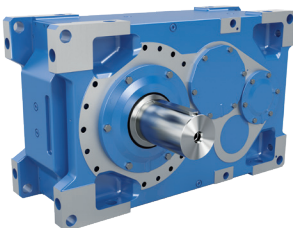




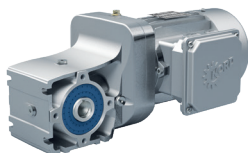
Drive solutions for the bakery industry

Complete drive solutions from a single source





Industrial gear units



Geared motors



Frequency inverters and motor starters

- ▶ Headquarters and technology centre in Bargteheide near Hamburg.
- ▶ Innovative drive solutions for more than 100 branches of industry.
- ▶ 7 production locations with cutting edge technology produce gear units, motors and drive electronics for complete drive systems from a single source.
- ▶ NORD has 48 subsidiaries in 36 countries and further sales partners in more than 50 countries, providing local stocks, assembly centres, technical support and customer service.
- ▶ More than 4,900 employees throughout the world create customised solutions.



Headquarters in Bargteheide



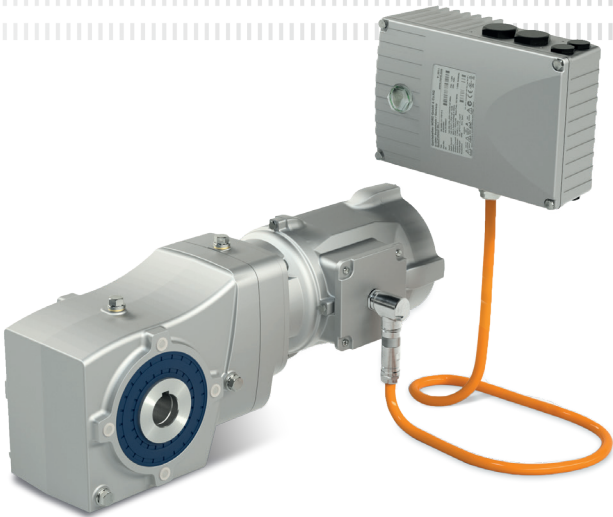
Motor production



Production and assembly



Motor assembly



Drive solutions for the bakery industry

6 Labelling, tagging, packing and palletising

With low-backlash drives, precise and dynamic moving becomes possible, resulting in significantly shorter cycle times.

5 Heating, cooling, freezing, fermenting and baking

NORD offers drive solutions designed to withstand extreme temperatures and temperature changes.

1 Kneading and hoisting

To be perfect, each type of dough requires a specific kneading speed and specific processing steps.

4 Weighing, filling, seeding and covering

Precise positioning and process speed control help minimise the cycle time and match the speeds of conveyors used in the finishing process.

3 Dividing, punching, stamping, rounding and crushing

Torque monitoring integrated in the frequency inverter ensures appropriate, fast rounding and prevents waste dough from sticking to the machine.

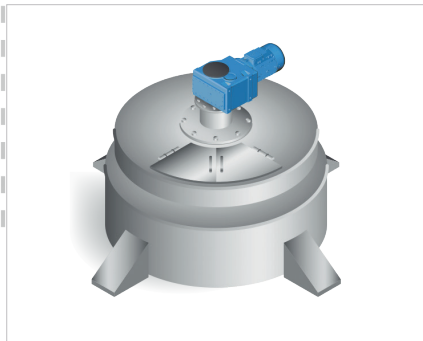
2 Dough sheeting system, conveying and laminating

As NORD drives can be controlled individually, the line speed is variable and adjustable when needed; this helps prevent jams and control the fermentation process.

NORD DRIVESYSTEMS is one of the world's leading suppliers of drive solutions for the bakery industry and provides:

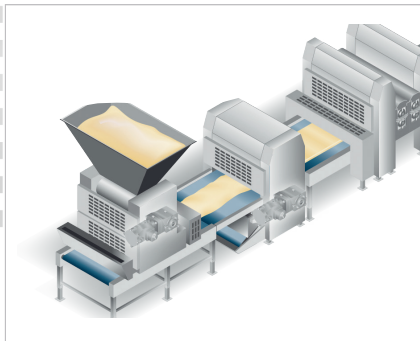
- ▶ Extensive knowledge of applications and technical support
- ▶ Complete drive solutions from a single source
- ▶ Strong global presence and service
- ▶ A great number of drives installed in the food industry
- ▶ Comprehensive, versatile range of high quality products
- ▶ Great reliability, economy and service life
- ▶ Recognised product quality compliant with international standards
- ▶ Drives designed to meet the hygienic requirements of the bakery industry

