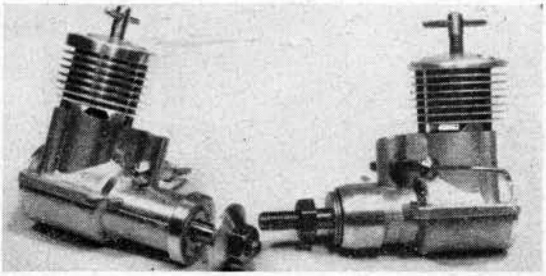
MOTOR MART (continued)

handbook, quoting date of manufacture and serial number.

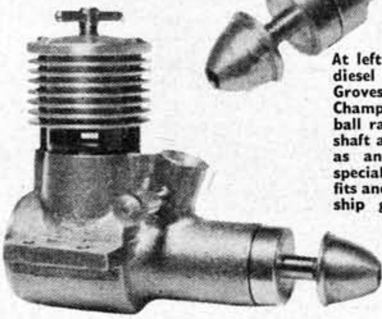
We are indebted to the *Wind So'k*, official bulletin of the Toronto Sputterflys MAC for some re-work hints on the **O.S. Max 15.** Some time ago we commented on the claim for 17,000 r.p.m. with a stock Tornado 6 x 9 in. prop. made by this club, with the suggestion that it might be a little on the high side. Now we are assured that the figures are obtained by an accurate electronic tachometer and to bear out the claim, they have a second engine which was similarly modified and turned 17,600 r.p.m. with promise of more to come when run-in. Mods include flaring the shaft opening into the crankcase, opening the shaft bore by 1/16 in., opening the rotary valve by an extra 1/32 in. each end, and for pressurising if wanted, a head bolt is drilled between 1/64 in. and 1/32 in. and locked with nuts as a backplate bolt in the upper left position when viewed from the rear. These were extra mods, over and above the usual "treatment" of replacing gaskets, de-burring and polishing the transfer, bevelling venturi to 45 degrees and opening to ⅜ in. internal bore, polishing the backplate, squaring out the piston transfer ports, bevelling lower edge of cylinder transfer port, polishing most other parts and hand lapping piston and shaft fits with rouge. Enough?

Same bulletin quotes Jaures Garofali's advice to **Super Tigre G.20** owners on running-in procedure. Run at 16,000 r.p.m. on a 55 per cent. Nitro, 20 per cent. Castor, 10 per cent. Methanol, 15 per cent. Nitrobenzine formula for a half-hour *after* 4 to 6 hours of general running. In-flight running is recommended *because* fairings (we presume this means speed cowls) cause overheating, and though first flights may show low speed, this improves with each succeeding flight, as many have seen when the Super Tigre *Equipe* performs at a contest.

Other news from Canada concerns Dave Sugden (well on the way to becoming a dentist, having forsaken the aircraft industry!) whose specials are always of interest. Ken Groves used the diesel illustrated here, at Cranfield but unfortunately suffered D/T timer troubles.



Above, comparative views of old and new P.A.W. 2.5 diesels shows how the front end has been changed completely. New model at left showing its tapered exhaust ports. Right, the Sugden Special glow plug 2.5 has an inclined plug mounting and voluminous 7/16th diameter intake. Will turn a 7 x 4 Kaysun nylon prop. at 18,200 r.p.m.



At left, the Sugden Special diesel as used by Ken Groves in the World Championships has double ball race supported crankshaft and said to be as fast as any other diesel. No special features — just good fits and excellent workmanship give it performance

2·5 cc Fuel consumption tests

DATA FOR THE three accompanying fuel consumption tests on 2.5 c.c. engines were obtained with "straight" diesel fuel and were made under identical conditions. Fuel consumption was measured at a range of loadspeeds between 10,000 and 16,000 r.p.m., using different sizes of propellers. Needle valve setting corresponded to the leanest mixture to give consistent running throughout the test and mean consumption of at least three readings averaged for each load-speed. Measured and derived data are summarised in the tables and graphs.

It must be pointed out that these data represent *static* test conditions and do not necessarily apply to consumption figures achievable in flight where a considerable modification of needle valve setting may be possible, or necessary. Maintenance of a "minimum lean" setting in flight, too, depends to some considerable extent on the location and design of the fuel tank.

The "A" and "B" curves should be related to the tabular figures, when it will be seen that they represent B.H.P. x Seconds per c.c. in the case of "A" (reading on the left hand vertical side of the graph) and c.c. per sec. per B.H.P. in the case of "B". Needless to say, these curves are symmetrically opposite, but do enable an immediate appreciation to be made when comparing with previous tests which have been conducted in either way.

