

Intelligent Drivesystems, Worldwide Services



EN

**GEAR UNITS AND MOTORS
MADE FROM ALUMINIUM**


DRIVESYSTEMS

ADVANTAGES OF LIGHT ALLOY GEAR UNITS

Corrosion-resistant aluminium housing

Modern gear units have to be robust, compact, powerful and economical and above all they need to be lightweight because weight causes costs, particularly if the gear unit also has to be moved during the movement processes. For this reason, aluminium offers numerous advantages and has become a common material for gear unit housings for many applications.

NORD DRIVESYSTEMS utilises many of the advantages optimised aluminium alloys offer for gear unit housings. This housing material also has a certain amount of inherent corrosion resistance, and does not necessarily require painting. Also, aluminium housings conduct heat more efficiently than cast iron. This makes lower operating temperatures possible, which is better for the internal components and ensures longer service life.

Advantages

- Painting is often not required
- Corrosion resistant for many applications
- Good thermal conduction (lower temperature)
- Easy to clean

Characteristics

- Low weight
- Smooth-surfaces
- Good thermal conductivity

In the Gadebusch factory, lightweight, high strength aluminium UNICASE housings are produced using the very latest production methods.



**NORD aluminium alloy
UNICASE housings**

- Low weight
- Natural corrosion protection
- Good thermal conductivity



Optimisation of the natural corrosion protection is possible with the use of **nsd t_{upH}** (see page 12).

nsd t_{upH}

Sealed Surface Conversion System

NORDBLOC.1[®]

2-STAGE BEVEL GEAR UNITS



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

Thanks to the Wash-down version they are especially suitable for applications in the food industry. Other fields of use are for example conveyor belts, lifting gear and warehouse systems.



Advantages

- The gear units have no recesses, cavities or undercuts. This ensures easy cleaning and drain-off of dirt and liquids
- In combination with a smooth motor these gear units are ideal for use in the food industry
- The wide range of speed ratios ($i = 3.03:1$ up to $70:1$) enables optimum adaptation to the customer's requirements
- Greater safety through optional double seal
- Available as open or closed Wash-down version with nsd tupH, resistant to acids and alkalis



Features

- Corrosion-resistant aluminium
- Easy to clean thanks to smooth-surfaces (Wash-down = liquids always drain off)
- Approx. 60% greater power density than the previous model
- Suitable for large forces due to enlarged, high strength output shaft bearings
- Sealing options (such as double radial shaft sealing rings) provide high sealing reliability for special fields of application
- Environmentally friendly due to minimised lubricant volume
- Flexible use due to compact design with short IEC adapter, integrated into the proven NORD modular system

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



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

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

Wash-down

- No cavities
- Smooth-surfaces
- No assembly cover
- Large radii
- Angled surfaces

nsd^{top}

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion



Unique housing

- High strength, with light weight
- Less use of materials
- Cool surfaces

Specially suitable for the following areas:

- Food industry
- Conveyor belts
- Lifting gear
- Warehouse systems



NORDBLOC.1®
2-stage bevel gear units
(Series SK92x72.1)



NORDBLOC.1®
2-stage bevel gear units
(Series SK93x72.1)



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

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

UNIVERSAL SI AND SMI WORM GEAR UNITS



NORD worm gear units provide a high power density and are extremely compact. They feature low-noise torque transmission. Due to the simple design they provide considerable installation space advantages in comparison with other types of gear unit. The gear units are available as SI and SMI versions.

Advantages

- Due to the large range of possible shaft diameters the gear units offer greater flexibility for customers
- IEC adapters for all sizes offer several standard motor mounting options
- Operation as a double gear unit for very high speed ratios is possible
- The improved surface structure of SMI worm gear units with lesser roughness due to chill-casting gives dirt less opportunity to accumulate (Wash-down effect)
- Due to the large selection of components from the modular system, the gear units can be optimally adapted to particular requirements
- W-cylinder (free drive shaft)
- H10 first stage for larger speed ratios
- Torque support

Characteristics

- SMI gear units made from chill-cast aluminium with smooth-surfaces especially suit applications in the food and beverage industry
- Gears and shafts from the tried-and-tested modular system
- SMI gear units are available for torques from 21 up to 427 Nm



