

ELECTRIC MOTOR TESTS

GEORGE LAND APPRAISES THE LATEST BATCH OF PRODUCTION AND MODIFIED OFF-ROAD MOTORS.



WITH THE STEADY increase of activity in 1/10 Off-Road racing, manufacturers of motors have begun to supply motors solely developed for this class of racing. In this country the two BRCA Off-Road racing classes are *Modified*, with a £35 price limit on the motor (the same as 1/12) and *Production* class which has a £10.00 price limit.

PRODUCTION CLASS

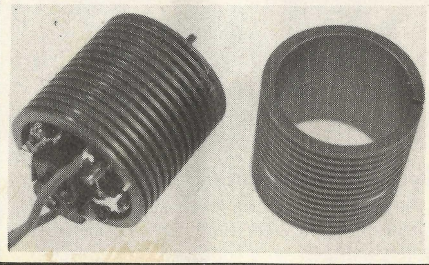
The two motors tested in this class are the *Parma 'Porsche'* and the *M.G. 'Buggy' Special 'Clubman'*.

The *Parma 'Porsche'* motor is an *Igorashi 05* that has been available for some time and which is very familiar to 1/12 racers although not so well known in 1/10 buggy racing. The *M.G. 'Clubman'* is a *Mabuchi 540* built up by *M.G. Products* in response to the low Ni-Cad duration problems encountered on tight or muddy circuits using the high gearing in the *Kyosho 'Scorpion'* with the ordinary *M.G. 'Buggy Special'*.

Parma Porsche

This motor is the familiar 32 turns of 22g wire *Igorashi 05* motor produced in Japan complete with a factory balance and epoxied windings. The motor is marketed in this country under the *Parma* label by *Helger Racing* who have recently dropped the retail price to £9.95 to make it legal for BRCA Production Class Racing. The factory balancing on this motor was found to be reasonable and the results of the dynamometer tests revealed a good power output but a high current consumption.

On the track these figures were further endorsed with very good acceleration out of slow corners and pulled well down the straights with again no race duration problems. The only problem encountered was a slight heat build up in the motor, this was cured by fitting one of the heatsinks now currently available for Off-Road cars. Overall the motor performed very well under all conditions.



M.G. Clubman

This motor is wound with the same diameter wire as the *'Buggy Special'* but with more turns per armature pole, this gives the effect of reducing the current consumption slightly as well as the power. The armature is very neatly wound with epoxied windings, the balance of which was found to be very good with the commutator trued for better brush contact. The dynamometer test showed that the motor was down on power compared to the *'Buggy Special'* and the *Parma 'Porsche'* but the current consumption was also reduced, giving a better performance than any standard kit motor tested thus far.

On track testing this motor it was found that its best performance came when using the high gearing with no problems experienced in lasting the race distance. This motor pulled very smoothly out of the corners and had a reasonable turn of speed on the straights.



Parma Porsche
UK Distributor Helger Racing 72, Lauderdale Tower, Barbican, London EC2Y 8BY England. Price £9.95.
MG Clubman
Manufacturer: MG Model Products, 38 Station Road, Nr. Wellingborough, Northants NN6 5NX. Price £10.00.

RESULTS						
1/10 Production Motors						
M.G. Buggy Special	A*	9.3	9.7	10.4	11.4	13.7
Clubman	V	7.05	6.96	6.82	6.59	6.07
Parma Porsche	A	10.7	11.2	11.9	13.0	15.3
	V	7.64	7.59	7.41	7.16	6.42

A* is Current Consumption for fixed load.
V is Power for fixed load.

MODIFIED CLASS

Four motors were tested in this section, two Yokomos, one Kyosho and one Mabuchi.

These first three are of the new generation of motors, and are distributed by *Parma*, *M.G.* and *Ripmax*. All three motors have adjustable timing and removable brushes with separate springs for brush tension. The adjustable timing is achieved by the use of a separate retaining ring fitted inside the motor can as described in the last issue. When these motors are fitted to Off-Road cars a rubber cover is essential as a lot of dirt and mud collects in the endbell brush assembly and works its way into the motor, thus reducing power and shortening the useful life of the motor.

The fourth motor was a *Tamiya* labelled Mabuchi RS 540SD imported by *Richard Kohnstam* and which has been available for a number of years and is a very popular motor.

The price range of these motors varied from around £18.00 for the *Tamiya* and *Kyosho* to £33.00 for the *M.G.* and £35.00 for the *Parma*.

