Material Handling

Bucket Elevators

Keep your employees safe while reducing unplanned downtime and extending equipment life

Martin bucket elevators operate safely, maximize uptime and deliver longer life. Reducing noise during operation, limiting exposure to contamination, and minimizing maintenance creates a safer work environment. Including self-cleaning components and easy access points to wear items not only extends life, but also reduces the frequency of maintenance touches required over the life of the elevator. Fewer touches equal a safer operation. Martin bucket elevators increase yield and reduce costs through design and construction practices that optimize speed, load capacity, and temperature capabilities while ensuring less buildup and product contamination. Utilizing a Martin bucket elevator design enables you to keep employees safe, increase throughput, and reduce costs over the life of the application.

Extend equipment life

Reduce costs and unplanned downtime

Operate safely and increase productivity

Extend equipment life

Materials and design

The structural integrity of the elevator components are designed to extend equipment life in the most harsh environments. These are some proven structural integrity features:

- **Chromium carbide overlay plate** used in high wear areas such as inlets and discharges, this wear-resistant material can greatly increase time between scheduled maintenance events.
- **AR (abrasion resistant steel)** is used in key areas in a bucket elevator greatly increasing the wear life of components in harsh environments.
- **Stainless material** is corrosion resistant and ideal in food processing, chemical, outdoor, and washdown applications.
- **Buckets mounted on belt** have less overall maintenance and perform better with abrasive materials.
- **Slat plates** extend the life of the belt by eliminating contact between the upside and downside of the chain or belt.

