

Mikron

HSM 500 MoldMaster



Applications

As flexible as your production is...

Thin walled part

Material: Aluminum
Time: 27 min.



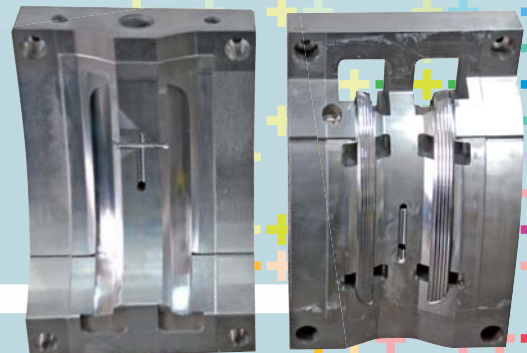
Bottle mold

Material 1.2316
Hardness 35 HRC
Priority Surface
Time 420 min.



Mold core

Material 1.2379
Hardness HRC 58
Priority Precision
Time 288 min.



Car light mold

Material: Assab S136
Hardness: HRC 50
Time: 240 min. per cavity



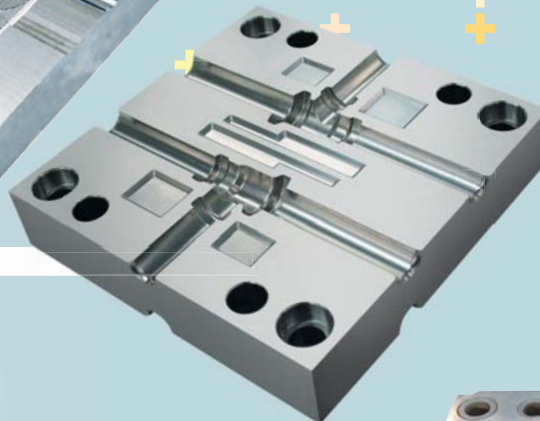
Mobile phone mold

Material NAK 80
Hardness 40 HRC
Time 416 min.



Hot pressing die for fittings

Material 1.2344
Hardness 25 HRC
Time 216 min.



Car antennas mold

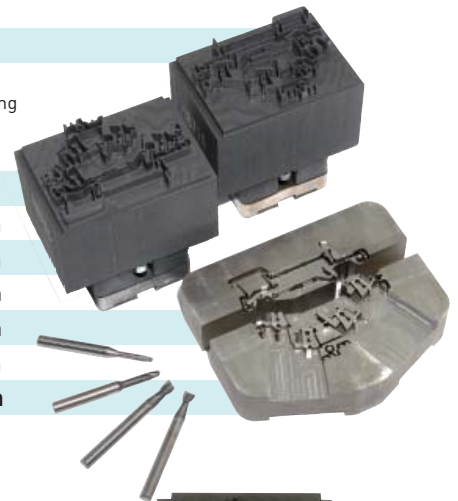
Material: Assab S136
Hardness: HRC50
Time: 60 min. per cavity



Efficient production in universal applications

Material: Graphite R8710

		Diameter D	Spindle speed n	Feed rate v_f	Radial cutting depth a_e	Axial cutting depth a_p	Machining time t
Operation	Tool	[mm]	[rpm]	[mm/min]	[mm]	[mm]	[min]
Roughing	toric	6	22'000	4'000	4	0.5	6 min
Prefinishing	toric	3	30'000	2'500	2	0.3	7 min
Roughing	toric	1.5	30'000	2'000	1	0.2	21 min
Prefinishing	ball nose	1	30'000	1'800	0.2	0.05	29 min
Finishing	ball nose	0.6	30'000	1'500	0.1	0.1	5 min
Total							68 min



Material: Graphite R8710

		Diameter D	Spindle speed n	Feed rate v_f	Radial cutting depth a_e	Axial cutting depth a_p	Machining time t
Operation	Tool	[mm]	[rpm]	[mm/min]	[mm]	[mm]	[min]
Roughing	toric	6	18'000	4'000	2.5	0.5	3.5 min
Prefinishing	toric	2	27'000	2'000	1.5	0.5	1 min
Roughing	ball nose	1	30'000	800	--	0.2	6 min
Finishing	ball nose	0.6	30'000	500	--	0.08	14 min
Slotting	toric	0.3	30'000	500	0.03	0.03	1.5 min
Total							26 min



