



THINK PARTS THINK TORNOS



DECO 7/10

Single spindle automatic
with sliding headstock and parallel NC
the generation DECO

TORNOS IS A SOLUTION PROVIDER FOR THE HIGH TECH INDUSTRIES INCLUDING

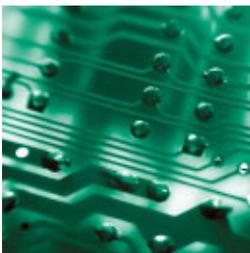
Automotive



Medical



Electronics



Watchmaking & Micromechanics



DECO 7/10

PUTTING TOGETHER ALL THE ADVANTAGES OF CAM CON BY TORNOS

DECO 7/10

Main advantages

- Large number of available pieces of equipment
- Simultaneous axes
- Reliability
- Rapidity
- Productivity
- Flexibility
- Versatility
- Accuracy



TROL AND NUMERICAL CONTROL:



DECO 7/10

FAST RELIABLE PRODUCTIVE FLEXIBLE
VERSATILE ACCURATE

DECO 10a



Titanium
360 sec.



Titanium
250 sec.



C97
60 sec.



Brass
40 sec.



Steel 20 AP
57 sec.



Chronifer Labor
M13
82 sec.



Brass
40 sec.

DECO 10e



Titanium
110 sec.



Titanium
105 sec.



Brass
33 sec.



Brass
34 sec.



