



WILLEMIN-MACODEL SA

6-8 axis Mill-Turn machining center
Bar stock or single part machining
Back working device

Complete machining in
one cycle...!

"Multi-Process" Machining Center
508MT
Milling - Turning



508MT - conception



■ Construction

The machine structures of the new **508MT** tilting head machining center are built with ribbed spheroidal graphite cast iron technology this in order to guaranty high static and dynamic rigidity.

In order to minimize thermal variations of the structure generally generated with cooling fluids as well as metal swarfs and chips an isolation wall separates the machine structure area from machining environment. The main structures are isostatically located on a chassis-frame which supports machine peripherals and automation functions. This concept ensures very high precision machining conditions.

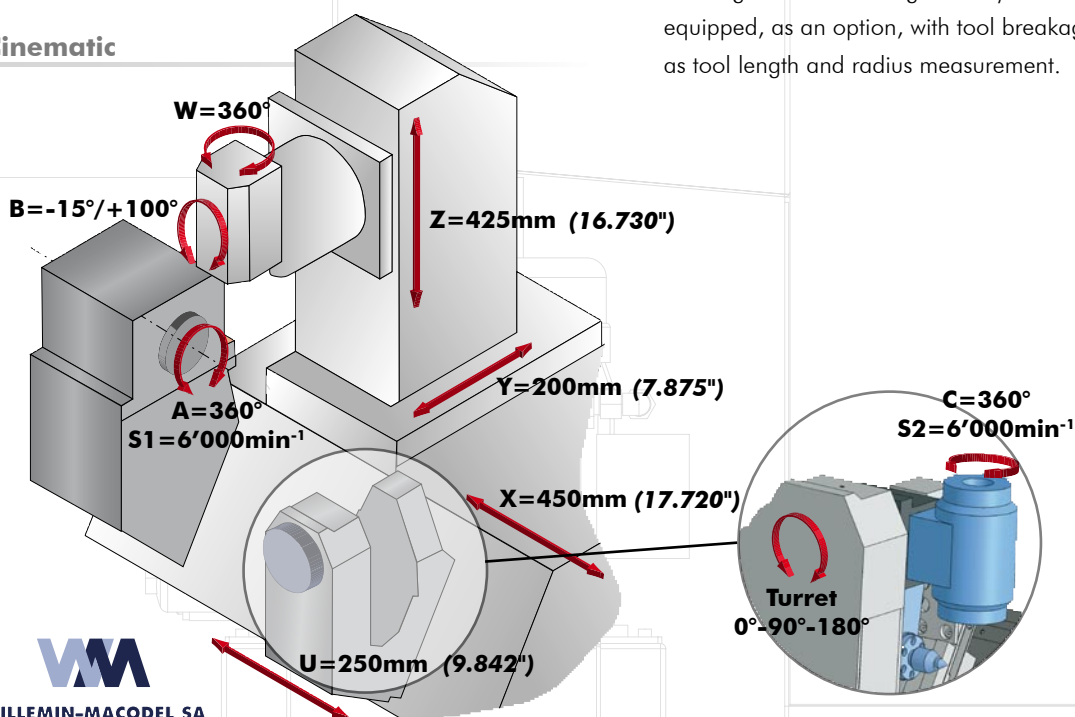
■ Travels and axis designation

X = 450 mm (17.720")
 Y = 200 mm (7.875")
 Z = 425 mm (16.730")
 A = 360° / S1 = 6'000min⁻¹
 B = -15° / +100°
 C = 360° / S2 = 6'000min⁻¹
 U = 250mm (9.842")
 W = 360° - increment 0,02°

■ Linear axis

To ensure high precision linear axis movements, Superprecision preloaded recirculating roller bearings and linear guideways are mounted on the machine. They are warrant of homogeneity and rigidity of the whole structure. The axis measuring resolution is 0.001 mm.

■ Cinematic



■ Rotary axis

A new generation of rotary axis with torque-motors equip the **508MT** machining center. The characteristics are : high speed, acceleration in accordance with axes dynamics and backlash maintenance-free. The rotating rigidity is guaranteed by servo control quick reactivity.

■ Spindle-motor

The 30'000rpm integrated spindle-motor with ceramic hybrid bearings, HSK E-40 taper and peripheral coolant distribution responds to high speed machining requirements. Compact, rigid and reliable, these are the qualities of the tilting spindle mounted on the **508MT** machining center.

