

Model Cars has always been a big fan of Tamiya Formula One racing, so we've been busy collecting as much information as we can on setting these cars up. The result is our complete guide to the world of Tamiya F1

Can R/C racing really provide fun at an affordable cost? Tamiya Formula One racing has proved that it can. Successful in Europe, F1 fever has now hit the USA and, in its short history, the class has introduced many new drivers to the thrills and spills of electric on-road racing. Apart from the superb scale looks, the major attraction to F1 racing is its cost-controlled formula, putting the emphasis firmly on having fun without having to spend a great deal of money. The cars are cheap to buy, easy to build, incredibly strong and reliable. They are not difficult to set-up, are quick enough to provide a driving challenge and handle well. What more could you ask for?

In the States, 'parking lot' F1 racing is currently the rage, in which a group of F1 fans find a convenient supermarket car park on which to hold their own mini Grand Prix.

In Britain, most of the action is centred around our excellent selection of purpose-built, on-road circuits. Two separate championships are run on these during the summer months: the ever popular Tamiya Eurocup series and the alternative BRCA/RRC series. Both offer excellent, cheap racing, although the rules for each series are a little different.

Your F1 guide

The Tamiya Formula One kits are easy enough to build, but there are still a number of areas you need to keep an eye on to make sure your car always performs at its best.

Front ride height

Make sure your car's front end is high enough to avoid scraping the bottom of the chassis or the front

wing on the ground. When the front end bottoms out you lose steering, and the car becomes unpredictable. As long as your front tyres are bigger than 53mm in diameter, you should be OK.

Front suspension

There isn't much you can adjust at the front of a Tamiya F1 car. The camber angle can't be changed and the cars work best with no toe-in, but adding two washers at the back of the suspension arms (nearest the servo) will reduce the caster and give the car more turn-in at low speeds.

The front springs can also be changed. Three strengths are available in the Tamiya range. The medium springs are ideal for most situations. On high-grip tracks, the hard springs should be used, especially if you're racing with tyre additives.

Rear suspension

Sideways movement of the rear pod is controlled by adjusting the rubber O-ring screw that secures the rear T-bar plate to the chassis. To a certain extent, rear traction can be altered by just tightening and loosening the O-ring screw itself.

The looser this is, the more traction you will have on bumpy and low-grip tracks. On smooth, high-grip tracks the screw can be tightened. For bumpy tracks, an extra O-ring can be added under the T-bar plate to give the rear suspension more side travel.

Fore-and-aft movement is controlled by the oil filled damper. This works best with 30 or 40 weight oil, and will react faster when only one O-ring is fitted. The newer Tamiya releases also have a friction damper to further improve the rear suspension

movement, although many top drivers run this as loose as possible, with no damper syrup.

Gearing

Gearing a car depends on three things; the diameter of the rear tyres, the number of teeth on the pinion and the number of teeth on the spur gear. Mathematically orientated racers can use these measurements to calculate the MMPR (millimetres per rev) their car is on.

This is the distance the car will travel for one rotation of the motor and is calculated using the formula: $MMPR = \text{Tyre diameter (in mm)} \times 3.142 / (\text{Spur/Pinion})$.

A kit standard Tamiya F1 with new tyres and a 17-tooth pinion will be geared on about 48 MMPR which is ideal for most circuits. Big circuits like Mendip and Halifax, demand a higher MMPR which gives the car a faster top speed.

In this case, an 18 or 19-tooth pinion may be fitted. Conversely, a short, twisty carpet track (such as the one used regularly at the Model Engineer Exhibition) requires a low MMPR to get good acceleration around corners. A 16-tooth pinion may be more suitable here.

If you are ever in doubt about which pinion to run, always start off with a small one to avoid overgearing the car. Then, if the top speed of the car feels slow, simply go up one pinion at a time. An overgeared car will feel very sluggish coming out of the corners and the motor will soon get hot, which will shorten its useful lifetime.

