

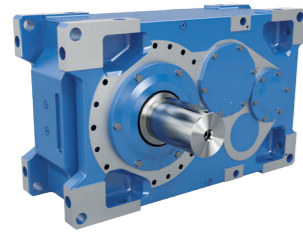
Surface protection for NORD[®] drive solutions

Coating, Powder Coating

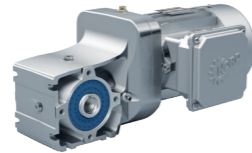


DRIVESYSTEMS

Our Solution. Your Success.



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

Gear unit production

Inverter production

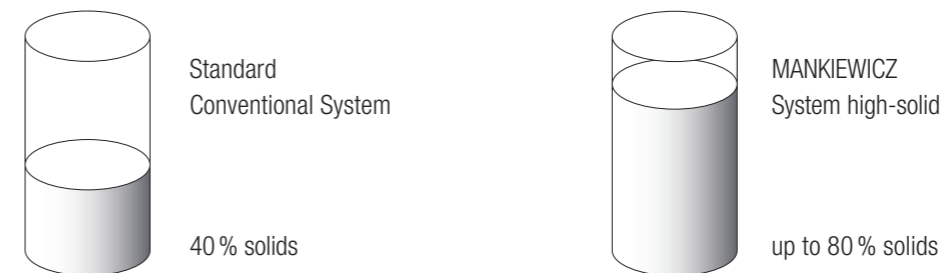
Fewer solvents and greater efficiency

We use the latest generation of high-solid paints, which reduces the use of solvents to levels far below the legally required limits. High-solid paints is a term used to identify a paint that is formulated with a high concentration of resin – up to 80 % – and a small concentration of solvents. As a result, these paints contribute considerably less environmental pollution than other industrial paints. The high-solid paints we use combine the emission benefits of hydro paints with the functionality of solvent-based coating materials. By complying with the VOC standards, we make an important contribution to protecting the environment. In addition, the lower solvent proportion of our paints allows for short drying times in production – a decisive advantage over water-based paint systems. The substrates materials for water-based paint systems have to be cleaned and de-greased with solvents before they are painted. Ultimately, our customers benefit from faster production and delivery times.

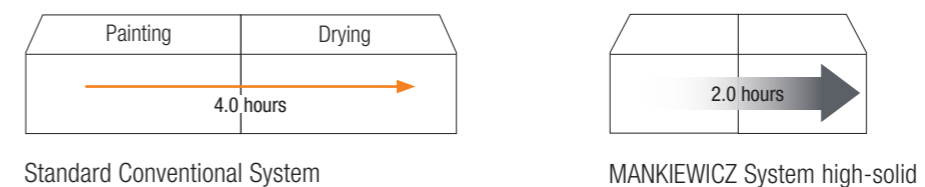
Energy efficiency as corporate value

Drive solutions from NORD DRIVESYSTEMS® are valued for their high energy efficiency. We apply the same optimisation standards to our own production in our plants.

Solvent reduction



Process optimization



Optimum protection for every application – our coating systems have been successfully tested by an independent laboratory:

- ▶ Cross cut test according to DIN EN ISO 2409 to test the adhesion of the paint system
- ▶ Salt spray test according to DIN EN ISO 9227 to test corrosion resistance
- ▶ Evaluation of degree of delamination according to DIN EN ISO 4628-8
- ▶ All NORD® paints are USDA compliant

Surface protection for NORD® drive solutions

Coating / Field of Application	Class**	Structure	Coating Thickness*
Basic Basic+ Indoor installation Previously Stainless Steel (SS)	C2		50 – 90 µm
NORD® Severe Duty 2 NORD® Severe Duty 2+ Indoor installation and protected outdoor installation (i.e. open, unheated halls) Previously NORD® Severe Duty+ and NORD® Severe Duty x3	C2		110 – 150 µm
NORD® Severe Duty 3 NORD® Severe Duty 3+ Outdoor installation, city, and industrial atmosphere with low contamination	C3		160 – 200 µm
NORD® Severe Chem Duty 3 Normal chemical contamination	C3		100 – 140 µm
NORD® Severe Food Duty 3 NORD® Severe Food Duty 3+ Food packaging areas	C3		100 – 140 µm
NORD® Severe Duty 4 NORD® Severe Duty 4+ Outdoor installation, city, and industrial atmosphere with moderate contamination.	C4		220 – 260 µm
NORD® Severe Duty 5 NORD® Severe Duty 5+ Outdoor installation, city, and industrial atmosphere with high contamination	C5		200 – 240 µm

