



THINK PARTS THINK TORNOS



## DELTA

A full new product range dedicated to machine simple parts.

# A NEW PRODUCT RANGE

Highly specialized in the production of machines dedicated to produce middle-complex to complex parts, Tornos enters the field of simple machines to produce simple parts.

### Main assets

- A true Tornos quality and precision product range.
- One machine for each and every need with 3, 4 or 5 linear axes.

	3 Axes	4 Axes	5 Axes
Ø 12	✓	✓	✓
Ø 20	✓	✓	✓

- Fast and simple to set up.
- Machining with or without guide bush.
- Ergonomics and flexibility.
- Very attractive price.

With Tornos Delta you can produce simple parts with the best tailored machine without question.



Clear information panel



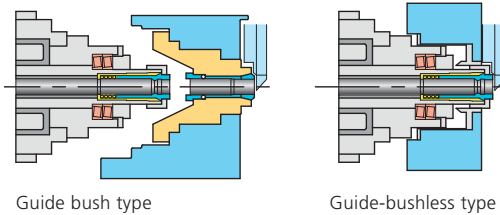
Electronic handwheel to adjust the axes

# DELTA FEATURES IN A NUTSHELL



# MACHINE EQUIPMENTS AND OPTIONS AVAILABLE

- Rotating and synchronized guide bush
- Stationary guide bush
- Guide-bushless kit



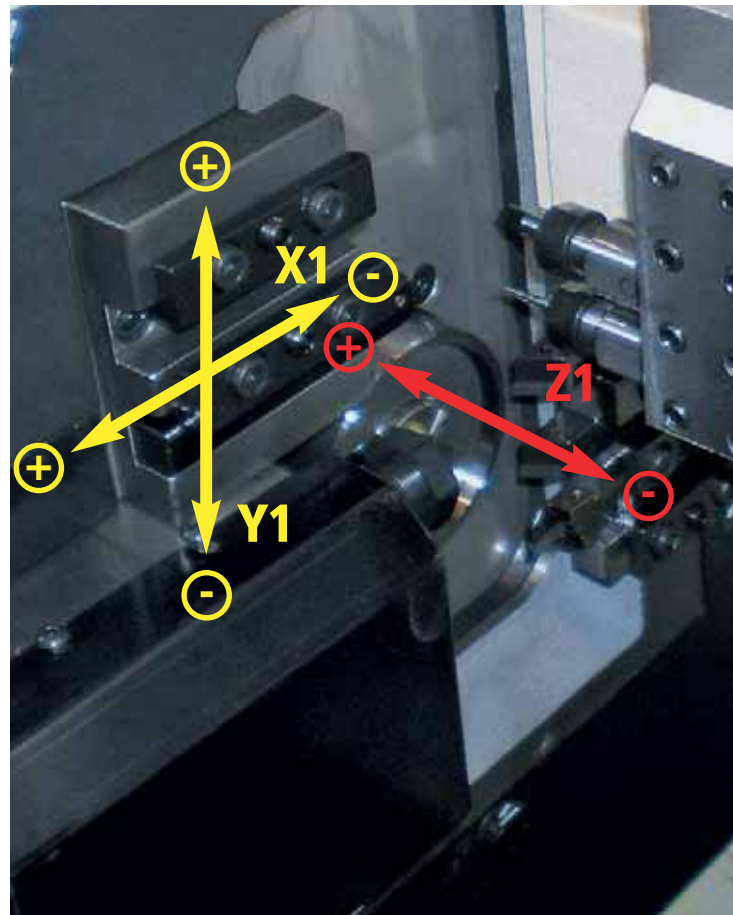
Guide bush type

Guide-bushless type

Max. machining length 45 mm

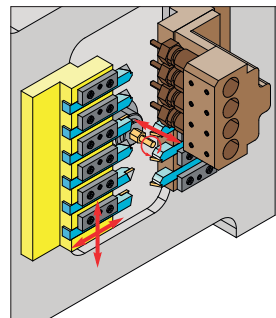
*Change within 30 minutes!*

- Main spindle and counter spindle 1° index
- Axe C main spindle
- 3 spindles cross drilling / milling attachment
- High pressure pump with M codes functions  
*Including:*
  - Oil on platten 1-front
  - Oil on platten 1-rear
  - Oil on counter-operations
- Signal indicator
- Parts receptacle
- Parts ejector with collet cleaning system with coolant
- Parts conveyor
- Bar feeder
- Bar feeder interface
- Fire extinguisher interface

