Addendum to the Operating Instructions

Explosion-Proof AC Motors DR63/eDR63, DVE250, DVE280

Edition 11/2012 19494815 / EN
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1 General Information

1.1 How to use this documentation

The documentation is an integral part of the product and contains important information on operation and service. The documentation is written for all employees who assemble, install, start up, and service this product.

The documentation must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

Use this addendum to the operating instructions only together with the operating instructions "Explosion-Proof AC Motors, Asynchronous Servomotors" and "Explosion-Proof AC Motors EDR.71 – 225".

1.2 Structure of the safety notes

1.2.1 Meaning of the signal words

The following table shows the grading and meaning of the signal words for safety notes, notes on potential risks of damage to property, and other notes.

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
<th>Consequences if disregarded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DANGER</strong></td>
<td>Imminent danger</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td>Possible dangerous situation</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
<td>Possible dangerous situation</td>
<td>Minor injuries</td>
</tr>
<tr>
<td><strong>NOTE</strong></td>
<td>Possible damage to property</td>
<td>Damage to the drive system or its environment</td>
</tr>
<tr>
<td><strong>EXPLOSION PROTECTION</strong></td>
<td>Important note on explosion protection</td>
<td>Suspension of explosion protection and resulting hazards</td>
</tr>
<tr>
<td><strong>INFORMATION</strong></td>
<td>Useful information or tip: Simplifies the handling of the drive system.</td>
<td></td>
</tr>
</tbody>
</table>

1.2.2 Structure of the section-related safety notes

Section-related safety notes do not apply to a specific action, but to several actions pertaining to one subject. The used symbols indicate either a general or a specific hazard.

This is the formal structure of a section-related safety note:

⚠️ SIGNAL WORD

Nature and source of danger.

Possible consequence(s) if disregarded.

- Measure(s) to avoid the danger.
1.2.3 Structure of the embedded safety notes

Embedded safety notes are directly integrated in the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

- **SIGNAL WORD** Nature and source of danger.
  - Possible consequence(s) if disregarded.
  - Measure(s) to avoid the danger.

1.3 Rights to claim under warranty

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Read the documentation before you start working with the unit!

1.4 Exclusion of liability

Compliance with the information contained in the documentation is essential to ensure safe operation of the explosion-proof AC motors DR63/eDR63 and DVE250/280 and to achieve the specified product characteristics and performance requirements. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of the documentation. In such cases, any liability for defects is excluded.

1.5 Copyright

© 2012 - SEW-EURODRIVE. All rights reserved.

Copyright law prohibits the unauthorized duplication, modification, distribution, and use of this document, in whole or in part.

1.6 Product names and trademarks

The brands and product names contained within this publication are trademarks or registered trademarks of the titleholders.
2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are primarily concerned with the use of the following components: Explosion-proof AC motors DR63/eDR63 and DVE250/280. If you use gearmotors, also refer to the safety notes in the corresponding operating instructions for:

- Motors
- Gear units

Also observe the supplementary safety notes in the individual sections of this documentation.

2.2 General information

**WARNING**

Danger of fatal injury or risk of injury during the operation of motors or gearmotors caused by live, bare (in the event of open connectors/terminal boxes) and movable or rotating parts.

Risk of burns caused by hot surfaces

Severe or fatal injuries

- All work related to transport, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel.
- For transport, storage, installation, assembly, connection, startup, maintenance and repair it is important that you adhere to the information in the following documents:
  - Warning and safety signs on the motor/gearmotor
  - All the project planning documents, startup instructions and wiring diagrams related to the drive
  - System-specific regulations and requirements
  - National/regional regulations governing the safety and prevention of accidents
- Never install damaged products.
- Never operate or energize the unit without the necessary protection covers or housing.
- Use the unit only for its intended purpose.
- Make sure the unit is installed and operated properly.

**INFORMATION**

In the event of damage caused by transport, submit a complaint to the shipping company immediately.

This documentation provides additional information.
2.3 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified personnel in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting and servicing of the product who possess the following qualifications:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician, electronics or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

2.4 Designated use

The explosion-proof electric motors are intended for industrial systems.

When installed in machines, startup of the motors (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in EC Directive 94/9/EC (ATEX Directive).

NOTES ON EXPLOSION PROTECTION

- The motor is only allowed to be operated under the conditions described in the "Startup" section.
- A motor may only be operated with the frequency inverter when the requirements of the prototype test certificates and/or this documentation and the information on the nameplate of the motor, if available, are fulfilled.
- There may be no aggressive substances in the vicinity that could damage the paint and seals.
- The motors must not be operated in areas/applications that cause strong electrical charge on the motor housing, e.g. as a fan motor in a dust-transporting tube as this may cause electrostatic charge of the coated surfaces.

Air-cooled types are dimensioned for ambient temperatures of -20 °C to +40 °C and installation altitudes ≤ 1000 m above sea level. Note that information on the nameplate may differ. The ambient conditions must comply with all the specifications on the nameplate.
2.5 Other applicable documentation

The following publications and documents have to be observed as well:

- Wiring diagrams provided with the motor
- Operating instructions of the frequency inverter for motors powered by inverters
- Operating instructions "Explosion-Proof Gear Units R..7, F..7, K..7, S..7 Series, SPIROPLAN® W" for gearmotors
- Operating instructions "Explosion-Proof VARIBLOC® Variable-Speed Gear Units and Accessories" / "Explosion-Proof VARIMOT® Variable-Speed Gear Units and Accessories"
- Operating instructions of installed options, if applicable
- "Explosion-Proof AC Motors" catalog and/or
- "Explosion-proof drives" catalog

The complete range of technical documentation is available at our home page:

www.sew-eurodrive.com

2.6 Transport/storage

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.

Tighten the eyebolts securely. They are designed to carry only the weight of the motor/gearmotor; do not attach any additional loads.

The built-in lifting eyebolts comply with DIN 580. Always observe the loads and regulations listed in this standard. If the gearmotor is equipped with two eyebolts, then both should be used for transportation. In this case, the tension force vector of the slings must not exceed a 45° angle according to DIN 580.

Use suitable, sufficiently rated handling equipment if required. Reattach these in the case of further transportation.

Store the motor/gearmotor in a dry, dust-free environment if it is not to be installed straight away. You must not store the motor/gearmotor outdoors or on the fan guard. The motor/gearmotor can be stored for up to 9 months without requiring any special measures before startup.

2.7 Installation

Make sure that the supports are even, the foot and flange mounting is correct and if there is direct coupling, align with precision. Resonances between the rotational frequency and the double network frequency caused by the structure are to be avoided. Release the brake (if installed), turn rotor manually, check for unusual grinding noise. Check the direction of rotation in decoupled status.

Only install or remove belt pulleys and couplings using suitable devices (heat up) and cover with a touch guard. Avoid improper belt tension.

Make the pipe connections that may eventually be required. Mounting positions with shaft ends pointing upwards should be equipped with a cover to prevent foreign objects from falling into the fan. Ensure that ventilation openings are not obstructed and that used air, including air from adjacent units, cannot be drawn in again straight away.
2.8 **Electrical connection**

All work may only be carried out by qualified personnel. During work, the low-voltage machine must be at standstill, enabled, and safeguarded against accidental restart. This also applies to auxiliary circuits (e.g. anti-condensation heating or forced cooling fan).

Check that the motor is de-energized!

Exceeding the tolerances in EN 60034-1 (VDE 0530, part 1) – voltage +5 %, frequency +2 %, curve shape, symmetry – increases the heating and influences electromagnetic compatibility. Also observe DIN IEC 60364 and EN 50110 (and, if applicable, other national regulations, such as DIN VDE 0105 for Germany).

In addition to the generally applicable installation regulations for low-voltage equipment, it is also necessary to comply with the special regulations for setting up electrical machinery in potentially explosive atmospheres (operating safety regulations in Germany: EN 60079-14; EN 61241-14 and system-specific regulations).

Observe the wiring information and differing data on the nameplate as well as the wiring diagram in the terminal box.

The connection should be a continuous secure electrical connection (no protruding wire ends); use the cable end equipment intended for this purpose. Establish a secure protective earth connection. When the motor is connected, the distances between live and conductive parts must not be shorter than the minimum values according to DIN EN / IEC 60079-7 and -15 and national regulations. The minimum values according to the respective standards must be observed, see the following table:

<table>
<thead>
<tr>
<th>Nominal voltage V_N</th>
<th>Distance for motors in category 3 (DIN EN / IEC 60079-15)</th>
<th>Distance for motors in category 2 (DIN EN / IEC 60079-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 500 V</td>
<td>5 mm</td>
<td>8 mm</td>
</tr>
<tr>
<td>&gt; 500 V to ≤ 690 V</td>
<td>5.5 mm</td>
<td>10 mm</td>
</tr>
</tbody>
</table>

The terminal box must be free of foreign objects, dirt and humidity. Unused cable entry openings and the box itself must be closed so that they are dust and water proof. Secure keys for test mode without output elements. Assure yourself of the flawless operability prior to starting up low-voltage machines.

