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SERVICE SHEETS

# **BSA SERVICE SHEET No. 604**

## **B. & M. Group Models ENGINE ADJUSTMENTS** **which can be carried out without dismantling**

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### **Oil Pressure Valves**

There are two ball valves in the system, and both are placed between the tank and the sump to prevent the transfer of oil when the engine is not running. The spring loaded ball valve as illustrated in Fig. M.6 is situated in the timing cover, and permits a supply of oil under pressure to the big end.

In the event of dirt or foreign matter lodging between the ball and its seating oil will slowly drain from the tank and into the sump when the engine is stationary, and on starting smoke will issue from the exhaust, but will clear after the engine has been running for some time. To rectify this dismantle the pressure valve by unscrewing the hexagon headed nut in the base of the timing cover, withdraw the spring and bolt, and carefully clean the ball and its seating. Finally replace the ball and give it a sharp tap with a hammer and copper drift to ensure a correct seating, and replace the spring, fibre washer and nut.

The other valve is situated in the base of the oil pump (see Fig. M.7) and consists of a ball bearing held on to its seat by gravity. Failure of the oil to return may be due to this ball sticking on its seat. This can be overcome by inserting a short length of wire into the valve orifice, and forcing the ball off its seating. It is not advisable to remove the pump from the crankcase unless such a procedure is absolutely essential, for unless the pump seating is oiltight, oil will transfer from the tank via the pump housing.

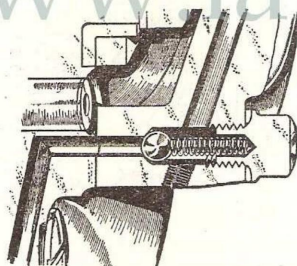


Fig. M.6. Pressure valve in timing cover.

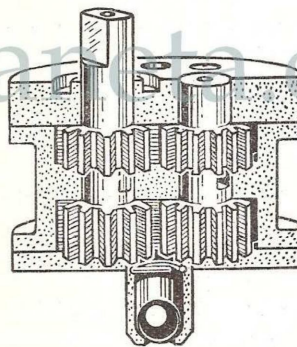


Fig. M.7. Ball valve below return pump.

### **Exhaust Valve Lifter**

At all times keep the actuating cam on the lifter clear of the rocker arm on B group and M.33 machines (Fig. M.8) or the tappet head on M.20 and M.21 machines; otherwise the tappet clearances will be affected and the valve gear will be noisy. Failure to check this clearance may result in a burned exhaust valve. Adjustment is usually carried out by means of the cable adjuster, but the actuating arm can be removed and reset at any position on the serrated shaft.

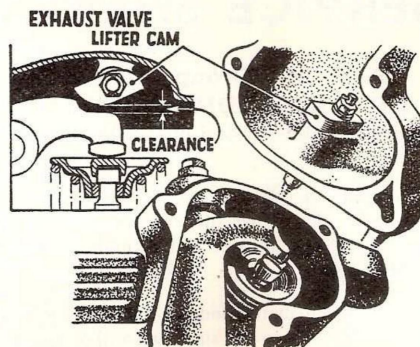


Fig. M.8. Exhaust valve lifter adjustment.

### Tappet Adjustment

Before any attempt is made to check the tappets ensure that the exhaust lifter is adjusted in accordance with the previous instructions. Owing to the special cam design it is essential that the following directions be adhered to.

1. Rotate engine until the inlet valve has just closed.
2. Adjust exhaust tappet.
3. Turn engine until exhaust valve has just taken up tappet clearance, but has not started to open valve.
4. Adjust inlet tappet.

Obviate the possibility of an incorrect tappet clearance on O.H.V. Models by lifting the push rod with the fingers before inserting feelers, or the weight of the push rod may prevent the feelers being correctly inserted.

The actual adjustment is carried out by releasing the locknut B (Fig. M.9), holding the tappet with a spanner and screwing the tappet head A up or down. When the correct clearance is obtained tighten the locknut on to the head of the tappet and re-check clearance.

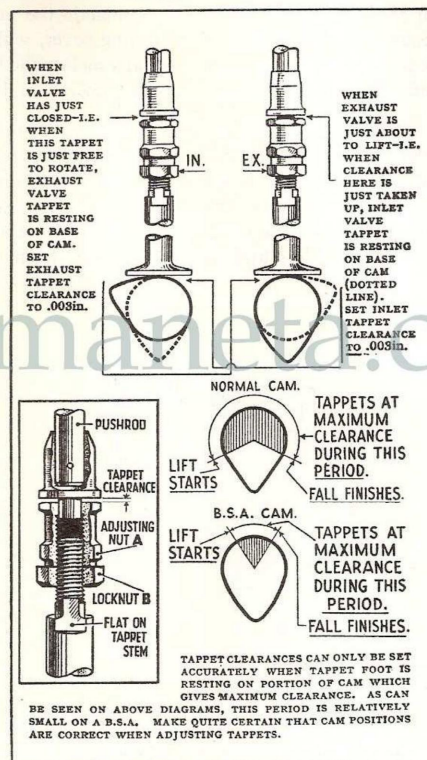


Fig. M.9.

