

MS12-4

TRAUB

*Multi-spindle CNC sliding/fixed headstock turning machine
for precision machining of small workpieces*



better.parts.faster.

TRAUB MS12-4

Four turning spindles—four times the productivity

The TRAUB MS12-4 is a revolutionary multi-spindle sliding/fixed headstock turning machine that combines the single-spindle mindset with the high productivity of a multi-spindle turning machine. It enables cost-efficient precision manufacturing within an exceptionally compact footprint.

The machine is designed for small workpieces with diameters ranging from 3 to 13 mm.

Unlike conventional INDEX multi-spindle turning machines, the four main spindles are not arranged in a drum but stacked vertically in four levels. Each main spindle is assigned a tool turret; depending on requirements, up to four flexible tool carriers can be added as an option.

Two or four counter spindles handle simultaneous back end machining.

The main spindles with integrated Z axis allow machining in either fixed or sliding headstock operation. As a result, all tool carriers and counter spindles can be flexibly adapted to the respective machining task.

The machine is equipped with a Mitsubishi control system with dual NCU, further developed on the basis of the TRAUB TX8i-s V8.

The modular design of the TRAUB MS12-4 allows for customer-specific configuration.

Compared with four single-spindle turning machines, the TRAUB MS12-4 delivers four times the productivity within the same footprint.

The control system and all peripheral components, such as the bar loading magazine, chip conveyor, cooling lubricant cleaning, mist extractor, etc., are required only once. In addition, the machine, including the control cabinet and bar loading magazine, forms a single unit.

Thanks to its exceptional productivity and flexibility, the TRAUB MS12-4 is ideally suited for users in precision mechanics and robotics, electrical engineering, the watch and jewelry industry, and above all the medical technology sector.



Machine concept

- Four times the productivity
- Four main spindles for bar stock up to 13 mm
- Two or four counter spindles
- Four tool turrets and up to four Flex tool carriers can be used simultaneously
- Large tool pool for setup-friendly production
- Easy changeover from sliding to fixed headstock operation
- Very compact machine design with small footprint
- Generously dimensioned and ergonomic work area
- Automation via integrated bar loading magazine, remnant removal, and either oriented or non-oriented workpiece unloading
- Hydraulics-free machine: no heat input from hydraulic components—which also means lower energy consumption
- Rigid cast iron bed and temperature compensation for high precision

Flexible by design

The TRAUB MS12-4 combines the advantages of a single-spindle sliding/fixed headstock turning machine with the productivity of a multi-spindle system. Thanks to the main spindles with integrated Z axis installed in all four levels, the machine can be converted from fixed headstock to sliding headstock operation in no time at all.

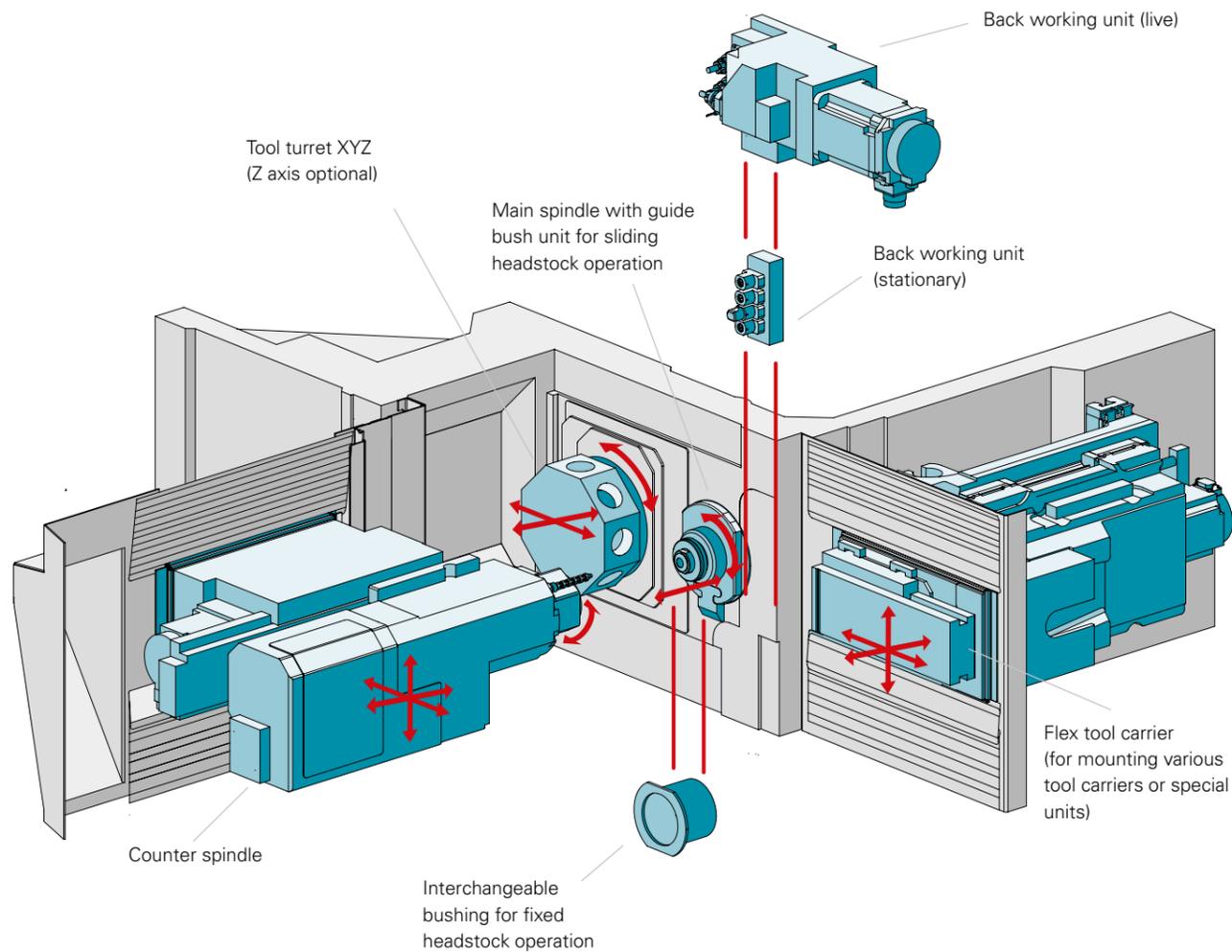
Each level is equipped with a turret featuring an X axis, an interpolated Y axis, and an optional Z axis. Each turret provides eight live stations, all fitted with KPS36 tool stations with W serration.

