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Making tracks

The range of aerial lifts available on tracks has soared in recent years, most of them being the spider type boom lifts, which require outriggers to be set prior to lifting the boom. In the following pages we take a look at the rarer, self propelled crawler mounted lifts.

It is clear that there is a significant demand for aerial lifts mounted on tracks with explosive growth in Spider type boom lifts. These units use tracks for travel in the fully stowed position, but then set outriggers before elevating. Some of the demand for this type of product is driven by the narrow overall width, light weight and low ground bearing pressures of these machines, which, thanks to the use of rubber tracks, prove ideal for building maintenance duties, both outdoor and indoor.

However a large number have also found favour with rugged outdoor applications such as forestry work where their exceptional ability to traverse the softest of ground conditions is vital. The spider lift also scores when the work area is way off level, the true spider type outriggers, as found on Falck

Schmidt, Teupen, Omme and Palazzani lifts provide incredible levelling capability.

While the range of spider type lifts on offer has ballooned, there has also been a significant, although much smaller, increase in the range of fully self propelled lifts available on tracks. This type of product has yet to catch-on in Europe outside of Holland and Northern Germany. But why are they popular there? The ground conditions are exceptionally soft with many construction sites requiring months of deep piling work prior to moving above ground. All but the lightest of wheeled equipment simply sinks to its axles.

While ground conditions in the UK and Ireland are generally nowhere near as bad, there are clearly applications that would benefit from such equipment. So why are more of these lifts not sold?



In soft ground like this site in Holland, wheeled machines simply sink



Standard products

While it might seem a little strange to talk of 'standard' and self propelled track mounted lifts in the same breath, there is now a good range of standard series production



Two Aichi booms in typical soft conditions

For one, their purchase cost is quite a bit more than that of their wheeled cousins, and substantially higher, metre for metre, than the more compact spider lifts. The higher price puts 'forestry types' off buying their own units. It also puts most rental companies off, as self propelled crawlers are seen as highly specialised machines and few rental companies are confident that they would be able to obtain a premium rate for them. So in summary they are seen as too expensive to buy and there are very few places where you can rent them so... they don't catch on here.

Moving on from the simple price factor, when it comes to self propelled booms and scissors in the UK or Ireland the wheel is still king. Rental companies simply prefer booms and scissors on 4x4 rough terrain chassis. The traction and rough terrain ability of a modern RT lift is first class, they have a good travel speed and tyres are reasonably 'kind' to most terrain. However crawler mounts are not just about rough terrain ability, they also offer ground bearing pressures way below that of any wheeled machine. In really soft ground conditions wheeled machines sink and then resort to using Track-way or matting to move around site. A crawler of course lays its own track.

Spider outriggers provide incredible levelling ability

boom and scissor lifts on the market. When it comes to fully self propelled aerial lifts the market leader is without question Aichi. One of the reasons for this is that users in Japan are very keen on track mounted anything when it comes to equipment, from Mini excavators to mini cranes and mini scissor lifts. In Europe, Aichi is best known for its crawler mounted booms. Many buyers assume that this is all the company sells here. The reality is quite different, actually selling four to five wheeled booms for every crawler mount.



Aichi has been selling enough of its crawler mounted boom lifts outside of Japan to prompt market leader JLG to start building a crawler mounted version of its 600S series. Designated the 600SC and 660SJC they use the basic superstructures from the wheeled 600 series but mounted on a steel tracked crawler



Aichi SR12B crawler booms destined for rental company, Boels



The 22 metre Hitachi crawler boom is not yet marketed in Europe

chassis. A significant benefit of such machines, apart from their ability to deal with soft ground conditions, is their stability. The extra weight, right at the base of the machine and the unyielding nature of steel tracks, makes for an

extremely solid and rigid unit, perfect for jobs where bounce is a 'no-no'. Aichi build crawler booms in three heights 40ft, 60ft and 70ft, all available with or without jibs. There are already quite a few of these working in the UK, largely on special applications or where a rental company has managed to purchase them at an especially attractive price. Units such as the SR12B/BJ, SR18A/AJ and SR21A/AJ are well proven with a reputation for being 'bullet proof' in terms of reliability and durability. The other manufacturer which offers something of a range is

