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A Toucan mast boom



An early TM11 mast lift from UpRight



A current Snorkel TM12

MAST BOOM OR MAST LIFT?

Whenever the subject of mast booms comes up in a survey, a good few companies - both end users and rental companies - tend to mix up or become confused over the difference between a self-propelled mast lift - which does exactly the same job as a micro scissor lift - and a mast boom which has all the functions of the smaller industrial articulated booms. In the following feature we hope to explain the differences as well as update on what is available along with a look at the latest new product introductions.

The mast lift originated in Japan in the late 1970s or early 1980s with companies such as Tadano and Aichi. They offered working heights of around 5.5 metres, smaller than most scissors lifts available at the time. UpRight also introduced a similar machine around this time called the TM11, but it appears to have been a commercial flop.

The sector only began to take off in the early 1990s when Japanese rental company Tokyo Rentals, having become a regular UpRight customer, asked the manufacturer to build a lift similar to the Tadano and Aichi machines. It produced the 12ft TM12, which was not exactly the same - so it had to re-engineer the product for Tokyo and then decided to commercialise it. After a slow start it really took off in of all places Sweden, and since then most other manufacturers - Haulotte, Skyjack, JLG and now most Chinese producers - all produce them. The TM12 is still made but is now the Snorkel TM12 with new technology, but pretty much the same structure.

In recent years 16ft and 20ft models with working heights of almost eight metres have appeared. The advantage of a mast lift is that while they do the same job as a small scissor lift, they tend to be shorter and lighter, while offering a lower step in height.

The mast boom on the hand, while featuring a mast for the elevating mechanism with working

heights of between 7.5 and 11 metres on the more popular models, also includes up to 360 degrees of slew and a jib or boom of a fixed length offering between 2.5 and 3.5 metres of outreach. Larger models - with working heights more than 12 metres - employ telescopic jib/booms for more outreach.

While the mast lift is an alternative to small scissors, the mast boom competes with the industrial narrow aisle, zero swing telescopic articulated booms with short dual risers and telescopic boom. These units - which start with working heights of around 11 to 12.5 metres - are however wider, longer and significantly heavier to provide more outreach, usually around six to seven metres and sometimes with higher platform capacity. They are of course also more expensive.

The most popular mast booms by far are those offering a 10 metre working height, such as the Haulotte Star 10 and JLG Toucan 10E and 10L, along with relative newcomer Dingli and its 11 metre - not so catchily named - AMWP11.5-8200AC.

All the models in this range, tend to have an overall width of just under a metre, three to 3.5 metres of outreach, 180 to 240 degrees of slew and an overall weight of between two and three tonnes. This specification accounts for the vast majority of all sales. Anything too different and its unlikely to sell in volume - this is a well established market sector.



The 20ft Skyjack SJ20 E mast lift



The 10 metre working height Haulotte Star 10 mast boom

A BIT OF HISTORY...

In the C&A 25.8 issue last year we covered the history of the mast boom in great detail. Rather than repeating, here is a potted version ...

The mast boom emerged in the early 1990s with limited numbers produced in the USA by Lift A Loft for big manufacturing companies such as Ford and Caterpillar. French startup company Delta Systems produced a more commercial product which they called the Toucan. In the early years sales were mostly to large end users as rental companies typically said "there is no market for the machine, we never get asked for it, and it has limited application." As end user sales - almost all in France - peaked and smaller end users said they would rent but not buy, Delta decided to start offering them for rent, building its own rental fleet. As more machines began to appear, rental companies realised they were missing out, and began adding them to their fleets - the more machines in use, the greater the demand - to the point where other manufacturers started taking the market seriously, especially in France.



A current Lift A Loft AMR40 series mast boom

In 1995 Grove/Manlift acquired Delta including its Toucan product line and manufacturing plant while the rental fleet was retained by Delta co-owner Daniel Duclos. After completing a pre agreed transition period, the rental fleet became Access Industrie - but that is another story. Other manufacturers soon joined the market, in particular Haulotte. In those days the mast



Dingli's 11 metre AMWP11.5-8200AC

boom was very much a French product, and the majority of machines are still built in France by JLG - which acquired the Toucan business from Grove in 2004 - Haulotte and Manitou. There are currently around 15 mainstream manufacturers offering almost 30 different models. In recent years Chinese manufacturers - and in particular Dingli which has been producing mast booms for almost 15 years - have successfully captured a sizeable proportion of the market. This has been achieved through building machines with a little more reach and similar specification that are readily available - including spare parts - and have competitive pricing.

