

UNIVERSAL MILLING MACHINES

## CMX U Series

CMX 50 U

CMX 70 U



**IoTconnector**  
IN STANDARD -  
READY FOR  
DIGITIZED  
PRODUCTION  
PROCESSES

3D

## Machine highlights

### Modularity

> Technology and applications

> Customization and solutions

> Control technology

### Technical data

## CMX U SERIES

# Your powerful and flexible 5-sided machining solution for more efficiency and productivity!

A modern CNC milling machine must be **productive, flexible** and **easy to operate**. The models of the CMX U series demonstrate this with their unique design and exclusive features and options!

Explore the entire range of **leading technological 5-axis performance of DMG MORI with the CMX U machines**. This applies to the **modularity** and possibility to build up "your own machine" with **wide range of hardware and software options, variety of 3D-controls and technological solutions**.

## HIGHLIGHTS

- + Increase your efficiency and productivity with the CMX U series!
- + Rapid traverse 30m/min in all linear axes for highest dynamics
- + 30-pocket tool magazine in standard with quick tool change within 2.4 sec.
- + 60-pocket tool magazine as an option with quick tool change within 2.7 sec. (optional)
- + inline spindle of 12,000 rpm with power 13 kW (40% DC) and torque 83 Nm (40% DC) in standard

- + **NEW:** inlineMASTER-spindle with 36 months warranty and 12,000 rpm / 15,000 rpm (optional)
- + **NEW:** Direct measuring system in standard
- + **NEW:** IoTconnector in standard

NEW

02



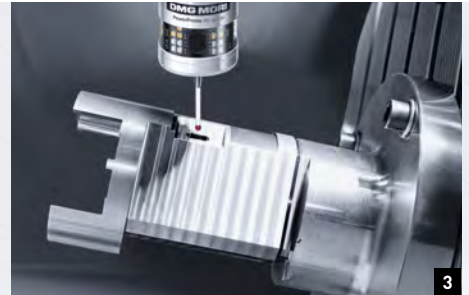




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2



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- 1: Technology: Variety of applications (p. 4-7)
- 2: Automation solutions (p. 8-11)
- 3: Customization: Broad range of options (p. 12-15)
- 4: Controls technology (p. 16-17)



3D



3D



2,594 mm

3,045 mm

max. 2,890 mm

3D

### PERFECT 3D MULTI-TOUCH CONTROL TECHNOLOGY

- + 19" DMG MORI SLIMline multi-touch control panel and SIEMENS
- + 19" DMG MORI SLIMline multi-touch control panel and HEIDENHAIN

**Modularity**

> **Technology and applications**

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Technical data

CMX U SERIES

# Increase your efficiency and productivity with the CMX U series!

The CMX U is the unrivaled winner in its segment – the **modern C-frame design** with **integrated NC-controlled B- and C-axis table** and inherently **stable, mineral cast composit bed** delivers maximum **stability**. Combined with the **recirculating roller guideways**, it delivers the **highest precision** and the **best surface finish** – with **direct measuring system** in standard!

## HIGHLIGHTS

### **Stability and reliability without any compromise!**

- + FEM-optimized design
- + Thermal compensation ensures stable and highest quality production process
- + Roller guideways for highest rigidity and stable machining process

### **More efficiency and productivity**

- + with dynamic axis drives; shorter idle-times up to 20% and 30 m/min rapid traverse in all axes







Hydraulic table clamping and maximum table load up to 350 kg (CMX 70 U)

		CMX 50 U	CMX 70 U
NC swivelling rotary table	degrees	B = -5/+110 C = n×360	B = -10/+95 C = n×360
Traverse (X/Y/Z)	mm	500/450/400	750/600/520
Spindle speed	rpm	12,000	12,000
Torque (40/100% DC)	Nm	83/57	83/57
Drive power (40/100% DC)	kW	13/9	13/9
Number of tool stations		30 (60*)	30 (60*)
Rapid traverse (X/Y/Z)	m/min	30/30/30	30/30/30
Max. table load	kg	200	350

\*Option

## HIGHEST LEVEL OF PRECISION AND ACCURACY THANKS TO DIRECT MEASURING SYSTEMS IN STANDARD

To meet increasing expectations of our customers, all CMX machines are now **equipped with direct measuring system on all 5 axes as a standard**. Implementation of reliable solutions from **MAGNESCALE\*** guarantees **enhanced accuracy** of the machining process as well as **improvement of the process stability**. The use of the MAGNESCALE which has the **thermal expansion coefficient equivalent to the machine casting** ensures high-accuracy machining.



**Magnescale**

\* SIEMENS control, HEIDENHAIN glass scale at HEIDENHAIN control

CMX U SERIES

# NEW: inlineMASTER spindle with 36 months warranty!

The new inlineMASTER spindle is dedicated for all CMX U and CMX V machines and offers **high stiffness** and **excellent thermal stability**. The combination of **big size bearings** and highly efficient Vacrodur material make the new spindle more reliable and rigid. Vacrodur is an innovative alloy, which proves **high load-carrying capacity, resistance to wear and thermal stability**. In combination with **BIG Plus interface** the new inlineMASTER spindle guarantees **improved rigidity** in the tool holder, an improved spindle structure and **repeatability of fastening**. Thanks to this solution the new inlineMASTER spindle with up to **15,000 rpm rotation speed** allows for the torque transmission **up to 121 Nm** and **maximum power of 20 kW**.

## HIGHLIGHTS

- + Better cutting performance due to **53% higher spindle power** and **45% higher torque** with the 15,000 rpm inlineMASTER (20 kW, 121 Nm at 40% DC)
- + **25% faster spindle speed** for improved surface quality
- + **BIG PLUS® interface** for longer tool service life: Elimination of Z-axis movement at high rotational speeds due to double face contact
- + **Oil/air lubrication** of the spindle bearing and improved ribbed structure for long service life
- + **Liquid cooling** for optimum thermal stability

**36 MONTHS WARRANTY** for all MASTER spindles with unlimited spindle hours

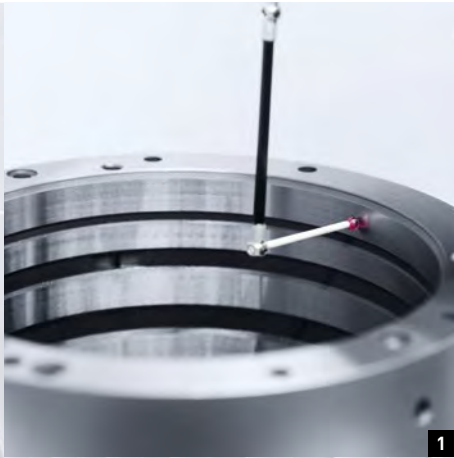


## HIGHLIGHTS

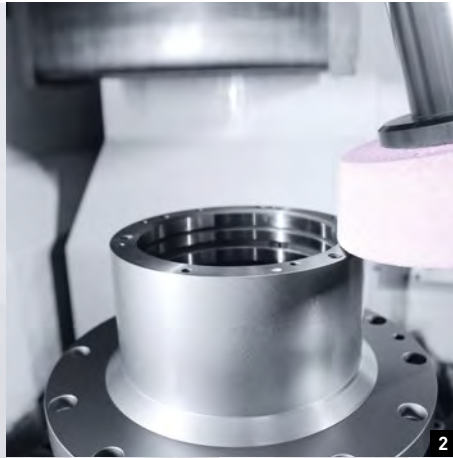
- + 36 months warranty for all inlineMASTER-spindles without hourly limitation
- + Well-proven DMG MORI quality of inlineMASTER spindles
- + 12.000 rpm inlineMASTER-spindles with 83Nm and 13kW\*
- + 15.000 rpm inlineMASTER-spindles with 121Nm and 20 kW\*

