

bad or otherwise, it's a personal choice, but they are competition and have to be taken into account, especially now that F1 style suspension principles are being put into use. More of that one later, let's now look closely at the 6010 and those 'subtle' changes mentioned in an earlier paragraph.

In order to improve the car's turn-in characteristics when cornering, the front end track has been narrowed by a total of 8mm. This narrowing has been achieved by moving in both front end suspension brackets, when used on the new chassis and radio plate. It is not possible to do this with your older 6000 car, without a lot of messing about, but a conversion kit car can be obtained by purchasing new chassis, radio plate, front transaxle and body mount bracket.

Twelve months ago, I converted my 6000 to the narrow track by replacing the 3mm thick older chassis with the new 4mm thick version, plus all the above mentioned parts, and was able to appreciate an immediate change to the cars handling characteristics. This was confirmed by going back to the original set up, using the second Serpent in the family, raced by my elder son occasionally last year. Hopefully we will get him out more often in 1991, and away from the over-saturated 1/10 off road scene!

I noted that I ran the car with firmer suspension, as low as possible, and with harder front tyres. Under similar conditions, I would run the original set up on say 30 shore tyres, and found improved handling on the new set up on 35 shore tyres, and more response on slow corner turn-in.

The 4mm chassis adds more weight to the car where it matters most, and brings the overall package much closer to the accepted minimum weight level. The chassis in your 6010 kit comes with CNC machined sections, corresponding with all front and rear mouldings and engine installation. This machining will allow you to achieve exactly the same ride height as the original car and also maintains the same centre of gravity. Perhaps without the machining, your average clubman may not be able to perceive any small changes to the cars handling, but in the experts hands, the

differences are noted. Small percentages they may be, but add up all of these throughout the cars set up and preparation, and they begin to take effect.

As far as geometry is concerned, the rear end suspension remains unchanged. However, the uprights have been modified to take an M4 socket grub screw, which now locks both top and bottom pivot pins in place. In the past, these were a press fit into the uprights, but too much removal, and you lost your fit, and suffered the pins 'working out' during racing. The alteration in location now allows you an easier withdrawal and assembly of parts whilst at the trackside, should damaged or broken wishbones have to be replaced. Personally, I felt the need to tighten the grub screw onto the shaft, thus leaving a small 'mark' from its hardened point, then removing each pin in order to file a very small flat to finally lock the screw onto. This, if re-assembled with care, should prevent damage to the pivot pin surface, and allow the easy dismantling of parts and prevention of damage to the pivot holes in the wishbone mouldings.

The lower rear wishbone now sports the facility of making ride height adjustments, by means of adjusting a socket grub screw in the moulding, which in turn acts as a stop on the chassis.

I have run an aluminium rear-plate purchased from Elite Models some eighteen months ago, which allows you a three position fixing for the shock absorber pivot. This gave you the ability to adjust ride height between maximum, and minimum rear tyre diameter, and not make adjustments to spring tension. However, this form of screw adjustment, will obviously make changes much quicker and easier to implement in the future.

Remember, do not try to overtighten any of these grub screws in the nylon mouldings, it is expensive and annoying to have to replace perfectly good parts just because of a stripped thread.

Our photos of the rear end of the Serpent 6010 will show changes to the quick-change wheel adaptors. No more the loose fitting wheel hub, helping to

give you a little unwanted rear end steer. The anodised aluminium adaptor now has a semi-circular annular ring machined into the hexagonal section to locate a rubber O-ring. Once the rear wheel has positively located onto the adaptor, with the nylon lever locked in position, the O-ring is positioned to centre the wheel, and lightly press against the outer edge of the wheel moulding, where it fits over the hexagon. As such your old wheels now have a positive fit upon the adaptor, equal to any new wheels you may use.

