www.dmgmori.com

DMG MORI

5-axis milling & 5-axis milling / turning machining centers

DMU P / FD and DMC U / FD duoBLOCK® Series

DMU 60 / 100 / 125 / 160 P duoBLOCK®
DMU 60 / 125 / 160 FD duoBLOCK®
DMC 60 / 100 / 125 / 160 U duoBLOCK®
DMC 60 / 125 / 160 FD duoBLOCK®

DMU P/FD and DMC U/FD duoBLOCK® Series

3rd Generation duoBLOCK®: 20% greater flexibility with 5-axis machining.

The 5-axis machines feature a very stable duoBLOCK® design for unbeatable precision and dynamics. In addition to drilling and milling operations, the milling / turning machines (FD) can also perform turning operations in the same setup. The 3rd Generation duoBLOCK® has larger travel paths and table loads to help deliver this exceptional versatility. A pallet changer available on the DMC machines even offers setup during machining operations for unparalleled productivity.


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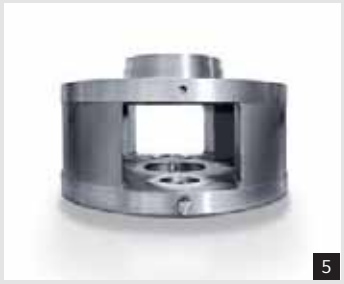
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Aerospace

1: Compressor disk
2: Integral component

Tool and mold making

3: Die insert
4: Tire mold segment

Mechanical engineering

5: Planetary carrier
6: Tool turret

Energy technology

7: Pelton blade
8: Impeller

Automotive / Fluidics

9: Crankcase
10: Hydraulic part

9

10

5 axis CHAMPION

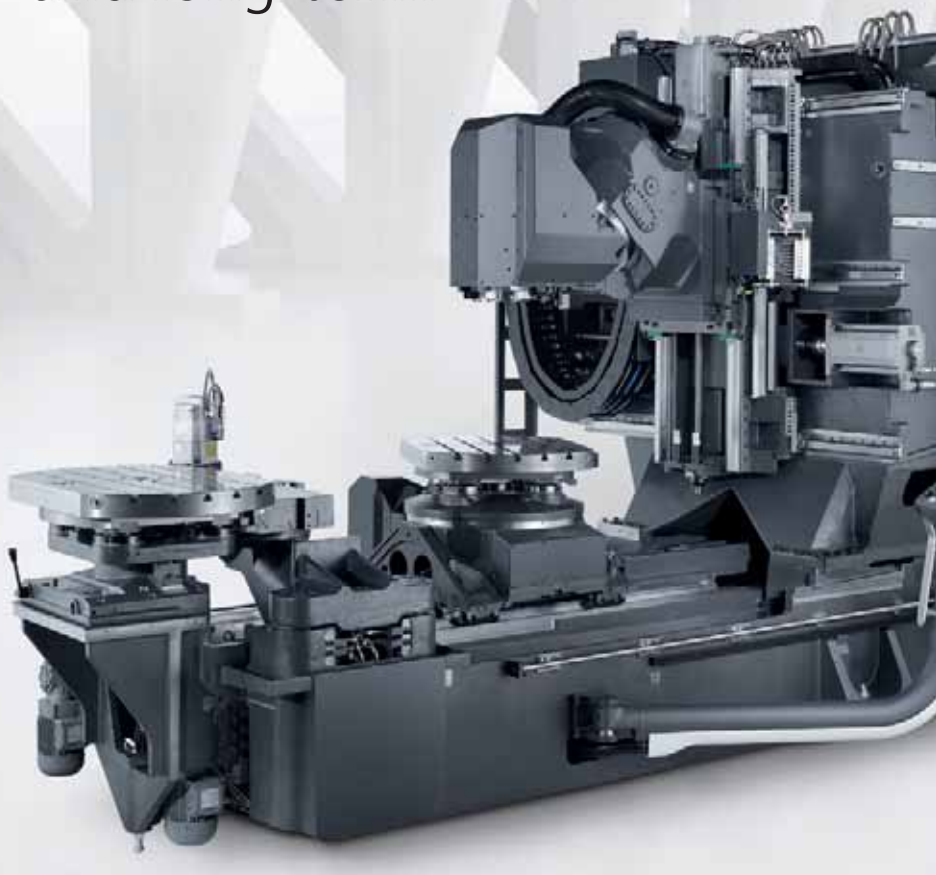
Note: The results of cutting and performance tests featured in this catalog are examples. Results may vary slightly depending on environment and cutting conditions.

DMU / DMC duoBLOCK®:
Simple and high-tech workpieces produced economically with exceptional precision.

Featured workpiece:
HP compressor housing / Aerospace.

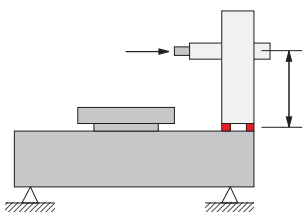
DMU P/FD and DMC U/FD duoBLOCK® Series

Compact 3rd Generation duoBLOCK® – Greatest stability and long-term accuracy.

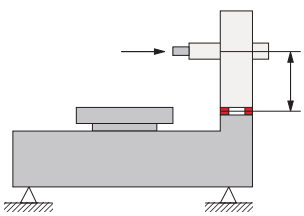


+ **B-axis comes standard**
+ **Improved dynamics** and **energy efficiency** through less moving mass
+ Longer Y-axis for a **larger work area**
+ Optimized machine design supports **heavier workpieces**
+ **Unbeatable precision** with cooling in all axes

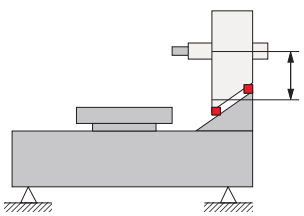
Development of the duoBLOCK®: Maximum rigidity for the greatest long-term precision thanks to continuous machine design improvement.