MORE RECENT ADDITIONS

In terms of market size and numbers, the mast boom cannot compare with small scissor or mast lifts or even, perhaps the most popular articulated boom lifts, so it is surprising to see so many manufacturers offering machines. What is even more surprising is that manufacturers are still entering the sector, for example Platform Basket which launched its tracked Heron 10 around 18 months ago. Since then it has added a second, simpler version for the more mainstream market. Another is California based MEC Aerial Work Platforms with its 11.2 metre MME30-RJ featuring direct wheel motor AC electric drive - although to be fair MEC is part owned by Dingli and the MEC unit is based on the Dingli model.



MEC entered the market with its 11.2 metre MME30-RJ

Other internationally orientated Chinese manufacturers such as Sinoboom and LGMG also offer 10 metre mast booms, while a more recent Chinese addition is the Reeslift AMWP11.2-8100 - which is very similar to Dingli's AMWP11.5-8200AC.

Reeslift was founded in 2015 in the Feicheng Bianyuan Economic Area of Shandong, about half way between Beijing and Shanghai. The company mainly manufactures low level access equipment including mast type lifts, slab electric scissor lifts, push around and portable lifts along with material lifts, and now mast booms. It claims to produce around 5,000 units a year, most of which are exported.

The AMWP11.2-8100 has a maximum working height of 11.2 metres and maximum outreach of three metres at an up & over height of 7.8 metres. The lift mechanism uses a six section steel box type mast topped by a jib with 130 degrees of articulation. Maximum platform capacity is 200kg



The Reeslift AMWP11.2-8100

and it has 345 degrees of slew. When stowed the machine has a length of 2.53 metres, a width of one metre and height of just less than two metres. Overall weight is 2,950kg. Features include automatic pothole protection, AC direct wheel drive and hydraulic pump motors and it can drive at full height. Standard equipment includes non-marking tyres, a load sensing system and drive enabled safety switch, while the basic hydraulic system is already prepared for explosion proofing.

The Reeslift is extremely similar to the 11.2 metre Dingli AMWP11.5-8200AC, in terms of working height, outreach and platform capacity, as well as almost identical physical dimensions although the overall weight is just 20kg different. The Dingli does have a slightly larger platform at 690mm by 930mm resulting in it being slightly longer at 2.62 metres when stowed.

DINGLI MAST BOOM

The AMWP11.5-8200AC is a relatively recent upgrade to the AMWP11.5-8100 which was first shipped in 2014. The newer mast boom appears the same structurally but is 100mm shorter when stowed. The key differences include fully sealed AC electric motor wheel drive compared to the DC drive on the old machine. It also features maintenance free batteries. Other changes include a slightly larger platform at 690mm x 930mm compared to 620mm x 870mm, a full height entry gate for easier entry into the platform, faster lift and lower speeds - for example, 42 seconds up



Dingli upgraded its AMWP11.5-8100 with a larger platform and faster lift and lower speeds

and 38 seconds down compared to 70 and 60 seconds on the old model. The forklift loading pockets have also been changed to dedicated brackets on the top of the chassis, rather than simply placing the forks underneath, allowing dramatically improved/safer fork lifting. This is a problem for all top heavy mast boom machines.

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MAST BOOMS/LIFTS

On both machines the additional mast section gives the additional working height of 1.2 metres and also takes the overall weight up to just under three tonnes, which may be a factor to consider when specifying. Machines such as the Haulotte Star 10 or Manitou 100 VJR for example weigh 2,650kg and are slightly narrower.

LARGER MAST BOOMS

Dingli however does not offer a smaller 10 metre mast boom but has two 12.4 metre machines in its range with platform capacities of 200kg or 250kg. These are totally different machines and the additional 1.2 metre working height and an outreach of 5.5 metres at an up and over height of seven metres pushes the overall weight up by about two tonnes to just under five tonnes - closer to the small industrial boom lifts.



