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Still growing in popularity...

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telehandlers

The telehandler is now a hugely popular and essential material handling machine for the construction and agricultural industries in many parts of the world with sales having grown to around 70,000 units a year. We take a look at some of the history surrounding the 'telescopic handler/variable reach forklift' and check out some of the latest developments and products on the market.

Establishing the exact date when 'the first' of any new machine type came into existence is tricky, often with several companies claiming to have been the first. This is the case with the telehandler which in previous features in *Cranes & Access* we have suggested may have originated in the late 1970s, probably originally pioneered by UK company Matbro. Since then many other manufacturers have entered the market of course which is now dominated by JCB and Manitou and in North America by JLG.

Pettibone father of them all?

However, one American company - Pettibone - recently celebrated the 50th anniversary of its first telehandler - the Model 88 Extendo - which it believes was the first telescopic handler ever produced. There is no question that the company's earlier products such as Pettibone Carry-Lift was the forerunner of the modern telehandler - in that it offered variable forward reach - the concept dates back as far as the 1940s. The first Extendo

as apparently developed in the late 1960s and with the first production units delivered in early 1970 as documented by the original 24th March bill of sale. The original Model 88s were manufactured at Pettibone's old facility in Alabama until it closed in the 1980s, when production moved to its Michigan facility.

Founded in 1881 Pettibone produced the first forward reaching material handling machines in the 1940s and was once a big name in cab down Rough Terrain cranes as well as offering truck cranes. It had some success in Europe in the 1970s and 80s with its massive Carry-Lift loaders which could handle up to 27 tonnes. While not telescopic, the front end loader type lift arm pivot points could be moved forward to increase the reach and were particularly popular with logging and sawmill businesses.

Compared to today's telehandlers, the Pettibone Model 88 looks basic, but it was obviously sturdily built as machines from the early 1980s

Pettibone believes the Model 88 Extendo was the first telescopic handler ever produced.



are still being used and sold on used equipment sites. The Model 88 took the concept of the variable forward reach machine a major step forward with the introduction of a three section telescopic boom, mounted with a high pivot point above and to the rear of the engine compartment, which was directly behind the open operator's cab. The Model 88 had a maximum capacity of 3.6 tonnes (8,000lbs) and could lift to a height of 10.36 metres. When fully extended to its maximum of 5.18 metres of forward reach it could handle 2.27 tonnes (5,000lbs).

The first Extendo

However, that first Extendo had several other features which are still innovative.

The advertising slogan on its launch

said: "Why buy two machines when one can do the work of both". This referred to the fact that in just 30 minutes the machine could be converted to a crane and vice versa. It also had four wheel drive and four wheel steer and when using the fork attachment could place materials up to 600mm below ground level. A jib could also be attached to the forks, adding reach to handle lightweight suspended loads, such as roof trusses, wall panels or beams. Overall weight was around 10.5 tonnes and maximum travel speed 24mph. The Model 88 also had 'sway control' which allowed the operator to tilt the boom by up to 11 degrees either side of centre to compensate for uneven ground when placing a load onto scaffolding or building.

The 13 metre/four tonne Pettibone Traverse T944X slides the boom forward up to 1.78 metres when the machine is stationary



The image shows two Merlo telehandlers in a large, empty industrial warehouse. On the left is a green Merlo Panoramic 40.17 telehandler with a long boom extended high, carrying a load of wooden pallets. On the right is a green Merlo Roto 50.35 telehandler with a rotating turret, also with its boom extended. The background shows the high ceiling and structural beams of the warehouse.

PANORAMIC
40.17

ROTO
50.35

ALL NEW **CONSTRUCTION** **RANGE**

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The PANORAMIC and ROTO Range design has inspired the construction market over the years, and is now introducing a new generation of wider cabs, improved cab comfort levels and a multitude of new features. The ROTO range has changed the movement method for telehandlers by introducing the rotating turret system that can rotate 360 degrees without having to reposition the machine. Merlo have skilfully evolved during time with exclusive technological innovations and an unparalleled level of performance, safety and efficiency.