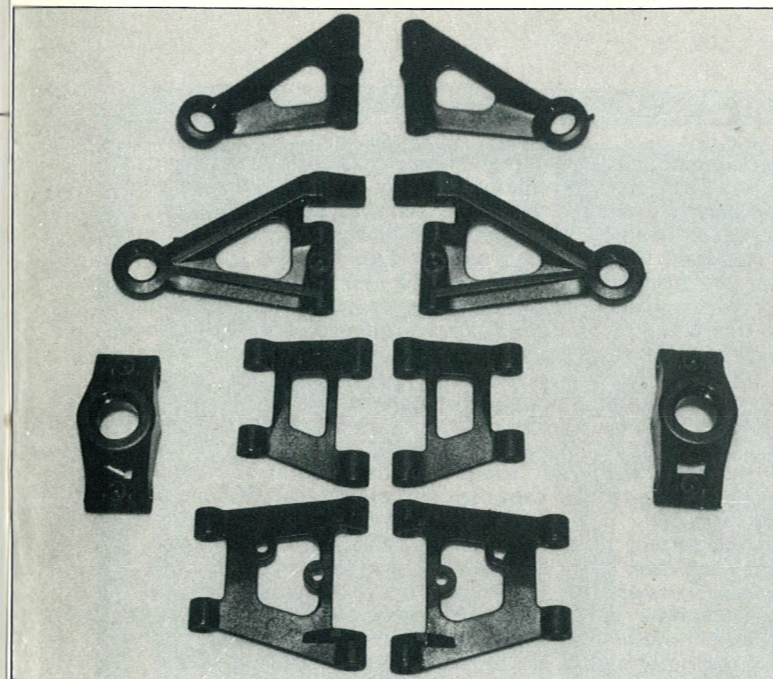
Whilst mentioning the kit wheels, you will notice that the latest specification of wheel is now moulded from a stronger, less flexible nylon material, available in white, black or red.

To conclude our review of the rear end of the car, I make no excuses for leaving the new design of limited slip differential until last. This one, new design feature, could have the credit for the biggest percentage of improvement in your cars handling. I say 'could' rather than 'will', because any assembly such as this can only offer advantages if you are prepared to regularly monitor its working and efficiency, and test for the cars changes in handling characteristics by varying the differential set-up.

Gone are the thin, hardened, flat thrust washers that were used in the old differential, to be replaced by an industrial style assembly. Precision steel balls of 4.8mm diameter are used in the nylon diff pulley, with much more substantial thrust washers, that incorporate a semi-circular grooved raceway for the balls to easily run in. The load on the ballbearings is now spread over a more acceptable surface area, than the original single point contact as arrived at with the original flat thrust washers.

The revised pulley moulding has the means to shield around the edges of the thrust washers, thus preventing any easy access of abrasive dust into the working area of the differential.

When adjusting tension on the old differential, the bellville thrust washer was positioned "brake-side" of the assembly, but now it is located inside the aluminium housing, along with the smaller thrust bearing. No longer in use,



➊ New harder wishbone mouldings with provision for pivot locking screws.

within the bore of the alloy housing, is the needle bearing, because this has now been replaced by a nylon clamp bushing.

When applying initial setting load to the differential, you still use the threaded split collar as on the older diff. With the nylon clamp bushing and the threaded section of the alloy housing now being slotted in the form of a "split collet", you can, by means of a grub screw with nylon pad, apply load through the locking collar, onto the housing thread and then onto the clamp bushing. This will offer the means of simply increasing or decreasing the amount of slip between the two halves of the differential.

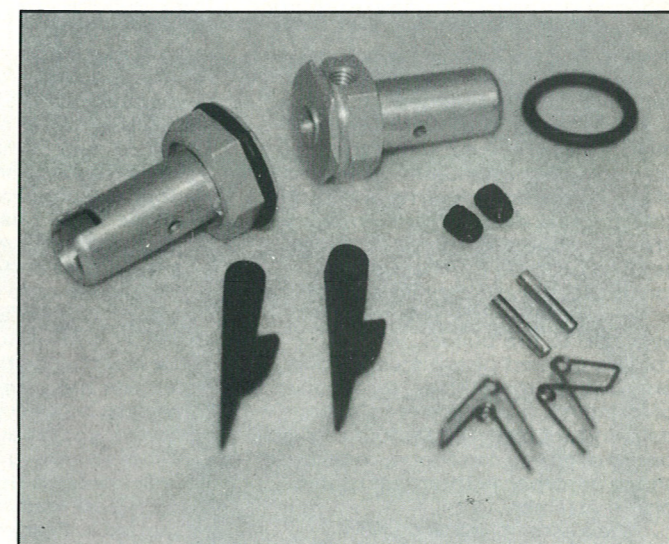
Serpent claim that it will take time to set up the right amount of limited slip. It will of course change from track to track and depend upon your choice of tyre at that time.

