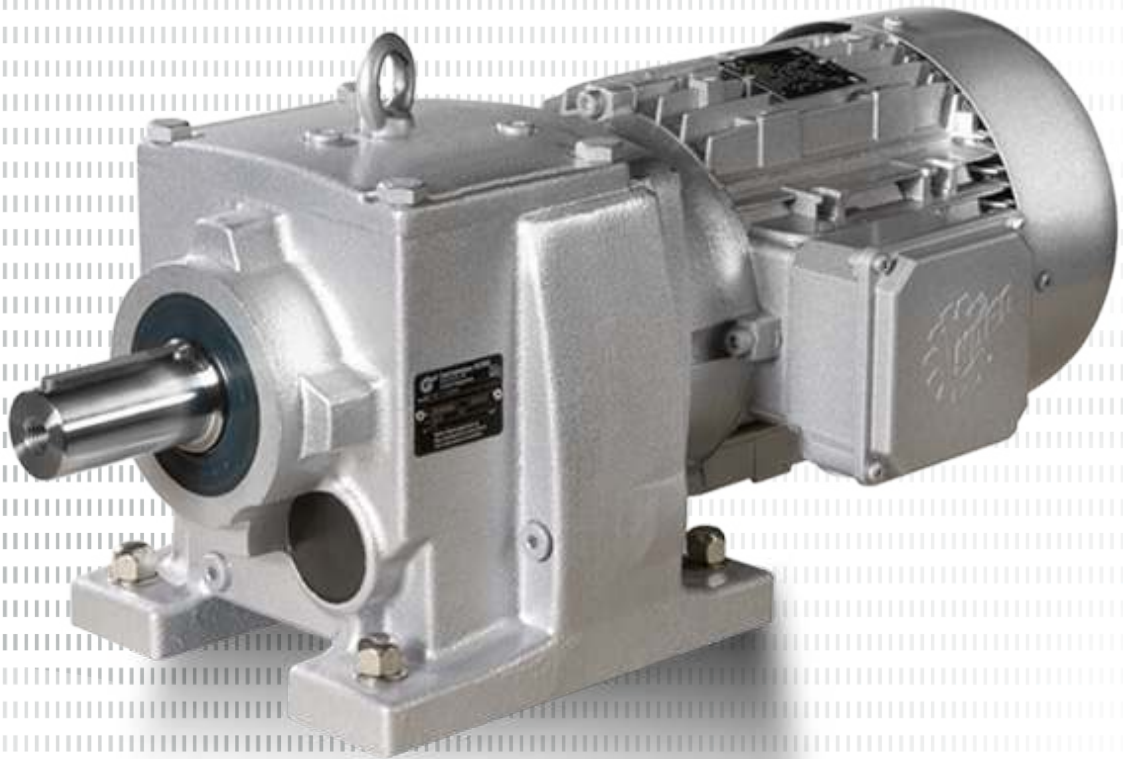




EN  
**Explosion Protection**  
G2122



# Contents

---

|                                              |          |
|----------------------------------------------|----------|
| INDRODUCTION                                 | A 2      |
| COUNTRY-SPECIFIC EXPLANATIONS                | A 2 - 14 |
| GENERAL DUST EXPLOSION PROTECTION            | B 1 - 8  |
| MOTORS FOR DUST EXPLOSION PROTECTION         | C 1 - 26 |
| GENERAL GAS EXPLOSION PROTECTION             | D 1 - 10 |
| MOTORS FOR GAS EXPLOSION PROTECTION          | E 1 - 8  |
| GENERAL EXPLOSION PROTECTED GEAR UNITS       | F 1 - 10 |
| HYBRID MIXTURES                              | G 1 - 2  |
| PAINTINGS AND COOLING SYSTEMS FOR GEAR UNITS | H 1 - 4  |
| DECENTRALISED INVERTERS AND STARTERS         | I 1 - 4  |
| DOCUMENTATION                                | J 1 - 10 |

# NORD DRIVESYSTEMS Group



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 4.980 employees throughout the world create customised solutions.



Headquarters in Bargteheide



Gear unit production



Inverter production



Motor production



Production and assembly



Motor mounting



For many decades, NORD DRIVESYSTEMS has supplied drive units for use in potentially explosive environments. Since 2003 this range has also included specially designed gear units which comply with EU Ex directives (ATEX).

Over the past years a great deal of work has been invested in order to comply with other international regulations such as IEC Ex, EAC Ex, CCC Ex, UKEX as well as the specifications for the North American market.

With a new generation of motors NORD is responding to the stricter efficiency requirements in Europe and China. These motors for dust explosion protection fulfil the ecodesign requirements for electric motors according to EU 2019/1781. NORD frequency inverters are marked with IE2 efficiency.

This catalogue contains information about gear units, motors and inverters for use in gas or dust explosion protection.

The catalogue has a modular structure and if necessary can be compiled separately for gas or dust areas.

In addition, this catalog provides a large amount of additional technical information and supplements catalogues

- ▶ catalogues G1000 (Geared Motors) and M7000 (Motors)
- ▶ the operating instructions B2000 for gear units and B1091 or B1091-1 for motors.

This catalogue provides assistance for use of software tools such as myNORD and NORDcad. The myNORD tool enables quick and simple verification of whether a particular drive is Ex compliant.

Certificates and declarations of conformity can be found on our homepage [www.NORD.com](http://www.NORD.com)  
- see ⇒ chapter Documentation  Page J 6-7

## Up-to-date and thorough

This catalogue has been compiled with the utmost care on the basis of the current legal situation. We cannot accept any liability for technical changes.

Please note that standards and directives are subject to constant change. Even though we attach great importance to correctness and accuracy, we cannot replace a study of the relevant directives or import regulations with this document.

The nameplates shown in this catalog are examples only.

NORD Drivesystems assumes no responsibility for the up-to-dateness of the data shown on the nameplates.



# Specific national regulations



## Scope of Application Basis

### Based on ...

### Ex standards

- for motors
- for inverters
- for gear units

### Documents

### Energy efficient motors

## European Union „ATEX“

For many decades, the EU has been using the ATEX technical standards to ensure the safe operation of machinery and equipment.

With its Ex specifications for mechanical devices regarding the former Directive 94/9/EG the EU acted as a pioneer at that time.

## EU member states + others such as Norway and Switzerland

Technical standards based on IEC standards  
(IEC - International Electrotechnical Commission)

Directive 2014/34/EU relates to mechanical and electrical devices for use in explosion hazard areas.  
(In addition to this directive, which directly relates to explosion protection, the Ecodesign, EMC and RoHS directives must also be complied with).

- ▶ DIN EN 60079-0, DIN EN 60079-7, DIN EN 60079-31
- ▶ EN 60079-0:2018, EN 60079-31:2014, EN 61800-9-1:2017, EN 61800-5-1:2007+A1:2017, EN 61800-3:2018, EN 61800-9-2:2017, EN 60529:1991+A1:2000+A2:2013+AC:2016, EN 63000:2018
- ▶ DIN EN ISO 80079-36:2016, DIN EN ISO 80079-37:2016

## The suitability of the device for explosion protection is documented by:

- ▶ Type Test Certificate and Declaration of Conformity for Category 2 motors
- ▶ Declaration of Conformity for Category 3 motors
- ▶ Declaration of Conformity for gear units
- ▶ Official bodies involved:
  - Physikalisch-Technische Bundesanstalt PTB
  - DEKRA Testing and Certification GmbH

**Audits:** The production and quality control of NORD DRIVESYSTEMS is audited at regular intervals by a Notified Body according to the regulations of EU 2014/34.

## Energy efficiency requirements for motors:

The regulation (EU) 2019/1781 stipulates minimum efficiencies including explosion-proof motors.

| Min. Efficiency acc. to EU 2019/1781 |                                         |                                         |              |  |
|--------------------------------------|-----------------------------------------|-----------------------------------------|--------------|--|
|                                      | IE2<br>Ex db<br>Ex ec<br>Ex tb<br>Ex tc | IE3<br>Ex db<br>Ex ec<br>Ex tb<br>Ex tc | IE2<br>Ex eb |  |
| 07/2023<br>2,4,6 and<br>8-pole       |                                         |                                         |              |  |
| 07/2021<br>2,4,6 and<br>8-pole       |                                         |                                         |              |  |
| Power [kW]                           | 0,12 ... < 0,75                         | 0,75...1000                             | 0,12...1000  |  |

## IEC Ex

IEC Ex approval can be helpful for the approval of explosion protected electrical equipment according to national standards.

## Australia and New Zealand

Technical standards based on IEC standards  
(International Electrotechnical Commission)

IEC Ex 01 IEC Scheme for the Certification to Standards for Electrical Equipment for „Explosive Atmospheres (IEC Ex Scheme) - Basic Rules“ und

IEC Ex 02 IEC Scheme for the Certification to Standards for Electrical Equipment for „Explosive Atmospheres (IEC Ex Scheme) - Rules of Procedure“

- ▶ IEC 60079-0 Explosive atmospheres  
- Part 0: Equipment - General requirements
- ▶ IEC 60079-31 Explosive atmospheres  
- Part 31: Equipment dust ignition protection by enclosure "t"
- ▶ ISO 80079-36 Non-electrical equipment for Explosive  
- Part 36: atmospheres - Basic method and requirements
- ▶ ISO 80079-37 Non-electrical equipment for Explosive  
- Part 37: atmospheres - Non electrical type of protection  
constructional safety "c", control of ignition  
source "b", liquid immersion "k"
- ▶ Official bodies involved:  
- DEKRA Testing and Certification GmbH and PTB

**Audits:** IEC Ex audits by Ex- testing laboratories and (Ex-certification bodies) are mandatory. Performed by the PTB as the notified body.

## Energy efficiency requirements for motors:

From the point of view of the IEC Ex there are neither requirements nor restrictions with regard to energy efficiency classes. But Australia and New Zealand where IEC Ex is used are requesting IE3. Because of this and because of standardization reasons NORD supplies motors for dust explosion protection in IE3 efficiency.

Currently, NORD does not offer Ex gear units according to IEC Ex.

A drive unit, consisting of a gearbox designed for ATEX explosion protection and a motor with IEC Ex approval is not allowed to be operated within the EU or the European Economic Area. (Special documentation 09/21), see ⇒  page 4.

## Scope of Application

### Basic

### Based on ...

### Ex standards - for motors

### - for gear units

## Documents

## Energy efficient motors

## Attention



# Specific national regulations



## EAC Ex

EAC (abbreviation for EurAsian Conformity) is a label which states that a product complies with the specifications of the Eurasian Economic Union regarding technical specification, labelling and documentation.

EAC Ex indicated conformity with the standard TR CU 012/2011 1) „On safety of equipment intended for use in Explosive atmospheres“. This contains technical specifications which are largely based on the IEC Ex as well as standards which are used in the EU.

Due to expiring certificates, the delivery of EAC Ex-compliant products from NORD will end on June 30, 2023.

## Certified NORD-Products

## Scope of Application Russia, Belarus, Armenia, Kazakhstan and Kyrgyzstan

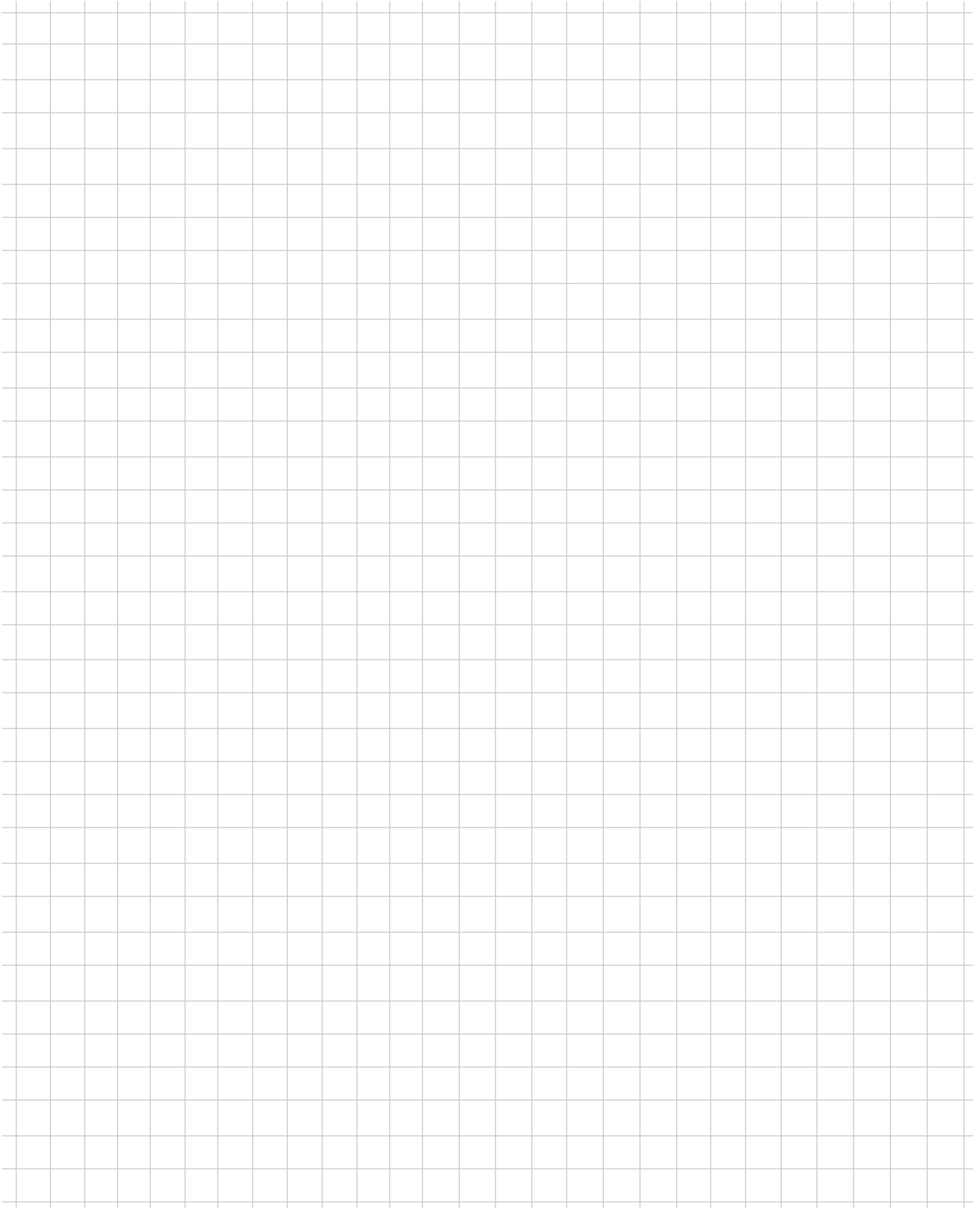
### Basic

TR CU 012/2011 „On safety of equipment intended for use in Explosive atmospheres“. Technical standards based on IEC (International Electrotechnical Commission) standards. In particular IEC 60079 and IEC 80079.

## Standards for Ex motors

### Applied standards for Ex motors

| ГОСТ Standard            | IEC Standards     |
|--------------------------|-------------------|
| ГОСТ 31610.0-2014        | IEC 60079-0:2011  |
| ГОСТ Р МЭК 60079-31-2013 | IEC 60079-31:2013 |
| ГОСТ Р МЭК 60079-7-2012  | IEC 60079-7:2006  |
| ГОСТ 31610.15-2014       | IEC 60079-15:2010 |





# Specific national regulations



## Canada CEC

- ▶ With the 2015 version of the Canadian Electrical Code (CEC) the IEC concept based on Zones was adopted: ⇒ A5, IEC Ex
  - Repairs and extensions of existing systems may continue to be carried out in accordance with the requirements of the division system. ⇒ A8, HazLoc
- ▶ Article 18-000, Annex J (see also NEC 500)

## CEC

Canadian Electrical Code

**CEC in Canada – with CEC 2015 several articles have been completely revised or deleted entirely!**

| Article     | Contents                                                            |
|-------------|---------------------------------------------------------------------|
| 18-000      | Description of scope of application                                 |
| 18-002      | Definition of hazard areas                                          |
| 18-004      | Classification of gases and dusts                                   |
| 18-006      | Classification of gases – Zone 0, 1 and 2                           |
| 18-008      | Classification of dusts – Zone 20, 21 and 22                        |
| 18 -AnnEx J | Classification according to the division system for Existing plants |

The Zone system according to IEC Ex protection is mandatory for all new installations as of 2015!



## HazLoc - Explosion protection in North America

Unlike in many other parts of the world, the explosion protection in the US is not based on IEC specifications.

With a similarly high safety level, this results in specific technical solutions as well as a separate categorisation of technical devices with regard to the corresponding explosive environment and the explosive mixture.

The specifications for electrical equipment originate from the NEC The National Electrical Code (NEC) is a safety standard of the United States of America.

This formulates the specifications for the design of electrical installations.

Unlike e.g. in Europe, devices are not categorised according to their use, but rather into „Classes“ and „Divisions“. In the USA the term „HazLoc“ is used in a similar manner to „ATEX“ in Europe.

**USA (and Canada for existing plants)**

USA: NEC National Electrical Code

(Canada: CEC Canadian Electrical Code)

In 1996, the IEC classification system (categorisation according to Zones) was also introduced for Class I. This change was made by Article 505 of the NEC, which gives the user the opportunity to choose the system that is technically and economically optimal for their purposes.

In 2005 Zones 20, 21 and 22 for areas with flammable dust (Article 506) were introduced.

### NEC in the USA

| Article | Contents                                                                            |
|---------|-------------------------------------------------------------------------------------|
| 500     | General requirements for Class I, II and III Divisions                              |
| 501     | Requirements for Class I Divisions                                                  |
| 502     | Requirements for Class II Divisions                                                 |
| 503     | Requirements for Class III Divisions                                                |
| 504     | Requirements for Class I, II and III Divisions with regard to intrinsic safety (IS) |
| 505     | General and specific requirements for Zone 0, 1 and 2                               |
| 506     | General and specific requirements for Zone 20, 21 and 22                            |

## Safety standard NEC

## HazLoc

## Scope of Application Basic

## NEC

National Electrical Code

## Class I - Gas groups A, B, C and D

### Class I

- ▶ Gases, vapours or aerosols
- ▶ NEC 500 / (CEC 18-000J for Canada up to 2015)
- ▶ Division 1  
Areas in which hazardous concentrations of flammable gases or vapours
  - Can be present under normal operating conditions,
  - Can frequently occur during repair and maintenance work,
  - Can occur throughout malfunctions concerning operation. During which, errors occurring in electrical equipment may result in a source of ignition.
- ▶ Division 2
  - Areas in which hazardous concentration of flammable gases or vapours are kept in closed containers or systems and can only be released under fault conditions.

## Class II - Dust groups E, F and G

### Class II

- ▶ Dusts
- ▶ NEC 500 / (CEC 18-000J for Canada up to 2015)
- ▶ Division 1  
Areas in which hazardous concentration of explosive dust atmospheres
  - Can be present under normal operating conditions,
  - Can occur throughout malfunctions concerning operation. During which, errors occurring in electrical equipment may result in a source of ignition.
  - Areas with hazardous quantities of conductive dust (Group E).
- ▶ Division 2
  - Areas in which hazardous concentrations of explosive dust atmospheres can only be released under fault conditions.

## Class III

### Class III

- ▶ Ignitable fibers and flyings
- ▶ NEC 500 / (CEC 18-000J for Canada up to 2015)
- ▶ Division 1
  - Areas in which flammable fibres and lint occur or are processed.
- ▶ Division 2
  - Areas in which flammable

## Comparison of IEC and US explosion protection

| Zone 20                                                                                                                                                                                                                                                                                                                                        | Zone 21                                                                                                                                                                             | Zone 22                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| is an area in which hazardous explosive atmospheres in the form of a cloud of flammable dust is present in the air <b>constantly, for long periods or frequently</b> .                                                                                                                                                                         | is an area where it is likely that an explosive atmosphere in the form of a cloud of flammable dust will occasionally occur <b>during normal operation</b> .                        | is an area where it is likely that an explosive atmosphere in the form of a cloud of flammable dust only occurs in <b>the air for a short period during normal operation</b> .                                                                                                                                                                      |
| Division 1                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                     | Division 2                                                                                                                                                                                                                                                                                                                                          |
| is an area in which hazardous concentrations of explosive dust atmospheres <ul style="list-style-type: none"> <li>- Can be present under normal operating conditions,</li> <li>- Can occur throughout malfunctions concerning operation. During which, errors occurring in electrical equipment may result in a source of ignition.</li> </ul> |                                                                                                                                                                                     | is an area in which hazardous concentration of explosive dust atmospheres can only be released under fault conditions.                                                                                                                                                                                                                              |
| Zone 0                                                                                                                                                                                                                                                                                                                                         | Zone 1                                                                                                                                                                              | Zone 2                                                                                                                                                                                                                                                                                                                                              |
| is an area in which the hazardous explosive atmosphere consisting of a mixture of air and flammable gases, vapours or aerosols is <b>present constantly, over long periods or frequently</b> .                                                                                                                                                 | is an area in which <b>during normal operation</b> a hazardous atmosphere consisting of an explosive mixture of air and flammable gases, vapours or aerosols can form occasionally. | is an area in which during normal operation a hazardous atmosphere consisting of a mixture or air, flammable gases, vapours or aerosols cannot <b>normally occur, or only occur for short periods</b> .                                                                                                                                             |
| Division 1                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                     | Division 2                                                                                                                                                                                                                                                                                                                                          |
| is an area in which ignitable concentrations or combustible gases aerosols or liquids <ul style="list-style-type: none"> <li>- <b>Probably occur during normal operating conditions</b></li> <li>- Regularly occur as a result of maintenance or repair work or due to frequent faults.</li> </ul>                                             |                                                                                                                                                                                     | is an area in which ignitable concentrations of combustible gases, aerosols or liquids <ul style="list-style-type: none"> <li>- <b>Probably do not occur</b> during normal operating conditions</li> <li>- Normally occur in closed containers and which can <b>only be released in case of accidents, faults or abnormal operation</b>.</li> </ul> |



## Note

Despite of the same syntax, the US temperature classes differ from those which are used by IEC:

| Gas temperature category |               |         |
|--------------------------|---------------|---------|
| Max. surface temperature | IEC / NEC 505 | NEC 500 |
| 450°C                    | T1            | T1      |
| 300°C                    | T2            | T2      |
| 280°C                    |               | T2A     |
| 260°C                    |               | T2B     |
| 230°C                    |               | T2C     |
| 215°C                    |               | T2D     |
| 200°C                    | T3            | T3      |
| 180°C                    |               | T3A     |
| 165°C                    |               | T3B     |
| 160°C                    |               | T3C     |
| 135°C                    | T4            | T4      |
| 120°C                    |               | T4A     |
| 100°C                    | T5            | T5      |
| 85°C                     | T6            | T6      |

For motors, the following specifications apply with regard to energy efficiency classes:

- ▶ USA Regulation: Epact 2007 EISA (NEMA MG-1)
- ▶ Canada Regulation: CSA C390 (NEMA MG-1)
- ▶ Official body involved:
  - UL and CSA

Energy efficient

Motors

Documents



## Regulation

## Certified NORD products

## Scope of Application

## Basic

## Energy efficiency

## Availability

## Restrictions

### CCC Ex

Since 1.10.2020, all motors in China which are suitable for use in potentially explosive applications are subject to CCC Ex certification. This applies to motors that are imported to China as well as to motors that are put into operation in China. The regulation applies to both gas and dust explosion protection and all Zones.

CNCA-C23-01:2024 - Compulsory Certification Rules - explosion protected electrical equipment (also called 'CCC Ex').

NORD CCC Ex motors have been certified for the type of protection Ex tc IIB as well as Ex tB IIC according to GB/T 3836.1-2021 and GB/T 3836.31-2021.

### China

Products from NORD DRIVESYSTEMS compliant with CCC Ex are tested and produced in a similar manner to products according to Directive 2014/34/EU ATEX.

The technical data of the motors correspond to that of ATEX motors used in Europe - see ⇒ C1-2.

Since June 2020, three-phase motors of energy efficiency grade 3 (IE3) are required in China in accordance with GB 18613-2020. This applies to 2, 4, 6 and 8 pole motors with power ratings from 0.12 to 1000kW. Further information on the scope of application and exceptions can be found at [www.nord.com](http://www.nord.com). The motors for the Chinese market have special nameplates, which differ from the nameplates of motors for the European market.

NORD offers a CCC Ex certificate for the following Ex-motors from our own production:

- ▶ Zone 21, equipment category 2D, Ex tb 125°C
- ▶ Zone 22, equipment category 3D, Ex tc 125°C
- ▶ Integral mounting and IEC interface
- ▶ Efficiency class IE3
- ▶ Size 63-180
- ▶ Frequency 50/60 Hz
- ▶ DOL and inverter duty
- ▶ IP Protection Class IP55 for Zone 22
- ▶ IP Protection Class IP66 for Zone 22 optional
- ▶ IP Protection Class IP66 for Zone 21

| Motortype | Explanation                     | CCC Ex | ATEX | IEC Ex | HazLoc |
|-----------|---------------------------------|--------|------|--------|--------|
| 2D        | Europe category 2D              | --     | O.K. | --     | --     |
| 3D        | Europe category 3D              | --     | O.K. | --     | --     |
| ID2       | US / Canada Class I Division 2  | --     | --   | --     | O.K.   |
| IID2      | US / Canada Class II Division 2 | --     | --   | --     | O.K..  |
| C2D       | China category 2D               | O.K.   | O.K. | --     | --     |
| C3D       | China category 3D               | O.K.   | O.K. | --     | --     |
| IDB       | IEC Ex category 2D              | --     | --   | O.K.   | --     |
| IDC       | IEC Ex category 3D              | --     | --   | O.K.   | --     |

-- : not available

O.K.: always additionally marked when selecting a CCC Ex motor

optional: possible in addition to ATEX or CCC Ex

If motors are equipped with two nameplates they are suitable for operation in Europe (ATEX) and China (CCC Ex).  
The number of type plates (on the motors) depends on the country of manufacture.

CCC Ex C2D + ATEX 2D = produced in Europe  
CCC Ex C2D = produced in China  
CCC Ex C3D + ATEX 3D = produced in Europe or China

## Examples

### CCC Ex C2D

|                                                                                   |       |                                                                                   |      |      |                                    |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |  |
|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|------|------|------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
|  |       |  |      | 防爆电机 |                                    |  |       |  |                                                                                   | 08514440                                                                          |  |
| Type SK 90LP/4 C2D TF                                                             |       |                                                                                   |      |      |                                    |                                                                                   |       |                                                                                   | 2026                                                                              |                                                                                   |  |
| 3 ~ Mot. No. 123456789-100                                                        |       |                                                                                   |      |      |                                    |                                                                                   |       |                                                                                   | 12345678                                                                          |                                                                                   |  |
| Th.Cl.155 (F)                                                                     |       |                                                                                   | S1   |      | Tamb -20...+40°C                   |                                                                                   |       | GYJ26.1130X                                                                       |                                                                                   |                                                                                   |  |
| Ex tb IIIC T125°C Db                                                              |       |                                                                                   | IP66 |      | GB/T 3836.1-2021 GB/T 3836.31-2021 |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |  |
|  | Hz    |                                                                                   |      |      |                                    |                                                                                   | r/min | 1414                                                                              |  | Hz                                                                                |  |
|                                                                                   | Nm    |                                                                                   |      |      |                                    |                                                                                   | kW    | 1,5                                                                               |                                                                                   | Nm                                                                                |  |
|                                                                                   | r/min |                                                                                   |      |      |                                    |                                                                                   | V     | 230/400Δ/Y                                                                        |                                                                                   | r/min                                                                             |  |
|                                                                                   | kW    |                                                                                   |      |      |                                    |                                                                                   | Hz    | 50                                                                                |                                                                                   | kW                                                                                |  |
|                                                                                   | V     |                                                                                   |      |      |                                    |                                                                                   | A     | 5,61/3,24                                                                         |                                                                                   | V                                                                                 |  |
|                                                                                   | A     |                                                                                   |      |      |                                    |                                                                                   | cos φ | 0,81                                                                              |                                                                                   | A                                                                                 |  |
| 16,8 kg                                                                           |       |                                                                                   |      | ①    |                                    |                                                                                   |       |                                                                                   |                                                                                   |  |  |
|                                                                                   |       |                                                                                   |      | ②    |                                    |                                                                                   |       |                                                                                   |                                                                                   | www.nord.com                                                                      |  |
| Getriebetechnik NORD GmbH & Co. KG, 22999 Bargteheide / GERMANY / 中国              |       |                                                                                   |      |      |                                    |                                                                                   |       |                                                                                   |                                                                                   |                                                                                   |  |

+

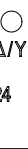
### ATEX 2D

|                                                                                   |       |                                                                                   |       |       |      |                                                                                     |             |                                                                                     |       |                                                                                     |       |              |      |                                                                 |             |  |  |
|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------|-------|------|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|-------|--------------|------|-----------------------------------------------------------------|-------------|--|--|
|  |       |  |       | 0102  |      |  |             | 08519170                                                                            |       |                                                                                     |       |              |      |                                                                 |             |  |  |
| Type SK 90LP/4 2D TF                                                              |       |                                                                                   |       |       |      |                                                                                     |             | 2026                                                                                |       |                                                                                     |       |              |      |                                                                 |             |  |  |
| 3 ~ Mot. No. 200123456-100                                                        |       |                                                                                   |       |       |      |                                                                                     |             | 12345678                                                                            |       |                                                                                     |       |              |      |                                                                 |             |  |  |
| Th.Cl. 155 (F)                                                                    |       | IP 66                                                                             |       | S1    |      | EN 60034 (H), (A) EN 60079                                                          |             |                                                                                     |       |                                                                                     |       |              |      |                                                                 |             |  |  |
| Ex II 2D Ex tb IIIC T125°C Db                                                     |       |                                                                                   |       |       |      |                                                                                     |             | BVS 04 ATEX E 037                                                                   |       |                                                                                     |       |              |      |                                                                 |             |  |  |
|  | Hz    | 3                                                                                 | 20    | 50    | 70   | r/min                                                                               | 1414        |  | Hz    | 3                                                                                   | 20    | 50           | 70   | r/min                                                           | 1414        |  |  |
|                                                                                   | Nm    | 5,68                                                                              | 10,20 | 10,10 | 8,19 | kW                                                                                  | 1,5         |                                                                                     | Nm    | 5,68                                                                                | 10,20 | 10,10        | 8,19 | kW                                                              | 1,5         |  |  |
|                                                                                   | r/min | 34                                                                                | 514   | 1370  | 1861 | V                                                                                   | 230/400 Δ/Y |                                                                                     | r/min | 34                                                                                  | 514   | 1370         | 1861 | V                                                               | 230/400 Δ/Y |  |  |
|                                                                                   | kW    | 0,02                                                                              | 0,55  | 1,45  | 1,60 | Hz                                                                                  | 50          |                                                                                     | kW    | 0,02                                                                                | 0,55  | 1,45         | 1,60 | Hz                                                              | 50          |  |  |
|                                                                                   | V Y   | 33                                                                                | 172   | 348   | 351  | A                                                                                   | 5,61/3,24   |                                                                                     | V Y   | 33                                                                                  | 172   | 348          | 351  | A                                                               | 5,61/3,24   |  |  |
|                                                                                   | A     | 2,19                                                                              | 3,12  | 3,53  | 4,01 | cos φ                                                                               | 0,81        |                                                                                     | A     | 2,19                                                                                | 3,12  | 3,53         | 4,01 | cos φ                                                           | 0,81        |  |  |
| 15,4 kg                                                                           |       | ①                                                                                 |       | ②     |      |                                                                                     |             |                                                                                     |       |  |       | www.nord.com |      |                                                                 |             |  |  |
| Versorgung durch Umrichter f <sub>max</sub> 100 Hz f <sub>min</sub> 4 kHz PWM     |       |                                                                                   |       |       |      |                                                                                     |             |                                                                                     |       |                                                                                     |       |              |      | Getriebetechnik NORD GmbH & Co. KG, 22999 Bargteheide / GERMANY |             |  |  |

Type plate on the Motor

(examples)

### CCC Ex C3D

|                                                                                     |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|-------|------------------|------|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|-------|----------|-------|-------------------------------------------------------------------------------------|------|--------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |       |  |       | 防爆电机             |      |  |            |  |       | 08514410 |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Type SK 90LP/4 C3D TF 2026                                                          |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 ~ Mot. No. 200123456-100 930 12345678                                             |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Th.Cl. 155 (F)                                                                      |       | S1                                                                                  |       | Tamb -20...+40°C |      | GYJ26.1130X                                                                         |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ex tc IIIB T125°C Dc IP56 GB/T 3836.1-2021 GB/T 3836.31-2021                        |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Hz    | 3                                                                                   | 20    | 50               | 70   | r/min                                                                               | 1414       |  | Hz    | 3        | 20    | 50                                                                                  | 70   | r/min        | 1414       |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     | Nm    | 5,68                                                                                | 10,20 | 10,10            | 8,19 | kW                                                                                  | 1,5        |                                                                                     | Nm    | 5,68     | 10,20 | 10,10                                                                               | 8,19 | kW           | 1,5        |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     | r/min | 34                                                                                  | 514   | 1370             | 1861 | V                                                                                   | 230/400Δ/Y |                                                                                     | r/min | 34       | 514   | 1370                                                                                | 1861 | V            | 230/400Δ/Y |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     | kW    | 0,02                                                                                | 0,55  | 1,45             | 1,60 | Hz                                                                                  | 50         |                                                                                     | kW    | 0,02     | 0,55  | 1,45                                                                                | 1,60 | Hz           | 50         |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     | V     | 33                                                                                  | 172   | 348              | 351  | A                                                                                   | 5,61/3,24  |                                                                                     | V     | 33       | 172   | 348                                                                                 | 351  | A            | 5,61/3,24  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     | A     | 2,19                                                                                | 3,12  | 3,53             | 4,01 | cos φ                                                                               | 0,81       |                                                                                     | A     | 2,19     | 3,12  | 3,53                                                                                | 4,01 | cos φ        | 0,81       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15,4 kg                                                                             |       | ①                                                                                   |       | ②                |      |                                                                                     |            |                                                                                     |       |          |       |  |      | www.nord.com |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 由变频器供电 f <sub>max</sub> 100 Hz f <sub>min</sub> 4 kHz PWM                           |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Getriebetechnik NORD GmbH & Co. KG, 22999 Bargteheide / GERMANY / 中国                |       |                                                                                     |       |                  |      |                                                                                     |            |                                                                                     |       |          |       |                                                                                     |      |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |

+

### ATEX 3D

|                                                                                                                |        |                                                                                     |       |                                                                                       |      |                                                                                       |             |
|----------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|-------------|
|                             |        |  |       |  |      | 08513407                                                                              |             |
| Type SK 90LP/4 3D TF                                                                                           |        |                                                                                     |       |                                                                                       |      | 2026                                                                                  |             |
| 3 ~ Mot. No. 200123456-100                                                                                     |        |                                                                                     |       |                                                                                       |      | 12345678                                                                              |             |
| Th.Cl. 155 (F)                                                                                                 |        | IP 66                                                                               |       | S1                                                                                    |      | EN 60034 (H), (A) EN 60079                                                            |             |
| Ex II 3D Ex tc IIIB T125°C Dc                                                                                  |        |                                                                                     |       |                                                                                       |      |                                                                                       |             |
|                             | Hz     | 3                                                                                   | 20    | 50                                                                                    | 70   | r/min                                                                                 | 1414        |
|                                                                                                                | Nm     | 5,68                                                                                | 10,20 | 10,10                                                                                 | 8,19 | kW                                                                                    | 1,5         |
|                                                                                                                | r/min  | 34                                                                                  | 514   | 1370                                                                                  | 1861 | V                                                                                     | 230/400 Δ/Y |
|                                                                                                                | kW     | 0,02                                                                                | 0,55  | 1,45                                                                                  | 1,60 | Hz                                                                                    | 50          |
|                                                                                                                | V Y 33 | 172                                                                                 | 348   | 351                                                                                   | A    | 5,61/3,24                                                                             |             |
|                                                                                                                | A      | 2,19                                                                                | 3,12  | 3,53                                                                                  | 4,01 | cos φ                                                                                 | 0,81        |
| 15,4 kg                                                                                                        |        | ①                                                                                   |       |                                                                                       |      |                                                                                       |             |
| Versorgung durch Umrichter f <sub>max</sub> 100 Hz f <sub>min</sub> 4 kHz PWM                                  |        |                                                                                     |       |                                                                                       |      |  |             |
| Getriebetechnik NORD GmbH & Co. KG, 22999 Bargteheide / GERMANY <a href="http://www.nord.com">www.nord.com</a> |        |                                                                                     |       |                                                                                       |      |                                                                                       |             |

(examples)



## Basic information regarding European dust explosion protection

## General

Explosive dust atmospheres occur in various areas of industry and crafts.