Hitachi. Only two of its four models - the zero tail swing HX99B and straight boom HX140B - are actively sold in Europe. The remaining models are an unusual non-telescopic articulated model, the 6.4 metre platform height HX64B and the seemingly strong 22 metre platform height, straight boom and articulating jib HX22B. The two smaller Hitachi HX booms are excellent products, but the only company actively selling them in Europe is Euro Supply in Holland. At a recent exhibition, it showed an HX99B with a quick-fit set of rail wheels (See crawlers on the rails) which it has developed with partners for the

Straight boomed crawler mounted lifts

Make - Model	Platform Ht	Outreach	GVW	O/A Width	Lift cap	Track type	Jib
Hitachi HX99B	9.7m	9.0m	5,400kgs	2.00m	200kg	NM Rubber	No
Aichi SR12B	12.1m	10.7m	7,445kg	2.30m	250kg	Steel	No
Aichi SR12BJ	12.1m	11.3m	8,240kg	2.30m	250kg	Steel	Yes
Hitachi HX140B	13.9m	13.2m	7,850kg	2.30m	250kg	NM Rubber	Yes
Aichi SR18A	18.0m	16.7m	12,800kg	2.46m	227kg	Steel	No
Aichi SR18AJ	18.0m	15.8m	12,900kg	2.46m	227kg	Steel	Yes
JLG 600SC	18.3m	15.1m	10,230kg	2.49m	230kg	Steel	No
JLG 600SJC	20.1m	17.3m	12,270kg	2.49m	230kg	Steel	Yes
Aichi SR21A	21.0m	18.6m	14,900kg	2.46m	227kg	Steel	No
Aichi SR21AJ	21.0m	17.8m	15,200kg	2.46m	227kg	Steel	Yes
Hitachi HX22B	22.1m	20.2m	17,000kg	2.49m	200kg	Steel	Yes



Some units are equipped to carry and lift items such as these heavy glazing panels

Dutch railways. Hitachi appears to be perfectly satisfied with the limited sales volumes it achieves in Europe and simply reacts to demand rather than seeking to actively pursue new distributors. Over the years a number of companies have put a standard boom superstructure onto a tracked undercarriage. The most notable being Gunco in the days when it was the Grove-Manlift distributor in Holland. The Grove MZ66A and MZ76 made great crawler mounted booms and a good number are still at work, mainly in Holland. Articulated boom superstructures have been tried in the past, including the Simon Boxer 17

C&A crawler lifts

and Genie 45. However the rough terrain capability of the heavy duty crawler undercarriage suits the more rugged structure of the straight telescopic boom.

Scissor lifts

With Aichi having pulled out of the European crawler mounted scissor market, the only producers of standard products remaining are Holland Lift and Omega lift, both of them based in Holland where, as we have already said, the vast majority of this type of lift is used.



On this special, the building frames are loaded on the material lift... and lifted into place for fixing.



While the smaller tracked scissor lift models are used on a wide variety of applications including road building and maintenance, the biggest application by far is the construction and refurbishment of the massive glass houses that are erected on reclaimed polder land and benefit from cheap Dutch natural gas for heat. It is in these massive green houses that the tasteless forced tomatoes are grown for the British and other less discerning European markets. Glass house construction is big business in Holland and follows a typical cycle, the land is reclaimed, and once stabilised, permission is sought to erect glasshouses.

In time the land is turned over to more profitable uses, and the glass houses removed, while new ones are erected closer to the coast or in new areas where planning permission has been obtained.

