MAIER Swiss-type Automatics

Machine Tools that Tip the Competitive Balance in your Favour

CNC Sliding Headstock Machines

MAIER

Robust
Flexible
Innovative

NEW:
F4 with three
tool turrets!

Designed by Engineers
for Engineers

ML-ProLine

The Concept

The ML series is designed based on three concepts:

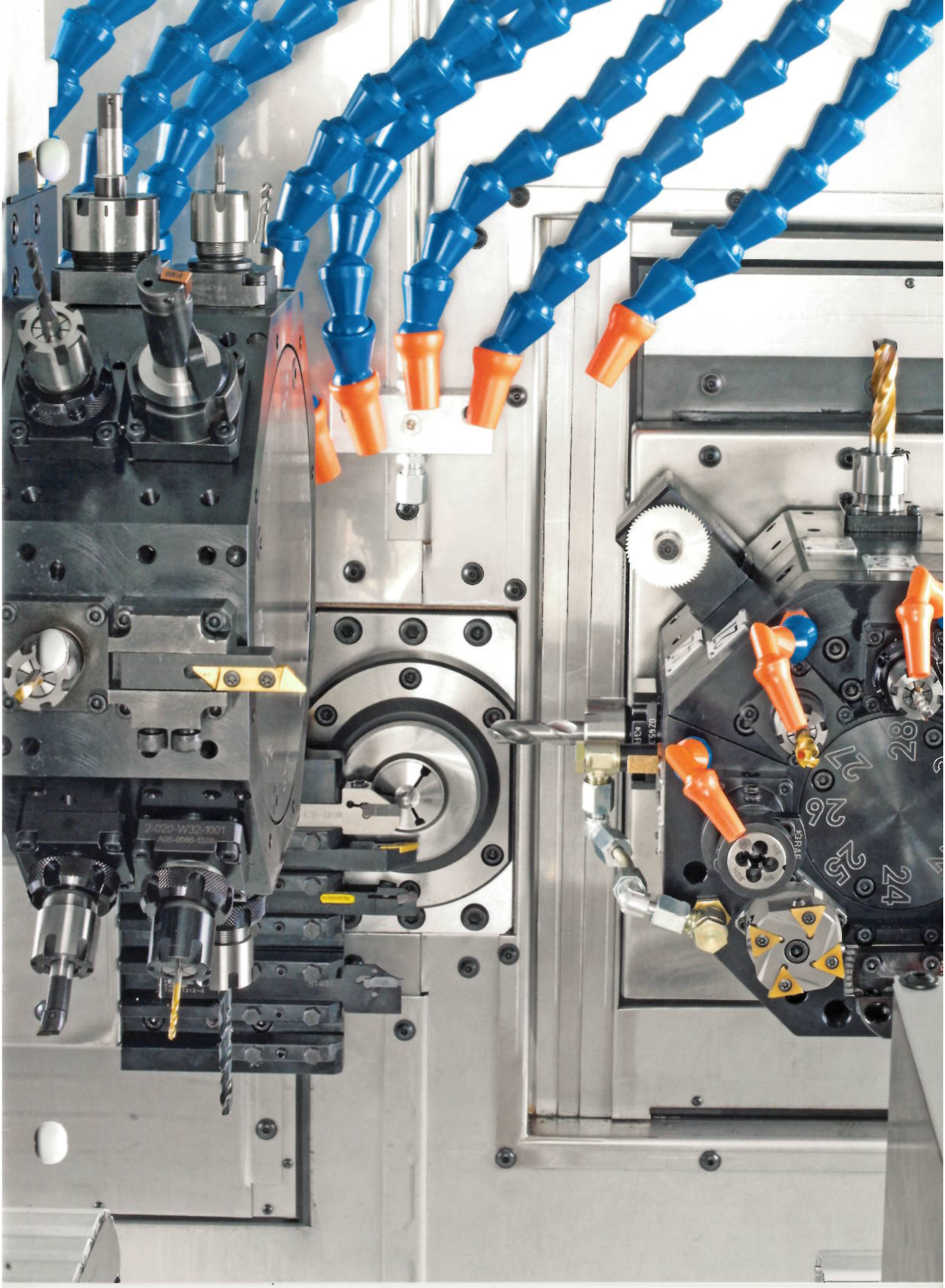
- As much technology as required
- As powerful as possible
- As practical as possible

The ML series delivers a careful balance of performance and processing flexibility allowing you to address a broad spectrum of machining operations without needing to employ manufacturing solutions from different suppliers.