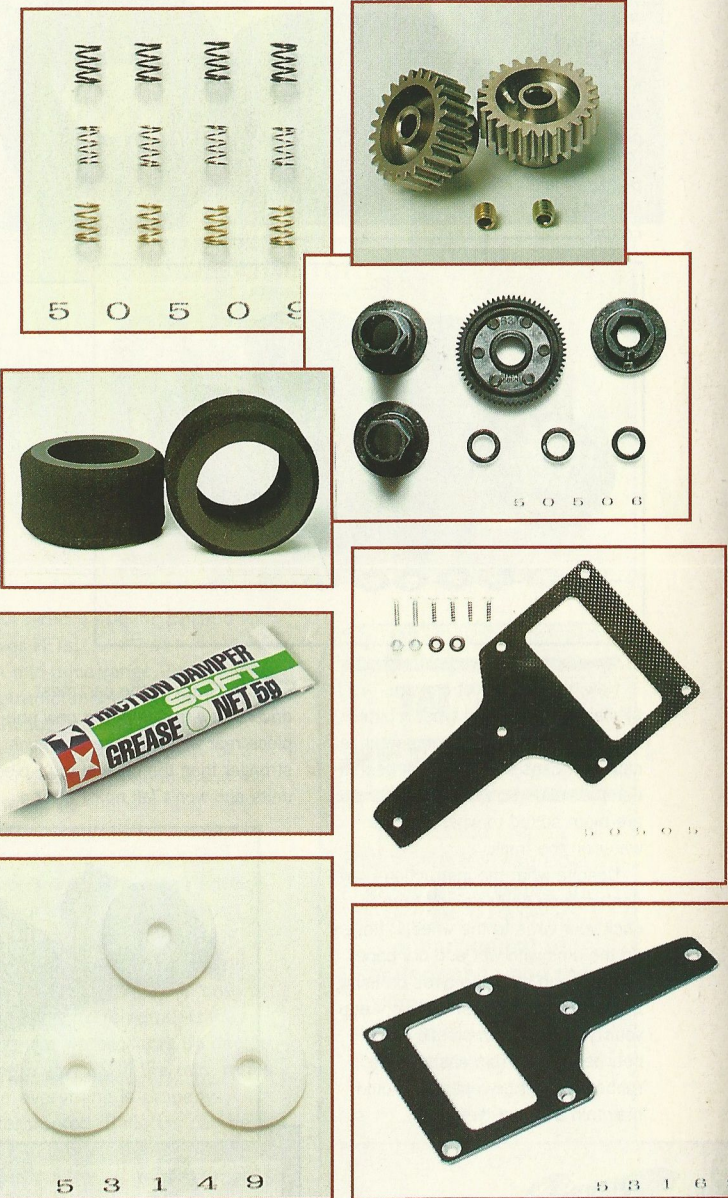
Keep an eye on the size of your rear tyres too. Abrasive tracks can sometimes wear these down quite quickly, and as the rear tyres get smaller, the MMPR will drop. Eventually, you will need to change to a bigger pinion just to keep the top speed of your car the same.

Tyres

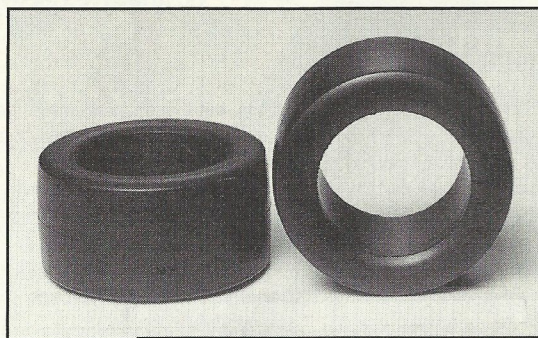
The kit tyres are ideal for most tracks and typically give the car good grip, but with slight understeer. As drivers get more proficient, many find they want more front end grip. Tamiya's medium compound fronts can be used to get more front end

traction, but these usually make the car quite tricky to drive and may not be suitable for every driver.

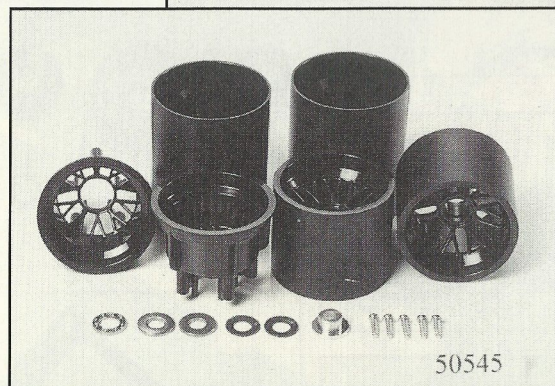
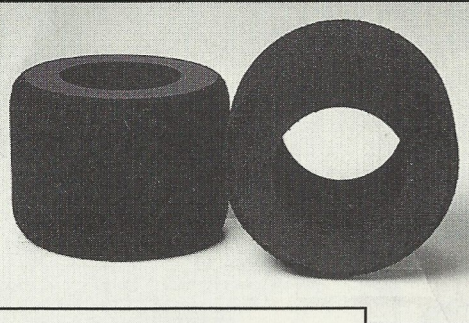
If you use tyre additives, stick with the standard kit tyres as these work well with the smelly stuff. In wet conditions there used to be no choice, as a set of Tamiya Caps was required.



Tamiya Formula One racing fever



Top; Latest moulded rubber tyres. Right; Foam Tyres available in different grades. Below; Wheel set from the Ferrari.



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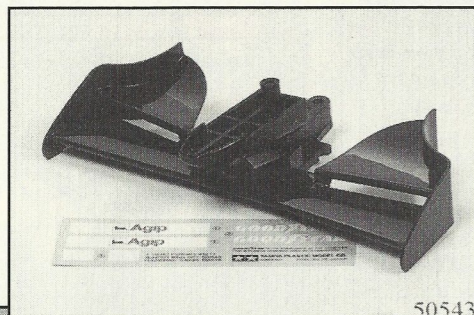
Now, three types of cap are available; the original type, a pitted variety and a new soft compound cap. Soft caps seem to work best in damp conditions, while the other two are more suited to when there is water on the track.

Despite what the instructions say, don't rely on double-sided tape to stick your tyres to the wheels. Rough up the rims with wet and dry paper instead, and stick the tyres on using a good contact adhesive. Also, keep your tyres sealed in plastic bags between races. This ensures the rubber doesn't dry out and should maintain a longer tyre 'grip'.

