CROWNGEAR

0314
Crowngear: Come lavora

Crowngear è un giunto a doppia articolazione, fabbricato in acciaio forgiato, e impiega come elementi di trasmissione due mozzi con dentatura bombata che ingranano su due flange con dentatura interna a denti dritti. La curvatura dei denti dei mozzi è disegnata allo scopo di consentire una trasmissione torsionalmente rigida, in grado di compensare disallineamenti angolari, radiali e assiali fra due alberi, e la speciale forma bombata dei denti assicura un’area di contatto ottimale e una pressione ridotta. Le due flange sono collegate attraverso viti ad alta resistenza e dotate di quattro ingrassatori attraverso i quali vengono riempite di grasso, che riduce l’attrito fra i denti e l’usura. Paraoli commerciali unificati nelle slitte garantiscono la tenuta e garantiscono una lunga vita del giunto; il grasso deve essere rabbocato ogni 1000 ore di lavoro e sostituito ogni 5000 ore. La gamma standard Crowngear è progettata per un impiego orizzontale di lavoro; un impiego verticale richiede una versione speciale. La temperatura di lavoro può variare da -10°C a +80°C.

Crowngear: How it works

Crowngear is a double joint coupling manufactured from forged steel using as transmission element two crowned tooth geared hubs which engage two internal straight teeth flanges. The hub’s teeth curvature is designed in order to allow a torsional stiff transmission, and to compensate angular, radial and axial shafts misalignments; the special shape of the teeth grants an optimized contact area and a reduced surface pressure. The two flanges are connected through high resistance bolts and, through four grease nipples, filled with grease which reduces teeth friction and wearing. Standard o-ring in the sleeves ensures the seal and the coupling’s long life; the grease must be refilled every 1000 working hours and changed every 5000 hours. The standard Crowngear range is designed for horizontal working position; vertical mounting requires a special drawing. The working temperature con range from -10°C up to +80°C.
Mounting, operating instructions and maintenance

Mounting
Clean carefully all the parts of the coupling.
Flanges must be located before to mount the hubs on the shafts.
align the shaft using a dial indicator.
A good shafts alignment maximize the coupling’s lifetime.
The distance between the hubs “s” must be according with the table (2). Tighten the screws with tightening torque $T_s$ (table 2).

Shafts-Bore fits
The stress on the hubs must be controlled.
For medium or heavy duty:
• with 1 keyway H7-p6 hub-shaft tolerance and P9 keyway tolerance are recommended, and $C/d_{max} > 1.40$ (see table 2)
Mounting by press and heating the hubs up to 100°C, if necessary.
• with 2 keyways H7-p6 hub-shaft tolerance and Js9 keyway tolerance are recommended.

Lubrication
Use lithium greases with extreme pressure characteristics:
CROWNGEAR

Dati tecnici e dimensioni di ingombro

**Tipo / Type A - C**

Tipo/Type A - Forma base / Basic shape
Tipo/Type C - Mozzi lunghi / Long hubs

**Tipo / Type A**

Posizione di lavoro orizzontale / Horizontal working position

**Tipo / Type B**

Mozzi rovesciati / Reversed hubs

**Tipo / Type S**

Con calettatore / with Shrink Discs

**Tipo / Type D**

Fori di estrazione / Threaded extraction holes

**Fig. 2**

**Fig. 3**

**Fig. 4**

**Fig. 5**
## Technical data and overall dimensions

### Tab. 1

<table>
<thead>
<tr>
<th>Grand. Size</th>
<th>CROWNGEAR Caratteristiche Tecniche / Technical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coppia nominale Nominal torque</td>
</tr>
<tr>
<td></td>
<td>T</td>
</tr>
<tr>
<td>50</td>
<td>1750</td>
</tr>
<tr>
<td>60</td>
<td>2750</td>
</tr>
<tr>
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</tr>
<tr>
<td>230</td>
<td>150000</td>
</tr>
<tr>
<td>270</td>
<td>195000</td>
</tr>
</tbody>
</table>

Disallineamenti: vedi tabella 5 / Misalignments: see table 5

### Tab. 2

<table>
<thead>
<tr>
<th>Grand. Size</th>
<th>CROWNGEAR Dimensioni d'ingombro / Overall dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foro minimo Min. bore</td>
</tr>
<tr>
<td>50</td>
<td>12</td>
</tr>
<tr>
<td>60</td>
<td>18</td>
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<td>75</td>
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<tr>
<td>230</td>
<td>120</td>
</tr>
<tr>
<td>270</td>
<td>130</td>
</tr>
</tbody>
</table>

* Chiavetta 6885/1 / 6885/1 keyway
** Distanza minima per allineare i mozzi / Minimum dimension to align the hubs

### Tab. 3

<table>
<thead>
<tr>
<th>Grand. Size</th>
<th>CROWNGEAR SD per Ø albero massimo disponibile / SD for max. available shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tipo / Type</td>
</tr>
<tr>
<td>50</td>
<td>62x110</td>
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<tr>
<td>60</td>
<td>80x145</td>
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<tr>
<td>75</td>
<td>100x170</td>
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<tr>
<td>95</td>
<td>125x215</td>
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<td>110</td>
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<td>155</td>
<td>200x350</td>
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<tr>
<td>170</td>
<td>220x370</td>
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<td>190</td>
<td>240x405</td>
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<tr>
<td>210</td>
<td>260x430</td>
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<tr>
<td>230</td>
<td>280x460</td>
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### Tab. 4

