

**SUPPLEMENTARY
INSTRUCTIONS**

for the



MIDGET

(J4)

RACING MODEL

The M.G. MIDGET J.4 SUPERCHARGED MODEL

As a considerable portion of the supercharger is covered up by cowl and the radiator, three illustrations have been prepared in order to illustrate the "Powerplus" supercharger, with which the M.G. J.4 Midget is fitted.

The supercharger is mounted on the front cross member at the front and a separate cross member at the rear, by means of "U" clips, and is driven by an extension to the crankshaft through a reduction gear. Examination of the Illustrations Nos. 1, 4, 5 will show that an S.U. carburetter is fitted on the near-side. On the off-side the manifold is united to the supercharger by means of a length of piping having a rubber joint at either end. These rubber joints are secured by means of "Jubilee" clips, which can be tightened periodically by means of a screwdriver.

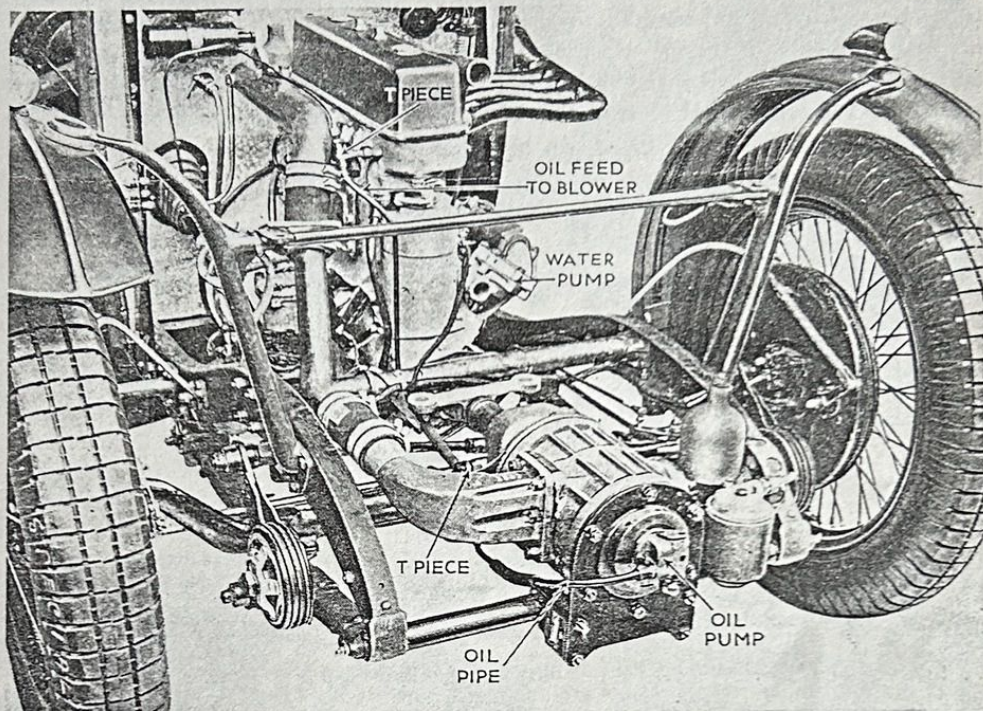


Illustration No. 1.—View of the supercharger fitted in the frame. Radiator and cowl have been removed.

Supercharger.—The No. 6a "Powerplus" supercharger fitted to the M.G. Midget Model J.4 is of the eccentric vane type, in which the blade element is wholly contained in the internal sleeve, which latter revolves inside the stationary casing; this type is considered to be the most efficient under all conditions, keeps in tune over a long period, and any wear taking place cannot endanger the working of the machine. Good pumping is maintained over the whole speed range due to close clearances being employed without any danger of mechanical failure at high speeds.

The following short explanation will assist the owner in understanding the working principles of the supercharger.

