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The only way is up!

Over the past 12 months the market for self-propelled boom lifts has seen several major developments, mostly at the two extremes of the working height range. *Cranes & Access* reviews the latest model launches and looks at the alternatives to the new super booms.

Of all the recent developments in the self-propelled boom lift sector, the introduction of the two super booms - the 180ft platform height Genie SX-180 and the 185ft JLG 1850SJ - have of course captured most of the news headlines. The SX-180 was seen first as a prototype at Bauma 2013 with the final machine shipping earlier this year while JLG surprised many with the launch of its chart topping 1850SJ at Conexpo in March.

Both units share a similarly designed chassis with each of the four wheels on legs that extend to create a cruciform support base. The chassis design at first glance is close enough that Genie initially said that it would take legal advice on possible patent infringements by JLG, although the two machines are quite different in terms of the design detail. The general cruciform concept has also been around for decades, particularly on cranes. Once above the chassis the units are quite different and while the



JLG 1850SJ

machine height and maximum outreach are virtually identical, the working envelopes vary slightly with Genie having its unrestricted envelope with 340kg lift capacity compared to the JLG's 227kg and a restricted envelope with 454kg in the basket. The two tonne lighter Genie has the slightly better outreach up to 27 metres however the JLG has the better working height of 58.6 metre, compared to Genie's 56.9 metres. Despite the similarities, UK-based wholesale rental company Kardon Contracts has purchased a number of both machines stating that each is suited to different applications.

The main difference is of course



Genie SX-180



The Genie SX-180 chassis and jib rotation system



The SX-180 has a horizontal reach of 24.38m and weighs almost 25 tonnes



Several JLG 1850SJ booms working at the World Trade Centre in New York

the articulated jib. Genie chose to incorporate a unique jib rotation system in the SX-180, with the jib mounted on a small slew ring. While the production machine featured a smaller range of rotation than the prototype, it still covers 60 degrees - 30 degrees either side of

centre. The argument is that given the size, weight and height of the machine, increasing the envelope at the top of the boom would allow users to cover a much wider work area without the need to relocate the base machine, even though this can be done from the maximum

Genie SX-180 vs JLG 1850SJ

	JLG 1850SJ	Genie SX-180
Platform height	56.56m	54.86m
Platform capacity restricted	454kg	N/A
Platform capacity unrestricted	230kg	340kg
Horizontal outreach	24.38m	24.38m
Machine weight	27,184kg	24,948kg
Machine height	3.05m	3.05m
Machine length	19.45m	14.33m
Machine length stowed jib	14.57m	12.98m
Platform size	0.91 x 2.44m	0.91 x 2.44m
Tail swing	2.31m	1.14m
Vertical jib rotation	120 degrees	135 degrees
Horizontal jib rotation	None	60 degrees
Below ground reach	1.5m	0.61m
Jib length	3.96 - 6.1m	3.0m
Gradeability	40%	35%
Width frame extended	5.03m	5.03m
Drive speed max	4.5km/h	4.02km/h
Engine	Deutz 74.4kW	Deutz 55kW

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With a tight turning radius and Fast Mast[™] boom function, the Z-33/18 is well-suited to tasks on sensitive surfaces where space is restricted such as airports, shopping centres and theatres. Its key features also include the choice of non-marking solid rubber or non-marking multi-surface tyres, long working cycles due to low-consumption AC drive transmission, a great ground clearance and the ability to drive at maximum height.

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The SX-180 has a transport length of 12.98m

work height. JLG however decided to keep the top simple in terms of jib rotation, preferring to offer a telescopic jib. Its opinion on jib rotation is summarised in the following statement: "the severe torsional stresses imposed on the long boom sections by a long rotated jib are not sufficiently justified by the benefits". The fact the jib when extended is more than six metres might also be a factor. Both machines offer excellent reach from the top of the fully extended, fully elevated main boom - they just have very different working envelopes.

While the manufacturers, dealers and rental companies will argue the pros and cons, it is true that the two machines will be put to work on similar applications a great deal of the time and for which they are both equally suited. For most buyers the choice between the two will come down to the usual issues such as the deal itself, availability and of course which manufacturer or distributor you prefer... What is clear is that sales of both units are ramping up faster than many predicted, and hardly a week has gone by this summer when another 'first' was being announced - the first in the UK, in France,

in Switzerland, Austria, Sweden etc.... The big question is where do manufacturers go next?

Over 200ft?

