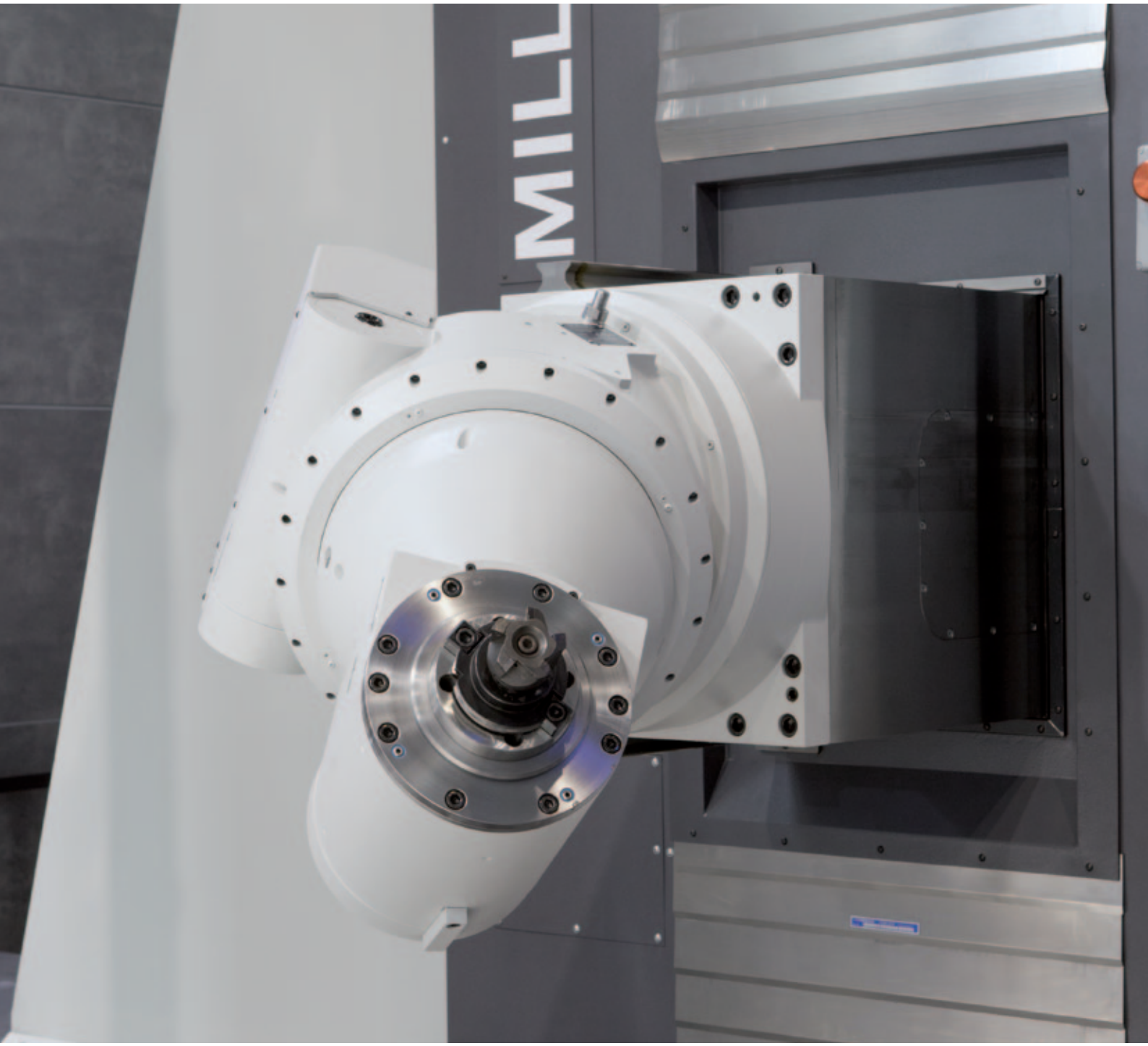
MILLFORCE 1

Dynamic workpiece machining



P-SERIES
K-SERIES
T-SERIES
MILLFORCE

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02 / Fields of application
03 / Machine concept
04 / Machine technology
05 / Options and equipment variants
06 / Working area
07 / Technical data

Universal travelling column mill for producing single pieces as well as small and medium batches.

Flexible and dynamic travelling column mill

The **MILL**FORCE 1 combines the fast and exact positioning of the milling head with the distinct stability for machining medium-sized workpieces. In its basic version the machine and its universal milling head realize all the common production tasks. An optional pick-up station with various exchangeable aggregates increases the fields of application significantly.