The 45.64 metre/six tonne 360 degree Magni RTH 6.46 SH

Skyjack machines are also gaining in popularity in North America



C&A

telehandlers

Current Extendo models include the 944X, 1246X and 1258X - part of Pettibone's Next Gen X-Series lineup - however its latest Extendo, the 1056X, is planned for a Conexpo launch. The X-Series also includes the company's Traverse mechanism, which claims to be the only telehandler left on the market with a sliding boom carriage, which allows the operator to move loads horizontally into a building without telescoping or elevating the boom or driving the machine forward. The concept was invented by Lull - now owned by JLG - with several Lull employees joining Pettibone and helping the company develop a similar concept without infringing the Lull patent.

JLG dropped the Lull product line at the end of 2014 in order to focus on the better selling SkyTrack and JLG models. The 13 metre/four tonne Pettibone Traverse T944X slides the boom forward up to 1.78 metres when the machine is stationary. Power is supplied by Cummins Tier IV Final diesels, while the cab includes a new analogue/LCD gauge cluster as standard with an optional seven inch digital display with integrated reversing camera.

The all steel fuel and hydraulic tanks are part of the machine's simple but rugged build.

Telehandler developments

Over the years the manufacturers have developed and refined the telehandler into three distinct product types or categories - Fixed boom or Rigid frame machines, 360 degree or roto models, and Heavy Duty or high capacity machines. Smallest of the fixed frame units are the compact models with the regular compact models having an overall height under two metres with an overall width of two metres or less, while the even smaller sub-compact models being no more than 1.6 metres high and wide. These units tend to have capacities up to two tonnes and lift heights of almost six metres. The larger fixed boom models now offer lift heights to almost 24 metres and five tonnes capacity, while the 360 degree roto type machines offer lift heights of up to 46 metres and six tonnes capacity. The Heavy duty models have lower lifting heights usually between eight and 11 metres, with the largest models lifting up to 50 tonnes. Specialist manufacturer Magni concentrates on the more

extreme, more niche products - mostly heavy duty and top end 360 degree machines - and has become a major player in these sectors in just a few years. In fact, the largest machines in the three categories are all produced by Magni - the 50 tonne heavy duty HTH 50.14 which can take 28 tonnes to 14 metres, the 45.64 metre/six tonne 360 degree RTH 6.46 SH and the 23.9 metre/five tonne fixed frame

TH 5.24. The company says that it has several new machines on the drawing board, including a new TH fixed frame models such as the six tonne/25 metre model and a new 13 tonner as well as adding Tier V engines.

The market leaders in Europe however are unquestionably Manitou and JCB with Merlo quite a way back in third place. In North America JLG/Skytrak dominates the market largely with its classic high boom North American models, although more buyers are taking European concept compact and heavy duty models. Last year JLG telehandlers were its star product in term of revenue growth, with new telehandler machine sales increasing by 33 percent to \$1.26 billion, a growing part of the \$4 billion business.

JLG to badge compact AUSA

The JLG telehandler range runs to eight fixed frame models, ranging from the compact 2.5 tonne/six metre G5-18A to the 17 metre/5.4 tonne 1255 and a high capacity 10 metre/7.6 tonne 1732 under the JLG brand plus SkyTrak machines ranging from the 11 metre/2.7 tonne 6036 to the 16.21 metre/4.5 tonne 10054.

However last month JLG signed a 10 year supply agreement with Spanish compact telehandler manufacturer AUSA to badge its compact T144H telehandler as the SkyTrak 3013. The 3013 has the same performance as the T144H with a four metre lift height, a maximum capacity of 1,350kg and is powered by a Kubota diesel matched to a standard hydrostatic transmission with a maximum travel speed of 20kph. The SkyTrak 3013 weighs 2,400 kg, allowing it to be

transported on a regular two axle equipment trailer behind a 4x4 vehicle. While it offers four wheel drive, steering is rear axle only. Capacity at maximum lift height is 770kg, while forward reach is just under 1.7 metres with up to 580kg. Overall width is 1.4 metres and overall height 1.96 metres.

