NEW chipbreaker for efficient hard turning
Innovative 3D chipbreaker on T-CBN inserts for efficient chip control
New HP Chipbreaker
For Finishing Hardened Steel

1. By separating the chipbreaker from the cutting edge, the cutting force imposed on the cutting edge during machining is significantly reduced, thus providing long tool life.

2. The cutting edge preparation is designed to ensure easy cutting at low cutting forces, while maintaining close tolerances with no deviations.

3. The HP style chipbreaker, combined with built-in wipers, yields excellent surface quality and good chip control.
ACCELERATED MACHINING

CUTTING PERFORMANCE

Chip control is stable for a long time

**HARDBREAKER HP** vs. Competitor

40 min. 80 min.

Chatter stability

Prevents chattering and provides the finest machined surface

Due to low cutting force, chatter stability is greatly improved

Competitor (without breaker)
# HARDBREAKER HP

## INSERT

<table>
<thead>
<tr>
<th>Shape</th>
<th>Designation</th>
<th>Grade</th>
<th>I. C. dia.</th>
<th>Thickness</th>
<th>Hole dia.</th>
<th>Corner radius</th>
<th>CBN length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>BMX10</td>
<td>BXA20</td>
<td>IC</td>
<td>S</td>
<td>D1</td>
</tr>
<tr>
<td>CNGM</td>
<td>2QP-CNGM120404-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-CNGM120408-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>2QP-CNGM120408WL-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.8</td>
</tr>
<tr>
<td>GNGG</td>
<td>2QP-GNGG120404-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-GNGG120408-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.8</td>
</tr>
<tr>
<td>DNGM</td>
<td>2QP-DNGM150404-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-DNGM150408-HP</td>
<td>●</td>
<td>●</td>
<td>12.7</td>
<td>4.76</td>
<td>5.16</td>
<td>0.8</td>
</tr>
<tr>
<td>TNGM</td>
<td>3QP-TNGM160404-HP</td>
<td>●</td>
<td>●</td>
<td>9.525</td>
<td>4.76</td>
<td>3.81</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>3QP-TNGM160408-HP</td>
<td>●</td>
<td>●</td>
<td>9.525</td>
<td>4.76</td>
<td>3.81</td>
<td>0.8</td>
</tr>
<tr>
<td>VNGM</td>
<td>2QP-VNGM160408-HP</td>
<td>●</td>
<td>●</td>
<td>9.525</td>
<td>4.76</td>
<td>3.81</td>
<td>0.8</td>
</tr>
<tr>
<td>CCGT</td>
<td>2QP-CCGT060204-HP</td>
<td>●</td>
<td></td>
<td>6.35</td>
<td>2.38</td>
<td>2.8</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-CCGT09T304-HP</td>
<td>●</td>
<td></td>
<td>9.525</td>
<td>3.97</td>
<td>4.4</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-CCGT09T308-HP</td>
<td>●</td>
<td></td>
<td>9.525</td>
<td>3.97</td>
<td>4.4</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>2QP-CCGT09T308WL-HP</td>
<td>●</td>
<td></td>
<td>9.525</td>
<td>3.97</td>
<td>4.4</td>
<td>0.8</td>
</tr>
<tr>
<td>DCGT</td>
<td>2QP-DCGT070204-HP</td>
<td>●</td>
<td></td>
<td>6.35</td>
<td>2.38</td>
<td>2.8</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-DCGT11T304-HP</td>
<td>●</td>
<td></td>
<td>9.525</td>
<td>3.97</td>
<td>4.4</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>2QP-DCGT11T308-HP</td>
<td>●</td>
<td></td>
<td>9.525</td>
<td>3.97</td>
<td>4.4</td>
<td>0.8</td>
</tr>
<tr>
<td>TPGT</td>
<td>3QP-TPGT110304-HP</td>
<td>●</td>
<td></td>
<td>6.35</td>
<td>3.18</td>
<td>3.4</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>3QP-TPGT110308-HP</td>
<td>●</td>
<td></td>
<td>6.35</td>
<td>3.18</td>
<td>3.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

- ●: New product
- ○: To be released in 2018
ACCELERATED MACHINING

STANDARD CUTTING CONDITIONS

<table>
<thead>
<tr>
<th>ISO</th>
<th>Grade</th>
<th>Work condition</th>
<th>Cutting speed Vc (m/min)</th>
<th>Depth of cut ap (mm)</th>
<th>Feed f (mm/rev)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BXM10</td>
<td>Continuous</td>
<td>120 - 350</td>
<td>0.05 - 0.20</td>
<td>0.05 - 0.20</td>
</tr>
<tr>
<td>H</td>
<td>BXA20</td>
<td>Continuous</td>
<td>70 - 180</td>
<td>0.05 - 0.20</td>
<td>0.05 - 0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Light interrupted</td>
<td>70 - 180</td>
<td>0.05 - 0.20</td>
<td>0.05 - 0.20</td>
</tr>
</tbody>
</table>

