

5-AXIS UNIVERSAL MILLING MACHINES

## DMU | DMC monoBLOCK series

DMU 65/85/105/125 monoBLOCK

DMU 75/95 monoBLOCK

DMU 65/85/105/125 FD monoBLOCK

DMC 65/75/85/95 monoBLOCK

DMC 65/85 FD monoBLOCK



**NEW**

CLIMATE-NEUTRAL MANUFACTURING  
OF OUR MACHINES



DMU | DMC monoBLOCK SERIES

# monoBLOCK – The benchmark in all sectors

The monoBLOCK series has a machine concept for every sector: Be it 5-axis simultaneous machining, highly dynamic high-speed milling, integrated mill-turning, high-torque cutting or the broad field of productive parts machining in 5 axes. With the monoBLOCK machines, every component produced becomes an impressive masterpiece.



## LIFESTYLE

Keel bearing plate  
for sailing yacht



DIE & MOLD

Die casting mold gearbox cover made of tool steel



MACHINE CONSTRUCTION

Structure component made of aluminum



AEROSPACE

Turbine disk made of Inconel



ENERGY

Pelton blade made of tool steel



MEDICAL

Titanium knee joint



AUTOMOTIVE

Rim made of aluminum



## Applications and parts

> Technology Excellence

## Highlights

Control technology

Overview

Technical data

EXCELLENCE CENTER

# No. 1 in Technology Excellence

The synergy between machine builder and component manufacturer has to fit. With the two technology excellence centers DIE & MOLD and AEROSPACE in Pfronten, DMG MORI offers its customers experts at eye level who know the industries, its requirements as well as the players and future developments. Customers can expect advice from holistic technology solutions right through to cross-machine turn-key process development, i. e.: machine design, tools, clamping systems, programming

## DIE & MOLD EXCELLENCE CENTER

- + **Over 50 years experience** and over 20,000 successful customers in the DIE & MOLD sector
- + Holistic product portfolio for everyone  
**Workpieces from 10 to 6,000 mm** and up to 150 t
- + Standardized and individual **Automation**
- + **Best surface qualities up to 0.15 µm** thanks to permanently accurate linear drives with up to 2g acceleration and measuring systems from MAGNESCALE

## Machine Highlights

- + speedMASTER spindles up to 30,000 rpm or up to 200 Nm
- + Direct Drive in the C axis for dynamic machining and best surface quality
- + Exclusive DMG MORI technology cycles and software options: 3D quickSET for highest kinematic accuracy, ATC for optimum surface qualities
- + Die & Mold package, consisting of:
  - NC swivelling rotary table Direct Drive C-axis
  - VCS Complete
  - ATC (Application Tunig Cycle)



DMC 65 monoBLOCK with RPS3



## AEROSPACE EXCELLENCE CENTER

- + Over **20 years of technology experience** for all applications and materials
- + **Green Button process**  
Process development in consideration of measuring and monitoring to ensure unmanned production with maximum process reliability
- + **Additive Manufacturing:**  
Laser cladding and selective laser melting in the powder bed
- + **20 years milling-turning technology**  
Best in Class for Casings and Rotatives
- + New: **technology integration grinding**

## Machine Highlights

- + Motor spindles with up to 30,000 rpm (67 kW, 40 Nm) for machining structural aluminium components with small and complex cavities
- + Highly dynamic swivel rotary table with Direct Drive in A/C axis for blisk processing
- + Process monitoring through DMG MORI technology cycles MPC, TCC as well as software solutions like the CONDITION ANALYZER
- + Advanced machining possibilities through DMG MORI technology cycles, e.g. Interpolation Turning, eccentric turning or Alternating Speed



## BLISK

**Machine:** DMU 65 monoBLOCK  
**Dimension:**  $\varnothing 450 \times 120$  mm  
**Material:** Ti6Al4V

05



DMU 65 monoBLOCK

DMU | DMC monoBLOCK SERIES

# The all-rounder!

Be it individual or universal, the machine concept of monoBLOCK machines with their comprehensive range of options provides a solution for every application. A wide range of table solutions from highly dynamic 5-axis machining with Direct Drive to Mill Turn operations as well as the widest selection of spindles are the basis for the optimal configuration of your machine. Large door openings with unique access to the working area give the operator impressive freedom and perfect handling.



## ERGONOMIC

- + Large door opening with unique access to the working area, even with a pallet changer
- + Unrestricted crane loading of up to 2,600 kg
- + The most compact machine on the market with a footprint of just 8 m<sup>2</sup> (DMU 65 monoBLOCK)
- + Quick and easy to set up thanks to its three-point support

**Please note:**

The results of machining and performance trials listed in this catalogue are to be taken as examples. The results may vary slightly due to the site conditions and cutting conditions.

## PRECISE

- + Comprehensive cooling measures, high-performance coolant unit and multi-sensor compensation as standard
- + Positioning accuracy down to 5 µm in the standard version
- + Stiff construction with high static masses and balanced moving parts
- + 55 mm roller guideways in all axes (45 mm on the 65er)



## monoBLOCK

Ergonomic  
Precise  
Versatile  
CELOS



Over 35 years of  
5-axis expertise

**CELOS**

## VERSATILE

- + Universal – swivelling rotary table with single or twin drive
- + Milling and turning – complete machining at up to 5,400 Nm
- + Dynamic – 3 different table options with Direct Drive on the A and C axes
- + Productive – with up to six pallets in the system

## CELOS

- + CELOS from DMG MORI allows consistent administration, documentation and visualization of order, process and machine data
- + CELOS can be extended with apps and is also compatible with your company's existing infrastructures and programs

DMU | DMC monoBLOCK SERIES

# Unique ergonomics!

With a footprint of 8 m<sup>2</sup>, the monoBLOCK is the most compact machine in its class on the market. The perfect accessibility and visibility of the working area also provide maximum user satisfaction! The working area can also be loaded from above.

- 1 Three-point support**  
with the inherently rigid monoBLOCK and crane hook design for rapid installation
- 2 Palletisation option**  
with unrestricted access to the working area
- 3 Optimal chip removal**  
and chip disposal from the machine to the rear –  
1,385 × 1,000 mm large chip aperture (65: 860 × 640 mm,  
85: 1,080 × 800 mm, 105: 1,180 × 1,000)
- 4 Stainless steel covers in working area**  
Prevention of soiling and best accessibility
- 5 The most compact machine on the market**  
just 8 m<sup>2</sup> of space required for the DMU 65 monoBLOCK  
(12.3 m<sup>2</sup> for the 85, 18.2 m<sup>2</sup> for the 105 and 28.5 m<sup>2</sup> for the 125)
- 6 CELOS**  
simplifies and speeds the process from the idea  
to the finished product
- 7 Improved functionality**  
The safety glass can be removed from outside the machine
- 8 Retention of value/long-life surfaces**  
Premium range built to a high standard for superior scratch  
resistance and protection against damage







UNRESTRICTED  
CRANE LOADING OF  
UP TO 2,600 kg

**Ergonomic**  
Precise  
Versatile  
CELOS



**CELOS**

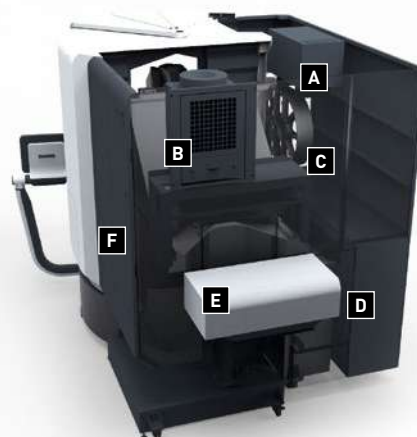
## HIGHLIGHTS

- + Large door opening with unique access to the working area for quick and ergonomic set-up of workpiece and tools
- + Crane loading from above to over the table centre
- + Door opening of up to 1,900 mm (1,310/1,500/1,650 mm on the DMU 65/85/105 monoBLOCK)
- + Full accessibility to the working area and tool magazine, even with automation

## EASE OF MAINTENANCE

- A** Oil mist extraction through the magazine\*
- B** Coolant unit
- C** Magazine with swing arm tool changer for up to 180 tools
- D** Control cabinet under the tool magazine
- E** Chip disposal to the rear\*
- F** Central Fluidbox best accessibility

\*Option



DMU | DMC monoBLOCK SERIES

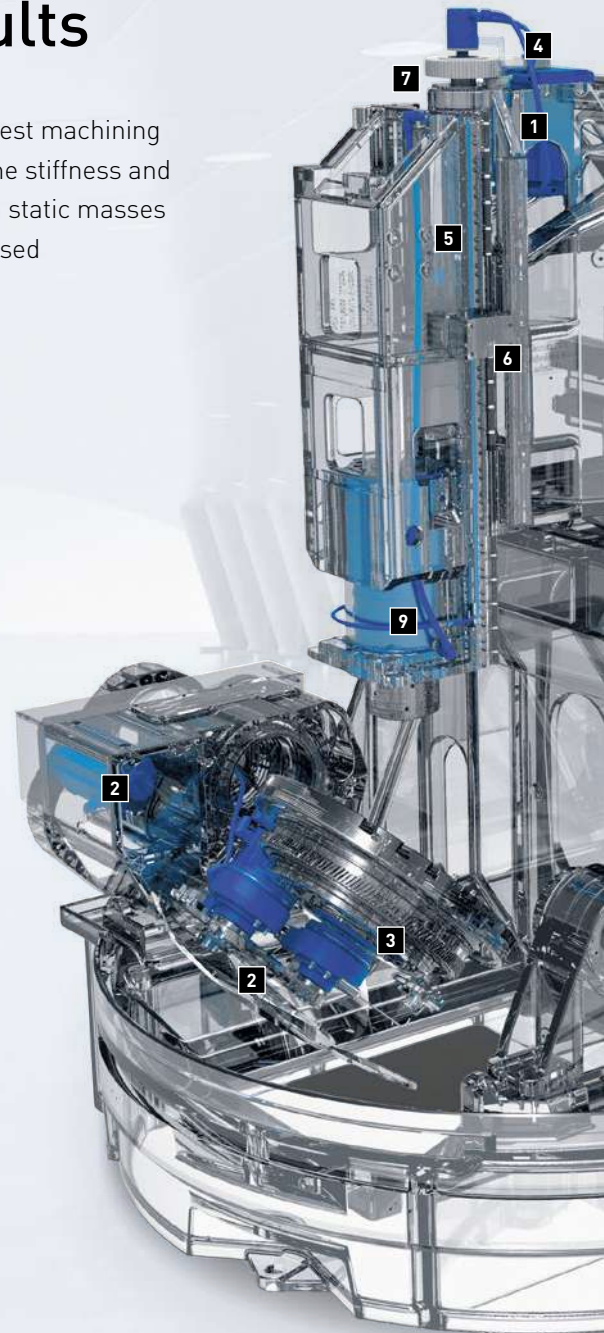
# Precise and stable – for perfect machining results

The monoBLOCK series produces optimal milling capability, the best machining performance and excellent levels of precision thanks to its extreme stiffness and stability. These top levels of performance are achieved by the high static masses of the monoBLOCK and detailed FEM analysis. The weight-optimised EN GJS 600-3 moving parts provide high process dynamics.

