

A LAND ROVER FOR THE GRANDCHILDREN



ENGINEERING in Miniature

Building a working Land Rover for a child to drive looks impressive, but the editor discovers that it's easier to do than you might think.

Ask anyone to name an iconic British motor vehicle and most will say "Land Rover". Since 1948, the Solihull factory has turned out millions of the boxy go-anywhere vehicles, but it turns out that they aren't the only manufacturers. In garages and sheds across the world, people are building their own versions, just a little bit smaller. Despite the size, they have quite a following and even an owners club.

I met two builders, Richard Hocking and John Nolan at their workshop, a suburban double garage. Proudly parked up behind the doors is the vehicle they constructed, a series 2 Land Rover, destined to be the first driving experience for each of the Hocking grandchildren.

The project started in 2009 with the purchase of a Toylander kit, or at least the basic parts and some paper templates for the body. Like so many such kits, it sat around until early 2017 when the two friends were looking for a project. Working one day a week, a few months later the Land Rover was ready for the road.

At first glance, this looks like a fairly complex build. We are talking about a small car able to travel at up to 4mph carrying a couple of children or a single adult. Powered by a 12v motor, the front axle pivots and enjoys proper Ackermann steering. OK, it won't compete with the real thing off-road, but can handle rutted ground and you'll often see them trundling around the field at both full-size and miniature steam rallies.

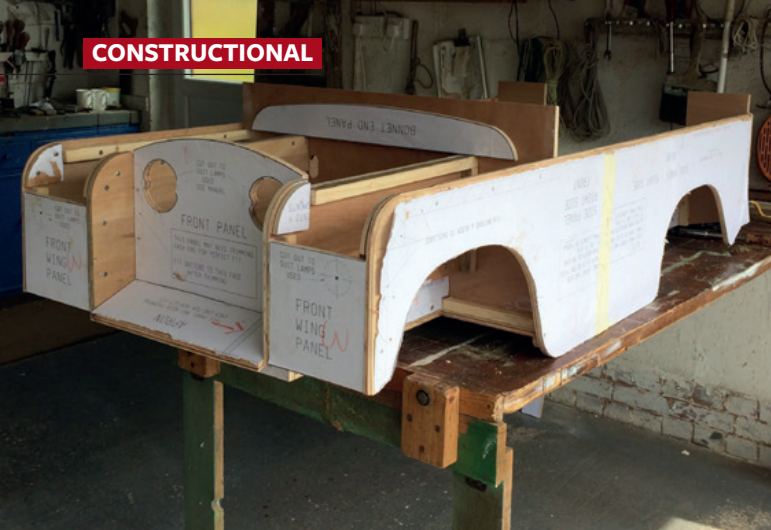
In truth though, this is a project within the grasp of anyone capable of basic DIY. In most respects, the two builders are somewhat over-qualified for the job but nonetheless, they enjoyed the work and are justifiably proud of the result.

Construction starts with the body. A monocoque built from 12mm thick exterior plywood, the main tools used were a jigsaw, spokeshave and smoothing plane. Full size paper templates were stuck on to the wood with border adhesive but as John admits, this isn't recommended as the glue can cause distortion. This is such a problem that Toylander now only provide plans requiring the builders to mark things out for themselves.

In truth, this isn't a huge issue – many parts are made in pairs and as long as they are identical, the body can be assembled. John simply pinned the sides together for finishing to ensure accuracy. For anyone who finds this too difficult or time consuming, Toylander sell a pre-cut pack of CNC-cut moisture resistant MDF and even an assembled version. Modifying the body design wouldn't be difficult either, the plan is for a short wheelbase model but a little fiddling would produce a LWB variant offering more passenger space.

Putting the parts together was simple enough for John and Richard. Screwed and glued, some 19mm square lengths of well-seasoned (it had been hanging around in the roof of the garage for years waiting to come in useful) scrap wood add extra rigidity where they can't be seen. Curved parts such as the wing fronts and bonnet are made from aluminium bent over formers. The boxy design of the prototype is a great help in this respect!

Running gear is bought in ready to bolt and screw onto the body. At the front, four bolts hold the tilting axle unit which incorporates the steering. At the rear, a pair of hangers hold the wheels. Drive is from a 12v electric motor hidden under the seat connected to a single wheel by a chain. No provision is made for

**ABOVE:**

The body is a monocoque made from 12mm thick plywood. Paper templates aren't supplied any more due to distortion issues, the builder needs to mark the wood out themselves.

stretching, but the unit can be moved slightly if required to take up the slack. No differential is required as the wheels rotate freely on the axles, the chain drive being to a cog fitted to the back of a wheel. A second motor can be added to drive the other wheel and combined with a 24v electrical system will raise the top speed to 6mph.