Classic traveling column
>> high leverage



Raised guideways
>> reduced leverage



Tiered guideways
>> optimized leverage

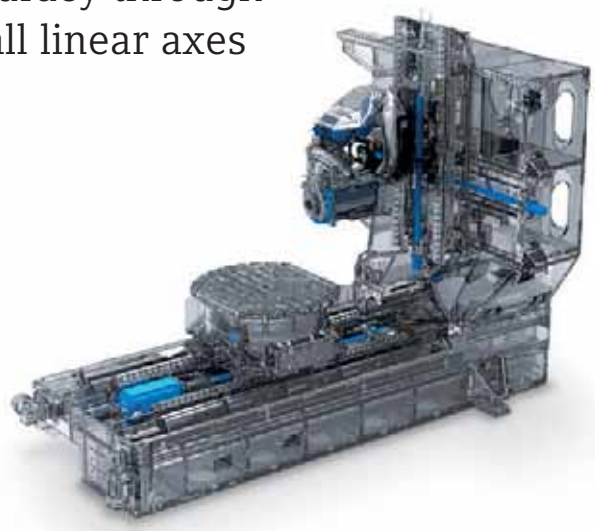
duoBLOCK® design highlights

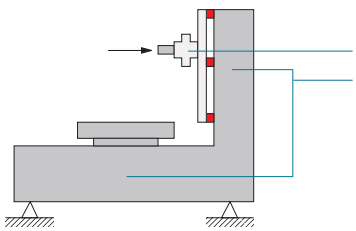
+ Maximum rigidity through the FEM-optimized, patented duoBLOCK® design provides unbeatable long-term precision
+ Impressive machine dynamics through high static mass and low moving mass for GGG60 parts
+ Constant rigidity over the entire travel range with three X-axis guideways
+ Spacious cubic work area for large multi-clamp devices or bigger workpiece machining
+ 3-point support with an inherently rigid machine bed and crane hook design for easy installation
+ SK50 / HSK-A100

Greatest long-term accuracy through continuous cooling of all linear axes (comes standard)

+ Cooling of all ball screw drives
+ Cooling of Y-axis drive*
+ Cooling of B-axis and main spindle
+ Cooling via active cooling units

*160 model: X / Y / Z





duoBLOCK®
>> no leverage effect

duoBLOCK®*

2,645.5 lbs. moving mass
17,637.0 lbs. static mass

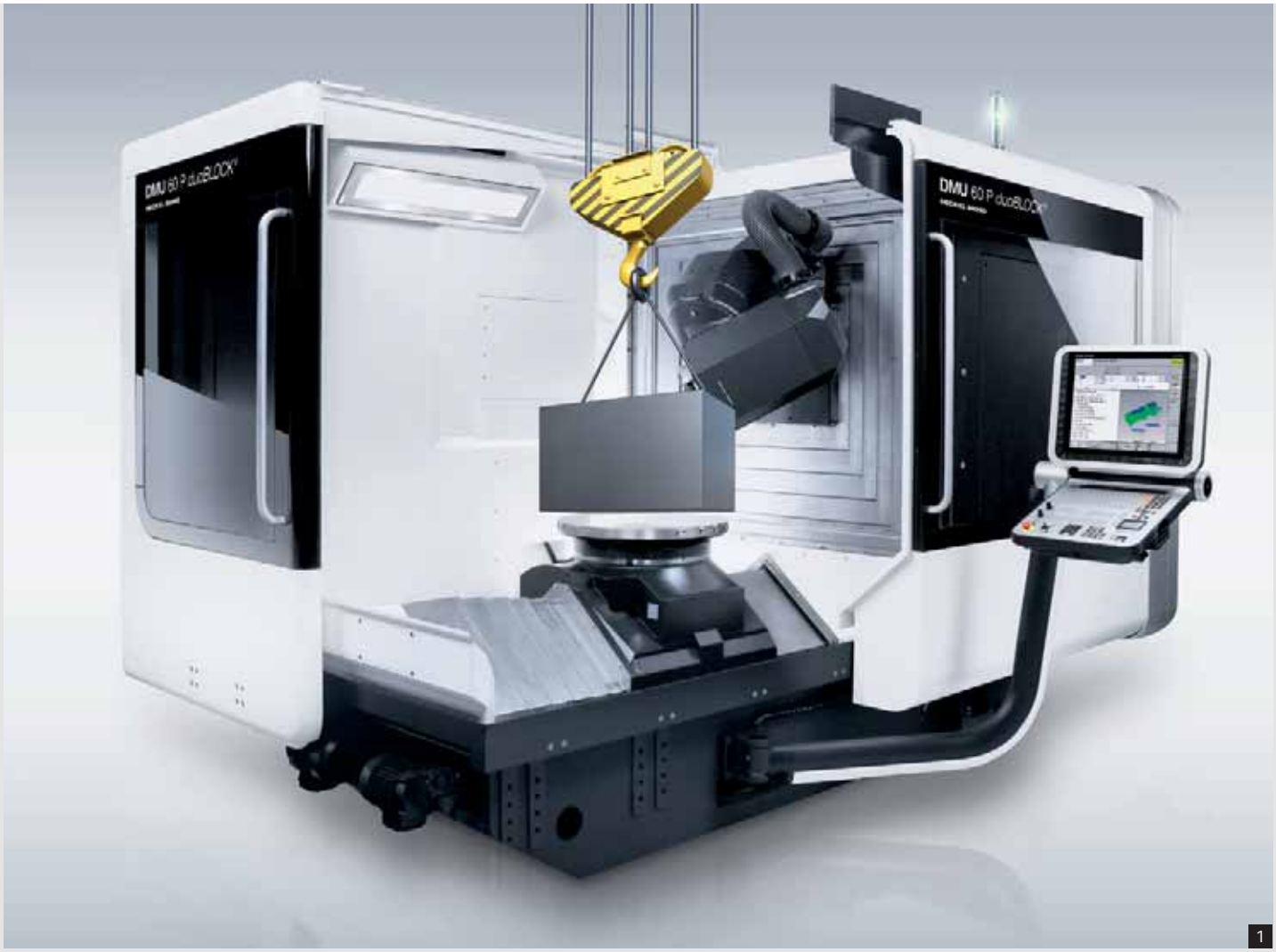
Traveling columns*

5,291.1 lbs. moving mass
8,818.5 lbs. static mass

* Compare DMU 125 P duoBLOCK® with DMU 125 P *hi-dyn* (traveling columns)

+ 50% less moving mass
+ 100% more static mass
= **Highest dynamics and stability**
= **Reduced energy use**
+ Constant rigidity over the entire travel range
+ Thermo-symmetrical base structure
= **Maximum long-term precision**

duoBLOCK® – the new standard in accessibility, with a large cubic work area and unrestricted crane loading from above.
1: Crane loading from above for workpieces up to 8,818.5 lbs.
2–3: Pallet changer for workpieces up to 6,613.9 lbs., optimal accessibility to the work area and setup station through the large access door



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3rd Generation duoBLOCK® – Even larger work area with unbeatable accessibility.

