



THINK PARTS THINK TORNOS



MULTISIGMA 8x28

Multispindle automatic lathe with
parallel numerical control.

THE EFFICIENT AND ECONOMIC SOLUTION FOR MANUFACTURING PARTS OF MODERATE COMPLEXITY

Automotive



Medical



Electronics



Miscellaneous



PRESENTATION

... require new solutions:
Tornos is presenting the MultiSigma



With the new MultiSigma 8x28 Tornos offers a complete and unique solution to produce complex parts in one set up. Eight powerful and independent spindles allow the highest degree of flexibility whilst an integrated robot allows the unloading of parts into a pallet. TB-DECO programming software offers great comfort in programming. Combined with a vast array of options such as up to eight independent frontal units, y-axis,

multiple tool holder, PC control and remote diagnostics, the MultiSigma 8x28 is the machine of choice for highly demanding parts. The legendary high precision, large working area provides accessibility and the bar loader and chip management system allow an overall, complete and high performing solution – all in one machine.



8 MOTORIZED SPINDLES RUNNING AT INDEPENDENT SPEEDS

Advantage: Ideal cutting speed at all times!

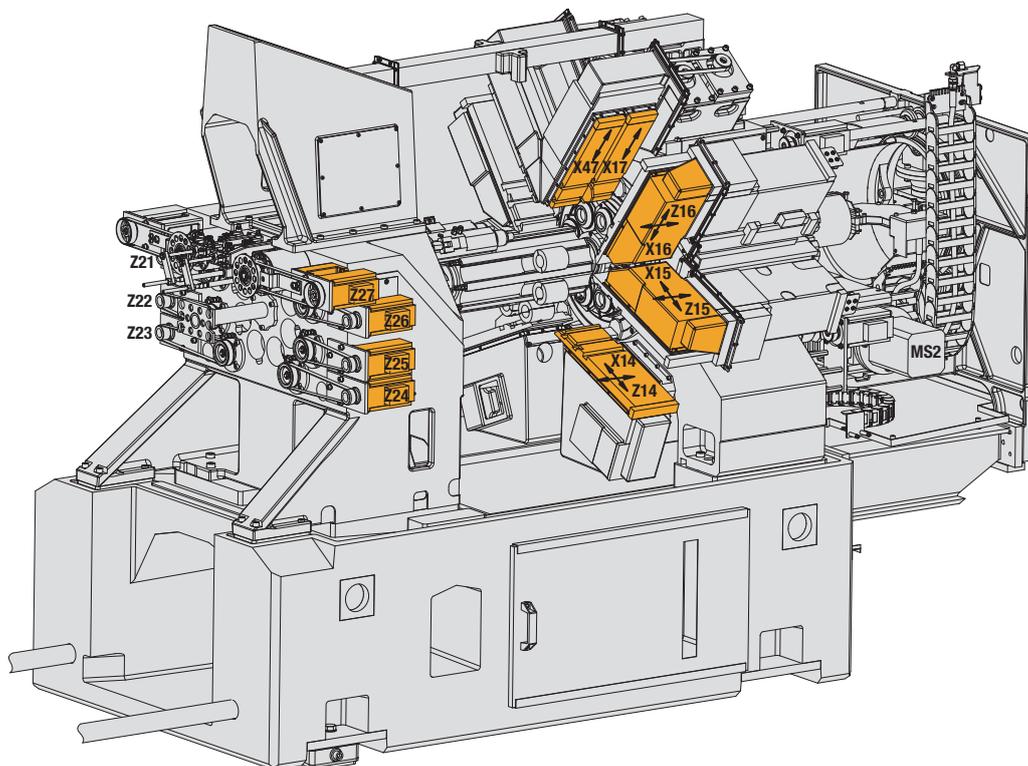
The new MultiSigma is supplied with the latest generation motorized spindles and is the most powerful machine in its category. The MultiSigma 8x28 is equipped with motorized spindle technology, the success of which has already been extensively proven with the MultiAlpha line.

