Cennik dla CLX 450 TC
Numer cennika 293483
Data utworzenia cennika: 15/10/2021

Szanowni Państwo,

W nawiązaniu do rozmowy przeprowadzonej z Państwem, chcielibyśmy podziękować za Państwa zapytanie i zainteresowanie naszą firmą. W celu uzyskania dalszych informacji oraz cen, prosimy o zapoznanie się z zał ączonym cennikiem.

W celu uzyskania dalszych informacji technicznych oraz szczegół owych warunków sprzedaży, pozostajemy do Państwa dyspozycji.

Z poważaniem,

DMG MORI Polska

Uwagi:
Dostawa odbywa się tylko wg naszych warunków dostawy, które przesył amy na żądanie, lub można je znaleźć pod:

http://en.dmgmori.com/terms-and-conditions

Oferta handlowa

CLX 450 TC



Design samples - changes reserved

Najważniejsze zalety obrabiarki

The added value compared to any universal turning machine!

_Chain magazine with 30 or 60 tools for highest flexibility
_Minimal setup and idle times thanks to multitools and sister tools
_Eccentric turning and milling with the Y-axis as standard
_Linear scales in X- and Y-axis for high machine accuracy (Z1-axis optional)
_Maximum usability of the working area through compactMASTER
_Interpolation of the B-axis with a resolution of 0.001 °.
_Optimally coordinated working area for components up to Ø400 mm x 1,100 mm

Przegląd inwestycji

#	Machine and Options
	Promotion package
B-ACLX00	BASIC, zawierająca:
B-A7290	CLX 450 TC
B-Z0140	Electronic handwheel
B-A0095	Documentation "Delivery list techn documentation"
	Control
B-A7080	Sterowanie SIEMENS 840D sl z SLIMline® bez CELOS
	Spindle
B-E7220	Counter spindle ISM 65, A2-8“
	Chucks for main spindle
B-S0132	Uchwyt 3-szcz, THW PLUS 260-81 Schunk
B-S0133	3-szczękowy uchwyt, THW PLUS 315-104, Schunk
	Tailstock
B-D7020	Funkcja konika dla przeciwwrzeciona
	Coolant supply / Chip removal
B-F7002	Transporter wiórów typu zagarniakowego
B-F01421	Jednostka filtrująca z filtrem taśmowym 8/20 bar, 600 l
B-B0012G	Spłukiwanie uchwytu z zewnątrz, przeciw-wrzeciono
B-Z0400	Pistolet spłukujący
	Measuring / Monitoring
B-H7017	Sonda dotykowa detalu RMP40 Renishaw
B-H7018	Tool measuring device RP1, Renishaw
B-C7227	Liniał pomiarowy osi Z
	Automation
B-Z0205	Lampa sygnalizacyjna, 4-kolorowa
	Measure
B-Z0110	Measure mm
	Options for Siemens control with CELOS / Siemens
B-A0801	Czytnik plików DXF dla Siemens
B-A0335	Alternating speed
	Suma Maszyna i opcje

#	Digitalization Products
	DMG MORI Connectivity
D-CO200	Digital Manufacturing Package
	DMG MORI Monitoring
D-MO002	Messenger V4
	Price Digitalization Products

#	Services

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

	Packing / Transport / Installation
B-Y0005	Koszt opakowania do transportu drogowego
	Koszty transportu
B-Y7011	Commissioning
	Services / Accessories
B-Z0950	Rozszerzenie gwarancji o 6 miesięcy
B-Z0908	3D data model of working area
	Application courses DMG MORI Academy
A-D821-D	Progr. DMG Programmer3D V5, 4,5d

Suma Usługi

Suma Maszyna i opcje
Price Digitalization Products
Suma Usługi

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

Niewybrane zalecane opcje

Options - machine

B-H72521 Protection Package

Further accessories

B-Z0206 proTIME

Clamping device main spindle - options

B-B7042 Hollow spindle stop ø 67 mm

Options - CNC-control

B-A0411 Easy Tool Monitor 2.0 - Monitorowanie złamania narzędzia
B-A0326 Opcje toczenia i frezowania pozaśrodkowego
B-A0342 Kontrola stanu programu
B-A0349 Broaching
B-A0351 Y-Axis Parting

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

CLX 450 TC

#	Machine and Options	EUR	EUR

Promotion package

B-ACLX00 BASIC, zawierająca:
B-A7290* Universal turning-/milling center
CLX 450 TC with turning length 1100 mm
(43.3 in)

- Main spindle as integrated
  spindle motor, ISM 65, A2-8",
  drive power 14/17 kW
  (18.7/22.7 hp)
  (S1-100%d.c. / S3-40%d.c.),
  torque 275/345 Nm
  (202.8/354.4 lb*ft)
  (S1-100%d.c. / S3-40%d.c.),
  speed range 0-5.000 rpm
- Hollow clamping device Ø67 mm (2.6 in)
- Turning-/ milling spindle
  compactMASTER,
  drive power 8,8/10,5 kW (11.8/14 hp)
  (S1-100%d.c. / S3-40%d.c.-2min),
  torque 73/90 Nm (53.8/66.3 lb*ft)
  (S1-100%d.c. / S3-40%d.c.-2min),
  speed range 0-12.000 rpm,
  reception HSK-A 63 DIN 69893
- B-axis ±120°
- Y-axis ±100 mm (±3.9 in)
- 30-fold chain magazine
- Absolute, direct measuring systems
  in X- and Y-axis
- Tailstock hydraulically operated
  with foot control pedal
- DMG MORI IoT connector
- Ergonomic control panel
  DMG MORI SLIMline
- Siemens 840D sl