4: Large cubic work area and consistent precision (even in the upper travel range) through 3 X-axis guideways
5: Steep (30°) 1-piece covers in the chip fall area
6: Quick chip disposal to the rear

Highlights

+ Unrestricted crane loading from above to over the table center on DMU machines, or over the pallet center on DMC machines (setup station)
+ Optimal accessibility to large work area and setup station through the large access door for fast and ergonomic setup and tooling
+ Spacious work area for large multi-clamp devices or bigger workpiece machining
+ Steep covers and cabin angles for optimal chip flow in the work area
+ 1-piece covers in the chip fall area
+ Quick chip disposal to the rear

DMU P/FD and DMC U/FD duoBLOCK® Series

DMU duoBLOCK® – Large cubic work area with a compact footprint.

5 axis CHAMPION

+ **B-axis for 5-axis simultaneous machining comes standard**
+ **Space-saving chip removal** to the rear
+ **Larger work area** with up to 9.8 in. more travel in the Y-axis
+ **Greater table loads** through the optimized duoBLOCK® design

Travel in X / Y / Z	in.
Table dimensions	in.
Load weight	lbs.
Workpiece dimensions	in.

The duoBLOCK® Series modular design with a standard-equipped B-axis.

Compact modular design – 2 guideways in the X-axis (size: 60)

B-axis

Large modular design – 3 guideways in the X-axis
(sizes: 100 / 125 / 160)

A-axis

B-axis

5X torqueMASTER® –
B-axis with a drive

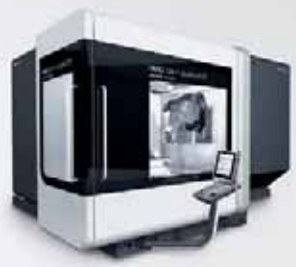
Tables

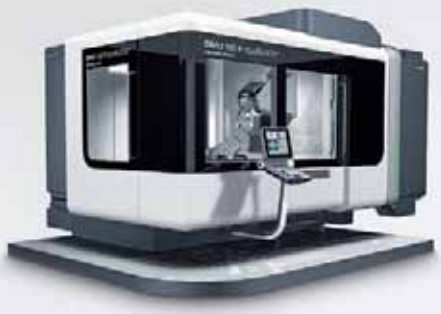
Rotary table

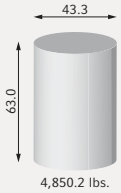
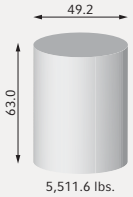
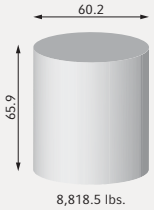
Milling / turning table (FD)

Pallet table

Pallet changer





DMU 60 P duoBLOCK®	DMU 100 P duoBLOCK®	DMU 125 P duoBLOCK®	DMU 160 P duoBLOCK®
23.6 / 27.6 / 23.6	39.4 / 49.2 / 39.4	49.2 / 49.2 / 39.4	63.0 / 49.2 / 43.3
ø 24.8	ø 43.3 × 35.4	49.2 × 43.3	59.1 × 49.2
1,543.2	4,850.2	5,511.6	8,818.5
 33.5 33.5 1,543.2 lbs.	 43.3 63.0 4,850.2 lbs.	 49.2 63.0 5,511.6 lbs.	 60.2 65.9 8,818.5 lbs.