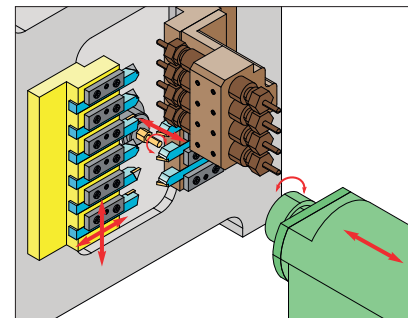


## Kinematics

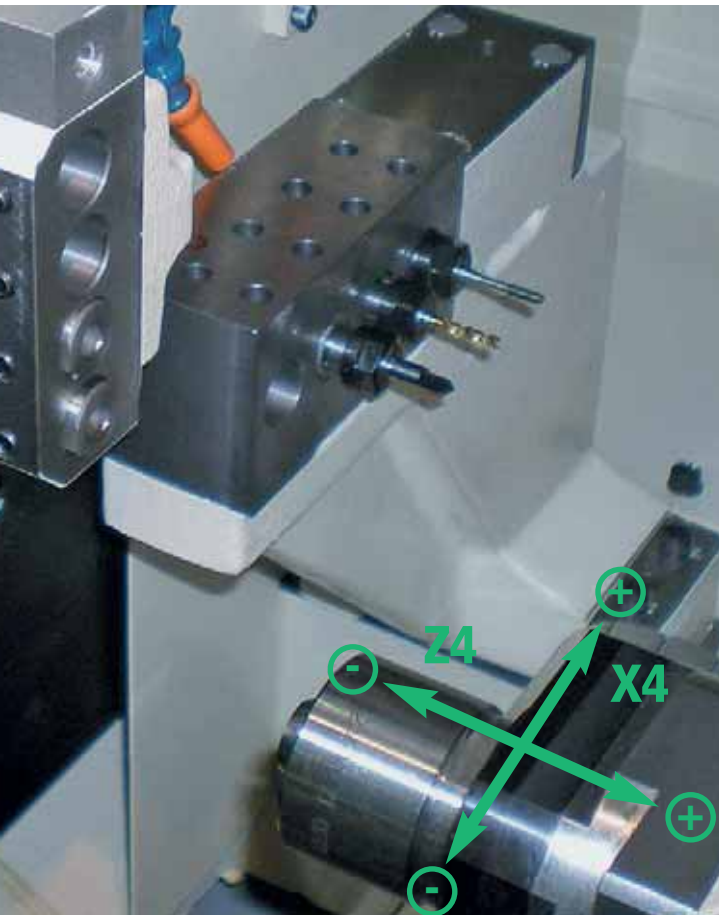
3 axes



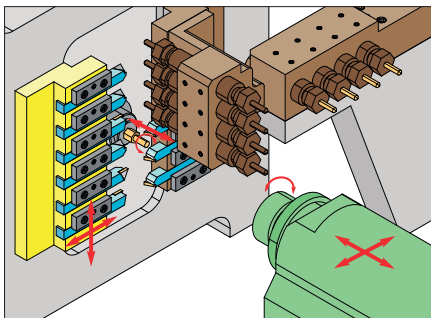
4 axes



# MACHINE EQUIPMENTS AND OPTIONS AVAILABLE



5 axes



**Delta 12/3 II**  
Workpiece size:  
Ø 3.5 x 130 mm



**Delta 12/4 I**  
Workpiece size:  
Ø 9.6 x 5.46 mm



**Delta 20/5 II**  
Workpiece size:  
14 A/F HEX x 24.2 mm



**Delta 12/4 I**  
Workpiece size:  
Ø 3.5 x 130 mm



**Delta 20/5 II**  
Workpiece size:  
H17 x 29 mm



**Delta 20/4 I**  
Workpiece size:  
Ø 15.5 x 17 mm



# TECHNICAL INFORMATION

## Delta 12/3

Bar diameter

**12**  
mm

3 linear axes

1 independant tool system

Up to 13 tools

Spindle speed 200-12'000 rpm

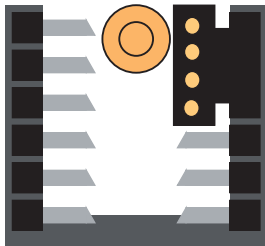
### MAX. PART LENGTH

Stationary  
guide bush:

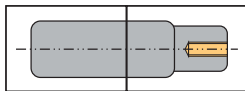
**210 mm**

Rotary  
guide bush:

**80 mm**



No Counter op. Main op.