For simultaneous machining or special processes such as whirling and gear cutting, a Flex tool carrier can be added.

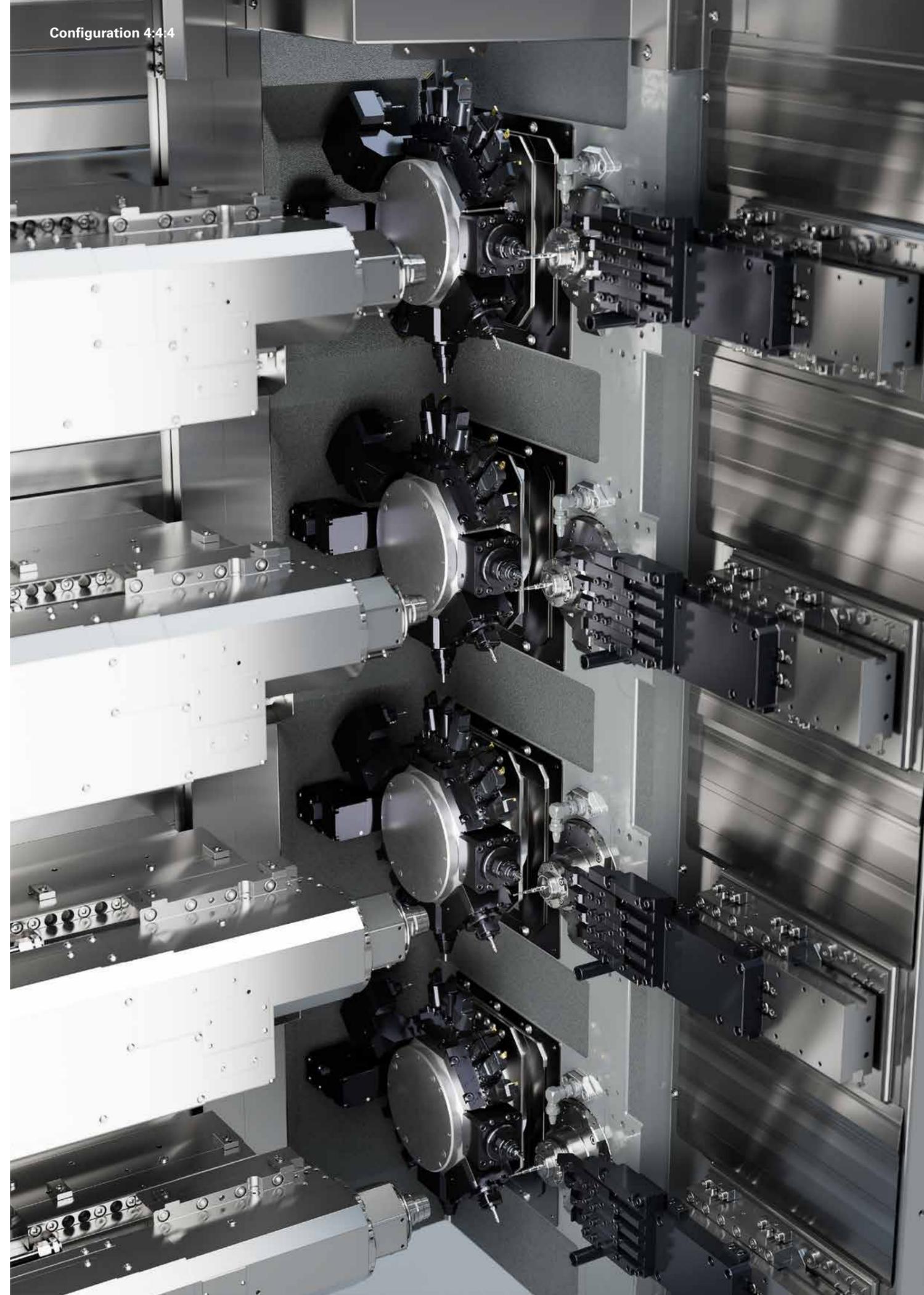
Back end machining via the counter spindle can be performed using tools mounted on the turret, on the Flex tool carrier, or on additional stationary and/or live back working units.

