Dale Burr

super touring

The Schumacher SST2000 '99

There cannot be many people who escaped hearing about the season long battle between Michael Schumacher and Mika Hakkinen. However, another Schumacher was involved in a season long battle in 1998. This was the Schumacher SST-98 of Steven Pole. And, like Schumy, they lost out by the smallest of margins. But it probably wasn't the superb performances from Steven Pole that have made the SST so popular recently. It is more likely the fact that almost anyone who changed to an SST (there are lots of them) instantly went quicker.

Having all of these drivers meant that Schumacher received excellent feedback on what needed doing to the car. All agreed that very little improvements were required; just a few things to make the car easier to work on, and more reliable.

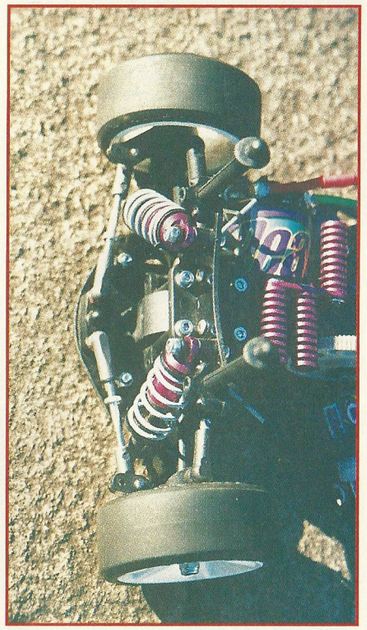
My own opinion about the SST-98 that I have been racing for around 8 months is that two things needed improving: Firstly, the wheel hexes bind straight onto the driveshafts, with no pins. They need beating with a large lump hammer to get them off, and sooner or later need replacing. Secondly, excessive play in the axles, due to said wheel hexes. This play causes the bearings to fail too often.

Apparently, I was not the only one who felt this way, because Schumacher have now released a new car, the SST 99-Pro. This car uses a brand new hex/axle system, to totally eliminate play.

As well as the new axles and hexes, the wheel bearings are now bigger. This makes them much less likely to shatter, and again reduces play. Making the bearings taller and thicker means that the 99-Pro is 5mm wider than previous SSTs. For the car to be BRCA legal, you now have to use Schumacher 185 wheels; Fastrax or Schumacher 190 wheels make the car too wide.

Also new are the bulkheads, gearbox tops and shock mounts. The gearbox tops have been cut down, allowing the bulkheads to mount underneath the top-deck. This lowers the centre of gravity, and gives the Pro a very sleek look.

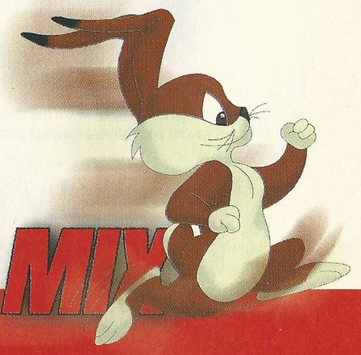
All of the fibreglass parts have now been replaced with Schumacher S1 carbon composite parts. These are a mix between fibreglass and pure carbon, and stiffness wise, they are about halfway between the two. The biggest improvement though is cosmetic; the S1 parts look almost like carbon fibre.

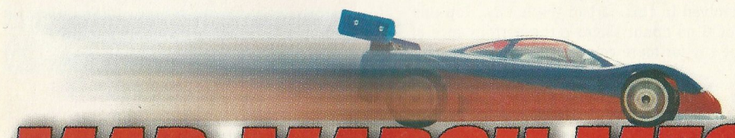


Purple alloy ultra-short shocks, always an optional extra before, are now included with the 99-Pro as standard.

For the first time, you also have the option of receiving your SST in kit form. This is a definite improvement. Most racers (myself included) like to build their cars up so that they can see exactly how everything works should anything go wrong or need adjusting. It also allows you to fit any hot-up options you have purchased at the same time. For an extra £15, Schumacher still give you the option of having a pre-built car, and you also get a bodyshell, ideal for a novice racer.