A footbrake in the cab pulls a bar that bears on the inside of the rear wheels, a friction surface ensuring there is plenty of grip to hold the vehicle as required.

Inside the cabin, the driver finds a steering wheel (left or right hand drive versions are available), accelerator, footbrake, reversing switch and controls for the lights. For authenticity and security, a key switch controls the power. For the nervous grandparent, a remote speed control can be fitted on a length of cable if required.

As befits a utilitarian vehicle, the upholstery is pretty basic. Foam squares are covered with vinyl by Richards wife. They won't mind getting wet through either rain or car washing.

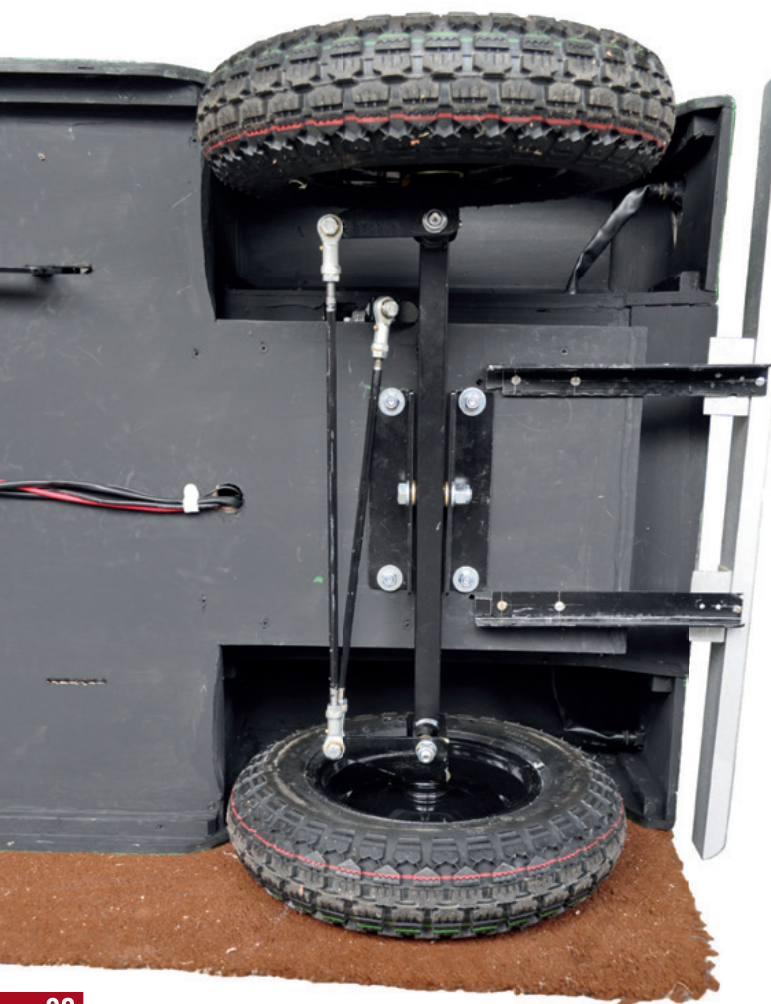
**ABOVE:**

Ready made steering wheels can be supplied but when you enjoy working with wood, why not make your own?

The paint finish looks very nice and I wondered if it was sprayed, apparently not. The only tools purchased were a couple of new brushes. Much of the detail is painted on with aluminium coloured panels and neatly applied lines the represent the doors. These are fake as opening versions would compromise the body rigidity, but then the drivers don't seem to mind leaping in and out over the side.

An early version of the kit, wiring had to be carried out the hard way with the aid of the comprehensive manual. Modern buyers have the option of purchasing a ready to use loom and all the lights, but here the builders sourced their own items. While they were at it, the iconic front grille is made up from lengths of welding rod soldered together, and it looks exactly the same as the real thing.