Adding 1.2 metre working height and an outreach of 5.5 metres on Dingli's AMWP13-9100 pushes the overall weight to just under five tonnes



Chinese manufacturer Mantall's 12 metre, 200kg, six metre reach Imp 120J weighs 4.8 tonnes

Physically both are much larger with the 250kg capacity AMWP13-9100 having an overall length of 3.82 metres and a width of 1.5 metres although the overall height remains about the same at 1.99 metres. The platform is also much larger at 750mm x 1.5 metres. The 200kg capacity AMWP13-9200 is 300mm narrower at 1.2 metres, has a smaller 690mm x 920mm platform and is 50kg lighter.

MEC ENTERS THE MARKET

Following the trend for 11 metre mast booms MEC Aerial Work Platforms launched its first - an 11.2 metre MME30-RJ with direct wheel motor AC electric drive - in mid-2023.

As mentioned above it is essentially a MEC version of Dingli's AMWP11.5-8100, and features both indoor and outdoor ratings, although the outdoor working height is limited to 10.2 metres. Outreach is 2.6 metres at an up & over height of 7.6 metres, maximum capacity is 227kg. The overall width is one metre, and overall weight

is just under three tonnes. The unit has a larger platform than is typical on this type of machine at 760mm x 1.08 metres. AGM maintenance free batteries are standard as research carried out by MEC indicated that maintaining lead acid batteries was the most detrimental aspect of owning this type of machine, and combined with AC motors the machine offers high work cycles between recharges.

FIRST FOR PLATFORM BASKET

A month later Italian manufacturer Platform Basket entered the market with its more traditional 9.6 metre working height Heron 10. However, the machine was mounted on a rubber tracked chassis and featured inboard mounted jacks to level the machine on slopes up to 10 degrees laterally and longitudinally. On level ground and up to three degrees, the machine can be used with the outriggers retracted. The mast is a five section forklift type open frame design, not unlike the Toucan, topped by an articulating jib with up to 3.4 metres of outreach at an up & over height of just over six metres. It also offers 360 degrees of slew, with a two person indoor and one person outdoor rating.



Platform Basket's 9.6 metre tracked Heron 10

Size wise it has an overall width of 1.2 metres, an overall stowed length of 3.25 metres and is 1.99 metres high. One major deviation is that a diesel power version is available - unheard of on mast booms - although the lithium ion battery pack version is likely to be the better seller of the two. Total weights are 2,750kg for the diesel and 2,800kg for the electric version, while remote controls are standard. The mast boom can also be ordered with a jib mounted hoist/winch with 35 metres of wire rope storage that replaces the platform, creating a compact remote controlled mini crane with a maximum lift capacity of 250kg.



The Heron 10 features inboard mounted jacks to level the machine on slopes up to 10 degrees

For those wanting a simpler lower cost option, Platform Basket launched a version at last year's Intermat in Paris that did without the levelling jacks, the quick release platform and the ability to convert into a small crane.

CRAWLERS OR WHEELS?

While the market for mast booms is growing, tracked versions are far less popular although there is a growing acceptance of rubber tracked machines for indoor applications on sensitive floor surfaces. The first units were the brainchild of industry pioneer Daniel Duclos - the Elon Musk of the mast boom market? After selling the Toucan to Grove and itching to get back in the market, he needed a product that did not compete with the Toucan, thus ATN and the tracked models.



ATN produced tracked mast booms until it entered administration in early 2022

Until Platform Basket came along there was a void in this sector, after French manufacturer ATN entered administration in early 2022. While it was subsequently purchased by Manitou later that year, the company which already has a line of mast booms has not added the ATN tracked models into its product range which currently consists of the 7.65 metre 80 VJR and 9.9 metre 100 VJR.



The largest Manitou mast boom - the 9.9 metre 100 VJR

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Haulotte's 20ft Star 8S

MAST LIFTS

As mentioned earlier, in terminology terms mast lifts can be confused with mast booms. Most mast lifts offer working heights of just under six metres. However, in recent years, several manufacturers have extended their 12ft mast type self-propelled ranges - such as the Skyjack SJ12, Snorkel TM12E, Genie GRC-12 and Haulotte Star 6 etc - with higher versions. Haulotte led the way several years ago with its 20ft Star 8S offering an eight metre working height. It is fair to say that it has not been a runaway success. A little more recently Skyjack developed the 16ft SJ16 offering a working height of 6.8 metres and Snorkel followed with its TM16E.

