Catalog Number of KHK Stock Gears

The Catalog Number for KHK stock gears is based on the simple formula listed below. Please order KHK gears by specifying the Catalog Numbers.

<table>
<thead>
<tr>
<th>Gear Type</th>
<th>Material</th>
<th>Type</th>
<th>Screw Gears</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>S45C</td>
<td>N</td>
<td>S N 1 - 13 R</td>
</tr>
<tr>
<td>SUN</td>
<td>SUS303</td>
<td>N</td>
<td>S N 1 - 13 R</td>
</tr>
<tr>
<td>AN</td>
<td>CAC702</td>
<td>N</td>
<td>S N 1 - 13 R</td>
</tr>
<tr>
<td>PN</td>
<td>MC901</td>
<td>N</td>
<td>S N 1 - 13 R</td>
</tr>
</tbody>
</table>

- SN: Steel Screw Gears
- SUN: Stainless Steel Screw Gears
- AN: Alumina Bronze Screw Gears
- PN: Plastic Screw Gears

Hand of Helix (R), No. of teeth (13), Module (1), Type (Screw Gears), Material (S45C)

Feature Icons
- RoHS Compliant Product
- Finished Product
- Re-machinable Product
- Ground Gear
- Heat Treated Product
- Stainless Product
- Ream Product
- Copper Alloy Product
- Injection Molded Product
- Black Oxide coated Product

Page 325
**Characteristics**

KHK stock screw gears come in four materials, S45C, SUS303, CAC702 (formerly Al BC2) and MC nylon, in modules 1 ~ 4 and numbers of teeth from 10 to 30.

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Module</th>
<th>Material</th>
<th>Heat Treatment</th>
<th>Tooth Surface Finish</th>
<th>Gear Number</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>1 ~ 4</td>
<td>S45C</td>
<td>—</td>
<td>Cut</td>
<td>N9</td>
<td>○ Popular screw gears. Additionally, gear tooth induction hardening secondary operations can be performed.</td>
</tr>
<tr>
<td>SUN</td>
<td>1 ~ 3</td>
<td>SUS303</td>
<td>—</td>
<td>Cut</td>
<td>N9</td>
<td>○ Suitable for food machinery due to SUS303’s rust resistant qualities.</td>
</tr>
<tr>
<td>AN</td>
<td>1 ~ 4</td>
<td>CAC702</td>
<td>—</td>
<td>Cut</td>
<td>N9</td>
<td>○ Aluminum bronze made products have excellent wear resistance.</td>
</tr>
<tr>
<td>PN</td>
<td>1.5 ~ 3</td>
<td>MC301</td>
<td>—</td>
<td>Cut</td>
<td>N9</td>
<td>○ Light-weight products made of MC nylon can be used without lubrication.</td>
</tr>
</tbody>
</table>

**Selection Hints**

Please select the most suitable products by carefully considering the characteristics of items and contents of the product tables. It is also important to read all applicable “CAUTION” notes shown below before the final selection. Since screw gears come in right- or left-hand helix, make sure to include the letter “R” or “L” in the catalog number when you order.

1. **Caution in Selecting the Mating Gears**

Screw gears are used for offset shafts. Whether the shafts are paralleled offset or skewed offset depends on the helix hands of the mating gears.

- **Direction of shaft**
  - Skewed shafts: RH-RH or LH-LH
  - Parallel shafts: RH-LH

- **Arrangement of helix hands**
  - Right (R)
  - Left (L)

**Application Example**

Feed by rollers * (It rotates 2 rollers by one input shaft.)

* The illustration above is a design example, not a design for machinery or a device in actual use.

---

**Application Hints**

In order to use KHK stock screw gears safely, read the Application Hints carefully before proceeding. Also, please refer to the “Application Hints” in the technical information section on KHK spur gears (Page 32) when performing secondary operations.

1. **Points of Caution in Assembling**

   - KHK stock screw gears are designed to give the proper backlash when assembled using the center distance given by the formula below with a tolerance of H7 to H8. The amount of backlash is given in the product table for each gear.

   \[
   a = \frac{a_1 + a_2}{2}
   \]

   Where

   - \(a_1\): Center distance
   - \(a_2\): Pitch diameter of pinion
   - \(d_1\): Pitch diameter of gear

   - **Overall length tolerance of Screw Gears**

     - **Total Length (mm)**
       - **Tolerance**
         - Up to 30
           - 0
         - 30 up to 100
           - 0

   **CAUTION:** PN Plastic Screw Gears are excluded.

2. **Caution in Selecting Gears Based on Gear Strength**

   The allowable surface strength listed in the product pages were derived using the Niemann formula as reference values (for the case of skewed offset shafts).

   - There is no data on the strength of screw gears. The values of constant \(K_s\) used in the calculations, which depend on the material of the mating gears, are our estimates. The mathematical expression below shows the Niemann formula to determine allowable tangential force \(F_T\) (kgf) and allowable torque \(T\) (kgf m) on a basic circle.

   \[
   F_T = \frac{K_T \times \pi \times d}{6000}
   \]

   \[
   T = \frac{F_T \times d}{1.8}
   \]

   Where

   - \(K_T\): Standard pitch diameter of pinion (mm)
   - \(F_T\): Coefficient based on no. of teeth combination
   - \(K_s\): Coefficient based on materials and sliding speed
   - \(T_s\): Coefficient based on material selection
   - \(V_s\): Sliding speed (m/s)
   - \(F_s\): Coefficient depending on material combination
     \[
     F_s = \frac{\text{material constant}}{V_s}
     \]

   - **Value of \(K_s\)**

     | \(z_2\) | \(z_1\) | 10 | 13 | 15 | 20 | 26 | 30 |
     |-------|-------|----|----|----|----|----|----|
     | 10    | 0.538 | 1.538 |
     | 13    | 2.005 | 1.538 |
     | 15    | 2.279 | 1.786 | 1.538 |
     | 20    | 2.963 | 2.229 | 2.013 | 1.538 |
     | 26    | 3.965 | 2.888 | 2.005 | 1.538 |
     | 30    | 4.161 | 3.556 | 2.963 | 2.279 | 1.786 | 1.538 |

   **Table 2.2**

   **K_s values depending on material combination**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Mating Gear</th>
<th>(K_s)</th>
<th>No maximum allowable sliding speed (m/s)</th>
<th>No. of teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN</td>
<td>SUN</td>
<td>AN</td>
<td>PN</td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>0.0030</td>
<td>0.0050</td>
<td>0.0050</td>
<td>5</td>
</tr>
<tr>
<td>SUN</td>
<td>0.0030</td>
<td>0.0050</td>
<td>0.0050</td>
<td>5</td>
</tr>
<tr>
<td>AN</td>
<td>0.0050</td>
<td>2.5</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>PN</td>
<td>0.0060</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

   **NOTE 1:** Use values shown in the table when using PN products with lubrication in case of using PN products without lubrication, the theoretical values shown in the table are applied.