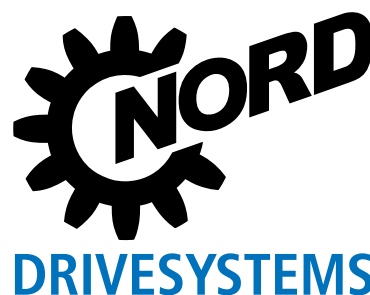


INTELLIGENT DRIVESYSTEMS, WORLDWIDE SERVICES



US

**DRIVE SOLUTIONS FOR
THE GRAIN INDUSTRY**



NORD DRIVESYSTEMS GROUP SERVING THE GRAIN INDUSTRY





NORD, A Global Leader

Producing over 1 million reducers annually and employing 3000 people globally, NORD is constantly improving and expanding its products to meet a never ending variety of industrial challenges.

Our successful rise to the elite list of gearmotor manufacturer's has been accomplished by listening and working closely with our clients. With the help of our customers we have created optimal drive solutions and together we continue solid growth.

North American Facilities (sales, assembly & service)

- Waunakee, WI (Madison)
- Charlotte, NC
- Corona, CA (Los Angeles)
- Brampton, ON Canada (Toronto)
- Guadalupe, Mexico
- Over 40 District offices
- Over 500 Distributor branches

Global Facilities

- Operations in 35 Countries



NORD Product Portfolio

NORD Drivesystems' product portfolio is extensive and continuously evolving in order to meet the needs of today's fast-changing markets. NORD's range of drive equipment includes: helical in-line, helical shaft-mount, helical-bevel, helical-worm and worm gear units with torques from 90 lb-in to 2,200,000 lb-in, readily available AC motors and from 1/6 HP to 250 HP, variable frequency drives up to 250 HP, and mechanical variable speed drives.



Innovative drive solutions

- Products for many industries

Mechanical Products

Gear units



Electrical Products

Motors



Electronic Products

Inverters & motor starters



CLEAN, SAFE, RELIABLE & EFFICIENT



Clean & Safe

NORD's efficient and reliable reducers, motors and AC Vector Drives contribute to a clean, safe design. By offering a clean, compact, direct-drive alternative, your application is free of belts and resulting in no exposed, rotating components.

- Optimized drive selections with safety in mind.
- Reduced pinch points and external rotating components.
- Bolt on carriers and housing splits are eliminated.

