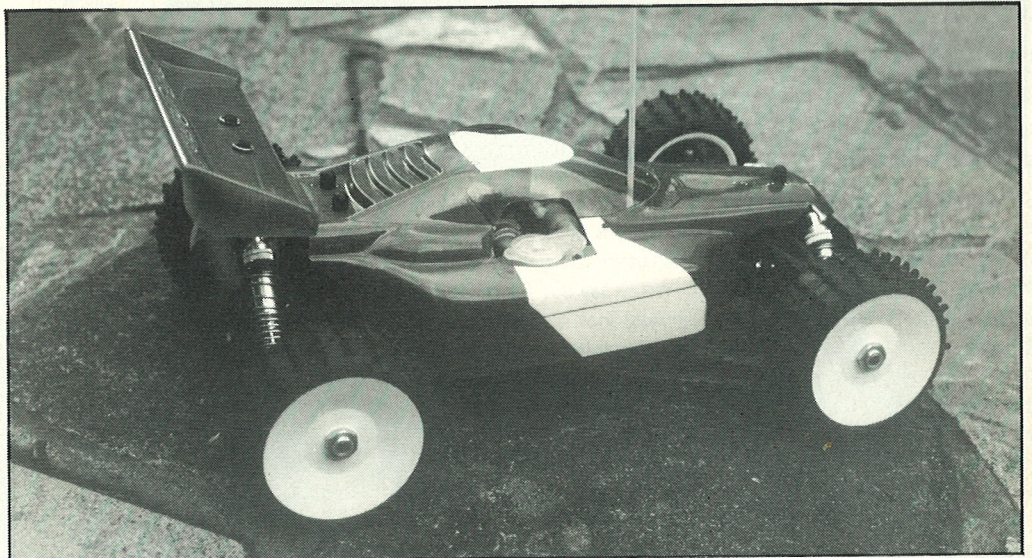


MUGEN

SPORT 4WD 1/8

RALLYCROSS CAR

Mugen are a company that should know just a little about racing cars, their racing engines are currently leading the F.3000 Championship. The man behind Mugen, Mr Honda is also the son of the world famous motorcycle giant. Some pedigree, eh!



In the past two years the Kyosho Burns has dominated the "A" and "B" Finals in Rallycross. It seems that every two years you find a "one make domination" of car. First we had the new breed of Garbo. The P.B. Xi2 took over from that. Then along came a very controversial car, the Siccom Magnum. This was followed by the Burns which has since dominated Rallycross. Well, I am here to tell you that the Burns domination is about to be busted. You don't believe me — then read on.

Back in August of 1989 I was competing in the British National Circuit Champs. at Lilford Park, when I met the proprietor of Elite Models. After the usual greetings (**!!**) (love and kisses) he told me that he had a new Rallycross car and would I like to take a look. On opening the box I came across one of the most impressive kits I have ever seen — if you can call it a kit — because the car comes 75% ready built. I knew then that I would be making yet another come back to Rallycross racing with this car.

On getting home I examined all the parts in the box. All the parts come in bags lettered "A" to "K". The body

shell is very finely detailed and well moulded, together with a wing. Wheels are dished and white in colour and are of the Exey Drive type, and retained with a 17mm nut. Tyres are fitted into grooves in the hubs and then super-glued.

I started construction of my kit with a complete strip down. This isn't absolutely necessary unless you intend to do a whole season's racing. After disassembly, I stripped all the diffs to ensure the Manufacturers had filled with grease. They had. But I washed it all out and started afresh. The diffs are very like the P.B. ones with four planet gears, so they should be very strong. I also removed all of the drive cups, de-greased and ground the ends of the grub screws to give better contact to the output shafts. I used red loctite to give better security to the grub screws. Before I assembled the diffs into their housings I fitted steel crown wheels (available from Elite Models), as I felt that the plastic ones supplied wouldn't do a full season's racing. Once fitted you shouldn't have to touch them again. The diffs are now

