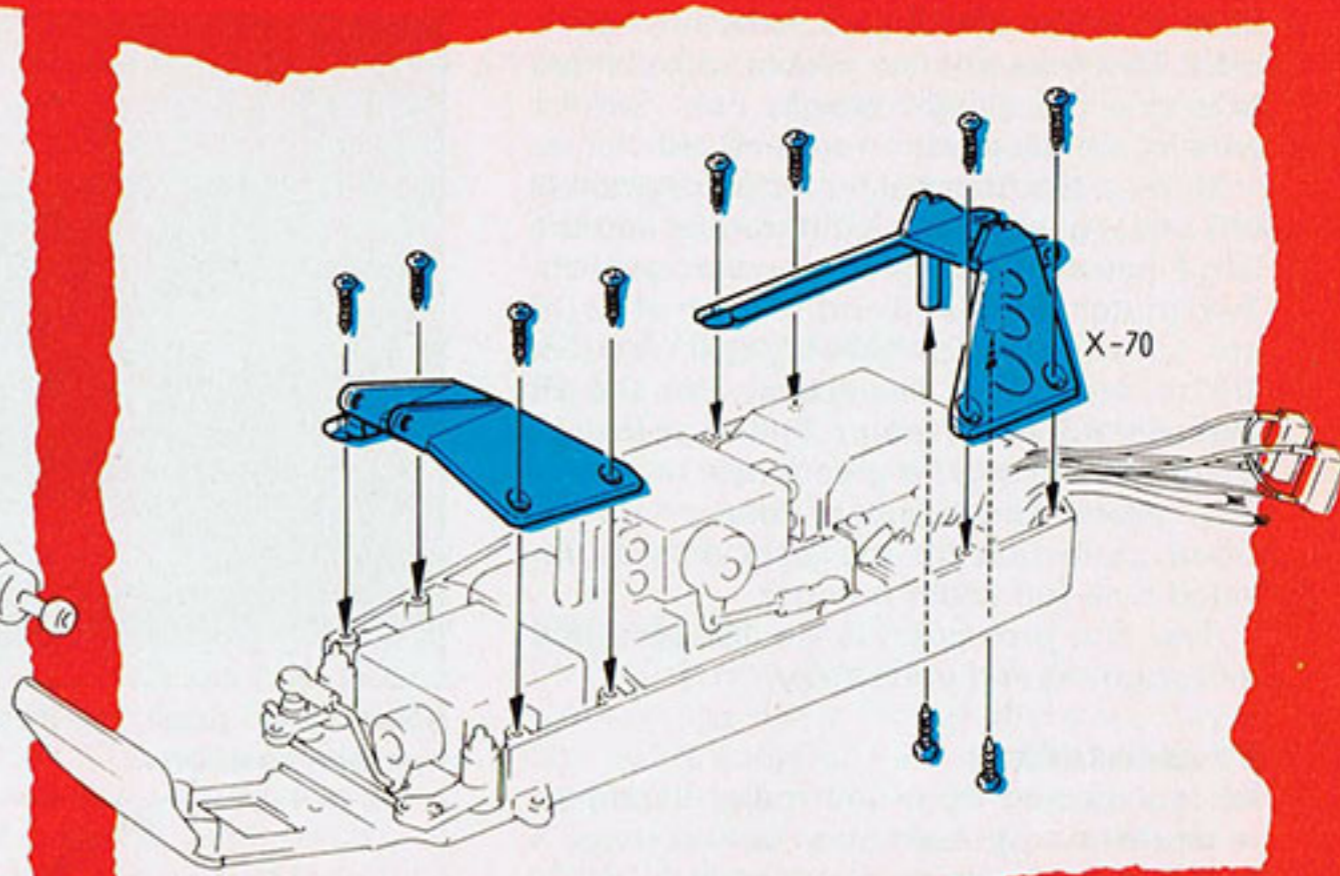
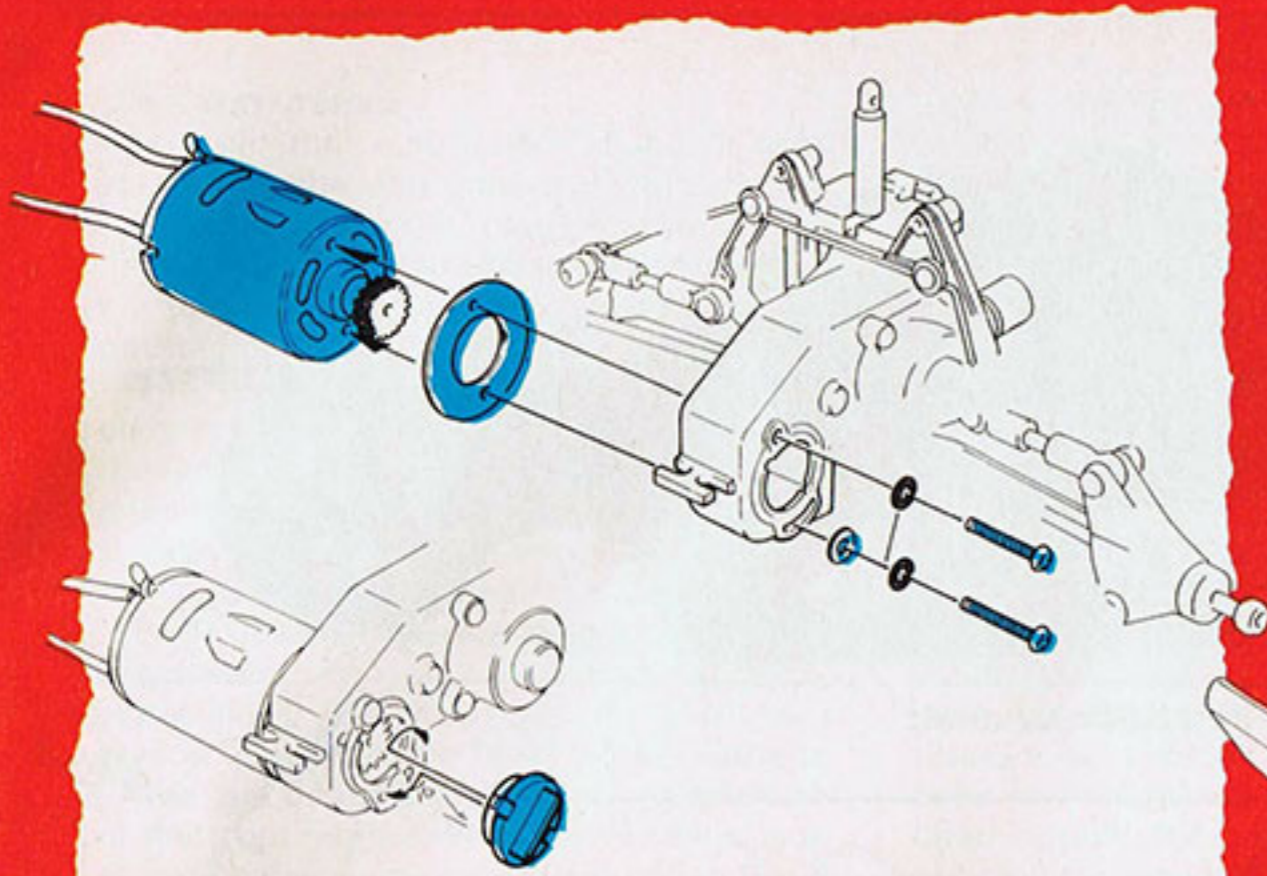