The counter spindles and Flex tool carriers are designed as 3-axis systems in X, Y, and Z. All tool carriers are supplied with high-pressure cooling lubricant of up to 120 bar, delivered in an energy-efficient manner via frequency-controlled pumps.

Depending on requirements, workpiece unloading is carried out either by flushing or by pick-off at the counter spindle.



Configuration 4:4:4



Versatile configuration options for customized applications

The TRAUB MS12-4 can be deployed in a wide range of applications to meet specific customer requirements. In addition to a fully equipped version with all components and axes, further equipment variants are available, allowing the sliding/fixed headstock multi-spindle turning machine to be configured cost-efficiently and precisely to match the requirements of the workpieces to be machined.

Depending on workpiece complexity, for example, two counter spindles instead of four can be configured. In this case, each counter spindle performs back end machining for two main spindles. Depending on tooling requirements, a fixed back working unit can also be installed between two levels.

Zero, two, or four Flex tool carriers can be configured and flexibly deployed on the main spindle and/or counter spindle. In the version with two Flex tool carriers, each tool carrier—similar to the counter spindles—machines two main spindles.

For special machining operations (e.g., gear cutting, whirling, deep-hole drilling, etc.), appropriate special components can be installed on the Flex tool carrier.

Three configuration variants are shown below by way of example.

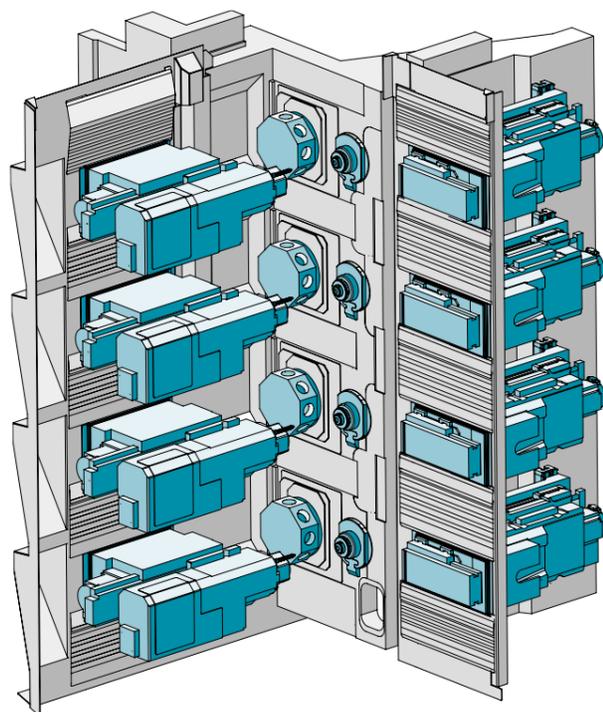
Configuration 4:4:4

In the fully equipped configuration, all four levels are fully populated.

| | |
|--------------------------------|----------|
| Main spindles and turrets: | 4 |
| Counter spindles: | 4 |
| Flex tool carriers: | 4 |
| Additional back working units: | 0 |

Usage:

Workpieces with an equal share of machining on the main and counter spindles and/or special operations on the main spindle (e.g., production of bone screws using a whirling unit).



