

Fig. 125 ① Gear shift drum ② Micrometer

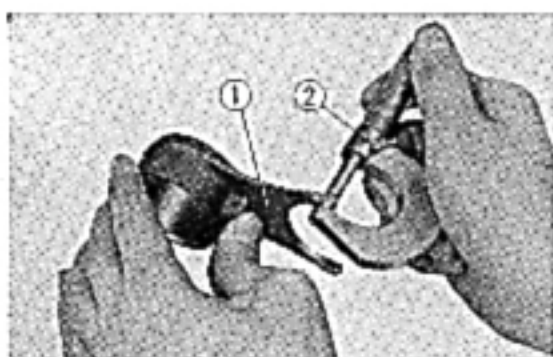


Fig. 126 ① Gear shift fork ② Micrometer

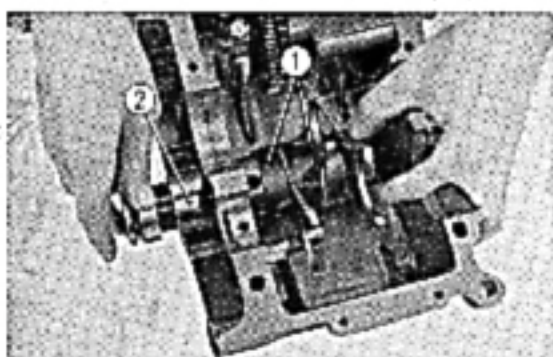


Fig. 127 ① Gear shift forks ② Gear shift drum

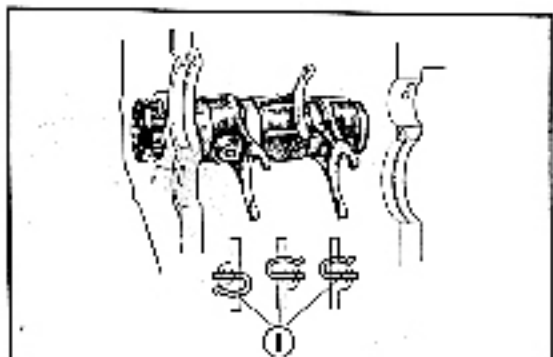


Fig. 128 ① Guide pin clip

B. Inspection

1. Measure the diameter of the gear shift drum with a micrometer and the shift fork with an inside micrometer. Replace any part which exceeds the serviceable limit.
2. Measure the width of the gear shift fork fingers with a micrometer. Replace if beyond serviceable limit.

C. Reassembly

1. Set the left, right and center gear shift forks into the upper crankcase as shown in Fig. 126, then install the gear shift drum.

2. Insert the guide pin into the shift fork and fix it with the guide pin clip.

Note:

Make sure that the guide pin clip is installed in the proper direction.

3. Place the counterbored section of the shift drum as shown Fig. 128, and install the steel ball, the spring cap, and the spring then lock with the shift drum screw.

Next, bend up the tab on the guide screw lock washer to lock the guide screw.

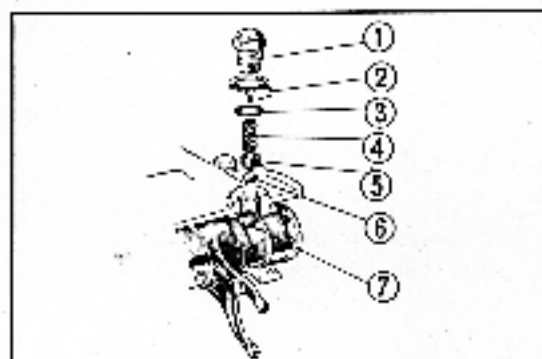


Fig. 128 ① Guide screw ② Spring
③ Spring cap ④ Steel ball
⑤ O-ring ⑥ Counterbored section

4. Align the neutral switch to the groove in the gear shift drum and lock in place with the 6 mm screw.

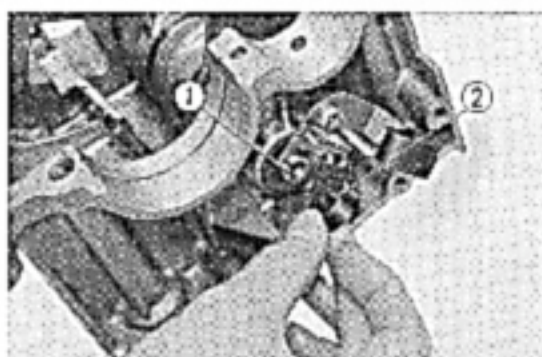


Fig. 130 ① Gear shift drum ② Neutral switch

5. Assemble the transmission into the upper crankcase in accordance with section 10, C, and assemble the upper and lower crankcase.
6. Install the cam plate on the pin of the gear shift drum with the 6 mm flat head screw which has been coated with thread lock cement.

