

CTX beta 800 TC
CTX beta 1250 TC
CTX beta 1250 TC 4A
CTX beta 2000 TC
CTX gamma 1250 TC
CTX gamma 2000 TC
CTX gamma 3000 TC

6-SIDED TURN & MILL COMPLETE MACHINING

CTX TC



Highlights

Machine and technology

Automation

Applications

Control and technology cycles

Technical data

CTX TC

Six sides. One solution. CTX TC – Turn & Mill machines



DMG MORI

02

CTX TC

Turn & Mill complete machining

- + **Highest precision and lower processing costs** with complete machining in a single setup
- + One **tool carrier as NC-controlled B-axis**
- + Machining of complex workpieces up to **5-axis simultaneous machining**
- + **ShopTurn 3G** for workshop-oriented programming directly on the machine



Mechanical engineering

Sprocket machined
on a CTX beta 800 TC
CK45/11.5 min.



Mechanical engineering

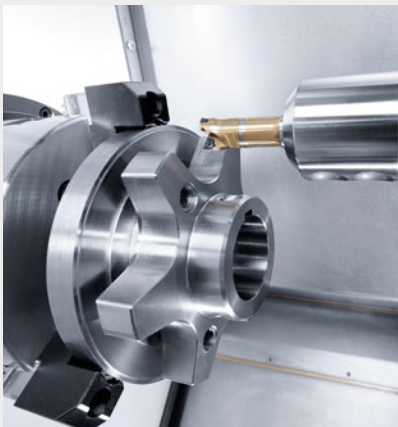
Turret disk machined
on a CTX beta 1250 TC
CK45/180 min.

Flexibility – the added value compared to any universal turning machine



100 % TURNING

- + Up to 700 mm maximum turning diameter due to large axis strokes of the travelling column
- + Up to 4,000 Nm maximum torque on the main spindle
- + 6-sided complete machining with optional counter spindle



100 % MILLING

- + Up to 420 mm Y-stroke for the excentric machining based on travelling column concept with maximum stability
- + Highest milling performance with the compactMASTER with 120 Nm (CTX beta TC)/220 Nm (CTX gamma TC) and up to 20,000 rpm (12,000 rpm as standard)
- + 5-axis simultaneous machining for the machining of free-form surfaces (with optional DMG MORI technology cycle)



100 % TOOLS

- + Up to 180 tools for highest flexibility during machining and shortest tooling times
- + Disk magazine with 24 (CTX beta TC)/36 stations (CTX gamma TC) as standard
- + Economical standard tools due to freely indexable B-axis with up to $\pm 120^\circ$ swivel range and highest precision (minimal position deviation $< 1 \mu\text{m}$)

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Parallel machining due to second tool carrier



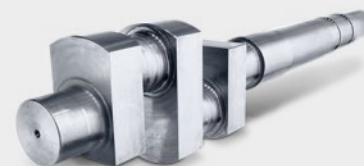
5-axis production turning
CTX beta 1250 TC 4A
CTX gamma TC (with optional turret)

- + **Highly productive machines** for the production of medium to large batch sizes
- + **Highest productivity** through the parallel use of two tool carriers
- + **Turret with highest long-term accuracy** due to TRIFIX® precision interface for <30sec. tool setup time
- + **Ideally suited to series production** due to optional automation solutions like for example integrated handling system or gantry loading



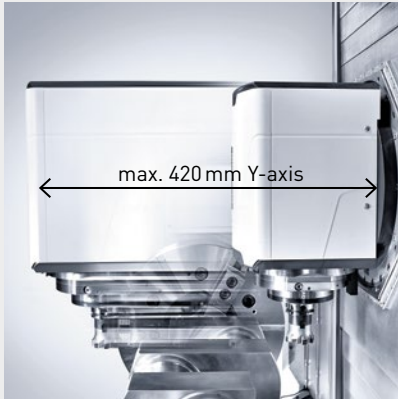
Aerospace

Diffuser produced
on a CTX gamma 1250 TC
Titanium / 6 hours



Mechanical engineering

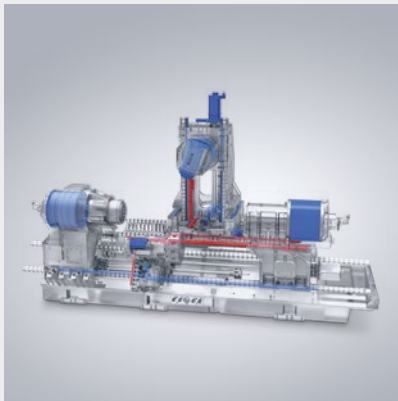
Marine crankshaft produced
on a CTX gamma 3000 TC
42CrMo4 / 280 min.



MAXIMUM STABILITY AND CUTTING PERFORMANCE DUE TO HIGHLY STABLE TRAVELLING COLUMN CONCEPT

- + **Up to 750 mm wide distance between the linear guides** of the travelling column
- + **Highest stability and optimum force transmission** into the machine bed by means of five positioning shoes* for heavy-duty machining
- + **Turning-milling spindle** HSK-A63 and 220 Nm torque**
Unrestricted use of HSK-T tools

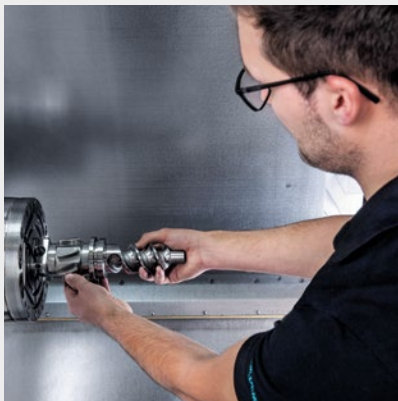
*6 positioning shoes in the CTX beta 1250 TC/TC 4A
** CTX beta TC: Max. 120 Nm



HIGHEST PRECISION AND LONG-TERM ACCURACY

- + **Highest precision due to direct measuring systems in all axes**
- + **Maximum thermal stability** due to dynamic spindle length compensation as well as liquid-cooled integrated spindle motors and headstocks
- + **Maintenance-free linear drive in the Z-axis*** with 5 years warranty and 70 m/min rapid traverse for highest dynamics and long-term accuracy

*Optional for CTX beta 1250 TC/CTX gamma 1250/2000 TC



OPTIMUM ACCESSIBILITY AND ERGONOMICS

- + **Low depth of engagement** up to the main spindle for the ergonomic loading and unloading (e.g. CTX beta 800 TC: 400 mm)
- + **Maximum visibility** of the machining compartment for best control
- + **Continuously variable adjustability** of screen and keyboard
- + **Shorter service times** due to optimum accessibility of the travelling column and further components



3D CONTROL TECHNOLOGY AND EXCLUSIVE TECHNOLOGY CYCLES FROM DMG MORI

- + **CELOS from DMG MORI** with 21.5" *ERGOline* and SIEMENS – Up to 30% faster setup due to the complete integration of the machine into the company organisation
- + **Exclusive DMG MORI technology cycles** – 60% shorter programming time due to parameterised context menus and simple entry of the parameters into the dialog; no complicated DIN programming

Highlights

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CTX beta TC

Universal Turn & Mill complete machining for workpieces up to \varnothing 700 mm



HIGHLIGHTS

- + **Highest milling performance with the compactMASTER** with 120 Nm and up to 20,000 rpm (12,000 rpm as standard)
- + **Up to 300 mm Y-stroke** for the excentric machining based on travelling column concept with maximum stability
- + **6-sided complete machining** with main spindle and optional counter spindle up to 700 Nm
- + **Bar machining up to $\varnothing 104$ mm,** chuck up to $\varnothing 400$ mm



| | | CTX beta 800 TC | CTX beta 1250 TC (<i>linear</i>) | CTX beta 1250 TC 4A | CTX beta 2000 TC |
|--|----------------|-----------------------|------------------------------------|-----------------------|-----------------------|
| Max. Turning length | mm | 750 | 1,200 | 1,185 | 2,000 |
| Max. Turning diameter (Disk/Chain magazine) | mm | $\varnothing 450/500$ | $\varnothing 470/500$ | $\varnothing 500$ | $\varnothing 630/700$ |
| Turning-milling spindle/speed | rpm | 12,000 | 12,000 | 12,000 | 12,000 |
| Torque/power (40% DC) | Nm/kW | 120/22.5 | 120/22.5 | 120/22.5 | 120/22.5 |
| Tool magazine | Stations | 24 (max. 80) | 24 (max. 80) | 24 (max. 120) | 24 (max. 100) |
| X/Y/Z Stroke travelling column slide | mm | 480/ ± 100 /845 | 490/ ± 125 /1,300 | 490/ ± 100 /1,200 | 650/ ± 150 /2,050 |
| Main spindle/speed | rpm | ISM 76/5,000 | ISM 76/5,000 | ISM 76/5,000 | ISM 76/5,000 |
| Torque/power (40% DC) | Nm/kW | 360/32 | 360/32 | 360/32 | 360/32 |
| Counter spindle (optional)/speed | rpm | ISM 52/6,000 | ISM 76/5,000 | ISM 76/5,000 | ISM 76/5,000 |
| Torque/power (40% DC) | Nm/kW | 200/14.5 | 360/32 | 360/32 | 360/32 |
| Footprint incl. chip conveyor | m ² | 10.2 | 12.1 | 17.1 | 18.6 |

Highlights

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CTX gamma TC

6-sided complete machining of workpieces up to 3 m length



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| | | CTX gamma 1250 TC <i>(linear)</i> | CTX gamma 2000 TC <i>(linear)</i> | CTX gamma 3000 TC |
|--|----------------|--------------------------------------|--------------------------------------|-------------------|
| Max. Turning length | mm | 1,250 | 2,000 | 3,000 |
| Max. Turning diameter (Disk/Chain magazine) | mm | ø 630/700 | ø 630/700 | ø 630/700 |
| Turning-milling spindle/speed | rpm | 12,000 | 12,000 | 12,000 |
| Torque/power (40% DC) | Nm/kW | 220/36 | 220/36 | 220/36 |
| Tool magazine | Stations | 36 (max. 180) | 36 (max. 180) | 36 (max. 180) |
| X/Y/Z Stroke travelling column slide | mm | 800/±210/1,300 | 800/±210/2,050 | 800/±210/3,050 |
| Main spindle/speed | rpm | ISM 102/4,000 | ISM 102/4,000 | ISM 127/2,500 |
| Torque/power (40% DC) | Nm/kW | 700/40 | 700/40 | 2,200/52 |
| Counter spindle (optional)/speed | rpm | ISM 76/5,000 | ISM 76/5,000 | ISM 102/4,000 |
| Torque/power (40% DC) | Nm/kW | 360/32 | 360/32 | 700/40 |
| Footprint incl. chip conveyor | m ² | 18.4 | 20.4 | 23.0 |

HIGHLIGHTS

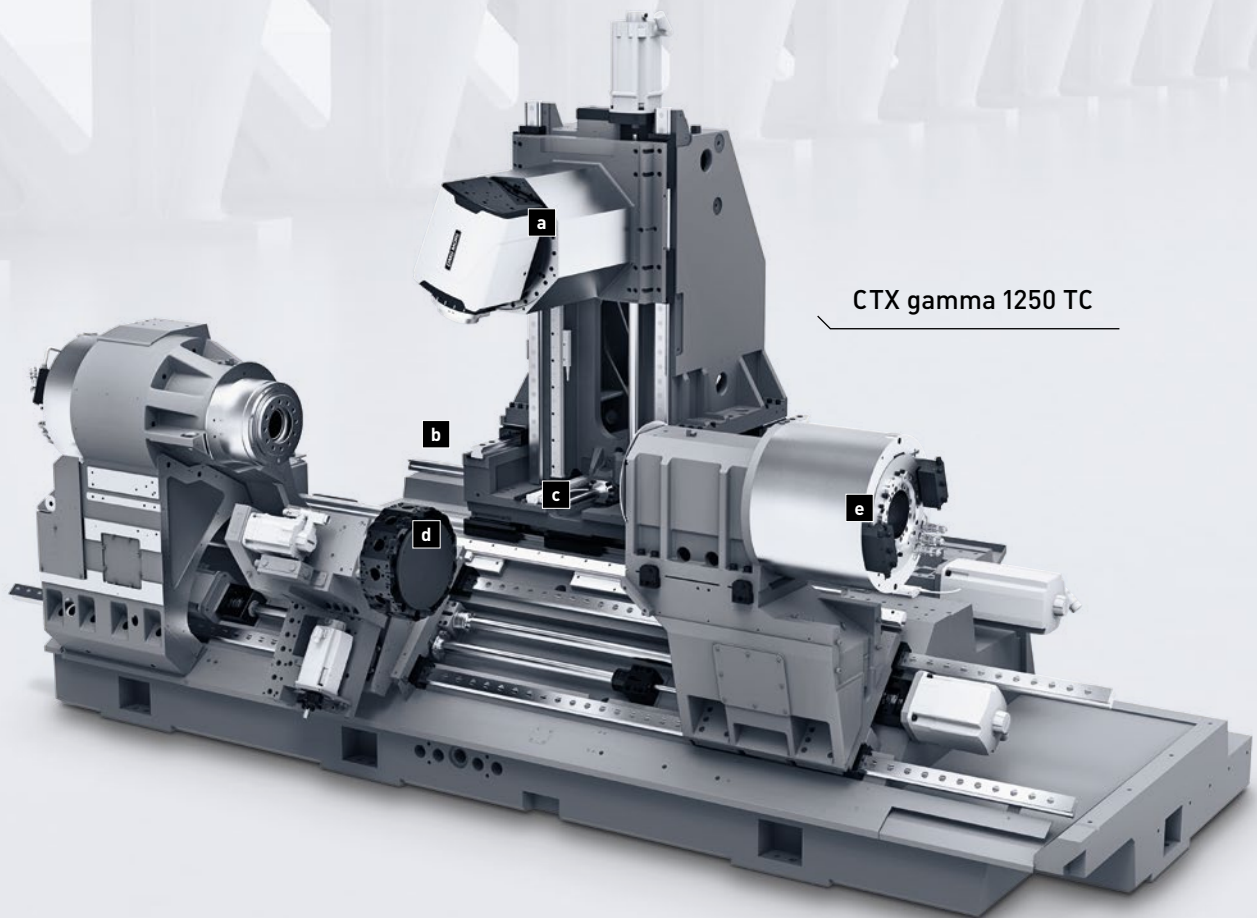
- + **compactMASTER II** – 220 Nm at just 450 mm length
- + 800 mm X-stroke and 420 mm Y-stroke for **maximum flexibility** during radial machining
- + 550 mm long tools, **horizontally drill through or unscrew workpieces with 550 mm length** (CTX gamma 1250 TC up to 340 mm)
- + **6-sided complete machining** with main spindle up to 4,000 Nm and counter spindle* up to 2,200 Nm, chuck* up to $\varnothing 630$ mm
- + **Production turning with B-axis** and lower turret* with up to 16 driven tools

* Option



CTX TC

Highest stability and long-term accuracy



CTX gamma 1250 TC

- a** **B-axis with DirectDrive**
for top precision and dynamics up to 100 rpm
- b** **Constant rigidity**
Thanks to robust guides up to size 55 and up to $\varnothing 50$ mm ball screw drives
- c** **Wide distance between the guideways of the travelling column**
CTX beta TC: 400/630/425 mm (X/Y/Z)
CTX beta 1250 TC: 400/645/475 mm (X/Y/Z)
CTX gamma TC: 545/740/752 mm (X/Y/Z)

- d** **Turret**
VDI interface, play-free and spring-loaded double centring and increased rigidity thanks to large interface with bolt-hole pattern
- e** **Thermal stability**
Liquid cooling of all relevant components: Machine bed, spindle motors, feed motors, linear guides and ball screw spindles

High-quality components – designed for any application


| CTX beta 800 TC | CTX beta 1250 TC | CTX beta 1250 TC 4A | CTX beta 2000 TC | CTX gamma 1250/2000/3000 TC |
|---|---------------------|--|---|---|
| 45 mm roller guides | 45 mm roller guides | 45 mm roller guides | 55 mm roller guides | 55 mm roller guides |
| 40 mm ball screw | 40 mm ball screw | 40 mm ball screw | 55 mm ball screw | 50 mm ball screw |
| Linear measuring systems in the linear axes of the travelling column (X1/Y1/Z1) | | | | |
| - | - | Linear measuring systems in Z3 optional (counter spindle) | Linear measuring systems in Z3 optional (counter spindle/tailstock) | Linear measuring systems in Z3 optional (counter spindle/tailstock) |
| - | - | Linear measuring systems in X2, in Y2/Z2 optional (turret) | - | TC 4A: Linear measuring systems in X2/Z2 (turret) |
| | | Cooling of turret drives | | Cooling of turret drives |



