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Smaller and lighter

The slab electric scissor lift is by far and away the most popular self-propelled aerial work platform - in terms of unit sales - typically accounting for half or more of deliveries. It was also one of the earliest, with the first mass production units appearing in the early 1970s. The design concept and 'look' of the modern slab electric scissor lift dates back to 1994 when larger manufacturers began adopting features that had already been seen on some manufacturer's machines several years earlier. These included active pothole protection, square cut scissor arms, swing out machinery trays and low profile bonded tyres. Since then development has been more evolutionary than revolutionary with most manufacturers extensively updating their products rather than completely redesigning them.

25 years of evolution

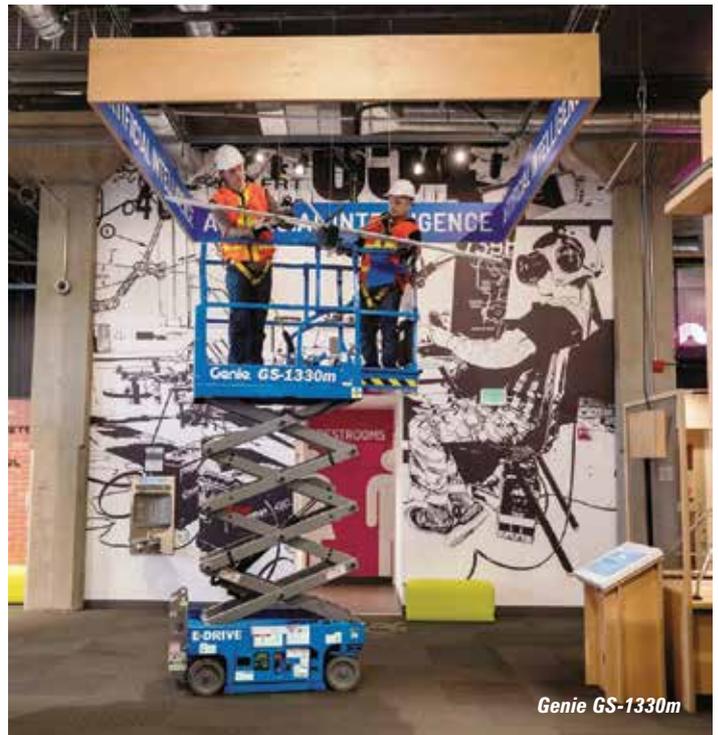
There have been many important developments over the past 25 years including motor controls replacing proportional solenoids for smoother, quieter and more energy efficiency operation, improved controls and safety switches. More recently direct electric drive wheel motors have finally begun replacing hydraulic wheel motors, although while this development was first introduced almost 15 years ago, the majority of scissor lifts still use hydraulic wheel motors rather than electric.

Another recent trend has been towards lighter weight, more compact micro scissor lifts, mostly with platform heights in the region of 12 to 14ft - or if you prefer - working heights of 5.8 to 6.1 metres. The micro scissor lift moniker was originally applied to the 19ft 'elevator' scissor lifts that replaced the 'skinny mini' scissors that were the standard in the 1980s and first half of the 1990s. The new 15 and 19 footers were shorter at just under 1.6 metres compared to the typical 2.4 metres of the 20ft models, and lighter, generally weighing in at just under 1,000kg, allowing them to fit into a standard passenger lift/elevator.

Since then they have become longer

- mostly thanks to the addition of larger steps - and heavier. At the same time demand has grown for even lighter machines that are able to work on suspended floors with limited load bearing capacity - particularly point loads. In North America Custom Equipment led the way in this market with its 10ft 1030 Hybrid self-propelled model. Weighing just 568kg it featured dual front steer wheels both to reduce point loadings and also to allow the wheels to turn without rucking up the carpet. A 14ft model came along in 2007. In Europe and Japan 12ft mast type lifts were initially more popular, led by Aichi in Japan and taken up by UpRight which won a major contract in 1994 to supply a 'look alike' machine to Tokyo Rentals. They were ideal for small elevators and applications that needed lower ground bearing pressures.