Material: Graphite R8710

		Diameter D	Spindle speed n	Feed rate v_f	Radial cutting depth a_e	Axial cutting depth a_p	Machining time t
Operation	Tool	[mm]	[rpm]	[mm/min]	[mm]	[mm]	[min]
Roughing	toric	6	20'000	6'000	3.5	1.5	8 min
Prefinishing	ball nose	2	29'000	3'500	0.5	0.4	5 min
Roughing	ball nose	1	30'000	2'000	0.08	0.08	8 min
Finishing	ball nose	1	30'000	4'000	0.05	0.05	29 min
Total							50 min



Highlights

Precision and quality for tool and mold making



Mikron machining centers feature extraordinary ergonomics.
Unparalleled accessibility regardless of the respective machine configuration.

Sophisticated concept for maximum rigidity

Polymer cast machine base

Portal construction for high rigidity and compact foot-print.

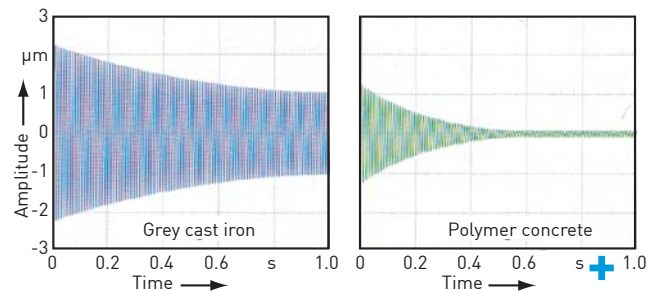
Cross slide

The cross slide is weightoptimised to meet highly dynamic machine tool motion requirements.

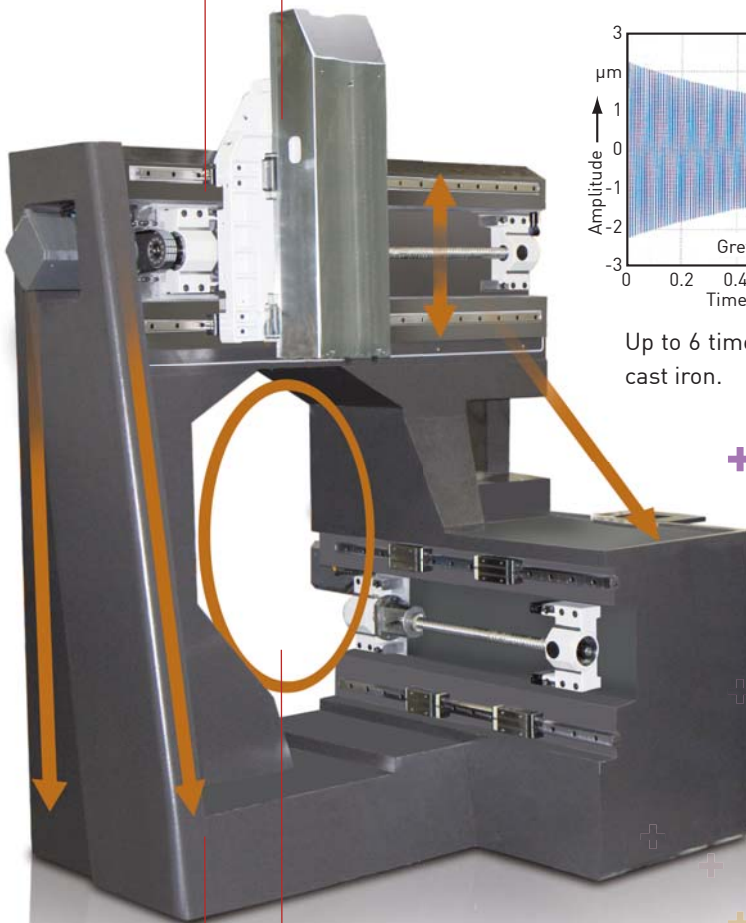
Polymer concrete

Striking features of polymer concrete include high thermal resistance and outstanding damping characteristics.

It is not susceptible to oil or cooling lubricants and does not undergo an aging process.



