Three-Phase Current Stroke Geared Motors GZ 0

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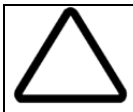
1 Safety Information

1.1 General Dangers in the Case of Failure to Observe the Safety Information

The electric drive is designed to the state of the art and was checked for operating safety before delivery. Nevertheless, the machine can represent a danger when it is improperly operated by insufficiently trained personnel or employed for inappropriate use.

This means:

- Danger to life and limb
- Danger to the machine and other material property of the owner
- Danger to efficient operation of the machine



– This symbol shows information about protecting the system

– This symbol shows general safety information for the protection of operating personnel

– This symbol shows safety information about sources of electrical danger.

1.2 Safety-Conscious Working

Any person occupied in the owner's company with setup, operation, corrective maintenance and repair of the electric drive must have read and understood the Commissioning Instructions, especially the section on **safety.**

It is advisable that the owner has this confirmed in writing by all such persons.

The drive must be connected and maintained by qualified and authorized specialists only.

The responsibilities for operation and maintenance of the drive must be clearly defined and observed in order to avoid indefinite responsibilities as far as safety is concerned.

For all work related to setup, operation, resetting, adjustment, maintenance and repair, the system must be shut down. Shutting down the system means that the drive is turned off with the main switch thus deenergizing all its components. The EMERGENCY STOP functions must also be checked.

1.3 Various Safety Information for Operating and Maintenance Personnel

Electric drives must be used only in systems corresponding to VDE specifications.

In operation, the power unit and the motor coils are live. Never touch these components during operation! Connect measuring instruments only when the motor is deenergized and disconnected from the mains!

Do not start working on the motor connections until you have made sure that they are not carrying either a potential or a voltage!

Be particularly careful when touching the drive shaft directly or indirectly. You must only do this when the drive is stationary and disconnected from the mains.

Refrain from any operation impairing machine safety.

The operator must report immediately any modifications that have occurred on the machine which might impair its safety.

Never dismount or disable safety equipment.

Disable the machine if safety devices are to be removed during commissioning, repair and maintenance work. Remount the safety equipment immediately after completion of commissioning, repair or maintenance work.

After any and all operator activity involving the drive, the owner must carry out acceptance testing of the machine and document it chronologically in the machine log (maintenance book etc.) (name of the person/firm carrying out acceptance testing, date of testing, signature and report number). If this is not carried out, the owner may be faced with consequences relating to liability legislation.

1.4 Indication of Special Risks

Important! Before starting any maintenance work, lower the load!

Current: Carry out all work only when the equipment is deenergized!
Main switch OFF!

Contact:

Before starting work on the motor, ensure that the unit is switched off, idle and secured from being switched on again. Risk of injury!
Do not disconnect the motor connections during operation. Danger to life! Do not touch the motor casing in rated operation. Risk of burns!

1.5 No Unauthorized Additions or Modifications to the Drive

In the section on safety, it is indicated that for safety reasons unauthorized additions or modifications to the drive are not allowed. In case of doubt, please contact the manufacturer.

1.6 Appropriate Use

These machines are intended for commercial systems. They meet the standards of series DIN 0530/EN 60034. Use of this equipment in hazardous locations is prohibited unless expressly provided for (refer to additional information). If stricter requirements are specified, e.g. in non-commercial applications special guards to protect children, you must ensure that these requirements are complied with on the system side at set-up.

The machines are rated for ambient temperatures of + 5° C to + 40° C and site altitudes of 1000 m or greater above sea level. Observe any information that differs from the data shown on the rating plate. On-site conditions at the place of use must correspond exactly with the information on the rating plate.

Electric motors are components for installation in machines in the sense of low-voltage guideline 89/392/EEC. You may not carry out commissioning until it has been determined that the end product conforms to this guideline (observe EN 60204-1).

DC machines comply with the requirements of low-voltage guideline 73/23/EEC.

When operating electric motors in accordance with their intended uses, the protection requirements must conform to EMC guideline 89/336/EEC. The person setting up the system is responsible for appropriate installation (e.g. physically separating signal lines and power cables, using shielded lines and cables.) In the case of systems with current converters, observe the manufacturer's EMC information.

2 Technical Data

2.1 Motor Type, Product Number and Technical Data

Refer to the rating plate on the motor.