The JLG badged telehandler will be built at AUSA's plant in Manresa near Barcelona, Spain. In 2019, AUSA had revenues of €86 million, 70 percent of it derived from exports. Over the last five years AUSA has invested €12 million in R&D, producing more efficient and safer models with significantly cleaner engines. It has also launched its first electric model. On paper this looks like a good move for JLG as the AUSA T144H is well proven, can be easily transported and its compact dimensions are ideal for older building refurbishment work and industrial applications. JLG has track record of successfully sourcing specialist products from smaller companies - such as its co-operation with Hinowa which dates back to October 2010 and is still going strong - and it should help expand the smaller end of the US telehandler market.

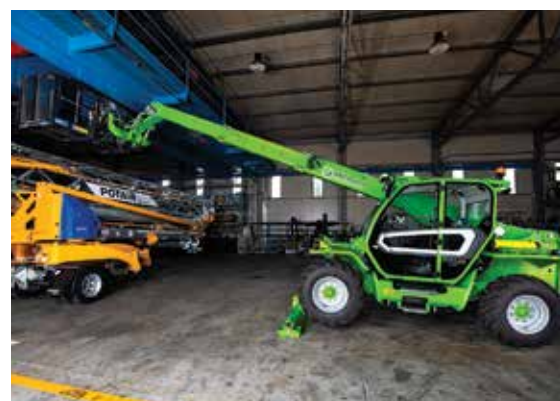
JCB ROTO?

JCB has been a major player in the telehandler market since its first 520 Loadall was introduced in 1977. The company is particularly strong in the UK where more than half its total production is sold, helped along by mega deals with the major rental companies, such as the 1,100 unit /£75 million deal with UK rental company Ardent last summer, its largest order ever.

Rumours that JCB was to enter the 360 degree telehandler were finally realised last summer when it unveiled its first model the 5.5 tonne/20.5 metre Hydralload 555-210R. It can take 2.5 tonnes to its full lift height or handle 850kg at



JLG has agreed a 10 year supply agreement with AUSA to badge its compact T144H telehandler as the SkyTrak 3013



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JCB's first 360 degree model is the 5.5 tonne/20.5 metre ROTO 5.5-2.1

its maximum 18.5 metres forward reach, while travelling with up to 4.5 tonnes.

JCB says it launched the machine because of the growing popularity of rotating telehandlers with heavier lift capacities in other parts of Europe. It is also hoping that the changing construction methods used with modular homes will create more UK demand. JCB has since renamed the model to the ROTO 5.5-2.1. The first machines are just coming off the production line so first deliveries should be this spring.

The ROTO features automatic one touch outrigger deployment, stowage and levelling and it can also be operated with the outriggers set up inboard - within the machine's overall width - or asymmetrically with each beam extended to fit the space available. Maximum road speed is 25mph/40kph.

The ROTO 5.5-2.1 is powered by a JCB Ecomax diesel and has a high degree of parts and service commonality with other JCB telehandlers. A low boom design is said to provide improved all round visibility, assisted by work light options and camera kits - including a boom head camera - making the placement of loads at full height easier. The JCB LiveLink telematics system is also fitted as standard.

A range of specially developed attachments using RFID technology can be identified by the machine which then automatically offers the correct load chart for that

attachment. Currently they include pallet forks, a 5.5 tonne carriage winch, a two tonne, two metre jib winch, a reduced height jib, 5.5 tonne hook, light duty buckets and a range of fork mounted accessories, such as waste and concrete placing skips. Remote lift end operation and aerial work platforms will also be offered later.

JCB's chief innovation and growth officer Tim Burnhope said: "Rotating telescopic handlers have become a genuine cost effective replacement for smaller mobile cranes, offering rapid set up and the ability to carry out technical lifting operations."

Going electric

In the past year or two there has been much talk about battery electric telehandlers among manufacturers. The pressure to develop such machines is coming from the increasing number of contractors seeking to lower their carbon footprint, while facing increased pressure from government to cut or even eliminate engine emissions and noise on prestigious city centre developments. Side benefits could also include drastically lower running and maintenance costs compared to diesel models. The downside though is the high purchase cost and questionable battery life, particularly on cycle work.