B-Z0140 Electronic handwheel

B-A0095 Documentation as per
Delivery list Technical Documentation
- contained in machine price –

Control

B-A 7080* CNC-control
with Siemens 840D sl Operate
inclusive 19“ SLIMline®
control with multi-touch-monitor

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

Spindle

B-E7220	Counter spindle as integrated spindle motor, ISM 65, A2-8" - Drive power 14/17 kW (18.7/22.7 hp) (S1-100%d.c. / S3-40%d.c.), - Torque 275/345 Nm (202.8/354.4 lb*ft) (S1-100%d.c. / S3-40%d.c.), - Speed range 0-5.000 rpm - Partial hollow clamping device Ø67 mm (2.6 in) - C-axis and spindle brake (hydr.) - Slide (Z3), AC servo motor with ball screw, absolute encoder

Chucks for main spindle

B-S0132*	Uchwyt trójszczękowy z otworem przelotowym i systemem szybkiej wymiany szczęk typ THW PLUS 260-81, marki Schunk, wraz z elementami połączeniowymi
B-S0133*	Uchwyt trójszczękowy z otworem przelotowym i systemem szybkiej wymiany szczęk typ THW PLUS 315-104, marka Schunk, wraz z elementami połączeniowymi

Tailstock

B-D7020	Tailstock function for the counter spindle incl. foot switch. Mechatronic control of the supporting force, selectable per program Thrust force: CTX 2500, CTX beta, CTX beta TC, CLX TC: 2.5 - 6 kN CTX beta 2000 TC: 2,5 - 17 kN

Coolant supply / Chip removal

B-F7002	Hinged type chip conveyor incl. coolant tank

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

B-F01421 Compact coolant system, consisting of:
- coolant tank, 600 litre/158.5 gal
- 8 bar/20 litre/min
  (CTX beta 2000 TC, CTX gamma TC 2nd:
  8 bar/80 l/min /116 psi/ 21.1 gal/min)
  and 20 bar/25 litre/min
  (theoretical pump performance)
  (116.psi/5.2 gal/min
  and 290 psi/6.6 gal/min)
  programmable via M-functions
  coolant supply
  turning/milling spindle
- band filtration unit, grade of
  filtration 40 µm/1,57 µ inch
- level controlled pump

B-B0012G Chuck rinsing device for counter spindle, outside

B-Z0400 Pistolet spłukujący

Measuring / Monitoring

B-H7017 Workpiece touch probe RMP40, Renishaw

- Dimensions basic body
  (excl. stylus length):
  L= 50 mm (1.9 in), Ø= 40 mm (1.5 in)
- Interchangeable in turning/milling spindle
- Probe reception and tracer point with data transfer between probe and receiver by radio signals
- Incl. measuring cycle package Inspection Plus

Note:
Custom measuring cycles are not included

B-H7018 Tool measuring device RP1, Renishaw

Automatic 5-way tool measurement in the machine by means of touch cubes to avoid measuring and transmission errors. Precise measurement of tool length and tool diameter for stationary tools (turning tools).
The measurement takes place below the tool changer, protected behind the tool loading hatch.

B-C7227 Measuring system for Z1-axis

Automation

B-Z0205* Lampa sygnalizacyjna, 4-kolorowa

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

Measure

B-Z0110 Jednostka mm

Options for Siemens control with CELOS / Siemens

B-A0801 Czytnik plików DXF dla Siemens w sterownaniu
Dla importu plików DXF-files w formie wybranego konturu
- wsparcie warstwy i kolorów
- wybór elementów geometrycznych

B-A0335* Cykl technologiczny dla zastosowania zmiennej prędkości dla ustawień wrażliwych na drgania
(Tylko w połączeniu ze sterowaniem Siemens)

Suma Maszyna i opcje

Digitalization Products

DMG MORI Connectivity

D-CO200* **Digital Manufacturing Package**
(1) IoT*connector*
Allows the use of the Online services from DMG MORI

(2) Machine Data Connector (MDC)
Standardized machine data interface
Protocols: OPCUA, MTConnect, MQTT

(3) NETservice
Qualified support through internet-based remote diagnosis

DMG MORI Monitoring

D-MO002* **Messenger V4**
Clear presentation of the machine live status.

Price Digitalization Products

Services

Packing / Transport / Installation

B-Y0005 Koszt opakowania do transportu drogowego

Koszty transportu

* szczegółowy opis wyposażenia zawarty jest w części technicznej oferty

B-Y7011*	Commissioning of the machine at the customers plant incl. travel costs within Germany Note: Travel costs outside Germany are not included

Services / Accessories

B-Z0950	Extended warranty of 6 months. 1,5% of machine order value
B-Z0908	3D data model of the working area of the specified machine in Step and IGES data format. The 3D data model is delivered on a data carrier.

