Operating Instructions
PowerGear Gearboxes

1. General safety instructions

All works performed in connection with the transport, storage, installation / mounting, start-up, service and maintenance of the gearboxes must be performed by qualified specialists only and only with due regard to the following:
- the notes and instructions contained in present operating instructions;
- the indications on the type plate attached to the gearbox;
- the system specific instructions and requirements;
- the national / local safety regulations and the rules for the prevention of accidents.

Only operators staff are considered as being qualified who have the required professional qualifications and who are familiar with the execution of any of the above works.

Severe bodily injury and/or material damage may be caused by or result from:
- inappropriate use;
- wrong installation or operation;
- unauthorized removal of the required safety covers.

2. Specified application

POWERGEAR gearboxes are special components and have been exclusively designed and constructed for the installation into machines and enable the deflection and multiplication of torques within a speed range up to 6 000 min^{-1}. They comply to the related machine (EN 292) and EMC directives (as far as applicable).

Any utilisation beyond that will be considered as not in accordance with the application the components have been specified and designed for. The manufacturer refuses to assume any liabilities resulting from any unauthorized use whatsoever. All risks must be born by the customer. As the POWERGEAR gearboxes can be applied in the most different fields, the responsibility for any such specific application passes on to the customer at the time he puts them into service.

3. Transport / storage

The carrier in charge must immediately be notified of any transport damages probably detected after delivery. If need be, it must be made sure to prevent the gearboxes from being put into service.
If necessary, sufficiently dimensioned transport means, e.g. rope guides, must be used.

POWERGEAR gearboxes must only be stored in a dry, dust-free, low-vibration environment (damages caused to the bearings due to stop times) at temperatures from -25 up to +50° C.

4. Alterations and modifications

The POWERGEAR gearboxes must not be changed, altered or modified in what way ever without our explicit permission, which particularly applies to their construction and to the safety requirements concerned. Any such unauthorized change, alteration or modification releases us from any liability whatsoever.

5. Installation / mounting

Upon installation, always make sure to take care of and comply with the following

- accommodate the devices on no other than on a regular, plane, vibration damped and torsion-free sub-construction. When doing so, always make sure to avoid that the boxes are put under tension. Both satisfactory lubrication and de-aeration are assured only if mounted in compliance with the gearboxes' constructional design.
- The drive and output elements (belt wheels, couplings, Cardan shafts etc.):
  - must all have been balanced by applying a force equivalent to 6.3 G;
  - must be assembled using appropriate fitting and puller tools only;

  - must be locked axially, even if shrinked on, and, when using appropriate tensioning elements, the prescribed tightening moments must be observed;
  - must be provided with a safety cover to protect against accidental contact;
  - if any, the correct belt tension has to be observed and the manufacturer's specifications referring thereto be followed;
  - with any of the gearboxes, the admissible transverse forces must not be exceeded;
- if coupled directly, the orientation of the gearbox must be exact and conform to the the manufacturer's specifications
- in case of both flange- and shaft-mounted gearboxes the assembly must be free from distortion
- make sure the gearboxes can run smoothly and are not subject to distortion.

6. First start-up

It is prohibited to start the POWERGEAR gearboxes (start-up for the specified operation) until it has not been established that the related machine or system into which they are to be installed complies to the relevant EEC machine directive.

7. Operation

- Before first start-up, always check if all transmission elements have been assembled correctly.
- With standard gearboxes, the application of a venting or ventilation filter is not required.
- Do not put any control and/or protective equipment out of service, even if performing a test run.
- Make sure to perform all first test runs without load, take care of running noises and the development of heat.

During and after operation, always check if any of the gearbox surfaces are overheated.

When using mineral gear oils (CLP), the operating temperature should not exceed 90° C and if exceeding it nevertheless, this should only be temporarily. When using synthetic gear oils (CLP), an operating temperature of 130 °C is admissible only if using Viton sealing rings.

Should there occur any irregularities usually not noticed during normal operation, e.g. increased temperatures, sounds, vibrations, the gearbox must, in case of doubt, be taken out of operation to find the reasons for any such irregularity. If necessary, consult our service department.

8. Inspection and maintenance

As for-life lubrication, the POWERGEAR gearboxes, sizes P75 up to P140 and X75 up to X140, have been provided with a synthetic high-quality oil on poly-alpha-olefin basis and are thus virtually free from maintenance. Sizes P140 and X 140 have been provided with the drill holes needed to make an oil change.

The POWERGEAR gearboxes, sizes P170 up to P280 and X170 up to X280 are delivered without any lubricant filling, except such filling is ordered along with the box.
With operating temperatures to be expected of up to 90° C, we recommend to use mineral gear oil types (CLP) in compliance with standard DIN 51517 or with ISO VG class 100 (DIN 51 519).
For temperatures ranging up to 130° C, we recommend to use synthetic gear oils on poly-alpha-olefin basis (CLP) in compliance with DIN 51517, part 3, or with ISO VG class 150 (DIN 51 519).

With mineral oil types, we recommend to make a first oil change after 500 operating hours and after any 5 000 operating hours in each case thereafter. When running the gearboxes with synthetic oil types and on continuous duty near to the thermal load limit, we recommend to perform an oil change after any 10 000 operating hours and, if running them under usual conditions, after 15 000 operating hours in each case.

Oil volumes (dependant on gear ratio, rpm, shaft arrangement and installation position)

construction size	P54	P75 / X75	P90 / X90	P110 / X110	P140 / X140	P170 / X170	P210 / X210	P240 / X240	P280 / X280	P360	P450
average oil volume	0,05	0,1 l	0,2 l	0,3 l	0,4 l	1,0 l	2,2 l	2,6 l	3,0 l	9,0	22,0
maximum oil volume	-	-	-	0,35 l	0,6 l	1,2 l	2,5 l	3,5 l	5,0 l	15,0	32,0

Wear part kits including replacement and repair instructions can be obtained from our service department.

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