## Standard cooling measures

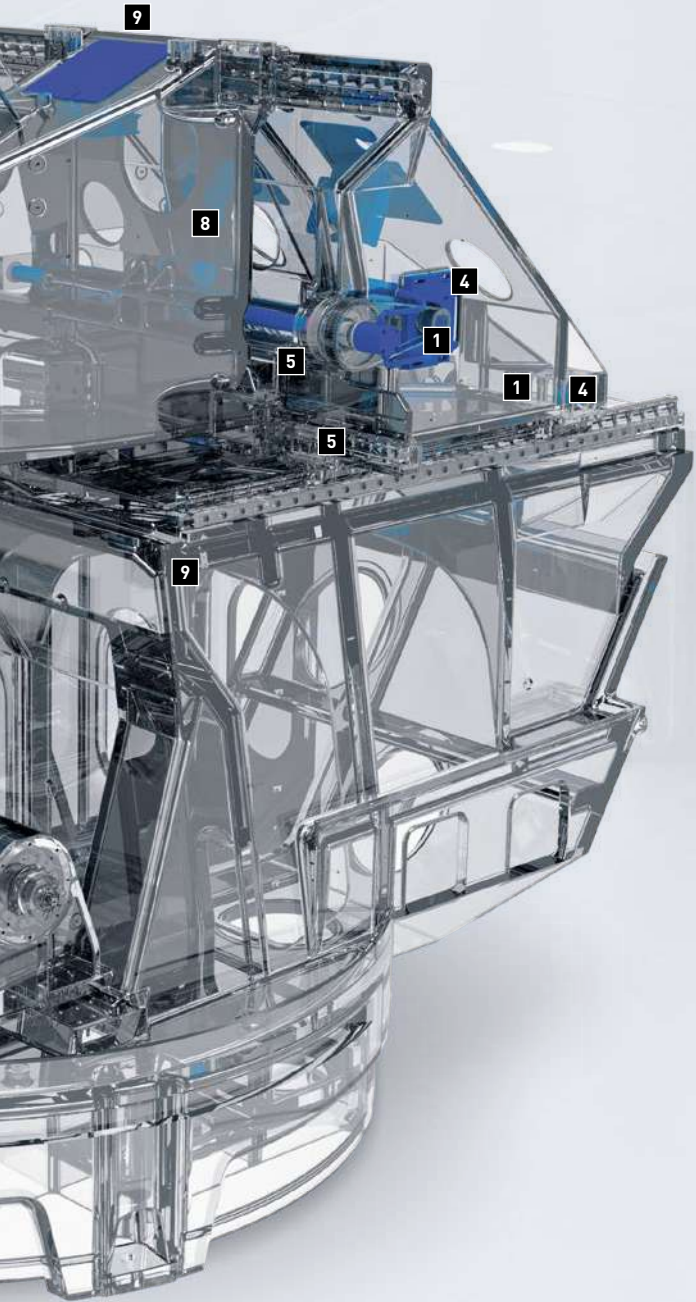
- 1** Cooled X, Y and Z axis motors
- 2** Cooled A- and C-axis motors
- 3** Cooled C-axis gear
- 4** Cooled motor plate of the X, Y and Z-axis motors
- 5** Internally cooled X, Y and Z- ball screw drive
- 6** Cooled linear guideways in the Z-axis
- 7** Cooled ball screw bearing in Z-axis
- 8** Constant temperature in the machine by covering Y-axis and using fans (two in X-axis, one in Y-axis)
- 9** Multi-sensor compensation four sensors: Spindle, cabin, Y-slide, machine body, increased number of compensation support points C-axis

4.3kW coolant unit Linear encoders in the X-,Y- and Z-axes



COMPREHENSIVE  
COOLING MEASURES  
FOR MAXIMUM  
LONG-TERM ACCURACY  
AS STANDARD

Ergonomic  
Precise  
Versatile  
CELOS



## monoBLOCK – MAXIMUM STABILITY FROM ONE CASTING

### Stiff monoBLOCK concept

- + One-piece column with large, stable slideways, 55 mm roller guideways in all axes (45 mm on the 65)
- + Maximum stability thanks to the large YRT bearing in the swivelling rotary table and large ball screws in all axes, e.g. 460 mm YRT and up to max. 63 mm ball screws on the DMU 105/125 monoBLOCK
- + FEM optimisation of all components
- + Clamping of the swivelling rotary table



### Workpiece

Bobby Car mould, surface  
finish of  $R_a < 0.4 \mu\text{m}$

DMU | DMC monoBLOCK SERIES

# Individual or universal – a solution for every application



## UNIVERSAL | SWIVELLING ROTARY TABLE WITH SINGLE OR TWIN DRIVE

5-axis simultaneous machining  
up to 2,600 kg and machining  
of negative angles



## MILLING AND TURNING | COMPLETE MACHINING RATED AT UP TO 5,400 Nm

Maximum productivity through  
complete machining on  
one machine with speeds  
up to 1,200 rpm



## LONG-TERM PRECISION | SWIVELLING ROTARY TABLE WITH WIDIRECT DRIVE IN C-AXIS\*

Highest long-term precision  
(even with continuous  
operation) and dynamics  
(simultaneous operation)  
in the C-axis




## DYNAMIC | DIRECT DRIVE IN THE A- AND C-AXES\*\*

Highly dynamic Direct Drive  
technology in the A- and C-axes  
(tandem) for the highest levels  
of precision and dynamics



\*not available for DMU 105/125 monoBLOCK \*\*available for DMU | DMC 65 monoBLOCK



FROM POWER TO  
HIGH SPEED –  
THE WIDEST RANGE  
OF SPINDLES ON  
THE MARKET

- + Up to 30,000 rpm and 430 Nm torque
- + speedMASTER – High-tech motor spindles with the best performance and accuracy
- + Modular technology for the quickest and most cost-effective repairs
- + SK50 | HSK-A100 available for the DMU | DMC 85 monoBLOCK upwards

Ergonomic  
Precise  
**Versatile**  
CELOS



# CELOS

Simplified machine operation.  
Complete integration of the machine  
in the operating organization.

## SMARTkey

Personalized authorization  
of the operator: Individually  
adapted access rights to  
the control system and  
the machine.

## CELOS ON THE ERGOline CONTROL WITH 21.5" MULTI-TOUCH SCREEN

### Standardized

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

### End-to-end

End-to-end administration, documentation and visualization of order, process and machine data.

### Open

Direct data import from MES and ERP systems.  
Integration of any external program and web contents.

### Measurable

With the DMG MORI MESSENGER all status information of the linked machines and devices is available at a glance. Regular and automated reports boost transparency in production.

### Future-proof

Simple PLC-independent CELOS update to the latest version from every existing version. The data is reliably migrated and all functions supported by the PLC will then be available to the full extent.

# CELOS – From the idea to the finished product

Ergonomic  
Precise  
Versatile  
**CELOS**

CELOS offers a standardized user interface for all new high-tech DMG MORI machines. CELOS APPs enable end-to-end administration, documentation and visualization of order, process and machine data. This also simplifies, standardizes and automates machine operation. Standard APPs support the machine operator during preparation, optimization and systematic processing of production orders.

## CELOS APPs – 3 EXAMPLES



### JOB MANAGER

**Systematic planning, administration and preparation of orders.**

- + Machine-based creation and configuration of new orders
- + Structured saving of all production-relevant data and documents
- + Automatic order data import with the help of the job import function



### APPLICATION CONNECTOR

**Your application directly on the machine.**

- + Integration of own systems (e.g. MES, ERP) and access to Intranet/Internet directly on the CELOS machine
- + Creation of up to 20 own connections as CELOS APPs on the CELOS user interface
- + Simple remote control (RDP or VNC) or web connections directly from CELOS



### MESSENGER

**Current status data from networked machines and devices in production at a glance.**

- + DMG MORI Monitoring for all machines and devices in production networked via DMG MORI Connectivity
- + Automatically generated one-page reports
- + Maximum flexibility thanks to the creation of customized dashboards



CONTROL TECHNOLOGY

# MPC 2.5 Machine Protection Control



- + Rapid shutdown in case of a crash
- + Torque monitoring for drilling and thread-cutting
- + In-process vibration monitoring
- + Determination of tool wear, prevention of drill breakage
- + Analysis of imbalance of tools
- + State of bearing diagnostics of the milling spindle
- + **NEW:** Automatic sister tool change in dependence on tool life and MPC reaction in the process

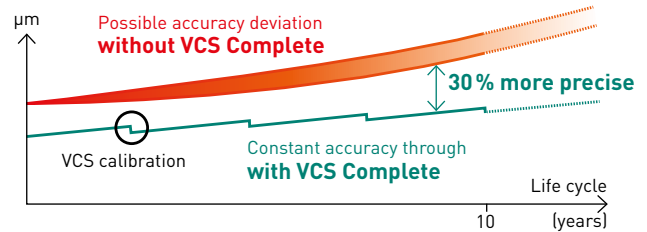




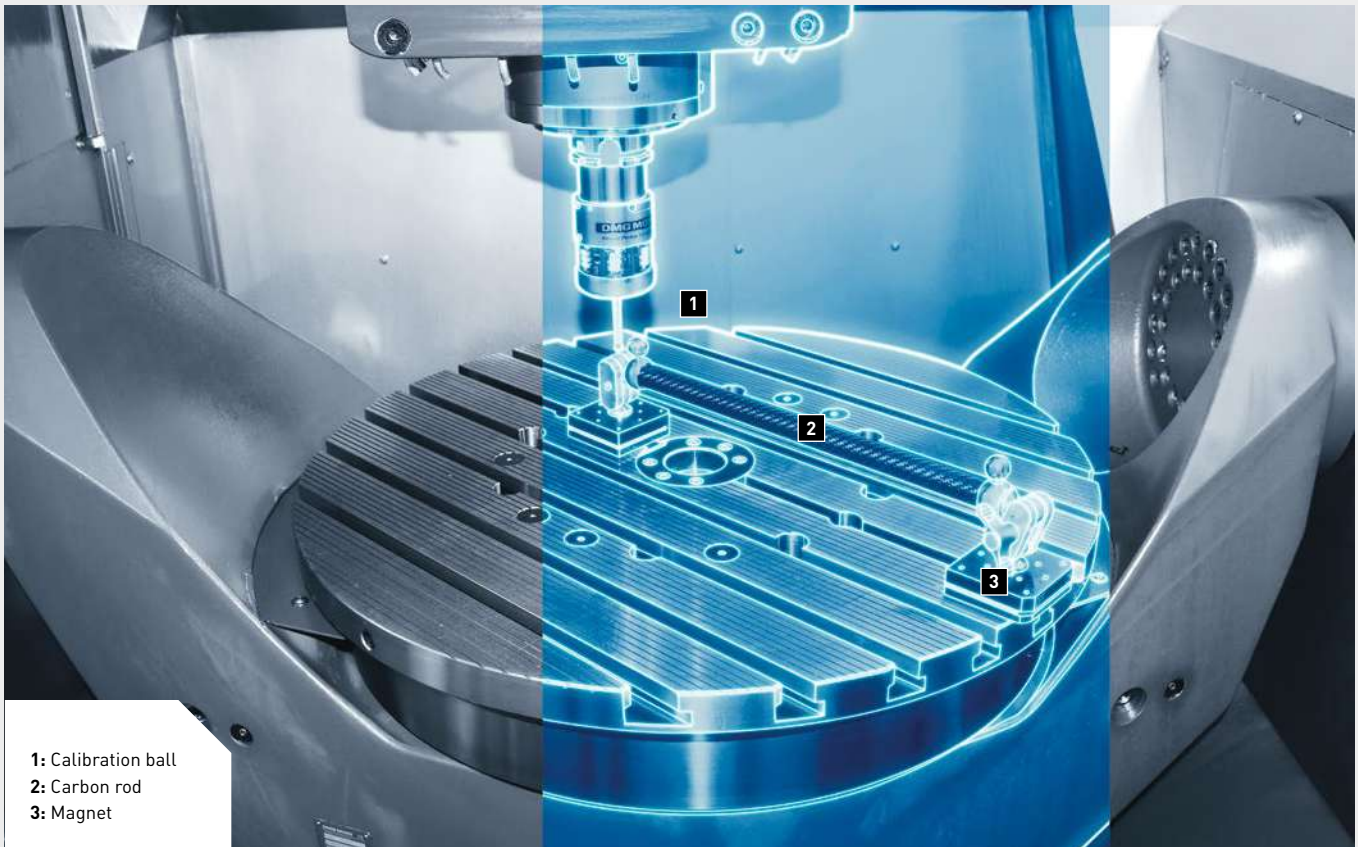
# VCS Complete – volumetric calibration at the touch of a button

- + Geometric fingerprint of the machine, volumetric calibration at the touch of a button
- + Detection and compensation of geometrical, positioning and angular errors of all axes
- + Easy handling and implementation by the customer directly at the machine
- + Data recording for further analysis

## ACCURACY DEVIATION ( $\mu\text{m}$ )



Comparison of accuracy deviation over the life cycle of a machine tool with and without VCS Complete. In addition to the initial accuracy optimization, the accuracy of the machine can be optimized with each VCS calibration over its entire life cycle.