Application courses DMG MORI Academy

A-D821-D*	Programming with DMG Programmer 3D V5 Duration: 4,5 days Price: calc. per pers

Suma Usługi

Suma Maszyna i opcje
Price Digitalization Products
Suma Usługi

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

Niewybrane zalecane opcje

Options - machine

B-H72521 Protection Package
consisting of:
- MPC 1.0 – Macine Protection Control
- Easy Tool Monitor 2.0

MPC 1.0 - Machine Protection Control
Preventive protection by
vibration sensor (SDS) at the spindle:
Machine protection by quick shutdown
of milling head in less than 0,01 sec

Tool breakage monitoring
Easy Tool Monitor 2.0
- Simplified holistic view of the actual state of the tools in side screen of CELOS*
- Setting of one monitoring limit for each tool selected from the tool list
- Easy teaching function to measure monitoring limit, with manual modification / correction of the fixed values
- Tool fracture and wear monitoring
- Process analysis and optimization

Note:
- Only available from Siemens Operate 4.7
- *Except CLX 450 TC

Further accessories

B-Z0206 proTIME
Visualisation of the remaining
runtime, remaining workpieces
and the machine state

* szczegółow y opis w yposażenia zaw arty jest w części technicznej oferty

Clamping device main spindle - options

B-B 7042 Zderzak wrzeciona, nastawny,
montowany z tyłu urządzenia zacisku
śr. 67 mm
(niezależny od uchwytu)

Options - CNC-control

B-A 0411 Tool breakage monitoring
Easy Tool Monitor 2.0

- Simplified holistic view of the actual state of the tools in side screen of CELOS*
- Setting of one monitoring limit for each tool selected from the tool list
- Easy teaching function to measure monitoring limit, with manual modification / correction of the fixed values
- Tool fracture and wear monitoring
- Process analysis and optimization

Note:
- Only available in connection from Siemens Operate 4.7
- *Except CLX 450 TC

B-A0326 Opcje toczenia i frezowania pozaśrodkowego
(tylko ze sterowniem Siemens i osią Y-axis)

B-A0342 Kontrola stanu programu części,
Stan obróbki jest utrzymywany
i pokazywany na sterowaniu.
Szczególnie przydatny dla obrabiarek
wielokanałowych.

B-A0349 Technology cycle with dialog-guided programming for the production of any keyways according to DIN6885 or driving grooves according to DIN138 with standard tools.

This option contains the technology cycle with the corresponding input mask.

B-A0351	Technology cycle to parting off the workpiece by the Y-axis to achieve significantly higher feed, more process stability and less material loss. This option contains the technology cycle with the corresponding input mask to simplify the operation and to minimize the operator errors. Fully usable with the parting-cycle "Cycle 95" in DIN-ISO and ShopTurn.

ZAŁĄCZNIK

OPIS TECHNICZNY

B-A7290
Technical description CLX 450 TC Subject to changes

Machine bed
The rigid 4-guide machine bed made of high-quality machine casting with screwed-on linear slide ways ensures free chip fall.

Headstock left, fixed
The headstock is designed as an integrated spindle motor with C-axis and hydr. actuated spindle brake. The spindle motor including the motor console is water cooled and is characterized by high dynamics, high torque, high thermal stability and low noise level.

Clamping device, spindle left
Hydraulic clamp 1-pressure, full clamping cylinder with safety device and stroke control, hollow clamping device Ø 67 mm, foot switch with electric/hydraulic control, completely assembled.

Upper slide
4-axis slide with X1-, Z1-, Y1- and B-axis. Additionally with low-friction, pre-loaded linear guiding elements and rotary, freely interpolatable B-axis.

Tool carrier on top as turning- and milling spindle
The turning- and milling spindle is designed as a motor spindle with direct drive, supplemented by a hydraulic clamp for frictional locking for turning operations. It includes a function for internal switching between coolant and compressed air. The tool holder is HSK 63A according to DIN 69893. The tool changer has HSK-T standard so that HSK-T tools can be used.
The tool clamping device is released hydraulically and clamped mechanically by disc springs.
Integrated motor spindle compactMASTER® with 36 months warranty period for the component spindle without restriction of spindle hours.

Feed drives with digital drive control
Feed drive longitudinal, transversal and vertical with highly dynamic synchronous drives and ball screws. High-torque torque motor for the rotary axis (B-axis).

Measuring systems
The linear axes of the upper slide in X-, Y- and Z-axis* are equipped with absolute direct linear scales and are pressurized with compressed air. The B-axis has an incremental inductive rotary encoder.

Tool magazine
Chain magazine with 30 tool places at the front on the left side with ergonomic front loading for optimum operating comfort. (More service friendly for access for maintenance work in the magazine area).

Tailstock
The automatically moving tailstock with a live center MT5 is guided on low-friction, preloaded linear rolling guide elements and positioned hydraulically via M command or foot switch. The setting force is adjusted via pressure control valves. The displacement measurement is incremental.

Control system
CNC control with SLIMline control panel, manufacturer and type see control description.

