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# Booming masts?

Since our last dedicated feature on mast booms two and half years ago, the concept, while still remaining a niche product has become much more popular - at least in some countries. While most of the major manufacturers such as JLG, Genie, Haulotte and Manitou have them in their ranges the product's market penetration varies enormously. In France they are almost as popular as electric scissor lifts, while in North America they are as rare as hen's teeth, in spite of the fact that the concept originated there. Cranes & Access looks at the players, developments and products in this interesting and growing sector.

Over the past few years there has been a surge in the growth of powered access particularly at the lower working height range - up to around 10 metres - driven by European working at height legislation, and the increasing move towards equipment rental, with rental companies investing heavily in the sector.

However most lifts under 10 metres - largely small scissor lifts, micro,

mini, push around etc - are designed to reach high points on a wall or for work directly overhead, although most do have some outreach over the front with their roll-out decks extensions. For those users looking for a compact platform with a little more outreach and not only over the front, but also over the side, a mast boom takes some beating. However more than 20 odd years since the first mast booms



*The Haulotte Star 10 is very popular thanks to a competitive price, strong specification, simple design and good reputation for reliability*



appeared in Europe, they are still viewed as a niche platform - an industrial end user tool - with few rental companies outside of France prepared to invest heavily in them. And yet they highly valued by those that understand how brilliant they can be for so many jobs - even in construction - especially when compared to a the limited reach of a scissor lift or bulkiness of a regular boom lift. This unsatisfied demand shows up in the used equipment market where mast booms are snapped up very rapidly and for good money. Clearly there is a wide appreciation for them, perhaps it is just the initial purchase price that is putting fleet buyers off?

## So what is a Mast Boom?

At this point we should clarify exactly what we mean by a mast boom? There is still some confusion, with people lumping any aerial lift with a mast type lift mechanism into the same category. A mast boom is a machine with a telescopic mast to provide height, slewing capability through at least 180 degrees and a jib or boom to obtain some decent outreach. Machines with a fixed mast and a fixed platform are not mast booms. These machines fit into the scissor lift category because their performance is identical to that of a scissor lift and simply use a different lift mechanism to reach a given height.

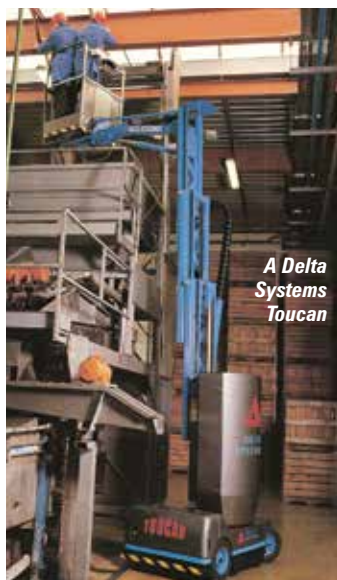
Mast booms, while they can be (and in France are) used for light construction duties were originally

designed for industrial, commercial and institutional type maintenance work. As such they are compact and look good enough to be stowed in the corner of a retail environment without looking too out of place.

## History lesson

As mentioned earlier the mast boom is most popular in Europe and in particular France - the only country where the mast boom is not considered a niche product, in fact one industry person we spoke with claimed that mast boom sales represent over 35 percent of the total electric powered aerial lift market. Users understand the product and what it can do and it is readily available to rent. However the original concept is not French but there is a large French connection.

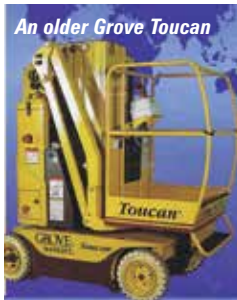
Like so many other forms of self-propelled access it originated in the USA by the highly innovative manufacturer Lift-A-Loft, which since 1991 has sold a large number of units to the US Postal Service and other major production facilities. A number of European distributors and rental companies did try them out, but found those early machines to be very expensive and unreliable. So only a few were sold even though they were perfect for certain applications. With clear demand existing for such a product, Alexis Biramian, a French/Armenian who had set up an access sales and rental business in the Lyon area,



A Delta Systems Toucan

decided to find a solution. He had returned to France from overseas where he had been working with the US air conditioning company Carrier, and had set up a rental company - ABM - after a short spelt with SGB France.