Reliable

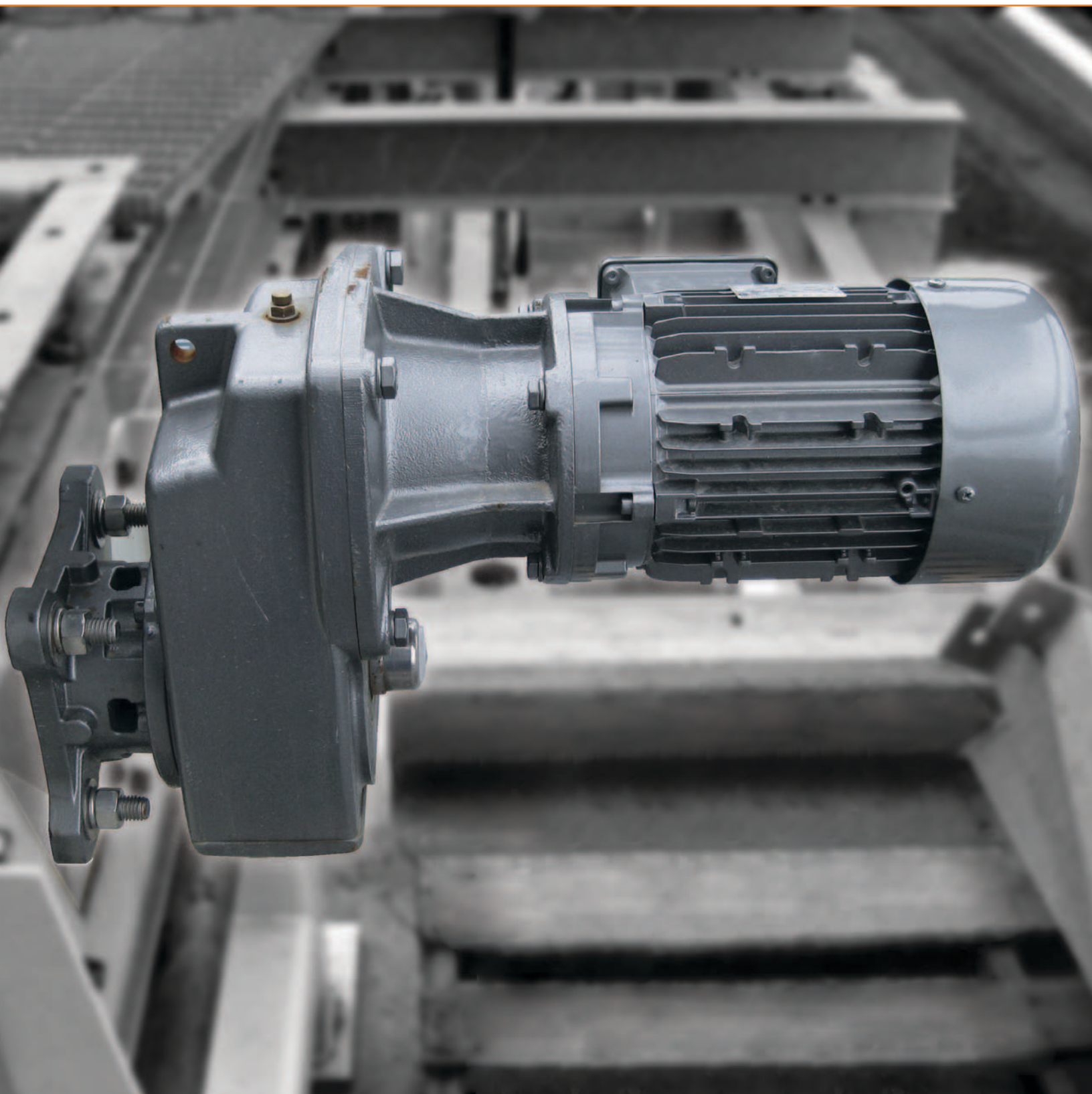
Downtime. It's the last word you can afford to hear when you work in the grain industry. Reliability is a direct result of NORD's unique design and our components work in unison to keep key operations safe and profitable.

- An industry leading ratio range and mounting option flexibility.
- UNICASE™ gear housings provide accurate positioning of bearings and shafts.
- AUTOVENT helps ensure a leak-free design.
- Infinite-life, high quality gearing, up to AGMA Class 13.
- Exceptional durability, quiet operation and long service life.

Efficient

NORD is committed to reduce overall carbon emissions harmful to our environment. NORD motors offer superior insulating materials, low temperature rise and voltage spike resistance.

- 95-97 % efficient for 2 and 3-stage select NORD gearboxes.
- Low-inertia, inverter-rated motors meet the latest global energy requirements
- Efficient operation and optimized motor performance.
- Reduced operating temperatures.
- Longer service life and lower total cost of ownership.



DRIVE SOLUTIONS FOR GRAIN HANDLING PROCESSES

Grain Industry Application Chart

NORD designs and manufactures drive systems engineered for adaptability. NORD's innovative drive solutions are specified and utilized for a range of applications in nearly every industry throughout the world.

Plant & Facility Types

NORD Drivesystems can design tailor-made, individual drive solutions, which meet the requirements of a variety of grain production processes.

