

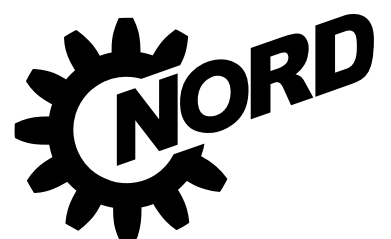
Intelligent Drivesystems, Worldwide Services



GB

# Aluminium gear units and motors

Optionally with **nsd** turn Sealed Surface Conversion System



DRIVESYSTEMS

# Advantages of light metal gear units

## Corrosion Resistant Aluminum Housing

Modern gear units need to be robust, compact, powerful, inexpensive - and above all, light: This is an advantage, because weight causes costs, especially if the gear unit has also to be transported during movement cycles. Because of this, aluminium alloy has become firmly established as a material for gear unit housings in many areas.

NORD DRIVESYSTEMS utilises many of the advantages provided by an optimised aluminum alloy for gear unit housings. In addition, the housing material has a certain corrosion protection and does not necessarily need to be painted. Last, not least, a housing made from aluminium conducts heat much better than a housing made from cast iron. This makes lower operating temperatures possible, which is good for the internal components of the gear unit and ensures a longer service life.

## Advantages

- Often there is no need for painting
- Corrosion resistant for many applications
- Good thermal conductivity (lower temperature)
- Easy cleaning

## Features

- Low weight
- Smooth surfaces
- Good thermal conductivity



The light and durable NORD aluminium UNICASE housings are produced in our Gadebusch factory in Mecklenburg-Vorpommern using the very latest production methods.



## NORD UNICASE housings made from aluminium alloy

- Low weight
- Natural corrosion protection
- Good thermal conductivity



Helical gear units



2-stage bevel gear units with NORD smooth surface



SMI worm gear units

Optimisation of the natural corrosion protection characteristics is possible with the use of **nscl<sup>tuPH</sup>** (see page 12-13).



**Sealed Surface Conversion System**




# 2-stage bevel gear units

The new 2-stage bevel helical gear units with optimised performance are an innovative NORD design made from high-strength aluminium alloy.

Thanks to the washdown version, the new 2-stage NORDBLOC.1 bevel gear units are especially suitable for applications in the food industry. Further fields of use are include conveyor belts, lifting gear or warehouse systems.

## Advantages

- The gear unit has no pockets, recesses or undercuts. Therefore easy cleaning and draining of dirt and liquids is guaranteed.
- In combination with our smooth surface motors, the gear units are ideal for use in the food industry.
- The rigid construction ensures optimum integration in existing systems and is easy to fit and remove.
- The wide range of speed ratios ( $i=3.5$  to 70) enables optimum adaptation to customers' requirements.
- Greater safety due to double seal as standard
- Available in open or closed washdown versions with , which is resistant to both acids and alkalis.

## Features

- Corrosion-resistant due to aluminium
- Easy to clean thanks to smooth surfaces (washdown liquids always run off)
- 60% increase in power density compared with the previously available range
- Suitable for large forces due to enlarged heavy duty drive shaft bearings
- Sealing options such as double radial shaft sealing rings provide highly reliable sealing for special applications.
- Environmentally friendly through minimised lubricant volume
- Flexible application through compact design with short IEC adapter, integrated into the proven NORD modular system



### 2-stage NORDBLOC.1 bevel gear unit

(Catalogue G1014)

- ✓ Up to 97% efficiency
- ✓ Shaft, foot or flange-mounting
- ✓ Hollow or solid shaft
- ✓ UNICASE housing

Sizes	5
kW	0.12 – 9.2
Nm	90 - 660
i	3.58:1 – 70:1



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### Washdown

- No recesses
- Smooth surfaces
- No assembly cover
- Large radii
- Inclined surfaces



### Sealed Surface Conversion System

- Surface treatment
- No detachment possible
- Corrosion-resistant - just like stainless steel
- No flaking
- No corrosion penetration



### Unique housing

- Lightweight with high strength
- Minimal use of materials
- Cool surfaces

### Especially suited to applications in:

- Food and beverage
- Conveying
- Lifting equipment
- Warehouse systems



2-stage bevel gear units  
(SK93x72.1 series)



2-stage bevel gear units  
with IEC cylinder and flange  
(SK92x72.1 series)



2-stage bevel gear units  
(SK92x72.1 series)

Designed and constructed according to the following standards: EHEDG, ANSI / BISSC, ANSI / NSF



# UNIVERSAL SI and SMI worm gear units

UNIVERSAL SI and SMI worm gear units from NORD DRIVESYSTEMS provide a high power density and are extremely compact. They feature quiet torque transfer.

Thanks to their simple and effective structure they take up considerably less space than other types of gear unit. The gear units are available in SI and SMI versions (with smooth closed surfaces).