## Exclusive, optionally available DMG MORI technology cycles



### 3D quickSET

**Quick and easy for maximum precision**

- + Toolkit for checking and correcting the kinematic precision of 5-axis machine configurations
- + All head variants and all table axes



### ATC – APPLICATION TUNING CYCLE

**Process optimisation at the push of a button**

- + Process-oriented feed drive tuning
- + Minimised machining time with maximised component quality, irrespective of workpiece weight
- + High surface quality during finishing



### LASER MEASURING SENSOR PACKAGE

**Enhanced measuring options with a laser measuring sensor**

- + Measurement of slots and grooves
- + Measurement in hard-to-reach areas
- + Measurement of individual points
- + Package with manual and automatic calibration



### TCC – Tool Control Center

**Process security and efficiency**

- + Chip detection on plan pad and tool cone
- + Monitoring of pull-in force
- + Cutting edge control in process by symmetry monitoring of the bending moment per cutting edge
- + Visualization of the bending moment over time via Graph



### MAINTENANCE PACKAGE i4.0

**Reduced maintenance without manual intervention**

- + Automatic recognition of tool pull-in force for consistently high process stability
- + Predefined cycle for automatic lubrication, every 75 h or after 20,000 tool changes
- + Detection of leakage and measuring of usage of pneumatics system



### MULTITOOL

**Reduced tool change times**

- + Efficient use of multi-tip turning tools with more than one cutting edge on turn & mill
- + Several "sister tools" on one main tool holder
- + Reduction of tool change times
- + Saves tool magazine space

# High-end CNCs for safe processes and maximum precision



## SIEMENS 840D SL OPERATE

- + Highly simplified interactive programming with identical "look and feel" for turning and milling
- + SINUMERIK Operate user interface
- + ATC\*, 3D quickSET\*
- + Powerful 32-bit multiprocessor system and controller, 1GB RAM
- + Fast block processing time of approx. 0.6ms
- + Look-ahead function for up to 150 NC blocks (capable of parameterisation)
- + Graphical simulation of the machining process with overhead view, triple-plane display and 3D display; synchronised display during the machining process
- + DECKEL MAHO Package MDynamics\*, optional optimisation of surface finish and speed for smoothing surface transitions

\* Option



## HEIDENHAIN TNC 640

- + Unique, highly detailed 3D simulation display
- + Optimised TNC user interface
- + HSCI – HEIDENHAIN Serial Controller Interface
- + Conversational or ISO programming
- + Rapid program generation with plain text programming
- + Graphical programming
- + Collision monitoring (DCM)
- + ATC\*, 3D quickSET\*
- + Powerful dual-core processor (Intel i7-3, 2 Cores)
- + Optimised ADP (Advanced Dynamic Prediction) motion control for improved surfaces and quicker machining (block processing time less than 0.5ms)
- + Dynamic look-ahead function with no path restrictions
- + Dynamic Efficiency with adaptive feed control AFC and trochoidal milling as standard (Active Chatter Control ACC optional)

\* Option



## MAPPS V\*\*

- + FANUC based
- + User memory with large capacity of 6GB as standard
- + Equipped with simple and easy-to-follow conversational programming function
- + Quick access to required information by manual data search function
- + Two multi-touch panels
- + 3D machining simulation for easy geometry checking
- + 6-window display for checking required machine information at the same time
- + Improved set-ups by displaying required machine information according to the operation

\* Option

\*\* available only for DMU 75 monoBLOCK

DMU | DMC monoBLOCK SERIES

# monoBLOCK – A large working area in the smallest footprint

True greatness comes from within. In a compact footprint the monoBLOCK series can accommodate workpieces up to 1,400 mm in diameter and 2,600 kg in weight. The working area can be loaded from above with no restrictions and, partly thanks to the standard stainless steel cladding in the working area, the machines retain their value.



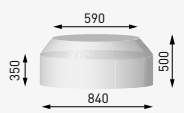
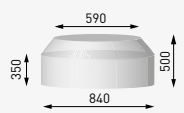
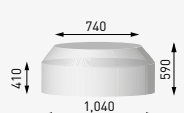
**just 8 m<sup>2</sup>**

Footprint



**just 12.3 m<sup>2</sup>**

Footprint

		DMU 65 monoBLOCK	DMU 75 monoBLOCK	DMU 85 monoBLOCK
		Swivelling rotary table*	Swivelling rotary table*	Swivelling rotary table*
Travel X/Y/Z	mm	735/650/560	750/650/560	935/850/650
Table size	mm	ø 650	ø 650	ø 850 × 750
Maximum load	kg	600/1,000**	600	1,000/1,500**
Workpiece dimensions	mm			

\* more detailed dimensional drawings available on request, restrictions dependent on swivel angle, \*\* swivelling rotary table with twin drive



## GLOBALLY UNIQUE – THE HIGHEST MAXIMUM LOAD

5-axis simultaneous machining with a swivelling rotary table  
for components weighing up to 2,600 kg



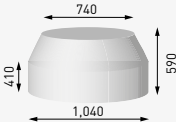
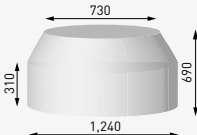
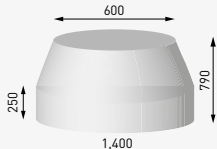
**just 18.2 m<sup>2</sup>**

Footprint



**just 28.5 m<sup>2</sup>**

Footprint

DMU 95 monoBLOCK	DMU 105 monoBLOCK	DMU 125 monoBLOCK
Swivelling rotary table*	Swivelling rotary table*	Swivelling rotary table*
950/850/650	1,135/1,050/750	1,335/1,250/900
∅ 850 × 750	∅ 1,050 × 850	∅ 1,250 × 1,000
1,000	1,500/2,000**	2,000/2,600**
		

## DMU | DMC monoBLOCK SERIES

# Table variants for every application



Direct Drive



Direct Drive



Direct Drive



		DMU 65 monoBLOCK	DMU 85 monoBLOCK	DMU 105 monoBLOCK	DMU 125 monoBLOCK
<b>Swivelling rotary table – drive from one side</b>					
Table diameter	mm	ø 650 in 800 × 650	ø 850 × 750 in 1,000 × 750	ø 1,050 × 860 in 1,200 × 850	ø 1,250 × 1,000 in 1,400 × 1,000
Max. load	kg	600	1,000	1,500	2,000
C-axis torque*	Nm	2,000	3,550	7,200	6,300
C-axis speed	rpm	40	30	30	30
A-axis torque*	Nm	3,400	4,900	8,300	15,800
A-axis speed	rmp	20	15	15	15
<b>Swivelling rotary table with Tandem Drive – drive from both sides</b>					
Table diameter	mm	ø 650 in 800 × 650	ø 850 × 750 in 1,000 × 750	ø 1,050 × 860 in 1,200 × 850	ø 1,250 × 1,000 in 1,400 × 1,000
Max. load	kg	1,000	1,500	2,000	2,600
C-axis torque*	Nm	3,600	5,000	7,200	6,300
C-axis speed	rpm	50	40	30	30
A-axis torque*	Nm	5,700	9,200	17,400	25,300
A-axis speed	rpm	20	15	15	15
<b>Mill-turn swivelling rotary table with single/twin Direct Drive technology</b>					
Table diameter	mm	680	850	1,050	1,250
Max. load	kg	600 / 600	1,000 / 1,200	1,500 / 2,000	2,000 / 2,600
C-axis torque*	Nm	1,000	2,050	4,000	5,400
C-axis speed	rpm	1,200	800	500	500
A-axis torque*	Nm	3,400 / 5,700	4,900 / 9,200	8,300 / 17,400	15,800 / 25,300
A-axis speed	rpm	20	15	15	15
<b>Swivelling rotary table with Direct Drive technology in the C-axis and a gear-driven A-axis (single/tandem)***</b>					
Table diameter	mm	650	850	–	–
Max. load	kg	600 / 1,000 (DMC: 500)	1,000 / 1,500 (DMC: 800)	–	–
C-axis torque*	Nm	900	1,630	–	–
C-axis speed	rpm	80	80	–	–
A-axis torque*	Nm	3,400 / 5,700	6,300 / 11,300	–	–
A-axis speed	rpm	20	15	–	–
<b>Swivelling rotary table with Direct Drive technology in the A- (tandem) and C-axes****</b>					
Table diameter	mm	ø 600	–	–	–
Max. load	kg	600	–	–	–
C-axis torque*	Nm	900	–	–	–
C-axis speed	rpm	80	–	–	–
A-axis torque*	Nm	1,900	–	–	–
A-axis speed	rpm	20	–	–	–
<b>Swivelling rotary table for single/twin pallet changer (DMC monoBLOCK)</b>					
Pallet size	mm	500 × 500	630 × 630	–	–
Max. load	kg	500 / 500 (600)**	800 / 800 (1,500)**	–	–
C-axis torque*	Nm	2,000 / 3,600	3,600 / 5,000	–	–
C-axis speed	rpm	40	30	–	–
A-axis torque*	Nm	2,800 / 5,000	6,600 / 13,700	–	–
A-axis speed	rpm	20	15	–	–

\*torque = 100% ED \*\*crane loading in the working area \*\*\*available for DMU | DMC 65/85 monoBLOCK; single drive for DMU 75/95 monoBLOCK \*\*\*\* available for DMU | DMC 65 monoBLOCK

# Modular system

## Spindles

(torque and power = 40% DC)

					
15,000 rpm 130 Nm / 35 kW SK40/HSK-A63	20,000 rpm 130 Nm / 35 kW SK40/HSK-A63	30,000 rpm 67 Nm / 40 kW HSK-A63	15,000 rpm 200 Nm / 46 kW SK40/HSK-A63	12,000 rpm 288 Nm / 44 kW SK50/HSK-A100	12,000 rpm 430 Nm / 52 kW SK50/HSK-A100

## Tool magazines



60/90/120/180 tools  
[SK40/HSK-A63]



60/90 tools  
[SK50/HSK-A100]



30 tools  
as standard

## Production



Coolant system  
and production package



Chip conveyor

## Tables



Swivelling rotary table  
[A-axis: single or tandem drive]



Mill-turn swivelling rotary table  
with Direct Drive technology in the C-axis

 Direct Drive

 Direct Drive



Swivelling rotary table with Direct Drive technology  
in the A- and C-axes [A-axis: tandem drive]

