BSA SERVICE SHEET No. 214

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A GROUP MODELS

(with Swinging Arm Type Frame)

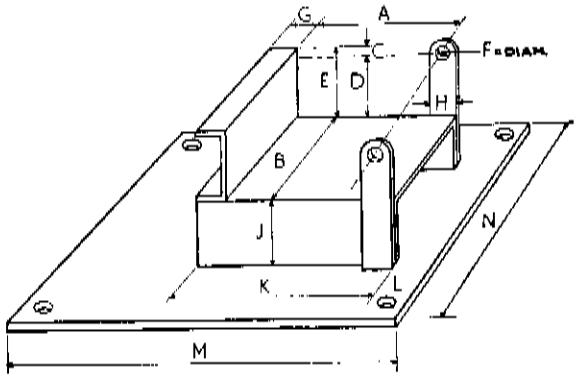
ENGINE REMOVAL AND COMPLETE DISMANTLING

The dismantling procedure will be described from the point reached in Service Sheet No. 204, when the cylinder head and barrel have been removed.

Before commencing to dismantle the engine it will be advantageous to construct a fixture such as that illustrated in Fig. A38.

Drain the oil tank and disconnect the oil pipes. Detach the dynamo leads and the stop button lead from the magneto end cap.

Remove the primary chaincase as described in Service Sheet No. 310 on Primary Transmission.



	Inches	mm.
A	4¾–5	120–125
B	3½	85–90
C	⅜	9
D	1⅝	41
E	2	50
F	7/16 dia.	11.5 ø
G	1	25
H	¾	20
J	2	50
K	6¼ 6½	155 160
L	1	25
M	12	300
N	8	200

Fig. A38 Engine Bench Fixture

Engine Removal.

Remove the studs securing the engine plates to the crankcase, and the studs holding the front engine plates in the frame. Slacken the gearbox bolts and the lower front stud of the rear engine plate as these tend to clamp the rear engine plates on to the crankcase. The engine is now ready to be lifted from the frame.

Dismantling the Engine.

Set the engine up in the bench fixture and undo the twelve timing cover securing screws, noting that the four lowest screws are the longest in the set and the three at the dynamo end of the cover are the shortest

A pan should be placed under the engine to collect the oil which will fall from the timing chest when the cover is removed.

Remove the dynamo securing strap and turn the dynamo in its housing until the chain is slack enough to permit it to be removed from the smaller sprocket. The dynamo can then be removed complete with its sprocket. To remove the larger sprocket, undo the retaining nut after prising back the lockwasher, then with the aid of a soft drift give a light tap on the side of the sprocket. This should free it, but if it does not do so then engine should be rotated slightly so that the punch is applied to another point on the sprocket. This should be repeated until the sprocket is jarred free from its taper.

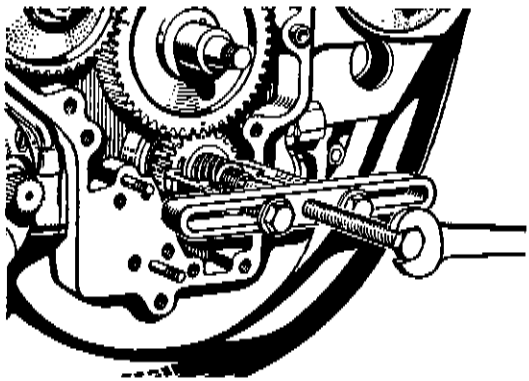


Fig. A39 Timing Pinion Extractor No. 61-3256

Undo the four retaining screws and withdraw the inner timing cover to expose the timing gears. The crankcase breather will probably come away with the inner timing cover, but care should be taken that the thick cork washer which separates it from the camshaft gear is not damaged.

The magneto advance and retard mechanism may now be removed by undoing its central securing nut. The mechanism is self extracting and as the nut is unscrewed the gear will be pulled from its taper.

The camshaft pinion is keyed on and is retained by a nut and lockwasher. Prise back the tab of the washer and remove the nut. With the aid of Service Tool No. 61-3256, draw the pinion off the shaft taking care not to lose the locating key.

The idler pinion with its shaft can now be pulled free with the fingers.

Remove the three securing nuts and washers holding the oil pump in position. Bend back the lockwasher and undo the locknut from the end of the mainshaft, noting that it has a left-hand thread. Remove the washer, then free the hexagon headed worm gear, which also has a left hand thread. Withdraw the oil pump gradually from the studs and at the same time unscrew the worm gear from the mainshaft. It may be advantageous to remove the oil pump studs to prevent them being bent.

Fig. A40 The Oil Pressure Release Valve.

The oil pump should not be dismantled unless it is known to be faulty. If the worm shaft is worn it may be removed by simply removing the circlip and end pad.

The timing gear which is keyed to the crankshaft may now be extracted with the aid of Service Tool No. 61–3256, as shown in Fig. A39. Do not lose the mild steel washer which lies between the timing gear and the worm gear.

