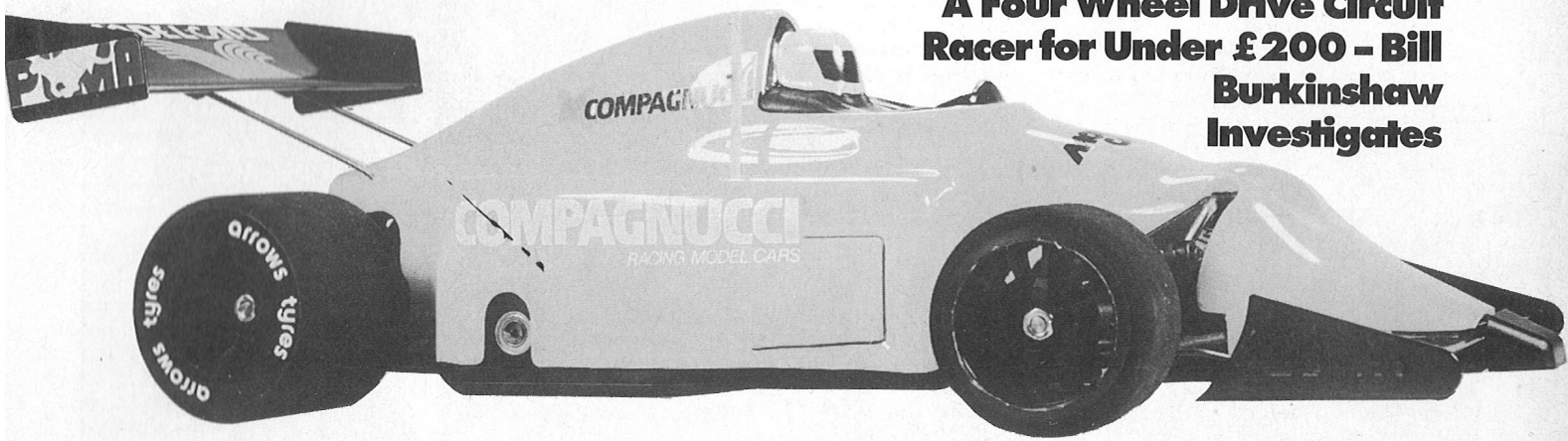


A Four Wheel Drive Circuit Racer for Under £200 - Bill Burkinshaw Investigates



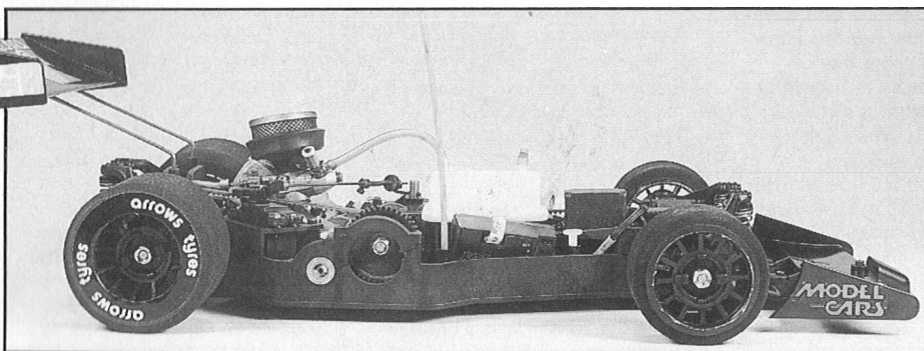
COMPAGNUCCI

399

Designing and marketing an R/C car for 1/8th scale track racing has not been thought of as a licence to print money for some time now but still they appear, and disappear, at regular intervals, each aiming to be the next world champion some with the right pedigree others with one hell of a lot of optimism. It takes a special breed to produce a kit for beginners for there can be few sports where there are no beginners to the same extent as model car racing.

