CNC Heavy Duty Horizontal Lathe

CNC Heavy Duty Horizontal Lathe has a perfect combination of the up-to-date design, advanced high technology and fully skilled DSK Machinery’s engineering. This machine consists of work bed, carriage bed, headstock, tailstock, carriage, accessories and CNC control system.

www.dskmc.com
Steel Industry
제철 분야
- Work roll
- Backup roll
- PB roll
- Paper mill
This machine has been designed for various kinds of workpieces in the industries like below.

디에스케이기계가 생산하는 horizontal lathe로 다양한 분야의 제품을 최고의 품질로 가공할 수 있습니다.

**Shipbuilding Industry**
- Propeller shaft
- Intermediate shaft
- Rudderstock

**Power Generation Industry**
- Turbine rotor
- Generator rotor
- Main shaft for wind turbine
**Cast Iron Structure**

The main parts such as work bed, carriage bed, headstock, tailstock and faceplate are made as cast iron to get rigid structure and high dimensional accuracy of the products. This stiff structure makes it possible to perform heavy duty machining.

**Hydrostatic Worm & Rack System**

The hydrostatic worm & rack system is used for longitudinal adjustment of the carriage on the bed (Z-axis). A stable film of the oil is built up between the worm and the rack, over which the feed power is transmitted friction-free the bed slide to the bed. Pressure monitors and gauges are built into each circuit. A lack of the pressure due to a defect in oil supply would lead to a fault message and the operation would be stopped.

In general, heavy duty cutting and high speed revolution without frictional resistance and backlash cannot be achieved easily, but hydrostatic worm & worm rack type is an ideal method which can solve all these problems.
Double Tool Carrier

2 tool carriers are installed on the upper carriage and adjusted by means of geared-motor. Carriers are clamped by spring-loaded cylinders and unclamped by hydraulic unit.

2개의 tool carrier가 carriage 위에 설치되어 있으며, geared-motor로 조정됩니다. Carrier는 spring-loaded cylinder로 clamp되며, 유압으로 unclamp 됩니다.

Control System

Up-to-date control systems of Siemens and Fanuc are applicable.

Siemens와 Fanuc의 최신 컨트롤 시스템이 적용됩니다.
CNC Heavy Duty Horizontal Lathe

Features

Headstock

Headstock mainly consists of faceplate, clamping jaws, spindle, motor and headstock base. The function of the headstock is to rotate the workpiece which is driven by the faceplate, clamping jaws and thyristor controlled AC / DC motor with a drive clutch and disk brake. This drive is designed for clockwise and counter clockwise rotation both.

Headstock은 faceplate, clamping jaw, spindle, motor, headstock base로 구성되어 있습니다. Headstock의 주요 기능은 소재를 회전시키는 것이며, faceplate, clamping jaw 그리고 drive clutch와 disk brake가 설치된 AC / DC motor로 구동됩니다. 구동은 시계방향과 반시계방향 양쪽으로 회전이 가능합니다.

Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>DHL1</th>
<th>DHL2</th>
<th>DHL3</th>
<th>DHL4</th>
<th>DHL5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle motor power</td>
<td>90 ~ 130 kW</td>
<td>150 ~ 250 kW</td>
<td>200 ~ 300 kW</td>
<td>250 ~ 360 kW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(122 ~ 170 Hp)</td>
<td>(201 ~ 335 Hp)</td>
<td>(268 ~ 402 Hp)</td>
<td>(335 ~ 482 Hp)</td>
<td></td>
</tr>
<tr>
<td>Speed range of spindle</td>
<td>0.5 ~ 200 rpm</td>
<td>0.5 ~ 150 rpm</td>
<td>0.5 ~ 120 rpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2 step)</td>
<td>(2 step)</td>
<td>(2 step)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Torque Diagram