\*optional





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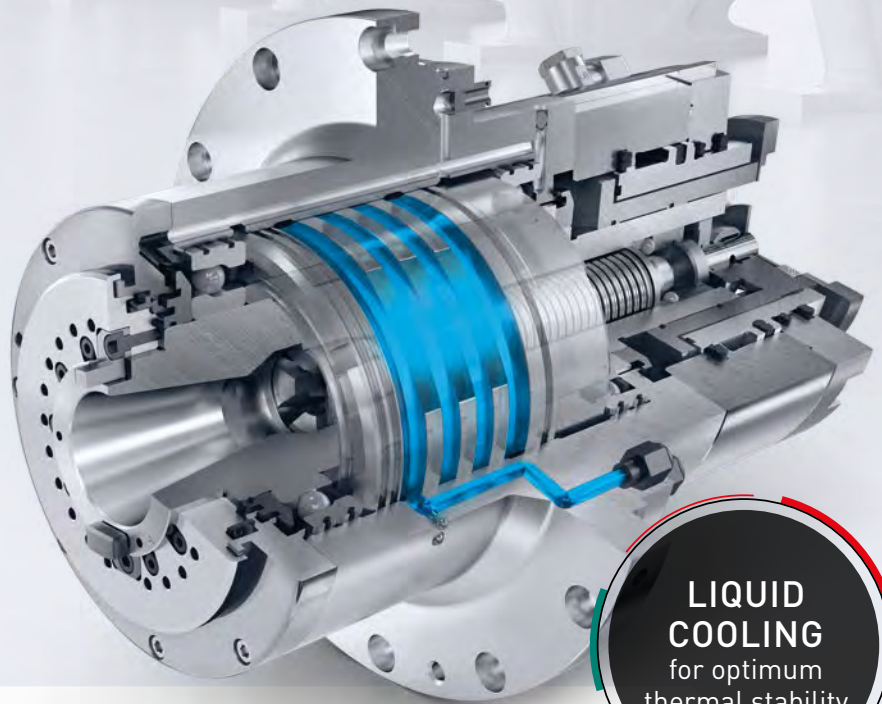
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3

1. The highest quality thanks to very restrictive tolerances 2. The highest precision with run-out <math>< 1 \mu\text{m}</math> thanks to grinding operation  
 3. The highest milling performance thanks to 15,000 rpm, power of 20 kW and high torque 121 Nm

Innovative **oil mist lubrication system** with supply through the external bearing ring guarantees **long spindle run with maximum spindle speed**. Additional **liquid cooling system** provides **thermal stability** and therefore contributes to **longer life time** and **increased machining precision**.

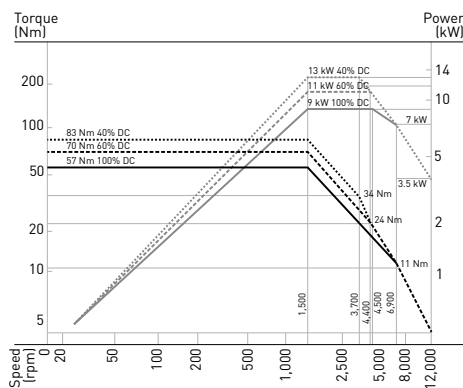


More information about inlineMASTER spindles at: [dmgmori.com/inlinemaster](http://dmgmori.com/inlinemaster)

