These operating instructions contain information about the transport, assembly, commissioning and service of gear units from STOBER. Observe the applicable documents of attached motors and additional drive components.

1 Operation in accordance with its intended use

Explosion-protected gear units from STOBER meet the requirements of the ATEX Directive 2014/34/EU and comply with the following standards:

- EN 1127-1:2011-07
- EN ISO 80079-36:2016-04
- EN ISO 80079-37:2016-04

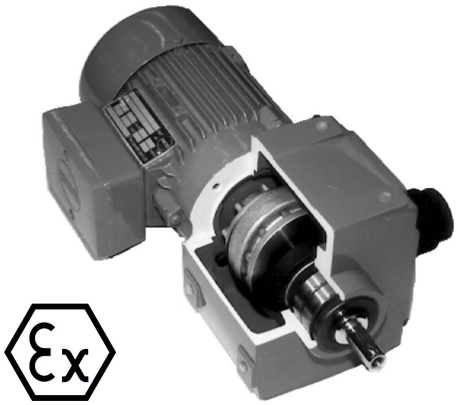
The gear units are intended for installation in commercial machines and systems. Intended use includes:

- Use of the gear unit exclusively for the application that it was designed for.
- No modifications to the gear unit by the customer.
- No overpainting of the gear unit housing (the increased coating thickness can cause the gear unit housing to become electrostatically charged).
- Use of the gear unit only in the zone subject to explosion hazard that corresponds to the identification on the ATEX nameplate.
- Use of the gear unit in the surrounding temperature range Ta that is specified on the ATEX nameplate.
- The maximum thickness of the dust deposit on the gear unit may not be more than 5 mm according to EN 50281-2-1.
- No overload of the gear unit with regard to the maximum permitted speeds and torques that are specified in the order confirmation.
- Compliance with the inspection and maintenance intervals.
- Observe these operation instructions.

⚠ WARNING!

Unintended use of the gear unit can lead to explosions that can cause serious injuries or even death.

▶ Only use the gear unit as intended!



2 Safety information

⚠ WARNING!

Failure to comply with these operating instructions can cause ignition sources when using the gear unit in areas subject to explosion hazard and lead to explosions that can cause serious injuries or even death.

▶ Comply with the instructions in these operating instructions!

⚠ CAUTION!

Burns!

The surface temperature of the gear unit can significantly exceed 65° C in operation!

▶ Allow the gear unit to cool down sufficiently before touching it or wear protective gloves.

Also follow the applicable national, local and system-specific requirements.

2.1 Ignition hazard and protective measures

The following is an overview of ignition hazards that can arise when operating the gear unit and protective measures that are described in these operating instructions.

Ignition hazard: hot surfaces
Possible causes: increased friction due to improper assembly, wear, overload or leaks.
Protective measures:

- Compliance with the maximum permitted torques and speeds
- Limitation of the motor current
- Control before commissioning
- Measurement of the maximum surface temperature during commissioning
- Regular inspection and maintenance

Ignition hazard: mechanically generated sparks
Possible causes: improper assembly of leaks

- Control before commissioning
- Regular inspection and maintenance

Ignition hazard: electrostatic discharge
Possible causes: friction processes, potential differences between components

- Exclusive use of components with ATEX approval
- Earth the gear unit housing
- Load-separating processes on the gear unit housing are avoided (no friction on the clothing of the operating personnel; cleaning of the plastic covers with a damp cloth)

2.2 Personnel requirements

All work on the electrical equipment of the drive units must be performed by qualified electricians. Installation, maintenance and repairs of mechanical parts must be performed by fitters, industrial mechanics or persons with comparable qualifications.

3 Description of the gear unit

The technical data of the gear unit/geared motor can be found in the order confirmation. This refers to the lubricant used that is specified on the nameplate of the gear unit. Other technical data as well as dimensional drawings can be found in the appropriate catalog from STOBER.

3.1 ATEX identification

The gear unit is identified on the ATEX nameplate as follows.