ABM - Biramian - keen to offer a locally built alternative to Lift-A-Loft, commissioned an engineering company near Bordeaux to provide detailed design drawings for a mast boom and build a prototype. The drawings were done largely by a young engineer by the name of Daniel Duclos. But then he and his investor decided - for whatever reason - to take over the designs and build the product themselves. He added some clever styling and a natty paint job and, called the company Delta Systems and named the resulting products the Delta Toucan 860 and



An older Grove Toucan

1100. While the Toucan found a small but steady market with end-users, rental companies ignored it, limiting the growth of the market and the young company.

So Duclos decided that if others

would not make them available for rent he would do it himself - at least in France. The mast boom rental business developed nicely and not only did the Delta rental business grow, but eventually other rental companies were forced to react as their customers demanded the Toucan and so they grudgingly started adding them to their fleets.

In the meantime Biramian had not been idle either, launching his own two model product range. The two battled it out, both offering their units for sale or rent. Haulotte then joined the fray with the 10 metre HM10, but as with many other producers over the years found it hard to make money from mast booms and pulled out of the market while it redesigned its product. This competitive market development is the main reason why mast booms are so widely used in France, and why, the country has often represented more than half the world sales for this type of lift.

Delta ran into financial difficulties in the late 1990's and was bought by Grove which added it to its Manlift operation. It kept the Toucan name for mast booms and continued to build then in the Delta plant. Duclos retained the rental business which became Access Industrie and grew into a major operation. Then in 2004 Grove, by then part of Manitowoc, decided to quit the access business and sold its Manlift operation to JLG. JLG had little interest in the continuing with the Grove Manlift booms, and was only mildly interested in the Liftlux scissor lift range, both of which were included in the deal. It was however much more interested the Manlift jewel in the crown - the Toucan operation - complete with its Tonneins production facility. The company became market leader overnight and continues to sell the product under the Toucan brand name, which is almost a generic name for mast booms.

In the United States Lift-A-Loft introduced a more stylised and series production version of its design, the AMT40, but the new

model failed to win over rental companies or the mass market and the USA remains resistant to the concept to this day, although Lift-A-Loft still builds mast booms for the Postal Service and other end users. With Genie now joining JLG on the American market, with a badged version of the Manitou VJR - perhaps this will change?

Over the years several other companies that have tried their hand at mast booms including Niftylift, CTE, Iteco and UpRight. They all struggled to make money at it with Niftylift pulling its Alley Cat product after having only shipped a few units. The CTE Dumbo, never really 'got off the ground' and UpRight - although it suspended production from time to time or just built them to order - persisted with its MB product range and has sold a good few over the years. Its MB20N was unusual in that it was designed to pass through a standard door while almost all other models are around a metre wide, and featured active



The UpRight MB20N was designed to pass through a standard doorway.

pot-hole protection. The MB product is now sold under the Snorkel brand and forms an important part of the company's range, albeit without the active the pot-hole system.

Haulotte moved back into the market with the Star 8 and Star



Niftylift briefly tried the market with its Alley Cat



JLG launched the 12.65 metre working height 12E Plus at Bauma

10 and along the way acquired ABM. The Star 10 has been highly successful and is well regarded even by those rental companies that do not typically buy Haulotte. Manitou had a similar lacklustre start in the mast boom market and followed Haulotte's lead by going back to the drawing board and replacing its original models with the lighter weight, more cost effective 80 and 100VJR Evolution. In 2010 Manitou entered into an OEM agreement with Genie to supply it with the GR20-J and GR26-J mast booms.

Moving back to Duclos, having missed the manufacturing business he helped form ATN in 2000, located close to the JLG plant in South West France. The company builds several mast boom models with working heights of eight, 10 metres and now the 11 metre Piaf 1100R. The range also includes models on rubber tracks with low point loadings for use on delicate floors.

So there are now four strong manufacturers in the business - JLG, Haulotte, Manitou and ATN - five if you count Genie. While JLG almost certainly remains the market leader - Haulotte and Manitou cannot be too far behind and ATN is making good progress chasing them.

### Latest models

Getting back to the here and now, JLG announced two all new mast booms earlier this year which it launched at Bauma - the Toucan 12E and the Toucan 12E Plus. With working heights of 11.83 metres and 12.65 metres respectively, the new models are the largest in

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Both Toucan models have a stowed height of just under two metre and are 1.2 metres wide



The 11 metre 1100R is based on the company's popular Piaf 1000R, but features slightly longer mast sections and a longer jib to achieve the greater height



ATN has recently moved to a new 10,000 square metre production plant in Fauillet

the JLG mast boom range which includes the 8.15 metre 8E launched in 2010 and the 10.10 metre 10E.

