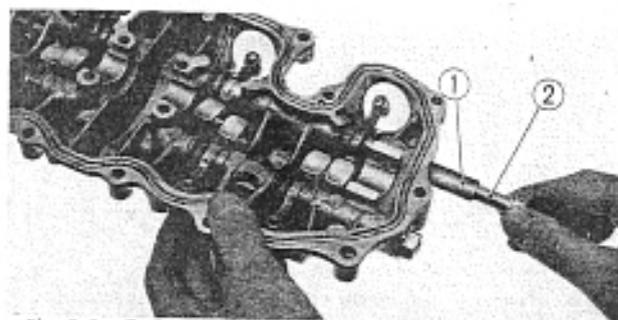


Fig. 3-3 ① Rocker arm shaft  
② 10mm (pitch 1.25 mm) bolt

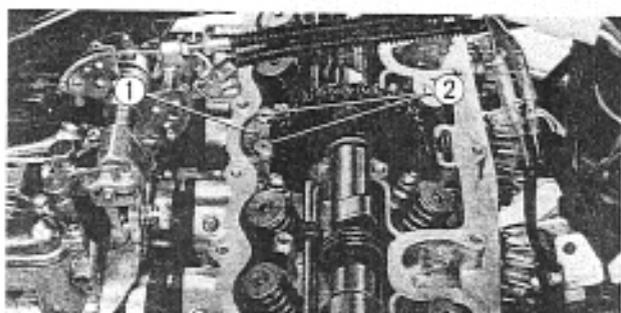


Fig. 3-4 ① Cam chain tensioner holder  
② 6x20 bolts

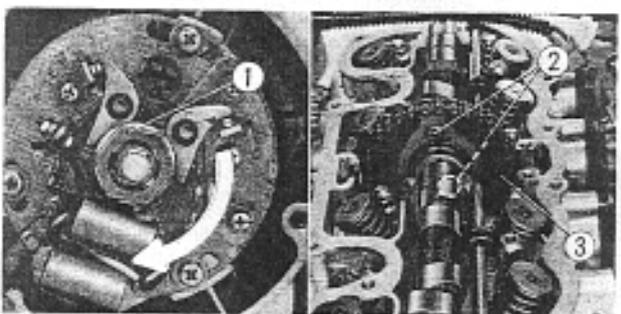


Fig. 3-5 ① Special nut ② Cam sprocket  
③ Knock bolts

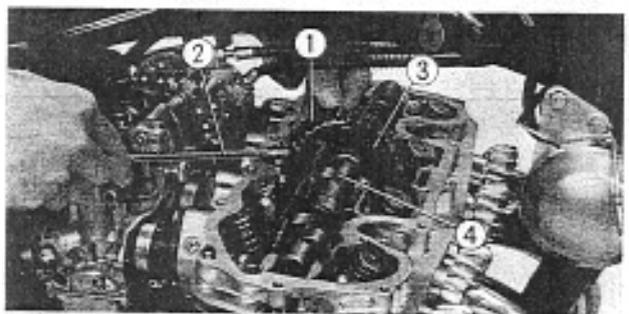


Fig. 3-6 ① Cam chain ③ Cam sprocket  
② Screwdriver ④ Camshaft

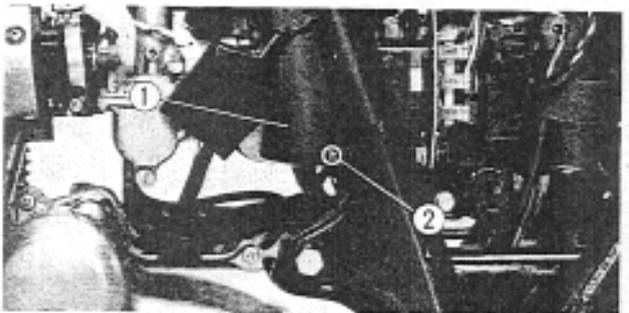


Fig. 3-7 ① Air cleaner chamber  
② Retaining screw

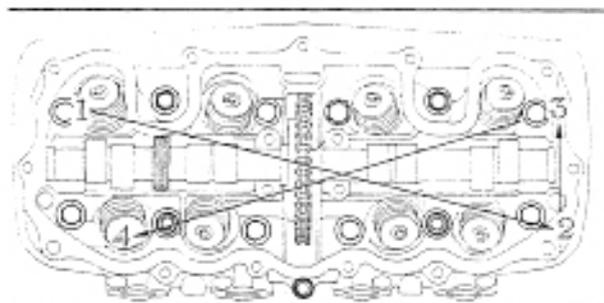


Fig. 3-8 Removal sequence of cylinder head securing bolts

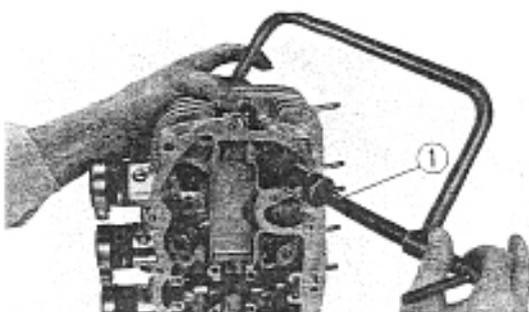


Fig. 3-9 ① Valve lifter

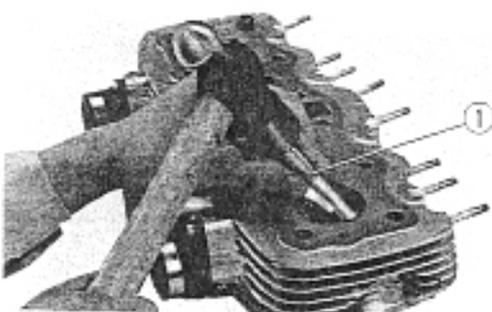


Fig. 3-10 ① Valve guide remover



Fig. 3-11 ① Piston pin clip  
② Waste cloth

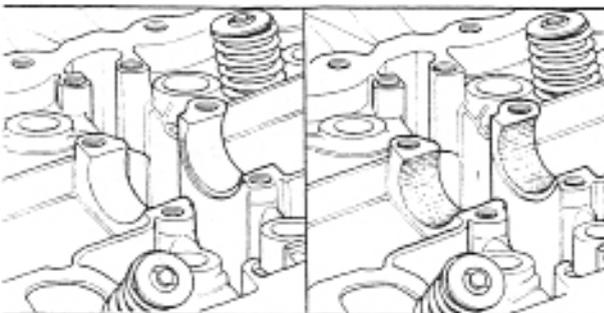


Fig. 3-12 Good No good

14. Remove the carburetors.
15. Loosen the cylinder head securing bolts in a criss-cross pattern, starting at external one as shown in Fig. 3-8.
16. Take out the cam chain guide and remove the cylinder head.

1) Use valve lifter (Tool No. 07031-32901) to compress the valve spring and remove the valve coters. Then remove the valve and valve spring.

2) Replacing valve guide  
Use valve guide remover (Tool No. 07046-32901) to remove the valve guide.

17. Remove the cylinder.

18. Remove the piston pin clips to pull out the piston pin. Remove the piston.

**NOTE:**

1. Put a waste cloth or the like under the piston not to fall the pin clips in the crankcase.
2. Take care not to damage the piston when removing the piston rings.