UNIVERSAL SI worm gear units (Catalogue G1035)



- ✓ Modular
- ✓ Universal attachment
- ✓ Life-long lubrication
- ✓ IEC version

Sizes	5
Power	0.12 – 4.0 kW
Torque	21 – 427 Nm
Speed ratio	5.00:1 – 3,000.00:1

UNIVERSAL SMI worm gear units (Catalogue G1035)



- ✓ Smooth-surfaces
- ✓ Life-long lubrication
- ✓ IEC version

Sizes	5
Power	0.12 – 4.0 kW
Torque	21 – 427 Nm
Speed ratio	5.00:1 – 3,000.00:1

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 units

nsd top

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion



Versatile application

- Aluminium housing with Wash-down effect
- Large selection of shaft diameters
- SMI up to size 5



Flange mounted
UNIVERSAL SMI
worm gear units



Foot mounted
UNIVERSAL SMI
worm gear units



UNIVERSAL SI
worm gear units

NORDBLOC.1[®]

2-STAGE HELICAL GEAR UNITS

One of the objectives during the development of the new NORDBLOC.1[®] gear units was to create a smooth-surface on which neither liquids nor solids could be deposited. This is an advantage in applications where cleanliness is important. These innovative and patented gear units do not have any installation openings. This increases the strength of the product and also provides a smoother surface.

Advantages

- Less operating noise
- High output torque
- Outstanding reliability, low maintenance
- Easy to clean
- Large output bearings

The output bearing of the NORDBLOC.1[®] gear units has considerably larger dimensions than conventional designs. This is made possible by the innovative design, the so-called "staggered bearing configuration".

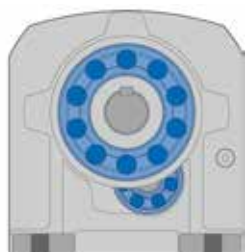
- Above-average radial forces possible
- Higher axial forces possible
- Longer bearing life

Features

- Smooth-surfaces
- No installation openings
- No sealing caps



Conventional construction



NORDBLOC.1[®] gear units

NORDBLOC.1[®] 2-stage bevel gear units (Catalogue G1000)



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

Sizes	5*
Power	0.12 – 7.5 kW
Torque	55 – 640 Nm
Speed ratio	2.10:1 – 402.80:1

* more sizes with UNICASE grey cast iron housing available

NORD UNICASE housings

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 casting, eliminating joints which can weaken the housing and allow oil leakage. Holes and attachment surfaces are machined in one operation. This enables close tolerances and increased service life for all components.

Universal mounting

- Foot mounted version
- B5 flange version
- B14 front flange version
- Foot mounted version with B5 or B14 flange

Miscellaneous drive components

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



nsd **tupH**

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion



- Compact, space-saving design
- Simple mounting
- Motor coupling
- Low bearing stress (long bearing life)
- Lightweight



NORDBLOC.1[®]

1-STAGE HELICAL GEAR UNITS



The single stage NORDBLOC.1[®] helical gear units, with its smooth-surface, is an innovative drive solution for all applications where cleanliness is essential. These advanced and patented gear units do not have installation openings. This increases the stability of the product and at the same time provides a smoother surface on which neither solidified liquids or solid materials can accumulate.



Advantages

- Quiet running
- High axial and radial load capacities enable reliable operation
- Application-specific versions
- Easy to clean
- High efficiency for low operating costs
- Innovative design



Features

- Smooth-surfaces
- No installation openings
- No sealing caps

NORDBLOC.1[®] 1-stage helical gear units (Catalogue G1000)



- ✓ Foot or flange mounted versions
- ✓ Die-cast aluminium housing
- ✓ UNICASE housing
- ✓ For high speed applications

