

FINISH HARD TURNING

MIKROTURN® MACHINE SERIES



About Hembrug



Hembrug is a leading manufacturer and worldwide supplier of high precision finish hard turning machines and hybrid machines with turn/grind capabilities. We do this with a team of committed and skilled employees from our factory in Haarlem, the Netherlands. Hembrug belongs to the Spanish machine tool manufacturer Danobat.

Our machines include:

- . Mikroturn® horizontal series
- . MikroTurnGrind series
- . Vertical-Mikroturn® series

We have been developing high precision turning solutions for more than 6 decades. We can, therefore, draw on a wealth of expertise for any machining challenge. Processes are developed and tested under actual working conditions in our

Technical Centre. You can be sure that what we develop and propose is feasible.

Innovative solutions

What we mean with finish hard turning



This catalog features a series of high precision, fully hydrostatic finish hard turning machines. Every machine is designed with one aim: to create ready-to-use, high quality workpieces directly from a hardened state without the need for any additional finishing process. That is what we mean by finish hard turning.

Finish hard turning on a Mikroturn® lathe means:

- You can expect to achieve workpiece accuracies of ≤ 0.00008 inches
- You can machine complex geometric forms as well as multiple surfaces such as ODs and IDs in the same set-up using standard tooling
- You will have a cost-saving process. No need for additional machining steps or machines, reducing capital costs
- You will have a simple setup process with changeovers in under 30 minutes
- You will have an eco-friendly production method. Hard turning allows dry machining, limiting waste and the usage of chemicals

Innovative solutions

Our Range



MIKROTURN®

High precision horizontal hard turning machine

The Mikroturn® Horizontal Series consists of 6 machines, each designed for a specific type of workpiece, depending on size and weight. Models can be customized to meet your production requirements.

Every machine features:

- A stable granite machine base with integrated damping system
- A wear-free, hydrostatic main spindle having run-out error of $\leq 0.000004''$
- Wear-free, hydrostatic guideways having $0.00004''$ positioning accuracy and $0.000008''$ repeatability
- Siemens 840D SL control

↔ 39"

∅ 24"

See this machine in action:



TECHNICAL CHARACTERISTICS	BASELINE	100	100 XLD
Max. turning diameter	15 in	15 in	24 in
Max. turning diameter between centers	∅7.8 x 13.7 in	∅7.8 x 13.7 in	N/A
Spindle speed	4000 rpm	4000 rpm	2000 rpm
CNC control unit	Fanuc Oi	Siemens Sinumerik One	Siemens Sinumerik One
Floor space	93 sq. ft.	70 sq. ft.	93 sq. ft.

TECHNICAL CHARACTERISTICS	100 XLS	500 XL	TWIN SPINDLE
Max. turning diameter	13.8 in	19.7 in	3.9 in
Max. turning diameter between centers	∅9.4 x 39.3 in	N/A	N/A
Spindle speed	4000 rpm	2000 rpm	8000 rpm
CNC control unit	Siemens Sinumerik One	Siemens Sinumerik One	Siemens Sinumerik One
Floor space	103 sq. ft.	134.5 sq. ft.	242.1 sq. ft.

Innovative solutions

Core Technology

Meet the highest demands

The Mikroturn® machines comprise state-of-the-art ultra-precision technologies. This enables you to machine the hardest and toughest materials with sub-micron tolerances.

Siemens or Fanuc control

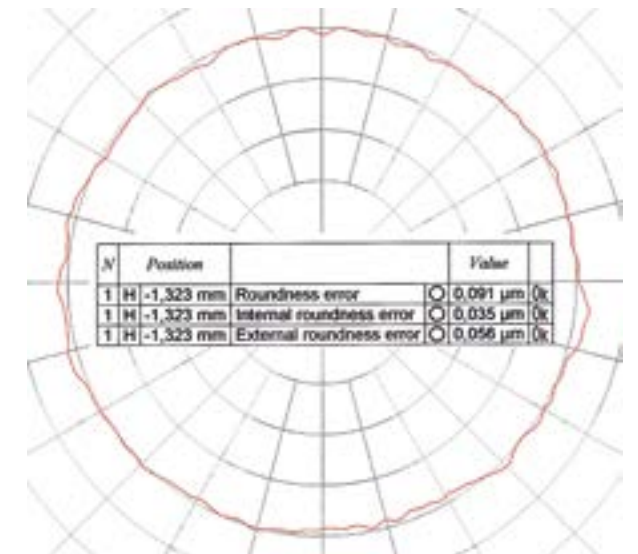
Siemens 840D SL or Fanuc 32i CNC control with 0.0000004" resolution.