Your advantages at one glance
- robust and dynamic machine for both rough machining and superfinishing
- compact precision roller guides in all axes to achieve utmost machining accuracies
- high speeds, feed rates and axis acceleration rates
- attractive cost-benefit ratio
- various equipment variants individually adaptable to customer requirements

The universal milling head

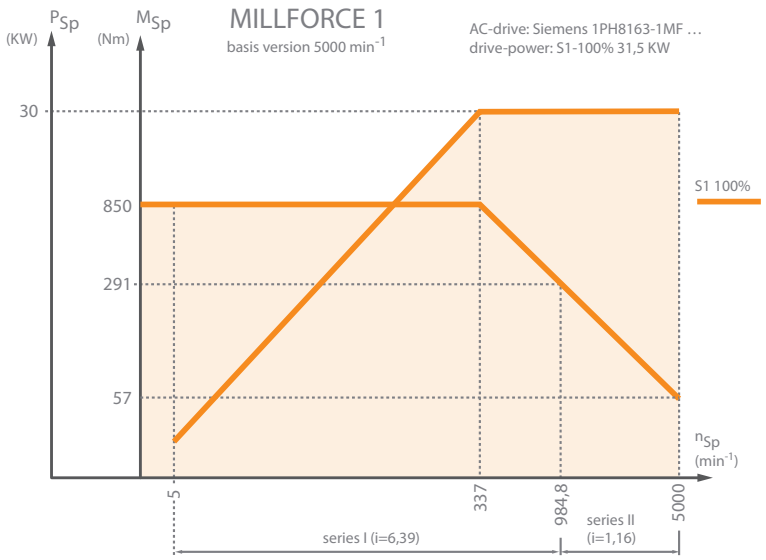
NC-positonable milling head
- performance 30 kW
- speed 5000, 6000 min^{-1}
- torque 850 Nm
- lubrication: oil-mist, watercooled

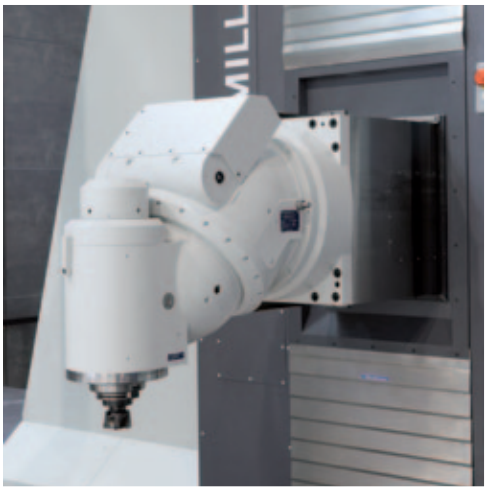
Positioning: automatically, continuous

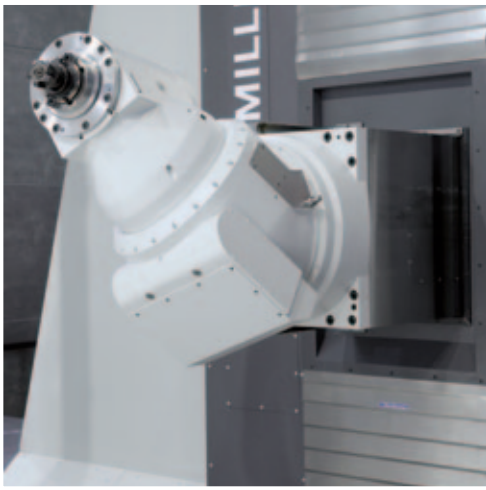
Coolant supply:
- external via nozzles
- internal through spindle

Positioning accuracy: +/- 5“ in both axes

Positioning range:
- axis A (45° to C): +/- 360°
- axis C (around Z axis): +/- 185°







Robust machine technology – for precise workpiece machining

The **MILL**FORCE 1 design
The wide and solidly ribbed machine bed in welded steel construction absorbs vibrations and forms the basis for precise machining results. It can be extended with a rack and pinion drive. As from 6 m, the X axis is designed with a rack and master-slave drive. Backlash-free compact roller guides in all linear axes guarantee the machine's high positioning accuracy and excellent stability.

Both the torsionally stiff box-type column, optimized by FEM and modal analysis, and the travel-dependent compensation for sagging and tipping (integrated into the ram) ensure the exact positioning of milling heads and tools.