Observe the notes in the "Electrical Installation" chapter.

2.9 **Startup/operation**

Whenever changes to normal operation occur, such as increased temperatures, noise, vibrations, etc., try to determine the cause. Consult the manufacturer if required. Never deactivate protection devices, even in test mode. Switch off the motor in case of doubt.

Regularly clean air ducts in dusty or dirty environments.
3 Motor Structure

**INFORMATION**
The following figures are block diagrams. They help you assign components to the spare parts list. Deviations are possible depending on the motor size and version.

### 3.1 Basic structure of the motors

The following figure illustrates the structure of a DR63/eDR.63 motor:
The following figure illustrates the structure of the DVE250/280 motor:

1 Rotor, complete
3 Key
7 Flanged endshield
9 Screw plug
11 Grooved ball bearing
16 Stator, complete
30 Oil seal
32 Retaining ring
35 Fan guard
36 Fan
42 B-side endshield
44 Grooved ball bearing
105 Spring washer
108 Nameplate
111 Gasket
127 Grounding terminal
128 Grounding terminal
129 Screw plug
134 Screw plug
160 Gasket
262 Terminal
615 Terminal
616 Terminal
1213 Terminal board, complete
3.2 Nameplate, type designation

3.2.1 Nameplate

The following figure shows an example nameplate of a DVE motor in category 3GD:

![Nameplate Example]

The marks on the upper edge of the nameplate are only present when the motor has been certified accordingly or when it includes the relevant components.

3.2.2 Type designations

The following diagram shows a type designation example:

- Motor protection option:
  - TF temperature sensor
  - Temperature detection KY

- Category for explosion protection:
  - 2G, 2GD, 3D, or 3GD

- Number of poles:
  - 4, 6

- Motor frame length:
  - S: short
  - M: medium
  - L: long

- Motor size:
  - 63, 250, 280

- Motor series with code letter:
  - E: Energy efficient motor variant IE2 (DVE250/280)

- Code letter for category 2:
  - eDR63
3.3 Accessory equipment

3.3.1 AC motor series

The following table shows the types of AC motors:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>eDR.., DR..</td>
<td>/2G, /2GD, /3D, /3GD</td>
<td>ATEX motor</td>
</tr>
<tr>
<td>DVE.. 63, 250, 280</td>
<td></td>
<td>ATEX energy-efficient motor, High Efficiency IE2</td>
</tr>
<tr>
<td>S – L</td>
<td></td>
<td>Motor sizes</td>
</tr>
<tr>
<td>4, 6</td>
<td></td>
<td>Lengths: S = short / M = medium / L = long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC = Rotors with copper cage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of poles</td>
</tr>
</tbody>
</table>

3.3.2 Mechanical attachments

The following table shows possible mechanical additions:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>/RS</td>
<td>/3GD</td>
<td>Backstop (line-powered only)</td>
</tr>
</tbody>
</table>

3.3.3 Temperature sensor / temperature detection

The following table shows the thermal protection options:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>/TF</td>
<td>/2G, /2GD, /3D, /3GD</td>
<td>Temperature sensor (PTC resistor)</td>
</tr>
<tr>
<td>/KY</td>
<td></td>
<td>One KTY84 – 130 sensor</td>
</tr>
</tbody>
</table>

3.3.4 Connection

The following table shows the connection variants:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Included in the scope of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>/VE</td>
<td>/3D, /3GD</td>
<td>Cage clamp (DT14): eDR63, DR63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Terminal board (DT13): DVE250/280</td>
</tr>
</tbody>
</table>

3.3.5 Ventilation

The following table shows possible ventilation variants:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>/VE</td>
<td>/3D, /3GD</td>
<td>Forced cooling fan for motors according to 94/9/EC, category 3 (gas / dust): DVE250/280</td>
</tr>
<tr>
<td>/AL</td>
<td>/2G, /2GD, /3D, /3GD</td>
<td>Metal fan: eDR63, DR63</td>
</tr>
<tr>
<td>/C</td>
<td>/3D, /3GD</td>
<td>Protection canopy for the fan guard</td>
</tr>
</tbody>
</table>
3.3.6 Explosion-proof motors

The following table shows the possible explosion protection categories:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>/II2G</td>
<td>Motors according to Directive 94/9/EC, category 2 (gas)</td>
</tr>
<tr>
<td>/II2GD</td>
<td>Motors according to Directive 94/9/EC, category 2 (gas/dust)</td>
</tr>
<tr>
<td>/II3D</td>
<td>Motors according to Directive 94/9/EC, category 3 (dust)</td>
</tr>
<tr>
<td>/II3GD</td>
<td>Motors according to Directive 94/9/EC, category 3 (gas/dust)</td>
</tr>
</tbody>
</table>

3.3.7 Other additional features

The following table shows an additional feature:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Category</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>/2W</td>
<td>/2G, /2GD, /3D, /3GD</td>
<td>Second shaft end on the motor</td>
</tr>
</tbody>
</table>
4 Mechanical Installation

4.1 Before you start

NOTICE

The mounting position for installation must correspond with the specifications on the nameplate.

Install the drive only if the following conditions are met:

- The data on the nameplate of the drive corresponds with the voltage supply system or with the output voltage of the frequency inverter
- The drive is undamaged (no damage caused by transport or storage)
- All transport locks have been removed.
- You are certain that the following requirements have been met:
  - Ambient temperature between -20 °C and +40 °C.
  - No oils, acids, gases, vapors, dusts, radiations, etc.
  - Max. installation altitude 1000 m above sea level.

The above mentioned information refers to standard orders. The conditions might be different when you order drives other than the standard. Refer to the order confirmation for differing conditions.
4.2 **Extended storage of motors**

- Note that the service life of the lubricant in the ball bearings is reduced by 10% per year after the first year of storage.
- Before startup, you should re-lubricate the lubrication devices on motors that have been in storage for longer than 5 years. Observe the information on the motor lubricant plate.
- Check whether the motor has absorbed moisture as a result of being stored for a long time. Measure the insulation resistance for this purpose (measuring voltage 500 V). The insulation resistance (see following figure) varies greatly depending on the temperature. The motor must be dried if the insulation resistance is not adequate.

![Graph showing insulation resistance varying with temperature](image)

4.2.1 **Drying the motor**

Heat the motor
- with warm air, or
- using an isolation transformer
  - Connect the windings in series (see following figures)
  - Auxiliary AC voltage supply max. 10% of the rated voltage with max. 20% of the rated current

**Connection with wiring diagram R13:**

![Wiring diagram](image)

[1] Transformer
The drying process is finished when the minimum insulation resistance has been exceeded.

In the terminal box, make sure that:
- The inside is clean and dry
- The connections and fixing parts are free from corrosion
- The gasket and sealing surfaces are in good condition
- The cable glands are tight, otherwise clean or replace them

### 4.3 Motor installation notes

**⚠️ CAUTION**

Sharp edges due to open keyway.

Minor injuries.
- Insert key in keyway.
- Pull protective sleeve over shaft.

**⚠️ CAUTION**

Improper mounting may result in damage to the motor.

Possible damage to property
- Observe the following notes.

**NOTICE**

The mounting position for installation must correspond with the specifications on the nameplate.

- Motor shaft ends must be thoroughly cleaned of anti-corrosion agents, contamination or similar (use a commercially available solvent). Do not allow the solvent to penetrate the bearings or shaft seals – this could damage the material.
- Mount the gearmotor only on a level, vibration-free and torsionally rigid support structure.
- Make sure the customer's counter-bearing is unobstructed and can move freely.
- Align the motor and the driven machine carefully in order to prevent the output shaft from being exposed to unacceptable strain. Observe the permitted overhung and axial forces.
- Do not jolt or hammer the shaft end.
• Make sure that there is sufficient clearance around the motor/brakemotor to provide for adequate cooling, and that the motor does not draw in warm air from other units. Observe the following minimum clearance:

<table>
<thead>
<tr>
<th>Motor type</th>
<th>h in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>eDR63, DR63</td>
<td>15</td>
</tr>
<tr>
<td>DVE250</td>
<td>40</td>
</tr>
</tbody>
</table>

• Balance components for subsequent mounting on the shaft with a half key (motor shafts are balanced with a half key).

• If you have used the hand lever of the self-reengaging manual brake release during startup, you must remove the lever again for regular operation. A bracket is provided for storing the lever on the outside of the motor housing.

**INFORMATION**

- If using belt pulleys:
  - Only use belts that do not build up an electrostatic charge.
  - Do not exceed the maximum permitted overhung load; for motors without gear units, see chapter "Overhung loads (page 51)".