Configuration 4:2:2

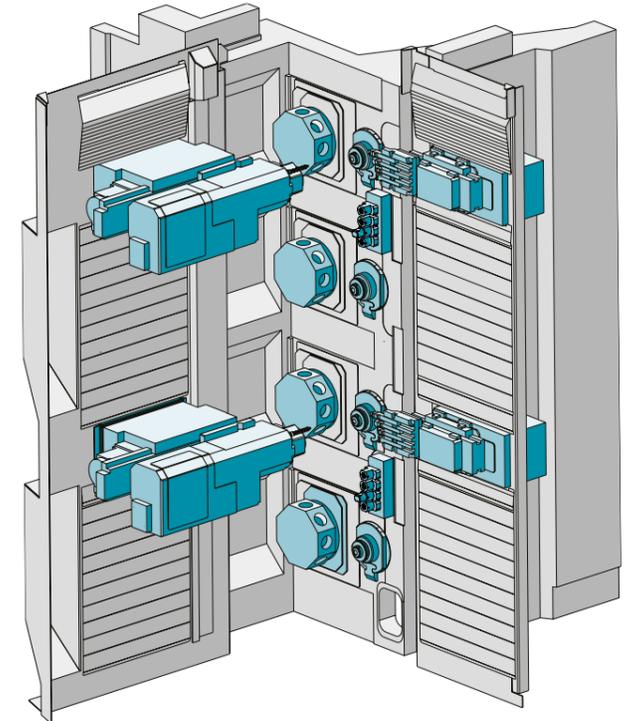
The equipment variant with **four** main spindles and turrets, as well as **two** counter spindles and **two** Flex tool carriers, offers a very high degree of flexibility. In this configuration, the two counter spindles and the Flex tool carriers can each operate across two levels.

| | |
|---|----------|
| Main spindles and turrets: | 4 |
| Counter spindles: | 2 |
| Flex tool carriers: | 2 |
| Additional back working units: (stationary) | 2 |

Usage:

For example, typical sliding headstock parts in which back end machining accounts for 30 to 60 percent of the machining time of the main side.

In this case, the main spindles operate with a time offset, and the counter spindles handle back end machining for two main spindles each. Despite the reduced equipment level and lower acquisition costs, the machine still achieves four times the output of a single sliding headstock turning machine.



Configuration 4:2:0

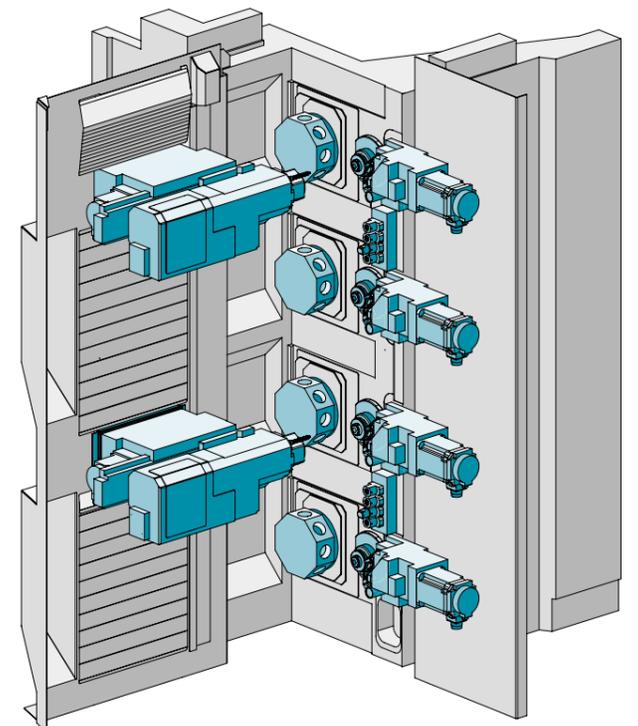
The equipment variant with **four** main spindles and turrets, **two** counter spindles, and **zero** Flex tool carriers, but with multiple back working units.

| | |
|--|----------|
| Main spindles and turrets: | 4 |
| Counter spindles: | 2 |
| Flex tool carriers: | 0 |
| Additional back working units (stationary) | 2 |
| Additional back working units (live) | 4 |

Usage:

Workpieces with lower technological requirements on the back end and without special machining operations.

In this configuration, the machine can be set up in a particularly cost-efficient manner. Instead of flexible tool carriers, back working units for stationary or live tools are installed. This allows the machine configuration to be optimally matched to the workpiece requirements with maximum cost efficiency.