I quote, "A delicate but very useful device to fine-tune your Serpent racing car".

People aware of the Serpent 6000 will be knowledgeable of the drive train assembly, and as such, it makes it easy within this review, to report that the following parts and assemblies remain unchanged. The layshaft assembly incorporating the two speed gearbox, pulleys and twin disc brake adaptor, are as previous. Also unchanged is the centre layshaft carrying pulleys from the short side belt and transferring drive to the front wheels. The radio plate follows the same configuration as previous, but has had subtle changes made to the position of fuel tank and certain radio gear, in order to account for the narrow track assembly of the front suspension.

The front transaxle is now 8mm narrower, in order to compensate for the same change in front track dimensions, but the axle block and front

➋ Front suspension assembly now comes in harder nylon.

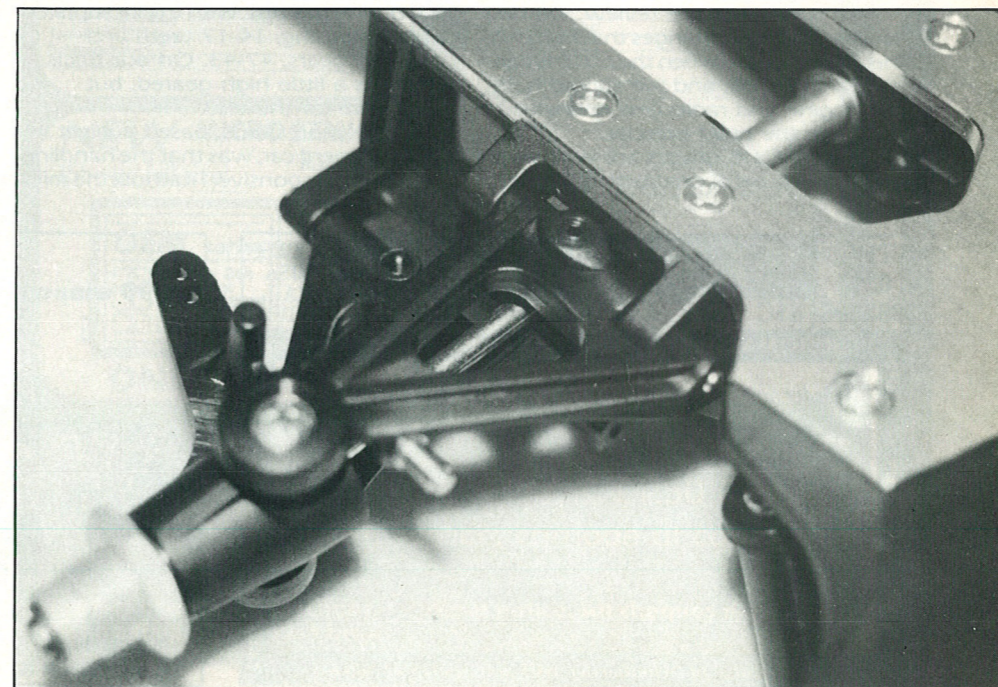


➌ New quick change rear wheel hubs.

suspension moulding remain unchanged. Wishbone design and location has been retained from the previous car, with the exception of two small but significant changes. The lower wishbone now incorporates the facility of locking the moulding to its inner pivot shaft, by means of a socket grub screw, rather than the previous means of making the shaft a "press fit" into the wishbone moulding. As with the redesigned rear wishbones, it is now much simpler to replace the wishbones at the trackside, should damage occur.

Finally, but very significantly, the mouldings are now produced from harder nylon, and offer a much firmer suspension than previously. Virtually all suspension movement goes through the shock absorber and springing, rather than partially through a 'flexing' lower wishbone, obviously all the more flexible, the hotter the weather.

➍ New harder rear uprights.



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Shock absorber design remains relatively unchanged, in that they come gold anodised, threaded on the outside of the shock body, with nylon spring clamps only, supplied with the kit. Knurled, anodised, threaded spring adjusters can be purchased separately for quicker trackside spring adjustments.

You will find a wide choice of pistons available to the builder, with three choices of fixed piston incorporating one, two or three holes, for a variance of damping. If you prefer to make damping adjustments without changing piston or oil you can choose to build the shock absorber with an adjustable piston assembly.

When assembling any shock absorber, follow the manufacturers instructions to the letter, because they have to function equally left to right, completely free of air at all times.

