

## On Test With a Nerus Modified Austin Mini



AS far as sporting enthusiasts are concerned the ordinary Mini has far less attraction than the Mini-Cooper and its latest S-type derivation. However, the standard Mini costs only £448 while the Mini-Cooper costs £568 and the S-type is £695. Of course, there are several advantages to be had in the Cooper models such as the improved engine and gearbox and remote control gear-lever but the front disc brakes have rather dubious merit and really need the servo assistance supplied in the S-type. As the rest of the car is virtually the same, anyone wishing for the outstanding handling of the Mini would be well advised to save over £100 and buy an ordinary Mini and be prepared to put up with the lower performance. An intensive course in double de-clutching would also be of great assistance.

Having saved the £120 over the Cooper-Mini the enthusiast will find that the performance needs ameliorating and of course it is quite possible to spend much more than £120 in the fitting of tuning equipment. This is where the Nerus Engineering Company comes into the picture for they are specialists in providing modest increases in performance at a modest price and with only a slight increase in fuel consumption.

Nerus is an offshoot of the long established Rother Ironworks which has been producing high quality castings for over a century. The man in charge of the Nerus works at Rye is Frank Webb whose experience includes several years in the experimental department of Lagonda, a spell in charge of the H.W.M. Formula Two racing team and more important as far as Mini tuning is concerned a number of years spent as chief assistant to Harry Weslake who is one of the World's leading authorities on cylinder head design.

Naturally with such a background the emphasis of Nerus tuning is placed on cylinder head modifications and the Rye workshops are equipped with modern gas flow plant and Heenan and Froude dynamometers. Three different stages of cylinder head modifications are offered by Nerus for all cars and these are sold on an exchange basis, the prices ranging from £17 15s. od. to £34 5s. od. Normally Nerus supply only cylinder heads and make recommendations for other equipment to improve performance still further, although for the Mini they do supply modified camshafts.

Stage I for the Mini has the inlet and exhaust ports modified and polished, the combustion chambers modified and polished to improve turbulence and burning characteristics and the combustion chamber volumes are balanced to improve smoothness and torque. The valve spring assembly is strengthened to allow the engine to reach 6,200 r.p.m. in the gears. This head gives a modest increase in performance but Nerus claim that if the car is driven normally the fuel consumption will improve. This stage costs £17 15s. od. on exchange.

Stage II follows a similar pattern to Stage I but the compression ratio is raised from 8.3 : 1 to 8.8 : 1, larger inlet valves are fitted and stronger valve springs supplied so that 7,000 r.p.m. can be reached. This head is particularly suitable for the fitting of twin carburetters, high-lift camshafts and modified exhaust systems and costs £21 15s. on exchange.

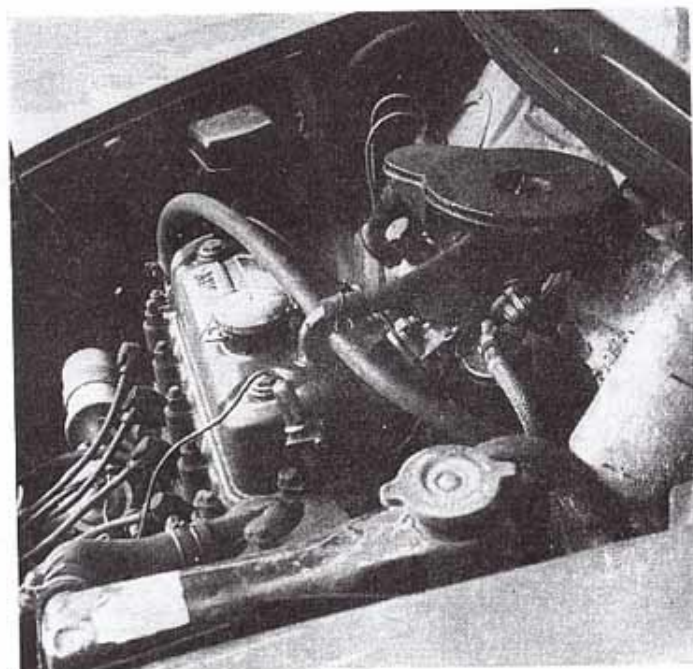
Stage III is the most advanced head and is intended for use where high speeds are envisaged or where competition work is



"Q" CAR. The Nerus Mini is externally unchanged but is almost as quick as the Cooper-Mini.

planned. This head is the same as the Stage II version with the larger inlet valves. Larger exhaust valves are fitted in conjunction with double valve springs and considerably more work is carried out on the ports and combustion chambers while the compression ratio is raised to 9.0 : 1. This head, which costs £30, is mainly intended to be fitted in conjunction with twin carburetters, modified camshaft and tuned exhaust systems as this is the only way to realise the full potential of the gas flowing operations. With the modifications recommended by Nerus 72 b.h.p. can be obtained or on the Mini-Cooper engine 83 b.h.p. at 7,200 r.p.m. can be achieved. Nerus offer three different camshaft grinds for the Mini; one is for normal road use, the intermediate one is for a car which is to be driven on road and track, and the racing shaft can only be fitted in conjunction with the steel racing crankshaft. As this allows the engine to develop peak torque at between 5,500 and 6,000 r.p.m. it is not suitable for road use. These camshafts cost £8, £9 10s. and £11 10s. respectively on exchange.