## Delta 12/4

Bar diameter

**12**  
mm

4 linear axes

1 independant tool system

Up to 17 tools

Spindle speed 200-12'000 rpm

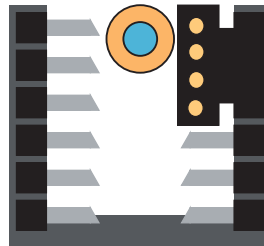
### MAX. PART LENGTH

Stationary  
guide bush:

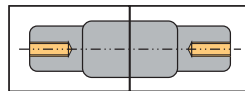
**210 mm**

Rotary  
guide bush:

**80 mm**



Counter op. Main op.



## Delta 12/5

Bar diameter

**12**  
mm

5 linear axes

2 independant tool systems

Up to 20 tools

Spindle speed 200-12'000 rpm

### MAX. PART LENGTH

Stationary  
guide bush:

**210 mm**

Rotary  
guide bush:

**80 mm**



Counter op. Main op.



Model I

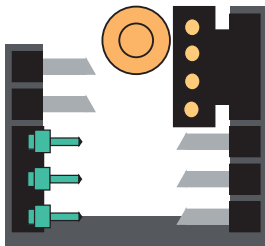
Caption

Turning tool

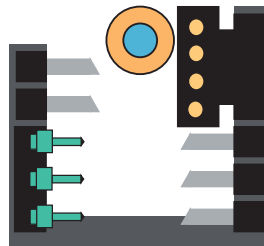
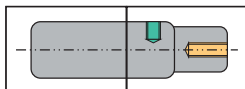
Stationary end and back end working tool

3 radial rotating tools module

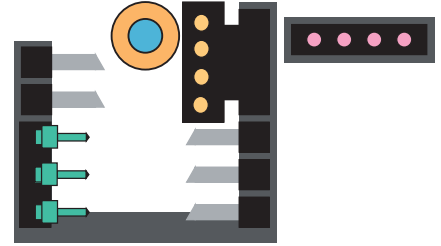
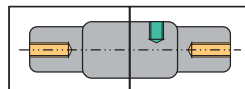
Model II



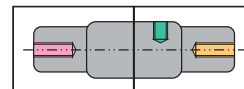
No Counter op. Main op.



Counter op. Main op.



Counter op. Main op.



Model III

### Fully equipped pack

### MAX. PART LENGTH

Stationary  
guide bush:

**210 mm**

Rotary  
guide bush:

**80 mm**

### Fully equipped pack

### MAX. PART LENGTH

Stationary  
guide bush:

**210 mm**

Motorized  
rotating bushing:

**170 mm**

Notes

Model I   
Model II   
Model III

Model I   
Model II   
Model III

Model I   
Model II   
Model III

## Delta 20/3

Bar diameter



3 linear axes

1 independant tool system

Up to 13 tools

Spindle speed 200-12'000 rpm

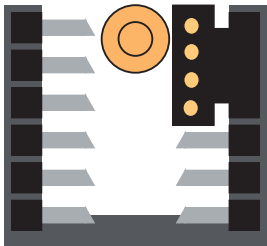
### MAX. PART LENGTH

Stationary guide bush:

**210 mm**

Rotary guide bush:

**80 mm**



No Counter op. Main op.



## Delta 20/4

Bar diameter



4 linear axes

1 independant tool system

Up to 16 tools

Spindle speed 200-12'000 rpm

### MAX. PART LENGTH

Stationary guide bush:

**210 mm**

Rotary guide bush:

**80 mm**



Spindle

## Delta 20/5

Bar diameter



5 linear axes

2 independant tool systems

Up to 20 tools

Spindle speed 200-12'000 rpm

### MAX. PART LENGTH

Stationary guide bush:

**210 mm**

Rotary guide bush:

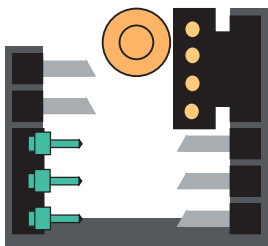
**80 mm**



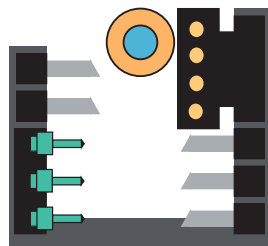
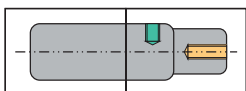
Counter Spindle



