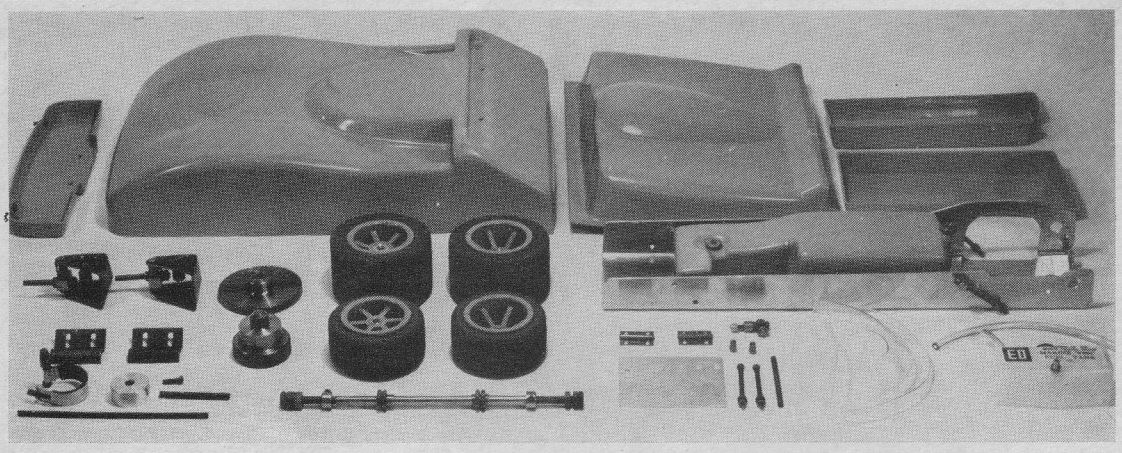


MARDAVE'S R/C ALFA

built and reviewed by Peter Richardson

MARDAVE R/C Racing were the first British manufacturers to provide a radio controlled racing car on the home market, and as such probably paid the penalty of all innovators in that their product appeared a little *too* soon. This car, a $\frac{1}{8}$th scale version of the Matra-Simca MS120 Formula I racer, had a number of unfortunate features, the worst probably being the excessively weak front suspension which consisted mainly of 16 s.w.g. wishbones clamped to the chassis with plastic plates. At the slightest pretext, the whole unit would fall apart, with obvious detriment to the handling! A further handicap were the excessively heavy tyres which fitted non too securely on the hubs, the result being that the rear tyres tended to 'grow' at high revs, slipping on the hub with embarrassing results once more.

However, to the credit of Wes Raynor of the Mardave Company, various modifications to this basic car resulted in a considerably better product in quite a short time. Presented with the opportunity of making-up the new Alfa Romeo kit, the reviewer, frankly, was rather in two minds as to whether to build it – after all, once bitten, twice shy! Subsequently, sanity prevailed and a cursory inspection of the kit box dispelled all fears.

The design is essentially the same as before but, with the advantage of hindsight, modified to overcome all previous snags. Basically, the car is built around an aluminium channel chassis, the front suspension merely bolting to the channel sides, while plain bronze bearings carry the rear unsprung axle. The motor sits upright, but across the chassis, driving force being applied by spur gears, via a centrifugal-force operated clutch. The chassis is thus very narrow (approximately 3 in.) and consequently could easily be used for either a 'Formula I' or a 'G.T.' body style – no doubt the manufacturer has this in mind!

Between photographing the kit contents and actual assembly of the Alfa, we received a further 'mod' in the form of a $\frac{3}{8}$ in. diameter axle from Mardave, who consider this advisable in order to prevent premature wear on the $\frac{1}{4}$ in. dia. rod normally supplied, and this is now incorporated in all kits. It is, we feel, very gratifying to find that the manufacturer is constantly improving his products and not content to merely sit back on the side lines.

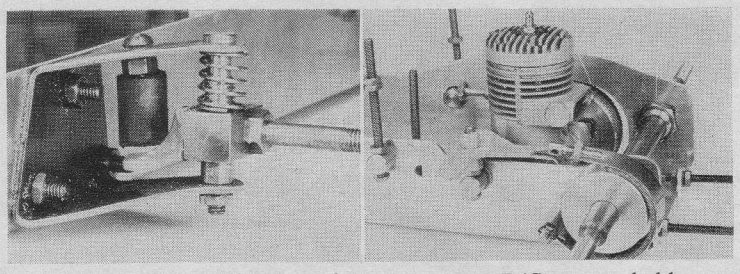
Assembly of the car proved to be simplicity itself, particularly as the front suspension units are supplied ready-built and merely require three bolts each to secure them. Approximately $\frac{1}{4}$ in. of vertical movement is provided for suspension, while rubber steering stops are also incorporated. The only other 'work' at this end of the chassis involves cutting away the side portions to clear the steering rods, and to cut the steering arms from the dural sheet (supplied and pre-marked). As only soft metal is involved, a 'Junior' hacksaw and file are all that are required.