Up to 6 times better damping characteristics than grey cast iron.



Pyramid-shaped design

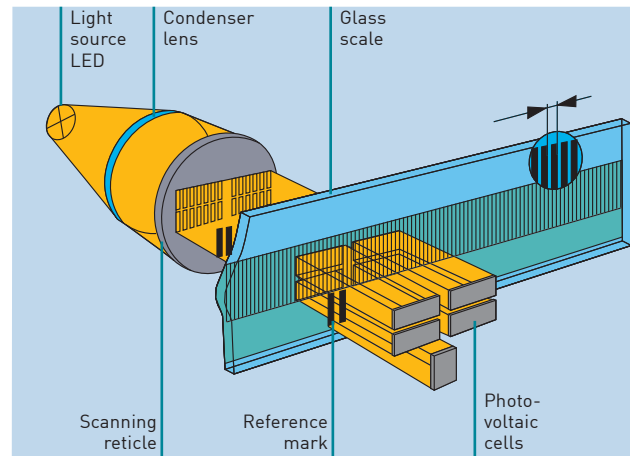
The pyramid-shaped arrangement ensures stability and rigidity.

Closed structure

The O-shaped portal increases the structural dampening characteristics

Accuracy

Maximum accuracy through optical linear scales, cooled drives and consistent quality control



Accuracy

Precision as a standard ...

- Absolute optical linear scales on X, Y, and Z axis operating with a measuring step of 20 nanometers for 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
- Highly accurate probing

High speed spindle

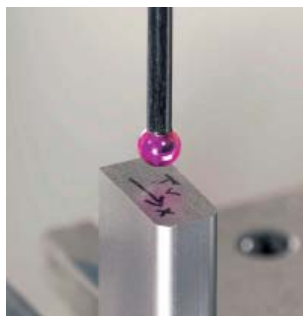
A key factor in a high speed milling machine...

- 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

Touch probe

A compact and extremely accurate touch probe is available as a standard option.

- Easy set-up
- In process calibration
- Measurement in the machine



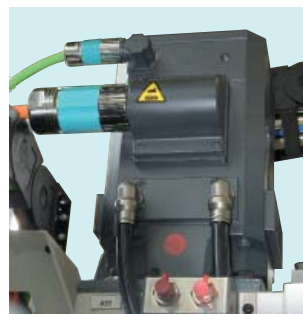
Quality control

Every MIKRON HSM machine is validated in our air-conditioned assembly shop with highly accurate laser measuring systems.



Automatic central lubrication

The automatic central lubrication system supplies the recirculating ball screws and the linear guides with grease at precisely defined intervals. This increases the service life of the feed units and reduces maintenance costs.



Water-cooled

All heat sources in MIKRON HSM machines are as standard watercooled.

- Drives
- High speed spindle
- Electrical cabinet

We are HSM

High speed milling has never been so easy...

Mikron HSM 500 MoldMaster

The unique concept of the HSM line designed to meet mold- and toolmakers requirements.

No compromises

Highest accuracy, extreme dynamic and best surface quality.

Incomparable accessibility, best ergonomics, and a user friendly handling of the machine.

Consistent quality

Every machining centre has been assembled in our air-conditioned assembly shops by qualified personnel. Inspecting according to ISO 230/97, extensively testing to meet quality goals.

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



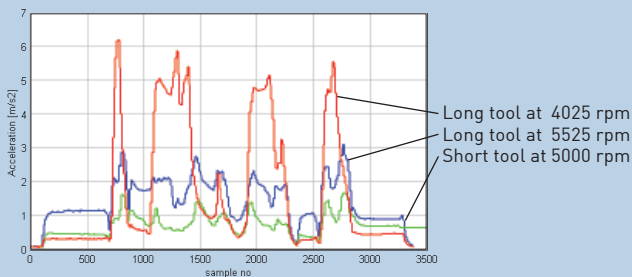
Brings intelligence into the milling process



Advanced Process System



Protection



The unique vibration monitoring system

With the help of this system, vibrations that occur during a milling process can be made visible as a "G-load". So it is possible to intervene selectively in the process and optimise it.