ACCURACY AND THERMAL STABILITY

Highest precision and thermal stability

Dynamic spindle length compensation

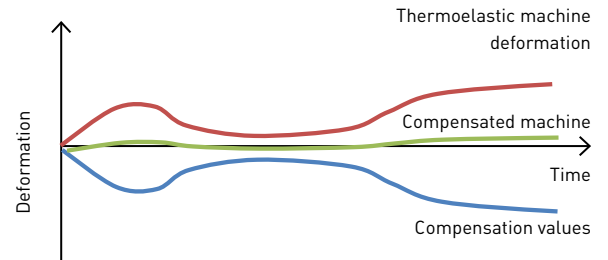
1. Temperature sensor 

2. Compensation model

- + Conventional : $\Delta X = \alpha \times \Delta T$
- + DMG MORI: Non-linear dynamic model

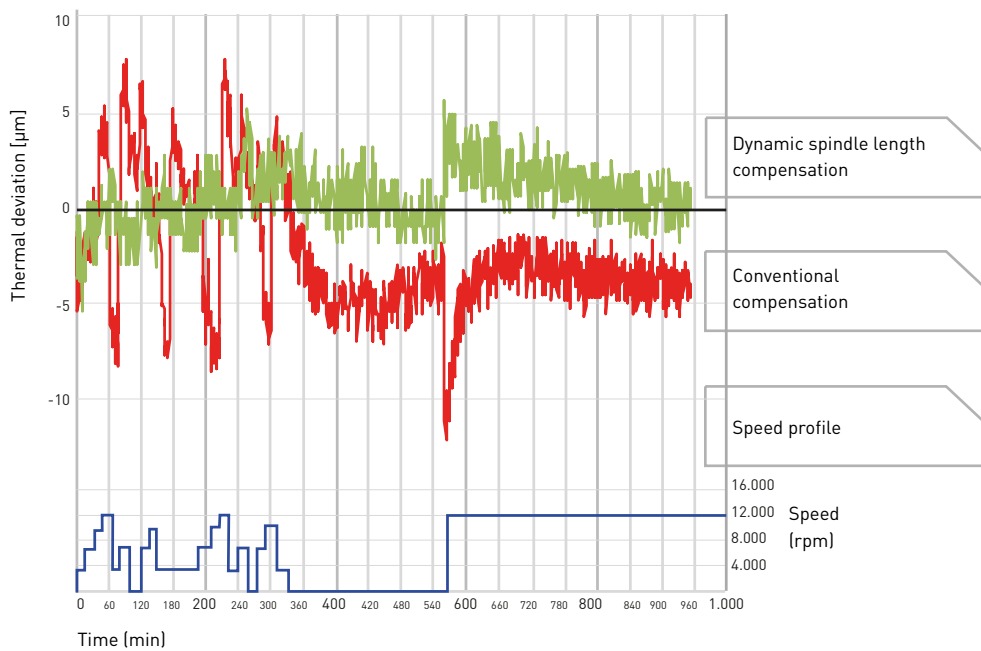
3. Adjustment of the axis nominal values

- + Conventional: Linear compensation
- + DMG MORI: 5-axis geometrical compensation

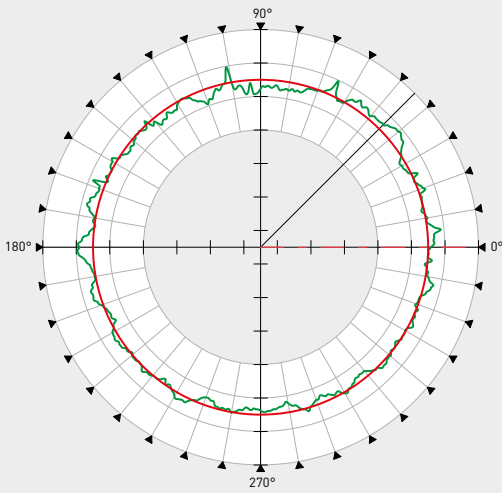


- + The compensation values offset the thermal deformation
- + A thermally stable machine is achieved

compactMASTER



Concentricity on the workpiece (scale 0.5 μm/div.)

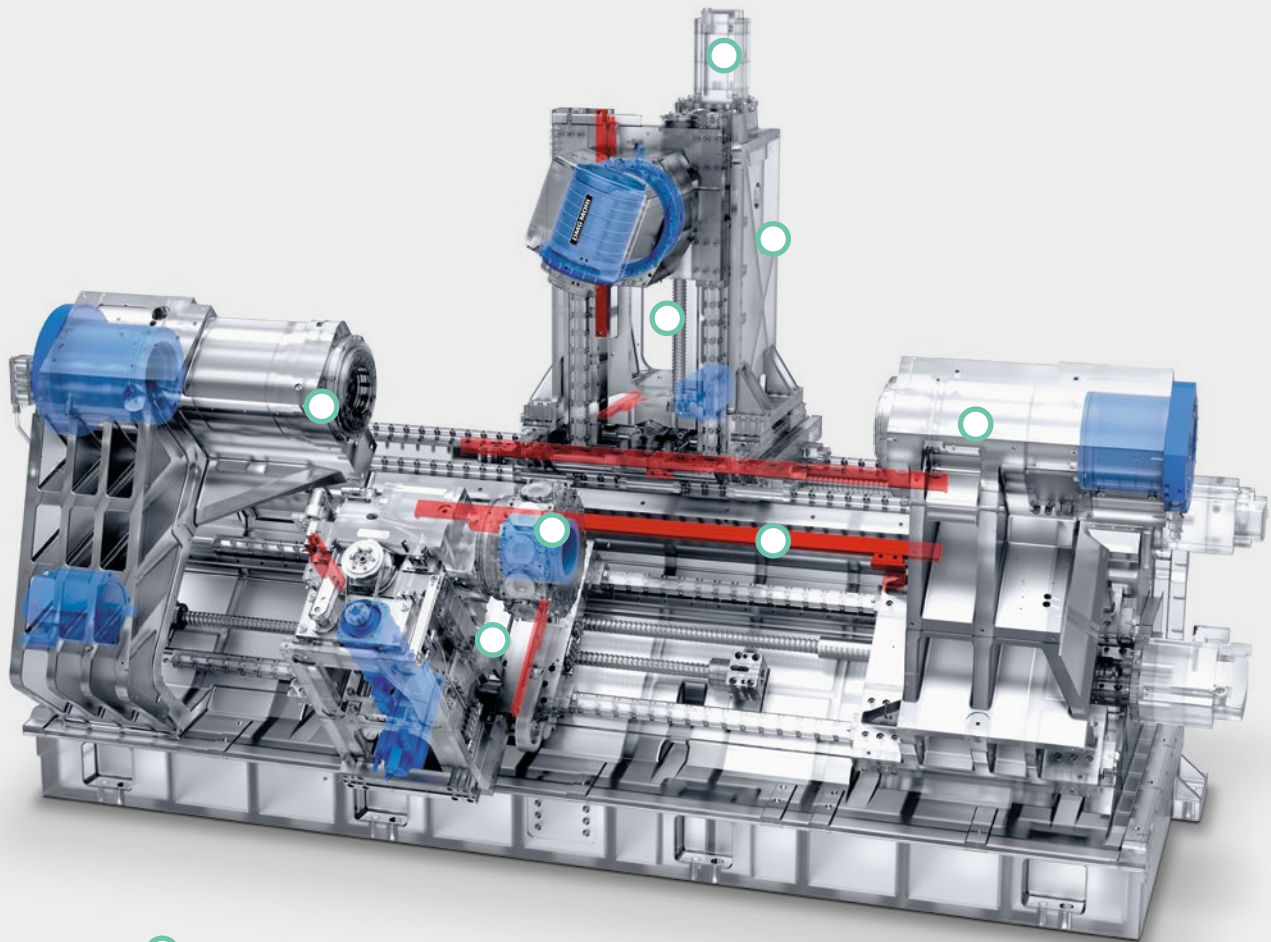


< 0.6 μm roundness on the workpiece during turning

| | |
|---------------|---|
| Workpiece | ø 42 mm cut-off, aluminium 80 mm projecting length, directly clamped in the spindle |
| Clamping | |
| Cutting speed | Vc = 280 m/min |
| Depth of cut | ap = 0.2 mm |
| Feed rate | f = 0.1 mm/rpm |
| Tool | Diamond tool |

Precision in the μ-range

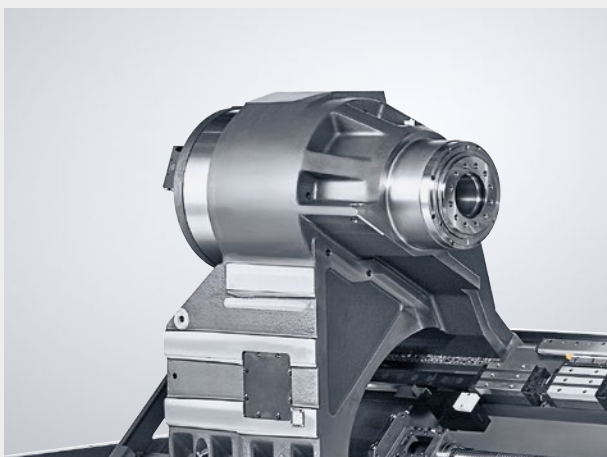
| | Positioning accuracy (P _{max}) | Repeat accuracy (Ps _{max}) |
|--------|--|--------------------------------------|
| X-axis | < 0.006 mm | < 0.002 mm |
| Y-axis | < 0.006 mm | < 0.002 mm |
| Z-axis | < 0.01 mm | < 0.003 mm |
| C-axis | < 0.0042 ° | < 0.0014 ° |



- Temperature sensor
- Blue: cooled elements
- Red: Linear measuring systems

TURN & MILL

Demand-based expansion stages for maximum productivity



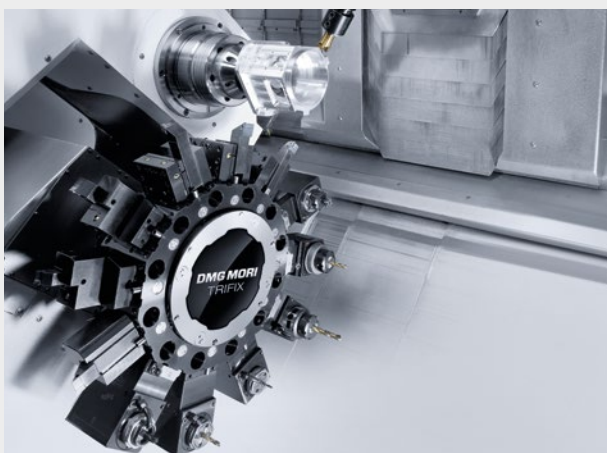
MAIN AND COUNTER SPINDLE AS INTEGRATED SPINDLE MOTOR

- + Main spindle up to 5,000 rpm or 59 kW and 4,000 Nm
- + Counter spindle up to 6,000 rpm or 52 kW and 2,200 Nm
- + Hydraulic partial hollow clamping device, optional with hollow clamping device for bar machining up to $\varnothing 127$ mm



USAGE OF CHUCK UP TO $\varnothing 630$ mm DUE TO HIGHLY STABLE MACHINE CONCEPT AND HIGH-TORQUE SPINDLES

- + CTX beta TC: Up to $\varnothing 400$ mm clamping diameter
- + CTX gamma TC: Up to $\varnothing 630$ mm clamping diameter
- + Special solutions like magnetic chucks on request



SHORTER JOB TIMES THANKS TO PARALLEL MACHINING WITH LOWER TURRET*

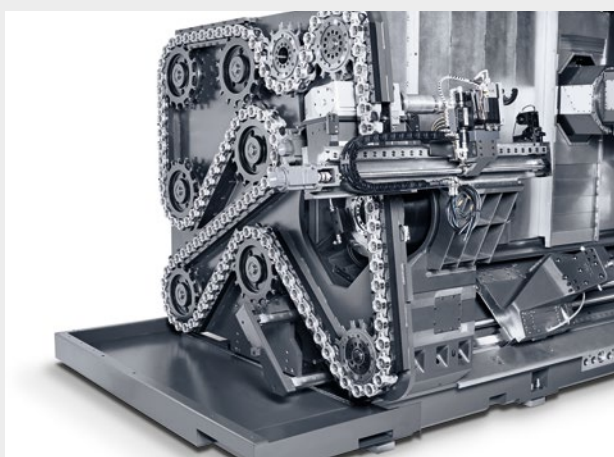
- + 12 driven tools VDI 40 or 16 driven tools VDI 30
- + Optional as DirectDrive with 10,000 rpm
- + Compound slide with absolute, direct travel measuring systems for more accurate startup**

* Standard for CTX beta 1250 TC 4A, optional for all CTX gamma TC **Option



AUTOMATICALLY MOVABLE STEADY RESTS FOR THE VIBRATION-FREE MACHINING OF LONG COMPONENTS LIKE SHAFTS

- + Up to $\varnothing 460$ mm workpiece diameter (procedure via own NC-axis)
- + 50% shorter setup time due to optional quick-change system with double cone clamping and $3\ \mu\text{m}$ repeat accuracy
- + Self-centring, hydraulic steady rest head



SHORTER TOOLING TIMES THANKS TO TOOL MAGAZINES UP TO 180 STATIONS

- + Disk magazine with 24/36 stations as standard (CTX beta TC/CTX gamma TC)
- + Up to 180 tools with optional chain magazine
- + Tool holder HSK-A 63 as standard. HSK-A100/Capto C6/Capto C8 optional
- + Tools up to 500 mm (disk magazine)/ 550 mm (chain magazine)
- + Tool weight up to 25 kg, 750 kg total load



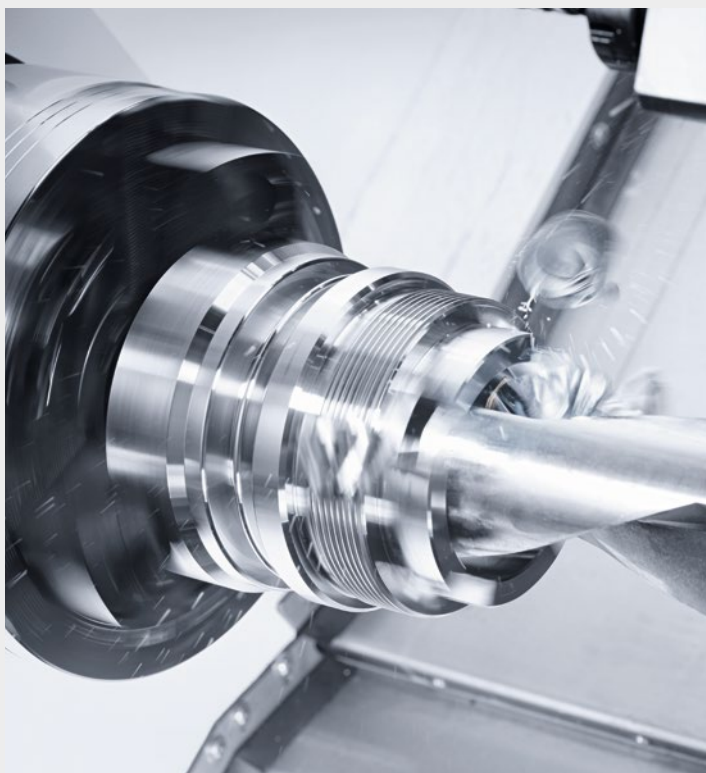
ADDITIONAL MAGAZINE FOR UP TO 6 OVERSIZED TOOLS VIA TAILSTOCK/COUNTER SPINDLE*

- + Tools up to 700 mm and 15 kg for deep holes
- + Automatically replaceable tools with the turning/milling spindle
- + Tool holder HSK-A63/HSK-A100/Capto C6/Capto C8
- + Total load of 120 kg

