HPI Formula One Review

Having spent several happy years working in the full-size Formula One world, I have more than just a "soft spot" for F1. So when given the chance to review one of their small scale brothers, I jumped at it.

H.P.I. Racing is an American company that has been around now for some years. At first supplying "hop-up" parts mostly for Associated on-road cars, with quite some degree of success. In fact I can remember several H.P.I. tricked-out Pro-Ten cars running in our own R.R.C. On-Road series. Having built the "add-on" parts H.P.I. finally took the plunge a couple of years ago and constructed their own range of on-road racing cars.

The kit we have for review is the Limited Edition Super Graphite F1, as the name suggests the car is an "all-singing, all dancing" spec kit. Within the spec of the kit are some very novel and unique features, more of which later.

Loads of Carbon

Just like its full-size cousin H.P.I. start with a very rigid chassis, as we are in "America" 0.120" thou thick, about 3 mm in Europe. Although extremely stiff it is surprisingly light in weight. All mounting holes through the chassis are countersunk quite deeply, which gives a smooth finish to the chassis when all the assemblies are fitted to the chassis plate. Prep the chassis and all the other graphite plates by rounding-off all the sharp corners with a small file and then some 600-grit wet or dry paper. Finish off with a little black felt pen and some very thin super glue.

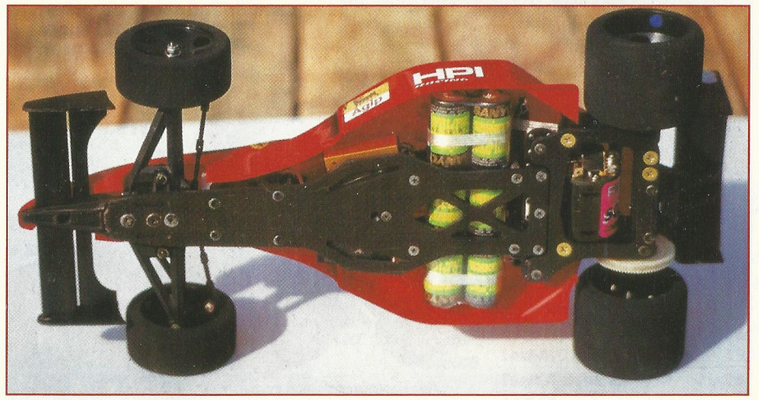
The last part of the chassis prep is most important, "sealing" the end-grain of the carbon stops any chance of impact damage causing the carbon to "de-laminate" and giving the chassis a permanent "tweek".

Front Suspension....but where's the springs

H.P.I.'s very neat independent front end mixes the familiar and the totally unique. Moulded upper and lower wishbones are strong enough to withstand anything most racers can throw at it, but still slender enough to be scale-like. The top wishbone having a "turnbuckle" to allow camber adjustments to be made. Machined aluminium steering blocks are drilled for steel kingpins and also carry a series of nylon washers which allow ride height adjustment.

But where are the springs? H.P.I. have gone for a unique and very Formula One-like answer. The springs are "inboard" on the lower wishbone next to the pivot pins. Captive ball-jointed pins carry your choice of spring medium, either coil springs (0.7mm/0.8mm/0.9mm/are kit supplied) or rubber "O" rings. With an available option of a longer captive pin you can run springs and "O' rings for damping. As I was intending to run on a known high grip surface I elected for the "O" rings and a little Parma silicone damper fluid. Two 1/4" flanged ballraces located in the front wheel hubs, are held onto the axle stub by Nyloc nuts. As the H.P.I. uses Pro-Ten sized wheels a large choice of tyre compounds are available. Turnbuckle steering linkages complete the front suspension. No lock-stops are included in the kit and as the amount of lock that is available is very large, electronic (Transmitter adjustment) means are definitely required to reduce the chance of the linkages locking-up.

Rear suspension. Yellow roll-springs and the outer pivot point.



What the track se's. Note the cells are retained by glass-fibre reinforced tape.

IF IT'S RED IT MUST BE A FERRARI!