**LIQUID COOLING**  
for optimum thermal stability

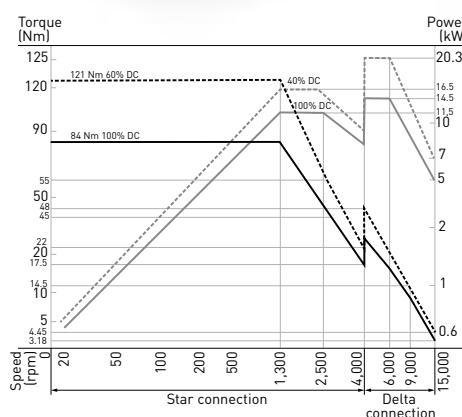
**Power torque diagram**

inlineMASTER 12,000 rpm



**Power torque diagram**

inlineMASTER 15,000 rpm



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Machine highlights

**Modularity**

> **Technology and applications**

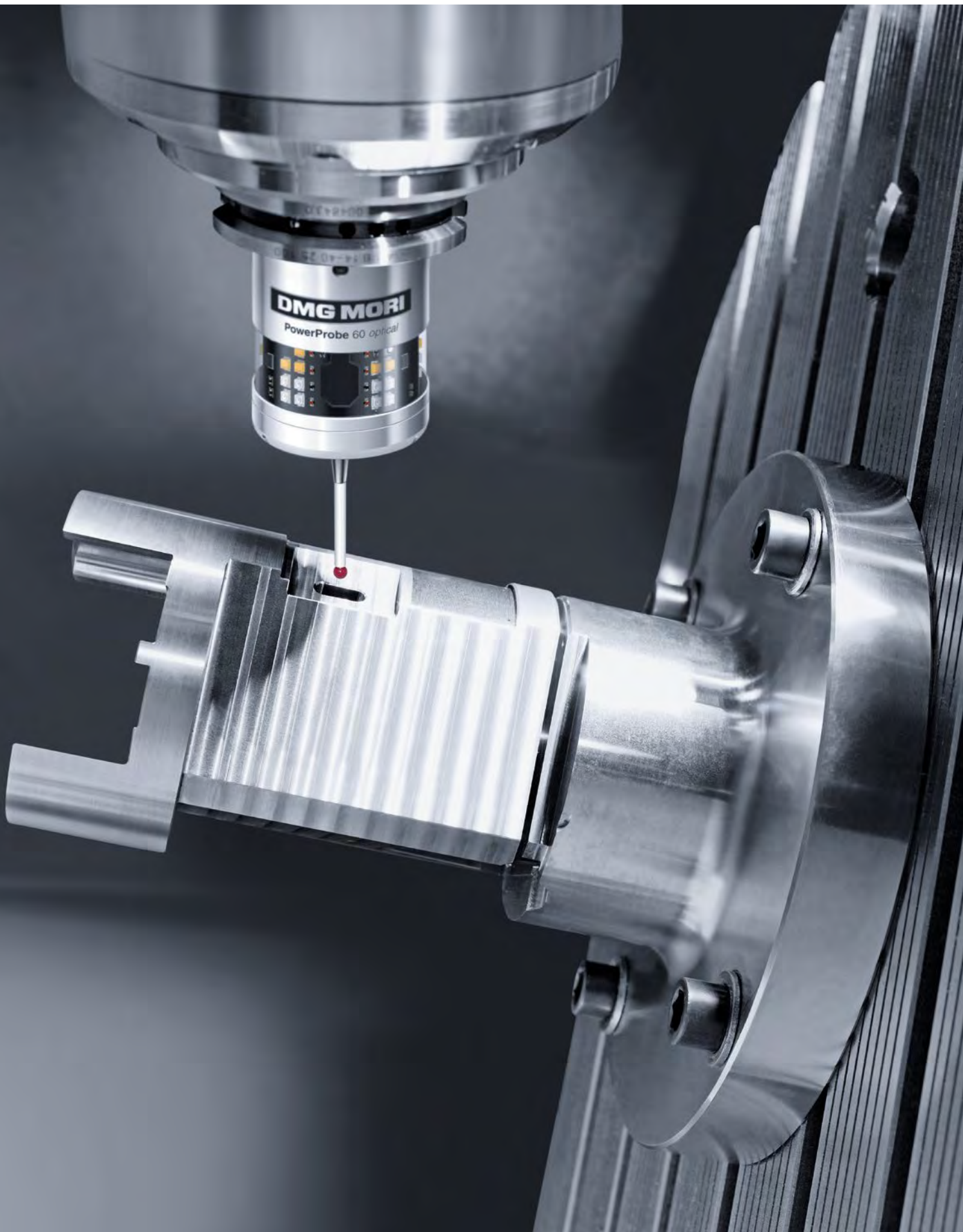
> Customization and solutions

> Control technology

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Technical data

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# Patented swivel-rotary table with perfect accessibility – The 5-sided milling solution for complex manufacturing

The **integrated patented NC swivelling rotary table** has a maximum workpiece mounting surface 200 kg and 350 kg for the CMX 50 U and CMX 70 U accordingly. Thanks to 5-sided machining in just one clamping, the precision of the finished parts is substantially increased and the set-up time is reduced, making the CMX U the high-efficiency solution for almost all workpieces.

## HIGHLIGHTS

- + Swiveling range of B axis from  $-5^{\circ}$  to  $110^{\circ}$  (CMX 50 U) and from  $-10^{\circ}$  to  $95^{\circ}$  (CMX 70 U)
- + Complete machining of complexed parts thanks to 5-axis technology
- + Huge tables  $\varnothing 630 \times 500$  mm (CMX 50 U) and  $\varnothing 800 \times 620$  mm (CMX 70 U) for machining of parts up to 200 kg (CMX 50 U) and 350 kg (CMX 70 U)

## PATENTED NC SWIVELLING ROTARY TABLE

- 1** Drive in C-axis (worm gear)
- 2** 2 Precision roller bearing in B/C-axes
- 3** Drive in B-axis (ball screw)
- 4** Rotary encoders in B/C-axes



**Modularity**

- > **Technology and applications**

- > Customization and solutions

- > Control technology

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 Technical data
 

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CMX U SERIES

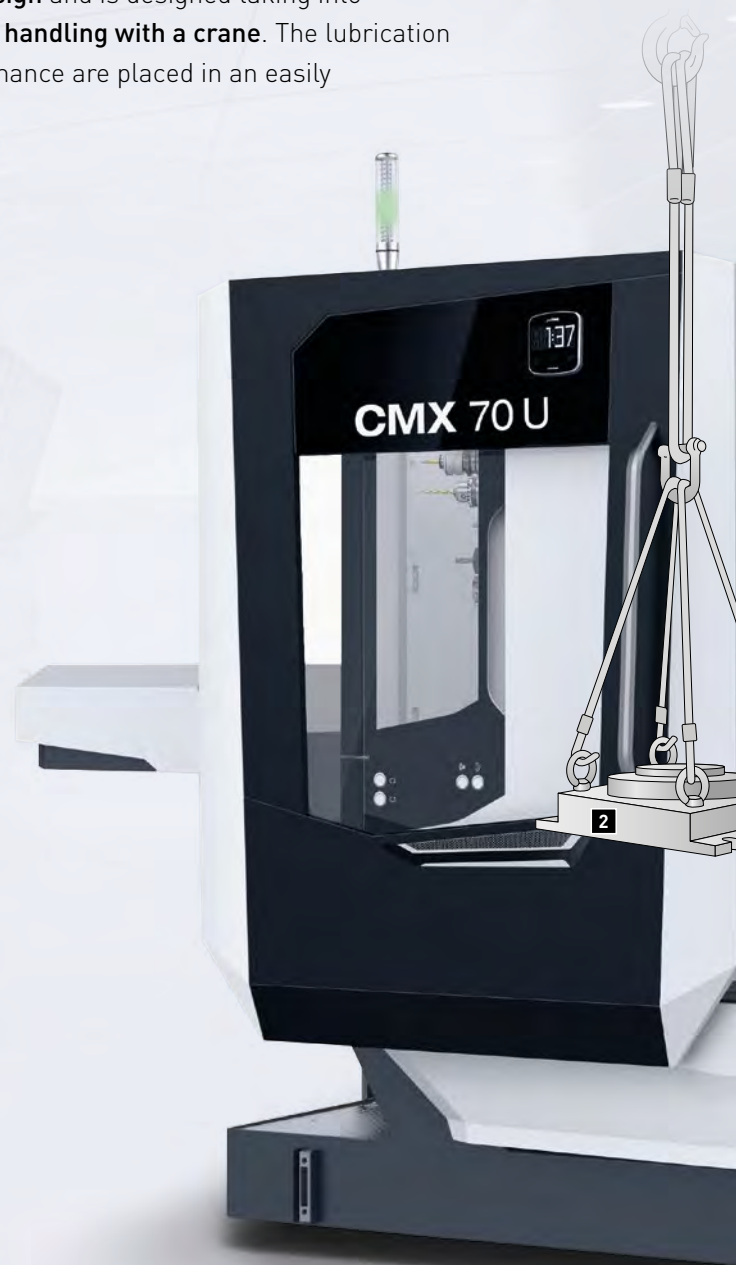
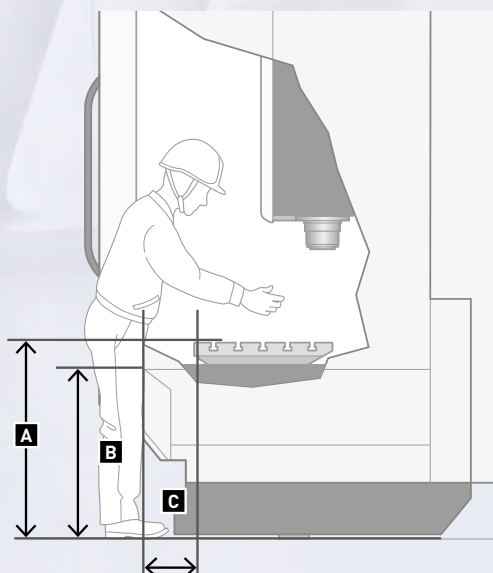
# Sophisticated design, small footprint and large working area – combined in the CMX U series

The CMX U Series employs a **sophisticated cover design** and is designed taking into account the **accessibility to the table** and **workpiece handling with a crane**. The lubrication unit and other peripherals requiring periodic maintenance are placed in an easily accessible location to **improve maintainability**.