## Advantages

- A larger selection of shaft diameters provides greater flexibility for customers.
- On the drive side, IEC adapters provide several standard motor attachments for gear units of all sizes.
- Operation as a double gear unit is also possible for very high speed ratios.
- Thanks to fine casting, the improved surface structure with low levels of roughness gives dust less chance to adhere (washdown effect).
- Because of the large selection of components from the modular system, gear units can be optimally adapted to requirements.
- W-cylinder (free drive shaft)
- H10 first stage for larger gear ratios
- Torque support

## Features

- SMI gear units made from cast aluminium with smooth surfaces are especially suitable for applications in the food and beverage industry.
- Gears and shafts from the tried-and-tested modular system
- SMI gear units available up to size 75 for up to 427 Nm



UNIVERSAL SI worm gear units (Catalogue G1035)	
✓ Modular	
✓ Universal mounting	
✓ Life-long lubrication	
✓ IEC versions	
Sizes	5
kW	0.12 – 4.0
Nm	21 – 427
i	5.00:1 – 3,000.00:1
SMI worm gear units (Catalogue G1035)	
✓ Smooth surfaces	
✓ Life-long lubrication	
✓ IEC versions	
Sizes	5
kW	0.12 – 4.0
Nm	21 – 427
i	5.00:1 – 3,000.0:1



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### Modular and flexible

- Use of various motors with IEC adapters
- The SMI flange housing can be combined with all SI series flanges
- Optimised NORD gear unit modules
- Standard IEC B5 / B14 interfaces for all sizes of gear unit



### Sealed Surface Conversion System

- Surface treatment
- No detachment possible
- Corrosion-resistant - just like stainless steel
- No flaking
- No corrosion penetration



### Versatile application

- Aluminium housing with washdown
- Can be used in ATEX areas
- Many possible shaft diameters
- SMI up to size 75



SMI worm gear units in foot-mounted version



SMI worm gear units in flange-mounted version



UNIVERSAL SI worm gear units



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# NORDBLOC.1 helical gear unit

One goal of the new NORDBLOC.1 units was to provide a smooth surface to prevent the deposit of liquids or solids on the units. This is an advantage in applications where cleanliness is important.

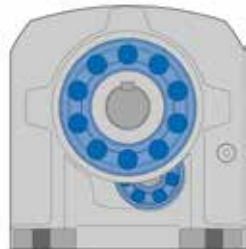
These innovative and patented gear units do not feature joints or openings. This increases strength and also provides a smoother surface.

## Advantages

- Quiet operation
- High output torque
- Increased reliability, low maintenance
- Easy cleaning
- Large dimension output bearings  
In the NORDBLOC.1 gear unit, the output bearing has considerably larger dimensions than in conventional designs. This is made possible by the innovative design - the so-called „staggered bearing configuration“.



Conventional construction



NORDBLOC.1 - Gear Units

- Greater than average radial forces
- Higher axial forces possible
- Longer bearing life

## Features

- Smooth surfaces
- No joints or openings
- No sealing caps

### NORDBLOC. Single stage helical gear unit (Catalogue G1012)

✓ Foot or flange-mounted	
✓ Die-cast aluminium housing (5 sizes)	
✓ UNICASE housing	
✓ Industry standard dimensions	
Sizes	5 Aluminium 3 Cast iron
kW	0.12 – 37
Nm	55 – 3,300
i	2.10:1 – 456.77:1



The very latest production methods ensure continuously high quality.



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## NORD UNICASE

NORD UNICASE housings are precisely machined to meticulous standards. Internal reinforcements further increase strength and rigidity. All bearings and seal seats are contained within the die-cast casing, eliminating joints which can weaken the housing and allow oil leakage. Holes and mounting surfaces are machined in a single step. This enables compliance with close tolerances and an increased service life for all components.

### Universal installation

- Foot-mounted version
- Flange-mounted version B5
- Front flange version B14
- Foot mounted version with B5 or B14 flange



#### Sealed Surface Conversion System

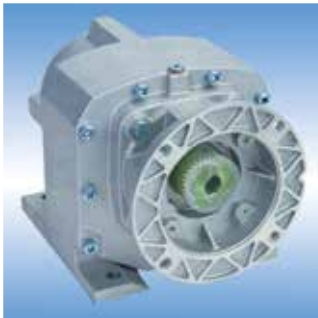
- Surface treatment
- No detachment possible
- Corrosion-resistant - just like stainless steel
- No flaking
- No corrosion penetration

### Various drive components

- Integral motor (geared motor)
- NEMA C flange motor adapter
- IEC, B5- and B14 motor adapter
- Free drive shaft
- Smooth surface motors (optionally with nsds tuff)

### IEC, NEMA C, B14 and B5 adapters

- Compact space saving design
- Simple installation
- Motor coupling
- Low bearing loading (long bearing life)
- Low weight



# Energy-efficient ribbed motors and NORD smooth surface motors

NORD builds energy-saving three-phase motors both with and without brakes for the international market. Our own motor production facilities guarantee that NORD is independent from supply bottlenecks and can ensure short delivery times. This is a decisive benefit for our customers. The use of NORD energy-

saving three-phase motors with considerably higher efficiencies allows you to reduce operating costs. NORD energy-saving three-phase motors compliant with EISA 2007 can be supplied.