11 SM Pb 9
5 sec.

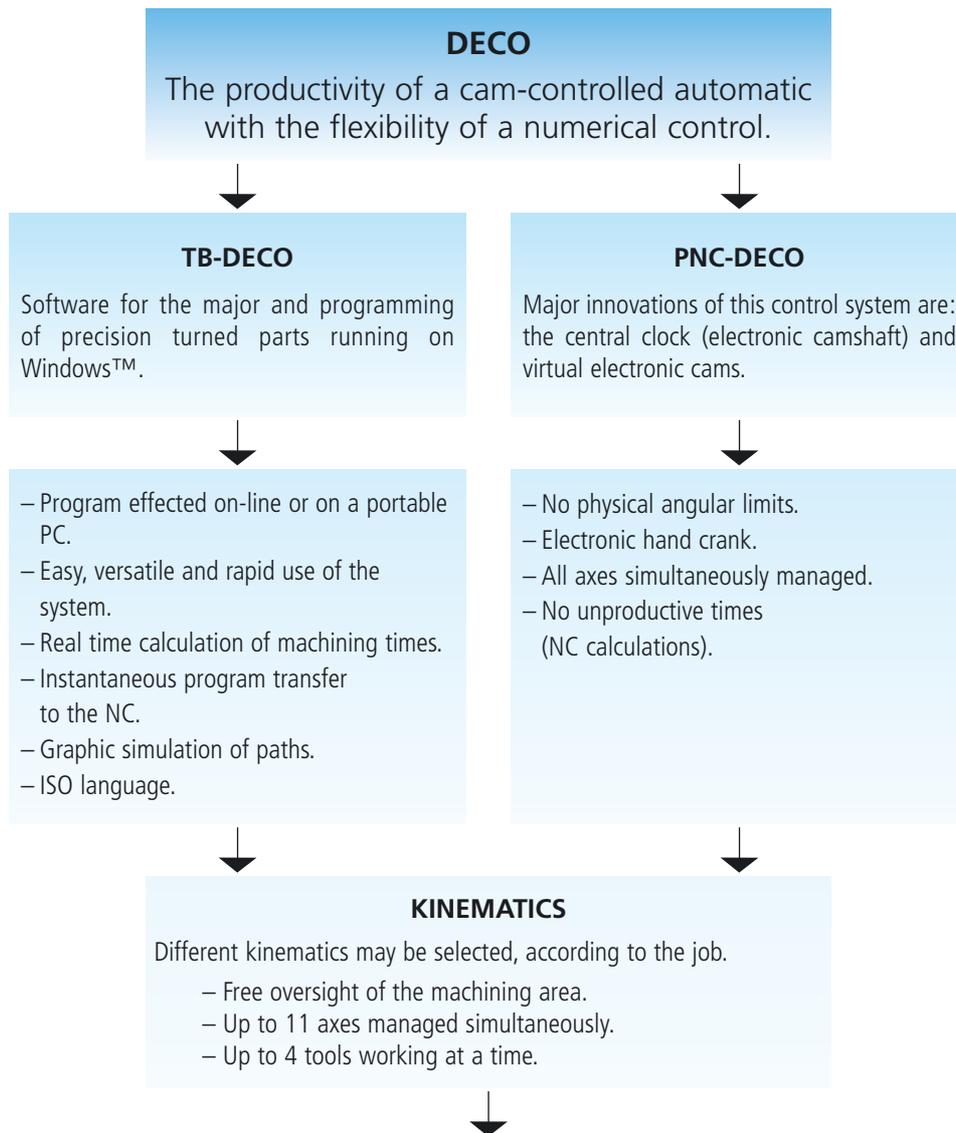


Steel 20 AP
18 sec.



Steel 20 AP
15 sec.



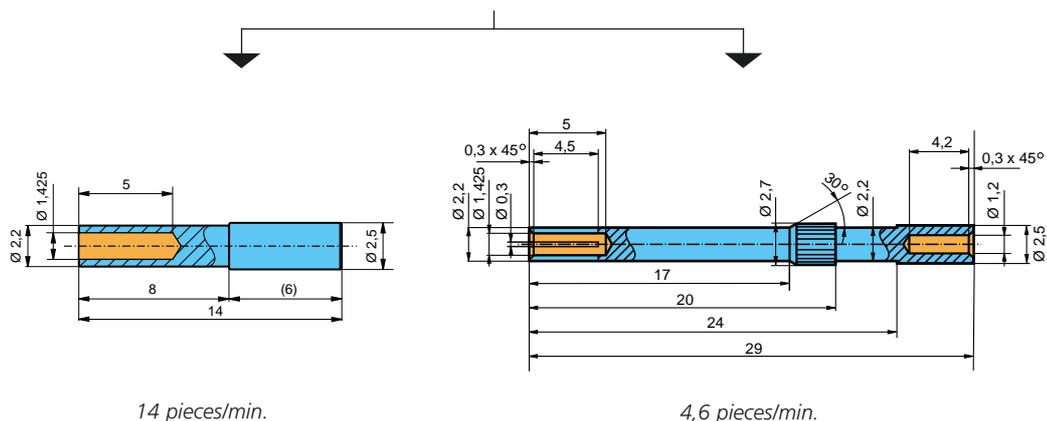


TB-DECO and PNC-DECO:

The next generation of modular NC, adaptable to all automatic turning applications.

TB-DECO and PNC-DECO:

Back again to highest productivity rates with simple or complex precision turned parts.



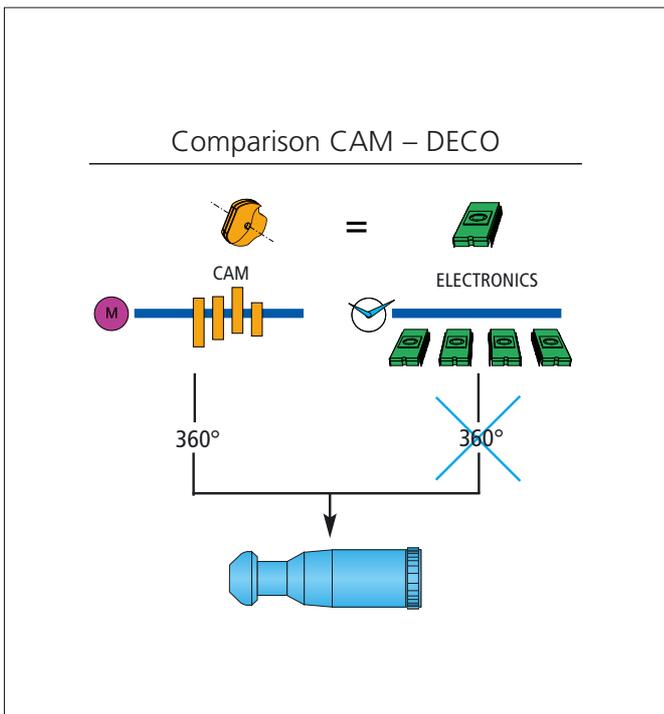
DECO 7/10

PNC-DECO PARALLEL NUMERIC CONTROL



The only solution to reach the high productivity of a camcontrolled automatic on a NC machine.

