

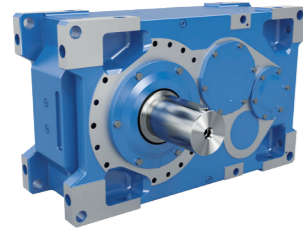
# Surface Protection for NORD Drive Solutions



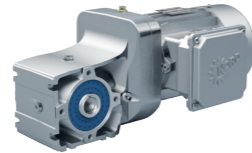
**DRIVESYSTEMS**

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 4,800 employees throughout the world create customised solutions.



NORD products come with the perfect surface protection for your needs.

Whether your application is located indoors or outdoors, whether on the coast or offshore, whether your machine is cleaned regularly or is exposed to chemical stress - NORD has the right surface solution for you that ensures maximum resistance and longevity.

### Surface Systems for NORD Gear Unit and Motors

#### CORE

Aluminium provides a good self-protection by passivation that is sufficient for various applications. Naturally only available for all aluminium housing units.

#### BASIC

This option comprises of a single layer of paint applied to the geared unit and provides a light protection for indoor installations. With that comes the freedom of choice of the colour. Available for all gear units and motors.

#### NSD

NORD Severe Duty surface protection system comprises of primer layer(s) combined with paint layer(s). The system covers a broad range of possible field of applications and corrosion classes. Available for all gear units and motors. Skeleton type gear units series SI, SID, SIS, 02040.1 and 92x72.1 only available with NSD2.

#### NXD

NORD eXtreme Duty surface protection systems, the housing parts individually receive a full surface conversion. For NXD BASIC a geared motor unit is built of converted parts and then a single layer of paint is applied. For NXD tupH the individual housing parts are further applied with a high-performance sealer and the gear unit is then built out of these parts. Available for smooth body aluminium gear units and motors. NXD tupH also available on smooth body decentral inverter NORDAC *ON PURE*.



Headquarters in Bargteheide

Motor production

Production and assembly

Motor assembly

Gear unit production

Inverter production

# Surface Protection for NORD Drive Solutions

Category	Surface System / Field of Application	Class **	Structure
CORE	<b>CORE</b> Indoor installation: Low humidity		
BASIC	<b>Basic</b> Indoor installation: Unheated buildings where condensation may occur	C2	
NSD	<b>NSD2</b> <b>NSD2+</b> Indoor installation: Unheated buildings where condensation may occur Outdoor installation: Atmosphere with low pollution level, mostly rural areas	C2	
	<b>NSD3</b> <b>NSD3+</b> Indoor installation: Production rooms with high humidity and increased levels of air pollution, e.g. laundries, breweries, dairies atmosphere with low salinity	C3	
	<b>NSDC3</b> Indoor installation: Production rooms with high humidity and increased levels of chemical air pollution and chemical load	C3	
	<b>NSDF3</b> <b>NSDF3+</b> Indoor installation: Production rooms with high humidity and increased levels of air pollution, e.g. food processing and packaging in non-food-contact zones	C3	
	<b>NSD4</b> <b>NSD4+</b> Indoor installation: Chemical plants, swimming pools, offshore shipyards, and boat harbors Outdoor installation: Industrial or coastal atmosphere with moderate salinity	C4	
	<b>NSD5</b> <b>NSD5+</b> Indoor installation: Buildings or areas with near-permanent condensation and high levels of pollution Outdoor installation: Industrial areas with high humidity, aggressive environments, or coastal atmosphere with high salinity	C5	 <small>gaps filled with polyurethane-based sealant</small>
NXD	<b>NXD BASIC</b> Indoor installation: Buildings or areas with near-permanent condensation and high levels of pollution Outdoor installation: Industrial areas with high humidity, aggressive environments, or coastal atmosphere with high salinity	C5	
	<b>NXD tupH</b> Indoor installation: Production rooms with intense cleaning or chemical stress, food applications with food contact	C5	

\*\* Comparable to DIN EN ISO 12944-2 classification of ambient conditions.