**Inspection**

**Camshaft and cylinder head**

1. Check the rocker arm-to-rocker arm shaft clearance.
2. Check the cylinder head camshaft bearing surfaces for scratches and excessive wear.

3. Measure the height of each cam.
4. Check the camshaft center journal for deflection.
5. Measure the valve seat width.

Coat the valve seat with prussian blue thinly and uniformly. Hold the valve against the seat and rotate it one turn. If the prussian blue shows a band of uniform width all the way around both seat and valve, the valve contact is proper. In case the contact is improper, lap the valve and recheck. If still defective, reface the valve seat.

**NOTE:**

When using a valve seat grinder, be sure to follow the instructions given by the tool manufacturer.

6. Measure the outside diameter of the valve stem.
7. Check the valve-to-valve guide clearance.
8. Measure the free length of the valve spring.
9. Check the cylinder head surface for flatness.

**Cylinder and pistons**

1. Measure the inside diameter of each cylinder.  
Measure the inside diameter of cylinder with a cylinder gauge at the top, center and bottom, in parallel (X) with, and at right angles (Y) to, the center line of the cylinder.
2. Measure the outside diameter of the piston at its skirt.
3. Measure the inside diameter of the piston pin hole.
4. Measure the outside diameter of the piston pin.
5. Check the piston ring-to-piston pin groove clearance.
6. Check the piston ring end gap.  
Insert the cylinder skirt to make measurement of the gap using a thickness gauge.