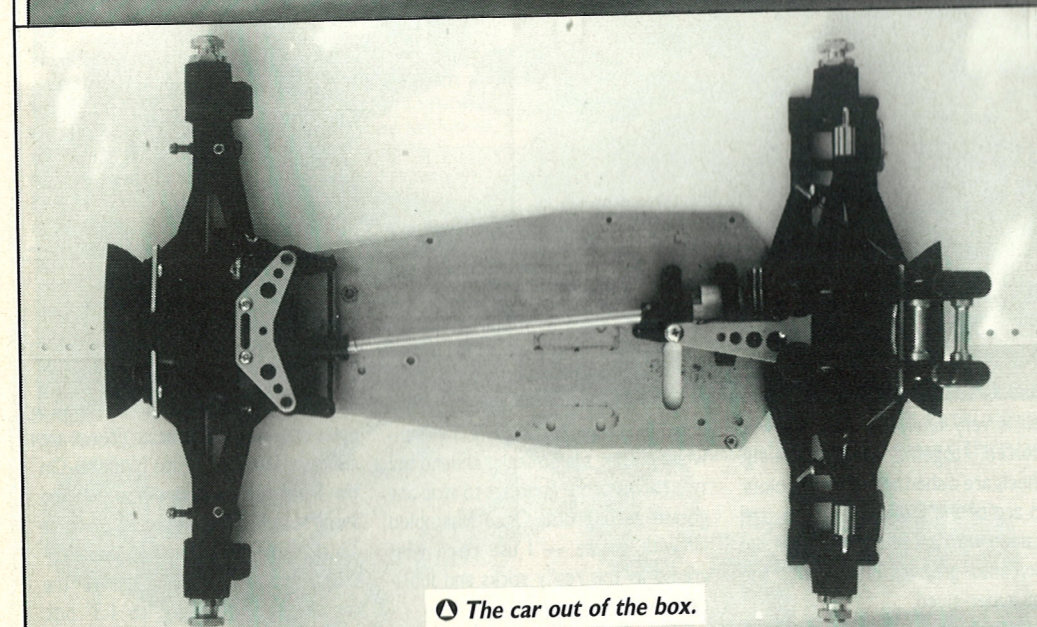
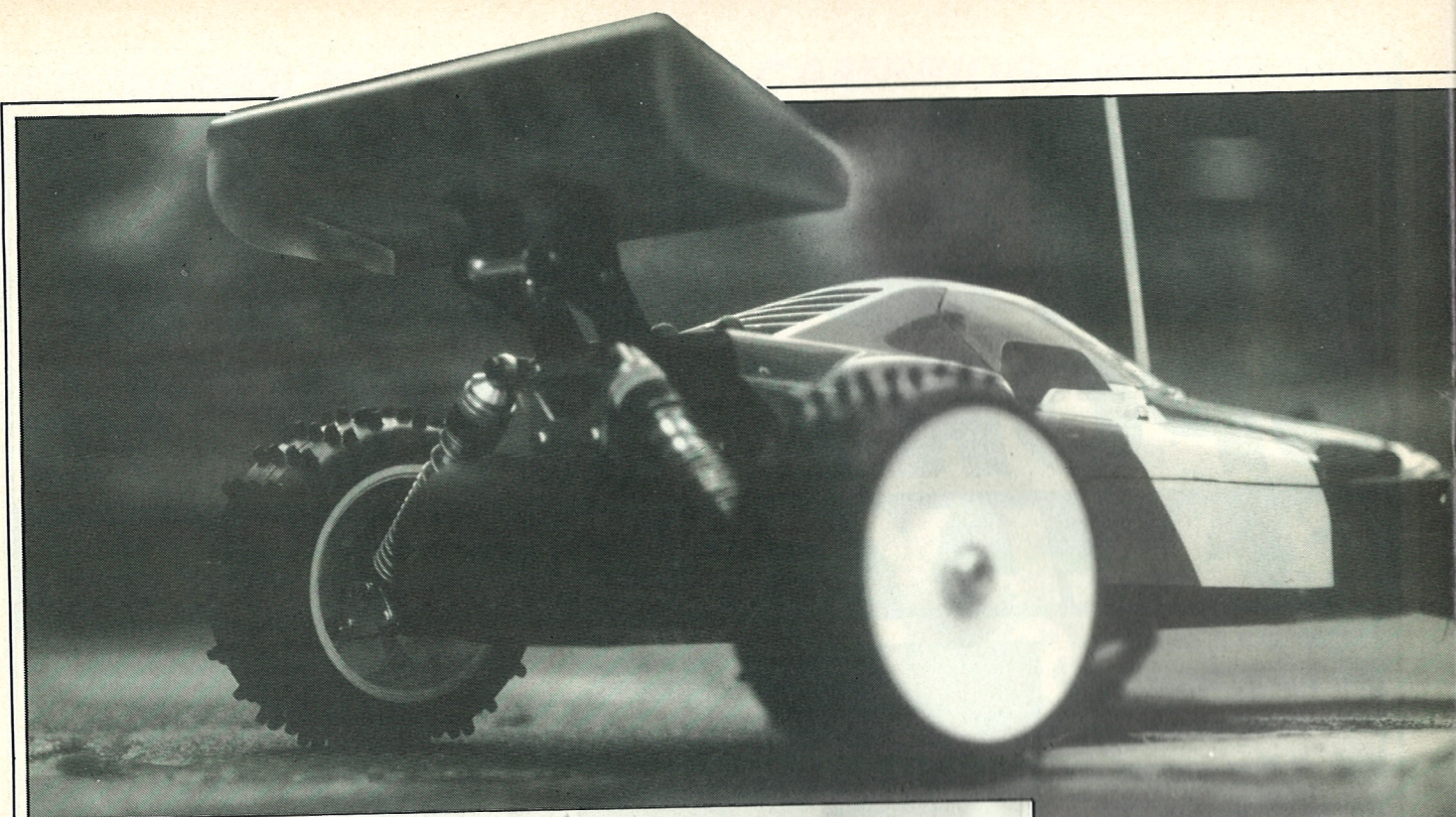
fitted into their housings. It is worthwhile putting silicon sealer around the two halves of the housings to stop any grease getting out. Once assembled fill with grease — I use open gear grease as this really sticks and lubricates well.