Front shocks are set firmer than those at the rear, but experimentation is recommended, in order to arrive at settings to suit differing conditions and tracks.

S-Performance Blue shock oil is supplied with the 6010 kit, along with some practical advice on how to arrive at an optimum setting on front to rear shock absorbers, on slow through to fast tracks.

Three spring rates are available, colour coded gold, silver and black, representing spring wire of diameters 1.3, 1.4 and 1.5mm respectively. Therefore, when you consider the range of shock oils available from most good model shops a choice of fixed or adjustable piston, coupled with three choices of springing, all drivers should eventually arrive at proven settings to suit most given situations.

At this stage of the review, we have covered all of the changes that make up the difference between the 6010 kit and the earlier 6000, and we should have our engine and radio gear to install to complete the build exercise. Experienced 1/8 drivers are well aware of the final build of cars such as this, but

I would point out that the less experienced follow the very instructive manual that comes with all Serpent kits. Pay close attention to the assembly and free running of the two speed gearbox internals, and the clutch shaping and fitting. Also take time and care preparing the truing and glueing of tyres, and take note of the drive ratios that are available. A cars handling changes when the ratio in tyre diameter is altered between front and rear, thus altering the overdrive ratio to the rear wheels. Regularly measure all tyres before fitting to the car, and consult the charts printed at the rear of your instruction manual to determine the overdrive ratio or otherwise, to give you a consistent performance throughout each race.

With everything in place, parts all double checked, body and wing in place, we are ready to test our new kit at the track. Fortunately we now have the facility in Birmingham to test on our own track just off the city centre at the Wheels Adventure Park, and already having promoted two club meetings, we are aware of the tracks potential and thus have a yardstick to measure our car by.

A track test, when only running one car on an empty track, will not indicate whether this car will perform better than the opposition under racing conditions. The winning combination is made up of many facets, such as overall attention to details when assembling, correct gearchange points, setting-up of engine, type of fuel used, clutch shoe lightening, tyre choice, type of track surface, wing fitted or not, as the case may be, and many more.

First impressions however, will be how well the car drives straight "out of the box". Here the Serpent 6010 scores immediately, because the drive train and all wishbone mouldings have easy, free movement, without the need of a 'fitting' or 'running in' period. I ran the car during this test, with the kit supplied clutch housing, 14-17 teeth and 2-speed gears, 47-43. On our track, perhaps a little high geared, but adequate for the test.

Initial impressions, based against my older Serpent car, was that the handling was more responsive. I had lost the mild

understeer characteristic and replaced it with a car that reacted much quicker to changes in direction. It was noted that the harder wishbones, allowed the anti-roll bars and shock absorbers to do their work more effectively.

The narrower front end has definitely improved the cars turn-in characteristics, and I found positive front end grip using 35 shore tyres. Changing to 30 shore, gave me slow speed oversteer, but by applying power earlier, allowed faster laps to be turned in, once my confidence increased.

The differential, when first built, was extremely stiff, even with no limited slip adjustment dialled in. However, after 15 mins running, the diff had freed up dramatically, and had a very smooth low-friction feel to it. This was definitely an improvement over my old car, and I had a very interesting 30 minutes noting the cars changes in handling, whilst applying more or less friction to the slip of the differential.

To conclude, we found that the car proved easy as ever to build, helped by its simple design, and high quality of production. It was easy to find an interim setting to begin testing on the track, and the design changes are an improvement to the car, and not for appearance sake. Spares back-up has never been a problem in England, and credit for that can go to Elite Models of Mansfield. Kits are always readily available and the majority of spares have been supplied by return. I am told that all parts referred to in this review are currently in stock. All parts will be supplied to the trade, and therefore Serpent car kits can be ordered through most top model shops.

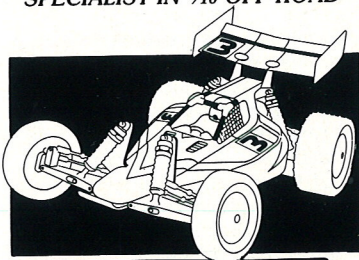
In the near future I hope to review back to back with this car, Serpents new short wheelbase conversion for the Sprint, and their new push-rod front suspension set-up. The push-rod set up I can't wait to try, but I am easily convinced about anything Serpent do, especially now I am in to running my fourth car of theirs! ●

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