

DMG MORI

UNIVERSAL TURNING

CTX 350 4A

UP TO
28 TOOLS



Highlights

Machine and technology

Machine components

CNC technology

Automation

Technical data and options

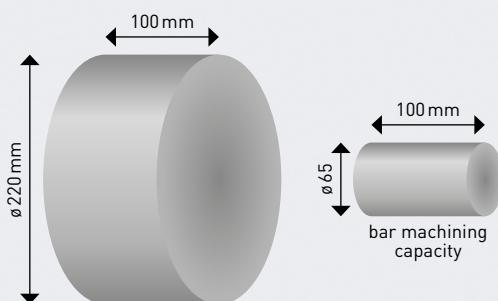
CTX 350 4A

CTX 350 4A – the easiest way to improve productivity



02

WORKPIECE DIMENSIONS CTX 350 4A



ERGOline X & CELOS X

24" Multi touch screen:

- + Maximum convenience of use and more information per screen

Operating terminal –ASCII full keyboard:

- + Comprehensive and reliable operation

HMI software runs on its own IPC in the control cabinet:

- + Machine complexity does not affect screen refresh time

CELOS X:

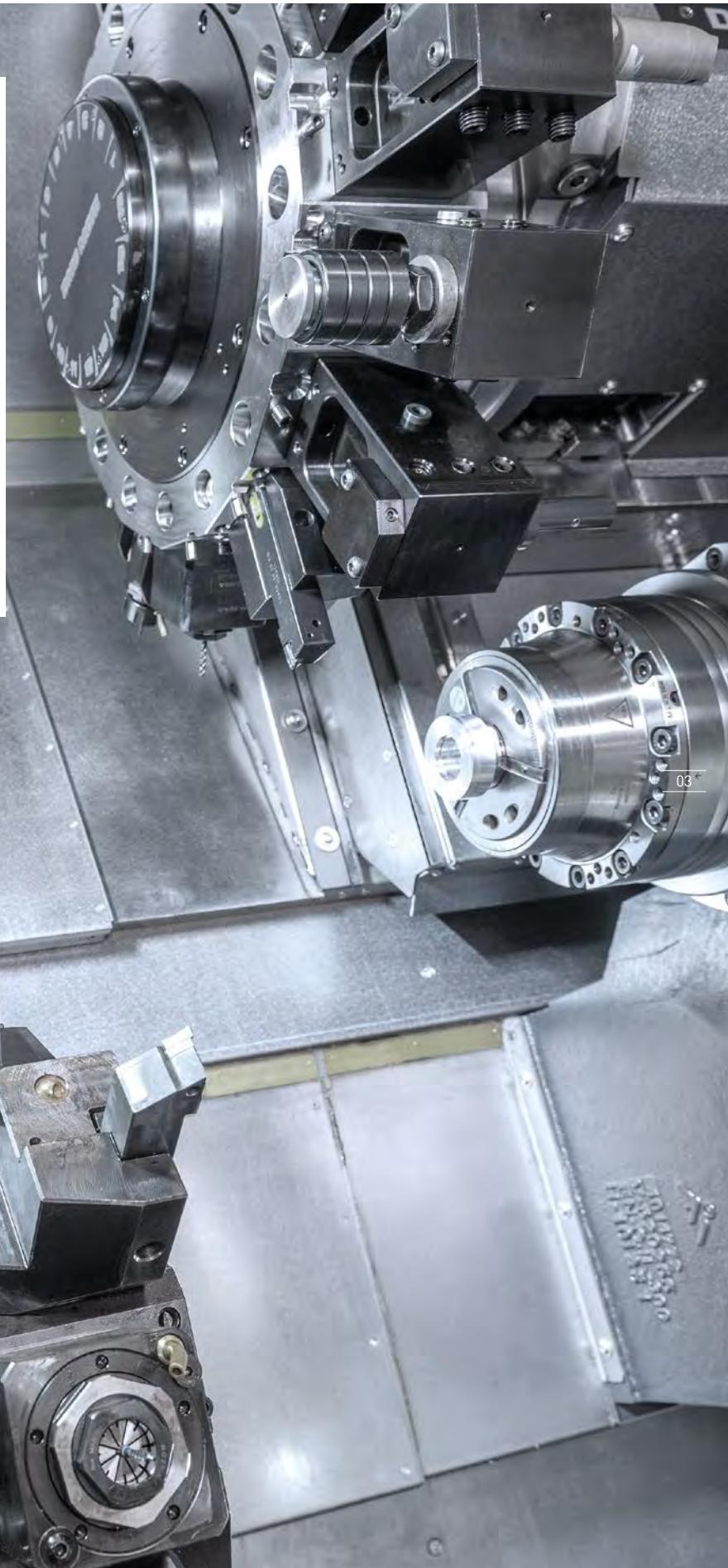
- + Prepared for shop floor digitization
- + Support for safe connectivity
- + Local and cloud APPs, remote maintenance, TULIP APP

PLC key bar:

- + Direct access to machine functions

HIGHLIGHTS

- + **6-sided complete machining** of workpieces up to Ø200×100 mm and +/- 50 mm Y-axis in a 8.1m² footprint
- + **Spindles up to 6,000 rpm or up to 171Nm**, bar machining up to Ø65 mm
- + Upper turret and lower turret up to 12,000 rpm or 14 Nm // **12 tool stations // VDI 30**
- + Upper turret up to **16 tool stations VDI30**
- + **Outstanding energy efficiency** due to integrated spindle motors with synchro technology and inverters for all motor pumps
- + **Ready for automation** as standard, e.g. with the Robo2Go Turning or integrated unloading device
- + State-of-the-art CNC with CELOS X on SINUMERIK ONE



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CTX 350 4A

High accuracy and highly rigid structure for twin-turret machine concept

The CTX 350 4A is based on an FEM optimized, high quality, compact and torsion-resistant cast iron bed for excellent stiffness and vibration damping characteristics, ideal for the twin-turret machine concept.

The four-guideway design allows collision free movement of the upper slide X1-Z1-axis and lower slide X2-Z2-axis and counter spindle as well. Metal covers in the working area inclined at 45° optimize chip evacuation and increase operational safety and machine service life.

High quality ball screws and wide linear guideways in X1-Y1-Z1, X2-Z2 and the counter spindle slideways have been combined to support heavy duty metal cutting and guarantee machine dynamics to meet the highest standards in production.

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HIGHLIGHTS

+ **Highly dynamic spindles**

Main spindle: ISM 65 with 5,500 rpm and 171 Nm and counter spindle: ISM 50 Plus with 6,000 rpm and max. 93 Nm

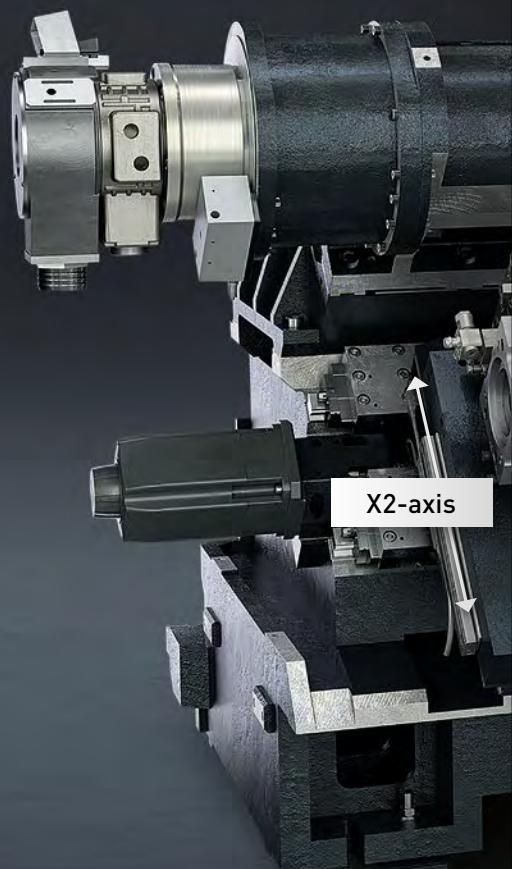
+ **Dynamic and precise C-axis control**

by using the Magnescale measuring system on front bearing

+ **VDI 30 interface turrets**

Upper turret up to 16 tool stations VDI30 and lower turret up to 12 positions

+ **Synchronization of the main spindle and counter spindle indexing** permits the machining of complex workpieces