Note:

The pin and the pin hole in the cam plate must be aligned.

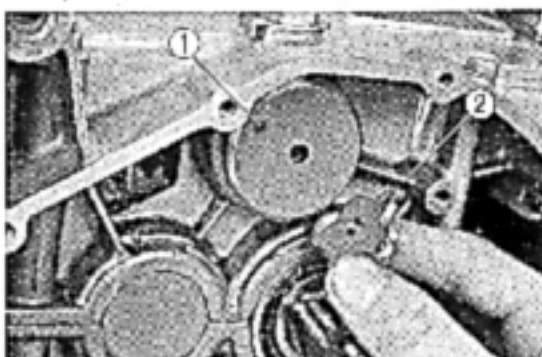


Fig. 131 ① Pin ② Cam plate

7. Insert the spring into the shift drum stopper, install the end of the spring into the crankcase groove as shown in Fig. 131, and tighten the shift drum stopper bolt. After tightening the bolt, make sure that the shift drum stopper operates smoothly. If there is excessive vertical looseness the shift drum stopper should be replaced.



Fig. 132 ① Spring ② Shift drum stopper



8. Install the gear shift arm and make sure that it operates smoothly in both direction.
9. Install the clutch in accordance with section 6. C.

8. CAM CHAIN TENSIONER

The cam chain tensioner is constructed of spring steel on which a layer of heat resistant rubber is vulcanized and a sheet of teflon cemented. It applies pressure against the cam chain and absorbs the shocks produced by the chain. The cam chain guide on the tension side of the cam chain also controls chain vibration.

An adjustment screw is located at the rear of the cylinder block.

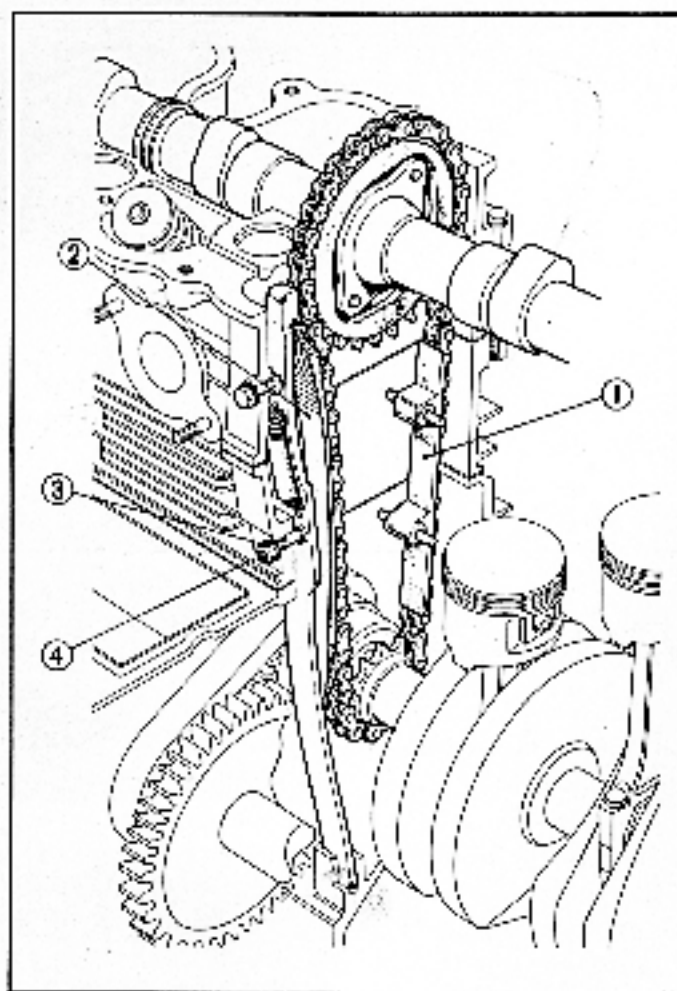


Fig. 133

- ① Cam chain guide
② Cam chain tensioner

- ③ Lock nut
④ Screw

A. Disassembly

1. Remove the cam chain tensioner and the chain guide in accordance with section 3. A.

B. Inspection

1. Make sure that the gear of the cam chain tensioner adjuster is properly meshed with the rack, and inspect for smooth operation.