They are usually caused by mixtures of oxygen in combination with circulating or deposited amounts of ignitable dust. Electrical and mechanical equipment for use in explosion hazard areas is subject to special national and international standards and directives.

Explosion protection specifies rules which have the objective of protecting people and objects from possible explosion hazards.

Integrated explosion protection specifies that the measures for explosion protection must be carried out in a defined sequence:

- ▶ Rules of conduct to prevent the occurrence of explosive atmospheres
- ▶ Avoiding ignition of explosive atmospheres
- ▶ Limiting the effect of an explosion to a harmless level

In the design of mechanical and electrical equipment the objective is to prevent ignition or to restrict its effects. For this, the explosion protection regulations come into effect. The term ATEX, which is often used for explosion protection, comes from the initial letters of an older French directive „Atmosphères Explosives“. Current European explosion protection regulations are based on Directive 2014/34/EU as the successor of the previously valid EU Directive 94/9/EC. This Directive serves for the harmonisation of statutory regulations of member states for devices and protective systems for proper use in explosion hazard areas. This Directive is also known as the „Manufacturer Directive“ in order to differentiate it from Directive 1999/92/EC which provides information regarding health and safety requirements for workers as well as details of categorisation according to Zones.

Harmonised standards are used to meet basic safety and health requirements, some of which are exemplified below

### Standards for electrical devices:

- ▶ DIN EN 60 079 - 0 General Regulations
- ▶ DIN EN 60 079 - 31 Dust explosion protection with housing „t“

### Standards for mechanical devices:

- ▶ DIN EN ISO 80079-36:2016 Basics and requirements
- ▶ DIN EN ISO 80079-37:2016 Protection by constructional safety

## Device groups

Directive 2014/34 EU differentiates between two groups of devices:

- ▶ **Group I devices** - indicate equipment which is particularly suitable for mining with device categories M1 and M2
- ▶ **Group II devices** - are suitable for use in other areas which may be endangered by an explosive atmosphere

For most applications the Ex protection data on the gear unit type plate begins with II, so that the special features of Group I systems are not considered in the following.

## EU Directive

## Standards

- for electrical  
devices

- for mechanical  
devices

## Device groups



# „ATEX“ Dust explosion protection



## Standards - for motors

While Directive 2014/34 EU differentiates between two Groups of Devices I and II, it is further sorted into Groups I, II and III on the basis of DIN EN 60079-0 and -31 standards applicable to motors.

- ▶ **Group I** - indicates devices for mining
- ▶ **Group II** - indicates devices for gas explosion protection
- ▶ **Group III** - indicates devices for dust explosion protection

## Zone

### Zone

The categorisation into zones is dependent on specific conditions of the workplace – please refer to the stipulations in Directive 1999/92/EC with regard to the frequency of occurrence of dust.

## Zone 21

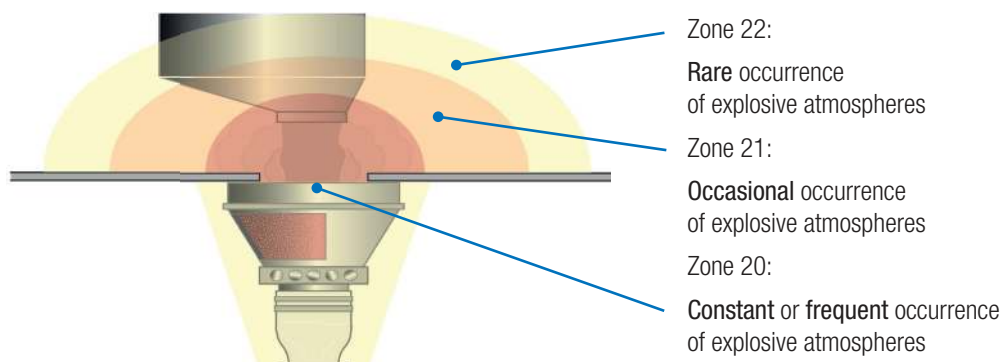
### Zone 21:

The area in which an explosive atmosphere consisting of a mixture of air and combustible dust can occasionally form during normal operation.

## Zone 22

### Zone 22:

The area in which, during normal operation, an explosive atmosphere in the form of a cloud of combustible dust in the air normally does not occur, and if so, only rarely or for a short time.



### Gear units

A gear unit, as a rule, becomes an explosion-protected system due to a constructionally safe design, use of specific Ex special parts as well as a detailed documentation. For technical requirements of components, please refer to the highly informative DIN EN ISO 80079-37:2016.

### Temperature details, e.g.: „125°C“

The Ex protection details on the type plate of Dust Ex drive units provide information about the maximum surface temperature of the device in degrees Celsius.

This is the total of the ambient temperature, the temperature rise as a result of operation as well as safety reserves.

### Standard limit value 125°C [140°C]

For most dust-air mixtures in the industry, the temperature rise as a sufficient and practicable. In spite of this, an individual examination must be made for each individual application.

## Dust explosion protection Device labeling

|                  |                                                           |                                                                                                    |                                                                                           |                                                                                             |
|------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Workplace        | Presence of an explosive dust atmosphere                  | occasionally                                                                                       | rarely or for short periods                                                               |                                                                                             |
|                  | Zone                                                      | 21                                                                                                 | 22                                                                                        |                                                                                             |
|                  | Dust type                                                 | all types                                                                                          | Electrically conducting                                                                   | Electrically non-conducting                                                                 |
| Device labelling | Device Group according to 2014/34/EU                      | II                                                                                                 |                                                                                           |                                                                                             |
|                  | Group according to DIN EN 60079-0                         | IIIC                                                                                               | IIIC                                                                                      | IIIB                                                                                        |
|                  | Device Category                                           | 2D                                                                                                 | 3D                                                                                        | 3D                                                                                          |
|                  | Equipment Protection Level EPL according to DIN EN 60079  | Db                                                                                                 | Dc                                                                                        | Dc                                                                                          |
|                  | Protection Class                                          | IP 65                                                                                              | IP65                                                                                      | IP55                                                                                        |
|                  | Max. permissible housing temperature 125°C or 140°C       |                                                                                                    |                                                                                           |                                                                                             |
|                  | Certificate                                               | EC Type Test Certificate, EC Declaration of Conformity on the basis of an EC Type Test Certificate |                                                                                           | EC Declaration of Conformity                                                                |
|                  | Labelling according to 2014/34 EU                         |  II 2D          |  II 3D |  II 3D |
|                  | Labelling according to DIN EN 60079-0<br>DIN EN 60079-31  | e. g.:<br>II 2D Ex tb IIIC T125°C Db                                                               | e. g.:<br>II 3D Ex tc IIIC T125°C Dc                                                      | e. g.:<br>II 3D Ex tc IIIB T125°C Dc                                                        |
|                  | Labelling according to DIN EN ISO 80079-36 for gear units | II 2D Ex h IIIC T125°C Db                                                                          | II 3D Ex h IIIC T125°C Dc                                                                 | II 3D Ex h IIIB T125°C Dc                                                                   |

## Drive dimensioning

The applications of our customers place a wide variety of demands on ATEX compliant operation. We are happy to consider these requirements in the drive design and thus contribute to the safe and reliable operation of systems and machinery. Documentation of special requirements is made on the type plate of the gear unit → Section „Explosion Protected Gear Units in General“ or in the special documentation enclosed with the standard documentation.

# ATEX LABELLING DUST FOR MOTORS

**II 3D Ex tc IIIB T125°C Dc X**

Dust  
explosion protection

| Labelling and categorisation of explosive environment |                                               |                                         |                        |                 |                                  |
|-------------------------------------------------------|-----------------------------------------------|-----------------------------------------|------------------------|-----------------|----------------------------------|
| Type of material                                      | Frequency of occurrence of flammable material | Categorisation of explosive environment | Labelling of equipment |                 | EPL - Equipment protection level |
|                                                       |                                               |                                         | Device Group           | Device Category |                                  |
| Dusts                                                 | Constantly or frequently present              | Zone 20                                 | I                      | 1D              | Da                               |
|                                                       | Occasionally present                          | Zone 21                                 | II                     |                 |                                  |
|                                                       | Rarely present (short periods)                | Zone 22                                 | II                     |                 |                                  |

| Type of ignition protection for electrical devices |                             |                |                |            |
|----------------------------------------------------|-----------------------------|----------------|----------------|------------|
| Protection principle                               | Type of ignition protection | Identification | Use in Zone    | Standard   |
| Protection with housing                            | Dust explosion protection   | ta<br>tb<br>tc | 20<br>21<br>22 | EN60079-31 |



| Explosion Group      |      |          |                     |
|----------------------|------|----------|---------------------|
| Explosion Group Dust |      | Examples |                     |
| IIIA                 | IIIB | IIIC     | Flammable lint      |
|                      |      |          | Non-conductive dust |
|                      |      |          | Conductive dust     |

| Surface temperature                                         |
|-------------------------------------------------------------|
| Maximum surface temperature of equipment in degrees Celsius |

| Additional information |                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------|
| X                      | Note any special conditions or restrictions – refer to the operating and installation instructions |

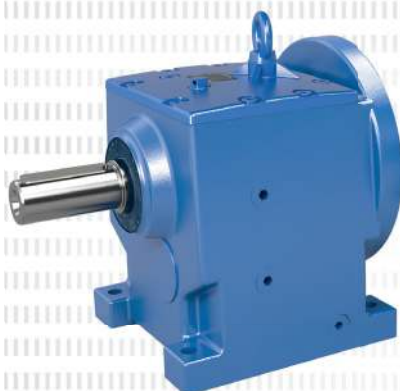
# ATEX LABELLING DUST FOR GEAR UNITS

**II 3D Ex h IIIC T125°C Dc**

Dust  
explosion protection

| Labeling and categorisation of explosive environment |                                               |                                         |                        |                 |                                  |
|------------------------------------------------------|-----------------------------------------------|-----------------------------------------|------------------------|-----------------|----------------------------------|
| Type of material                                     | Frequency of occurrence of flammable material | Categorisation of explosive environment | Labelling of equipment |                 | EPL - Equipment Protection Level |
|                                                      |                                               |                                         | Device Group           | Device Category |                                  |
| Dusts                                                | Constantly or frequently present              | Zone 20                                 | I                      | 1D<br>2D<br>3D  | Da<br>Db<br>Dc                   |
|                                                      | Occasionally present                          | Zone 21                                 | II                     |                 |                                  |
|                                                      | Rarely present (short periods)                | Zone 22                                 | II                     |                 |                                  |

**Ex h      Labelling of mechanical devices according to DIN EN ISO 80079-36**



| Explosion Group                                             |      |      |                                                                           |
|-------------------------------------------------------------|------|------|---------------------------------------------------------------------------|
| Explosion Group Dust                                        |      |      | Examples                                                                  |
| IIIA                                                        | IIIB | IIIC | suitable for combustible aerosol                                          |
|                                                             |      |      | suitable for combustible aerosol and non-conductive dust                  |
|                                                             |      |      | suitable for combustible aerosol, non-conductive dust and conductive dust |
|                                                             |      |      |                                                                           |
| Surface temperature                                         |      |      |                                                                           |
| Maximum surface temperature of equipment in degrees Celsius |      |      |                                                                           |





## Motors for dust explosion protection according to Directive 2014/34/EU

The motors listed in the following are explosion protected motors from our own production, which can be mounted to NORD gear units either directly or by means of an IEC or NEMA adapter.

Two designs are available, both suitable for mains (DOL) or inverter operation (VFD):

- Design 2D for Zone 21
- Design 3D for Zone 22 non-conductive dust

The maximum surface temperature of all these motors is 125°C.

All motors listed in this catalog fulfill the requirements for efficiency according to (EU) 2019/1781. All motors for explosive dust as described below are IE3 efficient motors. This can be also seen in the motor type like 63SP/4. The "P" is the abbreviation for "premium efficiency".

Mains or inverter operation

## ATEX 2D (conductive and non-conductive dust)

| 1500 r/min<br>50 Hz |                | 230/400 V & 400/690 V<br>4-pole |                |                |           | Ex II 2D Ex tb IIIC T125°C Db |                    |                                |                                |                                |         |                                                                                     |
|---------------------|----------------|---------------------------------|----------------|----------------|-----------|-------------------------------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------|-------------------------------------------------------------------------------------|
|                     | P <sub>N</sub> | n <sub>N</sub>                  | M <sub>N</sub> | I <sub>N</sub> |           | cos                           | η                  | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J       |  |
| Type                |                |                                 |                | 230/400 V      | 400/690 V | φ                             | 4/4xP <sub>N</sub> |                                |                                |                                |         | *                                                                                   |
|                     | [kW]           | [r/min]                         | [Nm]           | [A]            | [A]       |                               | [%]                |                                |                                |                                | [kgm²]  | [kg]                                                                                |
| 63 SP/4             | 0,12           | 1342                            | 0,85           | 0,71/0,41      |           | 0,70                          | 64,8               | 2,7                            | 2,5                            | 3,5                            | 0,00024 | 3,8                                                                                 |
| 63 LP/4             | 0,18           | 1373                            | 1,25           | 1,00/0,58      |           | 0,66                          | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033 | 4,7                                                                                 |
| 71 SP/4             | 0,25           | 1408                            | 1,70           | 1,21/0,70      |           | 0,73                          | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086 | 6,1                                                                                 |
| 71 LP/4             | 0,37           | 1397                            | 2,53           | 1,61/0,93      |           | 0,78                          | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110 | 7,2                                                                                 |
| 80 SP/4             | 0,55           | 1402                            | 3,75           | 2,46/1,42      |           | 0,75                          | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145 | 9,7                                                                                 |
| 80 LP/4             | 0,75           | 1414                            | 5,06           | 3,08/1,78      |           | 0,75                          | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019  | 10,2                                                                                |
| 90 SP/4             | 1,10           | 1429                            | 7,35           | 4,24/2,45      |           | 0,79                          | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034  | 15,1                                                                                |
| 90 LP/4             | 1,50           | 1414                            | 10,1           | 5,61/3,24      |           | 0,81                          | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039  | 15,4                                                                                |
| 100 LP/4            | 2,20           | 1460                            | 14,4           | 7,79/4,50      |           | 0,81                          | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081  | 24,5                                                                                |
| 100 AP/4            | 3,00           | 1454                            | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81                          | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081  | 27,4                                                                                |
| 112 MP/4            | 4,00           | 1440                            | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84                          | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014   | 35,5                                                                                |
| 132 SP/4            | 5,50           | 1465                            | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79                          | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032   | 55                                                                                  |
| 132 MP/4            | 7,50           | 1458                            | 49,1           | 26,8/15,5      | 15,4/8,91 | 0,79                          | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035   | 62                                                                                  |
| 160 SP/4            | 9,20           | 1474                            | 59,6           | 29,4/17,0      | 16,9/9,76 | 0,86                          | 91,0               | 2,9                            | 3,3                            | 9,5                            | 0,067   | 93                                                                                  |
| 160 MP/4            | 11,0           | 1467                            | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85                          | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067   | 93                                                                                  |
| 160 LP/4            | 15,0           | 1467                            | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87                          | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092   | 122                                                                                 |
| 180 MP/4            | 18,5           | 1480                            | 119            | 60,3/34,8      | 34,6/20,0 | 0,83                          | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16    | 155                                                                                 |
| 180 LP/4            | 22,0           | 1475                            | 142            | 70,7/40,8      | 40,6/23,4 | 0,85                          | 93,1               | 2,8                            | 3,2                            | 8,1                            | 0,16    | 155                                                                                 |

400/690V not available for inverter duty

\* Version B5, without options

### ATEX 2D DOL

|                                                                                                                                                                                                  |               |                                                                                                                                                                         |                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|   0102 EN 60034 / EN 60079 |               |  0613307                                                                             |                                                                                                 |
| Type SK 90LP/4 2D TF                                                                                                                                                                             |               |                                                                                                                                                                         |                                                                                                 |
| 3 ~ Mot. No. 123456789-100                                                                                                                                                                       |               | 20180323                                                                                                                                                                |                                                                                                 |
| Th. Cl.155 (F) IP 66                                                                                                                                                                             |               | S1                                                                                                                                                                      | Baujahr: 2026 (H)                                                                               |
| 50 Hz                                                                                                                                                                                            | 230/400 V Δ/Y | Hz                                                                                                                                                                      | V                                                                                               |
|                                                                                                               | 5,61/3,24 A   | 0,75 kW                                                                                                                                                                 | A kW                                                                                            |
| cos φ 0,81                                                                                                                                                                                       |               | 1414 r/min                                                                                                                                                              | cos φ r/min  |
| IE3-85,3%                                                                                                                                                                                        |               |                                                                                                                                                                         |                                                                                                 |
|                                                                                                               |               | BVS 04 ATEX E037                                                                                                                                                        |                                                                                                 |
| Kaltleiter für alleinigen Schutz                                                                                                                                                                 |               |                                                                                                                                                                         |                                                                                                 |
| PTC thermistors as sole protection                                                                                                                                                               |               |                                                                                                                                                                         |                                                                                                 |
|                                                                                                                                                                                                  |               | ①                                                                                                                                                                       |                                                                                                 |
|                                                                                                                                                                                                  |               | ②                                                                                                                                                                       |                                                                                                 |
| Getriebefabrik NORD GmbH & Co. KG, 22939 Bergshelde / GERMANY                                                                                                                                    |               |   |                                                                                                 |
|                                                                                                                                                                                                  |               |  www.nord.com                                                                        |                                                                                                 |

### ATEX 2D VFD

0102

Type SK 90LP/4 2D TF 2026

3 ~ Mot. No. 200123456-100 12345678

Th.Cl. 155 (F) IP 66 S1 EN 60034 (H), (A) EN 60079

Ex II 2D Ex tb IIIC T125°C Db BVS 04 ATEX E 037

|                                                                                                          |       |      |       |       |       |       |             |                                                                                                            |
|----------------------------------------------------------------------------------------------------------|-------|------|-------|-------|-------|-------|-------------|------------------------------------------------------------------------------------------------------------|
| <br>VERTICAL<br>MOTOR | Hz    | 3    | 20    | 87    | 100   | r/min | 1414        | <br>OPERATING<br>DATA |
|                                                                                                          | Nm    | 5,68 | 10,20 | 10,10 | 10,30 | kW    | 1,5         |                                                                                                            |
|                                                                                                          | r/min | 34   | 514   | 2483  | 2816  | V     | 230/400 Δ/Y |                                                                                                            |
|                                                                                                          | kW    | 0,02 | 0,55  | 2,63  | 2,99  | Hz    | 50          |                                                                                                            |
|                                                                                                          | V Δ   | 19   | 99    | 346   | 348   | A     | 5,61/3,24   |                                                                                                            |
|                                                                                                          | A     | 3,79 | 5,40  | 6,05  | 6,87  | cos φ | 0,81        |                                                                                                            |
|                                                                                                          |       |      |       |       |       | IE 3  | 85,3%       |                                                                                                            |

15,4 kg ①

Versorgung durch Umrichter f<sub>min</sub> 100 Hz f<sub>max</sub> 4 kHz PWM

Getriebefabrik NORD GmbH & Co. KG, 22939 Bergshelde / GERMANY   www.nord.com

Name plates (examples)



# Dust Explosion protection „ATEX“



Motor energy efficiency: Premium IE3

ATEX 3D (non-conductive dust)

| 1500 r/min<br>50 Hz    |                | 230/400 V & 400/690 V<br>4-pole |                |                |           | Ex II 3D Ex tc IIIB T 125°C Dc |                    |                    |                    |                                |                                |                                |                     |      |
|------------------------|----------------|---------------------------------|----------------|----------------|-----------|--------------------------------|--------------------|--------------------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|------|
| Type                   | P <sub>N</sub> | n <sub>N</sub>                  | M <sub>N</sub> | I <sub>N</sub> |           | cos                            | η                  |                    |                    | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   | kg   |
|                        | [kW]           | [r/min]                         | [Nm]           | 230/400 V      | 400/690 V | φ                              | 1/2xP <sub>N</sub> | 3/4xP <sub>N</sub> | 4/4xP <sub>N</sub> |                                |                                |                                | [kgm <sup>2</sup> ] | [kg] |
|                        |                |                                 |                | [A]            | [A]       |                                | [%]                | [%]                | [%]                |                                |                                |                                |                     | *    |
| 63 SP/4                | 0,12           | 1342                            | 0,85           | 0,71/0,41      |           | 0,70                           | 58,3               | 64,7               | 66,4               | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8  |
| 63 LP/4                | 0,18           | 1373                            | 1,25           | 1,00/0,58      |           | 0,66                           | 62,2               | 65,6               | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7  |
| 71 SP/4                | 0,25           | 1408                            | 1,70           | 1,21/0,70      |           | 0,73                           | 68,2               | 73,0               | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1  |
| 71 LP/4                | 0,37           | 1397                            | 2,53           | 1,61/0,93      |           | 0,78                           | 72,8               | 76,7               | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2  |
| 80 SP/4                | 0,55           | 1402                            | 3,75           | 2,46/1,42      |           | 0,75                           | 79,5               | 81,8               | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7  |
| 80 LP/4                | 0,75           | 1414                            | 5,06           | 3,08/1,78      |           | 0,75                           | 83,7               | 84,7               | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2 |
| 90 SP/4                | 1,10           | 1429                            | 7,35           | 4,24/2,45      |           | 0,79                           | 79,4               | 83,6               | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1 |
| 90 LP/4                | 1,50           | 1414                            | 10,1           | 5,61/3,24      |           | 0,81                           | 86,6               | 86,3               | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4 |
| 100 LP/4               | 2,20           | 1460                            | 14,4           | 7,79/4,50      |           | 0,81                           | 88,7               | 89,6               | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5 |
| 100 AP/4               | 3,00           | 1454                            | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81                           | 88,4               | 88,8               | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4 |
| 112 MP/4               | 4,00           | 1440                            | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84                           | 88,9               | 89,2               | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5 |
| 132 SP/4               | 5,50           | 1465                            | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79                           | 90,6               | 91,5               | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55   |
| 132 MP/4               | 7,50           | 1458                            | 49,1           | 26,8/15,4      | 15,4/8,91 | 0,79                           | 90,2               | 90,5               | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62   |
| 160 SP/4               | 9,20           | 1474                            | 59,6           | 29,4/17,0      | 16,9/9,76 | 0,86                           |                    |                    | 91,0               | 2,9                            | 3,3                            | 9,5                            | 0,067               | 93   |
| 160 MP/4               | 11,0           | 1467                            | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85                           | 91,6               | 92,0               | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93   |
| 160 LP/4               | 15,0           | 1467                            | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87                           | 92,3               | 92,8               | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122  |
| 180 MP/4               | 18,5           | 1480                            | 119            | 60,3/34,8      | 34,6/20,0 | 0,83                           | 92,4               | 93,1               | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155  |
| 180 LP/4               | 22,0           | 1475                            | 142            | 70,7/40,8      | 40,6/23,4 | 0,85                           | 93,2               | 93,5               | 93,1               | 2,8                            | 3,2                            | 8,1                            | 0,16                | 155  |
| 225 RP/4               | 30,0           | 1485                            | 193            | 96,0/55,4      | 55,4/32,0 | 0,84                           | 93,6               | 94,3               | 94,1               | 3,0                            | 3,4                            | 8,58                           | 0,49                | 315  |
| 225 SP/4               | 37,0           | 1485                            | 238            | 119,3/68,9     | 68,9/39,8 | 0,83                           | 93,6               | 94,4               | 94,1               | 2,9                            | 3,2                            | 8,4                            | 0,54                | 330  |
| 225 MP/4               | 45,0           | 1485                            | 289            | 142,4/82,2     | 82,2/47,4 | 0,84                           | 94,6               | 94,9               | 94,6               | 3,0                            | 3,4                            | 8,8                            | 0,67                | 365  |
| 250 WP/4 <sup>1)</sup> | 55,0           | 1480                            | 355            |                | 96,8/55,9 | 0,88                           | 95,2               | 95,0               | 94,6               | 2,6                            | 2,8                            | 7,7                            | 0,82                | 400  |

400/690V not available for inverter duty

\* Version B5, without options

<sup>1)</sup> Direct mount, no IEC B5 mount possible

Dust  
explosion protection

## ATEX 3D DOL

Type plates  
(examples)

|                                                                                                                |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|---------------------|--|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|
|                             |  |  |  | EN 60034 / EN 60079 |  |  |  | 08513550                                                                            |  |
| Type SK 90LP/4 3D TF                                                                                           |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
| 3 ~ Mot./No. 200123456-100                                                                                     |  |                                                                                     |  |                     |  | 12345678                                                                            |  |                                                                                     |  |
| Th. Cl.155 (F)                                                                                                 |  | IP 55                                                                               |  | S1                  |  | Baujahr: 2026                                                                       |  | (H)                                                                                 |  |
| 50 Hz                                                                                                          |  | 230/400                                                                             |  | V Δ/Y               |  | Hz                                                                                  |  | V                                                                                   |  |
| 5,61/3,24 A                                                                                                    |  | 1,5 kW                                                                              |  | A                   |  | kW                                                                                  |  |                                                                                     |  |
| cos φ 0,81                                                                                                     |  | 1414 r/min                                                                          |  | cos φ               |  |                                                                                     |  | r/min                                                                               |  |
|                             |  |                                                                                     |  |                     |  |                                                                                     |  |  |  |
| IE3-85,3%                                                                                                      |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
|  II 3D Ex tc IIIB T125°C Dc |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
| Kaltleiter für alleinigen Schutz                                                                               |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
| PTC thermistors as sole protection                                                                             |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
| <div></div>                                                                                                    |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |
| Getriebebau NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY                                                    |  |                                                                                     |  |                     |  |                                                                                     |  |  |  |
| www.nord.com                                                                                                   |  |                                                                                     |  |                     |  |                                                                                     |  |                                                                                     |  |

## ATEX 3D VFD

|                                                                                                                                                                          |             |                                                                                       |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------|-------|
|   |             |  |       |
| Type SK 90LP4 3D TF                                                                                                                                                      |             | 2026                                                                                  |       |
| 3 ~ Mot./No. 200123456-100                                                                                                                                               |             | 12345678                                                                              |       |
| Th. Cl. 155 (F) IP 66 S1                                                                                                                                                 |             | EN 60034 (H), (A) IEN 60079                                                           |       |
| Ex II 3D Ex tc IIIB T125°C Dc                                                                                                                                            |             |                                                                                       |       |
| Hz                                                                                                                                                                       | 3           | 20                                                                                    | 50    |
| Nm                                                                                                                                                                       | 5,68        | 10,20                                                                                 | 10,10 |
| r/min                                                                                                                                                                    | 34          | 514                                                                                   | 1370  |
| kW                                                                                                                                                                       | 0,02        | 0,55                                                                                  | 1,45  |
| V Y                                                                                                                                                                      | 33          | 172                                                                                   | 348   |
| A                                                                                                                                                                        | 2,19        | 3,12                                                                                  | 3,53  |
| r/min                                                                                                                                                                    | 1414        |                                                                                       |       |
| kW                                                                                                                                                                       | 1,5         |                                                                                       |       |
| V                                                                                                                                                                        | 230/400 Δ/Y |                                                                                       |       |
| A                                                                                                                                                                        | 5,61/3,24   |                                                                                       |       |
| cos φ                                                                                                                                                                    | 0,81        |                                                                                       |       |
| IE 3                                                                                                                                                                     | 85,3%       |                                                                                       |       |
| 15,4 kg                                                                                                                                                                  |             | ①                                                                                     |       |
| Versorgung durch Umrichter 100 Hz 4 kHz PWM                                                                                                                              |             |                                                                                       |       |
| Getriebebau NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY                                                                                                              |             |                                                                                       |       |



## Motor options

| 2D according to Directive 2014/34 EU | 3D according to Directive 2014/34 EU             |
|--------------------------------------|--------------------------------------------------|
| ▶ TF Temperature sensor (Standard)   | ▶ TF Temperature sensor (Standard)               |
| ▶ RD* Protection Canopy              | ▶ RD* Protection Canopy                          |
| ▶ WE 2nd shaft end                   | ▶ WE 2nd shaft end                               |
| ▶ KB Condensation drain hole         | ▶ KB Condensation drain hole                     |
| ▶ B3 Foot-mounted version            | ▶ B3 Foot-mounted version                        |
|                                      | ▶ RLS Backstop for size 80 to 180                |
|                                      | ▶ BRE Brake                                      |
|                                      | ▶ HL Manual brake release                        |
|                                      | ▶ FHL Lockable hand release for brake            |
|                                      | ▶ F External fan for sizes 63 to 180             |
|                                      | ▶ IG + F** Incremental encoder plus external fan |

\* If the fan cowl is inclined at an angle of 20° to 90° to the vertical, e.g. IM V1, IM V5 models, the motors are generally designed with a protective cover RD on the fan cowl. This rule applies to all Ex motors from NORD.

\*\* Motors including the IG option are marked with a surface temperature of 140°C.

2D and 3D motors intended to be used on inverter are 230/400V only.



Attention

## Extreme ambient temperatures for 2D and 3D motors

Operation is possible in ambient temperature range from -20°C to +40°C.

For other temperatures please contact NORD.

# Dust Explosion protection „IEC Ex“



## Motors for dust explosion protection according to IEC Ex

The motors listed in the following are explosion protected motors from our own production, which can be fitted to NORD gear units either directly or by means of an IEC cylinder.

The motors have two versions which are exclusively available as follows:

- ▶ Version IDB IP **66** for Zone 21 + 22
- ▶ Version IDC IP **55** for Zone 22

The maximum surface temperature is normally 125°C, but this may be 140°C in specially labelled exceptional cases.

Technically, these motors are similar to NORD Ex motors for dust application such as those on ⇒ Page C1 with acceptance according to Directive 2014/34 EU. However, they have a smaller number of options.

## Motor energy efficiency IE3:

IEC Ex IDB conductive and non-conductive dust

1500 r/min  
50 Hz

230/400 V & 400/690 V  
4-pole

Ex tb IIIC T125° C Db

S1

|          | P <sub>N</sub> | η <sub>N</sub> | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   |      |
|----------|----------------|----------------|----------------|----------------|-----------|------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|------|
| Type     |                |                |                | 230/400 V      | 400/690 V | φ    | 4/4xP <sub>N</sub> |                                |                                |                                |                     | *    |
|          | [kW]           | [r/min]        | [Nm]           | [A]            | [A]       |      | [%]                |                                |                                |                                | [kgm <sup>2</sup> ] | [kg] |
| 63 SP/4  | 0,12           | 1342           | 0,85           | 0,71/0,41      |           | 0,70 | 64,8               | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8  |
| 63 LP/4  | 0,18           | 1373           | 1,25           | 1,00/0,58      |           | 0,66 | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7  |
| 71 SP/4  | 0,25           | 1408           | 1,70           | 1,21/0,70      |           | 0,73 | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1  |
| 71 LP/4  | 0,37           | 1397           | 2,53           | 1,61/0,93      |           | 0,78 | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2  |
| 80 SP/4  | 0,55           | 1402           | 3,75           | 2,46/1,42      |           | 0,75 | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7  |
| 80 LP/4  | 0,75           | 1414           | 5,06           | 3,08/1,78      |           | 0,75 | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2 |
| 90 SP/4  | 1,10           | 1429           | 7,35           | 4,24/2,45      |           | 0,79 | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1 |
| 90 LP/4  | 1,50           | 1414           | 10,1           | 5,61/3,24      |           | 0,81 | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4 |
| 100 LP/4 | 2,20           | 1460           | 14,4           | 7,79/4,50      |           | 0,81 | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5 |
| 100 AP/4 | 3,00           | 1454           | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81 | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4 |
| 112 MP/4 | 4,00           | 1440           | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84 | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5 |
| 132 SP/4 | 5,50           | 1465           | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79 | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55   |
| 132 MP/4 | 7,50           | 1458           | 49,1           | 26,8/15,5      | 15,4/8,91 | 0,79 | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62   |
| 160 MP/4 | 11,0           | 1467           | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85 | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93   |
| 160 LP/4 | 15,0           | 1467           | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87 | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122  |
| 180 MP/4 | 18,5           | 1480           | 119            | 60,3/34,8      | 34,6/20,0 | 0,83 | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155  |
| 180 LP/4 | 22,0           | 1475           | 142            | 70,7/40,8      | 40,6/23,4 | 0,85 | 93,1               | 2,8                            | 3,2                            | 8,1                            | 0,16                | 155  |

\* Version B5, without Option Suitable for inverter operation. See data for the EX motors, intended for the European market

\*\* Measured values (The value on the rating plate may differ, as the rating plate reflects the minimum values for efficiency according to the standard).