Both Genie and JLG say that they could easily build a platform with working height of more than 200 or even 220ft, however the biggest challenge is retaining the ability to transport them relatively easily. The 180ft platforms are already sizeable and they are often rented out for short periods of time so the idea of having to strip them down and to use more than one truck as with crawler or Rough Terrain cranes, not to mention the possible need for a crane to help put them back together again, sort of defeats the purpose. On top of that the alternatives in the form of truck mounted lifts or possibly in the near future a larger (60 metre?) spider lift are likely to be as compact or even more compact than a self-propelled unit. On top of that the benefit of driving a machine from 200ft or more is questionable.

Truck mounted alternatives

It is interesting comparing the new super booms to truck mounted lifts of a similar working height. 58 metres working height is pretty much mid-range these days for a truck mounted lift and huge strides have been made in recent years

How a super boom compares with a truck mounted platform

	JLG 1850SJ	Bronto S 56 XR
Platform height	56.6m	56.0m
Max platform capacity	454kg	700kg
Horizontal outreach	24.4m	39.5m
Up-and-over reach	7m	15m
Machine weight	27,350kg	25,700kg
Main boom elevation	80 Degrees	84.5 degrees
Machine height	3.05m + flat-bed trailer	3.8m inclusive truck
Machine length stowed	14.57m	11.95m
Working length	6 - 8.3m	11.95m
Stowed width	2.49m	2.4m
Working width	5.03m	3.0/6.0 or 9.0m
Platform width	0.91m	1.05m
Platform length	2.44 m	2.4m (3.7m max)
Tail swing	2.31m	0 - no tailswing
Vertical jib rotation	120 degrees	180 degrees
Below ground reach	1.5m	9.5m
Approximate price	€330,000	€500,000



Genie ZX135-70



The truck mounted platform is a viable alternative to the super boom

in terms of making them more compact, while offering increased working envelopes. The largest truck mounts currently go almost twice as high as the self-propelled lifts to 112 metres - that's more than 350ft!

But staying with the 56/58 metre working heights that the new super booms offer, how do they stack up against a truck mounted lift of the same size?

The sales pitch of the super boom is that once on site the self-propelled lift is more compact and although it is narrower with its wheels retracted it is longer with the boom stowed and heavier. Take a look at our chart which compares the JLG 1850SJ with the Bronto S56 XR which have platform heights of 56.6 and 56 metres respectively.

The first stand out figure is the

purchase price - about €330,000 for the boom which then needs transport to move it to and from site for each contract, compared to the €500,000 for the truck mounted platform. If you were selling truck mounted lifts, you might argue that with the cost of a boom lift and a truck and trailer to move it, the overall cost is about the same. With the overall transport length of a self-propelled boom measuring 13 to 15 metres, the overall length of truck and trailer is going to be way more than the 12 metres of so for the truck mounted platform. However that is not the point, the base dimensions while working are usually more important. The booms have an overall height of 3.05 metres - significantly lower than the truck at 3.8 metres - which may be advantageous on site where the lift has to pass under overhead pipelines etc.. However in transport mode the boom sitting on a trailer has a similar height.

Platform capacity can be important and at 454kg the 1850SJ has more than enough for three people and tools however it cannot compare to the 700kg capacity of the Bronto. Nor can it compare with its horizontal reach - 24.4 metres compared to 39.5 metres - and its up and over reach seven metres on the JLG, compared to 15 metres on the Bronto. The JLG even weighs 1,650kg more, has a smaller platform, has a changing tailswing during operation to watch out for, and does not come close when looking at below ground reach. So why not use a truck mounted platform?

Price is certainly a consideration,



Genie's new Z33/18 articulated boom has an outreach of 5.57m

the truck mount with its built in transport, can travel to site without the extra cost and hassle of sizeable, external transport. Large truck mounts tend to be hired with their own operator, however given the size and working height of the super boom dedicated operators on site would probably also have to be used? On the other hand if you have a contractor or truck that can move the big boom, the €170k lower purchase price is significant, and in addition you don't have to worry about the strict road maintenance requirements involved with a truck mounted lift.

The main advantage of the super boom is mobility on site - the self-propelled lift can move with the boom elevated, without the operator needing to come down and stow the machine. However as the manufacturers and industry association IPAF have pointed out you do not simply pull the drive joystick of a super boom at full working height and move right along. The boom weighs about 27 tonnes so you had better be totally sure of the ground conditions because from that height your view will be somewhat compromised.