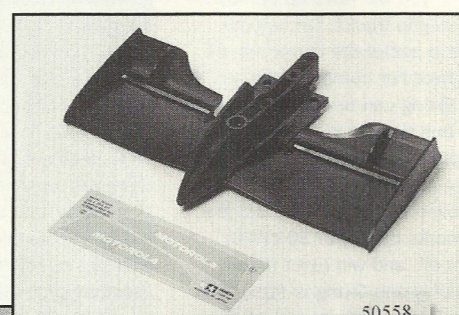
Wings

It may seem surprising, but aerodynamics do have a big effect on the performance of 1/10th scale racing cars. On Tamiya F1s, it is the style of front wing that seems to affect the handling most. The straight, non-sculptured wings give slightly less front end grip than the more complex shapes.

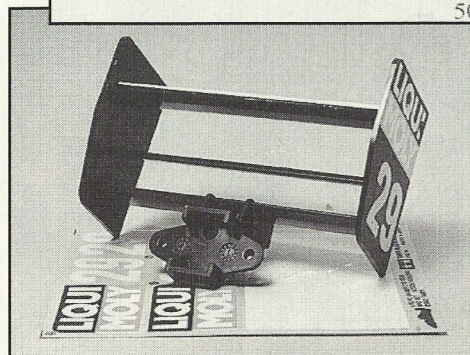
At the back of the car, most drivers now fit one of the new one-piece rear wings. These are much stronger than the original multi-piece units and won't fall apart after a



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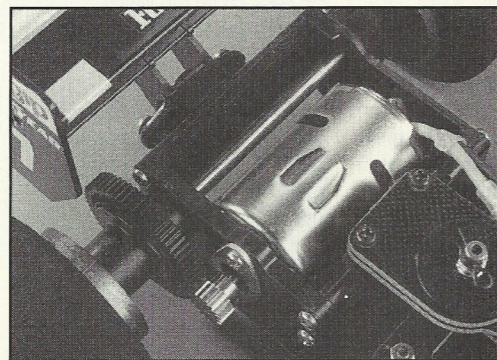
shunt from behind. If necessary, you can spray paint these wings, but make sure you rub them down thoroughly with 1200 grit wet and dry paper first, otherwise the paint will just chip off the first time you crash.

For those obsessed with aerodynamics, Tamiya also makes a hop-up rear diffuser. This doesn't suddenly give you oodles of rear end grip, but does double as an effective spur gear protector and looks pretty neat too.

Electrics

Eurocup racers must compete with the standard Tamiya kit motors, sometimes referred to as 'Johnson' 540 motors. Two things are important to keep them working well; don't overgear them and keep them clean.

Motor spray can be used to give the motor a regular flushing, while



Left; Standard kit F1 motor.

Below; How much downforce would you like? Just a few of the different wings in the Tamiya range.

some drivers use a small piece of comm-stick mounted on a bent wire to give the commutator a quick clean.

The rules state that 'any attempt to modify or influence the ability of the motor is not allowed', so magnet-zapping is definitely out, although it is still not clear how the organisers can detect such a motor.

If someone is significantly quicker than you though, don't automatically assume that they are cheating, as standard motors are not always the same. In a batch of seemingly identical motors, there will always be a few that rev higher than the others and will give a car a better top speed.

Some of the top Eurocup drivers have been known to buy several motors in one go and then test the whole lot on a motor dyno. The best motors are then kept for the important races, while the others are used for club meetings and practice sessions.

If you do manage to find a motor that is clearly better than all your others, try to use it as little as possible. Qualifying is all about getting one perfect run, so concentrate on getting the set-up of the car right first, then fit your good motor to go for that one quick time. If you think you've set the best score you can, take the motor out and save it for the final. Tactics can win race meetings too you know.

Cells

When racing with standard motors, 'punchy' cells are much more of an asset than those with enormous duration. SCRC cells