## IDB 50 Hz Mains operation DOL

### Type plates (examples)

|                                                                                                     |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
|-----------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|---------------------------|-------------------|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--|
| <br>DRIVESYSTEMS |  |  |  | IEC / EN 60034 / EN 60079 |                   |  |  | 08513660                                                                                  |  |
| Type SK 90LP/4 IDB TF                                                                               |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| 3 ~ Mot. No. 123456789-100                                                                          |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| Th. Cl.155 (F)                                                                                      |  | IP 66                                                                               |  | S1                        |                   | Baujahr: 2026                                                                       |  | (H)                                                                                       |  |
| 50 Hz                                                                                               |  | 230/400                                                                             |  | V                         |                   | Hz                                                                                  |  | V                                                                                         |  |
|                  |  | 5,61/3,24                                                                           |  | A                         |                   | 1,5                                                                                 |  | kW                                                                                        |  |
| cos φ 0,81                                                                                          |  | 1414                                                                                |  | r/min                     |                   | cos φ                                                                               |  | r/min  |  |
| IE3-85,3%                                                                                           |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| Ex tb IIIC T125°C Db                                                                                |  |                                                                                     |  |                           | IECEx BVS 14.0022 |                                                                                     |  |                                                                                           |  |
| Kaltleiter für alleinigen Schutz                                                                    |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| PTC thermistors as sole protection                                                                  |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| 15,4 kg                                                                                             |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
|                  |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| Getriebefabrik NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY                                      |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |
| <a href="http://www.nord.com">www.nord.com</a>                                                      |  |                                                                                     |  |                           |                   |                                                                                     |  |                                                                                           |  |

## IDB 50 Hz Inverter operation VFD

|                                                                                                                                                                          |       |                                                                                       |                   |                                                                                       |      |       |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|------|-------|---------------|
|   |       |  |                   |  |      |       |               |
| Type SK 90LP/4 IDB TF                                                                                                                                                    |       |                                                                                       |                   | 2026                                                                                  |      |       |               |
| 3 ~ Mot. No. 200123456-100                                                                                                                                               |       |                                                                                       |                   | 12345678                                                                              |      |       |               |
| Th.Cl. 155 (F) IP 66                                                                                                                                                     |       | S1                                                                                    |                   | IEC EN 60034 (H),(A) IEC 60079                                                        |      |       |               |
| Ex tb IIIC T125°C Db                                                                                                                                                     |       |                                                                                       | IECEx BVS 14.0022 |                                                                                       |      |       |               |
| <br>N<br>V<br>T<br>R<br><br>D<br>U<br>T<br>Y                                          | Hz    | 3                                                                                     | 20                | 50                                                                                    | 70   | r/min | 1414          |
|                                                                                                                                                                          | Nm    | 5,68                                                                                  | 10,20             | 10,10                                                                                 | 8,19 | kW    | 1,5           |
|                                                                                                                                                                          | r/min | 34                                                                                    | 514               | 1370                                                                                  | 1861 | V     | 230/400 Δ / Y |
|                                                                                                                                                                          | kW    | 0,02                                                                                  | 0,55              | 1,45                                                                                  | 1,60 | Hz    | 50            |
|                                                                                                                                                                          | V     | 33                                                                                    | 172               | 348                                                                                   | 351  | A     | 5,61/3,24     |
|                                                                                                                                                                          | A     | 2,19                                                                                  | 3,12              | 3,53                                                                                  | 4,01 | cos φ | 0,81          |
|                                                                                                                                                                          |       |                                                                                       |                   |                                                                                       |      | IE 3  | 85,3 %        |
| 15,4 kg                                                                                                                                                                  |       | ②                                                                                     |                   |                                                                                       |      |       |               |
| Versorgung durch Umrichter $f_{max}$ 100 Hz $f_{min}$ 4 kHz PWM                                                                                                          |       |                                                                                       |                   |                                                                                       |      |       |               |
| Getriebefabrik NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY <a href="http://www.nord.com">www.nord.com</a>                                                            |       |                                                                                       |                   |                                                                                       |      |       |               |



## Motor energy efficiency IE3

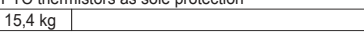
IEC Ex IDC non-conductive dust

| 1500 r/min<br>50 Hz |                | 230/400 V & 400/690 V<br>4-pole |                |                |           |      |                    |                    |                    | Ex tc IIIB T125°C Dc           |                                |                                |                     |                                                                                     |
|---------------------|----------------|---------------------------------|----------------|----------------|-----------|------|--------------------|--------------------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|-------------------------------------------------------------------------------------|
|                     | P <sub>N</sub> | n <sub>N</sub>                  | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                |                    |                    | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   |  |
| Type                |                |                                 |                | 230/400 V      | 400/690 V | φ    | 1/2xP <sub>N</sub> | 3/4xP <sub>N</sub> | 4/4xP <sub>N</sub> |                                |                                |                                |                     | *                                                                                   |
|                     | [kW]           | [r/min]                         | [Nm]           | [A]            | [A]       |      | [%]                | [%]                | [%]                |                                |                                |                                | [kgm <sup>2</sup> ] | [kg]                                                                                |
| 63 SP/4             | 0,12           | 1342                            | 0,85           | 0,71/0,41      |           | 0,70 | 58,3               | 64,7               | 66,4               | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8                                                                                 |
| 63 LP/4             | 0,18           | 1373                            | 1,25           | 1,00/0,58      |           | 0,66 | 62,2               | 65,6               | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7                                                                                 |
| 71 SP/4             | 0,25           | 1408                            | 1,70           | 1,21/0,70      |           | 0,73 | 68,2               | 73,0               | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1                                                                                 |
| 71 LP/4             | 0,37           | 1397                            | 2,53           | 1,61/0,93      |           | 0,78 | 72,8               | 76,7               | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2                                                                                 |
| 80 SP/4             | 0,55           | 1402                            | 3,75           | 2,46/1,42      |           | 0,75 | 79,5               | 81,8               | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7                                                                                 |
| 80 LP/4             | 0,75           | 1414                            | 5,06           | 3,08/1,78      |           | 0,75 | 83,7               | 84,7               | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2                                                                                |
| 90 SP/4             | 1,10           | 1429                            | 7,35           | 4,24/2,45      |           | 0,79 | 79,4               | 83,6               | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1                                                                                |
| 90 LP/4             | 1,50           | 1414                            | 10,1           | 5,61/3,24      |           | 0,81 | 86,6               | 86,3               | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4                                                                                |
| 100 LP/4            | 2,20           | 1460                            | 14,4           | 7,79/4,50      |           | 0,81 | 88,7               | 89,6               | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5                                                                                |
| 100 AP/4            | 3,00           | 1454                            | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81 | 88,4               | 88,8               | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4                                                                                |
| 112 MP/4            | 4,00           | 1440                            | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84 | 88,9               | 89,2               | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5                                                                                |
| 132 SP/4            | 5,50           | 1465                            | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79 | 90,6               | 91,5               | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55                                                                                  |
| 132 MP/4            | 7,50           | 1458                            | 49,1           | 26,8/15,4      | 15,4/8,91 | 0,79 | 90,2               | 90,5               | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62                                                                                  |
| 160 MP/4            | 11,0           | 1467                            | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85 | 91,6               | 92,0               | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93                                                                                  |
| 160 LP/4            | 15,0           | 1467                            | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87 | 92,3               | 92,8               | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122                                                                                 |
| 180 MP/4            | 18,5           | 1480                            | 119            | 60,3/34,8      | 34,6/20,0 | 0,83 | 92,4               | 93,1               | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155                                                                                 |

\* Version B5, without Option Suitable for inverter operation. See data for the EX motors, intended for the European market

\*\* Measured values (The value on the rating plate may differ, as the rating plate reflects the minimum values for efficiency according to the standard).

### IDC 50 Hz Mains operation DOL

|                                                                                                                                                    |                                                                                     |                           |  |                                                                                     |                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                 |  | IEC / EN 60034 / EN 60079 |  |  |  |
| Type SK 90LP/4 IDC TF                                                                                                                              |                                                                                     |                           |  |                                                                                     |                                                                                     |
| 3 ~ Mot. No. 200123456-100                                                                                                                         |                                                                                     |                           |  | 12345678                                                                            |                                                                                     |
| Th. Cl.155 (F) IP 55                                                                                                                               |                                                                                     | S1                        |  | Baujahr: 2026 (H)                                                                   |                                                                                     |
| 50 Hz                                                                                                                                              |                                                                                     | 230/400 V                 |  | Hz V                                                                                |                                                                                     |
| 5,61/3,24 A                                                                                                                                        |                                                                                     | 1,5 kW                    |  | A kW                                                                                |                                                                                     |
| cos φ 0,81                                                                                                                                         |                                                                                     | 1414 r/min                |  | cos φ r/min                                                                         |                                                                                     |
| IE3-85,3%                                                                                                                                          |                                                                                     |                           |  |                                                                                     |                                                                                     |
| Ex tc IIIB T125°C Dc IECEx BVS 14.0022                                                                                                             |                                                                                     |                           |  |                                                                                     |                                                                                     |
| Kaltleiter für alleinigen Schutz                                                                                                                   |                                                                                     |                           |  |                                                                                     |                                                                                     |
| PTC thermistors as sole protection                                                                                                                 |                                                                                     |                           |  |                                                                                     |                                                                                     |
| 15,4 kg                                                                                                                                            |                                                                                     |                           |  |                                                                                     |                                                                                     |
|                                                                 |                                                                                     |                           |  |                                                                                     |                                                                                     |
| Getriebefabrik NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY  |                                                                                     |                           |  |                                                                                     |                                                                                     |
| www.nord.com                                                                                                                                       |                                                                                     |                           |  |                                                                                     |                                                                                     |

### IDC 50 Hz Inverter operation VFD

|                                                                                       |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
|---------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|---------------------------|--|---------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|
|    |  |  |  | IEC / EN 60034 / EN 60079 |  |  |  |  |  |
| Type SK 90LP/4 IDB TF                                                                 |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| 3 ~ Mot.No. 123456789-100                                                             |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| Th. Cl.155 (F) IP 66                                                                  |  | S1                                                                                  |  | Baujahr: 2026             |  | (H)                                                                                   |  |                                                                                       |  |
| 50 Hz 230/400 V                                                                       |  | Hz                                                                                  |  | V                         |  |                                                                                       |  |                                                                                       |  |
| 5,61/3,24 A                                                                           |  | 1,5 kW                                                                              |  | A                         |  | kW                                                                                    |  |                                                                                       |  |
| cos φ 0,81                                                                            |  | 1414 r/min                                                                          |  | cos φ                     |  | r/min                                                                                 |  |                                                                                       |  |
| IE3-85,3%                                                                             |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| Ex tb IIIC T125°C Db IECEx BVS 14.0022                                                |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| Kaltleiter für alleinigen Schutz                                                      |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| PTC thermistors as sole protection                                                    |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| 15,4 kg                                                                               |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
|  |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| Getriebefabrik NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY                        |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |
| www.nord.com                                                                          |  |                                                                                     |  |                           |  |                                                                                       |  |                                                                                       |  |

Type plates  
(examples)

### Permissible motor options for motors as per IEC Ex

|      |                               |
|------|-------------------------------|
| ► TF | Temperature sensor (Standard) |
| ► RD | Protection Canopy             |
| ► WE | 2nd shaft end                 |
| ► KB | Condensation hole             |
| ► B3 | Foot-mounted version          |

Motor options



# Dust Explosion protection „HazLoc“



## Motors for the North American market

Class II, Division 2, Groups F and G temperature code 165°C, operating mode S1, IP 55, IP 66, -20°C to +40°C

These are motors which are used in areas in which flammable mixtures of dust and oxygen do not occur under normal conditions, but in exceptional cases can not be ruled out.

These motors are available in efficiency classes Standard „IE2“ and Premium „IE3“. The motor data is listed for the voltages 230/460 V and 332/575 V which are especially important for the USA and Canada.

All motors are suitable for mains operation. The Premium efficient motors can also be used for inverter duty. See page C8.

## US motor data - dust

| 1800 r/min<br>60 Hz |                        | 332/575 V<br>4 - pole  |                           |          |           |           |           |                 |                                |                          |
|---------------------|------------------------|------------------------|---------------------------|----------|-----------|-----------|-----------|-----------------|--------------------------------|--------------------------|
| Typ                 | P <sub>N</sub><br>[kW] | P <sub>N</sub><br>[hp] | n <sub>N</sub><br>[r/min] | U<br>[V] | f<br>[Hz] | M<br>[Nm] | I<br>[A]  | cos<br>φ<br>[°] | I <sub>A</sub> /I <sub>N</sub> | J<br>[kgm <sup>2</sup> ] |
| 63 S/4 TF IID2      | 0,12                   | 0.16                   | 1702                      | 332/575  | 60        | 0,67      | 0,65/0,37 | 0,58            | 3,34                           | 0,00021                  |
| 63 L/4 TF IID2      | 0,18                   | 0.25                   | 1711                      | 332/575  | 60        | 1,00      | 0,92/0,53 | 0,55            | 3,70                           | 0,00028                  |
| 71 S/4 TF IID2      | 0,25                   | 0.33                   | 1690                      | 332/575  | 60        | 1,41      | 0,90/0,52 | 0,73            | 4,33                           | 0,00072                  |
| 71 L/4 TF IID2      | 0,37                   | 0.50                   | 1710                      | 332/575  | 60        | 2,07      | 1,26/0,73 | 0,71            | 4,84                           | 0,00086                  |
| 80 S/4 TF IID2      | 0,55                   | 0.75                   | 1710                      | 332/575  | 60        | 3,07      | 1,84/1,06 | 0,71            | 4,47                           | 0,00109                  |
| ✓ 80 LP/4 TF IID2   | 0,75                   | 1.00                   | 1730                      | 332/575  | 60        | 4,14      | 2,16/1,25 | 0,70            | 6,50                           | 0,0019                   |
| ✓ 90 SP/4 TF IID2   | 1,10                   | 1.50                   | 1740                      | 332/575  | 60        | 6,04      | 2,91/1,68 | 0,76            | 8,50                           | 0,0034                   |
| ✓ 90 LP/4 TF IID2   | 1,50                   | 2.00                   | 1730                      | 332/575  | 60        | 8,28      | 3,88/2,24 | 0,78            | 7,70                           | 0,0039                   |
| ✓ 100 LP/4 TF IID2  | 2,20                   | 3.00                   | 1770                      | 332/575  | 60        | 11,87     | 5,32/3,07 | 0,79            | 9,20                           | 0,0081                   |
| ✓ 112 MP/4 TF IID2  | 3,70                   | 5.00                   | 1755                      | 332/575  | 60        | 20,13     | 9,00/5,20 | 0,80            | 9,60                           | 0,014                    |
| ✓ 132 SP/4 TF IID2  | 5,50                   | 7.50                   | 1770                      | 332/575  | 60        | 29,68     | 13,5/7,81 | 0,77            | 10,20                          | 0,032                    |
| ✓ 132 MP/4 TF IID2  | 7,50                   | 10.0                   | 1765                      | 332/575  | 60        | 40,58     | 18,6/10,7 | 0,77            | 9,60                           | 0,035                    |
| ✓ 160 MP/4 TF IID2  | 11,0                   | 15.0                   | 1770                      | 332/575  | 60        | 59,35     | 24,7/14,2 | 0,84            | 8,80                           | 0,067                    |
| ✓ 160 LP/4 TF IID2  | 15,0                   | 20.0                   | 1775                      | 332/575  | 60        | 80,70     | 33,0/19,0 | 0,85            | 10,80                          | 0,092                    |
| ✓ 180 MP/4 TF IID2  | 18,5                   | 25.0                   | 1780                      | 332/575  | 60        | 99,00     | 24,2/14,0 | 0,82            | 10,10                          | 0,160                    |
| ✓ 180 LP/4 TF IID2  | 22,0                   | 30.0                   | 1780                      | 332/575  | 60        | 118,00    | 27,8/16,0 | 0,85            | 8,80                           | 0,160                    |

✓ these motors are also suitable for inverter operation

Mains operation

and

Inverter operation



## US-motor data - dust

| 1800 r/min<br>60 Hz |                  | 230/460 V<br>4 - pole |                |                |         |      |        |           |      |                                |                     |
|---------------------|------------------|-----------------------|----------------|----------------|---------|------|--------|-----------|------|--------------------------------|---------------------|
|                     |                  | P <sub>N</sub>        | P <sub>N</sub> | n <sub>N</sub> | U       | f    | M      | I         | cos  | I <sub>A</sub> /I <sub>N</sub> | J                   |
| Type                |                  |                       |                |                |         |      |        |           | φ    |                                |                     |
|                     |                  | [kW]                  | [hp]           | [r/min]        | [V]     | [Hz] | [Nm]   | [A]       | [°]  |                                | [kgm <sup>2</sup> ] |
| 63                  | S/4 TF IID2      | 0,12                  | 0.16           | 1687           | 230/460 | 60   | 0,68   | 0,94/0,47 | 0,54 | 3,21                           | 0,00021             |
| 63                  | L/4 TF IID2      | 0,18                  | 0.25           | 1706           | 230/460 | 60   | 1,01   | 1,18/0,59 | 0,57 | 3,58                           | 0,00028             |
| 71                  | S/4 TF IID2      | 0,25                  | 0.33           | 1710           | 230/460 | 60   | 1,40   | 1,56/0,78 | 0,64 | 3,00                           | 0,00072             |
| 71                  | L/4 TF IID2      | 0,37                  | 0.50           | 1715           | 230/460 | 60   | 2,06   | 1,89/0,94 | 0,69 | 4,84                           | 0,00086             |
| 80                  | S/4 TF IID2      | 0,55                  | 0.75           | 1710           | 230/460 | 60   | 3,07   | 2,70/1,35 | 0,71 | 3,60                           | 0,00109             |
|                     |                  |                       |                |                |         |      |        |           |      |                                |                     |
| ✓                   | 80 LP/4 TF IID2  | 0,75                  | 1.00           | 1730           | 230/460 | 60   | 4,14   | 3,14/1,57 | 0,70 | 6,50                           | 0,0019              |
| ✓                   | 90 SP/4 TF IID2  | 1,10                  | 1.50           | 1740           | 230/460 | 60   | 6,04   | 4,20/2,10 | 0,76 | 8,40                           | 0,0034              |
| ✓                   | 90 LP/4 TF IID2  | 1,50                  | 2.00           | 1730           | 230/460 | 60   | 8,28   | 5,60/2,80 | 0,78 | 7,60                           | 0,0039              |
| ✓                   | 100 LP/4 TF IID2 | 2,20                  | 3.00           | 1770           | 230/460 | 60   | 11,87  | 7,68/3,07 | 0,79 | 9,20                           | 0,0081              |
| ✓                   | 112 MP/4 TF IID2 | 3,70                  | 5.00           | 1755           | 230/460 | 60   | 20,13  | 13,0/6,50 | 0,80 | 9,50                           | 0,014               |
| ✓                   | 132 SP/4 TF IID2 | 5,50                  | 7.50           | 1770           | 230/460 | 60   | 29,68  | 19,5/9,75 | 0,77 | 10,20                          | 0,032               |
| ✓                   | 132 MP/4 TF IID2 | 7,50                  | 10.0           | 1765           | 230/460 | 60   | 40,58  | 26,7/13,4 | 0,77 | 9,60                           | 0,035               |
| ✓                   | 160 MP/4 TF IID2 | 11,0                  | 15.0           | 1770           | 230/460 | 60   | 59,35  | 35,6/17,8 | 0,84 | 8,80                           | 0,067               |
| ✓                   | 160 LP/4 TF IID2 | 15,0                  | 20.0           | 1775           | 230/460 | 60   | 80,70  | 47,6/23,8 | 0,85 | 10,80                          | 0,092               |
| ✓                   | 180 MP/4 TF IID2 | 18,5                  | 25.0           | 1780           | 230/460 | 60   | 99,00  | 60,6/30,3 | 0,82 | 10,10                          | 0,160               |
| ✓                   | 180 LP/4 TF IID2 | 22,0                  | 30.0           | 1780           | 230/460 | 60   | 118,00 | 69,6/34,8 | 0,85 | 8,80                           | 0,160               |

✓ these motors are also suitable for inverter operation

Mains operation

operation with  
inverter

and

## IDC 60 Hz Mains operation DOL

DRIVESYSTEMS

Type SK 90 LP/4 CUS IID2 TF 2026

3 ~ Mot. No. 202592077-100 12345678

INS F NEMA IP55 CONT S1 AMB 40 °C TEFC DP

60 Hz 230/460 V YY/Y EFF<sub>η</sub> = IE3 86,5% CODE K

5,60/2,80 A 2,00 hp 1,5 kW/SF 1,15

PF 0,78 1730 r/min

INVERTER DUTY VPWM CT Class II Div2 Group F&G T3B -165°C

| Hz | r/min | Nm | lb-in | hp | A |
|----|-------|----|-------|----|---|
|----|-------|----|-------|----|---|

|   |     |      |       |      |           |
|---|-----|------|-------|------|-----------|
| 7 | 110 | 6,32 | 55,91 | 0,10 | 4,64/2,32 |
|---|-----|------|-------|------|-----------|

|    |      |      |       |      |           |
|----|------|------|-------|------|-----------|
| 83 | 2400 | 6,32 | 55,91 | 2,00 | 4,64/2,32 |
|----|------|------|-------|------|-----------|

16,7 kg MB 20 Nm 230 VAC 205 VDC

Over Temp Prot-2 Class F

Getriebetechnik NORD GmbH & Co. KG, 22899 Baegle/steile / GERMANY.

## IDC 60 Hz Inverter operation VFD

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|------|-----------|--|--|--|--|--|--|----|-------|----|-------|----|---|---|-----|------|-------|------|-----------|----|------|------|-------|------|-----------|
| <div></div> |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| Type SK 90 LP/4 CUS IID2 TF 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 3 ~ Mot. No. 202592077-100 12345678                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| INS F NEMA IP55 CONT S1 AMB 40 °C TEFC DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 60 Hz 230/460 V YY/Y EFF <sub>η</sub> = IE3 86,5% CODE K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 5,60/2,80 A 2,00 hp 1,5 kW/SF 1,15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| PF 0,78 1730 r/min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| INVERTER DUTY VPWM CT Class II Div2 Group F&G T3B -165°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| <table><tr><td>Hz</td><td>r/min</td><td>Nm</td><td>lb-in</td><td>hp</td><td>A</td></tr><tr><td>7</td><td>110</td><td>6,32</td><td>55,91</td><td>0,10</td><td>4,64/2,32</td></tr><tr><td>83</td><td>2400</td><td>6,32</td><td>55,91</td><td>2,00</td><td>4,64/2,32</td></tr></table>                                                                                                                                                                                                                                                                                                                                   |       |      |       |      |           |  |  |  |  |  |  | Hz | r/min | Nm | lb-in | hp | A | 7 | 110 | 6,32 | 55,91 | 0,10 | 4,64/2,32 | 83 | 2400 | 6,32 | 55,91 | 2,00 | 4,64/2,32 |
| Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | r/min | Nm   | lb-in | hp   | A         |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 110   | 6,32 | 55,91 | 0,10 | 4,64/2,32 |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 83                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2400  | 6,32 | 55,91 | 2,00 | 4,64/2,32 |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| 16,7 kg MB 20 Nm 230 VAC 205 VDC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| Over Temp Prot-2 Class F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |
| Gefährdungs NORD GmbH & Co. KG, 22329 Bargteheide / GERMANY.   <a href="http://www.nord.com">www.nord.com</a>                                                                                                                                                                                                                                                                                                                               |       |      |       |      |           |  |  |  |  |  |  |    |       |    |       |    |   |   |     |      |       |      |           |    |      |      |       |      |           |

Type plates  
(examples)

## Permissible motor options for motors with special voltages between 200V - 600V

|       |                               |
|-------|-------------------------------|
| ▶ TF  | Temperature sensor (Standard) |
| ▶ TW  | Temperature sensor (bi-metal) |
| ▶ RD  | Protection Canopy             |
| ▶ RDD | Double fan cowl               |
| ▶ WE  | 2nd shaft end                 |
| ▶ BRE | Brake                         |

Motor options



# Dust Explosion protection „HazLoc“



## Operation with frequency inverters

NORD motors that comply with Class II Div.2 are suitable for operation on a frequency inverter. The variable speed range requires temperature monitoring using temperature sensors. The approved speed ranges can be found in the following table:

| Motortype        | Typ VR 5:1 |         |         | Typ VN 10:1 |         |         | Typ VW 20:1 |         |         |
|------------------|------------|---------|---------|-------------|---------|---------|-------------|---------|---------|
|                  | M          | nmax    | nmin    | M           | nmax    | nmin    | M           | nmax    | nmin    |
|                  | [Nm]       | [r/min] | [r/min] | [Nm]        | [r/min] | [r/min] | [Nm]        | [r/min] | [r/min] |
| SK 80 LP/4 IID2  | 4,32       | 1680    | 350     | 3,16        | 1800    | 175     | 2,98        | 2400    | 110     |
| SK 90 SP/4 IID2  | 6,10       | 1750    | 355     | 3,96        | 1800    | 185     | 4,45        | 2400    | 80      |
| SK 90 LP/4 IID2  | 8,63       | 1695    | 360     | 6,28        | 1800    | 115     | 6,32        | 2400    | 110     |
| SK 100 LP/4 IID2 | 12,50      | 1700    | 315     | 8,19        | 1800    | 100     | 9,25        | 2400    | 65      |
| SK 112 MP/4 IID2 | 20,30      | 1750    | 360     | 11,87       | 1800    | 180     | 14,84       | 2400    | 115     |
| SK 132 SP/4 IID2 | 30,50      | 1750    | 350     | 19,78       | 1800    | 185     | 22,25       | 2400    | 120     |
| SK 132 MP/4 IID2 | 41,00      | 1745    | 350     | 29,67       | 1800    | 175     | 29,67       | 2400    | 125     |
| SK 160 MP/4 IID2 | 60,30      | 1760    | 345     | 39,56       | 1800    | 175     | 44,51       | 2400    | 120     |
| SK 160 LP/4 IID2 | 80,70      | 1760    | 350     | 59,34       | 1800    | 180     | 59,34       | 2400    | 115     |
| SK 180 MP/4 IID2 | 100,60     | 1760    | 355     | 79,12       | 1800    | 180     | 74,18       | 2400    | 125     |
| SK 180 LP/4 IID2 | 121,00     | 1765    | 350     | 98,90       | 1800    | 175     | 89,01       | 2400    | 120     |

Dust  
explosion protection





# Dust Explosion protection „CCC Ex“



## Motors for dust explosion protection according to CCC Ex

The motors listed in the following are explosion protected motors from our own production, which can be fitted to NORD gear units either directly or by means of an IEC cylinder.

The motors have two versions which are exclusively available as follows:

- Version C2D IP66 for conductive and non-conductive dust
- Version C3D IP56 or IP66 for non-conductive dust

The maximum surface temperature is 125°C. Ambient temperature range -20°C to +40°C. The motors can be used at main operation or for inverter duty in two different versions for 50 or 87Hz characteristic. Technically, these motors are similar to NORD Ex motors for dust application such as those on ⇒ Page C1 and C2. For further information see ⇒ pages A12 and A13.

All motors listed in this catalog fulfill the requirements for efficiency according to (EU) 2019/1781. All motors for explosive dust as described below are IE3 efficient motors. This can be also seen in the motor type like 63SP/4. The "P" is the abbreviation for "premium efficiency".

## CCC Ex conductive and non conductive dust

## NORD abbreviation C2D

1500 r/min  
50 Hz

230/400 V & 400/690 V  
4-pole

Ex tb IIIC T 125°C Db

|          | P <sub>N</sub> | n <sub>N</sub> | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   |      |
|----------|----------------|----------------|----------------|----------------|-----------|------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|------|
| Type     |                |                |                | 230/400 V      | 400/690 V | φ    | 4/4xP <sub>N</sub> |                                |                                |                                |                     | *    |
|          | [kW]           | [r/min]        | [Nm]           | [A]            | [A]       |      | [%]                |                                |                                |                                | [kgm <sup>2</sup> ] | [kg] |
| 63 SP/4  | 0,12           | 1342           | 0,85           | 0,71/0,41      |           | 0,70 | 64,8               | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8  |
| 63 LP/4  | 0,18           | 1373           | 1,25           | 1,00/0,58      |           | 0,66 | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7  |
| 71 SP/4  | 0,25           | 1408           | 1,70           | 1,21/0,70      |           | 0,73 | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1  |
| 71 LP/4  | 0,37           | 1397           | 2,53           | 1,61/0,93      |           | 0,78 | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2  |
| 80 SP/4  | 0,55           | 1402           | 3,75           | 2,46/1,42      |           | 0,75 | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7  |
| 80 LP/4  | 0,75           | 1414           | 5,06           | 3,08/1,78      |           | 0,75 | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2 |
| 90 SP/4  | 1,10           | 1429           | 7,35           | 4,24/2,45      |           | 0,79 | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1 |
| 90 LP/4  | 1,50           | 1414           | 10,1           | 5,91/3,41      |           | 0,81 | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4 |
| 100 LP/4 | 2,20           | 1460           | 14,4           | 7,79/4,50      |           | 0,81 | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5 |
| 100 AP/4 | 3,00           | 1454           | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81 | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4 |
| 112 MP/4 | 4,00           | 1440           | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84 | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5 |
| 132 SP/4 | 5,50           | 1465           | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79 | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55   |
| 132 MP/4 | 7,50           | 1458           | 49,1           | 26,8/15,4      | 15,4/8,91 | 0,79 | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62   |
| 160 SP/4 | 9,20           | 1474           | 59,6           | 29,4/17,0      | 16,9/9,76 | 0,86 | 91,0               | 2,9                            | 3,3                            | 9,5                            | 0,067               | 93   |
| 160 MP/4 | 11,0           | 1467           | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85 | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93   |
| 160 LP/4 | 15,0           | 1467           | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87 | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122  |
| 180 MP/4 | 18,5           | 1480           | 119            | 60,3/34,8      | 34,6/20,0 | 0,83 | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155  |
| 180 LP/4 | 22,0           | 1475           | 142            | 70,7/40,8      | 40,6/23,4 | 0,85 | 93,1               | 2,8                            | 3,2                            | 8,1                            | 0,16                | 155  |

400/690V not available for inverter duty

\* Version B5 without options <sup>1</sup>

\*\* Measured value (data on rating plates may deviate, as rating plates have standardised minimum efficiencies).