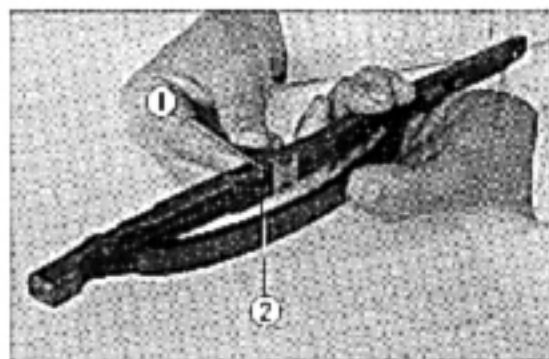


Fig. 134 ① Gear ② Rack

C. Reassembly

1. Perform reassembly in accordance with section 3. C.

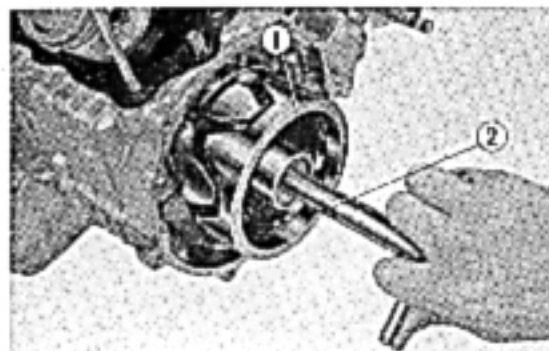


Fig. 135 ① Generator rotor
② Generator rotor puller

9. CRANKSHAFT AND CONNECTING ROD

A. Disassembly

1. Dismount the engine in accordance with section 2. A.
2. Disassemble the cylinder head, cylinder, and piston in accordance with section 3. A.
3. Remove the generator cover and remove the rotor using a generator rotor puller. (Tool No. 07011-21601)
4. Remove the point cover, and the special washer by removing the 6mm bolt. Next, unscrew the three 5mm screws and remove the contact breaker assembly and the spark advancer.
5. Remove the clutch and the gear shift arm in accordance with section 6. A.
6. Remove the starting motor cover, and dismount the starting motor.

