**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.

**Example** Other Products

<table>
<thead>
<tr>
<th>S V</th>
<th>20 - 200</th>
</tr>
</thead>
</table>

- **S** Total Length (200 mm)
- **V** Major Diameter (20 mm)
- 20 Type (Involute spline shafts)
- 200 Material (S45C)

**Material**

- **S**
- **S45C**

**Type**

- **RT** Pawls and Ratchets
- **GC** Gear Coupling
- **V** Involute Spline
### Features of Pawls and Ratchets

- A simple structure used to restrict the rotational direction in one way.
- The tips of pawls and the teeth of ratchets are induction hardened and therefore have superior durability.

### Table: Pawl and Ratchet Specifications

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Pitch No.</th>
<th>Shape</th>
<th>Keyway (mm)</th>
<th>Tooth Hardness</th>
<th>Bend Strength (N)</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRT2-3-50</td>
<td>10</td>
<td>T5</td>
<td>10</td>
<td>6</td>
<td>26</td>
<td>S45C</td>
</tr>
<tr>
<td>SRT2-3-60</td>
<td>10</td>
<td>T4</td>
<td>10</td>
<td>6</td>
<td>28</td>
<td>S45C</td>
</tr>
<tr>
<td>SRT3-3-50</td>
<td>10</td>
<td>T4</td>
<td>10</td>
<td>6</td>
<td>30</td>
<td>S45C</td>
</tr>
<tr>
<td>SRT3-3-60</td>
<td>10</td>
<td>T4</td>
<td>10</td>
<td>6</td>
<td>32</td>
<td>S45C</td>
</tr>
</tbody>
</table>

### Application

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

---

**SRT-C** Pawls

**Application**

The allowable transmission force \( F_b \) of ratchets is the value calculated by the following formula.

\[
F_b = \frac{m \cdot d \cdot l \cdot \tan 360}{L} \cdot \sigma \cdot \frac{2000}{E}
\]

Also, the SRT Ratchet’s allowable torque \( T \cdot m \) for bending strength is calculated by the following formula.

\[
T = F_b \cdot r_f
\]

Where:
- **m**: Bending stress ~ Assumed 225.5MPa (20kg/mm²)
- **d**: Face width mm ~ Dimension Table ratchet face width E
- **l**: Root length mm
- **\( \sigma \)**: Surface treatment ~ Black oxide coating
- **E**: Material ~ S45C
- **L**: Outside dia. D - 2h

Example: ratchets used for complete reverse prevention of worm gears.
Features of Pawls and Ratchets

- A simple structure used to restrict the rotational direction in one way.
- The tips of pawls and the teeth of ratchets are induction hardened and therefore have superior durability.

Features of Pawls and Ratchets

- The tips of pawls and the teeth of ratchets are induction hardened and therefore have superior durability.

Features of Pawls and Ratchets

- Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).
- Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring to the stated dimensions.
- Areas of products which have been re-worked will not be black oxide coated.
- Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap.
- Keyways are made according to JIS B1301 standards, Js9 tolerance.
- Areas of products which have been re-worked will not be black oxide coated.
- For products having a tapped hole, a set screw is included.

To order J Series products, please specify; Catalog No. + J + BORE

Catalog No. + J + BORE

- The product shapes of J Series items are identified by background color.
- Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring to the stated dimensions.
- Areas of products which have been re-worked will not be black oxide coated.

Notes on Product Characteristics

- Areas of products which have been re-worked will not be black oxide coated.
- Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring to the stated dimensions.
- Areas of products which have been re-worked will not be black oxide coated.
- For products having a tapped hole, a set screw is included.

Surface treatment: Black oxide coating

Material: S45C

Angle of teeth: 60°

Tooth hardness: 50 ~ 60HRC

Surface treatment: Black oxide coating

Catalog No. Pitch 2.09 ~ 12.57

SRTB C

Pawls

- The pawls are designed to prevent reverse rotation. They are not suitable for use as driving ratchets or driving rotation.
- SRTB-C is manufactured using a lost wax casting method.