Electrical data
Operating voltage: 400 V, (L1, L2, L3) ±10%, N, PE, 50 Hz, ±1%
Control voltage: Contactors 24 V DC
Machine light: Protection class IP 67, 24 V DC

Electrical equipment: DIN EN 60204 T1, switch cabinet in protection class IP 54 with filter fan

Protective measures
This turning machine is designed for the protective measure protective line system (protective earthing).
It must not be operated on networks with residual current protection devices.

Lubrication
Central lubrication system with impulse lubrication and electrical monitoring.

Coolant system
Coolant unit with separate circuits, selectable via M-function.
Coolant circuit for tool carrier top and chuck jaw rinsing device.

Chip tray
Chip tray with coolant tank, 165 l.

Hydraulic power unit
Frequency-controlled hydraulic unit complete with control pump and micro filtering in the pressure line.

Cover
Closed machine cover with sliding doors on the operating side, with electrical monitoring and electro-magnetic locking in accordance with accident prevention regulations All machine assemblies are covered in a chip- and splash-proof manner against the chip compartment.

Color
Painting (design variant "Black")
Machine cover: Calcite-white (RAL 9010, pure white)
Protection door: Deep black, smooth, high gloss (RAL 9005)
Front panel: Deep black, smooth, high-gloss (RAL 9005)
Front windscreen frame: Deep black, smooth, high-gloss (RAL 9005)
Control cabinet: Titanium grey (RAL 7016, anthracite grey)
Chip conveyor: Titanium grey (RAL 7016, anthracite grey)

Machine installation elements
with 10 plates and 10 heavy duty anchors

Scope of delivery documentation:
Operating Instructions:
Germany and German speaking countries: German
Europe (without German-speaking countries) German + national language
USA, Korea English
China, Japan, Russia: English + local language
Technical Documentation Mechanical Systems available in DE, EN, FR, IT
Technical Documentation Programming:
Germany and German speaking countries: German
Europe (without German-speaking countries) German + national language,
(depending on the availability of the control manufacturer)
USA: English
China (simplified) English + local language
Japan, Korea, Russia: English + national language
(depending on the availability of the control manufacturer)
Technical Documentation Electrics (incl. electrical circuit diagram with fluid diagram): available in DE, EN, FR, IT
The required languages must be ordered according to the country-specific legislation in consultation with the supplier plant.

Note
Cooling lubricant is not supplied with the machine.

Options
Counter spindle
Counter spindle for back-machining of the workpiece (integrated spindle motor) on separate slide instead of the tailstock.

Chip conveyor
Hinged plate chip conveyor with electrical running control, including transport rollers for easy installation and removal from the front, attachments and electrical control.
Discharge height approx. 1200 mm.

Technical data Subject to technical modifications

Working area	
Swing diameter 500 mm 19.6 in	
Max. turning diameter	400 mm 15.7 in
Max. turning length	1100 mm 43.3 in
Center distance for tailstock machine	1472,5 mm 57.9 in
Spindle distance for counter spindle machine	1435 mm 56.4 in
Spindle 1 Main spindle, left	
Spindle head (short taper)	A2-8
Chuck diameter	210-325 mm 8.2-12.7 in
Max. bar diameter	65 mm 2.5 in
Spindle bore diameter	87 mm 3.4 in
Draw tube inner diameter	67 mm 2.6 in
Diameter in front bearing	130 mm 5.1 in
Drive power, S1-100%d.c. / S3-40%d.c.	14/17 kW 18.7/22.7 hp
Max. Speed 5000 rpm	
Power knee 485 rpm	
Torque, S1-100%d.c. / S3-40%d.c.	275/345 Nm 202/254 lb*ft
Drive type, number of ranges	AC/1
Design ISM 65	
C-axis resolution	0.001 degrees
Slide 1, top	
Slide traverse X1 (below center)	750 mm 29.5 in
Slide traverse Y1	±100 mm ±3.9 in
Slide traverse Z1	1100 mm 43.3 in
Rapid traverse speed X/Y/Z	40/40/40 m/min 131/131/131 ft/min
Feed force 100% X/Y/Z	5,6/5,5/7,5 kN 1258/1236/1686 lbf
Feed force 40% X/Y/Z	8,5/7,5/10 kN 1910/1686/2248 lbf
Travel resolution X/Y/Z	0,001 mm 0.00003937 in
Ball screws -X/-Y/-Z, d x h	Ø40x10 mm Ø1.57x0.39 in
Turning-/milling spindle	
Tool holder HSK-A 63	
Max. Speed 12000 rpm	
Diameter front and rear bearing	70/75 mm 2.7/2.9 in
Drive power, S1-100%ED / S3-40%ED-2min	8,8/10,5 kW 11.8/14 hp
Torque, S1-100%ED / S3-40%ED-2min	73/90 Nm 53/66 lb*ft
Drive type, number of ranges	AC/1