Ex	II	2	G	Ex	h	IIC	T3	Gb
Identification according to ATEX Directive				Identification according to EN ISO 80079-36				

Code	Designation	Explanation
Ex	Ex-symbol	According to ATEX Directive
II	Device group	
2 3	Device category	
G D	Type of explosive atmosphere	Gas Dust
Ex	Ex-symbol	According to EN ISO 80079-36
h	Code letter for non-electrical devices	
IIC IIIC	Explosion group	Gases (such as hydrogen) Combustible suspended particles non-conductive and conductive dusts
T3 T4 T200° T120°	Temperature class	For gases (max. 200°C) For gases (max. 135°C) For dusts (max. 200°C) For dusts (max. 120°C)
Gb Gc Db Dc	Equipment Protection Level (EPL)	For zone 1[1] For zone 2[1] For zone 21[1] For zone 22[1]

1) According to IEC 60079-10-X

4 Transportation and storage

When transporting the gear units/geared motors make certain not to damage the shafts and bearings with impacts.

Sling the gear with a suitable support cable directly in the gear unit housing. In addition sling the motor mounted on the gear unit and make sure that there is no diagonal pull.

The gear units/geared motors may only be stored in enclosed, dry rooms. Storage in open air areas with a roof is only permitted for brief periods. Protect the gear units/geared motors from all damaging environmental effects and mechanical damage.
Avoid extreme temperature fluctuations with high relative humidity when the gear units/geared motors are being stored temporarily to prevent formation of water from condensation.

Long-term storage
If long-term storage is planned, protect the bare parts of the gear unit against corrosion. Completely fill the variable speed drive with integrated spur gear stage with lubricant that is specified on the nameplate. Reduce the lubricant to the correct filling quantity according to the nameplate before commissioning the drive.

5 Mounting

Inspect the delivery for any transport damage immediately after you receive it. Notify the transport company of any damage immediately. Do not operate damaged gear units/geared motors.

Remove the packaging of the gear unit/geared motor and dispose of it according to the applicable legal requirements on site.

Check the following before installing the gear unit:
- Do the specifications on the ATEX nameplate of the gear unit (gear group, category, EPL, temperature class and maximum surface temperature) correspond with the zone subject to explosion hazard where the gear unit is to be used?
- Is the gear unit installed in a zone that is not subject to explosion hazard?
- Do all drive and output elements to be mounted have appropriate explosion protection?

NOTICE

The lip seals of the shaft seal rings can be damaged by the use of solvents.

▶ When removing the corrosion protection, make sure that the lip seals of the shaft seal rings do not come into contact with solvents.

Completely remove all corrosion protection on the shaft ends prior to installation.

5.1 Installation positions

The version of the gear unit and the lubricant amount filled at the factory is matched to the installation position of the gear unit. The gear unit may therefore only be installed at the installation position specified in the order confirmation. A sign on the gear units shows which gear unit side must point downwards.

5.2 Installation of gear unit

Mount the gear unit on an even, vibration-reducing and torsion resistant substructure. Use screws of strength class 10.9 to fasten the gear unit via the pitch circle diameter. Use screws of strength class 8.8 for all other fastening types.
Observe the following for assembly:
- The housing feet and attachment area may not be braced against each other.
- The permitted shear and axial forces may not be exceeded.
- Screws for filling and draining the lubricant as well as available ventilation valves must be freely accessible.
- Earthing the gear unit housing via metal components of the system must be ensured.

Gear units/geared motor with solid shaft; installation of power transmission elements:
The output shaft is equipped with a centering thread according to DIN 332, Sheet 2, which is provided both for fitting and for axial mounting of transmission elements (gear, chain wheel, pulley, coupling hub) by means of a central screw. Shaft ends with a diameter up to 55 have tolerance ISO k6, those larger than 55 have tolerance ISO m6. The fitting keys correspond to DIN 6885, Sheet 1.

NOTICE

Damage to the bearing race.

