

KPB Transmission Gear Units



for the bucket wheel drive in excavators

The planetary bevel KPB transmission gear is especially designed for drive systems of bucket-wheel excavators used in open-pit mining. The gearbox is the perfect solution for newly designed excavators. However, it can also be employed to upgrade already existing bucket-wheel drives. The KPB unit is installed between the electric motor and the bucket wheel shaft. The coupling connects the gearbox input shaft with the electric motor,

while the output torque is transmitted to the bucket wheel shaft via the clamping ring. The transmission gear is equipped with a monitoring system. It is also fitted with a lubrication system (without oil cooler) integrated into the gearbox casing. The gearbox casing also serves as oil tank.

Gearbox description

The fluid coupling and the jointed shaft transmit the drive from the

electric motor to the gearbox input shaft. From there, the single bevel stage and the two planetary stages transmit it to the output shaft, which is connected to the bucket wheel shaft by the clamping ring. The bevel stage is equipped with a Klingelberg toothing and has been case-hardened and machined according to the HPG method.

Gearbox description



The two planetary stages consist of spur gears. The rims with internal tothing are part of the casing. The planet carrier of the second planetary stage is also used as the output shaft, shaped as a bushing. The tothing of the sun pinions and of the planet wheels is case-hardened and ground, while the rims with internal tothing are tough-hardened. The gearbox rotors are positioned by the roller bearings.

The transmission gear casing is a sturdy, welded construction. It consists of the bevel stage casing, two rims with internal tothing, a connector of both rims and an output bearing housing. The torque lever is directly connected to the output bearing housing and to the connector of both rims with internal tothing.

The bevel stage casing is fitted with the inspection cover containing the inlet filter.

Since it also functions as an oil tank, the casing has holes for piping connections. The pressure oil system integrated into the casing lubricates the gearbox. Additional oil chambers for gravitational lubrication of the transmission gear have been inserted into the casing to ensure the functioning of the gearbox in case of failure of the pressure oil system.

The pressure oil system consists of:

- a pump unit with a safety valve
- a magnetic filter at the suction
- a double-net filter, switchable in motion
- an oil heater
- a piping system

The transmission gear is naturally cooled. The bevel set casing is equipped with resistance thermal sensors allowing:

- to measure the temperatures of the lubrication oil and of the bevel pinion bearings,
- to signal and turn off the motor drive in case of too high temperatures of the lubrication oil and of the bevel pinion bearings, by excavator control system
- to block the drive motor power supply in case of too low temperatures of the lubrication oil,
- to control the operation of the heaters (turn on and turn off).

Additionally, in case the pressure of the lubricating oil is too low, the pressure relay can be used to turn off the drive motor. All wires from the thermal sensors are connected in one single switch box installed on the gearbox.

Type	KPB 190- 214	KPB 190- 194	KPB 163- 186	KPB 163- 250
Nominal Power (kW)	630	500	320	320
Input shaft rotation [min ⁻¹]	990	987	990	990
Output shaft rotation [min ⁻¹]	5.2	5.2	5.3	4
Weight [t]	29.6	15.4	9.3	9.3
Transmission ratio	190	190	186	250



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