Crankshaft grinders
PM 310
PM 320
For decades NAXOS-UNION crankshaft grinders held a prominent place in the worldwide manufacture of engine components for passenger and commercial vehicles. By now their combination of CBN technology and the pin chasing process has become the accepted industry standard. NAXOS-UNION was the first to apply linear motor technology to the process and now offers highly dynamic drive systems to satisfy production requirements.
Series PM 310 / 320.

The machine design meets the modern production environment’s increased demands for a high degree of availability, a small footprint, simple and time-saving installation and commissioning and easy servicing.

Special features:
- CBN technology also for the grinding of radii and shoulders
- Pin chasing of the bearings, with the workpiece centrically clamped
- The twin-head version offers the highest productivity levels through simultaneous machining with independently working grinding units
- X-axis drive system with antibacklash linear motor
- Work head with torque motor
- Hydro-static guideways (X- and Z-axis)
- Adaptive in-process gauging system
- Grinding spindle with direct drive (55 kW / 97 kW)
- Machine enclosure detached from machine
- Compact design
- Integrated roundness monitoring and error correction

Twin-head pin grinder for pre-grinding into solid material using an electro-plated CBN wheel.

Grinding the pin bearings on a heavy truck crankshaft.
CBN main bearing grinder.

Flexible CBN grinder with B-axis.
Machine variants and grinding technologies.

The modular system allows the configuration of a multitude of machine variants. The main and pin bearings can be machined in a single setup on the same grinder or on two different machines, following the traditional concept, the decision depends on production requirements.

| Single, straight wheel head:  | grinding the main and/or pin bearings |
| Two straight wheel heads: | simultaneous grinding of the main and/or pin bearings |
| Pivoting wheel head: | combined processes, grinding consecutively |
| Angular wheel head: | grinding the high and low ends |
| Available grinding technologies: | pre-grinding with electro-plated and finish-grinding with vitrified-bonded CBN grinding wheels; straight plunge grinding of bearing seats with/without shoulders and radii; multiple plunge grinding (bearing width > wheel width); diagonal and kiss grinding; flexible grinding (wheel edge radius < bearing radius); angular plunge grinding with CBN or corundum wheels. |

RF angular plunge cut.

PMD 320 twin-head machine for simultaneous grinding.
## Technical Data.

### Capacity

<table>
<thead>
<tr>
<th></th>
<th>PM 310</th>
<th>PM 320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece length, max.</td>
<td>mm 1,000</td>
<td>mm 1,800</td>
</tr>
<tr>
<td></td>
<td>in 39.5</td>
<td>in 71</td>
</tr>
<tr>
<td>Workpiece weight, max.</td>
<td>kg 80</td>
<td>kg 250</td>
</tr>
<tr>
<td></td>
<td>lb 176</td>
<td>lb 550</td>
</tr>
<tr>
<td>Swing diameter, max.*</td>
<td>mm 300</td>
<td>mm 320</td>
</tr>
<tr>
<td></td>
<td>in 12</td>
<td>in 12</td>
</tr>
<tr>
<td>Stroke radius, max.*</td>
<td>mm 110</td>
<td>mm 110 / 140</td>
</tr>
<tr>
<td></td>
<td>in 4.5</td>
<td>in 4.5 / 5.5</td>
</tr>
<tr>
<td>Grinding center above the bottom edge of machine</td>
<td>mm 1,100</td>
<td>mm 1,300</td>
</tr>
<tr>
<td></td>
<td>in 43.5</td>
<td>in 51</td>
</tr>
</tbody>
</table>

### Grinding wheels

<table>
<thead>
<tr>
<th></th>
<th>mm 650</th>
<th>mm 650</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in 25.5</td>
<td>in 25.5</td>
</tr>
<tr>
<td>Max. wheel width*</td>
<td>mm 50</td>
<td>mm 50 / 60</td>
</tr>
<tr>
<td></td>
<td>in 2.0</td>
<td>in 2.0 / 2.5</td>
</tr>
<tr>
<td>Cutting speed, max.</td>
<td>m/s 125 (200)</td>
<td>m/s 125 (200)</td>
</tr>
<tr>
<td>Coolant</td>
<td>emulsion or grinding oil</td>
<td></td>
</tr>
</tbody>
</table>