Sizes	5
Power	0.12 – 7.5 kW
Torque	25 – 311 Nm
Speed ratio	1.07:1 – 14.00:1

NORD UNICASE housings

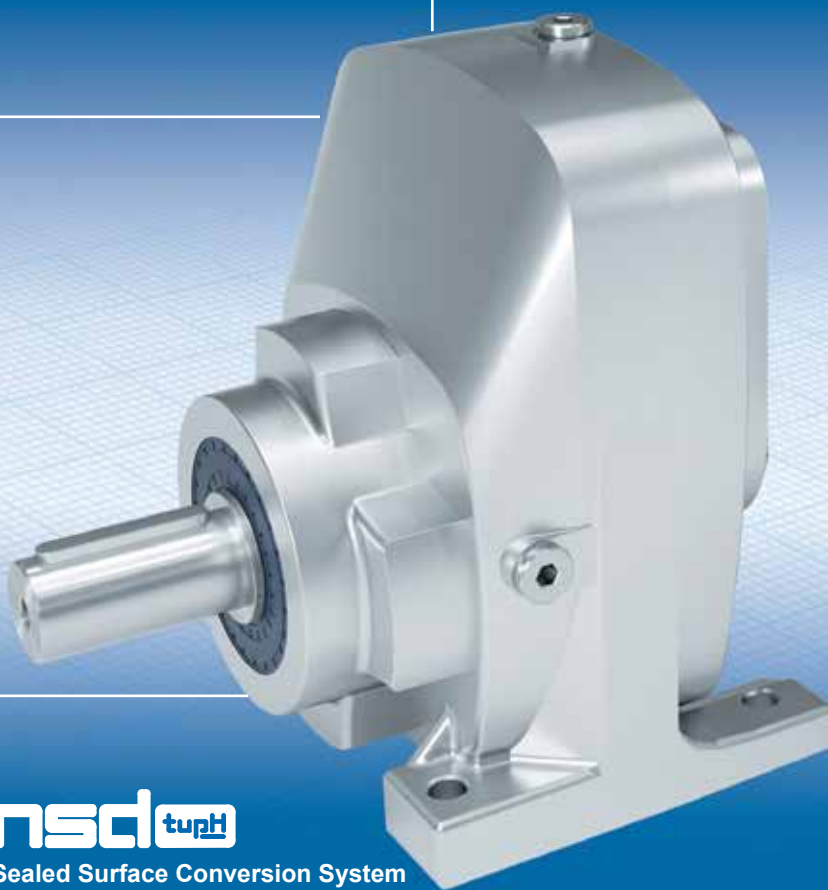
NORD UNICASE housings are precisely machined to meticulous standards. Internal reinforcements further increase strength and rigidity. All bearings and seal seats are contained within the die casting, eliminating joints which can weaken the housing and allow oil leakage. Holes and attachment surfaces are machined in one operation. This enables close tolerances and increased service life for all components.

Universal mounting

- Foot mounted version
- B5 flange version
- B14 front flange version
- Foot mounted version with B5 or B14 flange

Miscellaneous drive components

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



nsd **tupH**

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion



Foot mounted housing, B14 flange, integrated motor



Housing with B14 flange, integrated motor



Housing with B5 flange, integrated motor

NORDBLOC.1[®]

PARALLEL SHAFT GEAR UNITS



In combination with central or decentralised frequency inverters, parallel shaft geared motors provide ultimate efficiency and economy for a wide range of system solutions. The UNICASE concept guarantees long life cycles and low maintenance.

Advantages

- Slim design for space-saving installation
- Various bearing concepts guarantee high axial and radial load capacities
- Outstanding reliability, low maintenance
- Quiet running
- Robust design for long life and easy maintenance
- Inexpensive to run thanks to low maintenance
- High efficiency for low operating costs
- Optional: Drywell version for mixers and agitators

Features

- Smooth-surfaces
- No installation openings
- No sealing caps



NORDBLOC.1[®] parallel shaft gear units (Catalogue G1000)



- ✓ Food, flange or face mounted housing
- ✓ Hollow or solid shaft
- ✓ Compact design
- ✓ Low maintenance

Sizes	4*
Power	0.12 – 4.0 kW
Torque	130 – 400 Nm
Speed ratio	4.04:1 – 356.89:1

* more sizes with UNICASE grey cast iron housing available

NORD UNICASE housings

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 casting, eliminating joints which can weaken the housing and allow oil leakage. Holes and attachment surfaces are machined in one operation. This enables close tolerances and increased service life for all components.

