



## Stripping Engine



Fig. 3 Bend down the raised corners of the spacer washer.

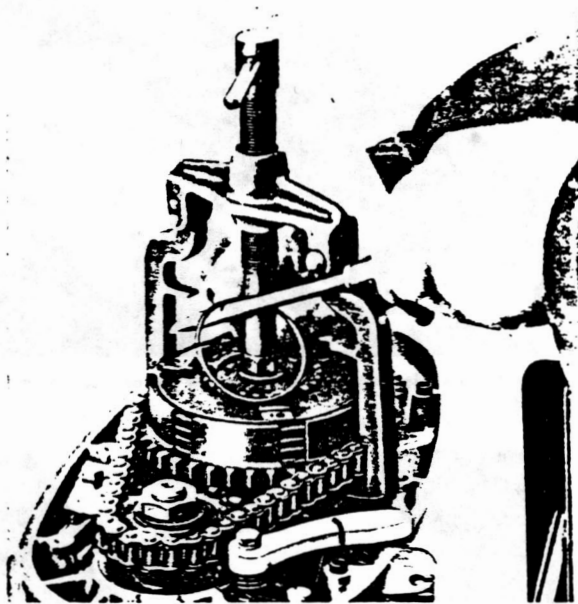


Fig. 4 Fit clutch extractor and compress clutch. Remove spring ring.

- 1 Take off fan cowling (2631) (three 5-mm bolts and two 5-mm nuts).
- 2 Take off fan volute (2630) (five 5-mm bolts).
- 3 Unscrew bolt holding fan rotor (2629) (right-hand thread).
- 4 Pull off fan rotor with **extractor** (2897).
- 5 Unscrew five 6-mm cheesehead bolts, and take off dynamo casing (2619) on fan base (2633).
- 6 Force off dynamo armature (2610) with **armature removal bolt** (2899). Take the key out of the keyway in the crankshaft.
- 7 Secure the engine to the **assembly stand** (2896). The engine will also fit in the assembly stand (1973) for the single-cylinder four-speed motor-cycle engines if this is available, but the stand will have to be filed away slightly to suit.
- 8 Take off cylinder head (2555 or 2564) after removing four 8-mm nuts.
- 9 Unscrew four 8-mm nuts at foot of cylinder, and remove cylinder.
- 10 Cover opening in crankcase with a rag. Remove gudgeon-pin circlips with a sharp-nosed pair of pliers. Push out gudgeon pin by hand, using **punch 2331**. Note: Piston need not be heated, since the gudgeon pins are fitted so that they can be inserted and removed with the piston cold.
- 11 Tilt the assembly stand so that the left-hand crankcase cover is uppermost.
- 12 Unscrew seven 6-mm cheesehead bolts on crankcase cover, and remove cover. Lever (2115) for gearchange mechanism remains on its shaft.
- 13 Take engine out of assembly stand and drain out oil. Replace engine in assembly stand.
- 14 Disconnect spring for chain tensioner (only fitted on Maicoletta 250).
- 15 Bend down raised edges of spacer washer (274) on the clutch, and turn spacer washer until it can be lifted off (Fig. 3).
- 16 Fit **clutch extractor** and compress clutch. Push out the spring ring (275) with a screw driver. If force has to be used (even though the clutch is fully compressed) and the ring is bent, a new one will have to be fitted when the clutch is re-assembled. In this case measure the thickness of the outer plates (2280) (with

- linings) by means of a vernier gauge. Their thickness should not exceed 3.9 mm (0.154 in). If their thickness is greater than this, rub them down with emery paper on a surface plate until they are the correct size (Fig. 4).
- 17 After taking off the extractor, the individual clutch plates, the plate guide (270 a), and the cup springs underneath it (2346) in the case of the Maicoletta 250, or the thrust springs (2572) in the case of the Maicoletta 175, are removed.
  - 18 Insert the **locking plate 1238**, and unscrew the guide nut (2355) on the gearbox mainshaft (2582) with a 17-mm box spanner (right-hand thread). Then bend down the lugs of the locking plate for the hexagon nut on the crankshaft, and unscrew this nut (right-hand thread). Make certain that the lug welded on the locking plate does not bear against the kickstarter shaft, since when the left-hand crankcase cover has been removed, this shaft is only located at one end. It is advisable to weld a bracket bent up from a piece of sheet metal on to the lug on the locking plate, and to allow this to bear against the outside of the chain passing over the crankshaft sprocket. In the latest design of locking plate the lug has been made of a suitable shape for this (Fig. 5).
  - 19 The clutch-plate holder 2278 can now be pulled by hand off the clutch shaft (if necessary lever it up with a pair of screwdrivers). Then push the clutch housing (2571 or 2573) to the left until the chain can be taken off the crankshaft sprocket; remove chain and clutch housing together.
  - 20 Take the chain sprocket (2262 or 2568) off the crankshaft. Remove the key. Take the spacer bush (2274) off the crankshaft. The chain sprocket is not fitted on a taper, but on a cylindrical collar on the shaft. If necessary lever off with a pair of strong screwdrivers.
  - 21 Take out the kickstarter shaft (2574).
  - 22 Bend down the locking plate (1755) and unscrew the 6-mm hexagon bolt; the cover plate (1756) can then be removed.
  - 23 Lift out the pull rod (1750).
  - 24 Disconnect the tension spring (1056) from the pawl (1044) and take out the pawl.
  - 25 Unscrew the eight 6-mm cheesehead bolts that hold the two crankcase halves together (in the case of the Maicoletta 250, two of these bolts also hold the chain tensioning device).
  - 26 The left-hand crankcase half can then be lifted off. If necessary free it by hitting lightly with a wooden or rubber hammer. The crankshaft is a push fit in the left-hand bearing, and so will come out of the bearing without any difficulty (Fig. 6).
  - 27 Lift the crankshaft out of the right-hand crankcase half. The crankshaft is carried in a roller bearing in the right-hand crankcase half; when the crankshaft is taken out, the inner race of the bearing will come with it without any difficulty.
  - 28 Take out the gear-selector fork spindle (1036).
  - 29 The gear pinions, gearbox shafts, and gear-selector forks can now be withdrawn. The