- Motors in vertical mounting position (e.g. M4/V1) are equipped with a canopy /C as standard. On request, the motor can be delivered without canopy. In this case, you have to install a cover when you install the drive in the plant/machine in order to prevent objects from falling into the ventilation openings. Observe the requirements according to EN / IEC 60079-0 and EN / IEC 60079-7. This cover must not obstruct the cooling air supply.

4.3.1 Installation in damp locations or outdoors

- Use suitable cable glands for the incoming cable (use reducing adapters if necessary) according to the installation instructions.

- If possible, arrange the terminal box in such a way that the cable entries are pointing downwards.

- Seal the cable entry properly.

- Thoroughly clean the sealing surfaces of the terminal box and the terminal box cover prior to reassembly. Replace any brittle seals!

- If required, touch up the corrosion protection (especially at the eyebolts).

- Check the degree of protection.

- Protect the shaft against corrosion using a suitable anti-corrosion agent.
### 4.4 Installation tolerances

<table>
<thead>
<tr>
<th>Shaft end</th>
<th>Flanges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter tolerance according to EN 50347</td>
<td>Centering shoulder tolerance in accordance with EN 50347</td>
</tr>
<tr>
<td>• ISO j6 with Ø ≤ 28 mm</td>
<td>• ISO j6 with Ø ≤ 250 mm</td>
</tr>
<tr>
<td>• ISO k6 with Ø ≥ 38 mm up to ≤ 48 mm</td>
<td>• ISO h6 with Ø ≥ 300 mm</td>
</tr>
<tr>
<td>• ISO m6 at Ø ≥ 55 mm</td>
<td></td>
</tr>
<tr>
<td>• Center bore in accordance with DIN 332, shape DR.</td>
<td></td>
</tr>
</tbody>
</table>

### 4.5 Assembling the input elements

Input elements that are mounted on the motor shaft end, e.g. pinions, must be warmed up prior to assembly in order to prevent damages to the encoder of stand-alone motors.

### 4.6 Turning the terminal box

#### 4.6.1 Terminal box with terminal board and anti-twist frame

The following figure shows a terminal box with anti-twist frame:

- K1M6 / K1M8 in with aluminum or gray cast design
- K1M12S made of gray cast

![Terminal box diagram](27021600583288587)
The type and number of terminal strips varies with the terminal box design and the options.

Proceed as follows to turn the terminal box:

1. Loosen the screws [123] from the terminal box cover and remove the cover.
2. Remove the retaining screws [119] of the terminal box.
3. Clean the sealing surfaces at the stator shoulder, the bottom and the cover of the terminal box.
4. Check the gaskets [111 and 131] for damages and replace them if necessary.
5. Remove the unit consisting of terminal board and anti-twist frame from the terminal box.
   Remove any cables that are already connected before taking out the unit.
6. Position the terminal box as desired.
7. Turn the unit consisting of terminal board and anti-twist frame in the same way as the terminal box and put it back in.
   The terminal board designations U1, V1 and W1 must be pointing towards the cable outputs afterwards.
8. Fasten the bottom part of the terminal box with the screws [119] and the lock washers with one of the following tightening torques:
   - **EDR.71 – 132**: 5 Nm [44.3 lb-in]
   - **EDR.160 – 225**: 25.5 Nm [225.7 lb-in]
9. Re-connect any removed cables according to the following table:

<table>
<thead>
<tr>
<th>Color</th>
<th>White</th>
<th>Brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1/T1</td>
<td>V1/T2</td>
<td>W1/T3</td>
</tr>
<tr>
<td>U2/T5</td>
<td>V2/T6</td>
<td></td>
</tr>
<tr>
<td>U2/T5</td>
<td>V2/T6</td>
<td></td>
</tr>
</tbody>
</table>

   Tighten the nuts on the connection bolts with the appropriate tightening torque.

**INFORMATION**

The connected cables must be free from bends and twists, etc.

Observe the correct order of the small connection accessories, see chapter "Motor connection via terminal board".

10. Fasten the terminal box cover with the screws [123] and lock washers using the appropriate tightening torque. Make sure the gasket is seated properly.
4.6.2 Tightening torques

The following table shows all the tightening torques required for this procedure:

<table>
<thead>
<tr>
<th>Key number</th>
<th>Screw</th>
<th>Applies to</th>
<th>Tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M6 stud</td>
<td>3 Nm 26.6 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M8 stud</td>
<td>6 Nm 53.1 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M12 stud</td>
<td>15.5 Nm 137.2 lb-in</td>
</tr>
<tr>
<td>[61]</td>
<td>Pan head screw option terminal</td>
<td>EDR.71 – 225</td>
<td>1.8 Nm 16.0 lb-in</td>
</tr>
<tr>
<td>[113]</td>
<td>Pan head screw DIN rail connection</td>
<td>EDR.71 – 132</td>
<td>5 Nm 44.3 lb-in</td>
</tr>
<tr>
<td>[117]</td>
<td>Hexagon screw grounding inside</td>
<td>EDR.71 – 132</td>
<td>4 Nm 35.4 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.160</td>
<td>25.5 Nm 225.7 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.180 – 225 (aluminum design)</td>
<td>25.5 Nm 225.7 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.180 – 225 (gray-cast iron design)</td>
<td>50 Nm 442.5 lb-in</td>
</tr>
<tr>
<td>[119]</td>
<td>Pan head screw of terminal box</td>
<td>EDR.71 – 132</td>
<td>5 Nm 44.3 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.160 – 225</td>
<td>25.5 Nm 225.7 lb-in</td>
</tr>
<tr>
<td>[123]</td>
<td>Hexagon screw terminal box cover</td>
<td>EDR.71 – 132</td>
<td>4 Nm 35.4 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.160</td>
<td>10.3 Nm 91.2 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.180 – 225 (aluminum design)</td>
<td>10.3 Nm 91.2 lb-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDR.180 – 225 (gray-cast iron design)</td>
<td>25.5 Nm 225.7 lb-in</td>
</tr>
<tr>
<td>[140]</td>
<td>Hexagon screw grounding outside</td>
<td>EDR.71 – 225</td>
<td>4 Nm 35.4 lb-in</td>
</tr>
<tr>
<td>[a1]</td>
<td>Screw of option terminal / rectifier</td>
<td>EDR.71 – 225</td>
<td>1.8 Nm 16.0 lb-in</td>
</tr>
<tr>
<td>[a2]</td>
<td>Flat head screw option terminal</td>
<td>EDR.71 – 225</td>
<td>1 Nm 8.9 lb-in</td>
</tr>
</tbody>
</table>

4.7 Painting

**NOTE ON EXPLOSION PROTECTION**

SEW-EURODRIVE delivers the drives with a painting that complies with the requirements for preventing electrostatic charging according to EN / IEC 60079-0. If you repaint the motors or gearmotors, observe the requirements for preventing electrostatic charging according to EN 60079-0.
5 Electrical Installation

**WARNING**
Danger of electric shock.
Severe or fatal injuries!
• Note the following:
  • Comply with the safety notes in chapter 2 during installation.
  • Use switch contacts in utilization category AC-3 according to EN 60947-4-1 for switching the motor.
  • When motors are powered by inverters, adhere to the wiring instructions issued by the inverter manufacturer.
  • Observe the operating instructions of the inverter.

5.1 Additional regulations

The generally applicable installation regulations for low-voltage electric equipment (such as DIN IEC 60364, DIN EN 50110) must be complied with when setting up electrical machinery.

5.2 Wiring diagrams and terminal assignment diagrams

Connect the motor only as shown in the wiring diagram(s) included with the motor. Do not connect or start up the motor if the wiring diagram is missing. You can obtain the valid wiring diagrams free of charge from SEW-EURODRIVE.

5.3 Checking cross sections

Check the cable cross sections based on the nominal motor current, the valid installation regulations and the requirements where the unit is installed.

5.4 Cable entries

The terminal boxes have metric threaded holes according to EN 50262 or NPT threaded holes according to ANSI B1.20.1-1983. All bores are equipped with explosion-proof closing plugs upon delivery.

For a correct cable entry, replace the closing plugs with cable glands with strain relief that are certified for use in the respective hazardous location. Select the cable screw fitting according to the outer diameter of the cable used. For the tightening torque of the cable entry, refer to the operating/installation instructions or the EC prototype test certificate of the cable glands. The IP degree of protection of the cable entry must be at least as high as the IP degree of protection of the motor.
5 Electrical Installation

5.5 Equipotential bonding

In accordance with EN 60079-14 and IEC 61241-14, it might be necessary to establish a connection to an equipotential bonding system. Observe the chapter "Electrical Installation" / "Improving the grounding (EMC)".

5.6 Wiring notes

Adhere to the safety notes during installation.