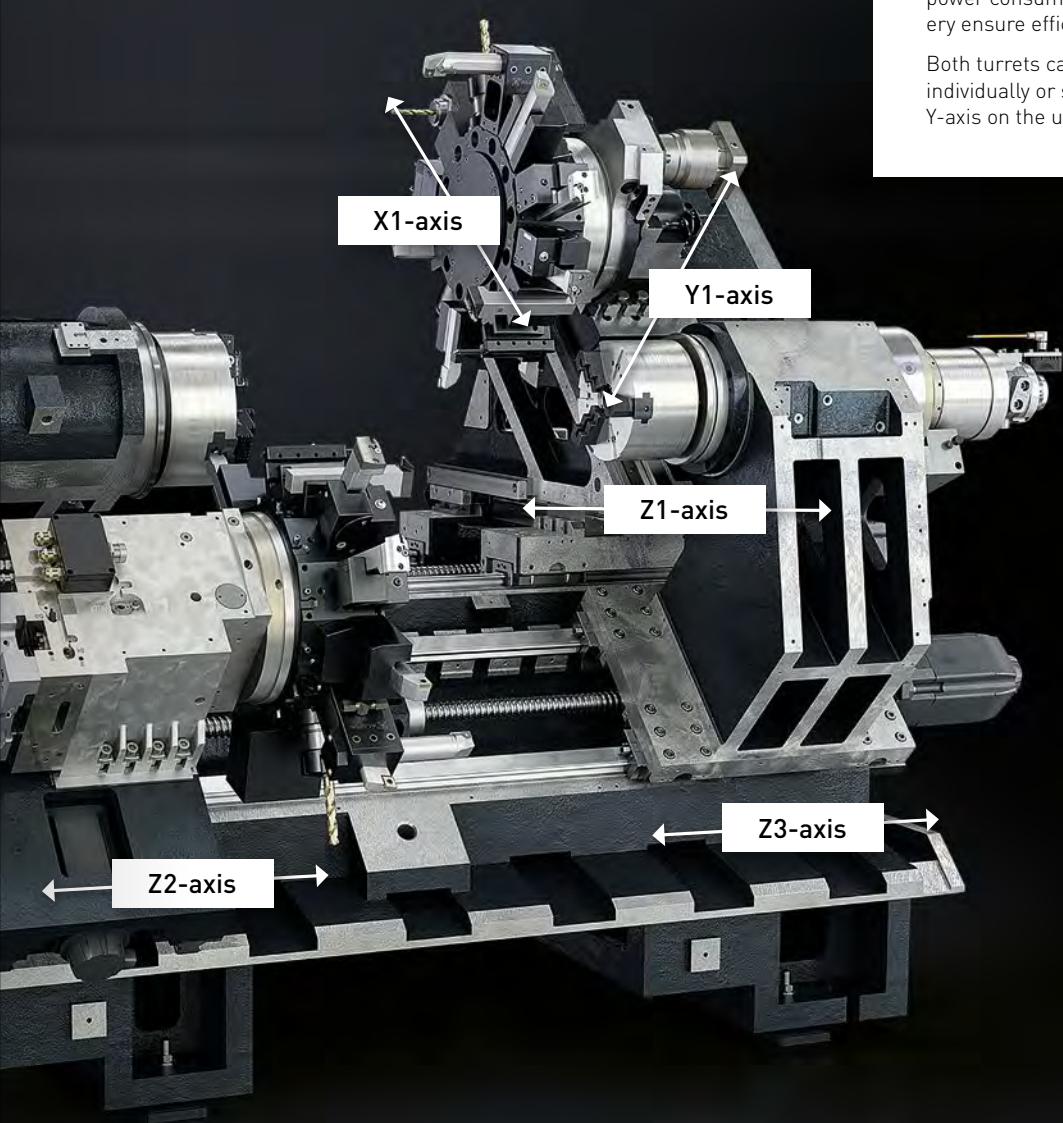
CONSTRUCTION AND DESIGN BENEFITS

The thermally stable main spindle, counter spindle headstocks with long life, lubricated, high-quality bearings ensure high rotational precision and service life.

The high-power synchro motors allow both dynamic and high torque machining with a large bar capacity, improving productivity.

The low connected load, economical power consumption and energy recovery ensure efficient use of energy.

Both turrets can work at both spindles individually or simultaneously, 100 mm Y-axis on the upper turret.



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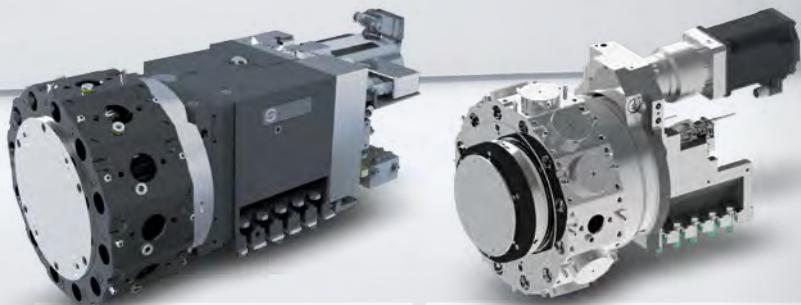
CNC technology

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CTX 350 4A

Dedicated turrets for any application



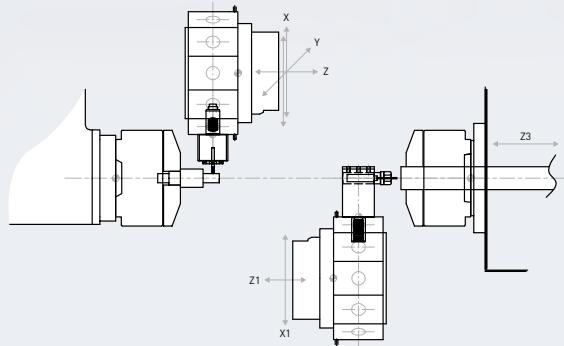
| | Star type turret HPT Gear Drive VDI 30 | Star type turret turretMASTER VDI 30 |
|--|---|---|
| Tool capacity | 12 | 12-16 |
| Power/torque (kW/Nm) | 6.6/14 | 14/14 |
| Driven tool speed (rpm) | 6,000(7,000*) | 12,000 |
| | upper and lower slide | upper slide (lower slide optional) |
| Ready for 40 bar coolant pressure | • | 80 bar |
| Air oil lubricated for 100 % duty cycle when milling | • | liquid cooled |
| • Standard *optional | | |

4 axis and 2 turrets

06

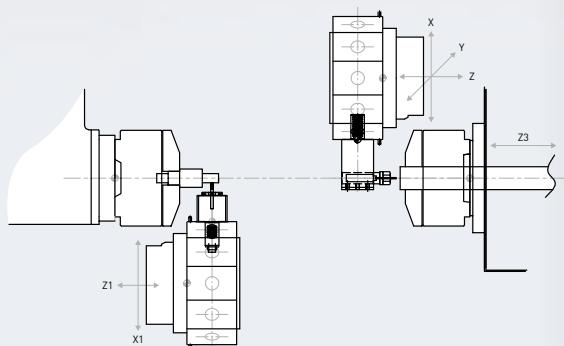
UP TO 16 TOOLS

working at the main spindle



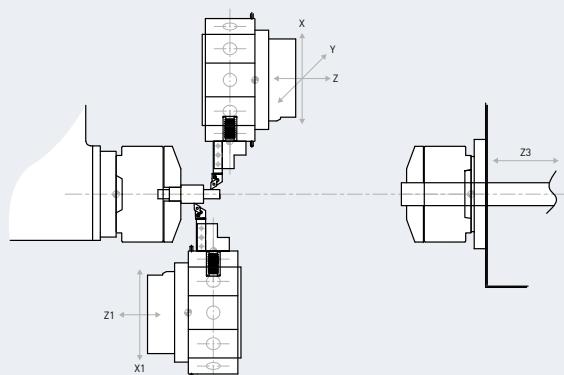
UP TO 16 TOOLS

working at the counter spindle



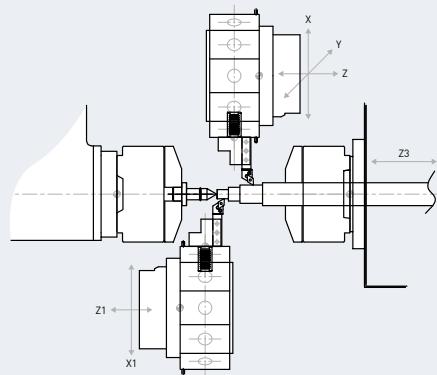
UP TO 28 TOOLS

working at the main spindle



SIMULTANEOUS MACHINING

with tailstock function for the counter spindle





TRIFIX®: ACCURATE AND QUICK SET-UP WITH VDI

- + Common to all star turrets
- + Tool set-up time of <30 seconds
- + Maximum stability and long-term precision: play-free and spring-loaded, double centring and with increased rigidity thanks to large interface with bolt hole pattern
- + < 6 µm repeatability (same tool, same position)
- + < 10 µm positioning accuracy from one station to the next
- + Fully aligned driven tools
- + VDI holders can be used
- + Up to 4:1 gear reduction tool holders for high torque milling
- + Faster turret tooling set-up vs. Block Tool System

DX – DIGITAL TRANSFORMATION

CELOS X – The future-proof solution for manufacturing

CELOS X platform offers a holistic solution for the digital transformation. Combined with the ERGOline X control panel, manufacturing companies will increase their competitiveness worldwide.

CELOS X consists of the two components **CELOS Xchange**, the open, secure and scalable data platform, and **CELOS Xperience**, which gives access to all applications and systems within the CELOS X ecosystem. This enables a comprehensive and seamless digital experience for the user with the goal of easy machine operation, extended spindle hours while maximizing energy efficiency. CELOS X is therefore the centerpiece of the digital transformation (DX) and a significant contribution to DMG MORI's Machining Transformation (MX) strategy.



Further information on
CELOS X can be found at:
<https://celos.dmgmori.com>

HIGHLIGHT APPS



Operator Workbook

Optimal order processing in the office and throughout the shopfloor.



Application Connector

Operate IT-systems directly on the control panel.



Monitoring

Increase planning reliability and productivity through digital transparency.



Tool Master

Manage tools directly on the machine.



Energy Saving

Optimize the machine's carbon footprint by managing and reducing energy consumption.



Energy Monitoring

Track and monitor the energy consumption of the machine.

3
GOALS

>30
APPS

>300
FEATURES



ALL YOUR DATA IN

CELOS Xchange

POWERED BY DMG MORI CONNECTIVITY

ALL APPS IN

CELOS Xperience

09



EASY OPERATION

In the manufacturing industry, the userfriendliness and ease of operation of machine tools plays a decisive role for the efficiency and productivity.

ADDED VALUE

- + Faster programming
- + Reduction of errors
- + Increased efficiency



EXTENDED SPINDLE HOURS

In addition to easy operation, productivity is another crucial parameter, which requires a holistic view across all production processes.

ADDED VALUE

- + Optimization of set-up processes & capacity planning
- + Shorter processing times and order changes
- + Increased machine availability



ENERGY EFFICIENCY

The energy efficiency of machine tools is of utmost importance to DMG MORI and CELOS X makes a valuable contribution to this, adding direct value to the customer.

ADDED VALUE

- + Real-time monitoring of energy consumption
- + Automated adaptation of energy requirements to machining processes
- + Optimized & demand-driven air and cooling lubricant supply

DMG MORI TECHNOLOGY CYCLES

Exclusive Technology Cycles – Complex machining easily realized!

DMG MORI exclusive technology cycles are the true assistants to production-oriented programming to increase productivity and safety as well as to extend machine capability.

