

TUNING THE XPAG ENGINES



(CONCLUSION)

by Eric Blower

Stage 4

The increase in power output in this instance is obtained by fitting a Shorrock eccentric-vane-type supercharger with a balanced pressure lubrication system, which will give a large increase in power at the lower and medium engine speeds. It is mounted on the inlet manifold and driven by twin belts from the crankshaft pulley. Full details of the fitting are supplied with the supercharger kits. It has a drive ratio of 1.16 : 1 step-up on engine speed and a swept volume of .72 litre per revolution with the following boost pressure:

r.p.m.	lb./sq. in. boost (approx.)
1,000	1.5
2,000	2.5
3,000	3.8
4,000	5.5
5,000	6.0

The oil metering pin is .304 in. in diameter fitted in a reamed housing bore .3125 in. diameter.

Early-type superchargers had a separate oil feed tank in which S.A.E. 30 oil should be used, but later kits were supplied with the oil feed to the supercharger taken direct from the main engine oil supply.

The kits are normally supplied with a single S.U. 1½-in. carburetter fitted with a jet .090 in. in diameter and an RLS carburetter needle.

With the supercharger kit fitted to the standard engine, Champion L11S or Lodge R49 plugs, tappet clearances at .022 in. according to Engine No., and No. 1 pump feed the engine should give a power output of 70 b.h.p. at 5,000 to 5,500 r.p.m.

It can, of course, for special purposes be run on a fuel of 50 per cent. methanol, 20 per cent. petrol, and 30 per cent. benzole, but this necessitates the use of the .125 in. jet to the carburetter and VE needle, or richer VG, or weaker VA.

Fit a T3 needle and seat to the float-chamber and fit the twin S.U. pumps. Use Champion L11S or Lodge HNP or, should harder plugs be required, use Champion LA11 or Lodge R49. The power should then be 75 b.h.p. at 5,000 to 5,500 r.p.m.

If the mixture is disturbed at high speeds through vibration use a ¼ in. thick neoprene washer to the carburetter flange in place of the ordinary gasket. Better still, of course, mount the float-chamber independently of the carburetter, etc.

When fitting a neoprene gasket use slotted nuts and double-coil spring washers on the carburetter fixing studs. Tighten these nuts only enough to grip the carburetter firmly. Drill the studs through the nut slots and lock with wire from one stud to the other around the carburetter body.

Stage 5

Fit the Shorrock supercharger kit in conjunction with a compression ratio of 9.3 : 1 as Stage 2, with the larger inlet and exhaust valves and 150-lb. valve springs.

Fit the .125-in. jet to the carburetter and the T3 needle and seat to the float-chamber. Use carburetter needles VG, or richer VI, or weaker VE, all with a ¼-in. shank.

Use the twin coupled S.U. petrol pumps, Champion LA11 or LA14 or Lodge R49 or R51 sparking plugs, and a fuel of 50 per cent. methanol, 20 per cent. petrol, and 30 per cent. benzole, with 1 per cent. castor oil added, when the engine should produce 88 b.h.p. at 5,500 r.p.m. A further increase in power can be obtained by fitting the 1½-in. carburetter to the supercharger, although this will necessitate a new elbow in either steel or aluminium, with an internal diameter of 1½ in., fitted between the carburetter and the supercharger. The inlet port to the supercharger should match up and be of the same size.

With a jet diameter of .1875 in. and the needle RM7, or richer RM8, or weaker RM6, and a fuel of 80 per cent. methanol, 10 per

cent. petrol, and 10 per cent. benzole the engine should develop 97.5 b.h.p. at 6,000 r.p.m.

Special Materials Available for 'TB' or 'TC' Midgets

4.00 × 16 wheels, suitable for tyre sizes 5.50—16 or 6.00—16.

Rear axle crown wheel and pinion 8/39 = 4.875 : 1.

The above ratio gives:

16.67 m.p.h. per 1,000 r.p.m. with 4.50—19 tyres = 100.02 m.p.h. at 6,000 r.p.m.

17.15 m.p.h. per 1,000 r.p.m. with 4.75—19 tyres = 102.90 m.p.h. at 6,000 r.p.m.

17.6 m.p.h. per 1,000 r.p.m. with 5.00—19 tyres = 105.6 m.p.h. at 6,000 r.p.m.

Special Materials Available for XPAG Engines 'TB', 'TC', and 'TD' Midgets

Rocker shaft bracket packing pieces ⅛ in. thick.

36 mm. inlet valves.

34 mm. exhaust valves.

High-compression pistons 12151 complete with special rings and gudgeon pins.

Outer valve spring (150 lb.).

Inner valve spring (150 lb.).

Competition cylinder head gasket.

Competition carburetters 1½ in. diameter. S.U. Spec. 532.

.100-in. bore jets.

.125-in. bore jets.

.1875-in. bore jets.

Jet needles as S.U. list

Float-chamber needle and seat assemblies T3 (identified by three grooves machined around body).

Booklet of S.U. needle range.

1½-in. carburetter (for supercharger).

Plugs:

Champion:	L11S	Super Sports.
	LA11	1st Step Racing.
	LA14	2nd Step Racing.
	LA15	3rd Step Racing.
Lodge:	HNP	Super Sports.
	R49	1st Step Racing.
	R51	2nd Step Racing.
	R53	3rd Step Racing.

S.U. Carburetter Co. Ltd.
Wood Lane,
Erdington,
Birmingham 24.

Lucas high-performance coil type BR12. (Standard Q12 coil is satisfactory up to 6,000 r.p.m. BR12 is good up to 8,000 r.p.m.)

Lucas 4VRA vertical magneto (Lucas Part No. ENM2002). The advance curve is suitable for the XPAG engine. When fitting a magneto it is necessary to indent the tappet cover to clear the body and move the position of the breather pipe elbow.

Competition clutch assembly (7½ in. dia.).

Competition clutch plate (driven) (7½ in. dia.).

Clutch springs, competition type, 150 lb., light blue (7½ in. dia.).

Competition clutch assembly (8 in. dia.).

Competition clutch plate (driven) (8 in. dia.).

Clutch springs, competition type, 205 lb., light grey (8 in. dia.).

Special Materials Available for 'TD' Midget

Combined water temperature gauge and oil pressure gauge. (This item fitted as standard from Chassis No. TD13914.)

4.50 × 15 wheels suitable for tyre sizes 6.00—15.

Rear axle crown wheel and pinion 8/39 = 4.875 : 1.

Gearbox speedometer pinion for above.

Gearbox speedometer gear for above.

Gear ratios with 9/41 axle:

	Overall	m.p.h. per 1,000 r.p.m.
Top	4.875 : 1	15.195
Third	6.752 : 1	10.97
Second	10.09 : 1	7.34
First and reverse ..	17.06 : 1	4.34

Rear crown wheel and pinion 9/41 = 4.555 : 1.

Gearbox speedometer pinion for above.

Gearbox speedometer gear for above.

Gear ratios with 9/41 ratio:

	Overall	m.p.h. per 1,000 r.p.m.
Top	4.55 : 1	16.259
Third	6.309 : 1	11.81
Second	9.429 : 1	7.85
First and reverse ..	15.942 : 1	4.64

Oil pump spring (fits inside existing spring and raises pressure to 60-80 lb./in.).

Flexible oil pipe, pump to filter, or filter to block.*

* Can only be fitted to engines with throw-away type of oil filter.