5.6.1 Protecting the motor protection devices against interference

Adhere to the following points to protect SEW motor protection devices (TF temperature sensors) against interference:

- You may route separately shielded supply cables together with switched-mode power lines in one cable.
- Do not route unshielded supply cables together with switched-mode power lines in one cable.
5.7 **Special aspects for operation with frequency inverter**

When motors are powered from inverters, you must observe the wiring instructions issued by the inverter manufacturer. It is essential that you observe chapter "Operating modes and limit values" as well as the operating instructions of the frequency inverter.

5.8 **Improving the grounding (EMC)**

For improved low-impedance grounding at high frequencies, we recommend using the following connections with DR/DV(E) AC motors:

- DVE250 and 280: M16 screw and 2 serrated lock washers in the bore of the eyebolt

5.9 **Special aspects in switching operation**

When the motors are used in switching operation, possible interference of the switchgear must be excluded by ensuring suitable wiring. According to IEC 60204 (electrical equipment of machines), motor windings must have interference suppression to protect the numerical or programmable logic controllers. As it is primarily switching operations that cause interference, SEW-EURODRIVE recommends installing protective circuitry in the switching devices.
5.10 Ambient conditions during operation

5.10.1 Ambient temperature

The temperature range of -20 °C to +40 °C must be ensured unless specified otherwise on the nameplate.

Motors intended for use in higher or lower ambient temperatures have specific designations on the nameplate.

If the motors are used at ambient temperatures above +40 °C (max. +60 °C), the cables and cable glands must be suited for temperatures ≥ 90 °C.

5.10.2 Motor power depending on the installation altitude

The following diagram shows the factor $f_H$ by which the motor power is reduced as a function of the installation altitude.

The reduction is calculated as follows: $P_H = f_H \times P_N$

The current is calculated as follows: $I_H = f_H \times I_N$

5.10.3 Hazardous radiation

The motors must not be subjected to hazardous radiation, such as ionizing radiation. Consult SEW-EURODRIVE if necessary.

5.10.4 Harmful gas, vapor and dust

If used according to their designated use, explosion-proof motors are incapable of igniting explosive gases, vapors or dusts. However, explosion-proof motors may not be subjected to gases, vapors or dusts that endanger operational safety, for example through

- Corrosion
- Damage to the protective coating
- Damage to the sealing material, etc.

Selecting gaskets

If the motor is operated in environments with high environmental impact, such as increased ozone values, you can equip it with high-quality gaskets. If you have doubts regarding the stability of the gaskets in connection with the respective environmental impacts, consult SEW-EURODRIVE.
5.11 Notes regarding the connection of the motor

**INFORMATION**
It is essential to comply with the valid wiring diagram. Do not connect or start up the motor if this wiring diagram is missing. The relevant wiring diagrams are available from SEW-EURODRIVE free of charge.

**INFORMATION**
The terminal box must be free from foreign objects, dirt and humidity. Unused cable entry openings and the terminal box itself must be closed so they are dust and waterproof.

Observe the following points when you connect the motor:

- Check cable cross section
- Arrange terminal links correctly
- Screw on the connections and the PE conductor correctly
- Make sure that the connection cables are not cramped in to avoid damage to the insulation.
- Observe clearances
- In the terminal box: Check winding connections and tighten them if necessary
- Perform the connection in accordance with the enclosed wiring diagram
- Avoid protruding wire ends
- Observe the specified direction of rotation

5.12 Connecting category 2G and 2GD motors

You can obtain the following wiring diagrams from SEW-EURODRIVE by specifying the order number of the motor (see chapter "Nameplate" in the corresponding detailed operating instructions):

<table>
<thead>
<tr>
<th>Series</th>
<th>Number of poles</th>
<th>Associated wiring diagram (designation/number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>eDR63</td>
<td>4</td>
<td>DT14 / 08 857 X 03</td>
</tr>
</tbody>
</table>
5.12.1 Motor connection

*Cage clamp*

With motors of size 63, the supply cables must be secured in the spring clamp terminal strip according to the wiring diagram. Connect the protective earth to the protective conductor connection so that the cable lug and housing material are separated by a washer:

<table>
<thead>
<tr>
<th>Connection</th>
<th>PE connection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram 1" /></td>
<td><img src="image2.png" alt="Diagram 2" /></td>
</tr>
</tbody>
</table>

5.13 Connecting category 3G and 3GD motors

You can obtain the following wiring diagrams from SEW-EURODRIVE by specifying the order number of the motor (see chapter "Nameplate" in the corresponding detailed operating instructions):

<table>
<thead>
<tr>
<th>Series</th>
<th>Number of poles</th>
<th>Connection</th>
<th>Associated wiring diagram (designation/number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR63</td>
<td>4, 6</td>
<td><img src="image3.png" alt="Diagram 3" /></td>
<td>DT14 / 08 857 X 03</td>
</tr>
<tr>
<td>DVE250/280</td>
<td>4</td>
<td><img src="image4.png" alt="Diagram 4" /></td>
<td>DT13 / 08 798 X 06</td>
</tr>
</tbody>
</table>

5.13.1 Motor connection

The motors are supplied and connected differently depending on the size and electrical design. Comply with the connection type specified in the following table.

<table>
<thead>
<tr>
<th>Series</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR63</td>
<td>Motor connection via cage clamp</td>
</tr>
<tr>
<td>DVE250/280</td>
<td>Motor connection via terminal board</td>
</tr>
</tbody>
</table>

Observe the permitted air and creeping distances when connecting the supply system cable.
Connecting category 3G and 3GD motors

**Size 63 – Cage clamp**

With motors of size 63, the supply cables must be secured in the spring clamp terminal strip according to the wiring diagram. Connect the protective earth to the protective conductor connection so that the cable lug and housing material are separated by a washer:

<table>
<thead>
<tr>
<th>△ connection</th>
<th>⚪ connection</th>
<th>PE connection</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image 1" /></td>
<td><img src="image2.png" alt="Image 2" /></td>
<td><img src="image3.png" alt="Image 3" /></td>
</tr>
</tbody>
</table>

**Size 250/280 – Terminal board**

- Perform the connection in accordance with the enclosed wiring diagram
- Check cable cross section
- Arrange terminal links correctly
- Screw on the connections and the PE conductor correctly
- In the terminal box: Check winding connections and tighten them if necessary

**Arrangement of terminal links for ⚪ connection**

![Image 4](image4.png)
Connecting category 3G and 3GD motors

Arrangement of terminal links for \( \triangle \) connection

Motor size DVE250/280:

Motor connection terminal box

The motors are supplied and connected in different ways depending on the electrical design. Arrange the terminal links as shown in the wiring diagram and screw them on firmly. Observe the tightening torques specified in the following tables.

The variants in bold print apply to duty type S1 for the standard voltages and standard frequencies according to the data in the catalog. Other variants may have different connections, for example, different terminal stud diameters and/or a different scope of delivery. The variants are explained in more detail on the following pages.

---

<table>
<thead>
<tr>
<th>Terminal stud</th>
<th>Tightening torque of hex nut</th>
<th>Customer connection</th>
<th>Design</th>
<th>Connection type</th>
<th>Scope of delivery</th>
<th>PE Terminal stud Ø</th>
<th>Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10</td>
<td>10 Nm</td>
<td>( \leq 95 \text{ mm}^2 )</td>
<td>3</td>
<td>Ring cable lug</td>
<td>Small connection accessories enclosed in bag</td>
<td>M10</td>
<td>5</td>
</tr>
<tr>
<td>M12</td>
<td>15.5 Nm</td>
<td>( \leq 95 \text{ mm}^2 )</td>
<td>3</td>
<td>Ring cable lug</td>
<td>Premounted connection pieces</td>
<td>M10</td>
<td>5</td>
</tr>
</tbody>
</table>
5.14 Motors of category 2G, 2GD, 3D and 3GD

5.14.1 General information

The explosion-proof SEW-EURODRIVE motors are designed for use in the following zones:

<table>
<thead>
<tr>
<th>Motor category</th>
<th>Area of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2G</td>
<td>Use in zone 1 and compliance with the design requirements for equipment group II, category 2G.</td>
</tr>
<tr>
<td>2GD</td>
<td>Use in zone 1 or 21 and compliance with the design requirements for equipment group II, category 2GD.</td>
</tr>
<tr>
<td>3D</td>
<td>Use in zone 22 and compliance with the design requirements for equipment group II, category 3D.</td>
</tr>
<tr>
<td>3GD</td>
<td>Use in zone 2 or 22 and compliance with the design requirements for equipment group II, category 3GD.</td>
</tr>
</tbody>
</table>

5.14.2 Special designation "X"

If the special indication "X" appears after the certification number on the declaration of conformity or the prototype test certificate, the certificate contains special conditions for safe use of the motors.

[1] Hex nut
[3] PE conductor with cable lug
[4] Serrated lock washer
[5] Stud
[6] Terminal box
5.14.3 Temperature classes

The motors are authorized for temperature classes T3 or T4.

The temperature class of the motor variants 3D and 3GD is listed on the nameplate or in the declaration of conformity in the appendix.