Custom Equipment led the way with lighter machines able to work on suspended floors.



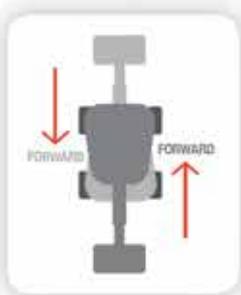
In some countries the low level push around scissor lifts have become highly popular being simple, inexpensive, compact and really lightweight - in the region of 350kg. However not everyone appreciated the inability to relocate the machine without returning to ground level, so wheelchair and mobility scooter drive technology was added to create low level, ultra-light self-propelled platforms. The new micro scissors and mast type lifts bridge the gap between low level push arounds and 19ft self-propelled mini scissors. At the same time several manufacturers have introduced 16ft and even 20ft versions of their mast type lifts, plugging another gap in the market. They include 16ft Skyjack, Snorkel model and Haulotte with its 20ft Star 8S.

You can do a lot with five to six metres

One thing that has become increasingly clear is that a large volume of the work for small slab electric scissor lifts only requires

working heights of between five and six metres - 10ft and 14ft platform heights. The new models that are becoming increasingly popular are largely built in China. This is the first aerial work platform sector in which the Chinese look set to dominate, at least in terms of manufacturing. Producers doing well in this sector include Dingli, Sinoboom and LGMG, while new models from Genie and JLG area also built in China, as are those sold by GMG, PB, WernerCo/Boss, Snorkel, JCB - for now - MEC and Pop-Up, while Haulotte is supplying the wider region with units built at its Chinese plant. As with most of the smaller slab scissor lifts, they are increasingly becoming a commodity type product, sold to a large extent on price, although brand and product support remains a key factor in machine selection. This lower end of the scissor lift market is becoming increasingly congested, the following review of some of the latest new products in this sector

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Genie is hoping its GS-1330m will tap into the growing market for smaller lighter scissor lifts

attempts to lift the fog a little.

Smaller and lighter

The 13ft GS-1330m is Genie's new ultra compact, self-propelled direct electric drive micro scissor lift. Made in Changzhou, China it is looking to tap into the growing market for smaller lighter scissor lifts. With a working height of 5.9 metres, it has an overall weight of 890kg, 227kg platform capacity with 460mm deck extension giving a total deck length of 1.72 metres. Overall width is 780mm, overall length 1.4 metres and the lift can be driven at full height. As on the Genie GS-1932 the scissor stack is centred under the extended platform helping improve platform rigidity especially when using the deck extension. The direct DC drive motors make light work of 25 percent grades.

The new machine complies fully with ANSI, CE and ISO standards and is selling exceptionally well, the first production units were delivered in May, with European sales already topping 750 units. The GS-1330m

has most, if not all of the features of larger models, including swing out service trays, active pothole protection and Genie's Smart Link control system with onboard machine adjustments and diagnostics.

The GS-1330m will of course fit into

The LGMG SS0407E has taken some sales from the traditional 19ft scissor lift market.



LGMG opened its new European headquarters and distribution centre in Rotterdam last year



Sinoboom machines at its facility in Poland

a standard one tonne passenger elevator - with the steps removed - but it is slightly on the heavy side to compete directly with the smaller micro scissor lifts with push around genetics. But it fares well against the Dingli JCPT0607DCS which has been a hot seller, as has the LGMG SS0407E, both of which have taken some market away from the traditional 19ft scissor lift market.

With Genie and JLG adding product - not to mention the other Chinese producers such as Sinoboom - we might well see a shift from the 19ft scissor lifts to these smaller 13ft and possibly 15ft models that are lighter, more compact and almost certainly cheaper - although in the case of the major manufacturers not that much cheaper - similar to the move from 20ft slab electric scissor lifts to 19ft units in the late 1990s.