Kw                          | Nm
-----------------------------|-----------------------------
320                          | 274Kw
300                          | 250Kw
280                          | 225Kw
260                          | 200Kw
240                          | 175Kw
220                          | 150Kw
200                          | 125Kw
180                          | 100Kw
160                          | 75Kw
140                          | 50Kw
120                          | 25Kw
100                          | 12Kw
80                           | 7Kw
60                           | 5Kw
40                           | 3Kw
20                           | 1.5Kw
10                           | 1Kw
5                            | 0.5Kw

rpm                         | Nm
-----------------------------|-----------------------------
15                            | 298,328Nm (94%)
10                            | 45,579Nm (94%)
7.5                           | 15,92
4.5                           | 7.5
1.5                           | 5
0.5                           | 3
1                             | 1.5
2                             | 2.5
3                             | 3.5
5                             | 5.5
10                            | 10.5
12.5                          | 12.5
15                            | 15.5
17.5                          | 17.5
20                            | 20.5
22.5                          | 22.5
25                            | 25.5
27.5                          | 27.5
30                            | 30.5
32.7                          | 32.7
50                            | 50.5
60                            | 60.5
80                            | 80.5
100                           | 100.5
120                           | 120.5
150                           | 150.5

1st step (0.9-11.8-32.7)      | 2nd step (4-54-150)
C-axis Indexing Function

C-axis indexing function can be added to the headstock for milling machining of the workpiece. The graduation of indexing is 0.001°.

소재에 milling 작업이 필요한 경우, C축 indexing 기능을 headstock에 장착할 수 있으며 indexing 각도는 0.001° 입니다.

Power Clamping System

4 clamping jaws are installed at the faceplate and adjusted by threaded spindle. A power clamping system which is integrated in the threaded spindle is provided for exact alignment of the workpiece and enough clamping force.

4개의 clamping jaw가 faceplate에 설치되어 있으며 나사산이 있는 spindle로 조정합니다. 이 spindle에는 power clamping system이 내장되어 있으며, 소재의 정확한 정렬과 충분한 clamping 힘을 전달하기 위해 사용됩니다.

Tailstock

Tailstock is guided on the bed and used to counterhold the workpiece by means of a center or by an additional faceplate at tailstock. Tailstock is made as one body in order to keep rigidity and be strong enough against vibration.

Tailstock은 bed 위에 설치되어 되고, tailstock의 center 혹은 추가적으로 설치된 faceplate를 통해 소재를 잡아 주기 위한 용도로 사용됩니다. Tailstock 본체는 강성을 갖춘, 진동에 강하게도 일체형으로 제작됩니다.
Accessories

Steady Rest

In order to bear higher workpiece weight than machine's original capacity or keep stable machining condition, steady rest is used for safe and precise machining. DSK Machinery supplies 3 types of steady rests such as hydrostatic steady rest, hydrodynamic steady rest and roller rest.

소재의 안정적인 가공 혹은 장비의 용량보다 무거운 소재를 가공해야 할 경우, steady rest를 사용하여 안전하고 정밀한 가공을 가능하게 합니다. Hydrostatic steady rest, hydrodynamic steady rest, roller rest 3 가지 타입의 steady rest를 제공합니다.
Several types of the attachments for additional machining work in large size machine tools such as dual cutting attachment, grinding attachment, drilling attachment, boring unit and special external cutter unit can be supplied by DSK Machinery.