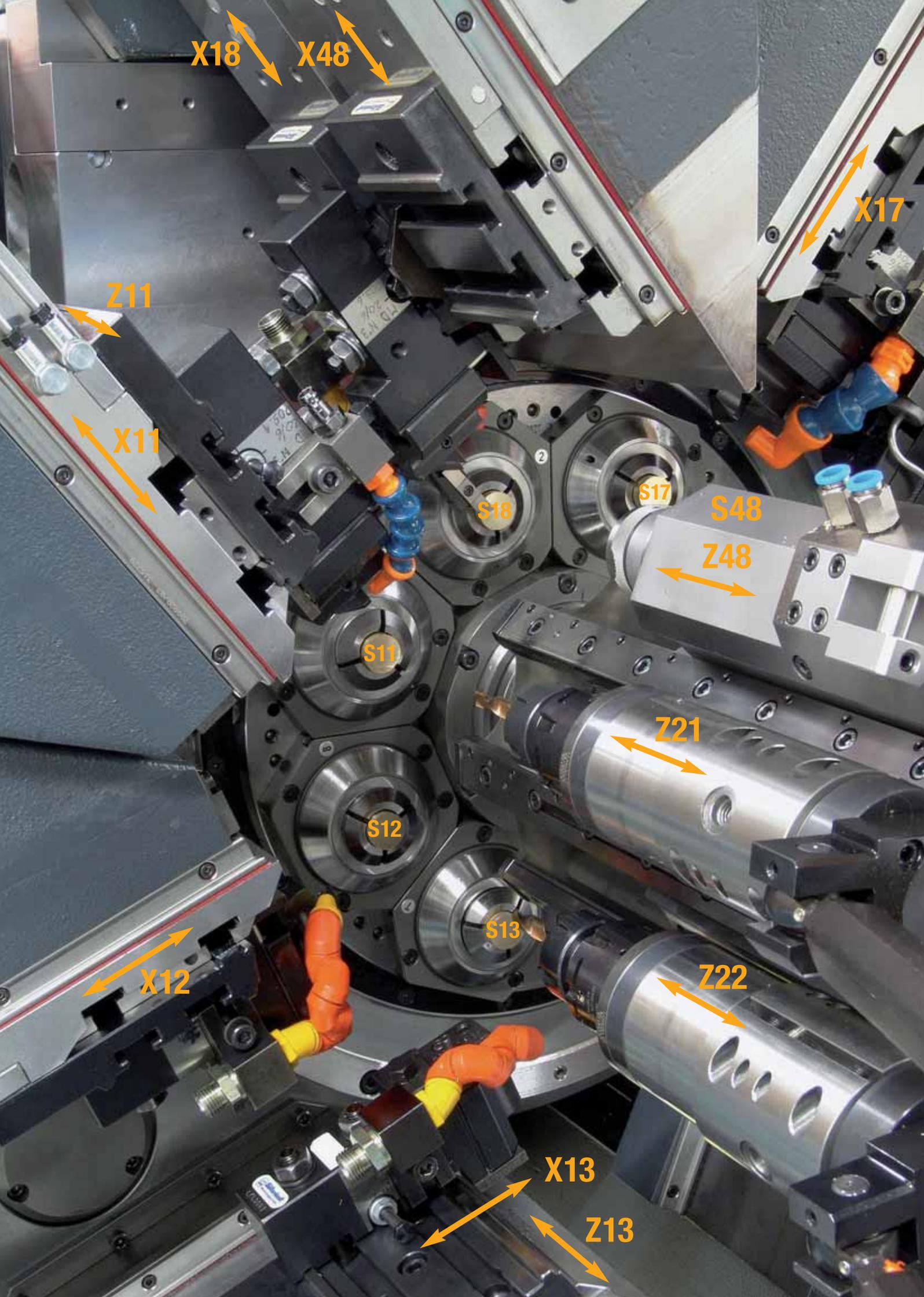
Advantages

- Ideal cutting speed on each position.
- Stopping and positioning on each spindle.
- Maximum exploitation of new cutting tool technologies.
- Exceptional flexibility.
- Uncompromised productivity.

