

The 1928-32 493 c.c. "Sloper" Model

B.S.A.**Part I.—Engine Details for One of the Most Popular Small Heath Models Made Between the Wars**

HERE it is at last! Of the many requests for this or that model to be featured in our Service Series before it ended, those mentioning the famous old B.S.A. "Sloper" have been most frequent. It is fitting here to say that to compile data for an article of this kind it is desirable, if not essential, to have access to major components (so that the artist can draw them) and also to manufacturers' detailed drawings in order to be able to quote dimensions. The absence of one or other of these facilities has forced us to disappoint numerous owners of now defunct *marques*.

Thanks, however, to the enthusiasm and energy of my colleague John Griffith, a keen vintagent, and to his friend R. Thornton Rigby (owner of a suitable "Sloper"); to the unending co-operation of B.S.A.'s Design Department, in the person of Arthur Lupton; to the patience of Len Crisp, who saw to the dismantling of the unit and then put up with artists and journalists tramping all over his shop (and drinking his men's tea) for days on end—thanks to all these people, we now present the "Sloper."

With 80 mm. by 98 mm. bore and stroke dimensions, the engine size conformed with the 493 c.c. swept-volume measurement long favoured by Small Heath designers whose aim with the "Sloper" was the establishing of an all-purpose motorcycle with the accent on utility and general touring purposes; a model for series production over a period; the foundation, as it were, of present B.S.A. policy.

Dismantling Procedure

Interesting trends of the period become apparent as the engine is stripped; removal of the domed rocker-box cover reveals the rocker mechanism and the use of little coil springs in tension, provided as auxiliaries to the main valve springs. Tappet settings are made by means of screwed adjusters and lock-nuts at the inner end of each rocker. The rockers are supported on roller bearings, another indication of quality design methods. Lock-nuts at the off-side end of each rocker spindle are used to locate and secure the spindles which, threaded, shouldered and screwed into the housings, can be withdrawn from the near side. If you have no jig or fixture for rigidly mounting the cylinder head on the bench, then carry out this dismantling of top-end components with the head still supported by the cylinder.

Inspect the condition of the rollers; there should be 11 to each race (total 44); the spindles are bored for lubrication by grease-gun and obviously the drill-ways should be thoroughly cleaned out and the rollers packed in grease when reassembled. It is a good idea to complete this part of the work

and also any jobs required on the cylinder head before continuing with the rectification of deeper-seated trouble. Renewal of valve guides (provided that you can get spares) is simple; both guides are a press fit in the head and should be driven in up to the flange. Normally guides were available with a range of O/D sizes varying from .5620 in. to .5645 in., so that a degree of selective assembly was possible. If you are lucky and manage to get spares then, when the new guides are fitted, the valve seats should be cleaned up with a 45° cutter. It is necessary to be pessimistic about spares of all kinds for the "Sloper" series and the owner would be wise, therefore, to refrain from disposing of any part until he is sure he can replace it.

Removal of the rocker box leaves you free to extract the upper push-rod tubes (complete with top oil-seals) and the base spring, the purpose of which is to press the tubes upward, keeping them firmly in contact with the rocker box. You cannot withdraw either of the push-rods until the lower tubes have been taken off; each has a hexagon, and by this means you can unscrew it from the tappet guide after the retaining spring clip has been slackened. Within each of the lower tubes is a flange locating a second

USEFUL DATA**FINE-LIMIT DIMENSIONS:**

Rocker Spindle Roller Track: .4850/.4854 in.
 Rocker Counterbore: .860/.861 in.
 Rocker Rollers: $\frac{1}{8}$ in. long \times $\frac{3}{8}$ in. dia. (44 off)
 Valve Guides: I/D .3785/.3795 in. O/D .5620/.5625 in. (normal) to .5640/.5645 in. (oversize)
 Valve-head Diameter: 1.755/1.765 in.
 Valve-seat Angle: 45°
 Piston Rings: 80 mm. O/D; Width .118/.119 in.; Gap .010/.014 in.
 Gudgeon Pin O/D: .7498/.7502 in.
 Gudgeon Pin Bore: .5615/.5625 in. to take end pads .5625/.5630 in.
 Pad Head Thickness: .1120/.1140 in.
 Small-end Bush: I/D .7500/.7505 in. O/D slightly tapered: .9405/.9395 in. to .9375/.9380 in.
 Connecting Rod: Big-end Bore 1.7699/1.7701 in. Width .738/.740 in.
 Big-end Rollers: $\frac{1}{4}$ in. dia. \times $\frac{1}{2}$ in. long. (28 off)
 Tappets: Stem dia. .3730/.3740 in.
 Tappet Guide: I/D .3755/.3745 in.
 Oil-pump Shaft Bush: I/D .437/.438 in. O/D .688/.689. Head thickness .092/.093 in.
 Cam and Idler Spindle Bushes: O/D .750/.751 in. I/D .501/.502 in. Head thickness .091/.093 in.
 Engine Shaft Timing-cover Bush: I/D .4995/.5005 in.