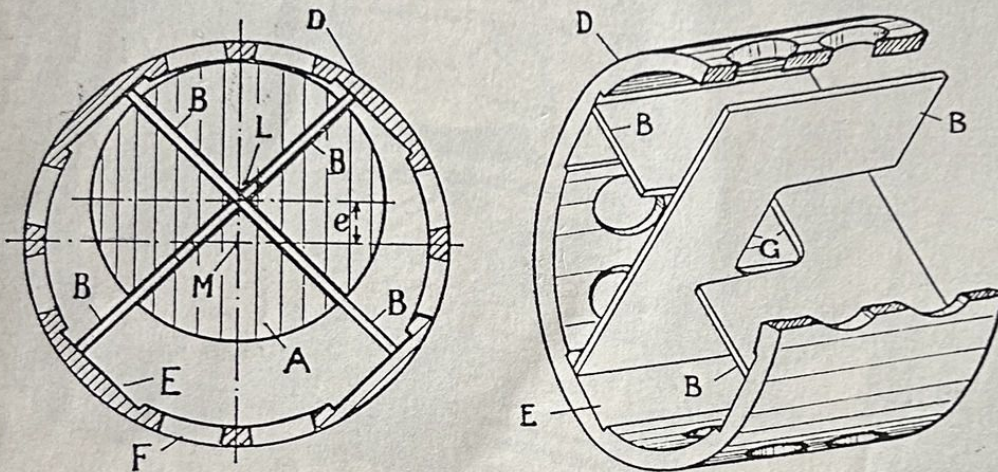
Illustrations 2 and 3 are diagrams of the sleeve and rotor, in which A is the rotor having slots in which slide blades B; D is a sleeve in which are formed pairs of parallel flat surfaces E of perpendicular distance equal to the internal diameter of the sleeve; the outer ends of the blade B are in contact with these flats and move across them. Holes F are also formed in the sleeve to permit of free passage of air into and out of the sleeve.

The rotor A rotates about its axis L, and the sleeve D rotates about its axis M at the same speed as the rotor A, a drive being provided to synchronise these two components. The distance between these two axes is known as the "eccentricity" of the pumping element.

Illustration 3 shows how opposite blades are connected together at G and move as one unit, their combined length being equal to the distance between the corresponding flats E.

The volume of space between any pair of blades at right angles is constantly changing, and this causes the pumping action.

It can be shown mathematically that the centrifugal force is constant for a uniform speed of the rotor, and furthermore, that the centrifugal force of one blade member is always equal and opposite to that of the other blade member; therefore the machine is in balance and may, in consequence, be run at high speeds with the minimum of power absorbed. The value of this centrifugal force is less than half that of previously known types of blower; or conversely, for the same speed of operation, a more robust blade construction can be adopted.



Illustrations Nos. 2 and 3.—Showing diagrammatically the sleeve and rotor of the supercharger and, Illustration No. 3, how the blades are connected together.

Lubrication of the supercharger is effected by a feed on the front cylinder head into the main oil system, a "T" piece being introduced, one branch of which conveys oil to the oil pump, and the other branch of the "T" piece going to the gauge on the dashboard. By suitably reducing the diameter of the pipe, oil at 2 lb. pressure is delivered to the blower. The oil feed pipe from the engine to the oil pump on the front of the blower is tapped, in order to supply a feed of oil to the reduction gear on the engine side of the blower. When this oil reaches a predetermined level, the surplus oil passes along a pipe and is fed in the air intake of the carburetter, which incidentally is provided with a suitable gauze air cleaner, to prevent foreign matter being sucked in through the carburetter and so into the blower, where it might damage the sleeve or rotors.

The supercharger oil pump is carefully checked by the makers to pass approximately 3 c.c. of oil per thousand revolutions, and this adjustment should not be altered, as it is adequate for all touring purposes. On the later superchargers the oil pump adjustment is sealed by the makers, Messrs. Superchargers Ltd., who would require an explanation if the seal is broken by anyone except their authorised service agents.