Last year Manitou launched a new 'green energy' initiative called Oxygen which aims to offer customers more sustainable solutions. Its new MRT 2550 hybrid Oxygen prototype shown at Bauma is capable of operating as a 100 percent battery electric machine, while having a Stage V diesel for longer shifts, and which can also be used to recharge the battery pack. Manitou has also been testing an all-electric MT 625 e Oxygen.



The Manitou MRT 2550 hybrid Oxygen can operate 100 percent battery electric while having a Stage V diesel for longer shifts.



Manitou has also been testing the all-electric MT 625 e Oxygen



Italian manufacturer Faresin unveiled its new 'production ready' All Electric 626 telehandler at Bauma

Faresin All Electric

Italian manufacturer Faresin unveiled its new 'production ready' All Electric 626 telehandler at Bauma. Based on the company's standard 626 machine with six metres lift height, 2,600kg capacity and maximum forward reach of 3.1 metres with 900kg, it shares most of its components and structure with the regular diesel model.

Power comes from a standard lithium 80 volt, 300Ah battery, while a larger 400Ah battery pack is also available. The standard battery is said to provide three hours continuous operation or six hours typical usage. Recharge time to 100 percent is two hours with a Fast charger or four hours with standard charger.

The optional 400Ah provides four hours continuous operation or eight hours of typical usage and takes five hours 20 minutes with the standard charger or two hours and 35 minutes with the Fast charge.

JCB electric Teletruck

JCB quietly launched its first electric model with a preview at Vertikal Days last year. The new C30-19e fits into its Teletruck industrial range and offers a four metre lift height with up to three tonnes capacity maximum forward reach is 2.5 metres with 1,600kg capacity, 111 degrees

of carriage tilt is standard. Designed for industrial type applications, the machine is two wheel drive with rear wheel steer. The battery pack is said to be good for a typical eight hour shift, while dual shifts can be accommodated by the easy change battery pack, which can be changed over in around two minutes. The batteries are recharged with a rapid GNB high-frequency charger. Measuring 4.1 metres long, 1.29 metres wide and 2.2 metres high it has a turning radius of five metres. The compact unit weighs 5,040kg and features a new JCB CommandPlus cab with more internal space and new seat design and single lever controls.

Merlo E-Worker

Merlo has been a major player in the telehandler market - and the 360 degree Roto machines in particular - since the 1990s. Last year it launched the all electric E-Worker compact telehandler.

JCB's new C30-19e Teletruck has a four metre lift height with up to three tonnes capacity





Maximum capacity of the Merlo E-Worker is 2.5 tonnes with a lift height of up to 4.8 metres



Inside the new Merlo E-Worker

Two E-Worker 25.5 models are available - a 44kW two wheel drive or four wheel drive with 66kW power pack. Maximum capacity is 2.5 tonnes with a lift height of up to 4.8 metres. Maximum forward reach is 2.6 metres with a 1,000kg load. Overall the machine weighs 4.5 tonnes, has an overall height of 1.95 metres, a width of 1.53 metres and is 3.28 metres long. The battery pack is enough for an eight hour work shift and is capable of powering the compact machine at maximum speeds of 22kph and gradients up to 40 percent. The machine should be available later this year.

New Panoramics and Rotos

Merlo unveiled its latest range of Panoramic and Roto machines in 2018, new Rotos offer capacities ranging from four to seven tonnes

and lift heights of between 15.8 and 34 metres. The entire range is equipped with a 170hp diesel matched to an electronically controlled hydrostatic transmission EPD - that lowers engine rpm when high power is not required.

Established over 30 years ago, the Panoramic range has evolved with the latest Modular machines. Features include a new high comfort cab and new axles. Lift capacities range from 3.5 to 12 tonnes and lift heights from 11 to 17.9 metres. This year the range will also be equipped with Tier V engines.

New 33 tonne Manitou

As well as its new 'green energy' Oxygen range, Manitou has launched several other new models including the heavy duty 33 tonne/12 metre MHT 12330 designed with an eye on the mining sector. It is second largest model in the Manitou range after the 35 tonne/14 metre MHT14350. The MHT 12330 has a maximum lift height of 11.92 metres and a forward reach of 6.6 metres. The unit is powered by a Deutz, Stage 5/Tier IV Final diesel coupled with a three speed hydrostatic transmission with four wheel drive.



