At Norstar, our mission is to consistently provide our customers with high quality products that make material handling operations more efficient. We accomplish this through innovative design and advanced manufacturing.

The driving force behind our innovation is the feedback we receive from you, the customer. We are continually looking for new and better ways to build products that maximize your efficiencies and increase your return on investment. As industry needs change, we adapt to provide relevant and cutting-edge solutions for your operation.

The needs of the industry may change, but one thing that remains the same is the demand for high quality products. At Norstar, we employ a skilled and passionate work-force that utilizes advanced design and manufacturing techniques to ensure that the highest standard of quality is realized by our customer. Norstar material handling solutions are designed and built so that you can move your commodities with ease and with confidence.

**MOVE WITH EASE. MOVE WITH CONFIDENCE.**
### Bucket Elevators

<table>
<thead>
<tr>
<th>Specification</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity (BPH)</strong></td>
<td>100 - 20,000</td>
</tr>
<tr>
<td><strong>Pulley Sizes</strong></td>
<td>6&quot;, 8&quot;, 12&quot;, 16&quot;, 24&quot;, 30&quot;, 36&quot;, 42&quot;, 48&quot;</td>
</tr>
<tr>
<td><strong>Discharge Heights</strong></td>
<td>Up to 200'</td>
</tr>
<tr>
<td><strong>Finish Options</strong></td>
<td>Powder Coated, Galvanized, Stainless Steel</td>
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</table>

### Screw Conveyors

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Capacity (BPH)</strong></td>
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<tr>
<td><strong>Conveyor Sizes</strong></td>
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</tr>
<tr>
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<tr>
<td><strong>Incline Range</strong></td>
<td>Up to 15°</td>
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<tr>
<td><strong>Finish Options</strong></td>
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</table>

### En-Masse Chain Conveyors

<table>
<thead>
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<th>Options</th>
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<tbody>
<tr>
<td><strong>Capacity (BPH)</strong></td>
<td>100 - 14,000</td>
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<td><strong>Conveyor Sizes</strong></td>
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<tr>
<td><strong>Maximum Horizontal Length (FT)</strong></td>
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### Incline Chain Conveyors

<table>
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<th>Options</th>
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<td><strong>Maximum Horizontal Length (FT)</strong></td>
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</table>
BUCKET ELEVATOR

BUILT FOR PERFORMANCE AND PRODUCT PROTECTION

Norstar bucket elevators are designed to provide you with reliable performance and to maintain the quality of your commodities. We offer a wide range of models, options and accessories to ensure a bucket elevator that is right for your application. Our elevators are found across North America, moving a wide variety of materials including grain, fertilizer, seed, sand, and even cement.

ELEVATOR HEAD FEATURES:

• Curved design for minimal product impact
• Two-piece hood design for interior access
• UHMW shaft seals for dust and weather protection
• Crown-faced drum pulley with SCOFR (static conductive, oil resistant & fire retardant) rubber lagging
• Inspection ports for belt tracking
• Shaft-mounted DODGE gearbox
• Double or triple ply SCOFR Goodyear belting

OPTIONAL:

• Liner packages (incl: UHMW and tile) for abrasive use

Inspection Doors
Providing convenient access to inside of head section.

Head Bearings
Heavy-duty pillow block bearings are externally mounted on all models.
ELEVATOR TRUNKING FEATURES:
- Double legged trunking design
- 14ga, 12ga and 10 ga available (size dependent)
- Flanges are laser-cut (to ensure hole pattern alignment) and jigged.
- Trunking seams are track welded for strength and dust/weather protection.
- Connector plates included with each section to ensure square and simple installation.
- Service trunking with inspection ports with hinged doors for easy access to belting and buckets.

ELEVATOR BOOT FEATURES:
- Heavy gauge steel construction
- Winged “easy clean” pulley
- Easy-access cleanout doors (16” pulley and larger)
- Externally mounted pillow block bearings
- UHMW shaft seals for weather/dust protection
- Threaded rod belt adjustment

OPTIONAL:
- Up-Leg or Down-Leg boot hoppers
- Flanged boot hoppers

WHY RUBBER BELTING?:
Norstar utilizes a SCOFR (static conductive, oil resistant & fire retardant) rubber belting designed for grain handling applications. We use rubber belting because it has the best combination of strength, and flexibility in the widest climate range.

