

BSA SERVICE SHEET No. 605

"M" Group Models

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ENGINE DISMANTLING FOR DECARBONISING

When decarbonising, it is not necessary or desirable to dismantle the cylinder barrel, unless it is suspected that the valves, piston, or its rings are the cause of some trouble. It is sufficient to remove the cylinder head and gasket thus exposing the piston and valves.

REMOVING CYLINDER HEAD.

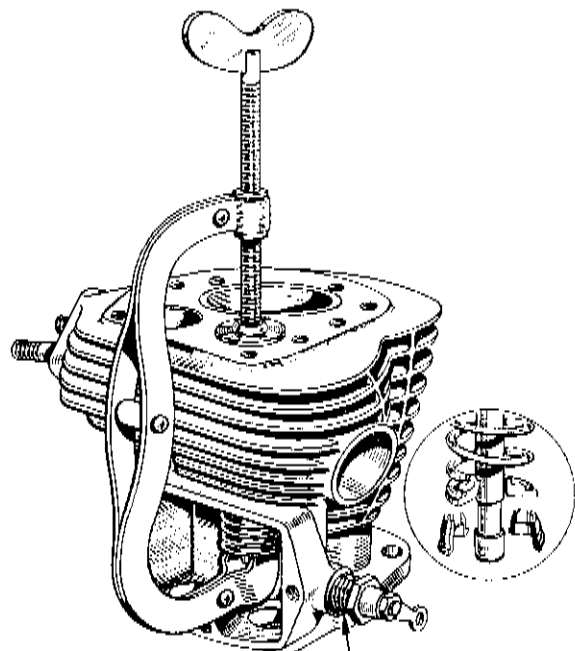
To detach cylinder head, disconnect sparking plug lead, remove steady strap and the ten cylinder head bolts. Head can then be lifted off.

Rotate the engine until the piston is at the top of its stroke and scrape it with an old penknife, taking great care not to damage the piston crown. Then clean the cylinder head and replace, tightening the bolts in the order shown in Fig. M24.

If the valve seats are suspected of gas leakage, due to insufficient tappet clearances or other causes, these should be remedied. It is possible to grind in the valves in position, but it is preferable to remove the barrel from the crankcase so that the work may be carried out on the bench, and at the same time the piston and rings inspected.

REMOVING CYLINDER BARREL.

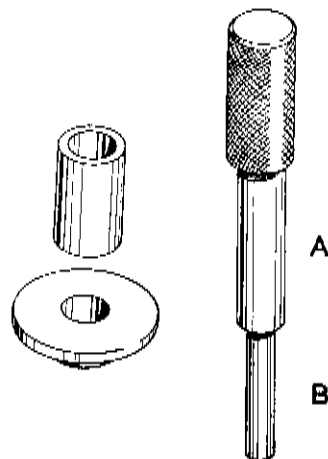
To remove cylinder barrel, first turn off petrol taps and detach carburetter. This can be tied to frame out of the way. Next, the exhaust pipe and silencer should be removed complete. The exhaust valve lifter should be unscrewed



EXHAUST VALVE LIFTER UNSCREWED

Fig. M12. B.S.A. valve removing tool 61-3340

from the tappet chest until the eccentric peg on the lifter is clear of the tappet head. Uncouple the exhaust valve lifter cable by removing the pin at the lever end. Now remove the five cylinder base nuts (four outside and one inside tappet chest), and cylinder barrel can be lifted off.



A .555 in. diameter
B .350 in. diameter

Fig. M13. Inserting valve guides
Service tool 61-3267.

When removing the cylinder barrel, the simplest way is to lift it up and tilt it forwards into the front angle of the frame. The piston should be steadied as it emerges from the barrel to prevent possible damage. Cover the crankcase mouth with rag to prevent dust and grit falling in.

REMOVING THE VALVES.

To remove the valves a spring compressor as shown in Fig. M12 may be used. If the proper tool is not available, the valves may be removed by laying the cylinder barrel on a bench (valve heads downwards) and compressing the valve springs with the aid of a piece of tube (suitably slotted), while an assistant removes the cotters. Clean all carbon from the ports and check valve guides for wear.

