MICRON MACRO-SK

LAPMASTER® WOLTERS

FLEXIBLE CNC GRINDING CENTER FOR CREEP FEED-, PROFILE-, AND HEDG GRINDING

THE MACRO PHILOSOPHY

The "Macro" machine range is based on the innovative Moving-Wheel-Head (MWH) concept. All linear movements when positioning and grinding are performed by the grinding head. Compared to conventional moving column and moving table concepts this design arranges the axes in a very compact way, which results in optimum force distribution and minimal thermal variation, properties which result in best possible process control over a long lifespan.

THE MACRO-SK

The MACRO-SK from LAPMASTER WOLTERS is a grinding machine especially designed for machining the internal contours of stators, and it sets new standards in efficiency and precision for machining the internal diameter of stators. The machine concept of the MACRO-SK enables the user to grind various types of stators on the machine, e. g. Gerotor and Geroller. The machine has two spindle arms when fully equipped. During grinding, these spindle arms are lowered in a vertical direction into a stack of stators that are clamped in a fixture. The vertical grinding direction proves to be a major advantage in this regard compared to other machine concepts, because the cooling lubricant is channeled specifically into the grinding gap, thus achieving larger grinding feed values. The grinding time, and thus the entire cycle time of the process are reduced by having higher grinding feed rates. The maximum stack height in the fixture is approx. 100 mm (3.937"), with the benefit that several stators can be ground at the same time, depending on the component thickness.

The compact, space-saving design reduces infrastructure costs thanks to the small amount of floor space taken up. A completely newly developed acoustic emission system supports precise and economical dressing of the grinding wheels, and is additionally used for initial cut control in order to monitor the grinding process. Optionally, the machine can be equipped with an RFID reader. RFID chips that are integrated into the corresponding fixtures store information about the CNC program number and technology data, for example. As a result, the correct machining steps are performed automatically after the fixture has been loaded.

CUSTOMER BENEFITS

- Compact machine design
- Machine only 1.5 m (59.055") wide, small footprint
- Vertical grinding technology
- Separate spindle arms for roughing and finishing
- Differently specified CBN grinding wheels
- The vertical grinding direction permits targeted feeding of the cooling lubricant into the grinding gap with gravity assistance
- All the stated technological advantages lead to higher stock removal rates and shorter cycle times
- Clamping station & handling system
- Loading/unloading of the fixtures during machining lead to a dramatic reduction in the cycle time
- The clamping station supports precise clamping of the components with repeat accuracy. The handling system provides ergonomic assistance and reduces the strain on the operator
- The fixture can be exchanged in the machine in only 30 seconds

Software Characteristics:

- Latest CNC technology. Siemens 840D with multi-channel structure and interpolation of up to 5 axes
- All axes have high-precision linear guides, ball screws and digital drive technology
- Dressing unit with integrated solid-borne noise sensors. Supports economical dressing of grinding wheels with exact profile accuracy

Software Benefits:

- Simple operation. Ideal for machining complex grinding applications
- Comfortable and fast adaption of different grinding operations
- Useable for collision monitoring, first detection of work piece and dressing Increases production safety and reduces operating costs
- Best tailored to the customer's needs

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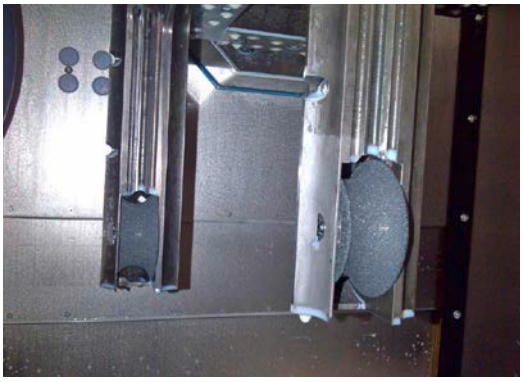
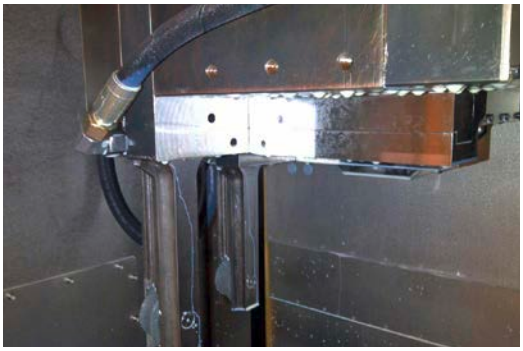
TECHNICAL DATA	MICRON MACRO-SK
Dimensions H × W × D (mm / inch)	approx. 1500 × 2600 × 2400 mm approx. 59.055" × 102.362" × 94.488"
Weight (kg / lbs)	approx. 7500 kg / 16535 lbs
X-travel (mm / inch)	300 mm* / 11.8110"
Y-travel (mm / inch)	approx. 350 mm* / 13.7795"
Z-travel (mm / inch)	approx. 260 mm* / 10.2362"
Spindle technology (KW)	
Number of spindle arms	2 (roughing and finishing)
Spindle motor	water-cooled
Spindle speed (rpm)	max. 16000
Spindle power (kW)	approx. 6.3
Dressing technology	
Dressing unit	Table-mounted
Dressing tools	Diamond forming or diamond profiling roller

* Maximum grinding wheel diameter and travel can change due to work piece and fixture size





EQUIPMENT

Grinding machine

- Compact grinding machine with a width of 1.5 m 1.5 m (59.055")
- Concrete-filled machine bed. Complete housing of the machine
- The motors of the spindle arms are water-cooled
- Precise positioning of the fixtures during grinding is achieved by an indexing table that is coupled to a high-resolution sensor
- Switch cabinet and auxiliary units connected to the machine in a swiveling arrangement

Clamping station for loading/unloading components

A clamping station mounted on the left next to the machine for exact alignment, clamping and unclamping of the stators in specially designed fixtures. The stators are clamped and unclamped outside the machine space, and these functions are carried out in parallel with the grinding procedure (setup during machining).

Handling system for fixtures

Handling system mounted on a guide rail for ergonomically transporting the fixtures from the clamping station to the workspace and from the workspace to the clamping station.

Filter system with cooler

High-performance filter for filtering cooling lubricant. The filter feed pump delivers up to 150 l/min cooling lubricant. The cooler is mounted on the filter, as a means of saving space.

LAPMASTER WOLTERS
Buesumer Str. 96 • 24768 Rendsburg, Germany
Phone: +49 (0) 4331 / 458-0 • info@lapmaster-wolters.de

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