Veteran recruitment

Most Chinese producers have a confusing array of products in this sector, as they try to offer a machine to suit all purposes and all markets. Towards the end of last year LGMG opened its new European headquarters and distribution centre in Rotterdam, the Netherlands and is beginning to carve out a strong position. It has teamed up with industry veterans including Hans Aarse who joins the company as a consultant in the Benelux region, while in North America it has formed a commercial partnership with ex JLG president Craig Paylor and Rusty Kaylor, with a facility and large machine inventory in Chambersburg, Pennsylvania. In April it formed a new cooperation agreement with German aerial lift manufacturer PB Liftechnik. LGMG already supplies PB with slab electric scissor lifts which it sells

under the PB Eco brand.

Sinoboom is also rapidly taking initiatives to establish a stronger presence in western markets. It opened a new European operation - in cooperation with Liftstore in Jawczyce, near Warsaw, Poland - to provide sales and service throughout the region and is working with partners such as Erik Geene - ex Genie - and Lucjan Bogdan in Benelux and Eastern Europe, and more recently, ex ATN/Toucan/Access Industrie owner Daniel Duclos in France. Until recently Sinoboom produced branded scissors for JCB under an OEM deal, this is said to be coming to an end as JCB ramps up scissor lift production at its new facility in India. The first units came off the line last month.

How about a 20ft mast?

Haulotte's new 20ft AC direct drive Star 8S is the largest mast type lift on the market, and unusually was launched in North America first as the Star 20, but is now available in Europe, with a working height of 7.95 metres. As an alternative to the micro scissors a mast type machine compares very well, although



Haulotte's 20ft Star 8S

micro scissor lift producers such as Compact Equipment will point out that its scissor lifts are just a few millimetres longer but have a much larger, unrestricted platform space.

JLG goes Light

JLG has launched several new slab electric scissor lifts, including two in its R series - the 26ft 2632R and 32ft 3246R - and three Light Weight Electric Scissor Lifts previously shown as concept models at Bauma China in November. These include the 15ft ES1530L available either on wheels or tracks and the 13ft ES1330, both of which are based on the company's ES line of direct electric drive scissors. It has also integrated the Power Towers product range into the JLG line up.



JLG's new R series scissors - the 26ft 2632R and 32ft 3246R

The ES1330 and ES1530L both have a 227kg platform capacity, the ES1330 weighs 830kg, while the two 15ft models are just 900kg. Overall length for all three is 1.43 metres with overall widths of 760mm for the wheeled versions and 780mm for the tracked. All three have a 550mm platform extension.

California-based boom and scissor lift manufacturer MEC launched a new micro scissor lift 18 months ago, built for the company in China by Dingli which took a 25 percent stake in the company in 2017. The 19ft Micro 19 slab scissor lift joins its 13ft 1330SE Micro scissor lift and includes all of the same features, including direct electric

drive. Overall length is just 1.5 metres - or 1.4 metres with steps removed. Overall width is 810mm and platform capacity 226kg, while the machine weighs 1,220kg including the 600mm rollout deck extension and automatic active pothole protection.

New 40ft Genie

Genie has also launched a new 46ft electric slab scissor - the GS-4655 - which will be available later this summer. Fitted with the latest generation of fully sealed AC direct electric drive motors it will be rated for both indoor and outdoor work with a working height of 16 metres indoors and 10.7 metres outdoors. Platform capacity is 350kg, it



JLG's 13ft ES1330 weighs 830kg

has a 1.22 metre extension, 25 percent gradeability and 14 degree breakover angle to negotiate ramps. Overall width is 1.4 metres and overall weight 3,696kg.

Genie lithium option

Genie also unveiled a lithium ion battery pack option for its slab electric scissor lift range providing faster, more efficient recharging, minimal maintenance,



MEC's new Micro 19 ultra-compact slab scissor lift features direct electric drive

How does the Genie and JLG 1330s stack up?