- + Logical program structure
- + Program up to 60 % faster
- + Error minimization by conversational programming
- + Technology know-how stored in the program

Other technology cycles are also available



ECCENTRIC TURNING AND MILLING

Eccentric geometries are easy to manufacture

- + Superposition of additional X- and Y-traverses onto the turning process
- + Applicable for turning and milling
- + Exact axis coupling and synchronization in the background



COUNTER SPINDLE TIP

Perfect combination of 6-sided complete machining and tailstock function

- + Automatically load and unload a tailstock center from the magazine into the chuck of the main spindle or counter spindle using the milling spindle
- + Support of long and slender workpieces in the main spindle thanks to the synchronous counter spindle tip
- + Higher component accuracy due to automatic change without opening the door (temperature stability)



POLYGON TURNING

Highly productive without milling the individual surfaces

- + Machining also on lathes without Y-axis
- + Conversational programming thanks to the technology cycle
- + High productivity, especially of small components
- + Chamfering possible in the same process
- + Simple and fast programming minimizes errors



ALTERNATING SPEED

Avoiding tool vibration by speed adaptation

- + Easy to operate by adjusting three parameters and without additional sensors
- + No manual intervention by the operator
- + Identical repeatability for all components
- + Increased process safety for special applications by avoiding vibration
- + For both SIEMENS and FANUC controls



EASY TOOL MONITOR 2.0

Drive load monitoring of the tools during the machining process to prevent damage to the machine, cutter and component

- + Save the monitoring limits for each tool and every cutting edge in the program
- + NEW: User interface on CELOS SideScreen
- + NEW: Powerful algorithm for efficient monitoring after the first workpiece
- + For both SIEMENS and FANUC controls
- + For both SIEMENS and FANUC controls



MULTI THREADING 2.0 PRO

Trapezoidal, buttress and knuckle threads easily programmable at the machine

- + Screw conveyor with any profile geometry
- + Free definition of contours, pitches and number of starts possible
- + NEW: On-Point Threading – Position oriented thread production



Y-AXIS PARTING

The new, highly productive Y-axis parting method is amazingly easy to use with the technology cycle

- + Compatible with the standard cycle CYCLE92 (Part off cycle), so that the operator can program as usual (ShopTurn and DIN/ISO)
- + Up to three times higher productivity possible (3x feed) with simultaneously improved chip control
- + For both SIEMENS and FANUC controls



KEYWAY BROACHING

High flexibility in creating grooves, according to DIN6885 or DIN138, inside or outside, narrow or wide, short or long with standard tools on standard machines

- + Structured input parameters for the groove geometry, the tool and the machining strategy
- + Advantages of rigid machine guideways for better groove quality
- + For both SIEMENS and FANUC controls



CTX 350 4A

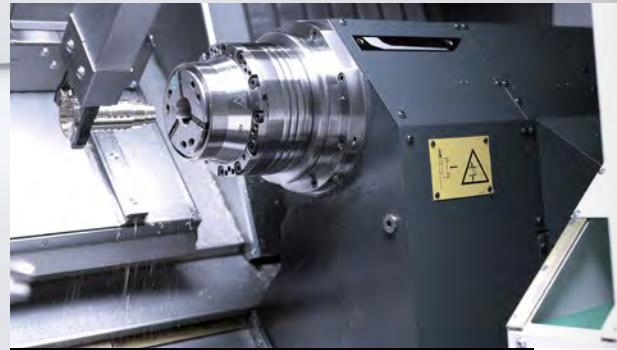
Increase efficiency of the machine with tailor-made automation solutions

Basic automation options for incorporated loading and unloading



BAR MACHINING PACKAGE WITH PARTS CATCHER

- + Handling of bars up to 65 mm
- + DMG MORI standard interface is compatible with the majority of barfeeds/bar loading magazines available on the market
- + Ready for automation, with integrated unloading device and bar loading interface as standard



INTEGRATED CNC UNLOADING DEVICE WITH CONVEYOR BELT

- + Component unloading device from the counter spindle in working area with axial CNC movement for parts up to Ø65×100 mm and max. component weight 3 kg
- + One gripper with two fingers for part handling and conveyor belt on the right side of machine
- + Flexible solution for unloading short parts

Integrated automation with 6-axis robot

PLUG AND PLAY CELL TO HANDLE THE PART FROM START TO FINISH

The automation device integrated in the machine allows quick and easy loading/unloading of components without opening loading hatches or doors.

- + For workpieces Ø100×125 mm
- + Customized workpiece tray
- + Personalized grippers

CUSTOMER BENEFITS:

- + Quick loading and unloading
- + Small space requirement

DMG MORI flexible workpiece loading and unloading systems

READY FOR DMG MORI AUTOMATION SOLUTIONS

- + Interface for Robo2Go:
Handling of shafts ø 20 – 170 mm
and chuck parts ø 20 – 175 mm
- + Interface for MATRIS Light:
Workpieces up to 5 kg or 2×2 kg
with double gripper



MATRIS Light

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ENERGY EFFICIENCY

- + Low friction guideways
- + Low consumption lubrication system
- + Synchron motor technology
- + LED workspace lighting
- + Hydraulic unit with inverter technology
- + Frequency controlled coolant pump motors
- + Clocked chip conveyor
- + Energy recovery from brake energy
- + 3-phase motors class IE3
- + Energy efficient cooling of electrical cabinet
- + Linear scales without pressurization
- + DMG MORI Autoshutdown in standard
- + Energy certificates for all CTX machines
- + Specific CELOS APP's (for SIEMENS control)

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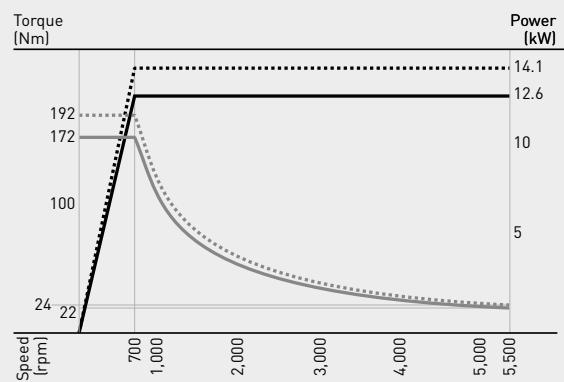
Technical data and options

CTX 350 4A

Power/Torque Diagrams

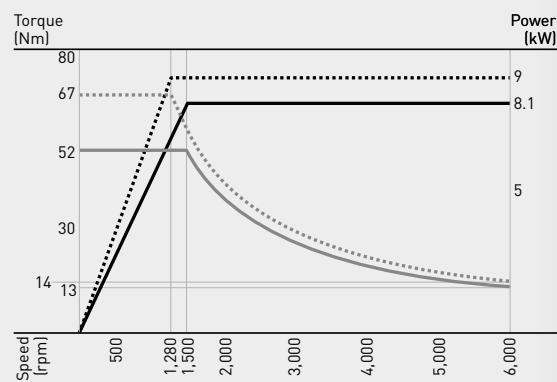
Main spindle

ISM 65



Counter spindle

ISM 50



Turrets

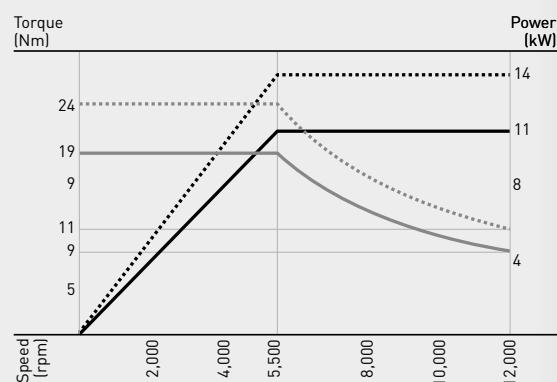
Gear drive 6,000 rpm

standard



turretMASTER 12,000 rpm

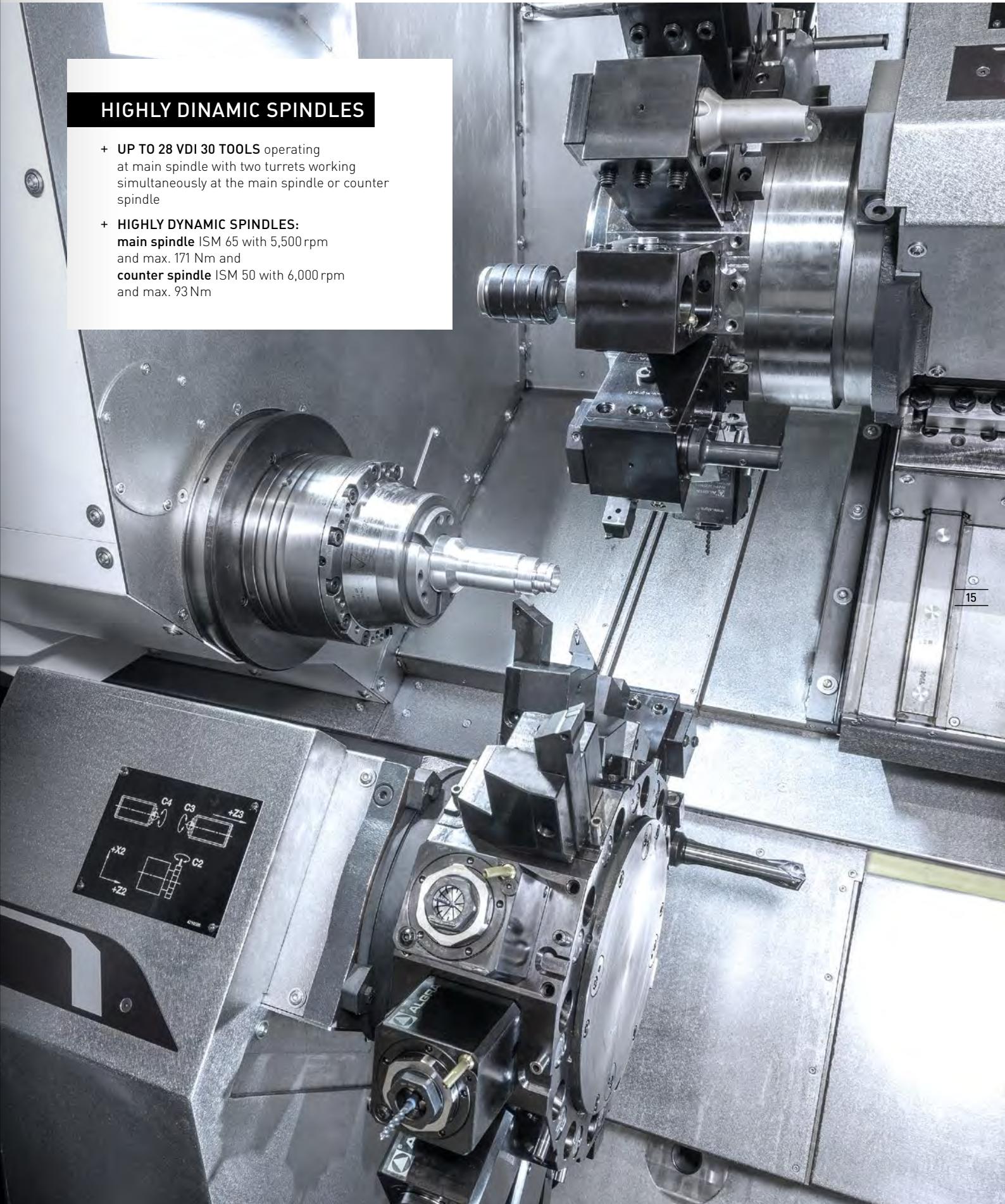
option



■ Power (kW) ■ Torque (Nm)
····· 40 % DC (S6) — 100 % DC (S1)