* Available for CTX beta 2000 TC, CTX gamma TC

TURN & MILL

High-performance turning up to 59 kW and 4,000 Nm torque



HIGHLIGHTS

- + **Top dynamics** due to integrated spindle drives up to 6,000 rpm or 4,000 Nm and integrated C-axis (0.001°)
- + **Maximum precision and thermal stability** due to liquid-cooled drives of the main and counter spindle
- + **6-sided complete machining** due to main and counter spindle
- + **Easy to service spindle construction** due to cartridge principle

| | | ISM 52 6,000 rpm 14.5/12.5 kW 200/170 Nm | ISM 76 5,000 rpm 32/25 kW 360/280 Nm | ISM 102 4,000 rpm 40/33 kW 700/580 Nm | ISM 102 Plus 2,500 rpm 52/40 kW 2,200/1,700 Nm | ISM 127 2,500 rpm 52/40 kW 2,200/1,700 Nm | ISM 127 Plus 2,000 rpm 59/50 kW 4,000/3,400 Nm |
|---|----------------------|---|---|--|---|--|---|
| High-performance roughing (Ck45) | | | | | | | |
| Workpiece diameter | mm | 75 | 150 | 200 | 400 | 400 | 500 |
| Material removal rate | cm ³ /min | 540 | 540 | 864 | 1,080 | 1,080 | 1,584 |
| Depth of cut | mm | 5 | 5 | 8 | 10 | 10 | 12 |
| Cutting speed | m/min | 240 | 240 | 240 | 240 | 240 | 240 |
| Feed | mm/rpm | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.55 |
| High-performance drilling (Ck45) | | | | | | | |
| Tool diameter | mm | 55 | 55 | 70 | 105 | 105 | 105 |
| Spindle speed | rpm | 750 | 750 | 609 | 242 | 242 | 242 |
| Cutting speed | m/min | 130 | 130 | 134 | 80 | 80 | 80 |
| Feed | mm/rpm | 0.18 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

TOP DYNAMICS DUE TO INTEGRATED SPINDLE DRIVES



| | CTX beta 800 TC | | CTX beta 1250 TC | | CTX beta 1250 TC 4A | | CTX beta 2000 TC | | CTX gamma 1250 TC | | CTX gamma 2000 TC | | CTX gamma 3000 TC | |
|--|--------------------|----|---------------------|----|------------------------|----|---------------------|----|----------------------|----|----------------------|----|----------------------|----|
| | HS | GS | HS | GS | HS | GS | HS | GS | HS | GS | HS | GS | HS | GS |
| ISM 52 6,000 rpm 14.5/12.5 kW 200/170 Nm 51 (65) mm 140h5 | | ◦ | | ◦ | | | | | | | | | | |
| ISM 76 5,000 rpm 32/25 kW 360/280 Nm 67 (77) mm 170h5 | • | | • | ◦ | • | • | • | ◦ | | ◦ | | ◦ | | |
| ISM 102 4,000 rpm 40/33 kW 700/580 Nm 95 (104) mm 220h5 | ◦ | | ◦ | | ◦* | ◦* | ◦ | ◦ | • | ◦ | • | ◦ | | ◦ |
| ISM 102 Plus 2,500 rpm 52/40 kW 2,200/1,700 Nm 95 (104) mm 220h5 | | | | | | | | | ◦ | ◦ | ◦ | ◦ | | ◦ |
| ISM 127 2,500 rpm 52/40 kW 2,200/1,700 Nm 125 (127) A15 | | | | | | | | | ◦ | ◦ | ◦ | ◦ | • | ◦ |
| ISM 127 Plus 2,000 rpm 59/50 kW 4,000/3,400 Nm 125 (127) A15 | | | | | | | | | ◦ | ◦ | ◦ | ◦ | | ◦ |

• Standard • Option * other performance data (see page 40)

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TURN & MILL

Complete machining with B-axis with $\pm 120^\circ$ swivel range*

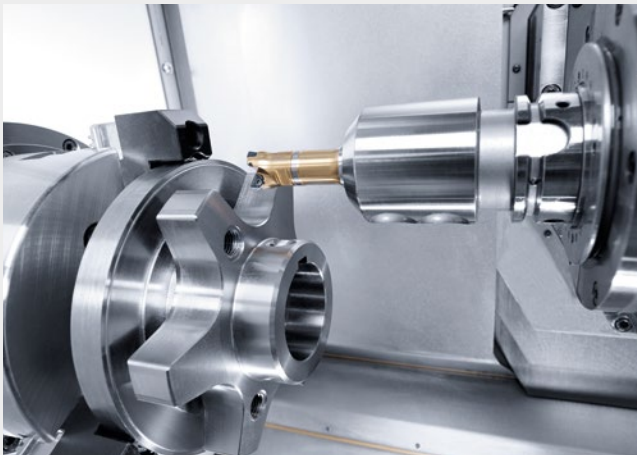
*CTX beta 800 TC / CTX beta 1250 TC 4A: $\pm 110^\circ$ swivel range

HIGHLIGHTS

- + 5-axis simultaneous machining due to technology cycle for 5-axis interpolation on the main and counter spindle (optional)
- + 0.001° resolution of the direct measuring system in the B-axis for best surfaces during 5-axis machining
- + Top dynamics thanks to 100 rpm swivel speed of the B-axis*
- + Optional as High-Speed version with 20,000 rpm

*CTX beta 800/1250 TC / 1250 TC 4A: 70 rpm swivel speed

| | | CTX beta TC Standard spindle | CTX gamma TC Standard spindle | CTX beta / gamma TC High-speed spindle |
|---|----------------------|--------------------------------------|-------------------------------------|---|
| High-performance milling (Ck45) | | 12,000 rpm 22.5/19 kW 120/85 Nm | 12,000 rpm 36/27 kW 220/160 Nm | 20,000 rpm 22.5/19 kW 120/85 Nm |
| Material removal rate | cm ³ /min | 530 | 592 | 530 |
| Spindle speed | rpm | 1,768 | 1,300 | 1,768 |
| Power | kW | 18.8 | 25 | 18.8 |
| Torque | Nm | 101 | 186 | 101 |
| Feed | mm/tooth | 0.2 | 0.2 | 0.2 |
| Depth/width of cut | mm | 10/30 | 13/35 | 10/30 |
| Cutting speed | m/min | 350 | 255 | 350 |
| Number of teeth | | 5 | 5 | 5 |
| Milling diameter | mm | 63 | 63 | 63 |
| Spec. cutting force | N/mm ² | 1,910 | 1,920 | 1,910 |
| High-performance drilling (Ck45) | | | | |
| Material removal rate | cm ³ /min | 92 | 295 | 16 |
| Spindle speed | rpm | 4,570 | 2,030 | 16,970 |
| Feed | m/min | 450 | 360 | 2,037 |
| Tapping (Ck45) | | | | |
| Thread size | mm | M20 × 2.5 | M27 × 2 | M20 × 2.5 |
| Spindle speed | rpm | 606 | 295 | 606 |



LOWEST TOOL COSTS

- + Usage of standard tools
- + Tools usable for machining on main and counter spindle
- + Usage of less expensive milling tools thanks to DirectDrive B-axis



DirectDrive FOR UP TO 100rpm RAPID TRAVERSE

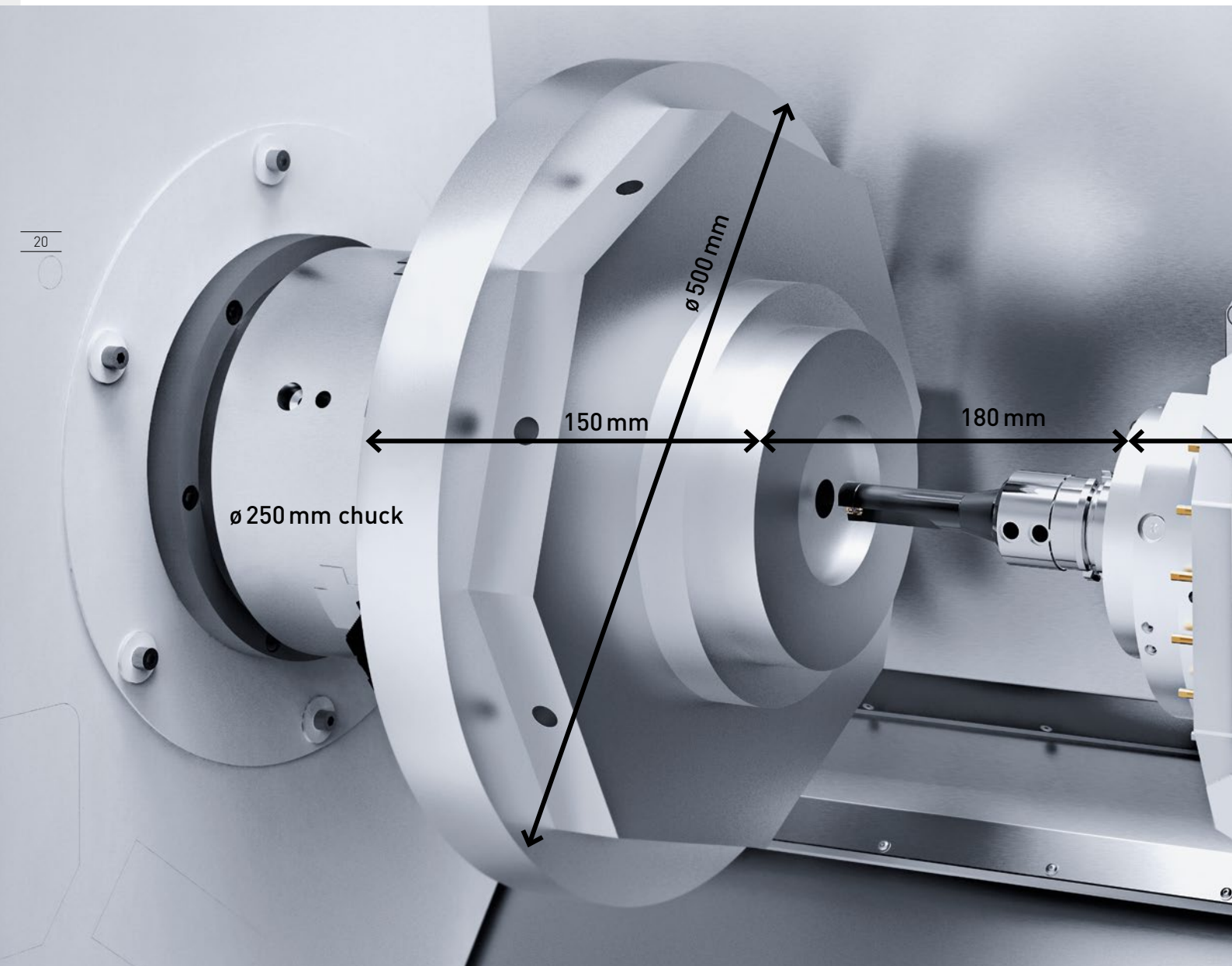
- + B-axis with DirectDrive for top dynamics and 50m/min rapid traverse speed
- + ±120° swivel range of the B-axis*
- + 6,000Nm holding torque

*CTX beta 800 TC / 1250 TC 4A: 110° swivel range

TURN & MILL

Optimum usage of the machining compartment – thanks to ultra-compact compactMASTER

- + Space gain of 170 mm with the CTX beta TC and 70 mm with the CTX gamma TC (compared to 1st generation)
- + Highest milling performance thanks to 120 Nm/220 Nm torque (CTX beta/gamma TC)
- + Up to 20,000 rpm with optional high-speed spindle

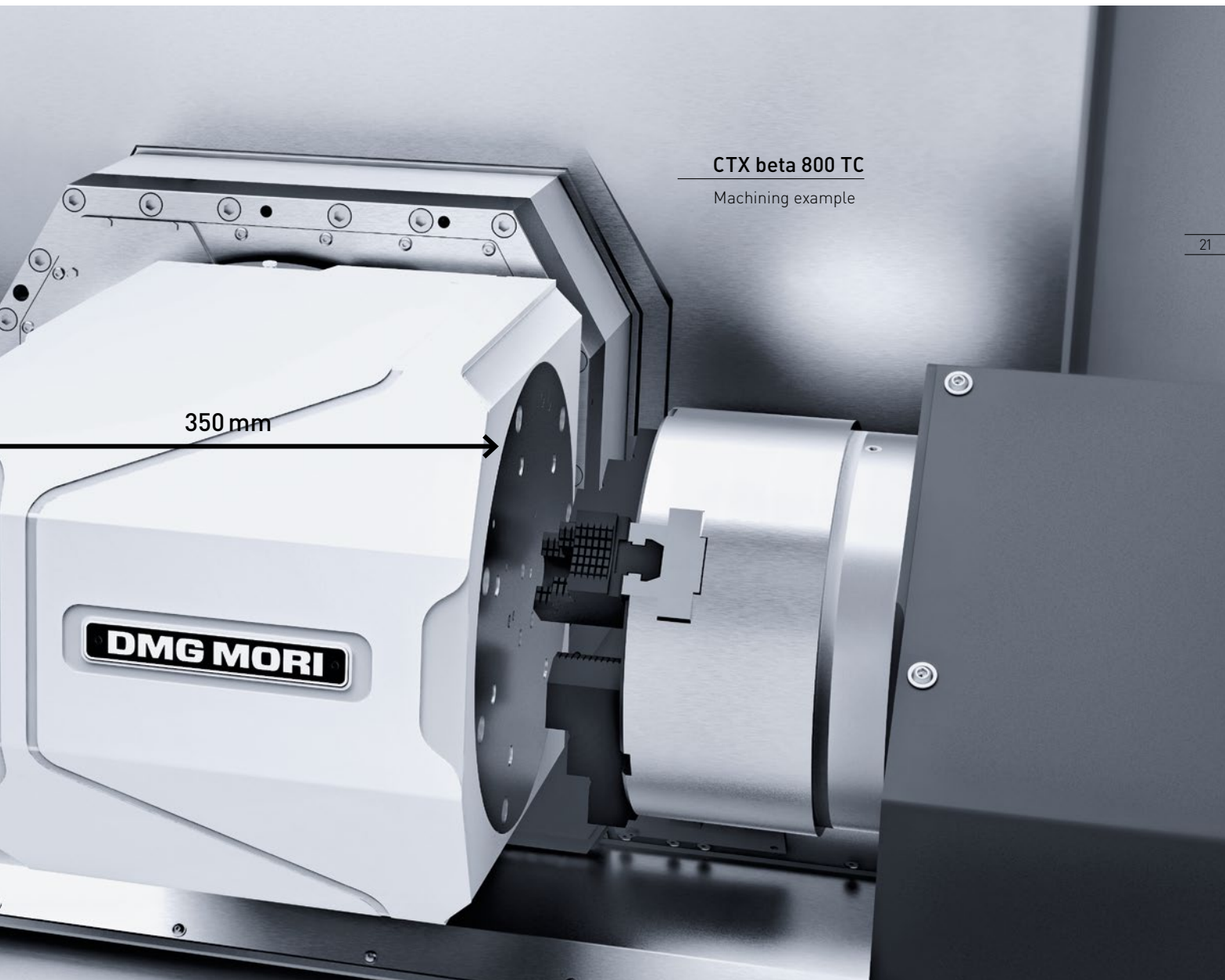


CTX beta TC: compactMASTER size 1

- + As standard for all CTX beta TC machines
- + Drill workpieces up to $\varnothing 220/230/300$ mm up to rotation centre (CTX beta 800/1250/2000 TC)
- + Drill workpieces up to $\varnothing 150/150/200$ mm vertically (CTX beta 800/1250/2000 TC)

CTX gamma TC: compactMASTER size 2

- + As standard for all CTX gamma TC machines
- + Drill workpieces up to $\varnothing 450$ to the center line
- + Completely drill workpieces up to $\varnothing 300$ mm vertically