CNC Sliding Headstock Machines from MAIER – Made in Germany.

CNC sliding headstock machines from MAIER are designed to be modular in design, and built with tried-and-tested German quality. This guarantees both advanced reliability and a dependable supply of replacement parts along with easy retrofitting and tailored options whenever needed.

The ML range is available in 7 versions allowing you to fine-tune your applications and access a variety of options, providing solutions for comprising every conceivable processing need.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Designed by Engineers for Engineers

ML-ProLine

The System

The 'technology of scale' philosophy of the ML series focuses on machines using key features and a wide range of equipment to match the widest range of processing requirements. Clearly this is reflected in the competitive price/performance ratio of our products.

The modular system employed in all our machine types helps you to buy exactly the technology you need for your daily applications.

The vast range of production experience our customers encounter at MAIER guarantees highly skilled consulting when selecting manufacturing solutions. This includes intensive support during the initial set-up, tooling selection for customer-specific applications, prompt commissioning of the machine and careful instruction of your operating personnel.

The ML series is continually being enhanced and offers a whole range of cutting edge innovations that encompass machine-processing with CNC sliding headstock machines for new manufacturing opportunities.

The Series

Series A

Simple, but precise and at an unbeatable price. The Series A ML-ProLine is designed for machining turned parts with a simple geometry. Guaranteeing you a maximum return on your investment.

Series B

Simple, precise and economical in price. For simple turned parts. With sub spindle and triple cross-working attachment.

Series C

The economic solution.
7 axes and up to 19 tools. 4 tools allow reverse-side processing caters for short secondary processing times.

Series D

3 independent slides allow 3 tools to be used simultaneously allowing for the optimum production of complex components. Front, transverse and rear working attachments, each with 4 motorised tools.

Series E

Short production cycles even with complex work pieces. 16 station tool turret, 12 axes and up to 35 tools.

Series F

The high-end machine for complete processing. Work with 4 tools simultaneously. With up to 3 tool turrets depending on features.

Linear

Compact precision! For small and miniature parts with a working area of 1-12 mm. Extremely dynamic due to linear motors. The ML Linear can be equipped with up to 26 tools and reaches top speeds of 40 m/min.

Series A, B, C

Series D, E, F

Linear

Individual

For highly specialised requirements!

Our project teams are available to assist you in finding technical solutions to meet your special processing requirements.
The modular design of the ML-ProLine permits adaptation of the machining process to your specific parts spectrum and non-standard processing requirements.

Innovative Components

- Freely programmable tool turret: all axes can be interpolated.
- Drives and motors for the very latest in CNC automation.
- All moving parts are connected to a central lubrication system.
- Flexible, modular parts system offers up to 4 independent tool carriers.

Deep Hole Drilling

- Don't just drill deep holes, drill high precision deep holes.
- Up to 200 mm deep
- Pressure up to 140 bar

Thread Whirling

- Another example of processing variety.

Polygon Forming

- Extremely stable machine set ups let you perform the toughest machining jobs, even polygon forming.

For Optimum Utility

The right tool for a perfect job! The flexibility and advanced design of the ML-ProLine is clearly visible in its details, such as the ability to use even the most advanced in tooling technologies:

- Features tool fitting systems adapted to the latest in tool technologies and materials
- Polygon turning
- 90° live tool heads
- Angular live tool heads
- Customer-specific quick-change systems: WTO or KM micro tooling
- Deployment of tools for heavy machining such as polygon forming
- Ejection of longer parts

Speed

For the shortest job times even with complex machining!

Dynamics in production: dynamic motors with extremely low mass moment of inertia. The interplay of several components: Fanuc 31iTA control, shaft encoder resolution (1 m. impulses/revolutions), MAIER control and construction design.

