

When the going gets tough....

First seen in Series I form in 1948, the ubiquitous Land Rover has been around for more than 60 years selling more than four million units in the process. Originally designed for farm and light industrial use, the first prototype was built in the summer of 1947 before being officially launched in April 1948 at the Amsterdam motor show.

The vehicle was originally designed as a short term project to keep the Rover car company busy until the depressed post-war market started to pick up. In common with the Land Rover's that followed, the Series I used a box section steel chassis and aluminium bodywork due to the rationing of steel and the abundance of aircraft aluminium. The Series II was introduced in 1958 and visually remained virtually unchanged for the next 25 years. The Defender – launched in 1983 and not radically different on the outside - was available in 90" and 110" wheelbase form with the most recent vehicles using the 110 and 130" wheelbase. Despite its 'Britishness' the company was sold to BMW in 1994, Ford in 2000 and finally its present owners, Tata Motors in 2008.

Its all set to change

The Land Rover is renowned for its off-road capabilities, qualities that first attracted specialist powered access manufacturers looking for a rugged, go-anywhere chassis to mount a platform that combined 4x4 off road capability with a decent working height.

It is thought that the first Land Rover-based platform was the L25 built by Simon in 1957 which continued in production until 1978. In all, more than 2,500 were sold although not all on Land Rover chassis. The company also built a 100ft high camera mast on a Land Rover!

Changes in EU regulations however mean that from January 2011 the shorter wheel-base, heavy-duty 3,500kg Land Rover 110 can no longer be sold, replaced by the light-weight 3,050kg Land Rover 110 or the more expensive and longer wheelbase 3,500kg Land Rover 130. Mounting an aerial lift onto the Land Rover poses its problems, particularly when it comes to high speed on-road handling and stability when cornering - caused by a high centre of gravity, relatively narrow track and long travel suspension. There have been many instances of Land Rover platforms toppling over at roundabouts.

While most, if not all installations use at least one set of outriggers, there are many that also use the front axle and wheels of the vehicle to provide additional stability in place of a second pair of legs. However if not done well this can lead to an unstable feel to the platform when the weight in the basket is close to its maximum.

The shorter 110 wheelbase vehicle does have advantages in manoeuvrability and price, but with its demise, most current manufacturers will have no choice but to offer the Land Rover 130, although those with lighter booms or booms manufactured specifically for the chassis may be able to fit their lifts to the 110 lightweight chassis but to offer any platform capacity the vehicle would have to be close to 2,800kg leaving barely 200-250kg for tools etc.



Over the years there have been a number of manufacturers offering special-build Land Rover-based platforms using various 'off the shelf' booms/superstructures from trailer lifts or truck mounts. However, given that the bulk of the demand for such lifts comes from the UK, with some in the Middle East and that annual sales are said to range between 100 and 150 units, there has been a surprising recent surge in the launch of new models.

Problems?

The Land Rover's popularity as a basis for an off-road platform probable stems from the fact that there are very few 3.5 tonne GVW, true 4x4 vehicles capable of taking

a 12 to 14 metre platform. This does not mean the vehicle is ideal – in fact it has some major flaws. Leaving the ageing design, lack of driver space and comfort to one side, along with the stability problems already mentioned, operators of most Land Rover-based platforms also have to climb up onto the vehicle to access the basket or the controls to telescope the boom to ground level.

Latest additions

Until relatively recently Allan Access was one of the few companies manufacturing this type of machine using the Niftylift trailer lift boom until it went into administration and ceased trading almost two years ago. Since then

the other main manufacturer, Versalift, has been concentrating more on the van mounted side of its business which along with the demise of Allan, left the door open, at least slightly, for new manufacturers. There are currently at least six models on the market, including Cumberland Industries, Gardner Denver, Isoli, Niftylift, Skyking and Versalift. Early units used short booms taken from a variety of trailer lifts and small articulated self propelled lifts and then 'made to fit' the Land Rover chassis, very little changed over the years until now!

Versalift launched its new Versalift ET36LF short wheelbase (110) Land Rover-based platform at Bauma with a 14 metre working height. A version mounted on the long wheelbase 130 is also available and features an articulated jib which provides 16 metres working height. Both models are available with up to 10kVA of insulation making them ideal for electricity companies and contractors.

At the same time Kettering-based Cumberland Industries, aiming to take advantage of what it sees is a gap in the market launched its A314 Land Rover at this year's Bauma. The company's recent appointment as UK distributor for Italian aerial lift manufacturer Socage is paying dividends as it uses a totally bespoke A314 boom designed by both companies and built by Socage specifically for the Land Rover chassis. This means that the new Land Rover 110-based platform has a very low overall height of 2.56 metres, which the company says delivers a low centre of gravity that provides confident cornering ability and excellent off-road handling. It also believes that when the 3.5 tonne Land Rover 110 chassis is no

longer available, it could be the only boom that can be mounted on the lightweight (3,050kg) chassis.