 Direct Drive



Swivelling rotary table with Direct Drive technology  
in C-axis and a gear-driven A-axis  
[A-axis: single or tandem]



Swivelling rotary table for pallet changer

Applications and parts

Highlights

Control technology

**Overview**

> Automation

Technical data

Pallet changer for three pallets  
in a footprint of less than 4 m<sup>2</sup>  
with optimum accessibility



DMC 65/85 monoBLOCK

## More productivity with a pallet changer

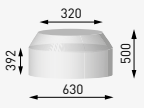
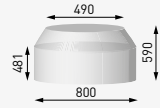


### HIGHLIGHTS – STANDARD

- + Full package including swivelling rotary table and chip conveyor
- + Automatic pallet changer for a total of three pallets
- + Crane loading into the working area for workpieces weighing up to 1,500 kg
- + 800 kg maximum load and workpieces up to 800 mm in diameter per pallet
- + Best accessibility and ergonomics on the market: Unrestricted accessibility from the front to the working area and crane loading from above to the centre of the table
- + Space requirement of just 17 m<sup>2</sup> (including chip conveyor and coolant system on the DMC 65 monoBLOCK)

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## DMC 65/85 monoBLOCK – Automatic pallet changer with three pallets as standard

		DMC 65/75 monoBLOCK	DMC 85/95 monoBLOCK
Pallet size	mm	500 × 500	630 × 630
Maximum load	kg	500	800
max. loading (crane loading)	kg	600/1,000*	1,000/1,500*
Workpiece dimensions	mm		

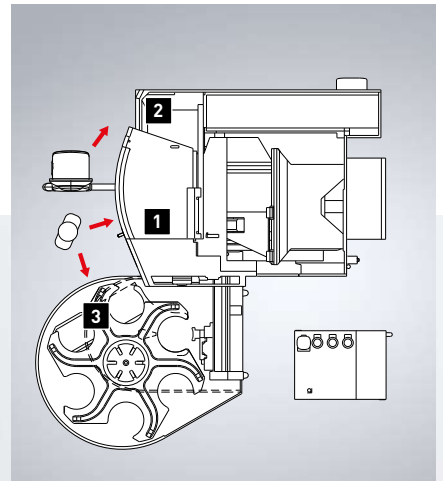
\*crane loading in the working area (optional for DMC 65/85 monoBLOCK)



Machine interior  
with shuttle unit



Unrivalled accessibility and ergonomics to  
1: Working area  
2: Tool magazine  
3: Pallet changer



## HIGHLIGHTS- MACHINE WITH RPS 6

- + 6 pallets in the system
- + Available for the DMC 65/85 monoBLOCK
- + Machine-integrated for simplest operation
- + For automatic loading onto the setup station or directly into the work area of the machine
- + Minimal footprint of just 21m<sup>2</sup>, incl. chip conveyor and coolant system (DMC 85 monoBLOCK: 35.3m<sup>2</sup>)
- + Also available as a mill-turn variant



**just 17m<sup>2</sup>**

Footprint

**DMC 65/85 monoBLOCK  
with RPS 6 rotary storage –  
The compact 21m<sup>2</sup> solution**



DMU monoBLOCK

# Automatization!

The flexible automation solutions from DMG MORI ensure maximum machine utilization and thus lead to a reduction in machining and personnel costs. DMG MORI automation solutions range from machine-integrated solutions to advanced systems for linking several machines together. The accessibility of the work area and the ergonomics for the operator are always given.



## PH CELL – COMPACT PALETTE HANDLING

- + Best ergonomics and accessibility to the work area thanks to side loading
- + Modular design for individual customer requirements with subsequent extendibility
- + Easy connection to machine
- + Up to 40 zero-point clamping pallets in the system
- + Particularly suited for medium heavy components



## MCC LPS4 – DMG MORI MASTER COMPUTER

- + Order management, prioritization and scheduling
- + Management of fixtures and raw material
- + Accessing of drawings and order data
- + Tool requirement and service life monitoring
- + Available for systems with several machines



## PH AGV – PALLET AUTOMATION WITH DRIVER-LESS TRANSPORT SYSTEM

- + Driver-less transport system for pallet handling
- + Modular concept with flexible layout without fixed installation on the ground
- + Free access without security fence for easy collaboration between man and machine
- + Simple expansion of the automation
- + DMG MORI MCC LPS 4 control computer

## PH 150 PALLET AUTOMATION

- + Simple and cost-effective automation solution for up to 12 pallets
- + Max. Workpiece dimensions: 400×400×400 mm
- + Complete retention of accessibility to the work area from the front and from above
- + Just 16 m<sup>2</sup> space requirement (incl. chip conveyor and ICS)



DMU 65/85/105/125 FD monoBLOCK AND DMC 65/85 FD monoBLOCK

# Mill-turn technology for complete machining



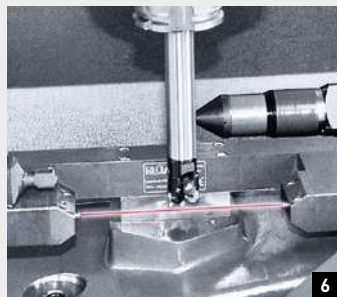
## HIGHLIGHTS OF THE DMU | DMC FD monoBLOCK

- + **Complete machining, including milling and turning, on one machine** in one clamping with Direct Drive technology up to 1,200 rpm
- + Less investment and **lower space** requirement with the use of just one machine
- + Quick machining and lower logistics costs thanks to the elimination of both idle times and additional operations – lower unit production costs and higher precision
- + **2,600 kg maximum workpiece weight** with the DMU125 FD monoBLOCK
- + Swivelling rotary table also available with **Tandem Drive with twin drive** for even more stability and better dynamics
- + **Powerful HSK-A100 motor spindle rated at 44 kW and 288 Nm** on the DMU 85 FD monoBLOCK

		DMU   DMC 65 FD monoBLOCK	DMU   DMC 85 FD monoBLOCK	DMU 105 FD monoBLOCK	DMU 125 FD monoBLOCK
Maximum speed	rpm	1,200	800	500	500
Power (100% DC)	kW	37	36	35	35
Torque (100% DC)	Nm	1,000	2,050	4,400	5,400
Maximum holding torque	Nm	4,125	4,125	6,200	6,200

### Sample application of mill-turn machining

		CK45	CK45	CK45	CK45
Material		CK45	CK45	CK45	CK45
Material removal rate	cm <sup>3</sup> /min	405	720	800	900
Depth of cut	mm	4.5	6	8	9
Feed	mm/rev	0.45	0.6	0.5	0.5
Cutting diameter	mm	500	500	900	900
Cutting speed	m/min	200	200	200	200
Spindle speed	rpm	127	127	71	71



- 1: Mill-turn table with Direct Drive technology for speeds up to 1,200 rpm
- 2: Tilted turning using the A-axis
- 3: Use of multi-tools (up to nine cutters)\*
- 4: Measurement cycles for in-process workpiece measurement\*
- 5: Electronic balancing
- 6: Measurement of turning and milling tools\*

\* Optional

## Mill-turn cycles for all requirements

### EXCLUSIVE MILL-TURN CYCLES, ONLY AT DECKEL MAHO\*

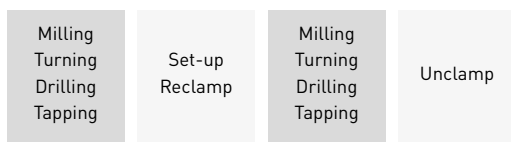
- + **Alternating spindle speeds**, process reliability thanks to the avoidance of vibrations
- + **L measuring sensor packages, measurement cycles for (L) measuring sensors:**  
Calibrate the measuring sensor in the working area, measure recesses and undercuts etc., store, display and transfer measurement data
- + **Multi-tool:** Use of multiple tools (up to nine cutters on one tool)
- + **Milling and turning tool measurement**

### STANDARD MILL-TURN CYCLES

- + Detect, control and monitor **imbalances**
- + **Grooving, undercutting, chip removal, thread cutting**, etc.
- + Tilted turning using the A-axis

\* Optional

#### DMU FD- | DMC FD-MILL-TURN MACHINES – FULL MACHINING PROCESS

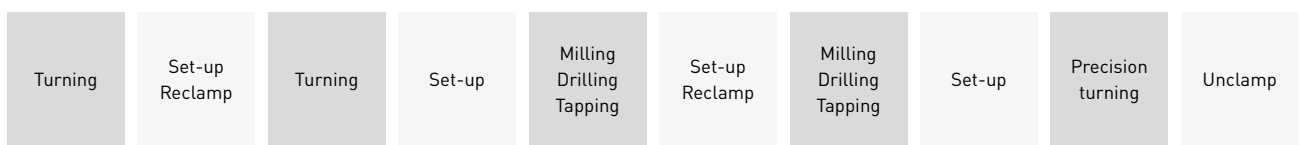


Machine 1

**Complete machining process:**  
1 machine  
4 machining steps  
300% higher productivity

**Conventional machining process:**  
3 machines  
10 machining steps

#### SINGLE-PURPOSE MACHINES – CONVENTIONAL MACHINING PROCESS



Machine 1

Machine 2

Machine 3



Applications and parts

Highlights

Control technology

**Overview**

> Technology integration

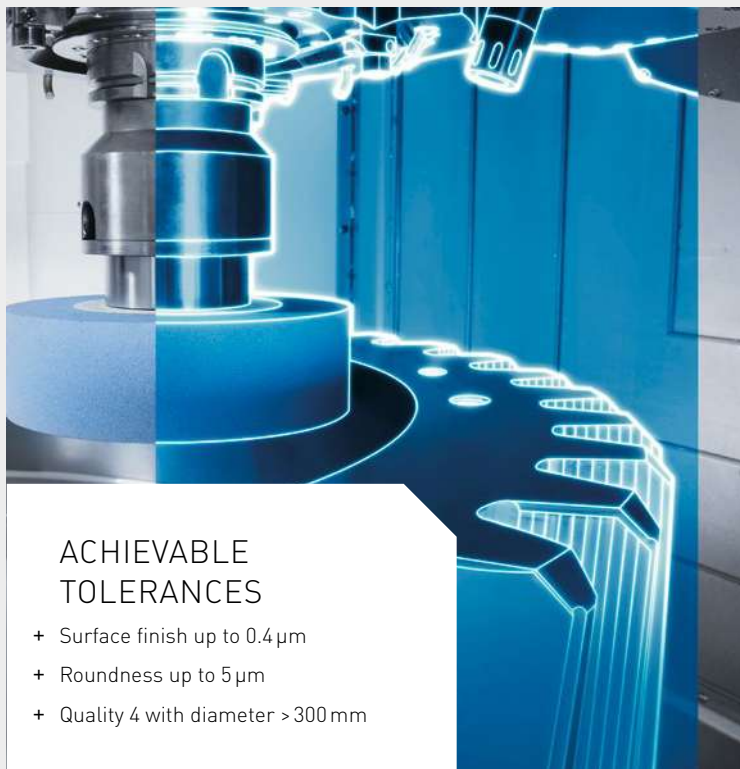
Technical data



1: Detection of components via spindle load  
2: Acoustic emission sensor for dressing

DMU | DMC monoBLOCK SERIES

## Grinding



### ACHIEVABLE TOLERANCES

- + Surface finish up to  $0.4 \mu\text{m}$
- + Roundness up to  $5 \mu\text{m}$
- + Quality 4 with diameter  $> 300 \text{ mm}$

### HIGHLIGHTS

- + Milling, turning and grinding in one set-up
- + Grinding cycles for internal cylindrical, external cylindrical and surface grinding as well as dressing cycles
- + Best surface qualities due to the integration of grinding technology
- + Economic manufacturing due to the reduction of setup times
- + Detection of the initial contact between the grinding wheel and the workpiece via spindle load