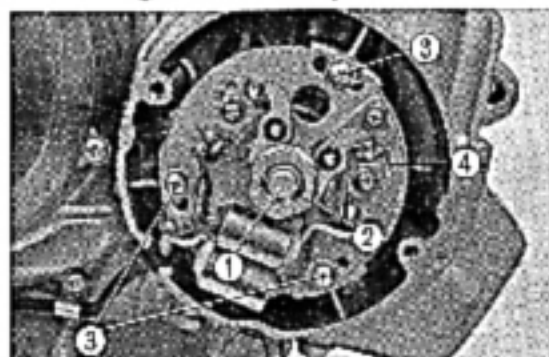


Fig. 136 ① 6mm bolt
② Special washer
③ 5mm screws
④ Contact breaker assembly



Fig. 137 ① Starting motor

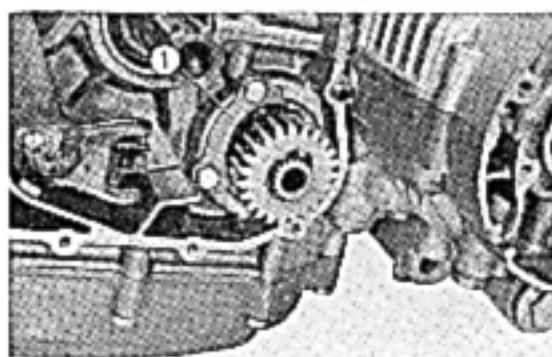


Fig. 138 ① Bearing set plate

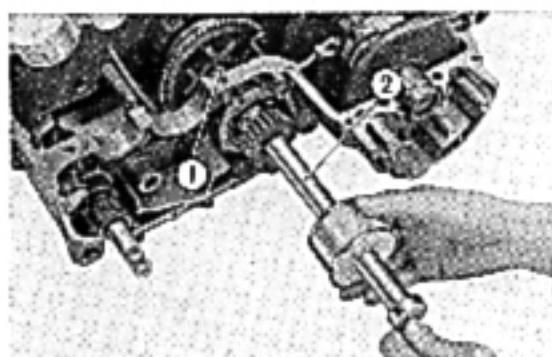


Fig. 139 ① Primary shaft ② Primary shaft puller



Fig. 140 ① Primary chain ② Starting clutch

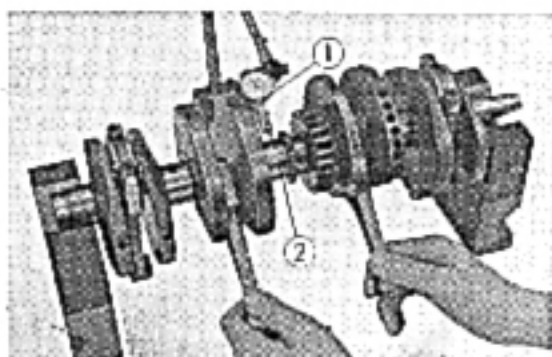


Fig. 141 ① Dial gauge ② Crankshaft

7. Place the engine upside down and unscrew the ten 6 mm bolts to remove the oil pan.

8. Unscrew ten 8 mm bolts and twelve 6 mm bolts from the lower crankcase. Loosen the 8 mm bolts in the reverse order shown in Fig. 151.

9. Then, put the engine in correct position and unscrew three each 8 mm and 6 mm bolts. Tap the upper crankcase lightly with a wooden hammer and separate the upper and lower crankcases.

10. Unscrew two 6 mm bolts and remove the bearing set plate.

11. Pull out the primary shaft using a primary shaft puller (Tool No. 07009-32301).

Note:

Disassembly of the primary shaft, transmission, and kick starter can be performed without removing the cylinder head, cylinder or piston. When removing lower crankcase, follow the sequence 10, 11, 9 and 8 above.

12. Remove the starting clutch from the primary chain.

13. Remove the primary chain and the cam chain from the crankshaft.

B. Inspection

1. Measure crankshaft runout

Support both ends of the crankshaft on V-block and measure the amount of bend in the crankshaft by applying a dial gauge to the center journal and rotating the crankshaft. If the runout beyonds the serviceable limit on the dial gauge, the crankshaft should be replaced.

2. Inspect the crankshaft journals for scoring and uneven wear with a micrometer. If any journal is out-of-round or tapered more than serviceable limit, the crankshaft should be replaced.

3. Measure the crankshaft journal wear.
Cut a length of plasti gauge to the width of the bearing cap. Place the gauge on the bearing parallel to the crankshaft, assemble the crankshaft and torque down the crankcase in accordance with Fig. 151.

Disassemble the crankcase and measure the plasti gauge using the scale provided. If there is a clearance in excess of 0.08 mm (0.0031 in.), the bearing should be replaced.

Note:

When measuring with the plasti gauge, do not turn the crankshaft.

Selection of The Bearing

1. Remove the bearing, assemble and tighten the upper and lower crankcases. Refer to Fig. 151.
2. Measure the inside diameter of all the bearing seats in the vertical direction with a cylinder gauge and select out the corresponding alphabet from the table below.

	mm (in.)
C	35.016~35.021 (1.4179~1.4182)
B	35.006~35.016 (1.4176~1.4179)
A	35.000~35.006 (1.4173~1.4176)

3. Measure the diameter of all the crankshaft journal with a micrometer and also select out the corresponding figure 1 or 2 from the table below.