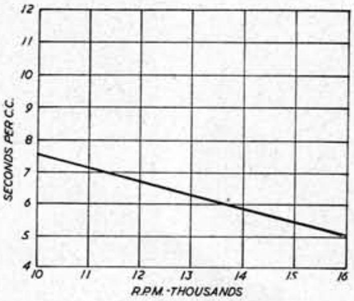
ENYA 15D-11

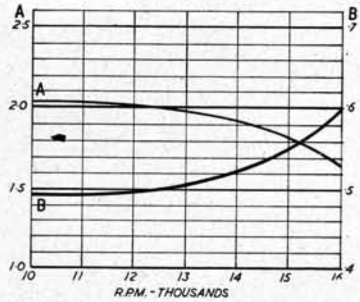
R.P.M.	*B.H.P.*	*Seconds per c.c.*	*A* *B.H.P. x Seconds c.c.*	*c.c./Second*	*B* *c.c./Second/ B.H.P.*
10,000	.266	7.6	2.02	.132	.496
11,000	.284	7.1	2.02	.141	.496
12,000	.299	6.8	2.03	.147	.49
13,000	.311	6.3	1.97	.159	.51
14,000	.321	5.9	1.91	.170	.53
15,000	.330	5.5	1.81	.182	.55
16,000	.332	5.0	1.66	.200	.60

ENYA 15D-11 (continued)

Being a loop-scavenged engine, somewhat different consumption/speed characteristics might be anticipated. However, the duration per c.c. shows to be linear in characteristic with an increase in fuel consumption of the order of .009 c.c. per second per 1,000 revs. The product of brake horse power developed against fuel consumption is substantially constant over a wide range of speed. Specific consumption (B) increases more rapidly at the upper end of the speed range.

Restarting characteristics of this motor, when hot, were excellent and could be accomplished without choking or priming.





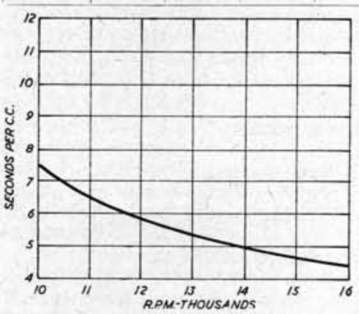
ETA 15 D

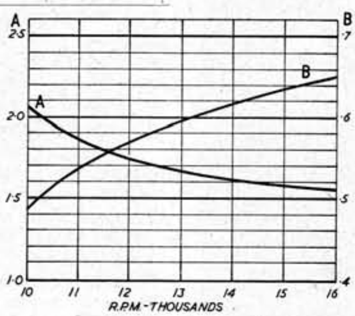
R.P.M.	B.H.P.	Seconds per c.c.	A B.H.P. x Seconds c.c.	c.c./Second	B c.c/Second/ B.H.P.
10,000	.272	7.6	2.07	.132	.485
11,000	.285	6.5	1.86	.154	.54
12,000	.300	5.8	1.74	.172	.57
13,000	.313	5.3	1.66	.189	.60
14,000	.326	4.95	1.62	.202	.62
15,000	.336	4.7	1.56	.213	.635
16,000	.344	4.5	1.55	.222	.645

Presenting a different curve graduation for the power consumption ratio figures, the ETA 15D has a comparatively low rate of increased consumption as speed rises. It is usually operated between 13,000 and 15,000 r.p.m. for team racing, (air figures).

The extremely nice needle valve control, and possibly the twin ball races, makes it easy to establish optimum settings with this engine. Fuel consumption showed a tendency to decrease slightly from a true linear relationship with increasing speed, probably due to the fine degree of mixture control provided by the needle.

Re-starting characteristics were found to be excellent, with or without choking.





P.A.W. 2·49 Mk. III

Fuel consumption proved to be substantially linear on static test with an increase in consumption of the order of .020 c.c. per second per 1,000 revs, which is a little on the high side. However, a slightly leaner mixture setting could undoubtedly be held for high speed running using a nitrated fuel. Specific consumption (B) showed a marked increase at high speeds. An exact setting was difficult to establish for "minimum lean" mixture to give a consistent run throughout the test runs and measured data probably correspond to a somewhat richer mixture can need be used in flight conditions.

Restarting characteristics were very good when hot, but choking or priming was virtually essential to ensure a first-flick start.

R.P.M.	B.H.P.	Seconds per c.c.	A B.H.P. x Seconds c.c.	c.c./Second	B c.c./Second/ B.H.P.
10,000	.256	7.8	2.0	.128	.50
11,000	.275	6.9	1.9	.145	.53
12,000	.290	6.3	1.83	.159	.55
13,000	.304	5.6	1.7	.179	.59
14,000	.314	5.0	1.57	.200	.64
15,000	.318	4.3	1.37	.733	.73
16,000	.313	4.0	1.25	.250	.80