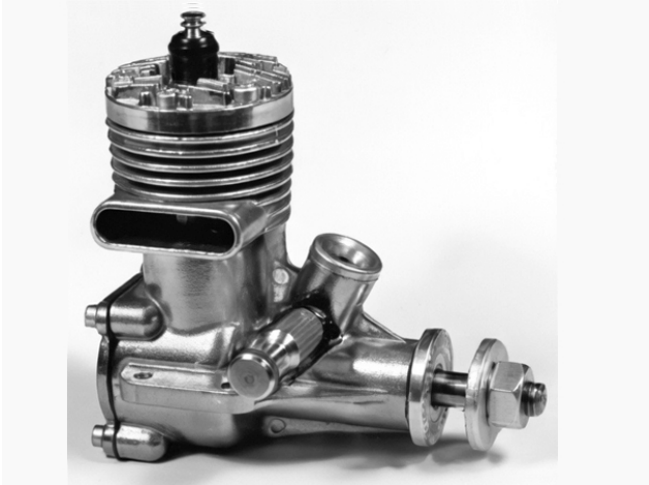


Veco 19 STD

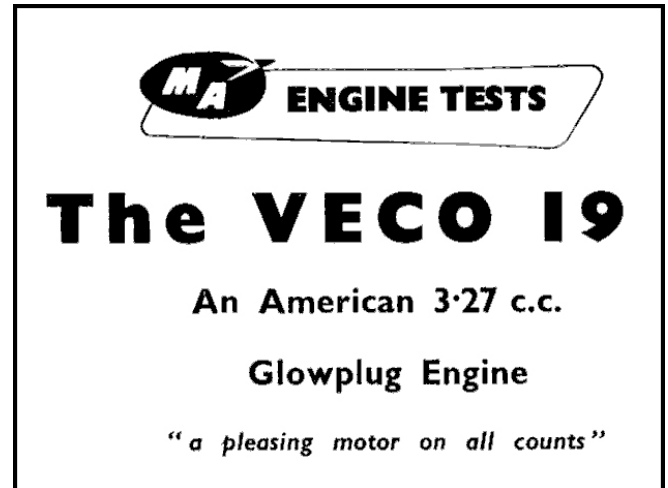


One of the most remarkable features of the modern medium capacity American model aircraft engine is not merely its power output that is virtually taken for granted but the way in which this is combined with exceptional handling qualities.

The 3.27 c.c. Veco 19 engine, made by the Henry Engineering Company of Burbank, California, is an outstanding example of this happy achievement and it took five seconds to start up our test engine from cold for the very first time. No priming is necessary, one simply chokes the intake for two or three turns and, provided that the needle-valve setting is roughly correct, the motor bursts into life within a couple of flicks of the prop.

When we first described the Veco 19 in the July 1956 issue, we mentioned that we had found the piston clearance to be much closer than that encountered on other glow plug engines of similar type and commented that this could be expected to result, inter alia, in better starting, a theory which seems to be supported in some measure by our present test findings.

The reduced piston clearance has been made possible by the makers' attention to cylinder design, which has aimed at achieving uniform expansion of piston and cylinder. This, by eliminating the risk of seizure under the most severe conditions, has allowed the piston to be more closely fitted to the bore, thereby improving compression seal.



Those who complain that most glow plug engines have a soggy fell, as compared with a diesel, will delight in the hearty “plop” of the Veco as it is flicked over compression.

The construction of the engine is fairly typical of current American design. It is extremely robust and is obviously intended to give long and hard service with maximum crash resistance. It has a shaft journal 0.406 in. (3/32 in.) in diameter, running in a 1¼ in. long bushed main bearing. This bearing is of sintered iron, an excellent material for the purpose, and has a small oilway running its entire length.

The body of the engine is a superior example of modern pressure die casting as applied to model engine construction and embraces the entire cylinder barrel, with exhaust duct and smooth, carefully radiused transfer passage, as well as the crankcase, main bearing housing and carburetor body. The casting is tumbled to a bright finish and receives a minimum of machining operations. Contrary to two other reports on the engine, the cylinder liner of our test sample was a close sliding fit in the main casting.

The cylinder liner follows current design concepts, having a fairly generous wall thickness of nearly in. and, located and locked in position by a flanged top, is relieved of radial or axial compression. The cylinder head is channelled to fit this flange and six head screws are arranged around the outer edge. The head gasket, being closely confined in this channel and not pierced by the head screws, is virtually “blow-out proof.”

Veco 19 STD



The piston is notable for its light weight, and the lower part of the skirt below the gudgeon pin bosses is slightly reduced in diameter to minimise friction. For this same reason, the cylinder bore below the ports is opened out. A tubular gudgeon pin with brass end pads is used. The fit of both the small and big-end bearings is first class.

Externally the Veco 19 is of neat and attractive appearance. It is for beam mounting but can also be adapted to radial mounting by means of the crankcase back plate lugs.

Specification

Type: Single cylinder, air-cooled, loop-scavenged two cycle, glow plug ignition. Shaft type rotary valve induction. No sub-piston supplementary air induction. Baffle piston with ignition plug offset to exhaust side.