After all, it's easy, all you need to do is buy the best of everything and that natural talent that you were born with will put you in the winners circle instantly. Few aspiring R/C car racers seem prepared to follow the route that the majority of R/C aircraft modellers take, that of Basic Trainer first, something that flies well enough to be fun yet allows a fighting chance of success, followed by increasingly ambitious models until the ultimate is achieved in the form of a pylon racer or competition aerobatic machine.

Having said all that, what then is the value of a beginners model, or introductory level kit? First of all the kit should match certain requirements; it should be lower in cost than the competition model to tempt potential enthusiasts to "have a go". It should be easy enough to assemble for the averagely competent "handyman" to complete the job without the need to resort to specialist tools and equipment and without specialist knowledge of the hobby and above all it should work properly and reliably when completed. Does the Compagnucci "399" match these criteria?



Above; Starting the car uses a clever system of a driver in the end of a standard starter motor. Left; Neat chassis consists of the plastic tub and neat moulded front bumper.

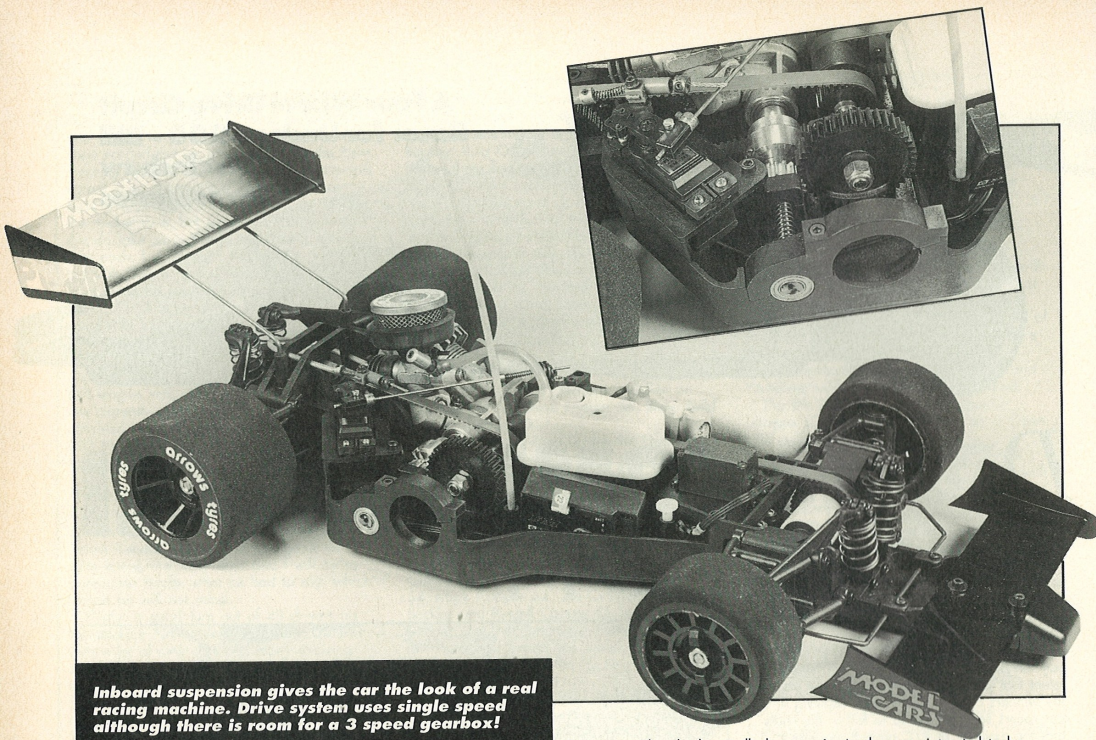
A little bit about the car

It's different. From many points of view, revolutionary for a 1/8 track car. Take the chassis for example; not the usual flat aluminium alloy

plate but a fully injection moulded glass reinforced plastic tub. Finished in black, the tub incorporates all the mounting points for transmission and suspension and the lower section of the fuel tank. Parts are fixed to the chassis using standard metric threaded

screws, brass nuts are moulded into the attachment points, no self tapping screws here.