PRACTICAL EXAMPLES

<table>
<thead>
<tr>
<th>Workpiece type</th>
<th>Bevel gear</th>
<th>Gear Wheel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert</td>
<td>2QP-CNGM120408-HP</td>
<td>2QP-CNGM120408WL-HP</td>
</tr>
<tr>
<td>Grade</td>
<td>BXA20</td>
<td>BXA20</td>
</tr>
<tr>
<td>Workpiece material</td>
<td>JIS SCM420 (HRC58)</td>
<td>JIS SCM420 (HRC58)</td>
</tr>
</tbody>
</table>

Cutting conditions

| Cutting speed: Vc (m/min) | 160 | 150 |
| Feed : f (mm/rev)         | 0.10 | 0.12 |
| Depth of cut : ap (mm)    | 0.15 | 0.18 |
| Coolant                   | Wet | Dry |

Results

Competitor’s inserts had a short tool life because of chip re-cutting. The -HP chipbreaker insert solved chip entanglement issues, prolonging tool life and achieving excellent surface finish quality.

Tool life 1.8 times!

The -HP chipbreaker insert with wiper provided good chip flow and machined surface.

Tool life 1.2 times!
Tungaloy Scandinavia AB
Bollhusen 36
442 30 Kungsåra, Sweden
Phone: +46-48219200
www.tungaloy.se

Tungaloy Rus, LLC
115-42, Russian Federation, Moscow, Andropova avenue., b.18, bld.7, fl. 11, office 5
Phone: +7-499-883-01-80/81
www.tungaloy.ru

Tungaloy East LLC
620075, Russian Federation, Sverdlovsk Region, Ekaterinburg, Mamina-Sibiryakaya str., bldg. 101, room 203
Phone: +7-343-286-48-23/24
Fax: +7-912-284-91-60
www.tungaloy.ru/ru

Tungaloy Polska Sp. z o.o.
ul. Genesiusa 24
03-963 Warszawa, Poland
Phone: +48-22-617-0890
Fax: +48-22-617-0890
www.tungaloy.pl

Tungaloy J.K. Ltd.
The Technology Centre,
Wolverhampton Science Park,
Glasier Drive, Wolverhampton
West Midlands, WV10 9RU, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloyuk.co.uk

Tungaloy Hungary Kft.
Erszébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-8666
Fax: +36 1 781-8666
info@tungaloytools.hu

Tungaloy Turkey
Dübulu, OŚB 4. Cad No:4
34776 Umraniye, Istanbul, TURKEY
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.tungaloyturkey.com.tr
info@tungaloytools.com.tr

Tungaloy Benelux b.v.
Tielt, 20
NL-2431 EZ Bodegraven, Netherlands
Phone: +31 172 630 420
Fax: +31 172 630 429
www.tungaloy-benelux.com

Tungaloy Croatia
Josip Kozarac 4
10432 Brinje, Croatia
Phone: +385 1 3326 604
Fax: +385 1 3326 683
www.tungaloy.hr

Tungaloy Cutting Tool (Shanghai) Co., Ltd.
Rm No 401 No.88 Zhaobei
Jiangchang No.3 Rd.
Shanghai 200438, China
Phone: +86-21-3632-1880
Fax: +86-21-3621-1918
www.tungaloy.co.jp/tcts

Tungaloy Cutting Tool (Thailand) Co., Ltd.
1675/7-8, Bangna-Trad Road
km 5 Bangna, Bangna, Bangkok 10260
Thailand
Phone: +66 2-751-5711
Fax: +66 2-751-5715
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.
82 Ubi Road 1, #08-11 Oxley BizHub 2
Singapore 408734
Phone: +65-6391-1833
Fax: +65-6299-4567
www.tungaloy.co.jp/tspl

Tungaloy Vietnam
LE 04-38, Lexington Residence
67 Mai Chi Tho, Dist. 2,
Ho Chi Minh City, Vietnam
Phone: +84-8-37406660
Fax: +84-8-37406662
www.tungaloy.co.jp/tspl

Tungaloy India Pvt. Ltd.
India Finance Centre,
Unit # 902-A, 9th Floor,
Tower 1, Serapath Bapat Marg,
Elphinstone Road (West),
Mumbai-400013, India
Phone: +91-22-6174-3904
Fax: +91-22-6124-8999
www.tungaloy.co.jp

Tungaloy Korea Co., Ltd.
#1312, Byulksan Digital Valley 5-ch
Be Front Tower 244, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-2921-6161
Fax: +82-2-6383-8952
www.tungaloy.co.kr

Tungaloy Malaysia Sdn Bhd
50 K-2, Kelana Mall, Jalan SS6/14
Kelana Jaya, 47301
Petaing Jaya, Selangor Darul Ehsan
Malaysia
Phone: +603-7805-3222
Fax: +603-7804-8563
www.tungaloy.co.jp/my

Tungaloy Australia Pty Ltd
PO Box 2232, Rowville,
Victoria 3178, Australia
Phone: +61-3-9755-8070
Fax: +61-3-9755-8069
www.tungaloycom.au

PT. Tungaloy Indonesia
Komp. Grand Wisata block AA-10 No.3-5
Cileungsi,
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
www.tungaloy.co.id

www.tungaloy.com
To see this product in action visit:
www.youtube.com/tungaloycorporation

Distributed by:

www.tungaloy.com