TERMINALS

- Receiving
- Storage
- Load Out

TRANSPORTATION

- Port Facilities
- Rail

PROCESSING

- Canola Crushing
- Flour Mills
- Feed Mills
- Fertilizer Storage
- Blending Facilities



1 Drag Conveyors



Drag conveyors can be used to meter or transfer bulk materials from one process to another. The design and characteristics of the drag conveyor enables it to fit almost any plant layout and is ideally suited to handle dry, free-flowing materials. A primary benefit of the drag conveyor include little product degradation during conveying and require less horsepower than other types of conveyors.

2 Slide Gates



Slide Gates are used to regulate the flow of bulk materials by the conveyor. Material can be accurately shut for scale or other purposes.



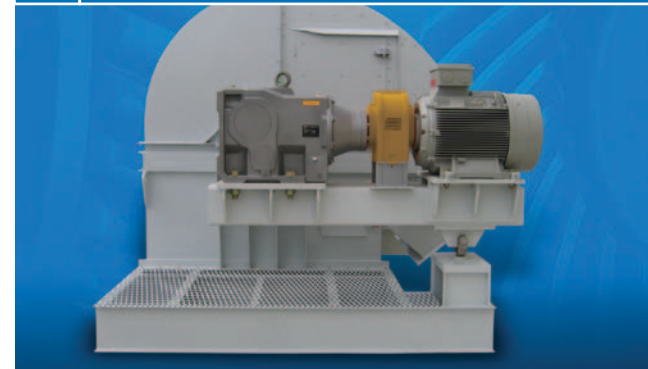
control or the discharge
regulating the flow on
discharged can be ac-
feeding operations.

3 Screw Feeders



Screw Feeders are used to move bulk materials from silos, hoppers or bins. Screw Conveyors incorporate a screw rotating in a housing to transport the material. The bulk material flows forward with each revolution of the screw and is can be metered through the shroud for accuracy.

4 Bucket Elevators



Bucket Elevators, used to vertically transport bulk materials, typically use belt and chain with pulleys and sprocket. Typical applications are centrifugal discharge bucket elevators, heavy-duty belt bucket elevators and high capacity belt bucket elevators. These bucket elevator types transport various types of product from powdery and fine products to sharp edged, coarse and abrasive material.

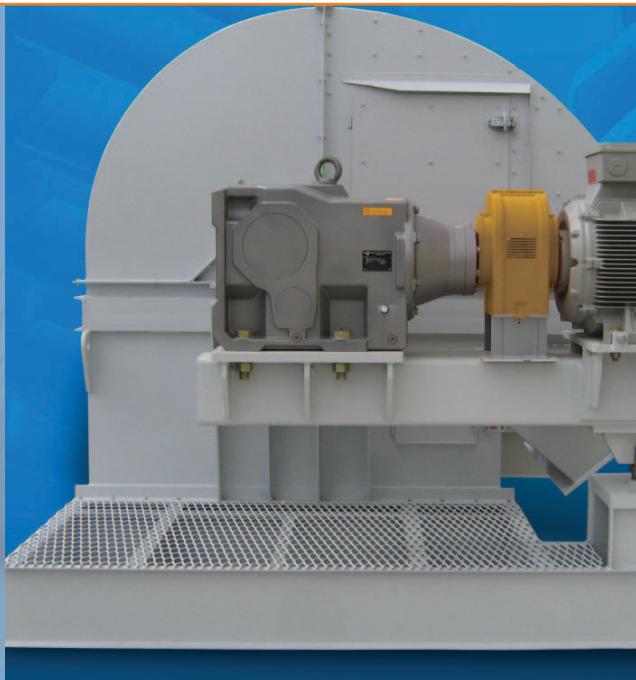
APPLICATIONS FOR THE GRAIN INDUSTRY

Complete Drive Solutions

NORD provides more than just the delivery of components. Drive solutions are created with close cooperation with the customer, therefore unnecessary options and special features are eliminated. NORD drive solutions also contribute to an overall cost reduction by energy efficient operation, wear resistance and long service life.