## Type plates (examples)

|                                                                                     |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|
|  |         |  |       |  |      |  |            |  |  |  |  |  |  |  |  |  |  |  |  |
| 防爆电机                                                                                |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| Type SK 90LP/4 C2D TF 2026                                                          |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| 3 ~ Mot. No. 200123456-100 12345678                                                 |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| Th.Cl. 155 (F) S1 Tamb -20...+40 °C GYJ26.1130X                                     |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| Ex tb IIC T125°C Db IP66 GB/T 3836.1-2021 GB/T 3836.31-2021                         |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| 电动机<br>电动机<br>电动机<br>电动机<br>电动机<br>电动机<br>电动机<br>电动机                                | Hz      | 3                                                                                   | 20    | 50                                                                                  | 70   | r/min                                                                               | 1414       |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | Nm      | 5,68                                                                                | 10,20 | 10,10                                                                               | 8,19 | kW                                                                                  | 1,5        |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | r/min   | 34                                                                                  | 514   | 1370                                                                                | 1861 | V                                                                                   | 230/400Δ/Y |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | kW      | 0,02                                                                                | 0,55  | 1,45                                                                                | 1,60 | Hz                                                                                  | 50         |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | V       | 33                                                                                  | 172   | 348                                                                                 | 351  | A                                                                                   | 5,61/3,24  |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | A       | 2,19                                                                                | 3,15  | 3,53                                                                                | 4,01 | cos φ                                                                               | 0,81       |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     |         |                                                                                     |       |                                                                                     |      | IE3-85,3 %                                                                          |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
|                                                                                     | 15,4 kg |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| 由变频器供电 f <sub>min</sub> 100 Hz f <sub>max</sub> 4 kHz PWM                           |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |
| Getriebesbau NORD GmbH & Co. KG, 22899 Bargteheide / GERMANY / 意大利                  |         |                                                                                     |       |                                                                                     |      |                                                                                     |            |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |  |

|                                                                                     |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|
|  |      |  |       |  |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 防爆电机                                                                                |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Type SK 90LP/4 C2D TF 2026                                                          |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| 3 ~ Mot. No. 200123456-100 12345678                                                 |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Th.Cl. 155 (F) S1 Tamb -20...+40° C GYJ26.1130X                                     |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Ex tb IIC T125°C Db IP66 GB/T 3836.1-2021 GB/T 3836.31-2021                         |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Hz                                                                                  | 3    | 20                                                                                    | 87    | 100                                                                                 | r/min      | 1414                                                                                  |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Nm                                                                                  | 5,68 | 10,20                                                                                 | 10,10 | 10,10                                                                               | kW         | 1,5                                                                                   |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| r/min                                                                               | 34   | 514                                                                                   | 2483  | 2816                                                                                | V          | 230/400Δ/Y                                                                            |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| kW                                                                                  | 0,02 | 0,55                                                                                  | 2,63  | 2,99                                                                                | Hz         | 50                                                                                    |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| V                                                                                   | 19   | 99                                                                                    | 346   | 348                                                                                 | A          | 5,61/3,24                                                                             |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| A                                                                                   | 3,79 | 5,40                                                                                  | 6,05  | 6,87                                                                                | cos φ      | 0,81                                                                                  |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                     |      |                                                                                       |       |                                                                                     | IE3-85,3 % |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| 15,4 kg                                                                             |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| 由变频器供电 f <sub>min</sub> 100 Hz f <sub>max</sub> 4 kHz PWM                           |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |
| Getriebesbau NORD GmbH & Co. KG, 22899 Bargteheide / GERMANY / 意大利                  |      |                                                                                       |       |                                                                                     |            |                                                                                       |  |                                                                                       |  |                                                                                       |  |  |  |  |  |  |  |  |  |  |  |



Motors for dust explosion protection according to CCC Ex mains operation and Inverter duty

CCC Ex conductive and non-conductive dust NORD abbreviation **C2D**

| 1500 r/min<br>50 Hz |                | 220/380V & 380/660V<br>4-pole |                |                |           |      |                    | Ex tb IIIC T125°C Db           |                                |                                |                     |      |
|---------------------|----------------|-------------------------------|----------------|----------------|-----------|------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|------|
| Type                | P <sub>N</sub> | η <sub>N</sub>                | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   | kg   |
|                     | [kW]           | [r/min]                       | [Nm]           | 220/380V       | 380/660V  | φ    | 4/4xP <sub>N</sub> |                                |                                |                                | [kgm <sup>2</sup> ] | [kg] |
|                     |                |                               |                | [A]            | [A]       |      | [%]                |                                |                                |                                |                     |      |
| 63 SP/4             | 0,12           | 1342                          | 0,85           | 0,74/0,43      |           | 0,70 | 64,8               | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8  |
| 63 LP/4             | 0,18           | 1373                          | 1,25           | 1,06/0,61      |           | 0,66 | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7  |
| 71 SP/4             | 0,25           | 1408                          | 1,70           | 1,28/0,74      |           | 0,73 | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1  |
| 71 LP/4             | 0,37           | 1397                          | 2,53           | 1,70/0,98      |           | 0,78 | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2  |
| 80 SP/4             | 0,55           | 1402                          | 3,75           | 2,60/1,50      |           | 0,75 | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7  |
| 80 LP/4             | 0,75           | 1414                          | 5,06           | 3,24/1,87      |           | 0,75 | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2 |
| 90 SP/4             | 1,10           | 1429                          | 7,35           | 4,47/2,58      |           | 0,79 | 85,0               | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1 |
| 90 LP/4             | 1,50           | 1414                          | 10,1           | 5,91/3,41      |           | 0,81 | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4 |
| 100 LP/4            | 2,20           | 1460                          | 14,4           | 8,21/4,74      |           | 0,81 | 88,1               | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5 |
| 100 AP/4            | 3,00           | 1454                          | 19,7           | 11,4/6,58      | 6,56/3,79 | 0,81 | 88,1               | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4 |
| 112 MP/4            | 4,00           | 1440                          | 26,5           | 14,5/8,36      | 8,32/4,81 | 0,84 | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5 |
| 132 SP/4            | 5,50           | 1465                          | 35,8           | 20,4/11,8      | 11,8/6,80 | 0,79 | 90,9               | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55   |
| 132 MP/4            | 7,50           | 1458                          | 49,1           | 28,2/16,3      | 16,2/9,38 | 0,79 | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62   |
| 160 SP/4            | 9,20           | 1474                          | 59,6           | 30,8/17,8      | 17,8/10,3 | 0,86 | 91,0               | 2,9                            | 3,3                            | 9,5                            | 0,067               | 93   |
| 160 MP/4            | 11,0           | 1467                          | 71,6           | 37,1/21,4      | 21,4/12,3 | 0,85 | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93   |
| 160 LP/4            | 15,0           | 1467                          | 97,6           | 50,1/28,9      | 28,9/16,7 | 0,87 | 92,3               | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122  |
| 180 MP/4            | 18,5           | 1480                          | 119            | 63,2/36,5      | 36,5/21,1 | 0,83 | 93,1               | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155  |
| 180 LP/4            | 22,0           | 1475                          | 142            | 74,1/42,8      | 42,8/24,7 | 0,85 | 93,1               | 2,8                            | 3,2                            | 8,1                            | 0,16                | 155  |

220/380V and 380/660V not available for inverter duty

\* Version B5 without options <sup>1</sup>

\*\* Measured value (data on rating plates may deviate, as rating plates have standardised minimum efficiencies).

|                                                                                     |       |                                                                                     |  |                                    |  |                                                                                     |            |                                                                                     |  |           |  |
|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|--|------------------------------------|--|-------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------|--|-----------|--|
|  |       |  |  | 防爆电机                               |  |  |            |  |  | 0851 4440 |  |
| Type SK 90LP/4 C2D TF                                                               |       |                                                                                     |  |                                    |  |                                                                                     |            | 2026                                                                                |  |           |  |
| 3 ~ Mot. No. 123456789-100                                                          |       |                                                                                     |  |                                    |  |                                                                                     |            | 12345678                                                                            |  |           |  |
| Th.Cl. 155 (F)                                                                      |       | S1                                                                                  |  | Tamb -20...+40°C                   |  | GYJ26.1130X                                                                         |            |                                                                                     |  |           |  |
| Ex tb IIIC T125°C Db                                                                |       | IP66                                                                                |  | GB/T 3836.1-2021 GB/T 3836.31-2021 |  |                                                                                     |            |                                                                                     |  |           |  |
| E<br>L<br>E<br>V<br>A                                                               | Hz    |                                                                                     |  |                                    |  | L<br>I<br>N<br>E<br>V<br>O<br>L<br>T<br>A<br>G<br>E                                 | r/min      | 1414                                                                                |  |           |  |
|                                                                                     | Nm    |                                                                                     |  |                                    |  |                                                                                     | kW         | 1,5                                                                                 |  |           |  |
|                                                                                     | r/min |                                                                                     |  |                                    |  |                                                                                     | V          | 220/380Δ/Y                                                                          |  |           |  |
|                                                                                     | kW    |                                                                                     |  |                                    |  |                                                                                     | Hz         | 50                                                                                  |  |           |  |
|                                                                                     | V     |                                                                                     |  |                                    |  |                                                                                     | A          | 5,91 / 3,41                                                                         |  |           |  |
| E<br>L<br>V<br>A                                                                    | A     |                                                                                     |  |                                    |  |                                                                                     | cos φ      | 0,81                                                                                |  |           |  |
|                                                                                     |       |                                                                                     |  |                                    |  |                                                                                     | IE3-85,3 % |                                                                                     |  |           |  |
| 15,4 kg                                                                             |       |                                                                                     |  |                                    |  | ①                                                                                   |            |                                                                                     |  |           |  |
|                                                                                     |       |                                                                                     |  |                                    |  | ②                                                                                   |            |                                                                                     |  |           |  |
| Gefährdeten, NORD GmbH & Co. KG, 22539 Bargteheide / GFRMANY / 中 德                  |       |                                                                                     |  |                                    |  |                                                                                     |            |                                                                                     |  |           |  |
| www.nord.com                                                                        |       |                                                                                     |  |                                    |  |                                                                                     |            |                                                                                     |  |           |  |

Type plates (examples)



# Dust Explosion protection „CCC Ex“



## Motor energy efficiency: Premium IE3

CCC Ex non conductive dust NORD abbreviation **C3D**

Dust  
explosion protection

| 1500 r/min<br>50 Hz |                | 230/400 V & 400/690 V<br>4-pole |                |                |           |      |                    | Ex tc IIIB T 125°C Dc |                    |                                |                                |                                |         |                                                                                     |
|---------------------|----------------|---------------------------------|----------------|----------------|-----------|------|--------------------|-----------------------|--------------------|--------------------------------|--------------------------------|--------------------------------|---------|-------------------------------------------------------------------------------------|
|                     | P <sub>N</sub> | η <sub>N</sub>                  | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                |                       |                    | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J       |  |
| Type                |                |                                 |                | 230/400 V      | 400/690 V | φ    | 1/2xP <sub>N</sub> | 3/4xP <sub>N</sub>    | 4/4xP <sub>N</sub> |                                |                                |                                |         | *                                                                                   |
|                     | [kW]           | [r/min]                         | [Nm]           | [A]            | [A]       |      | [%]                | [%]                   | [%]                |                                |                                |                                | [kgm²]  | [kg]                                                                                |
| 63 SP/4             | 0,12           | 1342                            | 0,85           | 0,71/0,41      |           | 0,70 | 58,3               | 64,7                  | 66,4               | 2,7                            | 2,5                            | 3,5                            | 0,00024 | 3,8                                                                                 |
| 63 LP/4             | 0,18           | 1373                            | 1,25           | 1,00/0,58      |           | 0,66 | 62,2               | 65,6                  | 69,9               | 3,2                            | 3,1                            | 4,0                            | 0,00033 | 4,7                                                                                 |
| 71 SP/4             | 0,25           | 1408                            | 1,70           | 1,21/0,70      |           | 0,73 | 68,2               | 73,0                  | 73,5               | 3,2                            | 3,2                            | 5,5                            | 0,00086 | 6,1                                                                                 |
| 71 LP/4             | 0,37           | 1397                            | 2,53           | 1,61/0,93      |           | 0,78 | 72,8               | 76,7                  | 77,3               | 2,8                            | 2,8                            | 5,3                            | 0,00110 | 7,2                                                                                 |
| 80 SP/4             | 0,55           | 1402                            | 3,75           | 2,46/1,42      |           | 0,75 | 79,5               | 81,8                  | 81,4               | 2,6                            | 2,8                            | 4,9                            | 0,00145 | 9,7                                                                                 |
| 80 LP/4             | 0,75           | 1414                            | 5,06           | 3,08/1,78      |           | 0,75 | 83,7               | 84,7                  | 83,7               | 3,0                            | 3,1                            | 5,8                            | 0,0019  | 10,2                                                                                |
| 90 SP/4             | 1,10           | 1429                            | 7,35           | 4,24/2,45      |           | 0,79 | 84,7               | 86                    | 84,1               | 3,6                            | 4,0                            | 7,2                            | 0,0034  | 15,1                                                                                |
| 90 LP/4             | 1,50           | 1414                            | 10,1           | 5,61/3,24      |           | 0,81 | 86,6               | 86,3                  | 85,3               | 3,3                            | 3,5                            | 6,8                            | 0,0039  | 15,4                                                                                |
| 100 LP/4            | 2,20           | 1460                            | 14,4           | 7,79/4,50      |           | 0,81 | 88,7               | 89,6                  | 86,7               | 2,6                            | 3,9                            | 8,1                            | 0,0081  | 24,5                                                                                |
| 100 AP/4            | 3,00           | 1454                            | 19,7           | 10,8/6,25      | 6,23/3,60 | 0,81 | 88,4               | 88,8                  | 87,7               | 2,4                            | 3,6                            | 7,7                            | 0,0081  | 27,4                                                                                |
| 112 MP/4            | 4,00           | 1440                            | 26,5           | 13,7/7,94      | 7,91/4,57 | 0,84 | 88,9               | 89,2                  | 88,6               | 3,3                            | 3,5                            | 8,3                            | 0,014   | 35,5                                                                                |
| 132 SP/4            | 5,50           | 1465                            | 35,8           | 19,5/11,2      | 11,2/6,46 | 0,79 | 90,6               | 91,5                  | 89,6               | 3,8                            | 4,1                            | 9,7                            | 0,032   | 55                                                                                  |
| 132 MP/4            | 7,50           | 1458                            | 49,1           | 26,8/15,4      | 15,4/8,91 | 0,79 | 90,2               | 90,5                  | 90,4               | 3,8                            | 4,2                            | 8,8                            | 0,035   | 62                                                                                  |
| 160 SP/4            | 9,20           | 1474                            | 59,6           | 29,4/17,0      | 16,9/9,76 | 0,86 | 90,4               | 91,1                  | 91,0               | 2,9                            | 3,3                            | 9,5                            | 0,067   | 93                                                                                  |
| 160 MP/4            | 11,0           | 1467                            | 71,6           | 35,3/20,4      | 20,3/11,7 | 0,85 | 91,6               | 92,0                  | 91,4               | 2,9                            | 3,4                            | 9,4                            | 0,067   | 93                                                                                  |
| 160 LP/4            | 15,0           | 1467                            | 97,6           | 47,6/27,5      | 27,3/15,8 | 0,87 | 92,3               | 92,8                  | 92,1               | 3,8                            | 4,3                            | 9,9                            | 0,092   | 122                                                                                 |
| 180 MP/4            | 18,5           | 1480                            | 119            | 60,3/34,8      | 34,6/20,0 | 0,83 | 92,4               | 93,1                  | 92,6               | 3,4                            | 3,8                            | 10,0                           | 0,160   | 155                                                                                 |
| 180 LP/4            | 22,0           | 1475                            | 142            | 70,7/40,8      | 40,6/23,4 | 0,85 | 93,2               | 93,5                  | 93                 | 2,8                            | 3,2                            | 8,1                            | 0,160   | 155                                                                                 |

400/690V not available for inverter duty

\* Version B5 without options

\*\* Measured value (data on rating plates may deviate, as rating plates have standardised minimum efficiencies).

Type plates  
(examples)

|                                                                                                                                                                                                                                                           |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------------------|-------------------------------------------------------------------------------------|-------------|----------|------------|--|--|--|--|--|--|
|                                                                                     |       | 防爆电机 |                   |  |             | 08614410 |            |  |  |  |  |  |  |
| Type SK 90LP/4 C3D TF 2026                                                                                                                                                                                                                                |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
| 3 ~ Mot. No. 200123456-100 930 12345678                                                                                                                                                                                                                   |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
| Th.Cl. 155 (F)                                                                                                                                                                                                                                            |       | S1   | Tamb -20°...+40°C |                                                                                     | GYJ26.1130X |          |            |  |  |  |  |  |  |
| Ex tc IIIB T125°C Dc IP56 GB/T 3836.1-2021 GB/T 3836.31-2021                                                                                                                                                                                              |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
|  INVERTER<br>DUTY                                                                                                                                                      | Hz    | 3    | 20                | 50                                                                                  | 70          | r/min    | 1414       |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                           | Nm    | 5,68 | 10,20             | 10,10                                                                               | 8,19        | kW       | 1,5        |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                           | r/min | 34   | 514               | 1370                                                                                | 1861        | V        | 230/400Δ/Y |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                           | kW    | 0,02 | 0,55              | 1,45                                                                                | 1,60        | Hz       | 50         |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                           | V     | 33   | 172               | 348                                                                                 | 351         | A        | 5,61/3,24  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                           | A     | 2,19 | 3,12              | 3,53                                                                                | 4,01        | cos φ    | 0,81       |  |  |  |  |  |  |
| 15,4 kg                                                                                                                                                                                                                                                   |       | ①    |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
| 由变频器供电 f <sub>min</sub> 100 Hz f <sub>max</sub> 4 kHz PWM                                                                                                                                                                                                 |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |
| Getriebetechnik NORD GmbH & Co. KG, 22309 Bargteheide / GERMANY / 中国   www.nord.com |       |      |                   |                                                                                     |             |          |            |  |  |  |  |  |  |

|                                                                                                                                                                          |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------------------|---------------------------------------------------------------------------------------|-------------|----------|------------|--|--|--|--|--|--|
|   |       | 防爆电机 |                   |  |             | 08614410 |            |  |  |  |  |  |  |
| Type SK 90LP/4 C3D TF 2026                                                                                                                                               |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
| 3 ~ Mot. No. 200123456-100 930 12345678                                                                                                                                  |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
| Th.Cl. 155 (F)                                                                                                                                                           |       | S1   | Tamb -20°...+40°C |                                                                                       | GYJ26.1130X |          |            |  |  |  |  |  |  |
| Ex tc IIIB T125°C Dc IP56 GB/T 3836.1-2021 GB/T 3836.31-2021                                                                                                             |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
| <br>INVERTER<br>DUTY                                                                  | Hz    | 3    | 20                | 87                                                                                    | 100         | r/min    | 1414       |  |  |  |  |  |  |
|                                                                                                                                                                          | Nm    | 5,68 | 10,20             | 10,10                                                                                 | 10,10       | kW       | 1,5        |  |  |  |  |  |  |
|                                                                                                                                                                          | r/min | 34   | 514               | 2483                                                                                  | 2816        | V        | 230/400Δ/Y |  |  |  |  |  |  |
|                                                                                                                                                                          | kW    | 0,02 | 0,55              | 2,63                                                                                  | 2,99        | Hz       | 50         |  |  |  |  |  |  |
|                                                                                                                                                                          | V     | 19   | 99                | 346                                                                                   | 348         | A        | 5,61/3,24  |  |  |  |  |  |  |
|                                                                                                                                                                          | A     | 3,79 | 5,40              | 6,05                                                                                  | 6,87        | cos φ    | 0,81       |  |  |  |  |  |  |
| 15,4 kg                                                                                                                                                                  |       | ①    |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
| 由变频器供电 f <sub>min</sub> 100 Hz f <sub>max</sub> 4 kHz PWM                                                                                                                |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |
| Getriebetechnik NORD GmbH & Co. KG, 22309 Bargteheide / GERMANY / 中国 www.nord.com                                                                                        |       |      |                   |                                                                                       |             |          |            |  |  |  |  |  |  |

Attention



C2D and C3D motors which are operated on the inverter can only be selected with a voltage of 230/400V.

The motors may only be operated at an ambient temperature between -20°C and +40°C.

For other ambient temperatures, please contact NORD.



## Motor energy efficiency: Premium IE3

CCC Ex non conductive dust NORD abbreviation **C3D**

| 1500 r/min<br>50 Hz |                | 220/380V & 380/660V<br>4-pole |                |                |           |      | Ex tc IIIB T125°C Dc |                                |                                |                                |                     |      |
|---------------------|----------------|-------------------------------|----------------|----------------|-----------|------|----------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|------|
| Type                | P <sub>N</sub> | n <sub>N</sub>                | M <sub>N</sub> | I <sub>N</sub> |           | cos  | η**                  | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   | *    |
|                     | [kW]           | [r/min]                       | [Nm]           | 220/380V       | 380/660V  | φ    | 4/4xP <sub>N</sub>   |                                |                                |                                | [kgm <sup>2</sup> ] | [kg] |
| 63 SP/4             | 0,12           | 1342                          | 0,85           | 0,74/0,43      |           | 0,70 | 64,8                 | 2,7                            | 2,5                            | 3,5                            | 0,00024             | 3,8  |
| 63 LP/4             | 0,18           | 1373                          | 1,25           | 1,06/0,61      |           | 0,66 | 69,9                 | 3,2                            | 3,1                            | 4,0                            | 0,00033             | 4,7  |
| 71 SP/4             | 0,25           | 1408                          | 1,70           | 1,28/0,74      |           | 0,73 | 73,5                 | 3,2                            | 3,2                            | 5,5                            | 0,00086             | 6,1  |
| 71 LP/4             | 0,37           | 1397                          | 2,53           | 1,70/0,98      |           | 0,78 | 77,3                 | 2,8                            | 2,8                            | 5,3                            | 0,00110             | 7,2  |
| 80 SP/4             | 0,55           | 1402                          | 3,75           | 2,60/1,50      |           | 0,75 | 81,4                 | 2,6                            | 2,8                            | 4,9                            | 0,00145             | 9,7  |
| 80 LP/4             | 0,75           | 1414                          | 5,06           | 3,24/1,87      |           | 0,75 | 83,7                 | 3,0                            | 3,1                            | 5,8                            | 0,0019              | 10,2 |
| 90 SP/4             | 1,10           | 1429                          | 7,35           | 4,47/2,58      |           | 0,79 | 85,0                 | 3,6                            | 4,0                            | 7,2                            | 0,0034              | 15,1 |
| 90 LP/4             | 1,50           | 1414                          | 10,1           | 5,91/3,41      |           | 0,81 | 85,3                 | 3,3                            | 3,5                            | 6,8                            | 0,0039              | 15,4 |
| 100 LP/4            | 2,20           | 1460                          | 14,4           | 8,21/4,74      |           | 0,81 | 88,1                 | 2,6                            | 3,9                            | 8,1                            | 0,0081              | 24,5 |
| 100 AP/4            | 3,00           | 1454                          | 19,7           | 11,4/6,58      | 6,56/3,79 | 0,81 | 88,1                 | 2,4                            | 3,6                            | 7,7                            | 0,0081              | 27,4 |
| 112 MP/4            | 4,00           | 1440                          | 26,5           | 14,5/8,36      | 8,32/4,81 | 0,84 | 88,6                 | 3,3                            | 3,5                            | 8,3                            | 0,014               | 35,5 |
| 132 SP/4            | 5,50           | 1465                          | 35,8           | 20,4/11,8      | 11,8/6,8  | 0,79 | 90,9                 | 3,8                            | 4,1                            | 9,7                            | 0,032               | 55   |
| 132 MP/4            | 7,50           | 1458                          | 49,1           | 28,2/16,3      | 16,2/9,38 | 0,79 | 90,4                 | 3,8                            | 4,2                            | 8,8                            | 0,035               | 62   |
| 160 SP/4            | 9,20           | 1474                          | 59,6           | 30,8/17,8      | 17,8/10,3 | 0,86 | 91,0                 | 2,9                            | 3,3                            | 9,5                            | 0,067               | 93   |
| 160 MP/4            | 11,0           | 1467                          | 71,6           | 37,1/21,4      | 21,4/12,3 | 0,85 | 91,4                 | 2,9                            | 3,4                            | 9,4                            | 0,067               | 93   |
| 160 LP/4            | 15,0           | 1467                          | 97,6           | 50,1/28,9      | 28,9/16,7 | 0,87 | 92,3                 | 3,8                            | 4,3                            | 9,9                            | 0,092               | 122  |
| 180 MP/4            | 18,5           | 1480                          | 119            | 63,2/36,5      | 36,5/21,1 | 0,83 | 93,1                 | 3,4                            | 3,8                            | 10,0                           | 0,16                | 155  |
| 180 LP/4            | 22,0           | 1475                          | 142            | 74,1/42,8      | 42,8/24,7 | 0,85 | 93,1                 | 2,8                            | 3,2                            | 8,1                            | 0,16                | 155  |

220/380V and 380/660V not available for inverter duty

\* Version B5 without options

\*\* Measured value (data on rating plates may deviate, as rating plates have standardised minimum efficiencies).

| C2D GB/T 3836.1-2021 GB/T3836.31-2021 | C3D GB/T 3836.1-2021 GB/T3836.31-2021 |
|---------------------------------------|---------------------------------------|
| ▶ TF Temperature sensor (Standard)    | ▶ TF Temperature sensor (Standard)    |
| ▶ RD Protection Canopy                | ▶ RD Protection Canopy                |
| ▶ WE 2nd shaft end                    | ▶ WE 2nd shaft end                    |
| ▶ KB Condensation drain hole          | ▶ KB Condensation drain hole          |
| ▶ B3 Foot-mounted version             | ▶ B3 Foot-mounted version             |
|                                       | ▶ BRE Brake                           |
|                                       | ▶ FHL Lockable hand release for brake |

## Motor options

|                                                                                                 |  |                                                                                     |  |      |  |                                                                                     |  |                                                                                     |  |             |  |
|-------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|------|--|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|-------------|--|
|              |  |  |  | 防爆电机 |  |  |  |  |  |             |  |
| Type                                                                                            |  | SK 90LP/4 C3D TF                                                                    |  |      |  | 2026                                                                                |  |                                                                                     |  |             |  |
| 3 ~ Mot. No.                                                                                    |  | 200123456-100                                                                       |  |      |  | 12345678                                                                            |  |                                                                                     |  |             |  |
| Th.Cl.                                                                                          |  | 155 (F)                                                                             |  | S1   |  | Tamb                                                                                |  | -20°...+40°C                                                                        |  | GYJ26 1130X |  |
| Ex tc                                                                                           |  | IIIB T125°C Dc                                                                      |  | IP56 |  | GB/T 3836.1-2021                                                                    |  | GB/T 3836.31-2021                                                                   |  |             |  |
| Hz                                                                                              |  |                                                                                     |  |      |  |                                                                                     |  | r/min                                                                               |  | 1414        |  |
| Nm                                                                                              |  |                                                                                     |  |      |  |                                                                                     |  | kW                                                                                  |  | 1,5         |  |
| r/min                                                                                           |  |                                                                                     |  |      |  |                                                                                     |  | V                                                                                   |  | 230/400Δ/Y  |  |
| kW                                                                                              |  |                                                                                     |  |      |  |                                                                                     |  | Hz                                                                                  |  | 50          |  |
| V                                                                                               |  |                                                                                     |  |      |  |                                                                                     |  | A                                                                                   |  | 5,91/3,41   |  |
| A                                                                                               |  |                                                                                     |  |      |  |                                                                                     |  | cos φ                                                                               |  | 0,81        |  |
|                                                                                                 |  |                                                                                     |  |      |  |                                                                                     |  | IE3                                                                                 |  | 85,3%       |  |
| 15,4 kg                                                                                         |  |                                                                                     |  |      |  |                                                                                     |  |                                                                                     |  |             |  |
|                                                                                                 |  |                                                                                     |  |      |  |                                                                                     |  |                                                                                     |  |             |  |
| <small>Copyright © NORD Drivesystems GmbH &amp; Co. KG, 22089 Rellingen, Germany. 11/14</small> |  |                                                                                     |  |      |  |                                                                                     |  |                                                                                     |  |             |  |

## Type plates (example)



## Inverter operation of NORD motors suitable for explosion protection

Continuously usable torques for operation with control cabinet inverters e.g. SK 500P

If a motor is operated on a frequency inverter, the speed of the motor and thus also the speed at which the driving machine is operated, can be changed. It is important not to exceed or fall below the permissible speed limits. Both NORD inverters and the matching motors are monitored by means of a PTC thermistor and switched off if an overtemperature is detected. In order to prevent this and thus enable reliable operation of the machine to be driven, the correct drive selection is fundamental. It should be noted that the permanently usable torque is not constant. Rather, the torque of the motor changes with its speed.

The usable torque also depends on the characteristic curve used, which can be specified in the inverter.

- ▶ 50Hz characteristic: Inverter power corresponds to motor power.
- ▶ 87Hz characteristic: Inverter power is at least 1.7 times higher than the motor power and the motor has a 230/400 V winding.

An optional available cooling fan cools the motor even at low speed. In most cases, this increases the usable torque at frequencies below 25 Hz. However, such a forced cooling fan also increases the length of the drive and is also a cost factor. The usable torques of modern IE3 motors are also quite high at low speeds, which is why the necessity of a forced cooling fan should be critically examined in each case.

The following guide values are intended to provide assistance in drive selection. In many cases, they are the result of interpolation of measured values. The values specified in the B1091-1 manual form the basis and are binding. In addition to B1091, these instructions are fundamental for safe operation. It also contains information on inverter operation and on the requirements for the inverter in the case of third-party products. The information on the usable torque is based on a combination of NORD cabinet inverters with NORD motors. Motor mounted inverters like the SK180E or SK200E series can produce different results. For more information, refer to catalog G4014.

**Attention:** 2D and 3D motors intended to be used on inverter are 230/400 V only.

Please do not hesitate to contact NORD if you have any questions regarding the selection of drives.

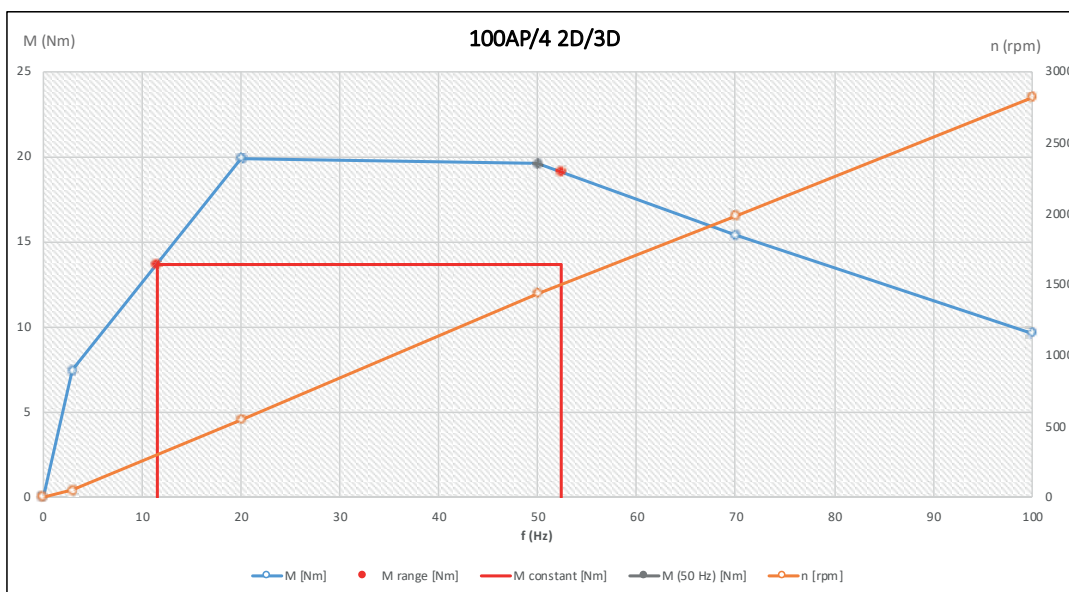


# Dust Explosion protection



## Example for 50 Hz characteristic

100AP/4 TF /3D or 100AP/4 TF /2D used in combination with cabinet inverter SK500P in the speed range of 300 to 1500 r/min.



The blue curve show the motor torque, that can be used permanently. At low speed selfventilation and because of this cooling of the motor is low and so torque is less compared to higher speed.

The red curve show the constant torque that can be used permanently in the range of 300 to 1500 rpm.

### Results for the motorshaft

|                                       |            |
|---------------------------------------|------------|
| Constant Motor torque<br>in the range | 13,68 Nm   |
| $M_1$ (min. frequency)                | 13,68 Nm   |
| $M_1$ (50 Hz)                         | 19,60 Nm   |
| $M_1$ (max. frequency)                | 19,10 Nm   |
| $n_1$ (min.)                          | 300 r/min  |
| $n_1$ (50 Hz)                         | 1435 r/min |
| $n_1$ (max.)                          | 1500 r/min |
| frequency (min.)                      | 12 Hz      |
| frequency (50 Hz)                     | 50 Hz      |
| frequency (max.)                      | 52 Hz      |



| Connection                                                                            | DOL or Starter     |                      | 50 Hz characteristic line with 3D or 2D motor in combination with cabinet inverter for example SK500P |                        |                                                                |                        |                                                                 |                        |                                                                    |                               |                        |                                                                      |                        |
|---------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------|------------------------|-----------------------------------------------------------------|------------------------|--------------------------------------------------------------------|-------------------------------|------------------------|----------------------------------------------------------------------|------------------------|
| Cooling<br>Regulation range<br>Speed [r/min]<br>Voltage / Frequency<br>Inverter power | IC411              |                      | IC411 self-ventilated<br>1:2,5<br>600-1500<br><br>U/F = constant                                      |                        | IC411 self-ventilated<br>1:5<br>300-1500<br><br>U/F = constant |                        | IC411 self-ventilated<br>1:10<br>150-1500<br><br>U/F = constant |                        | IC411 self-ventilated<br>1:1,73<br>1500-2600 *<br><br>U = constant |                               |                        | IC416 forced ventilation**<br>1:10<br>150-1500<br><br>U/F = constant |                        |
| Inverter power                                                                        |                    |                      | Pinv = Pmot                                                                                           |                        | Pinv = Pmot                                                    |                        | Pinv = Pmot                                                     |                        | Pinv = Pmot                                                        |                               |                        | Pinv = Pmot                                                          |                        |
| Type                                                                                  | P [kW] at<br>50 Hz | M <sub>nominal</sub> | P [kW] at<br>1500 r/min                                                                               | M [Nm] in<br>the range | P [kW] at<br>1500 r/min                                        | M [Nm] in<br>the range | P [kW] at<br>1500 r/min                                         | M [Nm] in<br>the range | n <sub>max</sub> [r/min]                                           | P [kW] at<br>n <sub>max</sub> | M [Nm] in<br>the range | P [kW] at<br>1500 r/min                                              | M [Nm] in<br>the range |
| SK 63SP/4                                                                             | 0,12               | 0,85                 | 0,13                                                                                                  | 0,80                   | 0,13                                                           | 0,66                   | 0,13                                                            | 0,48                   | 2035                                                               | 0,12                          | 0,49                   | 0,11                                                                 | 0,86                   |
| SK 63LP/4                                                                             | 0,18               | 1,25                 | 0,19                                                                                                  | 1,12                   | 0,19                                                           | 0,97                   | 0,19                                                            | 0,86                   | 2270                                                               | 0,19                          | 0,79                   | 0,17                                                                 | 1,25                   |
| SK 71SP/4                                                                             | 0,25               | 1,70                 | 0,26                                                                                                  | 1,65                   | 0,26                                                           | 1,26                   | 0,26                                                            | 0,96                   | 2521                                                               | 0,26                          | 1,00                   | 0,24                                                                 | 1,69                   |
| SK 71LP/4                                                                             | 0,37               | 2,53                 | 0,37                                                                                                  | 2,38                   | 0,37                                                           | 1,93                   | 0,37                                                            | 1,59                   | 2516                                                               | 0,37                          | 1,39                   | 0,35                                                                 | 2,52                   |
| SK 80SP/4                                                                             | 0,55               | 3,75                 | 0,55                                                                                                  | 3,35                   | 0,55                                                           | 2,19                   | 0,55                                                            | 1,41                   | 2557                                                               | 0,55                          | 1,60                   | 0,53                                                                 | 3,71                   |
| SK 80LP/4                                                                             | 0,75               | 5,06                 | 0,74                                                                                                  | 4,56                   | 0,74                                                           | 3,86                   | 0,74                                                            | 3,42                   | 2617                                                               | 0,75                          | 2,23                   | 0,72                                                                 | 5,06                   |
| SK 90SP/4                                                                             | 1,10               | 7,35                 | 1,10                                                                                                  | 7,12                   | 1,10                                                           | 4,97                   | 1,10                                                            | 3,43                   | 2689                                                               | 1,13                          | 4,27                   | 1,08                                                                 | 7,34                   |
| SK 90LP/4                                                                             | 1,50               | 10,1                 | 1,50                                                                                                  | 9,59                   | 1,50                                                           | 8,18                   | 1,50                                                            | 6,77                   | 2614                                                               | 1,50                          | 5,08                   | 1,46                                                                 | 10,1                   |
| SK 100LP/4                                                                            | 2,20               | 14,4                 | 2,20                                                                                                  | 14,0                   | 2,20                                                           | 9,96                   | 2,20                                                            | 7,57                   | 2844                                                               | 2,20                          | 7,47                   | 2,17                                                                 | 14,3                   |
| SK 100AP/4                                                                            | 3,00               | 19,7                 | 3,00                                                                                                  | 19,1                   | 3,00                                                           | 13,7                   | 3,00                                                            | 9,94                   | 2818                                                               | 3,00                          | 11,2                   | 2,94                                                                 | 19,6                   |
| SK 112MP/4                                                                            | 4,00               | 26,5                 | 3,90                                                                                                  | 24,6                   | 3,90                                                           | 18,3                   | 3,90                                                            | 14,1                   | 2783                                                               | 4,00                          | 13,4                   | 3,91                                                                 | 26,6                   |
| SK 132SP/4                                                                            | 5,50               | 35,8                 | 5,40                                                                                                  | 34,5                   | 5,40                                                           | 25,5                   | 5,40                                                            | 20,3                   | 2874                                                               | 5,50                          | 19,4                   | 5,12                                                                 | 35,9                   |
| SK 132MP/4                                                                            | 7,50               | 49,1                 | 7,50                                                                                                  | 47,1                   | 7,50                                                           | 37,0                   | 7,50                                                            | 31,2                   | 2838                                                               | 7,50                          | 26,6                   | 7,46                                                                 | 49,2                   |
| SK 160SP/4                                                                            | 9,20               | 59,8                 | 8,60                                                                                                  | 54,5                   | 8,60                                                           | 39,1                   | 8,60                                                            | 30,6                   | 2920                                                               | 9,20                          | 30,9                   | 8,38                                                                 | 48,5                   |
| SK 160MP/4                                                                            | 11,0               | 71,6                 | 10,4                                                                                                  | 66,2                   | 10,4                                                           | 53,5                   | 10,4                                                            | 45,0                   | 2030                                                               | 11,0                          | 40,6                   | 10,5                                                                 | 55,6                   |
| SK 160LP/4                                                                            | 15,0               | 97,6                 | 13,6                                                                                                  | 86,5                   | 13,6                                                           | 69,0                   | 13,6                                                            | 58,4                   | 2896                                                               | 12,8                          | 49,8                   | 14,0                                                                 | 80,7                   |
| SK 180MP/4                                                                            | 18,5               | 119                  | 17,6                                                                                                  | 112                    | 17,6                                                           | 97,5                   | 17,6                                                            | 85,5                   | 2935                                                               | 15,2                          | 61,2                   | 17,1                                                                 | 119,2                  |
| SK 180LP/4                                                                            | 22,0               | 142                  | 20,6                                                                                                  | 131                    | 20,6                                                           | 109                    | 20,6                                                            | 92,2                   | 2927                                                               | 17,3                          | 70,2                   | 20,4                                                                 | 116,4                  |
| SK 225RP/4                                                                            | 30,0               | 193                  | 30,2                                                                                                  | 192                    | 30,2                                                           | 162                    | 30,2                                                            | 146                    | 2941                                                               | 28,6                          | 105                    | 29,9                                                                 | 191,0                  |
| SK 225SP/4                                                                            | 37,0               | 238                  | 33,4                                                                                                  | 213                    | 33,4                                                           | 195                    | 33,4                                                            | 173                    | 2953                                                               | 27,5                          | 120                    | 34,9                                                                 | 222,0                  |
| SK 225MP/4                                                                            | 45,0               | 289                  | 39,3                                                                                                  | 251                    | 39,3                                                           | 225                    | 39,3                                                            | 204                    | 2954                                                               | 33,1                          | 138                    | 40,2                                                                 | 256,0                  |
| SK 250WP/4                                                                            | 55,0               | 355                  | 48                                                                                                    | 306                    | 48                                                             | 272                    | 48                                                              | 246                    | 2069                                                               | 46                            | 216                    | 48                                                                   | 310                    |

\* Note max. speed!