Best performance for applications in precision mechanics and medical technology

INDEX provides optimal solutions for flexible and efficient production. Its engineers have integrated years of experience leveraged from many industries into the product development process. Products and processes are then tailored to specific customer needs through feasibility studies, efficiency analyses, and, above all, close collaboration with the customer.

INDEX products are modular in design and highly flexible, giving customers access to an extensive modular system for a solution that perfectly matches their application. The TRAUB MS12-4 multi-spindle sliding/fixed headstock turning machine delivers outstanding performance for users in precision mechanics, electrical engineering, the watch

and jewelry industry, and medical technology—combining high productivity, top quality, and process reliability. It is the complete solution for high-performance machining of small workpieces.



Bone screw

Titanium
Ø 4 x 46 mm



Tulip-head screw

Titanium
Ø 10 x 23 mm



Implant

Titanium
Ø 4 mm x 15 mm



Abutment

Titanium
Ø 4 x 10 mm



Injection body

Steel
Ø 12 x 70 mm



Gear

Steel
Ø 7 x 12 mm



Drive shaft

Stainless steel
Ø 13 mm x 95 mm



Threaded spindle

Steel
Ø 4 x 60 mm



Planetary ball screw nut

Steel
Ø 8 x 25 mm



Spindle/shaft

Steel
Ø 12 mm x 80 mm



Connecting element

Brass
Ø 12 x 60 mm

Integrated automation solutions

Material supply

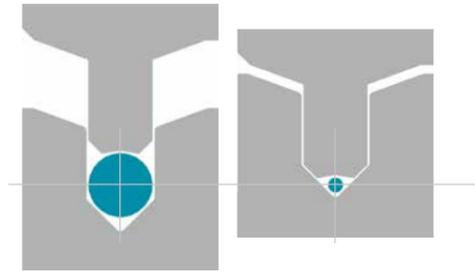
The TRAUB MS12-4 was designed for fully automated operation.

As standard, it features a fully machine-integrated INDEX bar loading magazine with four vertically stacked, patented material guides.



The diameter-independent guide channels ensure close, continuous bar guidance for all diameters, without the need to change guide components. The bar capacity is generously dimensioned and can be replenished during machining.