- Axes paths are calculated by data processing and stored on tables (virtual cams).
- A clock synchronizes the reading of the paths (virtual camshaft).
- Tool correctors are selected automatically and can be adjusted by the operator from the machine's control panel.



Basic principles:

The cams are replaced by a stored calculation, so that the physical angular limits of 360 degrees are eliminated.

The measuring unit of the virtual cam is the millisecond, not the degree.

The total time of an operation corresponds to the contour of the cam i.e. theoretically an infinite number of degrees!

Besides, with this electronic control you can manually feed for new setups just as on a conventional cam-controlled machine (MPG or electronic hand-wheel function).

All the advantages of both, cam control and numerical control, will perfectly match with the present trend to reduce delivery times through versatility, productivity and constant quality improvement while competition becomes keener.

DECO 7/10

A VERSION AVAILABLE FOR EVERY APPLICATION, FROM THE SIMPLEST TO THE MOST COMPLEX

To cope with specific requests with regard to workpieces up to 10 mm in diameter, Tornos has created three different versions of the DECO 7/10.

The basic version with five axes corresponds to the production of simple parts.

And a 9-axes version (11 axes with optional C-axes) managed simultaneously.

- With counter spindle and end working.

DECO 10e

- With counter spindle.

Tornos guarantees an excellent machine configuration to fit our customers needs.

Optimal machining conditions are offered by the machine's ergonomics and simplicity; with good visibility of the machining area.

The unique features of the numerical control permit the following operations while the productivity of a cam controlled machine is assured:

- Turning with two tools at the same time, the tools being separately interpolable. Rough turning and finishing in the same operation.
- Cross operations in the guide-bush with 4 driven spindles and Y-axis for cross-milling or eccentric drilling.
- Main spindle and counter-spindle thread wirling.
- Polygon milling of flats or contours on the guide-bush (Rotation speed synchronized).
- End attachment (2 numerical axes) working independently with three fixed or driven spindles.
- Threading and tapping operations by the differential threading principle, without any loss of productivity.
- Simultaneous turning and drilling (with optimal management of speeds and feeds).
- Independent opposite spindle for pick-up and transportation of workpieces.
- 4 counter-operation posts with fixed or driven spindles, working without any loss of time (100% hidden time).

- Main spindle and opposite spindle have programmable spindle positioning for all kinds of milling operations or other machining requests.
- Optimized management of feeds and speeds (no excessive efforts on material). Tools enter the material at the ideal moment, no waiting time.
- C-axis function at main and opposite spindle. Permanent indexing will permit to produce very specific shapes.

- **Up to 20 parts per minute.**
- **Possibility to machine with four tools simultaneously.**