HIGHLY DINAMIC SPINDLES

- + UP TO 28 VDI 30 TOOLS operating at main spindle with two turrets working simultaneously at the main spindle or counter spindle
- + **HIGHLY DYNAMIC SPINDLES:**
main spindle ISM 65 with 5,500 rpm and max. 171 Nm and
counter spindle ISM 50 with 6,000 rpm and max. 93 Nm



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|-----------------------------------|
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CTX 350 4A

Technical data

CTX 350 4A

| Bed | | |
|---|-------|------------------|
| Bed inclination | mm | 45° |
| Bed material | | Cast iron |
| Number of guideways | mm | 5 |
| Working area | | |
| Swing diameter over bed | mm | 585 |
| Swing diameter over cross slide 1 [Upper slide] | mm | 370 |
| Swing diameter over cross slide 2 [Lower slide] | mm | 510 |
| Max. turning diameter X1 / X2 | mm | 320 / 220 |
| Recommended turning diameter | mm | 120 |
| Distance between two spindle noses | mm | 800 |
| Max. turning length | mm | 470 |
| Travel X-axis (X1 / X2) | mm | 185 / 130 |
| Travel Y1-axis | mm | 100 (± 50) |
| Travel Z-axis (Z1 / Z2 / Z3) | mm | 495 / 495 / 500 |
| Spindle axis height from ground | mm | 1,017 (987+30) |
| Main spindle ISM65 | | |
| Spindle nose | type | A2-6" |
| Chuck (diameter) | mm | ø210/250 |
| Max. bar diameter | mm | 65 |
| Spindle hole diameter | mm | 73 |
| Front bearing diameter inside | mm | 120 |
| Power, max. 100 % DC (40 % DC) | kW | 12.6 (14.1) |
| Speed range | rpm | 5,500 |
| Rated speed at max. torque | rpm | 0 - 700 |
| Torque 100 % DC (40 % DC) | Nm | 172 (192) |
| Type of motor | | ISM65 syn. |
| Speed range C1-Axis | rpm | 0 - 700 |
| Torque of C1-Axis | Nm | 192 |
| Max. weight between centers | kg | 250 |
| Max. overhang weight | kg | 50/80 |
| Center of gravity distance from chuck face | mm | 120 |
| Counter spindle ISM50 | | |
| Spindle nose | type | A2-5" |
| Counter spindle chuck diameter | mm | 170 |
| Bar diameter (partial hole) | mm | 50 |
| Spindle hole diameter | mm | 60 |
| Front bearing inside diameter | mm | 100 |
| Power, max. 100 % DC / 40 % DC | kW | 8.1/9 |
| Speed range 100 % DC / 40 % DC | rpm | 6,000 |
| Rated speed at max. torque | rpm | 0 - 1,280 |
| Torque 100 % ED / 40 % ED | Nm | 52/67 |
| Type of motor | | ISM50 syn. |
| Speed range C-axis | rpm | 0 - 1,280 |
| Torque of C-axis | Nm | 67 |
| Rapid traverse Z3 | m/min | 30 |
| Max. overhang weight | kg | 20 |
| Max. center of gravity distance from spindle nose | mm | 100 |

| Slide 1: Upper slide | | |
|---------------------------------------|-----------------|---|
| Rapid travers X1/Y1/Z1 | m/min | 30/22.5/36 |
| Feed force X1/Y1/Z1 100% DC | kN | 3.5/3.5/6 |
| Feed force X1/Y1/Z1 40% DC | kN | 4.5/4.5/7.5 |
| Measuring system X1-, Y1-axis | | Absolute linear scale |
| Measuring system Z1-axis (opt.) | | Absolute rotary (absolute linear scale) |
| Ballscrew X1/Y1/Z1-axis, D × pitch | mm | ø 32 × 10 |
| Slide 2: Lower slide | | |
| Rapid travers X2/Z2 | m/min | 20/36 |
| Feed force X2/Z2 100% DC | kN | 3/6 |
| Feed force X2/Z2 40% DC | kN | 4/7.5 |
| Measuring system X2-axis | | Absolute linear scale |
| Measuring system Z2-axis (opt.) | | Absolute rotary (absolute linear scale) |
| Ballscrew X2/Z2-axis, D × pitch | mm | ø 32 × 5 / ø 32 × 10 |
| Turret 1: Upper turret | | |
| Tool taper standard | VDI (DIN 69880) | 30 |
| No. tools (opt.) | | 12 (16) |
| No. driven tools (opt.) | | 12 (16) |
| Driven tool power at 4,500 rpm (opt.) | kW | 6.6 (14/5,500 rpm) |
| Driven tool torque 100% DC (opt.) | Nm | 11 (11) |
| Driven tool torque 40% DC (opt.) | Nm | 14 (14) |
| Speed range (opt.) | rpm | 6,000 (12,000) |
| Turret 2: Lower turret | | |
| Tool taper standard | VDI (DIN 69880) | 30 |
| No. tools | | 12 |
| No. driven tools (opt.) | | 12 (16) |
| Driven tool power at 4,500 rpm (opt.) | kW | 6.6 (14/5,500 rpm) |
| Driven tool torque 100% DC | Nm | 1 |
| Driven tool torque 40% DC | Nm | 14 |
| Speed range | rpm | 6,000 |

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CTX 350 4A

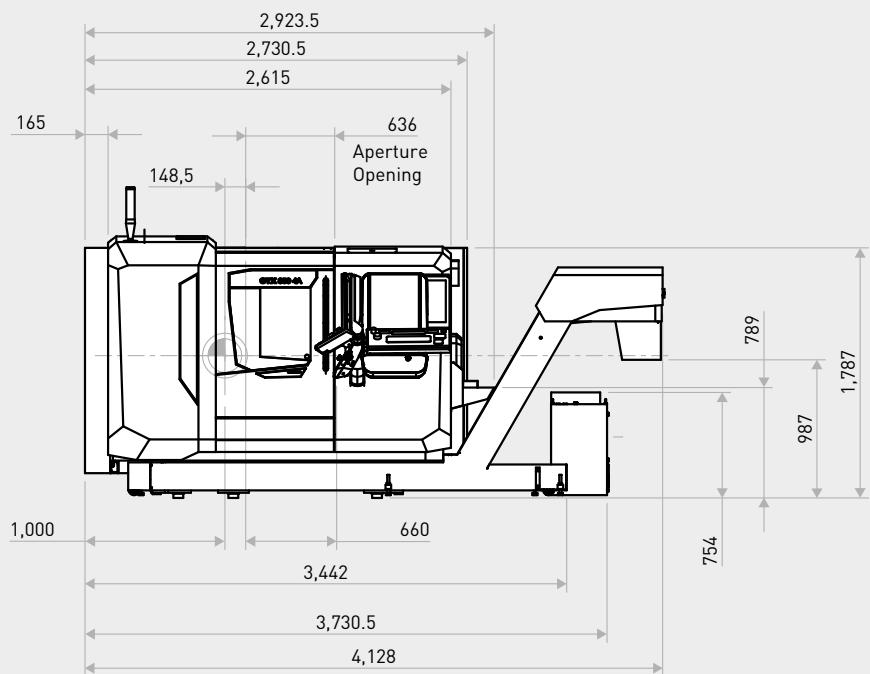
Technical data

| Cooling unit | | Main spindle, Counter spindle, turretMASTER |
|--|--------|---|
| Cooled units | | Fluid cooling |
| System | | |
| Capacity | l | 17 |
| Cooling power | kW | 3.3 |
| Cooling capacity | l/min | 20 |
| Pressure | l/min | 5 |
| Chip conveyor | | |
| Tank capacity | l | 170 |
| Pump power (opt.) | kW | 2.2 (2.2) |
| Pump capacity (opt.) | l/min | 20 (22) |
| Pump pressure (opt.) | bar | 12 (5 / 20) |
| Flushing covers pump's flow rate | l/min. | 20 |
| Cooling device (option) | | |
| Capacity | l | 600 |
| Pump pressure | bar | 8 (8 / 20) (8 / 40) |
| Coolant flow rate | l/min | 20 (20 / 25) (20 / 22) |
| Filter fineness | µm | 40 |
| Power (version 50 Hz) | kW | 0.75 (0.75 / 2.2) (0.75 / 3) |
| Cooling capacity for option with chiller | kW | 0.75 (0.75 / 2.2) (0.75 / 5.5) |
| | | 4.5 |
| Hydraulic unit | | |
| Tank capacity | l | 18 |
| Pump power | kW | 2.8 |
| Max. working pressure | bar | 55 |
| Pump capacity | l/min | 28.5 |
| Pneumatic | | |
| Pressure | bar | 6 |
| Consumption | m³/h | 10 (max 70) |
| Axis Lubrication | | |
| Lubricant type | | Grease 000 |
| Tank capacity | l | 2 |
| Electric power | | |
| Connection to the mains | | L1, L2, L3, N, PE |
| Frequency | Hz | 50 / 60 |
| Nominal power | KVA | 35 |
| Accuracy | | |
| According to ISO 230-2 (T=20+/-2°C) | | - |
| Positioning accuracy A on X1/X2/Y1/Z1 | µm | 6/6/8/10 |
| Positioning accuracy A on C | arcsec | 12 |
| Positioning accuracy A on Z2/Z3 | arcsec | 16/16 |
| Machine dimensions | | |
| Main dimensions for setup L/W/H without chip conveyor | mm | 2,730 x 2,621 x 1,870 |
| Main dimensions for setup L/W/H with chip conveyor | mm | 4,128 x 2,621 x 1,870 |
| Main dimensions for transport L/W/H (on wooden pallet) | mm | 4,330 x 2,230 x 2,200 |
| Weight of the machine incl. electrical cabinet | kg | 5,500 |