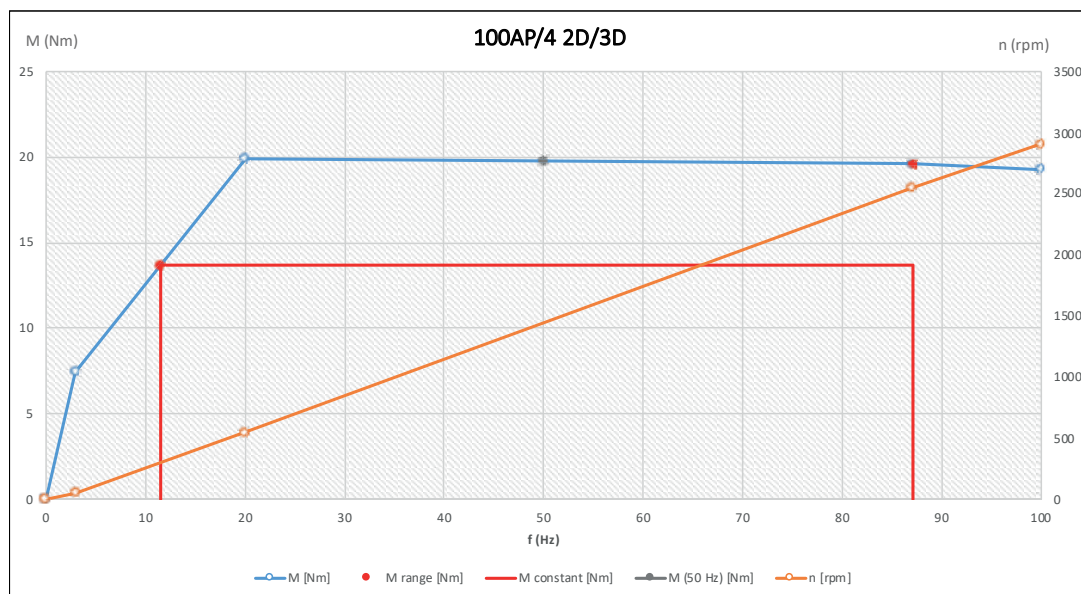
\*\* Only possible with 3D motors

# Dust Explosion protection



## Example for 87Hz characteristic

100AP/4 TF /3D or 100AP/4 TF /2D used in combination with cabinet inverter SK500P in the speed range of 300 to 2550 r/min. To use the characteristic the motor winding need to be 230/400V and inverter power need to be 1,73 \* motorpower. In this case motor has 3 kW and inverter has 5.5 kW power.



The blue curve show the motor torque, that can be used permanently. At low speed selfventilation and because of this cooling of the motor is low and so torque is less compared to higher speed.

The red curve show the constant torque that can be used permanently in the range of 300 to 2550 r/min.

### Results for the motorshaft

|                                       |            |
|---------------------------------------|------------|
| Constant Motor torque<br>in the range | 13,68 Nm   |
| $M_1$ (min. frequency)                | 13,68 Nm   |
| $M_1$ (50 Hz)                         | 19,77 Nm   |
| $M_1$ (max. frequency)                | 19,60 Nm   |
| $n_1$ (min.)                          | 300 r/min  |
| $n_1$ (50 Hz)                         | 1444 r/min |
| $n_1$ (max.)                          | 2550 r/min |
| frequency (min.)                      | 12 Hz      |
| frequency (50 Hz)                     | 50 Hz      |
| frequency (max.)                      | 87 Hz      |



| Connection DOL or Starter                                                             |                     |                      | 87 Hz characteristic line with 3D or 2D motor in combination with cabinet inverter for example SK500P |                        |                                                                      |                               |                        |
|---------------------------------------------------------------------------------------|---------------------|----------------------|-------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------|-------------------------------|------------------------|
| Cooling<br>Regulation range<br>Speed [r/min]<br>Voltage / Frequency<br>Inverter power | IC411               |                      | IC411 self-ventilated<br>1:5<br>300-1500<br><br>U/F = constant                                        |                        | IC411 self-ventilated<br>1:1,73<br>1500-2600 *<br><br>U/F = constant |                               |                        |
|                                                                                       | —                   |                      | Pinv = Pmot                                                                                           |                        | Pinv > 1,73* Pmot                                                    |                               |                        |
| Type                                                                                  | P [kW] bei<br>50 Hz | M <sub>nominal</sub> | P [kW] at<br>1500 r/min                                                                               | M [Nm] in<br>the range | n <sub>max</sub> [r/min]                                             | P [kW] at<br>n <sub>max</sub> | M [Nm] in<br>the range |
| SK 63SP/4                                                                             | 0,12                | 0,85                 | 0,13                                                                                                  | 0,66                   | 2740                                                                 | 0,21                          | 0,84                   |
| SK 63LP/4                                                                             | 0,18                | 1,25                 | 0,18                                                                                                  | 0,97                   | 2769                                                                 | 0,32                          | 1,17                   |
| SK 71SP/4                                                                             | 0,25                | 1,7                  | 0,27                                                                                                  | 1,26                   | 2816                                                                 | 0,44                          | 1,69                   |
| SK 71LP/4                                                                             | 0,37                | 2,53                 | 0,39                                                                                                  | 1,93                   | 2793                                                                 | 0,65                          | 2,46                   |
| SK 80SP/4                                                                             | 0,55                | 3,75                 | 0,55                                                                                                  | 2,19                   | 2805                                                                 | 0,96                          | 3,50                   |
| SK 80LP/4                                                                             | 0,75                | 5,06                 | 0,75                                                                                                  | 3,86                   | 2830                                                                 | 1,32                          | 4,80                   |
| SK 90SP/4                                                                             | 1,1                 | 7,35                 | 1,15                                                                                                  | 4,97                   | 2859                                                                 | 1,93                          | 7,34                   |
| SK 90LP/4                                                                             | 1,5                 | 10,1                 | 1,59                                                                                                  | 8,18                   | 2816                                                                 | 2,63                          | 10,1                   |
| SK 100LP/4                                                                            | 2,2                 | 14,4                 | 2,24                                                                                                  | 9,96                   | 2923                                                                 | 3,84                          | 14,3                   |
| SK 100AP/4                                                                            | 3                   | 19,7                 | 3,1                                                                                                   | 13,7                   | 2909                                                                 | 5,24                          | 19,6                   |
| SK 112MP/4                                                                            | 4                   | 26,5                 | 4                                                                                                     | 18,3                   | 2893                                                                 | 6,81                          | 25,1                   |
| SK 132SP/4                                                                            | 5,5                 | 35,8                 | 5,31                                                                                                  | 25,5                   | 2940                                                                 | 8,84                          | 32,6                   |
| SK 132MP/4                                                                            | 7,5                 | 49,1                 | 7,25                                                                                                  | 37                     | 2926                                                                 | 12,1                          | 44,6                   |
| SK 160SP/4                                                                            | 9,2                 | 59,8                 | 8,37                                                                                                  | 39,1                   | 2962                                                                 | 14,0                          | 51,6                   |
| SK 160MP/4                                                                            | 11                  | 71,6                 | 10,2                                                                                                  | 53,5                   | 2567                                                                 | 16,4                          | 61,0                   |
| SK 160LP/4                                                                            | 15                  | 97,6                 | 13,4                                                                                                  | 69                     | 2949                                                                 | 22,1                          | 81,2                   |
| SK 180MP/4                                                                            | 18,5                | 119                  | 17,3                                                                                                  | 97,5                   | 2969                                                                 | 26,5                          | 97,4                   |
| SK 180LP/4                                                                            | 22                  | 142                  | 20,3                                                                                                  | 109                    | 2972                                                                 | 31,4                          | 115                    |
| SK 225RP/4                                                                            | 30                  | 193                  | 29,2                                                                                                  | 162                    | 2973                                                                 | 48,2                          | 177                    |
| SK 225SP/4                                                                            | 37                  | 238                  | 31,4                                                                                                  | 195                    | 2981                                                                 | 42,1                          | 155                    |
| SK 225MP/4                                                                            | 45                  | 289                  | 37,8                                                                                                  | 225                    | 2978                                                                 | 57,0                          | 209                    |
| SK 250WP/4                                                                            | 55                  | 355                  | 45,3                                                                                                  | 272                    | 2589                                                                 | 76                            | 282                    |

\* Note max.speed!

The torque for speed < 1500 r/min is equal to those that are shown in the table for 50 Hz characteristic.



## General Information

### Planning of motors for NORD decentralised frequency inverters

When planning, it must be noted that the continuously usable motor torque is governed by two factors:

- ▶ By limits which are specific to the motor. These values can be obtained from B1091-1
- ▶ By limits which are specific to the frequency inverter. These values can be obtained from G4014-1

The lower of the two continuously usable motor torques as determined above must always be used for planning purposes.

Category 2D and 3D standard motors supplied by NORD DRIVESYSTEMS comply with the standards DIN EN 60079-0 and DIN EN 60079-31.

The insulation of the windings is designed for operation with frequency inverters. For operation with frequency inverters, the motors are always equipped with triple thermistors as per DIN 44082.

For variable speed drives, the thermistor is the most important protective element to ensure compliance with the maximum surface temperature, which is stated on the type plate of the motor.

Planning of motors with control cabinet inverters from NORD DRIVESYSTEMS, or with inverters which fulfil the following:

### Necessary frequency inverter characteristics

- ▶ Only frequency inverters with a vector regulation method which provides load-dependent terminal voltage adjustment in the low speed range may be used.
- ▶ The maximum output voltage of the frequency inverter must not be less than 91 % of the mains voltage which is stated as the rated voltage on the type plate.
- ▶ The frequency inverter must provide  $i^2 \cdot t$  monitoring which is adjustable to the rated current for the motor.
- ▶ The pulse frequency of the output stage must be adjustable to 4 kHz or higher.
- ▶ If the inverter does not have an input for evaluation of the thermistor, evaluation must be carried out by a separate triggering device which switches off the inverter. Operation without evaluation of the thermistor is not permitted.
- ▶ Evaluation of the thermistor for motors with ignition protection type tb (Category 2D) must be carried out with an external certified thermistor triggering device with an EU type test certificate.

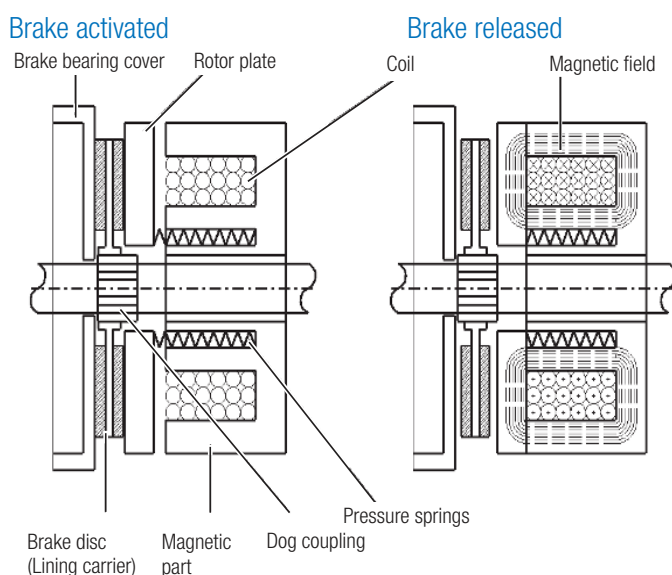
Thermistor evaluation by the frequency inverter is not permitted. In case of a fault (excessive temperature) the motor and frequency inverter combination must be safely switched off via the external thermistor triggering device.



## Motor Option Brake (BRE)

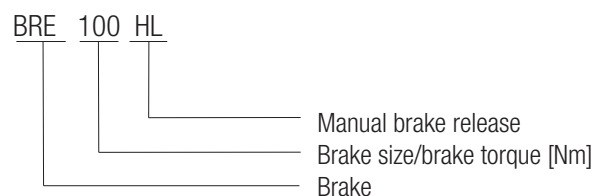
NORD 3D brake motors that can be used in zone 22 are equipped with DC-excited spring pressure brakes. These Ex brakes have the IP class IP66 and are only approved as holding brake. Working brake function as well as emergency stop function is not allowed.

The brakes prevent machines from rotating unintentionally. Therefore the braking torque have to fit to the application. These holding brakes can be switched at maximum 4 times per hour. Special solutions can be developed for applications with more than 4 switching operations, the need for emergency stop properties or use as a working brake. Please inquire. The braking action is activated on interruption of the current. (idling current principle).



Motors having the additional labelling BRE (e.g. 80LP/4 3D BRE 10) are equipped with a brake and have to be monitored via the installed temperature sensors. The triggering of the temperature sensor of one of the components (motor or brake) must lead to safe shut-down of the entire drive. The PTC resistors of motor and brake must be connected in series. If the motor is operated via a frequency inverter, an external fan (motor option „F“) must be used in the case of stator supply frequencies below 25 Hz. Operation without an external fan in case of stator supply frequencies below 25 Hz is not permitted. For additional information please inform in the NORD motor manual B1091 and in the manual of the brake supplier.

## Type code Brake



The brake option can be offered for use in the market of the EU, EAWU (EAC Ex) or China (CCC Ex).

Attention: The brake options for these different markets are as follows:

EU and EAWU: Manual hand release HL or lockable manual brake release FHL  
China: lockable manual brake release FHL

The DC voltage supply of the brake is realized via a rectifier in the motor terminal box or via direct supply with DC voltage. The brake voltage indicated on the name plate must be complied with.

# Dust Explosion protection



## Standard voltages

| Supply voltage (V) | Coil voltage (V) |
|--------------------|------------------|
| 400                | 180              |
| 230                | 205              |
| 24                 | 24               |

Permissible brake sizes for Category 3D motors

| Size | LKZ    | Braking torques [Nm] |    |    |    |    |     |     |     |     |
|------|--------|----------------------|----|----|----|----|-----|-----|-----|-----|
| 63   | SP, LP | 5                    |    |    |    |    |     |     |     |     |
| 71   | SP, LP | 5                    |    |    |    |    |     |     |     |     |
| 80   | SP     | 5                    | 10 |    |    |    |     |     |     |     |
| 80   | LP     | 5                    | 10 |    |    |    |     |     |     |     |
| 90   | SP     |                      | 10 | 20 |    |    |     |     |     |     |
| 90   | LP     |                      | 10 | 20 |    |    |     |     |     |     |
| 100  | LP     |                      |    | 20 | 40 |    |     |     |     |     |
| 100  | AP     |                      |    | 20 | 40 |    |     |     |     |     |
| 112  | MP     |                      |    | 20 | 40 |    |     |     |     |     |
| 132  | SP     |                      |    |    |    | 60 |     |     |     |     |
| 132  | MP     |                      |    |    |    | 60 |     |     |     |     |
| 160  | SP     |                      |    |    |    |    | 100 | 150 | 250 |     |
| 160  | MP     |                      |    |    |    |    | 100 | 150 | 250 |     |
| 160  | LP     |                      |    |    |    |    | 100 | 150 | 250 |     |
| 180  | MP     |                      |    |    |    |    |     |     | 250 |     |
| 180  | LP     |                      |    |    |    |    |     |     | 250 |     |
| 225  | SP, MP |                      |    |    |    |    |     |     |     | 400 |
| 250  | WP     |                      |    |    |    |    |     |     |     | 400 |



## Motor option forced cooling fan (F) IC416 TEBC

Typical applications for external fans are drives controlled by frequency inverter and operating at low speed over a long period of time. External fans cool the motor independently of the motor speed.

NORD offers separately driven fans for motor sizes 63 to 180. Due to the modified motor cooling, these motors have higher permanently usable motor torques, compared to motors without forced cooling.

More information on page C11 of this catalog and in the manual B1091-1.

The separately driven fan is integrated in the motor fan cover and is suitable for ambient temperatures from -20°C to +40°C and for frequencies of 50Hz or 60Hz.

## Execution

- ▶ ISO class F
- ▶ Protection class IP66
- ▶ CE approval ATEX: II 3D Ex tc III C T120°C Dc

All external fans have a separate terminal box. The external fans must be connected separately from the main motor - Conduit entry M16\*1,5.

The manufacturer's documentation covers most of the languages that are used in Europe. The manual for the external fan, is supplied with the NORD manuals B1091 and B1091-1.

The dimensions of these Ex fans do not differ from the standard external fans. The overall length and the weight of the external fan depends on the options that may be used in combination, such as brakes or encoders.

External fans of sizes 63-112 have 2 pole motors and those for sizes 132-180 have 4 pole motors.

IE3 motors have less losses and are therefore cooler compared to previously used IE1 and IE2 motors. Low speeds are therefore possible even without an external fan. In such cases the motors are either no longer as efficient or the continuous torque is lower than when using an external fan.

Significant advantages of using an external fan result when the frequency is below 30Hz for the motors: 80SP/4 TF 3D, 80LP/4 TF 3D and 160SP/4 TF 3D. If the frequency falls below 20Hz, the continuously usable torque for all motors with external fans is significantly higher compared to selfventilated motors.

# Dust Explosion protection



## Photoelectric principle

### Motor option Incremental encoder (IG)

Modern drive applications often require speed feedback. Typically, incremental encoders, which convert rotary movement into electrical signals are employed. These signals are read out and processed by frequency inverters or other control devices.

Incremental encoders operate according to the photoelectric method by scanning a disc with alternating lines and spaces. The integrated electronics convert the measuring signals into a digitalised square wave signal according to TTL or HTL logic. Models with various resolutions are available. Standard NORD Ex Encoders feature 1024 or 2048 pulses per rotation.

Motors with incremental encoders, in combination with the motor option external fan (F) and a suitable frequency inverter, offer numerous advantages.

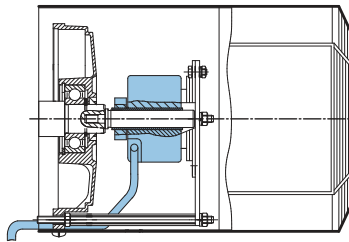
The desired speed can be adjusted very precisely and remains constant even under different loads. This also applies for very low speeds. Especially in connection with the 87Hz characteristic curve, a very wide speed range can be used. Positioning control is also possible.

This option can be used for all ATEX 3D motors Ex tc suitable for inverter operation with a power of 0.12 to 22 kW. A combination with the brake motor option is possible.



The encoder option is always offered together with the external fan option.

Principle presentation:



At NORD, the hollow-shaft plug-on rotary encoders are protected under the fan cover, directly on the B-side motor shaft end. This ensures a secure, torsion-free coupling of the encoder.

The electrical connection is made using a ready-for-use cable with an open cable end. The end of the line is sealed with an ESD shield. This protects the encoder from electrostatic voltages.

The connection wiring must be ESD-compliant!

The following variants are available:

| NORD Partnr. | Material code                 | Increments | Signal     | Length of the cable |
|--------------|-------------------------------|------------|------------|---------------------|
| 19651610     | 8.5020.0010.1024.S244.0015.EX | 1024       | 10-30V TTL | 1,5 m               |
| 19651602     | 8.5020.0050.1024.S244.0050.EX | 1024       | 10-30V HTL | 5,0 m               |
| 19651603     | 8.5020.0050.1024.S244.0015.EX | 1024       | 10-30V HTL | 1,5 m               |
| 19651604     | 8.5020.0050.2048.S244.0015.EX | 2048       | 10-30V HTL | 1,5 m               |

Variants with 5V TTL or other deviating specification on request!



Selection of the encoder according to the output logic is determined by the interface of the evaluation electronics. The following conditions apply for NORD frequency inverters:

| NORDAC frequency inverter series                                  |                             | Incremental encoder logic                                  | ⇒  |
|-------------------------------------------------------------------|-----------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| SK500P, SK510P<br>SK530P, SK550P                                  | NORDAC <i>PRO</i> (SK500P)  | HTL mit 10 – 30V Versorgung<br>TTL mit 10 – 30V Versorgung | BU 0600                                                                               |
| SK530P, SK540P, SK550P                                            | NORDAC <i>PRO</i> (SK500P)  | TTL mit 10 – 30V Versorgung                                | BU 0500 / BU 0505                                                                     |
| SK200E, SK205E, SK210E, SK215E, SK220E, SK225E,<br>SK230E, SK235E | NORDAC <i>FLEX</i> (SK200E) | HTL mit 10 – 30V Versorgung                                | BU 0200                                                                               |
| NORDAC LINK                                                       | (SK250E - FDS)              | HTL mit 10 – 30V Versorgung                                | BU 0250                                                                               |

- ▶ The maximum permissible ambient temperature for IE3 Ex tc motors is limited to a maximum of 40°C. Cable length maximum is 50 m.
- ▶ The current consumption under load is a maximum of 100 mA. Pulse frequency is maximum 300kHz.
- ▶ Ex encoder marking: II 3D Ex tc IIIC T135°C Dc IP6X X
- ▶ The encoders are CE-compliant according to:
  - ▶ EMC Directive 2014/30/EU
  - ▶ Directive 2011/65/EU

## Pin assignment

| Cable  |          |
|--------|----------|
| Colour | Signal   |
| WH     | 0 V      |
| BN     | + V      |
| GY PK  | 0 V sens |
| RD BU  | + V sens |
| GN     | A        |
| YE     | A        |
| GY     | B        |
| PK     | B        |
| BU     | 0        |
| RD     | 0        |



## Basic information regarding European gas explosion protection

## General

Explosive gas atmospheres occur in various areas of industry and crafts. They are usually caused by mixtures of oxygen in combination with explosive gases. Electrical and mechanical equipment for use in explosion hazard areas are subject to special national and international standards and guidelines.

Explosion protection prescribes rules which have the objective of protecting people and objects from possible explosion hazards.

Integrated explosion protection specifies that the measures for explosion protection must be carried out in a defined sequence:

- ▶ Rules of conduct to prevent the occurrence of explosive atmospheres
- ▶ Avoidance of ignition of explosive atmospheres
- ▶ Limiting the effect of an explosion to a manageable level

In the design of mechanical and electrical equipment the objective is to prevent ignition or to restrict its effects. For this, the explosion protection regulations come into effect.

The term ATEX, which is often used for explosion protection comes from the initial letters of an older French directive „Atmosphères Explosives“.

Current European explosion protection regulations are based on Directive 2014/34/EU as the successor of the previously valid EU Directive 94/9/EC. This Directive serves for the harmonisation of statutory regulations of member states for devices and protective systems for proper use in explosion hazard areas.

This Directive is also referred to as the “Manufacturer’s Directive” to distinguish it from the “1999/92 EC” directive, which also provides information on improvements to employee health and safety requirements in categories and zones.

Harmonised standards apply in order to meet basic safety and health requirements, some of which are exemplified below:

### Standards for electrical devices:

- ▶ DIN EN 60079 - 0 General Regulations
- ▶ DIN EN 60079 - 1 Pressure-resistant Encapsulation „d“
- ▶ DIN EN 60079 - 7 Increased Safety „eb, ec“
- ▶ DIN EN 60079 - 15 Non Sparking „n“

### Standards for mechanical devices:

- ▶ DIN EN ISO 80079-36:2016 Basics and requirements
- ▶ DIN EN ISO 80079-37:2016 Protection by Constructional Safety

### Equipment group

Directive 2014/34 EU differentiates between two groups of devices:

- ▶ **Group I** devices - indicate equipment which is especially suitable for mining with device categories M1 and M2
- ▶ **Group II** devices - are suitable for use in other areas which may be endangered by an explosive atmosphere

For the majority of applications, the explosion protection data on the type plate begins with „II“, therefore the special features of Group I systems will not be described in further detail here.

## EU Directive

## Standards

### for electrical devices

### for mechanical devices

## Device groups



# Gas Explosion Protection „ATEX“

## Standards - for motors

While Directive 2014/34 EU distinguishes between two categories of devices I and II, it is differentiated into Groups I, II and III based on EN 60079-0 standards for motors.

- ▶ **Group I** - features devices mining
- ▶ **Group II** - features devices for gas explosion protection
- ▶ **Group III** - features devices for dust explosion protection

## Zone

### Zone

The categorisation into zones is made according to the conditions of the workplace – please refer to the statements in Directive 1999/92/EC with regard to the frequency of occurrence of the gas.

### Zone 0

#### Zone 0:

The area in which an explosive atmosphere consisting of a mixture of air and inflammable gases, vapours or aerosols is present permanently, for long periods, or frequently.

### Zone 1

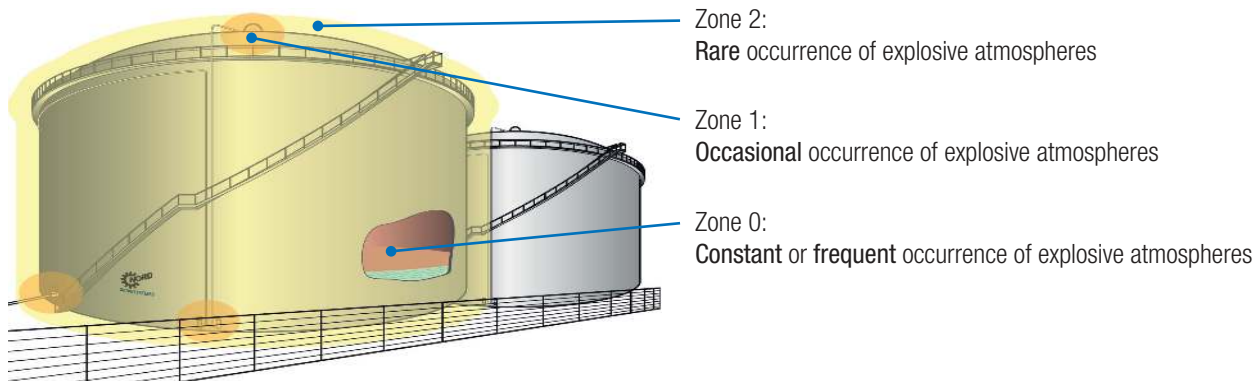
#### Zone 1:

The area in which an explosive atmosphere consisting of air and inflammable gases, vapours or aerosols can occasionally form during normal operation.

### Zone 2

#### Zone 2:

The area in which an explosive atmosphere of air and combustible gases, vapours or aerosols normally does not occur, or only occurs for a short time during normal operation.



## Temperature classes

Flammable atmospheres are divided into temperature classes, which provide information of how high the temperatures of surfaces may be that can come into contact with these gases.

For motors, this typically applies to externally accessible housing and shafts as well as for surfaces inside the motor and the terminal box.

### T1 - T6

The temperature classes are divided into T1-T6, whereby in practice the temperature classes T3 and T4 deserve special attention because they are particularly often implemented by motors.

The higher the temperature class, the lower the maximum permissible surface temperature.

### This means:

For example, motors of temperature class T4 have temperatures of up to 135 °C as a result of heating during operation, whereas motors in class T3 do not exceed 200 °C.

## Type of ignition protection

Depending on the device category and type of risk, small letters in the explosion protection data identify the precise ignition protection type for a device. Encapsulations and constructional measures mainly come into question as methods of protection.

Different solutions are permissible and possible according to the hazard zone.

## Gear units

As a rule, a gear unit becomes an Ex-protected system through a safe design, the use of Ex-specific special parts and detailed documentation.

The very informative EN 80079-37 indicates which requirements the technical components must meet.

## Motors with pressure-resistant encapsulation „d“ or pressure-resistant encapsulation with terminal boxes with Increased Safety „de“

The idea for protection with „Pressurised encapsulation - Ex d“ consists of housing potential source of ignition in a pressure-resistant casing. The sealing surfaces are bounded by gaps which are resistant to ignition penetration. This safely prevents any explosion inside the housing from spreading to the environment.

For ignition protection class „Ex de“ a terminal box with ignition protection type „Ex e“ is used.

The motor itself has ignition protection type „Ex d“.

Pressurised encapsulation motors are assigned to Device Category 2G (Zone 1) and also meet the requirements for Device Category 3G (Zone 2). The rated power does not differ from that of the standard motor.

These motors are often used in cases where inverter operation, brakes, encoders and/or a very high level of safety are required. Typically, pressure resistant encapsulated motors supplied by NORD DRIVESYSTEMS fulfil the requirements for Explosion Group IIC and Temperature Class T4.

Due to the design and compliance with the IE3 energy efficiency, these motors have an aboveaverage dead weight. Especially if motor options such as an external fan or a brake are included as an option. This is particularly important when it comes to IEC B5 motors, that are attached via a standard cylinder. To ensure safe operation, the following motor weights must not be exceeded when using an IEC cylinder:

| IEC motor size:        | 63 | 71 | 80               | 90 | 100              | 112 | 132 | 160               | 180 | 200 | 225 | 250                | 280  | 315  |
|------------------------|----|----|------------------|----|------------------|-----|-----|-------------------|-----|-----|-----|--------------------|------|------|
| max motor weight [kg]: | 25 | 30 | 50 <sup>1)</sup> | 50 | 80 <sup>2)</sup> | 80  | 100 | 250 <sup>3)</sup> | 250 | 350 | 500 | 1000 <sup>4)</sup> | 1000 | 1500 |

<sup>1)</sup> ≤ 40 kg SK 920072.1, SK 92072.1, SK 0, SK 071.1, SK 0182.1

<sup>2)</sup> ≤ 60 kg SK 1382NB, SK 1382.1, SK 92372, SK 92372.1, SK 12063, SK 372.1, SK 371.1

<sup>3)</sup> ≤ 200 kg SK 42, SK 4282, SK 9042.1, SK 42125

<sup>4)</sup> ≤ 500 kg SK 62, SK 72, SK 73, SK 83, SK 93, SK 9072.1, SK 6282, SK 7282, SK 7382, SK 8382, SK9382

In case the motor to be used exceeds the specified weights, changes will be made to the gearbox. This happens automatically when a geared motor is delivered. If the motor is not part of the request and the motor to be used exceed the permissible weight, the request should contain the motor weight.

