



MultiAlpha 8x20

Multispindle automatic lathe with parallel numerical control



THINK PARTS THINK TORNOS

MULTIALPHA 8x20

New market requirements...



Market requirements, especially in the automotive industry, are becoming more and more demanding. Quality and accuracy become more critical while part prices are expected to decrease. Traditionally, the manufacture of complex parts was performed over several separate operations. It started with preliminary machining on a multi-spindle lathe and then finishing on a second machine. This process involved several handling operations that increased the risk of part

breakage and led to reduced precision, due to numerous handling and clamping operations. The overall time and labour deployed was considerable and the cost of manufacturing increased. To produce complex parts at a competitive price is a difficult undertaking. In order to contain labour costs and maintain required accuracies and finishes, handling must be kept to a minimum and an innovative technical solution must be found.

PRESENTATION

...require new solutions:
TORNOS is presenting the MultiAlpha 8x20

To allow its clients to remain highly competitive when machining complex parts, TORNOS is now offering the complete machining solution.

The MultiAlpha 8x20 allows operators to complete a maximum number of parts on the machine, without entailing secondary operations

on additional equipment. This is achieved with a very competitive cycle time, thanks to the double counter-spindle, which reduces back operating time by half and to the parts handling devices, which provides careful part evacuation!

Main new benefits:

- 8 motorized spindles running at independent speeds
- Twin back operations*
- 2 numeric manipulators*
- Integral palletization*

Combine these with the benefits of the TORNOS multispindle lathes...

- High precision
- Maximum flexibility
- Universal single and multispindle programming system
- High output



* Optional.

8 MOTORIZED SPINDLES RUNNING AT INDEPENDENT SPEEDS

Benefit: Ideal cutting speed at all times !

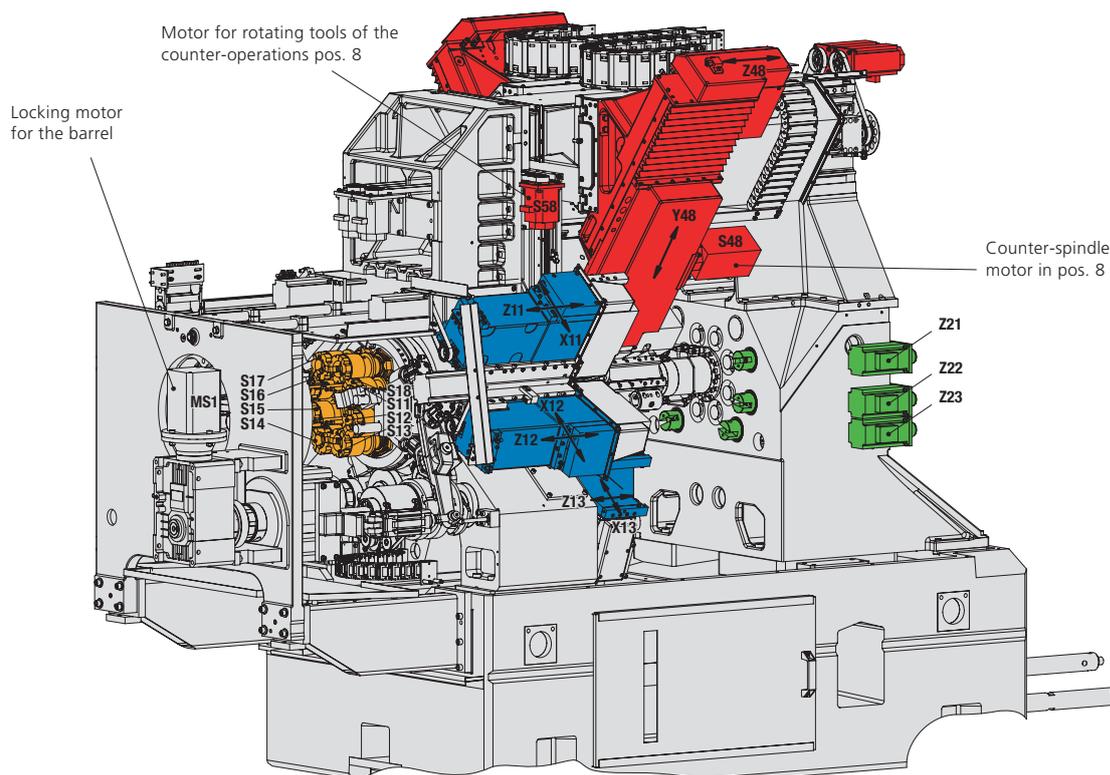
The new MultiAlpha 8x20 is supplied with the latest generation motorized spindles and is the most powerful machine in its category. Considering the experience gained in the technology of "motorized spindles", our engineers pushed the power that could be obtained with this method to its very limits. This means that all types of machining operations are now within reach.