CTX 350 4A

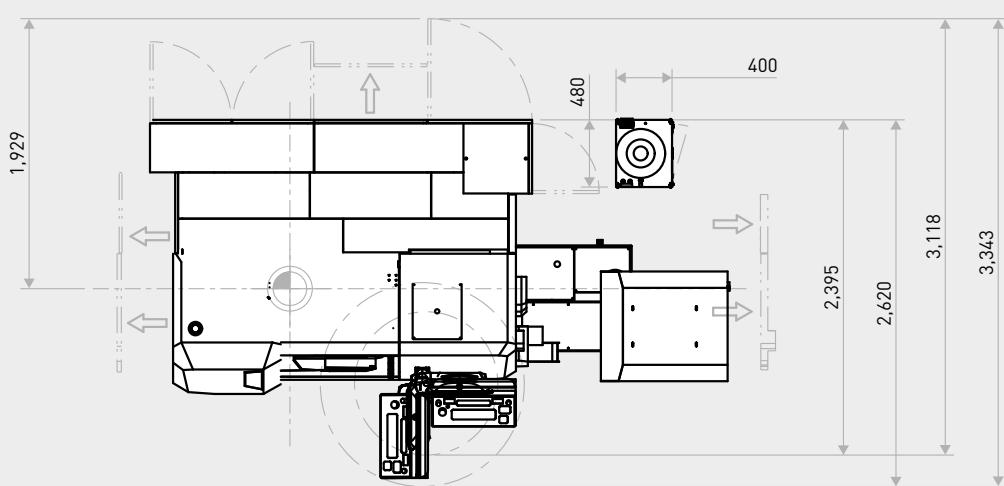
Floor Plans

Front view
(mm)



19

Top view
(mm)



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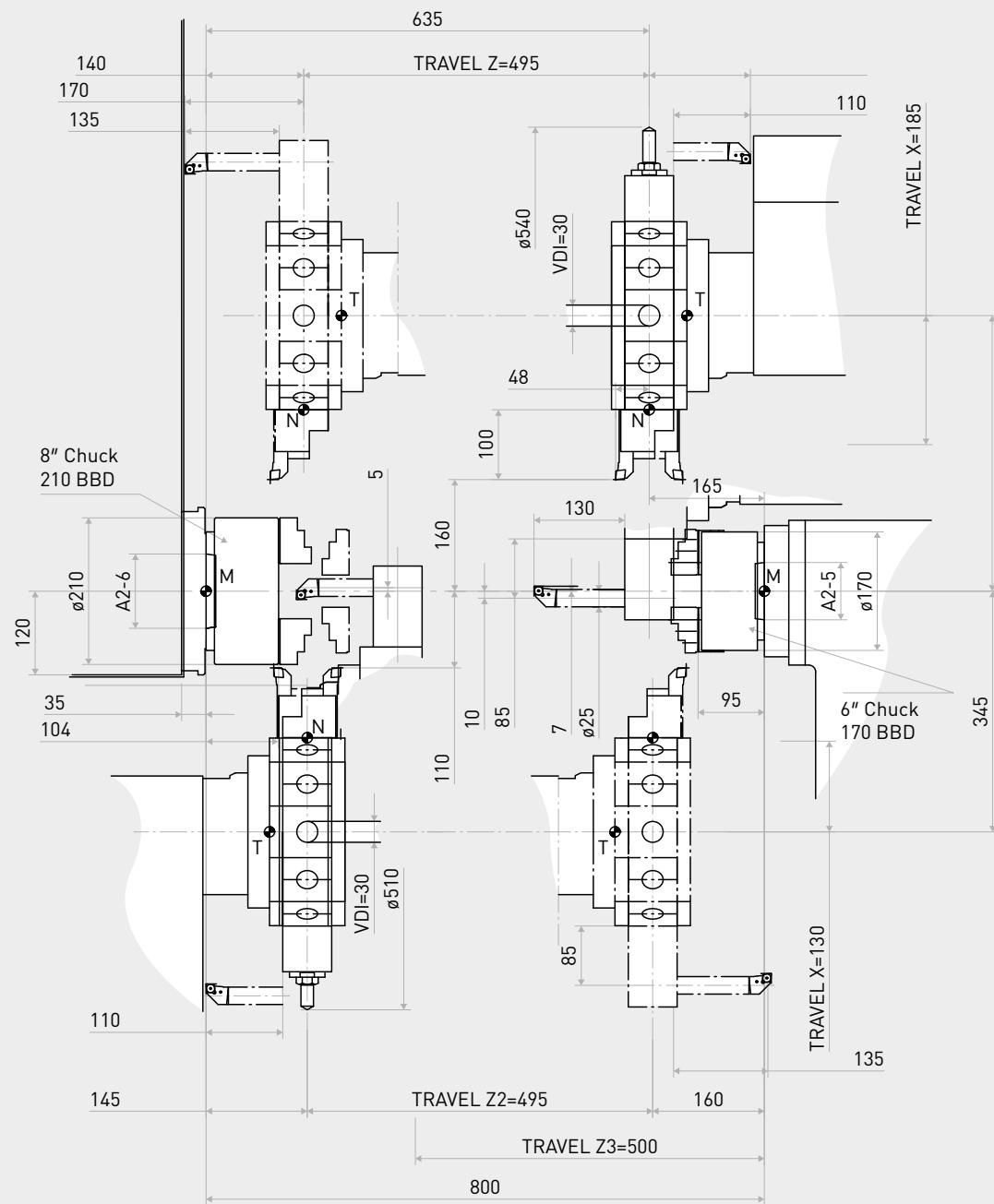
Technical data and options