**Areas of application**  
Explosion group IIC  
Temperature class T4



# Gas Explosion Protection „ATEX“



## Motors versions Increased Safety, type „eb“

For motors of device categories 2G that can be used in Zones 1 and 2, sparking and impermissible temperatures are prevented as per ignition protection type „e“ (Increased Safety). This is achieved by the design of the fans and fan cowls, bearings and terminal boxes.

The motors from our own production have efficiency class IE2 and meet the requirements of the EU as well as those of Russia, Belarus, Armenia, Kazakhstan and Kyrgyzstan. For more information, see pages E1 to E4.

The NORD product range is supplemented by 2, 6 or 8-pole motors as well as motors of efficiency class IE3 which come from another motor manufacturer. If you have any questions, please contact our sales department.

All these motors may only be operated from the mains. Starters are also permitted, the use of a frequency converter is not permitted.

## Motors of type of protection Non Sparking Ex n or Increased Safety Ex ec

Category 3G motors for use in Zone 2 and temperature classes T1-T3. These motors do not come from NORD in-house production. Two variants are offered:

- 1: For mains operation in operating mode S1
- 2: For inverter operation with PTC thermistor in operating mode S9. When selecting a motor, it must be taken into account that these motors have significantly less torque than a pressure-resistant motor Ex db of the same power. If in doubt, please contact NORD, stating the required torque and the speed adjustment range, in order to select the appropriate motor.



**II 2G Ex eb IIC T3 Gb**

| Labelling and categorisation of explosive environment |                                               |                                         |                        |                 |                                  |
|-------------------------------------------------------|-----------------------------------------------|-----------------------------------------|------------------------|-----------------|----------------------------------|
| Type of material                                      | Frequency of occurrence of flammable material | Categorisation of explosive environment | Labelling of equipment |                 | EPL - Equipment protection level |
|                                                       |                                               |                                         | Device group           | Device category |                                  |
| Gas (vapours, aerosols, etc.)                         | Constantly or frequently present              | Zone 0                                  | II                     | 1G 2G 3G        | Ga Gb Gc                         |
|                                                       | Occasionally present                          | Zone 1                                  | II                     |                 |                                  |
|                                                       | Rarely present (short periods)                | Zone 2                                  | II                     |                 |                                  |

| Type of ignition protection for electrical devices |                                                 |                |             |           |
|----------------------------------------------------|-------------------------------------------------|----------------|-------------|-----------|
| Protection principle                               | Type of ignition protection                     | Identification | Use in zone | Standard  |
| Pressure-resistant encapsulation                   | Contains any explosion within the motor housing | de or d        | 1 and 2     | EN60079-1 |
| Increased safety (EPL Gb)                          | Avoidance of high temperatures and sparks       | eb             | 1 and 2     | EN60079-7 |
| Increased safety (EPL Gc)                          | Avoidance of high temperatures and sparks       | ec             | 2           | EN60079-7 |

| Explosion Groups and temperature classes |     |     |                                                                                       |                         |                                      |                             |
|------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|-------------------------|--------------------------------------|-----------------------------|
| Explosion Group Gas                      |     |     | Examples (not complete) for gases, depending on explosion Group and temperature class |                         |                                      |                             |
| IIA                                      | IIB | IIC | Acetone, ethane, benzene, methane, propane                                            | Ethyl alcohol, n-butane | Heating oil, petrol and diesel fuels | Acetaldehyde<br>Ethyl ether |
|                                          |     |     | Town gas (natural gas)                                                                | Ethylene                | Hydrogen sulphide                    |                             |
|                                          |     |     | Hydrogen                                                                              | Acetylene               |                                      |                             |
|                                          |     |     | T1 <450 °C                                                                            |                         |                                      |                             |
|                                          |     |     | T2 <300 °C                                                                            |                         |                                      |                             |
|                                          |     |     | T3 <200 °C                                                                            |                         |                                      |                             |
|                                          |     |     | T4 <135 °C                                                                            |                         |                                      |                             |

# ATEX LABELLING GAS FOR GEAR UNITS

## II 2G Ex h IIC T3 Gb

| Labelling and categorisation of explosive environment |                                               |                                         |                        |                 |                                  |
|-------------------------------------------------------|-----------------------------------------------|-----------------------------------------|------------------------|-----------------|----------------------------------|
| Type of material                                      | Frequency of occurrence of flammable material | Categorisation of explosive environment | Labelling of equipment |                 | EPL - Equipment protection level |
|                                                       |                                               |                                         | Device Group           | Device Category |                                  |
| Gas (vapours, aerosols, etc.)                         | Constantly or frequently present              | Zone 0                                  | I                      |                 |                                  |
|                                                       | Occasionally present                          | Zone 1                                  | II                     | 1G              | Ga                               |
|                                                       | Rarely present (short periods)                | Zone 2                                  | II                     | 2G 3G           | Gb Gc                            |

**Ex h** Labelling of mechanical devices comply with DIN EN ISO 80079-36

### Drive dimensioning

Our customers' applications present a wide variety of requirements for ATEX-compliant operation. We are pleased to consider this in the design of the drive unit in order to contribute to the safe and reliable operation of plant and machinery.

Documentation of special requirements is made on the type plate of the gear unit - see Section „Explosion Protected Gear Units in General“ or in the special documentation enclosed.

| Explosion Groups and temperature classes |     |     |                                                                                       |                         |                                      |                           |
|------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|-------------------------|--------------------------------------|---------------------------|
| Explosion Group Gas                      |     |     | Examples (not complete) for gases, depending on explosion Group and temperature class |                         |                                      |                           |
| IIA                                      | IIB | IIC | Acetone, ethane, benzene, methane, propane                                            | Ethyl alcohol, n-butane | Heating oil, petrol and diesel fuels | Acetaldehyde, ethyl ether |
|                                          |     |     | Town gas (natural gas)                                                                | Ethylene                | Hydrogen sulphide                    |                           |
|                                          |     |     | Hydrogen                                                                              | Acetylene               |                                      |                           |
|                                          |     |     | T1 <450 °C                                                                            |                         |                                      |                           |
|                                          |     |     | T2 <300 °C                                                                            |                         |                                      |                           |
|                                          |     |     | T3 <200 °C                                                                            |                         |                                      |                           |
|                                          |     |     | T4 <135 °C                                                                            |                         |                                      |                           |





## Ex eb Motors Successor of the Ex e Motors

NORD supplies modern Ex eb motors from its own production, which comply with energy efficiency class IE2.

In many cases, due to their high efficiency and modern design, the commonly used reduction of the rated power is not necessary. These motors have type test certification from the PTB (Physikalisch-Technische Bundesanstalt).

PTB Certificates

NORD DRIVESYSTEMS explosion protected motors have the following type codes:

Type code

|                                 |   |    |    |     |
|---------------------------------|---|----|----|-----|
| Size: 63 - 200                  |   |    |    |     |
| Power code: S, M, L, A, X       |   |    |    |     |
| Efficiency class H = High (IE2) |   |    |    |     |
| Number of poles                 |   |    |    |     |
| ATEX category: 2G, 3G           |   |    |    |     |
| Options                         |   |    |    |     |
| 80                              | L | /4 | 2G | ... |

The Ex e motors listed comply with temperature classes T1, T2 and T2.

These motors may not be operated with frequency inverters.

Use of a suitable soft starter is permissible. The permissible ambient temperature or cooling air temperature for NORD Ex e and Ex n motors is between -20°C and +40°C.

These motors have the following features:

Temperature classes

**Notice**  
Not permitted for use  
with frequency  
inverters Features

Features

- ▶ Housing material: Aluminium
- ▶ Protection class: IP55
- ▶ Insulation class: F
- ▶ Fan cowl material: Metal
- ▶ Fan material: Plastic;  
above Size 132 metal
- ▶ Type plate material: Stainless steel (V2A)
- ▶ Cable gland:
 

|           |                       |
|-----------|-----------------------|
| 63, 71:   | 1 x M25x1.25 II brass |
| 80, 90:   | 1 x M25x1.5 II brass  |
| 100, 112: | 1 x M32x1.5 II brass  |
| 132:      | 1 x M32x1.5 II brass  |
| 160, 180: | 1 x M40x1.5 II brass  |
- ▶ Blind plugs:
 

|           |                                                  |
|-----------|--------------------------------------------------|
| 63, 71:   | 3 x M25x1.25 & 2 x M12x1.5 II brass              |
| 80, 90:   | 3 x M25x1.5 & 2 x M12x1.5 II brass               |
| 100, 112: | 3 x M32x1.5 & 2 x M12x1.5 II brass               |
| 132:      | 3 x M32x1.5 & 2 x M12x1.5 & 2 x M16x1.5 II brass |
| 160, 180: | 1 x M40x1.5 & 2 x M12x1.5 & 2 x M16x1.5 II brass |



# Gas Explosion protection „ATEX“



## Ex eb Motors

### II 2G Ex eb IIC T3 Gb

| Type        | P <sub>N</sub> | n <sub>N</sub> | M <sub>N</sub> | I <sub>N</sub> |           | cos φ | η                         | M <sub>A</sub> /M <sub>N</sub> | M <sub>K</sub> /M <sub>N</sub> | I <sub>A</sub> /I <sub>N</sub> | J                   |  | Zeit <sub>TE</sub> | Zeit <sub>TE</sub> |
|-------------|----------------|----------------|----------------|----------------|-----------|-------|---------------------------|--------------------------------|--------------------------------|--------------------------------|---------------------|-------------------------------------------------------------------------------------|--------------------|--------------------|
|             | [kW]           | [rpm]          | [Nm]           | 230/400 V      | 400/690 V |       | 4/4xP <sub>N</sub><br>[%] |                                |                                |                                | [kgm <sup>2</sup> ] | *<br>[kg]                                                                           | T1/T2<br>[s]       | T3<br>[s]          |
| 63SH/4 2G   | 0,12           | 1312           | 0,87           | 0,76/0,44      | 0,44/0,25 | 0,73  | 59,1                      | 2,20                           | 2,26                           | 2,8                            | 0,00024             | 3,8                                                                                 | 90/90              | 80                 |
| 63LH/4 2G   | 0,18           | 1313           | 1,31           | 1,06/0,61      | 0,61/0,35 | 0,70  | 64,7                      | 2,67                           | 2,72                           | 3,2                            | 0,00033             | 3,6                                                                                 | 73/73              | 64                 |
| 71SH/4 2G   | 0,25           | 1391           | 1,72           | 1,26/0,73      | 0,73/0,42 | 0,73  | 68,5                      | 2,68                           | 2,93                           | 4,5                            | 0,00086             | 4,9                                                                                 | 59/59              | 53                 |
| 71LH/4 2G   | 0,37           | 1413           | 2,50           | 1,81/1,05      | 1,05/0,61 | 0,70  | 72,7                      | 3,10                           | 3,40                           | 4,9                            | 0,00110             | 7,2                                                                                 | 34/34              | 30                 |
| 80SH/4 2G   | 0,55           | 1415           | 3,71           | 2,86/1,65      |           | 0,66  | 77,1                      | 3,20                           | 3,20                           | 4,8                            | 0,0014              | 8,0                                                                                 | 45/45              | 40                 |
| 80LH/4 2G   | 0,75           | 1400           | 5,12           | 3,55/2,05      | 2,05/1,18 | 0,68  | 79,6                      | 3,00                           | 3,10                           | 4,9                            | 0,0019              | 9,0                                                                                 | 45/45              | 31                 |
| 90SH/4 2G   | 1,10           | 1424           | 7,37           | 5,00/2,90      | 2,88/1,66 | 0,70  | 81,4                      | 3,10                           | 3,50                           | 5,8                            | 0,0034              | 12,0                                                                                | 24/24              | 21                 |
| 90LH/4 2G   | 1,50           | 1425           | 10,0           | 7,53/4,35      |           | 0,65  | 83,6                      | 3,30                           | 3,50                           | 5,6                            | 0,0039              | 15,0                                                                                | 17/17              | 9                  |
| 100LH/4 2G  | 2,20           | 1445           | 14,5           | 10,0/5,80      | 5,80/3,35 | 0,71  | 84,3                      | 3,70                           | 4,30                           | 7,1                            | 0,0075              | 21,0                                                                                | 18/18              | 13                 |
| 100AH/4 2G  | 3,00           | 1450           | 19,8           | 12,6/7,30      | 7,30/4,21 | 0,76  | 85,5                      | 2,40                           | 3,60                           | 6,5                            | 0,0081              | 25,0                                                                                | 10/10              | 9                  |
| 112MH/4 2G* | 3,60           | 1444           | 23,8           | 13,9/8,00      | 8,00/4,62 | 0,77  | 86,2                      | 3,44                           | 4,00                           | 8,3                            | 0,014               | 28,0                                                                                | 14/14              | 6                  |
| 132SH/4 2G  | 5,50           | 1460           | 36,0           | 20,8/12,0      | 12,0/6,93 | 0,77  | 87,7                      | 3,10                           | 3,50                           | 7,7                            | 0,032               | 42,0                                                                                | 14/14              | 9                  |
| 132MH/4 2G* | 7,50           | 1460           | 49,0           | 29,1/16,8      | 16,8/9,70 | 0,74  | 88,7                      | 3,30                           | 3,90                           | 8,1                            | 0,035               | 55,0                                                                                | 10/10              | 5                  |
| 160MH/4 2G* | 11,0           | 1470           | 71,5           | 39,0/22,5      | 22,5/13,0 | 0,82  | 89,8                      | 2,90                           | 3,40                           | 8,6                            | 0,067               | 93,0                                                                                | 12/12              | 5                  |
| 160LH/4 2G  | 13,5           | 1470           | 87,7           | 45,9/26,5      | 26,5/15,3 | 0,85  | 90,4                      | 3,32                           | 3,85                           | 9,53                           | 0,092               | 122                                                                                 | 14/14              | 6                  |
| 180MH/4 2G* | 15,0           | 1480           | 96,8           |                | 30,3/17,5 | 0,82  | 90,6                      | 2,90                           | 3,20                           | 8,2                            | 0,13                | 137                                                                                 | 24/24              | 8                  |
| 180LH/4 2G* | 17,5           | 1478           | 113,1          |                | 34,5/19,9 | 0,84  | 91,0                      | 2,90                           | 3,20                           | 8,2                            | 0,16                | 155                                                                                 | 23/23              | 7                  |

\* 112MH/4 2G, 132MH/4 2G, 160MH/4 2G, 180MH/4 2G and 180LH/4 2G cannot be operated with the integrated temperature sensor (TF) as the sole protection of the motor.



Thermal protection of the machine by means of direct temperature monitoring of the windings with a thermistor temperature sensor is permitted, if this is certified and stated on the rating plate.

No sole protection  
via temperature sensor

|                                                                                   |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
|-----------------------------------------------------------------------------------|--|---------------------------------------------------------------|--|--------------|--|-----------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------|--|
|  |  | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |  |              |  |  |  | 08513450                                                                          |  |
|                                                                                   |  | 0102                                                          |  |              |  |                                                                                   |  |                                                                                   |  |
| Type SK 112MH/4 2G TF                                                             |  |                                                               |  |              |  | 2019                                                                              |  |                                                                                   |  |
| 3 ~ Mot.                                                                          |  | No. 200900815.200                                             |  |              |  | 12345678                                                                          |  |                                                                                   |  |
| TH.Cl. 155(F)                                                                     |  | IP55                                                          |  | S1           |  | EN 60034 (H), (A)/EN 60079                                                        |  |                                                                                   |  |
| 50 Hz                                                                             |  | 230/400 V Δ/Y                                                 |  |              |  | 220-242/380-420 V Δ/Y                                                             |  |                                                                                   |  |
|  |  | 13,9/8,0 A                                                    |  | 3,60 kW      |  | PTB 14                                                                            |  |  |  |
| cos φ 0,77                                                                        |  | 1445 min <sup>-1</sup>                                        |  | ATEX 3038/01 |  |                                                                                   |  |                                                                                   |  |
|  |  | II 2G Ex eb II C T3 Gb                                        |  | T1           |  | T2                                                                                |  | T3 T4 IE2=86,2%                                                                   |  |
| IA/IN: 8,3                                                                        |  | tE [s]:                                                       |  | 14           |  | 14                                                                                |  | 6 230/400 V Δ/Y                                                                   |  |
| PTC nur als zusätzlicher Schutz zulässig                                          |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
|  |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
| <div></div>                                                                       |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
| <div></div>                                                                       |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
| <div></div>                                                                       |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |
|                                                                                   |  |                                                               |  |              |  |                                                                                   |  |  |  |
| www.nord.com                                                                      |  |                                                               |  |              |  |                                                                                   |  |                                                                                   |  |

Sole protection  
via temperature sensor

|                                                                                                                                |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
|--------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------|--|--------------|--|----------------------------|--|-------------------------------------------------------------------------------------|--|---------------|--|
|                                               |  | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |  |              |  | 0102                       |  |  |  | 08513450      |  |
| Type SK 80SH/4 2G TF                                                                                                           |  |                                                               |  |              |  |                            |  | 2019                                                                                |  |               |  |
| 3 ~ Mot.                                                                                                                       |  | No. 200900815.100                                             |  |              |  |                            |  | 12345678                                                                            |  |               |  |
| TH.Cl. 155(F)                                                                                                                  |  | IP55                                                          |  | S1           |  | EN 60034 (H), (A)/EN 60079 |  |                                                                                     |  |               |  |
| 50 Hz                                                                                                                          |  | 230/400 V Δ/Y                                                 |  |              |  | 220-242/380-420 V Δ/Y      |  |                                                                                     |  |               |  |
|                                               |  | 2,86/1,65 A                                                   |  | 0,55 kW      |  | PTB 08                     |  |  |  |               |  |
| COS φ 0,66                                                                                                                     |  | 1415 min <sup>-1</sup>                                        |  | ATEX 3024/19 |  |                            |  |                                                                                     |  |               |  |
|  II 2G Ex eb II C T3 Gb T1 T2 T3 T4 IE2=77,1% |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| IA/IN: 4,3                                                                                                                     |  | tE [s]:                                                       |  | 45           |  | 45                         |  | 40                                                                                  |  | 230/400 V Δ/Y |  |
| TMS bei Angabe der ta-Zeit nur mit PTC-Auslösegerät nach                                                                       |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
|  II (2)G PTC DIN 44082 M90 - ta: 31 s         |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| <div></div>                                                                                                                    |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| <div></div>                                                                                                                    |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| <div></div>                                                                                                                    |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| <div></div>                                 |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |
| www.nord.com                                                                                                                   |  |                                                               |  |              |  |                            |  |                                                                                     |  |               |  |

## Notice!

If the time  $t_A$  is not indicated on the type plate, the thermistor is not permissible as the sole means of protection.

It is essential that the motor is protected with a motor protection relay which has been approved by a testing facility.

The motor protection relay must be approved for the ignition protection class which is stated on the motor.

Thermistor permissible as the sole  
protection

Notice  
- if  $t_A$  is not stated  
on the type plate



# Gas Explosion protection „ATEX“



## Options

NORD DRIVESYSTEMS high efficiency explosion protected motors are available with the following options::

| Motor Option | Designation                          |
|--------------|--------------------------------------|
| KB           | Condensation hole (closed)           |
| RD           | Protection Canopy                    |
| TF           | Thermistor (Standard)                |
| WE           | Second shaft end                     |
| IP66         | Protection class IP66                |
| SOSP         | Special voltages between 104 - 725 V |
| 60Hz         | Motor for 60 Hz mains operation      |

## Documentation

The correct operating and installation instructions B1091 are included in every delivery and can be viewed in advance at [www.nord.com](http://www.nord.com).

### - Available languages

They are available in the following languages:

German, English, French, Spanish, Italian, Serbian, Chinese, Arabic, Brazilian/Portuguese, Dutch, Bulgarian, Slovenian, Danish, Greek, Lithuanian, Turkish, Latvian, Romanian, Polish, Russian, Slovakian, Czech, Ukrainian, Korean, Japanese, Finnish, Swedish, Hungarian, Croatian and Norwegian.

### - Additions to the NORD portfolio

Ex eb motors of energy efficiency IE3, as well as motors with higher power ratings than motors produced by NORD, are purchased separately. The same applies to Ex ec motors which are to be operated on the frequency inverter.



## Ex d and Ex de motors

No other explosion protected motors are offered on the market in a greater variety than pressure resistant encapsulated motors.

To make the advantages of this variety accessible to our customers, NORD DRIVESYSTEMS cooperates closely with various manufacturers. This enables us to provide our customers with an attractively priced and technically engaging drive, which realises the customer demand in the best possible way.

The standard version of these motors is as follows:

- ▶ II 2G T4 de IIC T4 Gb as 4-pole version - suitable for mains and inverter operation.

The majority overview of motors does not indicate individual motor features in this catalogue. The following overview presents the range of product and draws attention to special features.

- ▶ Power range: 0.12 - 200 kW (in combination with industrial gear units up to 1000 kW)
- ▶ Number of poles: 2,4,6 and 8 pole as well as switchable poles for 4-2, 6-4, 8-4 and 8-6 pole
- ▶ Cast iron motors in the entire power range and die cast aluminium motors up to 4 kW are possible
- ▶ Energy efficiency class IE3 is standard.

Motor mounting on the gear unit is typically by means of IEC cylinders in use with IEC B5 standard motors for fast delivery.

In many cases, the motor can also be mounted directly on the gear unit. This has advantages in thermally critical cases or to achieve high output speeds and larger adjustment ranges with inverter operation. This version also has advantages for confined installation spaces.

Pressure resistant encapsulated motors are suitable for gas and dust applications in combination with very low ambient temperatures of  $< -20^{\circ}\text{C}$  to  $-40^{\circ}\text{C}$ .

High ambient temperatures of  $>40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$  are also possible. In some cases, this results in a reduction in motor power and / or ISO H insulation.

Further motor options which can be supplied on request:

- ▶ Ex d version with pressure resistant terminal box encapsulation
- ▶ Protective or rain cover "RD"
- ▶ Foot-mounted version
- ▶ Temperature sensor for shut down in case of excess temperature "TF"
- ▶ Additional temperature sensors which switch at lower temperatures and are used as a warning. "2TF"
- ▶ PT100 for direct measurement of the winding temperature "PT100"
- ▶ ISO H
- ▶ Tropicalised installation
- ▶ External fan
- ▶ Special voltage "SOSP"
- ▶ IP66
- ▶ Standstill heating to prevent condensation "SH"
- ▶ Additional explosion protection for Zone 21 or Zone 22 "2D" / "3D"
- ▶ Brakes (various versions for combination with other options) as holding or working brakes "BRE"
- ▶ Incremental encoder "IG"
- ▶ Second shaft end, optionally with hand wheel "WE"
- ▶ Insulated bearings for inverter operation for motor sizes above Size 160

These special motors are marked accordingly with temperature specifications and are equipped with powerful standstill heaters.

## Standard version

## Motor mounting

- IEC cylinder

## Direct motor mounting

- Advantages

## Pressure resistant encapsulated motors

$< -20^{\circ}\text{C}$  to  $-40^{\circ}\text{C}$

$>40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$

## Options on request



# Gas Explosion protection „HazLoc“



## Motors for the North American market

- ▶ Class I
- ▶ Division 2 Groups A, B, C, D
- ▶ Temperature Code 165°C
- ▶ Mains operation
- ▶ Operating mode S1
- ▶ IP 55, IP 66,
- ▶ -20°C to +40°C

These are motors which are used in areas in which flammable mixtures of gases or vapours do not occur under normal conditions, but in exceptional cases cannot be ruled out.

These motors are available in efficiency classes High „IE2“ and Premium „IE3“. The motor data is listed for the voltages 230 / 460 V and 332 / 575 V which are particularly important for the USA and Canada ⇒ See type plate.

- ▶ Special voltages between 200 and 600 V
- ▶ Temperature sensor "TF"
- ▶ Temperature monitor "TW" bi-metal switch
- ▶ Protection Canopy "RD"
- ▶ Double fan cowl "RDD"
- ▶ Second shaft end "WE"

## Options

## Type plates (examples)

|                                                                                                     |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|
| <br>DRIVESYSTEMS |  | <br>LISTED<br>ELECTRIC MOTOR |  | <br>Energy Verified |  | <br>CCC 002 M |  | <br>165330 |  |  |  | 06513530                                                                            |  |
| Type SK 100 LP/4 CUS ID2 TF                                                                         |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  | 2019                                                                                |  |                                                                                     |  |
| 3 ~ Mot. No. 202592077-100                                                                          |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  | 31261588                                                                            |  |                                                                                     |  |
| INS F                                                                                               |  | NEMA                                                                                                            |  | IP 55                                                                                                  |  | S1                                                                                               |  | AMB 40 °C                                                                                     |  | TEFC                                                                                |  | DP                                                                                  |  |
| 60 Hz                                                                                               |  | 230/460                                                                                                         |  | V                                                                                                      |  | YY/Y                                                                                             |  | EFF IE3-90,0%                                                                                 |  | CODE L                                                                              |  |                                                                                     |  |
| 7,68/ 3,84                                                                                          |  | A                                                                                                               |  | 3,00                                                                                                   |  | hp                                                                                               |  | 2,20                                                                                          |  | kW                                                                                  |  | SF 1,15                                                                             |  |
| PF 0,79                                                                                             |  | 1770                                                                                                            |  | r/min                                                                                                  |  | Class I DIV2 Group A, B, C, D                                                                    |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
|                                                                                                     |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  | Class II DIV2 Group F&G T3B-165°C                                                   |  |
| Hz                                                                                                  |  | r/min                                                                                                           |  | Nm                                                                                                     |  | lb-in                                                                                            |  | hp                                                                                            |  | A                                                                                   |  |                                                                                     |  |
|                                                                                                     |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
| 29                                                                                                  |  | kg                                                                                                              |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
| Over Temp Prot-2 Class F                                                                            |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
| Getriebebau NORD GmbH & Co. KG, 22939 Bargteheide / GERMANY                                         |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |
|                                                                                                     |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |  |  |
| www.nord.com                                                                                        |  |                                                                                                                 |  |                                                                                                        |  |                                                                                                  |  |                                                                                               |  |                                                                                     |  |                                                                                     |  |

In addition to NORD's listed motors for the North American market, various motors from suppliers can be offered in addition.  
Please contact us.



## Standard Efficiency

230/460 V 4-pole

Class I Division 2

| Type         | P <sub>N</sub> | P <sub>N</sub> | η <sub>N</sub> | Voltage | Frequency | M    |           | cos φ | I <sub>A</sub> /I <sub>N</sub> | J                   |
|--------------|----------------|----------------|----------------|---------|-----------|------|-----------|-------|--------------------------------|---------------------|
|              | [kW]           | [hp]           | [rpm]          | [V]     | [Hz]      | [Nm] | [A]       |       |                                | [kgm <sup>2</sup> ] |
| 63S/4 TF ID2 | 0,12           | 0.16           | 1687           | 230/460 | 60        | 0,68 | 0,94/0,47 | 0,54  | 3,21                           | 0,00021             |
| 63L/4 TF ID2 | 0,18           | 0.25           | 1706           | 230/460 | 60        | 1,01 | 1,18/0,59 | 0,57  | 3,58                           | 0,00028             |
| 71S/4 TF ID2 | 0,25           | 0.33           | 1710           | 230/460 | 60        | 1,40 | 1,56/0,78 | 0,64  | 3                              | 0,00072             |
| 71L/4 TF ID2 | 0,37           | 0.50           | 1715           | 230/460 | 60        | 2,06 | 1,89/0,94 | 0,69  | 4,84                           | 0,00086             |
| 80S/4 TF ID2 | 0,55           | 0.75           | 1710           | 230/460 | 60        | 3,07 | 2,70/1,35 | 0,71  | 4,6                            | 0,00109             |

## Premium Efficiency

|                |      |      |      |         |    |      |           |      |      |        |
|----------------|------|------|------|---------|----|------|-----------|------|------|--------|
| 80 LP/4 TF ID2 | 0,75 | 1.00 | 1730 | 230/460 | 60 | 4,14 | 3,14/1,57 | 0,70 | 6,50 | 0,0019 |
| 90SP/4 TF ID2  | 1,10 | 1.50 | 1740 | 230/460 | 60 | 6,04 | 4,20/2,10 | 0,76 | 8,40 | 0,0034 |
| 90LP/4 TF ID2  | 1,50 | 2.00 | 1730 | 230/460 | 60 | 8,28 | 5,60/2,80 | 0,78 | 7,60 | 0,0039 |
| 100LP/4 TF ID2 | 2,20 | 3.00 | 1770 | 230/460 | 60 | 11,9 | 7,68/3,07 | 0,79 | 9,20 | 0,0081 |
| 112MP/4 TF ID2 | 3,70 | 5.00 | 1755 | 230/460 | 60 | 20,1 | 13,0/6,50 | 0,80 | 9,50 | 0,014  |
| 132SP/4 TF ID2 | 5,50 | 7.50 | 1770 | 230/460 | 60 | 29,7 | 19,5/9,75 | 0,77 | 10,2 | 0,032  |
| 132MP/4 TF ID2 | 7,50 | 10.0 | 1765 | 230/460 | 60 | 40,6 | 26,7/13,4 | 0,77 | 9,60 | 0,035  |
| 160MP/4 TF ID2 | 11,0 | 15.0 | 1770 | 230/460 | 60 | 59,4 | 35,6/17,8 | 0,84 | 8,80 | 0,067  |
| 160LP/4 TF ID2 | 15,0 | 20.0 | 1775 | 230/460 | 60 | 80,7 | 47,6/23,8 | 0,85 | 10,8 | 0,092  |

## Standard Efficiency

332/575 V 4-pole

Class I Division 2

| Type         | P <sub>N</sub> | P <sub>N</sub> | η <sub>N</sub> | Voltage | Frequency | M    |           | cos φ | I <sub>A</sub> /I <sub>N</sub> | J                   |
|--------------|----------------|----------------|----------------|---------|-----------|------|-----------|-------|--------------------------------|---------------------|
|              | [kW]           | [hp]           | [rpm]          | [V]     | [Hz]      | [Nm] | [A]       |       |                                | [kgm <sup>2</sup> ] |
| 63S/4 TF ID2 | 0,12           | 0.16           | 1702           | 332/575 | 60        | 0,67 | 0,65/0,37 | 0,58  | 3,34                           | 0,00028             |
| 63L/4 TF ID2 | 0,18           | 0.25           | 1711           | 332/575 | 60        | 1,01 | 0,92/0,53 | 0,55  | 3,70                           | 0,00028             |
| 71S/4 TF ID2 | 0,25           | 0.33           | 1690           | 332/575 | 60        | 1,41 | 0,90/0,52 | 0,73  | 4,33                           | 0,00072             |
| 71L/4 TF ID2 | 0,37           | 0.50           | 1710           | 332/575 | 60        | 2,07 | 1,26/0,73 | 0,71  | 4,84                           | 0,00086             |
| 80S/4 TF ID2 | 0,55           | 0.75           | 1710           | 332/575 | 60        | 3,07 | 1,84/1,06 | 0,71  | 4,47                           | 0,00109             |

## Premium Efficiency

|                |      |      |      |         |    |      |           |      |      |        |
|----------------|------|------|------|---------|----|------|-----------|------|------|--------|
| 80LP/4 TF ID2  | 0,75 | 1.00 | 1730 | 332/575 | 60 | 4,14 | 2,16/1,25 | 0,70 | 6,50 | 0,0019 |
| 90SP/4 TF ID2  | 1,10 | 1.50 | 1740 | 332/575 | 60 | 6,04 | 2,91/1,68 | 0,76 | 8,50 | 0,0034 |
| 90LP/4 TF ID2  | 1,50 | 2.00 | 1730 | 332/575 | 60 | 8,28 | 3,88/2,24 | 0,78 | 7,70 | 0,0039 |
| 100LP/4 TF ID2 | 2,20 | 3.00 | 1770 | 332/575 | 60 | 11,9 | 5,32/3,07 | 0,79 | 9,20 | 0,0081 |
| 112MP/4 TF ID2 | 3,70 | 5.00 | 1755 | 332/575 | 60 | 20,1 | 9,00/5,20 | 0,80 | 9,60 | 0,014  |
| 132SP/4 TF ID2 | 5,50 | 7.50 | 1770 | 332/575 | 60 | 29,7 | 13,5/7,81 | 0,77 | 10,2 | 0,032  |
| 132MP/4 TF ID2 | 7,50 | 10.0 | 1765 | 332/575 | 60 | 40,6 | 18,6/10,7 | 0,77 | 9,60 | 0,035  |
| 160MP/4 TF ID2 | 11,0 | 15.0 | 1770 | 332/575 | 60 | 59,4 | 24,7/14,2 | 0,84 | 8,80 | 0,067  |
| 160LP/4 TF ID2 | 15,0 | 20.0 | 1775 | 332/575 | 60 | 80,7 | 33,0/19,0 | 0,85 | 10,8 | 0,092  |





## General

Unlike in many regions of the world, European strict requirements apply to non-electrical equipment such as e.g. Pumps or gearboxes to be used in potentially explosive atmospheres.

The basic requirements for these are defined in Directive 94/9/EC and its successor 2014/34/ EU. To facilitate the demonstration that a device meets these requirements, uniform standards have been adopted at the European level, such as DIN EN ISO 80079-36:2016 and DIN EN ISO 80079-37:2016 were created, which apply in particular to the non-electrical area of explosion protection. These standards influence the conception, construction, testing, labelling and documentation of the devices and equipment. Compliance with these standards ensures that a product can be expected to comply with the essential conditions needed for the Declaration of Conformity.

The level of safety in each Member State is determined by these mandatory regulations for equipment and protective devices intended for use in explosion hazard areas. This facilitates free trade within the EU.

The safe operation of gearboxes and gearmotors depends on the standards-compliant design and two other aspects. Firstly, selection of a gearbox corresponding to the application, taking into account all the factors acting on the gearbox, and secondly proper assembly, operation and maintenance of a drive.

Selection of the gear unit should be made according to the technical explanations in the relevant product catalogues G1000, G1035 and G2000.

The gear unit selections described there must be complied with in order to avoid overloading the gear unit. This must be performed particularly conscientiously.

The selection of a suitable gear unit for the application, especially the necessary operating factor  $f_b$  for drive units to be operated in explosion hazard areas also has an influence on safety.