Above, 1/4 turn is all that is required to exposed motor pinion to check motor mesh.

MARUI SHOGUN

JIM CRABB looks at Marui's Latest 4WD Contender





Even the most casual reader of the model car press cannot have failed to notice the amount of column space that has been given to which car will reign supreme in 1988. Whilst all these hypothetical comparisons have been taking place, the Shogun has appeared on the scene very quietly most probably over-shadowed by the blaze of publicity about two of the new "super cars" for this seasons racing. The shogun was featured at both this years Earls Court and Nürnberg Hobby Fairs and looked very smart and interesting in an all black paint scheme to go with its martial arts name. Once again Marui have chosen a name from Japanese history this time using that of a line of hereditary military dictators who held power for over seven hundred years. The car has a good pedigree being descended from the Ninja of last year, out of the Samurai of '85 which was designed to win that years world championships. There was a very interesting story attached to the Samurai at the time and that was although the car did well at the championships it was the driver that failed to win not the car so he was sacked, makes a change from the usual moans one hears from drivers because they always feel its the car that has let them down. I cannot vouch for the authenticity of the



Above, long travel rear dampers very smooth plastic chassis see reflection of damper. High grip tyres.

Below, rear of car with wheel removed to show slot drive to hub.

story but it shows how dedicated the manufacturer was to winning.

Technical Specification

Four wheel drive with independent suspension it has a damper on each corner and a gear differential both front and rear. Drive is via a gearbox to the rear differential with shaftdrive to the front differential. The standard motor is mounted at the rear of the car outside the rigid bathtub chassis. Single wishbones are used on each wheel with upper adjustable tie bars for camber angle adjustment to give a good degree of suspension dialability. Ground clearance of the car is adjustable both front and rear with four adjustable positions on each set of wishbones. Damping is provided by Yellow plastic oil filled coil over shock absorbers with a choice of two different pistons to give soft or harder damping using the oil provided in the kit. An anti-roll bar is supplied for the rear. All the electrics and radio gear are mounted within the bathtub chassis which should give very good weather protection. Battery location is lengthwise in a compartment within the chassis with access via a tight fitting cover which is on the underside. The compartment will take either a 8.4 V or 7.2 V battery pack. Speed control is a 3 step forward one reverse resistor unit with linear action as



used in other Marui cars (see interesting bits). The tyres are low profile spikes fitted to a one piece light weight hub. Similar wheels are used both front and rear.

Metal is the material for both the small (3 off) bevel gears in each differential and the large bevel gears for the power take off. Two motor pinions 18 and 16 teeth of 32 DP are supplied which give a gear ratio of 7.72:1 and 8.68:1 respectively for the kit Mabuchi RS540SH motor. The body in light weight Lexan should give better than normal protection against debris ingress. Good protection for the front end is provided by a full width bumper.

Rear end protection is via a wrap round motor guard and under tray.