If the truck mount does need to relocate, it stows and then sets up more quickly these days with features such as auto-levelling, auto return to stow etc... Also careful initial placement and making use of its superior outreach and its greater working envelope might allow the truck mount to cover a wider area and may not therefore need to move at all for a particular shift, and is therefore not a problem.

The two types of lift are however quite different and much will depend on how long the work/contract takes to complete and the area the work is spread out over. For a short contract such as a day or two, the speed and cost of getting to site benefits the truck mount. If it is longer than that, then the self-propelled boom lift transport cost is offset by the fact that it is less expensive and simpler. However once you go up over 200ft - into the 70 metre bracket - things are likely to be quite different.

Gordon McGruer of Kardon Contracts points out how in his two decades in the access business he has been told several times that there was no demand for bigger self-propelled booms and yet every



Haulotte HT23RTJ



The 50m Bronto S 56 XR

time - at 80ft, 105ft, 130ft, 150ft and now 180ft - sales have, with one exception, always exceeded forecasts. His view is that the fact that 180ft machines are available will create new applications. He adds: "Also we will see a 200ft or higher machines, and when we do sales will outstrip expectations - the only provision being that it is practical and it can be transported relatively easily."

At the smaller end

At the other end of the height range, the other major recent development has seen Genie finally entering the European, low weight, 12 to 13.5 metre working height boom lift sector with its 33ft/12m articulated Z-33/18 which weighs 3,640kg. The sector was originally established by Niftylift more than 25 years ago, with the Height Rider boom lift. The very first models had their issues and were not an instant success. However company founder and designer Roger Bowden was quickly back at the drawing board and after taking on-board comments made at trade shows such as needing a telescopic boom and better traction the refined product began to take

off and soon became a highly popular machine in rental fleets in the UK and then the Benelux, Nordic regions, France and even North America.

The 30-38ft boom market

The articulated boom was made popular by Genie with the Z-30/20 and Z-45/22, but the Z-30 was no lightweight unit, weighing in at more than four tonnes in spite of an overall width of 1.8 metres and working height of just over 11 metres. The Nifty weighed just 2.5 tonnes and could be transported on a standard two axle equipment trailer or with a 3.5 tonne truck - still a requirement of many small rental companies.

The product was also designed with simplicity in mind, featuring direct hydraulic controls and a very basic layout which avoided fancy electronics, which in those days were notoriously unreliable on mobile applications. All these features made the machines reliable, resilient to rental damage and easy to repair. The Milton Keynes-based Niftylift gradually 'cleaned up' at the bottom end of the boom lift market with



Launched at Apex the 10m Z33/18 weighs 3,665kg



The Z33/18 measures 1.5m wide



Nifty HR12 weighs just 3,100kg

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booms

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growth only limited by production capacity.

Over the years the range was extended to include a narrow - 1.5 metre wide model - bi-energy versions and a 4x4 model, with greater ground clearance. The products' popularity has hardly been dented by new arrivals over the years, the most important of which was probably the UpRight AB38 - now the Snorkel A38N - although there were also models from Simon - acquired by Terex - JLG with a non telescopic 30ft direct electric drive unit, Matilsa, Airo and others.

So far no one has attempted to mirror the Nifty HR12. UpRight for example went with a direct electric drive chassis, which prevented the installation of what was referred to as a 'true bi-energy' option, that was highly popular at the time. The major manufacturers all appeared to ignore this market, probably due to the fact that it was not a mainstream product sector in North America. The reason for this was probably more related to the fact that none of the 'majors' offered such a product, and the fact that the need to weigh less than three



Nifty HR12 has 6.1m outreach

tonnes was not important. In spite of this Nifty has carved out a significant volume of business for the HR12 and the UpRight AB38N eventually built up a small but decent following. Genie Europe sales staff have requested something to compete in this sector for many years but no proposals ever made it through to the design approval stage, until now that is.

The new Genie Z-33/18 is closer to the AB38/A38N than the Niftylift, in that it has a low profile chassis and direct electric drive. Built in Europe and initially destined to be a CE only model, plans have changed and it will now be sold on a global basis. The key question is will it take business away from Niftylift? Time will tell on that front and it is entirely possible that Nifty might unveil a new HR12 anyway? In all likelihood Genie's entrance into the market is likely to expand the sector substantially, so while Niftylift's market share will probably fall, its sales volumes are likely to increase as more attention is directed at this lighter weight boom sector. (See Genie launch article on Page 51)

The Z-33/18 has an overall width of 1.5 metres, 5.57 metres of outreach, 4.28 metres up and over reach and a total weight of 3,665kg. Drive is AC direct electric, giving 30 percent gradeability and extended battery life. Platform capacity is 200kg although there is no platform

rotation option. The platform can descend to ground level with the riser fully elevated - a feature shared with the new Genie Z-62/40 - and dubbed 'Fast Mast' by the company. The unit has been designed for both indoor and outdoor maintenance applications with solid non-marking tyres as standard and a turf tyre option. The Z-33/18 should be available across Europe, the Middle East and Africa region now, with other parts of the world scheduled for the first quarter 2015.