FITTING NEW GUIDES.

If new Guides are to be fitted, the old ones can be driven out from below by means of a punch.

The new guides can be driven in from above, using the same punch in conjunction with the distance piece and depth gauge as show in Fig. M13. These three items comprise Service Tool No. 61-3267. After fitting the inlet guide, reverse the depth gauge before dealing with the exhaust guide. Use of the gauge ensures that the measure-

ments given in the inset on Fig. M. 14 are accurately obtained.

When new guides have been fitted, the valve seats must always be re-cut with a pilot cutter, in order that the seats will be concentric with the guides (Fig. M14). Note that the exhaust valve guide only has its upper end counterbored.

GRINDING-IN VALVES. If the old valves are to be retained, they should only be ground in if the seating shows slight pitting. If badly pitted, they should be refaced, otherwise excessive grinding

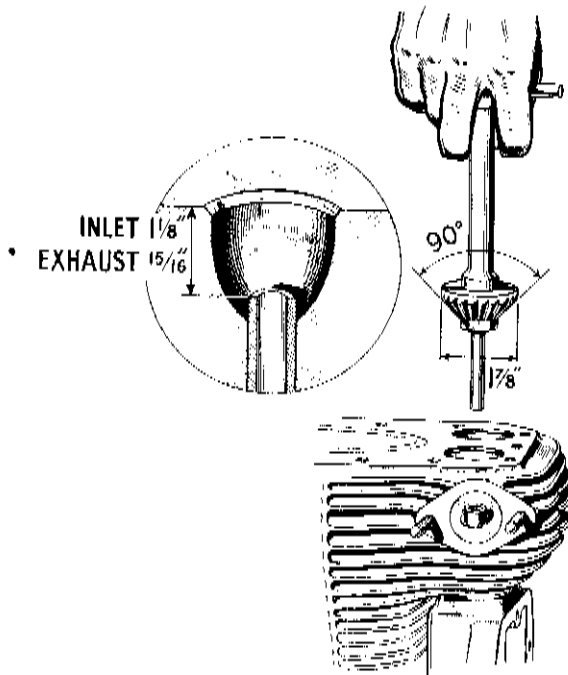


Fig. M14. Valve seating cutter and depth of guide.

Holder No. 61-3290 Tommy Bar No. 61 3291
Pilot No. 61 3291 Cutter No. 61 3302

Dismantling for decarbonising and piston inspection as described so far is carried out without removing the engine from the frame.

Assembly from this point is described on Service Sheet No. 607.

will wear away the seat in the cylinder barrel and cause the valve to become pocketed. Take great care to remove all traces of grinding compound afterwards. A light spring, inserted under the valve head, considerably simplifies valve grinding, which should be continued until the valve face shows a smooth surface all the way round. If the machine has covered a considerable mileage, the valve springs may need replacing. Refit the valves, springs and cotters with the aid of the tool shown in Fig. M12 after valve stems have been lubricated.

PISTON AND RINGS. The gudgeon pin is located by means of wire circlips which must be removed by means of a tang of a file or similar tool. Withdraw the gudgeon pin, thus freeing the piston and immediately after its removal mark the inside of the piston so that it may be re-assembled in its original position.

If inspection of the piston rings shows that they are stuck, prise them out very carefully, and clean them. Remove any carbon from the grooves and rings, but before replacing them, check the gap with a ring in the cylinder. If the gap is excessive, new rings must be fitted having gaps of between .008" and .012" when in position.

At this stage it is advisable to check the big-end bearing for wear. Turn engine until piston is at top of stroke, and resting both hands on sides of crankcase mouth, hold connecting rod between fingers and thumbs and feel for up and down play. It should be remembered that, even though there may be a little play present, it will not necessarily mean sudden failure of the bearing, though it will inevitably become worse. Where play seems excessive, and apparent big-end noise has been noticed when engine is running, the engine should be completely dismantled, and a new big end assembly fitted.