Bending Strength of Ratchets

The allowable transmission torque $F_b$ (N·m) of ratchets is the value calculated by the following formula.

$$ F_b = \frac{m_d}{\tan \frac{m_e}{2}} $$

Also, the SRT-Ratchet's allowable torque $F_b$ (N·m) for bending strength is calculated by the following formula.

$$ T = \frac{F_b}{r_1} $$

Where

- $m_e$: Bending stress - Assumed 225.5MPa (2260kgf/mm²)
- $m_d$: Bending stress - Assumed 135MPa (1360kgf/mm²)
- $m_e$ and $m_d$: Bending stress
- $h$: Tooth root radius $m$ - Assumed 2
- $h_2$: Tooth root radius $m$ - Assumed 3
- $h_2$:

Example: ratchets used for complete reverse prevention of worm gears

SRTB C

Pawls

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

Application

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

Example: ratchets used for complete reverse prevention of worm gears
GC Gear Couplings (Inner hub)

## Specifications

- **Gear teeth**: Standard full depth (Inner hubs are crenellated)
- **Pressure angle**: 20°
- **Material**: S45C
- **Heat treatment**: Tooth surface induction hardened
- **Tooth hardness**: 50 ~ 60HRC
- **Surface treatment**: Trivalent chrome

### Catalog No. | Module | No. of teeth | Shape | Bore | Hub dia. | Pitch dia. | Outside dia. | Face width | Hub width | Torque length | Set Screw |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GC1-12S</td>
<td>m2</td>
<td>25</td>
<td>T2</td>
<td>12</td>
<td>45</td>
<td>50</td>
<td>54</td>
<td>10</td>
<td>25</td>
<td>35</td>
<td>M5</td>
</tr>
<tr>
<td>GC1-22</td>
<td>m2</td>
<td>25</td>
<td>T2</td>
<td>20</td>
<td>45</td>
<td>50</td>
<td>54</td>
<td>10</td>
<td>25</td>
<td>35</td>
<td>M6</td>
</tr>
<tr>
<td>GC1-25</td>
<td>m2</td>
<td>25</td>
<td>T2</td>
<td>22</td>
<td>45</td>
<td>50</td>
<td>54</td>
<td>10</td>
<td>25</td>
<td>35</td>
<td>M10</td>
</tr>
<tr>
<td>GC2-20S</td>
<td>m2</td>
<td>25</td>
<td>T2</td>
<td>20</td>
<td>45</td>
<td>50</td>
<td>54</td>
<td>10</td>
<td>25</td>
<td>35</td>
<td>M6</td>
</tr>
<tr>
<td>GC2-30</td>
<td>m2</td>
<td>40</td>
<td>T2</td>
<td>30</td>
<td>70</td>
<td>80</td>
<td>84</td>
<td>15</td>
<td>40</td>
<td>55</td>
<td>M6</td>
</tr>
<tr>
<td>GC2-32</td>
<td>m2</td>
<td>40</td>
<td>T3</td>
<td>32</td>
<td>70</td>
<td>80</td>
<td>84</td>
<td>15</td>
<td>40</td>
<td>55</td>
<td>M10</td>
</tr>
<tr>
<td>GC2-35</td>
<td>m2</td>
<td>40</td>
<td>T3</td>
<td>35</td>
<td>70</td>
<td>80</td>
<td>84</td>
<td>15</td>
<td>40</td>
<td>55</td>
<td>M10</td>
</tr>
<tr>
<td>GC2-40</td>
<td>m2</td>
<td>40</td>
<td>T4</td>
<td>40</td>
<td>70</td>
<td>80</td>
<td>84</td>
<td>15</td>
<td>40</td>
<td>55</td>
<td>M10</td>
</tr>
<tr>
<td>GC3-20S</td>
<td>m2.5</td>
<td>42</td>
<td>T2</td>
<td>20</td>
<td>45</td>
<td>50</td>
<td>90</td>
<td>105</td>
<td>20</td>
<td>45</td>
<td>M10</td>
</tr>
<tr>
<td>GC3-35</td>
<td>m2.5</td>
<td>42</td>
<td>T3</td>
<td>35</td>
<td>45</td>
<td>50</td>
<td>90</td>
<td>105</td>
<td>20</td>
<td>45</td>
<td>M10</td>
</tr>
<tr>
<td>GC3-45</td>
<td>m2.5</td>
<td>42</td>
<td>T4</td>
<td>45</td>
<td>45</td>
<td>50</td>
<td>90</td>
<td>105</td>
<td>20</td>
<td>45</td>
<td>M10</td>
</tr>
<tr>
<td>GC3-50</td>
<td>m2.5</td>
<td>42</td>
<td>T5</td>
<td>50</td>
<td>45</td>
<td>50</td>
<td>90</td>
<td>105</td>
<td>20</td>
<td>45</td>
<td>M10</td>
</tr>
</tbody>
</table>

---

**Caution on Product Characteristics**

- ① Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas
- ② For products with a snap ring and a tapped hole, a set screw is included as an accessory
- ③ The allowable torques in the table are obtained from the shear strength of keys. The shear strength of keyway is assumed to be 44MPa (6kgf/mm²)
- ④ Since trivalent-chromate treatment is applied, changes may occur in the dimensions of the bore, keyway etc., decreasing by a few μm.