Special technical features of gear units

- ▶ Pressure venting to reduce the pressure inside the gear unit and to protect against dirt
- ▶ In case of a calculated oil temperature  $> 84^{\circ}\text{C}$ , automatic use of synthetic oil and Viton shaft seals
- ▶ The strength of the housings, shafts and gears correspond to or exceed the minimum values required by the standards
- ▶ In some cases a special housing material may be required. This depends on the method of attachment and the weight of the motor
- ▶ In some cases, special coupling materials (electrically conducting)
- ▶ Largely closed covers for shrink disk versions
- ▶ Possibility of checking the oil level, even for small gear units



# „ATEX“ Explosion protected gear units“



## Available gear unit types

### Helical gear units (Catalogue G1000)



|       |                        |
|-------|------------------------|
| ✓     | Foot or flange mounted |
| ✓     | UNICASE housing        |
| Sizes | 11                     |
| kW    | 0,12 – 160             |
| Nm    | 10 – 26.000            |
| i     | 1,35:1 – 14.340,31:1   |

### Parallel shaft gear units (Catalogue G1000)



|       |                                          |
|-------|------------------------------------------|
| ✓     | Push-on, foot or flange mounted versions |
| ✓     | Hollow or solid shaft                    |
| ✓     | Compact design                           |
| ✓     | UNICASE housing                          |
| Sizes | 15                                       |
| kW    | 0,12 – 200                               |
| Nm    | 65 – 90.000                              |
| i     | 4,03:1 – 6.616,79:1                      |

### Helical worm gear units (Catalogue G1000)



|       |                                          |
|-------|------------------------------------------|
| ✓     | Push-on, foot or flange mounted versions |
| ✓     | Hollow or solid shaft                    |
| ✓     | UNICASE housing                          |
| Sizes | 6                                        |
| kW    | 0,12 – 15                                |
| Nm    | 46 – 3.090                               |
| i     | 4,40:1 – 7.095,12:1                      |

### NORDBLOC.1 helical gear units (Catalogue G1000)



|       |                                              |
|-------|----------------------------------------------|
| ✓     | Foot or flange mounted                       |
| ✓     | Die-cast aluminium housing (5 sizes)         |
| ✓     | UNICASE housing                              |
| ✓     | Dimensions according to industrial standards |
| Sizes | 13                                           |
| kW    | 0,12 – 37                                    |
| Nm    | 55 – 3.300                                   |
| i     | 2,10:1 – 456,77:1                            |

### 2-stage bevel gear units (Catalogue G1000)



|       |                                          |
|-------|------------------------------------------|
| ✓     | Up to 97% efficiency                     |
| ✓     | Push-on, foot or flange mounted versions |
| ✓     | Hollow or solid shaft                    |
| ✓     | UNICASE housing                          |
| ✓     | Die-cast aluminium housing               |
| Sizes | 5                                        |
| kW    | 0,12 – 9,2                               |
| Nm    | 90 – 660                                 |
| i     | 3,55:1 – 70:1                            |

### 3-stage bevel gear units (Catalogue G1000)



|       |                                          |
|-------|------------------------------------------|
| ✓     | Up to 95% efficiency                     |
| ✓     | Push-on, foot or flange mounted versions |
| ✓     | Hollow or solid shaft                    |
| ✓     | UNICASE housing                          |
| Sizes | 11                                       |
| kW    | 0,12 – 200                               |
| Nm    | 180 – 50.000                             |
| i     | 8,04:1 – 13.432,68:1                     |

### SMI worm gear units (Catalogue G1035)



|       |                      |
|-------|----------------------|
| ✓     | Smooth surface       |
| ✓     | Lifetime oil filling |
| Sizes | 4                    |
| kW    | 0,12 – 1,5           |
| Nm    | 21 – 246             |
| i     | 5,00:1 – 540,0:1     |

### SI worm gear units (Catalogue G1035)



|       |                     |
|-------|---------------------|
| ✓     | Modular             |
| ✓     | IEC versions        |
| Sizes | 5                   |
| kW    | 0,12 – 4,0          |
| Nm    | 21 – 427            |
| i     | 5,00:1 – 3.000,00:1 |



To enable selection according to the application, NORD recommends that the following enquiry form is used



## General enquiry form



Company: \_\_\_\_\_

Customer number: \_\_\_\_\_

Town/Postcode/Country: \_\_\_\_\_

Contact: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Phone: \_\_\_\_\_

**Please send the enquiry directly to your local NORD contact.**

See homepage:  
[www.nord.com](http://www.nord.com)  
(NORD → Sales)



Reference: \_\_\_\_\_

Date: \_\_\_\_\_

|                                                                                                                                |                                                                                                                                 |                                                                                                                        |                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Helical gear units*</b><br>G1000/G2000 | <br><b>Parallel shaft gear units*</b><br>G1000 | <br><b>Bevel gear units*</b><br>G1000 | <br><b>Worm gear units</b><br>G1000/G1035 |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|

Geared motors

W - Type (free drive shaft): External force: Axial  $F_{A1}$ : \_\_\_\_\_ [N] | Radial  $F_{R1}$ : \_\_\_\_\_ [N]; Leverage on shaft collar: \_\_\_\_\_ [mm]

Type according to catalogue: \_\_\_\_\_

Adapter for IEC/NEMA motor/servo\*

Pcs.: \_\_\_\_\_

Stand-alone motor (M7000)

| Parameters specific to the gear unit                                                                                       | Frequency inverter operation                                               |
|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Output speed $n_2$ at mains frequency: _____ [rpm]                                                                         | Control cabinet inverters      Motor-mounted inverter                      |
| Output torque $M_2$ : _____ [Nm]                                                                                           | Adjustment range from: _____ [Hz] to _____ [Hz]                            |
| Speed ratio $i$ : _____                                                                                                    | Speed from $n_1$ : _____ [rpm] to _____ [rpm]                              |
| Installation position (M1 – M6): _____                                                                                     | Constant torque within adjustment range: _____ [Nm]                        |
| Flange: B14    B5    Ø _____ [mm]                                                                                          | Characteristic curve: 50 Hz    70 Hz    87 Hz    100 Hz                    |
| Hollow shaft    Solid shaft    Ø _____ x _____ [mm]                                                                        | Rotary encoder*:      Incremental      Absolute                            |
| Operating factor $f_b$ : _____                                                                                             | Generating mode: Recovered Power _____ [kW]                                |
| Required min. bearing life according to L10h: _____ [h]                                                                    | Outline conditions                                                         |
| Forces on output: Axial $F_{A2}$ : _____ [N]                                                                               | Ambient temperature: min. _____ to max. _____ [°C]                         |
| Radial $F_{R2}$ : _____ [N]   Leverage on shaft collar: _____ [mm]                                                         | Max. relative humidity RH: _____ [%]                                       |
| Bearings: normal    VL    VL2    VL3    AL                                                                                 | Max. installation altitude (if > 1,000 m): _____ [m]                       |
| Bevel gear and worm gear units: A/B side for flange/shaft*                                                                 | Internal    External    Contact with water*    Exposure to direct sunlight |
| Oil type: Mineral    Synth.    Food grade    Bio-degradable                                                                | Other (dust/dirt/aggressive media; mech./chem.)*                           |
| Special oil: _____                                                                                                         | ATEX                                                                       |
| Parameters specific to the motor                                                                                           | Gas explosion protection      Dust explosion protection                    |
| Rated power $P_1$ : _____ [kW]                                                                                             | Zone 1      Ex II 2G      Zone 21      Ex II 2D                            |
| Rated speed $n_1$ : _____ [rpm]                                                                                            | Zone 2      Ex II 3G      Zone 22      Ex II 3D                            |
| Temperature sensor (TF)    Bi-metal temperature monitor (TW)                                                               | Ex e      II T3      Non-conducting dust                                   |
| Mains voltage: _____ [V]   Mains frequency: _____ [Hz]                                                                     | EEx de      IIC T4      Conducting dust                                    |
| Efficiency class: IE1    IE2    IE3    IE4                                                                                 | Painting/ Surface treatment                                                |
| Protection class: IP55 (Standard)    IP _____                                                                              | Without    1.0    2.0 (Standard)    3.0    3. _____                        |
| Operating mode: S1 (Standard)    S _____*                                                                                  | nsd tuPH (only for aluminium housings)                                     |
| Switching frequency: _____ [cycles/h]                                                                                      | Colour (RAL): Blue (5010)    Grey (7031)                                   |
| Rel. switch-on time: _____ [%]    Back stop (RLS)                                                                          | Special colour (RAL No. / Colour): _____                                   |
| Ventilation: Standard    External (F)    Without (OL)                                                                      | Remarks                                                                    |
| Terminal box position: _____    Cable entry: _____                                                                         |                                                                            |
| Parameters specific to brake                                                                                               |                                                                            |
| Braking torque $M_B$ : _____ [Nm]    Manual release (HL)                                                                   |                                                                            |
| Brake/coil voltage: _____ [V]                                                                                              |                                                                            |
| Holding/emergency brake    Service brake                                                                                   |                                                                            |
| Documentation operation and maintenance instruction (language abbreviation according to ISO 639-1):                        |                                                                            |
| DE    BG    ZH    CS    DA    ES    FI    FR    EN    EL    HU    IT    NL    NO    PL    PT    RU    SV    SK    LV    RO |                                                                            |

\*Please add details in the remarks - Getriebebau NORD GmbH & Co. KG | Getriebebau-Nord-Str. 1 | D-22941 Bargteheide - DE-0818



# „ATEX“ Explosion protected gear units



## Details on the type plate

For the examination of a drive unit with regard to its suitability for use in explosion hazard areas, in particular the strength of the components as well as heating of the drive are examined individually with regard to the intended use. Many of these details are documented directly on the type plate.

## Component strength

In particular the following details have a direct influence on the strength of the components:

- ▶ Gear unit type, possible as the result of specification of the operating factor or the minimum bearing life
- ▶ Motor attachment directly or by means of an IEC or NEMA cylinder
- ▶ Output torque
- ▶ Gear ratio in combination with the motor torque
- ▶ Type and dimension of the output shaft
- ▶ Output shaft bearing type
- ▶ Forces and torques acting on the output shaft
- ▶ Braking torque

## Temperature calculation

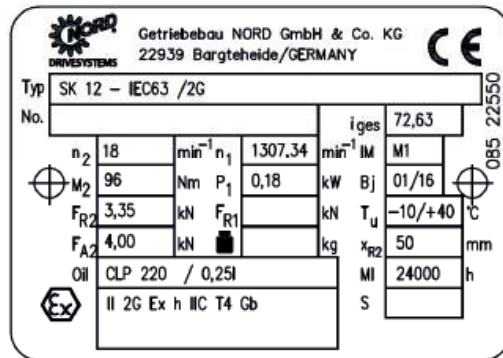
These details are especially important for calculation of the drive temperature:

- ▶ Gear unit type
- ▶ Motor attachment directly or by means of an IEC or NEMA cylinder
- ▶ Presence of a free input shaft (i.e. without attached motor)
- ▶ Speed of rotation of all rotating components
- ▶ Installation orientation - this has a great influence on the oil filling
- ▶ Bearing type
- ▶ Oil type
- ▶ Rated capacity
- ▶ Ventilation of the motor, whose cooling air flow also has an influence on the gear unit
- ▶ Inverter operation
- ▶ Maximum ambient temperature / cooling air temperature
- ▶ Installation altitude
- ▶ Number and type of seals



Many of the customer's details are documented directly on the type plate.

Ex Gear unit type plate



## Explanation of the type plate

| Abbreviations                                                                       | Unit  | Designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ⇒ B2000 Section |
|-------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Type                                                                                | -     | NORD gear unit type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| No.                                                                                 | -     | Serial number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |
| iges                                                                                | -     | Overall gear unit ratio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |
| n2                                                                                  | min-1 | Rated speed of gear unit output shaft*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |
| n1                                                                                  | min-1 | Rated speed of the gear unit drive shaft or the drive motor*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |
| IM                                                                                  | -     | Version (installation orientation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 6.1             |
| M2                                                                                  | Nm    | Max. permissible gear unit output shaft torque                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |
| P1                                                                                  | kW    | Max. permissible drive power or motor power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |
| Bj                                                                                  | -     | Year of manufacture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| FR2                                                                                 | kN    | Max. permissible transverse force on the gear unit output shaft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3.9             |
| FR1                                                                                 | kN    | Max. permissible transverse force on the gear unit drive shaft for option W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3.9             |
| Tu                                                                                  | °C    | Permissible ambient temperature for the gear unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |
| FA2                                                                                 | kN    | Max. permissible axial force on the gear unit output shaft                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3.9             |
|  | kg    | Total weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3.8             |
| MI                                                                                  | h     | Interval for general overhaul of the gear unit in operating hours or according to the specification of the dimensionless maintenance class CM                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.2             |
| xR2                                                                                 | mm    | Max. dimension for the point of application of the transverse force FR2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.9             |
| Oil                                                                                 | -     | Gear unit oil type and quantity (standard designation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6.2             |
| Last line                                                                           |       | ATEX labelling, as per (DIN EN 13463-1):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.3             |
|  |       | <ol style="list-style-type: none"> <li>1. Group (always II, not for mines)</li> <li>2. Category (2G, 3G for gas or 2D, 3D for dust)</li> <li>3. Marking of non-electrical devices (Ex h)</li> <li>4. Explosion group if applicable (Gas: IIC, IIB; Staub: IIIC, IIIB)</li> <li>5. Temperature class (T1-T3 or T4 for gas) or max. surface temperature (e.g. 125 °C for dust) or special max. surface temperature see special documentation (TX)</li> <li>6. EPL (equipment protection level) Gb, Db, Gc, Dc</li> <li>7. „X“ means: There is additional special documentation that must be observed.</li> </ol> |                 |
| S                                                                                   | -     | Number of the special documentation, consisting of serial no. / year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |

\* The maximum permissible speeds are 10 % above the rated speed, if the maximum permissible drive power P1 is not exceeded.

If the fields FR1, FR2, FA1 and FA2 are empty, the forces are zero. If the field xR2 is empty, the point of application of force FR2 is central on the output shaft journal (⇒ Section 3.9“)



# „ATEX“ Explosion protected gear units



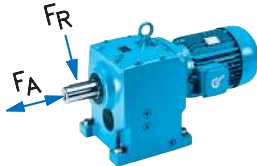
## Details from the enquiry form

### Examples

(the nameplates shown here serve as an example)

Forces on output: Axial  $F_{A2}$ : 500 [N]

Radial  $F_{R2}$ : 1000 [N] Lever arm length from shaft shoulder: 120 [mm]



|                                     |       |                                                               |       |               |    |
|-------------------------------------|-------|---------------------------------------------------------------|-------|---------------|----|
| <b>NORD</b><br>DRIVESYSTEMS         |       | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |       | <b>CE</b>     |    |
| Typ SK12 VL /2D-90LP/4 2D           |       |                                                               |       |               |    |
| No.                                 |       | iges 8,56                                                     |       |               |    |
| $n_2$ 165                           | r/min | $n_1$ 1414                                                    | r/min | M M1          |    |
| $M_2$ 86,6                          | Nm    | $P_1$ 1,5                                                     | kW    | Bj            |    |
| $F_{R2}$ 1,0                        | kN    | $F_{R1}$ 0,5                                                  | kN    | $T_u$ -10/+40 | °C |
| $F_{A2}$ 0,5                        | kN    | $F_{A1}$                                                      | kN    | MI 120        | mm |
| Oil CLP 220                         |       |                                                               |       | S 7701        |    |
| <b>Ex</b> II 2D Ex h IIIC T125°C Db |       |                                                               |       |               |    |

### Motor-specific parameters

Delete section

Rated power  $P_1$ : 4.6 [kW]

Rated speed  $n_1$ : 1800 [rpm]

☐ Temperature sensor (TF) ☐ Bi-metal temperature monitor (TW)

Mains voltage [V] Mains frequency: 60 [Hz]

|                                     |       |                                                               |       |               |    |
|-------------------------------------|-------|---------------------------------------------------------------|-------|---------------|----|
| <b>NORD</b><br>DRIVESYSTEMS         |       | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |       | <b>CE</b>     |    |
| Typ SK 32 IEC 112 / 2D              |       |                                                               |       |               |    |
| No.                                 |       | iges 9,80                                                     |       |               |    |
| $n_2$ 184                           | r/min | $n_1$ 1800                                                    | r/min | M M1          |    |
| $M_2$ 239                           | Nm    | $P_1$ 4,6                                                     | kW    | Bj            |    |
| $F_{R2}$                            | kN    | $F_{R1}$                                                      | kN    | $T_u$ -10/+40 | °C |
| $F_{A2}$                            | kN    | $F_{A1}$                                                      | kN    | $x_{R2}$      | mm |
| Oil CLP 220                         |       |                                                               |       | MI 10844      |    |
| <b>Ex</b> II 2D Ex h IIIC T125°C Db |       |                                                               |       |               |    |

### Frequency inverter operation

Delete section

☒ Control cabinet inverter ☐ Motor-mounted inverter

Adjustment range from: 10 [Hz] to 80 [Hz]

Speed from  $n_1$  [rpm] to [rpm]

Constant torque within adjustment range: 100 [Nm]

Characteristic curve: ☒ 50 Hz ☐ 70 Hz ☐ 87 Hz ☐ 100 Hz

|                                     |       |                                                               |       |               |    |
|-------------------------------------|-------|---------------------------------------------------------------|-------|---------------|----|
| <b>NORD</b><br>DRIVESYSTEMS         |       | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |       | <b>CE</b>     |    |
| Typ SK 32 IEC 112 / 2D              |       |                                                               |       |               |    |
| No.                                 |       | iges 9,80                                                     |       |               |    |
| $n_2$ 234                           | r/min | $n_1$ 2288                                                    | r/min | M M1          |    |
| $M_2$ 163                           | Nm    | $P_1$ 4                                                       | kW    | Bj            |    |
| $F_{R2}$                            | kN    | $F_{R1}$                                                      | kN    | $T_u$ -10/+40 | °C |
| $F_{A2}$                            | kN    | $F_{A1}$                                                      | kN    | $x_{R2}$      | mm |
| Oil CLP 220                         |       |                                                               |       | MI 26647      |    |
| <b>Ex</b> II 2D Ex h IIIC T125°C Db |       |                                                               |       |               |    |

### Framework conditions

Delete section

Ambient temperature: min. -10 to max. +50 [°C]

|                                     |       |                                                               |       |               |    |
|-------------------------------------|-------|---------------------------------------------------------------|-------|---------------|----|
| <b>NORD</b><br>DRIVESYSTEMS         |       | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |       | <b>CE</b>     |    |
| Typ SK 32 IEC 112 / 2D              |       |                                                               |       |               |    |
| No.                                 |       | iges 9,80                                                     |       |               |    |
| $n_2$ 146                           | r/min | $n_1$ 1430                                                    | r/min | M M1          |    |
| $M_2$ 262                           | Nm    | $P_1$ 4                                                       | kW    | Bj            |    |
| $F_{R2}$                            | kN    | $F_{R1}$                                                      | kN    | $T_u$ -10/+50 | °C |
| $F_{A2}$                            | kN    | $F_{A1}$                                                      | kN    | $x_{R2}$      | mm |
| Oil CLP 220                         |       |                                                               |       | MI 10409      |    |
| <b>Ex</b> II 2D Ex h IIIC T125°C Db |       |                                                               |       |               |    |



## Preventative maintenance

Scheduled and proper maintenance of gear units is especially important for explosion protection as it has a direct impact on safe operation. In particular, operators of Category 2 (2D or 2G) drives for use in Zone 1 or 21 must take expected errors into account.

This includes scheduled replacement of the gear oil as well as regular checks on the oil level – refer to the details in the operating and maintenance manual B2000.

In addition, the bearings and shaft sealing rings must be replaced as a preventative measure depending on the requirements of drive selection and application. Maintenance in case of damage or signs of imminent bearing damage results in a potentially dangerous situation and must be avoided at all costs!

To enable this preventative maintenance, according to a draft version of DIN EN ISO 80079-37:2016, NORD labels its Category 2 gear units with a maintenance interval „MI“. This interval indicates the number of operating hours after which replacement of the bearings and seals is advisable. In association with this, other components of the gear unit are subjected to a visual inspection and are replaced in rare cases.

The maintenance interval assumes use of the gear unit with the rated power / rated torque. Lower powers have a positive effect on the maintenance interval.

Example for a gear unit with a maintenance interval of 24497 hours.

## Oil level check

## General overhaul

## Example

|                                                                                    |                           |                                                               |                        |                                                                                    |  |
|------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------|--|
|  |                           | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |                        |  |  |
| Typ SK22 / 2G-80 LH/4 / 2G                                                         |                           |                                                               |                        |                                                                                    |  |
| No.                                                                                |                           |                                                               |                        | i <sub>ges</sub> 24,73                                                             |  |
| n <sub>2</sub> 57 r/min                                                            | n <sub>1</sub> 1400 r/min | M 126 Nm                                                      | P <sub>1</sub> 0,75 kW | M1                                                                                 |  |
| F <sub>R2</sub> 1 kN                                                               | F <sub>R1</sub>           | F <sub>A2</sub> 0,5 kN                                        | F <sub>A1</sub>        | T <sub>u</sub> -10/+40 °C                                                          |  |
| Oil CLP 220                                                                        |                           |                                                               |                        | MI 24497 h                                                                         |  |
| Ex II 2G Ex h IIC T3 Gb                                                            |                           |                                                               |                        |                                                                                    |  |

Explosion protected gear units

On customer's request, it is also possible to specify a maintenance class, which enables the customer to calculate the maintenance interval depending in the period of use per day and the actual average output power. Further details can be found in the operation and maintenance manual B2000.

## Maintenance class

|                                                                                     |                           |                                                               |                        |                                                                                     |  |
|-------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|--|
|  |                           | Getriebebau NORD GmbH & Co. KG<br>22939 Bargteheide / GERMANY |                        |  |  |
| Typ SK22 / 2G-80 LH/4 2G                                                            |                           |                                                               |                        |                                                                                     |  |
| No.                                                                                 |                           |                                                               |                        | i <sub>ges</sub> 24,73                                                              |  |
| n <sub>2</sub> 57 r/min                                                             | n <sub>1</sub> 1400 r/min | M 126 Nm                                                      | P <sub>1</sub> 0,75 kW | M1                                                                                  |  |
| F <sub>R2</sub>                                                                     | F <sub>R1</sub>           | F <sub>A2</sub>                                               | F <sub>A1</sub>        | T <sub>u</sub> -10/+40 °C                                                           |  |
| Oil CLP 220                                                                         |                           |                                                               |                        | MI CM = 3 h                                                                         |  |
| Ex II 2G Ex h IIC T3 Gb                                                             |                           |                                                               |                        |                                                                                     |  |

## Example



# „ATEX“ Explosion protected gear units



## DECLARATION OF CONFORMITY

You can find certificates on the NORD homepage under [www.nord.com](http://www.nord.com) - Heading DOCUMENTATION / CERTIFICATES

**GETRIEBEBAU NORD**  
Member of the NORD DRIVESYSTEMS Group

Getriebebau NORD GmbH & Co. KG  
Getriebebau Nord-Str. 1, 22941 Bargteheide, Germany, Tel.: +49(0)4532 289 - 0, Fax: +49(0)4532 289 - 2253, info@nord.com

**EU Declaration of Conformity**  
According to EU directive 2014/34/EU Annex VIII

Getriebebau NORD GmbH & Co. KG declares in sole responsibility, that the gear units and geared motors from the following product series

Page 1 of 1

- Helical gear units  
Type SK ...
- Worm gear units  
Type SK 02..., SK 1S..., SK 3..., SK 4...
- Parallel shaft gear units  
Type SK ...82, SK ...82.1, SK ...82NB
- Bevel gear units  
Type SK 9....

with ATEX labelling  II 2D / II 2G (you can find the specific labellin

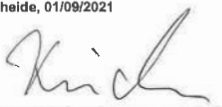
are compliant with the following directive:  
ATEX directive for products 2014/34/EU (source of inform

Applied harmonised standards:  
DIN EN 1127-1:  
DIN EN ISO 80079-36:  
DIN EN ISO 80079-37:  
DIN EN 60079-0:

Getriebebau NORD has submitted the documents required as per 2 VIII to the notified body:

DEKRA EXAM GmbH  
Dinnendahlstraße 9  
44809 Bochum  
ID number:0158  
Certificate: BVS 04 ATEX

Bargteheide, 01/09/2021

  
U. Küchenmeister  
Manager

  
Tec

**GETRIEBEBAU NORD**  
Member of the NORD DRIVESYSTEMS Group

Getriebebau NORD GmbH & Co. KG  
Getriebebau Nord-Str. 1, 22941 Bargteheide, Germany, Tel.: +49(0)4532 289 - 0, Fax: +49(0)4532 289 - 2253, info@nord.com

**EU Declaration of Conformity**  
According to EU directive 2014/34/EU Annex VIII

Getriebebau NORD GmbH & Co. KG hereby declares in sole responsibility, that the gear units and geared motors from the following product series

Page 1 of 1

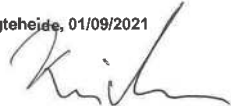
- Helical gear units  
Type SK ...
- Worm gear units  
Type SK 02..., SK 1S..., SK 12..., SK 13..., SK 3..., SK 4...
- Parallel shaft gear units  
Type SK ...82, SK ...82.1, SK ...82NB
- Bevel gear units  
Type SK 9....

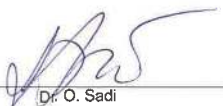
with ATEX labelling  II 3D / II 3G (you can find the specific labelling on the nameplate)

are compliant with the following directive:  
ATEX directive for products 2014/34/EU (source of information: L 96, 29.03.2014, p. 309-356)

Applied harmonised standards:  
DIN EN 1127-1: 2019  
DIN EN ISO 80079-36: 2016  
DIN EN ISO 80079-37: 2016  
DIN EN 60079-0: 2018

Bargteheide, 01/09/2021

  
U. Küchenmeister  
Manager

  
Dr. O. Sadi  
Technical Manager



## Documentation

| Standard                                                                                                                                    | Special Documentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|----|--------------------------------------------------------------------------------------|--|----|-------------------------------------------------------------------------------------|--|----|------------------------------------------------------------------------|-----|--|-----------------------------------------------------------------|-----|--|---------------|--|--|-------------------------------------|--|--|--|------------|-----------|--------|------------|-------|-------|--|--|
| B2000                                                                                                                                       | <div>Inclined installation orientations</div> <div><div><div>SK 3282 – IEC 80/90</div><div></div></div></div> <div><div><div><div><div> Entlüftung / Vent</div><div> Ölstand / Oil Level</div><div> Ölablass / Oil Drain</div></div></div></div><div><table><tr><td colspan="2">Konfigurationsbaustrom SAP<br/>Stanowisko montażu Konfiguracji SAP<br/>Position de montage de configuration SAP<br/>Configuration position SAP</td><td>M3</td></tr><tr><td> Grundbaustrom<br/>Pozycja podstawowa<br/>Position de montage de base<br/>Basic position</td><td></td><td>M3</td></tr><tr><td> Schwenkeichtung<br/>Kierunek nachylenia<br/>Sense de pivotement<br/>Pivoting direction</td><td></td><td>M4</td></tr><tr><td> Schwenkwinkel<br/>Kąt nachylenia<br/>Angle de pivotement<br/>Swivel angle</td><td>[7]</td><td></td></tr><tr><td> Ölfüllmenge<br/>Poziw. oleju<br/>Niveau d'huile<br/>Oil fill level</td><td>[8]</td><td></td></tr><tr><td>Datum<br/>Date</td><td colspan="2"></td></tr><tr><td>Unterschrift<br/>Podpis<br/>Signature</td><td colspan="2"></td></tr></table></div><div><div><div><br/>DRIVESYSTEMS</div><div>Getriebebau NORD<br/>GmbH &amp; Co KG<br/>Getriebebau-Nord-Straße 1<br/>D – 22941 Bargtheide<br/>Tel. 04532/289-0 – Fax 04532/289-2253 – www.nord.com</div></div><div><div>Schutzvermerk<br/>nach ISO 16016<br/>beachten</div><table><tr><td></td><td>Datum/Date</td><td>Name/Name</td></tr><tr><td>Bearb.</td><td>06.08.2018</td><td>Mirow</td></tr><tr><td>Drawn</td><td></td><td></td></tr></table></div><div><div>Atex</div><div>Sonderdokumentation<br/>Special documentation</div><div>60/18</div></div></div></div> | Konfigurationsbaustrom SAP<br>Stanowisko montażu Konfiguracji SAP<br>Position de montage de configuration SAP<br>Configuration position SAP |  | M3 | Grundbaustrom<br>Pozycja podstawowa<br>Position de montage de base<br>Basic position |  | M3 | Schwenkeichtung<br>Kierunek nachylenia<br>Sense de pivotement<br>Pivoting direction |  | M4 | Schwenkwinkel<br>Kąt nachylenia<br>Angle de pivotement<br>Swivel angle | [7] |  | Ölfüllmenge<br>Poziw. oleju<br>Niveau d'huile<br>Oil fill level | [8] |  | Datum<br>Date |  |  | Unterschrift<br>Podpis<br>Signature |  |  |  | Datum/Date | Name/Name | Bearb. | 06.08.2018 | Mirow | Drawn |  |  |
| Konfigurationsbaustrom SAP<br>Stanowisko montażu Konfiguracji SAP<br>Position de montage de configuration SAP<br>Configuration position SAP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | M3                                                                                                                                          |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Grundbaustrom<br>Pozycja podstawowa<br>Position de montage de base<br>Basic position                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | M3                                                                                                                                          |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Schwenkeichtung<br>Kierunek nachylenia<br>Sense de pivotement<br>Pivoting direction                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | M4                                                                                                                                          |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Schwenkwinkel<br>Kąt nachylenia<br>Angle de pivotement<br>Swivel angle                                                                      | [7]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Ölfüllmenge<br>Poziw. oleju<br>Niveau d'huile<br>Oil fill level                                                                             | [8]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Datum<br>Date                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Unterschrift<br>Podpis<br>Signature                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
|                                                                                                                                             | Datum/Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Name/Name                                                                                                                                   |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Bearb.                                                                                                                                      | 06.08.2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mirow                                                                                                                                       |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |
| Drawn                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                             |  |    |                                                                                      |  |    |                                                                                     |  |    |                                                                        |     |  |                                                                 |     |  |               |  |  |                                     |  |  |  |            |           |        |            |       |       |  |  |

The appropriate operating and installation instructions B2000 are included in every delivery and can be viewed in advance at [www.nord.com](http://www.nord.com).

## Documentation

They are available in the following languages:

German, English, French, Spanish, Italian, Serbian, Chinese, Arabic, Brazilian/Portuguese, Dutch, Bulgarian, Slovenian, Danish, Greek, Lithuanian, Turkish, Latvian, Romanian, Polish, Russian, Slovakian, Ukrainian, Korean, Japanese, Czech, Finnish, Swedish, Hungarian, Croatian and Norwegian.

- Available languages





## Hybrid mixtures

Both the gear units and motors, which are used in the context of explosion protection, take into account the specific requirements of the respective explosive substance.

For example, gases may penetrate into cavities in the motor or terminal box, which must be taken into account during construction.

Dust, on the other hand, is prevented by IP55 or higher protection from accumulating in the motor in an ignitable concentration, which facilitates the motor design on this point and saves costs.

In contrast, in the case of motors in a dust environment, electrostatic charging may occur more easily, which may result in hazardous corona discharge. In summary, it can be said that the ignition hazards in dust and gas atmospheres differ and result in specific technical solutions.

In rare cases, e.g. in mining, a mixture of flammable dust and flammable gas may occur - so-called hybrid mixtures. In the case of mining, this would typically be a mixture of methane, coal dust and air.

In view of the large number of flammable gases, dust and their resulting mixtures, the potential hazards are extremely numerous and complex.

The selection of a suitable drive can therefore not be made without the precise analysis of the situation on site. It must be acknowledged that a drive which can be used safely in a pure gas or dust atmosphere cannot provide an adequate level of safety in an environment with a hybrid mixture. In this case, the operator or plant constructor has to endeavour to avoid danger in the context of tertiary explosion protection - ie to reduce the effect of a possible explosion.

Currently no standard exists which provides specifications for the technical design of motors or gear units in environments with hybrid mixtures. NORD DRIVESYSTEMS therefore does not offer motors or gear units for this purpose.

For logistical reasons it may be advisable to use a drive unit which can be used in either an explosive gas or dust atmosphere. Here it should be evaluated whether the higher price of the drive is outweighed by the flexibility gained. Such drives are offered by NORD DRIVESYSTEMS in the following combinations: 2G/2D, 2G/3D and 3G/3D.

The type plates of the gear unit and the motor indicate suitability for both gas and dust.

