MIKRON HSM 500

+GF+ AgieCharmilles

HSM 500 – High speed milling has never been so easy...

No compromises on technology, no compromises on ergonomics

Mikron's new HSM 500 focused once more on the most important machining factor: The operator. The unique concept of the HSM line is convincing mould- and toolmakers of its advantages.

No machining compromises: Mikron HSM customers appraise the highest accuracy, extreme dynamic and best surface quality of their machining centres.

No operating compromises: incomparable accessibility, best ergonomics, visibility during the milling process and a user friendly handling of the machine.

Mikron follows on its successful innovation path with the HSM 500. This new machine line offers even more flexibility and machining volume than ever before.

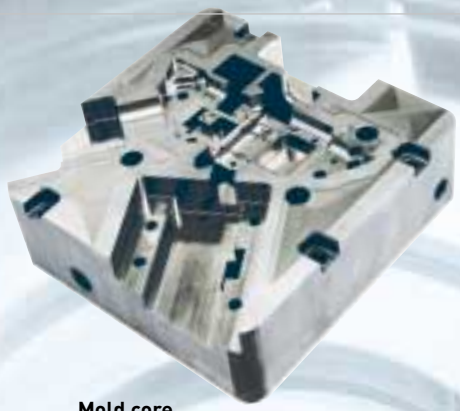
Welcome on the highway of HSM...

Bottle blow molding

Material	1.2316
Hardness	35 HRC
Feature	Ra 0.78
Time	420'

Mobile phone molding

Material	NAK 80
Hardness	40 HRC
Time	416'



Mold core

Material	1.2379
Hardness	HRC 58
Priority	Precision (<0.01mm)
Time	288'

smart machine – Intelligence inside

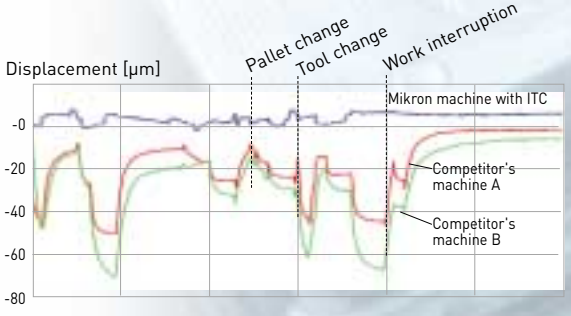
Bringing intelligence into the milling process is the intended aim of "smart machine".
To make the milling process "intelligent", various requirements have to be implemented. First of all, establishing comprehensive communication between operator and machine, this makes extensive information that the operator requires to assess the milling process available to him. Secondly, supporting the operator in the optimisation of the process, this considerably improves the performance. Thirdly, the machine optimises the milling process, which improves safety and the quality of the workpiece.

Intelligent Thermal Control - ITC

When accuracy and machining time are not mutually exclusive.
With the Mikron Intelligent Thermal Control, the operator only has to concentrate on the workpiece-specific requirements. The Mikron machine possesses the intelligent thermal process knowledge.

Your benefit

- A warm-up phase is no longer necessary for standard machining. This results in a time-saving of between 15 and 25 minutes compared to commercially available competitor's machines.
- The warm-up phase has been considerably reduced for demanding machine applications.
- This makes it very easy for any machine operator to achieve high surface and shape accuracy.



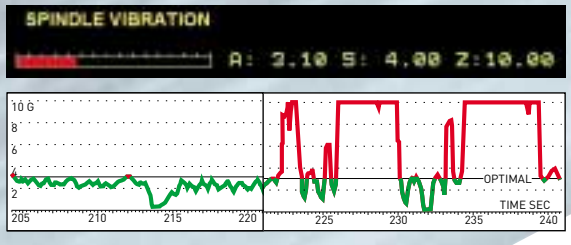
Thermal displacement of the tool origin (Z-axis) under different machine loads.

Advanced Process System - APS
Advanced Process System extended - APS extended

The unique monitoring system from Mikron
Mikron Advanced Process System, is a monitoring system which opens up new possibilities for the user to observe and control the milling process.

Your benefit

- Increase in the service life of the spindle (reduction in the machine's hourly rate)
- Recognition of critical machining strategies
- Increased tool service life (reduction in tool costs)
- Improvement in process safety
- Inspection of the balance quality of the tool
- Increase in the workpiece quality



Spindle vibration trace during a milling process

What HSM focused means...