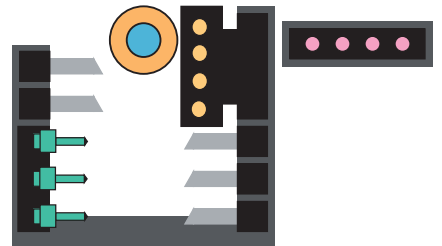
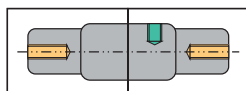
Stationary end working tools for counter operations



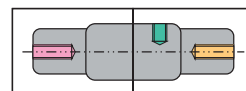
No Counter op. Main op.



Counter op. Main op.



Counter op. Main op.



### Fully equipped pack

#### MAX. PART LENGTH

Stationary guide bush:

**210 mm**

Rotary guide bush:

**80 mm**

### Fully equipped pack

#### MAX. PART LENGTH

Stationary guide bush:

**210 mm**

Motorized rotating bushing:

**170 mm**

- Model I
- Model II
- Model III

- Model I
- Model II
- Model III

- Model I
- Model II
- Model III

# TECHNICAL SPECIFICATIONS

TECHNICAL CHARACTERISTICS		DELTA 12/3	DELTA 20/3
Working barstock diameter	mm	Ø 3 to Ø 12	Ø 3 to Ø 20
Max. workpiece length	mm	210 (210 : FGB, 80 : RGB, 45 : NGB) *	210 (210 : FGB, 80 : RGB, 45 : NGB) *
Max. main spindle drilling diameter	Ø mm	7	10
Max. main spindle tapping diameter		M6 x 1	M8 x 1.25
Max. back spindle barstock dia.	Ø mm	–	–
Max. back spindle drilling diameter	Ø mm	–	–
Max. back spindle tapping diameter	Ø mm	–	–
Max. cross drilling dia.	Ø mm	6 (Option)	6 (Option)
Max. cross tapping dia.		M5 x 0.8 (Option)	M5 x 0.8 (Option)
Main spindle speed	min <sup>-1</sup>	200 to 12'000	200 to 12'000
Back spindle speed	min <sup>-1</sup>	–	–
Total tool storage capacity		13 tools	13 tools
Tool size	mm	12 x 12 x 85	12 x 12 x 85
Rapid traverse rate	m / min	32 (X : 24)	32 (X : 24)
Controlled axes		3 axes	3 axes
Main spindle motor	kW	1.5 / 2.2	2.2 / 3.7
Back spindle motor	kW	–	–
X1,X4,Z1,Z4-axis		0.5	0.5
Y1-axis motor	kW	0.75	0.75
Coolant pump	kW	0.18	0.18
Lubrication oil pump	W	3	3
Net weight	kg	1'500	1'500
Power source requirment	KVA	7	7
Compressed air requirement	bars	6	6
Air discharge rate	NL / min	30	30
Coolant tank capacity	L	115	115
Width x depth x height	mm	1640 x 1200 x 1725	1640 x 1200 x 1725
NC unit		FANUC 0i-TD	FANUC 0i-TD
Controlled axes		3 axes	3 axes
Axis names		X1, Y1, Z1	X1, Y1, Z1
Least input increment	mm	0.001 (X in diameter)	0.001 (X in diameter)
Least command increment	mm	X : 0.0005, other : 0.001	X : 0.0005, other : 0.001
Maximum programmable value		± 8 digits	± 8 digits
Interpolation method		Linear, circular	Linear, circular
Rapid traverse rate	m / min	32 (X1 : 24)	32 (X1 : 24)
Feedrate	mm / min	1 to 6000	1 to 6000
Feedrate override		0 to 150 % in 10 % increments	0 to 150 % in 10 % increments
Dwell		G04 0 to 99999.99	G04 0 to 99999.99
Tool offset value		±6 digits	±6 digits
Tool offset pairs		99	99
LCD / MDI		8.4" Color LCD	8.4" Color LCD
Part program storage size	Kbytes	128	128
Registable programs		400	400
Auxiliary function		M5-digit	M5-digit
Spindle function		S5-digit	S5-digit
Tool function		T4-digit	T4-digit