Your benefit

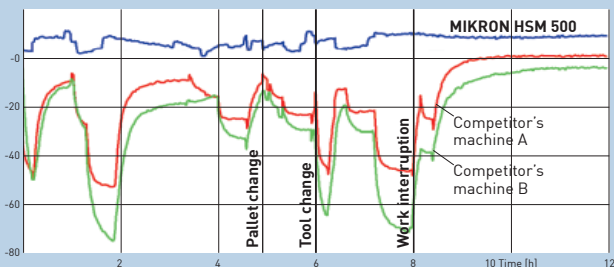
- Increase the life-time of the spindle (reduction in the machine's hourly rate)
- Improve quality (Recognition of critical machining strategies)
- Increased tool life (Improvement over all process reliability and cost)



Intelligent Thermal Control



Precision



The unique in-process compensation

Usually, the machine operator has to wait for the machine to settle to a thermal steady-state for a couple of hours. With the Intelligent Thermal Control, the operator can directly start with precision work.

The machine actively compensates for thermal displacement of the tool center point. Excellent accuracy is the result on the workpiece.

Your benefit

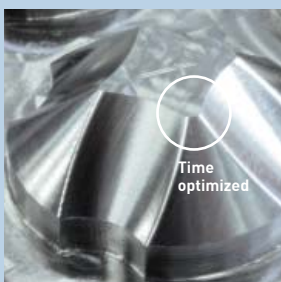
- Higher productivity
- Higher accuracy
- Increased process reliability



Operator Support System



Productivity



Time, Surface, Accuracy

The operator can access the internal parameters of the CNC controller using a simple and understandable interface to set the target value.

The system adjusts the dynamic behavior of the machine tool motion exactly according to your needs.

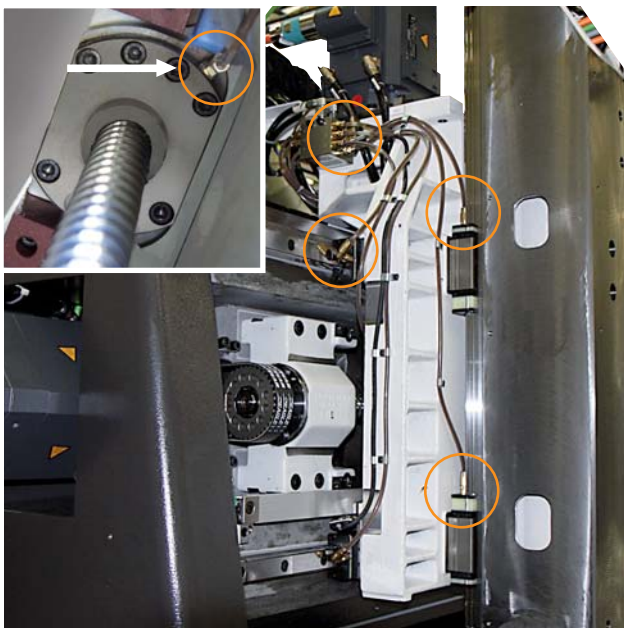
Your benefit

- Shorter machining times
- Better surface quality
- Higher accuracy

MIKRON HSM 500 MoldMaster

With high speed to EDM

Graphite electrodes, like high-speed machines, are both designed to increase productivity and customer values. The high speed milling of graphite electrodes requires not only a high reliability and performance spindle, it also requires exceptional vibration damping and repeating machine accuracy.



Advantages

- Absolute optical linear scales on X, Y, and Z axis operating with a measuring step of 0.02 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

Vacuum removal of graphite

- All axis fully covered and protected (machine hood)
- Automatic central lubrication with grease on all linear guides and ball screws
- Powerful Amano suction unit with two separate dust bins

High speed spindle

- Maximum operating speed 42.000 rpm
- 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