Miscellaneous drive components

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

Universal mounting

- Foot mounted version
- B5 flange version
- B14 front flange version
- Foot mounted version with B5 or B14 flange



nsd tupH

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion



Parallel shaft gear unit
SK 0182



Parallel shaft gear unit
SK 0282



Parallel shaft gear unit
SK 1282

ENERGY EFFICIENT RIBBED AND SMOOTH MOTORS



NORD DRIVESYSTEMS builds energy-saving three-phase motors both with and without brakes for the international market. Our own motor production facilities guarantee that NORD DRIVESYSTEMS 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.

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 motors contribute to reducing operating costs.

Features

- Die cast aluminium (smooth motors)
- IE2/IE3/IE4 motors from NORD DRIVESYSTEMS 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.



IE2/IE3/IE4 motors

- High efficiency
- Wide voltage range
- Lower heat losses
- High power reserves
- Long service life



NORD DRIVESYSTEMS develops its own motors and supplies them to all major markets throughout the world.

Our own developments ensure a high level of independence from external suppliers and therefore provides our customers with the decisive advantage of short and highly dependable delivery times.



nsd **tupH**

Sealed Surface Conversion System

- Surface treatment
- No flaking possible
- Corrosion resistance similar to stainless steel
- No flaking
- No spreading of corrosion

THE ALTERNATIVE TO STAINLESS STEEL

nsd tupH SURFACE TREATMENT



NORD geared motors with nsd tupH are the optimal choice for use in challenging environmental conditions.

- Easy to clean surfaces
- Resistant to acids and alkalis (wide pH range)
- No spreading of corrosion, even if damaged
- No flaking
- Corrosion resistant, prevents contact corrosion
- Alternative to stainless steel
- Complies with FDA Title 21 CFR 175.300
- Free from chromates

The complete solution for extreme conditions

- Surface-treated housing components
- DIN and standard components made from stainless steel
- Wash-down housing (gear unit and motor)
- Stainless steel shafts

Sealed Surface Conversion System

- Special shaft sealing rings
- Food grade oil

nsd tupH for extreme requirements

- Food and beverage industry
- Dairies
- Pharmaceutical industry
- Water and sewage plants
- Car washes
- Offshore and coastal areas
- Chemical cleaning (Wash-down, wide PH range)

Tests performed on surface-treated aluminium housing components:

- ASTM D714 Blister formation
- ASTM D610-08 Corrosion
- ASTM D1654-08 Scratching
- ASTM B117-09 Salt spray test
- ASTM D3170 Gravelometer test
- DIN EN ISO 9227 Salt spray mist test
- DIN EN ISO 2409 Cross-cut test

Products available with nsd tupH:



NORDBLOC.1® helical gear units (up to Size 6)



