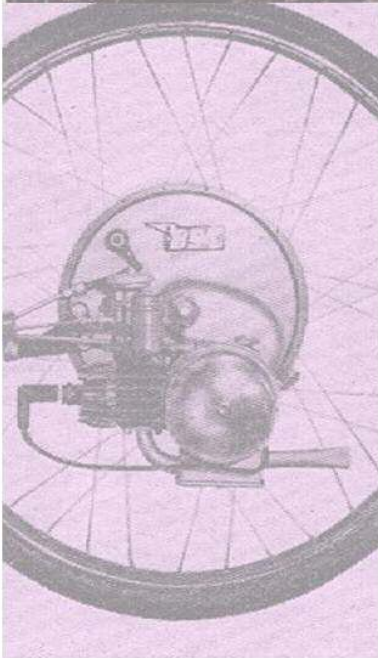


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Cyclemotor Carburettor

Non-needle Design Fitted to Well-known Units

A NEW and unusual carburettor called the B.E.C. is fitted to 1954 Cyclemasters and to standard Power Pak units. The carburettor is manufactured by the Bletchley Engineering Co., Ltd., Slough, Bucks, and was evolved as a result of collaboration between the Bletchley and Cyclemaster concerns. When development work had been completed and manufacture begun, it was agreed that Cyclemaster should not have exclusive rights to the instrument. As a result, the carburettor has also been adopted by Sinclair Goddard for fitting to the standard Power Pak model. Other cyclemotor manufacturers are known to be interested.

Since the Cyclemaster model of the B.E.C. carburettor is so far the most common, the illustration and the description which follows deal with that particular instrument. In principle, the Power Pak variant is identical but it has a vertical mixing chamber in place of the inclined chamber necessitated by the Cyclemaster layout.

There are three main features of the B.E.C. which distinguish it from a normal cyclemotor carburettor: indirect float chamber venting, the absence of a tapered needle on the throttle slide, and the provision of a separate starting system in place of a strangler.

Eliminating Leakage

The float chamber is of top-feed type and the union embodies a fuel filter. To obviate leakage as a result of road shocks, there is no vent hole in the top of the float chamber. Instead, the vent is contained in a small subsidiary chamber positioned alongside the main chamber. There are two communication passages between them, one below fuel level and one above, immediately under the top cover. Above the smaller chamber, in the cover, is a protruberance containing the vent hole, which emerges horizontally. Venting the subsidiary instead of the main chamber has eliminated leakage through the vent hole because fuel-surge effects are damped out by the relatively small passages between the two chambers.

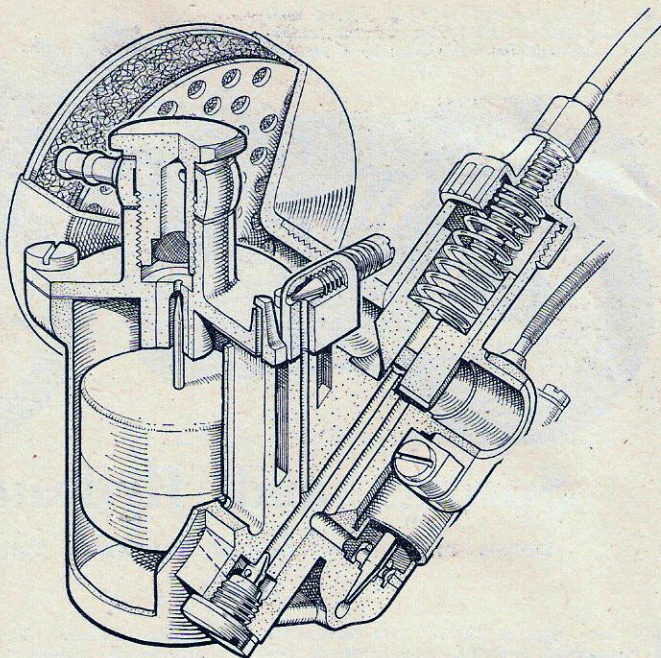
From the float chamber, fuel passes to the main jet, which is screwed into the base of the mixing chamber. Fuel is metered by the main jet and travels up an axial drillway in the mixing-chamber body to a diffuser jet which emerges into the choke. Basic mixture adjustment is effected by a tapered air-bleed screw on top of the carburettor; the screw controls the amount of air which is drawn through an orifice to mix with the fuel on its way from main jet to diffuser.