---

GC-I Gear Couplings (Outer ring)

## Specifications

- **Gear teeth**: Standard full depth (Inner hubs are crenellated)
- **Pressure angle**: 20°
- **Material**: S45C
- **Heat treatment**: Tooth surface induction hardened
- **Tooth hardness**: 50 ~ 60HRC
- **Surface treatment**: Trivalent chrome

### Catalog No. | Module | No. of teeth | Shape | Internal dia. | Pitch dia. | Outside dia. | Face width | Backlash (mm) | Weight (kg) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GC-I-25</td>
<td>m2</td>
<td>25</td>
<td>T1</td>
<td>46</td>
<td>50</td>
<td>68</td>
<td>25</td>
<td>0.40~0.60</td>
<td>0.33</td>
</tr>
<tr>
<td>GC-I-35</td>
<td>m2</td>
<td>40</td>
<td>T1</td>
<td>76</td>
<td>80</td>
<td>105</td>
<td>36</td>
<td>1.03</td>
<td>3.39</td>
</tr>
<tr>
<td>GC-I-50</td>
<td>m2.5</td>
<td>42</td>
<td>T1</td>
<td>100</td>
<td>105</td>
<td>145</td>
<td>48</td>
<td>2.96</td>
<td>6.14</td>
</tr>
</tbody>
</table>

---

**Characteristics of Gear Couplings**

- There are many ways to couple shafts to transmit power. We have developed these standardized gear couplings of our own design. They are easier to connect or disconnect than chain couplings.
- The gear teeth (inner hubs) are crowned to allow for up to 5° of shaft angle offset.
- Due to the induction hardened gear teeth, these couplings have excellent durability. All surfaces are plated (trivalent chromate).
- The units are machined complete with keyways, set screw holes and finished bores and are ready for immediate installation. We also offer minimum bore models for users who want to perform their own secondary operations.

**Strength of Gear Couplings**

The allowable torque of the gear couplings are determined in accordance with the shear strength of the keys. Allowable shear force of keys F (N) is calculated from the following formula.

\[
T = \frac{1}{1 - \frac{b}{b_0}}
\]

Additionally, allowable torques T(Nm) of the inner hubs of the gear coupling, versus shear force of keys, can be calculated from the formula below.

\[
T = \frac{F \cdot L}{d}\]

Where:
- T: Allowable Torque (Nm)
- F: Allowable Shear Force of Keys (N)
- L: Key Length mm
- d: Keyway Width mm

**Gear Coupling Ordering Method**

Gear coupling outer rings and inner hubs can each be purchased individually; however, normal usage requires a set of 1 outer ring and 2 inner hubs.

Formula: (GC2-30 GC2-I (outer ring) x 1 piece and GC3-30 (inner hub) x 2 piece set.)

---

Please see our web site for corrections on KHK Catalogs.
**Involute Spline Shafts**

### Specifications

- **Gear teeth:** Stub teeth
- **Pressure angle:** 20°
- **Material:** S45C
- **Heat treatment:** Thermal refined
- **Tooth hardness:** 200 to 270HB
- **Surface treatment:** Black oxide coating

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Module</th>
<th>No. of teeth</th>
<th>Shape</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Face width (mm)</th>
<th>Shaft length (mm)</th>
<th>Outside dia. (mm)</th>
<th>Face width (mm)</th>
<th>Allowable torque (N·m)</th>
<th>Backlash (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV17-170</td>
<td>8</td>
<td>TA</td>
<td>16.7</td>
<td>13</td>
<td>135</td>
<td>20</td>
<td>15</td>
<td>170</td>
<td>0.06–0.15</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV20-200</td>
<td>10</td>
<td>TA</td>
<td>19.6</td>
<td>15</td>
<td>165</td>
<td>20</td>
<td>15</td>
<td>200</td>
<td>0.06–0.15</td>
<td>0.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV25-250</td>
<td>13</td>
<td>TB</td>
<td>24.7</td>
<td>20</td>
<td>220</td>
<td>30</td>
<td>25</td>
<td>250</td>
<td>0.06–0.15</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV30-300</td>
<td>16</td>
<td>TB</td>
<td>29.7</td>
<td>25</td>
<td>270</td>
<td>30</td>
<td>30</td>
<td>300</td>
<td>0.06–0.15</td>
<td>1.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CAUTION for Secondary Operations:**

1. Be sure not to bend shafts or break teeth when performing secondary operations on SV Involute Spline shafts.
2. It is essential to apply lubricant on the contact surface of the spline shaft and the bushing. To prevent scuffing, it is recommended to apply lubricating grease. If used in applications where oil contamination is not desirable, solid lubrication is recommended.