The angular B-axis movement (-15° to +100°) enables machining of complex parts. The control spindle sequential orientation (W-axis) allows, for example, operations such as turning, shaping and positioning of boring heads.

■ Tool magazine and tool changer

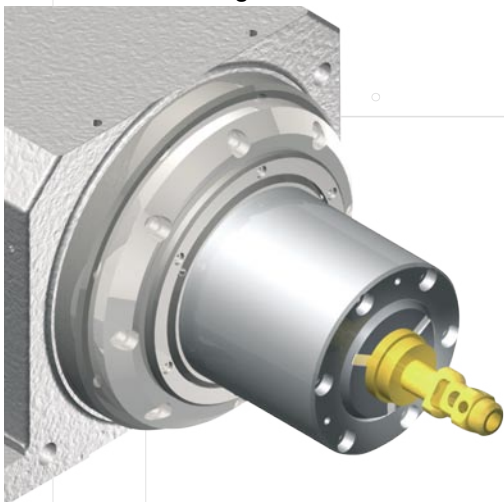
A 48 positions tool magazine with quick tool change double arm equipped is standard on the **508MT** machining center. At least 10 positions can be reserved for indexed tools. The tool change time is extremely quick (1 second) and the chip-to-chip time is approx. 3 seconds.

The important tool magazine capacity allows room for sister tools. Unmanned machining operations are possible through an integrated tool management system. The machine can be equipped, as an option, with tool breakage detection as well as tool length and radius measurement.



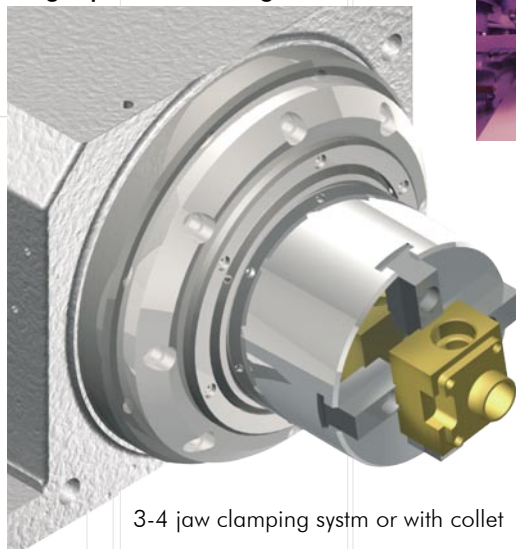
508MT - Machining applications

Bar stock machining



Bar stock clamping with Hainbuch system or F/W collet

Single part machining



3-4 jaw clamping system or with collet

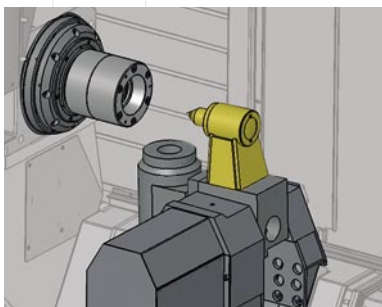


Multi-functions back working device on 3 position turret

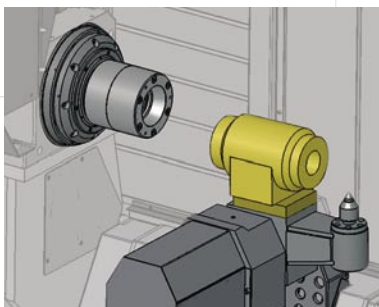
The **508MT** machining center while equipped with automatic back working device is able to perform milling and turning operations. This unit includes a 3 position turret on which a milling/turning (6'000rpm) counter-spindle, tailstock or a

vice can be mounted. The turret positions are mechanically locked. The back working device is mounted on a U-axis (250mm travel - 9.842").