## 1 ACCESSIBILITY

With excellent access to the table and a wide door opening, setup operations such as fixture adjustment can be done smoothly. The position of the lower end of the front door has been lowered to offer better access to the spindle and table.

- |   |  |
|---|--|
| <b>A</b> Height of table top surface:                     | CMX 50 U: 790 mm<br>CMX 70 U: 840 mm     |
| <b>B</b> The position of the lower end of the front door: | CMX 50 U: 640 mm<br>CMX 70 U: 747 mm     |
| <b>C</b> Distance from table:                             | CMX 50 U: 250.5 mm<br>CMX 70 U: 301.5 mm |
| <b>D</b> Door opening:                                    | CMX 50 U: 873 mm<br>CMX 70 U: 1,046 mm   |





## 2 LOADING AND UNLOADING WITH A CRANE

Cabin roof can be opened/closed allowing easy loading/unloading of workpieces using a crane.

### Max. workpiece weight:

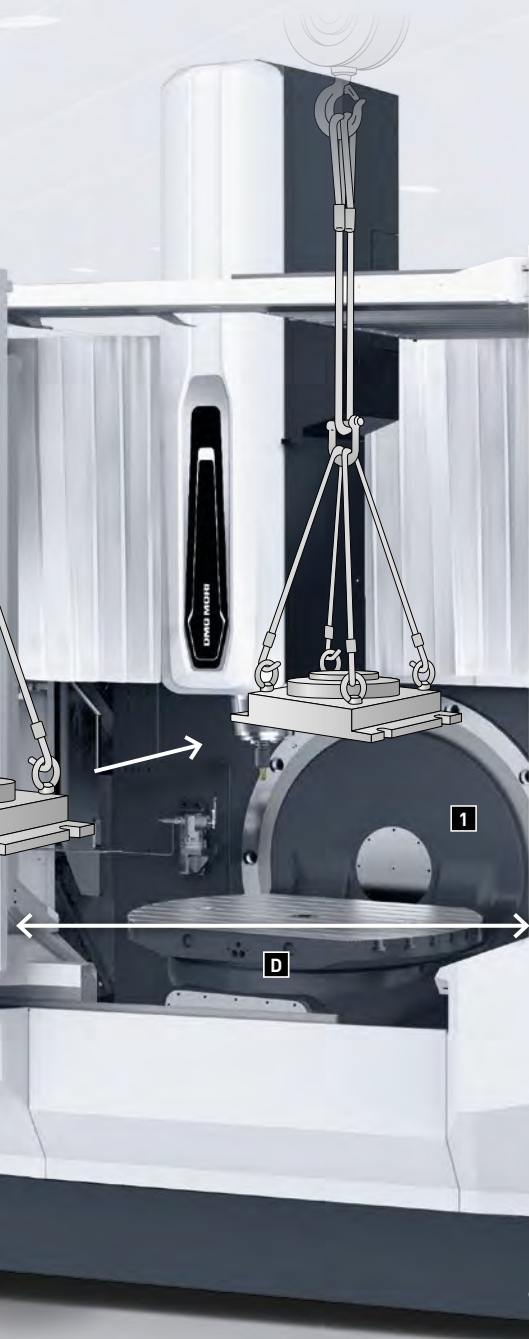
CMX 50 U: 200 kg

CMX 70 U: 350 kg

## 3 SWIVEL-TYPE OPERATION PANEL

The operation panel which can swivel from 0 degree to 90 degrees improves operability and visibility.

- + Vertical swivel range: 54°
- + Horizontal swivel range: 59°
- + Arm swivel range: 90°



## SMALLEST FOOTPRINT

+ CMX 50 U: 5,9m<sup>2</sup>

+ CMX 70 U: 7,9m<sup>2</sup>

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CMX U SERIES – PALLET HANDLING SYSTEM

## Automation solution PH 150

Integrated automation solutions by DMG MORI offer the **highest potential for an increase of productivity** with universal milling machines. At the same time, **consistent production quality** is achieved and the probability of human errors can be minimized. This leads to **economic success** and the growing pressure of rising costs is countered efficiently.

DMG MORI automates numerous universal machines and machining centres from its wide portfolio with the PH 150 pallet handling system. This enables customers attractively priced entry into the virtually unmanned manufacturing of milled parts. Optimum manual pallet placement is guaranteed by the large loading door or by crane. All orders can be controlled and prioritised using the dedicated user-friendly interface, which is **operated via the machine control panel**.





## HIGHLIGHTS PH 150

- + **Operation directly from the machine control panel**, no external control for automation needed
- + **Maximum clamping force up to 112 kN** with Turbofunction SCHUNK VERO-S chuck
- + **EROWA clamping system in standard** (SCHUNK optional)
- + **Three pallet storage configurations:**  
10 pallets 320×320 mm, 6 pallets\* 400×400 mm, 4 pallets\* 500×500 mm
- + **Reduced downtime**
- + Available for all CMX U machines
- + **Maximum load of 150 kg** (250 kg\*) per pallet
- + **High clamping repeatability** of pallets <0,002 mm with EROWA UPC-P chuck

\*optional

## AUTOMATION PACKAGE CMX U

Prepare your CMX U for any kind of automation!

- + **Automatic Lift Door** on the right cabin side
- + **Robot interface** (DMG MORI standard)
- + Hydraulic/pneumatic preparation with 4 channels on the machine table (to expand the fixing system and the medium supply)
- + Signal lamp with 4 colours
- + 10 free M-Codes
- + **Bed and ATC arm flushing** via M-Function



Technical parameters	PH 150
Magazine table drive	servo
X-axis drive	servo
Z-axis drive	pneumatics
Max. workpiece weight (with pallet)	150 kg (optional 250 kg)
Pallet size	320×320 mm (optional up to 500×500 mm)
Max. number of pallets	10
Clamping system	EROWA / SCHUNK
Control system	OMRON
Interface	Standard DMG MORI



**Modularity**

- › Technology and applications

- › **Customization and solutions**

- › Control technology

Technical data

## CMX U SERIES - WORKPIECE HANDLING SYSTEM

# WH CELL – Modular automation system for workpieces up to 25 kg

Complete solution from a single source: the WH Cell offers a **reliable turnkey solution** – from engineering to fixtures, tooling, NC programs and on through to integrated automation. The WH CELL offers a perfect integration of CMX U series and automation thanks to **end-to-end process concept** and digital twin. Furthermore, it offers a wide **spectrum of individual options to customize the solution to specific requirements and workpieces.**



Availability	CMX 50 U	CMX 70 U
WH 6 CELL	•	•
WH 8 CELL	•	–
WH 15 CELL	•	•
WH 25 CELL	•	•

