SANGNIM
Machine Tool & Service Provider

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CNC HEAVY DUTY HORIZONTAL LATHE

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

Steel Industry
제철분야

- Work roll
- Backup roll
- PB roll
- Paper mill

CNC Heavy Duty Horizontal Lathe

Applications

This machine has been designed for various kinds of workpieces in the industries like below.

상림엠에스피가 생산하는 Horizontal Lathe로
다양한 분야의 제품을 최고의 품질로 가공할 수 있습니다.

Shipbuilding Industry
조선분야

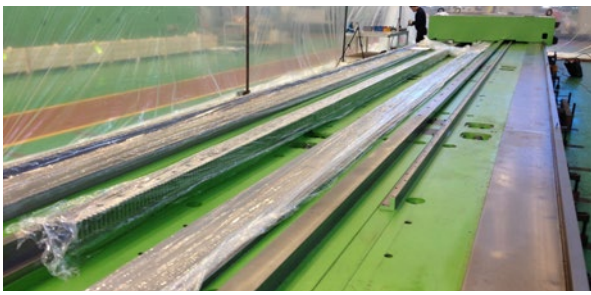
- Propeller shaft
- Intermediate shaft
- Rudderstock

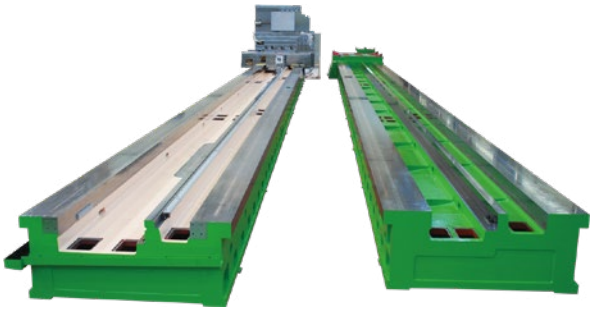
Power Generation Industry
발전분야

- Turbine rotor
- Generator rotor
- Main shaft for wind turbine

CNC Heavy Duty Horizontal Lathe

Features

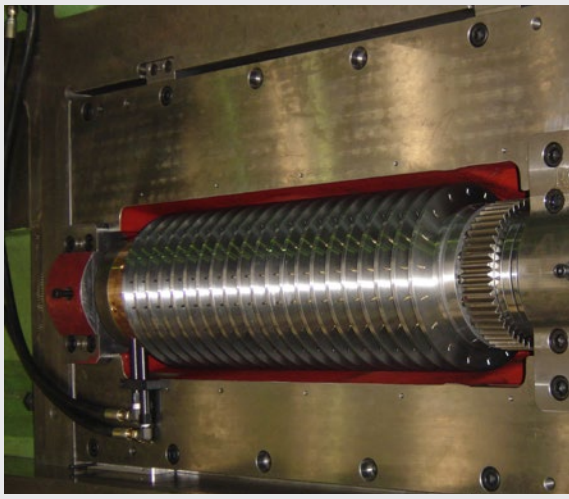




Cast Iron Structure

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.

주요 파트인 work bed, carriage bed, headstock, tailstock, faceplate는 주물로 제작되어 강성이 좋으며 제품의 고정밀도를 유지할 수 있고 강력 절삭에 알맞은 구조를 가지고 있습니다.



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.

Bed위 carriage의 움직임 (Z축)을 제어하기 위해 hydrostatic worm & rack 시스템이 사용되고 있으며, bed에 설치된 worm rack을 타고 이동하며 worm과 rack 사이에는 얇은 유막층이 형성되어 마찰에 의한 마모가 거의 발생하지 않습니다. 압력을 확인할 수 있는 모니터와 게이지가 각 회로별로 설치되어 있으며 오일 공급에 문제가 있어 압력이 충분하지 않을 경우 fault message를 출력하고 작동이 정지됩니다.