Presentation

As is expected from any major Japanese manufacturer, presentation is first class. A comprehensive instruction manual of 20 pages, together with a supplementary sheet which has a drawing of and a description of each part. The manual has a similar layout to that of Tamiya's where the right side of the page details the construction and the left hand margin lists each item to be used at that point of construction and the left hand margin lists each item to be used at that point of construction. Inside the box the more impressive goodies are displayed in a vacuum pack with the other smaller items in numerous plastic bags. My first reaction was why so many bags, until I examined one only to find once again each individual item was listed on the packet with a drawing of that item in full size. As there are quite a few different lengths, diameters and types of screw used during construction it should avoid any confusion.

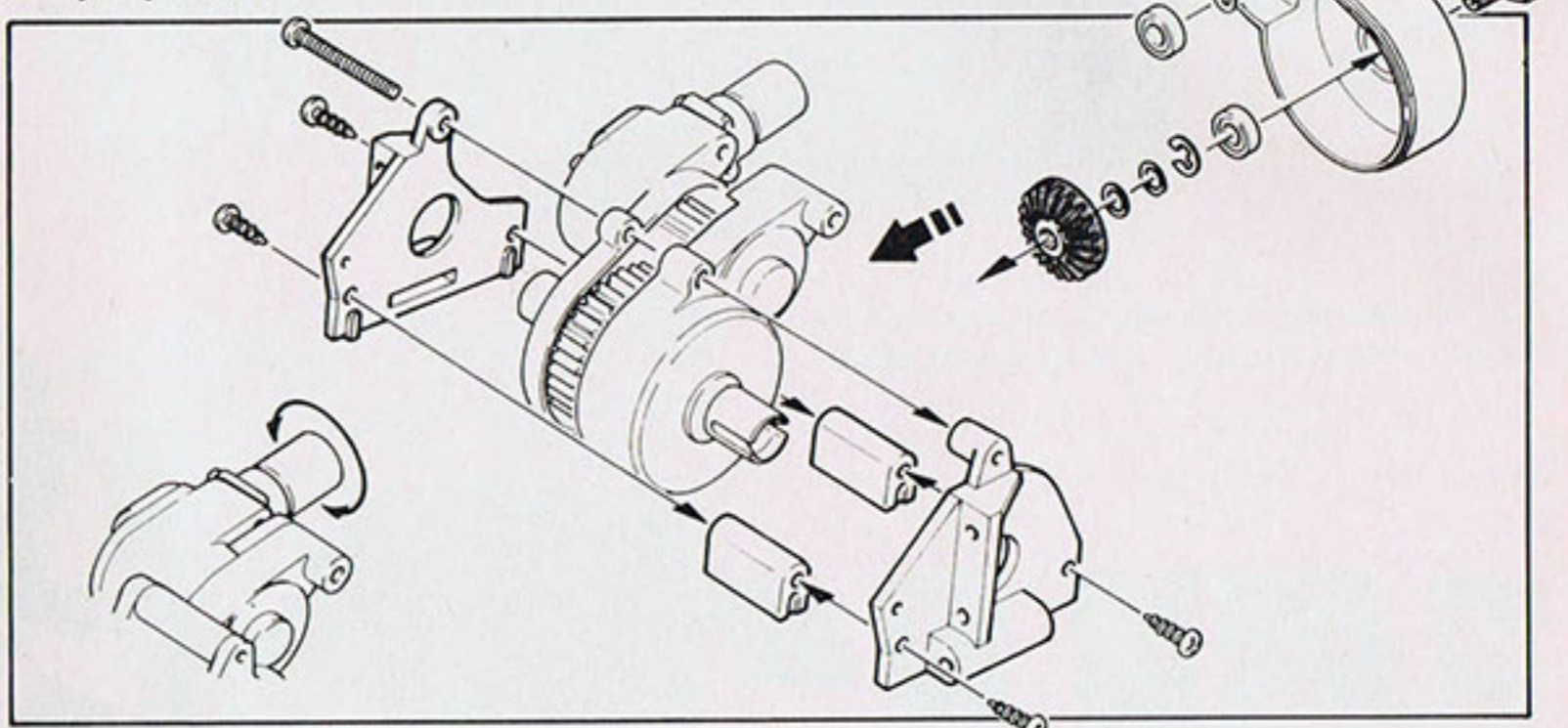
The same attention to detail also applied to the packets of bolts, nuts and washers. Maybe Marui knew I was going to review the car as the grub screw used to locate the motor pinion is referred to as the "crab" screw, it gave me some amusement.

Interesting Bits

The speed controller is a mechanical type pioneered by Marui a couple of years ago, it has a linear action and is totally enclosed although it can be opened up for the routine maintenance of internal contact cleaning. The speed controller can be used with transmitters not fitted with servo reverse by the use of an extended arm which connects to the operating servo.



Mean and Lean, note additional front damper positions.



The wheels are gold in colour and are of the "Flying Spoke" design, they are very attractive so it is particularly important you do not mix the left and the right hand wheels up or you will have them "flying" in opposite directions!! Although the tyres are quite tight a fit when pulled over the hub Marui suggest they are also glued, a small hole is pre drilled in the hub to allow air access to the tyre.