**Reassembly****Piston rings**

1. Use the piston rings of the same make in a set. Install the rings to the piston with their markings facing upward.

Marking	Manufacturer
N	NIHON PISTON RING
R	RIKEN PISTON RING
T	TEIKOKU PISTON RING

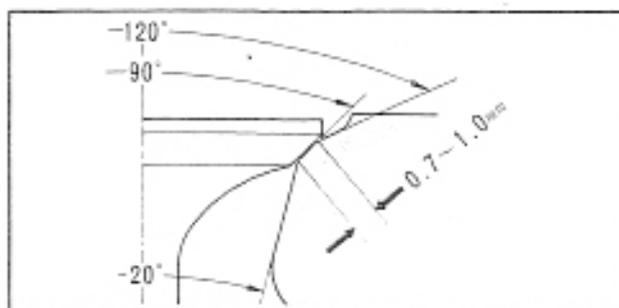


Fig. 3-13 Valve seat contact

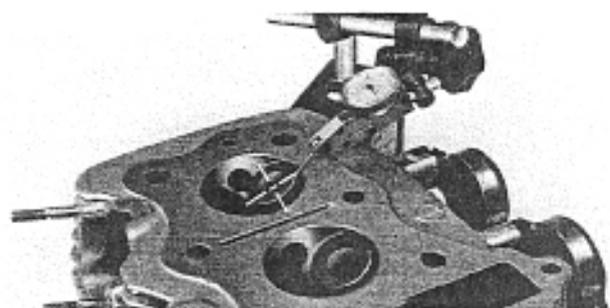


Fig. 3-14 Checking valve-to-valve guide clearance

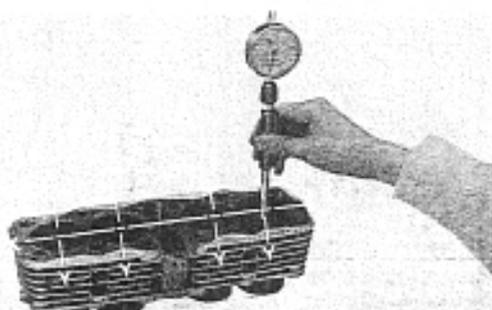


Fig. 3-15 Checking inside diameter of cylinder



Fig. 3-16 Checking piston ring end gap

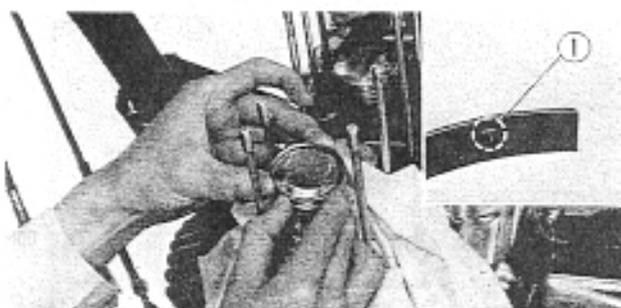


Fig. 3-17 (1) Marking



Fig. 3-18 ① Piston ring gap  
② Piston mark

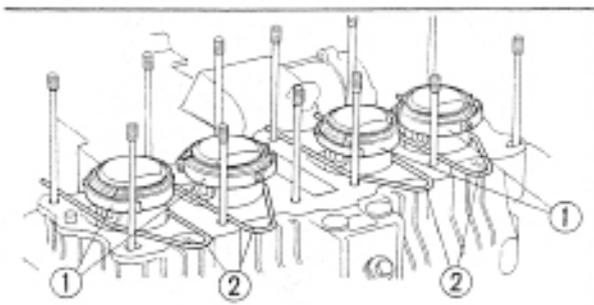


Fig. 3-19 ① Piston ring compressors  
② Piston bases

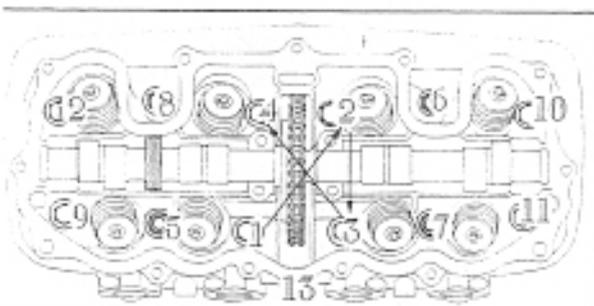


Fig. 3-20 Cylinder head nuts tightening sequence

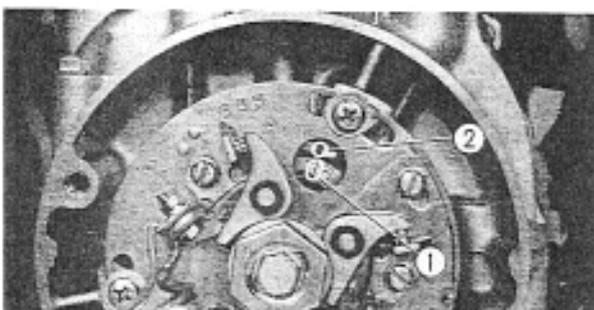


Fig. 3-21 ① "T" 1.4 mark  
② Matching mark

- When a new ring is used, check it for proper fit in the piston ring groove.
- Position the rings so that their gaps of the top, second and oil rings are staggered 120°, each being apart from the direction at right angles to the piston pin.

#### Pistons

Install the piston with the arrow mark on the piston head toward the front (exhaust side) and "IN" mark toward the rear (intake side) of the engine.

#### Cylinder

- Rotate the crankshaft so that all the four pistons will rise in a line and install the piston bases (Tool No. 07033-33301) to the pistons. Set the base in the groove below the piston boss. Then install the piston compressors (Tool No. 07032-33301) on the piston rings. Gradually lower the cylinder until all the piston rings enter the cylinder bores. Remove the piston bases and piston compressors.