Indexing angle 0.001 degrees	
Holding torque, locked	850 Nm 626 lb*ft
B-axis	
Swivel range ±120 degrees	
Torque, S6-40% d.c.	614 Nm 452 lb*ft
Measuring system	Incremental
Angular resolution	0.001 degrees
Clamping torque	2800 Nm 2065 lb*ft
Tool magazine	
Magazine type chain	
Max. tool places	30
Max. tool weight	8 kg 17.6 lbs
Max. total load 120 kg 264.5 lbs	
Max. eccentric load	48 kg 105.8 lbs
Max. tool length HSK-A/T 63	300 mm 11.8 in
Max. tool length Capto C6	295 mm 11.6 in
Tool diameter 78 mm 3 in	
Tool diameter with free space	125 mm 4.9 in
Tilting moment tool	10 Nm 7.3 lb*ft
Tool change time	1.6 s
Tailstock	
Travel 1200 mm 47.2 in	
Adjustment force	14 kN 3147 lbf
Center punch holder	5 MT
Drive type hydraulic	
Rapid traverse speed Z	5 m/min 16.4 ft/min
Cooling unit	
Cooling: tool spindle, B-axis torque motor, main spindle, hydraulics	
Motor flanges X1&Y1	
Capacity 19,5 l 5.1 gal	
Cooling capacity	2,7 kW 3.6 hp
Delivery rate 8 l/min 2.1 gal/min	
Delivery pressure	0,75 bar 10.8 psi
Number of cooling circuits	1
Coolant unit	
Pressure 6 bar 87 psi	
Delivery rate 20 l/min 5.28 gal/min	
Filter type Strainer + Insert filter	
Filter fineness 50 µm	
Chip tray	
Coolant capacity	165 l 43.5 gal
Chip conveyor*	
Coolant capacity	245 l 64.6 gal
Chip conveying capacity	150 kg/h 330 lbs/h
Hydraulics	
Capacity 20 l 5.28 gal	
Power pump (frequency controlled)	4 kW 5.36 hp
Pressure pump 100 bar 1450 psi	
Delivery rate pump	24 l/min 6.3 gal/min

Pneumatics
Pressure 5-8 bar 72-116 psi
Air consumption 10 m³/h 353 ft3 /h

Electrical energy demand
Connected load 40 kVA
Operating voltage 400 (L1, L2, L3) V ±10%, N, PE
Frequency 50 Hz
Fuse protection (slow blow, permissible) VDE 0100 63 A

Environmental conditions
Permissible ambient temperature from +15 to +35ºC
Max. relative humidity 75%
Max. Installation altitude 1000 m above sea level

Accuracy according to VDI ISO 230-2 (at T=20 ± 2º C)
Two-sided position uncertainty A in X1/Y1/Z1/Z3 5/5/12/10 µm
Two-sided position uncertainty A in C3/C4 18/18 arcsec
One-sided systematic position deviation E in X1/Y1/Z1/Z3 4/4/10/10 µm
One-sided systematic position deviation E in C3/C4 15/15 arcsec
One-sided repeatability of positioning R in X1/Y1/Z1/Z3 2/2/8/6 µm
One-sided repeatability of positioning R in C3/C4 10/10 arcsec
Reversal span B in X1/Y1/Z1/Z3 2/2/4/4 µm
Reversal margin B in C3/C4 6/6 arcsec

Dimensions and Weights
Installation - Dimensions L/W/H 5187.5/2107/2462 mm 204.2/82.9/96.9 in
Max. Weight of the machine incl. switch cabinet 11200 kg 24691 lbs

Emission sound pressure level
Emission sound pressure level LpA max. 75 dB(A)

*Option

B-A7080
Siemens 840D sl Operate

CONTROL DATA

Scope of delivery
ShopTurn 3G includes ShopTurn and DIN programming.

Control type
Contouring control for all axes, spindles, tool changer, tool magazine, turrets and tool drives.

Metric system of measurement

Input system metric or inch

Dimension input chain dimension/reference dimension

Input unit 0.001 mm (0.0001 inch)

Interpolation type and range linear ±99999.999 mm

circular ±99999.999 mm

Feed input directly in mm/rev or mm/min.

Feed rate superimposition 0 - 120

Feed range
- 0.001 mm/rev to rapid traverse rate

External servo handwheel
For fine adjustment of the slides, selectable ranges on the handwheel: 0.1 mm, 0.01 mm and 0.001 mm.

Thread cutting
- 0.001 to 500.000 mm/rev, longitudinal, plane and taper threads
- Single or multiple pass with constant or variable pitch
- Thread with inclined inlet and outlet

Rapid traverse limitation by parameter input

Spindle speed Input in rpm.

Spindle speed superimposition from 50 to 150%.

Spindle speed limitation
Programmable and adjustable via parameters.

* Machine dependent

Spindle stop via C-axis

Coordinate system
- Cartesian, polar and cylindrical coordinates

Constant cutting speed Input in m/min.

Tool programming

Tool name with tool data

Number of tool data / tool offsets
1500 tool cutting edges with a maximum of 600 tools available

- Tool types displayed as icons
- Tool name Alphanumeric 24 characters
- Multitool with max. 64 tools

Cutter radius compensation
- Programmable via G40, G41 and G42

Tool life monitoring
- Monitoring of tool life with automatic activation of replacement tools

Tool list
- Uniform tool list for all modes

- Firm compound of multitools
- Sort, filter and search within the list

Real-time clock
- Time is retained even after switching off.

