

Sparkign Plug.—We fit as standard the "K.L.G." plug, type H.S.3. This plug will stand a reasonable amount of heat, and is not very susceptible to oil. For long distance races, where the engine is likely to get very hot, and the rider can keep the oil away from the plug by careful driving, the "K.L.G." C.B. type plug will probably be found to be more suitable, as the C.B. type will stand much more heat than the H.S.3, but will stand very little moisture or oil.

Lubrication.—It is difficult to lay down a hard and fast rule as to the oil that should be given to the engine, but after a little practice it will be found quite simple to keep the engine properly supplied with oil.

It is not necessary to have the engine continually smoking.

Lubricate so that when the throttle is sharply opened momentarily, either in neutral or low gear, a puff of smoke comes from the exhaust pipe. Use Castrol "R" if possible. If this oil cannot be obtained, use only best quality motor cycle engine oil.

Gears.—For long distance races over average roads, the gear sent as standard will be found approximately correct.

For hill climbs a lower gear will be necessary. It is impossible to state definitely the correct gear to use. This depends upon the gradient, surface, wind and weather conditions. For hill climbs, be quite sure the machine is not geared too high. Gear if anything on the low side, especially if a standing start is taken. For flying starts usually a little higher gear can be used. For short sprints, the engine may be allowed to rev. in top gear, of course, from 5,500 to 8,000 r.p.m. NEVER RACE THE ENGINE WITH THE MACHINE STATIONARY. Racing the engine will teach you nothing, and may cause serious damage to the piston, big end, and connecting rod. More load is put on these parts when the engine is running at very high speeds with a small throttle opening than at the same speed at full throttle with the engine under load.

General.—As previously mentioned, the clutch sprocket and the back wheel sprocket are made from a special aluminium alloy. Examine the chains periodically, and see that the links do not get rusty, or the rollers stick on the rivets. If the chain becomes stiff through neglect it will probably damage the teeth on the aluminium sprockets. Ordinary care of the chains will prevent this trouble. Occasionally remove the chains, soak them in oil, and see that the links are quite free.

For instructions regarding gearbox and chain overhauling, etc., see our booklet on the care and maintenance of the 3-49 h.p. O.H.V. machine.

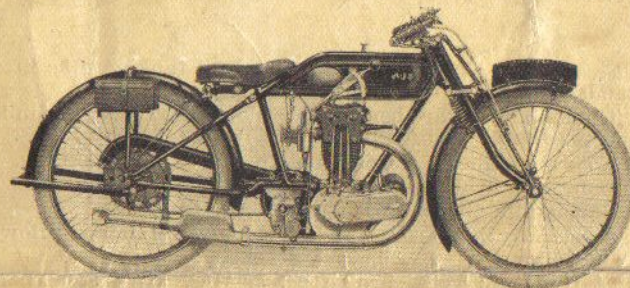
Racing Hints.—Before a race see that everything is tight—engine bolts, etc., tightly screwed up. Be quite sure the tyres are sound and correctly inflated. See that the carburettor is clean, the petrol pipe free, the jets quite O.K., and go over all the front wheel pins and nuts, especially the front hub spindle.

In a long distance race, if you have the good fortune to be leading, keep the speed down as much as possible, consistent, of course, with maintaining the lead. This is to save the engine as much as possible.

The race is not always to the swift, and the rider who uses keen judgment, and studies both himself and his machine, proves himself a winner more often than not, over the more spectacular rider who drives his machine to destruction in the earlier stages of the race. The spectacular rider provides the thrills, but the winner gets the prizes.

A.J.S.

Motor Cycles



3-49 h.p. 3-SPEED A.J.S. OVERHEAD VALVE
RACING MACHINE

MODEL E7
RUNNING INSTRUCTIONS

A. J. STEVENS & CO. (1914) Ltd.,
WOLVERHAMPTON.

TELEGRAMS:
"HOPIT, WOLVERHAMPTON."

TELEPHONE:
1731 (FOUR LINES.)

3.49 h.p. Overhead Valve Racing

Machine, Model E 7.

This type of machine is not a "production" model, but is specially designed, made and tested by experts. If it is not abused, but treated intelligently, its superior will not be found in its class for power, speed and endurance.

Frame, &c.—The frame, petrol and oil tanks are as fitted to the Standard O.H.V. Model, E 6.

The handlebars are bent a little more forward, and similar in all respects to those we used in the 1924 Tourist Trophy Races.