The 12E Plus is almost identical to the 12E but features a telescopic jib that offers additional outreach and therefore it weighs a little more. The 12E has an outreach of 5.1 metres and weighs 4,300kg, while the 12E Plus has an outreach of 6.05 metres and weighs 4,900kg and unusual for this type of product it has basket rotation. Both models have 200kg platform capacity, 345 degrees of slew, an overall stowed length of 3.65 metres, a stowed height of just under two metres and are 1.2 metres wide.

The new models include direct electric drive, with dual brushless

AC motors, which according to JLG give more precise speed control and help extend the life of the motors. Both models have 100mm of ground clearance but can move over thresholds, small inclines and ramps. Maximum break-over angle and gradeability for all Toucan models is 25 degrees.

#### ATN

French manufacturer ATN has steadily expanded its product range adding articulated booms and scissors, but is still best known for its mast booms. Its most recent introduction is the 11 metre Piaf 1100R, the highest of its four model mast boom range with heights from eight to 11 metres. The 1100R is based on the company's popular

Piaf 1000R, but features slightly longer mast sections and a longer jib to achieve the greater height. As well as providing more outreach, which at over 3.7 metres is around 700mm longer than most 10 metre machines. The 1100R has a two person platform capacity when working indoors but also has an outdoor rating with one person (120kg) for wind speeds up to 28 mph. Slew is 110 degrees either side of centre, and overall weight is a fairly hefty 3,200kg. Standard features include non-marking tyres and a 575 Ah, 24 volt battery pack with centralised top up system.

ATN is also the only manufacturer to offer a standard mast boom on tracks The Piaf 810 has been designed to operate both indoors and outdoors and has a maximum working height of 8.1 metres, with

an outreach of three metres. The tracks allow the unit to turn within its own length and weighing just 2,200kg it has by far the lowest ground bearing pressure of any mast boom, handy for surfaces such as marble and wood flooring. Drive speed is slower than the wheeled machines at 1.8 kph, but gradeability is better at 30 percent.

ATN began manufacturing next door to JLG in Tonneins, however with its recent move into scissor and articulated boom production, the company has moved to a new 10,000 square metre production plant in nearby Fauillet. The larger facility will not only add capacity, but also allows it to combine its commercial and production offices in the new building. They were previously located in different parts of Tonneins. The expansion follows

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ATN is also the only manufacturer to offer a standard mast boom on tracks

an investment in the company by Paris-based private equity firm Entrepreneur Venture.

ATN has been growing organically at a steady pace over the past few years, particularly since it began exporting its products which can now be found within the fleets of several international rental companies such as Loxam, Lavendon and Hertz.

ATN is also making progress further afield and recently sold its first machine to Hong Kong following the appointment of distributor Advanced Eco Engineering which sold its first unit, an 8.8 metre Piaf 880R mast boom to Chinese railway operator MTR.

**The new boy - Dingli**

Chinese aerial lift manufacturer Dingli is planning to launch its first mast boom, the AMWP81115, at the BICES show in China this month. With a working height of 11.5 metres - that's 31ft platform height - the AMWP81115 fits between the new ATN Piaf 1100R and the new



Chinese aerial lift manufacturer Dingli is to launch its first mast boom, the 11.5 metre AMWP81115 at the BICES show in China this month.



Snorkel has two models in its range - the eight metre MB20J and 10 metre MB26J (shown)

JLG 12E. It has a working outreach of three metres which is pretty standard for 10 metre models, but boasts a sector leading up and over height - the clearance under the jib with mast fully extended and jib horizontal - of just over eight metres. The six section box mast design is also seen on the Haulotte, Manitou and Snorkel machines, while the JLG Toucan and ATN models use the open fork-truck style mast, which is also found on ... Lift-A-Loft machines.

The new Dingli is also only the

second mast boom ever to be fitted with active pot-hole protection, which provides increased ground clearance when stowed. Most manufacturers use a passive system which incorporates low hanging steel blocks on each side of the wheel. Other than this Dingli has taken a fairly traditional approach, while some might claim that it looks like the Haulotte Star 10, the detailed design differs in many respects as does the specification. And to be fair it is hard to make a mast boom look radically different.