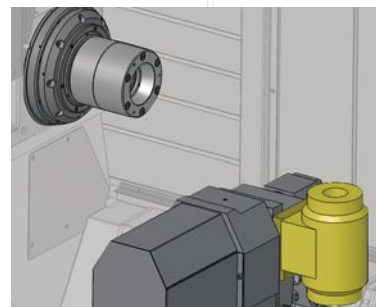
Counter-spindle/tailstock configuration



Tailstock in horizontal position

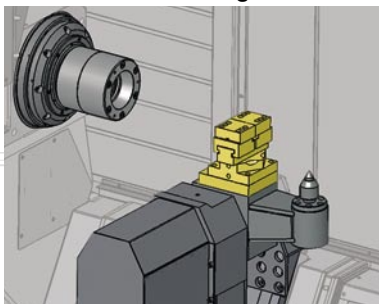


Counter-spindle in horizontal position



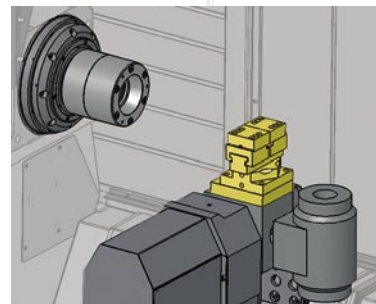
Counter-spindle in vertical position

Vice/Tailstock configuration



Back working device with vice in horizontal position

Vice/Counter-spindle configuration



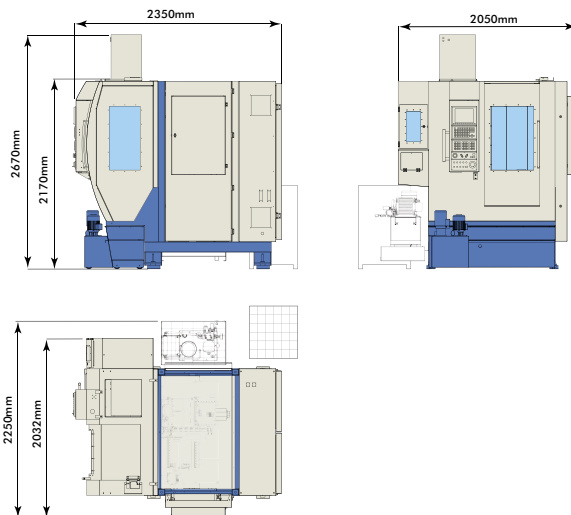
508MT - Technical specifications

Capacities	Travels and movements	X - Y - Z A - B	450/200/425 mm 360°/115°
Feed and forces	Rapid feed		40 m/min
	Acceleration		10 m/s ²
	Axes drives		AC motors
Spindle with built-in motor	Tool taper		HSK-E40
	Power		10 kW
	Torque		8 Nm
	Speed		500 - 30'000 rpm
B-axis	Movement		-15° to +100°
	Drive		Torque-motor
	Resolution		0,001°
	Nominal torque		180 Nm
	Holding brake (hydraulic)		450 Nm
	Max. rotation speed (G0)		250 rpm
A-axis - milling mode	Movement		360°
	Drive		Torque-motor
	Resolution		0,001°
	Torque		72 Nm
	Holding brake (hydraulic)		250 Nm
	Speed		300 rpm
A-axis - turning mode	Max. speed		6'000 rpm
	Power		7.5 kW at 100% ED
	Acceleration		480 rad/sec ²
	Spindle taper (interface)		A4
Ø through bore	Ø max.		42mm (1.65")
Clamping system (A-axis)	Collet type		Hainbuch, F48, F35, W31.75
	Collet type		Hainbuch, internal clamping, external clamping Ottet collet
Tool magazine	Number of tools		48 (10 indexed)
	Ø tool max.		50 mm (1.96")
	Ø tool max. (with 2 free positions)		80 mm (3.14")
	Max. tool length		150 mm (5.9")
	Tool change time		1 sec.
	Chip to chip time		~3 sec.
Coolant	Tank capacity		150 l
	Pump flow		60 l/min
Lubrication	Central lubrication		Pressure 2.5 bars
			Lubricant 2,7 l
Hydraulic group	Nominal pressure		100 bars
Numerical control			FANUC 31i

Options :

- Back working device with integrated 3 pos. turret on linear slide
- Vice / tailstock or counter-spindle on back working device
- Thread whirling head
- 42'000 rpm spindle with air/oil lubrication
- Resolution 0.0001 mm
- Tool breakage and tool measurement
- Chips conveyor
- B-axis movement B-45° to +100°
- 80 bars pressure coolant through spindle
- High-pressure minimal lubrication
- Various automatic bar feed systems and bar magazines
- Various automatic part loading/unloading systems

Layout without bar feeder



General data

- Voltage : 3 x 400V / 50Hz - 60Hz
- Installed power : 35KVA / 50 A
- Air pressure : 6 bars
- Air consumption : ~ 200l/min
- Net weight : 2'500 kg



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Milling - Turning

Swiss Made