MHP
High-Ratio Hypoid Gears

Features of MHP High Ratio Hypoid Gears

A pair of MHP high-ratio hypoid gears are able to produce an amazing reduction of speed of 200:1 in one stage.

1. Total-cost reduction
   The MHP provides a compact gearing body replacing several stages of reduction gears. This reduces the cost sharply.

2. High-efficiency
   Compared to worm gear drives, the MHP has less sliding contact. The resulting higher efficiency allows the use of smaller motors (See the graph on the right).

3. High-rigidity
   The carburized hypoid gears lead to smaller than comparable worms gears.

4. Compact gear assembly
   The size of the gear housing is nearly the same as outer diameter of the large gear. (See the diagrams below)

How to determine the radial and thrust loads

Before using the MHP high-ratio hypoid gears, be sure to confirm the direction of radial and thrust loads. Following equations are used to compute these loads. The radial and thrust load coefficients are given on the product pages.

Radial load calculation

\[ W_{rp} = W_{rp0} \times T_0 \times \frac{n}{z} \]
\[ W_{rp0} = \text{Radial load coefficient of pinion or } L(N) \]
\[ T_0 = \text{Torque of gear or } R(N \cdot m) \]
\[ n = \text{Number of teeth of pinion or } L \]
\[ z = \text{Number of teeth of gear or } R \]

Thrust load calculation

\[ W_{xp} = W_{xp0} \times T_0 \times \frac{n}{z} \]
\[ W_{xp0} = \text{Thrust load coefficient of pinion or } L(N) \]
\[ T_0 = \text{Torque of gear or } R(N \cdot m) \]
\[ n = \text{Number of teeth of pinion or } L \]
\[ z = \text{Number of teeth of gear or } R \]

Variations in tooth contact due to poor alignment of gears

If the gear engagement position is out of the normal position, variations in tooth contact, as illustrated below, may appear.
<table>
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<tr>
<th>Catalog No.</th>
<th>Reduction ratio (%)</th>
<th>Module</th>
<th>Actual module</th>
<th>No. of teeth</th>
<th>Type of gear</th>
<th>Pitch circle diameter (mm)</th>
<th>From * / Flank thickness</th>
<th>End depth</th>
<th>Inch dia</th>
<th>Flute dia</th>
<th>Pitch dia</th>
<th>Corresponding module</th>
<th>Lead with *</th>
<th>Face width</th>
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* [Table of Products Characteristics]:
1. The allowable torque capacities are based on the results of experimentation with the pinion at 600 rpm, lubricated with Kogurigui SUGO (MHI3 GRADE).
2. Radial and thrust load coefficients are the factors used for calculation of those loads. As shown in the figure B8 Shape, CW and CCW stand for clockwise and counterclockwise rotation. A plus sign means that the two gears in a set move away each other when load is applied. A minus sign means that two gears in a set approach each other when load is applied. For more details, see the section “How to determine the radial and thrust loads” on Page 286.

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**Helix Hands and Offset Position**

MHP High-Ratio Hypoid Gears are designed to be right hand helix for gears, left hand helix for pinions. The opposite helix hand gears are not available for these products. Also, the offset position is already set, so please refer to the illustration below when designing or assembling.

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**Inquiries are now being accepted on our website.**

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**High-Ratio Hypoid Gears**