Stability

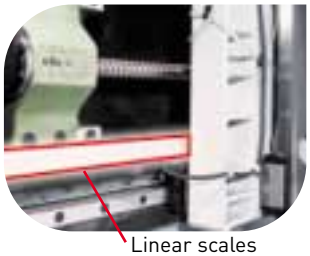
Primary requirements for highest precision on the workpiece: rigidity and stability...

- Portal construction in closed O-shape (patent pending)
- Pyramid shaped-design
- Machine base made of monobloc polymer concrete with high vibration damping properties (6 times better than cast iron)

Accuracy

What is speed, for when accuracy can not follow? Precision as a standard ...

- Absolute optical linear scales on X, Y, and Z axis operating with a measuring step of 0.02 µ guarantees incomparable positioning precision
- Better thermal inertia of machine base due to the polymer concrete
- All feed motors, the electrical cabinet and the motor spindle are liquid-cooled
- No heat source in the machines structure



Linear scales

Motor cooling

Ergonomics

Because security and accessibility can not be compromised...

- Just one large sliding door with a large window gives access from 3 sides
- Side window for maximum monitoring on the milling process
- Excellent illumination of the working area
- Easy crane-loading due to open roof door design
- Ergonomic table height
- Low loading depth
- Easy to clean work area
- Excellent access to the tool changer

Control

High performances control needed...

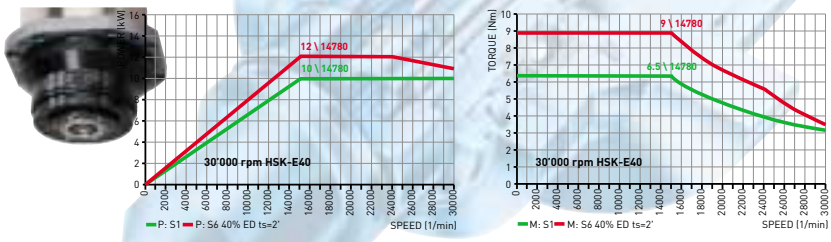
The iTNC 530 from Heidenhain is a versatile, flexible workshop-oriented control. Do you prefer to work at the machine or at a programming station? With the iTNC 530 you can easily do both.

- Powerful shop-floor programmability or offline programming.
- Free contour programming, sub-programming defined as desired
- Upwardly compatible programs
- Rapid datum setting with touch probe
- Fast execution through short block processing time
- Ethernet connection as standard for fast CAM data flow
- Adjustable look-ahead parameters

High speed spindle

A key factor in a high speed milling machine...

- Vector controlled motor spindle for short run-up and brake times and high torques at low speed
- Ceramic hybrid ball bearings with oil-air minimal lubrication
- Liquid-cooled stator jacket and bearings
- HSK interface



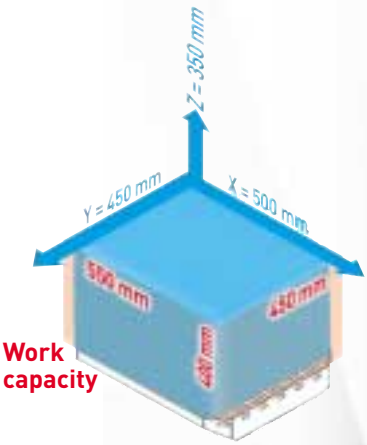
SWISS MADE – Precision and Quality

As flexible as your production is...

High speed dynamic

Highly dynamic axis are the pre-requisite for high-speed machining in mould construction and or other high-end applications. On the HSM 500, the best conditions have also been provided:

- Control system with digital drive technology
- All cross slides (X, Y, Z) as rigid, weight-optimised, well-ripped cast constructions
- Optimum ration (1:10) of moving to static masses

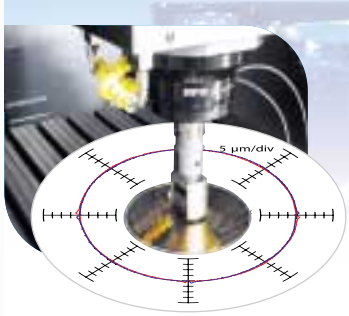


Divding head

MQL or coolant

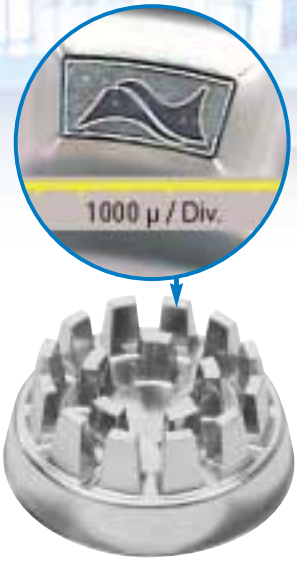
Graphite dust extractor

Consistent quality and precision is not a matter of luck...