#### NOTE:

Apply a coat of engine oil to the piston rings before installing the pistons into the cylinder.

- Check the oil control orifice valve for clogging before installation.

#### Cylinder head

- When installing a new valve guide, drive it in using valve guide driver (Tool No. 07047-32901) and ream with reamer (Tool No. 07008-20002).
- Apply a coat of engine oil to the threads of the nut and tighten the nuts in a criss-cross pattern, starting at the internal one as shown in Fig. 3-20.

Torque specification :

200kg-cm (14.5ft-lbs)

#### Valve timing

- Rotate the crankshaft and align the mark "T" 1.4 on the spark advancer with the matching mark as shown in Fig. 3-21.

2. Install the cam chain to the cam sprocket so that the matching lines on the sprocket will be aligned with the upper surface of the cylinder head.
3. Install the cam sprocket to the camshaft with two knock bolts.

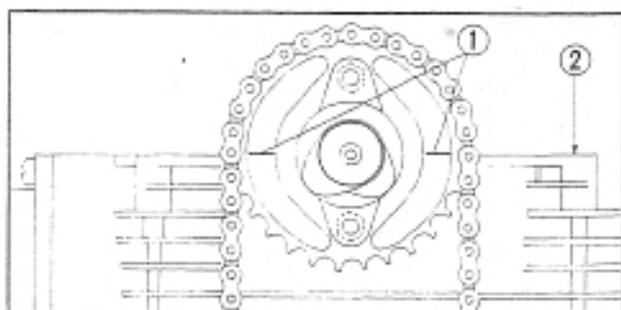


Fig. 3-22 ① Cam sprocket matching lines  
 ② Cylinder head upper surface

#### Cylinder head cover

1. Apply a liquid packing to the cylinder head cover packing groove. Install the packing in place. Replace packing if damaged.

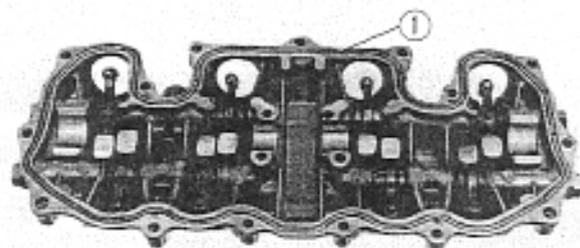


Fig. 3-23 ① Cylinder head cover packing

2. Tighten the bolts securing the cylinder head cover in the sequence as shown in Fig. 3-24.

Torque specification :

70~110 kg-cm (5.1~8.0 lbs-ft)

#### NOTE:

The torque difference of each bolt should be within 20 kg-cm (1.5 lbs-ft).