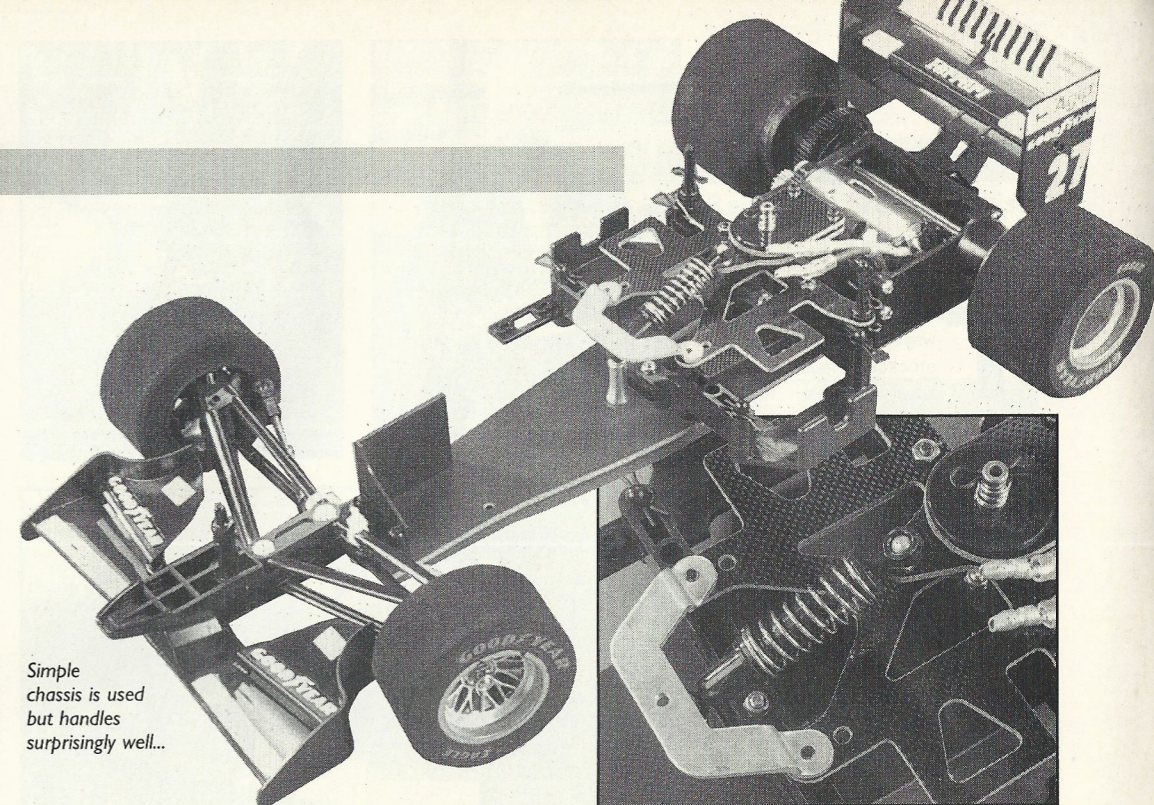


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deliver excellent punch and are therefore ideal for F1 racing. Even better are the older red SCR cells, which give similar punch to SCRCs, but weigh much less, and can also be charged more than once a day.

You certainly don't need to run expensive computer matched cells in Eurocup racing to go well. Mid-price range cells will do nicely, so go for a few packs of these instead. Look after them by completely flattening the cells individually after each race (simple dischargers are available for this), and try not to get the cells too hot (a cooling fan can help keep charging temperatures down).

Simple chassis is used but handles surprisingly well...



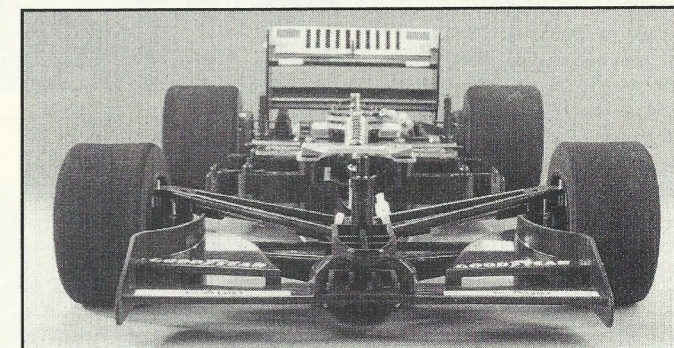
Steering servo

If you can afford it, go for a small, fast steering servo that will respond quickly to your stick movements. This will allow you to drive precisely without having to anticipate the corners.

Attach your servo to the chassis with proper mounting posts rather than double-sided tape, so that a crash does not mess up the tracking of your car. If you are competing in the Eurocup series, you must use the standard Tamiya servo saver, but if you're racing elsewhere, you may prefer to fit a better quality one, such as those made by Kimbrough.

Speed controller

Battery duration is rarely a problem with F1 racing, so you don't need to fit an expensive mega-efficient speed controller to be competitive. Standard motors also tend not to draw particularly high currents, so you



don't need a speedo packed with power FETs.

A mid-price range, forward-only electronic speedo will be ideal for F1 racing, particularly if it is small and lightweight. Go for a high-frequency speedo if you can afford it, as this will help keep your motors in tip-top condition for longer, and always check that there is a reliable repair service for your choice - everyone is going to accidentally reverse connect their cells one day!

With electrics there is one other thing to remember; they don't like water. If you do decide to race your F1 in the rain, make sure everything is properly waterproofed. Balloons can be used to protect the receiver and speed controller, and tie-wraps can be used to seal these properly.

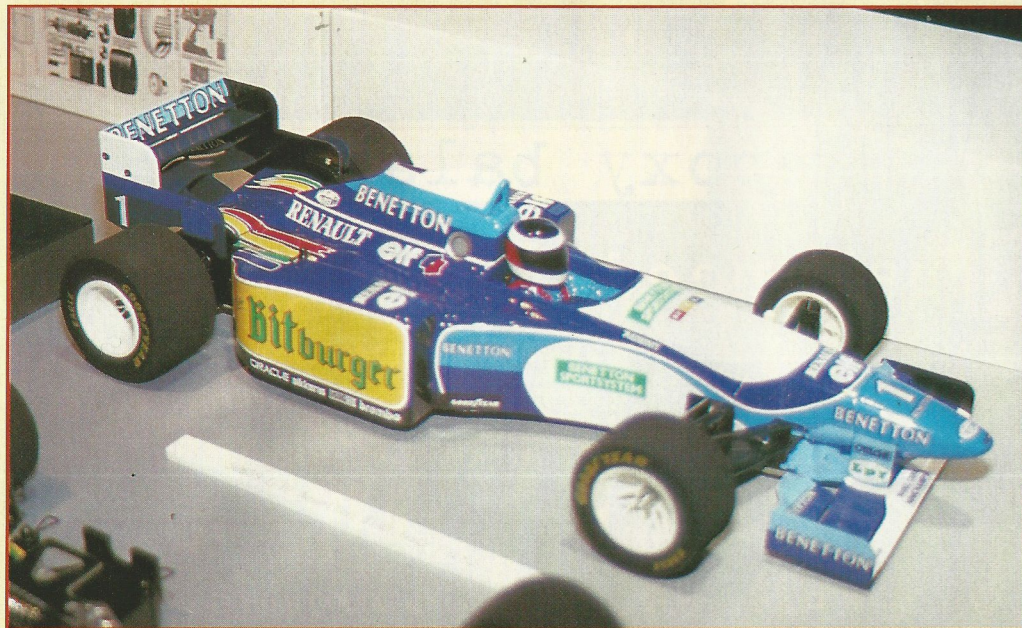
Any awkward areas can be sealed using Blue-Tack; Vaseline. Motor 'boots' are also available to stop water getting into the motor can. This is particularly important as the motor brushes wear down rapidly when they get wet.