Drive solutions for the bakery industry



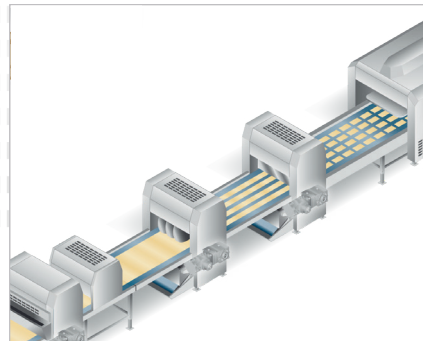
Kneading, hoisting

To be perfect, each type of dough requires a specific kneading speed and specific processing steps. With the NORD inverter technology, desired speeds, “safe stop” and reversing operation are possible. Reinforced bearings and agitator versions ensure that large axial and radial forces are absorbed permanently. Dual-gear agitators with counter rotating shafts are available upon customer's request. Intelligent sealing solutions prevent any leakage and in this way protect the foodstuff product. The gear unit is available with food grade oil filling.



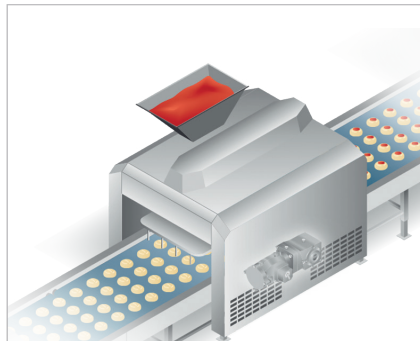
Dough sheeting system, conveying, laminating

As NORD drives can be controlled individually, the line speed is variable and adjustable when needed; this helps prevent jams and control the fermentation process. Precise positioning for subsequent filling, seeding and covering is made possible with encoders and sensor technology. This is done statically or dynamically.



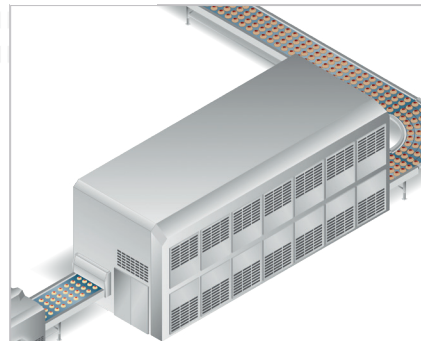
Dividing, punching, stamping, rounding, crushing

Torque monitoring integrated in the frequency inverter ensures appropriate, fast rounding and prevents waste dough from sticking to the machine. Precise positioning and dynamic sequences can be implemented reliably.



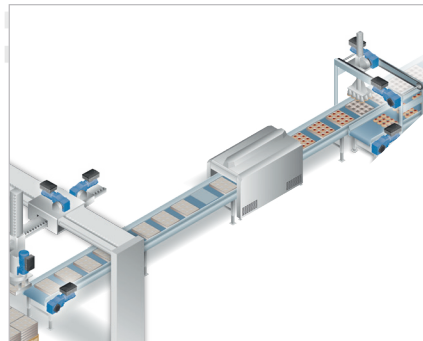
Weighing, filling, seeding, covering

Precise positioning and process speed control help minimise the cycle time and match the speeds of conveyors used in the finishing process.



Heating, cooling, freezing, fermenting, baking

NORD offers drive solutions designed to withstand extreme temperatures and temperature changes. Food-grade H1 low and high temperature oils and bearing lubricants as well as integratable condensate drains and vents ensure an appropriate resistance to temperature.



Labelling, tagging, packing, palletising

With low-backlash drives, precise and dynamic moving becomes possible, resulting in significantly shorter cycle times. Frequency inverters installed in the switch cabinet or mounted on the motor, combined with rotary encoder feedback and integrated PLC ensure a high level of automation because actuators and sensors can be integrated.

Drive solutions for the bakery industry

Explosion-protected NORD drive solutions



© Amreiter Mühle GmbH



Under unfavourable conditions, flour dust and other fine-grained deposits can cause ignitions or explosions.