▶ Avoid all impacts to the output shafts.

5.3 Ventilation

The gear units are closed on all sides and are not vented.

6 Commissioning

6.1 Prior to commissioning

Check the following before commissioning:
- Is it ensured that the gear unit is adequately vented and no external heat input (e.g. Via a coupling) is present? The cooling air may not exceed a temperature of 40° C.
- Is it ensured that no gear unit overload relating to the permitted torque can occur due to the mounted motor? (The permitted torque can be found in the order confirmation.)

⚠ WARNING!

Risk of injury due to moving parts!

Before switching on the drive, check the following:

▶ Are no persons in danger due to start-up?

▶ Is all protection and safety equipment properly installed, in test operation too?

▶ Is the drive not blocked?

▶ Are the brakes released?

▶ Is the direction of rotation of the drive correct?

▶ Are components attached to the output such as feather keys or coupling elements adequately secured against centrifugal forces?

6.2 During commissioning

As the operating conditions for gear units are very different, it must be ensured for safe operation under maximum operating conditions that the surface temperature of the gear unit does not exceed the maximum permitted value. For this purpose, take the following measurement with a standard commercial temperature measurement device.
Determine the surface temperature at the gear unit/motor transition where the terminal box position prevents ventilation by the motor fan.
For gear units with a motor adapter or free drive shaft, determine the surface temperature at the joining seam between the gear unit flange on the input side and the attachments.
The maximum surface temperature is reached after approx. 3 hours under full load and may not exceed the maximum value of 90° C for the highest surrounding temperature. Stop the drive immediately if the maximum value is exceeded and contact STOBER Service.

7 Service

7.1 Inspection and maintenance

⚠ WARNING!

Risk of explosion due to electrostatic charge!

▶ Only clean the plastic covers on the gear unit with a damp cloth.

To ensure safe operation with regard to explosion protection, carry out the following inspections and maintenance work at the specified intervals:

Daily or according to dust accumulation
- Remove dust deposits from the gear unit surface (STOBER recommends removing dust deposits with a thickness of 1 mm or more)

Every 500 operating hours, every 3 months at the latest
- Visually check the shaft seal rings for leaks
- Check operating noise for possible bearing damage

Every 1000 operating hours
- Check the protrusion of both races above the race frame. If the protrusion is < 2 mm, replace races (also see document ID 440226).

Every 5000 operating hours, every 5 years at the latest
- Replace lubricant
- Replace shaft seal rings

Every 10000 operating hours
- Replace rolling bearing

Comply with the lubricant specification and amount that is stated on the nameplate of the gear unit when changing the lubricant. Do not mix lubricants with different specifications.

7.2 In the event of disruptions

7.2.1 General faults

Changes compared to normal operation indicate that the function of the drive has been impaired. This includes:
- Higher power consumption, temperatures or vibrations
- Unusual noises or odors
- Leaks on the gear unit
- Monitoring devices responding

In this case, stop the drive as quickly as possible and contact STOBER Service.

7.2.2 Friction system faults

The following faults of the friction system can occur when operating the variable speed drive.
If the output shaft does not turn although the motor is running or the specified torque is not transferred, the following may be the causes:

- The wear limit of the races is exceeded. In this case, replace the races.
- The running surfaces of the friction system oily. Rectify the cause of the oiling, clean the friction system and replace the races.

After a brief blockage of the output shaft, knocking sounds are audible because a calotte has formed on the race surface. Small calottes can recede. Replace the races for persistent knocking sounds.
The replacement of the races is described in the document with ID 440226.

7.3 Contact

STOBER Service will be happy to help you:

- If you have queries about the product
- In the event of a fault
- Carrying out maintenance work
- If you need spare parts.

Have the serial number and the type designation of the gear unit ready when you contact us. This can be found on the nameplate of the gear unit.
For spare part orders, you will also need the item number of the spare part in the relevant spare parts list.

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7.4 Disposal

This product contains recyclable materials. Observe local applicable regulations for disposal.