The engine is mounted at an angle sloping backwards, it gives the chassis a distinctly different appearance and does of course lower the centre of gravity. Transmission is 4 wheel drive with bevel gear differentials front and rear with toothed belts taking the drive from the layshaft. The clutch arrangement is intriguing as it incorporates a simple starting mechanism. Cantilever operated inboard grease filled dampers with coil springing support the chassis.



Inboard suspension gives the car the look of a real racing machine. Drive system uses single speed although there is room for a 3 speed gearbox!

Can we follow the instructions?

It is all too easy for the experienced model car builder to throw together yet another kit and forget the pitfalls that await a beginner. Fortunately the "399" is sufficiently different to the norm to demand that even an experienced modeller takes a close look at the instructions and particularly a reviewer who is appraising a kit from a beginners point of view.

I am fascinated by instructions, reading manuals is almost a hobby in itself for me and I believe that I have absorbed enough over the years to make me, if not an expert, then a pretty fair judge. I have to say that if anything lets down the "399" it is the instructions. A lot of trouble has been taken much of it in the same vein as the so comprehensive publications offered by the likes of Tamiya, but it misses the point in all too many areas. The use of the English language is not good to the point that it causes confusion. No reference to the package identity numbers is made in the instructions. This would be of great help as, for example, the two differentials can be identified by the size of the toothed belt pulleys but only by cross referencing them with a non too clear general arrangement drawing. Another typical example of the

inadequacy of the manual is the total omission of any reference to fitting a silencer, throttle servo, brake and throttle linkages or indeed any of the R/C equipment.

Can we put it all together?

Putting aside the difficulties with the instructions for the moment, how does the "399" go together?

Very well indeed. The fit of the parts is excellent, nowhere was I obliged to modify or trim any part. The engine mounting and clutch cum starter system is designed around the Compagnucci engine and having seen this engine installed know that this fits without any problems. I chose to use an OPS "Pro", because like Everest, "It was there". Whilst there is a mount available for this, the OPS is around 1mm longer than the Compagnucci. This is easily allowed for by filing of the flywheel collet flush with the back of the flywheel.

The starting system is simple and positive. The minute flywheel has three unsprung shoes pivoted on three hardened steel pins which project 1.5 mm. The clutch bell runs on a ballraced spindle which is spring loaded so that if pushed towards the engine, three slots in the clutch bell engage on the clutch pin to turn over the

engine. The clutch spindle has a driver which can be engaged on a fitting that has to be mounted on the electric starter spindle. In use the starter is engaged on the driver, which is flush with the side of the chassis tub, the spindle is pressed in to engage the drive pins then activated to spin the engine. Once the engine starts, a one way bearing allows the engine to overspeed the starter which can be removed allowing the clutch spindle to withdraw from engagement. Simpler to use than describe, a very positive system with the added advantage of very substantial clutch bearings, a commonly weak area in conventional designs.

Layshafts

The layshaft that carries the toothed belt pulleys can accommodate a 2 speed transmission as an add-on accessory, this is a genuine bolt on with no modifications required to the chassis.

The front and rear differentials are both bevel gear types, the rear having a simple slip limiting feature. They are simple to assemble but fiddly. The instructions are however clear on this area and no difficulty should be encountered. The rear differential can easily be identified as it has the larger toothed belt pulley and the various washers and spacers that make up the slip limiter.

The dampers are ultra simple.

As they are intended to be grease filled, there are no complicated seals, the grease tends to stay in place by virtue of its viscosity. Slightly haphazard one might think, but it appears to work tolerably well in practice.

Once the dampers are assembled the suspension almost falls into place. The wishbones are pivoted on a long pin which has a plain section for the actual bearing and a self tapping threaded section immediately adjacent to the Phillips screwdriver head. These spindles are very effective and so simple to fit, only a few seconds work is required to fit all the lower wishbones. Complex mouldings are used front and rear for mounting the top wishbones, both of which incorporate a servo mounting tray.