Fig. 5 Insert locking plate and unscrew nut on gearbox mainshaft.



Fig. 6 Take off left-hand crankcase cover.

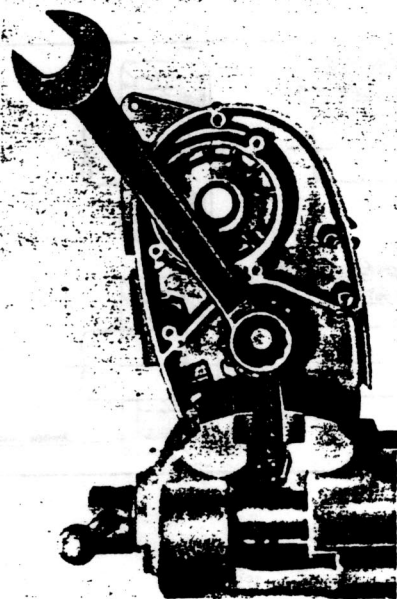


Fig. 7 Hold the sleeve pinion with a piece of chain when loosening sleeve pinion nut.

needle bearing (2289) can also be taken out of the sleeve pinion.

- 30 Take out the tension spring (1707) with the filter pad (1717).
  - 31 Take the crankcase off the assembly stand, and turn it over. Bend the locking plate (330) away from the sleeve pinion nut, and unscrew the nut (329) with a 36-mm spanner (right-hand thread). To hold the sleeve pinion (2295) still while this is being done, it is advisable to wrap a piece of old chain round the gear box sprocket (1037), and hold it in a vice (Fig. 7).
  - 32 Take off the driving gear box sprocket (1037), and the spacer ring (2294) that lies behind it.
  - 33 Press the sleeve pinion out of its bearing (1760) by means of a punch or a screw press.
  - 34 To remove the sleeve pinion ball bearing, remove the retaining ring (2296) behind the bearing with a pair of sharp-nosed pliers. Lift out the shaft seal (333) with a screwdriver, and then heat up the crankcase to a temperature of about 150° C (300° F) ("sizzling"), and press out the bearing. Lifting out the shaft seal will make it unsuitable for further use, and a new seal will have to be fitted on re-assembly.
- 35 Remove the retaining ring (1753) from the selector- cam shaft. Remove the pulley for the gear-indicator cable, and pull the selector cam out to the interior.
  - 36 Remove the spindle lock washer (1757) from the pin of the locking lever (1057) and take out the locking lever.
  - 37 If it is necessary to take the two crankshaft main bearings out of the crankcase halves, this should be done in the same way as the sleeve pinion ball bearing was removed, i. e. force out the shaft seals (and fit new seals on re-assembly), and warm the crankcase halves up to about 150° C (300° F) to enable the bearings to be pressed out.

## C) Assembly of Engine

- 1 Warm up right-hand half of crankcase to about 150° C (300° F). Insert roller bearing NUM 25 for crankshaft and sleeve pinion ball bearing 6005x, and secure with a circlip.
- 2 Smear liquid jointing compound round the circumference of seal ring (2261), and force it in, with a press if possible. Note that when fitting crankshafts of the type used to September 1955, (with a broad chamfer on the shoulder that runs in the seal) the shaft seal must be fitted with the spiral spring pointing towards the crank web. In crankshafts with a narrow chamfer on the shoulder (since September 1955), a 0.5 mm thick steel washer is fitted between the shaft seal and the roller bearing, and the seal is fitted with the spiral spring pointing towards the bearing (Fig. 8).
- 3 Warm up left-hand half of crankcase to a temperature of about 150° C (300° F), and insert ball bearing 6305 for the crankshaft and 6302 for the gearbox main shaft.
- 4 Smear jointing compound round the circumference of the shaft seal (2261), and press it into place. Observe the same procedure as outlined in section 2 for the right-hand half of the crankcase.
- 5 Fit the locking lever (1057), with the tension spring (1056) fitted, and place the circlip (1757) on the pin for the locking lever. Place the compression spring (1058) under the locking lever. Make certain that the lug bent up on the locking lever fits into the compression spring.
- 6 Insert the selector cam (2576). When inserting the cam, press down the locking lever.