D	Single Component Dip Primer (for cast-iron units only)
P	2-Component Polyurethane Primer***
E	2-Component Epoxy Zinc Phosphate Primer
T	2-Component Polyurethane Top Coat
A*	Optional Clear Top Coat (+ versions)
C	Surface Conversion (for aluminium units only)
S	Food Grade Sealer (for aluminium units only)

\*\*\* Primer may vary by country or geographic location.

## CORE

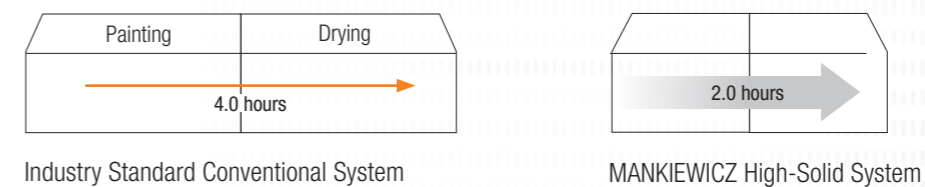
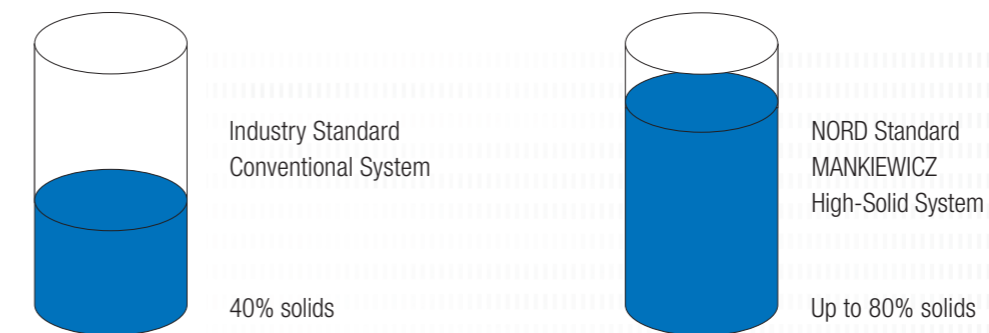
NORD aluminium gear units and motors have inherent corrosion protection and do not need additional surface protection when installed indoors in appropriate ambient conditions.

Avoiding painting or other surface protection - if technically possible and sensible - makes a valuable contribution to environmental and climate protection; This reduces energy requirements and greenhouse gas emissions during the manufacturing process.

## BASIC and NSD

We use the latest generation of high-solid paints, which reduces the use of solvents to levels far below the legal 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 substrate materials for water-based paint systems must be cleaned and de-greased with solvents before they are painted. Ultimately, our customers benefit from faster production and delivery times.

## Solvent Reduction and Process Optimization



## Global Quality to Reinforce your Corporate Identity

Throughout the world, NORD DRIVESYSTEMS offers you a uniform series of standard colours as well as preferred colours (may vary depending on location). In addition, we also implement individual solutions according to your specifications, which optimally match the corporate design and branding of your company.

# Surface Protection for NORD Drive Solutions



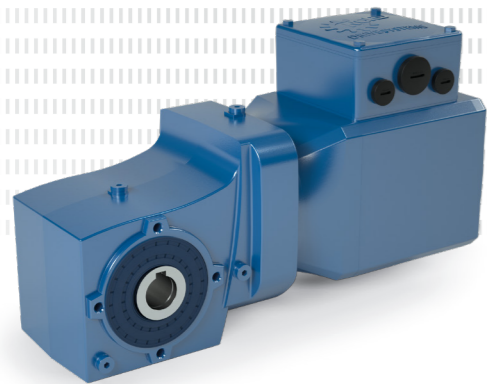
NXD BASIC is an enhanced surface coating for use in operating environments that require a higher degree of protection than standard paint can provide. It can be applied to NORD aluminium gear units and smooth surface motors.

### System Design

- ▶ **Step 1:** The ready-machined housing part undergoes a surface conversion process which creates a very hard, inert surface with good adhesion properties for the next layer.

**The surface converted parts are then assembled to a NORD drive system.**

- ▶ **Step 2:** The paint layer is then applied after the assembly and adheres excellently to the converted surface.