일반적으로 강력절삭 및 고속회전에서 마찰저항과 backlash없이 가공하기는 힘들지만, 이런 문제를 해결할 수 있는 이상적인 대안은 hydrostatic worm & rack 방식입니다.

Control System

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

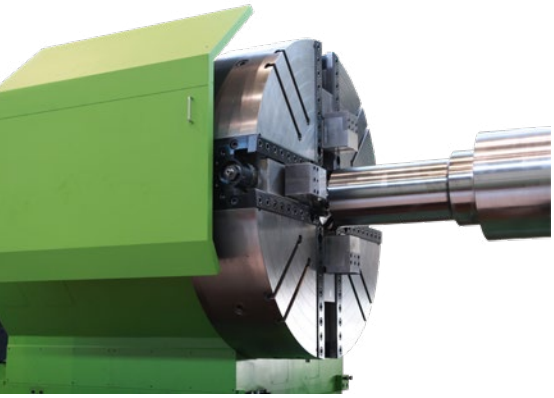
Siemens와 Fanuc의 최신 컨트롤 시스템이 적용됩니다.

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.

Features



Headstock

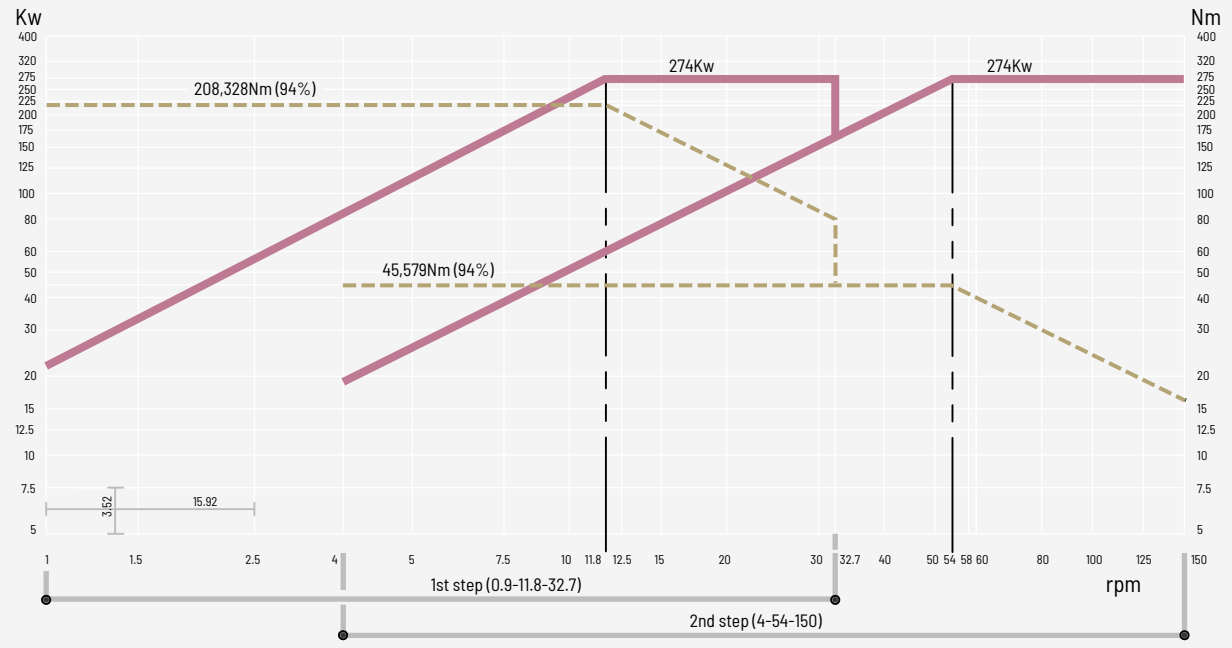
Headstock mainly consists of faceplate, clamping jaws, spindle, motor and headstock base. The function of the headstock is to rotate the workpiece which is driven by the faceplate, clamping jaws and thyristor controlled AC / DC motor with a drive clutch and disk brake. This drive is designed for clockwise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

