

## 1570-W Planetary Swing Upgrade System Dragline Services

### Overview

Komatsu designed and built the first planetary transmissions for excavator duty in 1984. Since then, over 3,000 of these transmissions have been applied to both swing and propel functions in mining shovels and draglines providing years of reliable service.

These transmissions are designed for the severe duty that is demanded for mining all types of materials in all climates. Compared to off-the-shelf planetary transmissions, the P&H transmission is significantly larger and more robust. This additional size is not only commensurate with the duty cycles of mining, but also means that the transmission has additional oil capacity so that extra oil cooling is not required and lubricant life is extended.

Replacing parallel shaft or split power swing gearboxes with planetary transmissions eliminates the need for swing timing and eliminates the spring cushion. The planetary transmission will also provide additional deck space around the swing units for inspection and maintenance access.



### 1570-W planetary swing

The transmission that suits the 1570-W is similar to that used on the P&H 757 and 9010C with the exception of the first reduction gear set and the motor support for the 597 kW (800 HP) DC motor. Using the loading imposed on this transmission by the 1570-W, the calculated gear, shaft, and bearing lives exceed that of the calculated life on the 757 application.

The actual experience with the 757 included an initial inspection of one transmission at ~50,000 hours. At that time, only one small thrust plate was replaced along with new bearings and seals. Two additional units were rebuilt in the 70,000 – 80,000 hour range with the last transmission rebuilt at 100,000+ hours.

### Maintainability

- Two tier construction – easily rebuildable
  - 1st stage parallel spur
  - 2nd stage planetary
- Easily removed as a unit
  - Rebuild in shop environment
  - Planetary assembly weight less motor is approximately 26,700 lb. (12,111 kg)

### Robust design

- Oil tight case – O-rings at all bolted joints
- Gears are case hardened or contour induction hardened
  - Precise control of hardness
  - Precise depth of penetration – both flanks and root area

### Long life

- Four planet pinions
  - Reduced tooth loading at each gear mesh
- Part of gear forces canceled by opposing mesh
  - Reduced bearing loads
  - Longer bearing life

### Improved swing shaft and lower bearing

- Shaft supported by lower bearing assembly
- Large, rigid shaft
  - Less deflection, better pinion to rack alignment under load
  - Less torsional windup, reduced torsional vibration
- Shaft, pinion and bearing assembly can be lifted out through the top of the revolving frame in one piece

### RTD monitoring

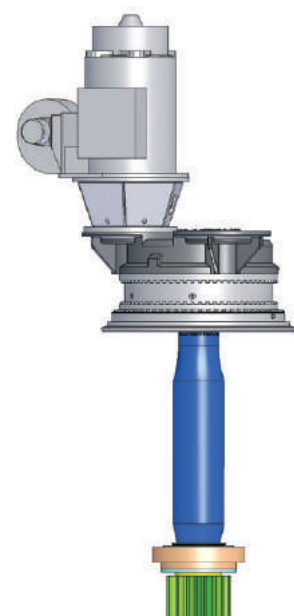
Depending on bearing housing used:

- Bearing and oil temperature monitoring with carrier bearing RTD
- Lower swing shaft bearing RTD

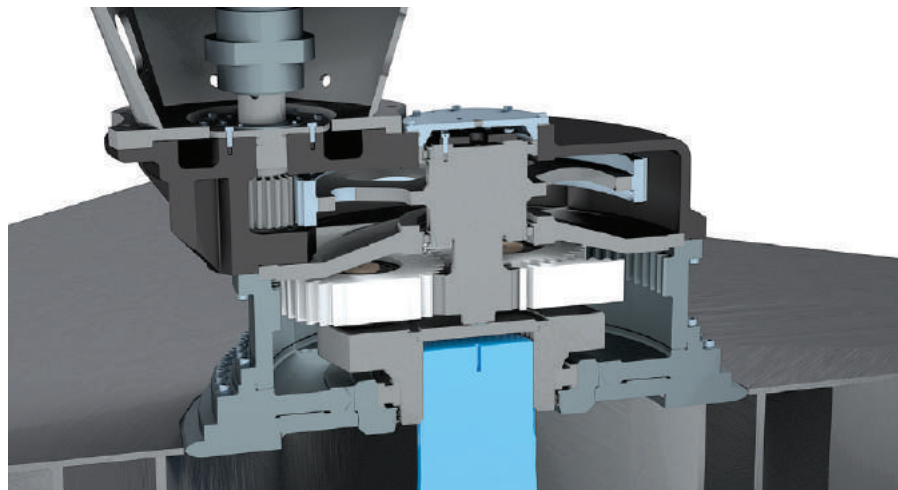
### Swing brake

- Disc brake is optionally available to replace drum brake

### Improved swing shaft



### Planetary swing transmissions



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