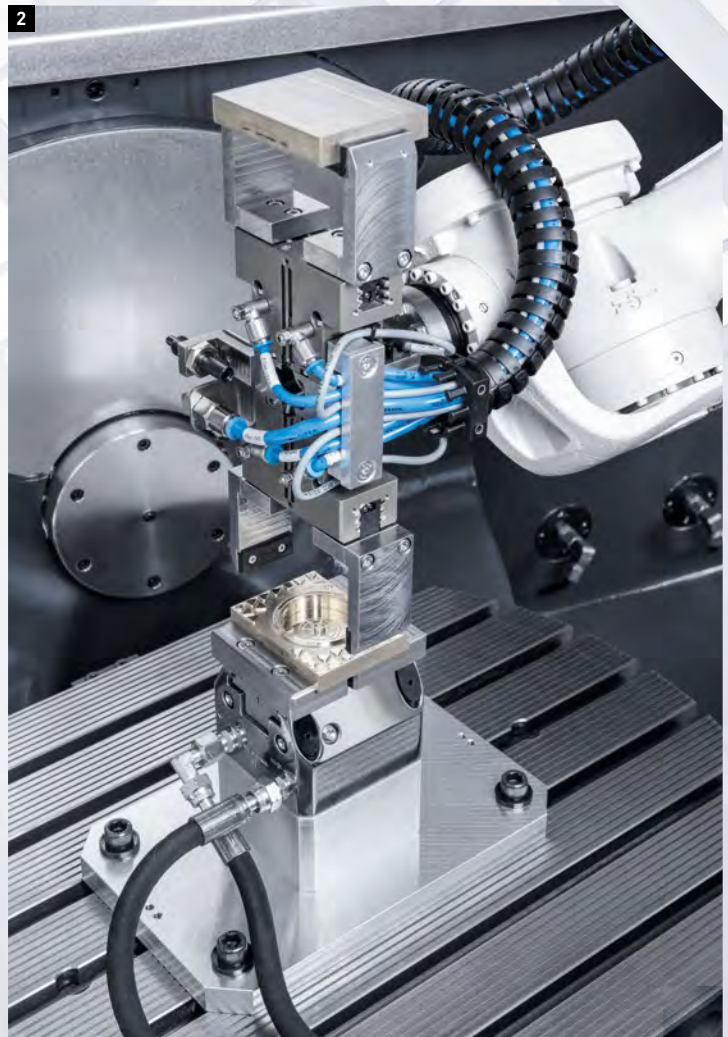
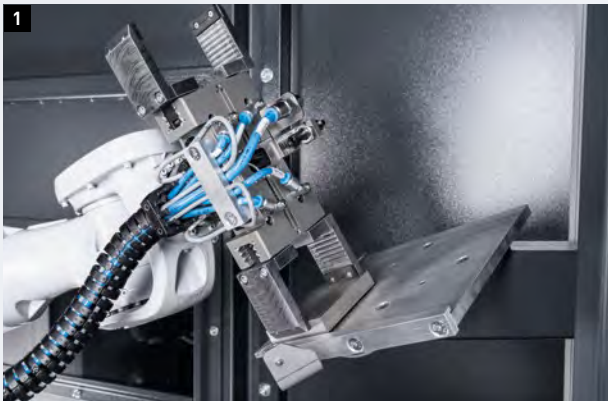
• Available – Not available



## HIGHLIGHTS WH CELL

- + Workpieces up to **300×300×220 mm** and **max. 25 kg\***
- + **Two workpieces storage systems**
  - Drawers up to 220 mm workpiece height
  - Circulating memory up to 100 mm workpiece height
- + **>1,000 workpieces storage capacity**  
by e. g. 6 drawers, each 600×800 mm  
(for workpieces 30×30×30 mm)
- + **Minimum space requirements** for automation
  - <4.0 m<sup>2</sup> for the WH 6 CELL
  - <3.7 m<sup>2</sup> for the WH 8 CELL
  - <5.5 m<sup>2</sup> for the WH 15 CELL /WH 25 CELL
- + Standardized modules, flexible and cost-effective

\* when using a single gripper



1: Referencing station, many options and upgrade levels available 2: Loading/unloading with double gripper

## TECHNICAL DATA

		WH 6 CELL Circulating storage	WH 8 CELL Drawer storage	WH 15 CELL Drawer storage	WH 25 CELL Drawer storage
Workpiece weight max. (single gripper)	kg	6	8	15	25
Workpiece dimensions max.	mm	300×280	300×300	300×300	300×300
Workpiece height approx. (restricted carrier)	mm	50 or 110	130	110 or 220	110 or 220
Useable area workpiece carrier	mm	515×315	600×800	600×800	600×800
Numbers of carrier		8 up to 24	2 or 3	2 up to 6	2 up to 6
Dimension of workpiece carrier drawer	mm	600×400	600×800	600×800	600×800
Carrier load max.	kg	20	150	250	250
Space requirements (W×L)	mm	1,925×2,045	1,930×1,935	2,455×2,240	2,455×2,240

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## MEASURING AND PRECISION

The CMX U series stands out in terms of the positioning accuracy of the axes with direct scales in standard (according to ISO 10791 – 4).

Single-touch tool and workpiece probing facilitate machine set-up and guarantee your process stability.



## TOOL MAGAZINE

- + Tool magazine 60 places with double gripper (optional; chain type, servo drive)
- + Tool (un-) loading through magazine door during AUTO Mode
- + Automatic magazine shutter (instead of brushes)
- + Buttons for magazine rotation

## SELECTED OPTIONS

	CMX 50 U	CMX 70 U
inlineMASTER spindle with 36 months warranty and no hourly limitation!	•	•
Tool Clamping CAT40	•	•
Tool Clamping SK40 (standard)	•	•
Tool Clamping BT40	•	•
Tool Magazine 60 places	•	•
Air Coolant Internal	•	•
Coolant Spray Gun	•	•
Oil- and Emulsion Mist Separator	•	•
Double cartridge filter for coolant	•	•
Bed and ATC arm Flushing via M-Function	•	•
Roto Clear – view window	•	•
Multilayer window with tempered glass	•	•
Renishaw Touch Probe-Kit	•	•
Infrared Touch Probe HEIDENHAIN TS 460	•	•
Tool Measuring Device HEIDENHAIN TT160	•	•
Laser Measuring Probe for Tools BLUM Micro Compact NT F= 140	•	•
Machine Preparation for PH 150	•	•
Automatic Front Door	•	•
Hydraulic / Pneumatic Preparation with 4 Channels	•	•
Hydraulic Unit for automatic Control of Clamping Device	•	•
Cabin Roof	•	•
Tool (Un-) Loading through Magazine Door	•	•
Signal lamp with 4 colours	•	•
External electronic Handwheel	•	•
Safety Package for Power Failure	•	•
PROTime	•	•
10 Free M-Codes	•	•
Software Option - DXF Import	•	•
Machine Preparation for use of the 3D quickSET	•	•
3D quickSET	•	•
Technology Cycle Machine Protection Control MPC 2.0	•	•
Technology Cycle ATC (Application Tuning Cycle)	•	•
Oil pan drawing	•	•
Machine 3D model in STEP format	•	•





## COOLANT SUPPLY

In the modern production of complex components made of high-quality materials, the internal coolant supply through cooling channels in the spindle and tools is of particular importance. The rapidly increasing cutting speeds and ever-shrinking diameter of deep bores necessitate rapid heat dissipation and safe chip removal.