3 Requirements of the Site

3.1 Transportation, Storage (see Appendix)

Check the motors at delivery. In the case of damage in transit, inform Baumüller GmbH or the sales office responsible immediately. (For addresses see back cover).

When storing motors for a relatively long period of time, damage can be avoided by taking the following precautions:

Store the motors only on dry premises at a constant temperature and without an aggressive atmosphere. Only store them out of doors in dust- and water-tight packaging material. Avoid permanent vibration acting on the motor. Protect the shaft and the connecting flange from corrosion.

3.2 Mounting Space Required

Mount the motors such that there is an unobstructed flow of cooling air into and of warm air out of the machine. This is ensured when the distance to neighbouring machine components is at least 10 cm.

3.3 Site

On-site, the effective vibration severity of 4.5 mm/s must not be exceeded over the entire speed range. Measurement according to DIN 45665.

3.4 Ambient Conditions

The power output stated in the list applies to continuous running duty (S1) at nominal speed and at a maximum ambient temperature of 40° C with the machines at a site altitude of less than 1000 m above sea level. Under different conditions, the required list power P_L is the product of the factors explained below and the required power $P_L = P * k_1 * k_2$ .If three-phase generators are to be operated at an ambient temperature of more than 40° C or at site altitudes of more than 1000 m above sea level, the required list power P_L is the product of factors k_1 k_2 listed in the table below and the required power P.

Ambient temperature	40° C	45° C	50° C	55° C	60° C
Correction factor k_1	1	1.05	1.1	1.16	1.24
Altitude above sea level	Up to 1000 m	Up to 2000 m	Up to 3000 m	Up to 4000 m	Up to 5000 m
Correction factor k_2	1	1.06	1.17	1.3	1.55

In the case of sites above 1000 m where the ambient temperature drops by approx. 10° C per 1000 m, power correction is not necessary.

At ambient temperatures above 40° C and with motors of enclosed design, contact the manufacturer for any design modifications that may be required.

3.5 Environmental Influences

You should generally prevent the motor from coming into contact with aggressive media.

4 Operation

All work may only be carried out by qualified specialists, with the low-voltage machine idle, deenergized and secured from being switched on again. This also applies to auxiliary circuits (e.g. the anti-condensation heater.) Check that the equipment is deenergized!
Exceeding the tolerances in VDE 0530, Part 1/IEC 34-1 – +5% for the voltage, +2% for the frequency, as well as the ones for the curve shape and symmetry - increases heating and affects electromagnetic compatibility. Observe the information on the rating plate and the terminal diagram in the terminal box. The equipment must be coupled up such that a permanent, safe electrical connection is maintained (with no protruding wire ends); use the assigned cable tips. Make a safe PE connection. The smallest clearances between uninsulated live parts and ground may not be less than the following values:

8 mm where $U_N \leq 550$ V, 10 mm where $U_N \leq 725$ V, 14 mm where $U_N \leq 1000$ V.

There may be no dirt or damp in the terminal box. Seal any unneeded cable entry holes and the terminal box itself dust- and water-tight. Secure the feather key for test operation without drive elements. In the case of low-voltage machines with brakes, check that the brake is working properly before carrying out commissioning.

Vibration levels of $v_{eff} \leq 3.5$ mm/s ($P_N \leq 15$ kW) or $v_{eff} \leq 4.5$ mm/s ($P_N > 15$ kW) in coupled operation are insignificant. If changes different from normal operation occur, e.g. increased temperatures, noises or vibrations, find out the cause and contact the manufacturer if necessary.
Never disable guards, even in test operation. In case of doubt, switch off the low-voltage machine.
If a lot of dirt accumulates, clean the airways regularly. Regrease bearing assemblies that have regreasing devices while the low-voltage machine is running. Observe the type of saponification. If grease exit holes are sealed with plugs (in the case of IP54 protection on the drive side, with IP23 protection on the driven and non-driven sides), remove the plugs before commissioning.
Seal the drilled holes with grease. Change permanently lubricated bearings after approximately 20,000 operating hours or 3-4 years at the latest.

4.1 Instructions for Initial Commissioning

Compare the available mains voltages to the values specified on the rating plate. Mount all guards before starting commissioning.

4.2 Wiring Diagrams

Connect the motor according to the supplied wiring diagrams.

4.3 Notes

The motor must only be mounted to the appropriate attachment points (pedestal, flange) in the installation position for which it is designed. When mounting, ensure that the motor is attached unwarped.