NORDBLOC.1® 2-stage bevel gear units



NORDBLOC.1® parallel shaft gear units



UNIVERSAL SMI worm gear units



Smooth motors

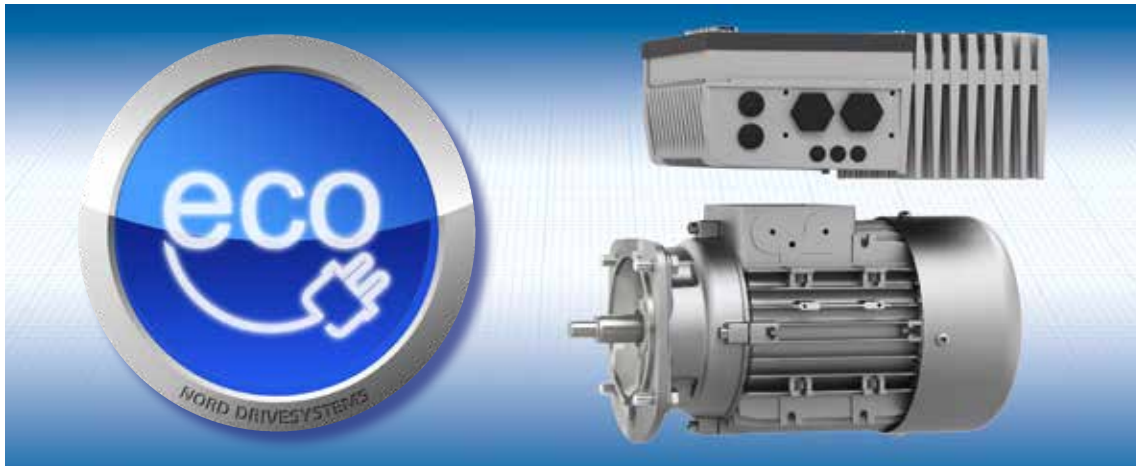


**Frequency inverter SK 180E
Motor starter SK 135E**



NORD smooth motor with nsd tupH

ECODESIGN DIRECTIVE IEC 61800-9-2: 2017 NEW EFFICIENCY CLASSES FOR MOTOR SYSTEMS



The new standard which defines the IE classes for inverters and IES classes for the combination of motors and inverters was published at the beginning of 2015.

Federal Environmental Agency: "The objective of the Eco-design Directive is to minimise the environmental effects of relevant products which are relevant to the consumption of energy over their entire life cycle." NORD drive solutions already fulfil the stringent requirements of the new IEC 61800-9-2: 2017-.

New terms and definitions in IEC 61800-9-2: 2017



Extended Product

Complete system of drive control, motor, power transfer and the driven load machine

Driven Equipment

Actual load machine, including the mechanical power transfer by gear units or belts

Motor System

Motor plus Motor Control System

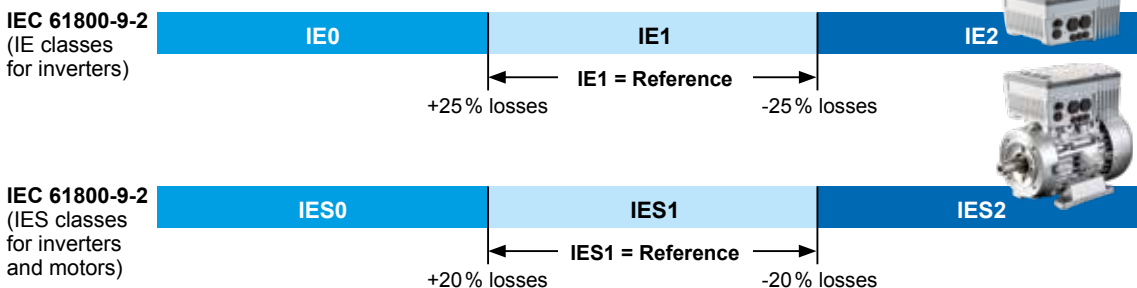
Combination of the drive control and motor including the motor cable, regardless of the motor technology

(PDS / Power Drive System = CDM + Motor)

Motor Control System

CDM (Complete Drive Module) or Motor Starter

CDM = The frequency inverter, including all necessary auxiliary components and equipment



DER ANTRIEB

Reliable. Versatile. Global.



**NORD
4.0
READY!**



GEAR UNITS

- Robust bearings
- High corrosion protection

MOTORS

- High efficiency
- Global standards

INVERTERS

- Compact design
- Easy commissioning



Headquarters and technology centre in Bargteheide near Hamburg

Mechanical products

Gear units



Electrical products

Motors



Electronic products

Frequency inverters and motor starters



Innovative drive solutions for more than 100 branches of industry



Gear unit production



Motor production



Inverter production

7 production locations with cutting edge technology produce gear units, motors, frequency inverters etc., from a single source – even for complex drive systems.



The map shown above is for information only and does not claim to be created for or applicable to any legal purpose. For this reason, we do not assume any liability for legality, correctness and completeness.

Subsidiaries and sales partners in 98 countries on 5 continents provide local stocks, assembly centres, technical support and customer service.



More than 4,000 employees throughout the world create customised solutions.

NORD DRIVESYSTEMS Group

Headquarters and technology centre
in Bargteheide near Hamburg

Innovative drive solutions
for more than 100 branches of industry

Mechanical products
Parallel shaft, helical, bevel and worm gear units

Electrical products
IE2/IE3/IE4 motors

Electronic products
Cabinet and decentralised frequency inverters
and motor starters

7 production locations with cutting-edge technology
for all drive components

Subsidiaries and sales partners
in 98 countries on 5 continents
provide local stocks, assembly centres,
technical support and customer service.

More than 4,000 employees throughout the world
create customised solutions.

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