## Hybrid mixtures

NORD drives  
- 2G/2D, 2G/3D, 3G/3D

Example  
- 2G/2D drive

Typeplates  
(examples)

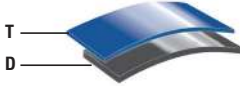
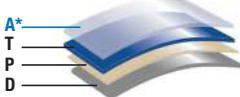
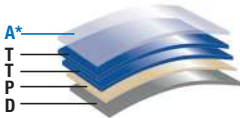
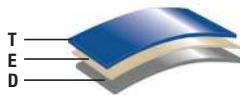
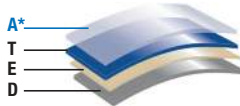
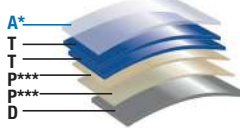
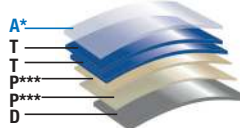
|                                                                                                                                                                                                                                                                                                                                                                 |                                       |                                                                                                                                                                         |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  <b>Getriebebau NORD GmbH &amp; Co. KG</b><br>22939 Bargeheide/GERMANY                                                                                                                                                                                                       |                                       |   |  |
| Typ SK52F IEC112 /2G /2D                                                                                                                                                                                                                                                                                                                                        |                                       |                                                                                                                                                                         |  |
| No. 085 22550                                                                                                                                                                                                                                                                                                                                                   |                                       |                                                                                                                                                                         |  |
| n <sub>2</sub> 54 min <sup>-1</sup> n <sub>1</sub> 1435 min <sup>-1</sup><br>M <sub>2</sub> 704 Nm F <sub>2</sub> 4 kW B <sub>2</sub><br>F <sub>R2</sub> kN F <sub>R1</sub> kN<br>F <sub>A2</sub> kN<br>Oil CLP PG 220<br> II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T125°C Db | i ges 26,46<br>M1<br>-20/+40<br>32825 |                                                                                                                                                                         |  |

|                                                                                          |    |                                                                                                                   |      |                                                                                      |                                       |
|------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------|---------------------------------------|
|  0158 |    |  <b>HEW</b><br>D-32008 Herford |      |  |                                       |
| 3-Mot. DDEx 132SP/4K No. XXXXXXXXX                                                       |    |                                                                                                                   |      |                                                                                      |                                       |
| BVS 14 ATEX E 114 X / IECEx BVS 14.0075 X                                                |    |                                                                                                                   |      |                                                                                      |                                       |
| II 2G Ex db eb II CT4 Gb / Ex db eb II CT4 Gb                                            |    |                                                                                                                   |      |                                                                                      |                                       |
| or II 2D Ex tb IIIC T135°C Db / or Ex tb IIIC T135°C Db                                  |    |                                                                                                                   |      |                                                                                      |                                       |
| I.CI.                                                                                    | F  | IP 65                                                                                                             | IM   |                                                                                      | 96 kg                                 |
| V                                                                                        | Hz | kW                                                                                                                | A    | cos φ                                                                                | r/min I <sub>A</sub> / I <sub>N</sub> |
| D400                                                                                     | 50 | 5,5                                                                                                               | 11,1 | 0,79                                                                                 | 1460 7,1                              |
| Y690                                                                                     | 50 | 5,5                                                                                                               | 6,41 | 0,79                                                                                 | 1460 7,1                              |
| Cable entries 2xM32x1,5 + 1xM20x1,5 Duty S1-S9                                           |    |                                                                                                                   |      |                                                                                      |                                       |
| t <sub>A</sub> =24s Artikel Nr.: T132-X0055                                              |    |                                                                                                                   |      |                                                                                      |                                       |
| PTC 3-PTC 145°C                                                                          |    | T <sub>a</sub> = -20/+40°C                                                                                        |      | IE3=90,3%                                                                            |                                       |



## Paintwork

NORD has a variety of paint coating options available in order to protect your investment regardless of the application's environment. Please refer to the table below for details:

| Coating / Field of Application                                                                                                                                           | Class ** |                                                                                      | Coating Thickness * |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|---------------------|
| CORE Indoor Installation, Low Humidity                                                                                                                                   |          |                                                                                      |                     |
| Basic<br>Indoor installation.<br><i>Previously F2</i>                                                                                                                    | C2       |    | 50 - 90 µm          |
| NORD Severe Duty 2 (NSD2) / <b>NORD Severe Duty 2+</b><br>Indoor installation and protected outdoor installation (i. e. open, unheated halls).<br><i>Previously F3.0</i> | C2       |    | 110 - 150 µm        |
| NORD Severe Duty 3 (NSD3) / <b>NORD Severe Duty 3+</b><br>Outdoor installation, city and industrial atmosphere with low contamination.<br><i>Previously F3.1</i>         | C3       |    | 160 - 200 µm        |
| NORD Severe Chem Duty 3 (NSDC3)<br>Normale chemical contamination.<br><i>Previously F3.4</i>                                                                             | C3       |   | 100 - 140 µm        |
| NORD Severe Food Duty 3 (NSDF3) / <b>NORD Severe Food Duty 3+</b><br>Food packaging areas.<br><i>Previously F3.5</i>                                                     | C3       |  | 100 - 140 µm        |
| NORD Severe Duty 4 (NSD4) / <b>NORD Severe Duty 4+</b><br>Outdoor installation, city and industrial atmosphere with moderate contamination.<br><i>Previously F3.2</i>    | C4       |  | 220 - 260 µm        |
| NORD Severe Duty 5 (NSD5) / <b>NORD Severe Duty 5+</b><br>Outdoor installation, city and industrial atmosphere with high contamination.<br><i>Previously F3.3</i>        | C5       |  | 200 - 240 µm        |

|    |                                                                                                                           |
|----|---------------------------------------------------------------------------------------------------------------------------|
| D  | Single Component Dip Primer (for cast-iron units only)                                                                    |
| P  | 2-Component Polyurethane Primer***                                                                                        |
| E  | 2-Component EP Zinc Phosphate Primer                                                                                      |
| T  | 2-Component Polyurethane Top Coat                                                                                         |
| A* | Optional clear lacquer coating (+ versions) Coating Thickness + 25 µm                                                     |
| Z  | Levelling of contour recesses and gaps with polyurethane-based sealant possible for NSD2, NSD3 and NSD4 included in NSD5. |

\*Protocol of the coating thickness based on ISO 19840 available on request

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

\*\*\*Primer requirements may vary depending on the country or geographic location.

# Surface Protection

The type of coatings applied to equipment used in explosive atmospheres is specified by standards. The applicable standards and regulations must be strictly complied with. These describe measures to prevent hazards that may arise from electrostatic charging.

In the Equipment Group II (gas) and Group III (dust), there are restrictions regarding the coatings. Therefore, the range of coatings permitted for explosion protection is limited, e.g. with regard to the use of clear coat. The coatings marked with a check mark in the following list can be offered for gearmotors and motors in accordance with ATEX, IECEx, and CCCEx.

| Painting            | Gas | Dust |
|---------------------|-----|------|
| CORE*               | ✓   | ✓    |
| with primer applied |     |      |
| Basic               | ✓   | ✓    |
| NSD2                | ✓   | ✓    |
| NSD2+               |     |      |
| NSD3                | ✓   | ✓    |
| NSD3+               |     |      |
| NSDC3               | ✓   | ✓    |
| NSDF3               | ✓   | ✓    |
| NSDF3+              |     |      |
| NSD4                | ✓   | ✓    |
| NSD4+               |     |      |
| NSD5                | ✓   | ✓    |
| NSD5+               |     |      |
| NXD Basic           |     |      |
| NXD Tuph            |     |      |

\*only valid for alumin

The RAL 9006 and RAL 9007 color shades are approved for use in gas explosion protection for NORD drives only with the Basic and NSD3 paint systems. All paint finishes approved by NORD for explosion protection have been tested and found to be suitable. Since this is a complex process, custom paint finishes cannot be offered.

Thanks to their inherent corrosion protection, NORD's aluminum gear units and motors often provide reliable operation without additional surface protection when installed indoors under suitable environmental conditions. Where technically feasible, eliminating the need for painting enables a manufacturing process with lower energy consumption and fewer emissions, thereby supporting environmental and climate protection goals. NORD specifically offers this option for selected gear unit and motor combinations with aluminum housings. If subsequent painting is necessary, only coatings that reliably prevent electrostatic hazards may be used; please refer to the Operating and Maintenance Manuals B2000 and B1091, respectively. For IEC motors from third-party suppliers (purchased or provided by the customer), it may be necessary—depending on the manufacturer—to purchase or provide motors that are already painted. If the motor is provided by the customer, this must be verified on a case-by-case basis.

Motors from NORD's preferred supplier of flameproof motors for gas explosion protection can be painted together with the gear unit at NORD. Subsequent large-scale painting of drives initially painted by NORD must be carried out in consultation with NORD and by a repair shop authorized to repair explosion-protected drives.

During this work, shaft seals, rubber components, vent screws, hoses, nameplates, stickers, motor coupling parts, blind plugs, and cable glands must not come into contact with paints, varnishes, and solvents.

## CORE

## Cooling systems

Compliance with the maximum permissible temperatures is of great importance in explosion protection. External application-related influences, a high power density in the gear unit, high speeds, as well as gear unit installation with maximum oil level in the gear unit may lead to gear units having to be cooled. For this purpose, NORD offers both water coolers as well as oil/air coolers.

### Water cooling

#### Gearbox option CC: Housing cover with cooling coil

An integrated heat exchanger is optionally available for parallel shaft gear units and bevel gear units. The cooling water flows through the heat exchanger, and cools the gear unit. Monitoring of the temperature or the cooling water flow is recommended. As the cooling coil is not located in the oil sump, the NORD water cooling design is very safe (German industrial design registration 20 2005 005 452.6).

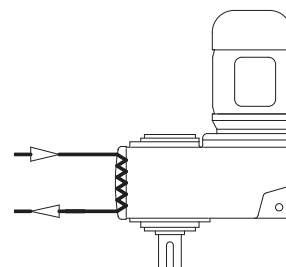
Integrated heat exchanger

NORD water cooling

Water cooling is also suitable for use in areas with potentially explosive atmospheres (ATEX).

| Parallel shaft gear units | Installation orientation |    |    |    |    |    |
|---------------------------|--------------------------|----|----|----|----|----|
|                           | M1                       | M2 | M3 | M4 | M5 | M6 |
| SK 6282 / SK 6382         | ✓                        | ✓  |    | ✓  | ✓  | ✓  |
| SK 7282 / SK 7382         | ✓                        | ✓  |    | ✓  | ✓  | ✓  |
| SK 8282 / SK 8382         | ✓                        | ✓  |    | ✓  | ✓  | ✓  |
| SK 9282 / SK 9382         | ✓                        | ✓  |    | ✓  | ✓  | ✓  |
| SK 10382.1 **             | ✓                        | ✓  |    | ✓  | ✓  | ✓  |
| SK 11382.1 **             | ✓                        | ✓  |    | ✓  | ✓  | ✓  |

Possible mounting position for water cooling



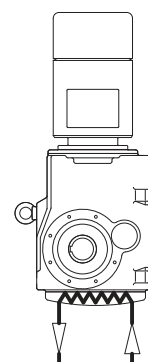
| Bevel gear units | Installation orientation |    |    |    |    |    |
|------------------|--------------------------|----|----|----|----|----|
|                  | M1                       | M2 | M3 | M4 | M5 | M6 |
| SK 9072.1 *      | •                        |    | ✓  | ✓  | •  | •  |
| SK 9082.1        | •                        |    | ✓  | ✓  | •  | •  |
| SK 9086.1        | •                        |    | ✓  | ✓  | •  | •  |
| SK 9092.1        | •                        |    | ✓  | ✓  | •  | •  |
| SK 9096.1        | •                        |    | ✓  | ✓  | •  | •  |

\* Only available in versions AF(B), AZ... and VF, VZ ⇒ E104, E105, E133

\*\* In preparation - Supply on request

✓ Full cooling power

• Reduced cooling power



# Cooling systems

## Oil/Air Cooler

### Gear unit option CS2

An oil/air cooler is a separate system which is connected to the gear unit with hoses which cools the oil in the gear unit and therefore directly reduces the surface temperature of the gear unit.

For this, the oil is drawn in by a pump and flows through a heat exchanger. The oil is cooled by an air stream which is generated by a fan. The oil is then returned to the housing from the heat exchanger. The temperature is controlled by a thermostat (PT100).

Temperature monitoring is necessary and is enabled by an Ex-compliant PT100 which is supplied with the system. Depending on the ambient temperature, the cooling power is approx. 5 kW.

Temperature-  
monitoring  
EX-compliant PT100

Can be used for the following gear units

- ▶ Helical gear units SK62 – SK103
- ▶ Parallel shaft gear units SK6282 – SK11382.1
- ▶ Bevel gear units SK9072.1 – SK9096.1

The cooling system is suitable for

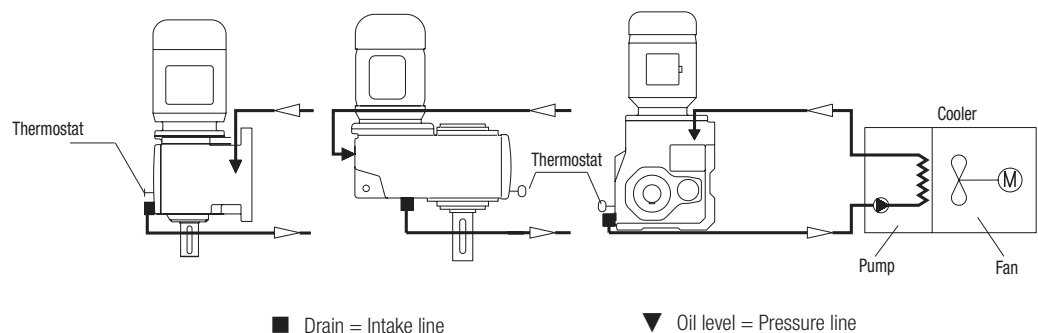
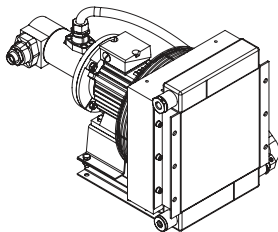
- ▶ II 2G Ex h IIB + H2 T4 Gb
- ▶ II 3D Ex h IIIC T130°C Dc
- ▶ Ambient temperatures (hoses and cooler) in operation
  - Minimum +5°C with 2 m hose length
  - For  $\geq +20^\circ\text{C}$  2 or 4 m hoses can be used
- ▶ Max. ambient temperature +40°C
  - Higher temperatures on request

Planning of this cooling system is always carried out by experienced engineers, who modify the system to the special features of the application and the gear unit which is to be cooled.

Separate special documentation exists, which provides detailed information about the commissioning, operation and maintenance of the system.

Commissioning,  
Maintenance

## Oil cooler



## Delivery

Oil cooler, gear unit with special type plate, hose pack, PT100

## Decentralised Product Group

NORD DRIVESYSTEMS understands decentralised inverters and starters to be devices which are mounted on the motor or mounted in the vicinity of the drive with the aid of wall mounting kits. This means that the devices must provide the same level of explosion protection as the drives with which they are associated. A 1:1 connection is required for this.

It is not permissible for an inverter to operate two motors simultaneously. NORD DRIVESYSTEMS is the manufacturer of all inverters and starters sold by NORD and can take all of the necessary measures from development and production up to quality control to ensure that the combination and electrics are ideally matched.

NORD has the following decentralised product groups which may all be installed in Ex Zone 22.

Decentralised  
product groups

### ► NORDAC FLEX – Frequency inverter SK 200E

Flexible to install, easy to service. The NORDAC FLEX is our most flexible inverter that can be tailored to any customer application by means of scalable functions. Installing and servicing the SK 200E can be carried out quickly and reliably due to its extensive plug-in capability and easy parameter transfer via EEPROM memory.



| Device       | Within ATEX-Zone 22 | Outside of a zone |
|--------------|---------------------|-------------------|
| NORDAC FLEX* | 0,55 ... 7,5 kW     | 0,55 ... 22 kW    |

\* The NORDAC FLEX can only be used up to 7.5 kW (400V) or up to 4 kW (230V). After that, a fan is integrated in the unit and the approval for the ATEX environment is no longer given.

### Extensions for devices which are used within the ATEX zone:

- Internal CU4 modules / internal braking resistors
- ATEX Potentiometer
- Wall mounting kit without fan

| Protection class                                   | IP55 | IP66 |
|----------------------------------------------------|------|------|
| Non-conducting dust<br>II3D Ex tc IIIB T125°C Dc X | Yes  |      |
| Conducting dust<br>II3D Ex tc IIIC T125°C Dc X     | -    | Yes  |



Sealing the devices is essential for safe and reliable operation. Special IP66 screw plugs and particularly reliable housing seals are used for this purpose. Conversions may only be made by NORD or by persons certified by NORD!

Attention



# Decentralised frequency inverters for „ATEX“ dust explosion protection



## Available languages

To ensure smooth commissioning, documentation is available in the following languages:

| Documentation  | DE | EN | FR | ES | RU | PL | US | CZE | IT | NL | TR | HU | JP | PT |
|----------------|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|
| BU 0200 / 0240 | X  | X  | X  | X  | X  | X  | X  | X   | Y  | Y  | X  | X  | X  | Y  |

X - Main instruction, BU 0200

Y - Brief instruction, BU 0240

## Usable characteristic curves

The frequency inverters can be operated with variously set characteristic curves. The settings for this are stated in B1096. The following are possible:

- ▶ 50 Hz characteristic curve (only for ASM asynchronous motors)
- ▶ 60 Hz characteristic curve (only for ASM asynchronous motors)
- ▶ 87 Hz characteristic curve (only for ASM asynchronous motors)

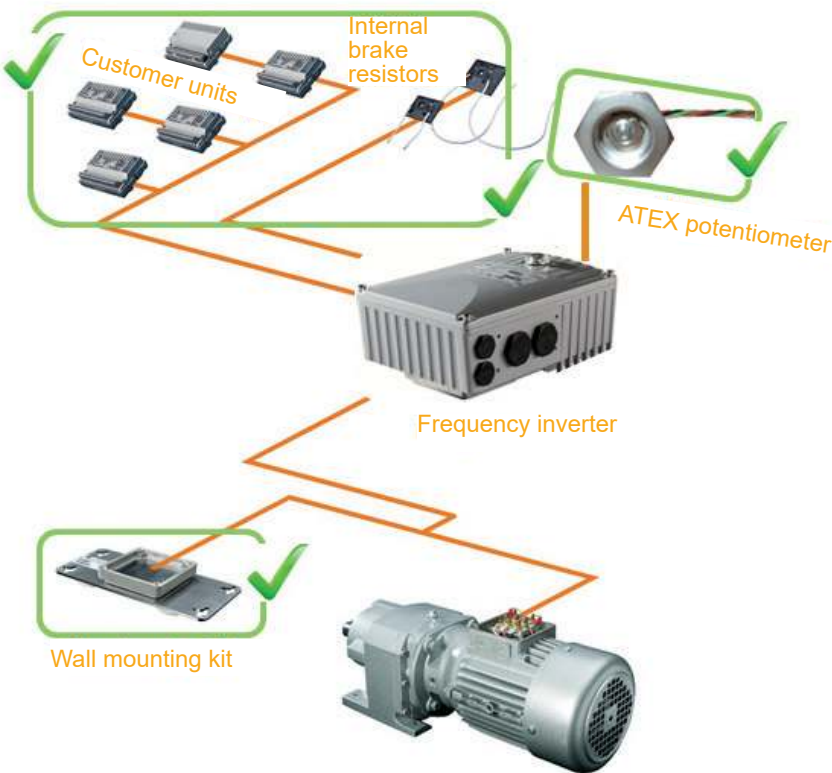
## Settings

It is essential that the following settings are complied with for operation:

- ▶ Pulse frequency 4 – 6 kHz
- ▶ Vector regulation
- ▶ Setting of the I<sup>2</sup>t trigger curve
- ▶ Maximum frequency 100 Hz
- ▶ Temperature sensor triggering must be used and tested

## Options

The otherwise extensive range of options is reduced to just a few for starters and inverters which are operated in the Ex zone.



## Frequency inverters and starters for installation outside of the Ex zone

For safe operation of motors within the Ex zone, motor manufacturers specify requirements for the technical design and settings of inverters and starters.

Details of these can be found in the relevant operating and maintenance instructions and in the E3000 catalogue.

If the motors and inverters from the same manufacturer are used, it is very likely the devices will be in sync.

For explosion protection a 1:1 connection between the motor and the inverter is necessary. It is not permissible for an inverter to operate two motors simultaneously. NORD DRIVESYSTEMS is the manufacturer of all inverters and starters which are sold by NORD and can take all of the necessary measures from development and production up to quality control to ensure that the combination and electrics are ideally matched.

### ► NORDAC ON

Decentralised compact solution for high energy efficiency.

The product range is designed for controlling NORD's highly efficient synchronous and asynchronous motors. While the NORDAC ON is suitable for IE3 drives, the NORDAC ON+ has been optimised for interaction with the IE5+ synchronous motor. The frequency inverters are characterised by an integrated multi-protocol Ethernet interface, full plug-in capability and a highly compact design. These features make them especially suitable for the requirements of horizontal conveyor technology.

- High compatibility and easy integration into Ethernet-based control systems via integrated multi-protocol Ethernet interface
- Simple installation and maintenance thanks to full plug-in capability
- Flexible use with both synchronous and asynchronous motors
- Low space requirements thanks to compact size and possible motor integration

### ► NORDAC LINK Motor starter SK155E

One product, many advantages. The NORDAC LINK motor starter impresses with its high plug-in capability and its easy installation. It can be freely configured and easily installed. Commissioning and servicing of the motor starter is performed easily with the integrated maintenance switch and the local manual control facility. It can also be integrated into various field bus systems. In short: The SK 155E is simply convenient

| Documentation  | DE | EN | FR | ES | P | RU | PL | CN | US | CZE | IT | NL |
|----------------|----|----|----|----|---|----|----|----|----|-----|----|----|
| BU 0155        | X  | X  | X  |    |   | X  |    |    |    |     |    |    |
| BU 0250        | X  | X  | X  |    |   | X  |    |    |    |     |    |    |
| BU 0500 / 0540 | X  | X  | X  | X  | Y | X  | X  | X  |    | X   | Y  | Y  |

X - Main instruction, BU 0500

Y - Brief instruction, BU 0540

Available languages

| 4 | [www.nord.com](http://www.nord.com)

NORD DRIVESYSTEMS provides extensive documentation. It ranges from the description of the product groups gearboxes, motors and inverters in catalogues, to the provision of drawings and data sheets, to operating and maintenance instructions.

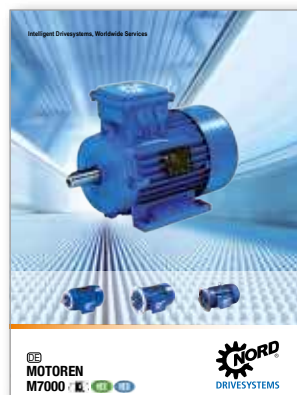
This section is intended to provide a brief overview.

This Ex-catalogue is a supplement to motor and gear unit catalogues M7000, G1000, G2000, G1012 and G1035. These can provide important information for the selection of the gear unit as well as descriptions of the various kinds and types of gear units and their options. Possible speeds and gear ratios as well as the associated output torques are shown.

Use of Ex motors may result in slightly changed data, which can be obtained from the offer in case of an enquiry.

Motor catalogue M7000 contains information for motor selection and technical explanations.

## Catalogues



# Documentation

## Customer portal myNORD

### Drive Expert / MYNORD

The product configurator in the myNORD customer portal ([www.mynord.com](http://www.mynord.com)) is also available as an alternative to catalogues. In this, all drive units, including Ex drive units and their options can be selected for

- ▶ Precise configuration.
- ▶ Direct generation of CAD-data (3D models, dimensioned drawings, outline drawings).
- ▶ Create offers online

It must be emphasised that the configurator indicates whether or not a selected drive unit is ATEX compliant. Price information as well as an enquiry/order form are also included.

Here are some impressions from this program:

Home | myNORD | Product selection

## MYNORD PRODUCT SELECTION

### Ordering process



### Create new product / CAD

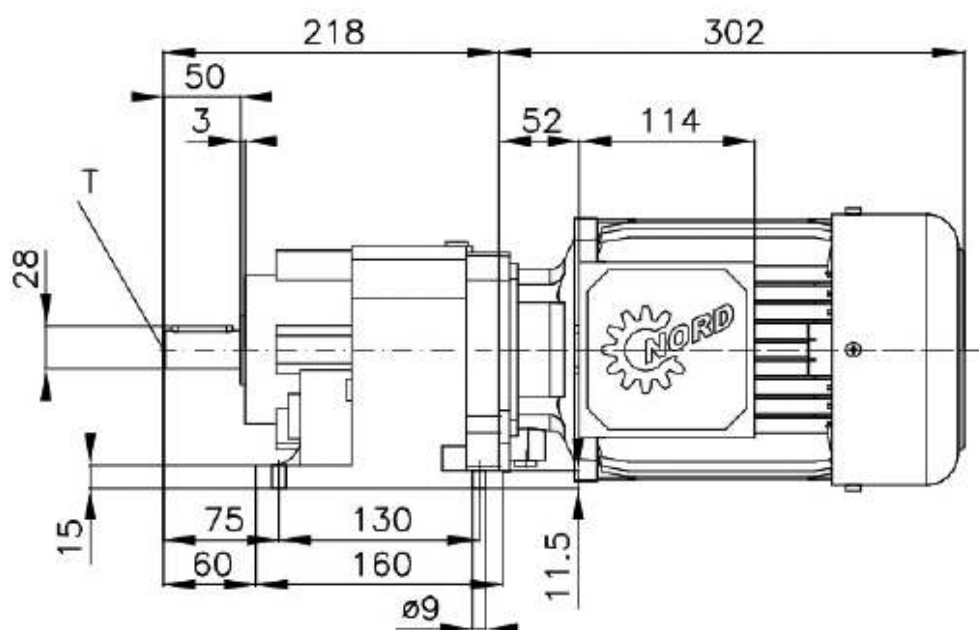


Preview of possible partial results as a result of using this software. Please contact your NORD Sales contact partner for more detailed information.

## NORDBLOC.1 Helical gear units 372.1-90LP/4 II3D



|                  |            |                   |            |
|------------------|------------|-------------------|------------|
| Motor power      | 1.5 kW     | Gear ratio        | 9.4        |
| Shaft dimension  | 25 x 50 mm | Output torque     | 95.2 Nm    |
| Output speed     | 150 1/min  | Max. radial force | on request |
| Operating factor | 2          | Max. axial force  | on request |



# Documentation

## Technical Data Sheet

### NORDBLOC.1 Gearmotor SK 372.1 /3D - 90LP/4 /3D TF

|                                                |                                  |
|------------------------------------------------|----------------------------------|
| HazHazardous Location                          | Zone 22 - Dust                   |
| ATEX Equipment Category Motor                  | 3D - Category 3 Dust             |
| ATEX Equipment Category Gearbox                | 3D - Category 3 Dust             |
| ATEX Ambient Temperature                       | -20°C - +40°C                    |
| ATEX Installation Attitude                     | 0m - 1000m                       |
| Lateral forces at the output shaft [N]         | 0                                |
| ATEX: force applied in the middle of the shaft | Yes                              |
| Max axial force [N]                            | 0                                |
| ATEX Inverter operation                        | No                               |
| Product Name                                   | Helical Inline Gears NORDBLOC.1  |
| Input Speed                                    | 1414 1/min                       |
| (EP) Motor Series                              | 00                               |
| Motor Inverter Speed Range                     | Standard Line Powered - Inverter |
|                                                | Capable                          |
| Ratio                                          | 9,4                              |
| Output Speed                                   | 150 1/min                        |
| Service Factor                                 | 2                                |
| Output torque                                  | 95.2 Nm                          |
| Mounting Pos                                   | M1                               |
| (EP) Gearbox Housing Material Type             | Aluminum Housing                 |
| Type of housing                                | Foot Mount                       |
| Output Shaft                                   | Solid Keyed Shaft                |
| Output Shaft Dia                               | 25X50 mm                         |
| Output Shaft Material                          | Standard                         |
| Gearbox Breather Options                       | Autovent                         |
| Gearbox Sealing Options                        | Standard                         |
| Gearbox Options                                | ATEX 3D/3G Gearbox               |
| Bearing Design                                 | Standard Bearings                |

## NORDBLOC.1 Gearmotor SK 372.1 /3D - 90LP/4 /3D TF

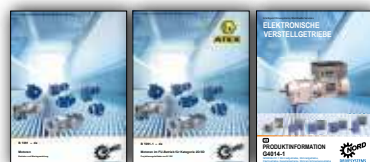
|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| Lubricant                 | Mineral Oil CLP 220 (Standard)                              |
| Lubricant Qty             | 0,45 l                                                      |
| Sealed Surface Conversion | No Surface Sealing Conversion                               |
| Paint Coating             | NSD" (F 3.0): For indoor and protected outdoor installation |
| Paint Color               | RAL 7031 Bluegrey                                           |
| ATEX Description Motor    | II 3D Ex tc IIIB T125°C DcX                                 |
| Power                     | 1,5 kW                                                      |
| Voltage                   | 230/400 V                                                   |
| Frequency                 | 50 Hz                                                       |
| Current 1                 | 5.61 A                                                      |
| Current 2                 | 3.24 A                                                      |
| Cosinus                   | 0.81                                                        |
| Motor Duty                | S1 - Continuous                                             |
| Enclosure                 | IP55                                                        |
| Insulation                | F                                                           |
| Motor Cooling             | TEFC - Totally Enclosed Fan Cooled                          |
| Terminal Box Pos          | 1                                                           |
| Conduit Entry Loc         | 1                                                           |
| Motor Option              | ATEX 3D Motor                                               |
|                           | Thermistor                                                  |

# Documentation

## Documentation accompanying the order

All deliveries of Ex drives to destination countries in the EU contain complete printed documentation in German, as well as in a language which can easily be understood by the operator.

Customers are requested to state the required language in their request for an offer.



- ▶ For Ex gear units, **B2000** is supplied, which specifically deals with explosion protection,
- ▶ **B1091** is intended for main operating motors,
- ▶ For use of motor mounted inverters for **Zone 22** documents **B1091**, **B1091-1** and **G4014-1** are supplied
- ▶ bei Verwendung von motoraufgebauten Umrichtern für die **Zone 22** werden die Dokumente **B1091**, **B1091-1** sowie **G4014-1** mitgeliefert.

## NORD Homepage

All operating and maintenance instructions, spare parts lists and certificates can be found under [www.nord.com](http://www.nord.com).



The screenshot shows the NORD DRIVESYSTEMS website. The header includes the company logo, navigation links (Products, myNORD, Documentation, Industries, NORD), and contact information. The main content area is titled 'Documentation' and features a message: 'To ensure that we always understand you, we communicate with our customers in 20 different languages.' Below this message are three image-based links: 'Manuals' (showing a stack of manuals), 'Catalogues' (showing a G1050 catalogue), and 'Flyers/Brochures' (showing a company brochure).

Rapid access enables a targeted search for documents:

[Home](#) | [Documentation](#) | [Certificates](#)

## Certificates

### Direct Access

|      |        |      |
|------|--------|------|
| ATEX | Motors | Dust |
| Nord |        |      |

Selection Results. 5 found in English, 54 found in other languages

| TITLE                                                                                   | LANGUAGE(S)                | VERSION | TYPE | DOWNLOAD     |
|-----------------------------------------------------------------------------------------|----------------------------|---------|------|--------------|
| Declaration of conformity - ATEX 2D <br>NORD Motors - frame size: 63 - 200<br>(C422110) | English<br>Other languages | 2018    | ATEX | PDF (107 KB) |
| Declaration of conformity - ATEX 3D <br>NORD Motors - frame size: 63 - 250<br>(C422111) | English<br>Other languages | 2019    | ATEX | PDF (62 KB)  |
| EG-Type Test Certificate - ATEX 2D <br>NORD Motors (C422120_2004)                       | English<br>Other languages |         | ATEX | PDF (637 KB) |
| EG-Type Test Certificate - ATEX 2D <br>NORD Motors, 4th Supplement<br>(C422121_2004)    | English<br>Other languages |         | ATEX | PDF (449 KB) |
| EG-Type Test Certificate - ATEX 2D <br>NORD Motors (C422122_2013)                       | English<br>Other languages |         | ATEX | PDF (351 KB) |

If the name of the document is known, the "search" will be successful.

[Getriebebau NORD GmbH & Co. KG](#)

[Contact](#)
[myNORD Login](#)

ENGLISH

G4014-1

[Products](#) | [myNORD](#) | [Documentation](#) | [Industries](#) | [NORD Group](#)

[Home](#) | [Global](#)

## Search results

Showing 1 - 10 of 2006 for "G4014-1"



NORD - Electronic Variable Speed Drives(**G4014-1**)  
Manual Electronic Variable Speed Drives



NORD - Electronic Variable Speed Drives(**G4014-1**)  
Catalogues Electronic Variable Speed Drives

# Documentation

## Accompanying information material:

- ▶ Manuals: German, English, French, Spanish ...
- ▶ Poster: Gas, dust
- ▶ Source:
  - ⇒ Sharepoint
  - ⇒ Presentation + Training
  - ⇒ Poster + Manual
  - ⇒ ATEX

## Abbreviations

|      |                                                                            |     |                                        |
|------|----------------------------------------------------------------------------|-----|----------------------------------------|
| 2D   | Category 2D                                                                |     |                                        |
| 3D   | Category 3D (non-conducting dust)                                          |     |                                        |
| ATEX | ATmosphères EXplosibles                                                    | IE1 | Efficiency as per IE1                  |
| DIN  | Deutsches Institut für Normung e.V.<br><i>[German Standards Institute]</i> | IE2 | Efficiency as per IE2                  |
| EN   | European standard                                                          | U/f | Voltage/frequency characteristic curve |

## Legend / Formula symbols

|                |                               |          |                        |
|----------------|-------------------------------|----------|------------------------|
| $\cos \varphi$ | Power factor                  | M        | Torque [Nm] or [%]     |
| $T_u$          | Ambient temperature [°C]      | n        | Speed [rpm]            |
| T125 / T140    | max. surface temperature [°C] | $P_N$    | Rated power [kW]       |
| $f_s$          | Stator frequency [Hz]         | $R_{st}$ | Resistance on line [Ω] |
| $f_N$          | Nominal frequency [Hz]        | $U_N$    | Rated voltage [V]      |
| $I_N$          | Nominal motor current [A]     |          |                        |





# An overview of NORD range

## G1000 Fixed speeds

UNICASE housing 50 / 60 Hz

- ▶ NORDBLOC.1® Helical geared motors
- ▶ Helical geared motors
- ▶ Parallel geared motors
- ▶ Helical-Bevel geared motors
- ▶ Helical-Worm geared motors



## G4014 Electronic variable speed drives

- ▶ NORDBLOC.1® Helical geared motors
- ▶ Helical geared motors
- ▶ Parallel geared motors
- ▶ Helical-Bevel geared motors
- ▶ Helical-Worm geared motors



## G1050 MAXXDRIVE® Large Industrial gear units

UNICASE housing 50 / 60 Hz

- ▶ Parallel-Axis gear units
- ▶ Right\_Angle gear units



## G1035 UNIVERSAL Worm gear units

- ▶ SI and SMI



## F3018\_E3000 Frequency inverter SK180E

## F3020\_E3000 Frequency inverter SK200E

## F3060\_E3000 NORDAC PRO

Frequency inverter SK 500P



EN

Headquarters:

Getriebebau NORD GmbH & Co. KG

Getriebebau-Nord-Str. 1

22941 Bargteheide, Deutschland

T: +49 45 32 / 289 - 0

F: +49 45 32 / 289 - 22 53

info@nord.com