6  Project Planning for Helical-Bevel Gear Unit on Swing Base MK

Pre-assembled drive units comprising helical bevel gear units, hydraulic centrifugal couplings and electric motors are available especially for conveyor systems, bucket conveyors and other machines with high inertia starting. The complete arrangement is attached to a torsionally rigid mounting rail. A protective cover and collecting pan provide protection against contact with rotating parts and against oil leakage in the event of a malfunction. The collecting pan is only relevant for mounting position M1. For other mounting positions, the customer must take appropriate measures.

Helical-bevel gear units in type sizes 107 to 187 with 4-pole motors of sizes 200 to 280 (30 to 90 kW) are available in combination with a swing base. The gear units can be used with a solid shaft or as shaft-mounted versions. The mounting rail is provided with foot mounting rails as standard for use as a foundation frame (output without overhung load via elastic coupling). A torque arm is available as an option for shaft-mounted gear units.

Horizontal mounting positions are standard for the swing base MK. Please contact SEW-EURODRIVE for other mounting positions.

1) The adapter with hydraulic centrifugal coupling is available for motors of size 71 to 180 (0.37 to 22 kW).
Design

![Diagram of Helical-bevel gear unit on swing base MK](image)

**Figure 27: Helical-bevel gear unit on swing base MK**

- [1] Helical-bevel gear unit
- [3] Oil pan
- [4] Protective cover
- [5] Hydraulic centrifugal coupling
- [6] Thermal monitoring device (optional design)
- [7] Electric motor
- [8] Torque arm (optional design)
- [9] Speed monitor (optional design, only in conjunction with thermal monitoring BTS)
The centrifugal coupling used is a hydrodynamic coupling that operates according to the Föttinger principle. The coupling is filled with oil and consists of a pump wheel (motor side) and a turbine wheel (gear unit side). The pump wheel converts the input mechanical energy into fluid energy and the turbine wheel converts this energy back into mechanical energy. Furthermore, the centrifugal couplings on the swing base have a deceleration chamber which holds part of the oil volume when the coupling is stationary. The oil is slowly returned to the pump and turbine wheels during the starting phase. This has a positive influence on the starting phase and reduces strain on the drive and the machine.

The hydraulic centrifugal coupling is equipped with fusible safety plugs that allow the operating fluid to be evacuated in the event of excessive temperature (severe overload, blockage). This protects the coupling and the machine from damage. We recommend using a thermal monitoring device (MTS or BTS option) to prevent the coupling from being emptied and oil escaping into the environment.

Figure 28: Centrifugal coupling

1. Pump wheel
2. Operating fluid (hydraulic oil)
3. Turbine wheel
4. Deceleration chamber
5. Flexible connecting coupling
A. Gear unit side
B. Motor side
Please contact SEW-EURODRIVE.

**Torque arm /T**

See dimension sheets "Helical-bevel gear unit on swing base MK" (for shaft-mounted gear units only).

**Mechanical thermal monitoring device /MTS**

Using a mechanical thermal monitoring device can prevent the operating fluid from being sprayed into the environment. A switch bolt screwed into the coupling releases a spring-loaded switch pin if the temperature reaches an excessive level. This switch pin operates a switch by means of which a warning signal can be output or the machine can be switched off.

![Figure 29: Mechanical thermal monitoring device /MTS](image)

- [1] Hydraulic centrifugal coupling
- [2] Switch bolt
- [3] Switch
- [A] Gear unit side
- [B] Motor side

Apart from the monitoring device, the centrifugal coupling is equipped with fusible safety plugs. However, these react considerably later than the monitoring device.
Using a proximity-type thermal monitoring device can prevent the operating fluid from being sprayed into the environment. The monitoring device consists of three components: a switch bolt, which is screwed into the coupling and that changes its inductance if the temperature reaches an excessive level, a switch which detects that the inductance of the switch bolt has changed, and an evaluation unit (speed monitor), which evaluates the signals from the switch. In turn, a warning signal can be output via this speed monitor or the machine can be switched off.

The switch bolt is regenerated after the coupling has cooled down and is then ready for use again.

![Diagram](image.png)

**Figure 30: Proximity-type thermal monitoring device /BTS**

- [1] Hydraulic centrifugal coupling
- [2] Switch bolt
- [3] Switch
- [4] Speed monitor
- [A] Gear unit side
- [B] Motor side
### Example of selection table swing base MK

|----------------------|----------------|-----------------|-----------------------------------------------|-------------------|----------------------|-------------------------------|

You find the corresponding selection tables on page 501.