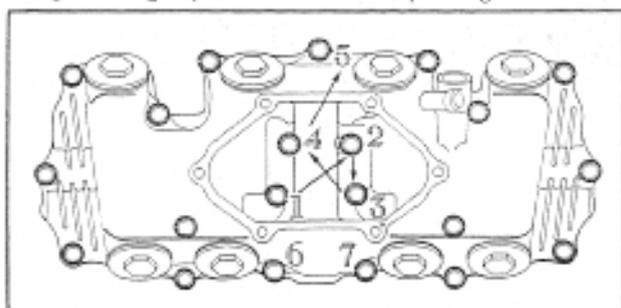


Fig. 3-24 Tightening sequence of cylinder head cover bolts

### 3. OIL PUMP AND OIL FILTERS

- The oil pump is a double trochoid pump driven by the primary shaft.
- One oil filter uses a screen and the another, paper element to provide two-stage filtering.

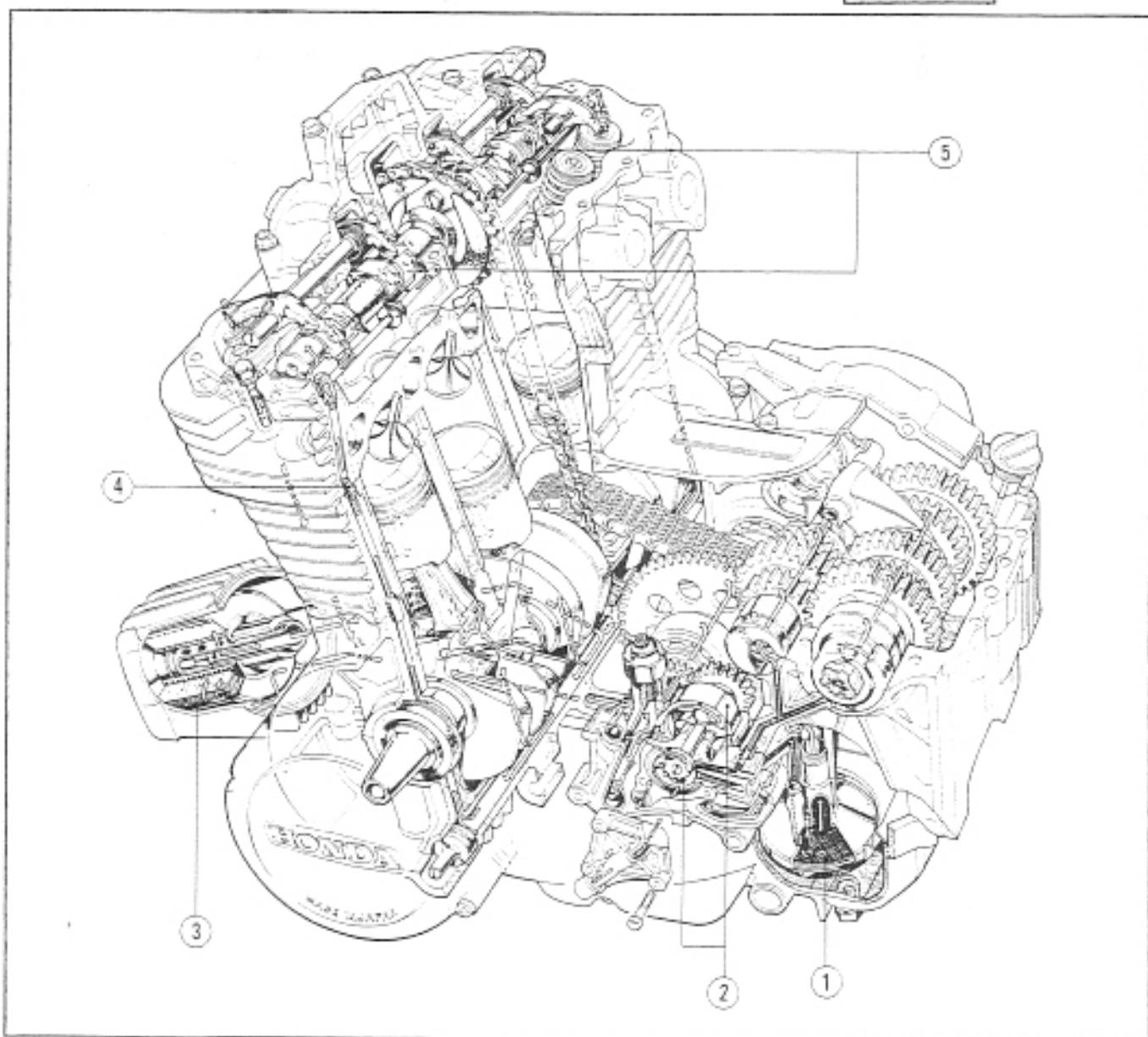
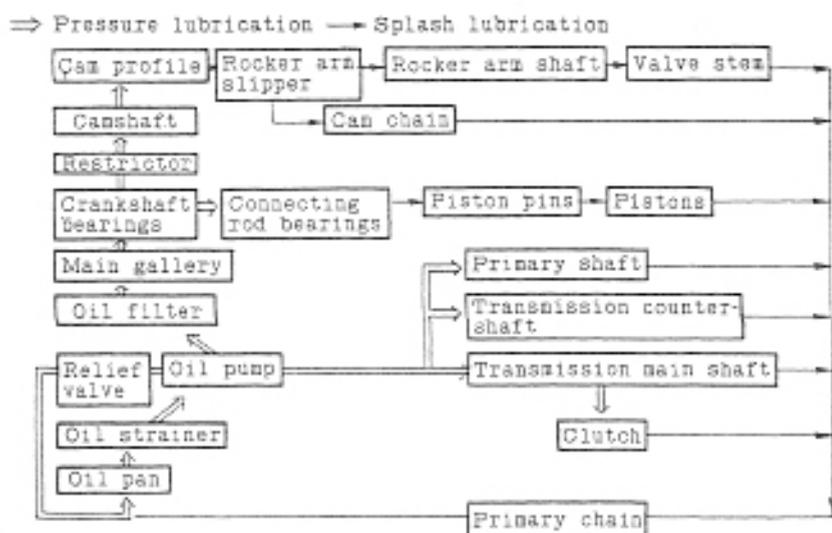