The ground conditions under these light aluminium buildings is soft, bottomless and often wet. Wheeled machines require very large tyres and lots of power, but even then

Staying with the standard products, Holland Lift produces two models. The Monostar X-105DL22-TR has a 10.8 metre platform height, 500kg lift capacity and an overall width of just over two metres. With a gross weight of just under 10 tonnes, the 14 metre platform height Q-135DL24-TR has a 2.4 metre overall width and



The Holland Lift X105DL22-TR levels by up to six degrees



The Omega TS105-500 demonstrates how these machines can cope with difficult terrain

they quickly create deep ruts which cause most vehicles to bottom out and get stuck. Big tracked machines are not only ideal for the ground conditions, but they also allow the development of

500 kg lift capacity. In addition to their firm bases and low centre of gravity, the TR scissor lifts offer six degrees of levelling either side of centre, allowing levelling while traversing side slopes or when working against a façade where the ground slopes away from the building.

Some crawlers, usually the larger custom build models, feature a full trunnion mounted scissor stack allowing it to be levelled both side to side and end to end. Others employ levelling jacks to achieve the same purpose, however, given that these machines are designed for working in soft ground, outrigger jacks are far from ideal.

The other producer of standard crawler mounted scissor lifts is the newly renamed Omega Platforms which incorporates the Omega brand of standard scissor lifts and HTN, the producer of special custom built crawler lifts. The standard range comprises four models, the 8.5 metre TS105-500, the 10.5 metre TS120-1000, the 13.5 metre TS150-800 and 16 metre TS180-800. While these units are to a standard specification, Omega produces its lifts one by one to order, with each being a virtual special. All of them feature a full trunnion mounted scissor stack, which gives side to side levelling of five degrees and end to end levelling of up to three degrees.

Specials though are this company's forte building massive crawler mounted lifts for highly specialised work such a big glass house erection.



Some units are built with staged platforms to cope with pitched roofing



Another unusual application features a scissor on a scissor to reach awkward locations.

extremely elaborate configurations with massive decks, lifting equipment and multi staged platforms to allow simultaneous work across the pitched roofs.



Many of the largest tracked scissors rotate so that the long deck can cover the full width of a building on the go



An unusual hydraulic stepped platform for work on sloped ceilings

Typically it offers platforms of 12 by five metres, with up to three tonne lift capacities. In addition the scissor stacks on these massive machines are usually mounted on a 360 degree slew bearing, to allow 'on the move' working across the full width of a building. The decks are designed very much to purpose, with pyramid style stepped platforms for working on a pitched roof, material lifts and component storage racking, all on deck. These monster machines are about as far off as it is possible from standard self propelled lifts.

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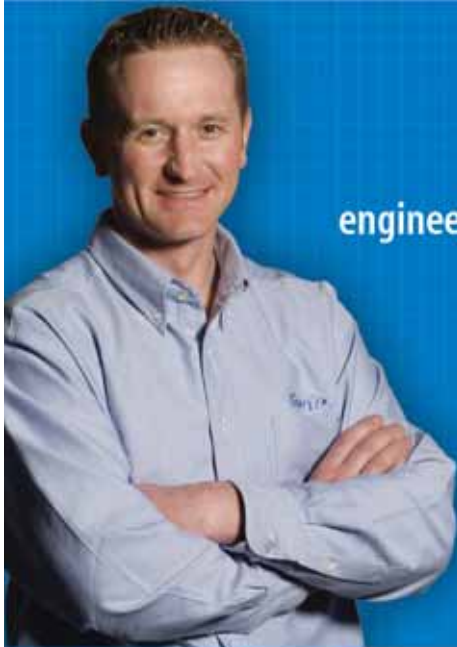
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The Hitachi HX99B for the Dutch railways combines rubber tracks with a quick fit rail chassis