The temperature class of the motor variants 2G and 2GD is listed in the type examination certificate that is enclosed with each motor.

5.14.4 Surface temperature

For the surface temperature of the motor, refer to the nameplate, the declaration of conformity, or the type examination certificate.

5.14.5 Protection against impermissibly high surface temperatures

Motors for hazardous locations ensure safe operation under normal operating conditions. The motor must be switched off securely in the case of overload to avoid the risk of impermissibly high surface temperatures.

Motor protection must be in accordance with the respective approvals. There are 2 basic motor protection types. The respective options can be added if available:

<table>
<thead>
<tr>
<th>Motor protection types</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Motor current circuit breaker</td>
<td>TF</td>
</tr>
<tr>
<td>B: Positive temperature coefficient thermistor (PTC resistor: SEW designation: TF)</td>
<td></td>
</tr>
</tbody>
</table>
The following table shows the type of motor protection required according to the respective approval:

<table>
<thead>
<tr>
<th>Category</th>
<th>2 (2GD / Gb Db or 2G / Gb)</th>
<th>3 (3GD / Gc Dc or 3G / Dc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation:</td>
<td>Supply system</td>
<td>Frequency inverter</td>
</tr>
<tr>
<td>Designation (see nameplate):</td>
<td>$T_e$ time</td>
<td>$T_e$ time</td>
</tr>
<tr>
<td>Motor protection via</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>

For permitted operating modes depending on the motor protection, see chapter “Permitted operating modes”. SEW-EURODRIVE equips brakemotors in category 3D and 3GD with positive coefficient thermistors (TF).

5.14.6 Protection exclusively with motor protection switch

Note the following when installing the motor protection switch according to EN 60947:

- **For categories 2G and 2GD**: With starting current ratio $I_a/I_N$ listed on the nameplate, the response time of the motor protection switch must be less than the heating time $t_E$ of the motor.
- The motor protection switch must disconnect all poles in the event of a phase failure.
- The motor protection switch must be approved by a notified body and assigned a corresponding inspection number.
- The motor protection switch must be set to the rated motor current indicated on the nameplate. With category 2G and 2GD, the permitted nominal motor current is specified on the prototype test certificate.

5.14.7 Protection exclusively with PTC temperature sensors (TF)

The positive coefficient thermistor must be evaluated using a suitable device. Observe the applicable installation regulations.

⚠️ CAUTION

Damage to the temperature sensor due to excessive voltage.

Possible destruction of the temperature sensor.
- Do not apply any voltages > 30 V

The PTC thermistors comply with DIN 44082.

Resistance measurement (measuring instrument with $V \leq 2.5 \text{ V}$ or $I < 1 \text{ mA}$):
- Standard measured values: $20 \text{ – } 500 \Omega$, thermal resistance $> 4000 \Omega$

The PTC thermistor (TF) is required in order to maintain a safe isolation and for thermal monitoring.

The evaluation function of the temperature monitoring must be activated in connection with the temperature sensor measuring circuit and must become effective in the event of an overtemperature.
5.14.8 Protection with motor protection switch and additional PTC thermistor

The conditions stated for exclusive protection with motor protection switches also apply here. Protection with positive temperature coefficient thermistors (TF) only represents a supplementary protection measure which is irrelevant to certification for potentially explosive atmospheres.

**INFORMATION**

Check during startup whether a trip of the protection device shuts down the drive properly.

5.15 Accessory equipment

Connect accessory equipment as shown in the wiring diagram(s) provided with the motor. If the wiring diagram is missing, do not connect or start up any accessory equipment. The applicable wiring diagrams are available from SEW-EURODRIVE free of charge.

The following optional equipment is used depending on the category, see the following table:

<table>
<thead>
<tr>
<th>Optional equipment</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature sensor /TF</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Forced cooling fan /VE</td>
<td>–</td>
<td>x</td>
</tr>
</tbody>
</table>

5.15.1 Temperature sensor /TF

**NOTICE**

Damage of the temperature sensor due to excessive heat.
The drive system might be damaged.
- Do not apply voltages > 30 V to the TF temperature sensor.

The PTC thermistors comply with DIN 44082.
Resistance measurement (measuring instrument with V ≤ 2.5 V or I < 1 mA):
- Standard measured values: 20 – 500 Ω, thermal resistance > 4000 Ω

When using the temperature sensor for thermal monitoring, the evaluation function must be activated to maintain reliable isolation of the temperature sensor circuit. If the temperature reaches an excessive level, a thermal protection function must be triggered immediately.

If there is a 2nd terminal box for the TF temperature sensor, you must connect the temperature sensor in that terminal box.

Observe the provided wiring diagram for the connection of the TF temperature sensor.
If the wiring diagram is missing, you can obtain it from SEW-EURODRIVE free of charge.

**INFORMATION**

The temperature sensor TF may not be subjected to voltages > 30 V.
Below figure shows the characteristic curve of the TF with reference to the rated response temperature (referred to as $T_{NF}$).

5.15.2 Forced cooling fan /VE

Motors in category II3D and II3GD can be equipped with a forced cooling fan as an option. For notes on connection and safe operation, refer to the operating instructions of the VE forced cooling fan.

V forced cooling fans must not be used with explosion-proof EDR.. AC motors.

5.15.3 Anti-condensation heating for motors in category II3D

An anti-condensation heating is required when the explosion-proof motors are operated at temperatures below -20 °C.

Anti-condensation heating is optional for applications above -20 °C where moisture condensation is expected.

When connecting the anti-condensation heating, observe the permitted supply voltage for the strip heater according to the motor nameplate as well as the wiring diagram of the motor.

Do not energize the strip heater as long as the motor is switched on.
6. Duty Types and Limit Values

6.1 Permitted duty types

<table>
<thead>
<tr>
<th>Motor type and equipment category</th>
<th>Protection against impermissibly high temperatures exclusively through</th>
<th>Permitted duty type</th>
</tr>
</thead>
<tbody>
<tr>
<td>eDR63 II2G</td>
<td>Motor protection switch</td>
<td>• S1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heavy starting not possible&lt;sup&gt;1)&lt;/sup&gt;</td>
</tr>
<tr>
<td>II2D</td>
<td>Motor protection switch and PTC thermistor temperature sensor (TF)</td>
<td>• S1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heavy starting not possible&lt;sup&gt;1)&lt;/sup&gt;</td>
</tr>
<tr>
<td>II2GD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR63 DVE250/280 II3GD/II3D</td>
<td>Motor protection switch</td>
<td>• S1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heavy starting not possible&lt;sup&gt;1)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>PTC thermistor (TF)</td>
<td>• S1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Heavy start&lt;sup&gt;1)&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Frequency inverter operation according to specifications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• with soft start units</td>
</tr>
</tbody>
</table>

<sup>1)</sup> Heavy starting is present when a motor protection switch that was properly selected and set for normal operating conditions trips during the acceleration time. This is usually the case when the acceleration time is > 1.7 x t<sub>E</sub> time.

6.1.1 Permitted voltage load for frequency inverter operation

Operating SEW motors on frequency inverters is permitted if the pulse voltages at the motor terminals indicated in the following figure are not exceeded.

![Graph showing permitted voltage load](image)

[A] Permitted pulse U<sub>LL</sub> in V
[B] Rise time in μs
[1] Permitted pulse voltage

**NOTE ON EXPLOSION PROTECTION**

The permitted maximum PE voltage of 1200 V must not be exceeded in IT system operation even in the event of an error.

**NOTE ON EXPLOSION PROTECTION**

If the permitted pulse voltage is exceeded, you have to provide for according measures to limit the pulse voltage. Consult the manufacturer of the frequency inverter.
Permitted duty types

Duty Types and Limit Values

Frequency inverters from SEW-EURODRIVE

When using frequency inverters from SEW-EURODRIVE at line voltages of up to 500 V, the maximally permitted limit values of the motors are met.

The maximum permitted motor cable length is 100 m.

A braking resistor and 4Q startup are mandatory. This prevents the DC link voltage from increasing to an unacceptable level in case of a fault in 1Q operation. External components, e.g. output choke, must not be used.

Regeneration

The regenerative power supply module of MOVIDRIVE® can be used with the necessary options without restrictions. The regenerative power supply unit prevents high DC link voltages and ensures that the limit values are not exceeded.

Frequency inverters from third party manufacturers

If the maximum permitted limit values cannot be met with frequency inverters from other manufacturers, you must take limiting measures. Consult the manufacturer of the frequency inverter.

IT network

In an IT system, an insulation fault between a phase and ground is tolerated. The ground connection of the motor could mean that the maximum permitted limit value for phase-to-ground of 1200 V is exceeded in regenerative operation. To prevent this effectively, you have to install suitable protection elements between the frequency inverter and the motor. Usually, sine filters are installed between frequency inverter and motor for this purpose. For detailed information about component selection and wiring, please contact the manufacturer of the frequency inverter.