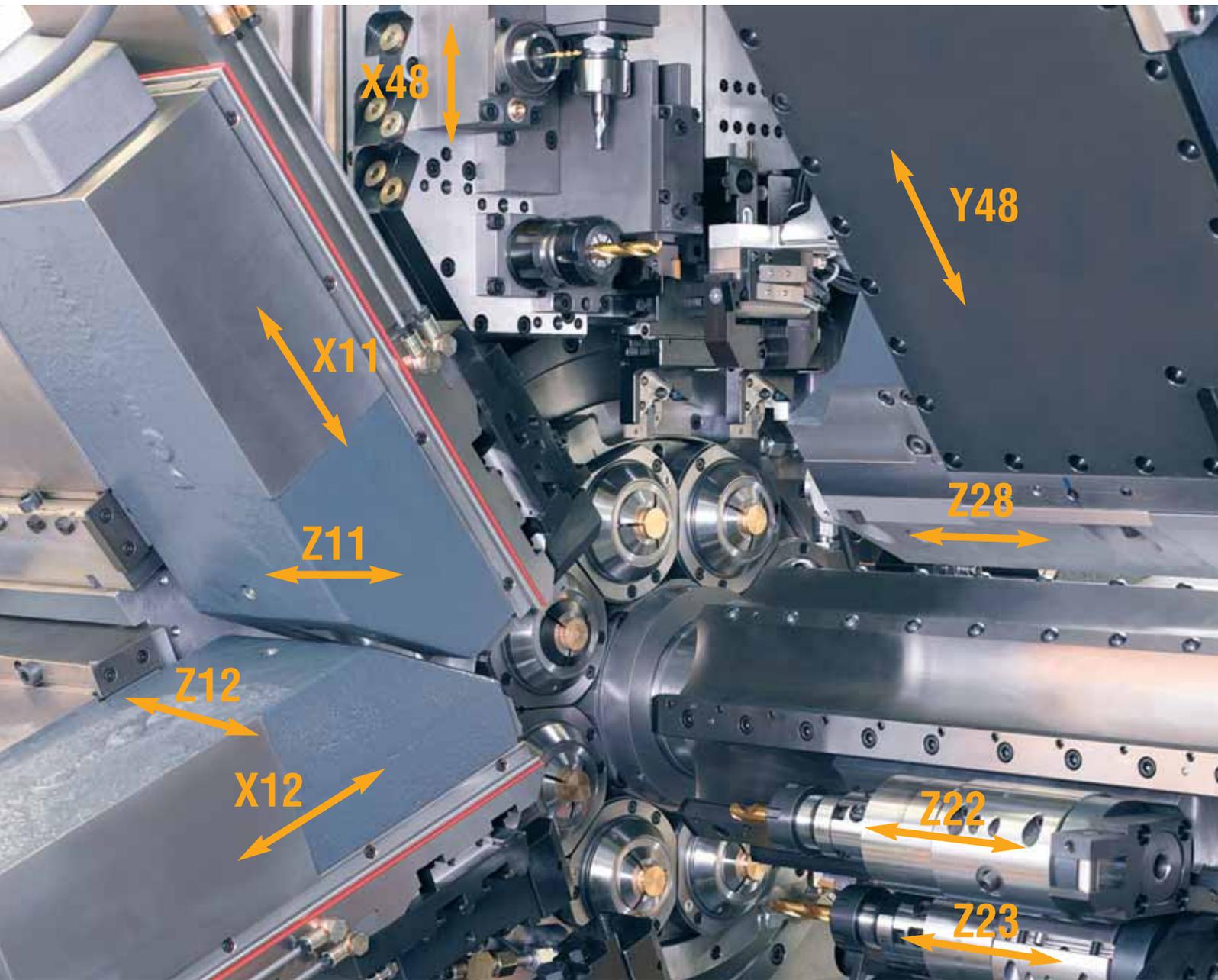
Advantages

- Optimum speed for each position, depending on the type of machining operation
- Stopping and positioning on each spindle
- Maximum exploitation of new cutting tool technologies
- Exceptional flexibility
- Uncompromised productivity

Each position can be used as a C axis, 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 (e.g. drilling/ eccentric tapping).

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.





TWIN BACK OPERATIONS

Benefit: Completing more complex parts through multiple back-operations machining runs !