Sealed Surface Conversion System

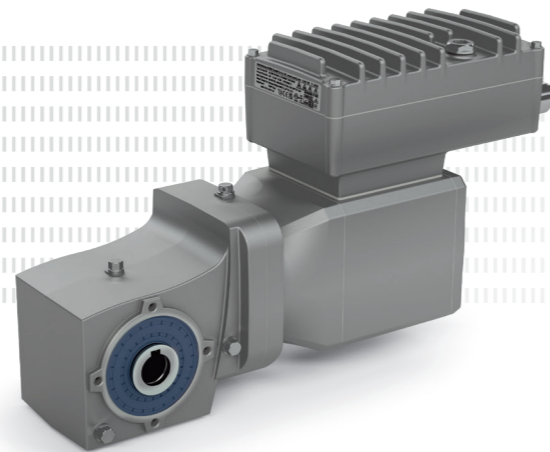
NXD tupH is a state-of-the-art surface treatment for wash-down applications. This molecular conversion process ensures aluminium drives have all the protection needed for the most extreme operating environments.

### System Design

- ▶ **Step 1:** The ready-machined housing part undergoes a surface conversion process which creates a very hard, inert surface with good adhesion properties for the next layer.

- ▶ **Step 2:** The surface converted parts are then coated and cured with a thin high-performance food-grade highly-adherent sealer

**Parts with the complete system applied are then assembled to a NORD drive system.**



### Surface conformity

for use in a USDA inspected facility as Incidental Food Contact Material



### Surface conformity

**USA:** Code of Federal Regulations, Food and Drugs (FDA), 21 CFR § 175.300

**EU:** Regulation (EC) No 1935/2004  
In compliance with applicable limit values of the Commission Regulation (EU) No 10/2011.



### Industries & Applications

- ▶ Water treatment
- ▶ Car washes
- ▶ Marine

### Benefits

- ▶ Resistant to scratches and chips
- ▶ Corrosion-resistant (C5)
- ▶ Free from chromates or PFAS
- ▶ Improved adhesion of paint layer
- ▶ Custom colours available



### Industries & Applications

- ▶ Food & Beverage
- ▶ Dairies
- ▶ Pharmaceuticals
- ▶ Chemical cleaning

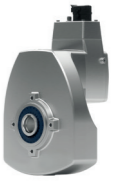
### Benefits

- ▶ Easy-to-clean surfaces
- ▶ Resistant to acids and alkalis
- ▶ Won't blister or flake
- ▶ Corrosion-resistant (C5)
- ▶ Free from chromates or PFAS
- ▶ Alternative to stainless steel with:
  - ▶ Lower weight
  - ▶ Higher power density
  - ▶ Better heat dissipation
  - ▶ More configuration options
  - ▶ Greater cost effectiveness

### Tests performed on NXD BASIC and NXD tupH

- ▶ DIN EN ISO 20567-1 Determination of stone-chip resistance of coatings
- ▶ DIN EN ISO 9227 Salt spray test according to C5 720h
  - ▶ DIN EN ISO 2409 Cross-cut test
  - ▶ DIN EN ISO 4628-2 Assessment of degree of blistering
  - ▶ DIN EN ISO 4628-3 Assessment of degree of rusting
  - ▶ DIN EN ISO 4628-8 Assessment of degree of delamination and corrosion
- ▶ DIN EN ISO 2812-1 Determination of resistance to liquids\*
  - ▶ DIN EN ISO 4628-1 Evaluation of degradation of coatings
  - ▶ DIN EN ISO 4628-2 Assessment of degree of blistering

Products available with NXD BASIC and NXD tupH



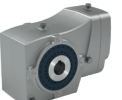
DuoDrive



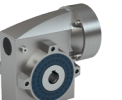
NORDBLOC.1® Helical Inline Gear Units (2 & 3 Stage up to Size 6 Single Stage up to Size 7)



UNICASE Parallel Shaft Gear Units 0182.1 - 1382.1



NORDBLOC.1® Helical Bevel Gear Units



UNIVERSAL SMI Worm Gear Units



Smooth Surface Motors (IE3 & IE5+)

### NXD tupH only



SK 350P NORDAC ON PURE VFDs (in preparation)

\*NXD tupH only

EN

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