Automatic tool changer

Operating platform

Optionally available

Automatic tool change
- tool magazine with 40, 60 or 76 tools
- tool change in horizontal position of the milling head

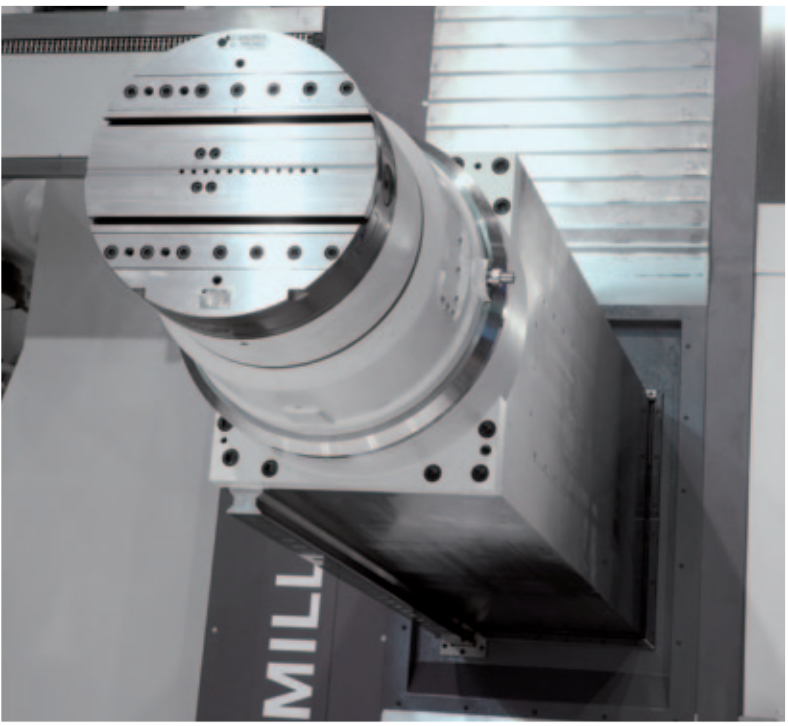
Pick-up station
- automatic change of aggregates

CNC controls
- Siemens 840 D sl
- Heidenhain iTNC 530 HSCI
- Fanuc 31i

Process monitoring
- tool-break monitoring, automatic tool detection
- workpiece probing (radio measuring probe and laser measuring bridge)
- torque and collision monitoring
- process-data acquisition and teleservice

Technical complete solutions
- rotary and traversing tables with a load up to 250 t
- tilting table with controlled tilting axis 0... 90°
- sinustable and rapidly moving caroussel tables
- trunnion devices, floor plates, clamping devices, equipment
- tool packages

Automatic change of a milling head



NC-facing head

Equipment variants

In addition to the universal milling head you can chose a spindle unit for machining operations within the work-piece with a higher speed and torque and a NC-facing head for NC-contouring, facing and turning. A pick-up station for docking this equipment can be integrated in the surroundings of the machine.

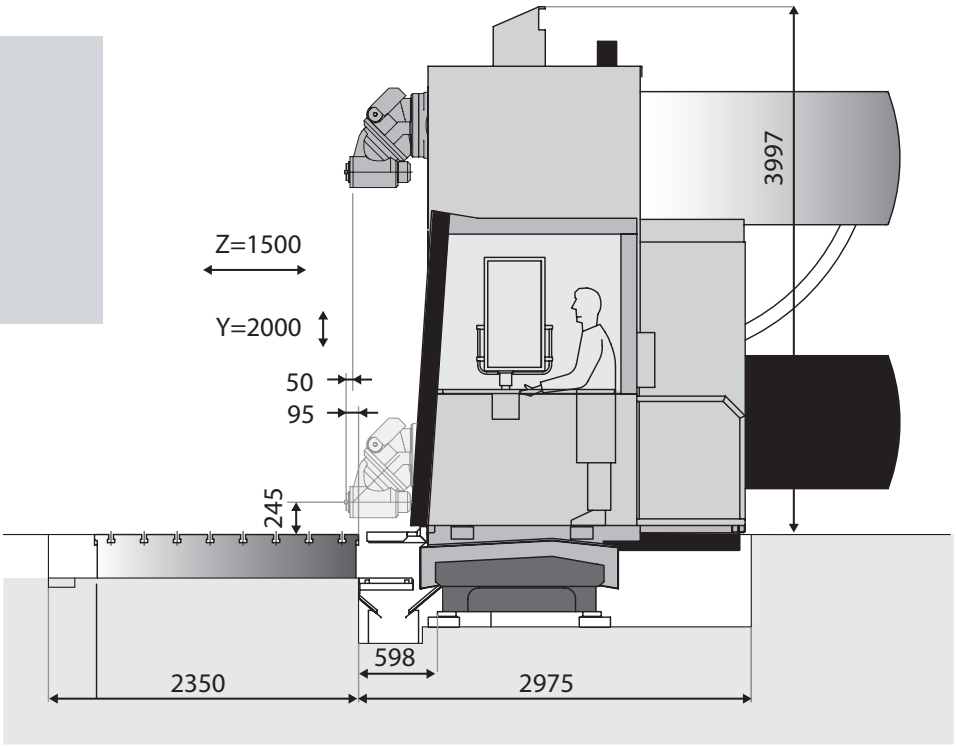
We offer you effective components to simplify your production process like a 3D touch probe including measurement cycles for automatic measurement of work pieces and a wireless handwheel for utmost flex-ibility when setting workpieces.

