

SPORTS SHOW SPECIAL!

JANUARY 1971

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MOTORCYCLE

SCOOTER & THREE-WHEELER

MECHANICS

LARGEST SALE

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*see offer inside
and full preview*

SEE THEM AT THE SHOW!



- Start first time ● Suzuki 250 engine analysis
- Scooter tune for sport ● Metisse 8-valve test



SOUPER SCOOTER

Build a better 'bretta with this tuning advice from Rafferty Newman's racing shop



► **Scooter sport is most certainly increasing, judging from the events planned for next season, and it is gathering a growing band of enthusiastic followers.**

Machines vary from the virtually standard to the full-blown racing variety like the outfits pictured above.

Down at the Rafferty Newman shop in West Street, Fareham, where they build their own racers and do a good job making other people's scooters go quicker, Les Rafferty showed us how he builds up a racing Lambretta.

To start, you don't need to take the motor out of the frame

—it can be stripped *in situ*. Les started on a 200 which had had the crankshaft removed. The gearbox and clutch were still *virgo intacto*, as the saying goes.

The best crankshaft to use is the GP-type—it has a stronger conrod and the taper is better for the later type flywheel.

The shaft web is the full circle type, with a couple of holes in it. These can be filled up to reduce crankcase volume, and Les uses cork discs made from bottle corks from the chemist. Aluminium plugs could also be made; in either case, they are stuck in with Araldite.

When you fit the nearside

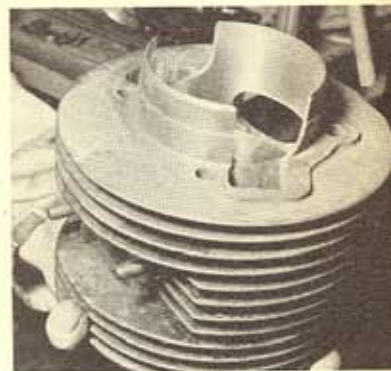
crankcase cover or bearing housing, don't fit the gasket. This allows the housing to go further into the case and reduces volume still more. Use non-setting jointing compound to keep the seal.

The next step is for racers only. The flywheel can be cut down substantially—see photograph above—and the coils removed from the stator, leaving the contact breaker unit. Rafferty Newman will do this for you if you give them the flywheel and some money.

Ignition is then supplied from a battery, through a coil to the contact breakers.



Starting at the crankshaft, the two holes in the flywheel can be filled with aluminium or cork plugs held by Araldite



The ports in the barrel may be modified, as described in text below. Make sure that the transfer ports match cutaways on piston

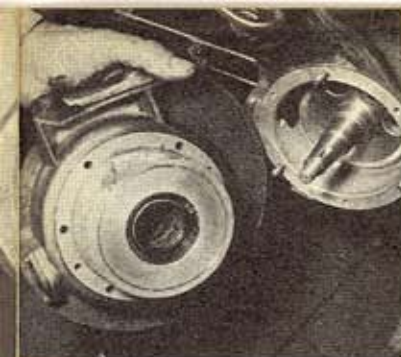


There is no special exhaust pipe available, but one can easily be made up for use with silencer — see below

The barrel can be altered fairly drastically by opening the ports and by overboring to a larger size. The ports go like this: exhaust—raised 2.5 mm, sideways 1 mm each way; transfer—just make sure they both open at the same time; intake—lower by 2 mm, widen by 3 mm on right-hand side (offside).

overbored

Bore conversions, complete with pistons will give the following increases: 150-175 cc, 175-200 cc, 200-225 cc, and Rafferty Newman can supply special Dykes pistons for these and the standard 200.



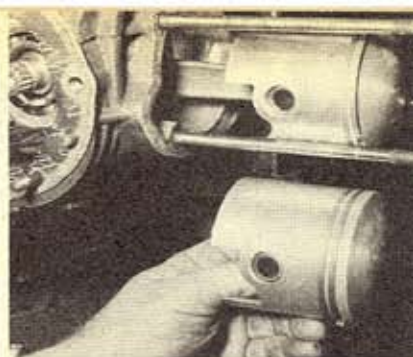
The timing side case can be fitted without a gasket to reduce crankcase clearance. Use a jointing compound



For racing, the lighting coils can be removed and the flywheel cut down as shown. Ignition is by battery and coil