### Drives

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis</td>
<td>SIEMENS linear motor</td>
</tr>
<tr>
<td>Feed force X</td>
<td>Nm 5,100</td>
</tr>
<tr>
<td></td>
<td>ft-lb 3,762</td>
</tr>
<tr>
<td>Rapid-traverse rate X / Z</td>
<td>m/min 25 / 20</td>
</tr>
<tr>
<td></td>
<td>ipm 984 / 787</td>
</tr>
</tbody>
</table>

### Control system

SIEMENS SINUMERIK 840 D solution line

### Dimensions and weights

<table>
<thead>
<tr>
<th></th>
<th>mm 5,800</th>
<th>mm 7,300</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in 228.5</td>
<td>in 287.4</td>
</tr>
<tr>
<td>Width b</td>
<td>mm 3,800</td>
<td>mm 4,140</td>
</tr>
<tr>
<td></td>
<td>in 149.5</td>
<td>in 163</td>
</tr>
<tr>
<td>Height c</td>
<td>mm 2,810</td>
<td>mm 3,010</td>
</tr>
<tr>
<td></td>
<td>in 110.5</td>
<td>in 118.5</td>
</tr>
<tr>
<td>Weight of single-wheel machine</td>
<td>kg 17,000</td>
<td>kg 21,000</td>
</tr>
<tr>
<td></td>
<td>lb 37,479</td>
<td>lb 46,297</td>
</tr>
<tr>
<td>Weight of twin-head machine</td>
<td>kg 20,500</td>
<td>kg 25,500</td>
</tr>
<tr>
<td></td>
<td>lb 45,195</td>
<td>lb 56,218</td>
</tr>
</tbody>
</table>

* It is also necessary to have individual checks, taking account of workpiece geometry and aspects of back rest and oscillation.
Floor plan PM 310 / 320

Subject to technical changes
At home in the world.

EMAG Salach GmbH

Salach
Austrasse 24
73084 Salach
Germany
Phone: +49 7162 17-0
Fax: +49 7162 17-820
E-mail: info@salach.emag.com

Frankfurt
Martin-Beihaim-Strasse 12
63263 Neu-Isenburg
Germany
Phone: +49 6102 88245-0
Fax: +49 6102 88245-412
E-mail: info@frankfurt.emag.com

Leipzig
Pitterstrasse 26
04159 Leipzig
Germany
Phone: +49 341 4666-0
Fax: +49 341 4666-114
E-mail: info@leipzig.emag.com

Munich
Zamdorferstrasse 100
81677 München
Germany
Phone: +49 89 99886-250
Fax: +49 89 99886-160
E-mail: info@muenchen.emag.com

Austria
Glaneckerweg 1
5400 Hallein
Austria
Phone: +43 6245 76023-0
Fax: +43 6245 76023-20
E-mail: info@austria.emag.com

Denmark
Horsvangen 31
7120 Vejle Ø
Denmark
Phone: +45 75 854854
Fax: +45 75 816276
E-mail: info@daenemark.emag.com

Sweden
Glasgatan 19B
73130 Köping
Sweden
Phone: +46 221 40305
E-mail: info@sweden.emag.com

Hungary
Gerenda 10
1163 Budapest
Hungary
Phone: +36 30 9362-416
E-mail: lbujaki@emag.com

Czech Republic
Lolkova 766
103 00 Praha 10 – Kolovraty
Czech Republic
Phone: +420 731 476070
E-mail: mdelis@emag.com

Poland
ul. Prusa 9F / 1
50-319 Wrocław
Poland
Phone: +48 728 389 989
Fax: +48 601 371 353
E-mail: arak@emag.com

Market Companies

NODIER EMAG INDUSTRIE
2, Parc des Fontenelles
78870 Bailly
France
Phone: +33 130 8047-70
Fax: +33 130 8047-69
E-mail: info@nodier.emag.com

EMAG MAQUINAS HERRAMIENTA S.L.
Pasaje Arrahona, nº 18
Polígono Industrial Santiga
08210 Barberà del Vallés (Barcelona)
Spain
Phone: +34 93 7195080
Fax: +34 93 7297107
E-mail: info@emh.emag.com

ZETA EMAG Srl
Viale Longarone 41/A
20080 Zibido S.Giacomo (MI)
Italy
Phone: +39 02 905942-1
Fax: +39 02 905942-21
E-mail: zetaemag@emag.com

EMAG UK Ltd.
Chestnut House,
Kingswood Business Park
Holyhead Road
Albrighton
Wolverhampton WV7 3AU
Great Britain
Phone: +44 1902 37609-0
Fax: +44 1902 37609-1
E-mail: info@uk.emag.com

