

Veco 19 STD



ENGINE ANALYSIS

NUMBER 40

New series 100 Veco's are robust and easy to handle.

Reviewed by R. H. Warring

line is full and the needle valve opened up about a turn).

THE VECO "19" is an extremely nice engine throughout. It is appreciably heavier and more robust than normal American practice and also better finished as regards running fits. The makers claim for the design "temperature controlled clearances", which presumably implies that the optimum running clearances are maintained irrespective of whether the engine is hot or cold, thus promoting consistent performance. Certainly the running is consistent, but this is probably due to the employment of a thicker than usual cylinder liner which is correspondingly freer from distortion, coupled with a good choice of materials for liner and piston.

The engine is supplied by the manufacturers "broken-in", but they recommend a further one hour's running time on a rich mixture before attempting high speed running. The engine as received was quite free and showed no signs of overheating, but was given a total running time of 1½ hours before test data were taken. At this stage the running fits appeared excellent, with good compression in the cylinder and the main bearing remaining quite cool. This bearing is, in any case, quite slack (roughly one thou, clearance).

Starting characteristics were not particularly brilliant from cold. The Veco appears to like a generous prime through the exhaust, but gives little indication whether it is too wet, or too dry, or even when it is on the point of starting. As a consequence one has to keep flicking until it bursts into life. Once warm, however, the engine starts readily first or second flick after a finger choke (and even this may not be necessary if the fuel

Running was consistent at all speeds tested, but the Veco was definitely happiest at the higher speed end 13,000 r.p.m. or more. It remains easy to hand-start right up to 20,000 r.p.m. Adjustment of the mixture by the needle valve is not critical and does not have to be hurried. Reversing the spray bar assembly to bring the needle on the left hand side is to be preferred, since this brings the fingers out of range of the exhaust, which is both hot and oily. It is also one of the first American engines we have run extensively on an American plug which has not burnt out the glow element, despite the fact that fuels containing up to 25 per cent, nitromethane were used.

Design and construction-wise the Veco conforms to sensible modelling requirements. The main unit is a large casting incorporating the crankcase, cylinder jacket and front bearing housing and choke tube. This is an excellent casting which is machined in only two places to take the liner and the main bearing bush. Externally the casting has been finished by buffing, but the inner surfaces are equally smooth.

The relatively thick cylinder liner is of soft steel, ground on the outside for a tight plug fit in the main casting. Ports are rectangular in shape, diametrically opposed and identical in shape (with appreciable overlap between transfer and exhaust). The bore of the liner is relieved at the bottom end.

The head is a light alloy casting, formed with a groove in the bottom face which locates on top of the liner. A gasket is trapped in this groove,

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providing a perfect seal, since it cannot extrude sideways. The head is retained by six short Phillips head screws locating in the main casting. The head itself is shaped to conform to the deflector on the piston and the plug is offset to the exhaust side, which is a little unusual (the normal location of an offset plug is towards the transfer side of the cylinder).

The piston is of cast iron, with a properly shaped deflector head. The bottom is relieved a matter of .001 in. The piston is quite long to ensure that there is no sub piston induction at the top of the stroke.

The gudgeon pin is 5/32 in. diameter, of the floating type and fitted with hollow brass end pads. Connecting rod is nicely machined from solid stock, with, again an unusual feature, the big end fitted with an alloy bush. Crankpin diameter is relatively small 3/16 in.

The crankcase is of soft steel, .045 in. diameter stepping down at the front to ¼ N.F. American thread. It runs in an iron bush inserted in the crankcase casting. The shaft has been ground to finish and the bush reamed to size. Final fitting then appears to have been done by lapping in the shaft. The propeller driver locks on to a cam-shaped section of the shaft. Length of shaft thread provided is adequate to take a whole range of propeller pitches certainly the full range of those which would normally be used.

The back cover is again a light alloy casting, with a transfer passage cast in the left side and top (which locates the back plate for reassembly). This is necessary since the cover would otherwise blank off part of the bottom of the cylinder and restrict the transfer area.

Summarising: a thoroughly likeable engine with lots of power. Performance is consistent on almost any propeller load over the range of speeds 10.000 to 20.000, with peak power developed at 15.000 r.p.m. It is capable of handling high-pitch speed props, as well as the 8x4 or 9x3 sizes which would appear ideal for free flight. It is a well-designed engine and, above all, well made.