Processing time
- Measurement of the elapsed machining time between the start and end of the program

Limit switch
- Software limit switch per axis direction

Spindle pitch compensation for all axes

Reverse play compensation available

Zero offset
- 4 pieces can be permanently called up via G54 - G57 and others can be programmed additively

Working memory

CNC working memory internal to NCU
- Up to 16 MB (for NCU710.3B depending on memory partitioning)
- Up to 22 MB (for NCU720.3B depending on memory partitioning)

Additional memory on CF Card NC-Extend 6GB

Program management
- Program name max. 24 characters

C-axis machining of lateral surfaces

Face machining
- With C-axis in Cartesian programming

Helical interpolation available

Program management
- Program name max. 24 characters

- Max. 1000 programs in NC memory with max. 512 files per directory-
Max. 250 workpieces, in total 256 directories

Subroutines 16 nesting levels

Subprogram repetition Repetition cycle 1 - 9999 times

Program format
- Program input based on DIN 66 025 with variable block length and
High-level language extension

Programming support for cycles
- Masks and animated auxiliary images
- Technological cycles for drilling / milling and turning

Simulation
- Traversing simulation line graphics or solid model with dynamic material removal

- Parallel simulation for machining (not with NCU710.3)
- Simulation of multi-channel machining (depending on machine configuration)

Program input/output
USB, on-screen keyboard for alphanumeric input, work from external data storage via network connection (Ethernet)

Ethernet interface available

USB interface in the control panel

Program editor
- Select, copy, delete areas
- Uniform editor for all programming functions
 -ASCII
- ProgramGuide
- ShopTurn
- Multichannel editor*

Cycles
- Clamping cycles for longitudinal, plane (rising contours), recesses, undercuts, threads and drilling cycles

Sentence search
- By machining status or block in the active program

Parameter
- Machine, setup and work parameters, editable on the control system

Reference point driving
- Not required, since axes with absolute encoder
- With B-axis available with independent retract from reference switch*.

Variable programming
- 500 global and 200 local variables for programming families of parts; trigonometric -.
 arithmetic functions, Boolean operations

Chamfers and radii
- Chamfer and radius programming at contour transitions

Drawing dimension direct programming available

Jump function absolute and conditional jump

Real time clock Power failure proof with battery

Diagnosis (automatic)
- Constant condition monitoring through the integrated diagnostic system
- Display of the current error states

Soft keys for special functions
- Create screenshots
- Language switching
- Copy, Paste, Cut, Select
- Backing up log files to USB or CF card
- Entry program start and end

Diagnosis after selection Display of:

- Internal memory contents
- Income and expenses
- The last error texts with time and date

MACHINEcheck
- Maintenance reminder application
- Optional: Maintenance training for your DMG MORI machine
- Optional: DMG Service Agent with the functions
  Notification, guidance and support for spare parts ordering

AUTOshutdown
Intelligent standby control to avoid unnecessary energy consumption by time-controlled shutdown of unused units.
The times and shutdown conditions can be individually adapted by the customer to his production for each machine in an easy-to-use NC mask.

Screen layout
- Display of the actual values of all axes (position, speed) in the operating modes manual control and Automatic
- Display of block number, feed rate, tool number and tool offset of the respective selected slide
- Actual value display for path dimensions, feed rate, speed, tool, vertical and horizontal soft keys
- Multi-channel display*

Plain text display
- Program text, block text, diagnostic text

Possible languages
- German
- English
- French
- Italian
- Spanish
- (other languages on request)

Functional scope of ShopTurn 3G control software on Operate user interface

Programming options

Scope of functions
Summary of the different programming interfaces for production and job store in a system.

DIN/ISO
Programming in plain text format or edit external programs.

programGuide
Creating DIN - programs with graphical support.

ShopTurn
Work step programming with graphic support and automatic generation of approach and departure paths.

programsync
Programming in programmGuide, ShopTurn or also mixed possible.
Block formation to summarize work steps in programGuide or ShopTurn.

Programming programGuide

Cycle programming
- Convenient cycles with graphically animated support
- Uniform look and feel between all programming types

Manual functions/setup functions

Measure workpiece
- Workpiece scratching in Z axis

Measure tool
- Measure mold with probe or tooleye (option)
- Measure tool by scratching

Automatic functions
- Block scan (also on individual holes of a hole pattern)
- Block sequence (automatic mode)
- Work plan test (dry run)
 (Limitations of the function possible depending on the machine equipment)
- Returning to the contour, block search run

More functions

Help functions
- Context sensitive online help
- Tooltips on each input dialog
- Syntax check with value control and color feedback

Simulation display
- Raw contour (cylinder, hollow cylinder, polygon)
- Material removal in real time or in fast forward mode
- Top or side views
- Display in variable magnification (zoom)
- Real-time simulation in parallel with machining

Programming ShopTurn

Contour basic elements
You can call up the basic elements that describe a contour, parameterize them, start them immediately, save them or include them in a working plan. A contour is thus created quickly and conveniently. The following basic elements are available:
- Straight X/Y*/Z also with C axis
- Bevel in X/Z or under angle, also with C-axis
- Circle parameterizable by radius/endpoint or center point