Specification	SHL1	SHL2	SHL3	SHL4	SHL5
Spindle motor power	90 ~ 130 kW (122 ~ 170 Hp)	150 ~ 250 kW (201 ~ 335 Hp)	200 ~ 300 kW (268 ~ 402 Hp)		250 ~ 360 kW (335 ~ 482 Hp)
Speed range of spindle	0.5 ~ 200 rpm (2 step)	0.5 ~ 150 rpm (2 step)		0.5 ~ 120 rpm (2 step)	

Torque Diagram



C-axis Indexing Function

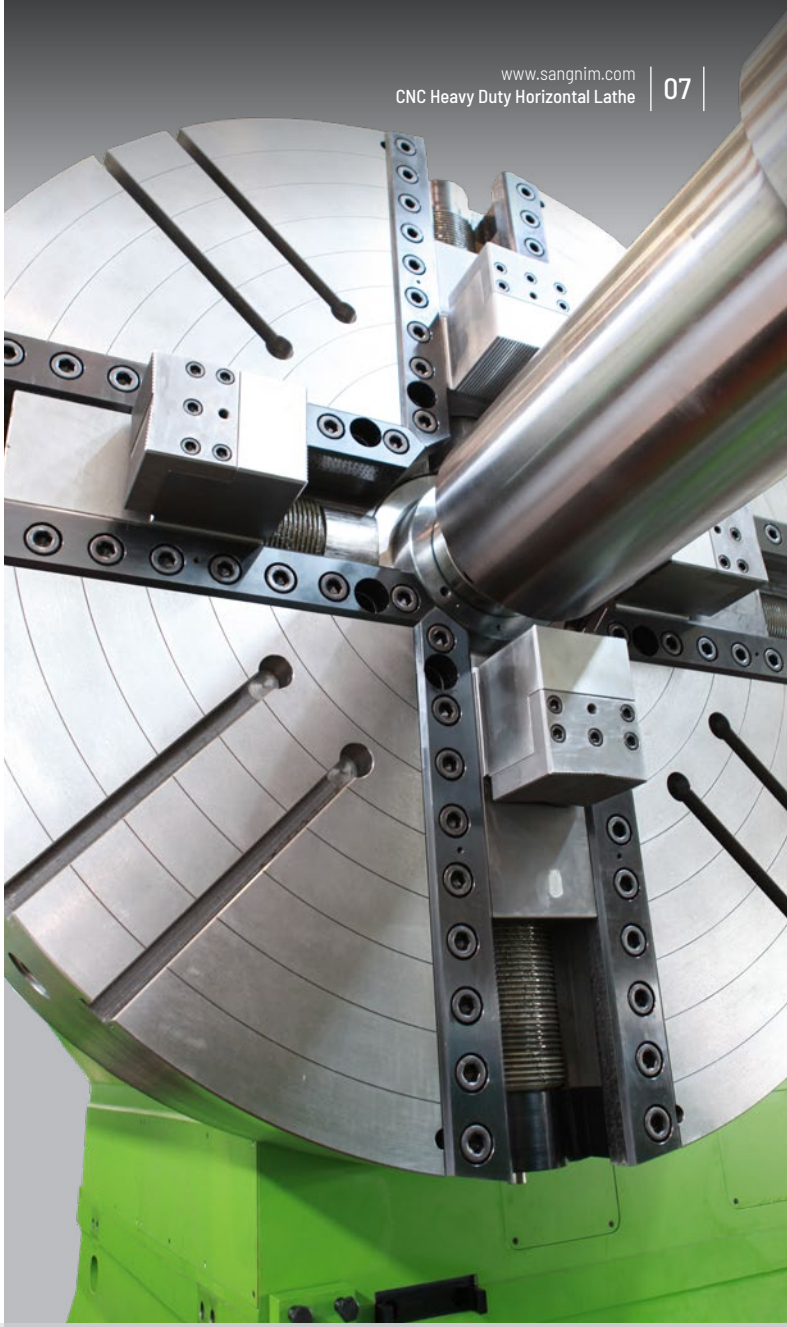
C–axis indexing function can be added to the headstock for milling machining of the workpiece. The graduation of indexing is 0.001°.