NORD offer secure solutions for dust explosion protection in line with the ATEX directives.

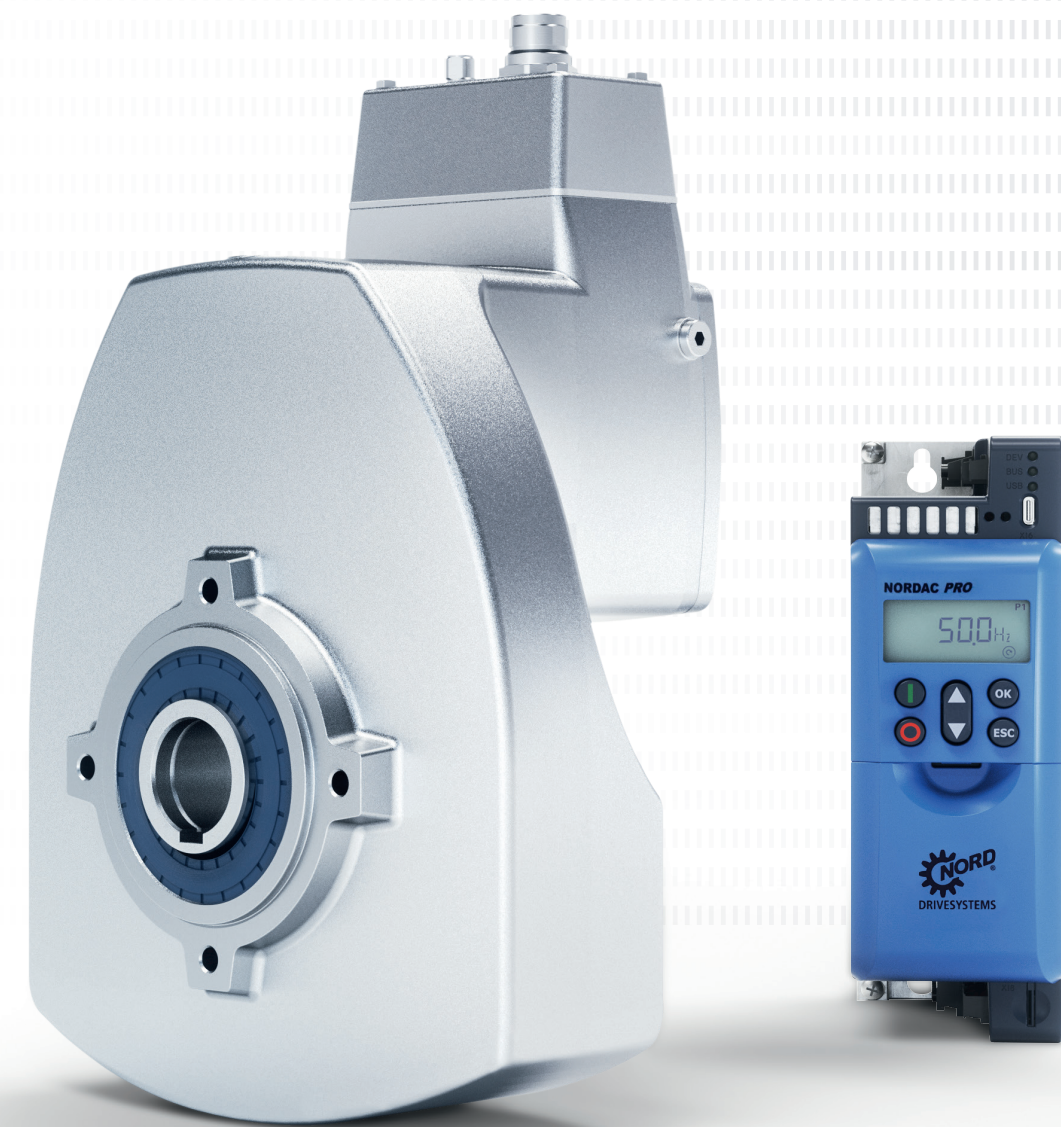
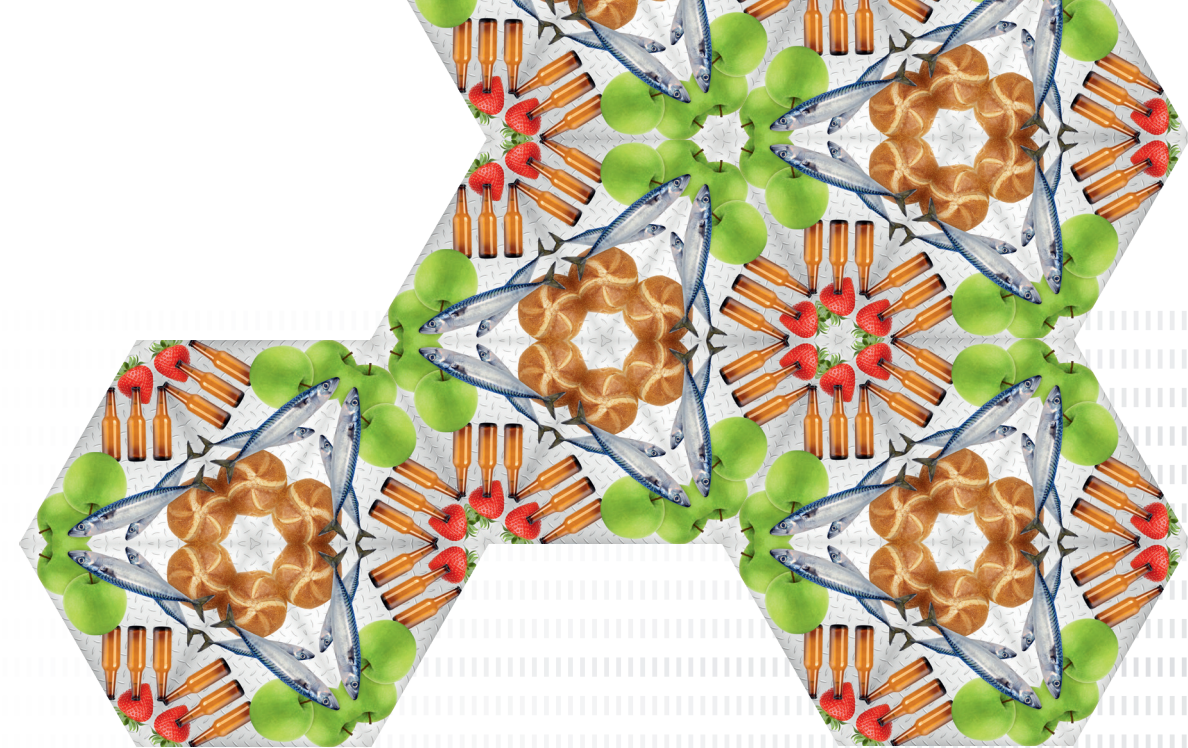
Energy efficient

