

All Electric

Battery powered scissor lifts are by far and away the most popular form of powered access equipment. While not the first self-propelled lift to appear on the market - that was a petrol powered boom lift - battery power came shortly after the first self-propelled scissor lift was introduced in 1971 or 1972.

Since then they have gone on to dominate the sector and today more than 40 manufacturers offer a range that runs into hundreds of different models and is still expanding. The appeal of battery powered scissor lifts is that they tend to be compact and inexpensive as well as clean, quiet and relatively cheap to run.

The vast majority of self-propelled electric scissor lifts are the slab electric models, intended for indoor use on smooth solid floors, with the majority being in the 19ft to 32ft platform height range with working heights between seven and 11 metres. However over the past few years the product sector has mushroomed with significant additions at both ends of the spectrum.

Medical technology

Recent developments have included ultra heavy-duty models with working heights of up to 35 metres, narrow heavy-duty machines with

overall widths of just 1.2 metres boasting working heights of more than 27 metres with big platform capacities. At the other end of the market we have seen a surge in ultra light-weight machines offering working heights of up to five metres yet weighing less than 500kg. Many of these have been developed from push-around models and use wheelchair drive technology for their propulsion. It seems that medical technology is moving into the access market. At the recent Executive Hire Show in the UK, we saw the X Step, a push around scissor lift that uses a lift cylinder taken from a hospital bed. Interestingly the 1.2 metre overall width of many mid-range electric scissor lifts was enshrined in the original CE standard allowing a descent interrupt in place of physical scissor guards on machines of up to 1.2 metres because..... apparently this was the width of a standard hospital door in Europe.

Rough Terrain electrics

Getting back to the main subject, other developments and trends include the steadily growing market for battery powered Rough Terrain scissor lifts. While such machines have been around for many years - as a by-product of big electric slab machines - it is only now that the concept is becoming popular. California-based MEC has pioneered the concept more than any other company, but Genie has taken it mainstream with its new 69 DC range launched late 2011, with platform heights of 26ft, 33ft and 40ft. The advantages of such machines are lower running costs compared to diesel and if fitted with non-marking lugged tyres, the ability to be rented out for both indoor and outdoor work.



Most electric scissor lifts are slab models with seven to 11 metres working heights



One of JLG's new low cost Rental Series scissors with passive pothole protection



Battery powered Rough Terrain scissor lifts are gaining in popularity - the GS4069DC boasts the same performance as the diesel powered models.



The low level X step scissor lift uses a lift cylinder from a hospital bed

A big factor that has made these machines more viable for heavy-duty outdoor work is the use of direct electric drive. Compared to hydraulic drive it offers significantly greater efficiency, allowing long distances to be driven on a single charge as well as offering substantial power, gradeability and good braking on slopes. The efficiency is such that so far no manufacturer has seen the need to consider lithium batteries or even a hybrid model although there have been some 'bi-energy' units in the past. One wonders why a company such as Skyjack has not approached Niftylift to look at

licensing its Hybrid technology for a scissor lift? One of the reasons for the absence of any move towards lithium, apart from the cost, is that there is usually ample room on a scissor lift for whatever size of battery pack is required, and given that they need a decent amount of counterweight in a low down central position, regular lead acid batteries serve this function well and provide more than enough battery life for most users. And of course there is a question of cost and complication - electric scissor lifts should be modestly priced and ultra reliable - although electric RTs are still something of an 'exotic'.

Don't be pedantic

Over the following pages we have highlighted some of the more



MEC pioneered the battery powered RT scissor and recently added to its range with the 4069 ERT, note the non-marking tyres

detailed trends and new products coming on the market which makes interesting reading. For our more pedantic readers we have always included mast and sigma type lifts in our scissor lift reviews even though they clearly do not use a scissor lift stack to elevate. The fact is that they serve exactly the same function and as such are totally interchangeable with a scissor lift, and that is what counts.

So what does the future hold?

