piston ring gaps at approximately 90° from each other around the piston.

Number 1-3 cylinder block can now be put on. First see that the keyway on the crankshaft is up or in line with the engine serial number on the front of the case. With the shaft in this position, the pistons 1-3 will be out of the case about half way. Move one piston about one inch farther out than the other. This will allow you to start one piston into the block over the three top rings. Oil the piston and cylinder bore thoroughly with clean oil. Now start the piston in the block holding the block horizontal and the piston will slide in very easily. This operation may be facilitated by the use of a piston ring clamp. Tighten the six 3/8 nuts and safety. Proceed in the same manner with number 2-4 block. These blocks can be identified for right and left by the number on the machine surface of the block. Number 1 on the block corresponds to number 1 on the case, etc.

After the cylinder blocks are on and safetied, the clearance should be set to .015" on all tappets. A .015" feeler gauge is furnished with the service tool kit, also two tappet wrenches. Turn the crankshaft until number 1 cylinder is on the firing stroke. The piston is on top dead center when the keyway on the shaft is on the center line of the cylinder. Set the tappets by loosening the jam nut and screwing the tappet in or out until the .015" clearance is obtained. Now draw the jam nut up snug, proceeding in the firing order which is 1-3-2-4. After the clearances are properly set, the magneto should be timed.

The Bosch FF4A, Scintilla PN4-DF1, and Bendix-Scintilla SF-4L magnetos are used on the single ignition A-40, and the Bendix-Scintilla SF-4R, is used on the dual ignition A-40. All are timed in approximately the same manner, the only difference being in the determining of when the magneto is set to fire number 1 cylinder.

For the Bosch, the mark on the distributor block designated "L", should point directly upward in line with the mark on the magneto housing. For the Scintilla, the mark on the distributor gear should be brought into alignment with the mark on the magneto housing. The Bendix-Scintilla magneto has a small window on the top forward part, through which is visible a gear and fixed pointer. One gear tooth has been cut off at an angle, and when this tooth is in line with the pointer, the magneto is set to fire on number 1 cylinder. All magnetos should be set at the above positions before they are attached to the engine.

Before the magneto is attached, turn the crankshaft until the markings on the crankshaft and camshaft gear are in line as assembled. Now turn the crankshaft in opposite direction of rotation until the markings are off two and one-half teeth. This puts the engine in approximately firing position for number 1 cylinder. With the magneto set as just described above, it should be attached to the engine. Magneto points should break at approximately 27° before top center on Series 2 engines, and approximately 22° before top center on Series 3, 4, and 5 engines. Both magnetos on the Series 5 engine fire at the same time, 22° before top center.

In order that an accurate timing be made, a .0015" feeler should be inserted between the points, and the engine turned over slowly and the exact opening position of the magneto points determined by a timing disc. Cellophane is a good substitute for a .0015" feeler, if a feeler is not available. Final adjustment can be made to the magneto by rotating it on its slots until the exact timing position is reached. Tighten nuts and put on palnuts.

The exhaust and intake manifold can now be assembled to the block with the intake pipe inserted in the crankcase opening. Before the intake pipe is inserted in the crankcase opening, be sure that the aluminum flange and the rubber packing has been placed on the pipe. The cylinder heads have purposely not been assembled at this stage in order that the copper asbestos gasket at the cylinder end of the pipe can be more easily placed. It is very important that this gasket be placed in the recess of the manifold which has been provided for it. Tighten the four brass nuts at the manifold to cylinder evenly, leading with the two inner nuts. Care should be exercised to see that the gasket is compressed evenly, and that the manifold fits the cylinder block tightly. If the copper-asbestos gasket is allowed to become dislocated, the manifold may