Secondary processing times are optimally reduced. Top fast-motion speeds up to 32 m/min inside a 5 mm stretch and quicker increment actions means efficient working.

Fanuc control coupled with the power of a conventional cam controlled automatic lathe.

High Stability for Precise and Rapid Machining

On a firm foundation:
High dimensional accuracy is achieved through the extreme rigidity of the machine. Developed in-house, the MAIER machine-base made of polymeric concrete provides the perfect foundation for absolute precision, perfect surface finishing and cost reductions during day-to-day machine operations, even for heavy-duty cutting. Polymeric concrete is 9-times better at damping than cast steel. This allows for much better absorption of the vibration caused during machining by the machine bed, and prevents it from being transferred to the cutting edge. Sliding headstock machines from MAIER are designed for performance and safety. The machine setup from MAIER lets you access more performance in precision and speed.

Operator and User-friendly

- Excellent access to the working space, and maintenance and control units.

Large-dimensioned Working Space

- Generously-dimensioned working space simplifies the setup.
- Several models are equipped with additional tool stations so that tools can remain fitted when processing groups of parts.

Stability for Stable Manufacturing Processes

- Minimum thermal expansion with high dampening qualities
- Low vibration for perfect dimensional accuracy
- Perfect quality surface finishes and tolerance thanks to solid machine engineering
- Perfect machining accuracy, surface quality and efficiency due to improved performance

Reduced Secondary Processing Times and Tool Costs

- Powerful: higher horsepower motors, stable in performance and speed, with a high drive rating, contribute to vibration-free machining and a reduction in secondary processing times.
- Vibration dampening for reduced tool costs: fine oscillations are eliminated. This prevents wear on the cutting edge and caters to a 30% improvement in tool downtime, hence providing time and cost savings.

Strong Even on Tough Materials

- Sure processing even when machining tough materials such as chrome-nickel steels, Hastelloy, Inconell, titanium-cobalt alloys and similar.
- MAIER supports the trend towards machining tough materials with its manufacturing technologies, tool knowledge and process consulting.

Hand Wheel Check Function

- Simulation of the work sequence in hand wheel mode (not just start/stop)
- Integrated hand wheel for convenient and quick setup, and manufacturing process run-in

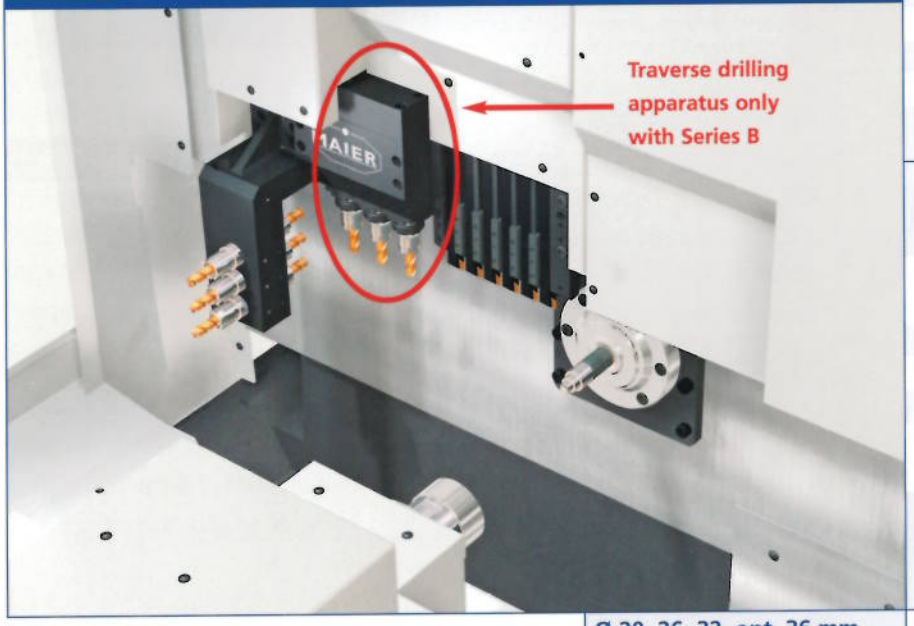
Multiple Versions

- Modular design: up to 52 machine versions designed in modular form can be tailored to customer-specific requirements.
- Extremely diverse and flexible tooling options
- Retrofittable from sliding to fixed headstock in 20 minutes