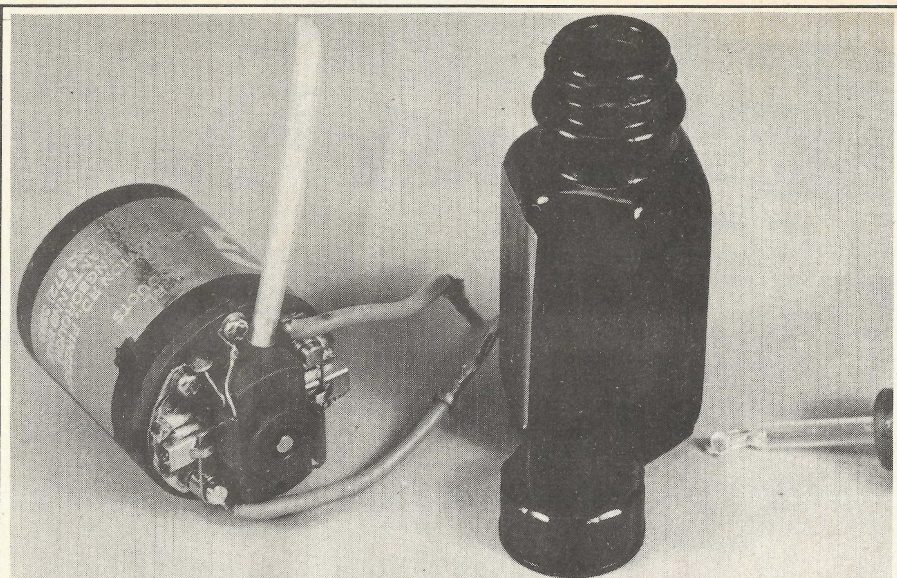
Tamiya RS 540D
UK Distributor: Richard Kohnstam, 13-15a, High Street, Hemel Hempstead, Herts. Price £17.99.
MG Buggy Special Yokomo
Manufacturer: MG Model Products, 38 Station Road, Nr. Wellingborough, Northants NN6 5NX. Price £33.00.
Kyosho Le Mans 480T
UK Distributor: Ripmax Models, Ripmax Corner, Green Street, Enfield EN3 7SJ. Price £80.95.
Parma Ferrari Yokomo
UK Distributor: Helger Racing, 72 Lauderdale Tower, Barbican, London EC2Y 8BY. Price £35.00.

Tamiya RS 540 SD

Although a very distinctive looking motor with its black can and red endbell, the familiar Mabuchi 540 is fitted with a single ball race in the can and an ordinary bush in the endbell.

The armature is wound with 22 turns of approximately 20g wire (a very hot wind) and in this case is balanced by grinding slots into the armature stack. On the minus side there is no epoxy or lacquer on the windings. The dynamometer tests which gave reasonable results revealed a high power output although the current drain was equally great.

On track testing the motor it was found to be very powerful and responded best to low gear ratios. On the high gearings it was extremely quick but would not last the five minutes.



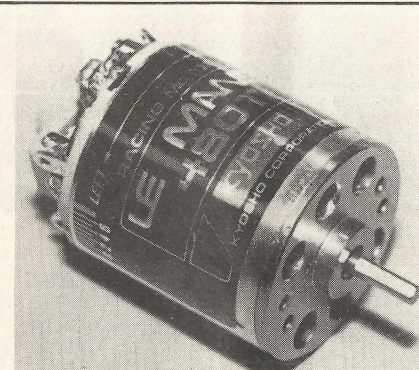
M.G. Buggy Special Yokomo + Wick

This is a new motor from Mick Goddard and along with his 1/12 example is *M.G.*'s first *Yokomo* based product. In this case a very simple modification has been incorporated which allows a plastic tube filled with a fibre 'wick' to be fitted through a hole drilled in the endbell. This in turn allows *M.G.*'s new motor lubricant, called 'Mr. Cool', to be dripped onto the armature throughout the race. (Read on for fuller description.) The only problem encountered here was that fitting the wick to the buggy motor would not allow the fitting of a protective rubber boot and as the track was damp and muddy we did not want to run the

motor without a cover. The motor will be re-tested at a later date with a modified cover and the wick fitted.

Technically speaking, the motor is of the normal round can type and when stripped down for inspection was found to be well built and very well balanced. The armature is a 26 turns of 21 AWG and dynamometer tests proved that the motor was both reasonably powerful and very good on the current consumption.

The track tests also proved its potential to be very good with plenty of smooth power given over the five minute race duration. Its performance out of the corners was particularly impressive as was its performance on the straight.