대형 공작기에 장착하여 부가적인 가공작업을 하기 위한 attachment를 공급하고 있으며, 그 종류로는 dual cutting attachment, grinding attachment, drilling attachment, boring unit 그리고 special external cutter unit도 공급하고 있습니다.
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<tr>
<td>Max. workpiece weight between centers</td>
<td>50 tons (110,000 lbs)</td>
<td>100 tons (220,000 lbs)</td>
</tr>
<tr>
<td>Max. swing over carriage (A)</td>
<td>4,000 mm (157 in.)</td>
<td></td>
</tr>
<tr>
<td>Max. turning length (B)</td>
<td>15,000 mm (590 in.)</td>
<td>20,000 mm (787 in.)</td>
</tr>
<tr>
<td>Spindle motor power</td>
<td>90 ~ 130 kW (121 ~ 174 Hp)</td>
<td>150 ~ 250 kW (201 ~ 335 Hp)</td>
</tr>
<tr>
<td>Speed range of spindle</td>
<td>0.5 ~ 200 rpm (2 step)</td>
<td>0.5 ~ 150 rpm (2 step)</td>
</tr>
<tr>
<td>Max. cutting force</td>
<td></td>
<td>160 kN (36,000 lbf)</td>
</tr>
<tr>
<td>Z-axis stroke (C)</td>
<td>16,000 mm (630 in.)</td>
<td>21,500 mm (846 in.)</td>
</tr>
<tr>
<td>X-axis stroke (D)</td>
<td>700 ~ 1,300 mm (28 ~ 51 in.)</td>
<td>1,000 ~ 1,500 mm (39 ~ 59 in.)</td>
</tr>
<tr>
<td>Z-axis feed rate</td>
<td>6,000 (10,000) mm/min (236 ~ 393 in./min)</td>
<td></td>
</tr>
<tr>
<td>X-axis feed rate</td>
<td></td>
<td>6,000 mm/min (236 in./min)</td>
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<tr>
<td>Control system</td>
<td></td>
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</tr>
<tr>
<td>Measuring system</td>
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<td>Heidenhain</td>
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Basic Accessories
- X, Z-axis telescopic cover
- Work light
- Patrol lamp (red, green, yellow)
- Leveling block & anchor bolt
- 4 chucking jaw units
- Test bar
- Center (60°, 75° 90°)

Optional Accessories
- Coolant supply unit (internal / external)
- Chip conveyor
- C-axis function
- Automatic tool changer
- Dual cutting attachment
- Milling attachment
- Grinding attachment
- Drilling attachment
- Boring unit
- Special external cutter unit
- Roller rest
- Hydrostatic steady rest
- Hydraulic steady rest
- Renishaw probe system
- Machine tools monitoring system (black box)
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<tr>
<td>Max. workpiece weight between centers</td>
<td>150 tons (330,000 lbs)</td>
<td>250 tons (550,000 lbs)</td>
<td>350 tons (770,000 lbs)</td>
</tr>
<tr>
<td></td>
<td>5,000 mm (196 in.)</td>
<td>6,000 mm (236 in.)</td>
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<td>31,500 mm (1240 in.)</td>
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DSK MACHINERY HEADQUARTER
129 Sincheon-ri, Jinbuk-myeon, Masanhap-gu, Changwon-si, Kyungsangnam-do, Korea
TELEPHONE: +82 (0)32 1644 4144  FAX: +82 (0)355 389 6320
E-MAIL: sales@dskmc.com  HOMEPAGE: http://www.dskmc.com

SEOUL BRANCH
S-28, 8th Floor, Tool Bldg, Garseok, Munjeong-dong, Songpa-gu, Seoul, 138-200, Korea
TELEPHONE: +82 (0)2 2047 7600  FAX: +82 (0)2 2047 7609
E-MAIL: seokyung@seokyung.co.kr  HOMEPAGE: http://www.seokyung.co.kr

BEIJING BRANCH
Beijing BYJC-DSK Machine Tool Engineering Technology Co., Ltd. (Joint Venture Company, Beijing)
Room 2606, Building B, Jianwai SOHO, No.39 Dongsanhuan Middle Road, Chaoyang District, Beijing
TELEPHONE: +86 010 5869 8634 ext 803  FAX: +86 010 5869 8662
E-MAIL: kalikisun@hotmail.com

SHANGHAI BRANCH
Room 309 No. 2008 Hongmei Road, Shanghai, 200233, China
TELEPHONE: +86-21-54262325  FAX: +86-21-54262326
E-MAIL: cai_yuxiong@yahoo.de