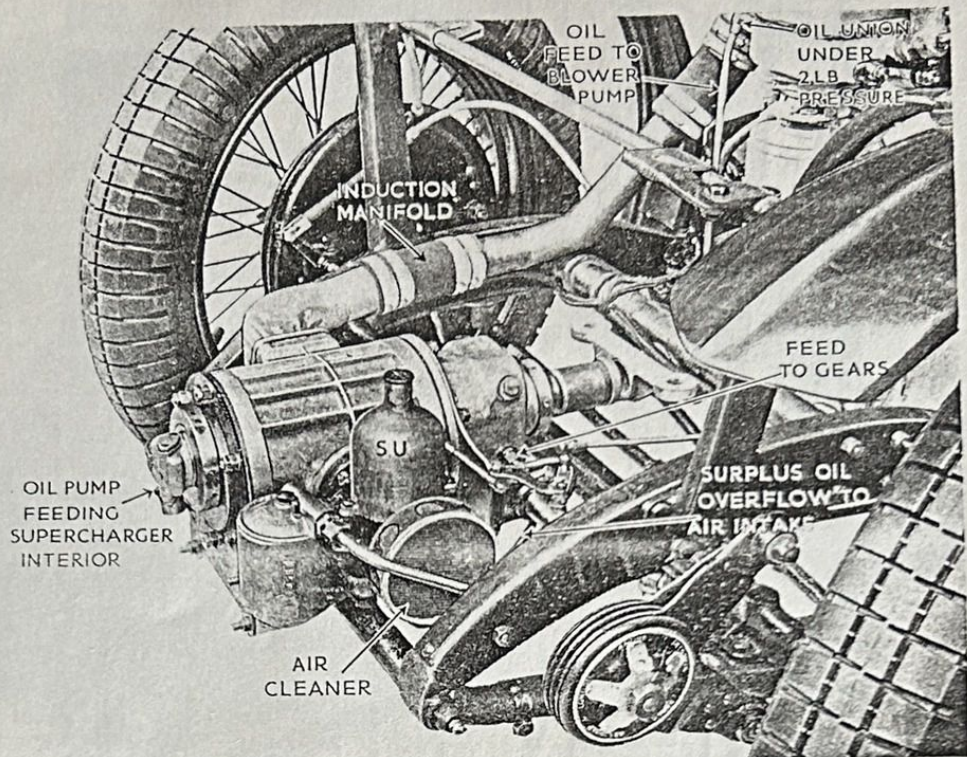


Illustration No. 4.—View of the supercharger carburettor, showing throttle control and air cleaner.

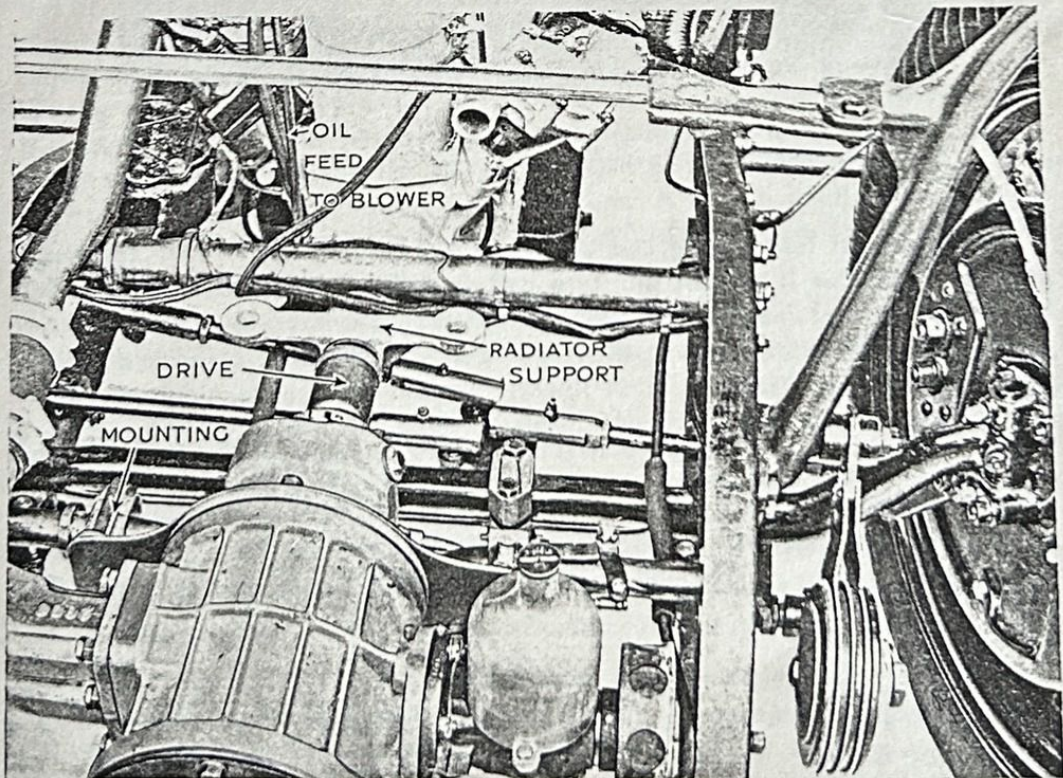


Illustration No. 5.—Plan view of supercharger, showing drive and mounting and position of radiator support.