**How the new 11/12 metre working height models compare**

	JLG Toucan 12E	Dingli AMWP81115	ATN 1100R
Working height	11.83m	11.5m	10.98m
Weight	4,300kg	2,850kg	3,200kg
Length	3.65m	2.56m	3.05m
Width	1.2m	1.0m	1.03m
Basket cap max	200kg	200kg	200kg
Outreach	5.1m	3.0m	3.7m
Height	1.99m	1.97m	2.14m
Slew	345°	360°	220°
Travel speed	6.0 km/hr	4.5 km/hr	4.8 km/hr
Mast height	7.2m	8.0 m	7.33m

In terms of dimensions the Dingli has an overall width of one metre, the same as most sub 12 metre models - with an overall length of 2.56 metres and an overall stowed height of 1.97 metres - both slightly more compact than the Star 10 and quite a bit more compact than the ATN1100R. Gross weight is 2,850kg - around 120kg heavier than the Star 10 but lighter than the Piaf 1100R - although it is not clear if this includes the optional overload cut-out system, a legal requirement in Europe.

The lift also offers a full 360 degrees of slew and features direct electric



Haulotte's 10.2 metre Star 10 is by far and away its most popular model

drive, over-centre steering for a tight turning radius and has an outdoor CE certification with a single person in the platform, two men and 200kg indoors.

**Snorkel**

Another mast boom manufacturer with eyes on the Far East is Snorkel. The company has two models in its range - the eight metre MB20J and 10 metre MB26J and has recently delivered MB20J units in India and MB26Js in Japan. The Snorkel MB20J (previously the UpRight MB20N) is specifically designed for narrower spaces and to pass through standard single doorways at 810mm wide and under two metres high, making it ideal for retail or office applications. Outreach is 2.6 metres, but up and over reach is around five metres. The MB20J and 26J have a platform capacity of 215kg indoors - two people and tools - or one person with tools when working outside. The larger MB26J has a maximum platform height of 7.8 metres and is a more typical one metre wide.

**Haulotte**

Haulotte has a four lifts that utilise a mast type lift mechanism, with

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Genie has two models - the GR20J and the GR26J - built by Manitou and based on its eight and 10 metre VJR models

working heights from six to 10.2 metres but only two of them - the Star 8 and Star 10 have jibs and qualify as mast booms. The company's 10.2 metre Star 10 is by far and away its most popular model, and offers three metres of outreach at a mast height of around 7.3 metres, while the overall weight is just 2,735kg. Both Haulotte machines have three degree slope sensors and 23 percent gradeability. The Star 10 is very popular thanks to a competitive price, strong specification, simple design and good reputation for reliability.

**Genie**

Genie has two models - the GR20J and the GR26J - built by Manitou and based on its eight and 10 metre VJR models. Slew is 350 degrees and platform capacity is the industry standard 200kg. Earlier this year the company launched the Ansi versions of the two models in order to try and break into the North American market.

**Alternatives to mast booms?**

So what if you are an end-user looking for a work platform with a working height of around 12 metres - what are the alternatives? Well as usual, it all depends on what you want it for. Do you need out-reach or up and over capability, how tight is the space where you need to work? Are there any floor loading restrictions etc.... If no outreach is required then any small narrow electric scissor would be the most cost effective choice.

However should you want to reach over obstacles then the scissor - with only its front mounted roll-out platform extension for overreach - is usually a non-starter. One platform that has been very popular in many countries for many years is the Niftylift HR12 available in narrow, two and four wheel drive versions. For a comparison we have chosen the narrow version, which at 1.5 metres wide is more compact than the other versions but is heavier at

**Platform alternatives with 12 metre working height**

	Niftylift HR12N	JLG 12E Plus	Genie 34/22N	Genie 3232
Type	Artic Boom	Mast Boom	Ind Artic boom	Scissor lift
Work height	12.2m	12.65m	12.52m	11.75m
Weight	3,100kg	4,900kg	5,171kg	2,352kg
Length	4.1m	3.65m	5.72m	2.44m
Width	1.5m	1.2m	1.47m	0.81
Platform cap	200kg	200kg	227kg	227kg
Outreach	6.1m	6.05m	7.28m	1.5m (f)
O/A Height	1.9m	1.99m	2.0m	2.39m

(f) = front only



3,100kg. It features a comparatively long single riser or lower boom for vertical lift topped by a telescopic boom. A working height of 12 metres is at the top end of the mast boom range so we have chosen JLG's latest model the 12E Plus which also has a very good outreach thanks to its telescopic jib.