Connector Plates
Provide rigidity and ensure a straight install

Laser Cut Flanges
Reliable strength and hole pattern alignment.

Winged Pulley
Prevents material buildup on elevator boot pulley face, preserving the product.

Clean-Out Doors
Easily slide open to access elevator floor for clean-out. (16” models and larger)
ELEVATOR ACCESSORIES:
There are many components that contribute to a bucket elevator’s function. Norstar offers a full array of accessories for use in installation and running of a material handling site. From big-ticket items like support towers, distributors and staircase systems, to smaller accessories like valves, clamps and buckets; Norstar has what you need.

**Ladders & Cages**
Norstar ladders and cages are built in 5’ and 10’ sections and are designed to meet OSHA standards. Safely access your bucket elevator for inspection and maintenance.

**Platforms**
Norstar offers work and rest platforms for head, distributor and ladder sections for all models. All platforms are built to OSHA standards.

**Buckets**
Our standard buckets are built of UHMW and feature a heavy-duty front lip and tapered design for longer wear life. Steel, stainless steel, and nylon buckets are also available.

**Distributors**
Norstar offers manual or electronic distributor models with multiple duct configurations to direct your product accurately. We also offer transitions, valves and gates.

**Spouting**
Norstar offers carbon and stainless steel spouting with sizes ranging from 6” - 20”. We also offer truss kits, elbows, bands, and sleeves.

**Support Towers**
Norstar designed and built support towers offer you reliable stability for your elevator without the need for guy-wiring. Norstar also offers spiral and switch-back staircase systems.

ELEVATOR FINISHES:
The finish that is right for you depends on your application, geographic location and the material that is being handled. Choosing the finish for your elevator is an important decision and that is why Norstar offers the following options.

**Powder Coated**
Powder Coating provides excellent durability and all-around protection while maintaining a new look.

**Galvanized**
The traditional Galvanized finish provides a sturdy protective coating to your elevator.

**Stainless Steel**
A Stainless Steel finish is ideal when handling highly corrosive material like fertilizer.
MONITORING OPTIONS:
Norstar offers a variety of monitoring options that can help you increase the efficiency of your operation by analyzing performance and preventing equipment breakdowns.

1. BEARING & SURFACE TEMPERATURE SENSOR
   - fits into existing grease zerk fittings on a bearing and is fitted with a grease nipple to maintain bearing lubrication without having to remove sensor.

2. SPEED SWITCH
   - signals alarm at 10% & 20% underspeed.

3. PLUG SENSOR
   - detects level or plug situations for granular solids

4. BELT ALIGNMENT SENSOR
   - detects tracking and misalignment issues on belts
Norstar En-Masse conveyors provide optimal efficiency in horizontal material handling. The chain and paddle design uses less hp/bushel to move your product and increases conveyor lifespan. Designed to promote proper cleanout and prevent contamination, Norstar En-Masse conveyors are used in on-grade, overhead and under-bin applications.

**CONVEYOR FEATURES:**

- Size range: 9x9, 9x12, 12x12, 12x15, 15x15, 15x18, 18x18
- Capacities from 0 - 14,000 BPH
- 12 gauge standard conveyor body (10 gauge optional)
- Premium Powder Coat Finish standard on all models (Galvanized and Stainless Steel finish available).
- CNC machined 1/2" thick UHMW paddles
- Chain available in 81X, 81XH and 81XHH (24,000, 44,000 and 49,000 lb average tensile strength)
- UHMW return rollers
- Self-Cleaning Tail Section (standard on all models)
- ACME screw slack adjustment
- Removable conveyor covers
- Inclines from 5° - 15° available

**Why a Paddle?**

UHMW paddles prevent steel on steel contact, preserving conveyor life.