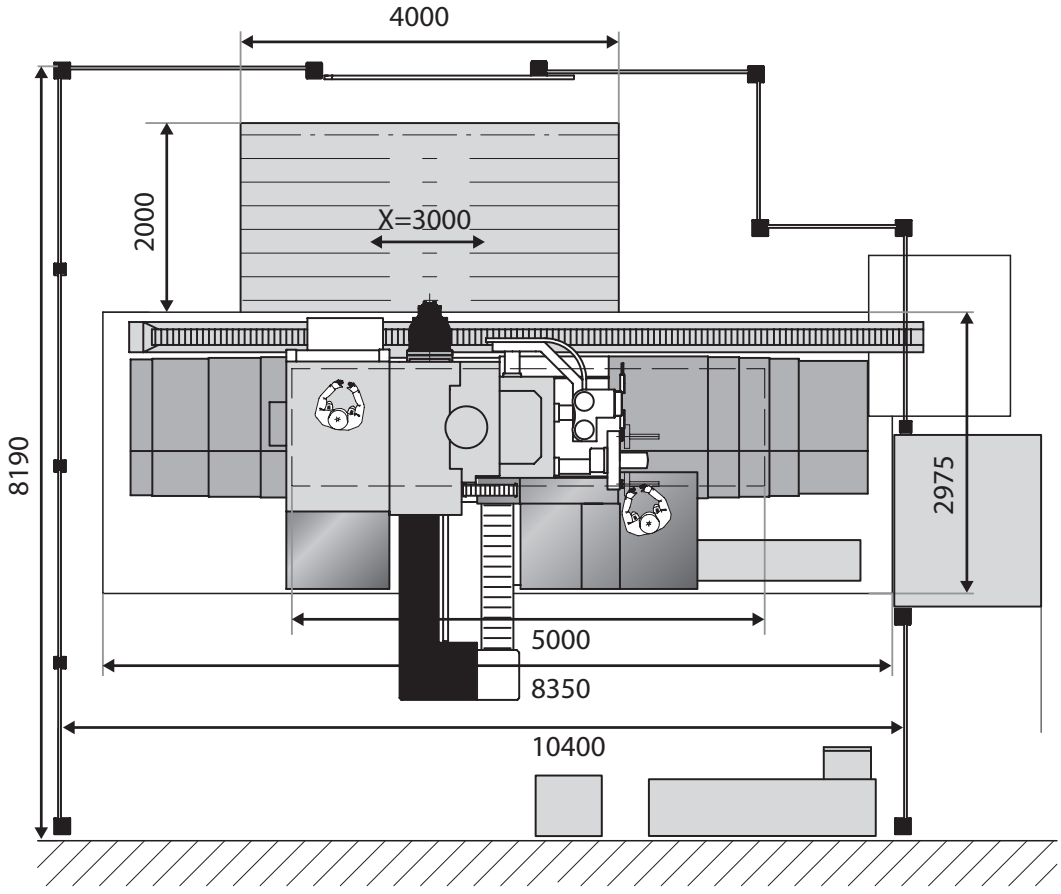
Individual solutions – we produce customer-specific solution on your request.

MILLFORCE 1: Layout

Basic version with
X = 3,000 mm,
Y = 2,000 mm,
Z = 1,500 mm,

Floor plate:
4,000 x 2,000 mm





Technical data

Performance			
Speed, continuous		min^{-1}	5...5,000 / 6,000
Drive power, max.		kW	30
Torque, max.		Nm	850
Spindle taper DIN 69871		ISO	50
Traverses	Axes		
Column cross traverse	X	mm	3,000
Optional extensions in steps of	X	mm	1,000
Vertical traverse	Y	mm	2,000 / 2,500
Ram traverse	Z	mm	1,500
Feed range			
Feed range in all axes		mm / min	1...20,000
Rapid traverse		m / min	20 / 40
Acceleration		m / s^2	1.25 / 1.5
Feed force, max.		N	10,000
Automatic tool change			
Number of tools in magazine			40 / 60 / 76
max. tool diameter for completely tipped magazine		mm	125
max. tool diameter		mm	250
max. tool length		mm	400
max. tool weight		kg	20
Net weight of the basic machine		kg	ca. 18,000

Automatic tool change

S165 eccentric spindle device	
Internal coolant supply, automatic tool clamping, labyrinth seal with permanent air sealing	
Available equipment variants:	
Spindle device	5,000 min^{-1} / 800 Nm
With increased speed	8,000 min^{-1} / 500 Nm
Diameter ca.	175 mm
Length ca.	262.5 mm

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