Recently, Nerus loaned us for road-test a standard Mini with the Stage III cylinder head which retained the single S.U. carburettor with a richer needle, slightly cleaned up inlet and exhaust



UNDER the bonnet the engine also looks unchanged but a lot of work has gone into the cylinder head.

manifolds and a straight-through silencer. Together with a special cylinder head gasket the whole conversion costs £35 3s. 3d. In all other respects the Mini was standard except for the Nerus badge on the boot lid, and in fact the car had covered 27,000 miles at the start of our test as the car is used as normal day-to-day transport by Nerus.

When driving the car the most noticeable difference is the way the engine goes on revving way past the point where the standard Mini has run into valve bounce and although no rev. counter was fitted it would seem from the performance figures that 6,500 r.p.m. is reached quite comfortably, and no doubt when the twin carburetter conversion and sports camshaft are fitted the engine will comfortably exceed 7,000 r.p.m. Some vibration is felt at peak revs and is transmitted through the gear-lever. The only other sign that the engine is tuned is indicated by the exhaust system which has a normal note at speeds up to about 2,000 r.p.m. and takes on a delightful crackle from then on. It is also noticeable on the over-run but does not become objectionable.

As the data table shows the performance is considerably better than the standard Mini, especially up to 60 m.p.h., but above this speed it tends to run out of breath and this is where an extra carburetter would show to advantage. However, it will almost touch 70 m.p.h. in 3rd and goes on to a maximum of 80 m.p.h., which is 8 m.p.h. better than the normal Mini. A cruising speed of 70 m.p.h. is quite comfortable although the usual high noise level of the Mini is present. The tractability of the Nerus Mini is only fractionally worse than the normal Mini and does not become apparent unless the driver lets the car lug down to very low speeds. The gearbox of the test car still had good synchro-mesh after 27,000 miles but the change is still extremely poor by modern standards. A feature of the car which was showing signs of old age were the shock-absorbers, which allowed a great deal of fore and aft pitching on bumpy roads as well as lateral pitching on corners. Obviously the Mini rubber cones cannot do all the work without the aid of shock-absorbers. The brakes were quite up to the performance and showed no signs of fade when stopping the car from high speeds. Nerus recommend fitting a hard lining with their conversion and will fit a complete set for just over £8.

This £35 conversion seems to be good value as even in the form tested it provides much improved acceleration and top speed without worsening the fuel consumption to any great extent. It also has the advantage that the conversion can be added to at any future date and the addition of a second carburetter and a modified inlet and exhaust system should take the performance well over that of a Mini-Cooper for the expenditure of around £50.—M. L. T.

## ACCELERATION FIGURES

	Standard Mini-Minor	Standard Mini-Cooper	Stage III Nerus Mini-Minor
0-30 m.p.h. . . . .	7.0 sec.	5.2 sec.	5.4 sec.
0-40 " " " " . . .	10.6 "	7.4 "	8.4 "
0-50 " " " " " " . . .	17.5 "	11.0 "	13.0 "
0-60 " " " " " " " " . . .	27.6 "	17.1 "	20.0 "
0-70 " " " " " " " " " " . . .	—	28.0 "	—
Standing-start 1-mile	23.5 "	20.5 "	21.3 "

## SPEEDS IN GEARS

1st " " " " . . . . .	25 m.p.h.	30 m.p.h.	28 m.p.h.
2nd " " " " " " . . . . .	40 "	50 "	43 "
3rd " " " " " " " " . . . . .	60 "	70 "	69 "
4th " " " " " " " " " " . . . . .	72 "	85 "	80 "
Overall fuel consumption " " . . . . .	44.0 m.p.g.	36.1 m.p.g.	36.6 m.p.g.

	£	s.	d.
Nerus Stage III cylinder head . . . . .	30	0	0
Modified induction & exhaust manifold	1	10	0
Carburettor needle . . . . .		3	9
Silencer " " " " " " " " . . . . .	1	7	6
Cylinder head gasket . . . . .	2	2	0
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	35	3	3
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Fitting extra . . . . .	7	0	0