Each position allows a controlled stop, meaning that all types of operation, such as milling or positioned cross drilling can be carried out at all times, with all spindles. The spindles can all be synchronised at an angle, meaning that positioned operations can be executed on several stations (for example, transversal drilling on one station and tapping on another).

This means that customers have a choice of using a machine that actually best meets their requirements. Where a company has a machine fleet, this would mean that it could deploy additional multispindle machines operating according to the same concept. The overriding aim is to use the most efficient machine in terms of cost and productivity, based on the parts being manufactured.





X18

X48

X17

Z11

X11

S18

S17

S48

Z48

S11

Z21

S12

S13

Z22

X12

X13

Z13

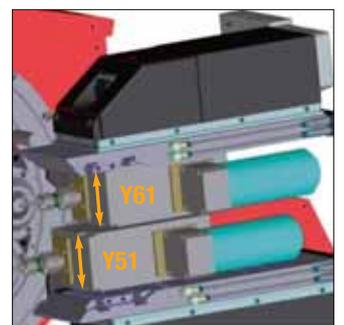
DOUBLE BACK WORKING OPERATION AND DOUBLE CYCLE (2x4)

Advantage: To complete a back working operation rapidly

Depending on the operation required on the rear face of the part, the machine can be equipped with two machining stations for rear counter operations with multiple tooling.

Advantages:

- Splitting the time for back working to reducing cycle time (m2).
- Double productivity with twice as many cycles (2x4).



8 FRONTAL SPINDLES AND MANY MORE FEATURES

Advantage: Complex parts can be produced



The well proven concept with central block allows the user to mount up to seven independent motor driven frontal spindles, fixed or driven by independent motors. The Y-axis enhances further the possibility for thread milling and grooving from the front side.

Many new features are available for mounting on the cross slides. The cross slide is used for off-center holes and for milling faces.

A multiple tool holder (turret) with 4 tools allows the user to perform four different operations or use sister tools for greater autonomy – all on one station. To increase performance and comfort, a PC control is available to program directly on the machine with all service instructions and videos available. Remote diagnostics are available to use with your internal network or connect to the Tornos service centre.

Applying the world-known know-how from our single spindle machine division for medical part production, the thread whirling technology has also been developed for the Tornos Multispindle machines.

New additional features

- Up to 7 frontal units (fix or with independent, free programmable spindle speed).
- Y-axis for frontal operation (fix or rotating).
- Y-axis for cross slides.
- Multiple tool holder (4 tools).
- PC Control with remote access.
- Internal and external thread-whirling.
- Milling heads and HF drilling attachments.
- Option shortened central slide. (This possibility allows the mounting of the two thread whirling devices and guarantees better chip evacuation.)



CONTROLLED AND PROGRAMMABLE PART UNLOADING

Advantage: Controlled part unloading



The increasing demand for parts with absolutely no marks has been taken care of with the controlled and programmable part unloading system. To fulfil exactly your requirements a variety of different systems are available.

- Cartesian system takes each part individually and outside the working envelope.
- A robot transports the part out of the working area into pallets, offering ideal conditions to perform further operations such as pre-cleaning, measuring, good/bad part selections.

Many leading manufacturers automate processes to improve quality output and reduce labour costs.

The MultiSigma was specially developed to allow a full integration of a palletizing system with minimal floor space requirements. Very often, commercial palletization systems are limited at machine interface level and therefore have to be assembled to the side of the machine, which takes up a lot of space. To overcome this problem, Tornos located the integral palletization system between the machine and control cabinet thereby optimising integration and saving on space. Large pallets of 400 x 600 mm are incorporated as standard to enhance autonomous operation.

INTEGRATED PALLETIZATION

Advantage: Easy to incorporate in a complete industrial process!



Advantages

- Integrated palletization in the machine.
- Reduced surface area.