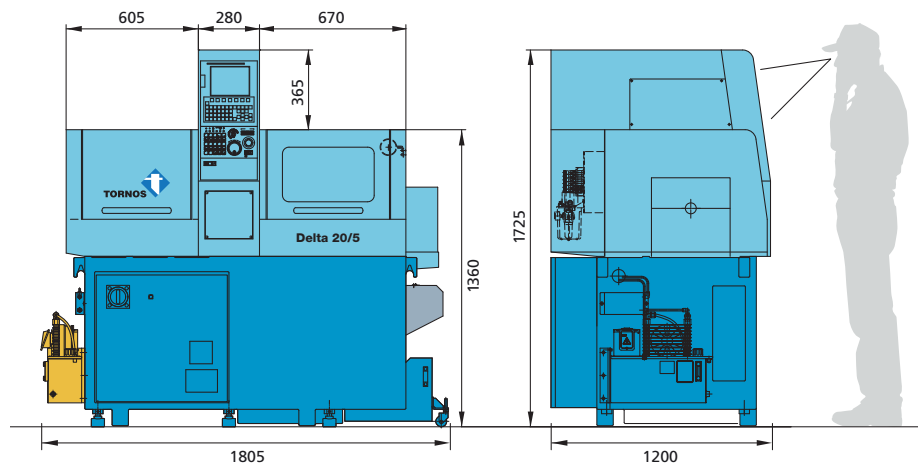
# TECHNICAL SPECIFICATIONS

DELTA 12/4	DELTA 20/4	DELTA 12/5	DELTA 20/5
Ø 3 to Ø 12	Ø 3 to Ø 20	Ø 3 to Ø 12	Ø 3 to Ø 20
210 (210 : FGB, 80 : RGB, 45 : NGB) *	210 (210 : FGB, 80 : RGB, 45 : NGB) *	210 (210 : FGB, 80 : RGB, 45 : NGB, 170 : BGB) *	210 (210 : FGB, 80 : RGB, 45 : NGB, 170 : BGB) *
7	10	7	10
M6 x 1	M8x1.25	M6 x 1	M8x1.25
12	20	12	20
7	7	7	7
M6 x 1	M6 x 1	M6 x 1	M6 x 1
6 (Option)	6 (Option)	6 (Option)	6 (Option)
M5 x 0.8 (Option)	M5 x 0.8 (Option)	M5 x 0.8 (Option)	M5 x 0.8 (Option)
200 to 12'000	200 to 12'000	200 to 12'000	200 to 12'000
200 to 12'000	200 to 12'000	200 to 12'000	200 to 12'000
17 tools	17 tools	20 tools	20 tools
12 x 12 x 85	12 x 12 x 85	12 x 12 x 85	12 x 12 x 85
32 (X: 24)	32 (X: 24)	32 (X: 24)	32 (X: 24)
4 axes	4 axes	5 axis	5 axes
1.5/2.2	2.2/3.7	1.5/2.2	2.2/3.7
1.5/2.2	1.5/2.2	1.5/2.2	1.5/2.2
0.5	0.5	0.5	0.5
0.75	0.75	0.75	0.75
0.18	0.18	0.18	0.18
3	3	3	3
1'800	1'800	1'950	1950
10	10	11	11
6	6	6	6
30	30	30	30
115	115	115	115
1640 x 1200 x 1725	1640 x 1200 x 1725	1640 x 1200 x 1725	1640 x 1200 x 1725
FANUC Oi-TD	FANUC Oi-TD	FANUC Oi-TD	FANUC Oi-TD
4 axes	4 axes	5 axes	5 axes
X1, Z1, Y1, Z4	X1, Z1, Y1, Z4	X1, Z1, Y1, X4, Z4	X1, Z1, Y1, X4, Z4
0.001 (X in diameter)	0.001 (X in diameter)	0.001 (X in diameter)	0.001 (X in diameter)
X: 0.0005, other: 0.001	X: 0.0005, other: 0.001	X: 0.0005, other: 0.001	X: 0.0005, other: 0.001
± 8 digits	± 8 digits	± 8 digits	± 8 digits
Linear, circular	Linear, circular	Linear, circular	Linear, circular
32 (X1: 24)	32 (X1: 24)	32 (X1: 24)	32 (X1: 24)
1 to 6000	1 to 6000	1 to 6000	1 to 6000
0 to 150 % in 10 % increments	0 to 150 % in 10 % increments	0 to 150 % in 10 % increments	0 to 150 % in 10 % increments
G04 0 to 99999.99	G04 0 to 99999.99	G04 0 to 99999.99	G04 0 to 99999.99
±6 digits	±6 digits	±6 digits	±6 digits
99	99	99	99
8.4" Color LCD	8.4" Color LCD	8.4" Color LCD	8.4" Color LCD
512	512	512	512
400	400	400	400
M5-digit	M5-digit	M5-digit	M5-digit
S5-digit	S5-digit	S5-digit	S5-digit
T4-digit	T4-digit	T4-digit	T4-digit