NORD drive solutions are environmentally friendly and help reduce operating costs and minimise CO₂ emissions.

- ▶ Highly efficient helical and bevel gear units achieve optimum power transmission performance.
- ▶ NORD motors comply with international energy efficiency classes up to IE4.



- ▶ NORD frequency inverters have energy saving functions to effectively reduce energy consumption.



Drive solutions for the bakery industry

Secure, proven and hygiene-friendly drive solutions from a single source



Reliable

From pinions to circuit boards, all NORD mechatronic components are produced in our own factories, which means unsurpassed reliability, long operating times, long service life and low total operating costs. Countless options cater for all requirements of the bakery industry.

- ▶ Special lubricants for low/high temperatures
- ▶ Temperature sensors to protect against overheating
- ▶ Protection class IP66 or IP69K for cleaning with hot water
- ▶ Stainless steel shafts and accessories; metal fan blades; fanless designs
- ▶ Protection against moisture: rust protection (dust and rust); multilayer coatings

Proven and hygiene-friendly

Demanding environments are common in the bakery industry. These include extreme temperatures, use of high pressure jet cleaning and various hazardous areas, e.g. alcoholic liquids and chemically aggressive environments in cleaning processes. NORD special solutions for this problem have proven themselves throughout the world.

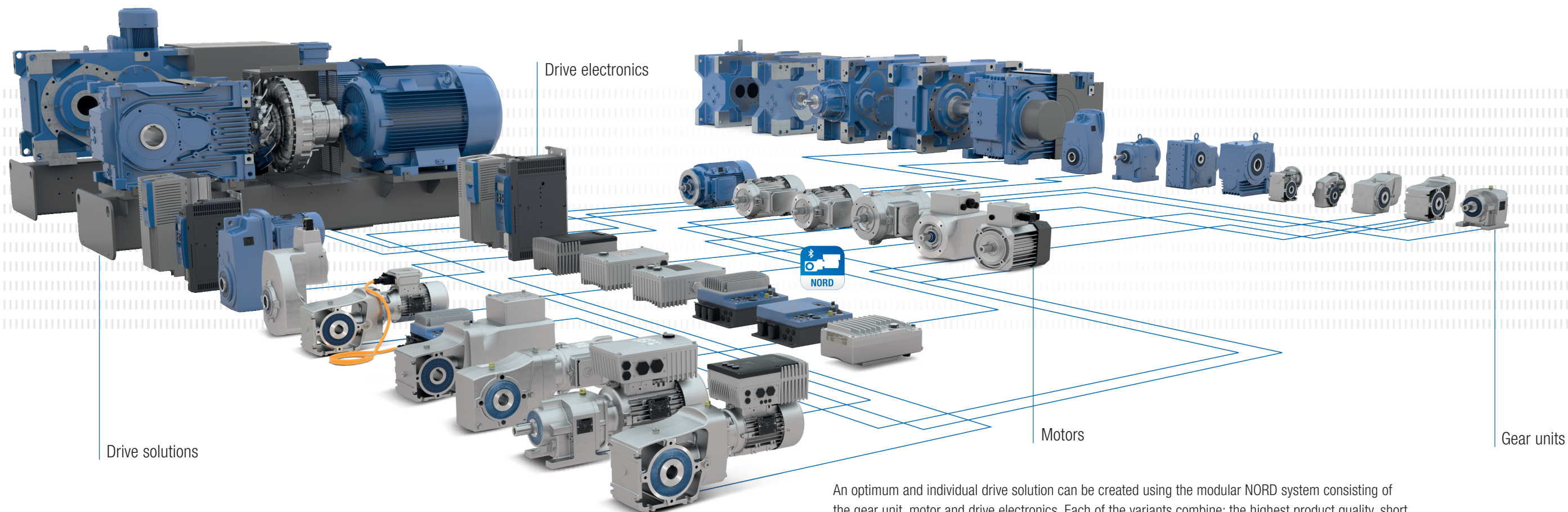
- ▶ Explosion protected motors (ATEX, NEC) for Zone 1/21 and Zone 2/22 explosion hazard areas
- ▶ Dairy versions: Condensate drains, anti-condensation heaters

Easy to service and maintain

Thanks to their optional plug connections and modular structure, NORD drive units are especially easy to service and maintain. They therefore help to reduce down times and increase plant availability. With subsidiaries and sales partners in 98 countries on 5 continents, NORD DRIVESYSTEMS ensures worldwide support.



Drive solutions for the bakery industry



An optimum and individual drive solution can be created using the modular NORD system consisting of the gear unit, motor and drive electronics. Each of the variants combine: the highest product quality, short planning and assembly times, high delivery availability, and a good price/performance ratio.



Reliable gear units with one-piece UNICASE housing can cater for any load.

- ▶ High power density
- ▶ Long service life



Powerful motors up to IE4 keep drive systems in motion in all operating situations.

- ▶ Designed in compliance with international standards
- ▶ High overload capacity
- ▶ Energy-efficient



Intelligent drive electronics provide exactly the control options which you need.

- ▶ Scalable functions
- ▶ Full field bus connection facilities
- ▶ Wide power range
- ▶ PLC integrated at no extra cost



Extensive communication options enable access to drives from all levels to enable a wide variety of setting options.

- ▶ All common bus systems
- ▶ Quick and simple commissioning with plug-in control box or using NORDCON software
- ▶ Convenient hand held console for local operation
- ▶ Optionally with intralogistics options



Switches and keys are located directly on the drives and enable direct starting and stopping as well as mode switching.

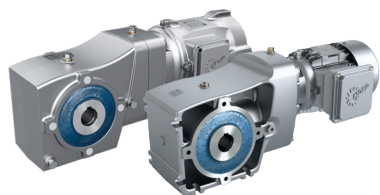
- ▶ Mains switch
- ▶ Selector switch for local or remote control
- ▶ Start/Stop and Forward/Reverse switch
- ▶ Energy-efficient



All interfaces are designed for ease of use. Drives can be easily configured and installed.