The steering servo is fitted upside down, a Sanwa BBH servo dropped straight in and the servo saver fitted to the output shaft complete with the moulded track rods. The upper wishbones incorporate a cantilever to connect to the inboard mounted dampers which are fixed to the wishbones with shortened versions of the same style of pivot pin used for mounting the wishbones.

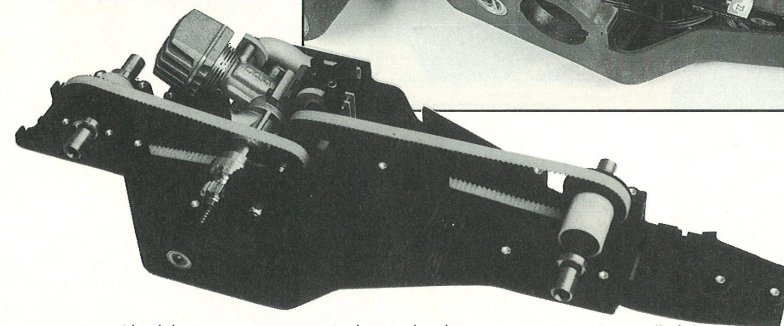
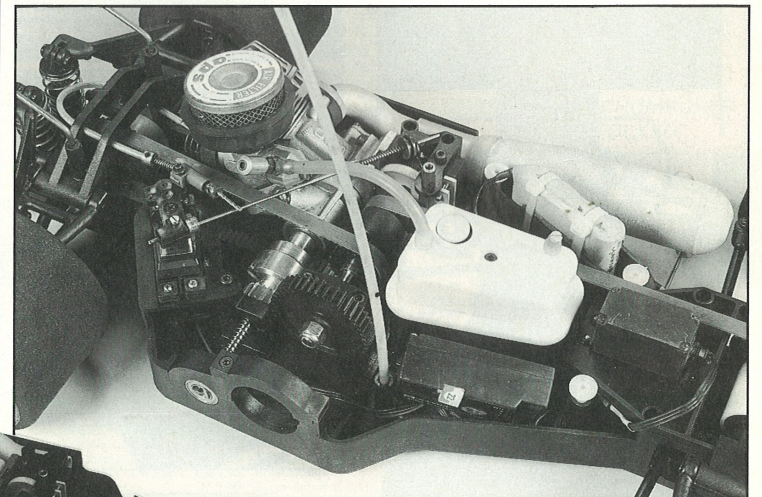
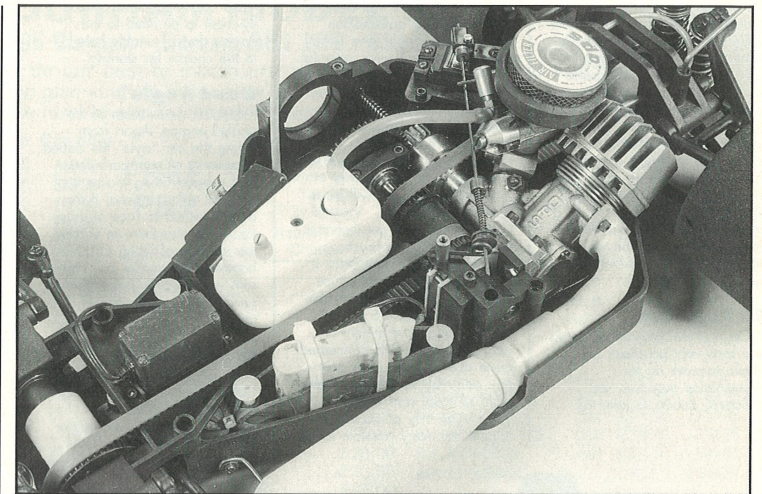
Wheel spindles run in two sealed ballraces and the uprights are pivoted in split top-hat style bushes retained in the wishbones with circlips. The

drive shafts are hardened hex ball type and run in the drive sockets particularly nicely. The entire suspension system assembly takes little more than an hour and all parts go together faultlessly.

