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A side-shift backhoe loader can dig along walls or structures.

BACKHOE LOADERS: CENTRE-MOUNT OR SIDE-SHIFT?

The debate over centre-mount versus side-shift backhoes is ongoing, with some in the industry preferring the superior lifting capacity of the former and others attracted to the greater lateral reach offered by the latter. This feature highlights the differences between the two, their applications, advantages and disadvantages, and sheds light on some of the models available in the market. *By Mark Botha.*

The primary difference between the centre-mount (or centre pivot) and side-shift backhoe, according to Mahindra South Africa CEO Rajesh Gupta, lies in the placement of the swing post.

"On a centre-mount backhoe, the swing post is mounted in the middle, at the centre of the H-frame while, on the side-shift version, the swing post can be moved to either side of centre, allowing the backhoe arm to move exactly as required by the operator.

He says the centre-mount backhoe is suited to "a very specific operation" where the work is clearly defined and the area is well controlled.

"The side-shift backhoe, by contrast, is the backhoe of choice if the environment is bound to change and where the work is more demanding. Think, for instance, of working on hilly ground or doing corner trenching, where there is some difficulty to manoeuvre."

Revaro Construction Operations manager Lourens Ackerman agrees, saying the

central position of the swing post on centre-mount backhoes is a fixed position from where the stabilisers swing out and down from the sides of the frame.

"A side-shift backhoe is designed with the backhoe's kingpost mounted on a carrier. This carrier can slide from one side to the other along a frame, with rails that include stabilisers mounted on both sides, which extend vertically."

He says the choice between using a centre-mount or side-shift backhoe should be based on the nature of the project:

"Consider the type of trench you plan to dig or the space constraints in which you will be doing the work."

Griffiths Makgate, C&F sales manager Africa and Middle East at John Deere, adds that the stabilisers on centre-mount machines "open wide and protrude beyond the width of the machine".

"On side-shift machines, the backhoe moves sideways and the stabilisers are positioned vertically. Their width matches that of the machine."

Applications

While the centre-mount backhoe is more suited to well-defined and controlled work areas, says Mahindra's Gupta, side-mount backhoes are better suited to complex environments or to where the machine is called upon to work in "varying conditions".



Operators appreciate the low maintenance costs on Mahindra's EarthMaster.

Makgate notes that, while both backhoe types work well in construction, centre-mount machines are not preferred in confined spaces due to the width of their stabilisers.

"However, both types are suited to agricultural applications as there are no restrictions apart from steep or uneven ground."

Revaro Construction workshop and equipment parts manager Kobus Hartzenberg says backhoe loaders are "very common" and can be used for a wide variety of tasks, including construction, small demolitions, transportation of light building materials, excavation, landscaping and breaking asphalt.

"Their relatively small frame and precise control make backhoe loaders very useful and common in urban engineering projects such as construction and repairs in areas too small for larger equipment.

He, too, stresses that centre-mount, tractor-loaded backhoes work well on construction sites with unrestricted space, but adds that their side-shift counterparts are suited to sites "where you may have to dig a trench next to a wall, for example".


Advantages and disadvantages

Gupta includes among the advantages of the centre-mount backhoe the stability offered by these machines, both while being driven and during operation.


"You can often dig deeper with centre-mount backhoes and their digging performance remains consistent, thanks to the fixed mounting. This fixed design also provides greater breakout and digging force as opposed to side-mounted backhoes."

He says the fact that the arm is mounted at the centre of the A-frame allows for


QUICK TAKE




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Both types are suited to agricultural applications as there are no restrictions apart from steep or uneven ground



The additional manoeuvrability of side-shift models allows for work at different angles



Centre-mount machines offer greater lifting capacity and stability due to the positioning of their radial stabilisers

greater lifting capacity and ensures more stability when loaded. Centre-mount backhoes will also offer lower operating costs in many applications.

In more complex operations such as corner trenching, however, the centre-mount backhoe will be less effective than the side-shift version, which can work comfortably in



"Centre-mount, tractor-loaded backhoes work well on construction sites with unrestricted space."