3: Turning  
4: Milling  
5: Grinding

## Grinding package

- + FD package incl. spindle and cabine – Approaching the workpiece with spindle power
- + Dressing unit with integrated acoustic emission sensor for a process-reliable dressing process with additional support through dressing cycles
- + Chip conveyor as well as coolant unit with 1,300 l incl. centrifugal filter for particle filtration up to  $10 \mu\text{m}$
- + Machine protection with additional wipers, sealing air for all linear measuring systems as well as shortened lubrication intervals



1: Turning 2: Tapping  
3: Gear milling with standard tools

DMU | DMC monoBLOCK SERIES

## DMG MORI gearSKIVING

### ACHIEVABLE GEAR QUALITIES

- + Spur gear DIN 9 (roughing)
- + Spur gear DIN 7 (finishing)



### HIGHLIGHTS

- + Synchronized rotation of the workpiece and the tool
- + Innovative method for manufacturing straight as well as helical external or internal spur and spline gears
- + For external and internal gearings
- + Modul 2 – 10 possible
- + Highly productive method of manufacturing gearings on universal milling machines
- + Advantages in comparison to conventional manufacturing
  - shorter processing time
  - less tools
  - better surface texture

## DMG MORI gearMILL

### ACHIEVABLE GEAR QUALITIES

- + Bevel gear DIN  $\leq 5$
- + Spur gear DIN  $\leq 6$   
(depending on the pitch circle diameter)



### HIGHLIGHTS

- + Complete machining with turning, drilling and gear cutting
- + Highest flexibility due to machining with standard tools on a standard machine
- + Unrestricted modifications of profiles, flanks and contact patterns with verification
- + Flexible for different gear types
- + Soft and hard machining on one machine
- + Quality control on the process with output log

DMU/DMC 75/95 monoBLOCK

## Top quality equipment at a competitive price

With 950 mm traverse on the X-axis (75: 750 mm), 20,000rpm motor spindle and a tool magazine with 60 pockets, the DMU | DMC 75/95 monoBLOCK machines offer top features from the ground up. In a footprint of less than 8 m<sup>2</sup> (95: 12.3 m<sup>2</sup>), workpieces up to 1,040 mm in diameter and 1,000 kg in weight can be machined. The working area can also be loaded from above without difficulty. Three different 3D control systems and the integrated MPC (Machine Protection Control) round off this unique 5-axis complete solution.



### DMU 75/95 monoBLOCK

*"The sophisticated solution  
for all requirements"*

### DMC 75/95 monoBLOCK

*"The access into automation  
at an unbeatable price"*







1: NC swivel rotary table



2: Motor spindle SK 40 20,000 rpm 130 Nm | 35 kW (40% DC)



3: Chain magazine for up to 60 tools SK40



4: MPC 2.5

## SCOPE OF BASIC MACHINE

1. NC swivel rotary table
2. Motor spindle speed MASTER SK40 20,000 rpm  
130 Nm | 35 kW (40% DC)
3. Chain magazine for up to 60 tools SK40
4. Machine Protection Control – MPC 2.5\*
5. CELOS with SIEMENS 840D sl Operate

## AVAILABLE OPTIONS

- + **Control**  
CELOS with HEIDENHAIN TNC 640  
CELOS with MAPPS auf FANUC\*\*
- + **Table**  
NC swivel rotary table with Direct Drive in C-axis
- + **Tool magazine**  
Chain magazine for up to 120 tools SK40\*\*\*
- + **Tool interface**  
HSK-A63 | BT40 | CAT40
- + **Automation / Measurement / Monitoring**  
3D quickSET  
Infrared measuring probe (HEIDENHAIN/  
RENISHAW)  
Surface Analyzer  
Maintenance Package i4.0  
Tool measuring in working area  
Mechanical tool breakage control  
Quad-colour signal lights  
VCS complete
- + **Cooling supply / chip removal**  
Production package ICS 40 bar, 23 l/min, 600 l tank  
Production package ICS 80 bar, frequency controlled,  
800 l tank  
Scraper type conveyor  
Spray pistol for chip rinsing  
Chip flushing

\* not available for machines with MAPPS control

\*\* only for DMU 75 monoBLOCK

\*\*\* only for DMC machines

Applications and parts

Highlights

Control technology

Overview

**Technical data**

> Tool magazines

## QUICK AND INNOVATIVE FOR HIGH STANDARDS

**Vertical chain magazine**  
for 30 tools  
(optionally 60/90/120/180)

**Rapid cam-controlled double  
gripper** for short chip-to-chip  
times (4.9 seconds for the  
DMU 65 monoBLOCK)

**SK50/HSK-A100** for the  
DMU 85/105/125 monoBLOCK  
with 30 tools as standard  
(optionally 60, 90)





1: Double gripper 2: integrated chain magazine with 120 stations with no additional space requirements

DMU | DMC monoBLOCK SERIES

# Ergonomic machine-integrated tool magazine with compact footprint

	DMU   DMC 65 monoBLOCK	DMU   DMC 85 monoBLOCK	DMU 105 monoBLOCK	DMU 125 monoBLOCK
<b>Tool magazine with SK40/CAT 40/HSK-A63</b>				
Vertical single chain, 30 stations	●	●	●	●
Vertical single chain, 60 stations	○	○	○	○
Vertical single chain, 90 stations	○	○	○	○
Vertical single chain, 120 stations	○	○	○	○
Vertical single chain, 180 stations	○	○	○	○
<b>Tool magazine with SK50/CAT 50/HSK-A100</b>				
Wheel magazine, 30 stations	-	○	○	○
Vertical single chain, 60 stations	-	○	○	○
Vertical single chain, 90 stations	-	○	○	○

		DMU   DMC 65 monoBLOCK	DMU   DMC 85 monoBLOCK	DMU 105 monoBLOCK	DMU 125 monoBLOCK
<b>SK40/CAT 40   HSK-A63</b>					
Magazine type/maximum stations	chain	180 stations	180 stations	180 stations	180 stations
Tool diameter	mm	160	160	160	160
Tool length	mm	315	365   420	365   420	470   500
Weight	kg	8	8	8	8
Chip-to-chip time	sec.	4.9	5.9	5.9	6.7
<b>SK50/CAT 50   HSK-A100</b>					
Magazine type/maximum stations	chain	-	90 stations	90 stations	90 stations
Tool diameter	mm	-	200	250	250
Tool length	mm	-	315   395	315   395	420   500
Weight	kg	-	20	20	20
Chip-to-chip time	sec.	-	7.3	7.3	7.9

● Standard ○ Option - not available

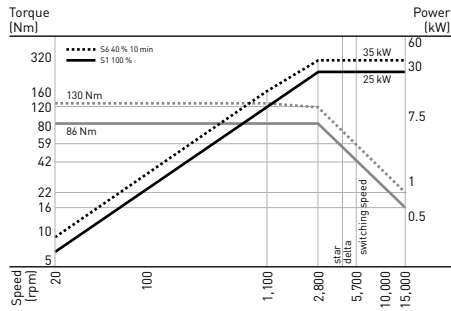
DMU | DMC monoBLOCK SERIES

# The largest and latest range of spindles

**Motor Spindles speedMASTER**

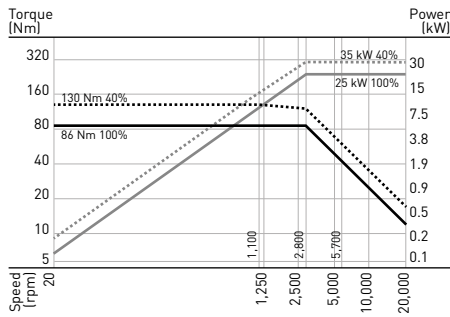
**SK40/HSK-A63**

15,000 rpm / 35 kW / 130 Nm



**SK40/HSK-A63\***

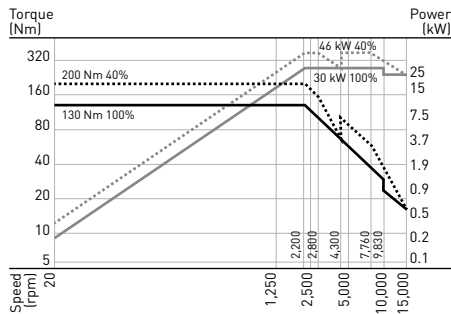
20,000 rpm / 35 kW / 130 Nm



**Motor Spindles speedMASTER**

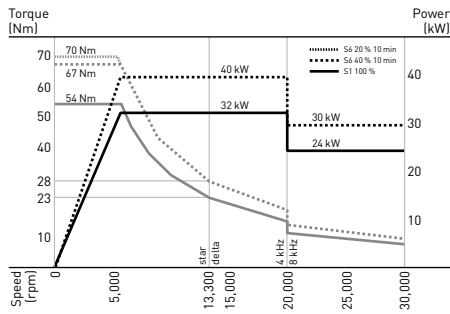
**SK40/HSK-A63**

15,000 rpm / 46 kW / 200 Nm



**HSK-A63**

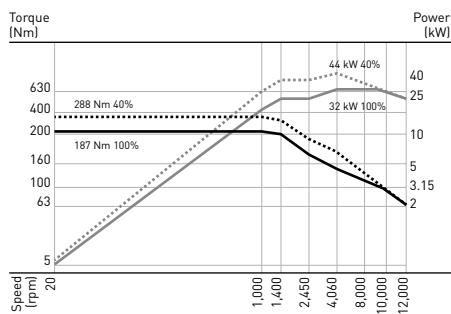
30,000 rpm / 40 kW / 67 Nm



**Motor Spindles powerMASTER**

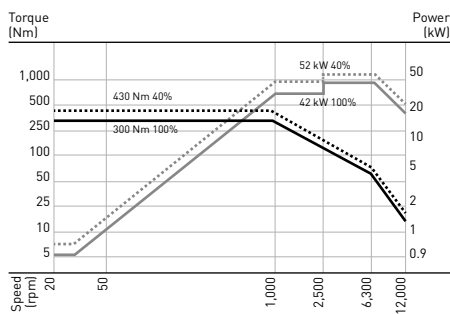
**SK50/HSK-A100\***

12,000 rpm / 44 kW / 288 Nm



**SK50/HSK-A100**

12,000 rpm / 52 kW / 430 Nm



\* Also available as Mill-Turn spindle

## SPINDLE RANGE monoBLOCK | FD monoBLOCK

<i>Speed   tool holder</i> <i>Output (40 % DC)</i> <i>Torque (40 % DC): Spindle run-up time</i>	<b>DMU   DMC 65 monoBLOCK</b>	<b>DMU   DMC 85 monoBLOCK</b>	<b>DMU 105 monoBLOCK</b>	<b>DMU 125 monoBLOCK</b>
<b>15,000 rpm</b>   SK40/HSK-A63* 35 kW, 130 Nm 0 – 15,000 rpm: 2.1 seconds	•	•	•	•
<b>20,000 rpm</b>   SK40/HSK-A63* 35 kW, 130 Nm 0 – 20,000 rpm: 2.6 seconds	◦	◦	◦	◦
<b>15,000 rpm</b>   SK40/HSK-A63* 46 kW, 200 Nm 0 – 15,000 rpm: 2.1 seconds	◦	◦	◦	◦
<b>30,000 rpm</b>   HSK-A63 40 kW, 67 Nm 0 – 30,000 rpm: on request	◦	◦	◦	◦
<b>12,000 rpm</b>   SK50/HSK-A100* 44 kW, 288 Nm 0 – 10,000 rpm: 3.6 seconds	–	◦	◦	◦
<b>12,000 rpm</b>   SK50/HSK-A100* 52 kW, 430 Nm 0 – 10,000 rpm: 4.5 seconds	–	◦	◦	◦