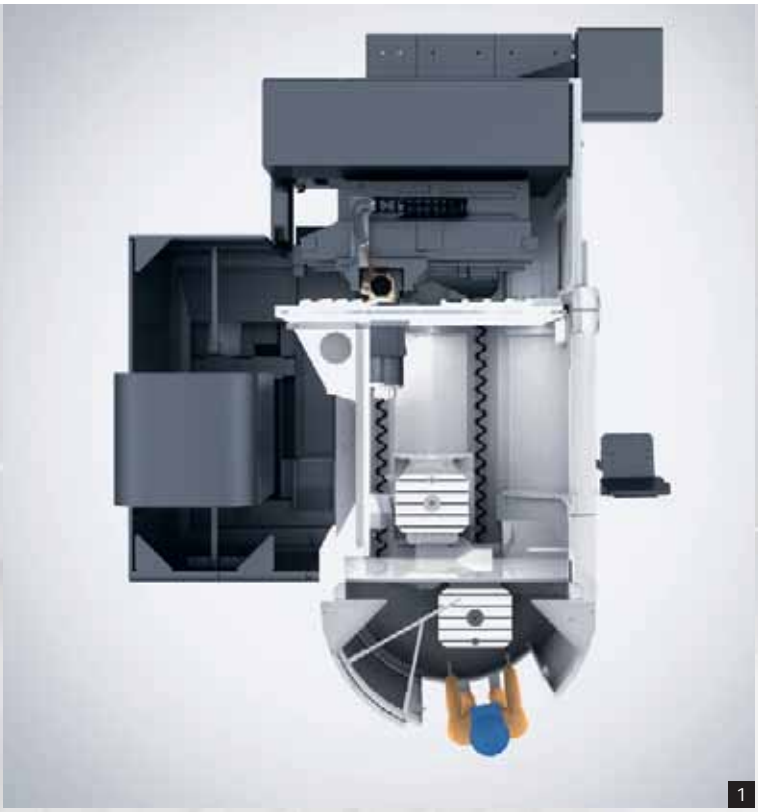
DMU P/FD and DMC U/FD duoBLOCK® Series

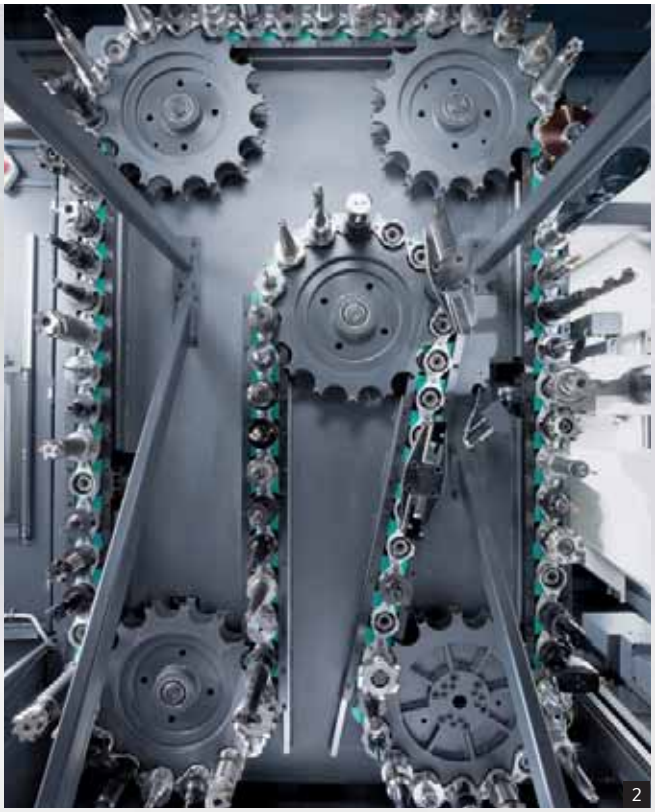
DMC U duoBLOCK® – Fast pallet changer for maximum productivity.

5 axis CHAMPION

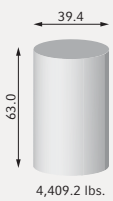
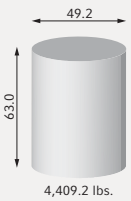
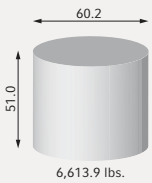
+ **Compact footprint** through optimized placement of the pallet changer
+ **Fast pallet changing** with advanced NC-axis changing technology
+ **Heavy workpieces** thanks to the sturdy construction and rigid machine bed
+ **Optimal accessibility** to the work area and setup station with the innovative duoBLOCK® design
+ **Quick chip-to-chip times** of 3.7 sec. with tool magazine technology designed for efficient mass production

Travel in X / Y / Z	in.
Pallet size	in.
Load weight	lbs.
Pallet change time	sec.
Workpiece dimensions	in.





1: Fast and compact pallet changer for max. 6,613.9 lbs. workpiece setup during machining operations
2: Vertical chain magazine with a fast cam-controlled double gripper for up to 3.7 sec. chip-to-chip times

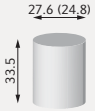
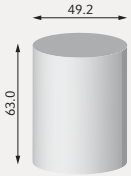
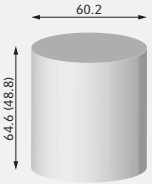
DMC 60 U duoBLOCK®	DMC 100 U duoBLOCK®	DMC 125 U duoBLOCK®	DMC 160 U duoBLOCK®
23.6 / 27.6 / 23.6	39.4 / 49.2 / 39.4	49.2 / 49.2 / 39.4	63.0 / 55.1 / 43.3
ø 24.8 × 19.7	ø 39.4 × 31.5	39.4 × 31.5	49.2 × 39.4
1,322.8	4,409.2	4,409.2	6,613.9
9.5	16	16	22
 1,322.8 lbs.	 4,409.2 lbs.	 4,409.2 lbs.	 6,613.9 lbs.

DMU P/FD and DMC U/FD duoBLOCK® Series

DMU FD and DMC FD duoBLOCK® – Maximum efficiency with complete machining on one machine.

Over 14 years of milling / turning experience

900 machines installed worldwide – 80% with a pallet changer

		DMU / DMC 60 FD	DMU / DMC 125 FD	DMU / DMC 160 FD
Travel in X / Y / Z	in.	23.6 / 27.6 / 23.6	49.2 / 49.2 / 39.4	63.0 / 55.1 / 43.3
Milling / turning table	rpm.	1,200	500	400
Table / pallet size	in.	ø 27.6 / 24.8	ø 49.2 / 43.3	ø 59.1 / 55.1
Load weight	lbs.	1,322.8 / 1,102.3	5,070.6 (4,409.2)	8,818.5 / 6,613.9
Pallet change time	sec.	9.5	16	22
Max. workpiece dimensions		 1,322.8 lbs. (1,102.3)	 5,070.6 (4,409.2) lbs.	 8,818.5 (6,613.9) lbs.

1: Vertical turning with A-axis and B-axis **2:** Horizontal turning with A-axis and B-axis **3:** Positioned turning with A-axis and B-axis*
4: Measuring of turning tools* **5:** Measuring of milling tools* **6:** Measuring cycles for in-process workpiece measuring*
7: Use of multi-bladed tools (up to 9 blades) **8:** Grinding package

Milling / turning cycles for every requirement

+ Exclusive milling / turning cycles only from DECKEL MAHO
+ Imbalance detection, control and monitoring
+ Automatic speed adjustment for part vibration
+ Measuring cycles for the (L-) measuring probe: Calibration in the work area and measuring of punctures, heels, etc.
+ Store and distribute measurement data
+ Positioned turning with the A-axis
+ Swiveling of long tools into the workpiece
+ Grinding cycles, e.g. calibration of the dressing station and alignment of the grinding disk

* Optional

Standard milling / turning cycles

+ Puncturing, undercutting, chipping, threading, etc.
+ Use of multi-bladed tools (up to 9 blades)
+ Milling and turning tool measuring