## Advantages

- Smooth surfaces, especially suitable for applications in the food and beverage industry
- IE2/IE3/IE4 motors have a greater efficiency than the previous EFF2 motors.
- IE2/IE3/IE4 motors produce less waste heat
- IE2/IE3/IE4 motors have a longer service life than previously common motors
- IE2/IE3/IE4 contribute to reducing operating costs

## Features

- Cast aluminium (smooth surface)
- NORD IE2/IE3/IE4 motors have an "extended operating range", which means that no safety reserves, or lower safety reserves need to be taken into account for the design of the drive unit.



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## IE2 / IE3 motors

- High efficiency
- Wide voltage range
- Less waste heat
- High power reserves
- Longer life

**nsc** **tuph**

## Sealed Surface Conversion System

- Surface treatment
- No detachment possible
- Corrosion-resistant - just like stainless steel
- No flaking
- No corrosion penetration



Smooth surface motor with SMI worm gear unit in foot-mounted version



Smooth surface motor with 2-stage bevel gear unit (SK93x72.1 series)



2-stage bevel gear unit (SK92x72.1 series)



## Sealed Surface Conversion System

NORD DRIVESYSTEMS now has an answer for the requirements of drive technology for extreme environment conditions in the variety of products with which you are familiar for standard geared motors – however, with the resistance of stainless steel and an outstanding price/performance ratio. [nscd](#).

The aluminium surface is coated with a special process to make it extremely durable. Together with a special sealing process, this layer is up to 7 times harder than the basic aluminium material and up to 1000 times harder than paints and lacquers - and so has very low-wear characteristics. It therefore provides unique protection against corrosion, as it is not a paint layer which can detach or flake off.

### [nscd](#) [tugh](#) for the food industry

- Complies with FDA Title 21 CFR 175.300
- Extensive tests have been performed with a wide range of cleaning agents

### Advantages of [nscd](#) [tugh](#)

- Corrosion-resistant and prevents contact corrosion
- Easy to clean surfaces
- Resistant to acids and alkalis (entire PH range)
- No penetration of corrosion, even if damaged
- No flaking
- Cost effective alternative to stainless steel
- Lighter than stainless steel

### [nscd](#) [tugh](#) for extreme operating and ambient conditions

- Chemical cleaning (washdown entire PH range)
- High ambient humidity
- Offshore and coastal areas
- Food and beverage industry
- Car wash equipment
- Dairies
- Pharmaceutical industry
- Water and sewage plants

### Tests performed on surface-treated aluminium housing components:

- ASTM D714 Blistering
- ASTM D610-08 Corrosion
- ASTM D1654-08 Scratches
- ASTM B117-09 Salt spray test
- ASTM D3170 Gravelometer Test
- DIN EN ISO 9227 Salt mist spray test
- DIN EN ISO 2409 Cross cut test





# nsd<sup>tupH</sup>

## Sealed Surface Conversion System

- Surface treatment
- No detachment possible
- Corrosion-resistant - just like stainless steel
- No flaking
- No corrosion penetration
- Complies with FDA Title 21 CFR 175.300



Products treated with nsd<sup>tupH</sup> are ideal for extreme ambient conditions and hygiene requirements.



SMI worm gear units in foot-mounted version



SMI worm gear units in flange-mounted version



2-stage bevel gear units (SK93x72.1 series)

## Products available with nsd<sup>tupH</sup>

- SMI worm gear units
- 2-stage bevel gear unit series (SK 92x72.1 / SK 93x72.1)
- NORDBLOC.1 helical gear units (up to size 6)
- NORD smooth surface motors



# Intelligent drive systems from a single source

NORD DRIVESYSTEMS drive solutions are based on the principle of the function pyramid: Motors, control units and gears are just as much components as our extensive range of system modules such as planning, project management, installation and service.

NORD DRIVESYSTEMS produces helical, parallel shaft, bevel gear and worm gear units and is the only manufacturer in the world which produces industrial gear units up to 242 kNm as UNICASE versions. The benefits for our customers include extreme reliability and exceptional sealing, safe handling of even the largest output torques, high axial and radial load bearing, quiet running, low maintenance and exceptionally long operating life. With its own gear and motor production facilities, NORD offers customers complete sophisticated system solutions, with the very highest levels of economy and efficiency.







Left: NORD DRIVESYSTEMS headquarters in Bargteheide. From top: Production plant in Gadebusch, Glinde, Aurich (all in Germany); motor factory in San Giovanni, (Italy); production facility in Waunakee (USA); production in Suzhou (China).

www.nord.com



### Always nearby worldwide

For globalisation, we rely on local roots. We have set up a network of assembly factories and service facilities in 35 of the most important industrialised countries, so that local planning advice, high availability of the required drive technology and rapid local service make NORD DRIVESYSTEMS a flexible and dependable partner for drive systems throughout the world.

- Close to customers thanks to 35 subsidiaries and more than 30 agencies throughout the world
- High availability and rapid service thanks to local presence
- Certification: ISO 9001, UL, CSA, GHOST-R, CCC and ATEX
- Everything from one source, from planning to commissioning
- You can find further up-to-the-minute data and facts about NORD DRIVESYSTEMS under [www.nord.com](http://www.nord.com)





[www.nord.com/locator](http://www.nord.com/locator)

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