The general idea of palletization

Once the parts are loaded onto pallets, they can pass directly to a secondary operation.

CHUCKER

	Motorized loading		Robotized loading	
	Grippers	Chucks	Grippers	Chucks
✓ standard * on request X not available				
MultiSigma Chucker	✓	*	✓	*
Minimum cycle time	4 secs		4.5 secs	
Modularity / flexibility	+		++	
Changing the start-up	+		++	

The requirements in terms of chucks are continuously evolving. Both profiles and dimensions are changing. To be able to offer the maximum amount of flexibility, a robot fitted in place of the slide in position 1 now offers easier loading for different types of parts. This also allows angular positioning of the parts.

One of the other advantages when using a robot is that there is the option to unload parts in a controlled way, as far as the machining time will allow.

Example of a solution:

A vibrating bowl, which guarantees a predefined autonomy, offers up the parts to the robot placed in position 1, which is within the machining zone. The robot grips the part and loads it inside the spindle.

Technical information:

- Minimum loading cycle time: 4.5 seconds.
- Clamping diameter, minimum: 4 mm to maximum: 55 mm
- Hydraulic or mechanical clamping with gripper or chuck.
- Angular orientation of the parts possible.
- Several options available: tracing, palletization, ejection of checked parts.
- Adaptable to the different machine configurations (2x4, ...)

CHUCKER

This chucker is an economic solution for large volumes of parts. So as to obtain maximum performance, a motorized system, which allows rapid loading of a specifically defined part, has been fitted in place of the slide in position 1. This system is designed for parts requiring cylindrical revolution, which do not need any angular orientation.

Clamping by chuck:

The use of a chuck is less demanding in terms of the quality of the billets, thanks to its 2 mm stroke. The hydraulic control allows linear adjustment of the clamping force.



Technical information:

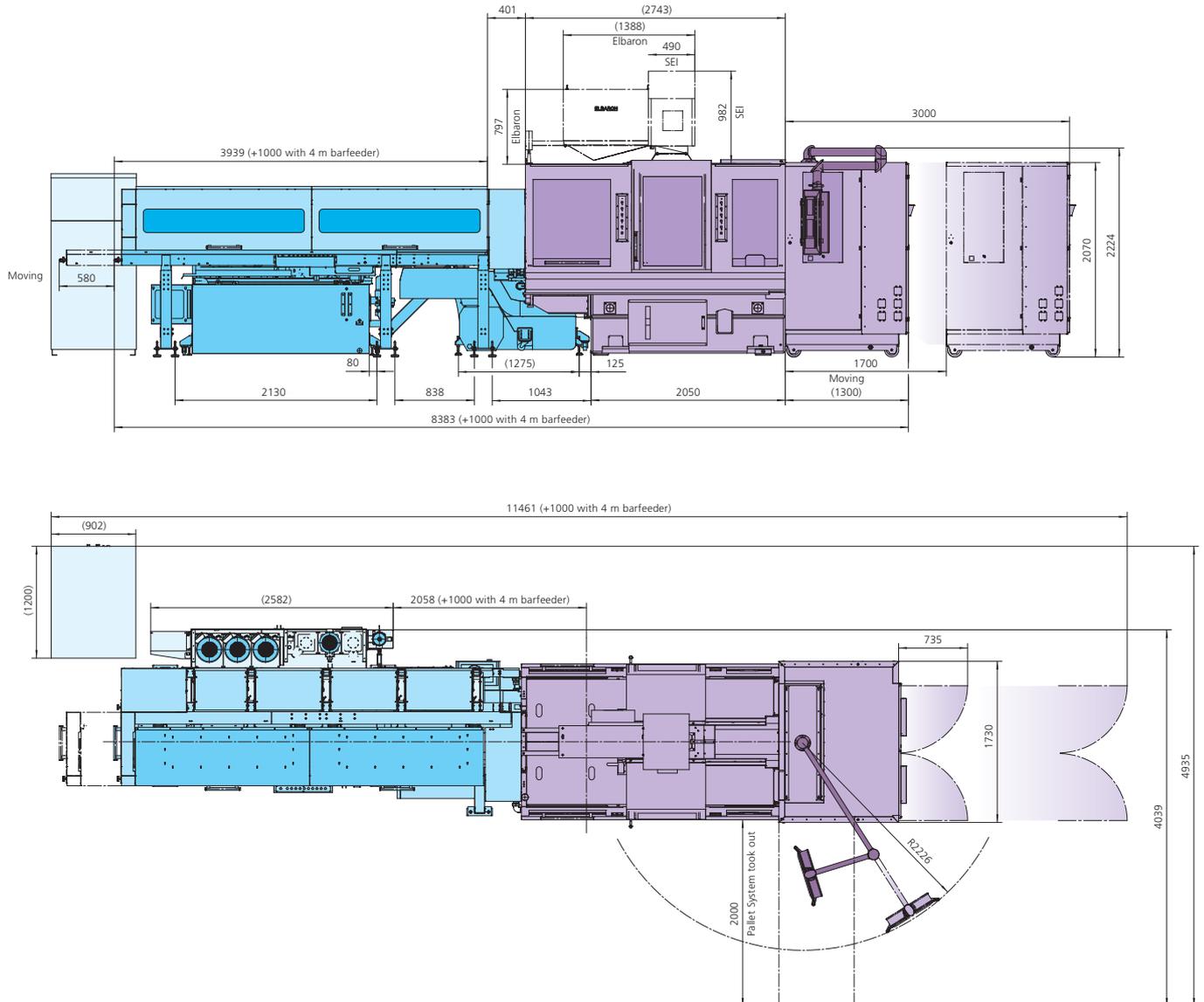
- Minimum loading cycle time: 4 seconds.
- Clamping diameter, minimum: 4 mm to maximum: 55 mm
- Hydraulic or mechanical clamping with gripper or chuck.
- Several options available: tracing, palletization, ejection of checked parts.
- Adaptable to the different machine configurations (2x4, ...)
- This concept is applied for parts where the blanks are parts which require cylindrical revolution, and do not need any angular orientation.