Integrated grinding technology*

+ Grinding cycles for internal, external and surface grinding
+ Universal dressing station in the work area
+ Grinding package with e.g. additional scraper

1: Clamping jaw box **2:** Integrated manual power clamping chuck **3:** Integrated hydraulic power clamping chuck
4: Milling / turning of a compressor housing

Milling / turning (FD) highlights

+ Complete machining through milling and turning on one machine in one setup
+ Faster production and greater precision by eliminating retooling steps
+ Lower investment costs and space requirements by using only one machine
+ Faster production and streamlined logistics through reduced idle time and processing steps = lower unit costs and greater accuracy

Comes standard: 5-axis milling and turning in one setup

+ Milling / turning drives with Direct Drive technology – max. speed: 1,200 rpm., max. power: 92.5 hp., max. torque: 5,384.2 ft./lbs., max. table load: 8,818.5 lbs.
+ Oil mist separator and laminated work area safety glass

Options

+ Clamping jaws offer a simple and economical clamping solution as an interface for standard clamping jaws starting with the DMU / DMC 125 FD; pallet preparation on the DMU / DMC 160 FD comes standard
+ Integrated manual power clamping chuck for easy centric clamping and quick setup starting with the DMU / DMC 60 FD
+ Integrated hydraulic power clamping chuck for accurate and efficient clamping (outside and inside) and programmable clamping pressure starting with the DMU / DMC 60 FD

Over 14 years of milling / turning experience

Direct Drive

DMU FD / DMC FD machines – Complete machining process

Machine 1			
Milling Turning Drilling Threading	Tool setup Re-clamping	Milling Turning Drilling Threading	Unclamping

Complete machining process:
1 machine
4 production steps
300% greater productivity

Conventional machining process:
3 machines
10 production steps

Single-purpose machines – Conventional machining process

Machine 1				Machine 2				Machine 3	
Turning	Tool setup Re-clamping	Turning	Tool setup	Milling Drilling Threading	Tool setup Re-clamping	Milling Drilling Threading	Tool setup	Fine turning	Unclamping
1	2	3	4	5	6	7	8	9	10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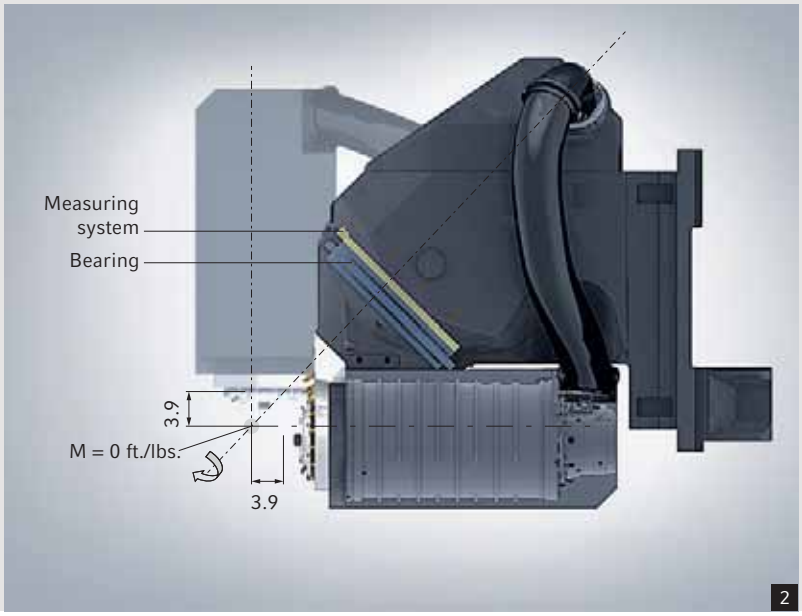

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5-axis machining at a glance – impressive stability through machining at the center point of rotation

Maximum rigidity with 45° B-axis kinematics

+ For 3.9 in. tool lengths, no torque on the B-axis, at any swivel angle

Highest precision through

+ High-resolution measuring system directly on the bearing
+ Minimal force through the 45° B-axis kinematics

DMU / DMC duoBLOCK® – 5-axis milling at the highest level.

+ **Patented B-axis comes standard**, NC-controlled swivel milling head with the greatest stability and precision through machining at the center point of rotation
+ **High-precision NC rotary table**, with direct measuring systems
+ **Compact and fast rotating pallet changer** for setup during machining operations on DMC machines

5-axis simultaneous machining (options)

+ NC-controlled A-axis for the machining of negative angles up to –30°
+ 5X torqueMASTER®, NC-controlled B-axis with a gear-driven spindle for 5-axis simultaneous machining with up to 811.3 ft./lbs. of torque
+ Custom solutions, e.g. dividing head

	A-axis	B-axis	B-axis with gear	Milling / turning (FD)	Pallet changer
60	–	•	–	•	•
100	•	•	•	–	•
125	•	•	•	•	•
160	•	•	•	•	•

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1–2: NC-controlled swivel milling head as B-axis for simultaneous 5-axis milling with impressive stability through machining at the center point of rotation **3:** Dividing attachment and B-axis available as a custom solution, e.g. for tool making **4:** NC-controlled A-axis – for simultaneous 5-axis milling with negative angles up to -30°

1: 5X torqueMASTER® – B-axis with a drive for up to 811.3 ft./lbs. of torque
2: Pump end housing made of GGG60 **3:** Cylinder head for a ship diesel made of GGG50
4: Fan disk made of Ti 6Al 4V (titanium) **5:** Chassis support made of Ti 6Al 4V (titanium)


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DMU P/FD and DMC U/FD duoBLOCK® Series

5X torqueMASTER® – B-axis with a drive for up to 811.3 ft./lbs. of torque.

The 5X torqueMASTER® is ideal for machining challenging materials, large drilling operations (solid material) and the use of disc milling cutters and form tools.

5X torqueMASTER®

+ Patented B-axis, NC-controlled swivel milling head as B-axis for simultaneous 5-axis milling with impressive stability via machining at the center point of rotation
+ SK50 / HSK-A100 tool holder
+ B-axis with a planetary gear drive
+ Continuous positioning over the entire swivel range
+ Very rigid milling head with good damping due to a swivel level below 45°
+ Max. cutting values in any direction and swivel position
+ Gear spindle with up to 811.3 ft./lbs. of torque and max. 42.9 hp.