Fig. 3-25 Lubricating oil circuits

① Oil strainer    ② Oil pump    ③ Oil filter    ④ Oil control orifice valve    ⑤ Oil pipe

**Disassembly****Oil pump**

1. Remove the gear change pedal and left-hand side foot rest.
2. Remove the L. crankcase cover.
3. Disconnect the oil pressure switch cord.
4. Remove the oil pump.

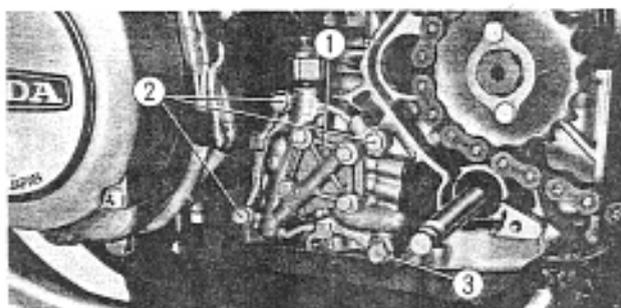


Fig. 3-26 ① Oil pump ② 6 mm bolts  
③ 8 mm bolt

**Oil screen filter**

1. Drain the crankcase.
2. Remove the oil pan.
3. Remove the oil screen filter.

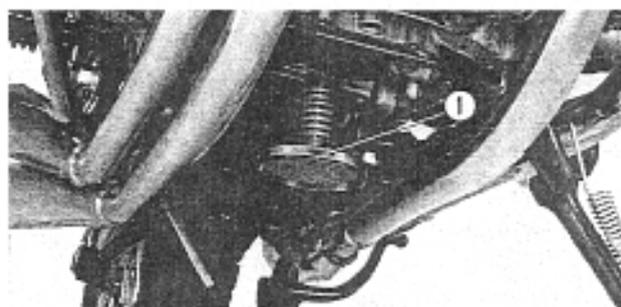


Fig. 3-27 ① Oil screen filter

**Oil filter**

1. Loosen the oil filter center bolt to remove the oil filter.

**Inspection****Oil pump**

1. Check the outer rotor-to-pump body clearance.
2. Check the inner rotor-to-outer rotor clearance.
3. Check the relief valve for dust entry and for operation.