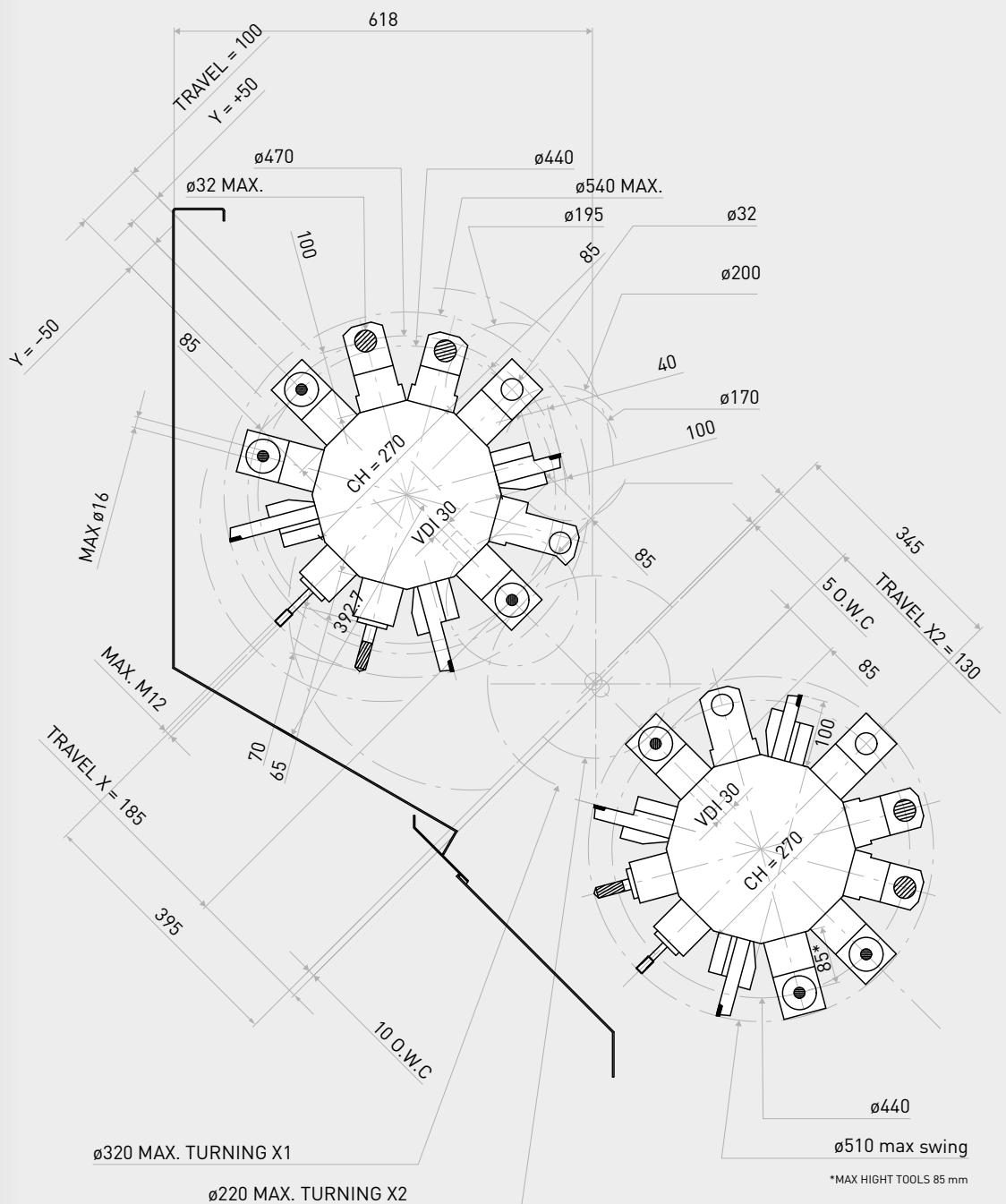
CTX 350 4A

Working area

Upper Turret: standard 12 tools VDI30

Lower Turret: standard 12 tools VDI30





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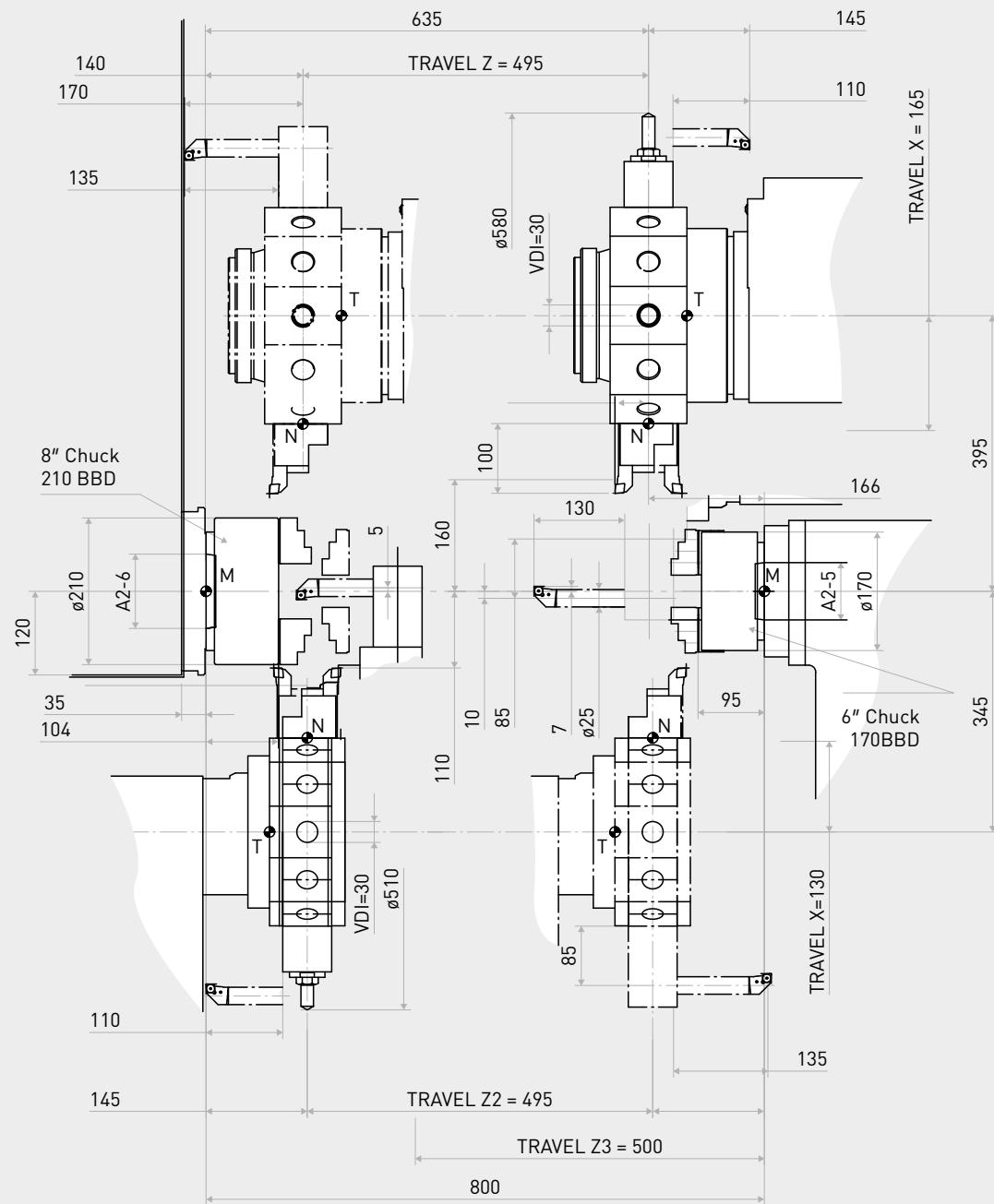
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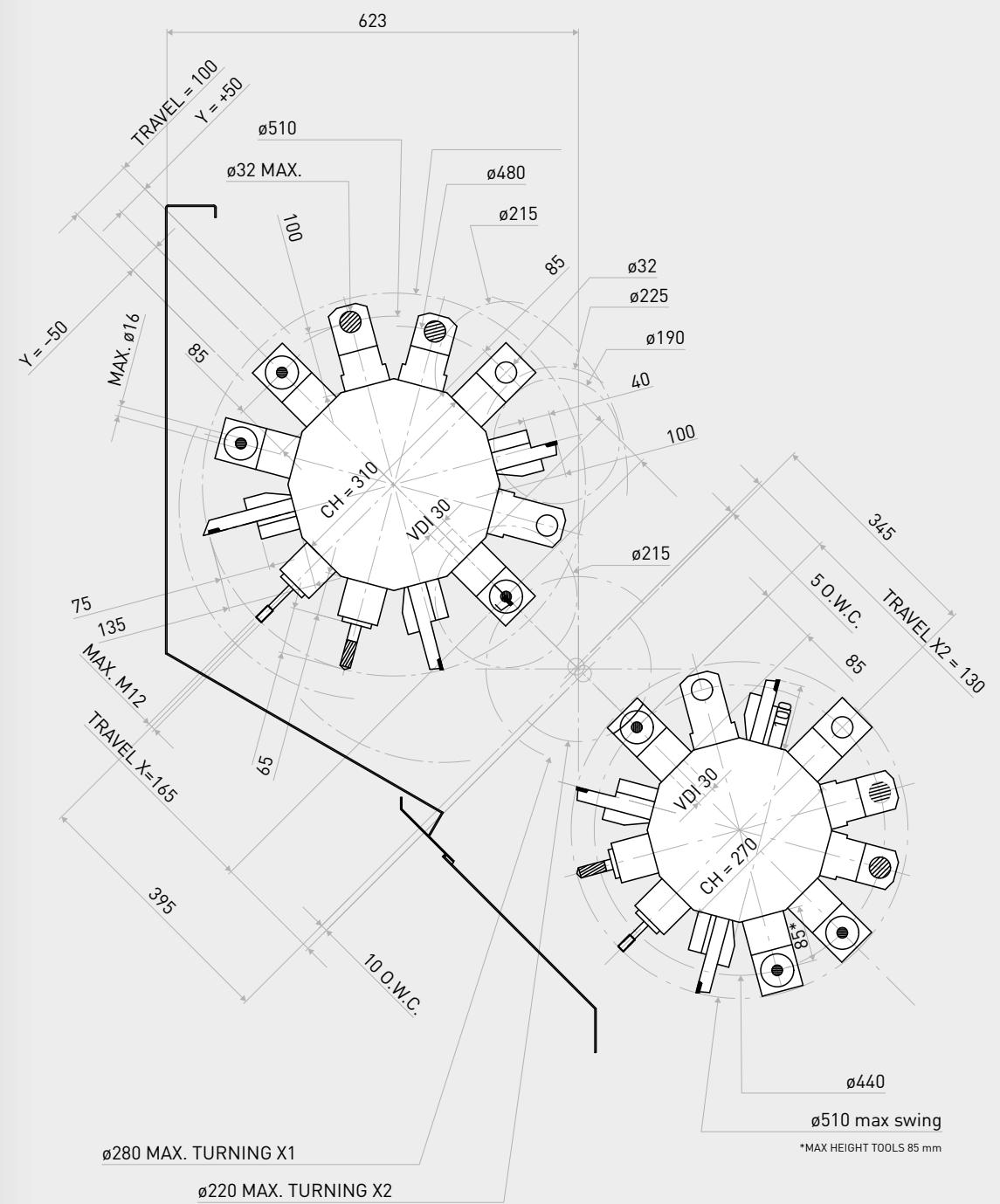
CTX 350 4A

Working area

Upper Turret: optional turretMASTER 12 tools VDI30

Lower Turret: standard 12 tools VDI30





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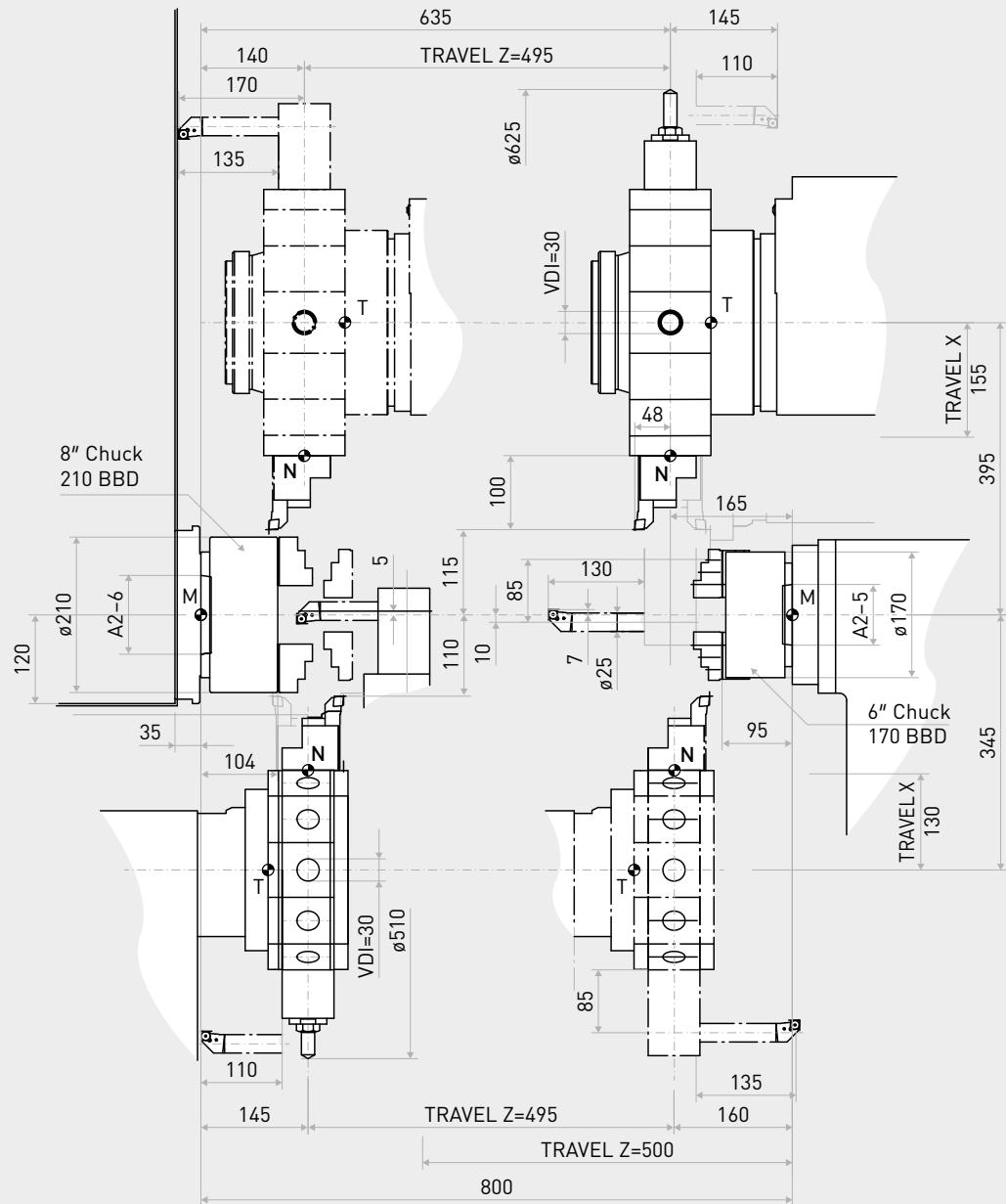
Automation