---

**Involute Spline Bushings**

### Specifications

- **Gear teeth:** Stub teeth
- **Pressure angle:** 20°
- **Material:** S45C
- **Heat treatment:** Thermal refined
- **Surface treatment:** Black oxide coating

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Module</th>
<th>No. of teeth</th>
<th>Shape</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>Face width (mm)</th>
<th>Allowable torque (N·m)</th>
<th>Backlash (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV17-40</td>
<td>8</td>
<td>T1</td>
<td>13.7</td>
<td>40</td>
<td>25</td>
<td>33.2</td>
<td>3.38</td>
<td>0.06–0.15</td>
<td>0.21</td>
</tr>
<tr>
<td>SV20-45</td>
<td>10</td>
<td>T1</td>
<td>16.7</td>
<td>45</td>
<td>30</td>
<td>59.6</td>
<td>6.08</td>
<td>0.06–0.15</td>
<td>0.31</td>
</tr>
<tr>
<td>SV25-55</td>
<td>13</td>
<td>T1</td>
<td>21.7</td>
<td>55</td>
<td>38</td>
<td>123</td>
<td>12.8</td>
<td>0.06–0.15</td>
<td>0.57</td>
</tr>
<tr>
<td>SV30-65</td>
<td>16</td>
<td>T1</td>
<td>26.7</td>
<td>65</td>
<td>45</td>
<td>222</td>
<td>22.6</td>
<td>0.06–0.15</td>
<td>0.93</td>
</tr>
</tbody>
</table>

**CAUTION for Product Characteristics:**

- The allowable torques are calculated based on "The surface strength of Spline".
- It is essential to apply lubricant on the contact surface of the spline shaft and the bushing. To prevent scuffing, it is recommended to apply lubricating grease. If used in applications where oil contamination is not desirable, solid lubrication is recommended.

---

**Characteristics of Involute Spline Shafts**

- SV and SVI series are made according to the automotive involute spline standard, JIS B 1603: 1995 (Straight cylindrical involute splines, backlash 0.06 to 0.15).
- Involute spline shafts and bushings are thermal refined to have good abrasion-resistance.
- Spline bushings may be made in CAC (copper alloy) type material as a special custom order item.

**Surface Strength of Splines**

The design concept of the spline surface strength is the same as that of a key. Here is the formula for the allowable transmission force F(N) of spline.

$$F = \eta \cdot d \cdot h_w \cdot l_w$$

And the formula of allowable torque T (N·m) of spline with respect to the surface strength.

$$T = \frac{F \cdot d}{200}$$

In designing a spline shaft, besides considering the surface strength, we should take into account the torsional and bending stresses of the spline.

Where

- \( \eta \): Contact ratio of surface \( \approx 0.75 \) (assumed)
- \( l_w \): Contact length of spline \( \approx 1.485 \)
- \( h_w \): Contact depth of tooth \( \approx 0.8 \)
- \( d \): Allowable surface stress of spline \( \approx 19.6 \text{MPa (2kgf/mm²)} \) (assumed)
- \( d \): Contact diameter (mm) \( \approx \) Tip diameter of spline shaft D - hw

---

Please see our web site for corrections on KHK Catalogs.
See the gears with your own eyes and move them with your own hands to learn about their mechanisms and characteristics.

### Features of GearCube

- Assembly kits can be connected flexibly.
- The frame is made of polycarbonate with high transparency and impact resistance.
- Gears combine MC nylon and metal, making lubrication unnecessary.
- An instruction manual is included, enabling easy assembly by anyone.

### Assembly Procedure

- Remove protective sheet
- Insert bushing
- Set in shaft
- Assemble into frame

### Set Contents

- With sticker

---

*These kits are not for actual use to transmit power. Please use only as representations of gear systems.

---

This product is certified by KAWAGUCHI i-mono i-waza.*

---

All six types of assembly kit and input/output shafts can be connected.