Z-62/40.

Genie also launched its new articulated Z-62/40 this year, which replaces the current Z-60/34. Working height has increased from 20.39 metres to 20.87 metres with 1.42 metres more outreach (12.47m). Up and over clearance is now 8.13 metres with a maximum platform capacity of 227kg. The new boom lift has zero tail swing and has a below ground reach of up to 1.68 metres. All in it weighs 10,430kg and stows to 7.58 metres long for transport. The Z-62/40 boom lift has a 1.52 metres jib with 135 degree range of motion, 4-wheel drive and full-time active oscillating axles.



Snorkel A38E



Second new articulated boom from Genie was the Z-62/40 with almost 18.62 metre platform height and 12.42 metres of outreach



Manitou 260TJ launched at Apex



Manitou 280TJ

How the Genie Z-33/18 compares

	Genie Z-33/18	Nifty HR12N	Snorkel AB38N
Platform height	10m	10.2m	11.5m
Platform capacity	200kg	200kg	215kg
Outreach	5.57m	6.1m	6.1m
Drive speed	6.0km/h	3.4km/h	4.0km/h
Machine weight	3,665kg	3,100kg	3,770kg
Machine height	1.98m	1.90m	2.0m
Machine length stowed	4.17m	4.1m	4.04m
Machine width	1.5m	1.5m	1.5m
Gradeability	30%	25%	36%
Platform size	0.76 x 1.16m	0.65 x 1.1m	0.58 x 1.3m
Power	Battery electric	Battery, petrol, diesel, LPG bi-energy	Battery electric

Boom launches

The boom sector had several other launches earlier this year including the Manitou 260TJ - the non-telescopic jib version of its 280TJ - while Haulotte has launched its 68ft HT23RTJ on a global basis, having announced it in 2012 with CE production beginning on 2013.

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Manitou 280TJ



Nifty HR28 Hybrid



Skyjack SJ 51

capacity, 18 metres of outreach, a 2.2m long articulated jib and can reach full height in less than a minute. Meanwhile Niftylift began shipping its top of the line 86ft HR28 hybrid 4x4 this year. The unit can rightly claim to be the largest electric powered self-propelled boom lift on the market.

Given this unique characteristic, the new boom which offers a lighter weight, cleaner emissions, lower fuel consumption and compact dimension could take the manufacturer into a number of new fleets, further expanding its market coverage. While Nifty and Manitou are recent entries to the 80ft market sector, they are not the last. Skyjack will almost certainly unveil its first 80ft boom lift - the SJ 86T - at the ARA show in February. It is thought that two models will be launched - a telescopic boom with a platform height of 82 feet (25 metres) and a model with jib with a platform height of 86 feet

(26.21 metres). Each machine will have a dual capacity rating. Expect nothing radical in terms of technology - more a combination of class matching specifications with a number of improvements in a simple to maintain and operate package.

Electric future?

Getting back to those looking for electric powered self-propelled platforms, Turkish manufacturer ELS Makine launched the AE15, a 43ft articulated boom lift which obviously goes head to head with a fairly crowded market sector.

Meanwhile Dutch distributor and rental group Rival launched its own battery electric version of JLG's 26.3 metre working height 800AJ which was initially developed for airline KLM. Since the product has been announced, Rival has seen further demand and is now adding further units to its rental fleet. One question we might ask is "will electric powered 4x4 booms take over some the lower end of the market?" We have seen the growth in the 4X4 electric RT scissor market and with emission compliance and sophistication increasing, at the same time as battery technology and electrical systems improve, who knows?

Obviously development right across the size and power of the self-propelled boom sector is gaining momentum so watch this space!



Skyjack SJ 63AJ



Rival electric version of 25 metre JLG 800AJ



The articulated AE15 from ELS Makine



Skyjack will unveil its first 80ft boom - the SJ 86T - at the ARA show in February a larger version of this SJ 66T

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