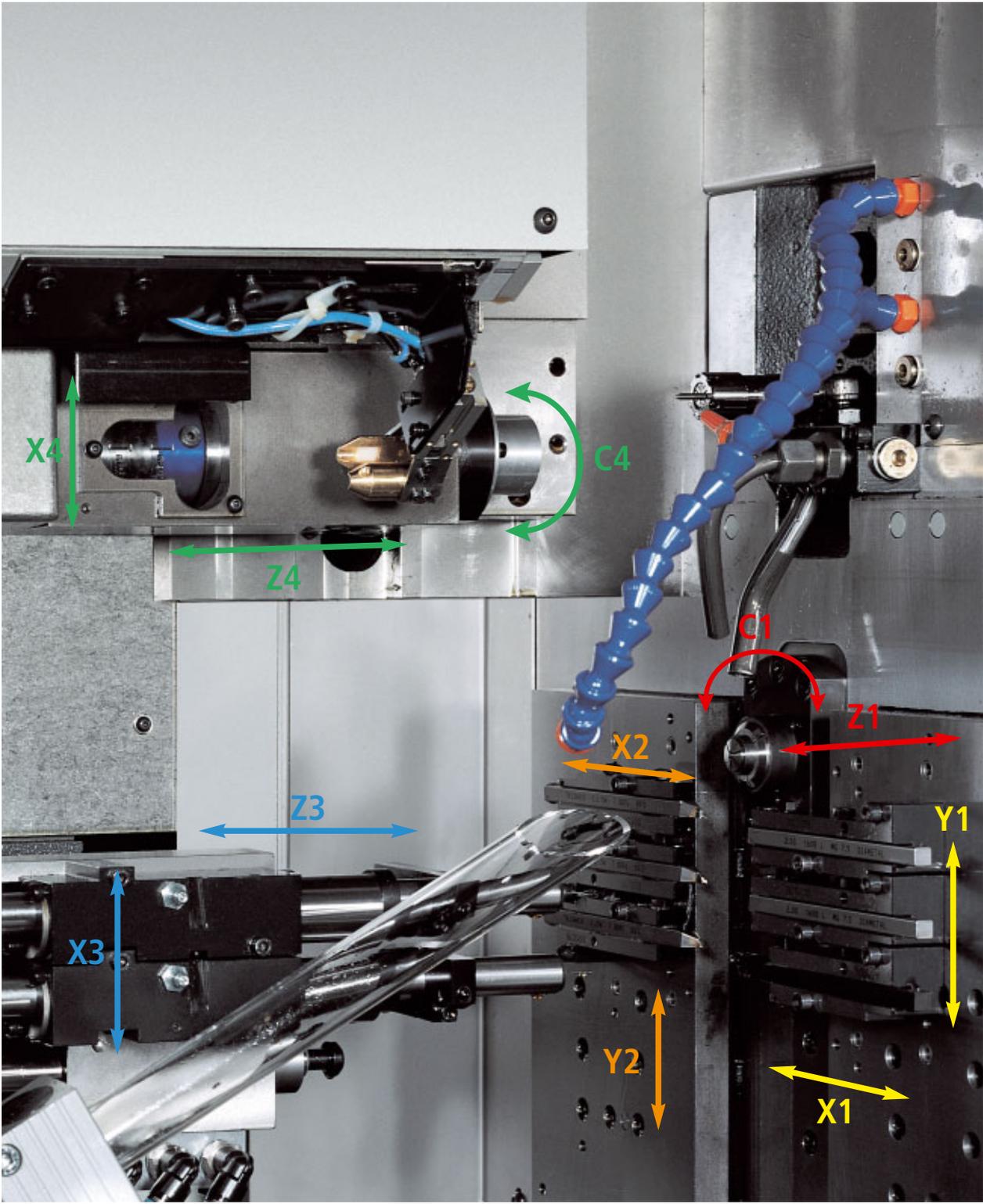
Each of these characteristics married to the kinematics orients to the efficiency by:

- Remarkable thermal behavior
 - Optimal chip evacuation
 - A coolant flow continuously adjustable
 - Clamping of the headstock and counter operation with ongoing adjustment.
- Make the DECO a great tool in the service of your productivity.



Presetter

DECO 7/10 KINEMATICS



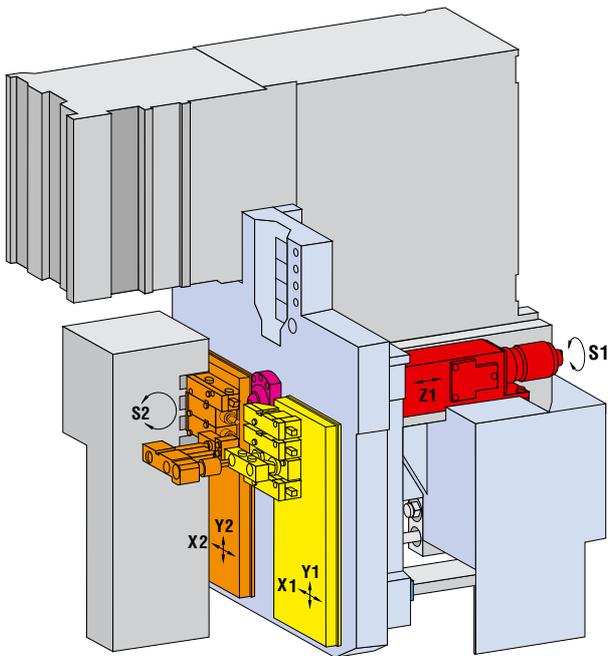
DECO 7/10 LATHE AND ITS 9 PNC AXES



Z1	C1	S1
Sliding headstock	C-Axis sliding headstock (option)	Main spindle
X1 / Y1		
Platen 1 (cross slide 1)		
X2 / Y2		S2
Platen 2 (cross slide 2)		Live guidebush spindle
X3 / Z3		S3
End working		Live end attachment spindle
X4 / Z4	C4	S4
Counter-spindle	C-Axis counter-spindle (option)	Counter-spindle
		S5
		Live counter-operation spindle