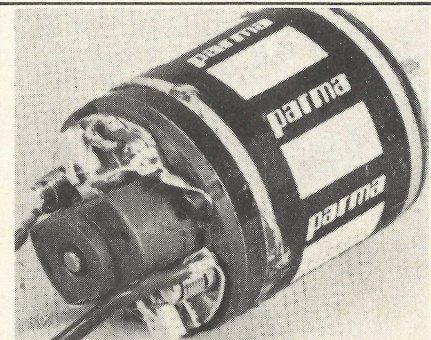


Kyosho Le Mans 480T

As described in the last issue this motor features a 'skewed' type armature and is well balanced and epoxied, the thicker motor case and aluminium end plate have the effect not only of improving the magnetic field but also of better heat dissipation.

Upon dynamometer testing, this motor was found to have the least power output of all the modified motors tested although it had the lowest current consumption.

On the track the 480T was found to be reasonably fast giving very smooth power at low speed and capable of using very high ratios for five minutes with no trouble.



Parma Ferrari 1/10 Yokomo

This Yokomo features a 21 turn of 19g wire armature and is extremely well constructed with the armature well balanced and epoxied. The dynamometer for this motor proved that it was extremely powerful and although the current draw was high it was a very smooth performer.

On the track this motor easily matched the figures found on the dynamometer and was by far the fastest motor tested. If too much power was applied in tight corners the front wheels of the car became very light and pushed the car straight on. Once round, very fast acceleration out of the corners resulted in an excellent performance down the straight. Overall great fun to drive!

Test Results

Kyosho 480T	A	8.7	9.2	10.0	11.3	14.2
	V	7.59	7.48	7.31	7.10	6.62
M.G. B.S. Yokomo	A	9.4	9.9	10.8	11.9	14.9
	V	7.94	7.79	7.59	7.32	6.84
Tamiya RS 540 SD	A	12.6	13.5	14.0	15.2	19.0
	V	8.47	8.18	7.77	7.48	7.13
Parma Ferrari Yokomo	A	10.2	10.9	11.9	13.4	16.3
	V	8.54	8.48	8.3	7.95	7.22

Mr Cool

As mentioned earlier the new motors from *M.G. Products* arrived complete with the interesting 'wick' modification to the motor end bells.

The enclosed instruction sheet claimed that this wick and the 'Mr Cool' liquid supplied, increased the power output of the motors and gave a longer useful life! Taking

Motor		No 'Mr Cool'	1st Application	2nd Application
Kyosho 480T	A	9.9	10.6	10.8
(Power)	V	6.56	6.69	6.69
Parma	A	12.4	13.1	13.4
Ferrari				
(Power)	V	7.38	7.5	7.61

The results from the above tests lead to a full test of the *Parma* motor after application of the 'Mr Cool' and a full set of reading taken.

Without 'Mr Cool'

	A	10.2	10.9	11.9	13.4	16.3
Power	V	8.54	8.48	8.3	7.95	7.22

With 'Mr Cool'

	A	11.8	12.6	13.6	15.4	18.4
Power	V	8.9	8.76	8.61	8.28	7.61

Mick Goddard at his word we tested the 1/12th motor and found that a slight power increase was apparent when 'Mr Cool' was applied to the endbell brush assembly.

The obvious question was, would this liquid help rejuvenate motors that had been extensively run and which were obviously dirty and down on power? The liquid was applied to three well used motors. On two

of these motors no difference was found until after the third application when a marked increase was noticed in the motor revs. The fluid was then applied to a Mabuchi RS 540 SD that had been in use for about a year and a noticeable difference was detected at once.

In a race situation the motors provided a definite performance increase although the batteries appeared to be losing power too quickly towards the end of the race.

Further tests with 'Mr Cool' were conducted using the *Kyosho* 480T and a *Parma* Ferrari Yokomo Off-Road motor. The first test was to run the motors on a fixed load and to check the current consumption and power readings. 'Mr Cool' was then applied as the motors were running and the readings taken, as can be seen from the results the power was increased but the current consumption also went up.

These tests proved *M.G. Products* claims to be correct as can be seen from the test results, on the minus side the power consumption was increased. On track testing it was found that the gear ratio needed to be played with to get the best results as on the motor's normal ratio it was draining the Ni-Cads slightly earlier in the race, when the ratio was lowered there was still an improvement in speed and the necessary duration obtained.

In conclusion 'Mr Cool' appears to be very effective and will be a useful addition to the pit box for use on ordinary motors and those fitted with the wick.