CTX beta 800 TC

Machining example

Minimum setup time thanks to large tool magazines with up to 180 stations

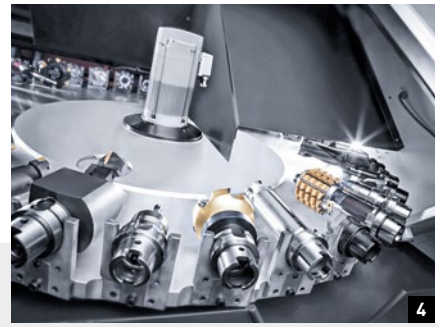


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FLEXIBLE TOOL HANDLING FOR COMPLEX MACHINING

- + As standard with 24- /36-station disk magazine (CTX beta/gamma TC)
- + Chain magazines with up to 180 tool stations
- + Tools up to $\varnothing 140$ mm and 550 mm length for deep hole drilling
- + Setup of tools through the magazine door simultaneously to the machining process possible
- + Can be flexibly used for HSK-A63/HSK-T63/Capto C6 or HSK-A100/HSK-T100/Capto C8 holders*
- + Low downtimes by using sister tools
- + Shortest tool change times from 1.2 sec.
- + Shorter idle times thanks to automatic sorting of the tools in the magazine, with the optional tool sorting cycle

*HSK-A100 and Capto C8 available for CTX gamma TC-series



1: Tool chain magazine for up to 180 tools 2: Tool loading station with optimum accessibility from the front 3: Additional magazine for 6 oversized tools up to 700 mm length or ø200 mm (optional for all CTX gamma TC machines) 4: Disk magazine with 36 stations

| | | CTX beta 800 TC | CTX beta 1250 TC | CTX beta 1250 TC 4A CTX beta 2000 TC | CTX gamma TC | |
|---------------------------------|----|-------------------|-------------------|---|-------------------|---------------------|
| Disk magazine tool data | | | | | | |
| Tool holder | | HSK-A63/Capto C6* | HSK-A63/Capto C6* | HSK-A63/Capto C6* | HSK-A63/Capto C6* | |
| Max. Tool diameter | mm | ø 125 | ø 125 | ø 125 | ø 140 | |
| Max. Tool length | mm | 300 | 300 | 300 | 500 | |
| Max. Weight per tool | kg | 7 | 7 | 7 | 12 | CTX gamma TC |
| Chain magazine tool data | | | | | | |
| Tool holder | | HSK-A63/Capto C6* | HSK-A63/Capto C6* | HSK-A63/Capto C6* | HSK-A63/Capto C6* | HSK-A100*/Capto C8* |
| Max. Tool diameter | mm | ø 120 | ø 120 | ø 120/140** | ø 140 | ø 140 |
| Max. Tool length | mm | 300 | 400 | 400 | 550 | 550 |
| Max. Weight per tool | kg | 12 | 12 | 12 | 15 | 25 |

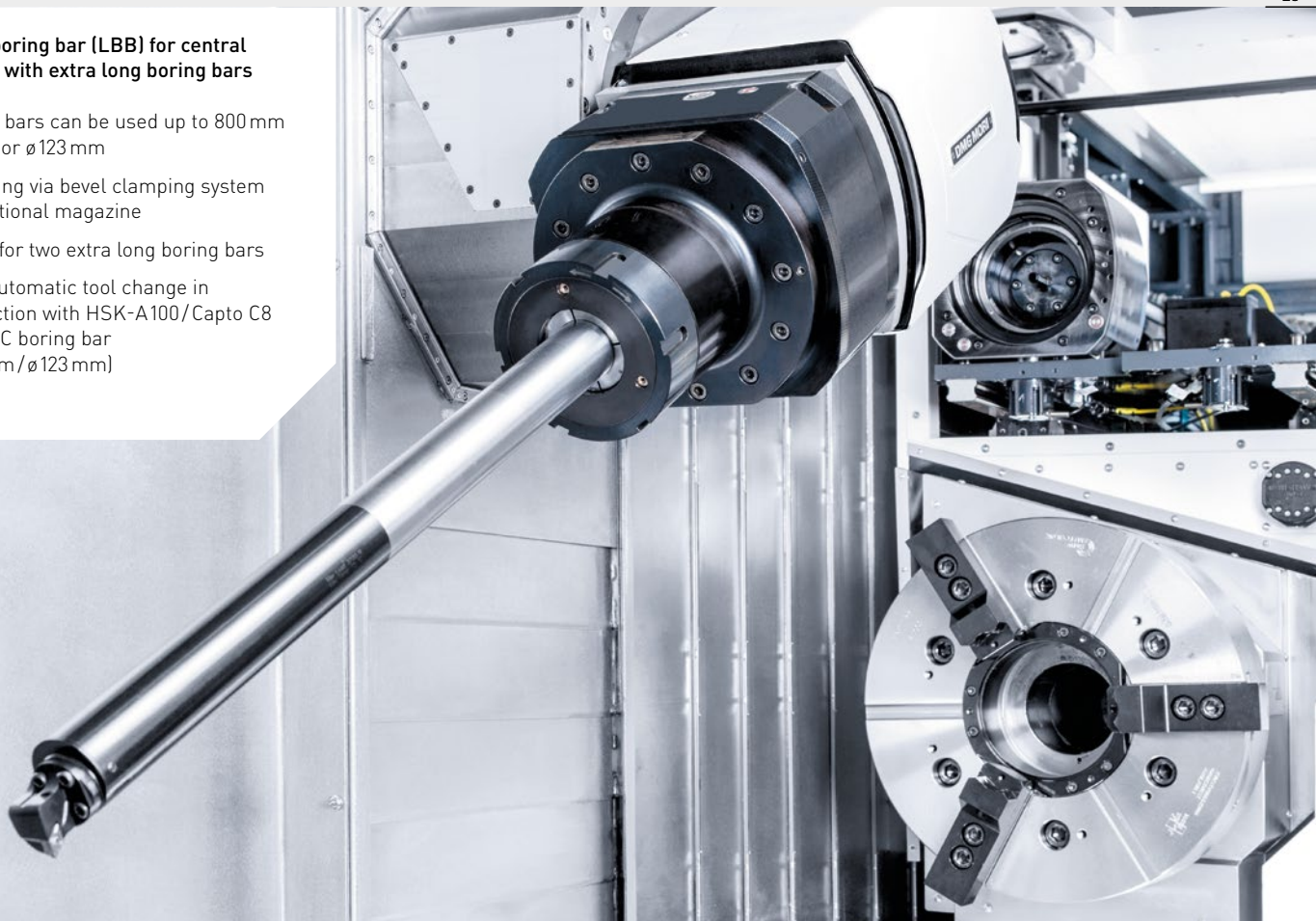
* Option ** ø 120 mm: CTX beta 1250 TC 4A / ø 140 mm: CTX beta 2000 TC

CTX gamma 3000 TC

Long boring bar – borings up to 800 mm

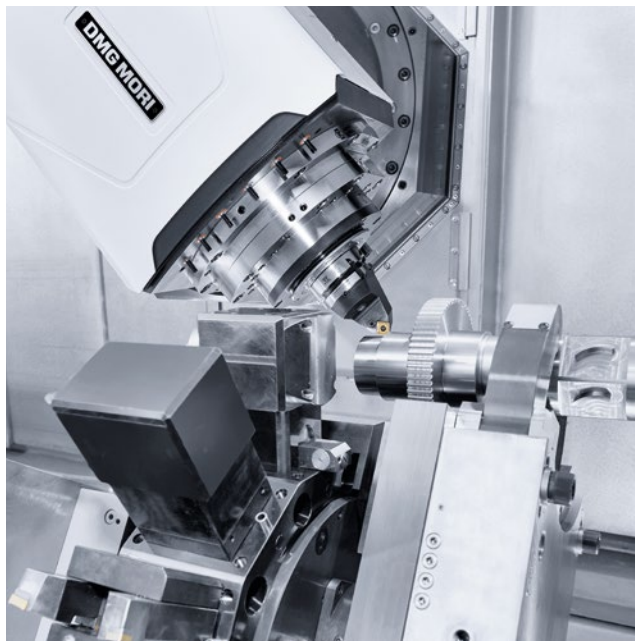
Long boring bar (LBB) for central boring with extra long boring bars

- + Boring bars can be used up to 800 mm length or ø123 mm
- + Clamping via bevel clamping system in additional magazine
- + Space for two extra long boring bars
- + Fully automatic tool change in connection with HSK-A100/Capto C8 and ATC boring bar (530 mm / ø123 mm)



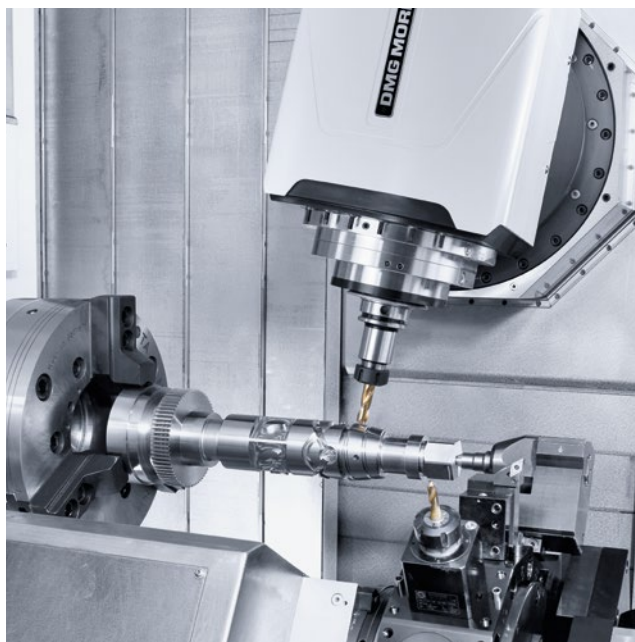
CTX beta 1250 TC 4A/CTX gamma TC

Maximum productivity due to parallel machining with two tool carriers



STEADY REST FOR TURRET*

- + Use of a hydraulically operated steady rest for supporting long and slim components
- + Workpieces up to $\varnothing 165$ mm clamping diameter
- + Steady rest for turret possible on all turrets
- + Technology cycle for simple selection of steady rest via dialog programming from the tool store; the cycle enables the startup as well as free travel of the steady rest



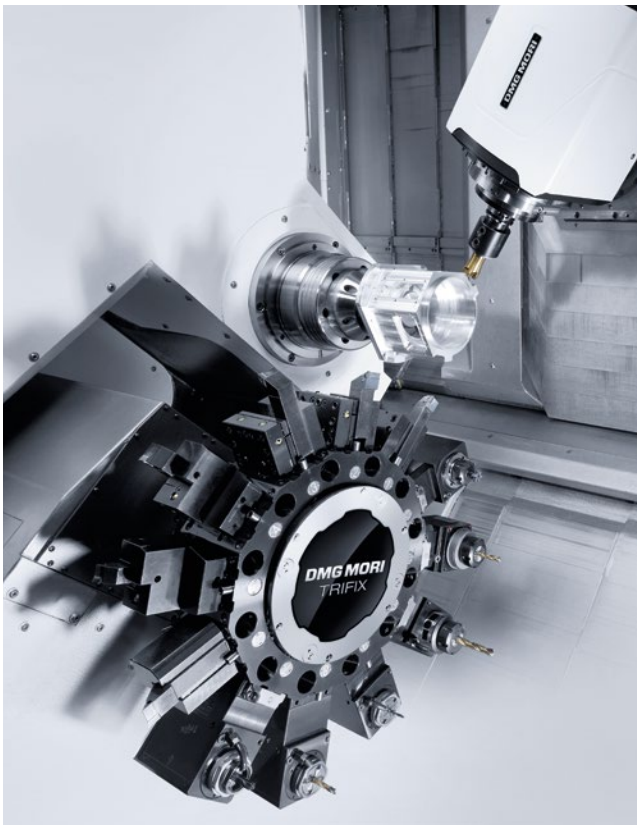
TAILSTOCK FOR TURRET*

- + Usage of a centring pin mounted on the turret
- + Application for fixed or spring-loaded centring pins
- + Technology cycle for simple selection of centring pin from the tool store

*Option

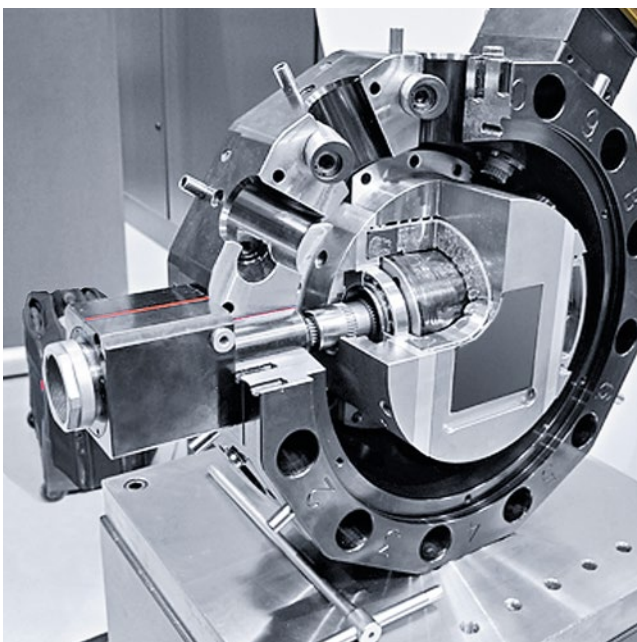


TRIFIX® quick-change system



TRIFIX® – FAST AND PRECISE SETTING WITH VDI COMPATIBILITY

- + As standard for all star turrets
- + <30 sec. tool setup time due to VDI with TRIFIX®
- + <6 µm repeatability (same tool, same position)
- + <10 µm positioning accuracy from one station to the next
- + Fully aligned driven tools



DirectDrive TURRET* WITH 10,000 rpm, FOR OPTIMUM MATERIAL REMOVAL RATE

- + Low-wear DirectDrive with low heat generation thanks to the elimination of the transmission
- + Runs more quietly thanks to the gear-free drive
- + Higher speed, performance and torque compared to conventional drives: 12-station VDI 40 turret with 10,000 rpm, 14.2 kW and 34 Nm
- + Top cutting performance with up to 136 Nm torque due to compact design of the turret and tools with gear reduction ratio up to 4 : 1

* Option

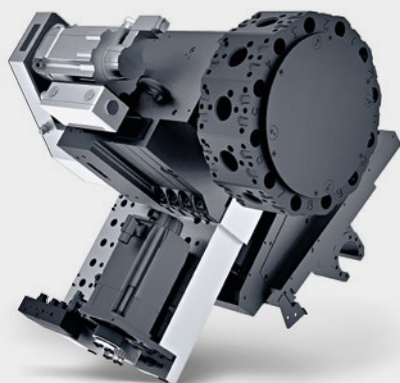
CTX beta 1250 TC 4A/CTX gamma TC


Production turning – turret up to 10,000 rpm or 36 Nm for highest material removal rate

| | | CTX beta 1250 TC 4A | CTX beta 1250 TC 4A DirectDrive turret | CTX gamma TC |
|--|----------------------|--|--|--|
| High-performance milling (Ck45) | | 12×VDI 40 (16×VDI 30) 4,000 rpm 10/8 kW 36/32 Nm | 12×VDI 40 10,000 rpm 14.2/10.9 kW 34/26 Nm | 12×VDI 40 4,000 rpm 10/8 kW 28/22 Nm |
| Tool drive | | 1:1 | 1:1 | 1:1 |
| Material removal rate | cm ³ /min | 152 | 267 | 153 |
| Spindle speed | rpm | 2,546 | 5,570 | 3,183 |
| Power | kW | 7.18 | 12.57 | 7.18 |
| Torque | Nm | 26.9 | 21.56 | 21.56 |
| Feed | mm/tooth | 0.15 | 0.15 | 0.15 |
| Depth/width of cut | mm | 4/25 | 4/20 | 4/20 |
| Cutting speed | m/min | 200 | 350 | 200 |
| Number of teeth | | 4 | 4 | 4 |
| Milling diameter | mm | 25 | 20 | 20 |
| Spec. cutting force | N/mm ² | 1,910 | 1,910 | 1,910 |
| Tapping (Ck45) | | | | |
| Thread size | mm | M20×1.5 | M20×1.5 | M16×1.5 |
| Spindle speed | rpm | 318 | 318 | 397 |

| | CTX beta 1250 TC 4A | CTX gamma TC |
|--|---------------------|--------------|
| Performance data | | |
| Power (40/100% DC), torque (40/100% DC) | | |
| VDI 40, 12-station star turret with TRIFIX® 12×4,000 rpm 10/5 kW, 36/28 Nm | • | – |
| VDI 30, 16-station star turret with TRIFIX® 12×4,000 rpm 10/5 kW, 32/28 Nm | ◦ | – |
| VDI 40, 12-station (VDI 30, 16-station) star turret with TRIFIX® 12×4,000 rpm 10/8 kW, 28/22 Nm | – | ◦ |
| VDI 40, 12-station star turret with TRIFIX® DirectDrive, 12×10,000 rpm 14.2/10.9 kW, 34/26 Nm | ◦ | – |
| VDI 30, 16-station star turret with TRIFIX® DirectDrive, 16×10,000 rpm 13.4/10.9 kW, 32/26 Nm | ◦ | – |

• Standard ◦ Option – not available





PRODUCTION TURNING WITH SECOND TOOL CARRIER

- + Lower turret with up to 16 driven tools
- + Shorter tooling times with TRIFIX® precision interface
- + DirectDrive* with 10,000 rpm for highest surface quality
- + Optional with Y-axis ± 40 mm**

*Available for CTX beta 1250 TC 4A

** Available for CTX beta 1250 TC 4A with DirectDrive turret

AUTOMATION CTX beta TC

Robo2Go 2nd generation - Flexible automation, programmed easily

- + Three versions for all demands: **Payload robot 10/20/35 kg**
- + Handling of **shaft parts** $\varnothing 25 - 150$ mm and **chuck parts** $\varnothing 25 - 170$ mm as standard
- + Modular gripper set: **Outside** and **Inside gripping** as standard
- + Customer-specific workpiece trays possible
- + **Stacking of workpieces**
- + **Optimal accessibility** to the machine
- + Parallel **use with bar loader** possible
- + Laser scanner for monitoring the fence-free safety zone
- + **Flexible setup** at multiple turning machines
- + Available for CTX beta 800 TC, CTX beta 1250 TC and CTX beta 1250 TC 4A*

*With optional chain magazine



Shaft parts tray



Stacking magazine



MACHINE, AUTOMATION AND CONTROL FROM A SINGLE SOURCE!