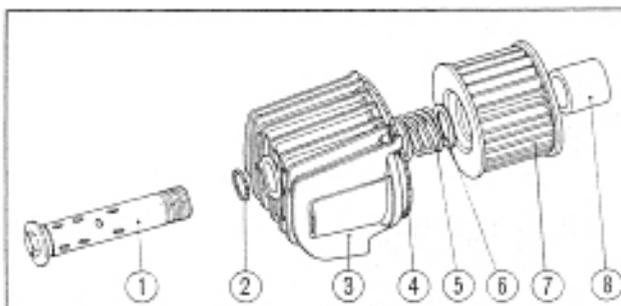


Fig. 3-28 ① Oil filter center bolt  
② O-ring, 15×2.5  
③ Oil filter case  
④ O-ring, 89×4.5  
⑤ Set spring  
⑥ Spring seat  
⑦ Oil filter element  
⑧ Oil filter bolt collar

**Reassembly**

1. Be sure to install O-rings in their proper locations as shown.
2. Check the oil level in the crankcase and add oil if necessary.
3. Make sure the oil filter is properly assembled. (See Fig. 3-28)

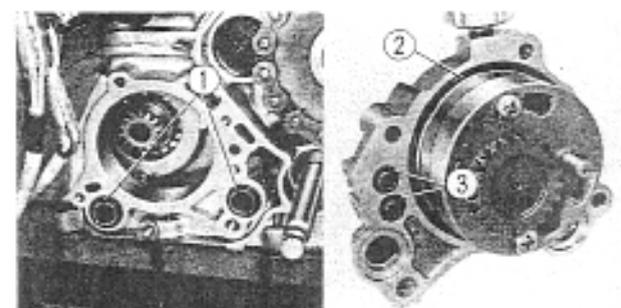


Fig. 3-29 ① O-ring, 15×2.5  
② O-ring, 63×2.5  
③ O-ring, 9.9×1.5

CLUTCH

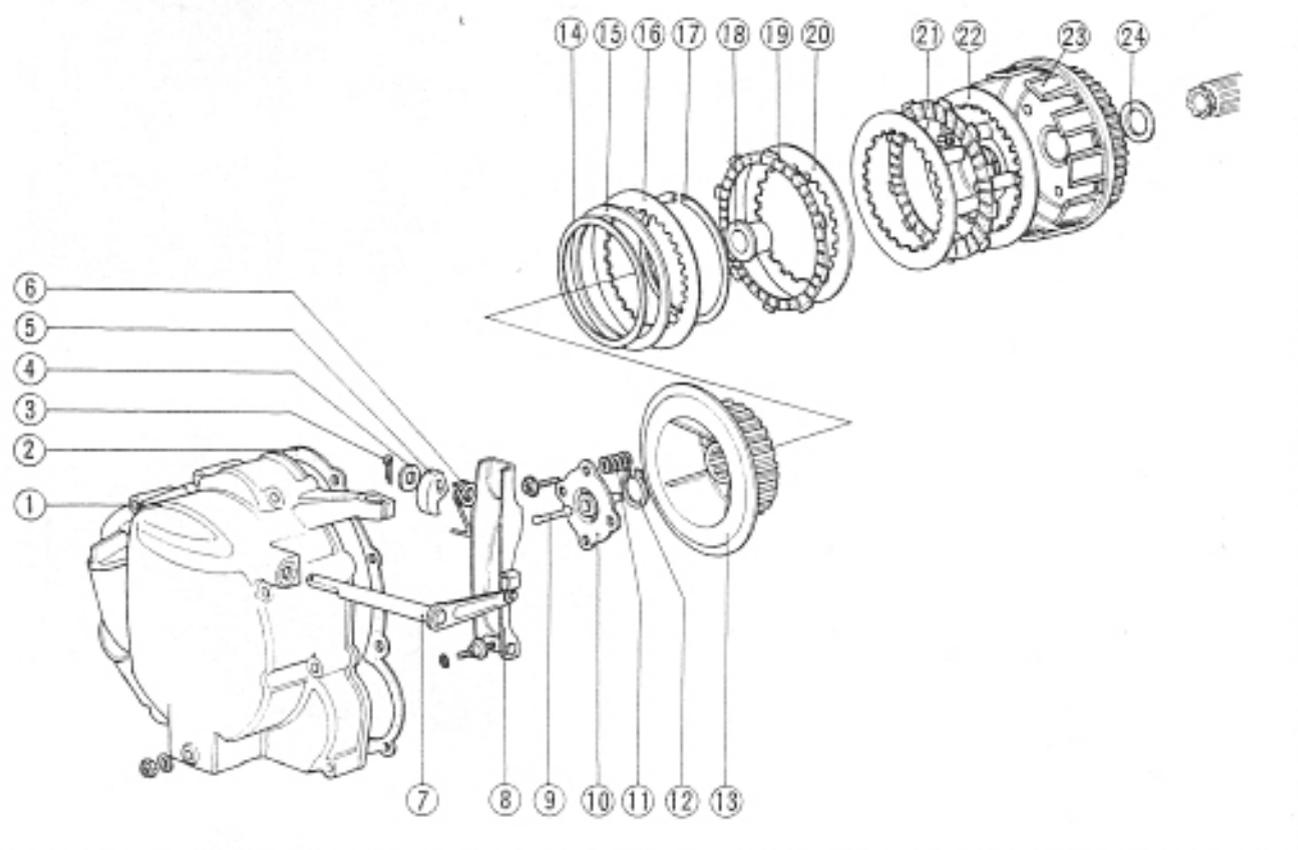


Fig. 3-30

- |                              |                          |                          |                               |
|------------------------------|--------------------------|--------------------------|-------------------------------|
| · Crankcase cover, R         | ⑦ Clutch lever           | ⑬ Clutch center          | ⑲ Clutch friction disc        |
| · Cover packing              | ⑧ Clutch adjusting lever | ⑭ Disc spring seat       | ⑳ Clutch plates (six)         |