ML-ProLine

All Versions at a Glance

Series A / B



Ø 20, 26, 32, opt. 36 mm

Series A:

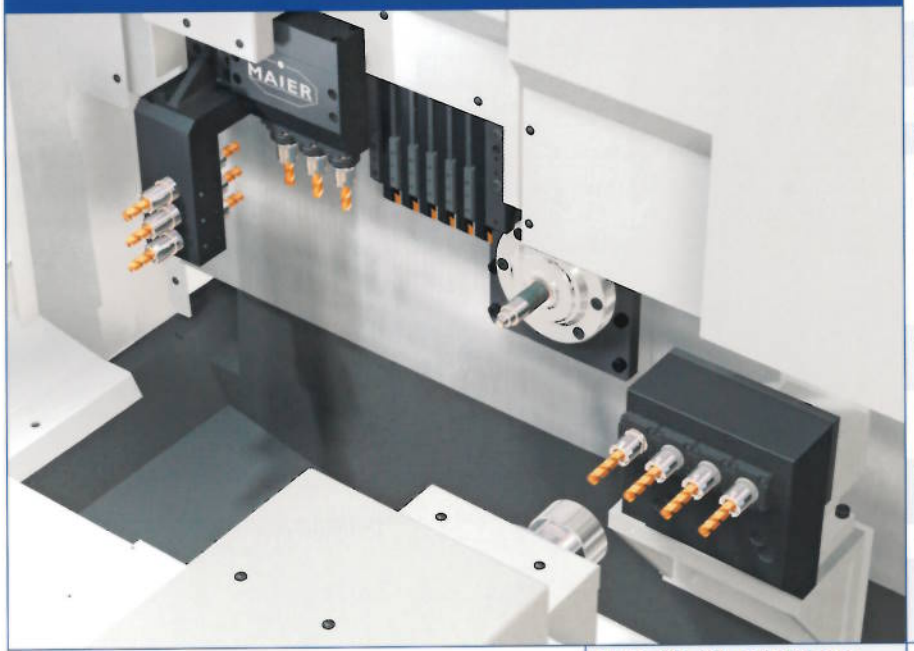
- For simple turned parts (without milling)
- 4 axes
- Up to 12 static tool positions

Series B:

- 3 additional tools enable traverse processing
- 5 axes
- Up to 15 tool positions (3 live tool positions)
- Including 3 driven toolholders
- C-axis on main spindle +5° mechanical locking with pin
- C-axis on opposed spindle + 5° mechanical locking with pin

Subject to technical change

Series C / C2



Ø 20, 26, 32, opt. 36 mm

- 2 system control: simultaneous machining with 2 tools
- Simultaneous machining on main and opposed spindle
- Crossdrilling/milling x 3
- 7 axes
- System 1:
  6 turning tool positions 12 x 12 mm or 16 x 16 mm (quantity of 5), crossdrilling/ milling x 3. Cropped drill socket on the face with 5 x Ø 20 mm or 3 x Ø 25 mm
- System 2:
  4 position backworking station
- C-axis on main spindle + 5° mechanical locking with pin
- C-axis on opposed spindle + 5° mechanical locking with pin
- Up to 24 tool positions (8 driven tools)