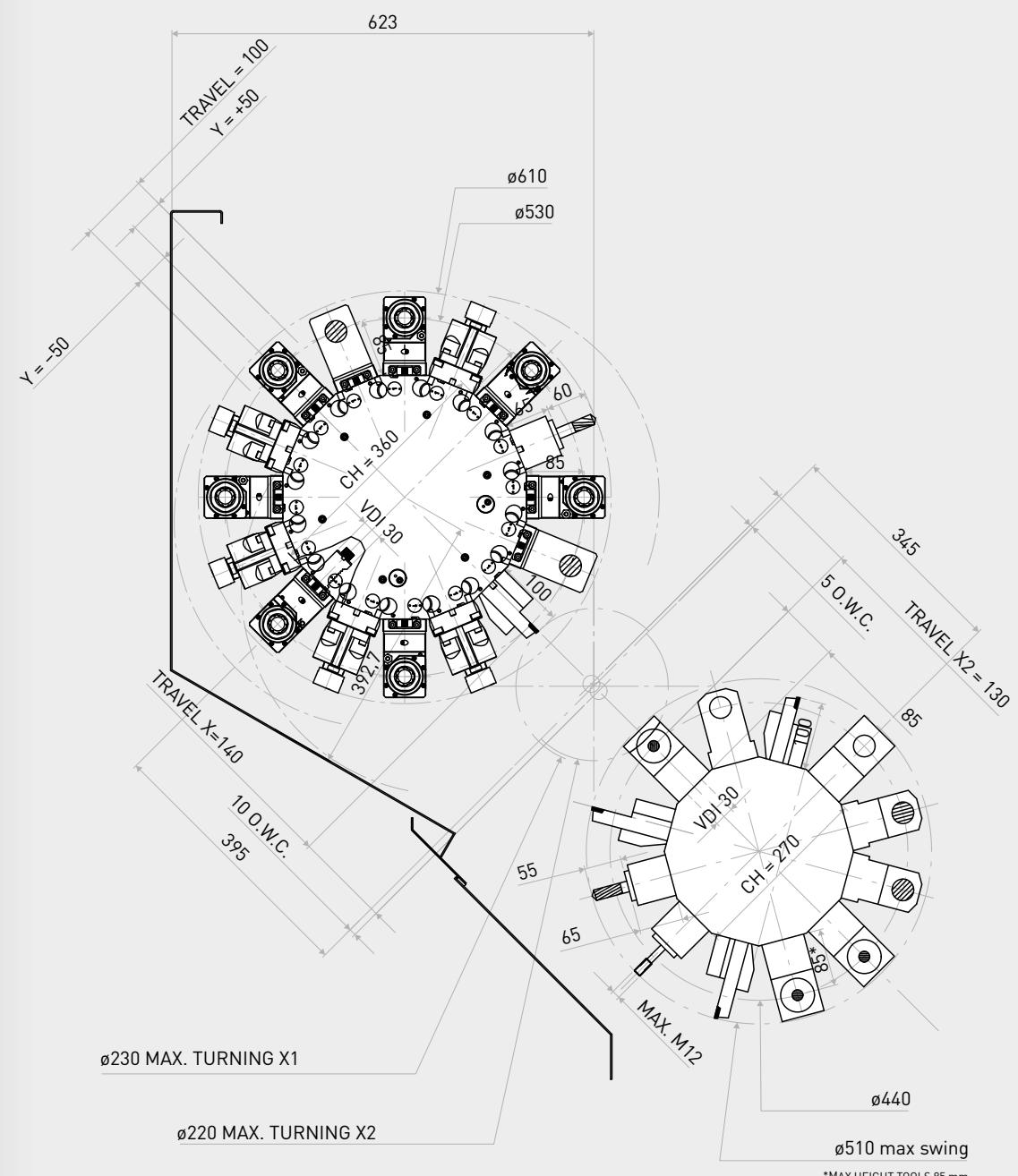
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Working area

Upper Turret: optional turretMASTER 16 tools VDI30
Lower Turret: standard 12 tools VDI30





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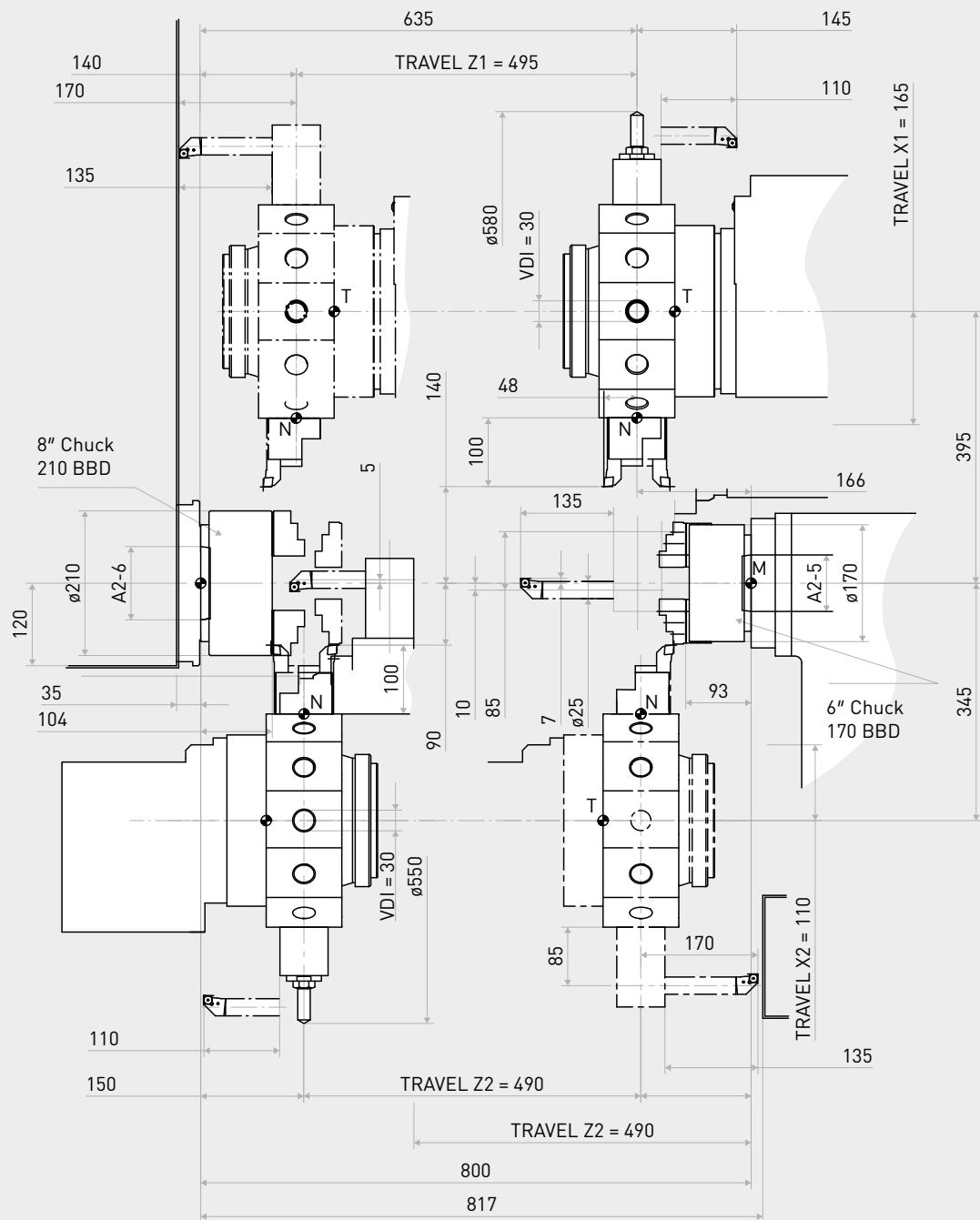
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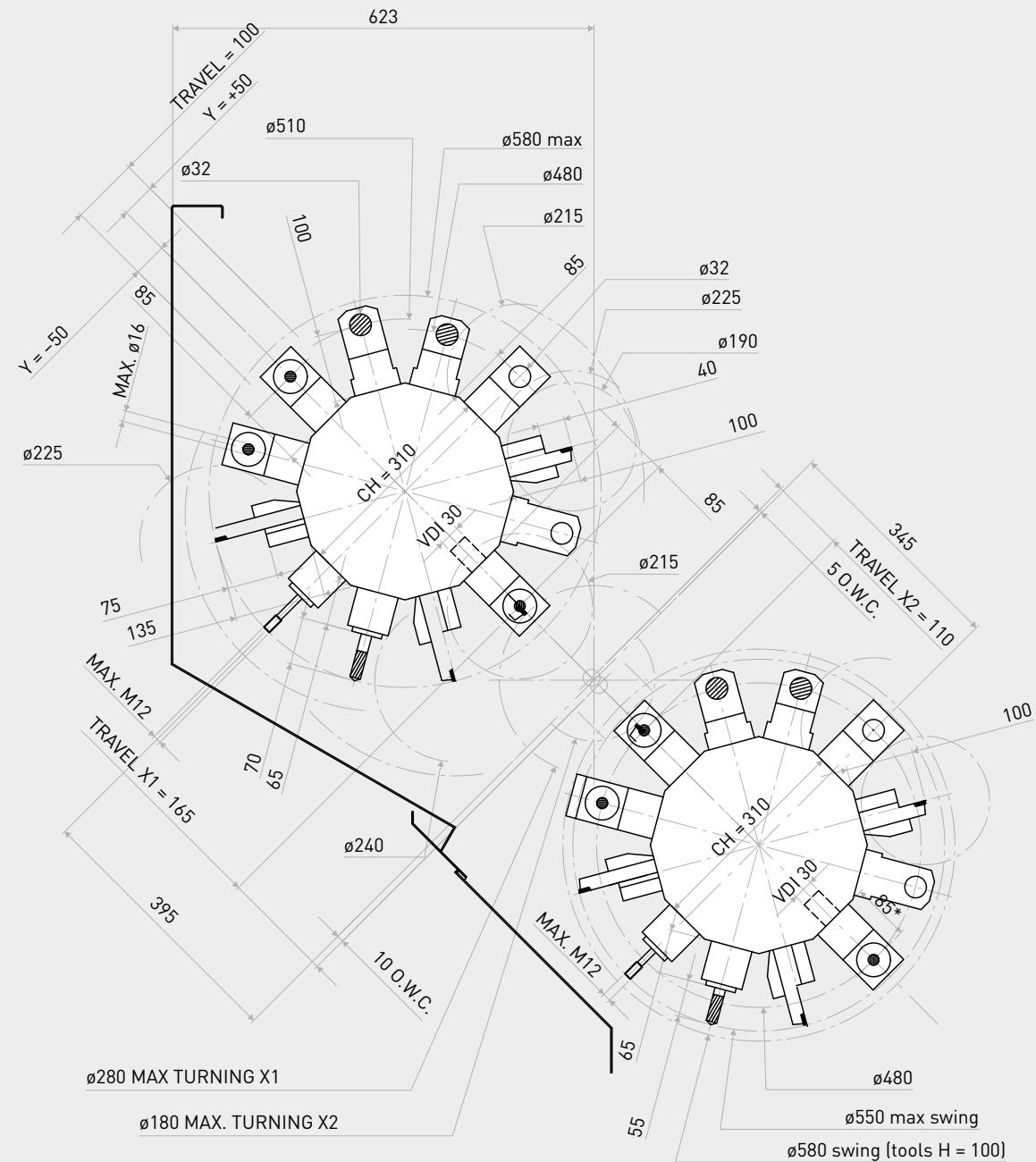
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Upper Turret: optional turretMASTER 12 tools VDI30
Lower Turret: optional turretMASTER 12 tools VDI30