1	2
32.99~33.00 (1.2987~1.2992)	32.98~32.99 (1.2983~1.2987)

4. According to the alphabet and the figure from item 2 and 3, pick out the proper bearing from A, B, C and D.

Crankshaft classification No.	1	2
Crankcase classification mark		
C	B (Brown)	A (Black)
B	C (Green)	B (Brown)
A	D (Yellow)	C (Green)

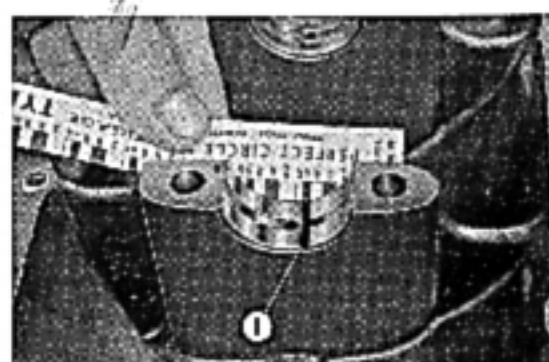


Fig. 142 ① Plasti gauge



Fig. 143 ① Cylinder gauge

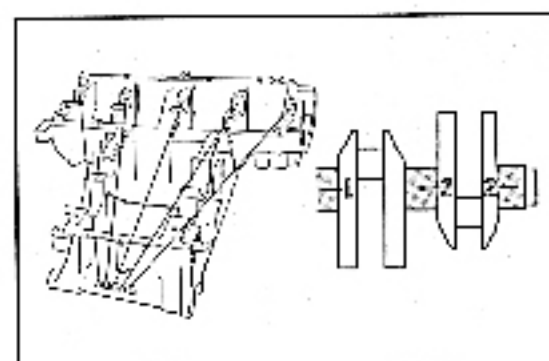


Fig. 144

Note:

The lower crankcase and crankshaft are marked with letters or number at the factory. These are production codes and should not be used or referred to during servicing or repair.

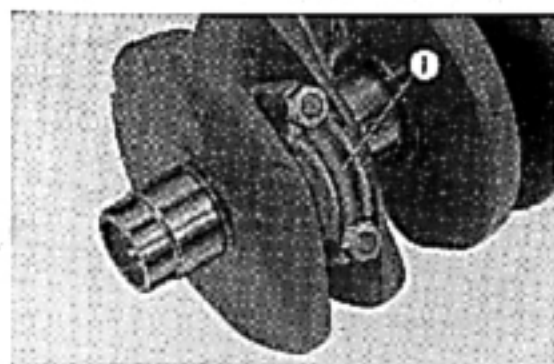


Fig. 145 ① Connecting rod cap

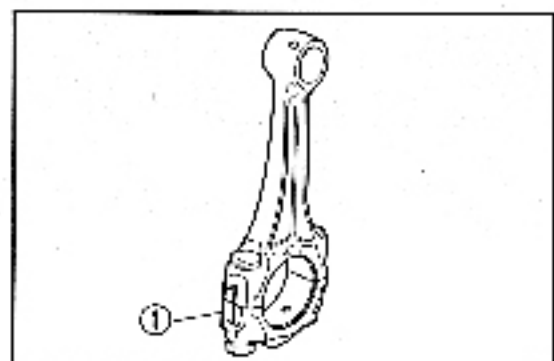


Fig. 146 ① Connecting rod code number

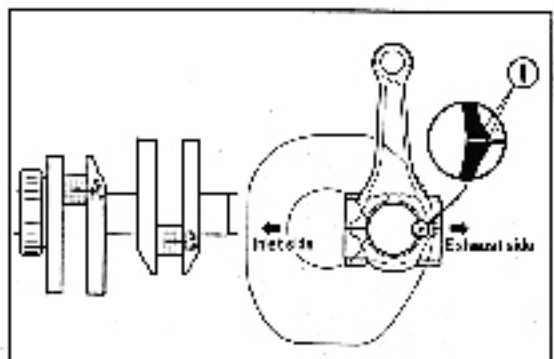


Fig. 147 ① Key (projection)

5. Measure connecting rod large end wear. Separate the cap from the connecting rod and after setting the plasti gauge in place, torque the two rod nuts to 2.0-2.2 kg-m (14.46-15.91 lbs-ft).

Disassemble the cap and measure the plasti gauge. Replace the bearing with new one if beyond the serviceable limit.

Note:

Do not turn the crankshaft while the plasti gauge is installed.

Selection of The Bearing

1. Measure crankshaft pin diameter with a micrometer and select out the corresponding alphabet from the table below.

A	B
34.82~35.03 (1.3775~1.3780)	34.88~34.89 (1.3771~1.3775)

2. Select out the bearing from the table below which coincides with the number (1, 2, 3) stamped on the large end of the connecting rod.