Segmental rim traction wheel on cement and aggregate application

Segmental sprocket vs. solid sprocket

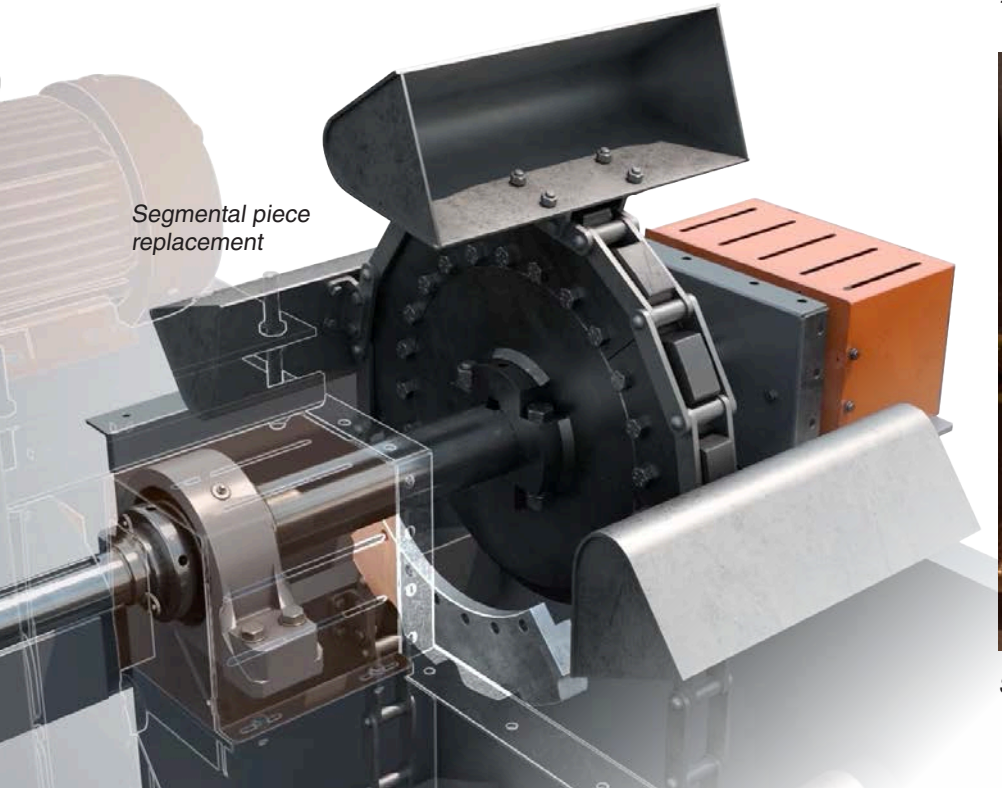
Video

Extend equipment life

Materials and design

- **Staggered row buckets** reduce shock loading on buckets and provide a more consistent production with constant flow.
- **Robotically welded buckets** offer improved weld quality both structurally and cosmetic.
- **Traction wheels** do not have teeth allowing for longer life in highly abrasive applications.
- **Segmental rim sprockets/traction wheels** maintain existing sprocket alignment for longer sprocket and chain life. Additionally, they have a lower replacement cost due to only requiring changing the worn segments.
- **Laser cut housing construction** has tight tolerance cuts which helps ensure ease of installation and casing alignment.
- **Vertically self-supporting elevators** are constructed in a manner that allows for complete vertical support.