IN THE NEXT ISSUE

In the next issue of RCMC we tell you how to set-up the chassis, the options for further enhancement of performance and the different places and styles of driving involved in this exciting and cost effective class.

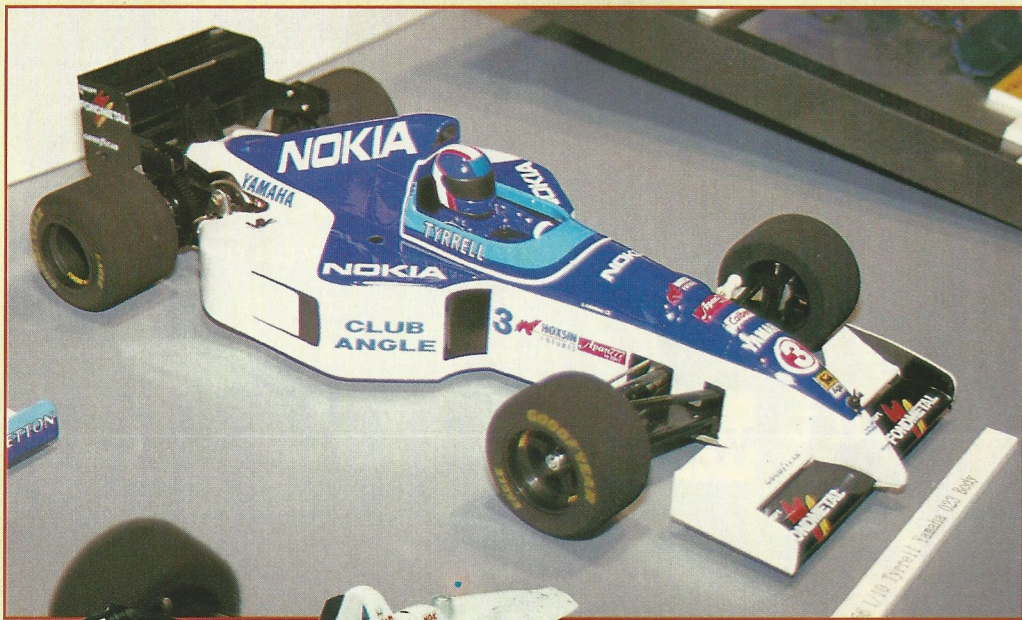


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Left; New from Tamiya for 1995 Benetton and Tyrrell.

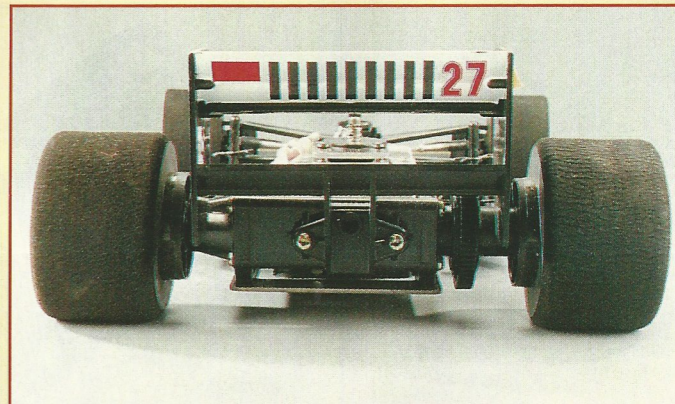
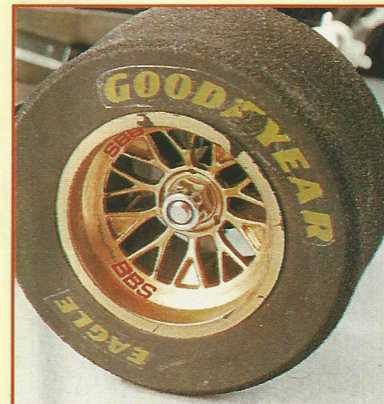
We continue the guide to building, driving and racing Tamiya F1 and Indycars and look at driving techniques and where to race.



acceleration of your car. For increased efficiency and a bigger choice of gear ratios, Tamiya makes a full set of fine-pitch pinions and spur gears. If you do decide to run these, then you will also need one of Tamiya's aluminium motor mounts.