Wheels fit onto simple quick release hubs and come equipped with ready trued and glued Arrows tyres with protective side wall covers on the rears.

At this point the full transmission turns and smoothly and the whole thing starts to look like a genuine F1 car. The top of the fuel tank has to be sealed down onto the chassis tub section and a large rubber ring acts as a seal. I found that the central pillar inside the tank had to be trimmed down a little to allow the tank halves to seal, after filling the tank of course. Nor did I realise that the black rubber disk in the package was a lid seal. It is not mentioned or illustrated in the instructions. Although the instructions do mention the fitting of "overall" bars, the fitting of these "anti-roll" bars is not illustrated and left to the imagination. Once it is appreciated that they clamp into sockets moulded into the chassis and the brass balls (that have to be soldered to each end) click into holes in the wishbones, then fitting them is easy. An idea of the type of

Above and right; The throttle linkage is tricky to say the least. Fuel tank uses a clever plunger system to seal the tank.



attention to detail that is incorporated in this kit can be gained from the clips that retain the anti-roll bars. They could just be completely flat rectangles of plastic trapping the wire anti-roll bars into the chassis slots. They are not, each clip has a projection that fills the slot and not only that, the projection that goes into the slot has a concave

groove that matches the curvature of the anti-roll bar.

Plastic moulded front and rear wings complete the rolling chassis ready for engine, R/C and body fitting.

Here we run out of ideas

Just when the beginner has cracked the worst of the job the

were barely compatible. This is not a problem with the Compagnucci engine I must stress. Finally I resorted to a Bowden cable linkage to hook up the throttle to the servo, not the best system that I have ever devised, but it works. Brake linkage was a simple and direct pushrod connection from the servo.

Vertical pillars are moulded into the chassis to form suspension points for receiver and battery packs. Clearance for the battery is minimal but it all goes in. No provision is made for mounting either aerial or switch. Curious, particularly as so much of the car is so well thought out and executed.

A Ferrari, or

"Ferarilamborginiton", body shell is available but once again how is the beginner to fix it on? No mention of a fixing method, no provision for fixing. I chose to fix it with Velcro strips to the side of the chassis tub. Last but not least, the muffler. Nothing special, just a muffler but no instructions for fixing and no apparent method provided nor, in spite of the fuel tank having a hole in it for pressurisation, a pressure nipple. The wire bracket in the package would not reach anything either so I made up my own.

All Together

Once assembled the car looks and feels very practical. It is simple to work on for maintenance purposes and sufficiently robust to take the

knocks a beginner will deal out. With the entire transmission ball-raced it should give good service. Chassis tuning potential is limited but that is no bad thing providing the out of the box set up provides basic predictable handling. Supply of top quality tyres helps enormously in this area and 4 wheel drive of course. It is unlikely that this car will be a world beater but if Compagnucci can get their act together with the instructions and the missing detail items it has the potential to introduce very many people to enjoyable practical 1/8 scale S.C. car racing. The starter system is neat but I am a little concerned as to its longevity. After only a few starts the starter dog shows signs of wear and without it there is no way of starting the engine. It is very possible for a

more conventional clutch and flywheel to be fitted to the engine and a suitable hole cut in the chassis for starting.

Good Angle?

I doubt the wisdom of the angled engine. Apart from giving the car "style" the added complexity of both carburettor and exhaust fitting makes it of doubtful value. Indeed, if the owner wished to race at many tracks, or elsewhere in Europe, the chances of fitting an EFRA homologated muffler are pretty slim without special manifolds and some butchery of the chassis.