A pre-assembled clutch – very free and with no binding at all evident – simply bolts on to the engine crankshaft. The engine mounting plates are predrilled for a Veco 19, but any other motor would fit simply by elongating one pair of holes with a rat-tailed file. With the motor loosely bolted into position, the rear axle assembly is added, adjusting the amount of overhang on the bearing to locate the gear wheel and dural brake drum. It should be mentioned that all nuts were applied with a *little* Locktite to prevent vibration from loosening them off. The only 'mechanical' work now remaining proved to be cutting the throttle bellcrank from dural sheet and installing it upon its pivot, already bolted in place!

Attention was then diverted to the installation of a Waltron 2-channel proportional R/C unit, and this

Heading, the component parts in all their glory; axle illustrated here was replaced by a modified version (see text). Left, a crafty photo of the finished car showing hinging rear body section in up and down positions.

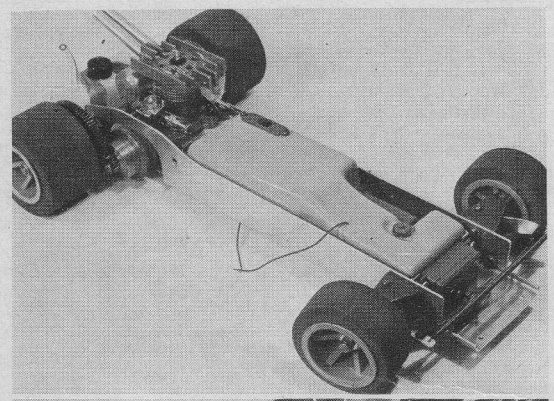
Simplicity is the keynote throughout the design and final appearance of Mardave's new Alfa Romeo kit. Here, at right, the ultra simple front suspension system is visible with wishbones carrying sprung kingpins. At far right, the motor installed and brake in position around outside of clutch.

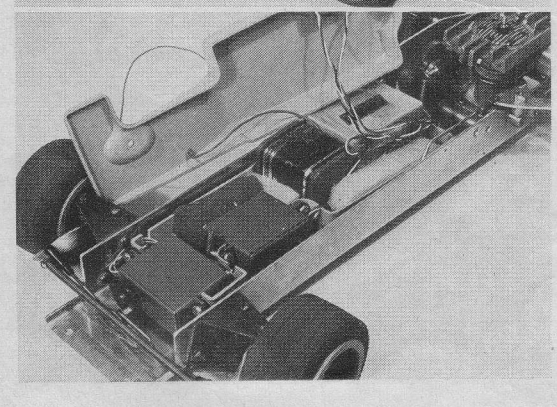


too proved exceptionally easy – perhaps just as well since the instructions throughout tended to be overbrief and at times non-existent.

All R/C cars suffer greatly from all sorts of dirt and corruption thrown up by the wheels and oil spewed from the engine, which is not quite in keeping with the precision electrical components in charge of controlling the beast! To keep out this unwanted sludge, a very neat two-part case is provided, moulded in thick ABS. This case is simply cut away to accept the servos which are retained with self-tapping screws. The Waltron receiver was originally intended for boat control and thus was not designed as a 'compact' unit. The servo amplifiers are also contained within the receiver adding to its bulk, and as such the unit consumes a lot of the available space, and by the time the Deac pack is installed within the case, there's little room left for vibration-killing foam.

The completed chassis minus sidepans; top sheet shows plastic vacuum-formed radio compartment lid in place and below, the lid removed showing R/C installation. Note extreme forward positioning of steering servo, leads to switch and aerial wire which passes up through the lid of the case.