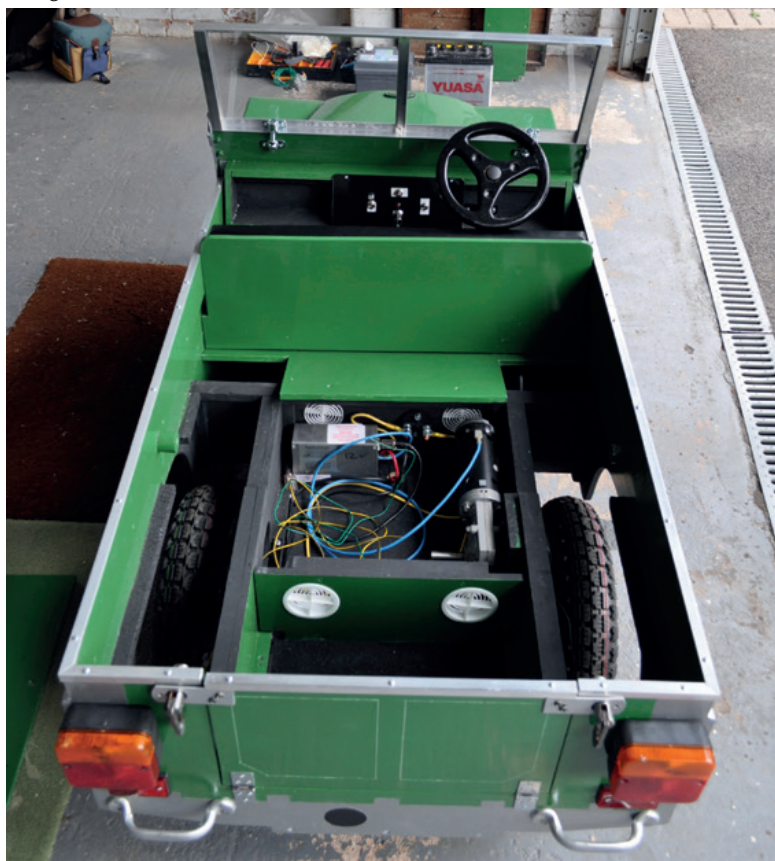
Power comes from a pair of car batteries under the bonnet. At the moment, one provides drive and the other works the lights which should allow an hours driving. Connecting them in parallel would give a longer running time.

**LEFT:**

Bolted under the engine compartment, the front axle incorporates steering and thanks to a central pivot, a way of keeping all four wheels on the ground. There's no suspension however so the occupants will enjoy a bumpy ride, but it's all part of the fun.

BELOW:

Hidden away in the load area under a removable panel is the all the important wiring and the drive motor. Batteries live under the bonnet.



**ABOVE:**

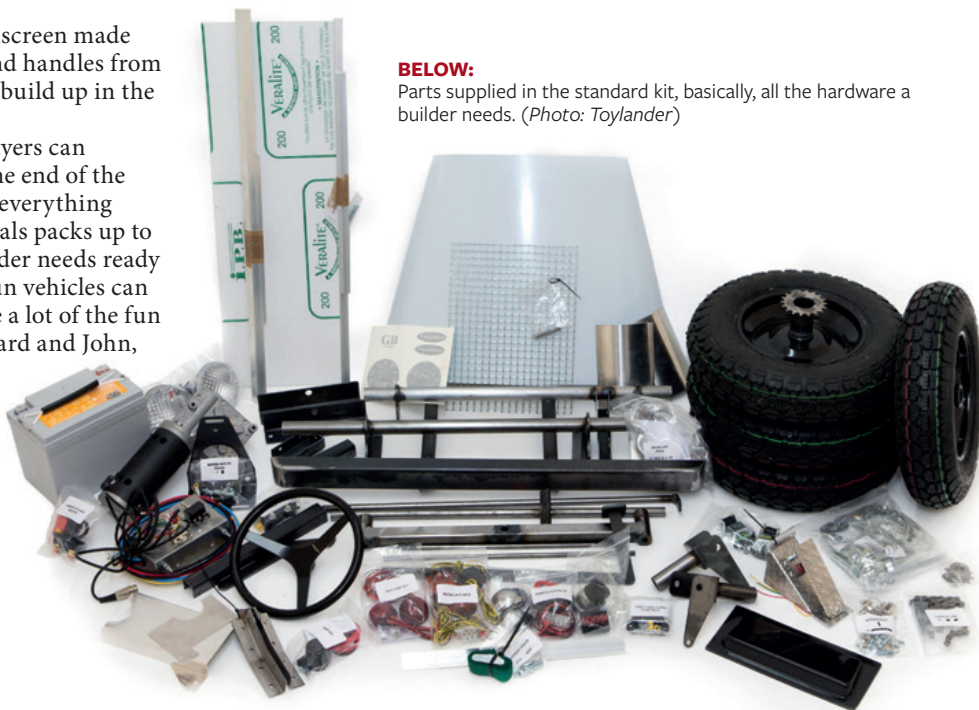
The speed control operates through a linear potentiometer for a realistic throttle response for the driver. Combined with a reversing switch, this provides a youngster with a pretty complete driving experience.

Fishing touches included the folding windscreen made from aluminium angle and various catches and handles from DIY stores or that stock all engineers seem to build up in the garage.