| · Cotter pin, 2.0×15         | ⑨ Clutch lifter rod      | ⑮ Clutch disc spring     | ㉑ Clutch friction discs (six) |
| · Washer, 10mm               | ⑩ Clutch lifter plate    | ⑯ Clutch plate B         | ㉒ Clutch pressure plate       |
| · Clutch lifter cam          | ⑪ Clutch springs (four)  | ⑰ Special set ring, 92mm | ㉓ Clutch outer                |
| · Clutch lever return spring | ⑫ Snap ring, 25mm        | ⑱ Collar, 25mm           | ㉔ Thrust washer, 25mm         |

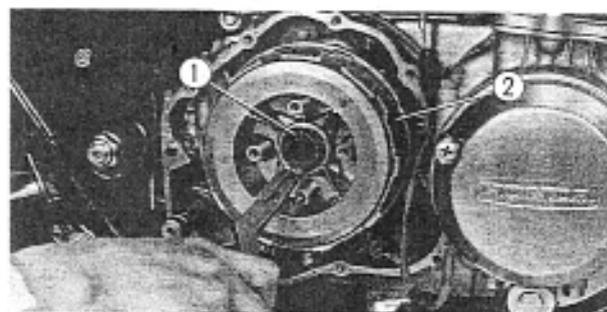


Fig. 3-31 ① 25 mm snap ring  
② Clutch assembly

Disassembly

1. Drain oil from the crankcase.
2. Remove the right-hand side foot rest and kick starter pedal.
3. Remove the R. crankcase cover
4. Remove the clutch pressure plate.
5. Remove the 25mm snap ring and remove the clutch assembly.
6. Remove the 92mm special set ring from the clutch center. Disassemble the clutch plate B, clutch disc spring and disc spring seat.
7. Remove the clutch lever and clutch adjuster lever from the R. crankcase cover.

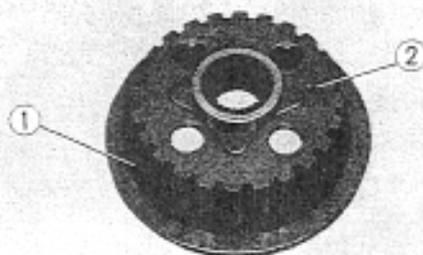


Fig. 3-32 ① 92mm special set ring  
② Clutch center