Another alternative is the industrial articulated boom lift such as the Genie 34/22N or Imer IT100E, which has a similar looking base to a mast boom but has an articulated sigma type dual riser for vertical elevation, rather than a telescopic mast. For its weight, the HR12 performs very well with 6.1 metres of



Two Manitou mast booms help with the erection of a steel roof

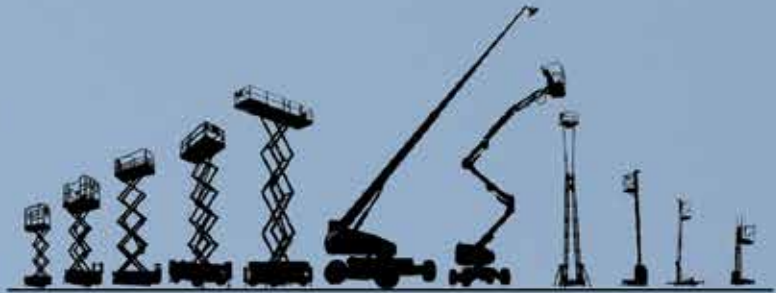
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### An eight metre mast boom compared to a vertical mast and scissor lift

	The Mast boom Manitou 80VR	The mast lift Skyjack SJ16	The scissor lift Genie GS-1930
Working height	7.7 m	6.7m	7.8m
Outreach	3.25m	0.95m	1.41m
Capacity	200kg	227kg	227kg -113kg on extension
Stowed length	2.95m	1.37m	1.83m
O/A Width	990mm	760mm	760mm
Height	1.99m	1.76m	2.0m
Weight	2,250kg	966kg	1,498kg



Skyjack  
SJ16



Manitou  
80VR.



Genie GS 1930

outreach and 200kg platform capacity. For a similar outreach and capacity the JLG 12E Plus weighs in at nearly five tonnes, however it is shorter and narrower than the HR12 and in confined working environments this may well be the difference between completing the job or not. The Genie 34/22N is interesting in that it is the heaviest, and by far the longest but also has the best outreach at 7.28 metres and a slightly better platform capacity at 227kg. We also tossed in a narrow scissor lift for the sake of the comparison, in this case the Genie GS3232.

At 12 metres working height there are several choices of platform type that can work with varying levels of outreach. However the problem gets more acute if you are looking for an aerial lift with outreach in the eight metre range. At this height there are very few alternatives to a scissor

lift. Although in many applications you can of course simply use a 12 metre machine, as long as you have the space and the budget.

While the mast boom concept continues to expand slowly but steadily in many parts of Europe, the USA is still a market that is stubbornly resistant to the concept. JLG has failed to make much of an impression, as did Grove before it, but perhaps with Genie and Haulotte joining the effort it may change? With the staged acquisition of Snorkel by Las Vegas based Don Ahern/ Xtreme Manufacturing there is a chance, however slight, that there may also be more interest in the Snorkel mast boom products in North America.

A wide range of mast boom variations have been produced over the years however the 10 metre working height unit with a one metre overall width remains the single biggest seller by far -



Manitou 100VJR.



*The JLG Toucan 12E Plus is able to work both indoors and outdoors*

whether the recent 11 and 12 metre introductions will be as popular remains to be seen. The ATN and Dingli are stretched 10 metre models, and so may well persuade buyers to trade up from 10 metre models. That is especially true of the Dingli, which is no wider, longer or heavier than most 10 metre models. The JLG 12Es are a different beast though, they are a little wider, and quite a bit heavier, however they do offer a good deal more performance, especially the 12E Plus. It is also more likely to take business away from the industrial boom lifts - such as the Genie 34/22N - than other mast booms, thus increasing the popularity of the mast boom sector.

Most manufacturers today are focussing their efforts on eight and 10 or 11 metre units, and having seen a range of alternatives come and go this is not likely to change. Whether you choose a mast boom or one of the many alternatives will probably boil down to what your local dealer or rental company stocks and the price rather than specification. If you haven't tried a mast boom yet, give it a thought

next time you need to work at height, having tried them many people stick with them. And if you are a rental company check out the returns and think differentiation.



*Mast booms have become much more popular in recent years*

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