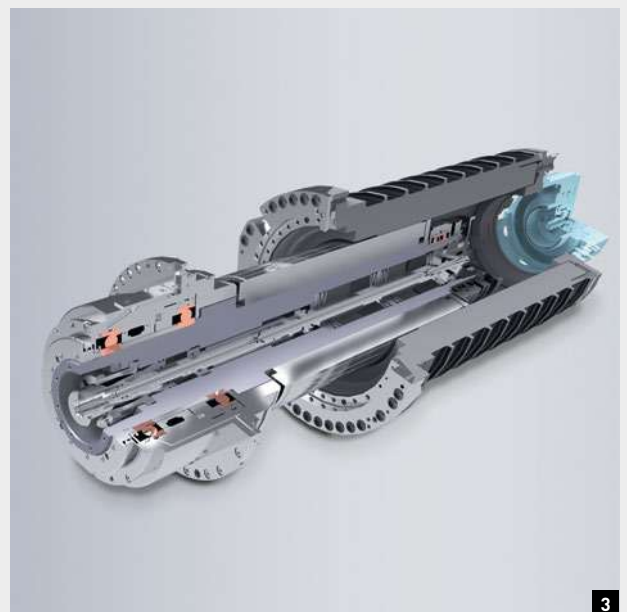
<i>Speed   tool holder</i> <i>Output (40 % DC)</i> <i>Torque (40 % DC): Spindle run-up time</i>	<b>DMU   DMC 65 FD monoBLOCK</b>	<b>DMU   DMC 85 FD monoBLOCK</b>	<b>DMU 105 FD monoBLOCK</b>	<b>DMU 125 FD monoBLOCK</b>
<b>20,000 rpm</b>   HSK-A63 35 kW, 130 Nm 0 – 20,000 rpm: 2.6 seconds	•	•	–	–
<b>12,000 rpm</b>   HSK-A100 44 kW, 288 Nm 0 – 12,000 rpm: 4.3 seconds	–	◦	•	•

• Standard ◦ Option – not available ◻ Option



## HIGHLIGHTS

- + **The largest modular spindle** rated at up to 30,000 rpm and 430 Nm torque
- + **speedMASTER** – High-tech motor spindles with high performance and running accuracy
- + **SK50/HSK-A100** available from the DMU 85 monoBLOCK upwards
- + Motor spindle with **modular technology** for the quickest and most cost-effective repairs
- + **12,000 rpm SK50/HSK-A100 spindle** rated at 52 kW and 430 Nm available from the DMU | DMC 85 monoBLOCK upwards



1: Ra <math>< 0.4 \mu\text{m}</math> 2: speedMASTER – Motor spindles with the highest running accuracy  
3: SGS – Spindle Growth Sensor for maximum accuracy through monitoring and compensation of spindle growth

## Example applications



### Complete machining of a GGG60 machine component Productive cast iron machining with the standard spindle

Machining focus: Roughing and finishing of surfaces; drilling, tapping and milling individual cavities; 5-sided machining with swivelling rotary table; complete machining in two clampings

Sector	Machine construction	Spindle	15,000 rpm
Tool	Face mill $\varnothing$ 63 mm	Power	21 kW
Material	GGG60	Torque	111 Nm



### Complete machining of a hydraulic aluminium railway component 40 % higher productivity for drilling and finishing

Machining focus: Face milling of the outer contours; 5-sided machining with swivelling rotary table; complete machining in two clampings

Sector	Hydraulics/railway	Spindle	20,000 rpm
Tool	PCD reamer $\varnothing$ 18 mm	Power	35 kW
Material	Aluminium die casting	Torque	130 Nm



### Complete machining of a CK45 machine component High-end machining in the SK40 class

Machining focus: 5-sided machining with roughing; drilling and M24 tapping on the same machine and in the same clamping

Sector	Mechanical engineering	Spindle	15,000 rpm
Tool	Solid drill $\varnothing$ 54 mm	Power	46 kW
Material	CK45	Torque	200 Nm



### Complete machining of a forging die for a tool steel connecting rod Hard machining (60 HRC) and excellent surface finish of Ra 0.2 $\mu$ m

Machining focus: 5-axis simultaneous machining for shorter machining times and better surface finishes; HSC machining with the 24,000 rpm motor spindle, Ra < 0.2  $\mu$ m surface finish

Sector	Mould making	Spindle	24,000 rpm
Tool	Ball nose end mill $\varnothing$ 3 mm	Power	24 kW
Material	Tool steel	Torque	100 Nm



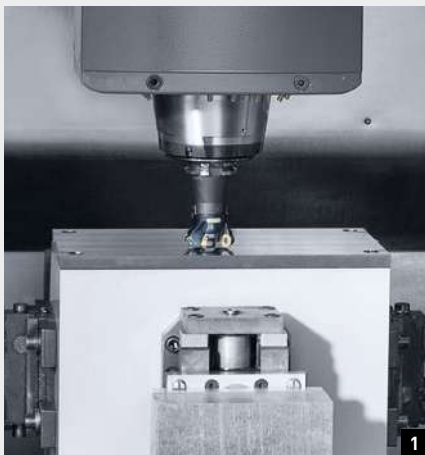
### Complete machining of a CK45 pump housing High-performance milling of CK45 with a material removal rate of over 800 cm<sup>3</sup>

Machining focus: Face milling with a powerful, high-torque motor spindle; 5-sided machining with swivelling rotary table; complete machining in two clampings

Sector	Mechanical engineering/fluidics	Spindle	12,000 rpm/SK50
Tool	End mill $\varnothing$ 100 mm	Power	44 kW
Material	CK45	Torque	288 Nm

DMU | DMC monoBLOCK SERIES

# High-performance milling, drilling and tapping



Motor Spindle speedMASTER rated at 20,000 rpm/35 kW/130 Nm

	<b>1 High-performance milling</b>	<b>2 High-performance milling</b>	<b>3 Tapping</b>
Workpiece material	Steel (CK45)	Steel (CK45)	Steel (CK45)
Material removal rate	520 cm <sup>3</sup> /min	435 cm <sup>3</sup> /min	-
Tool	Face mill ø63 mm	Indexable insert drill ø54 mm	M24 tap
Spindle speed	1,800 rpm	1,650 rpm	464 rpm (Vc = 35 m/min)
Feed	2,600 mm/min (Fz = 0.24 mm)	190 mm/min (Fu = 0.115 mm)	1,400 mm/min
Cutting depth/width	4/50 mm	-	-

Motor Spindle speedMASTER rated at 15,000 rpm/46 kW/200 Nm

	<b>1 High-performance milling</b>	<b>2 High-performance milling</b>	<b>3 Tapping</b>
Workpiece material	Steel (CK45)	Steel (CK45)	Steel (CK45)
Material removal rate	500 cm <sup>3</sup> /min	794 cm <sup>3</sup> /min	-
Tool	Face mill ø80 mm	Indexable insert drill ø54 mm	M24 tap
Spindle speed	955 rpm	1,650 rpm	530 rpm (Vc = 40 m/min)
Feed	2,741 mm/min (Fz = 0.41 mm)	347 mm/min (Fu = 0.21 mm)	1,600 mm/min
Cutting depth/width	3.5/52 mm	-	-





Motor Spindle powerMASTER rated at 12,000 rpm/52 kW/430 Nm

	<b>4 High-performance milling</b>	<b>5 High-performance milling</b>	<b>6 Tapping</b>
Workpiece material	Steel (CK45)	Steel (CK45)	Steel (CK45)
Material removal rate	1,000 cm <sup>3</sup> /min	830 cm <sup>3</sup> /min	-
Tool	Mill ø 160 mm (9 cuts)	Indexable insert drill ø 80 mm	M42 tap
Spindle speed	1,000 rpm (Vc = 500 m/min)	900 rpm (Vc = 255 m/min)	46 rpm (Vc = 6 m/min)
Feed	1,800 mm/min (Fz = 0.2 mm)	165 mm/min (Fz = 0.183 mm)	207 mm/min (Fz = 4.5 mm)
Cutting depth/width	4.5/120 mm	-	-

Motor Spindle powerMASTER rated at 12,000 rpm/44 kW/288 Nm

	<b>4 High-performance milling</b>	<b>5 High-performance milling</b>	<b>6 Tapping</b>
Workpiece material	Steel (CK45)	Steel (CK45)	Steel (CK45)
Material removal rate	812 cm <sup>3</sup> /min	708 cm <sup>3</sup> /min	-
Tool	Mill ø 100 mm (7 cuts)	Indexable insert drill ø 70 mm	M30 tap
Spindle speed	1,255 rpm (Vc = 394 m/min)	1,023 rpm (Vc = 225 m/min)	106 rpm (Vc = 10 m/min)
Feed	2,900 mm/min (Fz = 0.33 mm)	186 mm/min (Fz = 0.18 mm)	371 mm/min (Fz = 3.5 mm)
Cutting depth/width	3.5/80 mm	100/- mm	Thread depth 30 mm

## DMU | DMC monoBLOCK SERIES

# Technical data

		DMU 65 monoBLOCK
<b>Working area</b>		
X/Y/Z travels	mm	735 / 650 / 560
Working volume	dm <sup>3</sup>	268
<b>Swivelling rotary table</b>		
Pallet / table	mm	ø 650 / in 800 × 650
Max. load	kg	600 / 1,000
Maximum workpiece dimensions	mm	ø 840
Maximum workpiece height	mm	500
<b>Main drive (standard)</b>		
Rotational speed	rmp	15,000
Torque [S6 40 %]	Nm	130
Power [S6 40 %]	kW	35
<b>Tool changer</b>		
Tool holder		SK40/HSK-A63
Tool magazine	stations	30 / chain
Diameter (free adjacent positions)	mm	160
Max. length	mm	315
Weight	kg	8
Chip-to-chip time	sec.	4.9*
<b>Tool changer</b>		
Tool holder		-
Tool magazine	stations	-
Diameter (free adjacent positions)	mm	-
Length	mm	-
Weight	kg	-
<b>Linear axes (X/Y/Z)</b>		
Feed	mm/min	40,000
Rapid traverse	m/min	40
Acceleration	m/s <sup>2</sup>	6
Feed thrust (X/Y/Z)	kN	7 / 10 / 12
Roller guideways (X/Y/Z)	mm	45
Ball screws (X/Y/Z)	mm	40 / 50 / 40
P <sub>max.</sub> [X/Y/Z] – VDI DGQ 3441 / ISO 230-2	µm	5
<b>Machine data</b>		
Space requirements of the base machine without chip conveyor or internal coolant supply	approx. m <sup>2</sup>	8
Machine height (standard machine)	mm	2,897
Machine weight	kg	12,100
<b>Controls</b>		
CELOS with SIEMENS 840D sl Operate including 21.5" ERGOline Control with Multi-Touch-screen		•
CELOS with HEIDENHAIN TNC 640 including 21.5" ERGOline Control with Multi-Touch-screen		◦