Subject to technical change

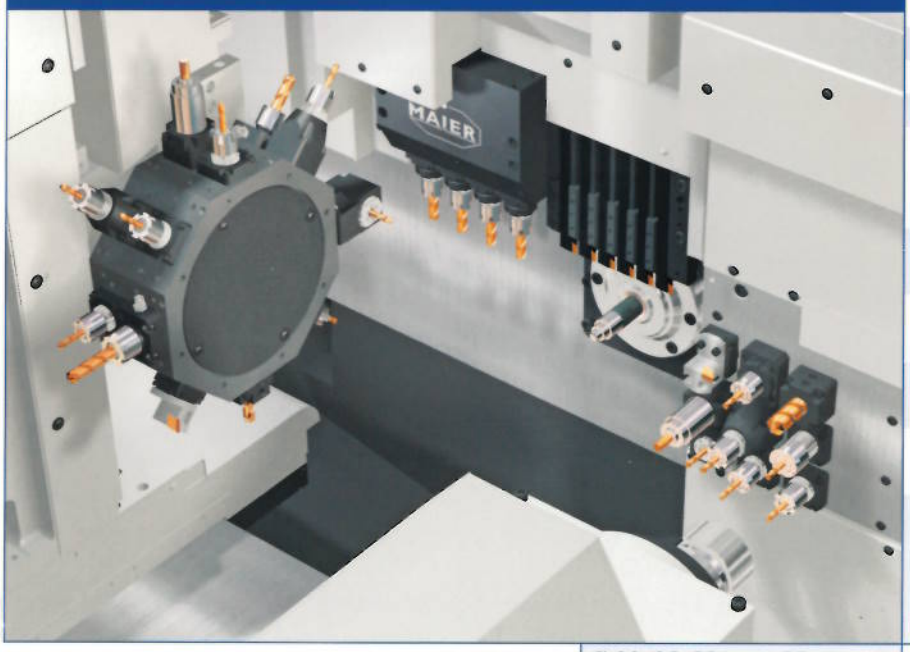
Series D / DY

- 3 system control: simultaneous machining with 3 tools
- 9 axes (10 with Y2-axis)
- Cross drilling/milling x 4
- System 1: 6 turning tool positions 12 x 12 mm or 16 x 16 mm (quantity of 5), cross drilling/milling x 4-fold
- System 2: 4 position backworking station
- System 3: drill support with up to 4 driven tools
- C-axis on main spindle +5° mechanical locking with pin
- C-axis on opposed spindle +5° mechanical locking with pin
- Up to 23 tools (14 driven)
- Option: Y2-axis for backworking station (3 stationary + 6 driven tools)

Subject to technical change

Ø 20, 26, 32, opt. 36 mm

Series E



- 3 system control: simultaneous machining with 3 tools
- 12 axes
- Cross drilling/milling x 4
- Up to 35 tools (26 driven)
- System 1: 6 turning tool positions 12 x 12 mm or 16 x 16 mm (5 off), cross drilling/milling x 4
- System 2: Y2-axis for backworking station (3 stationary + 6 driven tools)
- System 3: 2 x 8 station turret up to 16 driven tools
- C-axis on mainspindle +5° mechanical locking with pin
- C-axis on opposed spindle +5° mechanical locking with pin
- C-axis on turret for free programmable angular positions