INFORMATION

The maximum permitted rated motor voltage for frequency inverter operation is 500 V.
NOTES ON EXPLOSION PROTECTION

- It is not permitted to connect more than one motor to one frequency inverter.
- The voltage at the motor terminal board must be projected to prevent overheating.
- If the motor voltage is too low (undercompensation), slip increases, which causes higher temperatures in the rotor of the motor.
- If the mechanical load is the same, operation on a frequency inverter causes a more significant motor temperature rise due to the harmonic content in current and voltage.

6.2.1 Motors of category 2G and 2GD

NOTES ON EXPLOSION PROTECTION

- The frequency inverter can only be operated with motors that are permitted for this operating mode according to the EC prototype test certificate.
- Verification that the motor voltage matches the specifications of the EC prototype test certificate must be provided during startup.

The necessary information for this is listed on the nameplate.
6.3 **Safe operation of motors in category 3**

Project planning is the basic requirement for safe operation of explosion-proof motors. The following points have to be considered:

- Adhere to the thermal torque limit characteristic curve
- Observe the dynamic limit torque
- Observe the motor limit frequency
- Select the suitable frequency inverter
- Check the overhung and axial loads on the motor shaft of stand-alone motors
- Observe the maximum gear unit input speed, see \( n_{\text{emax}} \) on the nameplate
- Observe the maximum gear unit output torque, see \( M_{\text{amax}} \) on the nameplate

### 6.3.1 Maximum permitted torques

The thermal torque limit characteristic curve shows the permitted maximum torque for continuous operation.

The values may be exceeded for brief periods if the effective operating point lies below the thermal limit characteristic curve.

The maximum dynamic limit torque of motors of category 3 must not exceed 200% of \( M_N \).

#### Permitted frequencies

Observe the maximum frequencies listed in the assignment tables for the motor/frequency inverter combinations. These values must not be exceeded.

#### Frequency inverter selection

Base your selection of the appropriate frequency inverter on the table in chapter "Motor/inverter assignment": MOVIDRIVE® and MOVITRAC®.

### 6.3.2 Motor/inverter assignment: MOVIDRIVE® and MOVITRAC®

<table>
<thead>
<tr>
<th>Motor type</th>
<th>( P_f ) [kW]</th>
<th>( n_{\text{max}} ) [rpm]</th>
<th>( P_f ) [kW]</th>
<th>( n_{\text{max}} ) [rpm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR63S4</td>
<td>0.251)</td>
<td>2100</td>
<td>0.251)</td>
<td>3600</td>
</tr>
<tr>
<td>DR63M4</td>
<td>0.251)</td>
<td>2100</td>
<td>0.251)</td>
<td>3600</td>
</tr>
<tr>
<td>DR63L4</td>
<td>0.251)</td>
<td>2100</td>
<td>0.371)</td>
<td>3600</td>
</tr>
<tr>
<td>DVE250M4</td>
<td>55</td>
<td>2100</td>
<td>(90)2)</td>
<td>(110)3)</td>
</tr>
<tr>
<td>DVE280S4</td>
<td>75</td>
<td>2100</td>
<td>(110)2)</td>
<td>2500</td>
</tr>
</tbody>
</table>

1) Only MOVITRAC® B
2) Values in brackets: optional
3) Only MOVIDRIVE® B
6.3.3 Thermal limit characteristic curves – category 3GD

Thermal limit characteristic curve for inverter operation of 4-pole AC motors and AC brakemotors in \( \triangle \) connection:

![Graph 1](image1)

- [1] 104 Hz limit characteristic curve
- [2] 87 Hz limit characteristic curve

Thermal limit characteristic curve for inverter operation of 4-pole AC motors and AC brakemotors in \( \wedge \) connection:

![Graph 2](image2)

- [1] 60 Hz limit characteristic curve
- [2] 50 Hz limit characteristic curve
6.3.4 Notes for safe operation

General information
Install the frequency inverter outside the potentially explosive atmosphere.

Thermal motor protection
Only motors that are equipped with a positive temperature coefficient thermistor (TF) are permitted for operation on a frequency inverter to ensure that the permitted limit temperature is not exceeded. The positive temperature coefficient thermistor has to be evaluated using an appropriate device.

Motors that are suitable for frequency inverter operation have an additional frequency inverter nameplate.

EMC measures
The following components are permitted for MOVIDRIVE® and MOVITRAC® frequency inverters:
- Line filters of the NF...-... series
- Output chokes of the HD... series
- Output filter (sine filter) HF..

If an output filter is used, the voltage drop at the filter must be taken into account.

Gear units
When parameterizing FI-controlled gearmotors, you have to observe the $n_{\text{emax}}$ and $M_{\text{amax}}$ values of the gear unit.

6.4 Soft-start units

Soft start units are permitted for motors of category 3 when the motors are equipped with a TF temperature sensor and meet the requirements of EN 60079-14. During startup, you must verify and document whether temperature monitoring is effective and whether the motor starts up correctly. The motor must be disconnected from the supply system when the protection device trips.
7 Startup

INFORMATION
• Only qualified personnel is allowed to start up and operate the motors observing the applicable accident prevention regulations and the information in these operating instructions.

WARNING
Danger of electric shock.
Severe or fatal injuries!
Observe the following notes.
• Use switch contacts in utilization category AC-3 according to EN 60947-4-1 for switching the motor.
• When motors are powered by inverters, you must adhere to the wiring instructions issued by the inverter manufacturer.
• Observe the operating instructions of the inverter.

CAUTION
The surface temperatures on the drive can be very high during operation.
Danger of burns.
• Let the motor cool down before you start your work.

NOTICE
Limit the maximum speed and current at the inverter. For information on the procedure, refer to the documentation of the inverter.

7.1 Before startup
Before startup, make sure that:
• The drive is undamaged and not blocked
• The measures described in chapter "Preliminary work" are performed after an extended storage period
• All connections have been made properly
• The direction of rotation of the motor/gearmotor is correct
  – (motor rotating clockwise: U, V, W to L1, L2, L3)
• All protective covers have been properly installed
• All motor protection equipment is active and set for the rated motor current
• The self-reengaging manual brake release is used for hoist drives
• There are no other sources of danger.
7.2 **During startup**

During startup, make sure that:

- The motor is running properly (no overload, no speed fluctuations, no loud noises, etc.)
- The proper braking torque is set according to the specific application (see chapter "Technical Data")

In case of problems, refer to the "Malfunctions" chapter for more information.

7.3 **Parameter setting: Frequency inverters for category 3 motors**

**INFORMATION**

When you start up the frequency inverter, observe the operating instructions of the respective frequency inverter as well as the operating instructions of the gear unit if you use a gearmotor.

### 7.3.1 Startup procedure for MOVITRAC® B

Observe the following points during startup:

- Use the MOVITOOLS® MotionStudio software, version 5.70 or higher, for a guided startup procedure.
- Startup and operation of the motors of category 3 is possible in parameter sets 1 and 2.
- The system configuration only allows for individual drives.
- You can set either "V/f" or "vector-controlled" for the control mode.
- For the application, you can only select speed control and hoist application. Do not use the options "DC braking" or "Flying start function".
- Always set the operating mode to "4-quadrant operation".
- Select the proper motor series in the "Motor type" window.
- In the "Motor selection" window, choose the device category, the line voltage, the motor voltage and the connection type in addition to the motor.

**Current limit**

In guided startup, the *Current limit* parameter is set to 150% $I_{N\text{Mot}}$ in the application window. This value must be reduced according to the permitted maximum output torque at the gear unit $M_{\text{max}}$. 

---

**Operating Instructions – Explosion-Proof AC Motors DR63/eDR63, DVE250/280**
Parameter setting: Frequency inverters for category 3 motors

**Maximum speed**

The maximum motor speed must be limited in the "System limits" window. Observe the following when you set the parameter *maximum speed*:

- Maximum speed $\leq$ motor limit speed and
- Maximum speed $\leq$ maximum gear unit input speed $n_{\text{emax}}$ (see gear unit nameplate)

**Automatic adjustment**

The parameter *automatic adjustment* is activated via guided startup. Thus, the frequency inverter sets parameter $I_{xR \text{ value}}$ with each enable signal. A manual change is not permitted.

### 7.3.2 Startup procedure for MOVIDRIVE® B

Observe the following points during startup:

- Use the MOVITOOLS® MotionStudio software, version 5.70 or higher, for a guided startup procedure.
- Startup and operation of the motors of category 3 is possible in parameter sets 1 and 2.
- The first startup must always be a complete startup.
- The motor configuration only allows for individual drives. You can set either "V/f" or "vector-controlled" for the control mode.
- Select the proper motor series in the "Motor type" window.
- In the "SEW motor type 1" window, choose the device category, the nominal motor voltage, the nominal motor frequency and the line voltage in addition to the motor.
- For the application options, you can only select "speed control" and the "hoist" function. Do not use the options "DC braking" or "Flying start function".