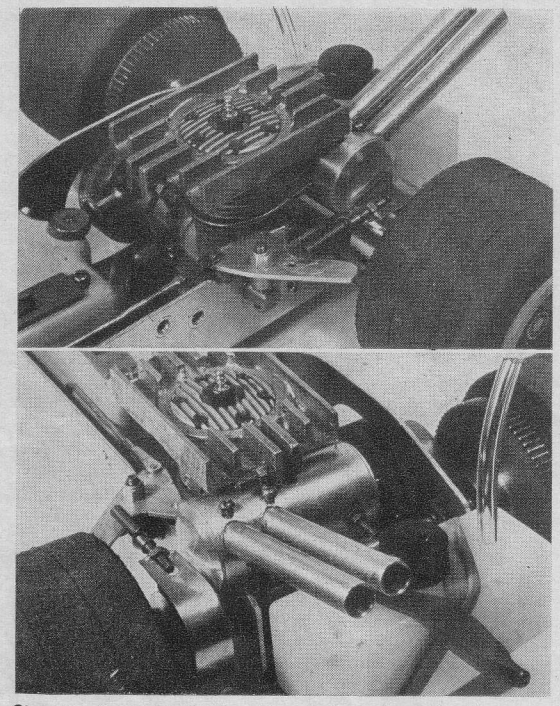


This is unfortunate as an R/C car probably provides the worst possible installation for radio equipment with the violent vibration and bumps that it receives, and the more insulation from such damaging influences, the better. This would not be a problem with most receivers and is not insurmountable with Waltron's product. The receiver and Deac pack were both mounted on 'double sided' servo tape to secure them in place, with thin foam rubber sheeting applied round the sides. This packing should always be loose – if the foam is 'stuffed' tightly betwixt case side and receiver, then all vibration will be transmitted and you are back to square one! Incidently, the battery pack is best mounted in front of the receiver – standard R/C aircraft practice. This is because the greatest shocks likely to be received by the car in the event of an accident will occur to the front end – thus deceleration will hurl all the ancillaries forward, and the mess a battery pack can make of a receiver as it passes *en route* to the 'sharp end' has to be seen to be believed!

The throttle/brake linkages were then added, following the brief description given. A clever idea, the linkage is based on the principle of spring-loading the throttle to the closed position, the servo merely pulling the bellcrank to open the throttle as it releases the brake. The intention here is to allow manual 'avoiding' on the throttle so that the engine may be run and the throttle 'blipped' without the transmitter being switched on – a handy feature when others are operating on your frequencies. Unfortunately, due to relative stiffness in the Veco throttle operation (accentuated if rubber fuel tubing is used) and the consequent spring tension needed to keep it fully closed while pulling the brake on resulted, in our case at least, in the servo being overloaded. While it would open the throttle, it was obviously struggling, with consequent drain on the battery pack. Therefore, it was deemed best to dispense with the 'override' facility and fit straightforward Quick-Link connectors throughout. No doubt one of the newly introduced 'servo savers' could be easily utilised, and this is a future-planned 'mod'.

The steering too works on a similar principle, the two steering arms being linked by a spring, while sliding rods, bent from Quick Links, slide around a 6BA pivot bolt on the servo output disc, which means that as one wheel is pushed in one direction by the servo, the opposite one is pulled by the spring. This is designed to eliminate wheel-shocks from affecting the servo i.e. the wheels are free to splay outwards, but not inwards. Again our personal preference would be to join the steering arms securely with a straight Quick Link, and then connect each steering arm to the output disc with springs in tension, even if this would provide slightly less precise steering. This is a fairly common practice on other R/C cars and without apparent detrimental affect.

With the superb foam rubber-tyred, plastic hubbed



Close-up rear end photos show brake linkage details on the Mardave Alfa; note neat exhaust system and heat sink arrangement plus rubber bands holding fuel tank in place. Below, right, the completed chassis with side plates.

wheels added, all that remains to have a 'running' chassis is to add such ancillaries as silencer (an Irvine unit was used), air filter – in this case a Veco foam plastic item, and a suitable heat sink. We used a Micro Mold cast item in this case which bolts either side of the cylinder head and had proved adequate on previous ocassions. It should also be added that the Veco 19 Series 71 fitted was not 'straight from the box' but had adequately run-in on a test bench with an 8 in. x 4 in. wooden propeller trimmed to 7 in. diameter. The motor was set very rich with a 25 per cent oil content fuel and run in 4 – 5 minute periods until it could be peaked-out at high r.p.m without 'sagging' or slowing up. With a quality engine such as this, and by no means a cheap product, this seems highly preferable to installing it into the chassis from new, even though the instruction leaflet supplied with the engine states that this is possible. The fact that the motor needed over an hour's running to loosen up certainly emphasises this point. Using such a small diameter prop, albeit with plenty of blade area, allows the motor to run with a very light load while consuming plenty of oily fuel and must prolong its useful life.