BEARINGS

Engine Shaft Roller Type: (1 off) Hoffman R325 bore 25 mm. by O/D 62 mm. by 17 mm.
 Ball Type: (2 off) similar dimensions.

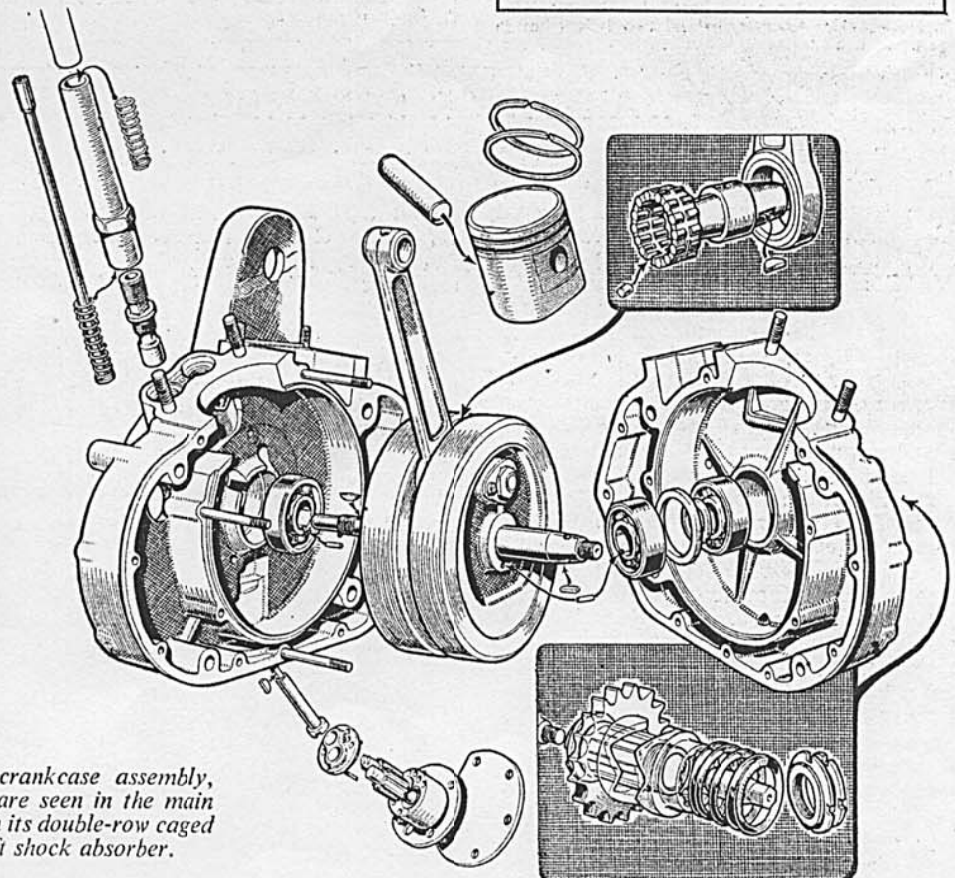
VALVE TIMING

(with .004-in. tappet clearance.)

Inlet opens before T.D.C. 45°
 Inlet closes after B.D.C. 85°
 Exhaust opens before B.D.C. 85°
 Exhaust closes after T.D.C. 30°

CARBURATION

Amal 6/024 equipment with 170 main jet (160 if air cleaner fitted) 6/4 slide; needle in 2nd notch.



Essential details of the "Sloper's" crankcase assembly, including the three mainshaft bearings, are seen in the main sketch. Insets show (top) the big-end, with its double-row caged bearing, and (bottom) the engine-shaft shock absorber.