A special light carrier is fitted to carry tool bags only. This can be removed for hill climbs, speed events, &c.

Racing mudguards—without side valances.

A specially light front hub is fitted, and a standard "Bowden" front wheel brake.

2½ rims and tyres are fitted, as they are faster than the heavier standard tyres.

A specially light back hub with internal expanding brake, similar in all respects to that we used in the 1924 Tourist Trophy Races.

The gearbox is our standard O.H.V. close ratio type, but fitted with special aluminium alloy clutch plates and clutch chain wheel.

Engine and Fuels.—Two pistons are supplied with each machine. The piston fitted to the engine on delivery gives a standard racing compression ratio, and this piston should always be used for ordinary touring, or for long distance races, and petrol, or half petrol and benzol should be used.

The other piston which is supplied separately with the machine has a taller dome than the one fitted to the engine, gives a higher compression ratio than racing standard, and should be used for speed events or hill climbs, up to, say, three-quarters of a mile—and half petrol and benzol should be used.

If an alcohol fuel can be obtained, such as "Discol," or "P.M.S.2," this high compression piston may be used for long distance races, but when using alcohol fuel it is necessary to alter the carburettor to suit.

Engine Details.—The engine is specially made for high-speed work.

Roller bearings are fitted to the driving side and timing side main shafts. Ball bearings to the timing shafts, roller bearings to the big end—the only plain bearing being that fitted in the small end of the connecting rod.

The gudgeon pin floats both in the piston and connecting rod bush. The gudgeon pin is secured in the piston by spring rings fitted inside the groove at each end of the gudgeon pin. The gudgeon pin is purposely fitted an easy fit on the small end bush. Should it be necessary at any time to fit a new small end bush, the bearing should be put up rather free for side play, and on diameter.

The exhaust and inlet valves, which are interchangeable and made from similar steel, are very sturdy, and should give no trouble; but if the machine has been used a good deal for ordinary touring purposes, and the rider wishes to enter a long distance race, it is advisable to fit new valves. New valves should be carefully ground in—in the usual way. If the valves are not renewed it is advisable to take the valves from the guides, clean away any burnt oil, well polish the stem, regrind the seats with finest flour emery paste, and replace—after carefully cleaning away all traces of emery paste.

It is also advisable to change the valve springs if the machine is used often for speed events. After a few hours of continual high speeds, the valve springs are likely to lose their tension. If the engine will not keep up its speed, and misses fire at high speeds—look to the valve springs. If there is the least doubt about the springs not being strong enough, put in a fresh set.

The clearance between the ends of the valves and rocker should be from .008 to .010, *i.e.*, from eight one thousandths to ten one thousandths of an inch. Set this gap when the engine is warm.

Although well tested by expert racing testers before being despatched, it is advisable to run the engine quietly for, say, 100 miles. Run at speeds from 25 to 30 m.p.h., giving the engine plenty of oil. After this running in, drive as fast as possible on top gear for a quarter of a mile, then move the cylinder and see if the piston shows any signs of seizing, or shows local high spots. If so, smooth these parts down very carefully with a smooth file or emery cloth, well polish, and replace. After another high-speed burst, examine the piston again. If high spots show, again ease these down. Do this three or four times, then the piston should be ready for any speed work the engine is put to. The above remarks, of course, apply to both the high or low compression pistons, whichever may be in use.

Ignition.—The ignition should be set so that the points of the contact-breaker are just about to break when the piston is five-eighths of an inch from top of dead centre on the compression stroke. This with the contact-breaker fully advanced.

Carburettor.—As standard, the machine is fitted with a special two-jet Binks carburettor, but we supply, at extra charge, a special three-jet Binks "Mousetrap" carburettor. This "Mousetrap" carburettor we strongly recommend as the first jet enables the machine to be driven reasonably slow, the second jet gives remarkably good acceleration, and the main jet (which does not come into operation until the throttle is about ⅔ in. open) enables the maximum speed to be obtained from the engine.

The carburettor is sent out with the jets approximately correct for use in England. Abroad, it might be necessary to change the jets.

The pilot jet, *i.e.*, the jet nearest the engine, rarely needs alteration. After a little experimenting, it will be possible to get the second and main jet dead correct to any climatic conditions. For further instructions regarding the special Binks carburettor, see leaflet sent with the machine. If an alcohol spirit is used, such as "Discol," or "P.M.S.2," larger jets must be fitted.

Spare jets are sent with the machine.