Kobus Hartzenberg, Construction Workshop and Equipment Parts manager at Revaro



"Side-shift backhoe loaders offer greater lifting capacity and stability due to the positioning of the radial stabilisers. Variable working angles relative to a position on the backhoe loader arm also improve vision when working in trenches."

Lourens Ackerman, Construction Operations manager at Revaro



"You can often dig deeper with centre-mount backhoes and their digging performance remains consistent, thanks to the fixed mounting. This fixed design also provides greater breakout and digging force as opposed to side-mounted backhoes."

Rajesh Gupta, CEO of Mahindra South Africa



"While both backhoe types work well in construction, centre-mount machines are not preferred in confined spaces."

Griffiths Makgate, C&F sales manager Africa and Middle East at John Deere

confined spaces or any outdoor area where manoeuvring is difficult.

"This, of course, is thanks to the fact that the arm can swing from side to side and work all around the vehicle."

He says the additional manoeuvrability of side-shift models also allows the backhoe operator to work at different

angles. He says the additional manoeuvrability is thanks in part is not only allows different types of trenching, but also gives the operator greater visibility.

"The side-mount backhoe has greater lateral reach than its fixed-arm counterpart. This backhoe's boom and arm



The side-shift backhoe is suited to trenching in tight spaces.

can be folded back across the width of the vehicle, allowing for easier transport to site and easier movement on site than with the fixed-arm backhoe."

He says the additional manoeuvrability is thanks in part to the larger number of moving parts, which in turn may require additional maintenance when compared to a centre-mounted backhoe.

Revaro's Ackerman says these machines offer greater lifting capacity and stability due to the positioning of the radial stabilisers.

On the side-shift backhoe, he says the movement of the arm enables the operator to work in confined or reduced spaces.

"Variable working angles relative to a position on the backhoe loader arm also improve vision when working in trenches," he says. "These machines also feature vertical stabilisers, so enabling a smaller working area."

He says the boom and arm of the backhoe can be folded over the width of the machine for better transport or movement on site.

"The maintenance of a backhoe with a movable boom is comparable to that of centre-mount backhoes, except for the additional points located in the sliding mechanism," he says.

John Deere's Makgate cites as an advantage of the centre-mount backhoe the improved stability afforded by 'butterfly' stabilisers while trenching or craning with the rear excavator.

Disadvantages include a wider stance that encroaches beyond one lane of street traffic and the fact that centre-mount backhoes cannot perform offset digging as the rear structure can limit visibility.

"Transporting these backhoes by road can cause the machine to 'porpoise' or bounce, as the rear structure cannot be tucked up close to the tractor."

He says the advantages of the side-



Mahindra's four-wheel drive, side-shift EarthMaster.



The 315SL side-shift backhoe from John Deere.

shift backhoe include the ability to dig along walls or structures, the fact that these machines only take up one traffic lane during street repairs, digging or trenching, and the fact that they can undertake offset digging as they provide better visibility.

"With side-shift machines, the operator can dig square trench boxes without re-positioning the machine. You can also tuck the rear structure up close to minimise bouncing on the road."

He says the vertical stabilisers on side-shift machines provide reduced stability,

and that the rear frame is situated too low to the ground and can therefore "drag through the terrain".

Ranges

Gupta says Mahindra's EarthMaster has been available in South Africa for three years and has found favour with many types of operator who appreciate the low maintenance costs and ease of operation.

"The 90 HP EarthMaster VX90 with four-wheel drive is both a backhoe and a loader and offers several bucket options.

According to Hartzenberg, Revaro offers backhoe loaders in four sizes: 60; 76; 96 and 100 hp.

"All these models are four-wheel drive, with side-shift booms, which makes for a more versatile machine.

"We also offer our backhoe loaders with the optional quick hitch feature to simplify the process of changing attachments. This saves time and makes the machine more diverse." He says Revaro also offers a variety of attachments for use in construction and agriculture. ☉



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