**GCU-S Spur Gear Kit**

- **Installation:** Parallel Axes (Two-stage)
- **Gear Type:** Spur Gears
- **Gears:** 2 units of S51.5-16
  2 units of PS1.5-22
- **Gear Ratio:** 1.89
- **Weight:** Approx. 1kg

The Gear Kit contains a two-stage spur gear train and allows speed increases/reductions, and includes the most commonly used combinations of gears.

**GCU-H Helical Gear Kit**

- **Installation:** Parallel Axes
- **Gear Type:** Helical Gears (also for Screw Gears)
- **Gears:** 5N2.5-10R
  5N2.5-10L
- **Gear Ratio:** 1
- **Weight:** Approx. 1kg

Helical gears have more strength than spur gears of the same dimensions and have the advantage of being less noisy.

**GCU-M Miter Gear Kit**

- **Installation:** Intersecting Axes
- **Gear Type:** Miter Gears
- **Gears:** SM2-25
  PM2-25
- **Gear Ratio:** 1
- **Weight:** Approx. 1kg

Use of bevel gears allows the changing of the shaft angle by 90 degrees. Applications include the changing of the direction of power.

**GCU-R Rack Kit**

- **Installation:** Intersecting Axes
- **Gear Type:** Racks & Pinions
- **Gears:** SRO1.5-500
  PS1.5-20
- **Weight:** Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.

**GCU-N Screw Gear Kit**

- **Installation:** Nonparallel and nonintersecting gears
- **Gear Type:** Screw Gears
- **Gears:** SN2.5-10R
  PN2.5-10R
- **Gear Ratio:** 1
- **Weight:** Approx. 1kg

Screw Gears are helical gears used in nonparallel and nonintersecting situations. Applications include devices like conveyors with light loads.

**GCU-W Worm Gear Pair Kit**

- **Installation:** Nonparallel and nonintersecting gears
- **Gear Type:** Worm Gear Pair
- **Gears:** SW2-R1
  PG2-20R1
- **Gear Ratio:** 1
- **Weight:** Approx. 1kg

Worm Gear Pairs can be used to make large reductions in speed in a single phase. The worm gear cannot be driven by the worm wheel due to inherent self-locking.
Special grease GC-F01 does not drip or pollute the machine. 

Grease up to consistency No. 3 can be used regardless of the manufacturer. 

Grease is applied by a polyurethane lubricating gear to form a uniform lubricating film. 

Integration is possible with the control system of the machine in use, to adjust the amount of lubricant according to the application. 

Grease applied to polyurethane lubricating gear to form a uniform lubricating film. 

Special grease GC-F01 does not drip or pollute the machine. 

Optimized lubricant improves the durability of racks & pinions and reduces the maintenance costs. 

Table 1. Required amount of lubricant

<table>
<thead>
<tr>
<th>NO.</th>
<th>Product Name</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flex pump</td>
<td>24 VDC automatic time controlled lubrication pump</td>
</tr>
<tr>
<td>2</td>
<td>Grease cartridge</td>
<td>3 V battery automatic time controlled lubrication pump</td>
</tr>
<tr>
<td>3</td>
<td>Tube connector</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Tube</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Mounting shaft</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Lubricating gear</td>
<td></td>
</tr>
</tbody>
</table>

Application Examples

Table 1. Required amount of lubrication

<table>
<thead>
<tr>
<th>Module</th>
<th>Required amount of lubrication (m³/24h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.25</td>
</tr>
<tr>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td>6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Flex pump

**FP400**

Mark compatible product

24 VDC automatic time controlled lubrication pump

- Tube connector (right angle type) and power cable (5 m) are included.

Flex pump

**FP400B**

Mark compatible product

3 V battery automatic time controlled lubrication pump

- Tube connector (right angle type) and 3 V battery are included as accessories.

GC-F01

- Special grease that contains additives considering the optimum adhesion to metal surfaces.

- Ideal for racks & pinions in high-temperature and high-load environments.

- This tube has excellent pressure resistance, elasticity, restoring force and bending strength.

- GC-F01 grease is provided before shipment.