Granite base and main spindle housing

A granite machine base with integrated vibration damping system provides optimum damping characteristics and is corrosion-resistant and free of any internal period.

Wear free hydrostatic main spindle

High precision hydrostatic main work- spindle having run-out error $\leq 0.000001"$ and high dynamic stiffness. The high dynamic stiffness provides the basis for high surface accuracy and an extended tool life as the inherent dampening minimizes vibrations.



Main spindle roundness error of 0.0000035" microns measured on a 17-year old Mikroturn®. This proves the lasting accuracy thanks to the absence of metal to metal contact between the rotating parts.

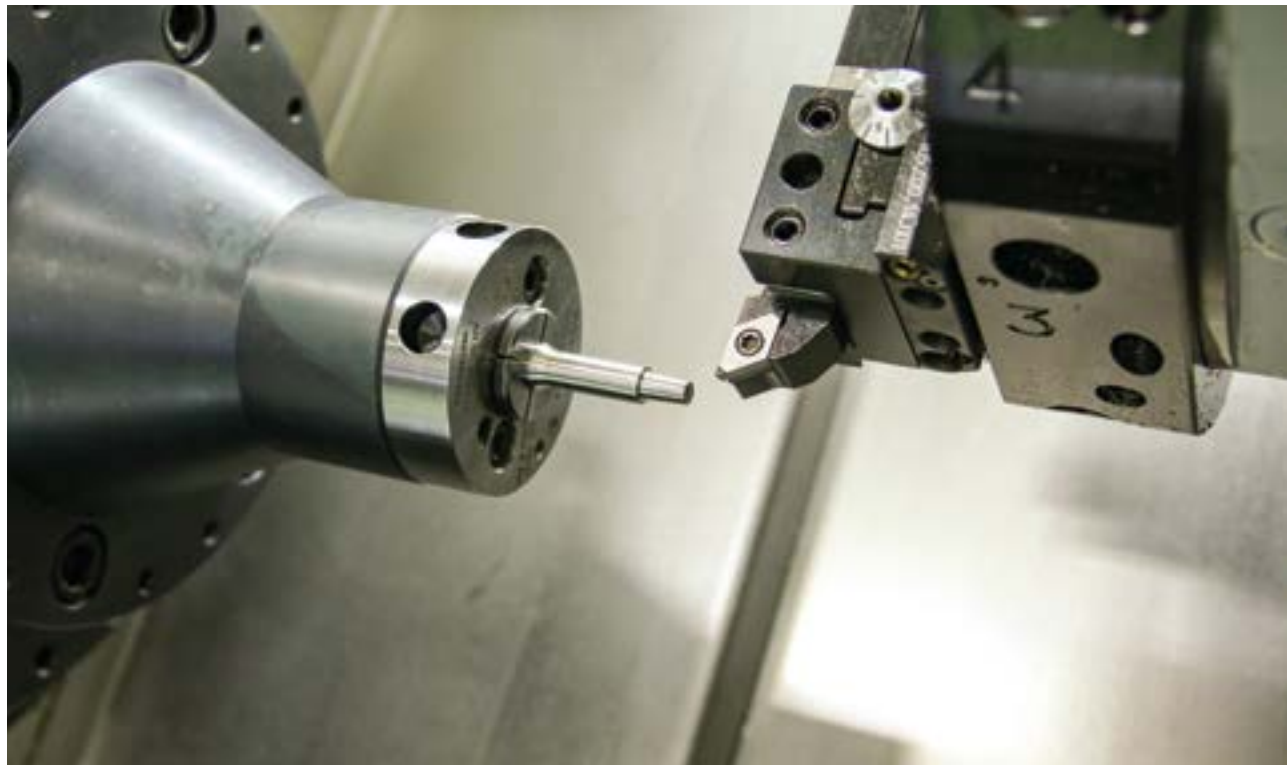
Wear free hydrostatic guideways

High precision hydrostatic guideways having 0.00004" positioning accuracy and 0.000008" repeatability. This contributes greatly to your finish workpiece quality.

