

## Synchronous servo motors, synchronous servo geared motors

### 1 Overview

This document is valid for the following products from STÖBER:

- ED, EK, EZ, LM synchronous servo motors and synchronous servo geared motors
- EZM, EZS synchronous servo motors for screw drives
- EZF, EZHD synchronous servo motors with hollow shaft
- EZHP, PY\_EZH synchronous servo geared motors with hollow shaft

This document contains information about safety and health protection for the users of the products and references to supporting documents. Users are allowed to carry out work in connection with the products only if they have read and understood this document and the supporting documents in their entirety.

### 2 Intended use

The motors / geared motors described in this documentation are intended for installation and operation in commercial and industrial machines or systems.

The following are considered non-intended use:

- Any overloading of the motors / geared motors
- Using the two-speed gearbox in ambient conditions that deviate from those described in this documentation
- Modifying or refitting the motors / geared motors
- Using the motors / geared motors for an application other than that defined during project configuration
- Direct operation on a three-phase network
- Operation in potentially explosive atmospheres

Commissioning the machine in which the motors / geared motors are installed is prohibited until it has been determined that the machine corresponds to regional laws and guidelines. In the EU, the following guidelines in particular are to be observed in their respective scope:

- (Machinery) Directive 2006/42/EC
- (Low Voltage) Directive 2014/35/EU
- (EMC) Directive 2014/30/EU

### 3 Requirements for personnel

All mechanical tasks that arise during the assembly, commissioning, maintenance and removal of the product may be performed only by specialized personnel who hold a corresponding qualification in the field of metal technology.

All electrical tasks that arise during the assembly, commissioning, maintenance and removal of the product may be performed only by electricians who hold a corresponding qualification in the field of electrical engineering.

Tasks that arise during transport, storage and disposal may be performed by personnel who have been instructed in the suitable method for doing so.

Furthermore, personnel who handle the product must carefully read, understand and observe the valid regulations, legal requirements and applicable basic rules as well as this documentation and the safety instructions it contains.

### 4 Prevention of personal injury

#### 4.1 Electrical hazards

##### **WARNING!**

**The motor is powered by high electrical voltage!**

Touching live parts is extremely dangerous and potentially fatal!

- The electrical connection of the motor may be carried out only by an electrician.
- Before performing the electrical connection, switch off the power supply of the machine with the main switch and secure it from being turned on again.
- Only connect the motor using power connection cables recommended by STÖBER.
- Do not open the housing of the power plug connector.

##### **WARNING!**

**Due to integrated permanent magnets, the rotating motor shaft generates high voltage that is present on the pin contacts of the plug connector.**

Touching live parts is extremely dangerous and potentially fatal!

- Only perform work on the motor with the motor shaft at a standstill.
- Do not touch the pin contacts of the plug connector.

#### 4.2 Mechanical hazards

##### **WARNING!**

**Dangerous movements of machine parts!**

Moving machine parts can cause serious injuries or even death!

- ✓ Before starting the motor or drive:
- Install all protective devices necessary for operation.
- Make sure that no one is standing in the danger area or able to enter it unchecked.
- Leave the danger area.

##### **WARNING!**

**Unsecured feather keys or power transmission elements can be thrown off by rotation of the drive shaft!**

Flying metal parts can cause serious injuries!

- Assemble the provided power transmission elements properly or remove them before a test run.

**⚠ WARNING!****Sinking or falling of gravity-loaded axes or vertical axes after switching off the motor due to gravity!**

Falling gravity-loaded axes or vertical axes can cause serious injuries or even death!

- Be aware that the holding brake of the motor does not offer sufficient safety for persons that are in the hazard area of gravity-loaded axes or vertical axes.
- Move gravity-loaded axes or vertical axes to their lowest position and lock or brace them mechanically before persons are allowed to enter the hazard area.

**4.3 Thermal hazards****⚠ CAUTION!****The surface of the motor / geared motor can reach temperatures over 100 °C during operation!**

Touching the hot surface of the motor / geared motor can cause severe skin burns!

- Do not touch the motor / geared motor during or immediately after operation.
- Allow the motor / geared motor to cool sufficiently before carrying out work on the motor / geared motor.
- Wear protective gloves when working on the motor / geared motor.

**4.4 Hazards due to magnetic or electromagnetic fields****⚠ WARNING!****Strong magnetic and electromagnetic fields in the immediate vicinity of the motor!**

Magnetic and electromagnetic fields can impair the function of sensitive electronic devices such as pacemakers and can cause serious health-related harm as a result!

- Take suitable protective and instructive measures so that persons with pacemakers do not enter the immediate vicinity of or work with the motor.

**5 Prevention of property damage**

**ATTENTION! Motor components such as encoders or temperature sensors can be damaged by electrostatic discharge!** Do not touch the contacts of the plug connectors with your fingers.

**6 Transport**

Lifting and transporting the motor / geared motor may require lifting gear (e.g. a crane), depending on the weight. The weight of your motor / geared motor is specified in the accompanying delivery documents.

**⚠ WARNING!****Suspended loads!**

Loads that become loose and fall during the lifting process can cause serious injuries or even death!

- Observe the instructions in this chapter.
- Cordon off the danger zone and ensure that no one stands under the suspended loads.
- Wear safety shoes.

In order to prevent the motor / geared motor from falling or getting damaged during transport, observe the following:

- Do not use the output shaft on the forced ventilation unit or the plug connectors to lift or fasten the motor.
- Fasten loads attached to the motor separately, as the eyebolts of the motor are designed only for the weight of the motor.

**7 Installation**

Inspect the product before assembly for damage due to transport or storage. If the product has been damaged, do not install it; instead, contact the STÖBER Service department. Check whether the requirements for ambient conditions at the assembly location are satisfied.

**ATTENTION! Shaft seal rings can be damaged by solvents!** Prevent shaft seal rings from coming into contact with solvents when cleaning and degreasing the components.

**ATTENTION! Damage to encoders, bearings and shafts due to improper assembly!** Never use force when installing machine elements with fittings, e.g. hitting power transmission elements, shafts or the motor or gear unit housing with a hammer, but rather install them in accordance with the instructions in the documentation.

**8 Electrical connection**

For the electrical terminal assignment of the motor, refer to the connection plan included in the delivery of every motor.

During proper operation of motors on drive controllers, leakage currents greater than 10 mA can occur. Connect the motor housing to the grounding conductor system of the machine in order to protect persons from electric shock in case of contact with the motor housing.

**ATTENTION! Unsuitable cables can damage the motor due to voltage peaks and cause thermal damage to plug connectors! Furthermore, they may fail to meet legal requirements for electromagnetic compatibility and may void any warranty claims!** Use appropriate cables from STÖBER.

**9 Supporting documents**

You can view or download supporting documents for the product if you read off the serial number from the nameplate of the product and enter it on the Internet at the following address: <https://id.stober.com>

Alternatively, you can use a suitable mobile device to scan in the QR code on the nameplate of the product in order to be linked to the supporting documents.