Now, as you get all of these new bits you are probably expecting to pay at least a few pounds extra. Wrong. The 99-Pro chassis kit is actually cheaper than the old car, at just under £150. The only things missing are the roll-bars, spring tuning kit and motor heatsink that were included on the SST-98 kit. The reason for this is that most people would prefer to have a cheaper car, then buy these bits when and if they need them.





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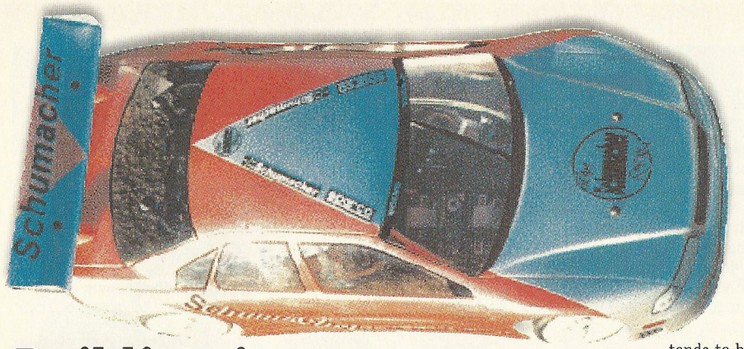


Building it up

Because the car is an evolution rather than a revolution, if you have had an SST in the past you will hardly need to use the instruction book. Everything goes together extremely well, but it is still worth spending a little extra time making sure everything is just right. It is far easier to do this now than have to do it later when things go wrong at the track.

Parts

The new S1 parts, while much better than the old fibreglass versions, still have quite rough edges, and the occasional spiky bit. You will need to file the spiky bits off before assembling the car, as for example the shock mounts need to fit flush to the bulkheads. I chose to go around the edges of all the S1 parts with wet and dry paper to remove any sharp edges. It is also a good idea to chamfer the cell slots slightly to, so that the chassis doesn't cut into your cells.

Once any excess material is removed from the plastic parts, they go together extremely well, and are clearly moulded to a very high quality.

Transmission

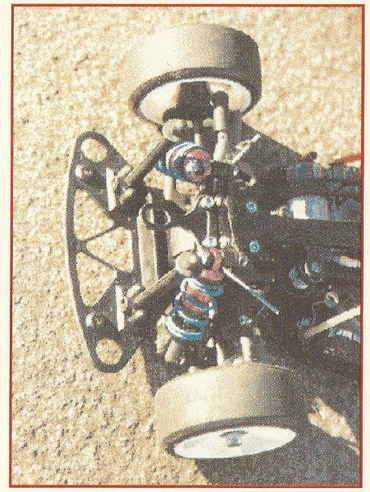
The diffs still come built up, which takes a fair amount of time off the build. They are also tightened correctly, and should need only a little adjustment after running in. I feel I must make a point of the fact that the Schumacher are the only manufacturer to use aluminium for their diff outdrives. Some use plastic. Some use steel and offer plastic as a hot-up. Steel tends to be too heavy, taking away acceleration and run time. Plastic tends to wear, and even snap. The SST has the best of both worlds with alloy diff halves: nearly as light as plastic, nearly as strong as steel. Excellent.

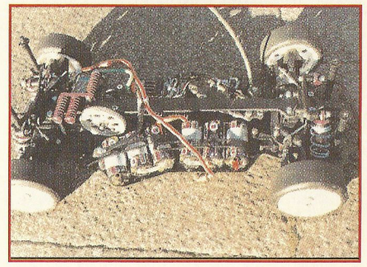
Plastic blade driveshafts are still used, which eliminate wear on both the driveshafts and diffs. The only parts that wear are the small plastic blades, which are easily replaced.

The new axles now use a standard hex and pin-drive system. A spacer is inserted between each pair of wheel bearings to prevent the bearings binding, no matter how much you tighten the wheel nut. A cone washer is placed between the hex and outer bearing to apply constant pressure to the centre of the bearings, totally eliminating play. Setting camber/toe angles is no longer a case of taking an average. Because everything is totally free of play, it is possible to set 100% accurate geometry, making the car more consistent, and easier to drive.