**Slack Adjustment:**

All internal shortening with no increase in actual conveyor length.
IS IT ACTUALLY EFFICIENT?:
- Conveyance principle is based on paddles dragging along conveyor floor, pushing the material at bottom of conveyor which carries the material particles above. (= less torque and less horsepower required)
- Chain and paddle assembly requires less housing space than other options (minimizes footprint)
- The shallow En-Masse paddle allows for a higher fill rate within the housing (= higher volume moved)

CONTAMINATION PROTECTION:
- Fully-enclosed housing keeps material protected from the elements
- Single chamber design with no risk of product drop off
- UHMW shaft seals keeps dust and weather out
- Self-cleaning tail section prevents product build-up
- Optional cleaning paddles for thorough cleanout
- Optional flush Cross Slide Gate with no catch points

LOW MAINTENANCE:
Chain conveyors offer cost savings with much lower maintenance requirements than other conveyance options.
- UHMW paddles are gentle on conveyor housing.
- Easier to add or remove chain links compared to splicing belts.
- Fully enclosed with no dust control required.

Self-Cleaning Tail
A curved back plate in the tail prevents material build up. The plate is attached to the tensioning system and moves with adjustments for appropriate proximity to the paddles.

Cleaning Paddles
Use our Cleaning Paddles to further prevent cross contamination (there is one paddle/10’ of chain). The paddle is a rubber plate, sized to slide against the walls of the conveyor to provide a “squeegee”cleanout.

OPTIONS/ACCESSORIES:

Liners
For abrasion resistance, we offer AR200, AR400 and UHMW bottom and side liner packages.

Inlets
Norstar offers a range of inlets including Drive-Over Hoppers, Hoppers with hinged or bolt-on lids, etc.

CROSS SLIDE GATE:
Norstar’s Cross Slide Gate is designed to preserve the integrity of your product. The gate is built so that the slide plate sits flush with the conveyor floor when closed with no cracks for product build up or ledges that could damage product during transit.
How Does It Work?
Incline Conveyors have a two-chamber design with the discharge and return chambers divided by a steel plate. The larger incline paddles ensure that material can be moved at a steep incline with minimal fall back.

Slack Adjustment:
Divider plate is slotted to ensure material slides through to the discharge and is not left in the return.

Inlets:
Multiple inlet options are available to control intake (ie: wide/narrow, flanged, drive-overs, grating etc.)
A COST-EFFECTIVE & VERSATILE CONVEYANCE SOLUTION

Norstar Screw Conveyors are able to convey almost any free-flowing material with ease. Screw Conveyors can be used in a wide range of applications. Our U-Trough design is rigid and durable, providing long-lasting performance to your operation.

CONVEYOR FEATURES:

• U-Trough Size: 6”, 8”, 10”, 12”, 14”, 16”
• Capacities from 0 - 10,000 BPH
• Capable of a wide range of run lengths
• Custom configured to handle any free-flowing material
• Premium Powder Coat Finish standard on all models (Galvanized and Stainless Steel finish available).
• Belt, Chain and Direct Drive configurations
• Split Wood Hanger Bearings minimize wear and noise
• Enclosed housing for protection and dust containment.
• Valves, adapters and spouting available
• Various inlet options available
• Range of mounting accessories available.

SPECIFICATIONS:

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tbody>
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<td>20.279”</td>
<td>10.254”</td>
<td>16.125”</td>
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</tr>
</tbody>
</table>

GEARBOX MODEL

- TA0107 14.245”
- TA1107 14.015”
- TA2115 15.485”
- TA3203 17.425”
- TA4207 18.195”
- TA5215 20.305”
- TA6307 22.115”

ABLE TO HANDLE THE JOB:

Our Screw Conveyors can move almost any free-flowing material including grain, fertilizer, corn, sand and more. Our Screw Conveyors can be mounted overhead, under-bin or on-grade to fit your specific needs. Our sales and design force can help you realize the right configuration for you.
## EN-MASSE SPECIFICATIONS