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Operation speed</td>
</tr>
<tr>
<td>Lubricating oil</td>
</tr>
<tr>
<td>Operating pressure</td>
</tr>
<tr>
<td>Lubricant</td>
</tr>
<tr>
<td>Operating temperature</td>
</tr>
<tr>
<td>Number of outlets</td>
</tr>
<tr>
<td>How to connect pipes</td>
</tr>
<tr>
<td>Operating voltage</td>
</tr>
<tr>
<td>Consumption voltage</td>
</tr>
<tr>
<td>Mounting direction</td>
</tr>
<tr>
<td>Control device</td>
</tr>
<tr>
<td>Lubricant level monitor</td>
</tr>
<tr>
<td>Malfunction signal</td>
</tr>
</tbody>
</table>

Specifications

- Dustproof/waterproof class IEC Standard IP54
- Mounting direction Omni-directional mounting available
- Operation method Piston pump type
- Lubricant Grease of consistency up to NLGI No. 3
- Operating pressure Up to 70 bar
- Operating temperature -30 to 70°C
- Lubricant supply amount 0.15 cm³/pulse
- Number of outlets 1 port
- Pressure monitor Built-in, electronic type
- Control device Built-in, electronic type
- Malfunction signal Error detection / grease depletion, back pressure rise, etc.
- Mounting direction Omni-directional mounting available
- Operation method Piston pump type
- Lubricant Grease of consistency up to NLGI No. 3
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DLS Schmiersysteme
PUS/PUSCP Lubricated Spur Gears

**Module 1.5 ~ 6 Circular pitch 5, 10**

**Lubrication Spur Gears**

- **Specifications**
  - Gear teeth: Standard full depth
  - Pressure angle: 20°
  - Material: Polyurethane foam

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Module Type</th>
<th>No. of teeth</th>
<th>Pitch dia.</th>
<th>Outside dia.</th>
<th>Face width</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUS1.5-24</td>
<td>m1.5</td>
<td>24</td>
<td>36</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>PUS3-17</td>
<td>m2</td>
<td>17</td>
<td>36</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>PUS5-17</td>
<td>m2</td>
<td>17</td>
<td>42.5</td>
<td>47.5</td>
<td>24</td>
</tr>
<tr>
<td>PUS7-17</td>
<td>m3</td>
<td>17</td>
<td>57</td>
<td>57</td>
<td>30</td>
</tr>
<tr>
<td>PUS10-17 (multi/bore)</td>
<td>m8</td>
<td>17</td>
<td>136</td>
<td>152</td>
<td>80</td>
</tr>
<tr>
<td>PUS10-17 (multi/bore)</td>
<td>m10</td>
<td>17</td>
<td>170</td>
<td>190</td>
<td>100</td>
</tr>
</tbody>
</table>

[Application Hints]
1. Can be used in temperatures from -30 to 150° C.
2. Setting is possible to either a rack or a pinion, but we recommend a pinion as it can provide proper lubrication.
3. Avoid operations with high load until grease is applied to the gear teeth of the rack and pinion gears.

---

DLS Schmiersysteme
PUH Lubricated Helical Gears

**Module 1.5 ~ 6**

**Lubrication Helical Gears**

- **Specifications**
  - Gear teeth: Standard full depth
  - Pressure angle: 20°
  - Material: Polyurethane foam

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Module Type</th>
<th>No. of teeth</th>
<th>Pitch dia.</th>
<th>Outside dia.</th>
<th>Face width</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUH1.5-24R</td>
<td>m1.5</td>
<td>24</td>
<td>36</td>
<td>41.2</td>
<td>15</td>
</tr>
<tr>
<td>PUH3-17</td>
<td>m2</td>
<td>17</td>
<td>36.1</td>
<td>40.1</td>
<td>20</td>
</tr>
<tr>
<td>PUH5-17</td>
<td>m3</td>
<td>17</td>
<td>54.1</td>
<td>60.1</td>
<td>30</td>
</tr>
<tr>
<td>PUH7-17</td>
<td>m4</td>
<td>17</td>
<td>72.2</td>
<td>80.2</td>
<td>40</td>
</tr>
<tr>
<td>PUH10-17 (multi/bore)</td>
<td>m8</td>
<td>17</td>
<td>144.3</td>
<td>160.3</td>
<td>80</td>
</tr>
<tr>
<td>PUH10-17 (multi/bore)</td>
<td>m10</td>
<td>17</td>
<td>188.4</td>
<td>200.4</td>
<td>100</td>
</tr>
</tbody>
</table>

[Application Hints]
1. Can be used in temperatures from -30 to 150° C.
2. Setting is possible to either a rack or a pinion, but we recommend a pinion as it can provide proper lubrication.
3. Avoid operations with high load until grease is applied to the gear teeth of the rack and pinions.

---

DLS Schmiersysteme
Mounting Shaft for Lubricated Gears

**Mounting Axes**

- **Straight Type**
- **Right Angle Type**

[Application Hints]
1. Tube connector is not included.

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Please see our web site for corrections on KHK Catalogs.