2025 APGA Innovation Award

SafeVac Lifting Systems by Austrack Equipment

Dipper Arm

Vacuum Relocation

Austrack Equipment

AUSTRALIAN MADE

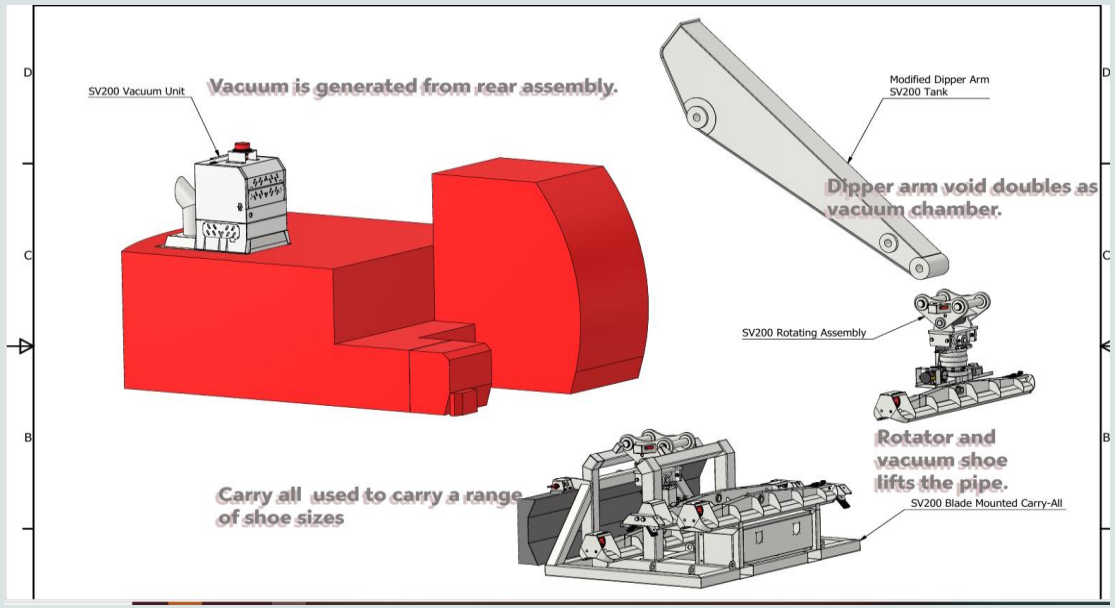
SAFEVAC LIFTING SYSTEMS

Conversion of Dipper Arm for use as Vacuum Chamber

Spreader bar arrangement above. Vacuum chamber is located within the spreader bar and hangs off the rotator and hitch. This set up reduces the SWL by the weight of the spreader bar and shoes.

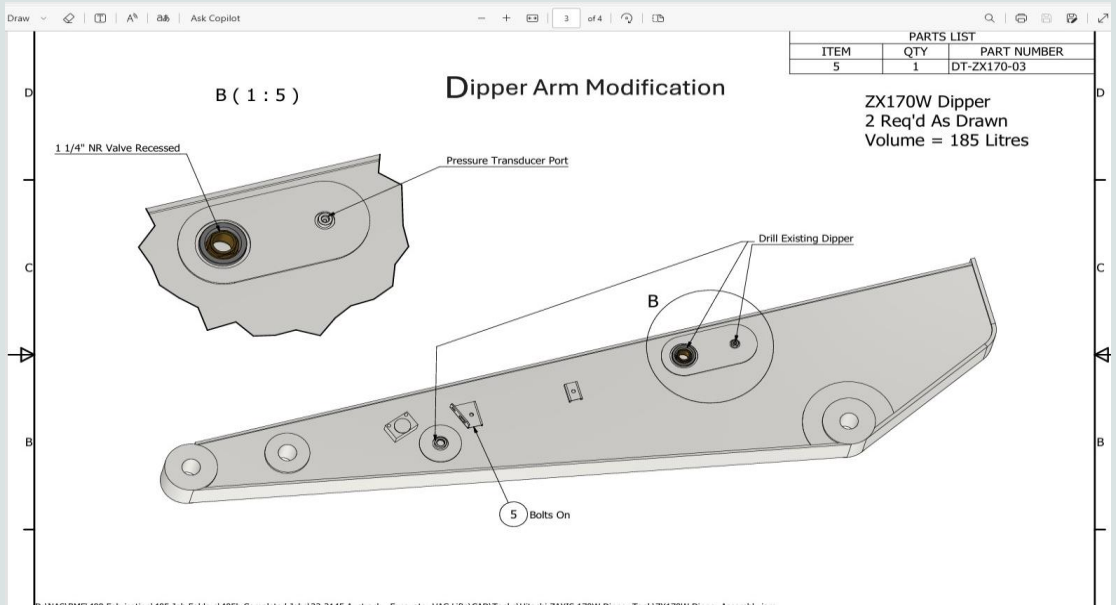
Innovation results in the vacuum chamber being now housed in the dipper arm which eliminates the need for a spreader bar and thus increases the SWL of the setup.

Dipper Arm Modification



The modification involves the excision of two sections of the dipper arm, to allow for the creation of intake and collection valving and the replacement of the excised sections to re-establish the void so that it can function as a tank capable of holding vacuum.