The kit layshaft uses fixed four wheel drive/brakes, but Schumacher also offer their new Adjustable Braking System (ABS) as an optional extra. We fitted this system to the review car, as I had heard lots of good things about it. Basically, it is a standard one-way pulley with a slipper system on one end to adjust how free the one way runs. Once fitted, you will never have to change layshafts again, as it can be run as free as a one-way bearing, totally locked up, or anything in between.

The exact effect that adjusting the ABS has depends very much on driving style. If you are a heavy braker, running it too loose will make the car quite unstable. If on the other hand you prefer to use just a small amount of brakes, or none at all, loosening the ABS can help to cure understeer coming into the corner. Being a heavy braker, and because the car would be tested at Bedworth (that hairpin), I set the ABS quite tight.





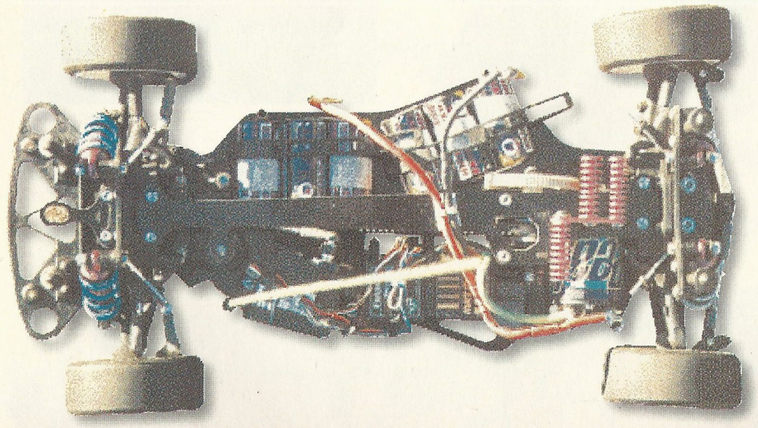
Once complete, the transmission is extremely free, and should get even better as everything runs in. Coupled with such lightweight diffs and driveshafts, acceleration, speed and duration should be no problem.

Suspension

One thing I have always liked about the SST is the fact that the front and rear suspension is pretty much identical. The front and rear wishbones are the same length. The shock absorbers, hubs, bulkheads, shock mounts, rollbars and driveshafts are identical front to rear. This makes setting the suspension very simple: if you have harder springs on the front, the front suspension will be harder; you don't have to take into account shock angles and wishbone lengths.

While the suspension may be uncomplicated, Schumacher have not limited the amount of adjustments available. Quite the opposite in fact; there is nothing on the SST that cannot be changed. Anti-squat, caster, front and rear toe-in, ackerman, camber, camber change, droop, shock angles and number of piston holes can all be adjusted without having to spend a penny on new hubs, pistons, etc.

With a new car, it is usually necessary to sand the wishbones slightly so that they drop under their own weight. However, all the parts on the SST are of such good quality that this wasn't necessary. Everything was perfectly free (yet not sloppy) without any sanding whatsoever.



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Once the lower wishbones are on, but before the rest of the suspension is fitted, you can set the droop. This is done by placing the car chassis down on a flat surface. Adjust the grub screws on each wishbone so that you can just slide the small fibreglass tool (included in the kit) under the outer end of each wishbone. It is important to make sure the droop is identical left to right, or you may find that the car handles differently on left hand bends as it does on right hand bends.

When screwing the hubs onto the wishbones, it is vital to ensure that they are all the same distance above the wishbones, or the droop will be different. The kit fibreglass tool again comes in useful. Slide the U-shaped part of the spanner between the hub and the wishbone, and tighten the socket ball until the tool can just be moved around. Remove the tool, and tighten the socket ball by one full turn.

Because the new hubs are larger than before, Schumacher have taken the opportunity to beef up the steering arms, making them much stronger. They have also made them longer, and included an extra ball joint hole. This is now the standard hole used at the rear, and can be used at the front to reduce the amount of steering.

Another point of note is the top wishbones. These come pre-built, but the turnbuckles are very tight. I suggest working them in and out a couple of turns before assembly.