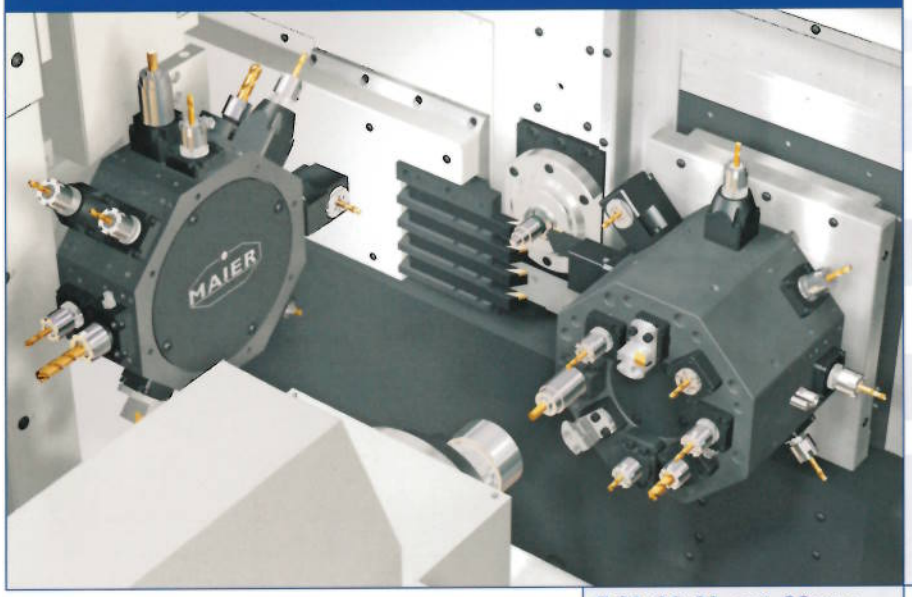
Subject to technical change

Ø 20, 26, 32, opt. 36 mm

ML-ProLine

All Versions at a Glance

Series F2

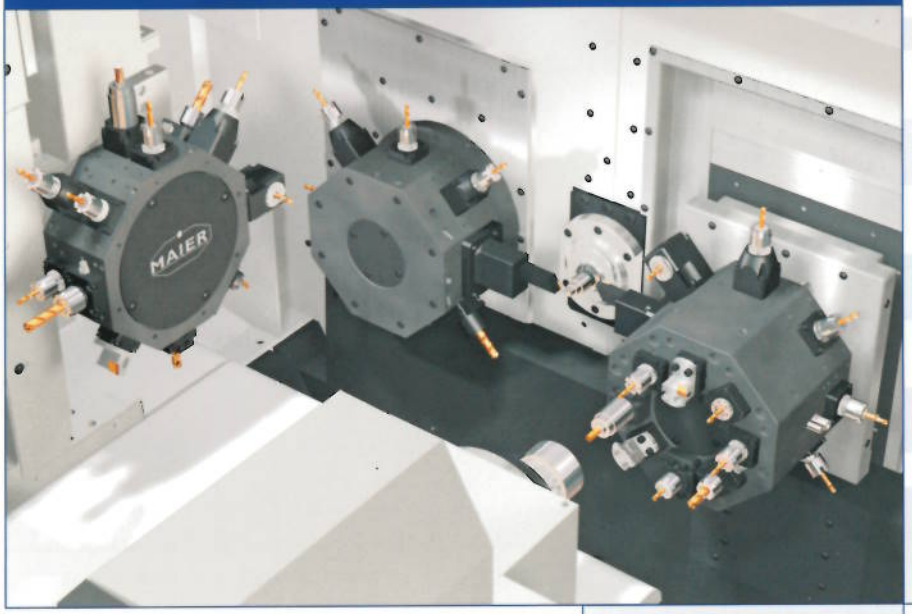


- 4 system control: simultaneous machining with 4 tools
- 15 axes
- System 1: 5 turning tool positions 12 x 12 mm
- System 2: 8 live tool positions (tool turret System 4)
- System 3: 16 tool stations (of which up to 16 are driven)
- System 4: 8 live tool positions (tool turret System 4)
- C-axis on main spindle + 5° mechanical locking with pin
- C-axis on opposed spindle + 5° mechanical locking with pin
- Up to 37 tools (32 driven)
- Available without tool turret (System 3)

Ø 20, 26, 32, opt. 36 mm

▶ Subject to technical change

Series F4



- 4 system control: simultaneous machining with 4 tools
- 16 axes
- System 1: 8 driven tools (traverse tool turret)
- System 2: 8 driven tools (rear traverse tool turret)
- System 3: 16 tool stations (of which up to 8 are driven) (front-sided tool turret)
- System 4: 8 driven tools (rear traverse tool turret)
- C-axis on main spindle + 5° mechanical locking with pin
- C-axis on opposed spindle + 5° mechanical locking with pin
- 40 tool stations (32 separated)
- Available without tool turret (System 3)

Ø 20, 26, 32, opt. 36 mm

▶ Subject to technical change

Linear

Basic Features

- 2 system control: main spindle, opposed spindle
- Simultaneous machining with 3 tools
- 7 axes
- C-axis on main spindle + 5° mechanical locking with pin
- C-axis on opposed spindle + 5° mechanical locking with pin