Schematic above shows units main components Dipper is removed and is modified so that the natural void now doubles as a vacuum tank. It is reattached with its dipper arm functioning normally.



How it Works and Performance Impacts

3:17

How it Works

Integration:

The dipper arm is designed with a natural void that is cleverly engineered to function as a vacuum chamber.

Vacuum Generation:

Hydraulic connections run through the boom to the dipper arm, supplying the necessary vacuum pressure for lifting operations.

Vacuum Tank:

The vacuum tank is strategically positioned above the single vacuum shoe on the dipper arm for rapid and secure engagement with lifted objects.

3:18

Performance Impacts

Weight Savings:

The integrated vacuum chamber eliminates the need for a separate, conventional spreader bar, leading to significant weight reduction.

Increased Productivity:

A vacuum system allows for quick and secure engagement of loads, improving operational speed and efficiency in material handling tasks.

Enhanced Versatility:

By incorporating a vacuum lifting system into the dipper arm, the excavator becomes a multi-functional tool, capable of tasks beyond traditional excavation.

Optimized Operations:

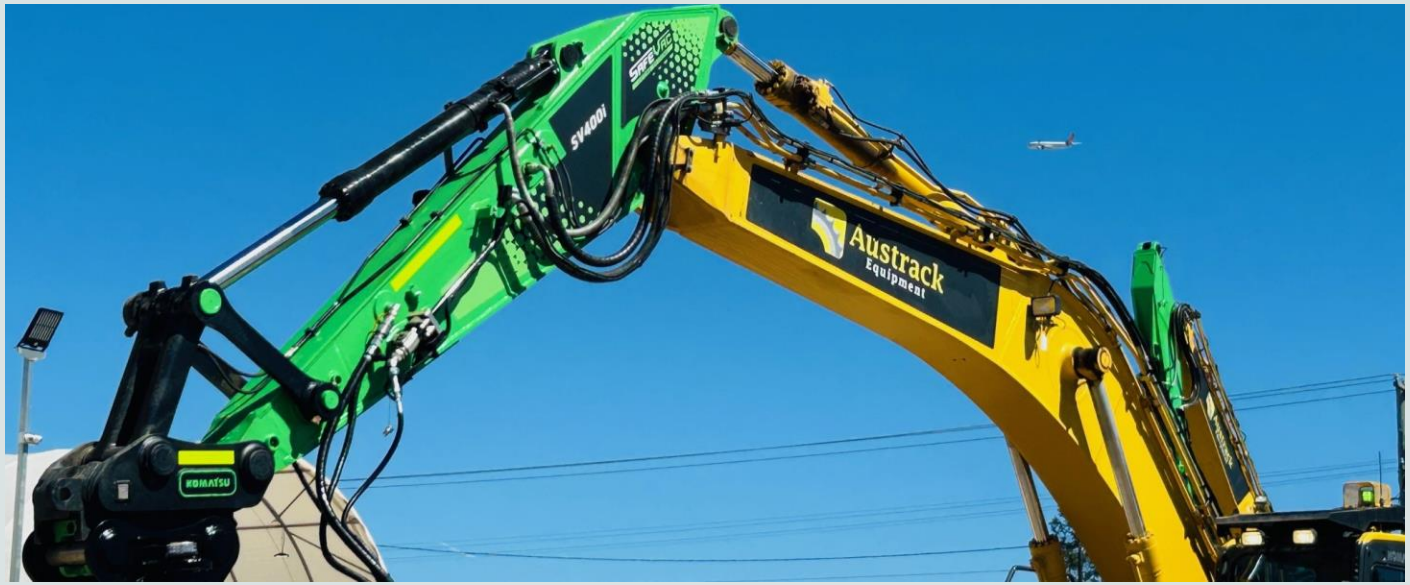
When a specialized arm configuration matches project requirements, it ensures the excavator operates at peak performance, completing tasks faster and with greater accuracy.

Benefits of the Vacuum Chamber Relocation

- **Less weight at lifting end increases unit SWL and lifting efficiency**
- **Eliminates need for Spreader Bar in Single Shoe mode**
- **Reduces VLA manufacturing cost by 25%**
- **Additional use for a manufactured component (dipper arm) improves sustainability and environmental outcomes**
- **Simpler design easier to use less to go wrong**
- **Integration is a marriage of function and form.**

The Future is Now
And it looks a lot like the SV400i

- **The natural progression is to bring the vacuum chamber innovation to tracked excavators.....so we did. The result is seamless integration**



A Customer Says

- *"We currently operate a few SafeVac ducks in gas gathering operations within the Surat basin as part of the GLNG project. These vaclifts perform exceptionally well in the field. They are robustly built and the design clearly reflects careful thought and strong understanding of operational need. One particularly impressive feature is the integration of the vacuum tank built into the dipper arm of the Hitachi machine, a clever and efficient design solution. Additionally, being a single shoe unit there is no need for a spreader bar which simplifies the set up and enhances speed and efficiency on site when stringing pipe , a key advantage in gas gathering work.*
- *The digital display is clear and easy to read and the menu navigation is intuitive. Hydraulic and electrical connections between hitch and machine are thoughtfully laid out making them very operator friendly.....Operating the safeVac has been a highly satisfactory experience overall."*
- **Robert Baumgartner Superintendent MPC Kinetic.**

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