

## Operating and safety instructions

### Ruhr worm gear motors



#### Foreword

A geared motor proper is not subject to the Machinery Directive. Through appropriate installation and/or assembly in an overall system it becomes a component of the machine or plant under construction, which must comply with the relevant standards and directives. The manufacturer of the machine bears the sole responsibility for compliance with these standards.

#### Safety Instructions

A machine may not be taken into use unless it has been ascertained that it meets the protection and safety requirements of Machinery Directive 89/392/EEC and its amending Directives 91/368/EEC and 93/44/EEC. The basic prerequisite for correct installation and connection is knowledge of and compliance with the operating and safety instructions together with the regulations relating to industrial safety and accident prevention. Only qualified personnel may be charged with work on geared motors. Faults susceptible to prejudice safety must be rectified immediately by previously appointed staff.

Geared motors are devices for use in industrial machinery and plant. In operation, these devices can have dangerous non insulated live parts, which perhaps could be moving or rotating. Hence, for example, unauthorised removal of the required casing or improper use, incorrect operation or poor maintenance could lead to severe bodily harm or damage to the machinery.

Personnel responsible for the safety of the machine or plant must therefore ensure that:

- only qualified personnel are charged with working on the machine or plant.
- such persons do always have access to the current operating instructions and other product documentation applicable to the work in hand, and that they are charged with consistent compliance with these documents.
- unqualified persons are prohibited from working on or near the machines or equipment.

**Qualified Personnel** are persons who have been authorized by the person in charge for the safety of the machine or plant to perform the appropriate activities required and thereby being able to recognise and prevent potentially dangerous situations. The authorisation is based on training experience instruction and knowledge of the relevant standard regulations on preventing accidents and improvement of working conditions. For the definition of skilled workers see VDE 0105 or IEC 364 which also regulate the prohibition of the employment of unqualified personnel. Knowledge of first aid and the local rescue organisation should also be included.

It is assumed that the basic planning of the machine or plant and all operations relating to its transportation assembly installation commissioning maintenance and repair will be performed by qualified personnel or controlled by responsible skilled hands. Special attention should be paid to:

- technical data and information on permissible use, which are included in the catalogue and the documents relating to the order and on the data plate
- the general regulations applicable to erection and safety
- the local regulations and requirements specific to the machine or plant - the proper employment of tools lifting transport devices - the use of personal protective equipment
- assembly conditions to ensure the necessary protection for operators during use and to prevent personnel from approaching too closely

The present documentation would become too unwieldy if it contained all the detailed information relative to possible construction variants, and it cannot take into account every conceivable case involving erection operation or maintenance. Consequently, it only contains the essential instructions necessary for qualified personnel operating geared motors in industrial areas of application.

In special circumstances, where it is intended to use the machine or plant in non-industrial areas of applications, more stringent requirements have to be met, e.g. to prevent children's fingers from touching the machine. These conditions must be assured during assembly by introducing additional safety measures for the machine or plant.

Changes in the normal operation (increased power consumption, raised temperatures, vibrations, noises etc. or indications from monitoring facilities) lead to the assumption about machine not being functioning correctly. To prevent faults, which in their turn might cause serious indirect or direct damage to persons or machinery, the responsible maintenance staff must be informed immediately.

**IN CASE OF DOUBT; SWITCH OFF THE MACHINE INVOLVED AT ONCE!**

## Regulation Use

The geared motors are designed exclusively for installation in or for operating with a machine or plant in industrial use. Use for any other or extended purpose is non-regulation. The supplier will not be liable for any damage arising from improper use.

## Erection

The beds on which the gears and geared motors are to be erected must be adequately dimensioned and free from vibrations. When mounting the geared motors, it is important that these are immovably mounted, free from distortion and on a level surface. Adequate ventilation for the motors should also be assured.

In case of coupling elements should be fitted onto the drive or output shaft, blows on the shafts must be avoided since they could cause leakage or damage to the bearings. Prior to fitting, the shaft endings should be lightly greased to facilitate mounting. We recommend that a flexible coupling be employed in order to reduce shock on the gears or geared motor from the machine being driven.

## Electrical Connection

The electrical connection of the motor may only be performed by personnel with the appropriate qualification and in compliance with the prescribed safety precautions and the local regulations governing electrical connections (see paragraph 1 Safety Instructions). The motor must be connected in accordance with the circuit diagram in the terminal box. Care must be taken to ensure that the voltage of the power supply corresponds to that on the performance plate of the motor. Any additional devices installed, such as brakes, revolution counter generators and secondary fans must comply with the appropriate standards. The direction of rotation can be changed in three-phase motors by changing two phases, in alternating-current (AC) motors by re-clamping the bridges on the terminal board, and in direct-current (DC) motors by changing the polarity of the armature voltage - all this may only be performed when the motor is at standstill!

## Safety Precautions

The earth lead must without fail be connected to the marked screw! To protect it against overloading every motor should be fitted with a trip switch. Heat-sensitive safety devices react to effective values, and the manufacturer will design them when ordered. When a transformer is used, the voltage must be restricted to the level of the effective nominal voltage.

## Maintenance

**Attention!** Before starting any maintenance operations, the geared motor must be disconnected from the mains permanently.

### a) Motor

Depending on the arising ambient dust, it is recommended that the dirt accumulating on the fan cowling of the motor and the motor and gears themselves should be cleaned off from time to time (heating). Motors with carbon brushes should be checked at regular intervals. The life of the brushes depends on the mode and conditions of operation. The brushes must be renewed when necessary. Once the fan cowling, the holding band or the screw-caps have been removed, the brushes are in most cases easily accessible.

### b) Gears

On delivery, the geared motors are ready for use and filled with gear grease or oil. This ensures long-term lubrication for all drive parts and bearings. No complicated stripping, cleaning or grease changes are required. Should, however, any additional greasing become necessary synthetic and mineral lubricants must not be mixed.

## **Closing Remarks**

Your attention is drawn to the fact that the contents of the operating and safety instructions and of the product documentation do not form part of any previous or existing agreement, undertaking or legal relationship, nor are they designed to alter such. All the obligations incumbent upon RUHRGETRIEBE are based on the contract of sale in each case, which also contains the complete and solely applicable regulations relating to the guarantee. The contractual provisions of the guarantee are neither extended nor restricted by the statements contained in these operating and safety instructions.

## **Regal A/S**

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