Two segmental rim sprockets



Segmental piece replacement

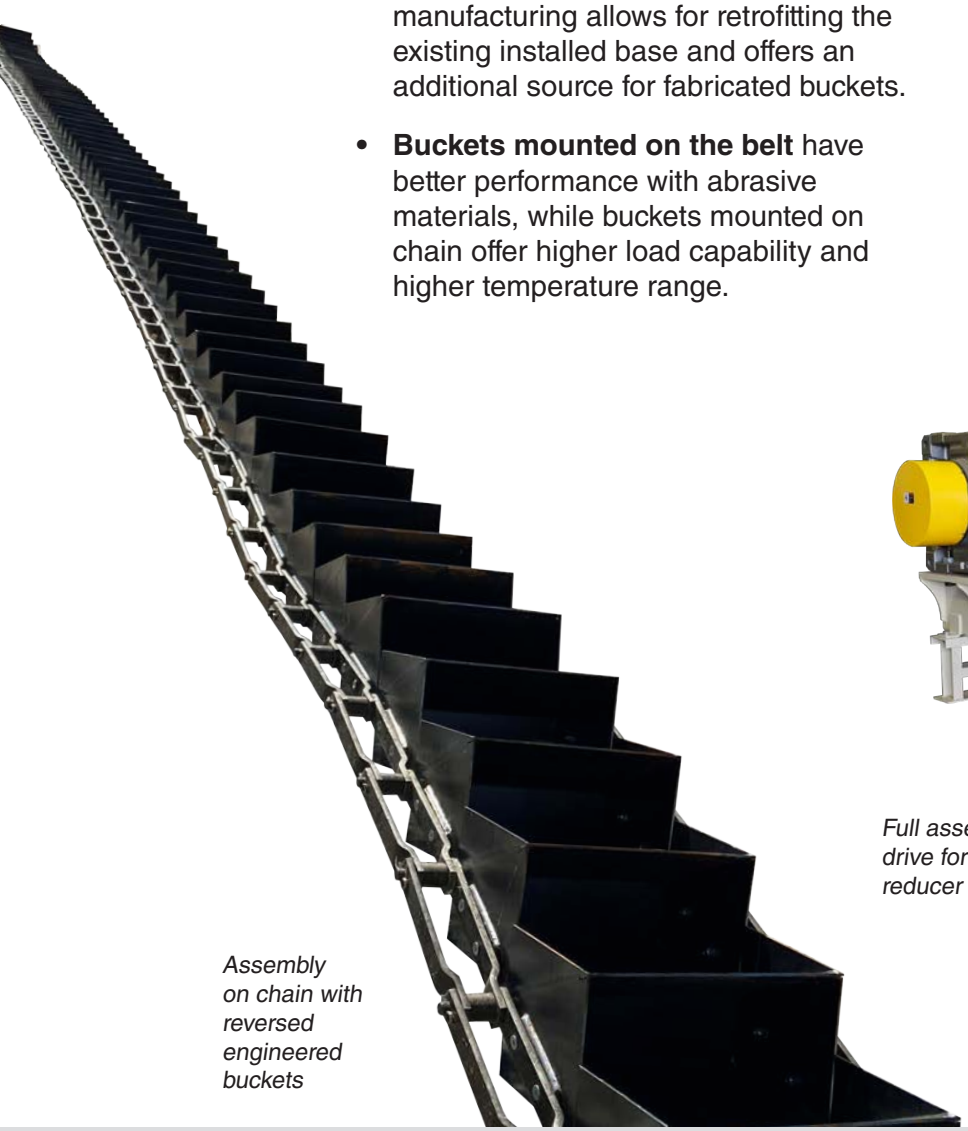
Segmental traction wheel with split hub

Reduce costs and unplanned downtime

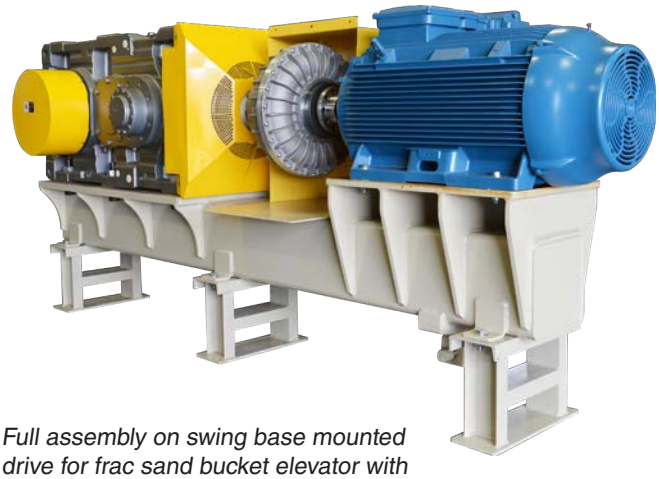
Optimized to operational needs

Martin's bucket elevators can be designed to your exact application needs and include replaceable wear items that are easy to access in the field, reduce maintenance and increase uptime.

- **Customized steel bucket** design and manufacturing allows for retrofitting the existing installed base and offers an additional source for fabricated buckets.
- **Buckets mounted on the belt** have better performance with abrasive materials, while buckets mounted on chain offer higher load capability and higher temperature range.
- **Full drive assembly** for drives exceeding 75HP using a swing base mounted drives are more beneficial than conventional shaft mounted drives. Laser-aligned coupling to ensure proper shaft alignment will enhance drive reliability and reduce vibration.



Assembly on chain with reversed engineered buckets



Full assembly on swing base mounted drive for frac sand bucket elevator with reducer and fluid coupling

