

MB 122 Edition 02/10 US

Safety information for the operation of geared motors

(in accordance with the Low Voltage Directive 2006/95/EC)

General

This safety information applies in addition to the relevant product-specific operating instructions and for safety reasons must be taken into particular consideration in every case.

This safety information is intended to protect persons and objects from injury and hazards which can arise from improper use, incorrect operation, inadequate maintenance or other incorrect handling of electric drive units in industrial installations. Low-voltage machines have rotating parts and may have parts that are live, even when the machine is at rest, and surfaces that may become hot in operation. Warning signs and information signs on the machine are to be observed without exception. Details may be found in our detailed operating instructions. They are provided with the machine when it is supplied and can be requested separately as required by stating the motor model.

1 Personnel

All necessary work on electric drive units, in particular also planning work, transport, assembly, installation, commissioning, maintenance, repair, may only be performed by adequately qualified personnel (e.g. electrical engineers as specified in draft EN 50 110-1/DIN VDE 0105), who have the operating instructions provided and other product documentation available during any corresponding work and who are obliged to abide by the instructions contained therein. This work is to be monitored by a specialist supervisor. Qualified personnel are persons who are authorised due to training, experience and instruction as well as their knowledge of relevant standards, rules, accident prevention regulations and operating conditions by the person responsible for the safety of the installation to perform the activities required in each case and who are able to recognise and avoid possible hazard.

Knowledge of first-aid measures and of the available lifesaving equipment is also required.

Non-qualified personnel shall be forbidden to work on the geared motors.

2 Intended use taking into account the relevant technical regulations

These machines are intended for commercial installations, unless otherwise expressly agreed. They comply with the standards of the series EN 60034/DIN VDE 0530. Use in a potentially explosive atmosphere is forbidden, if not expressly intended for this purpose (refer to additional information). If in a special case --use in non-commercial installations-- Increased safety precautions are required (e.g. protection against access by children's fingers), these conditions are to be ensured when setting up the installation. The machines are designed for ambient temperatures between -20 °C to +40 °C as well as for installation heights up to 1000 m above sea level. Any deviations found on the rating plate must be taken into consideration. The conditions at the place of work must correspond to all rating plate data.

Low-voltage machines are components for installation in machines in the sense of the Machinery Directive 2006/42/EC.

It is forbidden to use the machine until conformity of the final product with this directive is established (consult EN 60204-01).

3 Transportation, storage

When the electric drive units are being transported, the eye bolts -- where provided in the design-- must be firmly tightened down their bearing surface. They may be used only for transporting the drive unit and not for lifting both the drive unit and the driven machine. Damage sustained after delivery must be reported to the haulage company immediately. Commissioning may have to be suspended.

If drive units are to be stored, ensure a dry, dust free and low vibration (veff < 0,2 mm/s) environment (damage sustained during storage). The life of the lubricants and seals is reduced with longer storage times.

There is a risk of fracture at very low temperatures (under approximately - 20 ° C). If the transport eye bolts are replaced, drop forged eye bolts as specified in DIN 580 are to be used.

4 Mounting arrangement, assembly

The drive unit is to be fastened by its flange or foot if an IM.. mounting arrangement is intended. Gear units with hollow shafts are to be attached on the driven shaft using the means provided.

Caution! Depending on the reduction ratio, geared motors develop substantially higher torques and forces than high-speed motors of similar power.

Mounts, substructure and torque restraint are to be rated for the high forces to be anticipated during operation and secured sufficiently against loosening. The output shaft(s) and any second motor shaft extension present as well as the transmission elements mounted on it (couplings, chain wheels etc.) are to be covered so that they cannot be touched.

5 Connection

All work shall only be carried out by qualified technical personnel on a stationary machine which has been protected against re-starting. This applies also to auxiliary circuits (e.g. stationary heating). Remove any transportation blocks before start-up.

Check to ensure safe isolation from the supply!

The terminal box may only be opened once it has been ensured that the power is switched off. The information on voltage and frequency on the rating plate must correspond with the mains voltage under observance of the terminal circuit.

Exceeding the tolerances as in EN 60034 / DIN VDE 0530, i.e. voltages $\pm 5\%$, frequency $\pm 2\%$, cam form, symmetry, increases heating and reduces service life.

Accompanying connection diagrams, particularly for special equipment (e.g. pole-changing, thermistor protection etc.), are to be observed. Type and cross-section of the main conductors as well the protective conductors and any potential equalization which may become necessary must correspond to the general and local installation regulations. With switching duty, the starting current is to be taken into account.

The drive unit is to be protected against overloading and in dangerous situations against automatic restarting due to inadvertent starting.

The terminal box is to be locked again to protect against contact with live components.

6 Commissioning

Before commissioning, protective films are to be removed, the mechanical connection to the driven machine disconnected as far as possible and the direction of rotation examined in the no-load state. Feather keys are to be removed or secured in such a way that they cannot be ejected as this is done. Ensure that the current draw in the loaded condition does not exceed the rated current indicated on the rating plate for any length of time. Observe the drive unit after first commissioning for at least one hour for any unusual heat or noise.

7 Operation

With certain layouts (e.g. unventilated machines), relatively high temperatures can occur on the motor frame, which are however within the limits specified in the standard. If these drive units are located in a place where they are subject to intensive contact, measures must be taken by the installer or operator to provide protective shielding.

8 Spring-loaded brakes

Spring-loaded brakes are safety brakes which continue to work in the event of power failure or usual wear. If a manual release bracket is provided, it is to be removed when operating. Since other components could also fail, suitable safety precautions are to be taken to avoid any injury to persons or damage to objects caused by un-braked operation.

9 Maintenance

In order to prevent breakdowns, danger and damage, the drive units must be examined at regular intervals depending on the operating conditions. The lubrication intervals for bearings and gear units specified in the respective operating instructions are to be observed. Worn or damaged parts are to be replaced using original spare parts or standard parts. In the event of heavy dust accumulation, clean airways regularly. For all inspection and maintenance work, observe Section 5 and the information provided in the detailed operating instructions.

10 Operating instructions

For reasons of clarity, the operating instructions and safety information do not contain all information relating to all geared motors types and cannot take into account every conceivable case of installation, operation or maintenance. The information is essentially limited to that which is required for qualified personnel in normal working situations. Any unclear points can be clarified by contacting Danfoss Bauer.

11 Faults

Changes in relation to normal operation, such as higher temperatures, vibrations, noises etc. tend to indicate that the function is impaired. To avoid faults which could lead directly or indirectly to injury to persons or damage to property, the maintenance staff responsible must be informed. If in any doubt, the geared motors are to be switched off immediately.

12 Electromagnetic compatibility

The operation of the low-voltage machine in its intended application must meet the protection requirements of the EMC (electromagnetic compatibility) Directive 2004/108/EC.

Correct installation (e.g. screened cables) is the responsibility of the system's installers. Precise information can be taken from the operation instructions. For systems with frequency inverters and rectifiers, the manufacturer's electromagnetic compatibility information is also to be taken into consideration. The electromagnetic compatibility directive in accordance with EN 61000-6-2 and EN 61000-6-4 is complied with given proper use and installation of BAUER geared motors. This is also true in combination with Danfoss frequency inverters and rectifiers. The additional information provided in the operation instructions is to be taken into consideration when using the motors in the residential, commercial and trade sectors, as well as in small businesses in accordance with EN 61000-6-1 and EN 61000-6-3.

13 Warranty and liability

The warranty obligations of Danfoss Bauer arise out of the relevant supply contract, which is neither expanded nor restricted by this safety information or other instructions.

This safety information is to be kept in a safe place.