Crank pin classification mark Connecting rod code No.	A	B
3	R (Brown)	A (Black)
2	C (Green)	R (Brown)
1	D (Yellow)	C (Green)

Note:

- The numbers marked on the crankshaft are production codes and should not be referred to during servicing.
- The bearings must be installed on the connecting rod with the key toward the front.



6. Method of designating connecting rod weight.

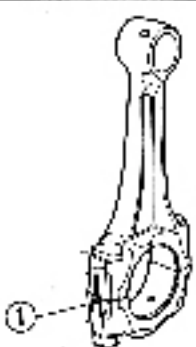
When replacing connecting rod, replace with one having the same weight code. The weight code is stamped at the large end of the connecting rod. When replacing all of the connecting rods, the tolerance of the respective rods should be within 5 grams.

Note:

In the connecting rod weight, that weight of cap and two bolts are included but does not include the bearings.

7. Measure axial clearance using a feeler gauge.

Replace if beyond the serviceable limit.



Code	Weight (gr.)
A	281~287
B	288~290
C	291~295
D	296~300
E	301~305
F	306~310
G	311~315

Fig. 148 (1) Weight code number

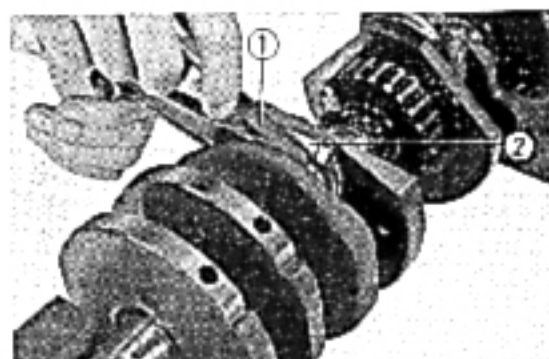


Fig. 149 (1) Feeler gauge
(2) Connecting rod

8. Measure the connecting rod small end.

Measure the diameter of the connecting rod small end with an inside dial gauge. Replace if beyond serviceable limit.

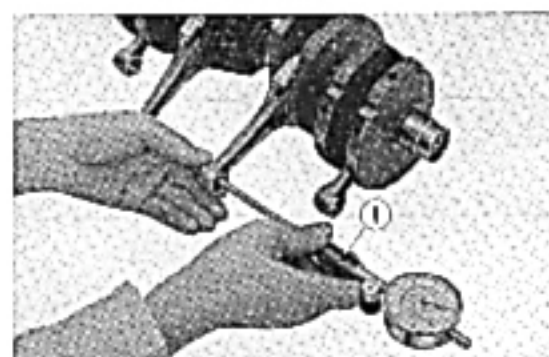


Fig. 150 (1) Inside dial gauge

C. Reassembly

1. Install the primary chain and cam chain on the crankshaft.
2. Install the crankshaft into the lower crankcase.
3. Position the starting clutch and starter gear as in Fig. 150, then drive the primary shaft in from the right to left. Exercise care in the needle bearing assembly sequence shown in Fig. 165.