소재에 milling 작업이 필요할 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.

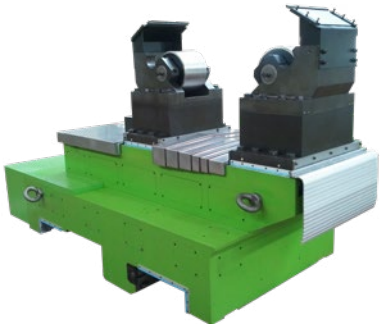
4개의 clamping jaw가 faceplate에 설치되어 있으며 나사산이 있는 spindle로 조정합니다. 이 spindle에는 power clamping system이 내장되어 있으며, 소재의 정확한 정렬과 충분한 clamping 힘을 전달하기 위해 사용됩니다.



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 설치가 되고, tailstock의 center 혹은 추가적으로 설치된 faceplate를 통해 소재를 잡아 주기 위한 용도로 사용됩니다. Tailstock 본체는 강성, 진동에 강하도록 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. SANGNIM MSP 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.

Attachment

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 SANGNIM MSP.

대형 공작기계에 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.

+ Boring unit

+ Drilling attachment

+ Dual cutting attachment

+ External cutter unit

+ Grinding attachment

Specification

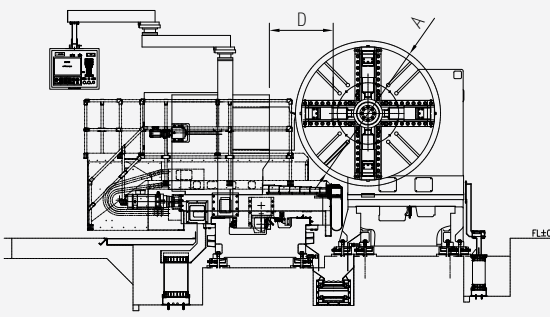
sepcification	SHL1	SHL2
Max. workpiece weight between centers	50 tons (110,000 lbs)	100 tons (220,000 lbs)
Max. swing over carriage (A)	4,000 mm (157 in.)	
Max. turning length (B)	15,000 mm (590 in.)	20,000 mm (787 in.)
Spindle motor power	90 ~ 130 kW (121 ~ 174 Hp)	150 ~ 250 kW (201 ~ 335 Hp)
Speed range of spindle	0.5 ~ 200 rpm (2 step)	0.5 ~ 150 rpm (2 step)
Max. cutting force	160 kN (36,000 lbf)	
Z-axis stroke (C)	16,000 mm (630 in.)	21,500 mm (846 in.)
X-axis stroke (D)	700 ~ 1,300 mm (28 ~ 51 in.)	1,000 ~ 1,500 mm (39 ~ 59 in.)
Z-axis feed rate	6,000 mm/min (236 in./min)	
X-axis feed rate	6,000 mm/min (236 in./min)	
Control system	Siemens or Fanuc	
Measuring system	Haidenhain / Fagor	

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)