Once all the diffs are in their housing, add the front and rear bulkheads and retain with P.K. screws. Next fit the wishbones top and bottom and retain with the pivot pins. These are very well designed. There are no clips to retain them, but instead they have a self-tapping thread on one end. Be careful here, as the left hand lower pins have left hand threads. These are marked with white paint. If you get them wrong you could strip the plastic mouldings so be warned. Next, fit all the assembled diff housings to the chassis. Use a smear of silicon sealer on the base of the housings. To stop any dust getting in, don't forget to fit the centre drive shaft in before you screw the housing to the chassis. Next, fit all axle blocks. On the front I used "UJ" drive shafts as I find they are necessary for serious racing —

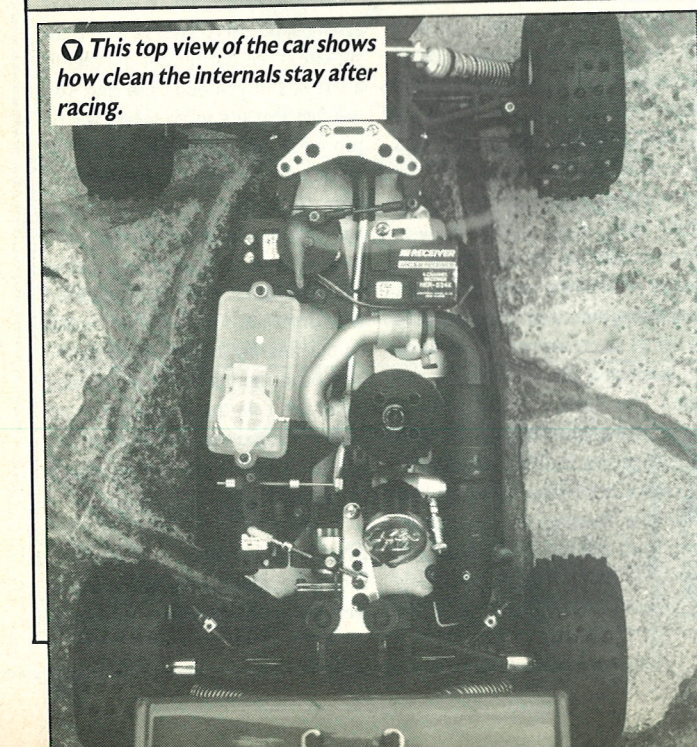
saves dropping drive shafts. (These are also available from Elite Models.) On the front top wishbone you will find a cup which the axle blocks pivot in. To alter the front camber simply rotate this cup. You can change the camber from 1.3° neg. to 1.3° pos. Once set replace the "E" clip. Next assemble the servo savers to the chassis, but in the bottom set of holes fit a link rod. If you don't use one, you will find that the servo savers will be too weak, no matter how much you tension the springs. This can be made from 10swg piano wire and retained with collets. Fit left and right hand steering arms to the axle blocks using P.K. screws. Fit pivot ball and retain with 3mm n.y. lock nut. Now make up the steering linkage. Once assembled bend the inboard end by 4mm. If you don't do this you will find that on full lock, the track rod end will flex and you will find you will be unable to get full lock.