# LIST OF OPTIONS

MODELS	I	II	III	III	NOTES
	12 & 20 3, 4 AXIS	12 & 20 3, 4, 5 AXIS	12 & 20 4 AXIS	12 & 20 5 AXIS	
Stationary guide bushing	○	○	○	○	
Rotating and synchronized guide bush	●	●	●	–	
Guide-bushless kit	○	○	●	●	
Motorized bushing	–	–	–	●	
Main spindle 1° index	●	●	–	–	
Main spindle C axis control	–	–	●	●	
Back spindle 1° index	–	–	●	●	
3-spindle cross drill	–	●	●	●	
High pressure pump	–	–	●	●	
Oil blow (X1 front, X1 rear, Z4)	–	–	●	●	
Parts receptacle	●	●	●	●	
Parts conveyor	–	–	●	●	
Work front discharge with oil blow	–	–	●	●	
Signal indicator	●	●	●	●	
Illumination lamp	●	●	●	●	
Simple drill holder	○	○	○	○	
Reduction tube for spindle	○	○	○	○	
Barfeeder interface	●	●	●	●	
Fire extinguisher interface	●	●	●	●	
Bar stopper	○	○	○	○	
RS232C interface	●	●	●	●	
Bar feeder	○	○	○	○	
Mist collector	○	○	○	○	
Chip conveyor	○	○	○	○	

- Standard
- Option
- Not available



# SPECIFICATIONS

## STANDARD NC FUNCTIONALITIES

Multiple-thread cutting cycle	Direct drawing dimension programming
Manual pulse generator	Tool nose radius compensation
Background editing	Multiple repetitive cycle
Run time & parts number display	Canned cycle for drilling
Custom macro B	Rigid tap (spindle, back spindle)
Constant surface speed control G96	Cut-off detection (differential)
Spindle synchronous control (speed/phase)	Spindle speed fluctuation detection
Tool geometry/wear offset	Inch metric conversion
Programmable data input G54-G59	0.1 micron resolution
Chamfering and corner R	

## GENERAL CHARACTERISTICS

		3 AXES	4, 5 AXES
Max. length	mm	1640	1640
Max. width	mm	1200	1200
Max. height (+ signal indicator)	mm	1725 (340)	1725 (340)
Height at spindle centre	mm	1100	1100
Weight	kg	~ 1500	~ 1950
Cutting oil tank capacity	l	115	115
Control pump flow rate	l/min	75-100	75-100
Chippings tank capacity	l	45	45
Installed power	kVA	11	11
Pneumatic group pressure	bars	6	6
Ambient working temperature	degrees	5-35	5-35
Colours : grey RAL 7035, blue RAL 5013			
CE / CEM certified			



## ROBOBAR

### TECHNICAL CHARACTERISTICS

		SBF 320 - D12	SBF 320 - D20
Machine		Delta 12	Delta 20
Min. bar passage	mm	3	3
Max. bar passage without preparation	mm	12	20
All capacities with two bar guide	mm	3-12	3-12 / 5-20
System		Oil bath	Oil bath
Round, hexagonal and square bar change-over		Yes	Yes
Bar length	m	3	3
Bar Remnant extraction		From rear	From rear
Bar storage (slope) capacity		5 mm - 54 bars	16 mm - 17 bars
Max. speed of bar rotation	rpm	12'000	12'000
Electrical power requirement	kW	1,5	1,5
Lubrication tank capacity	litres	40	40
Adjustable guide steady		Yes	Yes
Incorporated extension		No	No
Complies with CE/CEM standards		Yes	Yes
Weight	kg	340	340
Pneumatic pressure requirement	bars	6	6

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**Conforms to the European CE/CEM Safety Standards**

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