+ **12, 20, 40 or 80 bar** internal coolant supply in the production packages

### CMX U SERIES

## Useful packages

	CMX 50 U	CMX 70 U
<b>Production package 1</b>		
Internal coolant supply 12 bar	•	•
Chip conveyor (scraper type) with tank capacity: 250 l (CMX 50 U), 300 l (CMX 70 U) (left)	•	•
Coolant spray gun for swarf removal	•	•
Electronic handwheel	•	•
Bed and ATC arm flushing via M-Function	•	•
Cabin roof	•	•
Signal lamp with 4 colours	•	•
<b>Production package 2*</b>		
Internal coolant supply 20 bar	•	•
Tank capacity: 600 l with paper type filter	•	•
Chip conveyor (scraper type) with tank capacity: 250 l (CMX 50 U), 300 l (CMX 70 U) (left)	•	•
Coolant spray gun for swarf removal	•	•
Electronic handwheel	•	•
Bed and ATC arm flushing via M-Function	•	•
Cabin roof	•	•
Signal lamp with 4 colours	•	•
<b>Automation package</b>		
Automatic lift door on right cabin side	•	•
Robot Interface (DMG MORI Standard)	•	•
Rotary joint with 4 channels in swivel rotary table (for hydraulic or pneumatic connections)	•	•
Bed and ATC arm flushing via M-Function	•	•
Signal lamp with 4 colours	•	•
10 free M-Codes	•	•
<b>Chip removal package</b>		
Chip conveyor (scraper type) with tank capacity: 250 l (CMX 50 U), 300 l (CMX 70 U) (left)	•	•
Coolant spray gun for swarf removal	•	•
Signal lamp with 4 colours	•	•
<b>Safety package for power failure</b>		
Overload limiter	•	•
X/Y-axis motor with brake	•	•
Undervoltage monitoring with fast deceleration control	•	•
<b>Tropical package</b>		
Active cooling unit for electrical cabinet	•	•
Additional ventilator for control panel	•	•
Hydraulic oil temperature sensor	•	•
Chiller unit 3.3 kW for main drive**	•	•

\*Production package 3 and 4 are also available with internal coolant supply 40 bar and 80 bar accordingly \*\* available only with inlineMASTER spindles

CMX U SERIES

# DMG MORI Technology cycles

Increase your productivity of the CMX U machines – with unique technology cycles by DMG MORI!

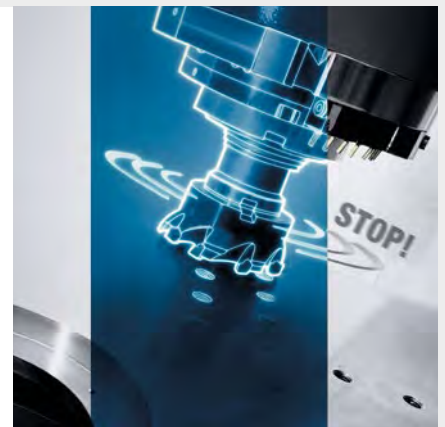
## 3D quickSET

Take the advantage of the quick and easy precision machining with the 3D quickSET available on the CMX U machines. A special toolkit for checking and correcting the kinematic prevision of four- and five-axis machine configurations. Available for all head variants and all table axes.



## MPC 2.0 – MACHINE PROTECTION CONTROL

- + Vibrations sensors at the milling spindle
- + Stop at critical vibration states
- + Cutting force monitoring for drilling and thread cutting
- + Unbalance display when idling



## ATC 2.0 (APPLICATION TUNING CYCLE)

- + Process-oriented tuning of feed rate in relation to table loading
- + Minimised processing time with maximised component quality, also depending on the workpiece weight
- + Easy operation for adjusting the machine dynamics with DMG MORI drive parameters
- + Time saving in roughing, high surface finish during finishing





# Technology Excellence

The CMX U series is the perfect machine for 5-sided machining – for a wide range of applications and industries!



1



4

**1: Main shaft support**

Industry: Automotive  
Material: Aluminium  
Dimensions: 125 × 95 × 62 mm  
Machining time: 18 min

**2: Wind Spacer**

Industry: Machinery (Aerospace)  
Material: Aluminium  
Dimensions: 404 × 120 × 50 mm  
Machining time: 45 min

**3: Bracket**

Industry: Automotive  
Material: Steel  
Dimensions: 108 × 65 × 55 mm  
Machining time: 28 min

**4: Milling Head**

Industry: Tool production  
Material: Aluminium  
Dimensions:  $\varnothing$ 200 × 68 mm  
Machining time: 37 min

**5: Motor block**

Industry: Automotive  
Material: Cast iron  
Dimensions: 500 × 300 × 280 mm  
Machining time: ca. 35 min

**6: Bracket**

Industry: Machinery  
Material: AlCuMgPb  
Dimensions: 200 × 200 × 70 mm  
Machining time: 34 min



2



5



3



6

**Modularity**

- > Technology and applications
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CMX SERIES

# Ready for digitized production – with IoTconnector in standard!

## IoTconnector:

- + **In standard of all CLX/CMX machines**
- + **DMG MORI NETservice and MESSENGER preinstalled**
- + **Quick and easy installation** in the control cabinet via LAN cable
- + Specially preconfigured for your machine prior to delivery via the machine's serial number
- + Standard interfaces allow a fast and efficient data exchange
- + **Integrated firewall** with automatic updates guarantees maximum protection for your machine

## SERVICEcamera:

- + **Direct livestream** to hotline via NETservice
- + **Plug-and-Play function** thanks to preconfiguration for IoTconnector
- + **Quick and secure** 5G WiFi transmission
- + Splashproofed housing
- + Integrated magnet for mounting camera
- + Integrated light and laser pointer

## NETservice

- + **Shorter waiting times**, as calls are directly routed to the next available staff member
- + **Higher resolution rate** due to access to IPC and NC
- + **Maximum data security**
- + Optional connection of the SERVICEcamera: More efficient problem resolution due to live-stream (video/audio/image) from the machine directly to the DMG MORI service expert
- + **Multi-user conference** = Interconnection of different DMG MORI specialists for faster joint problem-solving
- + **Also for existing machines** by using a Retrofit-Kit







## DIGITIZATION

# FAMOT DIGITAL FACTORY – Digitized production of the CLX and CMX

DMG MORI is supporting its customers with their digitization operations by providing end-to-end solutions. DMG MORI is demonstrating how a transformation such as this can be implemented in specific terms at the plant of its subsidiary, FAMOT Pleszew Sp. z o. o. in Poland.

We have consistently digitized our FAMOT production plant in Poland throughout. The entire value chain is now fully networked for the first time using modular products from ISTOS, DMG MORI Software Solutions and WERKBLiQ. We presented this open connectivity and intelligent workflows and processes to an expert audience at the Grand Opening on 8<sup>th</sup> of October 2018.

The FAMOT “Digital Factory” acts as a model worldwide for our customers and suppliers, and is also setting new standards at DMG MORI. We are setting a good example and are convincing, both internally and externally, with the brilliance of our digital showcase factory.