**Current limit**

In guided startup, the *Current limit* parameter is set to $150 \% I_{N\text{Mot}}$ in parameter window 1. This value must be reduced according to the permitted maximum output torque at the gear unit $M_{\text{amax}}$.

**Maximum speed**

The maximum motor speed must be limited in parameter window 2. Observe the following when you set the parameter *maximum speed*:

- Maximum speed $\leq$ motor limit speed and
- Maximum speed $\leq$ maximum gear unit input speed $n_{\text{emax}}$ (see gear unit nameplate)

**Automatic adjustment**

The parameter *automatic adjustment* is activated via guided startup. Thus, the frequency inverter sets parameter $I_{xR \text{ value}}$ with each enable signal. A manual change is not permitted.

Always set the operating mode to "4-quadrant operation" (parameters P820/P821).
7.4 Changing the blocking direction for motors with backstop

7.4.1 Dimension "x" after installation

<table>
<thead>
<tr>
<th>Motor</th>
<th>Dimension &quot;x&quot; after installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV(E)250 - 280</td>
<td>13.5 mm</td>
</tr>
</tbody>
</table>
Startup
Changing the blocking direction for motors with backstop

Do not start up the motor in blocking direction (ensure proper connection of power supply with motor). Note the direction of rotation of the output shaft and the number of stages when mounting the motor on a gear unit. For inspection purposes, you can operate the backstop once in blocking direction with half the motor voltage.

⚠️ WARNING

Risk of crushing if the drive starts up unintentionally.
Severe or fatal injuries.
- Before starting work, isolate the motor and, if installed, the forced cooling fan from the power supply.
- Safeguard against accidental startup.
- Carefully observe the steps described below.

1. Remove the fan guard [1] and the fan [2]; remove the cap screws [3].
3. Remove the retaining ring [6] (not with DT71/80); additionally for DV(E)132M-160M: remove the shims [10].
4. Pull the driver [8] and sprags [9] completely off using the tapped holes [7], turn them by 180°, and press them back on.
5. Re-fill the grease.
6. **Important: Do not exert pressure on or hit the wedge element train – risk of damaging the material.**
7. While pressing them back on, shortly before the sprag penetrates the outer ring, slowly turn the rotor shaft by hand in the direction of rotation. Doing so lets the sprag move into the outer ring more easily.
8. Install the remaining parts of the backstop by following steps 4. to 2. in reverse order. Note the installation dimension "x" for the V-ring [4].
8 Inspection / Maintenance

⚠️ WARNING
Risk of crushing if the hoist falls or in the event of uncontrolled unit behavior.
Severe or fatal injuries.
- Secure or lower hoist drives (danger of falling)
- Safeguard and/or protect the driven machine against touching
- Before starting work, disconnect the motor and, if installed, the forced cooling fan from the power supply safeguarding them against unintentional re-start.
- Only use genuine spare parts in accordance with the valid spare parts list.

⚠️ CAUTION
The surfaces on the drive can be very hot during operation.
Danger of burns.
- Let the motor cool down before you start your work.

⚠️ CAUTION
For assembly, the ambient temperature and the oil seals themselves may not be colder than 0 °C, otherwise the oil seals might be damaged.

Only SEW service staff, repair workshops or plants that have the necessary expertise may repair or modify the motor.

Before re-startup of the motor, make sure that all regulations are complied with and document this with a label on the motor or a written test report.

Always perform safety and functional tests following all maintenance and repair work (thermal protection).

INFORMATION
Before mounting oil seals, apply grease to the lip of the oil seals, see chapter "Order information for lubricants and anti-corrosion agents" in the corresponding detailed operating instructions.
NOTES ON EXPLOSION PROTECTION

- Use only original spare parts from the relevant and valid spare parts lists; otherwise, the approval for hazardous locations of the motor will become void.

- The routine test must be repeated whenever motor parts relating to explosion protection are replaced.

- Make sure that the motor is assembled correctly and all openings have been sealed after service and maintenance work.

- Clean motors for hazardous locations regularly. Prevent dust from building up higher than 5 mm.

- Explosion protection is largely dependent on the IP enclosure. Therefore, always check that the seals are fitted correctly and in perfect condition when performing any work on the machine.

- Explosion protection can only be ensured if motors are serviced and maintained properly.

- If you repaint motors or gearmotors, observe the requirements for preventing electrostatic charging according to EN / IEC 60079-0, see chapter "Painting" in the corresponding detailed operating instructions.

8.1 Inspection and maintenance intervals

<table>
<thead>
<tr>
<th>Unit / part of unit</th>
<th>Time interval</th>
<th>What to do?</th>
</tr>
</thead>
</table>
| Motor               | Every 10,000 operating hours | Motor inspection:  
• Check rolling bearing and change if necessary  
• Replace oil seal  
• Clean the cooling air passages |
| Motor with backstop | Varies (depending on external factors) | Change the low-viscosity grease of the backstop |
| Drive               | Varies (depending on external factors) | Touch up or renew the surfaces/anticorrosion coating |
| Air ducts and surfaces of the motor and the forced cooling fan if applicable | Varies (depending on external factors) | Clean the air ducts and surfaces |
8.2 Change the adapter plate

The following figure shows the adapter plate:

![Diagram of adapter plate]

To prevent screws from loosening, secure the screws [3] that are used to attach the adapter plate [2] for size DR63/eDR63 motors using LOCTITE® or a similar substance.

8.3 Greasing the backstop

The backstop is greased at the factory with the corrosion protection low-viscosity grease Mobil LBZ. If you want to use another grease, make sure it complies with NLGI class 00/000 with a base oil viscosity of 42 mm²/s at 40 °C on a lithium saponified and mineral oil base. The application temperature range is -50 °C to +90 °C. See the following table for the amount of grease required.

<table>
<thead>
<tr>
<th>Motor type</th>
<th>250/280</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease [g]</td>
<td>80</td>
</tr>
</tbody>
</table>
8.4 Mounting a VE forced cooling fan

1. Before installing the forced cooling fan [1], check to see that the fan wheel and the fan motor are not damaged.

2. After installation, turn the fan wheel to make sure that the fan wheel does not rub in any place. The clearance between the fan wheel and fixed parts must be at least 1 mm.

INFORMATION
Observe the operating instructions of the forced cooling fan.
9 Technical Data

9.1 Maximum permitted overhung loads

The following table lists the permitted overhung loads (top value) and axial forces (bottom value) of explosion-proof AC motors:

<table>
<thead>
<tr>
<th>Mounting position</th>
<th>[rpm]</th>
<th>Number of poles</th>
<th>Permited overhung load FR [N]</th>
<th>Permited axial force FA [N]; FA_tensile force = FA_pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot-mounted motor</td>
<td>1500</td>
<td>4</td>
<td>-</td>
<td>8000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>2500</td>
</tr>
<tr>
<td>Flange-mounted motor</td>
<td>1000</td>
<td>6</td>
<td>600</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>150</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1500</td>
<td>4</td>
<td>500</td>
<td>9000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>110</td>
<td>2600</td>
</tr>
</tbody>
</table>

9.1.1 Overhung load conversion for off-center force application

The permitted overhung loads must be calculated using the following formulae in the event that force is not applied at the center of the shaft end. The smaller of the two values FR_L (according to bearing life) and FR_W (according to shaft strength) is the permitted value for the overhung load at point x. Note that the calculations apply to M_a_max:

FxL based on bearing service life

\[ F_{xL} = F_R \times \frac{a}{b + x} \text{ [N]} \]

FxW based on shaft strength

\[ F_{xW} = \frac{c}{f + x} \text{ [N]} \]

\[ F_R = \text{Permitted overhung load (x = l/2) [N]} \]

\[ x = \text{Distance from the shaft shoulder to the force application point [mm]} \]

\[ a, b, f = \text{Motor constants for overhung load conversion [mm]} \]

\[ c = \text{Motor constant for overhung load conversion [Nmm]} \]

Figure 1: Overhung load Fx for off-center force application
9.2 Permitted ball bearing types

9.2.1 Category 3

The following table shows the permitted types of ball bearings:

<table>
<thead>
<tr>
<th>Motor type</th>
<th>A-side bearing (AC motor)</th>
<th>B-side bearing (foot and flange-mounted motors, gearmotors)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gearmotor</td>
<td>Flange- and foot-mounted motor</td>
</tr>
<tr>
<td>DR63, eDR63</td>
<td>6303 2RS J C3</td>
<td>6203 2RS J C3</td>
</tr>
<tr>
<td>DVE250/280M</td>
<td>6316 2RS J C3</td>
<td></td>
</tr>
</tbody>
</table>

9.3 Tightening torques

The following table shows all the tightening torques required for this procedure:

<table>
<thead>
<tr>
<th>Key number</th>
<th>Screw</th>
<th>Applies to</th>
<th>Tightening torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>[113]</td>
<td>Pan head screw DIN rail connection</td>
<td>DR63/eDR63</td>
<td>3</td>
</tr>
<tr>
<td>[117]</td>
<td>Hexagon screw grounding inside</td>
<td>DR63/eDR63</td>
<td>3</td>
</tr>
<tr>
<td>[123]</td>
<td>Hexagon screw terminal box cover</td>
<td>DR63/eDR63</td>
<td>3.5</td>
</tr>
<tr>
<td>[140]</td>
<td>Hexagon screw grounding outside</td>
<td>DR63/eDR63</td>
<td>3.5</td>
</tr>
<tr>
<td>[119]</td>
<td>Hex head screw terminal box lower part</td>
<td>DVE250/280</td>
<td>55</td>
</tr>
<tr>
<td>[123]</td>
<td>Hex head screw terminal box upper part</td>
<td>DVE250/280</td>
<td>55</td>
</tr>
</tbody>
</table>
## 10 Malfunctions

### 10.1 Malfunctions of the motor

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor does not start up</td>
<td>Supply cable interrupted</td>
<td>Check connections, correct if necessary</td>
</tr>
<tr>
<td></td>
<td>Fuse blown</td>
<td>Replace fuse</td>
</tr>
<tr>
<td></td>
<td>Motor protection tripped</td>
<td>Check motor protection for correct setting, correct fault if necessary</td>
</tr>
<tr>
<td></td>
<td>Motor protection does not switch, controller error</td>
<td>Check motor protection control, correct error</td>
</tr>
<tr>
<td>Motor only starts with difficulty or does not start at all</td>
<td>Motor designed for delta connection but used in star connection</td>
<td>Correct the connection</td>
</tr>
<tr>
<td></td>
<td>Voltage or frequency differs considerably from the setpoint, at least when switching on the motor</td>
<td>Provide better power supply system; check cross section of supply cable</td>
</tr>
<tr>
<td>Motor does not start in star connection, only in delta connection</td>
<td>Star connection does not provide sufficient torque</td>
<td>Switch on directly if delta inrush current is not too great; else, use a larger motor or a special design (contact SEW-EURODRIVE)</td>
</tr>
<tr>
<td></td>
<td>Contact fault on star/delta switch</td>
<td>Correct the fault</td>
</tr>
<tr>
<td>Incorrect direction of rotation</td>
<td>Motor connected incorrectly</td>
<td>Swap two phases</td>
</tr>
<tr>
<td>Motor hums and has high current consumption</td>
<td>Winding defective</td>
<td>Send motor to specialist workshop for repair</td>
</tr>
<tr>
<td></td>
<td>Rotor rubbing</td>
<td></td>
</tr>
<tr>
<td>Fuses blow or motor protection trips immediately</td>
<td>Short circuit in the cable</td>
<td>Eliminate short circuit</td>
</tr>
<tr>
<td></td>
<td>Short circuit in the motor</td>
<td>Send motor to specialist workshop for repair</td>
</tr>
<tr>
<td></td>
<td>Cables connected incorrectly</td>
<td>Correct the connection</td>
</tr>
<tr>
<td></td>
<td>Ground fault on motor</td>
<td>Send motor to specialist workshop for repair</td>
</tr>
<tr>
<td>Severe speed loss under load</td>
<td>Overload</td>
<td>Measure the power, use larger motor or reduce load if necessary</td>
</tr>
<tr>
<td></td>
<td>Voltage drops</td>
<td>Increase cross section of incoming cable</td>
</tr>
<tr>
<td>Motor heats up excessively (measure temperature)</td>
<td>Overload</td>
<td>Measure the power, use larger motor or reduce load if necessary</td>
</tr>
<tr>
<td></td>
<td>Insufficient cooling</td>
<td>Correct cooling air supply or clear cooling air passages, retrofit forced cooling fan if necessary</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature too high</td>
<td>Observe permitted temperature range</td>
</tr>
<tr>
<td></td>
<td>Motor in delta connection instead of star connection as intended</td>
<td>Correct the connection</td>
</tr>
<tr>
<td></td>
<td>Loose contact in supply cable (one phase missing)</td>
<td>Tighten loose contact</td>
</tr>
<tr>
<td></td>
<td>Fuse blown</td>
<td>Look for and rectify cause (see above); replace fuse</td>
</tr>
<tr>
<td></td>
<td>Line voltage deviates from the rated motor voltage by more than 5%. A higher voltage has a particularly unfavorable effect in motors with a great number of poles since in these, the no-load current is already close to the rated current even when the voltage is normal.</td>
<td>Adjust motor to line voltage</td>
</tr>
<tr>
<td></td>
<td>Nominal duty cycle (S1 to S10, DIN 57530) exceeded, e.g. caused by excessive starting frequency</td>
<td>Adjust the nominal duty cycle of the motor to the required operating conditions; consult a professional to determine the proper drive, if necessary</td>
</tr>
<tr>
<td>Excessively loud</td>
<td>Ball bearing compressed, dirty or damaged</td>
<td>Re-align motor, inspect ball bearing (→ chapter “Permitted ball bearing types”), grease if necessary (→ chapter “Lubricant table for rolling bearings of SEW motors”), replace</td>
</tr>
<tr>
<td></td>
<td>Vibration of rotating parts</td>
<td>Rectify cause, possible imbalance</td>
</tr>
<tr>
<td></td>
<td>Foreign bodies in cooling air ducts</td>
<td>Clean cooling air ducts</td>
</tr>
</tbody>
</table>
10.2 Malfunctions during operation with a frequency inverter

The symptoms described in chapter "Motor malfunctions" can also occur when the motor is operated with a frequency inverter. Please refer to the frequency inverter operating instructions for the meaning of the problems that occur and to find information about rectifying the problems.

10.3 Customer service

10.3.1 Customer service

Have the following information available when you require the assistance of our customer service:

- Nameplate information (complete)
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Assumed cause
11 Declarations of Conformity

INFORMATION

The EC prototype test certificate is provided with the drive. The notified body as well as the technical details are listed in the provided EC prototype test certificate.
11.1 eDR.63 AC motors in category 2GD

EC Declaration of Conformity

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal

declares under sole responsibility that the

motor series: eDR3 / eDFR3

category: 2GD

labeling:
II2G Ex e IIA.. IIC T3 Gb
II2G Ex e IIA..IIC T4 Gb
II2D Ex tb III C T120°C Db

are in conformity with

ATEX Directive: 94/9/EC

Applied harmonized standards:
EN 60034-1:2004
EN 60079-0:2009
EN 60079-7:2007
EN 60079-31:2009

Bruchsal 07.03.13

Johann Soder
Managing Director Technology

a) Authorized representative for issuing this declaration on behalf of the manufacturer
b) Authorized representative for compiling the technical documents
11.2 **AC motors DR.63 in category 3GD**

**EC Declaration of Conformity**

**SEW-EURODRIVE GmbH & Co KG**  
Ernst-Blickle-Straße 42, D-76646 Bruchsal  
declares under sole responsibility that the

<table>
<thead>
<tr>
<th>motors of the series</th>
<th>DR63</th>
</tr>
</thead>
<tbody>
<tr>
<td>category</td>
<td>3GD</td>
</tr>
</tbody>
</table>
| labeling             | II3G Ex nA IIB T3 Gc  
|                      | II3G Ex nA IIC T3 Gc  
|                      | II3D Ex tc IIB T120°C Dc  
|                      | II3D Ex tc IIC T140°C Dc  
|                      | II3D Ex tc IIIC T120°C Dc  
|                      | II3D Ex tc IIIC T140°C Dc  |

are in conformity with

- **ATEX Directive**  
  1994/9/EC
- **Applied harmonized standards**  
  EN 60034-1:2004  
  EN 60079-0:2009  
  EN 60079-15:2010  
  EN 60079-31:2010

Bruchsal 11.07.11  
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a) Authorized representative for issuing this declaration on behalf of the manufacturer  
b) Authorized representative for compiling the technical documents

4112853387
11.3 AC motors DVE250/280 in category 3GD

EC Declaration of Conformity

SEW-EURODRIVE GmbH & Co KG
Ernst-Blickle-Straße 42, D-76646 Bruchsal
declares under sole responsibility that the
motors of the series DVE250 / DVE280

category 3G
3D
3GD

labeling IIC Ex nA II T3
IIID Ex iD A22 IP55, T120°C
IIID Ex iD A22 IP5, T140°C
IIID Ex iD A22 IP6, T120°C
IIID Ex iD A22 IP6, T140°C

are in conformity with
ATEX Directive 94/9/EC
Applied harmonized standards EN 60079-0:2009
EN 60079-15:2010
EN 60079-31:2009

Bruchsal 05.11.12
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b) Authorized representative for compiling the technical documents
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