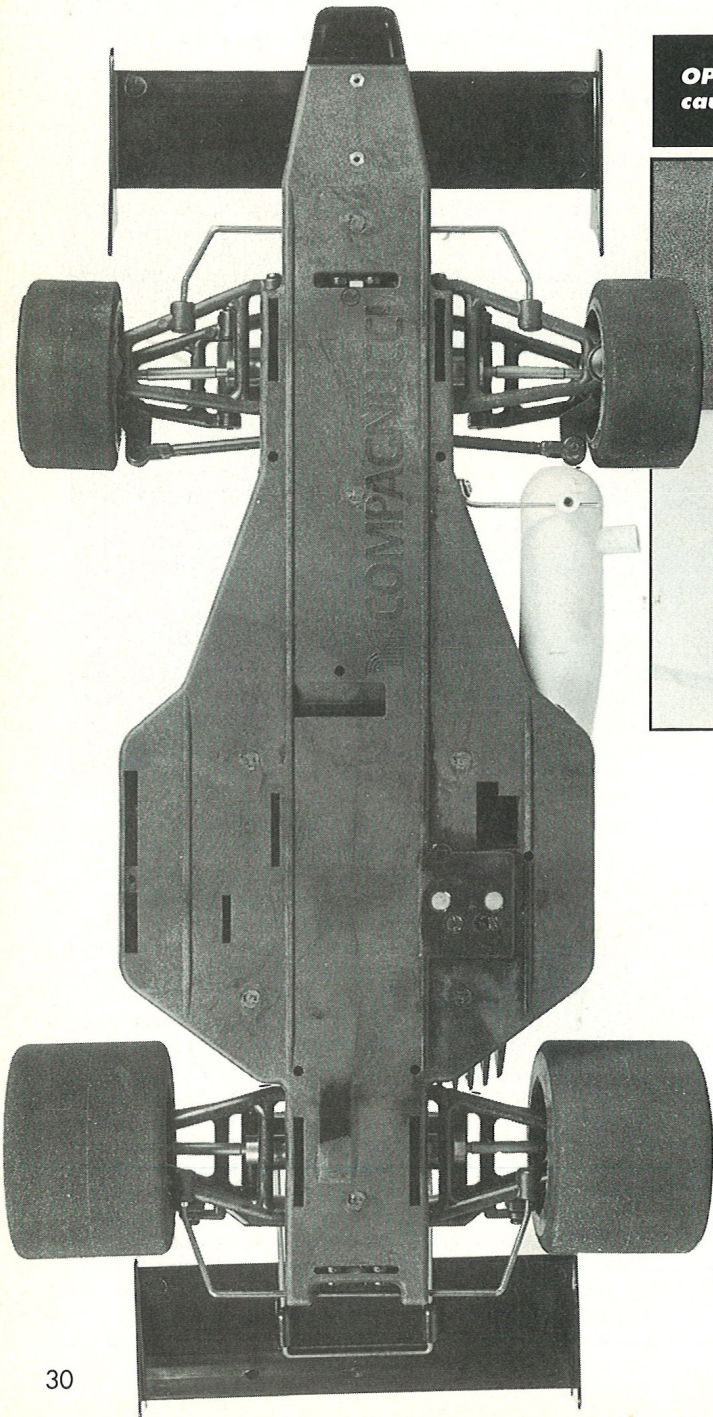
In Conclusion

In conclusion, how does the Compagnucci "399" match my standards for a beginners model. On the strength of the instruction book I cannot see that wholly unaided a beginner

could assemble this model. As for ease of assembly without specialist tools, first class. Compagnucci are to be congratulated on the quality of the parts, everything fitted. A practical model? A resounding yes. Sound basic design and good quality ensure that this will be as reliable a runner as anyone could expect for a model of its type and they will certainly have received good value for money from the kit by current standards.

Specification;

1:8th Scale
4WD (Belt)
2 Differentials
3.5cc Single Speed
Independent Suspension



OPS engine sits at an angle, throttle servo sits near carb but causes a difficult task to set the linkage correctly.

