GENERAL

If the swivel gears are not put into operation immediately, they have to be filled up with the mineral oil to be used for operation, then they have to be closed. The oil is filled in through the two main connections and the drain oil connection.
Please contact us in case of storing the swivel gears several months.
Apart from this operating manual please pay attention to the technical information and our prospectus!

DIRECTION OF ROTATION

For clockwise rotation of the drive shaft - with view to the drive shaft, the bolting plate of the swivel gear is underneath - the right-hand connection must be pressurized.

MIDDLE POSITION OF THE SWIVEL GEARS

The swivel gear is in its middle position if one of the three keys is at right-angle to the bolting plate.

INSTALLATION

The swivel gear and its accessory pipes must be installed without tension. Above all, the drive shaft has to be in alignment with the part to be connected because otherwise the maximum permissible radial and axial forces could be exceeded.
When mounting transmission elements, care has to be taken that the permissible axial forces will not be exceeded. Couplings must never be hammered.
The pipe system has to be cleaned before connecting the swivel gear and the heat-treated pipes have to be pickled. Utmost cleanliness is the prerequisite for a long service life.
Before starting up the drain oil collecting chamber has to be filled up to the drain connection bore with the mineral oil to be used for operation. The drain oil pipe has to be installed in that way that the drain oil chamber cannot run dry. The maximum permissible pressure in the drain oil chamber is 2 bar.

START-UP AND MAINTENANCE

Start with the lowest setting of the pressure relief valve, only then adjust the pressure to the definite value which, however, must not exceed the maximum permissible pressure of the swivel gear.

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During start-up the braking pressure must be supervised through the gauge connection. This braking pressure must not exceed the permissible working pressure.
The maximum working temperature should never and at no point exceed + 70° C!
After the test run retighten all connections, screw joints, etc. at working temperature!
The swivel gears have to be vented through screw connections, the types STD and STED additionally - if necessary - through the gauge connection of the cushioning.
When starting up check and clean the filters in short intervals; then clean them regularly.
The first oil change should be done as soon as possible, unless the system has been flushed by a flushing device before starting up. For further oil changes contact the oil supplier. The oil supplier will also give assistance concerning survey and analysis of the oil, make use of this service.
In case of strongly discoloured or dirty oil contact the oil supplier even before the next stipulated maintenance is due.

TECHNICAL INFORMATION

Due to their compact design, swivel gears are especially suitable for heavy duty, however, care has to be taken when using rigid transmission elements that the permissible radial load will not be exceeded due to distortion or faulty alignment.
If torque transmission is effected freely suspended over a pinion or a rod, the maximum permissible radial load has to be observed as well.
Series connection of the swivel gears is possible. With this, both sides of the swivel gear can be submitted to the maximum permissible nominal pressure.
Any position of installation is possible and has to be indicated when placing the order only if the drive shaft shall point upwards because this position requires the dislocation of the drain oil connection. In order to maintain the lubrication of all sliding parts, the drain oil pipe has to be installed in that way that the interior of the swivel gear cannot run dry. We recommend to prepressurize the drain oil chamber up to max. 2 bar, for example by means of a spring-loaded non-return valve.

PRESSURE FLUID, TEMPERATURE, FILTERING

We recommend to use pressure fluids on a mineral oil basis according to group HLP, DIN 51525.
The viscosity range should be within 20 and 150 mm^2/s, but may attain 700 mm^2/s for a short time during start-up. The ideal viscosity, after attaining the working temperature, is about 40 mm^2/s.
The pressure fluid should, under due consideration of the permissible viscosity, have a temperature between - 25° C and + 70° C.

For cleaning the pressure fluid, suitable filters have to be installed in the circuit. We recommend a minimum filtration rating of 25 µm, however, a longer service life will be obtained with a filtration rating of 10 µm.
For swivel gears type B the cleanliness of the pressure fluid is the prerequisite for a perfect high-pressure lubrication. If necessary, especially for larger swivel gears, a high-pressure filter has to be installeded in the separate pressure-equalizing pipe.

OPEN CIRCUIT OPERATION

In open circuit care has to be taken that a load can only be lowered by appropriate brake valves, if necessary by throttle non-return valves. If the swivel gear is standing higher than the pump unit, the return line has to be equipped with a non-return valve (opening pressure 1-2 bar) before the return filter.

END STOP

The cylinder caps are designed for taking the maximum torque respectively the maximum permissible working pressure.
If the cylinder caps are used for end stop limitation, the working stresses - including those resulting from inertia forces - must never exceed the maximum permissible working pressure.
The end stop cushioning serves for braking the inertia forces on the last 12 degrees before the end stop. The adjustment of the cushioning through the throttle screw has to be effected in that way that the pressure resulting from the braking procedure will not exceed the maximum permissible working pressure. Special care has to be taken if the return side is already prepressurized by throttle valves, current control valves or other devices. The braking pressure has to be measured at the special measuring point of the cushioning head. Please contact us if inertia forces are expected which will require more than 12 degrees for braking (at maximum permissible working pressure).
For swivel gears with swivel angle limitation (type STE) or with cushioning and swivel angle limitation (type STED) the adjustment of the swivel angle has to be effected always with unloaded adjusting piston (i.e. without close-lying rack or without pressure).