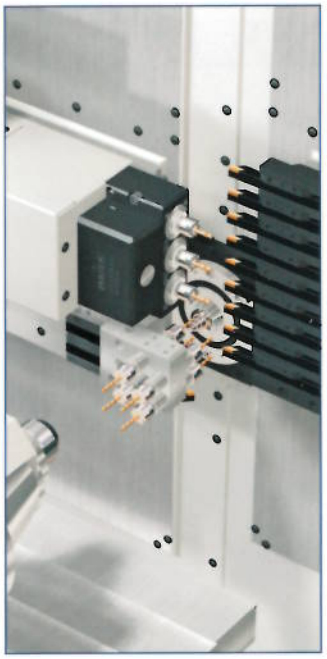
System 1:

- 9 turning tool positions 10 x 10 mm

System 3:

- 3 turning tool positions 10 x 10 mm
- 2 driven tools (cross working)
- Drill support with 4 tool stations

Options for Supplementing Basic Equipment



Option 1:

Additional tool holder with cross drilling/milling x 3 (System 3)

Option 2 :

Additional tool holder with six driven tools (System 3)

Option 3 :

Additional tool holder with four driven tools (cross working) (System 3)

Option 4 :

Additional tool holder with two driven tools (System 1)

▶ Subject to technical change

ML-ProLine

Technical Data – Overview

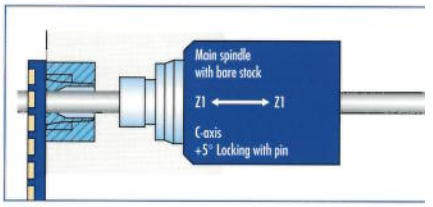
Technical Data		Series A / B	Series C / C2	Series [illegible] DY
Axes	pcs.	4 / 5	7	9 / 10
Rapid speed	inch/minute			
Coolant capacity	l			
Control system	type			
Measurements L x W x H	mm		about 2,640 x 1,500 x 1,900	
Weight	kg		about 3,800-4,200 (depending on sp	
Main Spindle				
Spindle bore	mm			20 / 26
Head stock stroke	mm			220 / (320 / 450)*
Main spindle speed	t/min.			0-8,000 (ML20, ML26)
Power rating main spindle (100% / 60% ED)	kW			3.7 / 5.5
Sub Spindle				
Spindle bore	mm			20 / 26
Sub spindle speed	t/min.			0-8,000 (ML20, ML26)
Power rating sub spindle (100% / 60% ED)	kW		1.1 / 3.7 / (3.7 / 5.5)*	
Cross Working**				
Lathe tools	pcs.	5 (6)	5 (6)	5 (6
Driven tools (cross-working)	pcs.	– / 3	3	
Power rating driven tools (100% / 60% ED)	kW			0.55 /
Back Side Working**				
Number of tools	pcs.		4	4 / 9
Thereof driven tools	pcs.		up to 4	4 / 6
Power rating driven tools (100% / 60% ED)	kW			0.55 /
Front Working Attachment**				
Number of tools	pcs.	– / 3	3	4
Thereof driven tools	pcs.			up to 4
Power rating driven tools (100% / 60% ED)	kW			0.55 /
Traverse tool turret**				
Number of tools	pcs.			
Thereof driven tools	pcs.			
Power rating driven tools (100% / 60% ED)	kW			
Turret Front Side**				
Number of tools	pcs.			
Thereof driven tools	pcs.			
Power rating driven tools (100% / 60% ED)	kW			
Traverse tool turret back**				
Number of tools	pcs.			
Thereof driven tools	pcs.			
Power rating driven tools (100% / 60% ED)	kW			

*Option

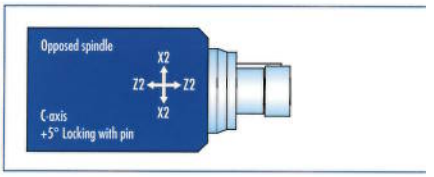
**Max. speed for driven tools 10,000 apm

▶ Please note that we improve the efficiency of our machines continually. Therefore only the latest product details for the respective machine category are valid.