Access to check gear mesh between the motor pinion gear and the driven gear is via a cap in the gearbox case, all that is required is a quarter turn to the right to lock the cap in position. This facility is partly required because the pinion is fitted to the motor prior to offering it up to the gearbox and it is infinitely easier at the trackside than having to undo small screws to take off the gearbox covers which are found on other cars. The track rod ends are heavy

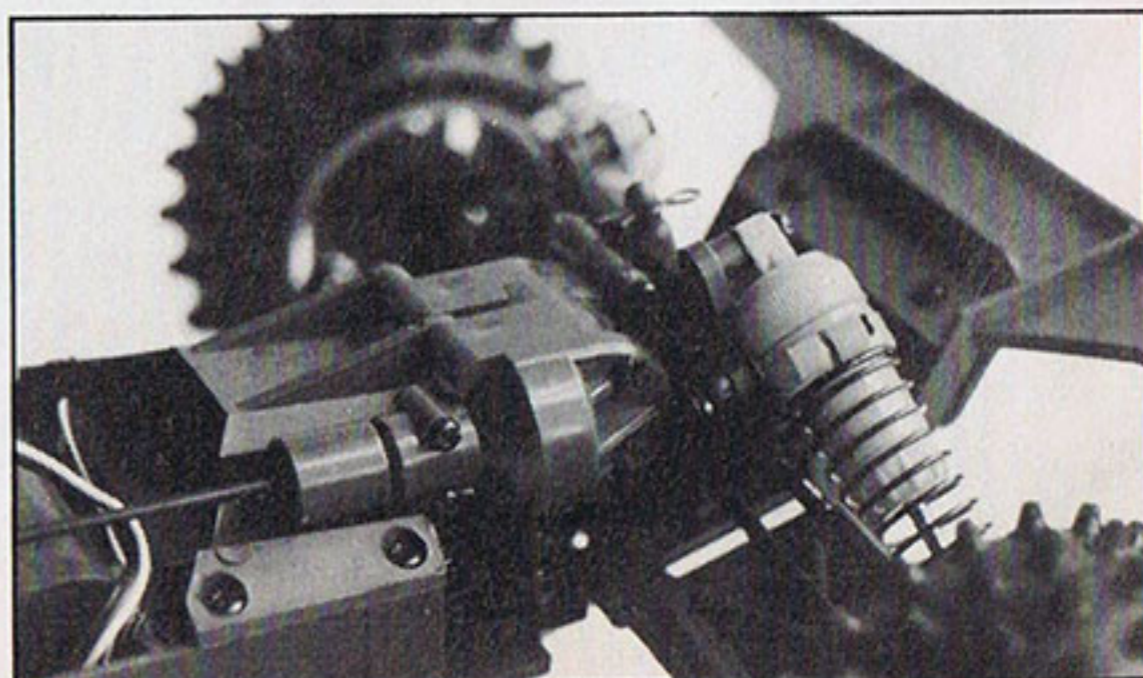
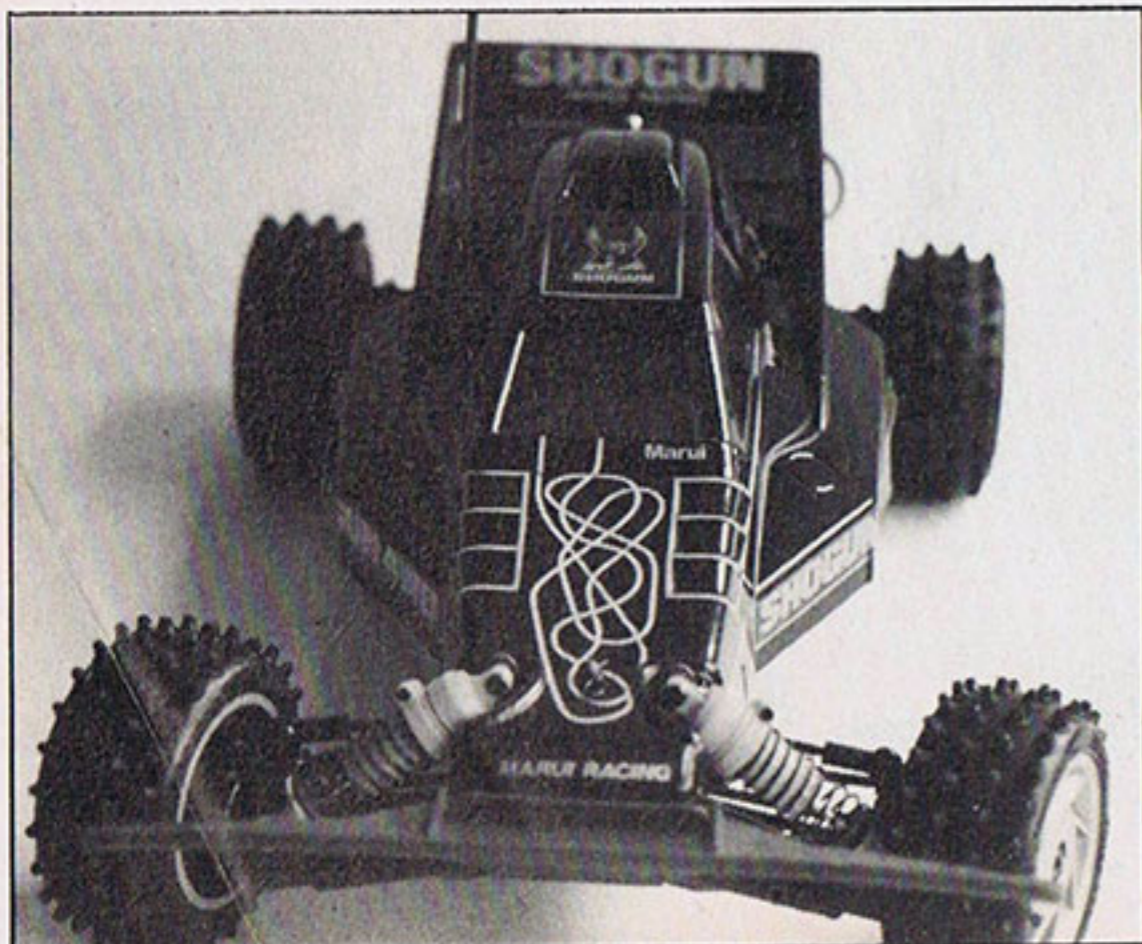
duty 5.8 mm units and if care is taken to put them with the face with a circle uppermost when fitting them to the knuckle arm and the bell crank they cannot pop off.