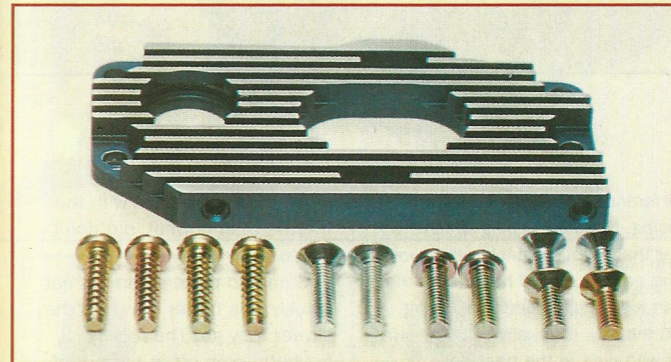
The standard plastic mount has a tendency to flex slightly under acceleration and will help strip fine-pitch plastic spur gears in no time at all, particularly if you decide to have some fun and fit a modified motor.

Incidentally, if you do decide to try a modified motor in your F1, be prepared for some very interesting handling. A modified motor pushes the Tamiya chassis



The BRCA/RRC rules are more open; they allow hop-up parts from other manufacturers to be fitted to your car. The idea is to keep costs down by allowing cheap on-road rubber, any gears and pinions, and the F1/Indy car body shells made by Racecraft and Parma.

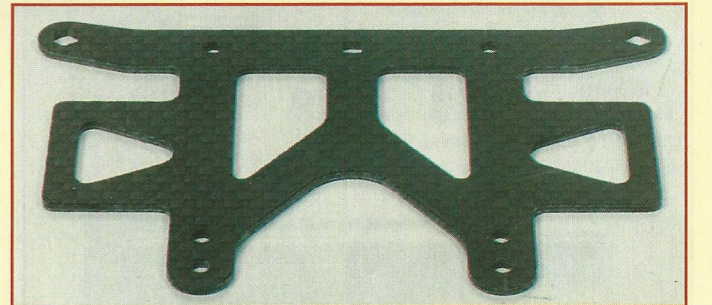
BRCA 27-turn stock motors are also allowed. These usually last longer than the Tamiya kit motors and give the car a lot more power. It has to be said that the cars in this series don't always look as



Neat alloy rear motor mount aids cooling and provides a solid mount for the rear suspension.

servo saver, trackrods and ball-ends, and Tamiya spur gears. Non-Tamiya pinions are now allowed, as long as they have no more teeth than the equivalent Tamiya pinion. You can fit additional bushes and washers to take the 'slop' out of

some of the moving components. If you do come up with a 'tweak' and want to try it out, make sure you ask the Tamiya official at the Eurocup meeting before you change your car, as it might be a forbidden modification.



Some of the F1 parts are available in lightweight carbon fibre.

Every year drivers fall foul of the rulebook, whether it be by running extensions on their rear wings, adding extra weight at the front of the car to get more grip, or running non-Tamiya tyres. Remember, the aim of this racing is to be fair and cheap. Play by the rules and everyone will have plenty of fun.

good as the cars competing in the Eurocup series.

After all, for scale appearance you can't beat a well-sprayed Tamiya body shell decorated with the proper sticker set. However, the BRCA/RRC series can be a very cheap one to race in and the cars can be made to perform

Formula One Racing Fever 2

Below left; Even bright wheel decals are available to tune your car's looks.

Hop-up parts

Tamiya makes a host of hop-up parts that can be fitted to your F1. There are a couple of items that are essential for competitive racing, including a full set of ballraces. These will make your car faster and will also make the front wheels track better.

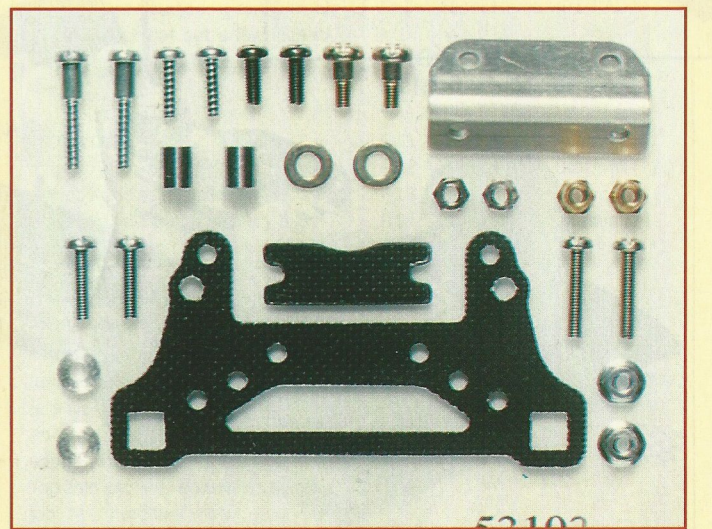
A lightweight rear axle is another prime purchase. Both fibreglass and carbon fibre rear shafts are available. Either will save a substantial amount of weight compared with the beefy standard steel shaft and will completely transform the

to the limit, resulting in a ballistically quick car that is a handful to drive. It might put you off modified motors for life!