Currently the A314 has an overall weight of 2,880kg giving the platform a class-leading 620kg of total payload capacity and a very good 225kg platform capacity. The unit also uses its four outriggers to totally support the vehicle.

"To prove the stability of the A314 we carried out the 150 percent overload test over the front of the cab after taking off one front wheel and the unit did not move," said Cumberland's Paul Murphy. "The first sign of any movement in the chassis was when there was more than 400kg on the boom."

"The amazing stability has been achieved by designing both the boom and mounting position from



The Unimog is the ultimate 4x4 off-road vehicle



The Cumberland A314 has a 225kg platform capacity



The Overland 130 with V145 platform



scratch. The combination of lightweight bespoke boom and mounting it further back on the chassis not only gives good stability but a very low centre of gravity. The basket can also be telescoped out from controls at the side of the machine from its travel position so that basket access can be gained from the ground. The unit is also unique in that it is the only one that has all its hydraulics and electrics routed internally."

Other manufacturers of Land Rover-based platforms tend to employ an existing boom from another application rather than designing specifically. This obviously saves

time and development costs but is likely to involve some compromises.

Italian truck mounted lift manufacturer Isoli first showed its MPT 140 at SAIE 2009. Using the larger Land Rover 130 chassis the platform is just under three metres high and has an overall length of just 4.88 metres. The boom can be mounted on a wide range of chassis - including a Nissan Cabstar, Iveco, Mercedes, Ford Transit and Renault - and in Land Rover form offers 14.0 metres working height, 6.5 metres outreach with a platform capacity of 200kg. Recently it has also tailored the unit towards utility workers by introducing a 1,000 kVA insulated platform version. The new GRP platform measures 1,250 x 710 x 1,100mm and includes 180 degrees of platform rotation. Mounted on most 3.5 tonne chassis the length is less than five metres.

Another new entrant is the Skyking AT136 which uses a Matilsa trailer lift boom. This machine has been a long-time in the making with a prototype version seen at SED last year. Getting a Land Rover-based platform ready is obviously not an easy process. Working height and outreach are both in line with other models but it includes platform rotation.

Gardner Denver originally launched its VM135 three years ago aimed at the utility and forestry sectors. The new VM135 is designed for mounting to the long wheelbase models and offers 13.5 metres work height and 6.4 metres working outreach with a 200kg lift capacity while the overall height is relatively low at 2,880mm.

Pic 1: A two man capacity LH28;

Pic 2: The Skyking AT136 was launched at this year's Vertical Days

Pic 3: A Priestman Land Rover dating back to 2000

Pic 4: An L25 Land Rover on a railway track



Skyking's AT136 uses a Matilsa boom

Because more and more operators are not able (on a standard driving license) to drive a vehicle with a GVW of more than 3.5 tonnes, 4x4 vehicles such as the Land Rover will continue to be popular, particularly with contractors looking for true 'off road' ability. However the Land Rover does have competition.

The Spanish alternative

The origins of the Santana company does not go as far back as 1947 but can be traced back to the formation of Metalurgica de Santa Ana, S.A. in Linares, Spain in 1955 with the help of the Spanish government. Although initially building agricultural equipment, it was anxious to diversify production, and with the help of the Government a licensing agreement was reached with Rover to build the Land Rover at its Linares plant.

In 1959, just a year after the Series II became available, the first Spanish-built Land Rovers were launched, 75 percent locally manufactured, with a choice of 2.25-litre petrol engine or two litre diesel engine.

With the company facing drastically declining sales in 2000/01 - which resulted in a loss of € 301 million - Santana introduced a new model at the 2002 Madrid Motor Show known as the 'PS-10' (outside Spain) or 'Anibal' (within Spain). The plan was to sell more than 6,000 units per year directly into Land Rover's home markets.

The PS-10 is in fact a very thinly-disguised Land Rover, powered by an Iveco 2.8-litre 4 cylinder turbodiesel engine. 2006 saw the release of a short wheelbase version with a new Iveco three litre diesel and a six speed gearbox - again set to lock horns directly with the Defender. Later that year Santana and Iveco signed an agreement to work together to develop new light 4x4 vehicles and produce the Iveco Massif - a rebadged and restyled PS-10 - the following year.

Iveco also produces the Daily 4x4, a 5.5 tonne GVW chassis which has just been made available in the UK and offers builders increased

flexibility for mounting platforms. Both Cumberland and Versalift have recently shown new Iveco Daily 4x4 platforms. The Daily is the ideal solution for general 'off road' duties. For most electrical companies and contractors, it can carry out 80 percent of 4x4 work that might have needed a heavier chassis vehicle - ie a Unimog-based platform - but at about half the cost of the Unimog.

The Cumberland Iveco Daily 4x4 is fitted with a Sogace boom which gives 20.3 metres working height and a nine metre outreach with 225kg of platform capacity.



Versalift's new Iveco Daily 4x4



The Land Rover offers great off-road manoeuvrability



An alternative 4x4 platform?



Cumberland uses the 20.3m Sogace boom on its Iveco Daily

Overall cargo payload is 640kg.