- + In the machine control **integrated operation via CELOS APP**
- + **New control** for dialogue-guided, intuitive operability
- + **No robot programming knowledges necessary**
- + **Multijob function:** Various jobs on one workpiece tray. Ideal for small and medium batch sizes
- + Creation of a process based on **predefined program modules**
- + Easy creation of individual workpiece trays
- + Home function for easy retraction and setup of the system



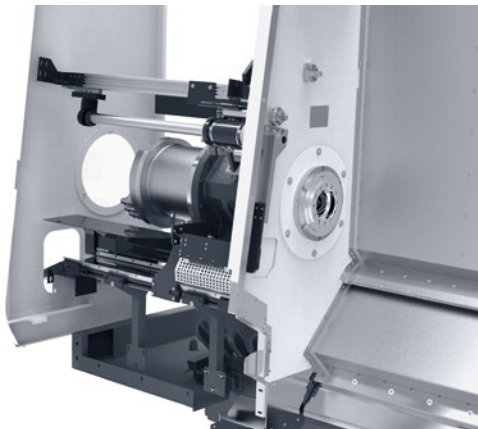
Intelligent workpiece handling for maximum productivity



Illustration: Design study

GX 60 T – FLEXIBLE AND EFFICIENT GANTRY LOADER

- + Loading and unloading of workpieces up to 60 kg
- + Integration into the machine control for easy programming and setup
- + Modular workpiece storage for chuck parts and shaft parts
- + Easy maintenance through optimized design
- + Available for all CTX gamma TC-machines



COMPLETE PACKAGE FOR BAR MACHINING

- + Workpieces up to $\varnothing 102 \times 600$ mm / 10 kg
- + Preparation for bar feed or bar loading magazine
- + Automatic workpiece pickup device for workpieces up to 6 kg and up to 200 mm
- + Conveyor belt for removal of workpieces from the machine
- + Simple programming via CELOS
- + Available for CTX beta 800/1250 TC/1250 TC 4A



CUSTOMER-SPECIFIC SOLUTIONS FOR YOUR WORKPIECE

- + Holistic solution: From planning and simulation to the handover of the ready-to-operate production line
- + Turnkey solution
- + Integration of related peripherals
- + Integrated additional functions: washing, measuring, engraving

CTX TC

Technological competence in all sectors



Mechanical engineering: Sprocket

| | |
|----------------------|---|
| Machine | CTX beta 800 TC |
| Material | Ck45 |
| Workpiece dimensions | ø 180 × 80 mm |
| Machining time | 11.5 min. |
| Highlight | High-performance turning, milling, drilling |



Fluid / Hydraulics: Connecting flange

| | |
|----------------------|----------------------------|
| Machine | CTX beta 800 TC |
| Material | Ck45 |
| Workpiece dimensions | ø 120 × 120 mm |
| Machining time | 11.4 min. |
| Highlight | 6-sided complete machining |



Aerospace: Blade

| | |
|----------------------|-------------------------------|
| Machine | CTX beta 800 TC |
| Material | 1.4021 |
| Workpiece dimensions | ø 61 × 260 mm |
| Machining time | 29 min. |
| Highlight | 5-axis simultaneous machining |



Mechanical engineering: Rotor shaft

| | |
|----------------------|----------------------------|
| Machine | CTX beta 1250 TC |
| Material | Ck45 |
| Workpiece dimensions | ø 120 × 300 mm |
| Machining time | 19.2 min. |
| Highlight | 6-sided complete machining |



Energy: Clamping piece

| | |
|----------------------|--|
| Machine | CTX beta 800 TC |
| Material | GK-CuZn38Al (Copper-zinc alloy casting) |
| Workpiece dimensions | 62 × 45 mm |
| Machining time | 7.4 min. |
| Highlight | Pure milling, bar machining |



Mechanical engineering: Gear hollow shaft

| | |
|----------------------|------------------|
| Machine | CTX beta 1250 TC |
| Material | Ck45 |
| Workpiece dimensions | ∅ 130 × 300 mm |
| Machining time | 29 min. |
| Highlight | gearSKIVING |



Aerospace: Adjusting spindle

| | |
|----------------------|-----------------------|
| Machine | CTX gamma 1250 TC |
| Material | Ck45 |
| Workpiece dimensions | ∅ 80 × 315 mm |
| Machining time | 19.5 min. |
| Highlight | Multi-Threading Cycle |



Aerospace: Connecting piece

| | |
|----------------------|--|
| Machine | CTX gamma 2000 TC |
| Material | Titanium |
| Workpiece dimensions | ∅ 250 × 125 mm |
| Machining time | 8 hours |
| Highlight | 5-axis simultaneous machining High Performance Turning & Milling Profit Turning (Esprit) |



Power engineering: Guide vane

| | |
|----------------------|-------------------------------|
| Machine | CTX gamma 2000 TC |
| Material | X13Cr12Ni2W1V-5 (steel) |
| Workpiece dimensions | ∅ 110 × 770 mm |
| Machining time | 180 min. |
| Highlight | 5-axis simultaneous machining |

CTX TC

CELOS – From the idea to the finished product



SIEMENS with ShopTurn 3G

- + Dialog-guided programming with graphical support
- + 3D graphics including real-time simulation
- + New, clear screen design
- + Ample diagnosis for all drives

APP Selector: Central access to all available applications

ERGOline CONTROL WITH 21.5" MULTI-TOUCH SCREEN AND SIEMENS

Simple

Simple machine operation for all new high-tech machines from DMG MORI.

Consistent

Consistent administration, documentation and visualisation of order, process and machine data.

Compatible

Compatible with PPS and ERP systems.
 Can be networked with CAD/CAM products.
 Open to trendsetting CELOS APP extensions.



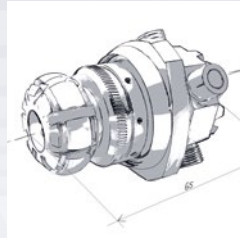
DMG MORI process chain – from the idea to the finished workpiece



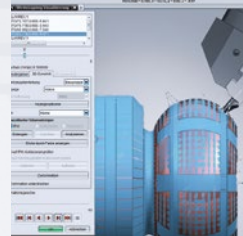
CAD/CAM PROGRAMMING WITH SIEMENS NX CAM OR ESPRIT

- + Programming for single and multi-channel turning centres with main and counter spindle
- + Milling operations with the C-, Y- and B-axis, 2D, 3D and 5-axis simultaneous machining
- + Rotation routines for roughing, finishing, piercing, tapping and drilling
- + Multi-channel synchronisation
- + Program structure output (post-processor)

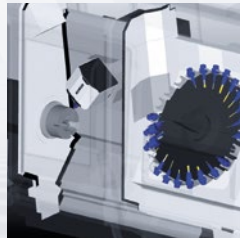
Real representation of the machining compartment with the DMG MORI Virtual Machine



Idea
from the idea to the CAD model



CAM programming
with NX CAM from SIEMENS or ESPRIT



1 : 1 Simulation with the DMG MORI Virtual Machine



Production with DMG MORI machines

Simulation with DMG MORI Virtual Machine

- + Highest process reliability with collision and machining compartment control
- + Authentic machine model with exact work room representation
- + Comprehensive control of all program and production sequences in advance 1 : 1
- + Simulation of handwritten programs
- + ShopFloor programming
- + Real determination of job times due to integration of the PLC
- + Significant reduction of the setup and tooling time
- + Efficient production startup due to optimal preparation

DMG MORI TECHNOLOGY CYCLES

Exclusive technology cycles – Complex machining easily realised

DMG MORI exclusive technology cycles are genuine assistive systems for shopfloor programming that help boost productivity, improve safety and enhance the capability of machines.

- + Clear programming structure
- + Up to 60 % faster programming
- + Error reduction thanks to dialog-guided programming
- + Technology know-how saved in the program



AVAILABLE TECHNOLOGY CYCLES FOR CTX TC MACHINES:

Handling

- + Tool sorting cycle¹
- + Tailstock for turret²
- + Steady rest for turret²
- + Counter spindle tip³
- + Control of program status
- + Multitool
- + ATC 2.0 (Application Tuning Cycle)
- + Alternating speed
- + Retraction Cycle

¹ only with tool magazine

² only with lower turret

³ only in conjunction with counter spindle

Machining

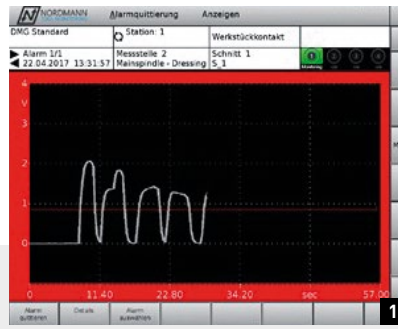
- + 5-axis simultaneous machining
- + Multi threading 2.0
- + Polygon/oval turning
- + Gear Hobbing
- + gearSKIVING 2.0
- + DMG MORI gearMILL
- + Grinding
- + Interpolation turning
- + Eccentric machining
- + Y-Axis Parting
- + Keyway Broaching
- + crownHOBBING

Monitoring

- + Runtime monitor
- + MPC 2.0 – Machine Protection Control
- + Easy Tool Monitoring 2.0

Measuring

- + 3D quickSET



1: Acoustic emission sensor: Monitoring of the dressing process 2: Tool technology: Standardised grinding wheel holder with IKZ
 3: In-process measurement: Measurement repeat accuracy up to 0.8–1.0 µm (Marposs Micromar 8)

From 3 to 1: Technology integration grinding on Turn & Mill machines



COMPLETE MACHINING IN A NEW DIMENSION

- + Turning, milling and grinding on one machine
- + Higher shape and positional tolerances due to one single setup
- + Best possible shape and surface quality:
 - Ra: <math>< 0.2 \mu\text{m}</math>
 - Rz: <math>< 2.0 \mu\text{m}</math>
 - Roundness: <math>< 3 \mu\text{m}</math>
 - Quality 5 for $\varnothing > 30 \text{ mm}$
- + Dressing and grinding without air cuts thanks to use of acoustic emission sensor
- + Dialog-based dressing and grinding cycles for internal, external and face grinding (centric)
- + In-process measurement of the workpiece diameter due to measuring calliper on the steady rest slide

DRESSING AND GRINDING CYCLES

- + Intuitive, dialogue-guided programming
- + External and internal round grinding and face grinding
- + Grinding with straight / conical grinding discs and cup wheels
- + Vertical and horizontal dressing
- + Dressing tools using intuitive parameterisable input screens
- + Dressing with or without acoustic emission sensor

DMG MORI TECHNOLOGY CYCLES

Flexible and efficient gearing production on complete machining centres



gearSKIVING 2.0

- + Straight and helical external or internal spur gears and splines
- + Arrow teeth with tooth offset*
- + Ball-shaped toothing by means of the mathematical transformation of the 6th virtual axis*
- + Up to 8 times faster compared to shaping with quality up to DIN 7

* CTX TC with counter spindle



GEAR HOBGING

- + Up to 50% time saving thanks to programming of gear parameters via dialog inputs
- + Straight, oblique, curved gears and worm wheels
- + Maximised tool life by shifting the milling cutter
- + Achievable quality \leq DIN 7

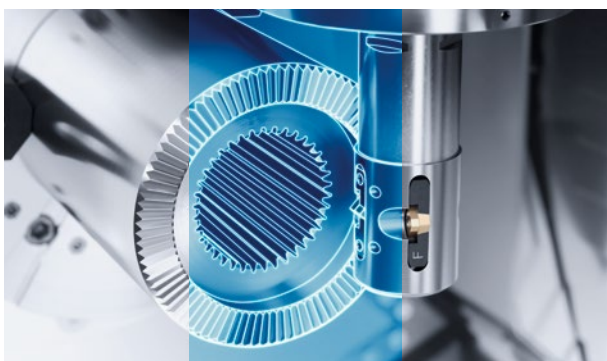


Efficient complete machining:

- + Soft and hard machining on one machine
- + Quality check during operation

DMG MORI gearMILL

- + Cost-effective gear cutting on standard machines with standard tools
- + Flexible for different gear geometries
- + Gearing quality bevel gear DIN up to 5
- + Face gear DIN up to 6
- + In-process quality checks



crownHOBGING

- + Production of hirth serrations by impact milling
- + Automatic calculation of the tool path movement
- + Position-oriented tooth pairings by determining the angular position of the toothing on the workpiece
- + Strong shortening of the process chain because no special machines are needed



5-AXIS SIMULTANEOUS MACHINING – INTELLIGENT MOVEMENT GUIDANCE FOR PERFECT SURFACES

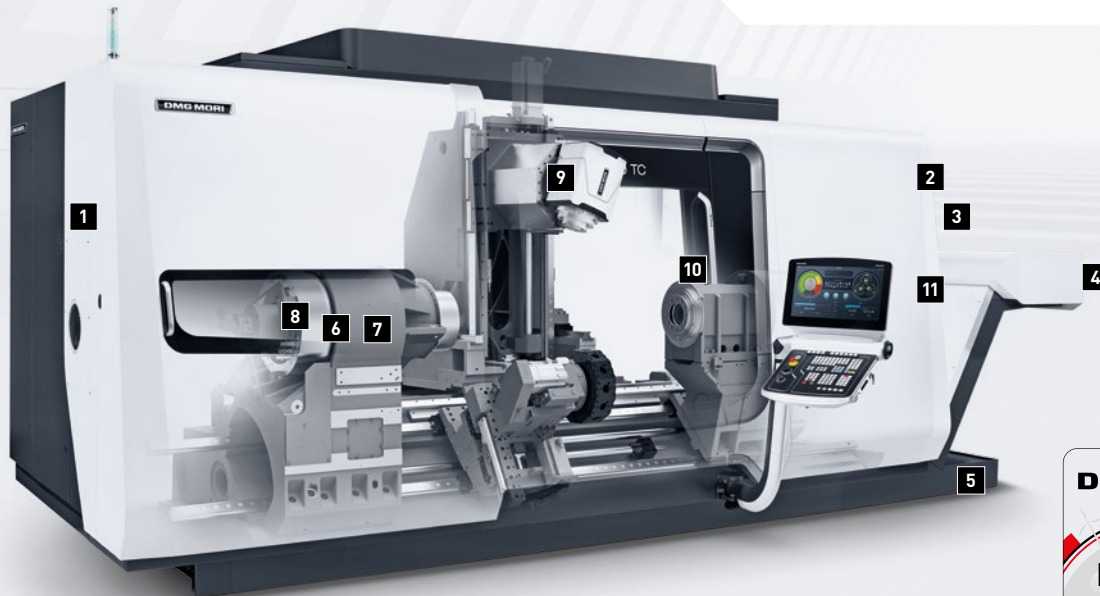
- + Free form surfaces with 5-axis interpolation on the main and counter spindles
- + Turning and milling with interpolating B-axis
- + With ATC tuning for increased machine dynamics
- + Look-ahead function for continuous processing
- + High surface quality and transitions in combination with thermal compensation