Shock Absorbers

Shock absorbers come ready assembled, but not filled with oil. It is worth



Ⓞ The car out of the box.



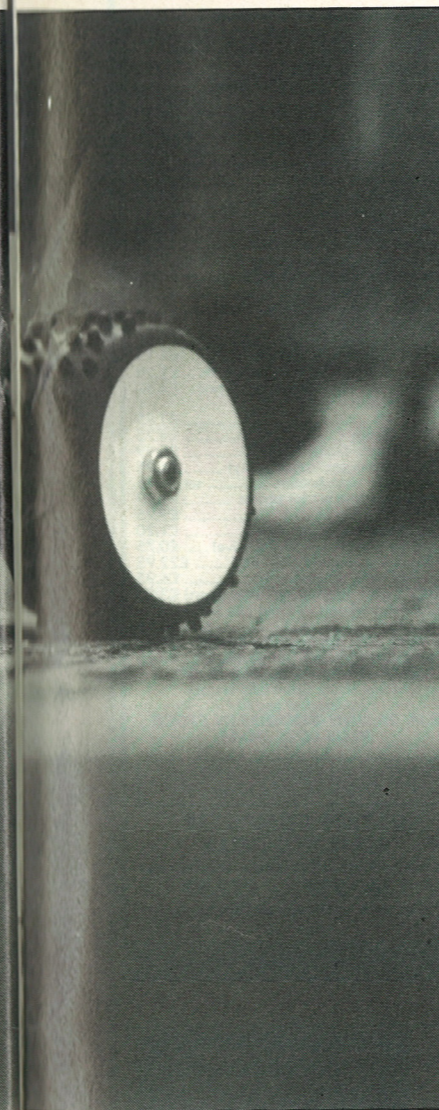
Ⓞ This top view of the car shows how clean the internals stay after racing.

taking them apart, wash out the bodies to remove any swarf. Before final assembly it would be worth experimenting with different pistons. You get six sets in the kit. You also have the choice of one way damping. Four flap valves are also supplied. Re-assemble with the pistons you have chosen, but before fitting the nut to retain the piston, put a little mild loctite on the threads. If you don't do this you can bet they'll come undone and you don't want that to happen. Now fill the shocks with your chosen grade of oil (you do get oil in the kit) but do not fill as per the instructions otherwise you will find the shocks will have a hydraulic lock. Fill them to just below the top of the body and slowly pump up and down to remove any air

bubbles. Leave to stand for about ten minutes before fitting shocks to their mountings. Loctite the bottom alloy mount to stop these coming undone.

Radio Plate and Fuel Tank

The radio plate comes ready made, pressed from alloy, anodised black with all servos, tank cut outs pre-done. Just simply fit your chosen radio gear. I would recommend using a high torque servo such as the J.R. 4021 or K.O. Fet type. After putting receiver into a balloon fit the rubber retaining band supplied and wrap with adhesive tape. Fit this into the pre-cut slots. Do make a neat job of tie wrapping all servo wires up so that they do not foul any drive shafts or steering mechanism. Just look at the instruction book — it shows you the best way to do this. The fuel tank is the best I have ever seen on a model car. The fuel filler cap is big, very big, and is fitted with a very strong spring — watch your fingers when you close this lid. The filler lid is also adjustable if the seal starts to leak after using for



nut, and clutch shoes, a 14 tooth clutch bell and various spacing washers. You will need to use an engine with a plain threaded crank, although it could be possible to fit an S.G. type crank with some modifications. I fitted an O.P.S. Pro engine fitted with a prop driver spacer. I then fitted the flywheel to the crank and measured the amount to be ground off the end of the crank without the nut bottoming out, making sure this was fully tightened against the flywheel. I don't use loctite here, otherwise you would have a lot of trouble removing the nut if you needed to remove the flywheel later on. A wide range of flywheels are available again from Elite Models. Mount the engine to the chassis making sure the surface of the mounts are not distorted; if they are, face off with a file, fit the pipe or silencer of your choice and connect all throttle and brake linkages. Just follow the instructions for the correct method. Fit fuel tubing, not forgetting a pressure nipple in the pipe. A method I have been using for some time now with no problems is to drill a hole in the tuned pipe that is slightly smaller in diameter than your fuel tubing and push your tube into the hole. Exhaust pressure then flares out the tubing and stops it being forced out. You don't believe me? Well try it. You'll be surprised. Lots of circuit racers use this method without problems.