Diameter-independent bar guidance



Bar guide
Ø 13 mm

Bar guide
Ø 3 mm

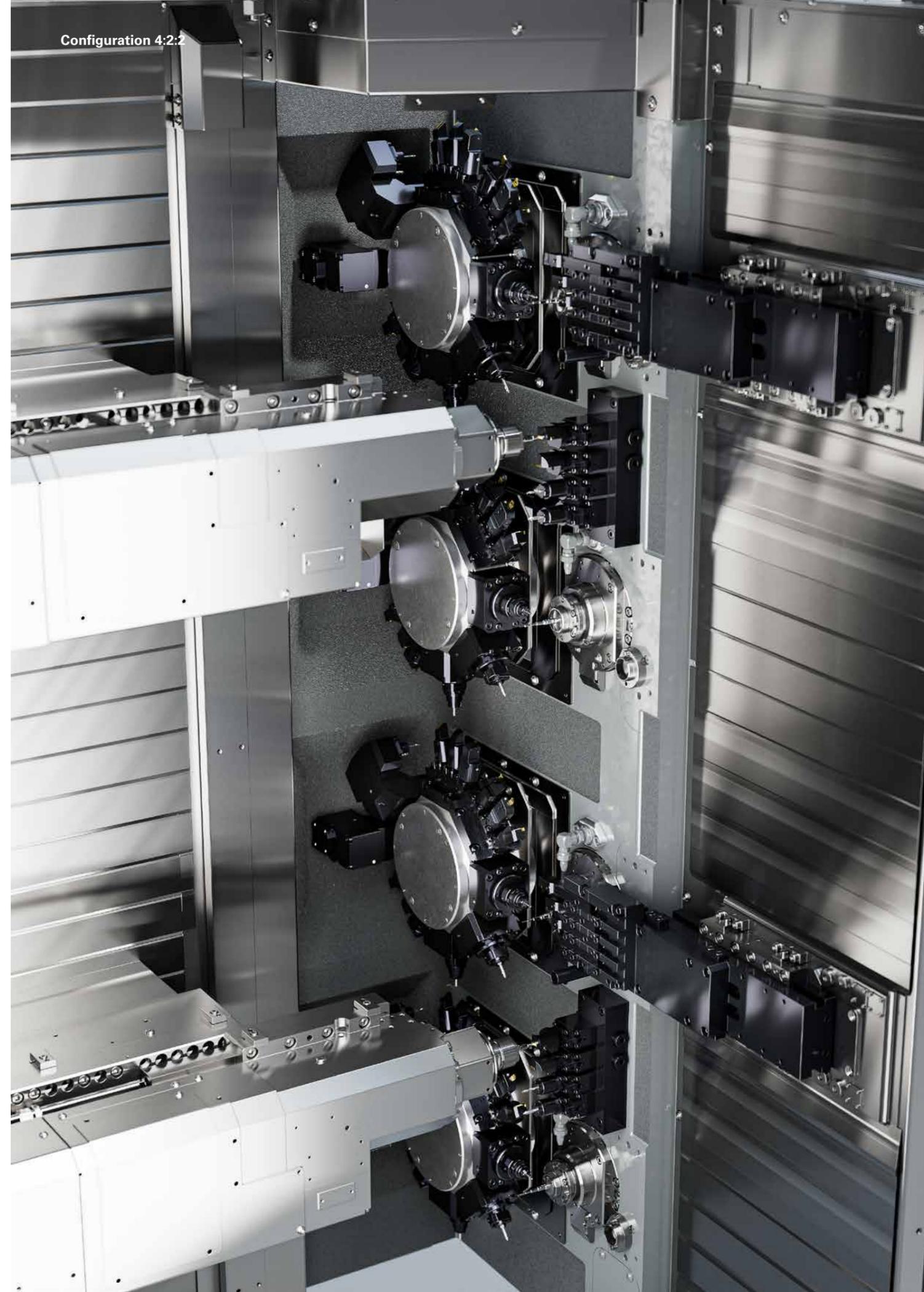


Workpiece unloading

Finished parts can be unloaded non-oriented by flushing either into four boxes or into an integrated part selector.

Alternatively, oriented workpiece unloading is available via a linear unit. In this case, finished parts are transferred by the linear shuttle to a robot (handshake solution) and, for example, placed onto a conveyor belt or into a pallet storage system.

Remnants can be unloaded through the counter spindle housing.





The cockpit for easy integration of the machine in your business organization

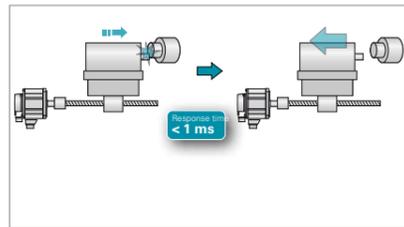


Focus on production and control—Industry 4.0 included

The iXpanel operating concept provides access to networked production. With iXpanel, your staff always has all relevant information for efficient production right at the machine. iXpanel is already included in the standard and can be individually extended. You can use iXpanel just as you require it for your business organization—that's Industry 4.0 tailored to suit your needs.

Future-proof.

The TRAUB TX8i-s V8 control system is optimally integrated into the TRAUB iXpanel. Operation is intuitive via a 19-inch touchscreen.



Intelligent

Overload and collision monitoring with electronic quick retraction

- Active on all TRAUB machines
- Minimizes damage to the machine
- Active counter control in case of malfunction
- Response time in the millisecond range by intelligent servo amplifier



Productive

Ergonomic interactive user interface for programming, editing, setup, and operation

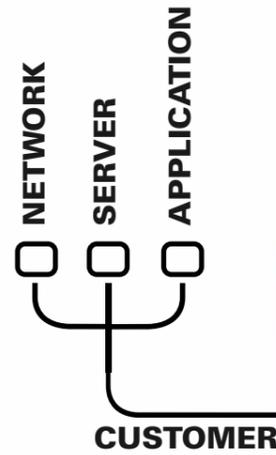
- Online retrieval of manufacturing and setup information; remote access via VNC
- Graphics-supported interactive guidance, also during setup
- Comfortable process synchronization and optimization of program sequences of parallel machining processes
- Visual verification to avoid collision situations through graphical process simulation
- Highly sensitive tool breakage monitoring



Virtual & open

with the TRAUB WinFlexIPS plus option

- Step-by-step parallel programming and simulation
- Extremely easy synchronization of machining sequences including up to 6 subsystems
- Cycle-time optimization already during programming
- Planning and optimization of a setup in manual/automatic mode just as on the machine
- 3D simulation and 3D collision detection provide for additional safety
- Optionally on an external PC and/or integrated in the control
- Third-party software can be installed via an optional gateway computer