ENERGY EFFICIENCY

Up to 34 % savings due to energy efficiency measures as standard

Calculation basis for production conditions

| General information | | |
|-------------------------------------|------------|-----|
| Machine utilisation | h/day | 16 |
| Working days/year | days/p. a. | 250 |
| Percentage of production | % | 50 |
| Percentage of operational readiness | % | 40 |
| Percentage of standby | % | 10 |
| Time slices in production | | |
| Roughing | % | 25 |
| Mean output | % | 25 |
| Finishing | % | 50 |



Energy efficient measures

- 1** Frequency-controlled hydraulic aggregate
- 2** Cooling unit with precision control
- 3** Regulated switch cabinet cooler
- 4** Timed chip conveyor
- 5** Regulated cooling lubricant pump
- 6** Energetic brake energy recovery system
- 7** DirectDrive with synchronous motor
- 8** Clamping cylinder with minimum leakage
- 9** Needs-based clamping cylinder
- 10** LED workspace lighting
- 11** DMG MORI AUTOshutdown for switchoff after program end

| | Saving* [in %] | Current consumption [in kW/h] |
|---------------------|----------------|-------------------------------|
| Savings | | |
| CTX beta 800 TC | 28 | 37,103 |
| CTX beta 1250 TC | 27 | 41,333 |
| CTX beta 1250 TC 4A | 27 | 55,681 |
| CTX beta 2000 TC | 27 | 45,507 |
| CTX gamma 1250 TC | 32 | 54,566 |
| CTX gamma 2000 TC | 34 | 64,714 |
| CTX gamma 3000 TC | 30 | 76,585 |

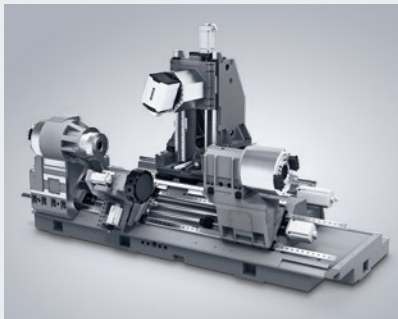
*Basis for measurement: Previous model 2010 (CTX beta 800/1250 TC: 2009; CTX beta 1250 TC 4A: 2011)

| | 40% | 60% | 80% | 100% |
|---------------------------|-----|-----|--|---|
| | | | CTX beta 800 TC 38,004 kWh/a consumption 28% saving | Comparable machine from 2009 (53,401 kWh/a) |
| | | | CTX beta 800 TC | Comparable machine (2009) |
| Energy consumption | | | 38,004 kWh/a | 53,401 kWh/a |
| Saving | | | 15,397 kWh/a -28% | - |



CTX beta 800 TC

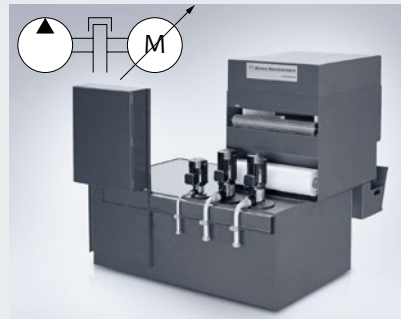
60 kVA connected load
34 kW max. spindle power
8.9 kW medium spindle power



Design: FEM-optimised design with high static and low moving masses



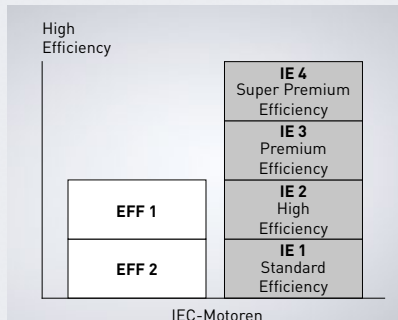
Linear guides: Low friction due to consistent use of roller bearing technology



Servo technology/frequency control:
Frequency-controlled coolant and hydraulic pumps instead of fixed displacement pumps with regulator technology



Drives: Energy recovery during the braking phases of spindles and feed drives



Motor: Use of the latest drive motors with up to 93% efficiency



Cooling: Inverter-controlled systems for demand-based cooling*

*Option

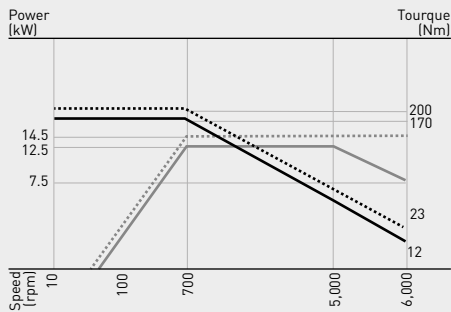
CTX TC

Performance diagrams and options

TURNING SPINDLES

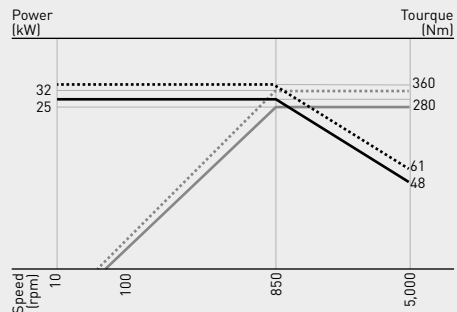
ISM 52

6,000 rpm / 14.5 kW / 200 Nm (40 % DC)



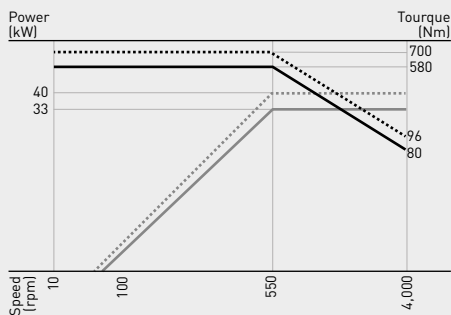
ISM 76

5,000 rpm / 32 kW / 360 Nm (40 % DC)



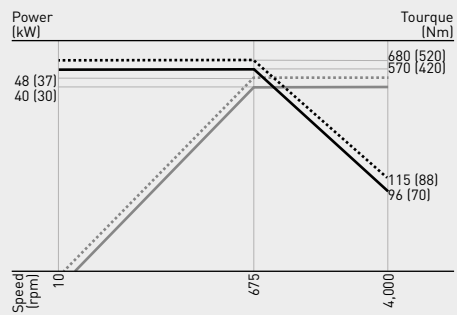
ISM 102

4,000 rpm / 40 kW / 700 Nm (40 % DC)



ISM 102 (CTX beta 1250 TC 4A)

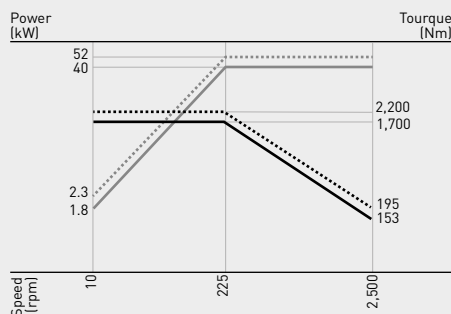
4,000 rpm / 48 kW / 680 Nm (40 % DC)



The values in brackets () relate to the counter spindle

ISM 102 PLUS / ISM 127

2,500 rpm / 52 kW / 2,200 Nm (40 % DC)



ISM 127 PLUS

2,000 rpm / 59 kW / 4,000 Nm (40 % DC)

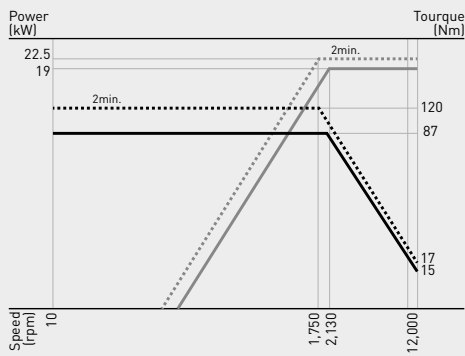


TURNING/MILLING SPINDLES

CTX beta TC

compactMASTER – Standard

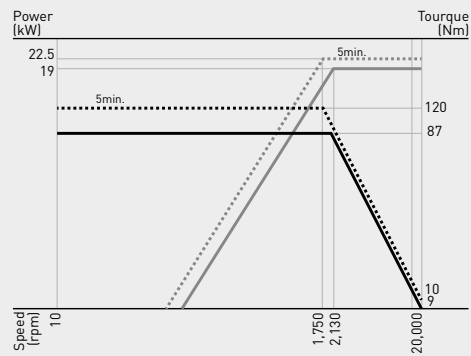
12,000 rpm / 22.5 kW / 120 Nm (40 % DC)



CTX beta / gamma TC

compactMASTER – Highspeed Option

20,000 rpm / 22.5 kW / 120 Nm (40 % DC)



CTX gamma TC

compactMASTER – Standard

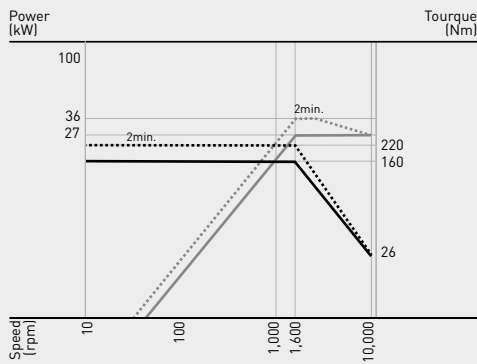
12,000 rpm / 36 kW / 220 Nm (40 % DC)



CTX gamma TC

compactMASTER – Option

10,000 rpm / 36 kW / 220 Nm (40 % DC)



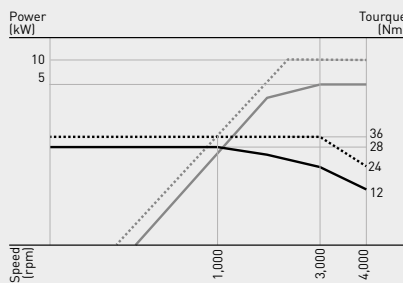
..... M [S3 40% DC] — M [S1 100% DC]
 P [S3 40% DC] — P [S1 100% DC]

CTX TC

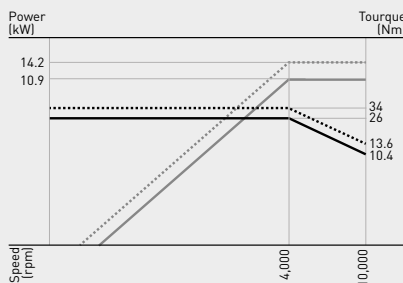
Performance diagrams and options

TURRET

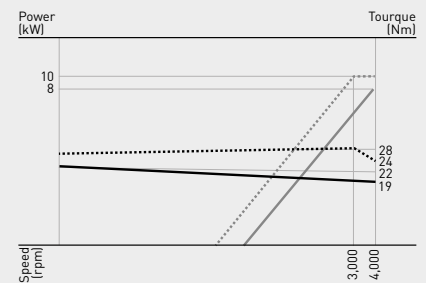
CTX beta 1250 TC 4A
Standard turret 12 × VDI 40
 4,000 rpm / 10 kW / 36 Nm (40% DC)



CTX beta 1250 TC 4A
Option DirectDrive turret 12 × VDI 40
 10,000 rpm / 14.2 kW / 34 Nm (40% DC)



CTX gamma TC
Option turret 12 × VDI 40 (16 × VDI30)*
 4,000 rpm / 10 kW / 28 Nm (40% DC)



..... M (S3 40% DC) — M (S1 100% DC)
 P (S3 40% DC) — P (S1 100% DC)

TOOL MAGAZINES

| | CTX beta 800/1250 TC | CTX beta 1250 TC 4A | CTX beta 2000 TC | CTX gamma TC |
|--|-------------------------|------------------------|------------------|--------------|
| Tool magazine version | | | | |
| Disk magazine, 24 stations (HSK-A63/Capto C6) | • | • | • | – |
| Disk magazine, 36 stations (HSK-A63/Capto C6) | – | – | – | • |
| Chain magazine, 48 stations (HSK-A63/Capto C6) | ◦ | – | ◦ | – |
| Chain magazine, 80 stations (HSK-A63/Capto C6) | ◦ | ◦ | – | ◦ |
| Chain magazine, 80 stations (HSK-A100/Capto C8)* | – | – | – | ◦ |
| Chain magazine, 100 stations (HSK-A63/Capto C6) | – | – | ◦ | – |
| Chain magazine, 120 stations (HSK-A63/Capto C6) | – | ◦ | – | ◦ |
| Chain magazine, 120 stations (HSK-A100/Capto C8)* | – | – | – | ◦ |
| Chain magazine, 180 stations (HSK-A63/HSK-A100/Capto C6/Capto C8)* | – | – | – | ◦ |
| Additional magazine for 3 oversized tools (HSK-A63/Capto C6) | – | – | ◦ | – |
| Additional magazine for 6 oversized tools (HSK-A63/HSK-A100/Capto C6/Capto C8) | – | – | – | ◦ |

• Standard ◦ Option – not available *HSK-A100/Capto C8 only in connection with optional compactMASTER (10,000rpm)

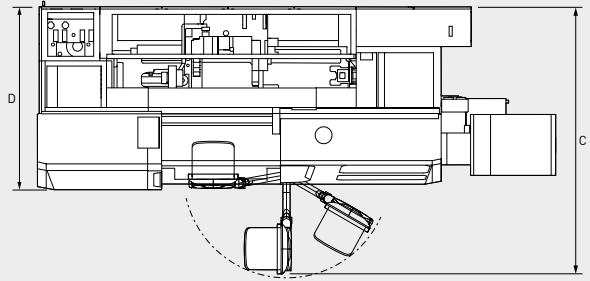
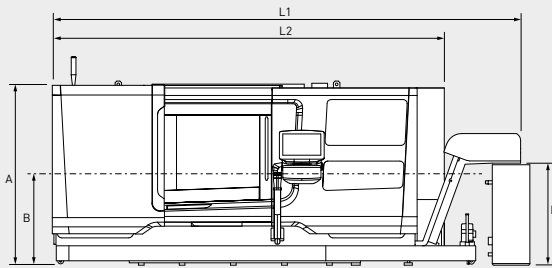
CTX TC

Floor plans

CTX beta 800/1250 TC / 1250 TC 4A | CTX gamma 1250 TC – Schematic diagram

Front view

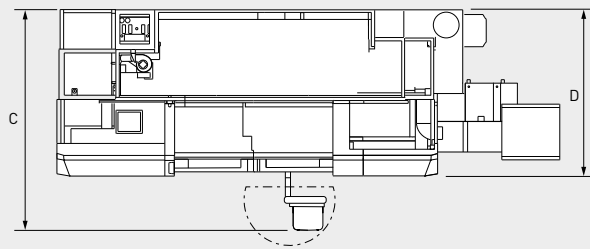
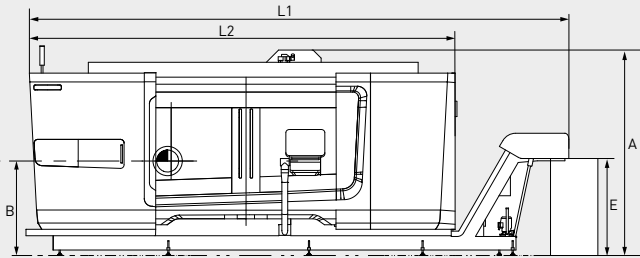
Top view



CTX beta 2000 TC | CTX gamma 2000/3000 TC – Schematic diagram

Front view

Top view



| | A | B | C | D | E | L1 | L2 |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|
| Machine dimensions | | | | | | | |
| CTX beta 800 TC | 2,247 | 1,050 | 2,910 | 2,065 | 1,269 | 4,957 | 4,100 |
| CTX beta 1250 TC | 2,247 | 1,040 | 3,061 | 2,065 | 1,269 | 5,854 | 4,900 |
| CTX beta 1250 TC 4A | 2,372 | 1,310 | 3,571 | 2,851 | 1,284 | 5,990 | 5,678 |
| CTX beta 2000 TC | 2,603 | 1,290 | 3,323 | 2,588 | 1,298 | 7,193 | 6,295 |
| CTX gamma 1250 TC | 2,805 | 1,290 | 3,627 | 2,608 | 1,234 | 7,074 | 5,577 |
| CTX gamma 2000 TC | 2,805 | 1,290 | 3,669 | 2,608 | 1,234 | 7,811 | 6,328 |
| CTX gamma 3000 TC | 2,805 | 1,290 | 3,669 | 2,608 | 1,234 | 8,840 | 8,067 |

