

TECHNICAL INSIGHT

A PUBLICATION OF NSK EUROPE

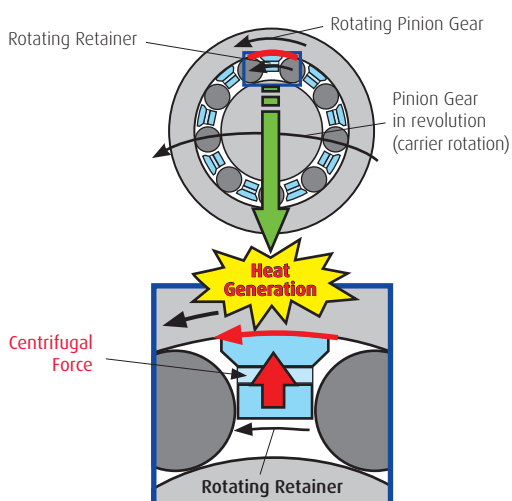
Lineup of a Cage & Roller and Planetary Shaft

Development Objectives

- › Application of a special coating to the bearing cage for higher speed
- › Downsizing is possible through use of NSK original material and special heat treatment

General Description and Product Features (Structure and Operating Principles)

Cage and Roller for High-Speed Planetary



Higher-speed design of planetary
→ Generation of seizure and abnormal wear

	Conventional Technology		NSK-Developed Product
	Standard Product	High-speed Spec	Ultra High-speed Spec
External View			
Surface Property of Retainer	Topmost Surface No Coat Base Material (Cr+Mo Steel)	Topmost Surface Coat Carbonitriding Layer	Topmost Surface Special Coat
Frictional Force (Heat Generation)	Large	Medium	Small
High-Speed Performance			

High-Speed performance of "twice the standard product" and "1.5 times the High-Speed Spec" has been achieved

Features of Super-long Life Planetary Shaft

1. Optimisation of chemical components

Adoption of high Cr-alloy steel (NSK original)

2. Optimisation of heat treatment conditions

Optimum amount of residual austenite

3. Heat treatment technology employed according to specifications

Applicable to swaging and pinning types

A longer life of "4.5 times more than standard product" and "2.5 times more than special heat treatment spec" has been achieved

Ultra-long service Life Planetary Shaft

	Swaging	Pinning
Shaft Type	Higher hardness only for required portions End face of shaft (lower hardness)	Higher hardness for entire portion
Standard (Life Factor 1)	SUJ2 + High Frequency	SUJ2 + Quench Annealing
Long Life (Life Factor 1.8)	SUJ2 + (Special High Frequency)	SUJ2 + Special Heat Treatment or Special High Frequency
Super-long Life (Life Factor 4.5)	NSK-original material + Special High Frequency	NSK-original material + Carbonitriding