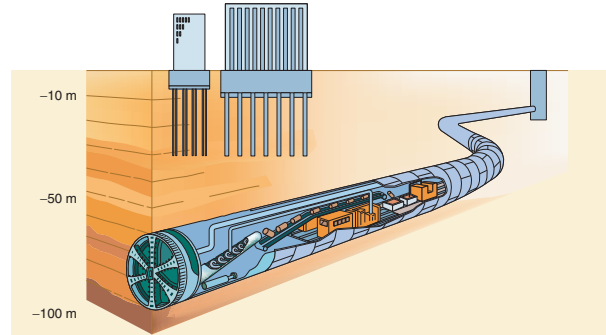


Segmented Type Three-row Roller Bearing for Shield Tunneling Machine

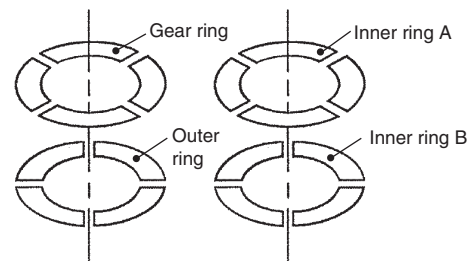


Shield tunneling machine

When an expressway is constructed in a metropolitan region, there is a need to reduce impacts on living and natural environments close to the expressway. Accordingly, projects to construct deep underground tunnels (at depths not used for basement or construction of foundation piles) are in progress as an alternative to elevated road structures. For a shield tunneling machine used for deep underground work, JTEKT has developed a segmented type three-row roller bearing with an outer diameter of 7.7 m, one of Japan's largest bearings.

Structure

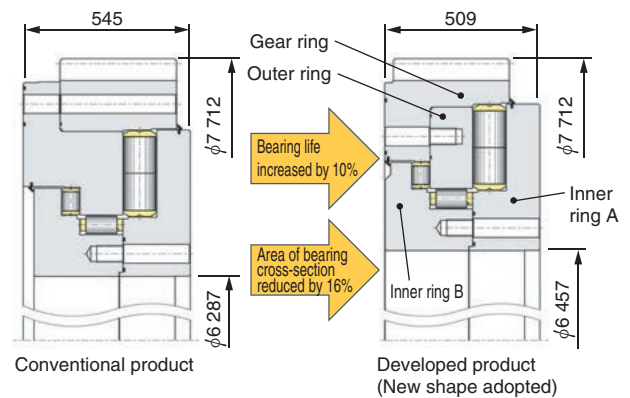
- ① The bearing ring consists of an outer ring, an inner ring A, an inner ring B and a gear ring that transmits excavation torque. Each bearing ring is segmented into four parts in circumference directions for purpose of land transportation.
- ② Bolt fastening and the special design allow the assembly of four-segments into an integrated ring shape at the tunnel construction site. The raceway accuracy and gear accuracy are secured at the equivalent level as those of non-segmented bearings.



Structure of divided bearing rings

Features

A new shape was adopted to contain the bearing in a limited space in the shield tunneling machine, and to meet the market demands for longer bearing life. Compared with the conventional shape, the bearing life is increased by 10% and the area of bearing cross-section is reduced by 16% while the dimension of the tooth tip outer diameter is kept unchanged.



Comparison of shape

(Industrial Machinery Application Engineering Dept., Bearing Operations Headquarters)

JTEKT CORPORATION