Parts have become more complex and sophisticated. Therefore additional back when machined in back-operation mode.

Operating principle

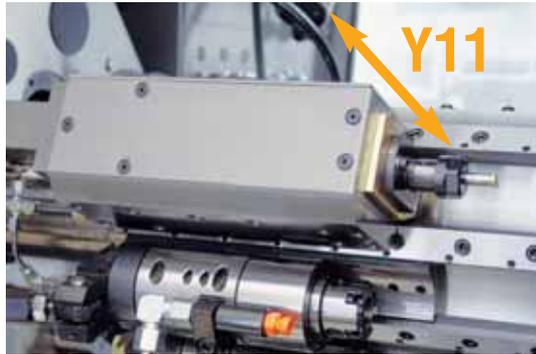
In order to face up to the more stringent machining requirements at this level, TORNOS fitted two counter-spindles on one axis. These grip the parts during cut-off and then execute operations such as turning, drilling, milling, etc., on the backside of the part. This is carried out in parallel with the main spindle operations!

Thanks to the independent motors of the counter-spindles and long travel in Y and Z, the MultiAlpha 8x20 is capable of unequalled machining on the back side of the part.

Because the machine has twin counter-spindles, this consequently reduces back-operation cycle time.

Because of its flexible system, up to 5 tools can be fitted vertically or horizontally, with several combinations for executing back-operations. The counter-spindle motorization can drive 3 tools per position, but you also have the facility of fitting high-frequency drills or other solutions! Coolant can be supplied to all tools to insure machining conditions.





Advantages

- 2 x 5 tools to execute extensive back-operations, with cycle times cut by half
- Counter-spindle operations with 3 CNC axes
- Flexible system allowing the tools to be fitted horizontally or vertically, fixed or turning, with central lubrication

This concept of many additional back-working operations opens up many new possibilities in finishing parts on a multispindle machine.

This machining system has already been tried and tested on single-spindle lathes. When applied to the multispindle lathes, this system combines the versatility of the single spindles with the productivity of the multispindles.

The versatility of the MultiAlpha 8x20 goes yet further with its 8 motorised spindles and 2 counter-spindles, each of which can work with 5 tools. The MultiAlpha 8x20 allows its operators to envision new opportunities...

The back-operation system on the MultiAlpha 8x20 is flexible, meaning that it is also possible to use a machine with only one single counter-spindle.

2 NUMERIC PART MANIPULATORS

Benefit: Controlled part extraction !



Precision and the visual appearance of the parts being manufactured in today's market are becoming more and more stringent. Dents, marks and flaws are no longer permitted.

In order to meet these requirements, TORNOS developed a dual parts handling system, which picks up the parts and conveys them directly to the machining area and then conveys them outside of the machining area.

Advantages

- All parts are handled with care
- No more flaws caused by impact
- Facility of transferring the parts to another machine

The system can be adapted and used for various applications, such as:

- Removing the part away from the machining area to a pre-cleaning station
- For chuck applications, the parts can be loaded and unloaded using this manipulator from a vibratory feeder or other system

INTEGRAL PALLETIZATION

Benefit: Easy to incorporate in a complete industrial process !



Many leading companies automated their processes to a maximum because of labour costs and the demand for very high quality output. The MultiAlpha 8x20 was developed by incorporating a palletization system. 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 were incorporated as standard to enhance autonomous operation.