The Manitou MXT 840 - one of two new models aimed at developing markets

The cab is equipped with Manitou's JSM (Joystick, Switch and Move) single joystick controller for all boom and hydraulic functions as well as drive. A four camera video system is mounted to the sides, front and rear of the machine, while operators can set restrictive zones for the boom height, outreach and hydraulic speed. A full telematics system also helps simplify machine management and is standard equipment. Overall width is 2.98 metres with an overall height of 3.6 metres and an overall length of 10.77 metres. Total weight is 49 tonnes. The first unit was sold to Stevenson Crane Service of Illinois.

Emerging market machines

Manitou has also unveiled two new telehandlers designed specifically to meet the requirements of developing



Manitou's heavy duty 33 tonne/12 metre MHT 12330 designed with an eye on the mining sector.



The Merlo P40.13 Plus



The Merlo 50.26 S.Plus Roto



The 3.2 tonne/seven metre HTL 3207 is Haulotte's most compact telehandler to date

3.9 metre turning circle and a generous 380mm ground clearance. The 95hp diesel is matched to a regular torque converter transmission. The new models will be manufactured at the company's facility in India and are expected to cost around 20 percent less than their western equivalents, with that gap possibly widening if production volumes exceed current forecasts. Product manager Kévin Arnou said: "Our ambition is to develop the telehandler market through models that are easy to use, robust and that have a total ownership cost suitable to the local users."

Compact Haulotte



The main control on the HTL 3207 is a simple joystick for one hand operation

Haulotte has a new 3.2 tonne/seven metre HTL 3207 telehandler - its most compact unit to date, which can take 2.5 tonnes to its maximum lift height of 6.85 metres or 1.3 tonnes to its maximum forward reach of 3.8 metres. Power comes from a Kohler Tier IV Final/Stage 3B diesel, matched

to a full hydrostatic transmission, offering a maximum road speed of 15mph/25kph.

The new model has an overall width of 2.26 metres, an overall height of 2.33 metres - allowing it to squeeze into and load and unload a standard sea container - and an overall length of 4.67 metres. The stabilisers fall within the machine's overall width when fully set, while its overall weight with forks is just over seven tonnes.

The cab is just under a metre wide, with a large glazed area for maximum visibility, a fully adjustable seat with shock absorbers and 4 in 1 joystick for single handed operation. The load moment indicator includes an automatic cut off when operating in a danger zone, with automatic reset in case of a malfunction.



The ETH 935 is ELS's first telehandler and has a maximum capacity of four tonnes and a 6.35 metre lift height

ELS enters market

The telehandler market is already bursting with manufacturers, but this has not stopped others from joining including Snorkel which is badging units built by Faresin and Turkish aerial lift manufacturer ELS working in partnership with Sanko Holding which builds the MST range of telehandlers. The ETH 935 is ELS's first telehandler and has a maximum capacity of four tonnes and can take three tonnes to a maximum height of 6.35 metres. Overall weight is 7.36 tonnes. Power is a Perkins Stage IIIA diesel.

Bobcat 'Waste Expert'

Bobcat has launched the 'Waste Expert' range of telehandlers for the refuse and recycling markets. Based on the TL43.80HF model Bobcat has started with four variants: the 6.4 metre/3,400kg TL34.65HF, two seven metre models - the 3,500kg TL35.70 and 3,800kg TL38.70HF - plus the 7.5 metre/4,300kg TL43.80HF, all powered by Stage IV diesels. All have variable transmissions with automatic parking brake and an ECO mode, which adjusts the High Flow hydraulic system to produce the best balance between performance and fuel consumption. The new machines feature an extra large boom nose, standard boom cushioning and equipment for working in harsh and tough conditions, with extra protection for hydraulic cylinders, windshield, roof, lights and the fuel and oil tanks.



Bobcat's 'Waste Expert' telehandlers is based on the TL43.80HF model

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