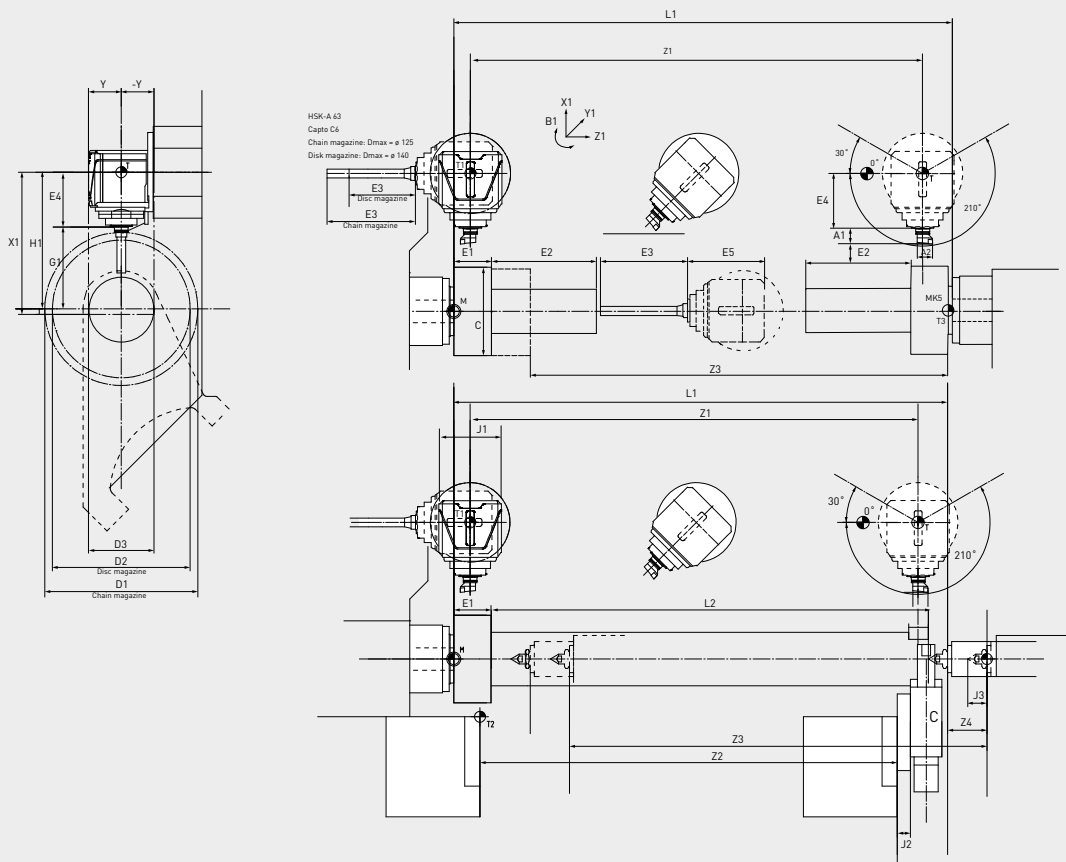
Dimensions in mm

| |
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| Highlights |
| Machine and technology |
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CTX beta TC

Machining compartment

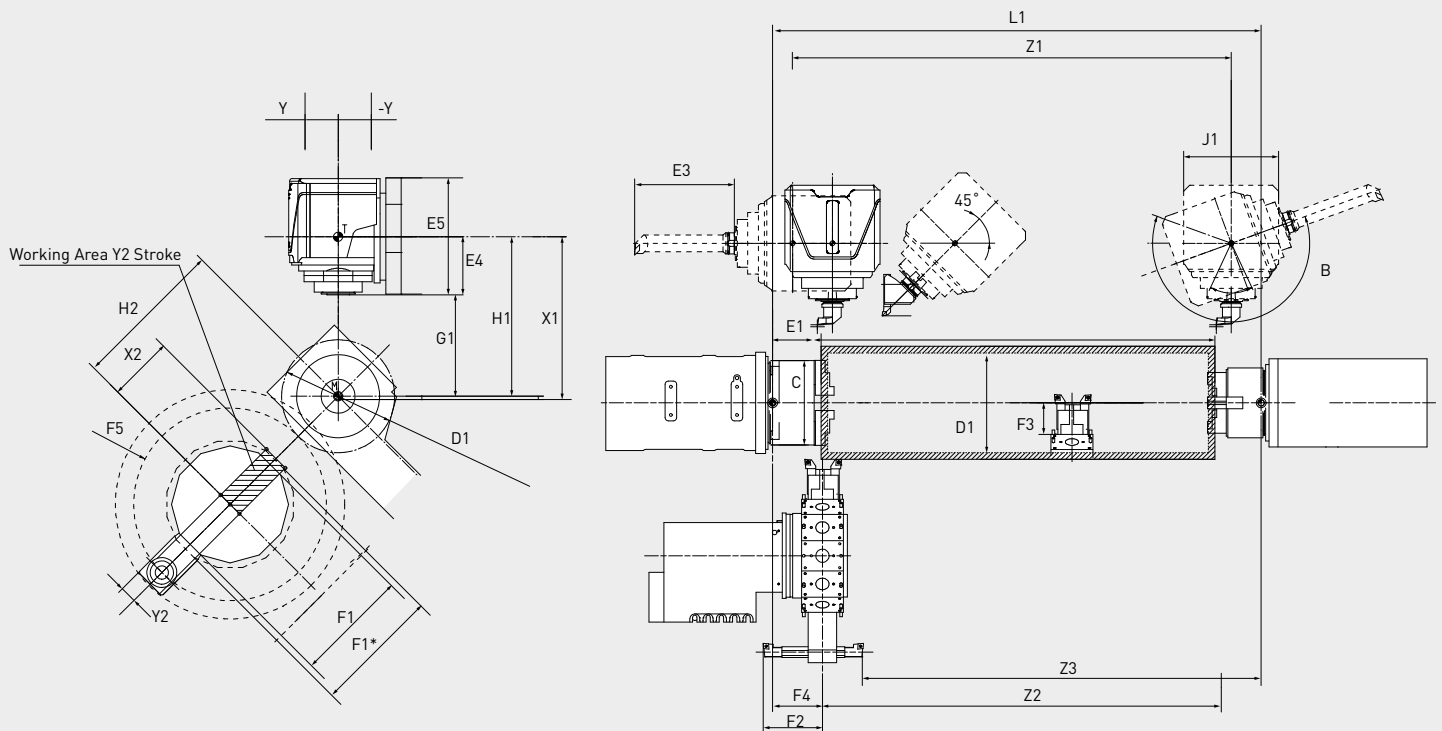
Machining compartment with one tool carrier



MACHINING COMPARTMENT DIMENSIONS

| | CTX beta 800 TC | CTX beta 1250 TC | CTX beta 2000 TC | | CTX beta 800 TC | CTX beta 1250 TC | CTX beta 2000 TC |
|----|--------------------|---------------------|---------------------|----|--------------------|---------------------|---------------------|
| A1 | 70 | 70 | 70 | H1 | 470 | 480 | 625 |
| A2 | 45 | 45 | 45 | J1 | 286 | 286 | 286 |
| B | ±110° | ±120° | ±120° | J2 | 60 | 60 | 60 |
| C | 400 | 400 | 400 | J3 | 87.5 | 87.5 | 87.5 |
| D1 | 500 | 500 | 700 | L1 | 1,020 | 1,470 | 2,260 |
| D2 | 450 | 470 | 630 | L2 | 1,078 | 1,473.5 | 2,240 |
| D3 | 220 | 230 | 300 | X1 | 480 | 490 | 650 |
| E1 | 171.5 | 171.5 | 170 | Y | ±100 | ±125 | ±150 |
| E2 | 150 | 350 | 480 | Z1 | 800 | 1,200 | 2,050 |
| E3 | 180 | 400 | 400 | Z2 | 707 | 1,095 | 1,910 |
| E4 | 175 | 175 | 175 | Z3 | 800 | 1,200 | 1,910 |
| E5 | 350 | 350 | 350 | Z4 | - | - | 180 |
| G1 | 295 | 305 | 375 | | | | |

Machining compartment with two tool carriers



MACHINING COMPARTMENT DIMENSIONS

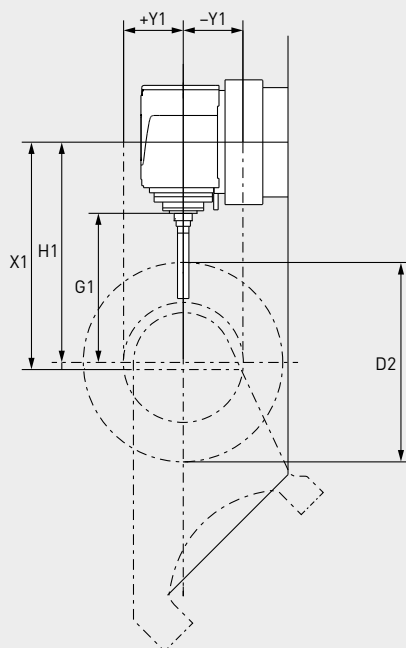
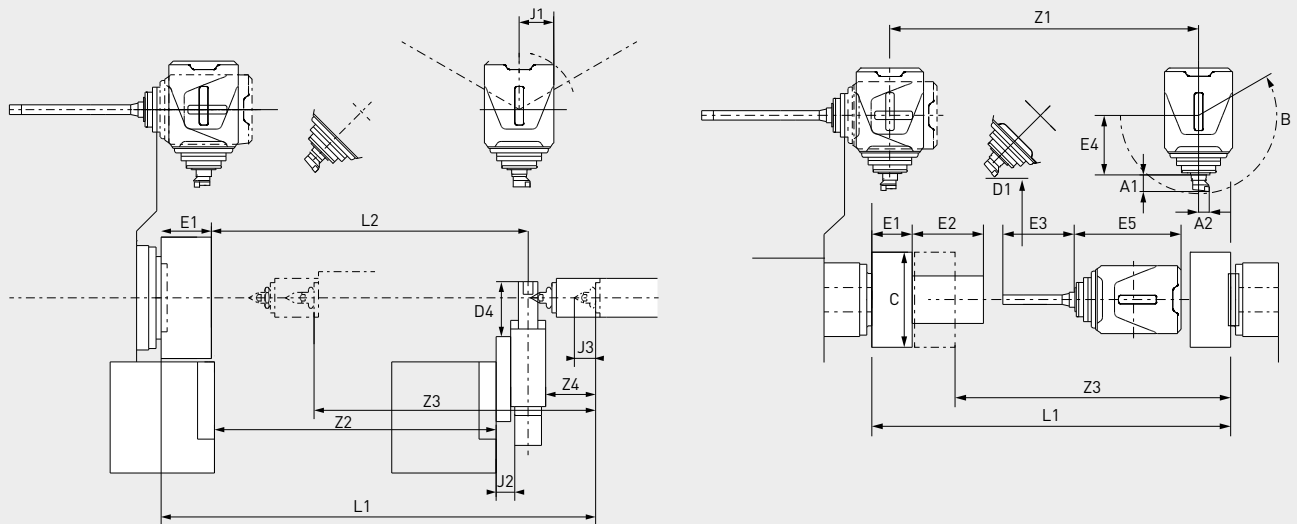
| | CTX beta 1250 TC 4A | CTX beta 1250 TC 4A | |
|----|---------------------|---------------------|-------|
| B | ±110° | G1 | 305 |
| C* | 400 | H1 | 480 |
| D1 | 340 | H2 | 460 |
| E1 | 146 | J1 | 286 |
| E2 | 1,185 | L1 | 1,470 |
| E3 | 300 | X1 | 490 |
| E4 | 175 | X2 | 195 |
| E5 | 352.5 | Y | ±100 |
| F1 | 340 [380]* | Y2** | 80 |
| F2 | max. 178 | Z1 | 1,200 |
| F3 | 95 | Z2 | 1,200 |
| F4 | 150 | Z3 | 1,200 |
| F5 | 580 | | |

* 340 mm: 12-fold turret, 380 mm: 16-fold turret

CTX gamma TC

Machining compartment

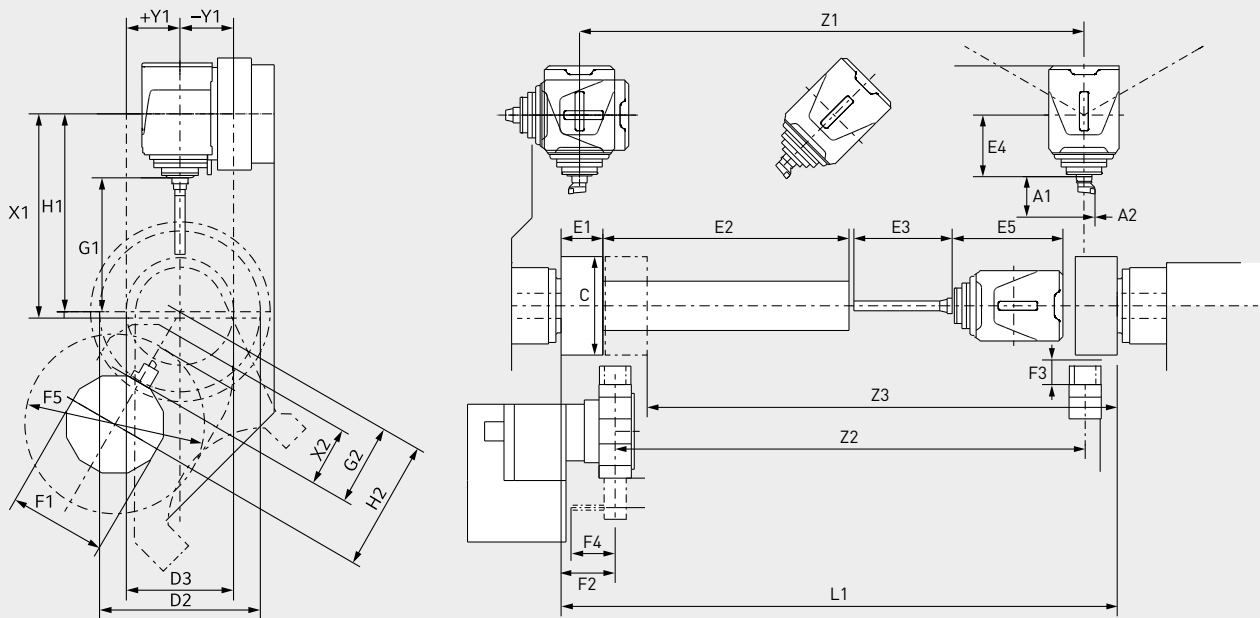
Machining compartment with one tool carrier



MACHINING COMPARTMENT DIMENSIONS

| | CTX gamma 1250 TC | CTX gamma 2000 TC | CTX gamma 3000 TC |
|----|-------------------|-------------------|-------------------|
| A1 | 70 | 70 | 70 |
| A2 | 45 | 45 | 45 |
| B | ±120° | ±120° | ±120° |
| C | 400 | 400 | 400 |
| D1 | 630 (700) | 630 (700) | 630 (700) |
| D2 | 630 (700) | 630 (700) | 630 (700) |
| D3 | 420 | 420 | 420 |
| D4 | 500 | 500 | 500 |
| E1 | 170 | 170 | 170 |
| E2 | 300 | 960 | 2,200 |
| E3 | 300 | 400 | 400 |
| E4 | 250 260*** | 250 260*** | 250 260*** |
| E5 | 450 460 | 450 460 | 450 460 |
| F1 | SW 380 | SW 380 | SW 380 |
| F2 | 220 | 220 | 220 |
| F3 | 100 | 100 | 100 |
| F4 | 180 | 180 | 180 |
| F5 | 700 | 700 | 700 |