This crankcase packing plate is a help to all models except the GP which already has a web to take up crankcase clearance



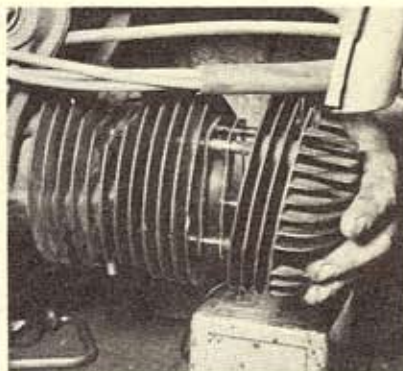
The Dykes piston shown fitted is of high silicon alloy and doesn't smear. Ring position gives better port timing. Comp ratio is same



Timing can be set most accurately with a dial gauge and AVO-meter or light bulb connected across the contact breaker points



Cylinder heads can be machined down to give higher compression ratio. Central plug may be fitted to central squish-type head



Use the standard gaskets on both the cylinder head and the cylinder base. Changing base gaskets will affect timing



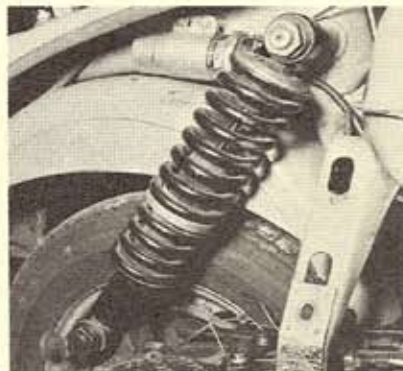
The standard carburettor can be changed for an Amal, Phillips, or larger Dell'Orto, using this manifold flange



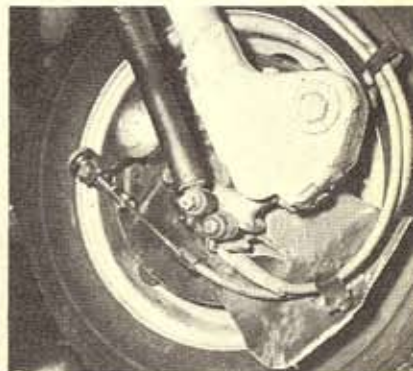
If a central plug is fitted, the cylinder cowl will need an extra hole. Never run without the cowling fitted



A larger carb may require a cutaway in the cover—this kind of air scoop can easily be made up and fitted



The original dampers soon lose their efficiency; these Girling units are much stronger. The spring rate is not changed



Front brake cables brought over the front of fork leg may need a guard—an alloy sheet like this can be made up easily

One point—they have the ring pegs at the rear, so make sure they're fitted the right way round. The arrow stamped on the crown points towards the exhaust port. Ignition timing, on the hairier motors, is recommended by Les as 2.5 mm btdc. He sets it up with a dial gauge and a continuity tester on the cb points. Cylinder heads can be machined down to give a high compression ratio, the one Les was building was running on 10.5:1. Also heads with a central squish band can be altered to fit a central plug. This necessitates cutting a suitable hole in the cowling.

To prevent cowlings coming adrift, use Allen screws to hold them down, and wire the screw heads together. The engine will need a bigger carburettor to breathe through, and intake manifolds are available to suit Amal, Phillips, or a 30 mm Dell'Orto. The Amal used is the 930 (30 mm) Concentric. Finally, there are several engine sprockets available and gear clusters are interchangeable, giving a variety of gears—for more information, we recommend Ken Herlingshaw's book, *Performance Tuning and Conversions*.

PRICE LIST

	£	s	d
Girling damper	4	7	6
engine sprocket	3	1	6
modified flywheel	1	10	0 exchange
6-volt battery	2	9	6
coil	2	10	0
modified barrel (ports)	6	10	0 exchange
overbored barrel	2	10	0 exchange
Dykes piston (for 225)	4	5	0
(others)	3	19	6
skimmed head and central plug	5	0	0 exchange
crankcase packing plate	12	6	
flywheel padding kit	7	0	
intake manifold (Amal, etc)	1	5	0

Note: all parts available from Rafferty Newman, 260 West St. Fareham, Hants. There is no postage charge for normal spares, but for conversions or modifications it is 8s. 0d.