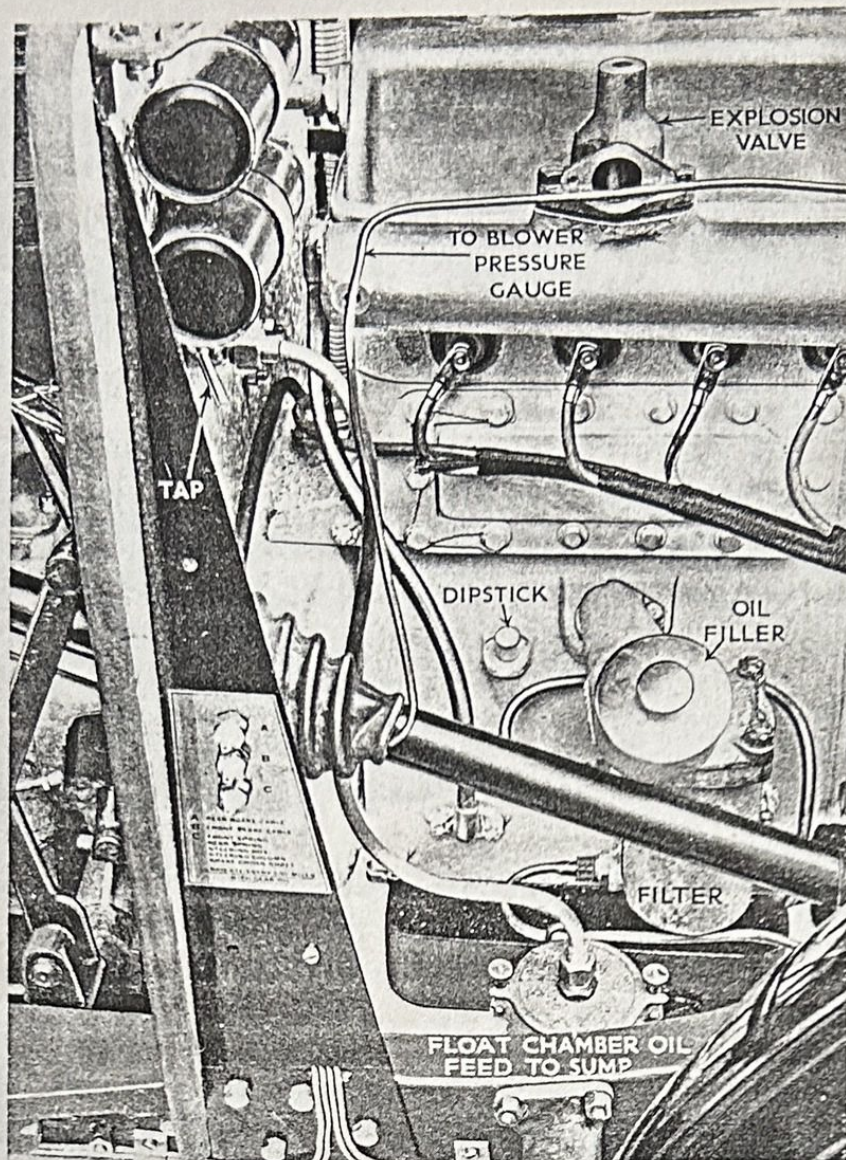


Illustration No. 6.—Side view of engine, showing explosion valve, oil feed float-chamber and position of dipstick and filler and filter.

To assist in lubricating the blades of the supercharger half an ounce of upper cylinder lubricant per two gallons must be mixed with the fuel. This upper cylinder lubricant can be measured with the measure supplied for this purpose, and which is fitted in the top of the tank. The upper cylinder lubricant mixes well with the fuel.

It is always essential to see that there are no air leaks in the system, either between the carburetter flange and the manifold and supercharger.

Engine Lubrication.—The lubrication of the J.4 model follows the standard Midget practice with certain modifications, which can be seen on referring to Illustration No. 6.

It is highly desirable always to maintain the correct level of oil in the sump, which is effected in this case by fitting a supplementary tank on the dashboard and coupling this by means of a pipe to the float-chamber on the side of the sump. The flow can be shut off by means of a tap on the engine side of the dashboard, but when running normally, this tap should be turned on, which is in the horizontal position.