This is a really impressive little vehicle. Buyers can chose the level of difficulty they require. At one end of the scale you can buy just the plans and fabricate everything yourself. Beyond this there are various materials packs up to a comprehensive kit with everything the builder needs ready to screw and bolt together. Finally, ready to run vehicles can be supplied, although that would seem to take a lot of the fun out of this sort of project, and talking to Richard and John, building this has given them an awful lot of pleasure. Neither is sure how much time the build took but the manufacturer suggests 60 hours plus painting would be a reasonable estimate. Now the pair are searching for the next project, it will be interesting to see what they do next. ■

**ABOVE:**

The wheels supplied are road quality pneumatic tyres on 3.50 x 8 inch dia. steel rims running on roller bearings. Total tyre diameter is approx. 15" (380mm) for Standard tyres. The drive wheel is supplied with an extended hub, extra bearing and drive sprocket welded on. Wheel rims have smooth rolled return edge to comply with toy safety and use the flat of the rim for the braking surface.

**BELOW:**

Parts supplied in the standard kit, basically, all the hardware a builder needs. (Photo: Toylander)

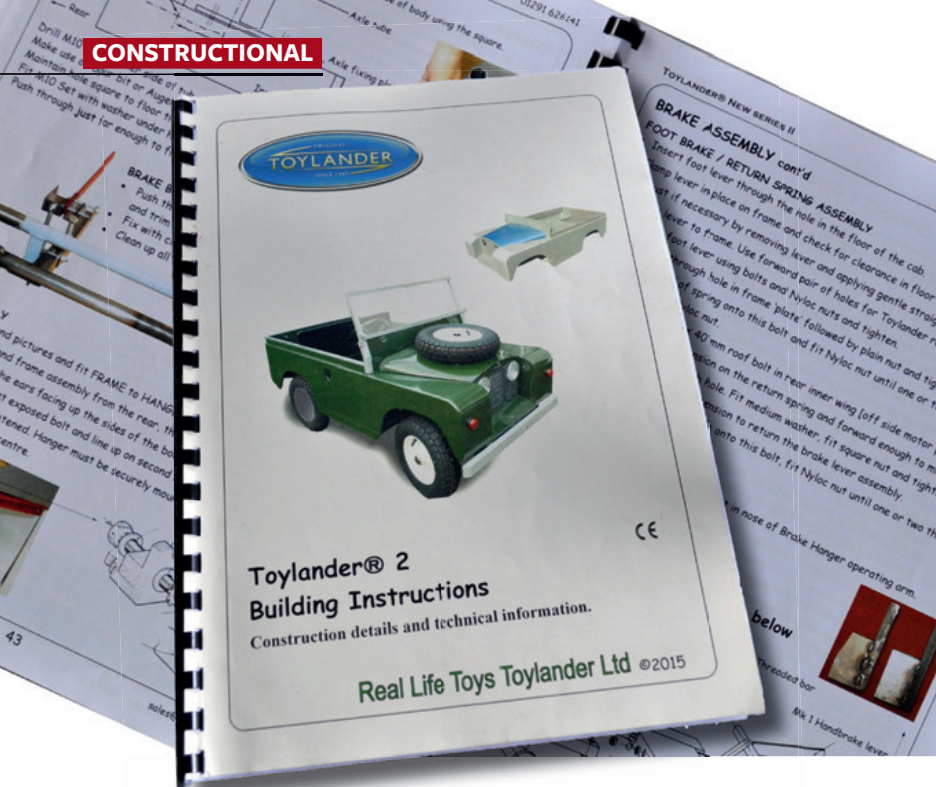
BELOW:

Lights were sourced by the builders here and the grille scratchbuilt from welding rod. The aluminium windscreen folds down, just like the real thing. The front bumper is wood, but this kit now comes with a metal version.

**BELOW:**

On display at Carfest South, the full range of kits from the range. All share the same basic construction methods.





ABOVE

An essential part of the kit is a comprehensive manual fully illustrated and written in an easy to follow manner.

VEHICLE SPECIFICATIONS

Wheelbase: 965mm (38")

Turning circle: 5400mm (212 $\frac{3}{4}$ "²)

Length: 1625 mm (64")

Width : 740 mm (29")

Height: 750mm (29 $\frac{1}{2}$ "²)

WEB LINKS

Toylander
www.toylander.com

Toylander Owner Club
www.toylanderownersclub.com

THE BUILDERS

Appropriately for this project, Richard has spent most of his life as a garage mechanic before moving to the Land Rover assembly plant. He then went to be part of the Vehicle Operations team in charge of press cars and preparing new models for the dealer network.

John also worked for Land Rover in several areas culminating in the experimental bodies division where he was responsible, among other things, for building the full size clay styling test models used to prove the look of a car ahead of the decision to authorise it for production. A pattern maker by trade, he also enjoyed a spell of national service with the RAF working on both Hastings and Vickers Valletta airframes.



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