Tools For Construction

Two tools are supplied in the kit, an Allen key for the 3 mm grub or "crab" screws and a "T" bar box wrench very similar to that most prized possession I have referred to in the past and that's the Tamiya "T" bar. The "T" bar is suitable for four different size nuts 2, 2.6, 3 and 4 mm. Additional tools you will require are longnosed pliers for the circlips and a small and medium sized Phillips screwdriver for the self tapping and machine screws. A model knife and scissors are required for body trimming. Grease is supplied but both thread lock and super glue are also required during construction to help make the car "bul-

Another fine paint job from Mr. Airbrush Pete Dorwell. A full width bumper will protect it!

Front differential with shaft drive, collar needs to be secured during construction (see text).



let proof".

Construction

Although the instructions suggest one starts with the rear gear box and differential, I built up the dampers and then all the tie rod links first just to use up some of the numerous parts before I started on the packets of different length screws.

The dampers are straightforward and I elected to go for the "softer" damping with the two hole ported piston. All the track rod ends have a 5.8 mm pillow ball fitted, its a system I prefer to the type where the track rod clips onto a fixed ball.

Both gearboxes are a beautiful piece of engineering and go together quite easily especially if you take note of the advice I give in "Construction Tips" when I came to fit the last bearing during the construction of the front gearbox, I found I had lost one of the bearings, my heart sank, Allan Bond was expecting the car to be ready to photograph and I wanted to track test it on the Sunday, my bacon was saved by the discovery that the 14 smaller bearings used in the car are the same size as the small bearings used by Kyosho, as I had a spare I was able to continue.

prior to fitting the quick release cover. Once the rear underguard is fitted the back of the car is complete.

Two Part Complete The Third To Go

The third item is the chassis, first part to be fitted is the speed controller and dependant upon you having a servo reverse so depends the way you fit it.

Steering is via the twin bell crank type linkage which should eliminate any bump steer, a servo saver is supplied in the kit for the steering servo and the speed controller servo, they are quite different and cannot be confused. Final electrical item is the receiver, the speed controller comes with a dropping diode so if you do not have a BEC (Battery Eliminator Circuitry) receiver it does not matter as you will have a regulated supply for receiver and servo's. If your system has BEC just cut off the diode and use the BEC system connector which is in the kit. The suggestion in the kit for connecting the wiring is to twist them together and then use heat shrink, I suggest solder is used as it makes a far better connection, then complete the joint with the heat shrink. The receiver is located in place with

double sided tape and the aerial run up the inside of a brightly coloured antenna tube, a nice touch of attention to detail is a cap which fits on top of the tube to prevent damage to the aerial should you crash and the car turn over. A front skid plate and two bracing parts complete the chassis.

Final Completion

Fit the two gearboxes to the chassis not forgetting the drive shaft between the two of them, put on the wheels, dampers and body and apart from a charged battery the car is ready to go.

The Body

Mr "Airbrush" Pete Darwell did the paint work for me and although there is a driver doll figure supplied I did not fit it thinking it would save a little weight. Peter left the windows clear in case with concours in mind I'd fit him at a later date. The driver figure plays no part in the rigidity of the car.