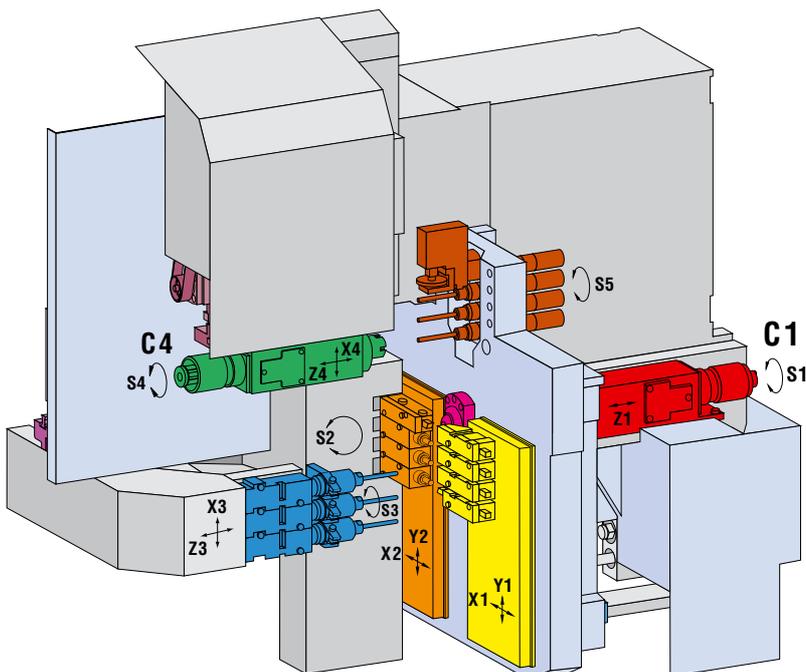
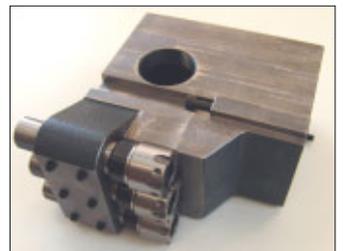
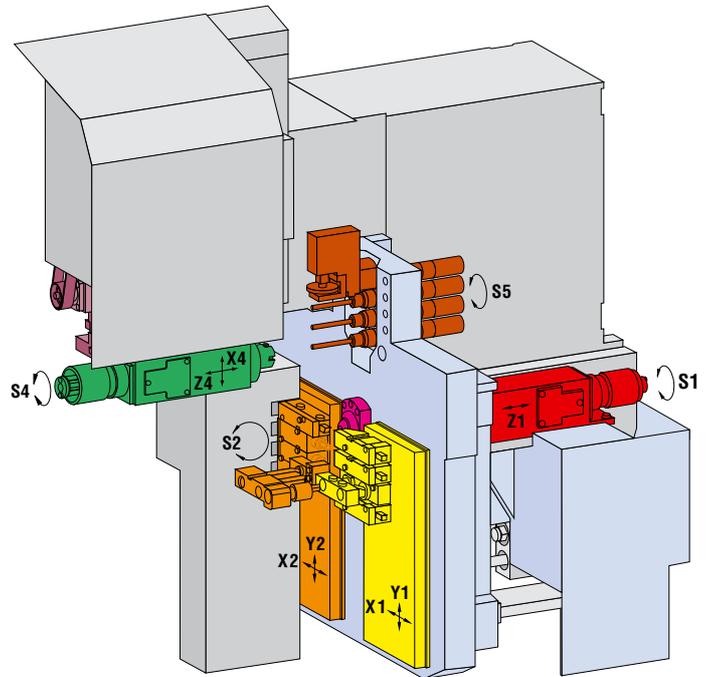
A VERSION AVAILABLE FOR EVERY APPLICATION,
FROM THE SIMPLEST TO THE MOST COMPLEX

DECO 10a



5 axes

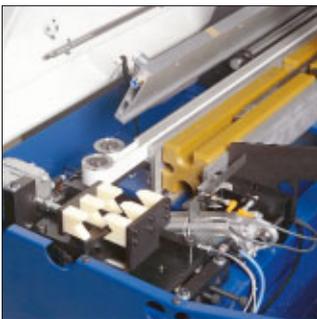
DECO 10e



9 axes with end attachment and counter-spindle

A BARLOADER, 100 % DESIGNED AND DEVELOPED IN HARMONY WITH THE MACHINE FOR WHICH IT WAS PLANNED!