Crawlers on the rails

Dutch company Euro supply has been in the access business for many years and has developed a strong following throughout the Benelux region. The largest part of the company's business is the distribution of Nifty Lift trailer and boom lifts, Hitachi crawler mounted booms and Kesla boom lifts. It also has a strong and well established operator training programme. As a specialist aerial lift company it is often called on to provide bespoke solutions to access problems. Its most recent special project was to rail mount an Hitachi boom lift. With an exacting set of demands from its customer, the Dutch railways, it teamed up with Gebr. Koerts Techniek BV to produce the road-rail crawler mounted boom lift. Based on the Hitachi HX99B with almost 10 metres of platform height, it uses a complete rail

wheeled sub chassis developed with the assistance of specialist contractor, Winkel VOF. The sub chassis includes two hydraulic drive motors that can propel the lift at up to 10kph (6mph) on rails. The lift is fitted with height and position limiters, which combined with its zero tail swing and compact dimensions ensures that it does not intrude into adjoining track space. A battery powered auxiliary drive system is fitted to the machine in case the engine should fail or run out of fuel. Euro supply says that the sub chassis, which weighs 1,200kgs, can be easily fitted or removed in around 30 minutes, without the need for any special tools, making the machine a practical dual purpose lift for both regular and rail work. The work platform is used for a wide variety of repair, maintenance and inspection work.



The rail gear is incorporated in a quickly removable chassis, which features dual wheel drive.



The Custers Verda 10 at work on trimming duties

Take a walk through the woods

Dutch manufacturer Custers has developed a fully self propelled, crawler mounted boom lift with the aid of one of its forestry customers. The resulting product, the Verda 10, is one of the best lift designs for its purpose we have seen so far. The new product benefits from the fact that it was designed as a 'special' to an exacting specification, but



The massive steel plate covers enclose everything for full protection from falling timber and for driving through heavy brush

with series production in mind. As a result it carries few, if any, of the compromises that are inevitable with modified machines. The one characteristic that might not appeal to some users, is the 150 kg lift

capacity in the one man basket. But Custers says that the design allows for either greater working height, with a telescopic top boom or a greater lift capacity or both. The main sacrifice for such additions would be the machines gross weight. The Verdana 10's built so far weigh only 3,500 kgs and offer 4.5 metres of outreach.

The key features of this unit include:

- Fully self propelled capability
- Heavy duty crawler chassis that will go almost anywhere
- 360 degree continuous slew superstructure
- Heavy steel plate tank-like covers that envelope all of the machines moving parts, and will resist just about anything, bullets included.
- Chain saw scabbards built into the platform
- A curved front guardrail to allow the user to get close into the tree.
- An integrated cable reel for tree-tie string

The machine, was developed and tested in a real-life work situation. Custer's then delivered the first completed unit earlier this year and already has several months experience monitoring the product prior to launching it at this year's Hoogwerker dagen in Holland.



The Custers platform with protected controls, curved rail and tie reel

Cheaper in the long run

Aichi recently had the unique chance to track (forgive the pun) the total ownership costs of one of its 18 metre booms since it was built more than 20 years ago. The lift was delivered new to rental company Gardemann in Germany in February 1985. Gardemann is one of the few companies that has kept systematic and detailed service records for its machines over such a long period. Each lift has its own file that includes a worksheet for every time it was worked on, including both routine services and repairs. Over the period the machine has cost just over 8,000 euros. Most of which was spent on filters, service



labour, seals and some engine parts. The hour meter stopped working at 12,500 hours but the machine is still in full working order, although rarely rented out these days due to its age.

The paintwork, in Gardemann colours, is apparently original and still in fairly good shape.

The steel tracks were originally fitted with optional rubber pads, although these are now virtually worn out. Aichi has long argued that its boom lifts are the 'cheapest' over their full working life. This unit would certainly appear to support that claim.

A full and detailed service history is available with the machine, it apparently shows total maintenance and repair costs over its lifetime of just over €8,000.



This Aichi crawler mount is over 21 years old and still in perfect working order.