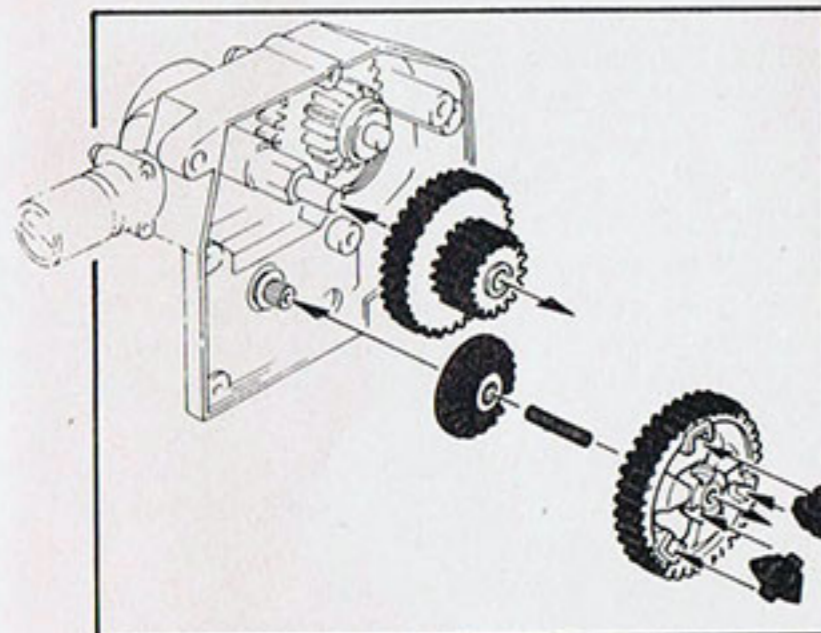
Peter achieved the squiggly lines on the bonnet and the sides of the car by using microline masking tape on the inside of the shell prior to painting it black. Once the black was dry the masking tape on the bonnet was removed and the gold colour used then the straight lines of tape removed and the red colour sprayed on.

Construction Tips

When constructing both front and rear differentials it is possible for the drive joint for the shaft drive to fall out of the differential. On the end of this drive joint and inside the gearbox is a counter bevel gear and a thrust washer. Once the drive joint comes out the bevel gear and thrust washer fall into the gearbox and differential and a strip down is required to retrieve the two parts. I found a piece of adhesive wrapped around the drive joint and onto the gearbox cover prevented any movement until the two gearboxes were offered up to the chassis and the shaft installed between them. On completion of the front differential it was found to be very tight, the instructions for the front differential show two shim washers on one output drive and only one on the other side whereas only one is used on either side of the rear differential. By removing the extra shim the differential ran quite free, both of these points once you are aware of them will save considerable frustration and help speed the building process.



Body shell, note the strengthening moulding around the front shock absorber cut-outs.



Beautiful lines and "flying spoke" wheels make sure both "fly" in the same direction (see text).

Once both gearboxes are complete the suspension is hung from them. The wishbones are very similar but they are labelled F & R because they are not exactly the same with the front ones being slightly narrower, it is very obvious if you offer up the wrong one. The complete rear and front of the car is built up before either is fixed to the chassis which makes construction easy because you work on three major items; front gearbox, rear gearbox and chassis and then just join the three together. Prior to fitting the drive shafts in situ, a small black "O"-ring is fitted in the drive cup, it takes up some of the slack due to suspension movement and stops a lot of the "chattering" associated with dog-bone drive shafts.

The motor location is at the rear of the gearbox and I elected to use the lower gearing of 8.68:1 using the 16 tooth pinion supplied (an 18 tooth pinion is also supplied), meshing is easily adjusted by viewing and altering the pinion position



Continued on page 57

Final Thoughts On Construction

Well thought out car, enjoyable to build and quite within the capabilities of the first time buyer. Off putting at first, the different length screws when chosen with care proved no problem but a little rationalization and perhaps opting for a 10 mm standard length instead of 8, 9, 10 and 12 mm would certainly have made construction easier.