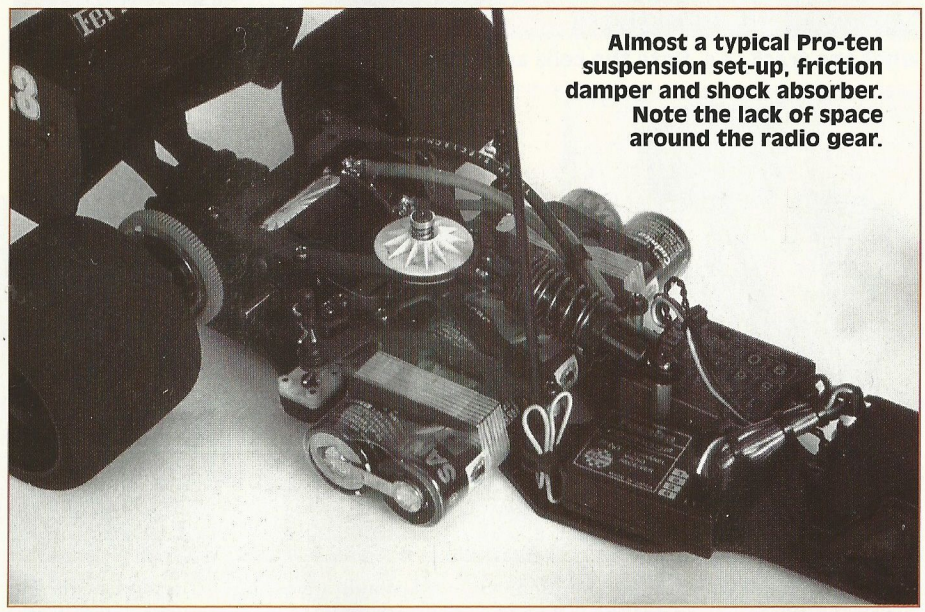
IT MUST BE A FERRARI!

The completed assembly also traps the twin plane front wing and front body mount to the chassis.

The steering servo is retained between two vertical nylon frames bolted to the chassis, mounting lugs on the servo have to be cut off. Then servo tape is used on three faces of the servo case. A small Kimbro 1/12th servo saver is included in the kit, however I replaced this with a larger 1/10th off-road size one.

To The Rear

At a quick glance the rear end looks very much like a normal "Pro-Ten" damper/friction plate set-up. This is not the case, the bottom carbon plate of the "pod" is bolted to a beam which has three pivot points. No T-bar at all, the outer pivot allows the pod to move fore and aft. The central pivot along with two springs, are for roll control Also the roll springs help to "self-centre" the pod. So with the friction damper, the roll springs and the centrally mounted shock absorbers, the car can be tuned to all circuits and grip levels. Three grades of roll spring where supplied with the kit: black 1.2mm, yellow 1.0mm and white 0.90mm. As I hate understeer I chose the stiffest springs (black). Care was taken to get a smooth surface for the friction damper to work on. Again Parma damper syrup was applied. An unknown grade of oil was supplied in the kit for the shock absorber and a progressive rate spring. Two mounting positions are available for the front mounting post, this allows you to tune for the most bumpy of tracks.



Almost a typical Pro-ten suspension set-up, friction damper and shock absorber. Note the lack of space around the radio gear.

A modern diff

H.P.I.'s diff is a modern design (no thrust washers) and features twin bearings and alloy hubs. The carbon axle spins very true and allows the use of 64dp gears. Also spacers are provide so you can alter the width of the rear track. The rear end is finished off with a very tasty three plane "bent" rear wing. This includes an adjustable top plane.

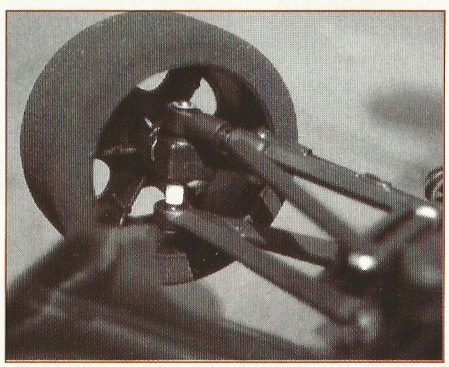
Construction of the car was totally trouble free and was completed in a matter of hours, no filing or fettling being needed. With all the black suspension components and the black of the graphite parts the chassis looks "fast" standing still.