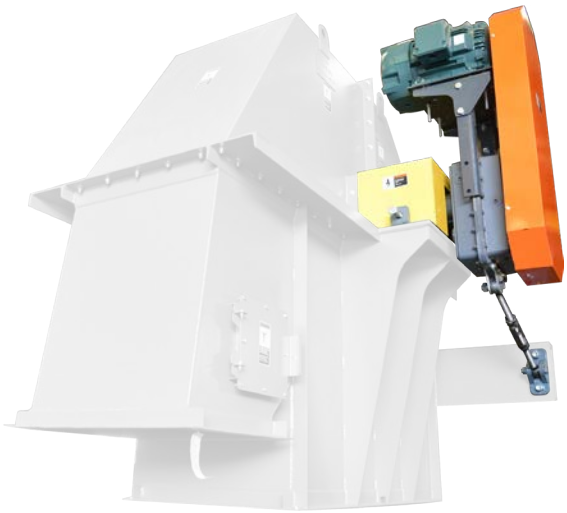
Steel bucket robotic welding cell

Video

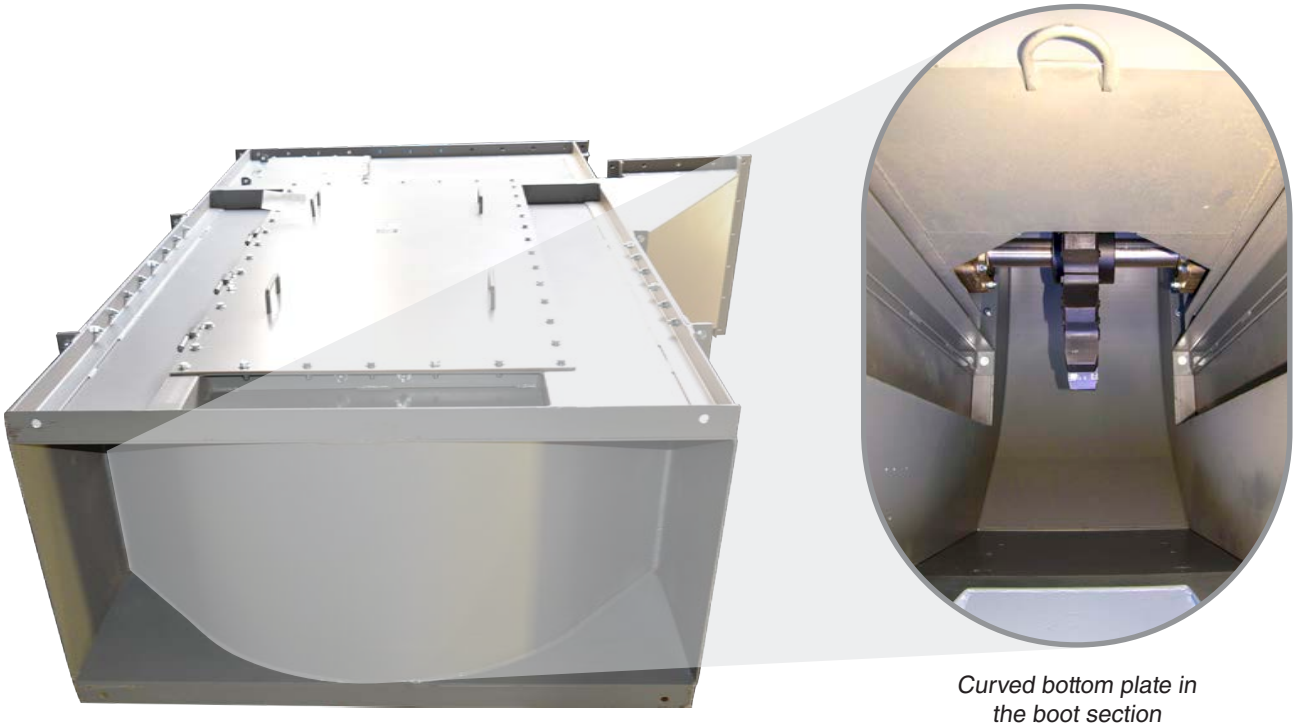
Reduce costs and unplanned downtime

Optimized to operational needs

- **Modified radius hood** keeps material from falling back down into the boot (down-legging) due to better discharge of conveyed material.
- **Fully adjustable throat plate** ensures down-legging does not occur.
- **Loading legs** help bridge the gap between inlet and bucket.
- **Curved bottom plate** improves product clean-out and reduces buildup in boot section, additionally preventing product spoilage/contamination.
- **Shaft mounted reducer** requires less maintenance.



Shaft mounted drive with torque arm



Curved bottom plate in the boot section

Operate safely and increase productivity

Designed for safe operation

Martin bucket elevators create a safe work environment by reducing noise and exposure to contamination. Additionally, offering easier access to components that require maintenance greatly reduces the risk of harm to employees.

- **Split hood** allows easy access to the carrier line (either pulley or sprocket) for safer installation or removal of smaller components.
- **Dust and weather tight construction** keeps dust inside so external environment remains clean. This is essential to avoid potential explosions in grain handling applications.
- **Double leg design** has a reduced surface area, resulting in less susceptibility to high winds, and offers reduced casing volume/ oxygen content for an explosion proof environment.
- **Hinged service doors** do not require removal of door for inspection reducing safety risk for maintenance employees.

Structural steel for shaft mounted reducer torque arm assembly

Screw take-up enclosure

Safe work environment
Documented cost savings

Operate safely and increase productivity

Designed for safe operation

- **Head take-up** on elevators within a certain height range can be used to completely affix boot shaft for a better sealed system.
- **Screw take-up** properly tensions the belt or chain and is accessible from outside of the elevator allowing for easy, safe tension installation/ tensioning.
- **Internal gravity take-up** is fully enclosed to prevent dust release to environment, providing safe operation with no exposed moving parts and prevents dust release to outside environment that could lead to an explosion.
- **Platforms and ladders** provide a safe workspace and access to the highest point of the structure.
- **Buckets mounted on belt** have a quieter operation which prevents employees hearing loss and complies with OSHA safety requirements providing a quiet operation for community noise ordinance.
- **Backstop** prevents rotation of elevator in the opposite direction during power outage or catastrophic component failure.
- **Electronic safety equipment**, including alignment sensors, zero speed switch, plugged chute sensors, fire suppression, and explosion panels.