FAMOT was established in 1877 as a small workshop producing castings and simple agricultural machines. The first machine for metal cutting was manufactured in 1964. In 1993 the factory became property of a & f Stahl- und Maschinenbau GmbH in Würzburg, Germany. Since 1999 FAMOT belongs to the DMG MORI Group and is the biggest machine tool manufacturer in Poland and Central Europe.

FAMOT’s development is an example of production of innovative, high-tech CNC machines designed in its own Research & Development Department. Thanks to the latest investments, until 2020 the total under roof area of factory will increase to 50,000 sqm. (+20,000 sqm.), thereof assembly 6,500 sqm., machining 14,700 sqm. The factory has an increased production capacity of 2,000 machines per year and has therefore a growing strategic importance within the DMG MORI Group.

FAMOT Pleszew Sp. z o. o.  
Fabryczna 7 Street  
63-300 Pleszew, Poland



**Modularity**

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## CMX U SERIES

# DMG MORI SLIMline multi-touch control panel for highest efficiency and reliability

The **DMG MORI SLIMline multi-touch control panel** with Operate 4.8 on **SIEMENS** or with **HEIDENHAIN** represents the next advanced step for a **modern user interface**.

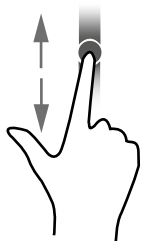
The **practical and ergonomically optimised 19" multi-touch display** with its **maximised resolution** and 90 degrees arm swivel range offers decisive user benefits.

Thanks to **3D control technology**, you can **simulate machining in advance** – this is what state-of-the-art and user friendly workplaces look like nowadays! Additionally, the control system features greatly expanded CNC memory capacity from 5 MB to **4 GB** and **additional memory 8 GB** on DMG MORI SMARTkey.

## SINUMERIK OPERATE – ADDITIONAL FUNCTIONS VARIOUS – SMART OPERATION

**TAP**

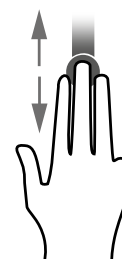
Select window Select object (e.g. NC block)

**FLICK**

Scroll in lists (e.g. programs or tools, zero points) Scroll in files (e.g. NC programs)

**FLICK WITH TWO FINGERS**

Page-scrolling in lists (e.g. NPV) Page-scrolling in files (e.g. NC programs)

**FLICK WITH THREE FINGERS**

Scroll to the start or end of lists. Scroll to the start or end of files

**PAN**

Move graphic contents (e.g. simulation, mold making view)

**PAN WITH TWO FINGERS**

Rotate graphic contents (e.g. simulation, mold making view)

**PINCH**

Zoom-in graphic contents (e.g. simulation, mold making view)

**SPREAD**

Zoom-out graphic contents (e.g. simulation, mold making view)



## 19" DMG MORI SLIMline MULTI-TOUCH CONTROL PANEL AND SIEMENS\*



3D



## 19" DMG MORI SLIMline MULTI-TOUCH CONTROL PANEL AND HEIDENHAIN

### MORE EFFECTIVE OPERATIONS

- + **Fast and convenient** "zoom" features
- + **Quick and convenient** access to parameters and user data
- + **Expanded memory capacity** to 4 GB
- + **Program selection:** expansion on local drive/USB/Network
- + **Multi tasking machining:** extension drilling cycle for drilling/piercing; program guide with new deep hole drilling technology
- + **Execution from external storage:** display and storage of additional file formats as HTML/PDF/BMP/JPEG/DXF also on the NC
- + **Advanced simulation:** workpiece stock definition by clamping; simultaneous recording
- + **DMG MORI SMARTkey:** Personalised authorisation and additional 8GB USB memory

\*For SIEMENS, the version Operate 4.8 is compatible with the previous versions of SIEMENS Operate.

### MORE COMFORTABLE USE

- + **Improved overview with 19-inches screen:** maximized resolution and innovative comfort of intuitive use with a unique range of functions
- + **3D control technology:** workpiece and machining simulation with touch operations
- + **Flexible software keyboard:** integrated into multi-touch display
- + **Effective and safe machining** with content access button on the panel
- + **Optimised ergonomics:** with 90° arm swivel range
- + **Simplified process**
- + **Reliable touch control** with proven user interface SINUMERIK Operate
- + **Optimization of the elements** on the screen
- + **Reliable and scratch-resistant** operating surface

- + 19-inches multi-touch display
- + 66% more pixels
- + 90° arm swivel range
- + 4 GB – now expanded memory capacity
- + 3D control technology

**Modularity**

> Technology and applications

> **Customization and solutions**

> Control technology

Technical data



B-axis:  
CMX 50 U / -5° to 110°  
CMX 70 U / -10° to 95°

C-axis: 360°

FOR  
5-SIDED  
MILLING

5-sided machining with NC swivelling rotary table for the highest dimensional and positional tolerances

### CMX 50 U

- + Maximum table load 200 kg
- + Workpiece mounting surface with T-slots  
ø 630 x 500 mm
- + Swivel range -5° to +110° (B-axis)

### CMX 70 U

- + Maximum table load 350 kg
- + Workpiece mounting surface with T-slots  
ø 800 x 620 mm
- + Swivel range -10° to +95° (B-axis)



# Technical data

		CMX 50 U	CMX 70 U
<b>Working area</b>			
Traverse [X/Y/Z]	mm	500/450/400	750/600/520
<b>Spindle</b>			
Maximum speed range	rpm	12,000	12,000
Power (40/100% DC)	kW	13/9	13/9
Torque (40/100% DC)	Nm	83/57	83/57
Rapid traverse [X/Y/Z]	m/min	30/30/30	30/30/30
Maximum feed force	kN	4.5	6
Max. cutting feed	m/min	30	30
<b>Positioning accuracy</b>			
To ISO 10791 – 4 for X/Y/Z-axes (indirect/direct measuring system)	mm	0.016/0.006	0.016/0.006
To ISO 10791 – 4 for B and C-axes (direct measuring system)	arcseconds	16	16
<b>B/C-axis</b>			
B-axis swivel range	degrees	-5/+110	-10/+95
Clamp		hydraulic	hydraulic
Rapid traverse	degrees/min	2,160	2,160
<b>Tool magazine/changer</b>			
Number of tools		30 (60*)	30 (60*)
Maximum tool weight	kg	8	8
Maximum tool length	mm	300	300
Maximum tool diameter	mm	ø 80	ø 80
Maximum tool diameter for vacant adjacent stations	mm	ø 130	ø 130
Tool change time without ATC shutter	seconds	2.7	2.7
Tool change time (chip-to-chip) without ATC shutter	seconds	7	7
<b>Table configuration</b>			
Workpiece mounting surface with T-slots	mm	ø 630 × 500	ø 800 × 620
Loading height (upper table edge)	mm	790	840
Table load (total weight)	kg	200	350
<b>Connected values</b>			
I <sub>N</sub> max. at 100% DC	A	42	50
Power consumption at 100% DC	kVA	28	32
Maximum pre-fusing	A	50	63
<b>Controls</b>			
19" DMG MORI SLIMline multi-touch control panel and SIEMENS		•	•
19" DMG MORI SLIMline multi-touch control panel and HEIDENHAIN		•	•
<b>Space requirements</b>			
With coolant tank	mm	4,400 × 5,000	4,770 × 5,300
With chip conveyor	mm	5,350 × 5,000	5,630 × 5,300
Machine weight	kg	4,700	7,500