Operating in the mixing chamber is a cylindrical throttle slide which has a cutaway on the upstream half of its lower end. A key formed in the mixing chamber bore engages with a slot on the side of the throttle to prevent it turning. Operation of the throttle is by normal control cable and return spring.

The diffuser jet has a slight taper on its outer surface, and below about one-third throttle opening the jet is embraced by a blind hole in the base of the throttle slide. Further closure of the throttle results in progressive restriction of the fuel-flow orifice between jet and slide, while the cutaway controls the air supply. In the slow-running position of the throttle, the mixture is delivered to the engine through a small horizontal passage in the slide base, behind the blind hole already mentioned.

A suitably rich mixture for starting is provided by an entirely separate starter-jet

This sectional drawing of the B.E.C. carburettor reveals the indirect venting of the top-feed float chamber and the tapered air-bleed screw which governs the basic mixture setting. Alongside the inclined mixing chamber, with its needle-less throttle slide, is the separate easy-starting device



system, as on some carburettors. From the base of the float chamber a passage leads to a cylindrical starter chamber alongside the mixing chamber. The orifice between passage and chamber is normally closed by a spring-loaded, conical-ended rod. When the starter control attached to the rod is pulled, petrol flows from the float chamber into the starter chamber. Two further passages, one at right angles to and the other parallel to the mixing chamber axis, terminate in a relatively large starter jet, which projects into the choke immediately behind the diffuser jet and below the throttle slide.

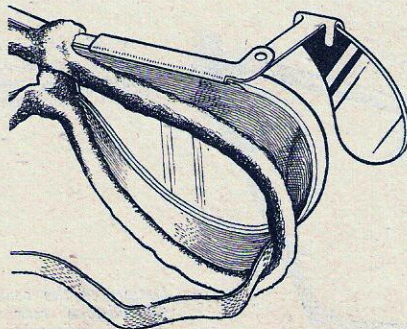
It is necessary to lift the starter control for only about five seconds to fill the starter

chamber up to normal float-chamber level; after that level has been reached the float needle, of course, cuts off the supply. Turning over the engine then causes fuel from the starter chamber to be drawn through the starter jet to augment the normal slow-running mixture. The reserve of fuel in the starter chamber suffices, even in really cold weather, until the engine will accept the normal mixture.

The B.E.C. carburettor embodies an air-filter element of steel wire and brass mesh which is detachable for cleaning. The float, mixing and starter chambers are integral and are formed by a pressure die-casting in zinc-base alloy.

Rear-view Mirror

A SIMPLE rear-view mirror for attaching to goggles has been patented by a Birmingham enthusiast, R. R. Palmer. The device comprises a strip of brass which can be clipped to the frame of the goggles, and from which is pivoted a small arm carrying a pear-shaped segment of mirror in either stainless steel or safety-glass. When the



The rear-view mirror attached to a pair of goggles

goggles are not in use, the mirror can be moved to lie flush with the side of the eyepiece. Though the mirror is small, a wide field of vision is obtained owing to the close proximity of the mirror to the eye. In use, the mirror allows virtually no blind spot astern because by slight turning of the head the wearer can see the left-hand kerb close to the rear of the machine. One disadvantage is that a small area of vision, forward and to the side, is screened by the mirror, so that at road junctions it is necessary for the head to be turned slightly more than is usual. It is thought that the device could be marketed at a price of about 4s.

Photo Competition

OUR associated journal *Amateur Photographer* is organizing a photographic competition to coincide with the Model Engineers' Exhibition (New Horticultural Hall, August 18 to 28). Prizes of £50, £25, £15, and seven consolation awards, will be given for the best photographs of an engineering model of any kind. Prints submitted should measure not more than 10 x 8 in and be unmounted, and must have been taken by the competitor; processing and developing may have been done commercially. Full details appear in the issue of *Amateur Photographer* published yesterday.