Make Model	Genie GS-1330m	Dingli JCPT0607DCS	LGMG SS047E	Haulotte Star 6	MEC 1330SE	JLG* 1330L
Work height	5.9m	5.6m	5.6m	5.8m	6.0m	5.8m
Capacity	227kg	240kg	240kg	230kg	240kg	227kg
Weight	880kg	880kg	880kg	835kg	860kg	830kg
Extension	460mm	600mm	600mm	400mm	600mm	550mm
Length	1.4m	1.44m	1.53m	1.4m	1.5m	1.43m
Width	780mm	760mm	760mm	790mm	760mm	760mm
Gradeability	25%	25%	25%	25%	25%	25%

*The JLG 1330L and 1530L are currently 'concept' machines



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Custom's new ZT1630

superior cold weather performance and the ability to maintain its full charge longer when not used for a period. Battery life between charges is similar to its lead acid battery pack but can be 'opportunity charged' when stationary or during breaks. The battery is fully compatible with the Delta-Q charger, Genie Lift Connect telematics and Genie Tech Pro Link device connections.

Custom goes higher

US low level platform specialist Custom Equipment has revamped its Hy-Brid scissor lift range and launched a new 16ft self-propelled micro scissor lift - the ZT1630 - its highest model to date, with a working height of almost seven metres, true zero degree turning radius and an overall weight of 934kg. The new scissor is aimed as an alternative to 16ft mast type lifts being lighter, while offering a larger platform. It is however a tad long, although this can be reduced by removing the steps.

Smart phone remote

JLG's new 26ft 2632R and 32ft 3246R complete the company's new R series of simpler specification models aimed at the price sensitive end of the rental market. The 2632R has a 230kg platform capacity and 9.8 metre working height, while the wider 3246R offers 320kg with 11.75 metres. As with other R-series models they have hydraulic wheel motor drive and steel covers. The company is also using the R Series range to prototype a new smart phone based remote control function. Any phone with the JLG remote control app can be quickly



The GS-4655 has the latest generation AC direct electric drive motors and rated for both indoor and outdoor work

paired with the scissor via a QR code and Bluetooth. This allows a delivery driver or operator to operate the stowed drive and steer functions from their phones, when passing through smaller doorways, or driving up a ramp, while maintaining a safe distance from the machine with better visibility.

JLG product marketing manager Jan-Willem van Wier said: "The mobile control app helps operators manoeuvre equipment avoiding potential hazardous situations.



JLG showed off its smart phone remote controlled function at Vertikal Days

How the Custom ZT1630 compares

Manufacturer Model	Custom ZT1630	Snorkel TM16E	Skyjack SJ16	Dingli JCPT0708	Bravi Lui 460
Work height	6.9m	6.9m	6.58m	7.5m	6.62m
Platform size	1.4m x 610mm	960 x 760mm	930 x 690mm	1.37m x 700mm	1.56m x 680mm
Ext'd platform	2.16m	1.4m	0.93m*	1.98m	2.37m
Overall length	1.57m	1.37m	1.37m	1.52m	1.56m
Overall width	762mm	762mm	770mm	810mm	760mm
Platform cap.	250kg	227kg	227kg	230kg	280kg
GVW	934kg	1,102kg	966kg	1,200kg	1,250kg

* The SJ16 has a 0.51m traversing platform

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The new Power Tower Duo uses an innovative stabiliser system for two person operation both indoors and outdoors

The operator can be anywhere around the machine without being restricted by the controls. By touching and holding the drive/steer controller in the track pad area, the individual can operate the machine. Haptic feedback vibration helps indicate the borders of the track pad area. Once the drive/steer controller is released, the scissor will stop, and the machine icon will move back to its home position."

Power Towers goes orange

JLG's UK-based Power Towers operation is dropping its blue livery in favour of a JLG low level access colours of orange and grey. The original Power Tower is also now available as a Duo version. An innovative stabiliser system gives the Duo two person operation both indoors and outdoors. Working height is 5.1 metres and platform capacity 250kg. Power Towers has also launched ATEX approved versions of the Eco and Peco lift.