5X torqueMASTER®	Machine		
Speed **Power / torque**	**DMU 100 P / FD** **DMC 100 U / FD**	**DMU 125 P / FD** **DMC 125 U / FD**	**DMU 160 P / FD** **DMC 160 U / FD**
8,000 rpm. 37.5 hp. / 536.2 ft./lbs.	•	•	–
6,300 rpm. 42.9 hp. / 811.3 ft./lbs.	–	–	•

• Optionally available

1–2: Vertical chain magazine for up to 120 tools (SK40 / HSK-A63) and 25.6 in. max. tool lengths **3:** Fast cam-controlled double gripper for short chip-to-chip times (3.7 sec. with HSK-A63) **4:** Horizontal chain magazine for up to 120 tools with SK50 / HSK-A100 (not available on the DMU 160 P / FD)


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Machines without pallet changers: Innovative tool handling.

DMU: Maximum tool measurements and tool magazine specifications

		DMU 60 P / FD duoBLOCK®	DMU 100 / 125 P / FD duoBLOCK®	DMU 160 P / FD duoBLOCK®
SK40 / CAT 40 / HSK-A63				
Tool holder		SK40 (HSK-A63)	SK40 (HSK-A63)	SK40 (HSK-A63)
Magazine type / Max. slots		120 slots	120 slots	120 slots
Dimensions (occupied adjacent slots)	in.	ø 3.1 / length 15.7	ø 3.1 / length 25.6	ø 3.1 / length 25.6
Dimensions (unoccupied adjacent slots)	in.	ø 6.3 / length 13.8 (15.7)	ø 4.7 / length 25.6 ø 6.3 / length 13.8 (15.7*)	ø 4.7 / length 25.6 ø 6.3 / length 13.8 (15.7)
Dimensions (drilling bridges)	in.	ø 11.0 × 6.3 / length 13.8 (15.7)	ø 11.0 × 6.3 / length 13.8 (15.7*)	ø 11.0 × 6.3 / length 13.8 (15.7)
Weight	lbs.	33.1 (basic chain: 12)	33.1 (basic chain: 12)	33.1
Breakdown torque	ft./lbs.	18.4 (basic chain: 12)	18.4 (basic chain: 12)	18.4
Chip-to-chip time (HSK)	sec.	3.7	4.1 / 4.3	4.7
			DMU 100 / 125 P / FD dB	**DMU 160 P / FD dB**
SK50 / CAT 50 / HSK-A100				
Tool holder			SK50 (HSK-A100)	SK50 (HSK-A100)
Magazine type / Max. slots			120 slots	120 slots
Dimensions (occupied adjacent slots)	in.		ø 4.3 / length 25.6	ø 4.3 / length 25.6
Dimensions (unoccupied adjacent slots)	in.		ø 9.1 / length 25.6	ø 7.9 / length 25.6
Dimensions (drilling bridges)	in.		ø 15.7 × 9.1 / length 25.6	ø 15.7 × 11.0 / length 15.7 (18.5)
Weight	lbs.		66.1	66.1
Breakdown torque	ft./lbs.		51.6	51.6
Chip-to-chip time (HSK)	sec.		5.6 / 5.9	4.8

	DMU 60 / 100 / 125 P (SK40 / CAT 40 / HSK-A63)	DMU 100 / 125 P (SK50 / CAT 50 / HSK-A100)	DMU 160 P (SK40 / CAT 40 / HSK-A63)	DMU 160 P (SK40 / CAT 50 / HSK-A100)
Tool magazine specifications				
Basic vertical chain, 40 Slots	standard	–	–	–
Basic vertical chain, 60 Slots	–	•	•	•
Vertical chain, 40 Slots	–	•	–	•
Vertical chain, 60 Slots	•	–	•	–
Vertical chain, 120 Slots	–	•	–	–
Horizontal chain, 40 Slots	–	•	–	•
Horizontal chain, 60 Slots	•	–	•	–
Horizontal chain 120 Slots	–	•	–	–

	DMU 60 FD (HSK-A63)	DMU 125 FD (HSK-A63)	DMU 160 FD (HSK-A63)
Tool magazine specifications			
Basic vertical chain, 40 Slots	standard	–	–
Basic vertical chain, 60 Slots	•	–	–
Vertical chain, 40 Slots	–	–	standard
Vertical chain, 60 Slots	–	–	•
Vertical chain, 120 Slots	•	–	•
Horizontal chain, 40 Slots	–	standard	–
Horizontal chain, 60 Slots	–	•	–

* 15.7 in. tool lengths on a basic chain for SK40 / CAT 40 and HSK-A63

1: Highly dynamic vertical chain magazine for up to 480 tools and fast setup **2:** Quick cam-controlled double gripper for unbeatable chip-to-chip times (3.7 sec. with HSK-A63 and 3.9 sec. with HSK-A100)

Machines with pallet changers: Innovative tool handling.

DMC: Maximum tool dimensions and tool magazine specifications

		DMC 60 U / FD duoBLOCK®	DMC 100 / 125 U duoBLOCK®	DMC 160 U duoBLOCK®
SK40 / CAT 40 / HSK-A63				
Tool holder		SK40 (HSK-A63)	SK40 (HSK-A63)	SK40 (HSK-A63)
Magazine type / max. slots		480 slots	480 slots	480 slots
Dimensions (occupied adjacent slots)	in.	ø 3.1 / length 17.7	ø 3.1 / length 25.6	ø 3.1 / length 25.6
Dimensions (unoccupied adjacent slots)	in.	ø 4.7 / length 17.7 ø 6.3 / length 13.8 (15.7)	ø 4.7 / length 25.6 ø 6.3 / length 13.8 (15.7)	ø 4.7 / length 25.6 ø 6.3 / length 13.8 (15.7)
Dimensions (drilling bridges)	in.	ø 11.0 × 6.3 / length 13.8 (15.7)	ø 11.0 × 6.3 / length 13.8 (15.7)	ø 11.0 × 6.3 / length 13.8 (15.7)
Weight	lbs.	33.1	33.1	33.1
Breakdown torque	ft./lbs.	18.4	18.4	18.4
Chip-to-chip time (HSK)	sec.	3.7	4.1 / 4.3	4.7