**Specifications**

### Chain Conveyor Spec Sheet

**Capacity (BPH)**
- 0 - 175 FPM: Up to 2,500, 9" x 9"
- 125 FPM: Up to 2,800, 9" x 12"
- 110 FPM: Up to 3,200, 12" x 12"
- 100 FPM: Up to 3,600, 12" x 15"
- 75 FPM: Up to 4,200, 15" x 15"
- 50 FPM: Up to 5,200, 18" x 18"

**Head Shaft RPM**
- 100 FPM: 27 - 97, 9" x 9" - 12" x 12"
- 75 FPM: 20 - 72, 12" x 12" - 15" x 15"
- 50 FPM: 15 - 53, 15" x 15" - 18" x 18"

**Paddle Thickness**
- 100 FPM: 1/4", 9" x 9" - 100 FPM
- 75 FPM: 1/4", 12" x 12" - 50 FPM
- 50 FPM: 1/2", 15" x 15" - 75 FPM

**Discharge Size**
- 100 FPM: 8" x 8", 9" x 9" - 100 FPM
- 75 FPM: 10" x 10", 12" x 12" - 75 FPM
- 50 FPM: 14" x 14", 15" x 15" - 50 FPM

**Max. Length**
- 100 FPM: 150', 9" x 9" - 150 FPM
- 75 FPM: 150', 12" x 12" - 75 FPM
- 50 FPM: 150', 15" x 15" - 75 FPM

**Chain Speeds**
- 100 FPM: 125 FPM: 175 FPM: 175 FPM

<table>
<thead>
<tr>
<th>Capacity (BPH)</th>
<th>Chain Speeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
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<tr>
<td>125 FPM</td>
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<tr>
<td>110 FPM</td>
<td>0 - 175 FPM</td>
</tr>
<tr>
<td>100 FPM</td>
<td>0 - 175 FPM</td>
</tr>
<tr>
<td>75 FPM</td>
<td>0 - 175 FPM</td>
</tr>
<tr>
<td>50 FPM</td>
<td>0 - 175 FPM</td>
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**Model 5° 10° 15°**

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**Model 5° 10° 15°**

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<td>33.625&quot;</td>
<td>25.125&quot;</td>
<td>19.360&quot;</td>
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**To calculate an approximate discharge height:**

\[
\text{Discharge height} = \left( \frac{\text{sin}\theta}{\text{Total Length of Inclined Intermediate Sections}} \right) \times (B + C - D) + M
\]
## INCLINE SPECIFICATIONS:

<table>
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<th>A (°)</th>
<th>B (°)</th>
<th>C (°)</th>
<th>D (°)</th>
<th>E (°)</th>
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<th>G (°)</th>
<th>H (°)</th>
<th>I (°)</th>
<th>J (°)</th>
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<td>12°</td>
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### INCLINE SPECS

**To calculate an approximate discharge height:**

\[
\text{discharge height} = \left( \frac{1}{2} \times (\text{MODEL} \times (\text{Total Length of Inclined}\ \text{Intermediate Sections} + B)) - (C \times D) + N \right)
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### Conveyor Specifications

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</thead>
<tbody>
<tr>
<td>Chain Speeds</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
<td>0 - 175 FPM</td>
</tr>
<tr>
<td>Capacity (BPH)</td>
<td>Up to 2,525</td>
<td>Up to 4,025</td>
<td>Up to 5,375</td>
<td>Up to 7,575</td>
<td>Up to 10,100</td>
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<td>Paddle Thickness</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
<td>1/2&quot;</td>
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<td>1/2&quot;</td>
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</tr>
<tr>
<td>Discharge Size</td>
<td>10&quot; x 10&quot;</td>
<td>14&quot; x 14&quot;</td>
<td>14&quot; x 14&quot;</td>
<td>16&quot; x 16&quot;</td>
<td>18&quot; x 18&quot;</td>
<td>20&quot; x 20&quot;</td>
<td>22&quot; x 22&quot;</td>
</tr>
<tr>
<td>Max. Length</td>
<td>150&quot;</td>
<td>150&quot;</td>
<td>150&quot;</td>
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### Chain Specifications