Low riding scissor

At Bauma Snorkel unveiled the S3019E prototype with an ultra-low overall stowed height of 1.76 metres allowing it to easily pass through a single doorway without the need for folding guardrails, while also offering a very low 'step in' lowered platform height. The concept of storing the scissor arms within the chassis was first seen with the 12ft XS3212 on the Snorkel/Xtreme manufacturing stand at Conexpo 2014. Snorkel has taken a fresh look at the technology with the idea proving a hit with dealers placing orders - production is likely to begin towards the end of this year.



Custom Hy-Brid PS-1430

The S3019E will also be the first Snorkel scissor lift with both electric drive and electric steer i.e. no hydraulic hoses eliminating hydraulic leaks from the chassis area, making it attractive for use in 'clean' areas while extending battery life between charges. Overall width is said to be 770mm, with a total weight of 1,581kg, maximum capacity is 250kg and working height 7.8 metres. A 910mm roll-out extension provides an extended deck length of 2.6 metres. It is rated for one person plus tools for outdoor use.

High tech Skyjack

Skyjack has been busy developing innovative technology and interconnectivity features for its slab electric range, while also upgrading them at the same time as it introduces the changes required for the new ANSI standard which comes into force at the end of the year.

The changes include a new control panel, a revised, more user friendly emergency lowering system,



The ultra-low stored height concept was first seen with this 12ft XS3212 on the Snorkel/Xtreme stand at Conexpo 2014



The Snorkel S3019E stores its scissor arms in the chassis giving an ultra-low overall stowed height of 1.76 metres

modified pothole protection, a new diagnostic display and tweaks to its scissor stack design which are said to noticeably improve its rigidity. As part of these changes the company is changing its cumbersome nomenclature system for the new models, in essence this means that the SJIII prefix goes, so for example the SJIII3219 becomes the SJ3219. The largest in this new generation of DC electric scissors is the 39ft SJ4740 unveiled at the ARA and shown at Bauma and Vertical Days with an overall width of 1.19 metres and a 350kg platform capacity, while weighing in at 2,900kg.

In other Skyjack scissor lift news the company has unveiled its all new large Rough Terrain scissor lift range, starting with the 53ft SJ9253. Available in the autumn it will replace Skyjack's highly popular 88 and 92 inch models and will include the 33ft SJ9233, 43ft SJ9243, 53ft SJ9253, and 63ft SJ9263 RT. The new design includes an updated drive train that makes it very easy to add an all electric or hybrid version in the future.

Automated scissor lifts

The company also demonstrated a remote self check concept for its DC scissor lifts, in which a team member in Australia, was able to use a mobile phone app to complete a full self check of a machines critical systems, along with physical function checks for drive, steer and lift. The concept of autonomous control could also allow an office based employee to unload a machine and drive it into its storage/recharging bay from his desk, or the reverse.



The largest new generation Skyjack DC electric scissor - the 39ft SJ4740.

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scissor lifts



Chief executive Brad Boehler said: "The concept allows our DC models to be controlled over the cellular network and perform a function check of its critical systems has generated a lot of interest, indicating that we are headed in the right direction when it comes to autonomy. The end goal is to not only increase productivity, but to contribute to a safer job site as well."

New name - Eastman

Another Chinese aerial lift manufacturer - Eastman Heavy Machinery - entered the European slab electric scissor market last year with the appointment of Dutch trading company Fontexx as its exclusive sales and support representative for Europe, excluding France and Turkey. Eastman offers a range of mast type self-propelled lifts and a full line of slab electric scissors. Founded in 2012 by Michael Zhou it is based in Kunshan, Jiangsu province.

Eastman's all electric E series mast booms includes two models - the eight foot E8 and 12ft E12 with working heights of 4.5 and 5.6 metres respectively and 227kg platform capacity. Overall length is 1.37 metres with an overall width of 760mm and overall stowed height of 1.9 metres. Overall weights are 730kg and 840kg. Both are also available with electric drive but hydraulic mast functions. The nine model ES scissor lift range runs from 19ft to 46ft with platform capacities from 230kg to 450kg and overall weights of 1,400kg to 3,200kg.