While some may claim that the European and North American markets are mature we see nothing but further growth, at least in the short to medium term. Just look at the number of ladders and scaffold towers that are still sold, along with podiums and rolling steps, not to mention all those people who commandeer the factory forklift and a pallet and this is just in the developed world. We still have huge future growth potential in China, South America and dare we say it, Africa. The additional volume this will bring could encourage more component producers to introduce new technology and componentry to the sector. Meanwhile producers are regularly introducing new ideas, some of which will wither and die while others will take off. For example MEC has been promoting its Crossover electric range with offset deck, which provides a platform flush with the chassis on one side and an inboard sheet carrier on the other. While this appears to be a very good idea there has been little pressure on other manufacturers to do anything similar. In another development Cushman has introduced a high speed buggy-mounted scissor lift in partnership with Custom Equipment. There could be substantial demand for scissor lifts that can safely drive between work areas at better speeds with better range. Vehicle mounted units have been around in the aviation field for some time but no one has considered trying this on a regular production unit before.



For this article lifts like this JLG are counted along with scissor lifts



MEC offers an offset deck design on its ERT and Crossover models, which gives users a platform that extends to the full chassis width on one side and incorporates an inboard sheet or tube rack on the other side.



No matter what the future holds for powered access, the future is bright for electric powered scissor lifts.

Scissor or Mast?

12ft self-propelled all steel mast-type lifts have been gaining in popularity at a steady pace since the mid-1990s. The product began life in Japan and was introduced to western markets by UpRight with its TM12, designed specifically for a large Japanese rental company. The TM12 - now the Snorkel M1230E - has over the years sold particularly well in Nordic countries but has also been popular in a number of other European markets and North America. Today very similar products are also produced by JLG and Skyjack, while Genie has a model adapted from its aluminium-based Runabout series and Haulotte produces the slightly different Star 6 which is a little higher and a little heavier.

A key benefit of this type of lift is its low weight. The original TM12 weighed just 630kg but is now a chunkier 780kg. While still more than light enough for many elevators they are now on the heavy side for those elevators found in smaller



The Snorkel M1230 is the latest version of the UpRight TM12 launched in 1994

hotels and offices where the capacity is 680kg. Another benefit is the machine's compact dimensions - overall length of around 1.35 metres - again making them suitable for smaller elevators.



Custom Equipment is aiming its new HB-1230 at the 12ft mast lift market

electric scissors C&a

They are also very simple to operate - with just forward, reverse, up down and steer - and offer a low platform entry height.

Most important of all though is that they are less costly to buy and run, and easy to ship or deliver thanks to their low weight and small dimensions. They are therefore profitable units for rental fleets, being able to carry out much of the work for which 19 and 20ft scissor lifts are typically used. So it was with great interest that we spotted the prototype HB-1230E scissor lift on the Custom Equipment stand at the recent Rental show.

Custom is pitching this new machine as an alternative to the mast-type lift, claiming that it will be lighter and yet offer a larger working platform with access to work from both ends of the platform, with no mast getting in the way. So how does it really stack up? Well as you can see from the chart below it is a fraction longer,



The mast type configuration is ideal for many applications - JLG's 1230ES offers direct electric drive too

but still under 1.4 metres and a good deal lighter at around 680kg. The platform is a longer at 1.37 metres, but slightly narrower at 610mm. The most recent mast-type lift to be launched into this market was the Skyjack SJ12 and its bigger brother the SJ16. These two introduced a surprising number of new features into what appeared to be a very rigid product concept, one of which was a sliding deck - not a deck extension more a traversing deck - which shifts just over 500mm outside of the machine's footprint to provide a little overreach. Genie was the first to introduce a slide out deck on the original Runabout series, but it was not particularly robust or rigid and complicated a simple design. The Skyjack solution keeps closer to the original spirit of this product sector. Snorkel sensing the need to introduce an extension to the M1230E showed a retrofit version last year, which didn't quite work out. However at the Rental show last month it launched its final version which actually worked well and provides a good solid feel, a larger platform and some overreach although it is bound to add to the machines weight and cost. Custom's HB-1230E will also have a rollout extension but the company has yet to decide on the length, which is expected to be around half a metre.