A Optional clear coat (+ variants)
Coating Thickness + 25 µm

T 2-Component Polyurethane Top Coat
E 2-Component EP Zinc Phosphate Primer
P 2-Component Polyurethane Primer
D Single Component Dip Primer
(for cast-iron units only)

** Comparable to DIN EN ISO 12944-2 classification of ambient conditions
* Protocol of the coating thickness based on ISO 19840 available on request

Global quality to reinforce your corporate identity

Throughout the world, NORD DRIVESYSTEMS® offers you a uniform series of standard colors as well as preferred colors. In addition, we also implement individual solutions according to your specifications, which optimally match the corporate design and branding of your company.

U.S. standard colors:

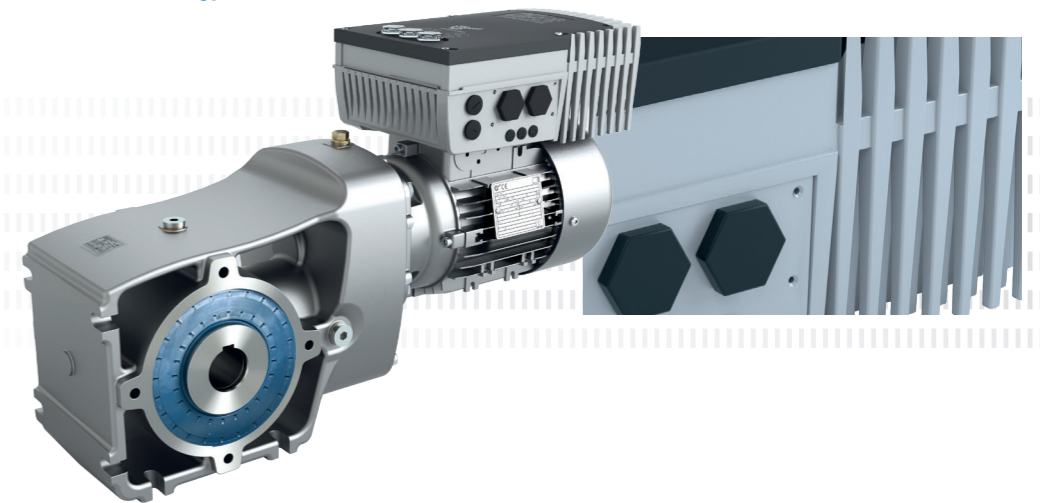
- ▶ RAL 9007C Gray Aluminum / Stainless Steel Gray
- ▶ RAL 9003 Signal White
- ▶ RAL 5009 Azure Blue

Global standard colors are stocked in our painting facilities throughout the world:

- ▶ RAL 7031 Blue-Gray
- ▶ RAL 5010 Blue
- ▶ Other options include special colors according to RAL, BS, Munsell and Pantone

Powder coating für decentralized drive technology

Environmentally friendly high performance coatings for SK 200E series decentralized variable frequency drives with IP66 protection class



Due to their extremely robust and durable properties, powder coatings are highly suitable for the electrical industry. Surfaces treated in this way are resistant to impact, scratches, and wear. They are also resistant to weather and chemicals, making them even more durable than conventional NORD® paints.

In the electrical industry, the anti-static properties of electrically conducting powder paints are relevant for the prevention of static charging of the drive units. Potential interference is eliminated and downtime is minimized. Environmental protection is becoming increasingly important in the field of surface coatings. NORD® offers powder coating options that do not use solvents, but rather dry powder, which is melted onto the unit in a kiln.

Surface protection for NORD® drive solutions



The paint systems used by NORD DRIVESYSTEMS® are resistant to chemicals and have been tested for their resistance to all common substances which could have a negative affect on the environment. Once fully dry, NORD® paints are food-safe and fulfil the NSF / ANSI 51-2009e test criteria. No further top coats are required. NORD®'s protective properties extend beyond paint coatings and surface treatments for its products. All NORD® motors and speed reducers are constructed to provide a high degree of protection against wet and severe conditions. A variety of standard and optional features are available to help your NORD® gear unit endure the harshest environmental conditions year after year.