- Your guarantee that the feed system complies exactly with the capacities of the lathes for which they were designed!
- Adopt a dedicated bar feeder! This new complete machining solution is your performance guarantee of your DECO lathe.



ROBOBAR SBF-216

- Reduced space requirement.
- Optimum integration.
- Guaranteed bar guide.
- Machine incorporated control.
- Easy handling and programming.
- Joint development.
- Only one supplier for machine and bar feeder.

TECHNICAL CHARACTERISTICS ROBOBAR SBF-216

Machine	DECO 7/10 DECO 13a
Minimum bar passage	2 mm
Maximum bar passage	
- without preparation	14 mm
- with preparation	16 mm
All capacities as a single bar guide	2 – 4 mm (5.5 mm) 4 – 5.5 mm (7 mm) 5.5 – 8 mm (10 mm) 8 – 14 mm (16 mm)



System	oil bath
Round, hexagonal and square bar change-over	yes
Bar length	3 m, 12' (3 m 65), 4 m
Chute extraction	from rear
Slope capacity	18 bars with \varnothing 16 150 bars with \varnothing 2
Max. bar speed of rotation	16,000 rpm
Electrical power required	1.5 kW
Lubrication tank	50 litres
Adjustable guide steady	yes
Incorporated extension	yes
Complies with CE/CEM standards	yes
Weight	720 / 850 / 900 kg

DECO 7/10

A WIDE RANGE OF SOLUTIONS

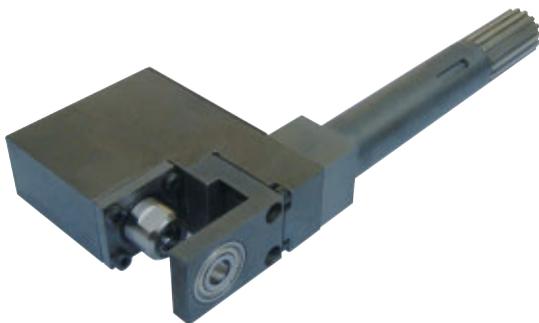
The global solution of the DECO includes peripherals specially developed for the lathe which guarantee perfect adaptations and total compatibility. The performance of the DECO is increased by the auxiliary equipment which optimizes production.



Stationary drilling spindle



Revolving end drilling / milling spindle



Milling / slotting and drilling



Shaft of polygon milling cutter

DECO 7/10

TECHNICAL CHARACTERISTICS

SLIDING HEADSTOCK (AXIS Z1) (+C1 AS OPTION)	DECO 7a	DECO 10a	DECO 10e
Max bar diameters	Ø 7 mm	Ø 10 mm	Ø 10 mm
Max length of workpiece acc. to guide bush	60/90 mm	60/90 mm	60/90 mm
Programmable spindle speed	100 – 16000 rpm	100 – 16000 rpm	100 – 16000 rpm
Incrementation for position stop (option)	0,1 degree	0,1 degree	0,1 degree
Max output of motor kw	1,1 (3,7) kW	1,1 (3,7) kW	1,1 (3,7) kW

GUIDE BUSH (X1/Y1) (X2/Y2)

Max number of tools	2 x 4	2 x 4	2 x 4
Tool section	8 x 8 mm	8 x 8 mm	8 x 8 mm
Max number of cross drills, cross milling cutters	4	4	4
Programmable rotation speeds	100 – 12000 rpm	100 – 12000 rpm	100 – 12000 rpm

END ATTACHMENT (COMBINED ATTACHMENT) (X3/Y3)

Max number of end tools	3	3	–
Programmable spindle speeds	100 – 12000 rpm	100 – 12000 rpm	–

COUNTER SPINDLE AND COUNTER OPERATIONS (X4/Z4) (+C4 AS OPTION)