So if looking for a 12ft lift - which provides a decent 5.6 metres of working height - is it to be a scissor or a mast? A great deal will, as is often the case, depend on price and distribution. For the sake of this article we will presume that these two facts are equal - a luxury that we have as a magazine. We would have to come down in favour of the HB-1230E even though our heart says that the Snorkel, JLG and



Skyjack offers an innovative sliding deck on its 12 and 16ft mast lifts, for both outreach and easy service access when stowed



Snorkel's new roll out deck extension on the M1230 works well

Skyjack is the more appealing product concept.

We are swayed by the HB-1230E's longer platform, the fact that you can work unobstructed from either end and that it is quite a bit lighter. However the vast majority of buyers select their equipment, whether it be cranes or work platforms with their hearts. A factor that drove JLG and then Skyjack to virtually copy the TM12 design. So while Compact Equipment's new machine should do exceptionally well, it is unlikely to replace the mast-type product.

And still lower...

Another interesting dynamic could be the arrival of a greater range of slightly smaller self-propelled lifts such as Power Towers' Nano series and the self-propelled versions of push-around lifts such as the Pop-Up Drive 10, Youngman's Boss X3X-SP and the Iteco Easy Up 5sp.

Perhaps if there were more 15 or 16ft mast models, such as Skyjack's SJ16, the market would polarise away from 12ft masts towards 10ft scissors and 16ft mast lifts? However at this stage there are few signs of this happening so we will wait and see how Compact Equipment does with the HB-1230.

Self-propelled push-arounds

The UK is the largest low level powered access market in the world spurred on by the Work At Height Regulations of 2005 and the launch of the low cost, low-level push-around scissor lift launched by Pop Up in 2006. The lift has been immensely popular selling more than 6,000 units in the UK alone. The original Pop Up had a platform height of just 1.63 metres, was lightweight with a platform capacity of 240kg. However, it was soon

How they stack up

	Custom	Snorkel	Skyjack	JLG	Haulotte	Genie	Skyjack
	HB-1230	M1230E	SJ12	1230ES	Star 6	GRC 12	SJ16
Platform height	3.66m	3.63m	3.65m	3.66m	4m	3.66m	4.75m
Work height	5.66m	5.63m	5.65m	5.66m	6m	3.66m	6.75m
O/A length	1,397mm	1,359mm	1,370mm	1,360mm	1,500mm	1,370mm	1,370mm
O/A width	762mm	762mm	762mm	762mm	760mm	800mm	762mm
Entry height	550mm	554mm	450mm	520mm	550mm	570mm	450mm
Platform capacity	226kg	226kg	226kg	230kg	180kg	227kg	226kg
Total weight	680kg	780kg	782kg	790kg	810kg	948kg	966kg
Extension	500mm?	500mm	510mm	N/A	N/A	400mm	510mm

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The original Pop-Up

obvious that slightly more platform height - up to three metres - was desirable and with the advent of 'surfing' there was a clear demand for self-propelled versions.

Many of the push-around manufacturers - and others - have added a drive function to create self-propelled models, while increasing the height, making for a good, lightweight, low level platform which not only offers an alternative to podiums, small towers and push-arounds, but that also knocks on the door of the established 12ft electric scissor/mast market.

Platforms in this sector must be ultra-compact with low maximum



The low level market growth has brought new companies into the powered access market such as Youngman

point loadings so that they can work on the low capacity raised 'computer' floors which are now very common in new commercial construction and ride in the smallest of elevators. Such machines only started to appear a few years ago, but there is already a wide selection to choose from with working heights up to around five metres (10ft platform height) and these are the platforms we will compare.

10ft v 12ft?

So how do these new 10ft self-propelled lifts compare to the established 12ft mast and scissor lifts? One of the key features of the 12ft lift is its low weight and compact dimensions. In recent years this type of platform has put on some weight though and now ranges from around 700 to 1,000kg.



The Iteco Easy Up 5 SP.

This causes problems for users with smaller elevators. All widths are about 760mm - good for most door frames - and the shortest are now about 1.36 metres long but can range up to 1.5 metres in length.

As covered in the 12ft article this type of platform is less costly to buy and run than the larger 19 and 20ft electric scissors, as well as being easier to ship and deliver thanks to their low weight and small dimensions. They are therefore profitable units for rental fleets, being able to carry out much of the work from which 19 and 20ft scissor lifts have traditionally been used.

