

# big shot racer

## The Laro 1:5th scale on road cars

**T**he Laro 1/5th scale car is a straightforward design, suitable for use either for a 'fun' car for driving around a large paved area such as a big parking lot, or (with a few upgrades) for racing in 1/5th scale on-road events. To keep the initial costs down, the car, as delivered, comes complete with all the standard components. It will work perfectly well as it is for sporting use. The upgrades for racing do not change the basic design of the car - they only add additional capabilities, when the car will be pressed harder for racing. I will describe the racing components later on - the first part of this review will cover all the standard components that come with the car kit. You can have an excellent racing car if you add some of the options.

The car as delivered really should not be considered as a kit, as it comes almost completely pre-assembled. Both the front and rear suspension, the body mounts, the fuel tank, the engine and exhaust, and the radio tray are all mounted in place on the chassis. All the user has to do, is mount his electronics and radio gear, mount the front bumper, paint the body, and add the control linkage for throttle and brakes. Everything else is done for you.

### The Chassis

The chassis is a rectangular aluminium alloy plate. It is quite thick, and appears to be more than heavy-duty enough for use on a 1/5th scale car. There are many holes in the chassis that are not used in this particular kit. The reason for this, is that the chassis is pre-drilled for any of the three engines available for 1/5



The Bugatti of Juan Sat

scale cars, Tech, Zenoah, and Solo. There also are extra body mount holes, for use on different styles of car bodies.

### The front suspension

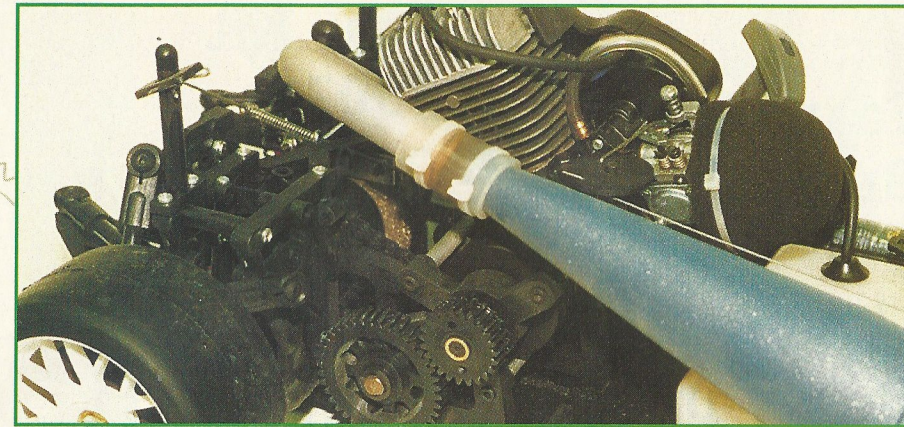
The front suspension consists of upper and lower 'A' arms, which pivot on ball-joints. Both sides of the car's suspension are tied together, so the right and left wheels move somewhat together - if the right wheel moves upwards, so does the left wheel - but the linkage has some play in it, which acts almost like an anti-sway bar. The mechanism that ties the right and left suspension together also uses a cantilever arrangement to transfer the up and down motion to a pair of horizontal coil-over shock absorbers. The shock absorbers move together, giving the same effect as a larger shock.

The suspension components are made from beefy composite material, which appears to be quite rugged. Based on my past experi-

ence with 1/5 scale cars, it seems more than adequate for a car of this size and weight.

One of the things I was most impressed with was how freely the suspension operated on this brand new out-of-the-box car. Unlike some other cars, which require a lot of attention to get the suspension to work properly, this suspension worked just the way it should. The set-up is the exact same set-up used by Philippe Lachat, who is the European Champion as well as the French Champion.

The steering components are moved by two thick plastic tie-rods with ball fittings on each end. The tie-rods are not the adjustable type - to adjust them, you need to snap off one of the ball fittings and screw it on or off a little as needed. The mechanism that controls them consists of a huge vertical steering servo-saver (similar to the servo savers that now come on many 1/10 scale sedan cars), and an upper fitting similar to the type of servo-lever that goes onto steering servos. This fitting is located directly in front of where the servo output gears will be located. The steering turned freely, with no binding, but I think a little attention to the ball fittings will make it move



The mighty Tech engine



Juan Sat paint jobs are superb

even more freely. There also is absolutely no slop whatever in the linkage.

The left and right hubs are quite big, with large ball bearings pressed into them. The axles go through these bearings, and into a metal insert that is pressed into the wheels. All together, the components are lightweight, rugged, and move freely.

There are adjustments that will allow you to set the camber, and of course the toe-in can be set with the tie-rods.

While discussing the car with Philippe Lachat during his visit to the USA, Philippe explained that the suspension was one of the main features of the Laro car, and that this suspension design results in an excellent handling, as well as rugged, 1/5 scale car.