Cycles

Abspanzyklen
- Clamping cycle with adjusted B axis against any contours Axis- and contour-parallel
 Roughing and finishing

- Front side, back side
- Residual material detection
- Any blank specification

Drilling cycles
- Center deep hole drilling
- Bolt circle on face, on lateral surface with C-axis
- Tapping
- Position pattern

Thread cycles
- External and internal thread
- Face and taper thread
- Machining of multiple threads
- Thread reworking
- Linear or degressive infeed
- Constant or variable slope

Grooving / undercutting cycles
- Infeed cycles for straight lines and on slopes
- Undercut Form E, Form F, DIN thread

Milling cycles
- Line milling (C/X, C/Z)
- Grooves (straight and circular) on lateral and end faces
- Pockets (also with islands) on front face
- Cones on the star surface
- Path milling, also displacement in the machine coordinate system possible
- Engraving text
- Block sequence (automatic mode)
- Work plan test (dry run)
 (Limitations of the function possible depending on the machine equipment)
- Returning to the contour, block search run

More functions

Step-by-step routing allows:
- Characterize each step with easy to understand symbols
- Work plan creation without DIN/ISO knowledge
- Easily change, insert and remove
- Special commands (e.g. M-functions)
- Inserting transition elements, processing block by block (single step)

Additional options
- Easy to understand help screens for each cycle
 (Animation are only a schematic representation of the function)
- Scaled graphic for input support
- Graphical work plan test (test run)
- Creation/reading and processing of complete DIN/ISO programs

Technology input
- Tool definition per routing step possible
- Tool and wear data for up to 900 tools

DMG Mori technology cycles as an option depending on machine equipment
- Simple programming of complex technologies

(Depending on the function, a simulation may not be possible).

Functions for multi-channel editing - programSync*.

Time display
- Display of machining times in the program per channel (after first simulation)

Wait mark analysis (only for multi-channel machines)
- Graphic display of the synchronization points

Setting up programs on the machine
- Channel or spindle dependent mode

B-S0132
3-jaw power clamping chuck with through-hole Ø81 mm (Ø3.188 in)
and jaw quick-change system, complete with one set basic and hard top jaws,
incl. connecting elements, type THW PLUS 260-816, make Schunk
(max. speed = 4000 rpm, max. operating force = 65 kN / 14617 lbf)

B-S0133
3-jaw power clamping chuck with through-hole Ø104 mm (Ø4.09 in)
and jaw quick-change system, complete with one set basic and hard top jaws,
incl. connecting elements, type THW PLUS 315-104, make Schunk
(max. speed = 3600 rpm, max. operating force = 90 kN / 20232 lbf)

B-Z0205
Lampa sygnalizacyjna, 4-kolorowa

Lampa sygnalizacyjna zamontowane powyżej obudowy maszyny na pionowej rurze.
Następujące stany obsługi maszyny wyświetlane są przez lampkę kontrolną:

CZERWONY (ciągły) Ogólna awaria
Wymaga natychmiastowego działania, stan niebezpieczny, błąd / usterka
o wysokim priorytecie, np. ZATRZYMANIE AWARYJNE, wrzeciona i posuwu.

ŻÓŁTY(ciągły) maszyna wymaga interwencji
z powodu komunikatu o usterce z niskim priorytetem, ciągle istniejącej,
np. złamanie narzędzia, ostrzeżenie wyprzedzające np. brak chłodziwa,
części niedostarczone do obróbki (pusty zasobnik części obrabianych)
lub magazyn części do obróbki jest pełny, zmierzona część
nie jest dobra (odrzucona).

ŻÓŁTY (migający) Brak materiału przy popychaczu pręta (zgodnie z interfejsem koncernowego podajnika prętów)

ZIELONY (ciągły): Normalne warunki pracy maszyny, np. maszyna pracuje w trybie automatycznym
lub MDA

NIEBIESKI (ciągły) Maszyna wymaga interwencji ze strony operatora, np.
maszyna w trybie ustawiania, start cyklu, pusty zasobnik detali, brak materiału
w podajniku prętów, wybrany specjalny tryb ¾.

NIEBIESKI (migający) Generalnie maszyna wymaga działania ze strony operatora ponieważ wybrany jest specjalny tryb pracy 3/4.

B-A0335
Za pomocą tego cyklu, zarówno prędkość części obrabianej jak i wrzeciona narzędziowego mogą być doprowadzone do prędkości alternatywnej.
Przez wprowadzenie parametru prędkości różnicowej (amplituda) i czasu (częstotliwość), prędkość obrotowa wrzeciona oscyluje harmonicznie wzdłuż zaprogramowanej prędkości zadanej. Częstotliwości wzbudzania są absorbowane i możliwe jest uniknięcie drgań narzędzia na przedmiocie obrabianym.

B-Y7011
Commissioning
Scope: Commissioning of the machine at the customers plant within Germany.
The commissioning of the machine includes alignment and a functional test.

Condition: Machine already installed, cleaned, degreased and electrically connected according to the operating instructions. Lubricants and corresponding coolant have to be available.