Standard Gear Unit Features

- ▶ UNICASE™ housing design
- ▶ AUTOVENT™ breather
- ▶ Factory primer on all cast-iron components
- ▶ Corrosion-resistant nameplate

Optional Gear Unit Features

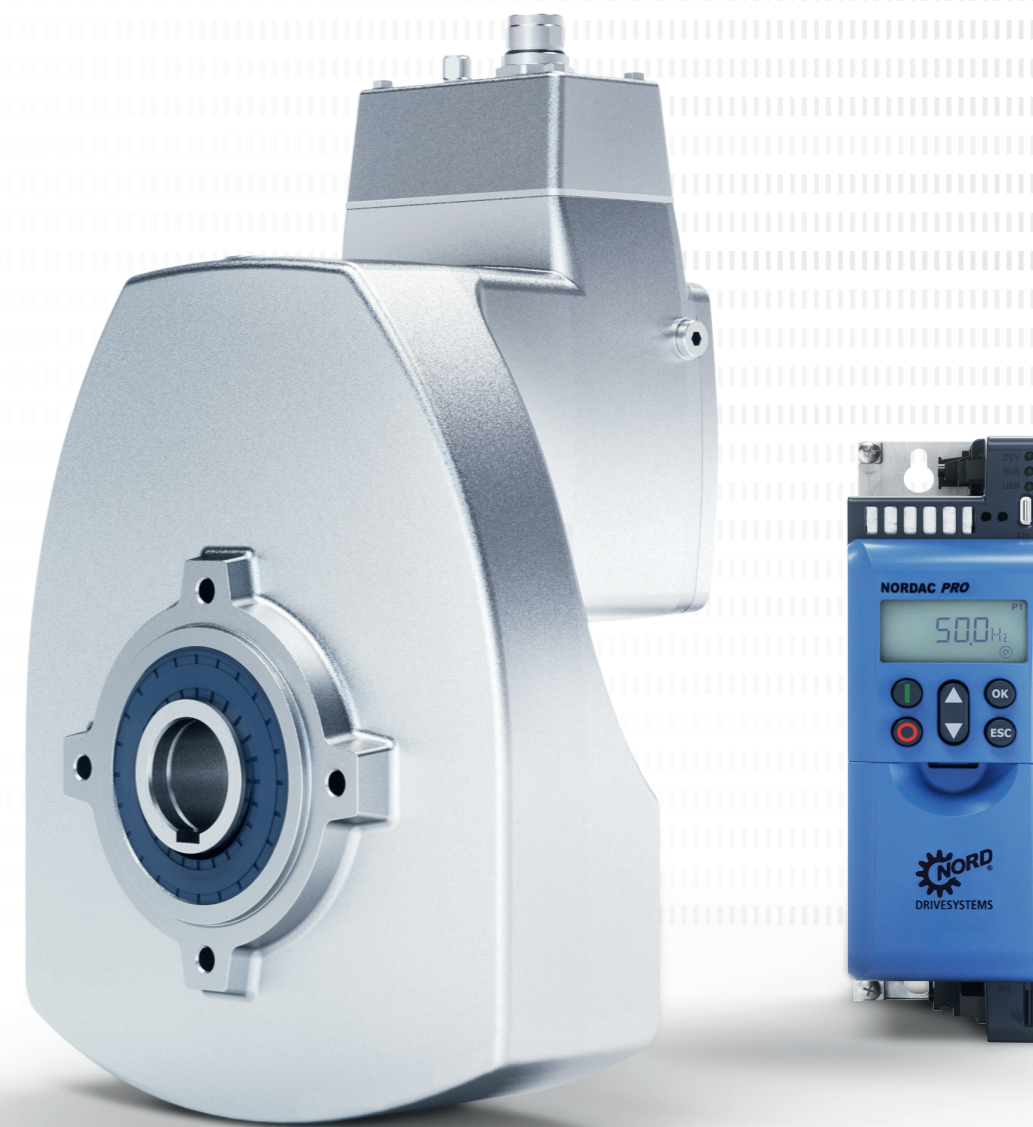
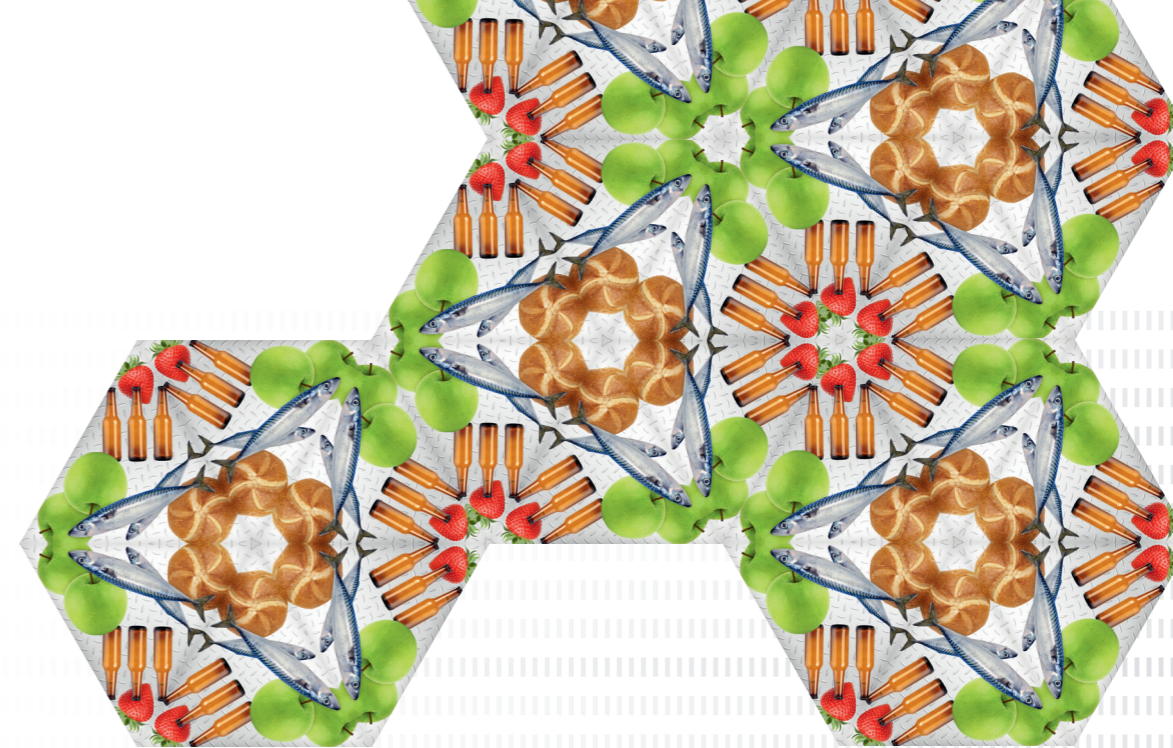
- ▶ Stainless steel output shafts
- ▶ Stainless steel hardware
- ▶ Custom venting solutions – stainless steel, filtered vents

Standard Motor Features

- ▶ Shaft lip seals on both ends of the motor shaft
- ▶ Sealed stator to endbell connections to exclude moisture
- ▶ Moisture-resistant varnish dipped windings
- ▶ Double coated magnetic wire insulation
- ▶ Conduit box sealed with gaskets
- ▶ Corrosion-resistant alloy materials
- ▶ Tropical protection – inorganic insulating components

Optional Motor Features

- ▶ IP66 enclosure protection (IP55 standard)
- ▶ Condensation drain holes (KB or KBO)
- ▶ Resin-sealed terminal box (KKV)
- ▶ Epoxy-dipped motor windings (EP)
- ▶ Drip covers – canopy cover or double fan cover (RD or RDD)
- ▶ Totally Enclosed Non-Ventilated (TENV)
- ▶ Space Heaters (SH)
- ▶ Brake protection options
 - ▶ Stainless steel brake plate (RG)
 - ▶ Rubber dust boot with stainless brake plate (SR)
 - ▶ IP66 Sealed Brake
 - ▶ Sealed brake rectifiers



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