

# Safety and commissioning instructions for low-voltage machinery

According to Low Voltage Directive 2014/35/EU



**Manufacturer:** Gefeg Neckar Antriebssysteme GmbH  
Industriestraße 25-27  
78559 Gosheim / Germany

**Product:** D-, Ds-, Dg-, K-, Es-, Eg-, KD-, MCN-, M-, MQ-, Pg/PN/G- and U-Motors  
Voltage range between 75Vdc to 1500Vdc or 50Vac to 1000Vac

## 1. General

Low-voltage machines have dangerous live and rotating parts and possibly hot surfaces. All operations serving transport, connection, commissioning and maintenance are to be carried out by skilled responsible technical personnel (in conformity with EN 50110-1/ VDE 0105; IEC 60364).



**Improper handling may cause serious personal injury and damage to property.**

## 2. Intended use

These low-voltage machines are intended for industrial and commercial installations. They comply with the harmonized series of standards **EN 60034 (VDE 0530)**. Their use in hazardous areas is prohibited unless they are expressly intended for such use (follow additional instructions).

The degrees of protection  $\leq$  IP 23 are by no means intended for outdoor use. Air-cooled models are rated for ambient temperatures of **- 15°C to + 40°C** and attitudes of  **$\leq$ 1000m** above sea level. Strictly observe different instructions on the rating plate. Conditions on site must conform to all rating plate markings.

Low-voltage machines are components for installation in machinery as defined in the Machinery Directive 2006/42/EG. Commissioning is prohibited until conformity of the end product with this directive has been established. (Follow i.a. EN 60204-1).

## 3. Transport, storage

Immediately report damage established after delivery to transport company. Stop commissioning, if necessary. Tighten screwed-in ring bolts before transport. They are designed for the weight of the low-voltage machine, do not apply extra loads. If necessary, use suitable, adequately dimensioned means of transport (e.g. rope guides). Remove shipping brace before commissioning. Reuse it for further transports. When low-voltage machines are stored, make sure of dry, dust-free, low-vibration ( $v_{\text{eff}} \leq 0,2\text{mm/s}$ ) environment (danger of bearing damage at rest). Before commissioning, measure insulation resistance. In case of values  $\leq 1\text{k}\Omega$  per volt of rated voltage, dry winding.

## 4. Installation

Make sure of even supporting surface, solid foot or flange mounting and exact alignment in case of direct coupling. Avoid resonances with rotational frequency and double mains frequency which may be caused by the assembly. Turn motor by hand, listen for abnormal slipping noises. Check direction of rotation in uncoupled state (mind. Section 5). Mount or remove belt pulleys and couplings only using appropriate means (heat!) and cover them with a touch guard. Avoid excessive belt tensions (technical list).

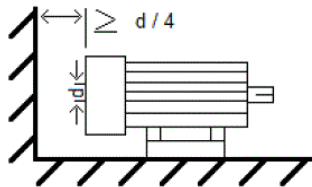
The balance of the low-voltage machine is indicated on the shaft end face or on the rating plate (H=half, F=full key). In case of half-key design, the coupling, too, must be half-keys balanced. Remove protruding, visible part of key. Make necessary ventilating pipe connections, if any. Models with shaft ends pointing upward are to be provided with a cover by the customer

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to prevent foreign objects from falling into the ventilator. The ventilation must not be obstructed and the exhaust air, also of neighbouring sets, must not be drawn in again directly.



d: fan-diameter

For cooling it is required, to choose the low-voltage-machine mounting position with distance to machine-construction with  $> \frac{1}{4}$  of fan-diameter.

Sample: fan-diameter 80mm = distance  $> 20$ mm.

## 5. Electrical connection

All operations may be carried out only by skilled technical personnel on the low-voltage-machine at rest and de-energized and provided with a safeguard to prevent reconnection. This also applies to auxiliary circuits (e.g. anti-condensation heating).



### Check safe isolation from supply!

Exceeding of the tolerances specified EN 60034-1 (VDE 0530, Part1), i.e. voltage  $\pm 2\%$ , waveform, symmetry, leads to elevated temperatures and affects the electromagnetic compatibility. Take account of rating plate markings and of connection diagram in terminal box.

Note circuit and differing data on the nameplate and the connection diagram in the terminal box.

The connection must be so made as to maintain a permanent safe electrical connection (no loose wire ends). Use appropriate cable terminals. Establish safe **protective conductor connection**.



Minimum clearances between uninsulated live parts and between such parts and earth must not be below the following values: 8 mm at  $U_N \leq 550V$ , 10 mm at  $U_N \leq 725V$ , 14 mm at  $U_N \leq 1000V$ .

No presence of foreign objects, dirt or moisture is admitted in the terminalbox. Close unused cable entrance holes and the box itself in a dust- and watertight manner. For trial run without output elements, lock key. For low-voltage machines with brakes, check satisfactory functioning of brake before commissioning.

## 6. Operation

Vibration severities of  $v_{eff} \leq 3,5$  mm/s ( $P_N \leq 15$  kW) or 4,5 mm/s ( $P_N > 15$  kW) are acceptable in coupled-mode operation. In case of deviations from normal operation – e.g. elevated temperatures, noises, vibrations – find cause or consult manufacturer, if necessary. Do not defeat protective devices, not even in a trial run. If in doubt, switch off low-voltage machine.

In case of heavy dirt deposits, clean air channels periodically.

Regrease bearings with relubricating device while the low-voltage machine is running. Use right kind of grease. Where grease exit holes are closed with plugs (IP 54 drive end, IP 23 drive and non-drive ends), remove plug before commissioning. Seal holes with grease. Replace prelubricated bearings (2-Z bearings) after abt. 10.000 hours (2-poles) or after 20.000 hours ( $>2$ -poles), but no later than after three to four years or according to the manufacturer's instructions.

The manufacturer reserves all rights for technical modifications.

Download the documents at: [www.gefeg-neckar.de/downloads](http://www.gefeg-neckar.de/downloads)