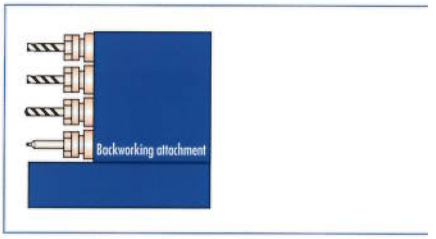
...ries E	Series F2	Series F4	ML Linear
12	15	16	7
1,260			1,654
260			180
MAIER PRO GE FANUC 30 SERIES			
	2,640 x 2,030 x 1,862	3,050 x 1,920 x 2,000	1,900 x 960 x 1,930
pindle bore)		4,600	2,000
/ 32 / 36			12 (7)
		450	160
resp. 0-6,000 (ML32, ML36)			0-10,000
(5.5 / 7.5)*			1.5 / 2.2
/ 32 / 36			12 (7)
resp. 0-6,000 (ML32, ML36)			0-10,000
3.7 / 5.5			1.5 / 2.2
5 (6)	5		up to 12
4			up to 6
/ 1.1			0.55 / 1.1
up to 9			up to 6
up to 6			up to 2
/ 1.1			0.55 / 1.1
			up to 6
			up to 2
/ 1.1			0.55 / 1.1
		8	
		8	
		1.1 / 3.7	
16	16	16	
8	8	8	
0.55 / 1.1	0.55 / 1.1	0.55 / 1.1	
	16	16	
	16	16	
	1.1 / 3.7	1.1 / 3.7	



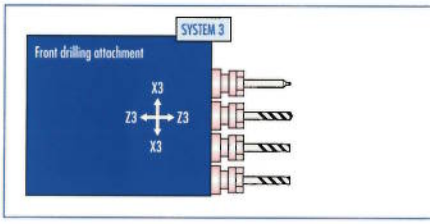
Main spindle with bare stock



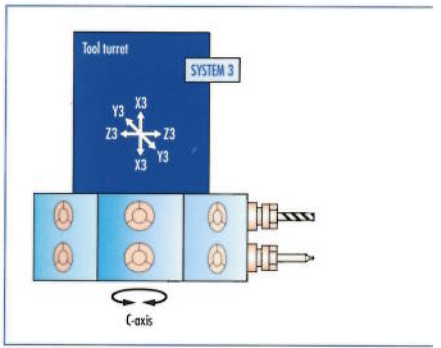
Opposed spindle



Backworking attachment



Front drilling attachment



Tool turret

▶ Subject to technical change

Control for Maximum Productivity

MAIER Control Based on Fanuc Hardware

The control software is perfectly matched to the components, and simplifies programming and setting up and connecting the potentials that assist you in becoming just that little bit more efficient every time you perform a processing operation.

Experience shows its true colors here as well. MAIER focuses on properties that contribute to clearly improved and quicker results far beyond the options provided by traditional and standard machine controls.

Moving quicker from the draft to the finished component:

- User-friendly due to user interface designed by MAIER
- Convenient due to use of customer and machine-specific macro cycles
- Quicker due to parameter-entry and macro-support

Reliable:

- Integrated tool break and wear control on all axes without the need for any additional hardware
- Integrated programme synchronisation via kinematic logic for reliably preventing tool carrier collisions
- Clearly fewer servo cycles and block process times for preparing the CNC batches deliver a more precise, true-to-contour and improved surface quality

Varied:

- Support for complex processing requirements such as 3D milling, 3D circle interpolation...
- Ethernet interface for integrating the control into the information management network
- Fanuc 30/31iTA

Tool Knowledge

- Tool selection advice
- After-sales support for new work piece productions

Processing Power

- Manufacturing process development
- Project management
- Time studies
- Milling tests
- Customer-specific solutions based on 52 machine variations: proprietary development and production

Use our knowledge to benefit your machining

Manufacturing Solutions from MAIER

More than Just Machine Technology

Sustainability

- Training, instruction and commissioning at the customers premises or at the new MAIER Customer Center
- Worldwide service partners

Innovation

- Added value through intelligent innovations

Automation Integration

- Work piece handling matched to the respective process chain
- Support for integrating the manufacturing solution into the workflow
- Integration of loading and unloading handling systems
- Integration of robotic systems for measurement processes, palleting, polishing...

Produced in Series, Tailored to your Exact Requirements.

Convince yourself of the benefits of the ML series and the power of our machines. Feel free to call us for a non-binding discussion of your needs at anytime. Or simply come and visit us at our customer center.

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