			DMC 100 / 125 U / FD duoBLOCK®	DMC 160 U / FD duoBLOCK®
SK40 / CAT 40 / HSK-A63				
Tool holder			SK50 (HSK-A100)	SK40 (HSK-A63)
Magazine type / max. slots			240 slots	480 slots
Dimensions (occupied adjacent slots)	in.		ø 4.3 / length 25.6	ø 3.1 / length 25.6
Dimensions (unoccupied adjacent slots)	in.		ø 7.9 / length 25.6 ø 11.0 / length 15.7 (18.5)	ø 4.7 / length 25.6 ø 6.3 / length 13.8 (15.7)
Dimensions (drilling bridges)	in.		ø 15.7 × 7.9 / length 25.6 ø 15.7 × 11.0 // length 15.7 (18.5)	ø 15.7 × 7.9 / length 25.6 ø 15.7 × 11.0 // length 15.7 (18.5)
Weight	lbs.		66.1	66.1
Breakdown torque	ft./lbs.		51.6	51.6
Chip-to-chip time (HSK)	sec.		4.2 / 4.4	4.8

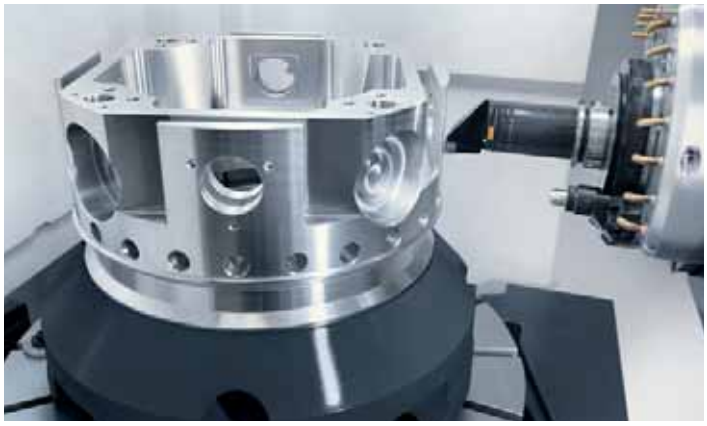
	DMC 60 / 100 / 125 U (SK40 / CAT 40 / HSK-A63)	DMC 100 / 125 U (SK50 / CAT 50 / HSK-A100)	DMC 160 U (SK40 / CAT 40 / HSK-A63)	DMC 160 U (SK40 / CAT 50 / HSK-A100)
Tool magazine specifications				
Vertical single chain, 60 Slots	standard	•	standard	•
Vertical single chain, 120 Slots	•	•	•	•
Vertical single chain, 180 / 240 Slots	•	–	•	–
Vertical double chain, 180 / 240 Slots	–	•	–	•
Vertical double chain, 360 / 480 Slots	•	–	•	–

	DMC 60 FD (HSK-A63)	DMC 125 FD (HSK-A100)	DMC 160 FD (HSK-A100)
Tool magazine specifications			
Vertical single chain, 60 Slots	standard	standard	standard
Vertical single chain, 120 Slots	•	•	•
Vertical single chain, 180 / 240 Slots	•	–	–
Vertical double chain, 180 / 240 Slots	–	•	•
Vertical double chain, 360 / 480 Slots	•	–	–

• Optional

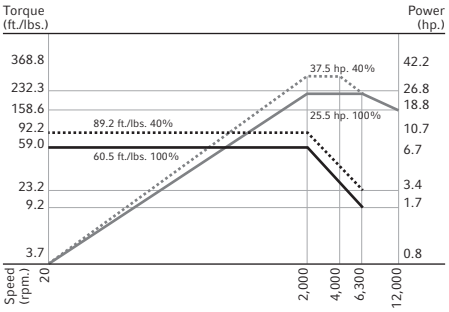
DMU P/FD and DMC U/FD duoBLOCK® Series

The largest selection of advanced spindles.



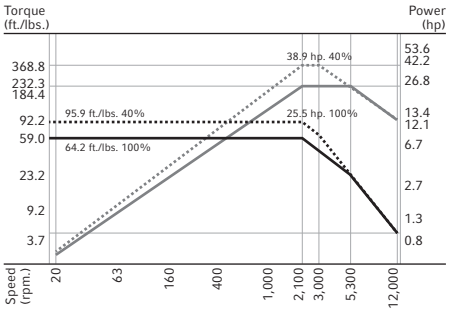
Motor spindle: SK40 / HSK-A63*

12,000 rpm. / 37.5 hp. / 89.2 ft./lbs.



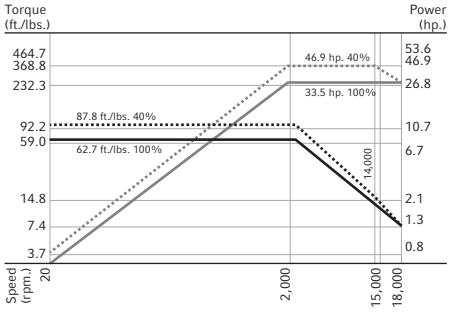
Motor spindle: HSK-A63

12,000 rpm. / 38.9 hp. / 95.9 ft./lbs.



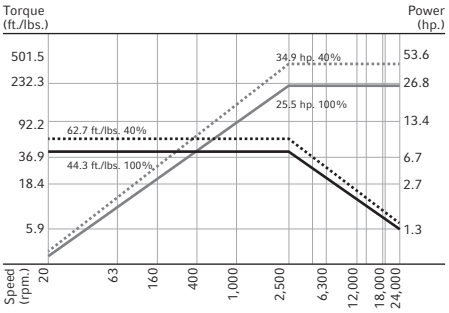
Motor spindle: SK40 / HSK-A63*

18,000 rpm. / 46.9 hp. / 87.8 ft./lbs.