Apart from the obvious lower platform height, the 10ft self-propelled 'push-arounds' are a much lighter package which adds to the advantages outlined above for 12ft lifts, being even less expensive to purchase and transport to site. It is surprising therefore that the 10ft machines are not more popular and are not taking more sales off the slightly larger machines.

It can only be a matter of time. As can be seen from the comparison table between the new Custom HB-1230 and the 10ft offerings from Bravi, Dingli, Pop Up, Youngman, Snorkel, Iteco, Power Towers and Faraone, the only real 'advantage' of a 12ft platform is the additional 600mm of working height. Most of the 10ft models weigh around 500kg, with platform capacities between 150 and 200kg compared to the heavier 700 to 950kg weight of the 12ft machines which only have a small amount of additional capacity at about 230kg.

With all the manufacturers, the option of a platform extension varies. The 10 and 12ft lifts that do have the option tend to be 500mm long, apart from the Power Towers Nano SP Plus. Given that this machine has a slightly lower working height of 4.5 metres, the lift has a good platform capacity of 200kg and a full one metre extension with 120kg on the extended deck. Its 540kg total weight is slightly heavier than the average but still a good 150kg lighter than the average 12ft machine. If you can live without an extending deck, one self-propelled push around that is certainly worth a look - particularly if weight is a concern - is the Faraone PK50S.

With its three metre platform height and compact length (just 1,000mm - the shortest compared) the unit has a 200kg platform capacity yet has a total weight of just 290kg.

If machine width is a critical factor it has to be the Bravi Lui Slim. Although the heaviest self-propelled unit at 850kg it has an overall width of just 450mm - 250mm less than any other lift.

Comparing specifications between the 12ft machines and it is fairly obvious that over the years a 'standard' template has been adopted by all manufacturers with the average lift having a working height of 5.65 metres, width



Dingli's JCPT 0507



The Faraone offers the lowest overall weight



Power Towers Nano SP Plus has a full 1m deck extension

762mm, length 1,375mm, 226kg platform capacity and total weight of about 750kg. If there is a platform extension then it will be 500mm.

With more manufacturers now competing in the 10ft market and development is naturally far more diverse, specifications vary a great deal more. So it pays to delve a bit more deeply into the features and benefits of each machine and your requirements. So if you don't need the additional working height or the extra 25-50kg of platform capacity, the new generation of 10ft self-propelled lifts have a lot to offer.



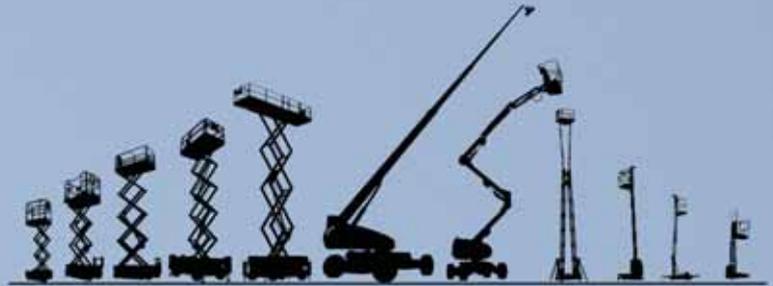
A mast lift among scissors the Bravi Lui

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ANSI model shown.

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How the Custom HB-1230 performs against the 10ft platform height self-propelled push arounds

Model	Platform height	Work height	O/A length	O/A width	Platform capacity	Total weight	Extension
Custom HB-1230	3.66m	5.66m	1,397mm	762mm	226kg	680kg	500mm?
Custom HB-1030	3.00m	5.00m	1,760mm	760mm	340kg	751kg	760mm
Bravi Lui Slim	2.95m	4.95m	1105mm	450mm	120kg	850kg	N/A
Bravi Leonardo	2.90m	4.90m	1215mm	760mm	180kg	495kg	485mm
Dingli JCPT0507DC	3.00m	5.00m	1,150mm	760mm	240kg	554kg	550mm
Snorkel S1030E*	3.00m	5.00m	1,020mm	770mm	227kg	495kg	N/A
Iteco Easy Up 5 SP	3.00m	5.00m	1,400mm	760mm	150kg	490kg	N/A
Youngman Boss X3X-SP	3.14m	5.14m	1,390mm	760mm	150kg	495kg	400mm
Power Towers Nano SP Zero	2.50m	4.50m	1,200mm	750mm	200kg	440kg	N/A
Power Towers Nano SP Plus	2.50m	4.50m	1,200mm	750mm	200kg	540kg	1,000mm
Pop Up Eco Drive 10	3.00m	5.00m	1,200mm	700mm	140kg	495kg	N/A
Faraone PK50S	3.00m	5.00m	1,000mm	750mm	200kg	290kg	N/A