SHL3	SHL4	SHL5
150 tons (330,000 lbs)	250 tons (550,000 lbs)	350 tons (770,000 lbs)
5,000 mm (196 in.)	6,000 mm (236 in.)	
30,000 mm (1,181 in.)		
200 ~ 300 kW (268 ~ 402 Hp)	250 ~ 360 kW (335 ~ 482 Hp)	
0.5 ~ 150 rpm (2 step)	0.5 ~ 120 rpm (2 step)	
200 kN (45,000 lbf)	250 kN (56,200 lbf)	
31,500 mm (1,240 in.)		
1,000 ~ 2,000 mm (39 ~ 79 in.)		1,000 ~ 2,500 mm (39 ~ 98 in.)
6,000 mm/min (236 in./min)		
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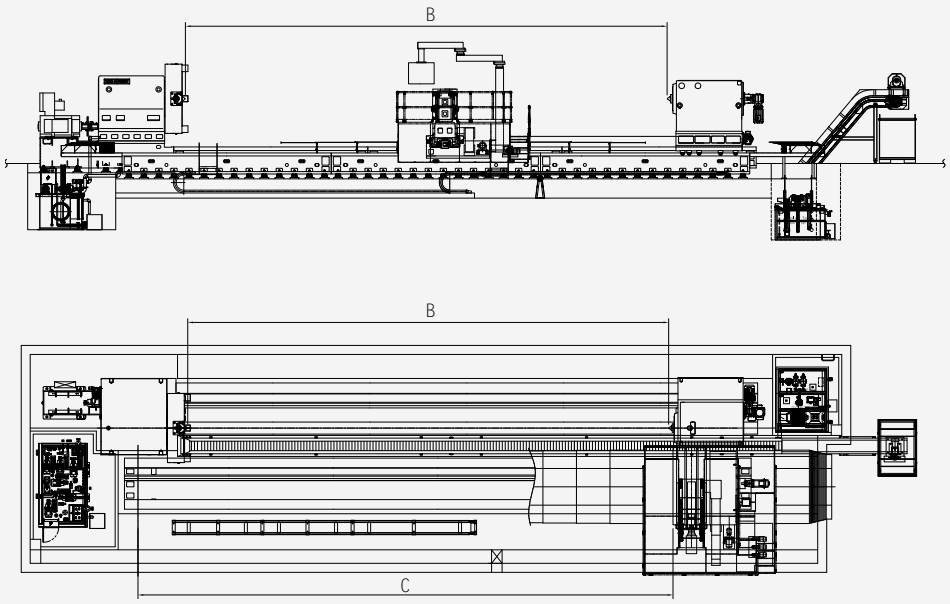
Siemens or Fanuc		
Haidenhain / Fagor		



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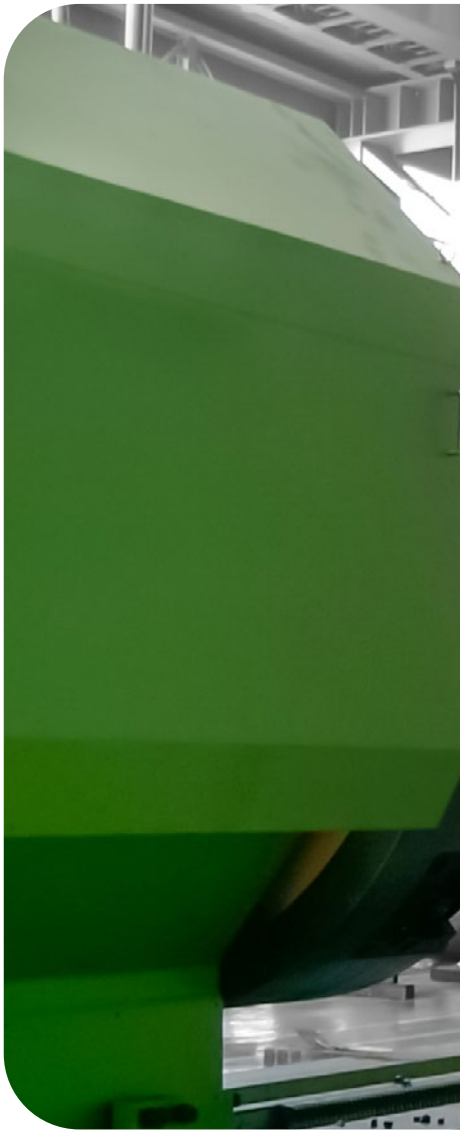

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