Track Test

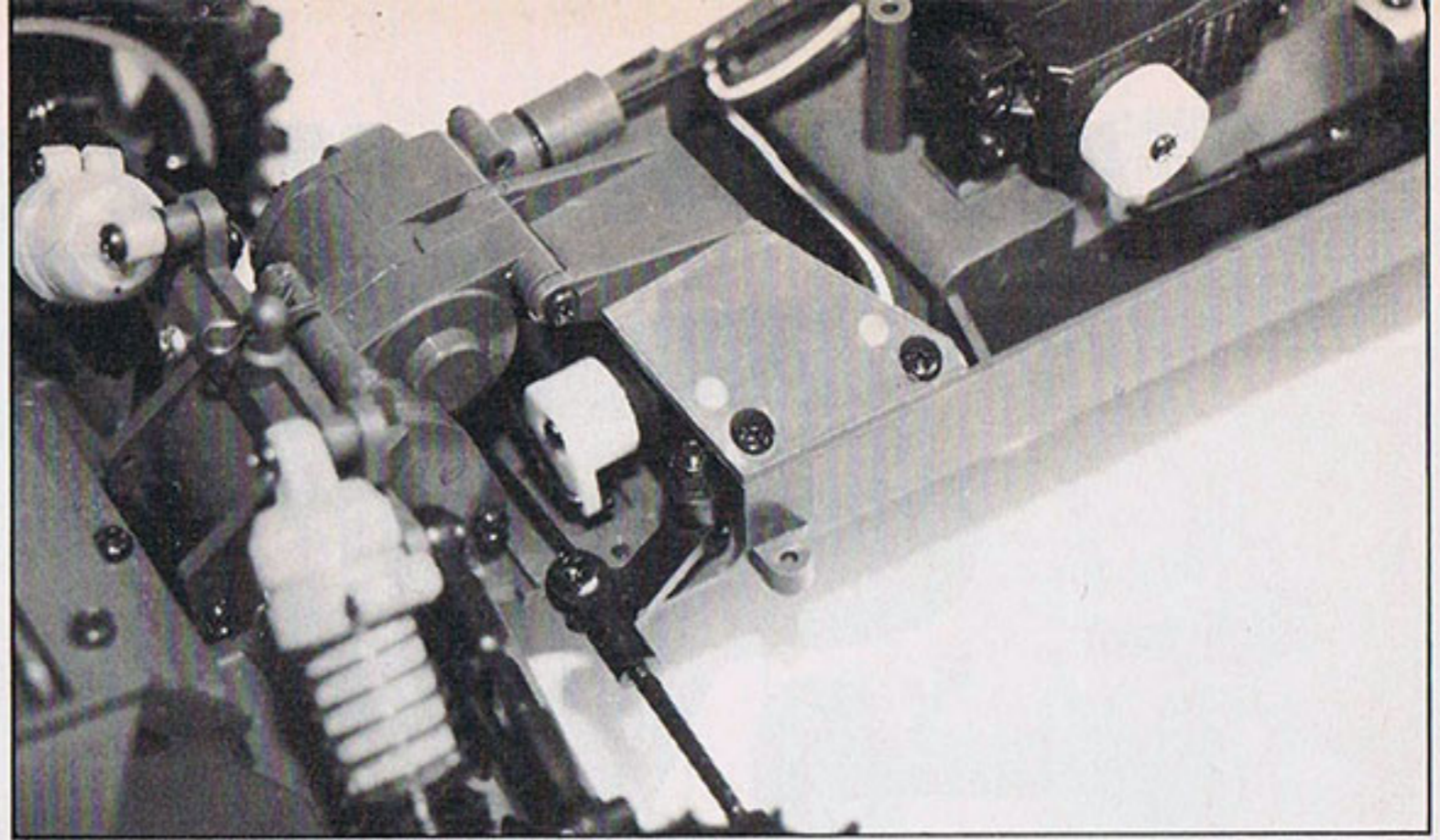
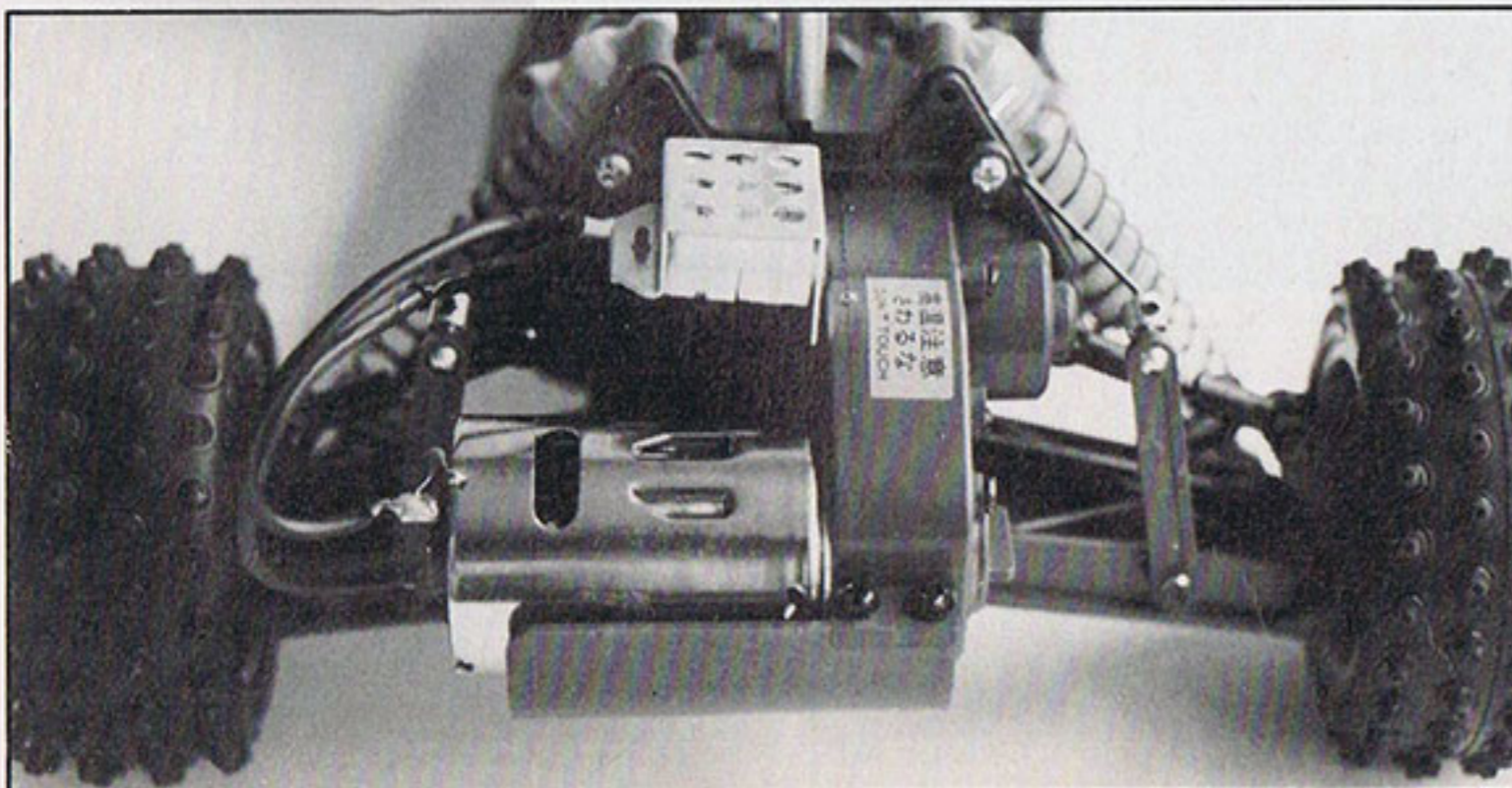
If you intend to race competitively the weight of the car is important and most drivers will remove parts of their cars structure they feel were not required so as to bring the weight down to the legal minimum of 3½ lb for a 4WD car. With the Shogun you do not have this problem you have to add 3 oz!!