Roundness check in compliance with ISO 230-4

Axis positioning check in compliance with ISO 230-2



Gear engraving

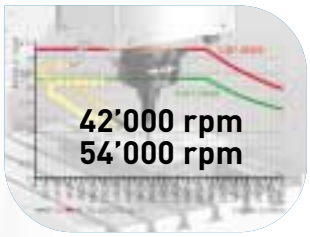
Material	1.2767
Hardness	54HRC
Feature	micro machining
Time	75'

Every machining centre "made by Mikron" has been assembled in our air-conditioned assembly shops by qualified personnel, submitted to complete quality inspection according to ISO 230/97, measured by means of laser and extensive tests before delivery.

The results are logged and handed over with the machine to the customer.

Quality µ Precision

Further options...



Spindle 42'000 rpm
Spindle 54'000 rpm

Extended tool-changers

Laser tool measuring

Mobile handwheel

Rotating window

Process control lamp

Coolant tank and flushing pistol

Chip conveyor

Minimum quantity lubrication

Oil mist extractor

Paper roll filter unit

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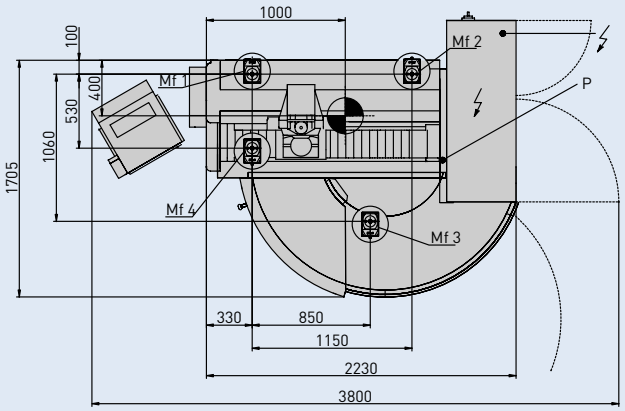
Technical specifications



Machine type		
Work area		
Longitudinal, X	mm	500
Lateral, Y	mm	450
Vertical, Z	mm	350
Working spindle (40% ED)		
100 – 30'000 min^{-1}, HSK 40	kW / Nm	12 / 8.8
100 – 42'000 min^{-1}, HSK 40	kW / Nm	13 / 4.2
100 – 54'000 min^{-1}, HSK 32	kW / Nm	8.5/ 3.5
Feed rate		
Feed rate / Rapid traverse (X, Y)	m/min	20 / 40
Feed rate / Rapid traverse (Z)	m/min	40 / 40
Dynamic		1.7 G
Work table		
Clamping surface	mm	550 x 450
Max table load	kg	200
Height of table top front floor	mm	980
T-slot on table (nominal size x pitch x quantity)	mm	14 x 63 x 7
Tool changer		
HSK 32	piece	20 / 40
HSK 40	piece	18 / 36 / 68
Control unit		
Heidenhain		iTNC 530
Dimensions and weight		
Machine dimensions (W x D x H)	mm	1750 x 2250 x 2100
Machine weight	kg	5500

CE Our designs are continously updated to meet changing requirements.
Changes can be made at any time. Details contained in this brochure are not binding

Standard equipment

- Control iTNC 530
- Interface Ethernet
- 25 GB Harddisk capacity
- Spindle 100 – 30'000 rpm, HSK-E40
- Tool changer with 18 HSK-E40 tool positions
- T-slot work surface 550 x 450 mm
- Machine enclosure
- Chip sump
- Work area light
- Safety switches
- Vector drive spindle (high torque)
- Rigid tapping
- Optical linear scales with compressed air protection
- Liquid cooled spindle, drives, electrical cabinet
- Air gun
- Levelling bolts
- 3 user-definable M codes
- ITC (Intelligent Thermal Control)
- APS (Advanced Process System)

Options

- Spindle 100-42'000 rpm, HSK-E40
- Spindle 100-54'000 rpm, HSK-E32
- Extended tool-changers
- Dividing head with Ø 80 flange w. fixation threads or HSK 63 cone (center height 150mm)
- Laser tool measuring
- Stationary handwheel
- Mobile electronic handwheel
- Measuring touch probe
- Chip sump with coolant tank and chip flushing pistol
- Chip conveyor
- Band filtration
- Minimum quantity lubrication
- Oil mist exhauster
- Graphite dust removal
- Rotating window
- Process control lamp
- Extended accuracy
- APS extended (Advanced Process System extended)
- RNS (Remote Notification System)

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