\* HSK-A values • Standard ◦ Option – not available

DMU 85 monoBLOCK	DMU 105 monoBLOCK	DMU 125 monoBLOCK	DMC 65 monoBLOCK	DMC 85 monoBLOCK
935 / 850 / 650	1,135 / 1,050 / 750	1,335 / 1,250 / 900	735 / 650 / 560	935 / 850 / 650
517	894	1,502	268	517
∅ 850 × 750 / in 1,000 × 750	∅ 1,050 × 850 / in 1,200 × 850	∅ 1,250 × 1,000 / in 1,400 × 1,000	500 × 500	630 × 630
1,000 / 1,500	1,500 / 2,000	2,000 / 2,600	500	800
∅ 1,040	∅ 1,240	∅ 1,400	∅ 630	∅ 800
590	690	790	500	590
15,000	15,000	15,000	15,000	15,000
130	130	130	130	130
35	35	35	35	35
SK40/HSK-A63	SK40/HSK-A63	SK40/HSK-A63	SK40/HSK-A63	SK40/HSK-A63
30 / chain	30 / chain	30 / chain	30 / chain	30 / chain
160	160	160	160	160
365 / 420	365 / 420	470 / 500	315	365 / 420
8	8	8	8	8
5.9°	5.9°	6.7°	4.9°	5.9°
SK50/HSK-A100	SK50/HSK-A100	SK50/HSK-A100	-	SK50/HSK-A100
30 / wheel	30 / wheel	30 / wheel	-	30 / wheel
200	250	250	-	200
315 / 395	315 / 395	420 / 500	-	315 / 395
20	20	20	-	20
40,000	40,000	40,000	40,000	40,000
40	40	40	40	40
6	5	5	6	6
12 / 15 / 18	12 / 15 / 18	12 / 15 / 18	7 / 10 / 12	12 / 15 / 18
55	55	55	45	55
50 / 50 / 50	50 / 63 / 50	50 / 63 / 50	40 / 50 / 40	50 / 50 / 50
5	6	6	5	5
12.5	15.4	28.5	17	26
3,205	3,382	3,910	2,924	3,218
14,600	17,900	26,000	16,800	19,000
•	•	•	•	•
◦	◦	◦	◦	◦

DMU | DMC FD monoBLOCK SERIES

# Technical data

**DMU 65 FD monoBLOCK**

<b>Working area</b>			
X/Y/Z travels	mm	735 / 650 / 560	
Working volume	dm <sup>3</sup>	268	
<b>Swivelling rotary table (mill-turn with C-axis speed)</b>			<b>• (1,200)</b>
Pallet / table	mm	ø 680	
Maximum load (single drive / twin drive)	kg	600	
Maximum workpiece dimensions	mm	ø 840	
Maximum workpiece height	mm	500	
<b>Main drive (standard)</b>			
Rotational speed	rpm	20,000	
Torque (S6 40 %)	Nm	130	
Power (S6 40 %)	kW	35	
<b>Tool changer</b>			
Tool holder		HSK-A63	
Tool magazine	stations	30 / chain	
Diameter (free adjacent positions)	mm	160	
Max. length	mm	315	
Weight	kg	8	
Chip-to-chip time	sec.	4.9	
<b>Linear axes (X/Y/Z)</b>			
Feed	mm/min	40,000	
Rapid traverse	m/min	40	
Acceleration	m/s <sup>2</sup>	6	
Feed thrust (X/Y/Z)	kN	7 / 10 / 12	
Roller guideways (X/Y/Z)	mm	45	
Ball screws (X/Y/Z)	mm	40 / 50 / 40	
P <sub>max.</sub> (X/Y/Z) – VDI DGQ 3441 / ISO-230-2	µm	5	
<b>Machine data</b>			
Space requirements of the base machine without chip conveyor or internal coolant supply	approx. m <sup>2</sup>	8	
Machine height (standard machine)	mm	2,897	
Machine weight	kg	12,300	
<b>Control system</b>			
CELOS with SIEMENS 840D sl Operate including 21.5" ERGOline Control with Multi-Touch-screen		•	
CELOS with HEIDENHAIN TNC 640 including 21.5" ERGOline Control with Multi-Touch-screen		◦	

\* HSK-A values • Standard ◦ Option – not available

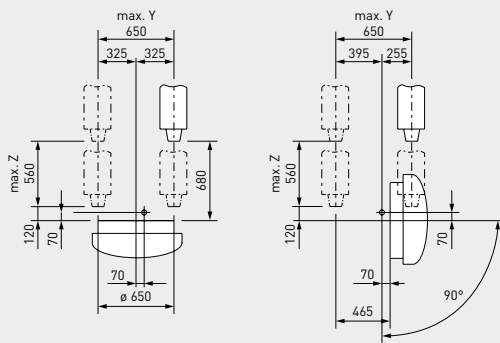
DMU 85 FD monoBLOCK	DMU 105 FD monoBLOCK	DMU 125 FD monoBLOCK	DMC 65 FD monoBLOCK	DMC 85 FD monoBLOCK
935 / 850 / 650	1,135 / 1,050 / 750	1,335 / 1,250 / 900	735 / 650 / 560	935 / 850 / 650
517	894	1,502	268	517
• (800)	• (500)	• (500)	• (1,200)	• (800)
ø 850	ø 1,050	ø 1,250	ø 630	ø 800 × 630
1,000 / 1,200	1,500 / 2,000	2,000 / 2,600	500 / 500	800 / 800
ø 1,040	ø 1,250	ø 1,400	ø 630	ø 800
590	690	790	500	590
20,000	12,000	12,000	20,000	20,000
130	288	288	130	130
35	44	44	35	35
HSK-A63   HSK-A100	HSK-A100	HSK-A100	HSK-A63	HSK-A63   HSK-A100
30 / chain	30 / wheel	30 / wheel	30 / chain	30 / chain
160   200	250	250	160	160   200
420   395	395	500	315	420   395
8   20	20	20	8	8
5.9   7.3	7.3	7.9	4.9	5.9   7.3
40,000	40,000	40,000	40,000	40,000
40	40	40	40	40
6	5	5	6	6
12 / 15 / 18	12 / 15 / 18	12 / 15 / 18	7 / 10 / 12	12 / 15 / 18
55	55	55	45	55
50 / 50 / 50	50 / 63 / 50	50 / 63 / 50	40 / 50 / 40	50 / 50 / 50
5	6	6	5	5
12.5	15.4	28.5	17	26
3,205	3,382	3,910	2,924	3,218
14,800	18,300	27,500	17,800	20,000
•	•	•	•	•
◦	◦	◦	◦	◦

DMU | DMC monoBLOCK SERIES

# Floor plans

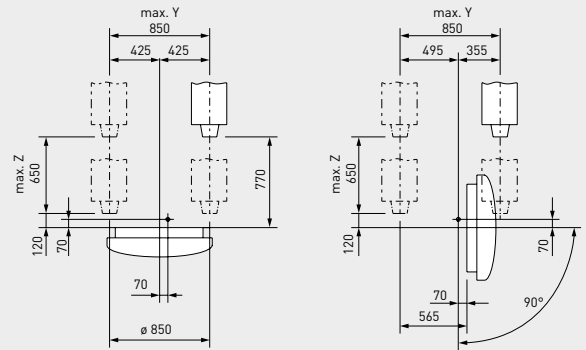
**Working area of the DMU 65/65 FD/75 monoBLOCK**

Swivel range  $\pm 120^\circ$



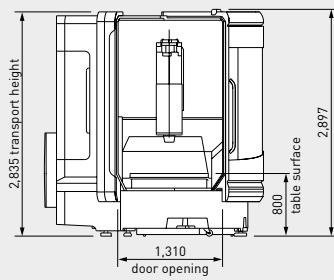
**Working area of the DMU 85/85 FD/95 monoBLOCK**

Swivel range  $\pm 120^\circ$



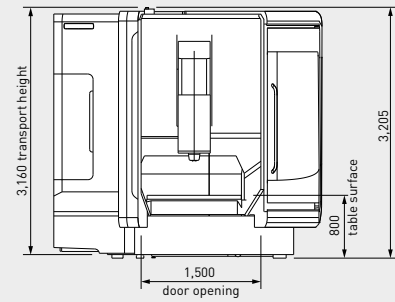
**Floor plan of the DMU 65/65 FD/75 monoBLOCK**

Front view



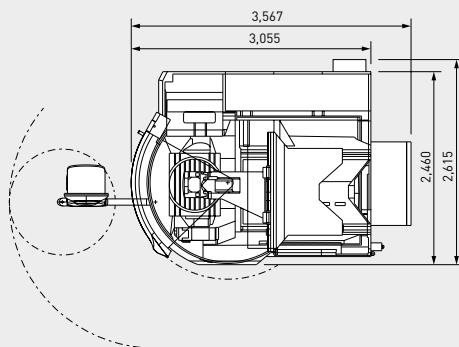
**Floor plan of the DMU 85/85 FD/95 monoBLOCK**

Front view



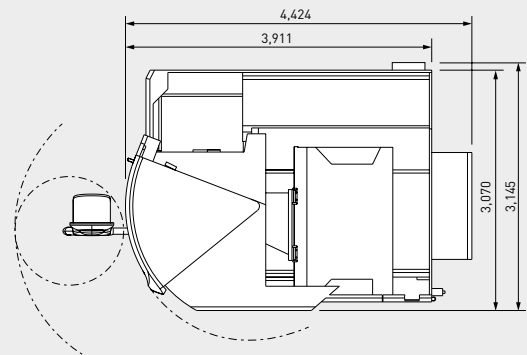
**Floor plan of the DMU 65/65 FD/75 monoBLOCK**

Plan view with chain magazine for 30 or 60 tools and chip conveyor option  
Footprint: 8 m<sup>2</sup> (9.3 m<sup>2</sup> with chip conveyor)



**Floor plan of the DMU 85/85 FD/95 monoBLOCK**

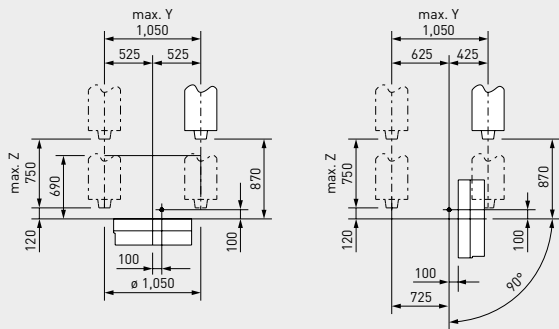
Plan view with chain magazine for 30 or 60 tools and chip conveyor option  
Footprint: 12.3 m<sup>2</sup> (13.9 m<sup>2</sup> with chip conveyor)



Layouts with chip conveyor, without cooling unit

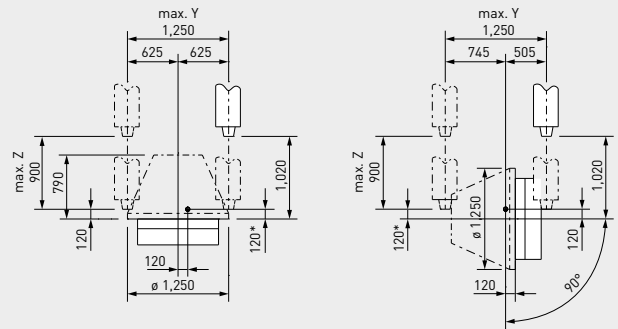
**Working area of the DMU 105 / 105 FD monoBLOCK**