Stainless steel boot with hinged service doors

Head with screw take-up

Operate safely and increase productivity

Configured for easier maintenance

Martin bucket elevator components are designed to identify maintenance issues early while providing safe and easy access for maintenance crews. Additionally, these components are self-cleaning due to the discharge of material, helping to increase productivity and reduce downtime.

- **Modified radius hood** reduces down-legging due to better discharge of material, allowing to meet production expectations.
- **Staggered row buckets** encourage clean-out with constant material agitation.
- **Hinged service doors** offer easier access for preventive maintenance inspections.
- **Boot inspection door (clean out)** gives easy access for preventive maintenance inspections.
- **Curved bottom plate** allows for better product clean-out and reduced buildup in boot section.
- **Maintenance accessible boot housing** offers easier access to the boot shaft assembly for maintenance and replacement.

Bucket elevator drive mounted on driver base with laser aligned grid coupling. Gear reducer features a creeper drive to perform bucket elevator maintenance safer and more efficient.

Bucket elevator manufacturing capabilities

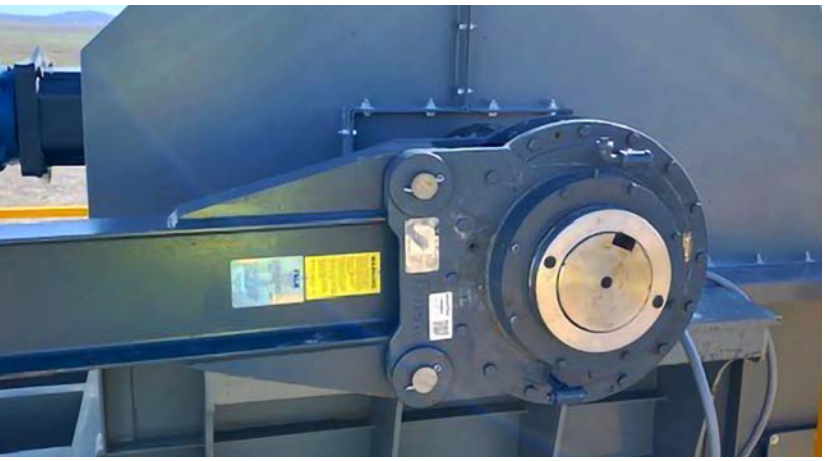
Video

Operate safely and increase productivity

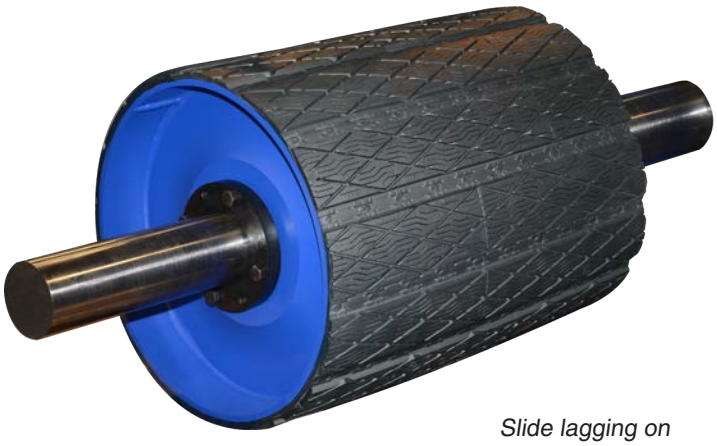
Configured for easier maintenance

Access door for maintenance

- **Segmental rim sprockets/traction wheels** are faster to replace and do not require the removal of the chain to install.
- **Slide lagging** (Holz® and Richwood®) is field replaceable, because it is welded on in individual sections.
- **External backstop** allows for a non-shaft mounted reducer which can be changed out easier.
- **Hoist beam** allows for easier maintenance by provision of a system to hoist critical components to head section of elevator.
- **Clean Flight® wing pulley** with screw helix geometry drastically reduces wing stress during operation to prevent unplanned downtime, and also maximizes material removal efficiency between flights.



External backstop



Slide lagging on profiled end disc drum pulley

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