This whole chassis assembly is very easy and quick thanks to the fact that the design is basically simple and well prepared, and can easily be accomplished in a day, making a trial run of the chassis possible during the same weekend.

Now the body was tackled. In contrast to many commercial bodies, this one is moulded in a heavy gauge plastic, nearly 1/16 in. thick, and is consequently very strong, if a little heavy, a good point for the tyro driver who dislikes frequent replacement of these parts! The design is very clever in that it subsequently clips neatly to similar moulded 'wings' which are bolted (although the instructions advise gluing only) to the chassis, and is also supported vertically on two bolts at the rear. The rear portion hinges upward to allow instant access to the engine.

The only snag with such a thick moulding is that the body outline impressions are rather indistinct but holding the shell to the light reveals their presence at wheel arches etc., and can then be emphasised with a soft pencil to ease recognising the partion to be removed. The plastic is easily 'worked' and we used a power tool quickly to drill a series of holes near the perimeters to remove the excess parts. The resulting ragged edges were then cleaned up with a balsa knife, file and glass paper as required. This seemingly tedious process is in fact quick and easy, although a power drill is most advantageous in drilling the hundreds of holes that this method employs. The moulding is perfectly smooth and needs no preparation prior to painting, which in this instance was executed with Humbrol Spray Enamel. These small spray cans give a good finish if used carefully and the rapid curing time (7 minutes) enables the time conscious to complete this task easily in one evening. Decorations were then applied from a sheet of P.B. race-car transfers, and finally the cockpit glazing was added prior to giving a couple of coats of Humbrol spray fuel proofer. While all this was finally curing our enthusiasm for 'having a go' overtook us, and the basic chassis was road-tested, (not going to spoil that paint job yet!).

A nearby school provided the necessary testing ground, while friendship with a member of staff proved a worthwhile asset! Lacking a suitable starter, we had mounted a solid type model-aircraft wheel in the chuck of a power tool, and thanks to a long extension lead had the means (we hoped!) of firing up.

Eventually with the engine ticking over nicely, the chassis was placed on the ground and the controls tested for the last time. Confidently, rather too confidently perhaps, the 'tap' was opened – no fluttering heart beats here, after all anyone who can fly a model aircraft could drive a car blindfolded, couldn't they? Well . . . perhaps not that easily. The car tore off down the smooth asphalt at an indecent speed, straight on to the sports field before the 'driver' had a chance to 'unfreeze' from the transmitter.

With an ego suitably deflated, the motor was started again, and this time the throttle was *gently* eased open, and surprise surprise, the car only shot forward at about 200 m.p.h.! This time we were more prepared and the throttle was instantly shut as the brute was steered to the left. The result was an untidy, almost handbrake turn, but at least it hit nothing, and the motor was still running. Taking a few deep breaths, we tried again, this time obtaining a rela-

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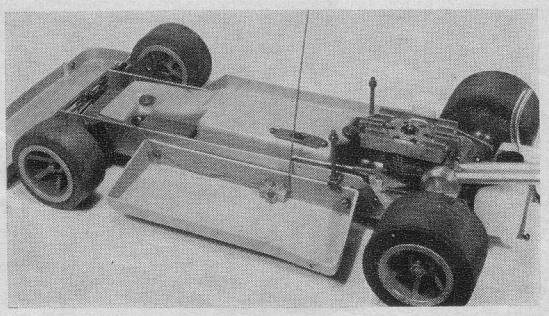

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tively smooth take-off and a modest speed, but the car proved to wander off from side to side in large arcs. This was decided to be 'pilot' error and the amount of throw in the steering was decreased by moving the pivot bolt to the innermost hole on the servo drive.

This proved to be a vast improvement, the car seemed almost controllable, and one could practically relax when driving. The wide soft sponge tyres seemed to give good traction, while their light weight must have aided acceleration.

In all truth we cannot say that this is the 'greatest' handling car ever for the simple reason that we have nothing by which to compare it! Also, we do not have the driving ability to get the best out of the car, so any comments would be superfluous. The only way to assess its competitiveness is in actual racing, and by the way an example was going at the Bradford meeting, it could be quite some challenger. In fact next season could see this little racer on the winner's rostrum, but we'll need just a little secret practice first if it's to be our own!

At a price of £23.95 it is one of the least expensive racers going, and certainly the most robust. Its very simplicity is an added attraction and the whole unit seems 'built to last' and would seem to fill the bill perfectly as an introduction to the fast moving sport.