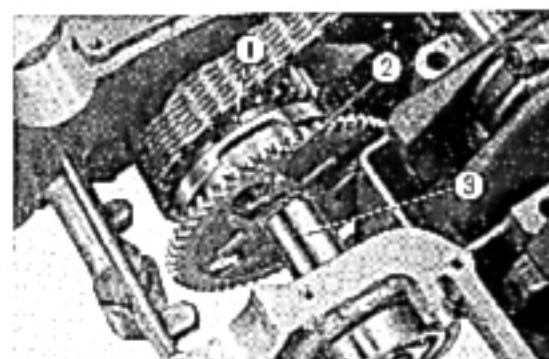


Fig. 151 (1) Starting clutch
(2) Starter gear (3) Primary shaft

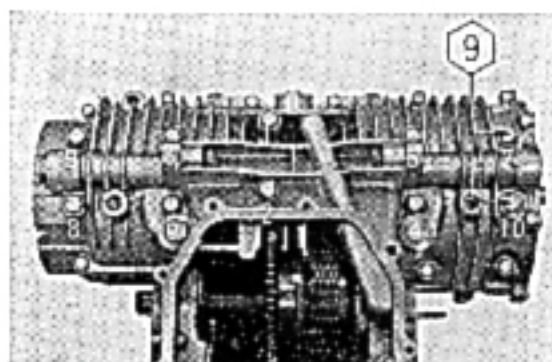


Fig. 152 8mm mounting bolts

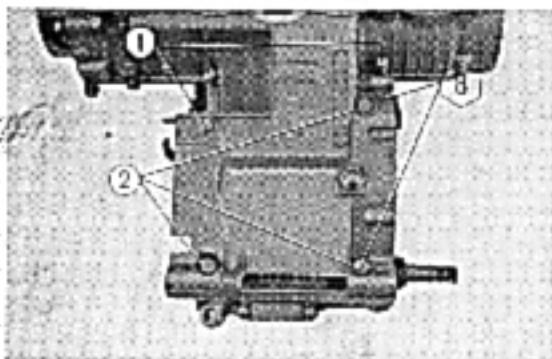


Fig. 154 (1) 6mm bolts
(2) 8mm bolts

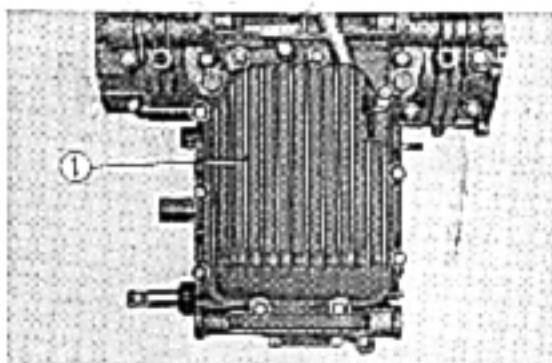


Fig. 155 (1) Oil pan

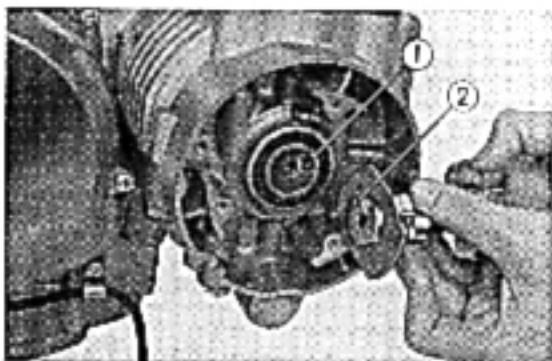


Fig. 158 (1) Dowel pin hole (2) Dowel pin

4. Install the bearing set plate with two 6mm bolts.
5. Apply a thin coat of gasket paste on the mounting flange of the lower crankcase (heavy coat will cause the paste to fall inside the crankcase).
Install two dowel pins, mount the upper crankcase on the lower crankcase.

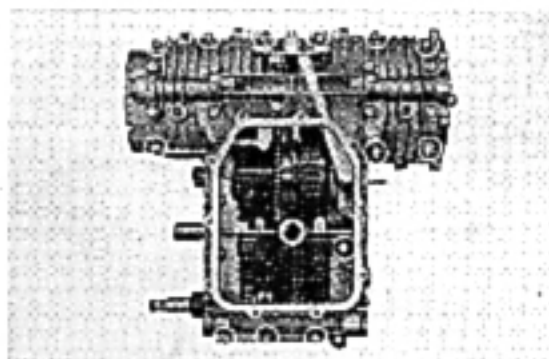


Fig. 153 6mm mounting bolts

6. Place the engine upside down so as not to separate the parting surfaces by holding them by hands and install the ten 8mm bolts. Torque the 8mm bolts in the sequence shown in Fig. 151 to a torque of 2.3-2.5 kg-m. (16.63-18.08 lbs-ft).
Next, tighten thirteen 6mm bolts. (Fig. 152)

Note:

Note position of the two 8mm bolts which are stamped on the bolt head with numeral "9".

7. Position the upper crankcase on top and install with three each, 6mm and 8mm bolts. (Fig. 153)

Note:

Note position of the two 8mm bolts which are stamped on the bolt head with numeral "8".

8. Install the oil screen filter and mount the oil pan with ten 6mm bolts.
9. Mount the starting motor with two 6mm screws.
10. Install the gear shift arm in accordance with section 7. C.
11. Install the clutch in accordance with section 6. C.
12. Insert the spark advancer dowel pin into the pin hole in the crankshaft, and then mount the contact breaker with three 5mm screws.