

## Operating instructions bevel helical gear KS TWINGEAR

### 1. General safety instructions

All work involving transport, storage, installation/assembly, start-up, maintenance and repair may only be carried out by qualified technical personnel who strictly observe

- the instructions contained in this manual
- the identification/name plate on the gear
- the system-specific regulations and requirements
- as well as the national/regional regulations for safety and accident prevention.

Qualified service personnel are persons who have a relevant professional qualification and are familiar with carrying out the above-mentioned work.

Serious damage to property and person can be caused by

- improper use
- incorrect installation or operation
- the illegal removal of the necessary protective covers.

### 2. Intended use

KS TWINGEAR are components designed to be installed in machines and destined exclusively for the deflection and multiplication of torques in a speed range of up to  $4000 \text{ min}^{-1}$ . They comply with the machine guidelines (EN 292) and EMC guidelines, insofar as far as they apply.

Any other use is regarded as improper use.

The manufacturer is not liable for any damages resulting from improper use. The risk is borne solely by the user.

Since KS TWINGEAR can be used in lots of different applications, the responsibility for each specific application passes to the user.

### 3. Transport / storage.

The transport company must be immediately notified of any damages found after delivery; if necessary, start-up should be delayed.

If required, use suitable, sufficiently dimensioned means of transport, e.g. cable guides.

KS TWINGEAR should only be stored in a dry, dust free and low vibration (standstill damage during storage) environment at temperatures between  $-25$  and  $+50^\circ\text{C}$ .

### 4. Alterations and modifications

KS TWINGEAR may not be modified for construction or safety-related reasons without our consent. We are not liable for any unauthorised changes of this kind.

## 5. Installation / assembly

### When installing or assembling, please observe the following:

- uniform support on an even, vibration-cushioned and torsion-free substructure; tension in the housings should be avoided here. Efficient lubrication and ventilation can only be ensured if assembly is carried out correctly.
- drive and output elements (belt wheels, clutches, drive shafts etc.), these:
  - must be balanced to G 6.3,
  - may be installed only with mounting/dismounting devices,
  - must be secured axially, even if they are shrunk-on; observe tightening torque when using suitable tensioning elements
  - must be covered with a touch guard.
  - if present, observe correct belt tension; observe manufacturer data, do not exceed permissible transverse forces with the gears
- precise alignment for direct coupling, observe manufacturer data
- distortion-free assembly for combined flange/shaft-mounted gears
- uniform, distortion-free running.

## 6. Start-up

Starting up (starting normal operation) the KS TWINGEAR is forbidden until it is determined that the machine or plant conforms to the regulations of the European Union machine guidelines.

## 7. Operation

- before start-up, check that the transmission parts are correctly mounted
- the use of a ventilation filter is not necessary with gears up to size 10. With gears from size 20, we recommend using at gear operating temperatures from 60°C.
- Monitoring and protection devices should not be deactivated, even during a test run
- carry out the first test runs without load; gradually increase to the desired number of revolutions, while paying attention to operating/running noises and temperature development.

### ***During and after operation, watch out for potentially hot gear surfaces.***

When using mineral oil-based gear oils (CLP) the operating temperature should not exceed 90°C or should only briefly exceed this temperature. When using synthetic transmission oils (CLP) an operating temperature of 130°C is permissible, only if Viton sealing rings are being used.

For changes in relation to the normal operation, e.g. increased temperatures, noises and vibrations, the gear must, in case of doubt, be stopped in order to determine the cause. If necessary, contact our Service department for more help.

## 8. Inspection and maintenance

### Lubricants

KS TWINGEAR gears are supplied without lubricant, unless this was specified in the order.

With expected operating temperatures of up to max. 80°C, mineral hypoid gear oils API-GL 4 can be used, in accordance with MIL-L-2105-A.

In the temperature range up to 95°C (in the short term up to 110°C) we recommend the use of poly-alpha-olefin-based synthetic gear oils; up to 120°C we recommend polyglycol-based synthetic gear oils, in accordance with CLP DIN 51517, Part 3, and in accordance with ISO VG Class 150 (DIN 51 519).

Polyglycol oils may not be mixed with other synthetic or mineral oils, or with residues.

At high temperatures seals made from suitable materials should be used. Please speak to us about this.

### Oil change intervals

The first oil change should be done after approximately 500 hours.

The oil should be discharged immediately after stopping, while the oil is still warm.

Further oil changes are recommended after each 5000 operating hours, although the intervals should not be greater than 18 months.

Screwed drain plugs for discharging the oil are available at all gear sides with exception of the "drive" side. Before filling, check that, with exception of the oil filler plug, all plugs have been fitted and tightened. Use new sealing rings in the case of doubt.

The gears are supplied only when desired with lubricant display (oil gauge glass, angle oil level indicator, dipstick); in this case the details of the installation position and the number of revolutions are required.

### Quantities of oil (depending on transmission, rotational speed and installation position)

Size	KS10	KS20	KS30	KS35	KS40	KS50	KS60	KS70
average quantity of oil	0.3	0.6	1.0	1.9	3.0	5.0	9.5	21
max. quantity of oil	0.4	0.75	1.5	2.7	4.5	6.5	13.5	32.5

For gears without a lubricant display, you fill in the recommended average quantity of oil; you can fill with the maximum quantity of oil at low rotational speeds or in the installation position "drive".

If a lubricant display is available, this should be used to measure the exact fill quantity.

If this consists of an oil gauge glass, the middle of this shows the minimum fill height; you have reached the maximum fill quantity, if a bubble can still be seen at the top of the gauge glass.

### Inspections

The gear must be inspected at regular intervals to ensure it is in good condition, and in particular for leaks and the oil level. Rotary shaft seals with signs of leaks must be replaced to ensure the operational safety of the gear.

Repair kits with replacement and/or repair manuals are available from our Service department.