Options

Options for all needs

350
MIKRON HSM 500
500 x 450 x 350 mm
450
500



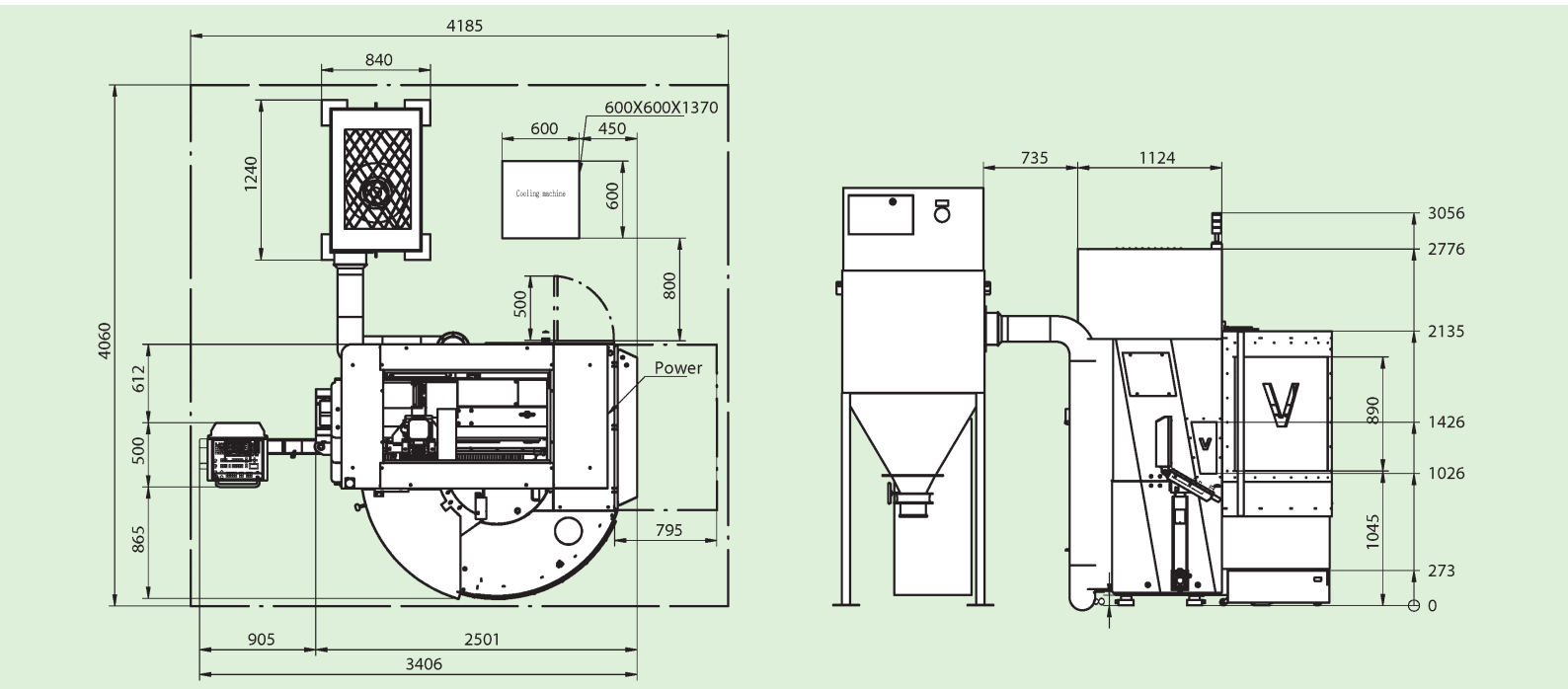
Rotating window



Oil mist extraction

Layout and technical data

A lot of functionality for a small footprint



Standard equipment

- Control Heidenhain iTNC 530
- Interface Ethernet
- 25 GB Harddisk capacity
- 3 user-definable M codes
- Step-Tec High-Speed Spindle
- Vector drive (high torque)
- Rigid tapping
- Optical linear scales with compressed air protection
- Liquid cooled spindle, drives, electrical cabinet

Workarea	MIKRON HSM 500	
Longitudinal X mm	500	[19.69"]
Lateral Y mm	450	[17.72"]
Vertical Z mm	350	[13.78"]
Working spindle (40% ED, S6)		
42,000 rpm, HSK-E40 kW / Nm	13.0/ 4.2	
Feed rate		
Velocity [X, Y] m / min	20/42	
Velocity [Z] m / min	20/42	
Work table		
Clamping surface mm	550x450	[21.65"x17.7"]
Max table load kg	200	[440 lbs]
Tool magazine		
HSK-E40 Capacity	18/36	

At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser and Automation solutions. A comprehensive package of Customer Services completes our proposition.

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