19" TOUCHSCREEN MONITOR

STANDARD included as standard

Industry 4.0 features



Workpiece-specific documents



Notes



Customer data



Information center



Browser



Remote access



Technology calculator



User management



Programming assistance

OPTION

- WinFlexIPS
- WinFlexIPS Plus
- Custom applications

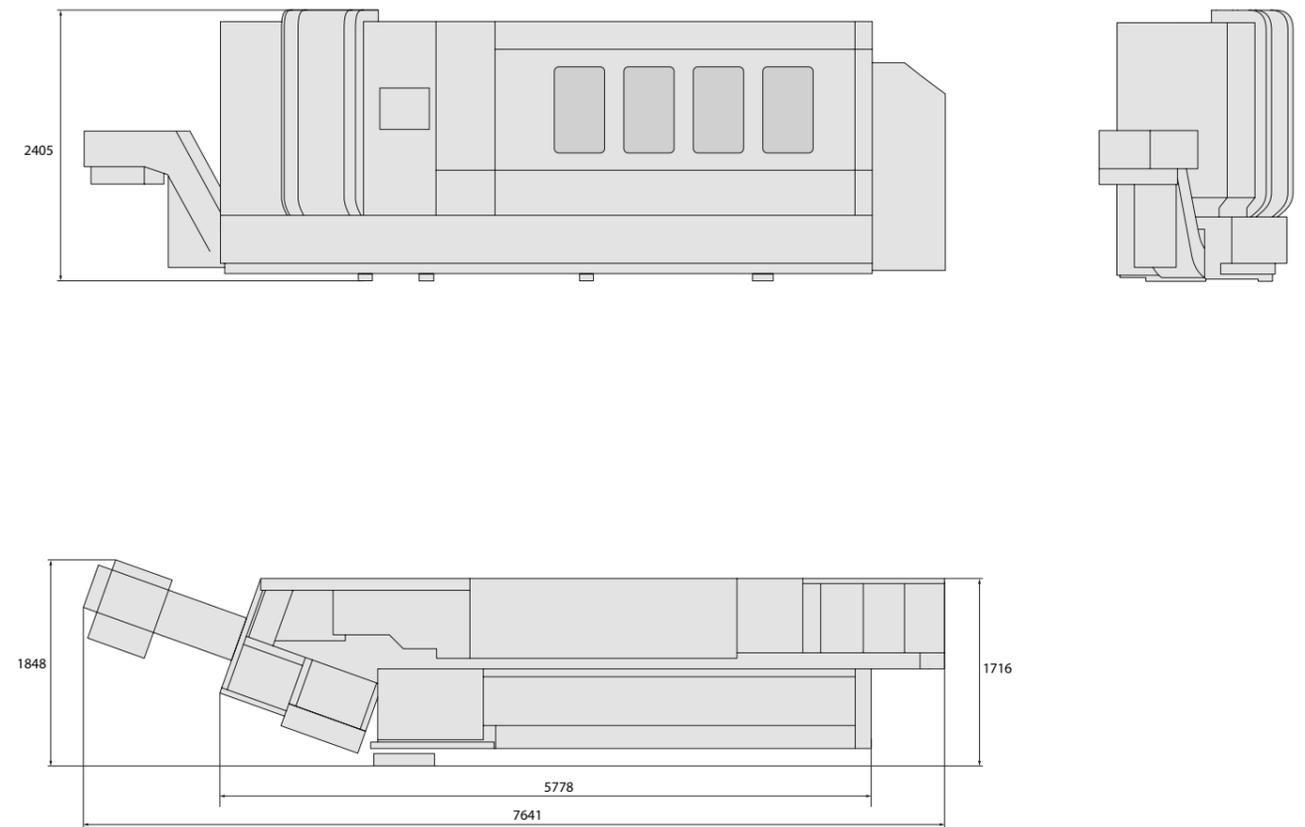
+ many more standard features

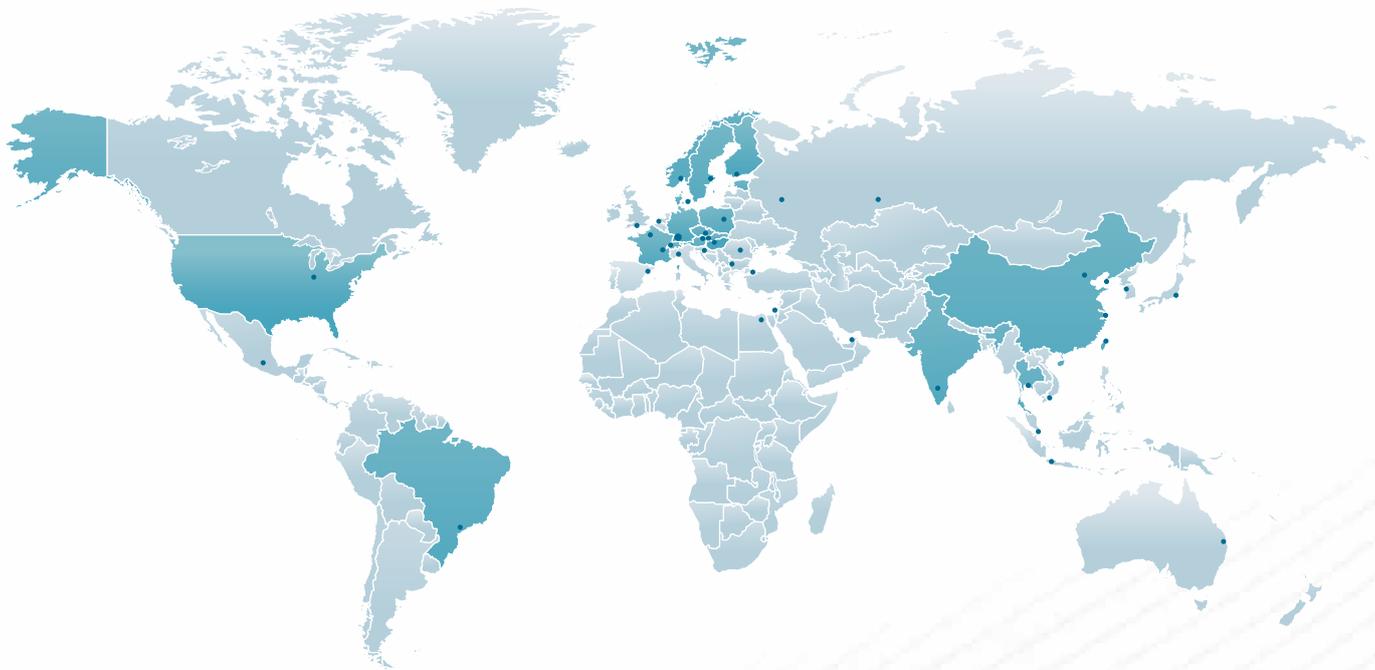
Technical specifications

TRAUB MS12-4

| | | |
|---|---------|----------------------------------|
| Machining area | | |
| Turning length | mm | 130 |
| Main spindle | | |
| Max. spindle clearance | mm | 13 |
| Max. speed | rpm | 15,000 |
| Drive power (100%/40% DC) | kW | 3.5/4.4 |
| Torque (100%/40% DC) | Nm | 6.7/8.6 |
| C axis resolution | Degrees | 0.001 |
| Slide travel Z: Fixed headstock/sliding headstock turning (prog. guide bushing) | mm | 52/130 |
| Counter spindle | | |
| Max. spindle clearance | mm | 13 |
| Max. speed | rpm | 15,000 |
| Drive power (100%/40% DC) | kW | 5.1/5.4 |
| Torque (100% DC) | Nm | 3.1 |
| Slide travel X | mm | 128 |
| Slide travel Y | mm | 90 (450) |
| Slide travel Z | mm | 152 |
| C axis resolution | Degrees | 0.001 |
| Tool turret | | |