Remove the oil pressure release valve from the crankcase to clean and check it (see Service Sheet No. 202).

Three studs, the one underneath having a long nut, secure the magneto to the crankcase. After the nuts have been removed, the magneto can be pulled from its housing.

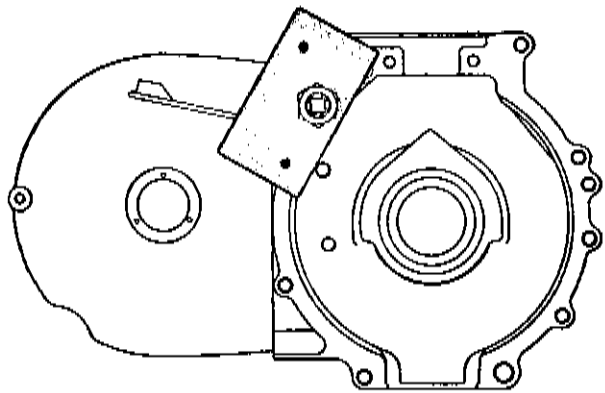


Fig. A41 Withdrawing Blind Camshaft Bush. (Service Tool No. 61-3159).

Remove the sump plate and withdraw the crankcase filter but do not attempt to withdraw the oil return pipe. The four studs should be left in position to protect the projecting part of the pipe.

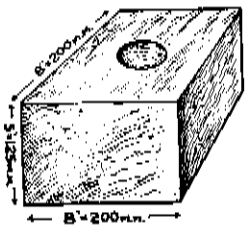


Fig. A42.

Remove the engine from the bench fixture and place it on a wooden block, similar to that illustrated in Fig. A42, drive side downwards. If the crankshaft splined sleeve has not already been removed it should be withdrawn from the shaft. After all the crankcase securing bolts have been removed, separate the crankcase halves by gently tapping the front and rear of the cases with a soft mallet. With the crankcase halves parted, the complete crankshaft and con rod assembly can be detached and laid aside.

Prise the oil seal out of the drive side crankcase. The drive side roller-race and the gearside white metal bearing can then be pressed from their respective halves to the inside if they are in need of attention. It is advisable to warm the crankcase halves in a degreasing plant, or hot water, before attempting to remove the bearings.

Service Tool No. 61-3159 will withdraw the blind camshaft bush from the drive side crankcase (see Fig. A41).

The tappets are carried in the cylinder block and will not normally require attention. To remove them, undo the two setscrews *A* (Fig. A43) and withdraw the inlet tappets *B*. Remove the setscrew *C* and the steel ball which it retains. The locating pin between the two exhaust tappets can then be pushed out from the inside of the barrel and the tappets withdrawn. The inlet and exhaust tappets are not interchangeable.

Withdraw the split pins and unscrew the big end cap retaining nuts. The con rod can then be pulled away from the crankshaft. Mark the con rods and bearings, etc., to ensure that they are replaced in the same position and the same way round.

The flywheel is bolted to the crankshaft and need only be disturbed if a new crankshaft has to be fitted. The plugs at each end of the crankshaft should be removed and the internal oilways cleared of sludge. The inner race of the drive side bearing should not be removed unless a replacement is required, as it may be damaged during removal. Take careful note of the shims fitted behind the bearing and ensure that they are not omitted during re-assembly.

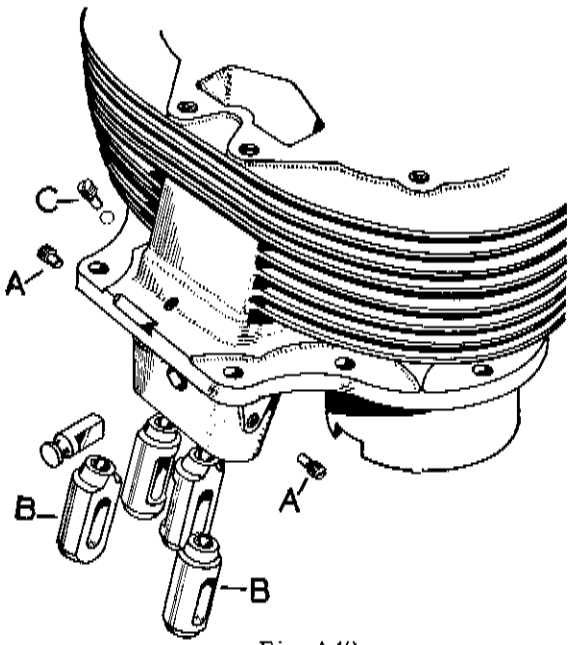


Fig. A43

Dimensions for regrinding the crank-pins, as given in Service Sheet No. 207, must be rigidly adhered to, as the bearing liners are manufactured to match these dimensions.

The return pipe from the sump is cemented into the case and should only be disturbed if it is damaged. This also applies to the non-return ball valve which is retained by a small grub screw near to the crank-shaft main bearing. Check that the internal oilways are clear and if necessary flush out with petrol.

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