MULTISIGMA 8x28

Key benefits

- 8 motorspindles with independent spindle speeds.
- Controlled and programmable part unloading.
- Single cycle 1x8 or double cycle 2x4.
- Integrated palletizing.



TECHNICAL SPECIFICATIONS

Weight (with oil)	kg	~ 10,000
Cutting oil tank capacity	l	up to 2,000
Installed power	kVA	87
Pneumatic group pressure	bars	6

TECHNICAL CHARACTERISTICS

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Bar capacity (with machining preparation)	mm	28 (28)
Max. length of part	mm	90 (140)

Max. speed of motorized spindles	rpm	7'000
Motorized spindle power	kW	11.6 (15.4)
Motorized spindle torque	Nm	16 (20.2)

Max. counter-spindle speed	rpm	7'000
Motor counter-spindle power	kW	5.3 (7.5)
Counter-spindle motor torque	Nm	7 (9.2)

Max. drilling spindle speed	rpm	8'000
Drilling spindle power	kW	5.3 (7.5)
Drilling spindle torque	Nm	7 (9.2)

Max. "High Power" drilling spindle speed	rpm	8'000
"High Power" Drilling spindle power	kW	10.6 (15)
"High Power" Drilling spindle torque	Nm	14 (18.4)

Number of linear axes		24 (28)
Number of rotary axes		9 (13)
Travel of crossing slide in X1	mm	50
Travel of crossing slide in Z1	mm	80
Travel of end unit in Z2	mm	200
Cutting slide travel (X17, X18)	mm	75
Counter-spindle travel in Z (Z47, Z48)	mm	330
Back-operation tool support travel (X47, X48)	mm	75
No. of tools for back-operation		2 (4) tools
Spindle cooling		Oil
Numeric control		Fanuc 30i
Programming system		TB-DECO

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