### The Radio Tray

The radio tray consists of a large aluminium plate with cut-outs for the servos, the receiver box, and so on. It extends all the way to the front of the car, with the steering servo-saver and the front suspension components also being attached to this plate. The radio tray is designed to accept three large 1/4 scale servos, two for steering, and one for throttle/brakes. The steering servos are located directly in line with the steering servo mechanism. Although one servo could be used for steering for fun driving, everyone I know of uses two servos. The design is quite straightforward; with the servos and the servo-saver in line, it is a simple matter to hook up the steering linkage.

### The Fuel Tank

The U-shaped fuel tank is located behind the radio tray, and in front of the engine. There is really nothing special to report about the tank, but unlike some other cars, it has a quick-fill fuel lid. A built-in fuel filter keeps debris out of the fuel line. Unlike the FG cars, there is no primer button to get gasoline flowing to the engine. Whether this effects starting, I will find out later. Three screws from underneath secure the gas tank in place.

### The Battery

A 6-cell 7.2 volt battery (or a 5-cell 6 volt battery) is mounted to a plastic mount that is fitted around the left side of the gas tank. I like this location, as the business end of the battery pack is located right near the receiver location. This results in shorter wires. No holes are provided for an on/off switch. Laro feels an on/off switch is dangerous on a 1/5 scale car, because it can be turned off after a little collision, which could lead to a runaway car.

### The Engine

The Laro comes with a stock Tech engine as standard equipment.

The TECH23 Motor is made in Italy and was designed and made by a subsidiary of Dynamic Cars. This engine needs a very short header pipe and a low volume silencer. The TECH takes quite a while to bed in, as much as three or four meetings.

### The Rear Drive

The engine powers a centrifugal clutch, which transfers power to a heavy-duty pinion gear. The pinion gear drives an equally heavy-

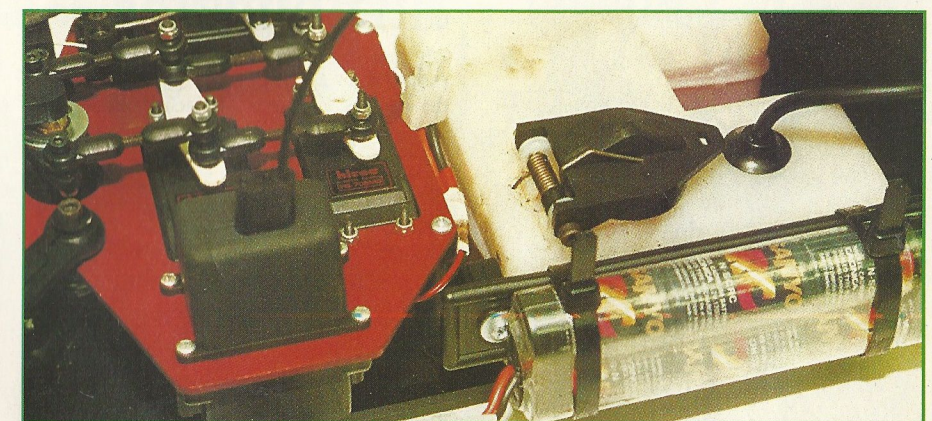
duty spur gear, mounted to a shaft that is supported by two ball bearings. On the other end of this shaft is a sprocket that drives a single-row chain, similar to a motorcycle chain. The chain drives a much larger sprocket, which is attached to the differential housing. The differential is a gear type differential, capable of dealing with the huge amounts of power generated by the 23 cc Tech engine. On the opposite side of the gear differential is the disk brake, with a large rotating fiber disk and a steel disk plate on either side of it. The disk brake is actuated by a lever arm, much like the brakes on many typical r/c cars. The only difference is one of size. There are typical drivers on either side of the differential/brake/sprocket assembly, which drive huge dogbones, which in turn drive the two rear axles.

### The Rear Suspension

The rear suspension consists of a lower suspension arm supported by ball fittings, and an adjustable upper suspension arm. The lower arm can be adjusted to set toe-in, and the upper-arm can be adjusted to set camber. A rod is attached (with a ball fitting) to the lower arm, and it moves a lever that in turn compresses a vertically mounted inboard coil-over shock absorber when the rear suspension is compressed. This lever is bent, so that an extension of it points downward. The downward end moves in and out as the shock is compressed, and a screw is provided to limit this movement, providing a down-stop for the rear suspension. Three mounting points are provided for the top of the coil-over shocks, allowing them to be set at an angle which will soften the suspension somewhat. The rear suspension components are braced to keep everything stiff and prevent flexing.

### Body and Body Mounts

The car has a set of front and rear body mounts that bolt to the chassis, and extend outward to support the body. They are light, strong, and can easily be moved forward and backwards to accommodate different body designs. Another set of vertical body mounts is attached to the rear suspension, and holds up the rear of the Laro's body. These mounts are very well designed, and incorporate a pivoting support pad that the car body rests on. The Laro bodies are absolutely beautiful. They are made from thick Lexan, so they should last a



The Radio Tray

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# New Year New Gear

long time, and are beautifully detailed. Several different body styles are available.

The Porsche and Bugatti bodies in these photographs were painted by Juan Sat, who is perhaps the premiere body painter in the South East (USA) - every body that he paints is outstanding!