Advantages

- Integral palletization in the machine
- Reduced surface area

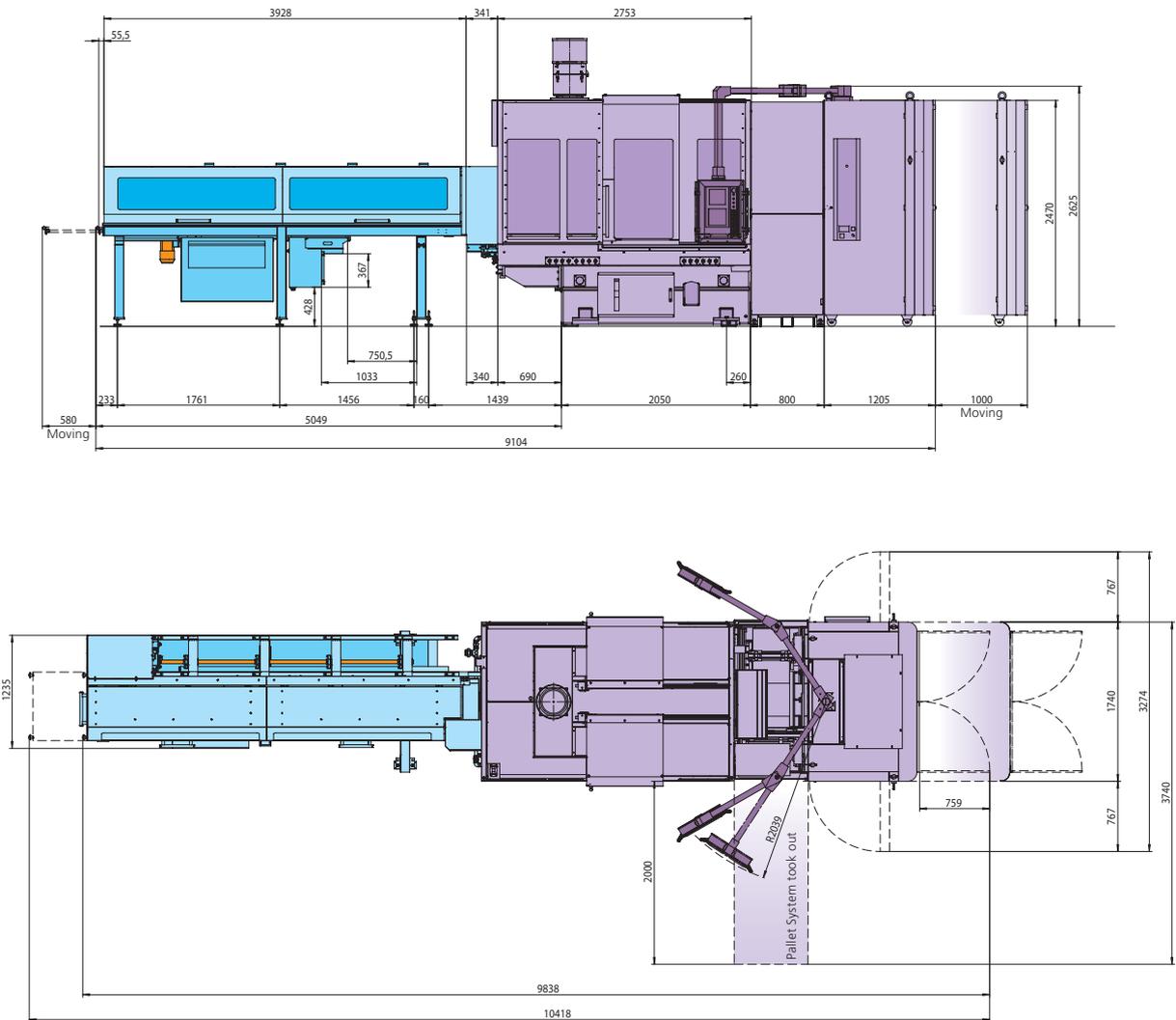
The general idea of palletization

Once the parts are loaded onto pallets, they can pass directly to a washing system.

MULTIALPHA 8x20

Key benefits

- Motorized spindle (= ideal speed for each position)
- Twin counter-spindles (highly complex parts at high output)
- Controlled part unloading
- Integrated palletizing



TECHNICAL SPECIFICATIONS

Weight (with oil)	kg	~ 12'000
Cutting oil tank capacity	l	850
Installed power	kVA	75
Pneumatic group pressure	bars	6

TECHNICAL CHARACTERISTICS

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Bar capacity	mm	22 (25)
Max. length of part	mm	100

Max. speed of motorized spindles	rpm	8'000
Motorized spindle power	kW	11.2
Motorized spindle torque	Nm	17 (25)

Max. counter-spindle speed	rpm	8'000
Motor counter-spindle power	kW	3.7
Counter-spindle motor torque	Nm	8.3

Max. drilling motor speed	rpm	8'000 (6'000)
Drilling motor power	kW	6 (12.1)
Drilling motor torque	Nm	2

Max. speed of the counter-operation tool drive motor	rpm	8'000
Power of the counter-operation tool drive motor	kW	1.5
Torque of the counter-operation tool drive motor	Nm	2

Number of linear axes		28
Number of rotary axes		9
Travel of crossing slide in X	mm	50
Travel of crossing slide in Z	mm	80
Travel of crossing slide in Y	mm	12
Travel of end unit in Z	mm	200
Travel of end unit in Y	mm	13
Cutting slide travel (X7, X8)	mm	65
Counter-spindle travel in Y	mm	280
Counter-spindle travel in Z	mm	450
Back-operation tool support travel	mm	52
No. of tools for back-operation		2 x 5 tools
Spindle cooling		Yes
Numeric control		Fanuc 30i
Programming system		TB-DECO

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