Finishing Off

With the stick pack layout and the narrow chassis, space for the radio gear is at a premium. Small radio gear is a must. I used Futaba 40 meg mini receiver, a Futaba 9101 steering servo and a Tekin 410 K2 programmable speed controller. The finishing rolling chassis was topped off with H.P.I.'s latest 412T2 bodyshell painted red of course. H.P.I. again supplying some very smart sticker sets to adorn the bright red curves.

Track Time

As it has been some years since I had driven any form of electric on-road car, some degree of caution was used in planning the "Testing" program. No motor is supplied with the kit so a A.G.R. Maniac stock (27t) motor was installed for its maiden run. Jaco trued and glued blues and greens were my chosen tyres. So off to Ashby Woulds track I went.

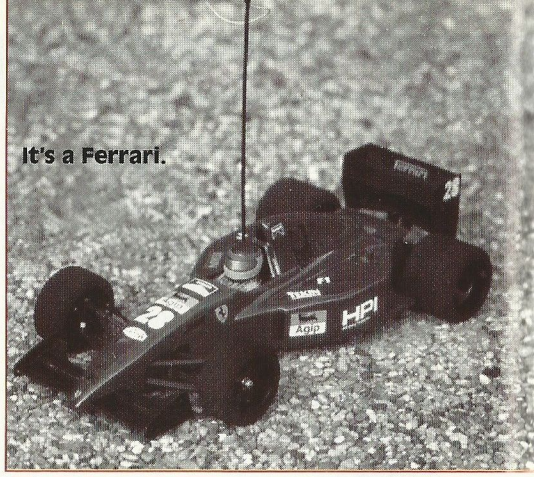


Kingpin detail. You can see the white nylon spacers that adjust the ride height.

First run.

I had a mixed bag of cells to use, Trinity, Fastrack and Schumacher 1700 SCR-SP's. My first run was used to trim the car and settle myself in. With a M.P.R. of 50mm I found I was massively undergeared and I had no larger pinions or smaller spur gears.

On the handling side, the key word was oversteer, slow and high speed. I changed the rear roll springs for the softer yellow grade. The "Green" front tyres for harder "Blues" and set the rear wing to maximum. While a set of cells charged the rear tyres were treated full width with T.Q. additive, the fronts just the inner 1/4".



It's a Ferrari.

The second run proved the tweeks to the handling had done their work, now I had still a sharp turn in but the applying power did not slide the tail round. High speed round the banking could now be achieved with ease. But I was still undergeared, the obvious answer was to change the motor. A Reedy Sonic 15 Quad was mounted in the pod. So with some slightly larger rear tyres, I now had a M.P.R. of 56mm. Cells charged, tyres dried of, into the unknown I went. Wow!!! is all I can say, the car was now a ballistic missile, top speed was stunning, but the instant torque from the modified motor was causing the back end to step out in dramatic style, even Jean Alesi could control these power slides slides. What to do? Then the penny dropped, while I had been running the standard motor I had no torque control set on the speed controller. Re-setting maximum torque to 60 amps tamed the beast.

Final run

My last set of cells were charged (Trinity World-Tech), no additive was used on the front tyres but the rears were re-treated. Now I had a balanced car, good turn-in, slight power-on understeer and sublime high speed handling. With the reduction in amps, top speed was slightly down, but as the car was now very driveable lap times dropped significantly.

Conclusion

The H.P.I. is definitely a Formula One car. Very fast, reliable, immensely adjustable, constructed with all the best materials. For a modest outlay you too can own your own F1 Ferrari. Reading the results from the first round of our own on-road series, Robin Hammet won first time out with the H.P.I, a great start.

Available from Thor Racing.

The testers kit.

Transmitter	JR X756
Receiver	Futaba R-103F
Servo	Futaba 9101
Speed Controller	Tekin 410 K2
Body	412T2
Motors	A.G.R. 27 turn stock/Reedy Sonic 15 Quad
Front Springs	"O" rings
Rear Springs	Yellow
Front Camber	2° Neg
Front Track	Slight Toe-In
Caster	Max
Ride Height	6mm All Round
Front Tyres	Jaco Blue (untreated)
Rear Tyres	Jaco Green (treated full width)