**Note.** Correct Tappet clearances are as follows:

|                                     |            |              |
|-------------------------------------|------------|--------------|
| Models B 31, B 32, B 33, B 34, M 33 | Inlet .003 | Exhaust .003 |
| „ M 20, M 21 .. .. .                | „ .010     | „ .012       |

### Ignition Timing

It is a rare occurrence for the magneto pinion to slacken off and upset the timing, and it is inadvisable to disturb the setting unless absolutely necessary, or unless the timing is known to be at fault.

It is advisable however, to check the timing periodically, or after carrying out any adjustment to the contact breaker points, as a slight variation tends to advance or retard the engine. If the timing requires resetting first check that the fully open gap is .010 in.-.012 in., then remove the timing cover and in so doing take care to see that the small nozzle which feeds oil to the hollow crankshaft is not damaged. (See Service Sheet No. 606.)

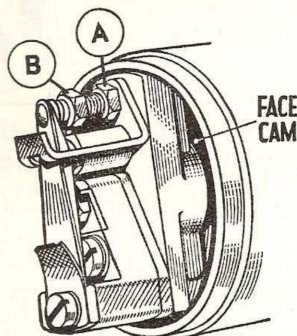


Fig. M.10.

With the cover removed, take off the locknut which holds the magneto pinion on to its taper, and with the aid of a magneto pinion extractor, withdraw the pinion. (The pinion is fixed on its shaft by a plain taper.)

To reset the timing, turn the engine forward until the piston is at the top of the compression stroke, and then turn the engine **backwards** until the piston has descended  $\frac{7}{16}$  in. Turn the contact breaker in the direction of rotation until the points are just open (.002 in.) with the ignition lever fully advanced. Tap the magneto pinion lightly on to its taper, tighten up the nut carefully, and when dead tight re-check the setting.

N.B.—It is essential that the ignition setting as laid down here be adhered to or high running temperatures and the possibility of a seizure will be present.

To adjust the contact breaker gap, release the locknut A (Fig. M.10) and adjust the gap to .012 in. max. by rotating the small bolt B in the desired direction.

### Carburetter

To maintain the efficiency of the carburetter it is necessary to dismantle it periodically and wash thoroughly in clean petrol.

Renew any worn parts, particularly the needle valve if the head has a distinct ridge at the point of seating, the throttle valve if excessive side play is present, and the taper needle and clip if it is possible to rotate the needle freely in the clip.

For further attention to the carburetter and for tuning details see Service Sheet No. 708.

### Sparkign Plugs

The machine is supplied with Champion non-detachable type sparking plugs to suit the characteristics of the engine. If the best performance with regard to both power and economy is to be obtained then they must remain clean and properly gapped.

The sparking plugs should be removed periodically for examination. If the carburation is correct and the engine is in good condition the plugs will remain clean for considerable periods. An over-rich mixture will however cause the formation of a sooty deposit on the plug points and eventually on the plug body (see upper view of Fig. A6). Heavily leaded fuels may form a greyish deposit in a similar manner. If a heavy deposit is found, the plug should be cleaned, with the aid of the sand blast type of plug cleaner found at most garages, as otherwise the performance of the machine may be affected. If a heavy deposit is allowed to build up inside the plug it may prevent the engine from firing altogether. A weak mixture will cause burning of the plug points and give the plug a whitish appearance. See Service Sheet No. 708.

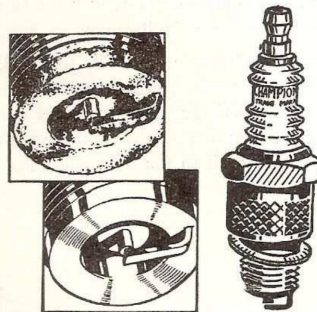


Fig. A.6. The Sparking Plug.

Check that the gap between the sparking plug points is correct and if necessary re-set to .018—.020 in. (.45—.50 mm.) by bending the side wire. In no circumstances attempt to move the central electrode as this may damage the insulation. If the points are badly burnt away or cleaning fails to restore the plug to its full efficiency then it should be replaced by a new one.

When replacing the plug make sure that the copper washer is in good condition. Use a tubular spanner to prevent damage to the plug and keep the outside of the insulation free from oil and dirt by wiping with a clean rag.