EMAG OOO
ul. Akademika Chelomeya 3/2
117630 Moscow
Russia
Phone: +7 495 287 0960
Fax: +7 495 287 0962
E-mail: info@russia.emag.com

EMAG L.L.C. USA
38800 Grand River Avenue
Farmington Hills, MI 48335
USA
Phone: +1 248 477-7440
Fax: +1 248 477-7784
E-mail: info@usa.emag.com

EMAG MEXICO
Colina de la Umbria 10
53140 Boulevarres
Naucalpan Edo. de México
Mexico
Phone: +52 55 5374266-5
Fax: +52 55 5374266-4
E-mail: info@mexico.emag.com

EMAG DO BRASIL Ltda.
Rua Schilling, 413
Vila Leopoldina
05302-001 São Paulo
SP, Brazil
Phone: +55 11 38370145
Fax: +55 11 38370145
E-mail: info@brasil.emag.com

EMAG Machine Tools (Taicang) Co., Ltd.
Building 3, Cang Neng
Europe & American Technology Park
No. 8 Lou Jiang Rd. (N.)
215400 Taicang
Jiangsu, China
Phone: +86 512 5357-4098
Fax: +86 512 5357-5399
E-mail: info@emag-china.com
EMAG GROUP Thailand Office
19 Moo 1, Pong, Banglamung
Chonburi 20150
Thailand
Phone: +66 87 1468800
E-mail: ukaiser@emag.com

EMAG INDIA Pvt. Ltd.
Technology Centre
No. 17/G/46-3, Industrial Suburb,
2nd Stage, Yeshwanthpur,
Bengaluru – 560 022
India
Phone: +91 80 42544400
Fax: +91 80 42544440
E-mail: info@india.emag.com

EMAG KOREA Ltd.
Rm204, Biz center, SKn Technopark, 124
Sacimakipo-ro, Sangdaewon-dong,
Jungwon-gu, Seongnam City,
Gyeonggi-do, 462-721
South Korea
Phone: +82 31 776-4415
Fax: +82 31 776-4419
E-Mail: info@korea.emag.com

Czech Republic
Loikova 766
103 00 Praha 10 – Kolovraty
Czech Republic
Phone: +420 731 476070
E-mail: modelis@emag.com

Hungary
Gerenda 10
1163 Budapest
Hungary
Phone: +36 30 9362-416
E-mail: lbujaki@emag.com

Poland
ul. Prusa 9F / 1
50-319 Wroclaw
Poland
Phone: +48 728 389 989
Fax: +48 601 371 353
E-mail: arak@emag.com

EMAG UK Ltd.
Chestnut House,
Kingswood Business Park
Holyhead Road
Albrighton
Wolverhampton WV7 3AU
Great Britain
Phone: +44 1902 37609-0
Fax: +44 1902 37609-1
E-mail: info@uk.emag.com

EMAG OOO
ul. Akademika Chelomeya 3/2
117630 Moscow
Russia
Phone: +7 495 287 0960
Fax: +7 495 287 0962
E-mail: info@russia.emag.com

EMAG L.L.C. USA
38800 Grand River Avenue
Farmington Hills, MI 48335
USA
Phone: +1 248 477-7440
Fax: +1 248 477-7784
E-mail: info@usa.emag.com

EMAG MEXICO
Colina de la Umbria 10
53140 Boulevares
Naucalpan Edo. de México
Mexico
Phone: +52 55 5374266-5
Fax: +52 55 5374266-4
E-mail: info@mexico.emag.com

EMAG DO BRASIL Ltda.
Rua Schilling, 413
Vila Leopoldina
05302-001 São Paulo
SP , Brazil
Phone: +55 11 38370145
Fax: +55 11 38370145
E-mail: info@brasil.emag.com

EMAG Machine Tools (Taicang) Co., Ltd.
Building 3, Cang Neng
Europe & American Technology Park
No. 8 Lou Jiang Rd. (N.)
215400 Taicang
Jiangsu, China
Phone: +86 512 5357-4098
Fax: +86 512 5357-5399
E-mail: info@emag-china.com

TAKAMAZ EMAG Ltd.
1-8 Asahigaoka Hakusan-City
Ishikawa Japan, 924-0004
Japan
Phone: +81 76 274-1409
Fax: +81 76 274-8530
E-mail: info@takamaz.emag.com