Checklist for Initial Commissioning

Make a note of the motor type, the motor number and the version of the drive.
Check the connections. The motor shaft can be turned evenly (release the brake first with brake motors).
Measured at room temperature on U-V-W, the winding resistance corresponds to double the value of R_1 from the technical description. The tolerance of the measured value between the windings is less than 5%.

5 Preventive Maintenance

Important!

Before starting all maintenance work, lower the load.
Before starting maintenance work, disconnect the machine from the mains.
Retighten as specified all connections, e.g. screws, that were loosened during maintenance work.

Maintenance of GZ 0 series three-phase current stroke geared motors may only be carried out in authorized specialist service centres.

5.1 Replacing the Transmission Lubricant

After approximately 10,000 operating hours, you must remove the used lubricant from the transmission and replace it with a lubricant of the same quality.
At the factory, the transmission is filled with 0.2 kg of Calypsol SF 7-022 or
Fuchs Renosod FK 140 transmission grease.
To be able to change the lubricant and wash out the transmission, you must remove the snap ring, item 6 and the cover, item 5. After refilling the transmission, you must mount the cover oil-tight on the transmission housing using Epple sealant type epple 37 (resource article number 129623).

5.2 Regreasing the Rotor Hub and the Shaft

After approximately 5,000 operating hours, you must dismantle the shaft, item 8 as described in 5.3.1. Pull off the ball bearing, item 15 and take off the rotor, item 4. Thoroughly clean the old grease from the rotor hub and the shaft (using solvent) and lightly regrease with new Chevron SRI Grease or Fuchs Renax FH 300; while doing this, fill the lubricant grooves too.
Plug the rotor onto the shaft and press it all the way in several times with your hands; carefully remove any excess grease. Take particular care that the brake lining and the cone do not come into contact with the grease; if necessary, clean them.
After this, assemble the motor.

5.3 Replacing the Rolling Contact Bearings

5.3.1 Motor

After loosening the screws, item 24, you can dismantle the non-drive end shield, item 3. Carefully take off the bearing shield in the axial direction so that the spring, item 11, cannot jump out of the rotor. You can now pull the shaft, item 8, out backwards and replace the ball bearings, item 15, and item 16.
After removing the cover, item 27, and loosening the screws, item 25, you can take off the stator housing.
Carry out remounting in the reverse order.

5.3.2 Transmission

To change the ball bearings in the transmission, you must remove the cover, item 5. To dismount the drive end pinion, item 9, you remove the retaining ring, item 21, and pull off the cog, item 7.
You can now take out the retaining ring, item with the drive end pinion and replace the ball bearing, item 17.
Carry out remounting in the reverse order.
Assemble the cover, item 5, oil-tight to the transmission housing using epple 37 sealant, for example.

6 List of Spare Parts

Item	Qty.	Name	Designation	DIN
1	1	Transmission housing		
2	1	Stator housing, complete		
3	1	Non-drive end shield, complete		
4	1	Impeller, complete		
5	1	Cover		
6	1	Snap ring	SB 170	
7	1	Cog		
8	1	Transmission shaft		
9	1	Output pinion shaft		
10	1	Pressure ring		
11	1	Pressure spring		
12	1	Pressure disk		
13	1	Distance ring		
14	1	Distance ring		
15	1	Deep-groove ball bearing	6001 2Z	625
16	1	Deep-groove ball bearing	6201 2RSR C3	625
17	2	Deep-groove ball bearing	6202 2RSR C3	625
18	1	Feather key	A 5x5x45	6885
19	1	Feather key	A 5x5x16	6885
20	1	Fitting disk	15x21x0.3	988
21	1	Retaining ring	15x1	471
22	2	Retaining ring	35x1.5	472
23	1	Ball bearing equalizing washer	27x21x0.3	
24	2	Cylindrical screw	M6x120	912
25	2	Cylindrical screw	M6x 30	912
26	4	Oval-head screw	M5x10	7985-4.8B
27	1	Terminal box lid		
28	1	Terminal board, complete		

When ordering spare parts, always state the exact type designation and the motor number.

7 Decommissioning and Disposal

At decommissioning of the motors the following also applies:

Before starting any maintenance work, lower the load!
Disconnect the motor from the mains.

The motor contains materials like steel, copper, insulation materials and lubricants. You must disassemble the motor appropriately and dispose of the material separately.