D-CO200
D-CO200
Digital Manufacturing Package

1) IoT*connector*
The integrated IoT*connector* enables to use the DMG MORI online services (eg NET*service*). With the integrated firewall, the machine is protected against attacks despite the online connection. In addition, the IoT*connector* receives security updates via an integrated Device Management.

Notes:
For the secure operation of a machine tool within a network, DMG MORI recommends orientation on IEC62443 IT-security for industrial automation systems.

2) Machine Data Connector
Uniform machine data interface as an integrated function of the DMG MORI Connectivity Hardware independent of the machine controller, the machine signals are available as a signal output through one of the following protocols:

- MQTT (MQTT Client)
- MTConnect (MTConnect Agent Version 1.4.0.3)
- OPC-UA (DMG MORI OPC-UA Server Konfiguration)

The used protocol is to be configured at machines with CELOS (Version 5) through the App "Connector Management" or through the Windows application “Connector Management” which is directly installed to an external PC (recommended) operated within the same network than the DMG MORI Connectivity Hardware.

CELOS Connector Management is included in CELOS or/ and is provided as a separate software for standalone usage.

Updates for the software function of the Machine Data Connector will be provided directly to the DMG MORI Connectivity Hardware via DMG MORI Device Management. An Internet connection of the DMG MORI Connectivity Hardware is required for this update function.

The following signals are available*:

- Machine Serial Number
- Operating hours
- Power On Time
- Controller Mode
- Status Stack Light
- Number of active alarms
- Notifications (Alarm/Warnings)
- Part Program Name
- Current Program Execution Time
- Spindle Override
- Desired Parts
- Feed Override
- Number of active Tool
- Rapid Override
- Execution State
- Part Counter
- Part Counter overall

*Additive DMG MORI machines (powder nozzle or powder bed) have a different signal set because of their machine technology.

3) NETservice

The NET*service* stands for a couple of new features for optimal remote service support. Besides of an interactive remote desktop feature for a direct view on HMI and control, direct file transfer of service related files the experts of DMG MORI can be involved in a single or multi-user-conference. A chat and whiteboard functionality complete the conference functionality. To use the DMG MORI NET*service* the supplied software DMG MORI NETservice Customer Application has to be installed on a PC/notebook.

Your customer benefits at a glance:

- Fast support through access to CELOS, IPC and NC
- Intuitive operation
- High transparency thanks to logging of all service activities
- Deposit of individual user profiles and rights
- Chat functionality for communication between customer and service

The usage of NET*service* is free of charge for the duration of the machine warranty and ends automatically. NETservice after Warranty is subject to monthly costs. The DMG MORI Service is able to create a suitable offer.

Requirements of usage:

- Requires IoT*connector*
- Requires Internet connection to the machine
-

D-MO002
DMG MORI Messenger V4

The latest version of DMG MORI Messenger displays web based the machine live status. It allows to analyze the machine run-time, downtime, alarms in individually configurable dashboards and transparently shows the actual status in the manufacturing shopfloor through the subscription to e-mail reports. The DMG MORI Messenger needs to be installed on a PC/Server. The access to the application is done web based through a web browser.

Scope of delivery:
- 1x Software "DMG MORI Messenger V4" on DVD
- 1x License key to connect a single machine
- 1x Manual on DVD

The Software needs to be installed and configured by the customer himself on his own computer or server. In case of any questions, the support team from DMG MORI Software Solutions GmbH will be available over the DMG MORI regio service by telephone and via E-Mail (support@dmgmori-digital.com, keyword "Messenger").

Requirements for connecting a machine:
- DMG MORI Connectivity Hardware with Machine Data Connector (min. version 2.4) or
- DMG MORI MAPPS control with active MTConnect interface or
- DMG MORI machine from at least 2013 with DMG MORI Connectivity Hardware Retrofit or
- Third party machine with MTConnect interface on request (professional-service@dmgmori.com).

System requirements server:
- Installation on an exclusive server or virtual machine
- Supported operating systems: Microsoft Windows Server 2019 Standard (1809), Microsoft Windows Server 2016 (current version 1607 [Build 14393.2828]) or Microsoft Windows 10 Enterprise LTSC (Long Term Service Channel version for corporate clients).
- Hardware requirements: CPU min. x64 2x1.4 GHz, min. 8 GB RAM, min. 80 GB SSD
- For further requirements, please visit https://dmgmori.com/messenger-preinstallationcheck

Besides applies the End-user license agreement for DMG MORI Messenger, which is available under www.dmgmori.com.

A-D821-D
Programming production lathe by the DMG Programmer 3D V5
The participants will be qualified by our certified trainers 4,5 days, according to the courses offered by the DMG MORI Academy GmbH Germany.
Every participant gets special training documents and at the end of the course a Certificate of Excellence.
Depending on the scheduled dates, the training will be take place in one of our locations in Germany.
The training-language is German.
Accommodation, traveling and board expenses are additional for the purchaser.
Requirements: Profound knowledge in Gildemeister structure programming.
Maximum participants: 8 persons.
For less than 3 participants the DMG MORI Academy GmbH reserves the right to change the appointed day of the course.