- ▶ Simple Plug-and-Play with all common connection plugs
- ▶ Plug-in supply cable and motor output
- ▶ Plug-in sensors and encoders
- ▶ Pre-assembled cables
- ▶ PLC integrated at no extra cost

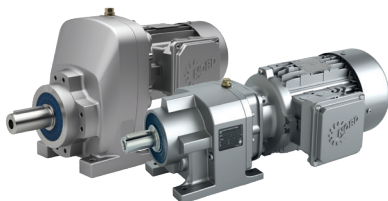
NORDBLOC.1® 2-stage bevel gear units (Catalogue G1014)



- ✓ Foot, flange or face mounted
- ✓ Hollow or solid shaft
- ✓ Aluminium housing

Sizes: 6
Power: 0.12 – 9.2 kW
Torque: 50 – 660 Nm
Speed ratio: 3.03 – 70:1

NORDBLOC.1® 1- and 2-stage helical in-line gear units (Catalogue G1000)



- ✓ Foot or flange mounted
- ✓ Die-cast aluminium housing
- ✓ UNICASE housing
- ✓ Industry standard dimensions

Sizes: 13
Power: 0.12 – 37 kW
Torque: 30 – 3,300 Nm
Speed ratio: 1.07 – 456.77:1

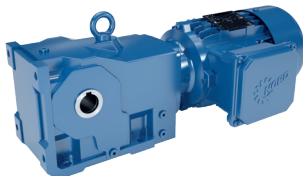
UNIVERSAL SMI worm gear units (Catalogue G1035)



- ✓ Modular
- ✓ Universal mounting options
- ✓ Life-long lubrication
- ✓ IEC version

Sizes: 5
Power: 0.12 – 4.0 kW
Torque: 21 – 427 Nm
Speed ratio: 5.00 – 3,000:1

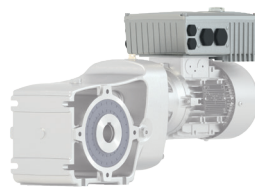
UNICASE bevel gear units (Catalogue G1000)



- ✓ Foot, flange or face mounted
- ✓ Hollow or solid shaft
- ✓ UNICASE housing

Sizes: 11
Power: 0.12 – 200 kW
Torque: 180 – 50,000 Nm
Speed ratio: 8.04 – 13,432.68:1

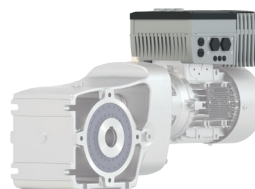
NORDAC BASE SK 180E frequency inverters (Catalogue E3000)



- ✓ Stand-alone operation
- ✓ 4 parameter sets
- ✓ Sensorless current vector control (ISD control)
- ✓ Integrated PLC

Sizes: 2
Voltage: 1~ 110 – 120 V, 1~ 200 – 240 V, 3~ 200 – 240 V, 3~ 380 – 500 V
Power: 0.25 – 2.2 kW

NORDAC FLEX SK 200E frequency inverters (Catalogue E3000)



- ✓ Energy-saving functions
- ✓ Integrated POSICON positioning control
- ✓ Integrated PLC

Sizes: 4
Voltage: 1~ 110 – 120 V, 1~ 200 – 240 V, 3~ 200 – 240 V, 3~ 380 – 500 V
Power: 0.25 – 22 kW

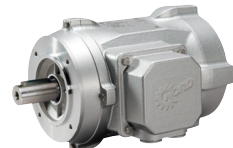
NORDAC PRO SK 500E frequency inverters (Catalogue E3000)



- ✓ Stand-alone operation
- ✓ 4 parameter sets
- ✓ Sensorless current vector control (ISD control)
- ✓ Integrated PLC

Sizes: 11
Voltage: 1~ 110 – 120 V, 1~ 200 – 240 V, 3~ 200 – 240 V, 3~ 380 – 480 V
Power: 0.25 – 160 kW

Smooth surface motors (Catalogue M7010)



- ✓ IP66/IP69K (optional)
- ✓ Aluminium motors
- ✓ IE3
- ✓ IE4

Sizes: 80, 90, 100
Power: 0.12 – 2.2 kW

Headquarters:
Getriebebau NORD GmbH & Co. KG
Getriebebau-Nord-Str. 1
22941 Bargteheide, Germany
T: +49 45 32 / 289 0
F: +49 45 32 / 289 22 53
info@nord.com