Swept Volume: 0.1998 cu. in. (3.274 c.c.).

Bore: 0.634 in.

Stroke: 0.633 in.

Compression Ratio: 8:1.

Stroke/Bore Ratio: 1:1.

Weight: 5.6 oz.

General Structural Data

One piece crankcase, cylinder barrel and main bearing of pressure die cast aluminum alloy. Cylinder liner and main bearing of sintered iron. "Stress proof" steel crankshaft with integral crescent counterbalance and rectangular induction port. Duralumin floating big-end bush. Meehanite lightweight lapped piston with tubular gudgeon-pin. Pressure die cast aluminum alloy finned cylinder head attached with six Phillips screws. Pressure die cast aluminum alloy rear cover attached with four Phillips head screws.

Steel propeller drive washer. Reversible brass spray bar type needle-valve assembly. Detachable aluminum venturi insert fitted as standard. Beam mounting.

Test Engine Data

Running time prior to test: 21 hours.

Fuel used: 70 per cent, methanol, 30 per cent, castor-oil for preliminary running, 50 per cent, methanol, 25 per cent, castor-oil, 25 per cent, nitromethane for dynamometer test.

Ignition plug used: Anderson- Veco as fitted. Venturi insert retained for all tests.

Performance

Starting, as we have said, is exceptional. The engine is easy to adjust, the needle-valve response being just right. Instant hand starting was obtained under all propeller loads permitting speeds up to the peak r.p.m. Running is smooth and even at all speeds.

The makers' leaflet states that Veco engines are partially run-in at the factory and suggests the engine be installed direct in a model without bench running, with, however, the proviso that a rich mixture setting should be used for the first hour.

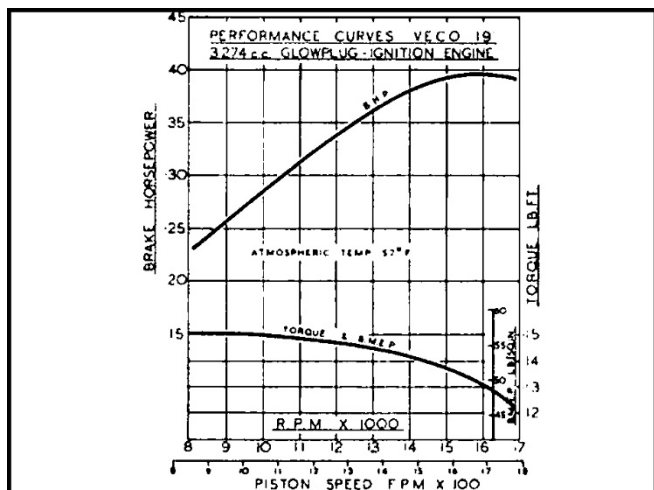
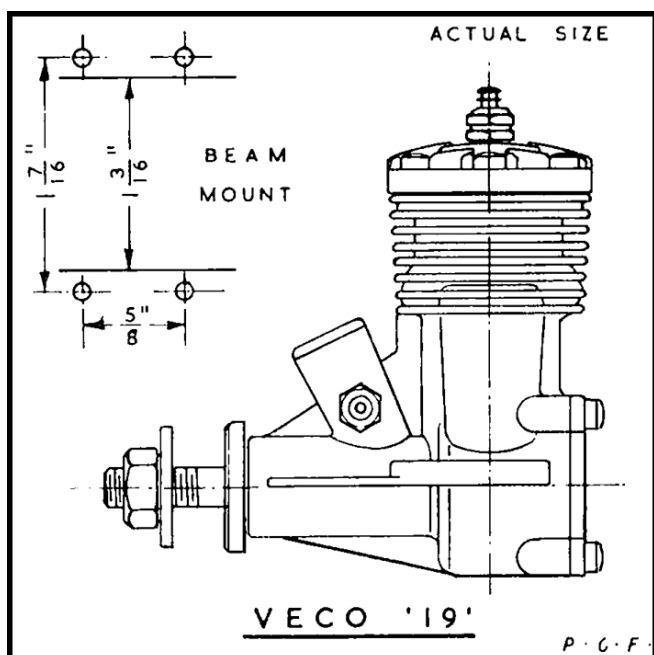
On our dynamometer test, the Veco proved to have a somewhat higher peaking speed than we had anticipated. The lowest speed at which torque was checked was 8,000 r.p.m. where a figure of 0.15 lb./ft. (29 oz./in.) was recorded. But from this point onwards, torque declined quite slowly, with the result that the peak horsepower was realised at between 15,500 and 16,000 r.p.m., where the actual b.h.p. was a fraction under 0.40. This, of course, is really excellent. Nevertheless, with the venturi choke removed and a higher nitromethane content fuel, following some further running, it may well be possible to exceed these figures.

To sum up, this is a pleasing motor on all counts: well made, strong, easy to handle and very powerful.

Power/Weight Ratio (as tested): 1.14 b.h.p./lb.

Specific Output (as tested): 122 b.h.p./litre.

Veco 19 STD



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