Customization

You can customize the machine entirely to your needs with a large range of complementary options. Available options include:

- Air and magnetic operated workholding systems
- Up to 16 pos. tool turrets with or without live tooling
- 2,000 or 8,000 rpm spindle(s)
- Tailstock and/or steady rests
- Tool and workpiece probing systems
- Chip conveyor
- Fanuc 32i and Oi CNC controls



Advanced customization

Our advanced options further improve your productivity, flexibility, and process reliability.



Automation

Greater productivity and lower cost per workpiece are ensured with our Flexmotion robot or Motion gantry systems. These systems can also be equipped with statistical process control or post-process measuring.

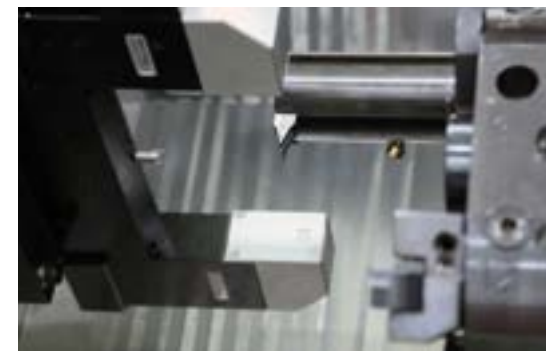
Super finishing techniques

Create a surface quality and texture not achieved with hard turning by integrating a grinding spindle or stone no hyphen. You save capital costs and process steps by not needing a separate machine.



Optical tool measurement

This measures the position and wear rate of the tool. It helps to create highly accurate profiles smaller than 0.00004". You can also make the required corrections in case of worn tools.



Tool monitoring

Our tool monitoring system lets you establish tool wear or damage in real-time. This greatly increases the process and workpiece quality and optimizes tool life.

Applications

The Mikroturn® machines are flexible and capable of producing almost any type of workpiece. They are used worldwide by high precision industries to produce components such as:

- Ball screw nuts and shafts
- High speed grinding spindle shafts
- Bearings rings and bearing rollers
- Hydraulic components
- Drive shafts and gear wheels
- Various mold & die components (including non-hardened material components)

Obtainable workpiece tolerances up to 70 HRC

- Form and size : ≤ 0.00008 inches
- Surface finish (Ra) : 4 - 16 microinches



Ball screw nut(s)



Bearing rollers



Hydraulic components



Gear wheels and drive shafts



Carbide draw dies



Inner and outer rings



Innovative solutions

Advanced Services

A wide variety of services are available worldwide through local service networks and service engineers. We can respond quickly to any machine problem, minimizing downtime while realizing highest possible up time.

OEM Parts

A large stock of spare parts is kept in our factory and regional locations in order to be shipped and on-site as quickly as possible.

Maintenance services

Preventive maintenance visits by our service teams reduce the risk of unplanned failures and production downtime. With each visit, you will receive a detailed technical report. We offer:

- A health check on 15 points
- A minor service with a check on 31 points. Standard parts, such as filters, are replaced
- A major service with a check on 62 points. The machine is cleaned, oil and standard maintenance parts are replaced

These services can also be carried out on a contract basis. Maintenance is then performed at a scheduled time along with other special offers, such as discounts on parts and working hours.

Advanced training and e-learning possibilities

We train you to get the most out of your machine. Training includes; programming, operation, and maintenance. We also offer e-learning options that can be taken at any time and location.

Production and process optimization

In partnership, we examine how we can improve your process or the machine to suit any new requirement. Process improvement and stabilization are always the goal.

Retrofitting

Replacing an obsolete CNC control system on a virtually wear-free machine after many years of usage is an economically feasible option to be considered. This gives your machine a new life and guarantees the supply of control and electrical spare parts for many years.





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