Max clamping diameter	7 mm	10 mm	10 mm
Max workpiece length	60 mm	60 mm	60 mm
Programmable spindle speed	100 – 12000 rpm	100 – 12000 rpm	100 – 12000 rpm
Incrementation for position stop (option)	0,1 degree	0,1 degree	0,1 degree
Max number of counter operations	4	4	4
Fixed or driven spindles	4	4	4
Programmable spindle speeds	100 – 9000 rpm	100 – 9000 rpm	100 – 9000 rpm

PARALLEL NUMERICAL CONTROL PNC – DECO

Number of simultaneous axes	all axes	all axes	all axes
Number of interpolable axes	all axes	all axes	all axes

CONFORMS TO THE EUROPEAN CE/CEM SAFETY STANDARDS

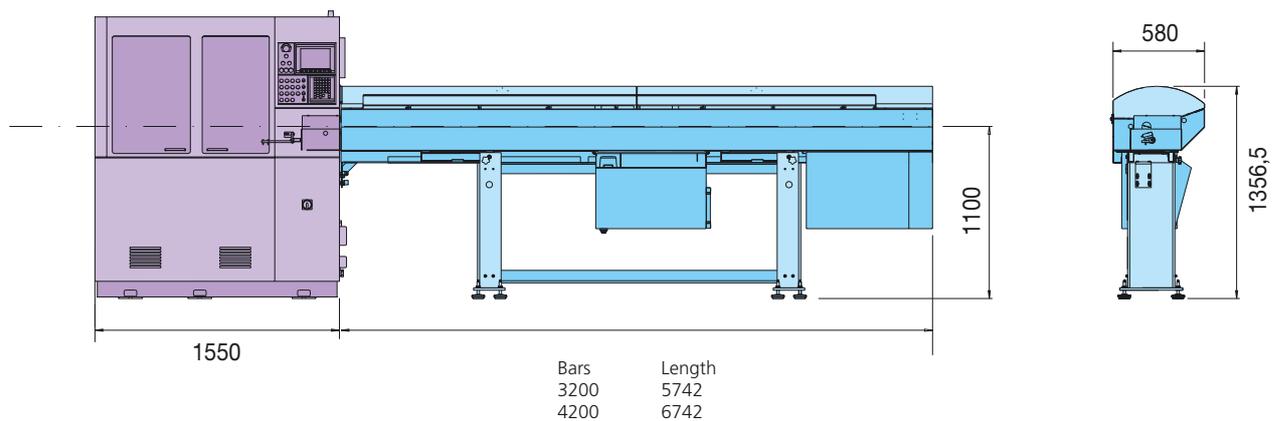
DECO 7/10

TECHNICAL CHARACTERISTICS

GENERAL CHARACTERISTICS

Max length	1550 mm
Max width	1000 mm
Max height	1800 mm
Height at spindle center	1100 mm
Weight	from 1200 to 1500 kg
Oil pan capacity	130 liters
Output of adjustable pump	9-37 liters/min
Maxi pressure	2.4 bars
Chip tray capacity	50 liters
Installed power	10 kVA
Pressure of pneumatic unit	6 / 87 bars/PSI
Ambient working temperature	5-35 °C
Paint grey RAL 7035 and blue RAL 5013	
EC/CEM certificate	

DECO 10a + SBF 216





NUMERICAL CONTROL AND PROGRAMMING SOFTWARE

Type of control	PNC-DECO
Programming software	TB-DECO
Encoder Axes Motor	serial, absolute
Motor type (axes and spindles)	synchron, AC
Max number of axes	9 (11)
Designation of the axes	Z1 / X1 - Y1 / X2 - Y2 / X3 - Z3 / X4 - Z4 (C1 / C4 options)
Max number of spindles	5
Designation of the spindles	S1 - S2 - S3 - S4 - S5
Min incrementation of program	1 μ
Min resolution of axes	0.1 μ
Number of tool correctors	31 per axis
Override for spindles and axes	0-120%
Computation of real production time	
Graphic simulation of program	
Programming language on TB-DECO	ISO

MAIN PROGRAMMING FUNCTIONS

Management of tool offsets
Chamfering functions
Cutter compensation
Management of origin offsets
Function "lag" and "differential"
Spindle synchronization
Synchronous feeds (mm/rev)
Thread chasing with constant, increasing, decreasing thread
Polygon milling in the guide-bush
Programming in Inch mode
Operations with C axis

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Conforms to the European CE/CEM Safety Standards

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