## Wheels and Tires

I am very impressed with the wheels. They are white plastic wheels with a nice pattern, and seem to be more than strong enough. The car comes with fairly stiff tire inserts, and rubber tires, all of which are designed to be glued together. If you are getting the car to do any racing, do not glue the kit tires together, as they seem to be very inexpensive rubber display tires, with no belting. They are probably fine for cruising around a large yard, but they are nothing like the racing tires I've seen. Laro does offer several compounds of race tires made by PMT, and these are definitely designed for competition. In the past, mounting tires was a real pain with some types, and much easier with others. The PMT tires I mounted on the Laro went right on, over the foam inserts, with no difficulty at all.

## Overall Impressions of the Stock Laro

My overall impressions, are that this is a well designed kit, that appears to be suitable for both fun driving, and non-competitive sport-racing. Anyone who is serious about racing the car will certainly want to get several of the optional performance components, which I will describe later. The car seems more than rugged enough to keep everything in good shape, while not being overly heavy which would reduce performance. All the components are easily accessible, and this appears to be a kit that will be very easy to work on.

## Racing Parts

My test car came with all the optional competition parts that Philippe recommended. If you purchase the basic car, you do not need to make all these upgrades at once, but can do so as time and money permit. The following is a list of those components.

## Racing Chassis #5145A

The standard Laro chassis is a rectangular plate. It is plenty substantial, but there are areas where weight can be removed without in any way weakening the chassis. The Laro racing chassis has both side cut-outs, removing material where it is not needed, and also machined slots in the chassis, again removing weight without effecting strength. If you want

to get your Laro down to the minimum allowable weight, buying this chassis will save you a lot of time in lightening the standard chassis.

## Foam Front Bumper #5088

The rules for 1/5 scale dictate that a foam bumper be used in the front of the car. The Laro bumper is sculpted to fit inside the car's body. This is really a must, whether you use the car for competition or just driving around a yard.

## Heavy Duty Clutch Bell #4075B

If you are going to be racing the Laro, this clutch bell is much beefier than the standard component, and can take a lot more abuse. This is also pretty much a must have if you plan on racing the car.

## Front Brake Kit #5071

This is also a must have if you plan on racing your Laro. The kit includes all the components necessary to mount disc brakes on each of the front wheels. It includes the cables that are used to attach the brake mechanism to the throttle/brake servo.

## Double Chain Drive Kit, #4140

If you plan on racing the Laro, this kit doubles the strength of the rear drive chain by providing a double-width drive chain and special drive sprockets. You can probably get the other racing parts first, and get this part later on, but it is good insurance for competitive racing. It will add a little weight to the car, but it will pay off in a stronger drive train.

## Adjustable turnbuckles

To save time in car set-up, Laro offers front (#5079K) and rear (#4122) turnbuckles for the suspension. If you are racing the car, these will definitely simplify making changes in set-up. They are not a must-have, but they are quite convenient.

#5077

These are red alloy caps that fit the 10 mm balls in aluminium. These parts are fit with the lower arms on the chassis.

## Gear Kit #5072

This kit provides additional gear ratios for the Laro car. The standard car comes equipped with 23/40 gears. The gear kit includes two sets of spur and pinion gears, providing ratios of 24/39 and also 25/40. These additional gears will allow you to match the performance of your Laro to larger and smaller racetracks.

## Spring Kit #5100

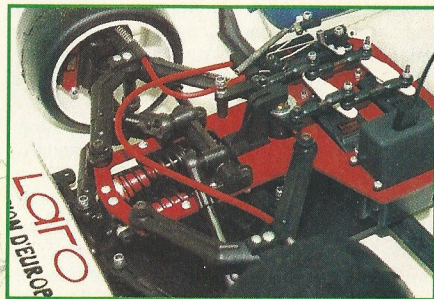
The spring kit includes four sets of colour-coded suspension springs, and spring collars that can be used on the coil-over shocks. If you are planning on competing with your Laro, you should plan on getting this kit to fine-tune your car to the different tracks you will find yourself on.

## Instructions

The Laro comes with very basic instructions. I've written a supplement to those instructions. It covers the set-up and operation of the car, and the installation of many of the racing accessories.

Note: As this is being written, I have not yet raced my car. Juan Sat and I each set up similar cars, on which Juan went overboard in doing some excellent paint jobs - check the photos. Juan has been able to drive his car a little, mostly in un-prepared parking lots - no dust blow-off, no traction compound, no nothing. Although the engine isn't yet broken in, the car still works extremely well. The Tech engine has all the power you could ever want, and the limit of how much power Juan used was determined more by not wanting to spin the tires, than by thoughts of engine break in. Our cars are each equipped with Futaba 3PJ radios, and Juan has the anti-lock feature turned on for the brakes. Even on dirty, dusty surfaces, the car stops quickly, and in a straight line. It also seems very well balanced - although it is easy to get it to slide on the dirty pavement of the typical parking lot, the car never goes out of control or anything.

More soon on progress with the Laro



Sturdy front end with optional parts fitted

'You can have an excellent racing car if you add some of the options'