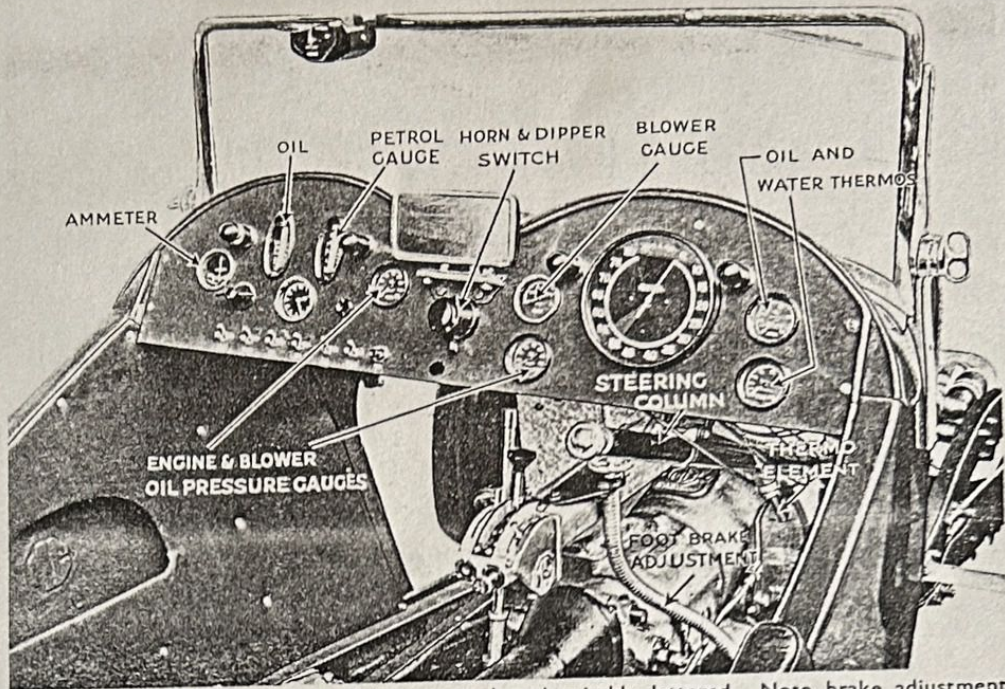


Illustration No. 7.—View of instrument board suitably lettered. Note brake adjustment and pre-selector gear control when fitted.

The inlet manifold is provided with an explosion valve, and should a backfire take place, the valve lifts and relieves the pressure on the supercharger. The pipe is taken from the back end of the induction manifold to a gauge on the dashboard, which the driver should watch. A view of the dashboard can be seen in Illustration No. 7, the various instruments being suitably lettered in the illustration, the principal gauges to watch in connection with the supercharged model being the blower gauge, and the oil pressure gauge to the blower. If there is too much oil pressure to the blower, this will in all probability cause oiling up of the plugs at low speeds. The blower gauge, however, should be studied, zero point being on the top; vacuum on the left side of the gauge, and pressure on the right-hand side of the gauge; the pressure is sometimes known as "boost." The boost is used when going above 55 m.p.h. or for acceleration to attain this speed, the supercharger maximum pressure is in the region of 12 lb. It is possible to run at 55 m.p.h. after obtaining this speed, by lifting the foot on the accelerator sufficiently, so that the gauge shows zero; that is to say, in vacuum and no boost.

It is possible after obtaining considerable speed to lift the foot from the accelerator slightly, and it is prudent also to reduce boost whenever possible, except, of course, when very high speeds are required. It will be found that even at high speeds, once the desired speed has been obtained, the boost can be reduced without considerable diminution of speed.

The model shown at Illustration No. 7 is fitted with a pre-selector gearbox, and, as shown, the brakes can be adjusted by turning the hand wheel in a clockwise direction.

Maintenance.—The "Powerplus" supercharger does not need any special care, and when used only for touring purposes should be overhauled when engine overhauls take place.

When the car has been laid up for a long time or in very cold weather, the gumming up of oil in the supercharger may make it difficult to turn, and it should be "freed" before starting the engine. The best way to do this is to inject some petrol (about an egg-cup full) into the supercharger through the carburetter air intake.