Machining compartment with two tool carriers



| | CTX gamma 1250 TC | CTX gamma 2000 TC | CTX gamma 3000 TC |
|----|-------------------|-------------------|-------------------|
| G1 | 525 515** | 525 515** | 525 515** |
| G2 | 320 | 320 | 320 |
| H1 | 775 | 775 | 775 |
| H2 | 510 | 510 | 510 |
| J1 | 286 | 286 | 286 |
| J2 | 60 | 60 | 60 |
| J3 | 87.5 | 87.5 | 87.5 |
| L1 | 1,790 / 1,510* | 2,440 / 2,260* | 3,380 / 3,260* |
| L2 | 1,300 | 2,000 | 2,950 |
| X1 | 800 | 800 | 800 |
| X2 | 320*** | 320*** | 320*** |
| Y1 | ±210 | ±210 | ±210 |
| Z1 | 1,300 | 2,050 | 3,050 |
| Z2 | 1,160 | 1,910 | 2,850 |
| Z3 | 1,160 | 1,910 | 2,850 |
| Z4 | 180 | 180 | 180 |

* with tailstock / with counter spindle
 ** HSK-A63 / Capto C6 I HSK-A100 / Capto C8
 *** 245 mm in the range of Z2 0-220 mm

| |
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CTX TC

Technical data

| | | CTX beta 800 TC | CTX beta 1250 TC |
|---|----------------|---------------------------|---------------------------|
| Machining compartment | | | |
| Max. Swing diameter | mm | 500 | 500 |
| Max. Turning diameter (disk/chain magazine) | mm | 450/500 | 470/500 |
| Distance from main spindle to tailstock (without chuck) | mm | 1,077.5 | 1,473.5 |
| Distance from main spindle to counter spindle (without chuck) | mm | 1,020 | 1,470 |
| Max. turning length (machinable) | mm | 750 | 1,200 |
| Main spindle (standard) | | ISM 76 | ISM 76 |
| Speed | rpm | 5,000 | 5,000 |
| Drive power/torque (40% DC) | kW/Nm | 32/360 | 32/360 |
| Spindle bearing – \varnothing in the front bearing | mm | 130 | 130 |
| Draw tube – internal – diameter | mm | 67 (77 ¹) | 67 (77 ¹) |
| Spindle head (flat flange)/max. Chuck diameter ¹ | mm | 170 h5/315 | 170 h5/315 |
| Counter spindle | | ISM 52¹ | ISM 52¹ |
| Speed | rpm | 6,000 | 6,000 |
| Drive power/torque (40% DC) | kW/Nm | 14.5/200 | 14.5/200 |
| Spindle bearing – \varnothing in the front bearing | mm | 100 | 100 |
| Draw tube – internal – diameter | mm | 52 | 52 |
| Spindle head (flat flange)/max. Chuck diameter ¹ | mm | 140h5/210 | 140h5/210 |
| B-axis with turning-milling spindle (standard) | | | |
| Tool holder/Number of tool stations | | HSK-A63/24 | HSK-A63/24 |
| Spindle speed | rpm | 12,000 | 12,000 |
| Drive power/torque (40% DC) | kW/Nm | 22.5/120 | 22.5/120 |
| Swivel range B-axis | ° | ±110 | ±120 |
| Rapid traverse B-axis | rpm | 70 | 70 |
| Lower turret | | | |
| Number of driven tools/max. rotational speed | rpm | - | - |
| Drive power/torque (40% DC) | kW/Nm | - | - |
| Indexing time 30° | sec. | - | - |
| Top slide for B-axis | | | |
| X/Y/Z | mm | 480 (+470/-10)/±100/845 | 490 (+480/-10)/±125/1,300 |
| Rapid traverse X/Y/Z | m/min | 30/40/40 | 40/40/50 |
| Feed force X/Y/Z (S3 – 40%) | kN | 10/7/10 | 10/7/10.3 |
| Lower turret slide | | | |
| X/Z | mm | - | - |
| Rapid traverse speed X/Z | m/min | - | - |
| Feed force X/Y/Z (S3 – 40%) | kN | - | - |
| Slide for counter spindle | | | |
| Z | mm | 800 | 1,200 |
| Rapid traverse speed Z | m/min | 40 | 30 |
| Feed force Z (S3 – 40% DC) | kN | 10 | 10 |
| Tailstock | | | |
| Stroke (hydraulic) | mm | 800 | 1,200 |
| Centre sleeve force | kN | 8 | 14 |
| Tailstock centre | MK | 5 | 5 |
| Machine | | | |
| Space requirement machine incl. chip conveyor | m ² | 10.2 | 12.1 |
| Drop height chip conveyor | mm | 1,270 | 1,270 |
| Machine height | mm | 2,300 | 2,300 |
| Machine weight | kg | 10,000 | 15,000 |

1: Option 2: Turning diameter with turret 3: With chain magazine

| CTX beta 1250 TC 4A | CTX beta 2000 TC | CTX gamma 1250 TC | CTX gamma 2000 TC | CTX gamma 3000 TC |
|---------------------------|---------------------------|---|---------------------------------|------------------------------|
| 700 | 630/700 ³ | 700 | 700 | 700 |
| 500 (340) ² | 630/700 | 630/700 | 630/700 | 630/700 |
| - | 2,440 | 1,790 | 2,440 | 3,380 |
| 1,470 | 2,260 | 1,510 | 2,260 | 3,260 |
| 1,185 | 2,000 | 1,250 | 2,000 | 3,000 |
| ISM 76 | ISM 76 | ISM 102 | ISM 102 | ISM 127 |
| 5,000 | 5,000 | 4,000 | 4,000 | 2,500 |
| 32/360 | 32/360 | 40/700 | 40/700 | 52/2,200 |
| 130 | 130 | 160 | 160 | 200 |
| 67 (77 ¹) | 67 (77 ¹) | 104 | 104 | 127 |
| 170 h5/315 | 170 h5/315 | 220 h5/400 | 220 h5/400 | A15/630 |
| ISM 76 | ISM76¹ | ISM 76¹ | ISM 76¹ | ISM 102¹ |
| 5,000 | 5,000 | 5,000 | 5,000 | 4,000 |
| 32/360 | 32/360 | 32/360 | 32/360 | 40/700 |
| 130 | 130 | 130 | 130 | 160 |
| 67 | 67 | 67 | 67 | 104 |
| 170h5/315 | 170h5/315 | 170h5/315 | 170h5/315 | 220h5/400 |
| HSK-A63/24 | HSK-A63/24 | HSK-A63/36 | HSK-A63/36 | HSK-A63/36 |
| 12,000 | 12,000 | 12,000 | 12,000 | 12,000 |
| 22.5/120 | 22.5/120 | 36/220 | 36/220 | 36/220 |
| ±110 | ±120 | ±120 | ±120 | ±120 |
| 70 | 100 | 100 | 100 | 100 |
| 12×VDI 40 | - | 12×VDI 40¹ | 12×VDI 40¹ | 12×VDI 40¹ |
| 12/4,000 | - | 12/4,000 | 12/4,000 | 12/4,000 |
| 10/36 | - | 10/28 | 10/28 | 10/28 |
| 0.4 | - | 0.44 | 0.44 | 0.44 |
| 490 (+480/-10)/±100/1,200 | 490 (+480/-10)/±150/2,050 | 800/±210/1,300 | 800/±210/2,050 | 800/±210/3,050 |
| 30/30/45 | 40/40/30 | 50/50/50 (70 ²) | 50/50/50 (70 ²) | 50/50/40 |
| 7/7/13 | 12.5/11/16 | 11.5/12/18 (10.4 ²) | 11.5/12/18 (10.4 ²) | 11.5/12/20 |
| 195/80/1,200 | - | 235/-/1,160 | 235/-/1,910 | 235/-/3,050 |
| 30/45 | - | 30/40 | 30/40 | 30/30 |
| 12/13 | - | 7.5/14 | 7.5/14 | 7.5/12 |
| 1,200 | 1,910 | 1,160 | 1,910 | 2,850 |
| 45 | 30 | 40 | 40 | 30 |
| 13 | 16 | 14 | 14 | 28 |
| - | 1,200 | NC-axis and hydraulically movable steady rest | | |
| - | 18 | 17 | 17 | 22 |
| - | 5 | 5 | 5 | 5 |
| 17.1 | 18.6 | 18.4 | 20.4 | 23.0 |
| 1,270 | 1,250 | 1,234 | 1,234 | 1,234 |
| 2,419 | 2,380 | 2,805 | 2,805 | 2,805 |
| 16,000 | 22,000 | 18,500 | 24,000 | 30,000 |

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| Machine and technology |
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CTX beta TC

Options

| | CTX beta 800 TC | CTX beta 1250 TC | CTX beta 1250 TC 4A | CTX beta 2000 TC |
|---|--------------------|---------------------|------------------------|---------------------|
| Machine options | | | | |
| Linear drive in the Z1-axis (slide of the B-axis) | – | ○ | – | – |
| Differential pressure clamping for the main spindle and/or counter spindle | ○ | ○ | ○ | ○ |
| Disk magazine 24 stations | ● | ● | ● | ● |
| Chain magazine 48 stations | ○ | ○ | – | ○ |
| Chain magazine 80 stations | ○ | ○ | ○ | – |
| Chain magazine 100 stations | – | – | – | ○ |
| Chain magazine 120 stations | – | – | ○ | – |
| Measuring / monitoring | | | | |
| Tool measuring device for turning and milling tools | ○ | ○ | ○ | ○ |
| Mechanical drill breakage monitoring | ○ | ○ | ○ | ○ |
| In-process workpiece measurement via measuring probe | ○ | ○ | ○ | ○ |
| Bar machining / automation | | | | |
| Package bar machining with workpiece pickup device, hydraulic partial hollow clamping device, signal light 4-colour and connection for bar feed or bar loading magazine | ○ | ○ | ○ | – |
| Bar loading magazines for max. bar length 1.2 to 3.2 m (machine-dependent) | ○ | ○ | ○ | – |
| Automation interface | ○ | ○ | ○ | ○ |
| Shaft machining | | | | |
| Tailstock function for counter spindle | ○ | ○ | ○ | ○ |
| Steady rest slide, automatic positioning | ○ | ○ | – | – |
| Steady rest slide, NC controlled | – | – | – | ○ |
| Steady rest clamping range 8 – 101 mm | ○ | ○ | ○ | ○ |
| Steady rest clamping range 20 – 165 mm | ○ | ○ | – | ○ |
| Steady rest clamping range 30 – 245 mm | – | – | – | ○ |
| Steady rest clamping range 85 – 350 mm | – | – | – | ○ |
| Steady rest quick-change system | ○ | ○ | – | ○ |
| Clamping device for main spindle | | | | |
| Chuck up to ø 210 mm incl. attachments and chuck jaws | ○ | ○ | ○ | ○ |
| Chuck up to ø 250 mm incl. attachments and chuck jaws | ○ | ○ | ○ | ○ |
| Chuck up to ø 315 mm incl. attachments and chuck jaws | ○ | ○ | ○ | ○ |
| Chuck up to ø 400 mm incl. attachments and chuck jaws | ○ | ○ | ○ | ○ |
| Clamping device for counter spindle | | | | |
| Chuck up to ø 170 mm incl. attachments and chuck jaws | ○ | ○ | – | – |
| Chuck up to ø 210 mm incl. attachments and chuck jaws | ○ | ○ | ○ | ○ |
| Chuck up to ø 250 mm incl. attachments and chuck jaws | – | ○ | ○ | ○ |
| Chuck up to ø 315 mm incl. attachments and chuck jaws | – | – | ○ | ○ |
| Chuck up to ø 400 mm incl. attachments and chuck jaws | – | – | ○ | ○ |
| Coolant and chip conveyor | | | | |
| Chip conveyor | ○ | ○ | ○ | ○ |
| Reinforced coolant pump, 12 bar, 23 l/min | ○ | ○ | – | ○ |
| 8/20 bar internal coolant supply, 600 l and 40 µm paper band filter | ○ | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, 980 l and 40 µm paper band filter | ○ | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, 980 l, 40 µm paper band filter and cooling unit | ○ | ○ | ○ | ○ |
| 8/20/80 bar internal coolant supply, 980 l, 40 µm paper band filter and cooling unit | ○ | ○ | ○ | ○ |
| Aluminium package in connection with paper band filter | ○ | ○ | ○ | ○ |
| Oil mist extraction system | ○ | ○ | ○ | ○ |
| Other | | | | |
| Machine adjustment for increased ambient temperatures (tropical package) | ○ | ○ | ○ | ○ |

● Standard ○ Option

Options

| | CTX gamma 1250 TC | CTX gamma 2000 TC | CTX gamma 3000 TC |
|---|----------------------|----------------------|----------------------|
| Machine options | | | |
| Linear drive in the Z1-axis (slide of the B-axis) | ○ | ○ | – |
| Counter spindle | ○ | ○ | ○ |
| Differential pressure clamping for the main spindle and/or counter spindle | ○ | ○ | ○ |
| Disk magazine 36 stations | ● | ● | ● |
| Chain magazine 80 stations | ○ | ○ | ○ |
| Chain magazine 120 stations | ○ | ○ | ○ |
| Chain magazine 180 stations | ○ | ○ | ○ |
| Additional magazine for 6 oversized tools (up to 700 mm length up to ø200 mm) | ○ | ○ | ○ |
| Second tool carrier as 12-fold turret with driven tools | ○ | ○ | ○ |
| Linear scales in X1/Y1/Z1 | ● | ● | ● |
| Linear scales in X2/Z2 turret slides | ○ | ○ | ○ |
| Measuring/monitoring | | | |
| Tool measuring device for turning and milling tools | ○ | ○ | ○ |
| Mechanical drill breakage monitoring | ○ | ○ | ○ |
| In-process workpiece measurement via measuring probe | ○ | ○ | ○ |
| Automation | | | |
| Preparation for external handling with robot interface, Profibus standard | ○ | ○ | ○ |
| Shaft machining | | | |
| Tailstock function for counter spindle | ○ | ○ | ○ |
| Sleeve for tailstock with 180 mm stroke (hydraulic) | ● | ● | ● |
| Steady rest slide, NC-controlled, steady rest clamping range up to 460 mm | ○ | ○ | ○ |
| Steady rest quick-change system | ○ | ○ | ○ |
| Clamping device for main spindle | | | |
| Chuck up to ø250 mm incl. attachments and chuck jaws | ○ | ○ | – |
| Chuck up to ø315 mm incl. attachments and chuck jaws | ○ | ○ | – |
| Chuck up to ø400 mm incl. attachments and chuck jaws | ○ | ○ | ○ |
| Chuck up to ø500 mm incl. attachments and chuck jaws | ○ | ○ | ○ |
| Chuck up to ø630 mm incl. attachments and chuck jaws | – | – | ○ |
| Clamping device for counter spindle | | | |
| Chuck up to ø210 mm incl. attachments and chuck jaws | ○ | ○ | – |
| Chuck up to ø250 mm incl. attachments and chuck jaws | ○ | ○ | – |
| Chuck up to ø315 mm incl. attachments and chuck jaws | ○ | ○ | ○ |
| Chuck up to ø400 mm incl. attachments and chuck jaws | ○ | ○ | ○ |
| Chuck up to ø500 mm incl. attachments and chuck jaws | ○ | ○ | ○ |
| Chuck up to ø630 mm incl. attachments and chuck jaws | – | – | ○ |
| Coolant and chip conveyor | | | |
| Chip conveyor | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, 600 l and 40 µm paper band filter | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, 980 l and 40 µm paper band filter | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, 980 l, 40 µm paper band filter and cooling unit | ○ | ○ | ○ |
| 8/20/80 bar internal coolant supply, 980 l, 40 µm paper band filter and cooling unit | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, frequency-controlled, 600 l and 40 µm paper band filter | ○ | ○ | ○ |
| 8/20 bar internal coolant supply, frequency-controlled, 980 l and 40 µm paper band filter | ○ | ○ | ○ |
| 8/20/80 bar internal coolant supply, frequency-controlled, 980 l, 40 µm paper band filter and cooling unit | ○ | ○ | ○ |
| Aluminium package in connection with paper band filter | ○ | ○ | ○ |
| Oil mist extraction system | ○ | ○ | ○ |
| Other | | | |
| Machine adjustment for increased ambient temperatures (tropical package) | ○ | ○ | ○ |

● Standard ○ Option



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