As mentioned, Schumacher's excellent purple alloy shock absorbers now come as standard. The shock pistons are adjustable, from 1 to 4 holes. I set all four pistons to 3 holes, filled the front shocks with 70wt oil, and the back with 60wt. Blue springs were used on the front, and grey on the back. Thicker oil and harder springs were used on the front as the car will be run with 26mm tyres all round. Stiffer front suspension should help to balance the extra steering that the wider tyres give.

Track Test

Winter weather conditions being what they are, we were lucky to get a dry afternoon at the Bedworth track for the test. Although it wasn't raining, the track was still half damp from overnight rain, so would be a good test of the Pro's grip and tuneability. The car was fitted with a ProtoForm Alfa 156 shell. This is what I have been using on the old car, so it should give a good benchmark. An Infinity 13x3 geared at 27/83, and 26mm HSAs all round were also used.

Run 1: My first impressions were that the car was far too twitchy for my liking, most likely caused by the 26mm tyres. Although the motor was quick for the first few laps, it seemed to die off too quickly.

Run 2: I increased the castor to maximum, as I had built the kit with it in the medium position, and increased the rear toe-in slightly, both done to make the car more stable. I also fitted some harder brush springs to the motor, to try to improve performance. Well, the handling was totally dialled. The car carried huge amounts of speed through the corners, and was no longer unstable. I actually had my old SST with me, running on 22mm front and 26mm rear tyres, and the new car was definitely quicker. However, I still wasn't happy with the motor.

Run 3: A Peak Performance 12x2 motor (distributed by Schumacher) was fitted, geared at 26/86. The power was absolutely awesome. This is easily the quickest motor I have ever used. The result was 18 laps in a split of 321; it dumped on the last lap, mostly due to me having too much fun with all that power.

Run 4: I geared the motor down to 25/86, just to see if I could get a little more duration. Well, I did manage to get more duration, and I also got a little more acceleration as well. Clearly a win-win situation. The result was 18/316. Now, this may not sound wonderful (Bedworth lap record is 20/314, set by Steven Poles SST-98), but the track was still mostly damp. This is certainly the quickest I have ever managed around Bedworth in such conditions, and I am confident that when the Summer comes, I will easily beat the quickest time I have managed in the dry (19/312, also with an SST).

Conclusion

So, why is the Schumacher so good? Well, one of the reasons is that it is English. It is designed in English weather conditions, on English tracks, by English drivers. I don't care how good a car is on a Japanese or American test track. I want a car that will perform at my local track, without having to do lots of home-made modifications to get good lap times. This is exactly what the SST 99-Pro provides. Well done Schumacher, give yourselves a well deserved pat on the back.

At the end of this summer, I will be reporting back on how I have got on with the new car over a seasons racing. This will include what hot-ups I fitted, and why, and also any set-up tips I come across.

Many thanks to Schumacher Racing and to Steven Pole, Roger and Ben Cosgrove for their set-up help. **RRCi**

Set Up:

Motor: Peak 12x2 at 25/86
Camber: 1 degree all round
Front Shocks: 70wt Oil, 3 hole pistons, blue springs, outer hole on shock tower.
Rear Shocks: 60wt Oil, 3 hole pistons, grey springs, outer hole on shock tower.
Ride height: 6mm all round.
Castor: Maximum
Anti-squat: Level
Front toe-in: Parallel
Rear toe-in: Just inside middle of front wheel (Place a straight edge on the outside of the rear wheel).
Ackerman: Standard
ABS: Very tight

Tester Kit

Futaba FF3 radio, KO 2015 Servo, MRT VFx speed control, Peak Performance 12x2 motor (very fast), Schumacher Volvo S40 and ProtoForm Alfa-156 bodyshells.

Likes

Excellent price, alloy diffs, purple alloy shocks, new hex system, awesome performance.

Dislikes

Spiky bits on S1 parts, tight camber turnbuckles.

Options Fitted:

Adjustable Braking System (ABS), motor heat sink, roll bars, spring tuning kit, socket screw set.