<table>
<thead>
<tr>
<th>Grand. Size</th>
<th>Fori di estrazione Threaded extraction holes</th>
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<tbody>
<tr>
<td></td>
<td>V</td>
</tr>
<tr>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>60</td>
<td>-</td>
</tr>
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<td>-</td>
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<tr>
<td>280</td>
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</tbody>
</table>
Selezione grandezza CROWNGEAR

In order to select a Crowngear coupling correctly, first find the correct service factor \( f_S \) and then divide the Crowngear nominal torque (see \( T \) value on the technical data table (1)) by the service factor. The transmitted torque must always be less than \( \frac{T}{f_S} \).

The \( f_S \) service factor accounts for the shaft misalignment \( f_1 \), and for the type of operating machine \( f_2 \), so that \( f = f_1 \times f_2 \).

**Tab. 5**

<table>
<thead>
<tr>
<th>Grand. Size</th>
<th>( \text{ang max} )</th>
<th>( \text{rad max} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>0.11</td>
<td>1°</td>
</tr>
<tr>
<td>60</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>0.29</td>
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<tr>
<td>155</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>0.38</td>
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<tr>
<td>190</td>
<td>0.44</td>
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</tr>
<tr>
<td>210</td>
<td>0.50</td>
<td></td>
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<tr>
<td>230</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>270</td>
<td>0.64</td>
<td></td>
</tr>
</tbody>
</table>

Il disallineamento ang massimo di 1° e rad max non possono coesistere contemporaneamente: un disallineamento ang riduce la possibilità di un disallineamento rad, secondo la tabella.

The maximum ang of 1° and rad max cannot co-exist at the same time, therefore an angular misalignment ang reduces the possibility of a radial misalignment according to the table.

**Fattore di disallineamento \( f_1 \) / Misalignment factor \( f_1 \)**

The combined total angular misalignment \( T_{\text{tot}} \) is a function of the angular misalignment \( \text{ang} \) and offset misalignment \( \text{rad} \) of the shafts, according to the following formula:

\[
T_{\text{tot}} = \text{ang} + \arctan \left( \frac{\text{rad}}{H} \right)
\]

The value \( H \) (mm) is given in the overall dimensions table (2). The misalignment factor \( f_1 \) is a function of the % of the maximum speed \( n_{\text{max}} \) (table 1) and of the \( T_{\text{tot}} \) as in the diagram (table 5).
Size selection

**Fattore di carico $f_2$**
La grandezza del giunto dipende anche dai tipi di macchine azionate, soggette a diversi tipi di carico, da “uniforme” a “servizio pesante con alti e frequenti sovraccarichi”.

**Load factor $f_2$**
The coupling size depends also on the type of machine to be coupled, where different types of loads can be involved, from “uniform” to “heavy duty with high and frequent shocks”.

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<table>
<thead>
<tr>
<th>Tipo di carico</th>
<th>Esempio di macchina operatrice</th>
<th>Fattore di carico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous without overloads</td>
<td>agitatori e centrifughe per liquidi</td>
<td>$1 \div 1.3$</td>
</tr>
<tr>
<td>Continuous with light overloads</td>
<td>Macchine confezionatrici e imbottigliatrici</td>
<td>$1.4 \div 1.7$</td>
</tr>
<tr>
<td>Intermittent with medium overloads</td>
<td>Compressori a pistone</td>
<td>$1.75 \div 2.4$</td>
</tr>
<tr>
<td>High and frequent overloads</td>
<td>Frantumatori da miniera</td>
<td>$2.5 \div 3$</td>
</tr>
</tbody>
</table>

Il fattore di carico $f_2$ deve essere aumentato:
- $f_2 + 1$ per macchine azionate da motori a combustione con 4 o 5 cilindri
- $f_2 + 0.5$ per azionamenti con motori a combustione con 6 cilindri o con turbine idrauliche, o con coppie di spunto $> 2$
- Applicazioni con picchi elevati e frequenti:
  - Carico unidirezionale: $T >$ Coppia di picco
  - Carico alternato: $T > 1.5 \times$ Coppia di picco

The load factor $f_2$ must be increased:
- $f_2 + 1$ for machines operating by piston engines with 4 or 5 pistons
- $f_2 + 0.5$ for machines operating by piston engines with 6 pistons or hydraulic turbines or with start torque $> 2$
- Repetitive high peak torque applications:
  - Non reversing duty: $T >$ Peak torque
  - Reversing duty: $T > 1.5 \times$ Peak torque.

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CROWNGEAR
Product Lines:

Conex
Clamping Elements

Midas
Clamping Elements and Timing Belt Pulleys

Metalflex
Bellow Couplings

Flexsteel
Disc Pack Couplings

Crowngear
Steel Gear Couplings

Securex - Standard - ZBC
Torque Limiters

MRF
Large Torque Limiters

Compolastic
Elastic Couplings

Compogear
Nylon Gear Couplings

Jason Accu-link
Adjustable length V-Belts