Italian flair

Two Italian companies - Airo and Imer - should not be forgotten. Imer has a good range of high quality slab electric scissors, its latest being the IM90 Series which includes the 21ft IM-6390, the 27ft IM-8290, the 33ft



Imer's latest IM90 series includes the 21ft IM-6390.

IM-10090, and the 39ft IM-12090 that replace the IT90 series. All models are lighter in weight, feature a new chassis, new steering, hydraulic systems and controls, a redesigned scissor stack for greater height and platform rigidity, new easier to fold down guardrails and maintenance free gel batteries as standard. The units are a little wider than the norm for this class of machine at 892mm.

The new machines maintain the direct electric wheel drive motors of the IT90 range along with the longer deck extensions of 1.3 metres, compared to the 900mm and one metre extensions that are typical for this size of lift, and yet still offer the full platform capacity - from 300kg to 400kg - on the deck extensions.

Airo is another slab scissor manufacturer that offers long extensions. Its 40ft narrow aisle X14 EN and 46ft X16 EW scissors both feature 1.5 metre platform extensions with full platform capacity and can be driven at full height. The new X14 EN has a working height of 14 metres, overall width of 890mm and overall length of 2.4 metres. Total weight is 3,600kg. The 46ft X16



Airo has 1.5 metre extensions on its scissors including the 40ft narrow aisle X14 EN and 46ft X16 EW

EW has very similar specifications and features but offers a 16 metre working height, 250kg capacity and an overall width of 1.2 metres. Total weight is the same at 3,600kg.

From the sublime to the ridiculous

At the other large end of the slab electric market Germany's PB Liftechnik has unveiled the world's highest electric powered scissor lift to date - the 117ft PB370 -24ES - with a 37.5 metre working height. This monster indoor only machine was built to satisfy a number of customer orders and tops Holland Lift's 33.7 metre HL-340 D30 - by almost four metres! It is however a beast, weighing in at a massive 34 tonnes, so certainly not one for suspended floors. It is also long at 8.74 metres, however four wheel steer and drive will help with manoeuvrability. The overall width of 2.4 metres is 580mm narrower than the Holland Lift, while its minimum closed height is only 3.03 metres as it has five scissor stacks rather than six on the Holland Lift thanks to longer scissor arms providing the additional height. The PB has a maximum platform

Another Chinese aerial lift manufacturer - Eastman Heavy Machinery - entered the European slab electric scissor market last year



capacity of 750kg and can drive at heights of up to 20 metres. However it will not tolerate slopes of more than one degree so built-in inboard levelling jacks will automatically level the machine on ground that is off level or uneven. The new platform has clearly been designed for installation, maintenance and cleaning work within high cube warehousing, although it might struggle to move down the narrow aisles.

How the new PB370-24ES stacks up

Make Model	PB Liftechnik PB370-24ES	Holland Lift HL-340 E30
Max working height	37.5m	33.7m
Lift capacity	750kg	1,000kg
Length	8.74m	7.02m
Width	2.4m	2.98m
Minimum height	3.21m/3.03m	3.63m/2.87m
Total weight	34 tonnes	34.85 tonnes electric
Max drive height	20m	Full height
Indoor/outdoor	Indoor	Indoor/outdoor
Drive/Steer	4x4x4	4x4x4

PB Liftechnik's 117ft PB370-24ES has a 37.5 metre working height



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Introducing an all-new Snorkel scissor lift with a revolutionary design. The **Snorkel S3019E** self-propelled electric scissor lift features a sunken scissor stack that stows entirely inside the chassis for a low step-in height. A low stowed height can pass through doorways without the need for folding guardrails. This zero-emission lift stacks the deck with all-electric two-wheel drive and electric steering that eliminate hydraulic hoses.



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