Swivelling rotary table - swivel angle



**Working area of the DMU 125 / 125 FD monoBLOCK**

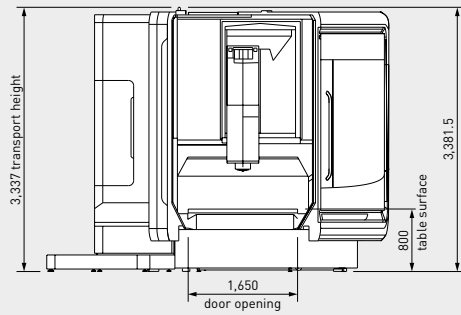
Swivelling rotary table - swivel angle



\* for FD 100

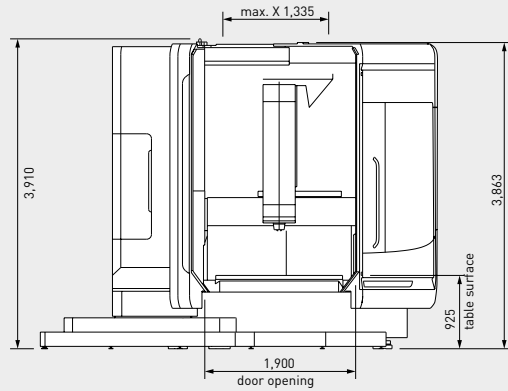
**Floor plan of the DMU 105 / 105 FD monoBLOCK**

Front view



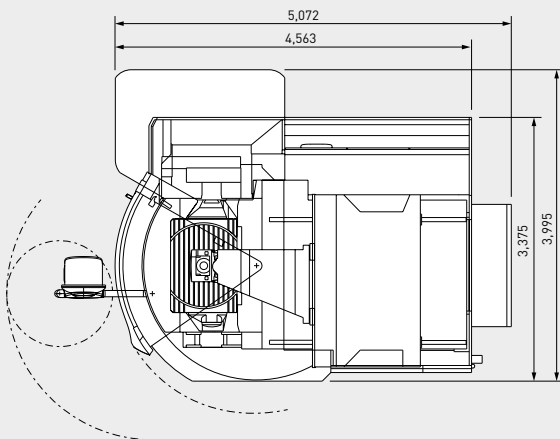
**Floor plan of the DMU 125 / 125 FD monoBLOCK**

Front view



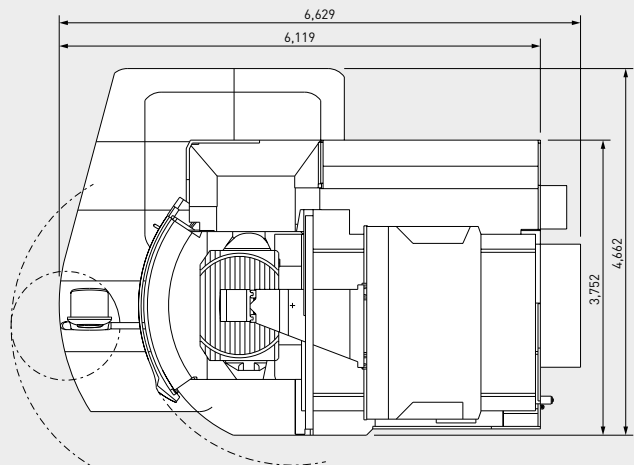
**Floor plan of the DMU 105 / 105 FD monoBLOCK**

Plan view with 30-station chain magazine and chip conveyor option  
Footprint: 18.2m<sup>2</sup> [20.2m<sup>2</sup> with chip conveyor]



**Floor plan of the DMU 125 / 125 FD monoBLOCK**

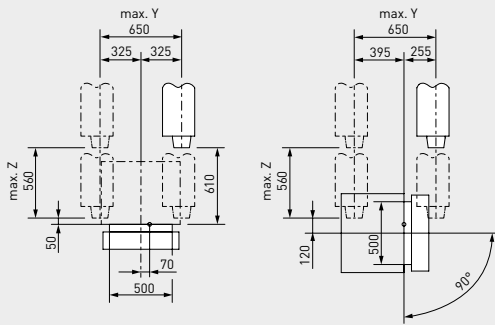
Plan view with 30-station chain magazine and chip conveyor option  
Footprint: 28.5m<sup>2</sup> [30.9m<sup>2</sup> with chip conveyor]



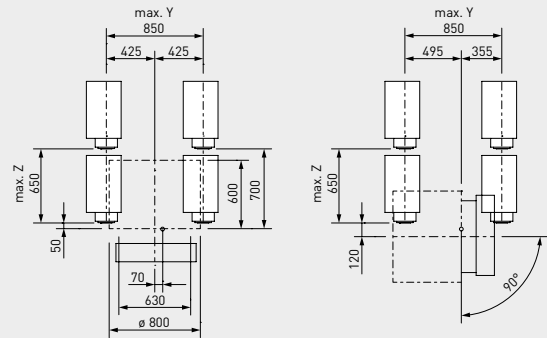
DMU | DMC monoBLOCK SERIES

# Floor plans

**Working area of the DMC 65/65 FD monoBLOCK**

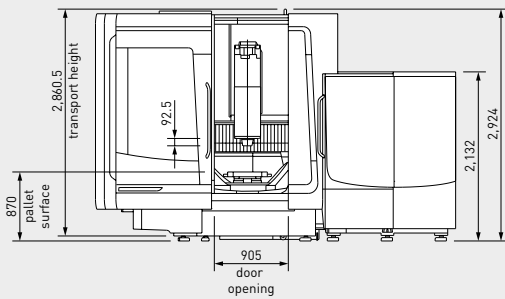


**Working area of the DMC 85/85 FD monoBLOCK**



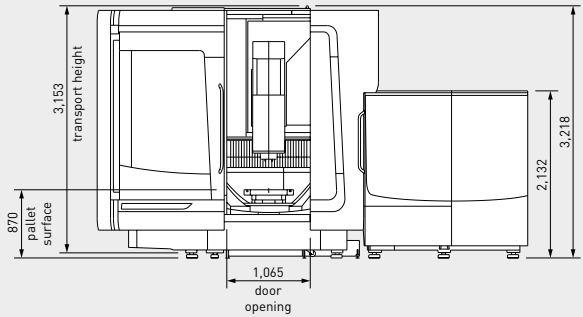
**Floor plan of the DMC 65/65 FD monoBLOCK**

Front view



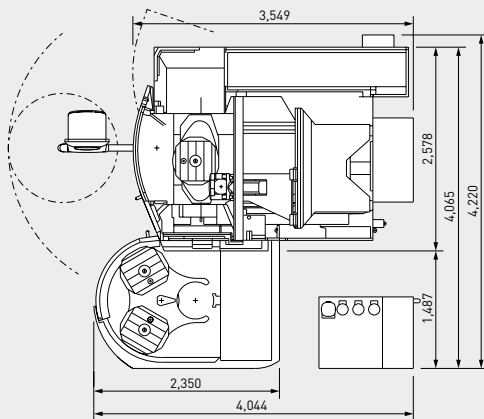
**Floor plan of the DMC 85/85 FD monoBLOCK**

Front view



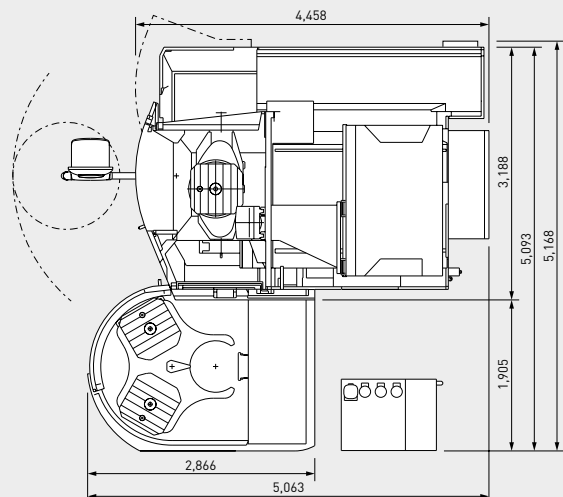
**Floor plan of the DMC 65/65 FD monoBLOCK**

Plan view with 30-station chain magazine and chip conveyor option  
Footprint: 17 m<sup>2</sup> (including chip conveyor and coolant tank)



**Floor plan of the DMC 85/85 FD monoBLOCK**

Plan view with 30-station chain magazine and chip conveyor option  
Footprint: 26 m<sup>2</sup> (including chip conveyor and coolant tank)



Layouts with chip conveyor





DMU 65/85/  
105/125 FD  
monoBLOCK:

Complete machining, including  
milling and turning, in one  
machine in a single clamping  
with Direct Drive technology  
up to 1,200 rpm

## DMU | DMC monoBLOCK- AND DMU | DMC FD monoBLOCK SERIES

# Options

	DMU 65/75 monoBLOCK	DMU 85/95 monoBLOCK	DMU 105 monoBLOCK
<b>Table options</b>			
Swivelling rotary table (A-axis: single/tandem)	●/○	●/○	●/○
Swivelling rotary table mill-turn (A-axis: single/tandem)	–	–	–
Swivelling rotary table with Direct Drive in A- and C-axis (A-axis: tandem)	○/○*	–	–
Swivelling rotary table with Direct Drive C-axis (A-axis: single/tandem)	○/○*	○/○*	–
<b>Main drive</b>			
Motor spindle speedMASTER SK40 15,000 rpm   35 kW/130 Nm (40% DC)	●/–	●/–	●
Motor spindle speedMASTER SK40 20,000 rpm   35 kW/130 Nm (40% DC)	○/●	○/●	○
Motor spindle speedMASTER HSK-A63 30,000 rpm   40 kW/67 Nm (40% DC)	○	○	○
Motor spindle speedMASTER SK40 15,000 rpm   46 kW/200 Nm (40% DC)	○	○	○
Motor spindle powerMASTER SK50 12,000 rpm   44 kW/288 Nm (40% DC)	–	○	○
Motor spindle powerMASTER SK50 12,000 rpm   52 kW/430 Nm (40% DC)	–	○	○
<b>Tool holder</b>			
HSK-A63/BT 40/CAT 40	○/○/○	○/○/○	○/○/○
HSK-A100/BT 50/CAT 50	–/–/–	○/○/○	○/○/○
<b>Tool magazine</b>			
Vertical chain magazine with 60/90/120/180 pockets (SK40/HSK-A63)	○	○	○
Vertical chain magazine with 60/90 pockets (SK50/HSK-A100)	–	○	○
<b>Automation / measurement / monitoring</b>			
Infrared measuring sensor: HEIDENHAIN TS 460/RENISHAW PP60 (OMP 60)	○	○	○
High-accuracy measuring probe Renishaw PP600 (OMP 600)	○	○	○
Tool measurement in the working area – Blum Laser DIGILOG	○	○	○
Quad-colour signal lights	○	○	○
<b>Coolant / chip disposal</b>			
Compact 500 l coolant system, 20 bar internal coolant supply, chip conveyor, paper band filter	○	○	○
Production package: 40 bar, 600 l internal coolant supply, chip conveyor	○	○	○
Production package: 80 bar, 980 l internal coolant supply, frequency controlled	○	○	○
Coolant temperature control for the 600/980 l internal coolant supply	○	○	○
Spray pistol	○	○	○
Minimal lubrication internally through the spindle centre, externally via nozzles	○*	○*	○
Oil and emulsion mist delivery equipment	○	○	○
Air blast through the spindle centre	○	○	○
<b>Technologie cycles and software options</b>			
Grinding package	–	–	–
3D quickSET	○	○	○
Application Tuning Cycle ATC	○	○	○
Maintenance i4.0	○	○	○
Tool Control Center TCC (only in combination with HSK-A63)	○*	○*	○
Volumetric Calibration System VCS complete	○	○	○
MDynamics Paket (only in combination with SIEMENS)	○	○	○
Machine Protection Control MPC	○**	○**	○
<b>General options</b>			
Shatter-proof safety glass viewing panel	–	–	–
Operating mode 4 "Process monitoring in production"	○	○	○
Package for increased precision	●	●	●
Electronic handwheel	○	○	○





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