From engineering & sales support to purchase & delivery, Nord helps you maximize your performance, productivity & profit.

- Designed for maximum dependability
- Environmentally tough
- Built for dust and weather tight operation under the most adverse conditions
- High quality gearing
- High Strength Gear Cases
- Rugged, Reliable & Dependable



Bucket Elevators

NORD's ability to deliver rugged and reliable drives, built for maximum dependability, provide for the efficient movement of grain required by the Agri-Industry. NORD offers a unique combination of flexibility, durability and support for the most demanding high-torque applications.

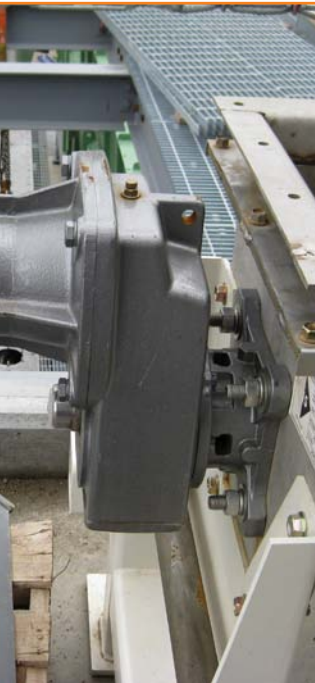
- UNICASE® housings, infinite-life gears, minimum backlash
- High quality gearing, rated up to AGMA class 13
- An industry leading ratio range
- Trouble free and quiet transmission of power
- Protective features suited for the grain industry

Screw Conveyors

Handling and conveying materials is dramatically improved by the ability to provide a compact alternative. Minimizing the belted input system increases reliability and superior drive performance.

- UNICASE® reducer housings
- Quadrilip™ reducer shafts
- CEMA drive shafts ranging from 1-1/2" to 3-7/16"
- Eliminates the need for pulleys, belts or guards





Conveyors

a wide variety of bulk material handling applications improved by NORD's compact and cost effective design. NORD's compact and cost effective design provides for increased drive performance.

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Drag Conveyors

Ideal for handling dry, free-flowing materials, benefits of the drag conveyor include minimal product deterioration during conveying. NORD's compact and versatile fit almost any plant layout.

- Foot, shaft or flange-mounted
- UNICASE® cast iron housing
- AUTOVENT™ helps prevent bearing and gear damage
- Clincher™ Parallel Shaft space saving design
- 90.1 reducers offer infinite-life gears & high permissible radial forces

Slide Gates

Whether at hoppers, bins, silos or conveyors, NORD works perfectly with the grain industry's slide gate requirements. Used to control the discharge of bulk materials by regulating the flow on the conveyor, NORD's reliability can be counted on for discharge materials to be accurately cut off, or shut off.

- One-piece UNICASE® design
- Die-cast aluminum alloy gear housing
- Higher strength-to-weight ratio than cast iron
- Corrosion resistant in many applications
- NEMA or IEC input and NORD motor or brake motor

NORD DRIVE SOLUTIONS

GRAIN INDUSTRY RELATED PRODUCTS



UNICASE™ Design

NORD heavy-duty, one-piece housings are precisely machined to meticulous standards. Internal reinforcements increase the strength and rigidity of the housing. All bearings and seal seats are contained within the casting, eliminating splits or bolt-on carriers that can weaken the housing and allow oil leakage. Bores and mounting faces are machined in one step, producing precise tolerances that ensure accurate positioning of gear teeth, bearings and seals, which leads to longer life for all components.