Rules

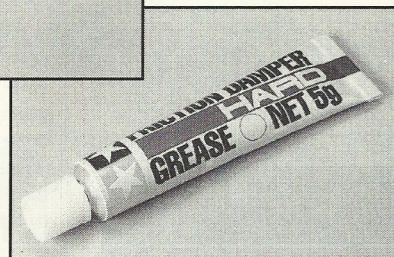
Tamiya's excellent eight-round Eurocup series runs to a strict set of rules distributed to all Eurocup competitors. With a few exceptions, these forbid the use of anything other than Tamiya car components and don't allow much in the way of modifications.

The standard 'kit' 540 motor must be used, plus Tamiya 'shiny sidewall' F1 tyres, the Tamiya

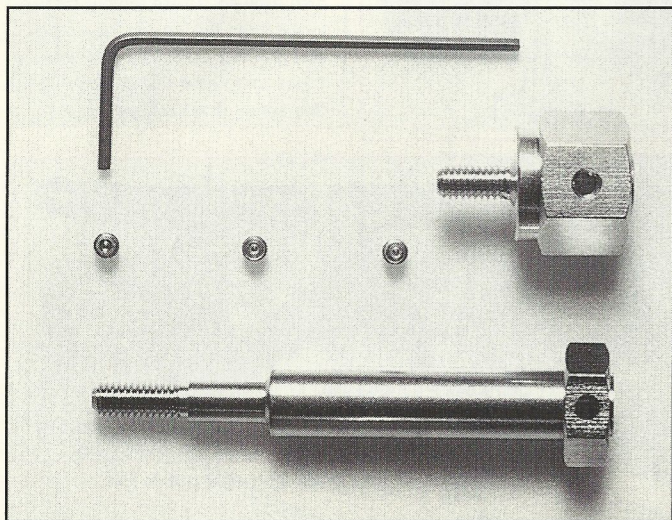




Different greases are available to tune the handling of your F1.



Even the sliding rear plates are available in carbon fibre.



Below; Carbon axle is lighter giving higher acceleration and top speed.

much better than in the Eurocup series. Speed freaks and Indycar fans in particular will love it.

Driving

As the Tamiya cars are always so evenly matched, the way you drive can make the

difference between winning and losing. No one is going to have a car that is much quicker than yours and no one should have a car that has significantly better handling. On the day, it usually comes down to who puts in the best drive.

The rules for driving an F1 car are pretty much the same as those for any on-road circuit car. To do well, you have to drive smoothly and consistently, trying to keep the speed of the car up as much as possible through the corners, while maintaining neat racing lines.

Since battery duration is rarely a problem when racing with standard motors, you can be a

little more aggressive with the throttle than normal, but don't get too carried away.

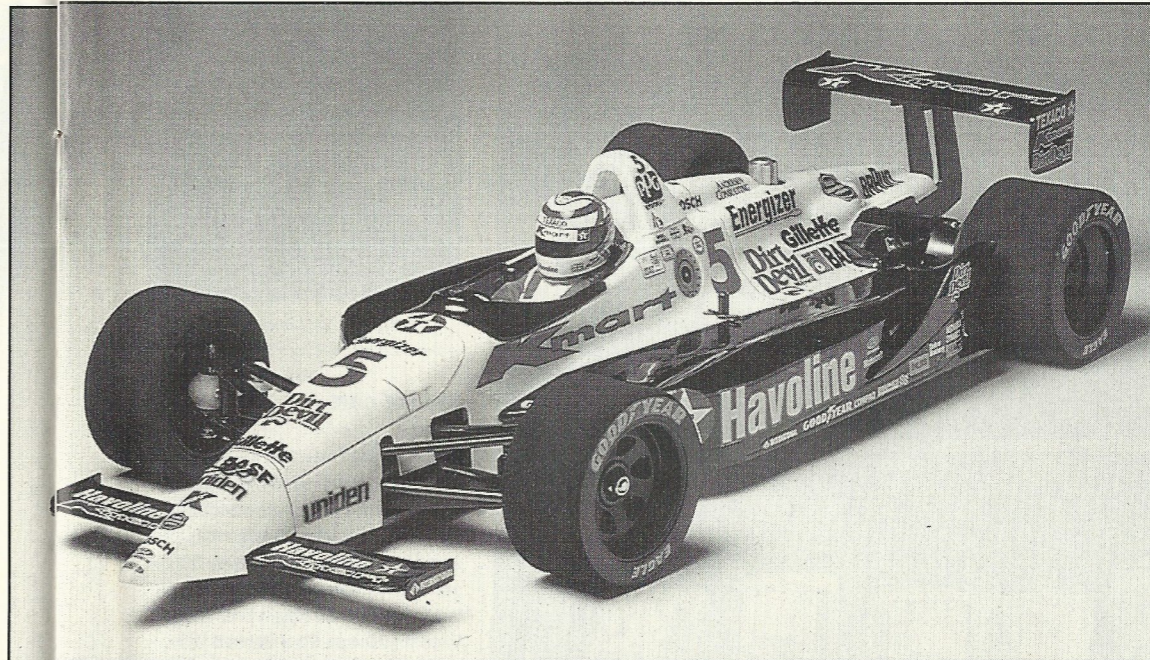
Standard motors can get hot quickly; the hotter they get, the slower they go. The most dramatic drop off in performance can be seen when racing on carpet, so try to be extra smooth with the throttle if racing on a high-grip surface such as this.