| Tool stations (multiple tool holders possible) | Number | 8 x TRAUB KPS36 with W serration |
| Max. speed | rpm | 12,000 |
| Drive power (100%/25% DC) | kW | 1.0/2.6 |
| Torque (100%/25% DC) | Nm | 2.7/7.6 |
| Slide travel X | mm | 43 |
| Y axis | Degrees | ± 8° |
| Slide travel Z | mm | 52 |
| CL high pressure | bar | 120 |
| Flex tool carriers | | |
| Slide travel X | mm | 85 |
| Slide travel Y | mm | 90 (450) |
| Slide travel Z | mm | 90 |
| CL high pressure | bar | 120 |
| Additional back working unit, stationary | | |
| Tool stations | Number | 3 (4) |
| CL high pressure | bar | 120 |
| Additional back working unit, live | | |
| Tool stations | Number | 2 (+ max. 2 stationary) |
| Tool drive max. speed | rpm | 12,000 |
| Drive power at (100%/25% DC) | kW | 1.1/2.6 |
| Torque at (100%/25% DC) | Nm | 0.9/2.5 |
| CL high pressure | bar | 120 |
| Flushing unit (option) | | |
| Max. workpiece length/diameter | mm/mm | 55/13 |
| General data | | |
| Length | mm | 5,778 |
| Width | mm | 1,716 |
| Height | mm | 2,404 |
| Weight, fully equipped (excluding cooling lubricant system and chip conveyor) | kg | 8,000 |
| Connected power | | 65 kW/76 kVA, 125 A |
| Control system | | TRAUB TX8i-s V8 |

Floor plan





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