Benefits

- Leak-free design
- Quiet operation
- High output torque capabilities
- Extended lubrication life
- Longer gear and bearing life
- Superior dependability, low maintenance and longer life



Helical-Bevel gear units (Catalog G1000)



- Foot, Flange or Shaft Mounted
- Hollow or Solid Shaft
- UNICASE™ housing
- Industry leading ratio range

hp	0.16 - 200
lb-in	Up to 442,500
Ratios	3.58:1 - 300,000:1
Output	0.1 - 490 rpm
Efficiency	Up to 95%

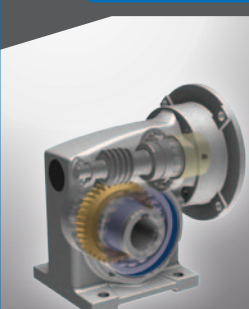
Screw Conveyor Package units (Catalog G1129)



- Foot, Flange or Shaft Mounted
- Long life, low maintenance
- UNICASE™ housing
- Parallel and right-angle gear units

hp	0.16 - 60
lb-in	Up to 53,100
Ratios	4.32:1 - 1,585.08:1
Output	0.41 - 405 rpm
Efficiency	Up to 97%

MINICASE™ Worm gear units (Catalog G1035)



- Foot, Flange or Shaft Mounted
- Hollow or Solid Shaft
- Corrosion Resistant
- Paint Free

hp	0.16 - 5
lb-in	Up to 4,863
Ratios	5:1 - 10,000:1
Output	0.18 - 350 rpm
Efficiency	Up to 93%

CLINCHER™ gear units (Catalog G1000)



- Foot, Flange or Shaft Mounted
- Hollow or Solid Shaft
- UNICASE™ housing
- Short design

hp	0.16 - 200
lb-in	Up to 796,500
Ratios	4.03:1 - 300,000:1
Output	0.1 - 430 rpm
Efficiency	Up to 97%

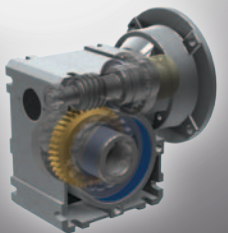
MAXXDRIVE™ gear units (Catalog G1050)



- CEMA mounted design for CLINCHER™ and Helical Bevel
- Compact and cost-effective
- Eliminates belted input systems

hp	3 - 1300
lb-in	Up to 2,196,000
Ratios	5.54:1 - 1600:1
Output	1 - 316 rpm
Efficiency	Up to 97%

FLEXBLOC™ Worm gear units (Catalog G1035)



- Compact worm gear unit
- Universal foot & flange mounted housing
- Corrosion Resistant
- Die cast aluminum alloy

hp	0.16 - 5
lb-in	Up to 4,863
Ratios	5:1 - 10,000:1
Output	0.18 - 350 rpm
Efficiency	Up to 93%

High-Quality Gearing

High quality gearing is essential to decreased noise, low maintenance and high durability. We take pride in the our gearing production since it equates to increased gear box life and higher torque and load capacities for you, our customers.

Benefits

- Designed and manufactured up to AGMA CLASS 13
- Case-Hardened Steel
- Exceptional Hardness: 60 Rc
- High-speed gears are ground; low speed gears are skive hobbled
- 275% momentary overload capacity

High-Strength Gear Cases

NORD housings are designed for maximum torque delivery. NORD uses state of the art FEM (Finite Element Modeling) to allow optimal structural design to maximize the strength and rigidity of internal components.

Benefits

- Thick housing wall cross-sections
- Torsionally stiff
- Maintains shaft alignment
- Primer sealed interior walls assure casting integrity and longer service life



NORD Gear Corporation
MEMBER OF THE NORD DRIVESYSTEMS GROUP
info.us@nord.com

Waunakee, WI
800 NORD Drive
Waunakee, WI 53597
Tel. 608.849.7300

Corona, CA
1180 Railroad St.
Corona, CA 92882
Tel. 608.849.0190

Charlotte, NC
300 Forsyth Hall Dr.
Charlotte, NC 53597
Tel. 608.849.0140

NORD Gear Limited - Canada
MEMBER OF THE NORD DRIVESYSTEMS GROUP
info.ca@nord.com

Brampton, ON
41 West Drive
Brampton, ON L6T4A1
Tel. 800.668.4378