<table>
<thead>
<tr>
<th>Chain</th>
<th>175 FPM</th>
<th>125 FPM</th>
<th>110 FPM</th>
<th>100 FPM</th>
<th>75 FPM</th>
<th>50 FPM</th>
<th>RPM (50 FPM)</th>
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</thead>
<tbody>
<tr>
<td>10&quot; x 9&quot;</td>
<td>2,525 BPH</td>
<td>1,810 BPH</td>
<td>1,590 BPH</td>
<td>1,585 BPH</td>
<td>1,080 BPH</td>
<td>725 BPH</td>
<td>25</td>
</tr>
<tr>
<td>16&quot; x 9&quot;</td>
<td>4,025 BPH</td>
<td>2,900 BPH</td>
<td>2,535 BPH</td>
<td>2,310 BPH</td>
<td>1,725 BPH</td>
<td>1,150 BPH</td>
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<tr>
<td>16&quot; x 12&quot;</td>
<td>5,375 BPH</td>
<td>3,870 BPH</td>
<td>3,400 BPH</td>
<td>3,100 BPH</td>
<td>2,300 BPH</td>
<td>1,550 BPH</td>
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<tr>
<td>18&quot; x 15&quot;</td>
<td>7,575 BPH</td>
<td>5,425 BPH</td>
<td>4,775 BPH</td>
<td>4,350 BPH</td>
<td>3,250 BPH</td>
<td>2,150 BPH</td>
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<tr>
<td>20&quot; x 18&quot;</td>
<td>10,100 BPH</td>
<td>7,250 BPH</td>
<td>6,350 BPH</td>
<td>5,800 BPH</td>
<td>4,350 BPH</td>
<td>2,900 BPH</td>
<td>15</td>
</tr>
<tr>
<td>21&quot; x 21&quot;</td>
<td>12,375 BPH</td>
<td>8,850 BPH</td>
<td>7,800 BPH</td>
<td>7,100 BPH</td>
<td>5,300 BPH</td>
<td>3,550 BPH</td>
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<tr>
<td>24&quot; x 24&quot;</td>
<td>16,175 BPH</td>
<td>11,600 BPH</td>
<td>10,200 BPH</td>
<td>9,250 BPH</td>
<td>6,900 BPH</td>
<td>4,650 BPH</td>
<td>13</td>
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</tbody>
</table>
MILL ACCESSORIES

Norstar Industries offers a wide range of mill and elevator accessories. We provide accessories in Powder Coated, Galvanized or Stainless Steel finishes as per your order and can provide a large variety of sizes to ensure that your specific on-site needs are met. Whether you are in the installation business or looking to upgrade your site, Norstar has the components that you need.

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- 6" - 16" models
- 4 - 12 ducts
- 45° and 60°
- Flat Back design

ROUND SPOUTING
- Carbon Steel, Galvanized, or Stainless Steel
- Raw or Powder Coated (carbon only)
- All spouting available in 20' and 40' lengths
- 4" - 16" diameters
- Truckload quantities available

TRUSS KITS
- Compatible with 6" to 16" spouting
- Powder Coated or Galvanized
- 40' - 100' kits
- Kits include star and anchor assemblies, wire rope, turnbuckles, wire clamps and hardware
- Components also available separately

CLAMP BANDS & PIPE SLEEVES
- 4" - 24" Bolted Clamp Bands
- Galvanized or Stainless Steel
- 24" long Bolted Pipe Sleeves
- Powder Coated, Galvanized or Stainless Steel
- 6" - 18" diameters

ELBOWS
- 22.5° elbows
- 6", 8", 10", 12", 14", 16", 18", 20", and 24" diameters
- Single, Double and Triple assemblies (up to 67.5° angle)
- Powder Coated, Galvanized or Stainless Steel
SLIDE GATES
- Powder Coated, Galvanized or Stainless Steel
- Plastic Slider, Cam Roller & Skate Wheel models
- Manual or Actuator (Cam Roller & Skate Roller) compatible
- Motor/Gearbox operation packages
- Hand Wheels and Chain Wheels
- 6” - 36” Wide

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