In one way the Veco 100 series are unique (other capacities being .29 and .35 American cu. in. sizes) in that the exhaust has been reversed to the other side of the cylinder at a time when everyone else is producing new cross or loop scavenged engines is placing the exhaust on the left side of the cylinder.

SPECIFICATION

Displacement: 3.271 c.c. (.1995 cu. in.).

Bore: .635 in.

Stroke: .630 in.

Bore/Stroke ratio: 1:1

Bare weight: 5½ ounces.

Max. power: .316 B.H.P. at 15.000 r.p.m.

Max. torque: 27 ounce-inches at 10.000 r.p.m.

Power output: .0965 B.H.P. per c.c.

Power/weight ratio: .0575 B.H.P. per ounce.

Material Specification:

Cylinder/Crankcase unit: light alloy pressure die casting, buffed and polished externally.

Cylinder liner: soft steel.

Piston: cast iron.

Con. rod: light alloy (alloy big end bush).

Crankshaft: soft steel (ground and lapped).

Main bearing: iron.

Spray bar unit: brass.

Manufacturers:

Henry Engineering Company,

P.O. Box 229, Burbank, California, U.S.A.

(Available in this country through: H. J.

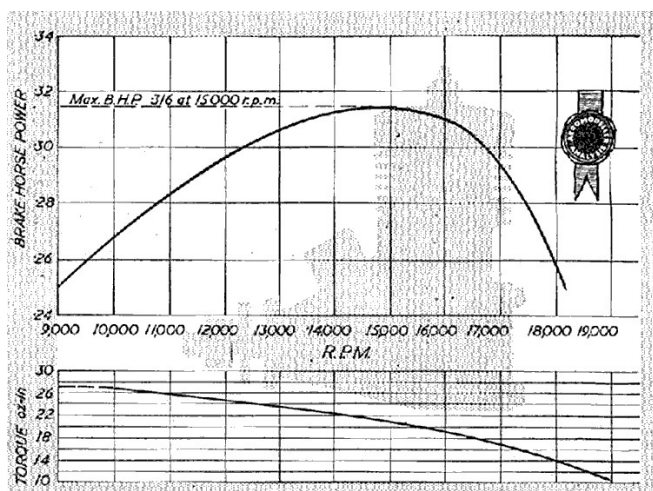
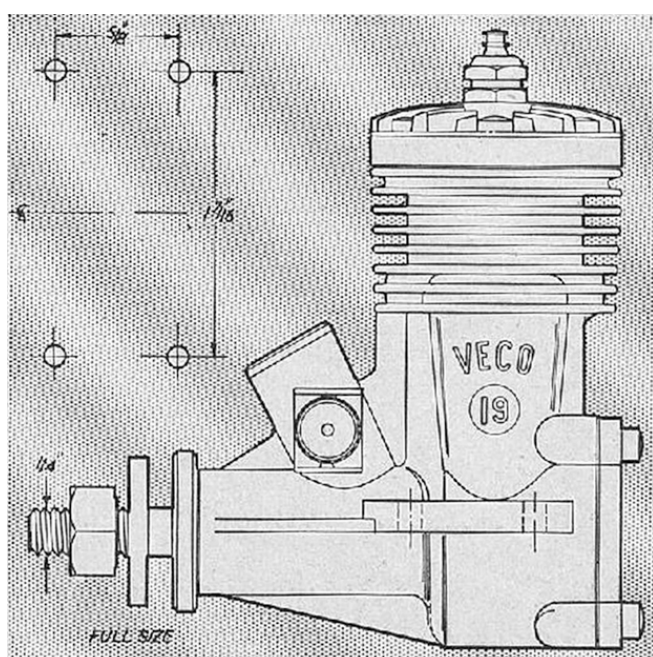
Nicholls Ltd., 308 Holloway Road, London, N.7.)

Propeller test figures

Propeller	r.p.m.
9 x 4 (Stant)	11.600
8 x 4 (Stant)	14.600
7 x 4 (Stant)	16.200
6 x 4 (Stant)	18.200
8 x 8 (Stant TR)	11.800
7 x 6 (Stant)	15.000
9 x 3 (Tiger)	13.000
6 x 9 (Tiger)	15.250

Fuel used: Standard methanol/castor mixture with 20 per cent, nitromethane.

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More: https://flyinghlsat.com/search.php?search_keywords=Veco-Tests