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Machine components

CNC technology

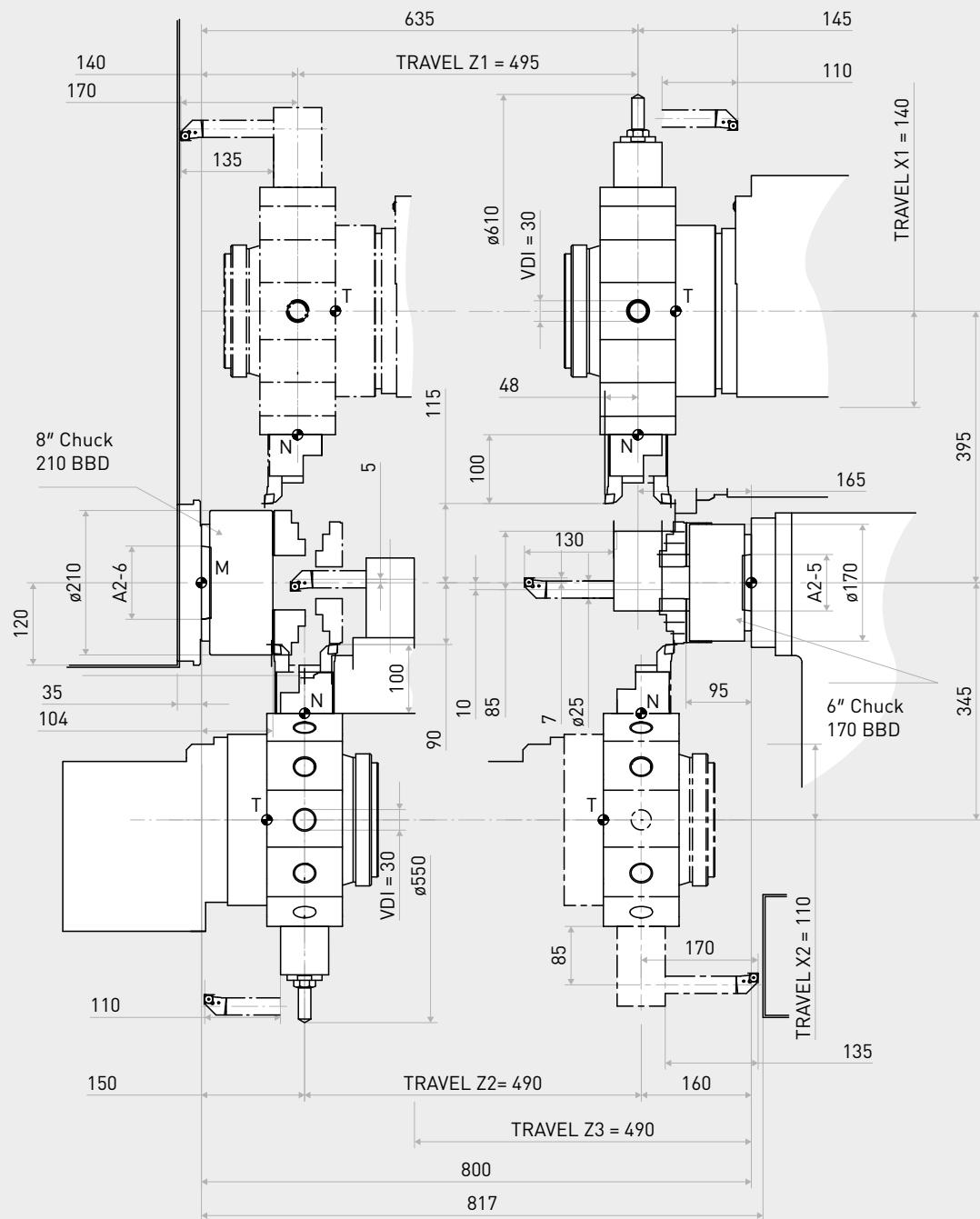
Automation

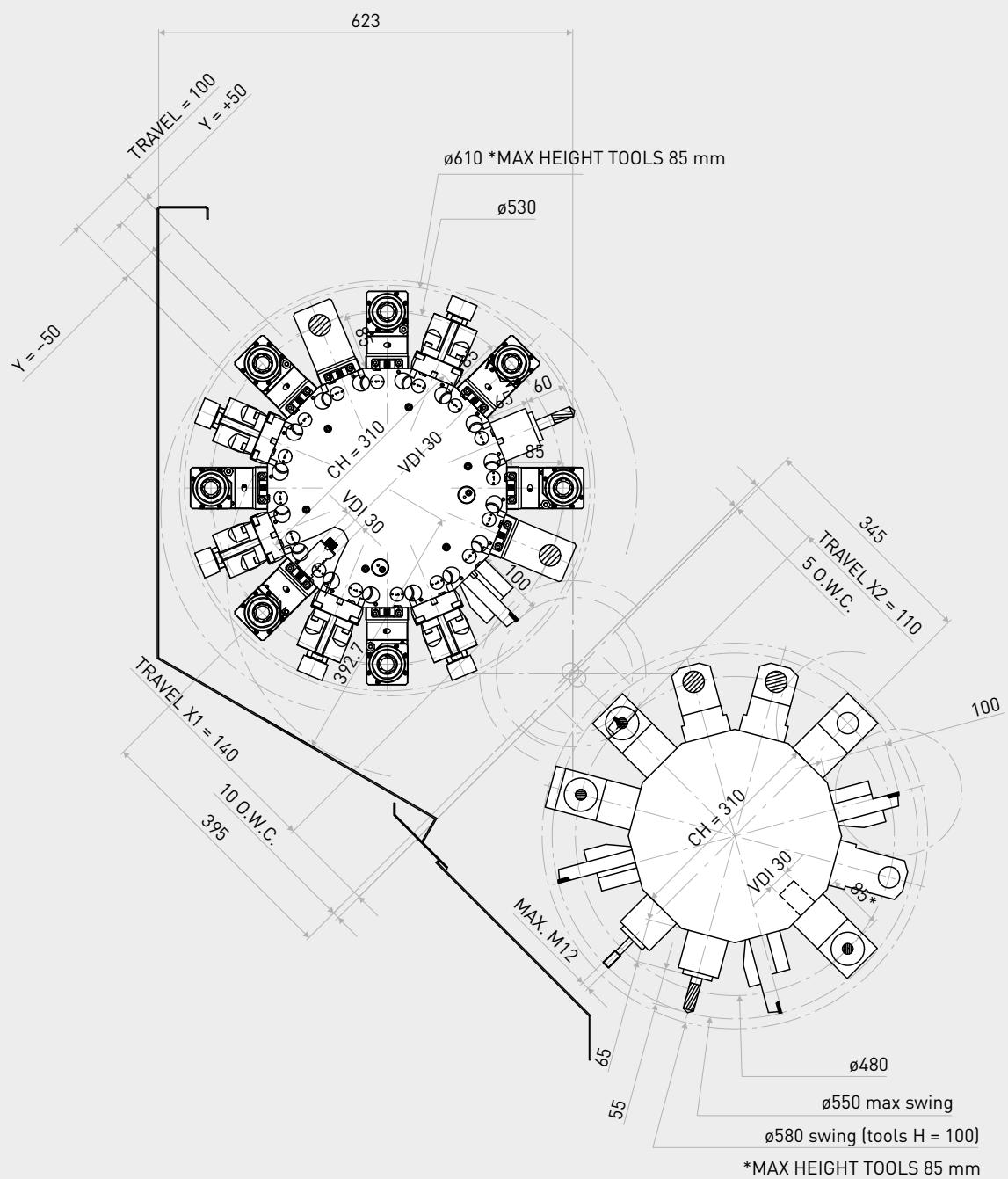
Technical data and options

CTX 350 4A

Working area

Upper Turret: optional turretMASTER 16 tools VDI30
Lower Turret: optional turretMASTER 12 tools VDI30





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YOUR DOCUMENTS



YOUR SERVICE REQUESTS

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