If you are used to racing cars with modified motors, then you may find you have to dial in more brakes than usual to get an F1 car handling to your satisfaction. Standard motors have much weaker magnets than modified motors and give little in the way of motor braking.

If your transmitter has an exponential setting, then you may like to dial in some exponential on the steering, especially if you are running softer front tyres than those provided in the kit. Exponential will prevent your car from trying to 'stand on its nose' when you make steering movements as you blast down the straight, while leaving you with the lock needed to negotiate the tight corners.

To improve your driving skills, there is no substitute for practice. Spend as much time as you can out on the circuit, try out different racing lines, different car set-ups and try to learn as much as possible. Keep notes of what works and what doesn't and refer to these at the meetings that matter.

Also, don't be afraid to ask others for advice. Many of the



suddenly you will have the meanest, fastest street machine ever to hit an R/C circuit.

Scale saloon

Some enthusiastic touring car fans from the West London Racing Centre decided to fit scale saloon body shells to their Tamiya F1s, and were amazed at the superb handling car that resulted. Racing against Tamiya touring cars and Yokomo YR-4s wasn't a fair contest; the converted F1s thrashed the cumbersome independent suspension cars every time! This form of cheap electric scale saloon racing could well catch on in 1995, particularly with the release of Trinity's similar S-Spec 10 parking lot racer.

Where to race?

A packed calendar of racing is scheduled for this summer, so if you have got an F1 car, try to get out and enjoy the competition. Both series are tremendous fun to race in and the atmosphere is always very friendly.

Tamiya Eurocup F1 Calendar - 1995

- R8 August 6th Halifax
- R9 Sept 2nd/3rd TEMAC Tamiya Circuit, Basildon

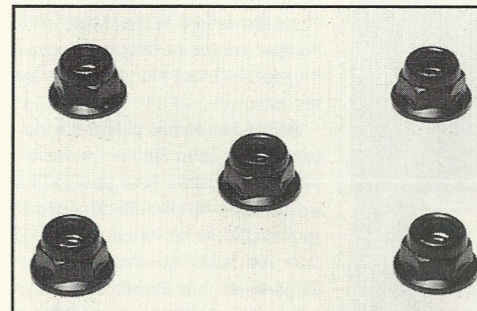
Entry forms are available from Colin Spinner, Richard Kohnstam Ltd., 13-15a High Street, Hemel Hempstead, Herts HP1 3AD.

BRCA/RRC F1 Calendar - 1995

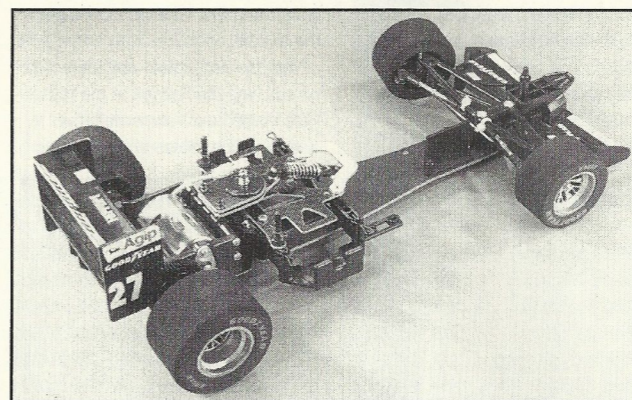
- R11 August 6th Ashby (*)
- R12 August 20th Stafford (*)
- R13 Sept. 3rd Ashby
- R14 Sept. 10th Mendip (*)
- R15 October 1st Wrexham (*)

* BRCA National events

Entry forms are available from Mike Haswell, 36 Ashford Avenue, Hayes, Middlesex, UB4 0LZ. Please remember to include a SAE.



Even alloy nuts are available to lighten the car and look good!



more experienced drivers will often hit upon the ideal car set-up for an event after just a handful of practice runs. Surprisingly perhaps, most will actually share this set-up with you, as long as you ask them nicely. Making use of their experience can save you a lot of time trying to get your car set-up right, and the quicker you can get your car handling well, the more time you will have to concentrate on perfecting your driving.

Beyond F1

Tamiya Formula One racing is very addictive and a lot of fun, but if you should tire of racing Grand Prix cars, there's no need to confine your car to the shelf. The F1s are very versatile and with a little bit of effort can be turned into a completely different racing machine that will give you many more hours of enjoyment.

IndyCars

Fans of high-speed oval action might like to try their hand at Indycar racing. Model Cars explained how to perform this conversion in the November 1994 issue. The basic required components were a Parma Indycar bodyshell and a good BRCA stock motor.

TEMAC hosted three rounds of exciting oval action in 1994 and is planning more races for the coming season, with further oval races being held at Birmingham and the West London Racing Centre.

Indycar racing is definitely not for the faint-hearted. It takes nerve to hold a car flat out a few inches away from a solid track board!

Hot rod

Hot Rod racing hasn't caught on in Britain yet, but is already big business in the USA. Bolink's Legend series and Parma's Hemi Coupe and '29 Roadster kits provide off-the-shelf fun, but owners of Tamiya F1 cars can also jump in on the action. All you need is a Dahm's Phantom body shell, an awesome chopped-top 1932 coupe with an enormous bonnet. Top this off with a custom spray job, fit a modified motor, and you