*provisional details

Rapid indoor intervention

If you have spent any time at a mid-sized production facility or warehouse, you will invariably have seen maintenance men working at height, either working on alarms, sensors, lighting, repairing ducting or just replacing a light bulb. All too often their access method of choice is a large A-Frame step ladder, even in a factory producing alloy towers or access platforms. Why? The work may be a two minute job at the opposite end of the plant.

The time taken to erect a mobile scaffold tower is too long, if one is kept assembled, it still seems like a lot of work to push it all the way to a job for such a short time in the air. And when you get there it may be difficult to get the tower into position and it may

need to have its outriggers set etc.

To a lesser extent the same applies to a small self-propelled lift, if the

distance is let's say 300 metres, you are talking about a travel time of around six minutes each way. Now while that's not a lifetime, progress seems slow compared to putting a step ladder over your shoulder and walking there. It's a bit like the elevator compared to escalator debate – it's all about perception. And then if the machines batteries have not been charged it may not make it back. So it's just simpler and easier to use a ladder. And we all know that the problem with ladders is that all too often they are misused.

It is for this type of application and more that Cushman - the industrial truck to golf cart company - has teamed up with Compact Equipment to produce the Titan high speed scissor lift. The lift combines a standard Cushman industrial truck with the lift stack of a Custom HB-1030E scissor lift, but offers a little more reach thanks to the truck's higher chassis, with a platform height of just over 11ft for a working height of almost 5.5 metres. Unlike regular scissor lifts it can travel at speeds of up to 21kph, so will take the maintenance man to the job much faster, and in greater



comfort than if he were to walk. Maximum capacity on the platform is 340kg, and it comes with a standard 400mm slide out deck extension. The vehicle can transport loads of up to 800kg and tow up to two tonnes, and yet the Gross Vehicle Weight is just 1,177kg - lighter than a 19ft scissor lift. The lift is of course not as compact as a micro scissor, but at just under 2.9 metres long and 1.13 metres wide it is still very compact.

The Titan has four wheel braking, but when the platform is raised stabilisers are lowered from the chassis as an additional safety precaution and to take out any suspension sway or movement. The unit is fully electric, running on a 48 volt battery system with direct electric drive. Cushman introduced the Titan at the Lift and Access event in November and also showed it at this year's Rental show. The

company says that it also plans to launch a CE version in Europe.

Tall and slim

Throughout the 1980s and 1990s slab electric scissors lifts essentially came in two widths, the 32 inch 'skinny' models to pass through single doorways originally limited to 20ft platform heights and the wider 46 inch chassis for 24 to 26ft platform heights or wide bodied 20ft models. In 1994 the arrival of 30 inch wide 19ft scissiors, designed to be short and light enough to fit into elevators started eroding the 2032 market. Skyjack launched the next innovation with a 26ft high scissor lift on a 32 inch chassis and was later followed by the other producers. Developments continued and the next step up was a 32ft platform height unit on the 46 inch chassis, as manufacturers strived to get more height on their standard 32 and 46 inch wide chassis.



Cushman's Titan high speed electric scissor lift.

electric scissors C&a

The Dutch approach

Holland Lift, sensing this trend to get more height on a 46 or 47 inch (1.2 metre) wide chassis, and encouraged by its Dutch and German customers who wanted tall narrow machines to work on the rapidly expanding hi-density warehouse construction and maintenance market, took a different approach. Retaining the overall width of 1.2 metres it employed a longer, heavier chassis that allowed longer scissor arms to be used to reach even greater heights without adding more scissor stacks. The heavier chassis and larger, higher capacity drive components allowed more counterweight to be carried and therefore significantly greater