For ultimate off road capability the Unimog is virtually unbeatable, however the 5.5 tonne GVW Iveco 4x4 looks like a good compromise between performance and price. However for a 'go anywhere' 3.5 tonne GVW, the Land Rover is still the one to beat.



The A type replaced the Simon L25 series in 1978

	Wander Lead	Slew (Degrees)	Emergency Decent	110v Plug At Basket	Basket Type Standard
Cumberland A314	Optional	700	Electric	Standard	Aluminium Tubular or Plastic
Isoli MPT 140	No	250	Hand Pump	Standard	Fibreglass
Niftylift V130	No	360	Hand Pump	Standard	Fibreglass
Gardner Denver TVM135	Yes	360	Hand Pump	Standard	Fibreglass
Skyking AT136	No	360	Hand Pump	Standard	Steel Tubular
Versalift LAT-39-TB	Optional	360	Electric	Standard	Fibreglass



A 1990 Land Rover 110

	Kerb Weight (kg)	Spare Payload (kg)*	Platform capacity (kg)	Overall Height (mm)	Working Height (m)	Working Outreach (m)	Platform Rotation	Walk In Basket
Cumberland A314	2880	370	225	2560	13.5	6.5	No	Yes
Isoli MPT 140	3000	250	200	2995	14.0	6.5	Yes	Yes
Niftylift V130	3100	150 Estimated	200		13.3	6.5	No	No
Gardner Denver TVM135	3000	250	200	2880	13.5	6.4	No	Yes
Skyking AT136			200		13.0	6.5	Yes	No
Versalift ET36LF	3000	250	200	3600	14.5 (16.0 with jib on LWB)	7.5	Optional	Yes

* After 250kg allowance for driver, passenger and fuel

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When the going simply gets too rough

With the safety authorities in many countries having warned utility companies that they will be increasingly tough in enforcing the European Work At Height Rules for transmission tower and pole work, the need for work platforms, not to mention cranes, that can reach some of the more challenging locations is growing. The alternative of using helicopters is expensive and still requires men to climb on the towers and in the equipment hierarchy is hardly the safest.

For locations where Land Rovers and other road-going wheeled vehicles such as Unimogs begin to struggle, one solution is to move to off-road vehicles designed for extreme ground conditions. One such machine, supplied by National Crane distributor, Shawmut Equipment to New England-based Locke Crane Services, mounts a 23 tonne National Crane 800D on a Caterpillar 574 logging chassis. The crane features a 30.5 metre four section boom with two man platform attachment.

Given that the crane needs to drive through thickly wooded areas, a patented internal anti-two-block design was conceived, which routes the wire inside the boom to avoid snagging.

Company owner Ken Locke said: "The crane has been out working since mid-May and has been performing very well. We have been very pleased with the carrier's performance and coupled with the National Crane this machine is the perfect solution for us."



The National Crane 800D on Cat logger offers a go anywhere crane and platform

The big Finns

Finnish aerial lift manufacturer Bronto specialises in providing large lifts for utility applications and transmission work. Its range includes fully insulated platforms and special devices for washing insulators. It has also mounted a number of units on special tracked vehicles for work in some of the most inhospitable locations such as Alaska. Its fully insulated range with up to 500Kv insulation - to allow bare hand live line work - offers working heights of up to 60 metres and combined lift capacities of 860kg with a 600kg load handling device to help install or replace insulators etc.



One of the larger tracked installations, a fully insulated Bronto SI 125HDT working in Alaska

Crawlers go all the way

For locations where wheels simply cannot go, tracked machines come into their own. If the distance to the location is not too far from a road or track, then larger spider lifts and crawler cranes can be ideal, being standard products that can be purchased economically or even rented. Spiders can not only cross the most challenging of ground conditions, but also level up on steep slopes and with heights of up to 50 metres can cope with most towers.

When the distances are greater or the capacity requirements are higher, then special vehicles come into play. Earlier this year US-based Altec announced a partnership with Prinoth to install cranes and work platforms on the Go-Tract range of tracked vehicles, offering cranes of up to 34 tonnes and insulated boom lifts to 46 metres. The first unit is an Altec AC38-127S on the new Prinroth GT4500 chassis which offers a payload of 20 tonnes. The AC38 offers a maximum tip height of 58.5 metres and a two man platform.

The machine can climb a 60 percent slope or traverse a 40 percent incline with a ground pressure lighter than a human footprint, even when fully laden.



Spiders can handle tough ground conditions



Once in position working heights of up to 50 metres is enough for most towers

And something smaller

Finally something a little more modest was introduced by British specialist platform producer Cautrac, at the recent Vertical Days event. It marries a 15 metre Niftylift articulated boom with a Marooka MST300 chassis, resulting in a vehicle, that weighs less than 3,000kg, can climb a 57 percent slope, travel at up to nine kilometres an hour and is just 1.64 metres wide and less than four metres long.

With so much going on in the utility and transmission field we have planned another, more in depth look at the sector in the New Year.

The 15m Nifty on Marooka chassis



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