The car is incredibly light, weighing 3 lb 5 oz with radio gear and battery. Ballraces are quite heavy and the Shogun needing 22 would have its weight increased by about 2 oz if they were fitted so perhaps the drivers doll will be fitted to bring the weight up! When weight has to be added to a car it does give the driver a chance to add it where he finds it advantageous to his driving style, most drivers will opt to put it on the front to help with the steering and grip on the front end.

Track testing took place in dry conditions on very short grass with two large bumps, a 6 inch jump onto asphalt then a very long straight up a ramp and back onto grass. If the car had been photographed 24 hours earlier it would have been in racing with other cars but unfortunately we just had to race against the clock.

The initial testing was with the smaller 16 tooth pinion which gave good acceleration and a very reasonable top speed especially remembering the car was not ballraced and had a standard motor. The car is very stable has no body-roll what so ever and will turn at full speed and on full lock without loosening the back end or rolling over. Robert (my son) try as he might could not get it to step out of line, the car took the bumps well and landed after the jump without bottoming out. Duration on the lower gearing was in the region of 9½ minutes. A second pinion is supplied with the kit (18 tooth), this was tried next and really showed the cars capabilities. The car handled the extra speed well and it was noticeable on the asphalt how good it held a straight line. Robert then managed at last

Rear protection for motor is good, note wide rear track and anti-roll bar.



Two servo savers supplied in kit externally similar but with different intervals.

(as it was getting a challenge for him) to roll the car. At full speed on grass with new grippy spikes he gave it full left stick, I was not suprised it rolled and I suggested he try the same trick with his "super car" to see if that would survive such harsh treatment!

Duration on the higher gearing was just over a minute less than with the lower gearing. During the high speed testing a screw came out of the pillow ball on the steering knuckle arm to give exactly the same symptom you get when a track rod end pops off, normally one loses a drive shaft but on the "Shogun" it is retained by the upright, a very good plus point.

I had not used thread lock on the screw in question nor as it turned out had I had glued the tyres on but they gave no problems.

Roberts verdict was that it is a very stable car, has very precise handling with a small turning circle which gives no tendency to roll or understeer, he felt the car was more predictable than his own "super car". His one criticism was the very noisy gearbox. He said the car was easy to sum up:- Quite impressive!!

Improvements

It runs well out of the box with a nice suspension set up and a good speed controller, the only thing it lacks for racing is ballraces. They are a necessity once you start to race seriously for two main reasons, one is wear and the other battery duration.

Nylon or plain metal bearings pick up debris and if oil is added although lubricating the bearing surface it also acts as a grinding paste by keeping the dust and grit in

contact with both bearing surfaces, hence the high rate of wear. Plain metal or nylon bearings are not as efficient as ballraces so the increased friction reduces battery duration. When ballracing if you cannot afford a complete set (cost approx. £29.00) and you decide to progressively improve your car start with the gear box, then the differentials and finally the wheels. The ballraces for the wheels need a 1 mm shim behind them as there is not a exact equivalent ballrace to that of the nylon bearing (the bearing is 5 mm wide and the ballrace 4 mm). It did not prove a problem on the Ninja and therefore should not on the Shogun. No other improvements are necessary at club level.

Is This For Me

There is a vast potential market of drivers who budget for their hobby, there is also the driver who wants a competitive and complete car with both motor and speed controller in the original price. The Shogun will satisfy the needs of both drivers as it will be competitive out of the box and all that is needed to race is the radio gear and a set of ni-cads. As a package it represents good value for money in both its technical specification and the way it is engineered this is one of several cars that you do not have to spend in excess of £200 to be competitive with although I doubt very much if you will win the "A" Final with it at a larger club. The reason being it will be competing against the £200 super car with perhaps another £100 of go faster goodies on it, even so it could be very competitive against them and should show a clean pair of heals to some of the similarly priced opposition. So, if you want a reasonably priced ready to race from the box car without the extra expense of motor and speed controller it could be the car for you, if you have a limited budget and want to compete with the "super car" it could also be the car for you, can you imagine the pleasure you would get from beating a car costing more than twice as much as yours. I can assure you it gives a very great inner feeling of satisfaction.

Summary

Very good club racer and excellent value for money with no extras to buy except perhaps ballraces, I will watch with interest its progress and performance on the tracks this summer.

Many thanks to Allan Bond, Pete Darwell and Amanda Jane Smith in their help in the preparation of this report.

Available from Amerang Stockists.