Body and Wing

In this kit you get a fully adjustable wing mounting kit (not an extra, as with some kits). This is retained on the rear gearbox mouldings after assembly, with 4 pk screws. The pre-painted wing is then mounted with four rubber "O" rings, two below the wing and two at the top. These are then retained with two "E" clips.

The body shell has holes marked in, but before drilling fit the pre-trimmed body over the mounting post. I found on mine that the front mark was half a hole out so beware before you drill your holes. All other trim lines are very accurate. I painted my body as per the one in the leaflet enclosed in the kit. That completes the construction.

Setting Up

The Mugen is a very adjustable car and very easy to set up. I will start at the front and move backwards. Firstly you have ride height adjustment. You will have noticed whilst building the car that on each gearbox casing there are two raised pips. Insert into these pips

a 4mm grubscrew, 5mm long and screw it in so that they are flush. To do this you must disconnect the top wishbone from the axle blocks. These ride height adjusters should only be used on fast flat grass tracks where you would need to lower the car to stop it rolling over on fast cornering.

The next adjustment at the front is camber. I would suggest that this is left fixed at 1.3° neg. This is how the kit comes assembled. If you do need to change the setting simply remove the wishbone link rod from its bottom ball, remove the "C" clip from the cap and rotate to the desired setting, making sure you have both sides the same. Re-fit "C" clip and rod. You also have caster adjustment from 10° to 20°. You will notice on the inboard top wishbone pivot pin. There are two spacers with lugs on. With two spacers at the front of the wishbone you set 20° caster with both spacers at the rear position you get 10° caster. I would suggest you start with the middle setting and set up at the track, but as a rule the less caster you have, the more steering you get.

The next setting is front tracking. I would suggest an initial parallel setting and do final setting up at trackside. The last adjustment at the front is spring tension. This is achieved by placing the various spacers provided in the kit, above the sleeve on the shock absorber body.

Moving to the rear, you have as previously mentioned, ride height adjusters. Just do as per the front. Next is camber adjustment, with the outboard top pivot pin removed screw in the metal wishbone link two complete turns. This will give approximately 4° neg. for more camber screw in, for less camber screw out. The only other adjustment at the rear is spring tension. Do as per the front. This completes the setting up, now take the car to the track and set up to suit your driving style.

Track Testing

The first outing with the Mugen was at the Hackney B.R.C.A. Round on 24 September 1989. It was not a good day; in fact it was disastrous! Not because the car broke or anything fell to bits. The problem lay with the engine. I had taken a highly modified engine from my circuit car, which was totally unsuitable for Rallycross racing, but I did do enough laps to get the feel of the car. The Mugen rode the bumps with absolute ease, but could have done with more damping. The turn in power was phenomenal, hand-

ling the tightest corner with ease. The single disc brake is very powerful and progressive. There was one other Mugen present in the hands of John Skidmore. Now he has been out of Rallycross for two years but qualified thirteenth overall, with a standard kit car. Now that ain't bad for a first time outing and with an entry of sixty-nine. I will now be doing a lot of testing in the Slough based Remote World Model Car Club Winter series, together with Ralph Allum, another well known Rally Cross Star who, after a brief drive with my Mugen, was convinced that this car was the way to go for 1990. Also watch out for a world famous circuit driver who may be making a comeback to Rallycross if he feels he can make a 100% commitment to this field of racing. Watch for news in future columns of this magazine.

Summary

In reviewing this kit, I have not set out with the intention of a step by step build up, but more to give the builder a few tips as I have found necessary. The instructions supplied with this kit are first class. They say that a picture is worth a thousand words and what you get in this kit are dozens of very sequential assembly photos that cover all aspects of building. If you just want to build the car as it comes, to have fun with it, it takes about four hours to build, including fitting radio gear and engine.

Whilst building the kit I have found that all the mouldings are in typical Japanese style — in a word "excellent". I didn't have to drill, file or modify anything at all. It went together perfectly and was very free running.

If you want a car that is capable of beating a Burns but don't want to spend vast amounts of money, the Mugen Sport is the way to go for 1990. This car has won all eight Japanese National Races, plus the Big National Championship, beating the new Burns Turbo in the process. The kits are available now, elite Models have in stock vast amounts of spares, including competition wheels in red and white, different tyre compounds and tread patterns, and other tune-up goodies.

Elite Models can also do a Kit and Engine deal — for example:
Mugen Kit and Serpent "S" Power Engine £345.00
Mugen Kit and Rex 350 Competition £385.00

Phone Elite Models on Mansfield (0623) 36062 and ask for Walt.