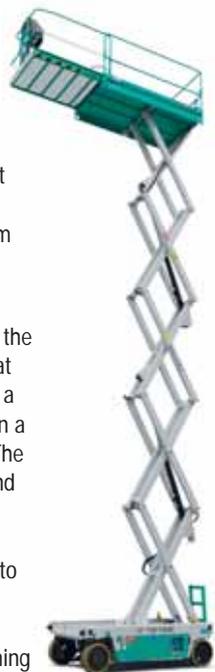


Holland Lift N265EL13 offers a platform height of 86ft and four wheel steer and drive

platform heights - up to 86ft - to be achieved. However these machines are in a totally different class when it comes to cost and transportability etc... and so form a different niche market.

Over to the Italians

In the mainstream market it was the Italians - in the form of Iteco - that introduced the next step up with a 40ft platform height scissor lift on a 46 inch wide compact chassis. The Iteco/Imer IT122 has sold well and taken the company into some mainstream rental fleets that it would otherwise have struggled to penetrate. The first global high volume manufacturer to follow Iteco's lead was Haulotte, launching its 40ft platform height Compact 14 at Intermat in 2009. A little longer than the Iteco at 2.7 metres, it is also a couple of hundred kilos lighter at 3,175kg. The Haulotte has sold very well and has been a good profit contributor for the company. Its success prompted Genie to enter the market, with its GS4047 unusually for an American-based company with a CE model first. Similar to the Haulotte in some



Iteco has done well with its compact 40ft platform height scissor which boasts a 1.4 metre deck extension.

weight compact market with its Ecostar 11812. Similar to the Iteco and Genie models it weighs in at just less than 3,000kg. German manufacturer H.A.B which goes head to head with Holland Lift in the long heavy 1.2 metre electric scissor lift market, recently joined

the party with a very handy looking machine in the form of the S142-12E2WD. It has the same overall length as the Haulotte Compact 14 at 2.7 metres, but offers almost 2ft/600mm more platform/working height and features a 1.2 metre roll-out deck extension, but it is also the heaviest at 3,400kg.



Genie has now joined Iteco and Haulotte and others in the growing 14 metre compact market.

Another stretch and its 16 metres this time from China

Finally coming right up to date, Dingli, a new entrant to the European access market, has not only broken into this market in a



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Haulotte was the first of the major manufacturers into the 14 metre working height 1.2 metre wide market.

relatively significant manner, but has also taken it to another level. The Chinese aerial lift specialist introduced the 14 metre working height JCPT1212HD at around the same time as Genie in 2011, and has been quite successful with it. Dimensions are similar to the Haulotte at 2.48 metres long, but it is slightly narrower at 1.15 metres and weighs just 2,760kg - the lightest of them all. However this is reflected in the lower platform capacity of 230kg, instead of the more usual 350kg. At Bauma China in late November the company surprised many with the introduction of a 16 metre version. The JCPT1612DC is quite a clever design using the company's narrower 810mm wide platform on the 1.15 metre wide chassis, still well within the arm reach criteria that other manufacturers use on their Rough Terrain scissors. It also has a lower platform capacity at 200kg - so it is not suited to every application - and is a little longer at



The 46ft platform height Dingli JCPT1612DC currently tops the charts for short 1.2 metre wide scissor lifts



The H.A.B S142-12E2WD is a very solid 14 metre model.

2.8 metres. Weight is just 2,800kg, helped to some extent by a clever aluminium extruded top scissor arm design.

Horses for courses

There was a time when buyers in Europe tended to buy the highest electric scissor on a given chassis width, so the 26ft unit sold and not the 20ft model and then the 32ft started taking over from the 26ft. However as the market has become more mature and rental rates keener and product choice wider - now extending from eight to 16 metres - more companies are buying several models in each series, and offering the specific lift for the job required. So out goes the old routine of buying the bigger unit on the basis that it could also be used for the lower level work.

So far the other two big mainstream suppliers - JLG and Skyjack - have left the 4047 market to those mentioned above. Will this change at Bauma? So far there are no signs that they have any intention to do so, but having said that there is already plenty of choice out there for buyers that need a product in this sector.



Holland Lift introduced a more compact version of its 34 metre working height electric scissor lift.

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