• available \*Option



		with inlineMASTER 12,000*	with inlineMASTER 15,000*
Spindle speed	rpm	12,000	15,000
Torque (40/100% DC)	Nm	83/57	121/84
Drive power (40/100% DC)	kW	13/9	20/14.5

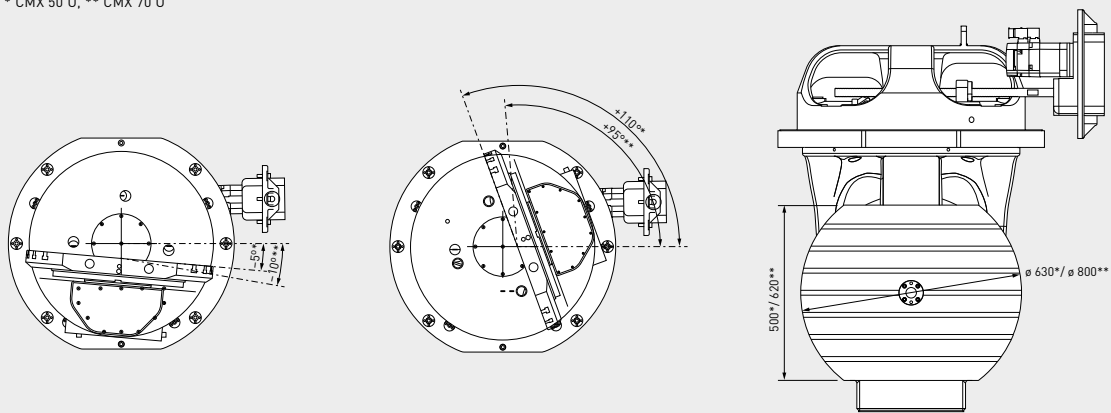
\*Option

CMX U SERIES

# Working area and dimensions

With maximum traverses of 500 × 450 × 400 mm\* and 750 × 600 × 520 mm\*\*, a table swivel range of -5°/+110° and -10°/+95°\*\* and optimal working area accessibility, the CMX 50 U and CMX 70 U are the best machines for more complex workpieces.

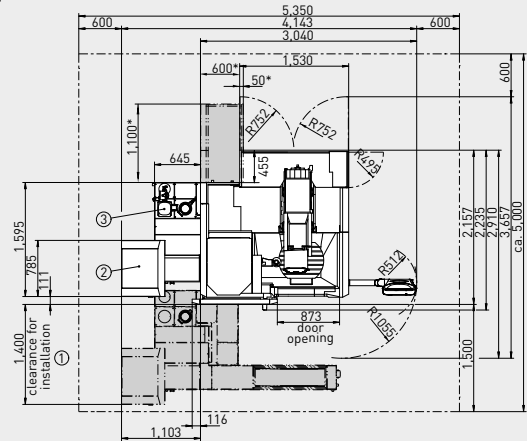
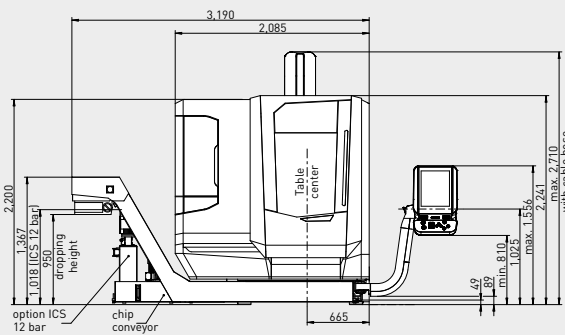
\* CMX 50 U, \*\* CMX 70 U



**CMX 50 U**

Front view (mm)

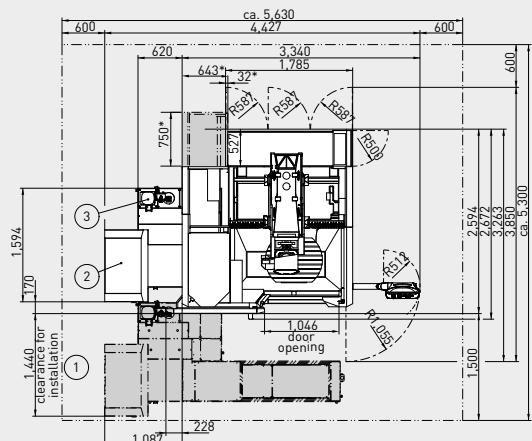
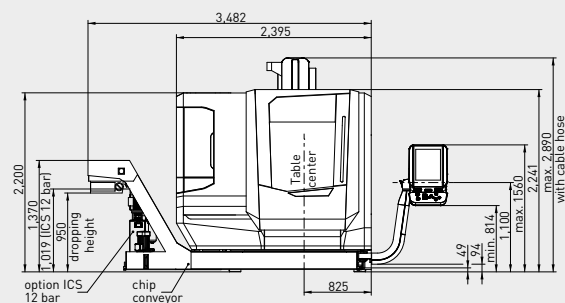
Top view (mm)



**CMX 70 U**

Front view (mm)

Top view (mm)



The technical data stated in the brochure is based on the basic machine configuration and may therefore deviate and be the subject to the technical changes.

# Cutting data

		inlineMASTER 15,000 rpm	inline spindle 12,000 rpm inlineMASTER 12,000 rpm
<b>FACE MILL</b>			
Tool diameter	mm	ø 63	ø 63
Spindle speed	rpm	1,360	1,360
Feed	mm/min	1,360	1,360
Cutting depth	mm	<b>5</b>	3
Cutting width	mm	47.5	47.5
Material removal rate	cm <sup>3</sup> /min	<b>323</b>	194
Material		Steel C45	Steel C45
<b>END MILL</b>			
Tool diameter	mm	ø 12	
Spindle speed	rpm	2,400	
Feed	mm/min	430	
Cutting depth	mm	24	
Cutting width	mm	12	
Material removal rate	cm <sup>3</sup> /min	124	
Material		Steel C45	
<b>DRILLING</b>			
Tool diameter	mm	<b>ø 50</b>	ø 40
Spindle speed	rpm	1,017	1,275
Feed	mm/min	122	160
Material removal rate	cm <sup>3</sup> /min	<b>239</b>	192
Material		Steel C45	Steel C45
<b>THREADING</b>			
Tool diameter	mm	<b>M24</b>	M20
Spindle speed	rpm	198	240
Feed	mm/min	594	600
Material		Steel C45	Steel C45





# DMG MORI Service – fast and reliable!

“Our service commitment will meet your expectations with the highest quality of service!”

Available for you around the clock:

[service-hotline.dmgmori.com](http://service-hotline.dmgmori.com) 

Top quality at fair prices. **It's a promise!**



**Spare Parts:** 96 % global availability



**Spindle Service** with Fair Price Guarantee



**Training:** Professional training at highest standards



**Service Products:** Our protective shield for your DMG MORI machine

For further information please contact your local DMG MORI office.