Haulotte has also introduced a tracked mast lift, the Star 6 Crawler with features including zero turning radius and a 400mm platform extension. With a six metre working height it adds potentially new applications to this type of lift. Dedicated fork lift pockets make it easy to load and move the lift, while the machine has direct electric drive with brushless AC motors and Activ'Screen onboard diagnostics.

As with any mast lift, the platform extension is the only way of gaining outreach and is limited to around 500mm.

Skyjack also went larger, adding its biggest mast lift, the 20ft SJ20, in 2021. Initially for the



The Star 6 Crawler with features including zero turning radius and a 400mm platform extension

North American market it has now launched a CE version, the SJ20E, which offers a 7.95 metre working height with 159kg platform capacity, direct electric wheel motor drive and an optional outdoor rating for one person up to just under four metres. The machine also has a five section mast extended by a single multi-stage hydraulic cylinder, so no chains or sequencing straps. The platform includes a traversing deck with up to 410mm of overreach. The optional outdoor rating is one person up to a working height of just six metres/13.2ft platform height. Overall weight is 1,170kg.



The SJ20 has a 410mm traverse deck

OTHER MAST LIFTS

Dingli has five self-propelled mast lifts including three with five section masts, the 6.7 metre AMWP7-8100L and 7.6 metre AMWP8-8100L with 500mm deck extensions, platform capacities of 200kg and 227kg and overall weights of 990kg and 1,380kg respectively and the unusual 5.6 metre oil free, dual platform AMWP8-3100 with a combined 272kg platform capacity.

The 9.5 metre Dingli AMWP9.5-1200 features a six section aluminium forklift type mast



The other two Dingli mast lifts - the AMWP8-1200 and AMWP9.5-1200 - feature six section aluminium forklift type masts - so really fit into a different industrial type category. They offer working heights 8.0 and 9.5 metres, with capacities of 159kg and 136kg respectively.

Sinoboom also has a 16ft mast lift - the VM05EL or VM16EL in North America - with a 6.9 metre



Sinoboom has the 6.9 metre, 500mm deck extension, 970kg VM05EL

working height, 500mm deck extension, 227kg platform capacity and overall weight of 970kg. The lift is 780mm wide, just under two metres high when stowed and 1.38 metres long.

18FT JLG MAST LIFTS

In one of the more recent introductions - just over a year ago - JLG launched two new 18ft self-propelled mast type lifts in North America. The E18MCL was aimed at the construction market and has a 13ft outdoor rating, whereas the indoor only E18MML is intended for general maintenance and cleaning work. The lifts are available with JLG's stock picker package for warehouse and distribution centre applications.



The 7.5 metre working height JLG E18MCL

Both models have a 7.5 metre working height with 200kg platform capacity. However, the outdoor rating on the MCL limits the working height when outside to six metres. Overall weight is 862kg for both versions. The E18MCL has regular scissor lift type steering while the E18MML is equipped with drive wheels at the rear and castor wheels on the front, combined with JLG's 'Point & Go' wheelchair type steering control.

FINAL THOUGHTS

Although both the mast boom and mast lift have similar lift mechanisms, they are totally different beasts. Mast booms offer greater working heights and decent outreach at good up and over heights to reach over obstacles such as machine tools or parts bins etc. However, they are substantially larger and heavier than mast lifts, which are simply an alternative to micro scissors.

Why not install a jib on a mast lift... well it has been done before. Delta offered the Pelican - essentially a non-slewing mast boom - as did a company that worked on the development of a European mast boom with Duclos - ABM - which also offered a sort of slewing mast lift, with the deck extension providing the over the side outreach instead of a jib. (ABM was acquired by Haulotte in 2001). Neither product found favour with buyers - "what's the point" was what most potential customers thought.

When it comes to the powered access market in general, there is a lift for almost every application - it is just a matter of choosing the right lift for the job. ■

An early brochure showing the ABM Orion mast boom