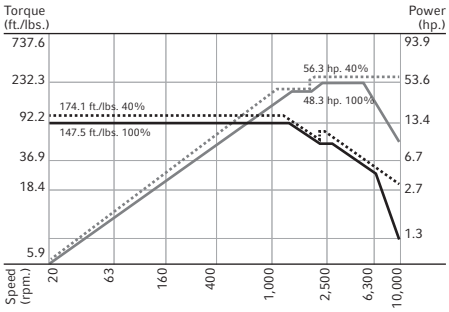
Motor spindle: HSK-A63

24,000 rpm. / 34.9 hp. / 62.7 ft./lbs.



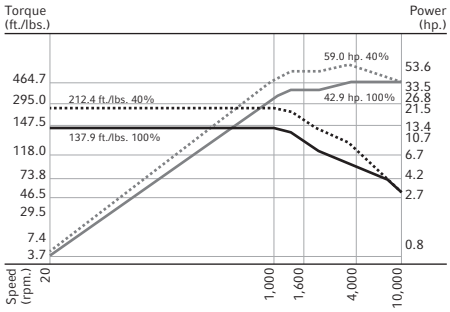
Motor spindle: SK40 / HSK-A63*

10,000 rpm. / 56.3 hp. / 174.1 ft./lbs.



Motor spindle: SK40 / HSK-A63* / SK50* / HSK-A100*

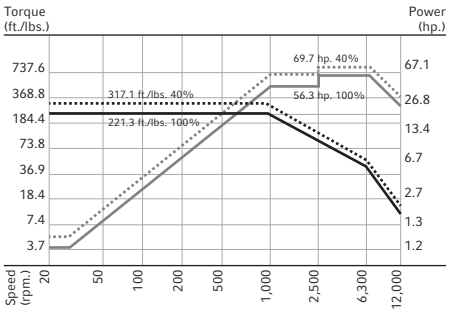
10,000 rpm. / 59.0 hp. / 212.4 ft./lbs.



* Optional

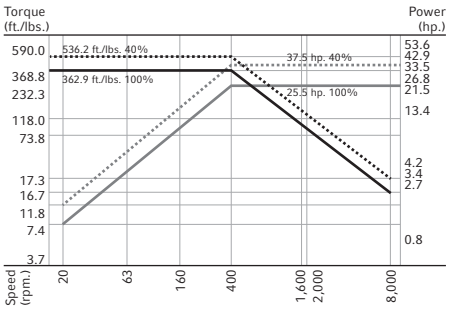
Motor spindle: SK50 / HSK-A100*

12,000 rpm. / 69.7 hp. / 317.2 ft./lbs.



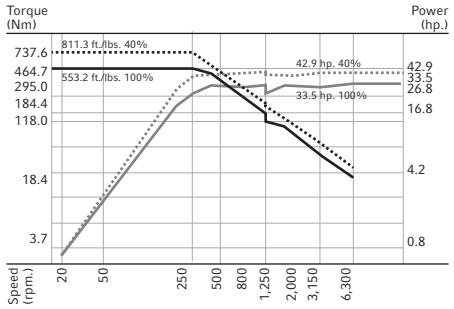
Gear spindle: SK50 / HSK-A100*

8,000 rpm. / 37.5 hp. / 536.2 ft./lbs.



Gear spindle: SK50 / HSK-A100*

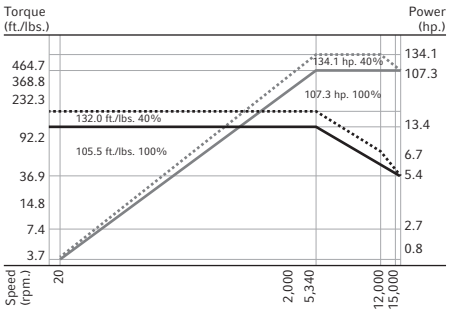
6,300 rpm. / 42.9 hp. / 811.3 ft./lbs.



Aerospace spindles

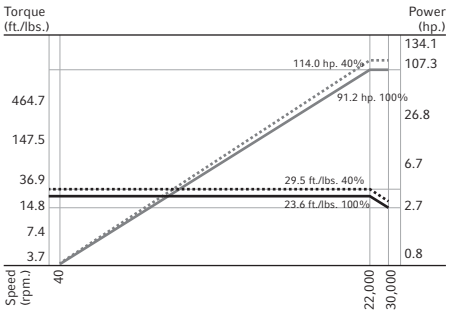
Motor spindle: HSK-A100

15,000 rpm. / 134.1 hp. / 132.0 ft./lbs.



Motor spindle: HSK-A63

30,000 rpm. / 114.0 hp. / 29.5 ft./lbs.



* Optional

DMU P/FD and DMC U/FD duoBLOCK® Series

The largest selection of advanced spindles.

DMU P / DMC U machines: Spindle selection Speed // Tool holder Power, torque (40 / 100% DC) // Run-up time	DMU 60 P DMC 60 U	DMU 100 / 125 P DMC 100 / 125 U	DMU 160 P DMC 160 U
12,000 rpm. // SK40 / HSK-A63* 37.5 / 25.5 hp., 89.2 / 60.5 ft./lbs. // 0–12,000 rpm.: 2.0 sec.	standard	standard	standard
18,000 rpm. // SK40 / HSK-A63* 46.9 / 33.5 hp., 87.8 / 62.7 ft./lbs. // 0–18,000 rpm.: 2.2 sec.	•	•	•
24,000 rpm. // HSK-A63 34.9 / 25.5 hp., 62.7 / 44.3 ft./lbs. // 0–24,000 rpm.: 3.5 sec.	•	special option	special option
10,000 rpm. // SK40 / HSK-A63* 56.3 / 48.3 hp., 174.1 / 147.5 ft./lbs. // 0–10,000 rpm.: 1.4 sec.	•	–	–
10,000 rpm. // SK40 / HSK-A63* / SK50* / HSK-A100* 59.0 / 42.9 hp., 212.4 / 137.9 ft./lbs. // 0–10,000 rpm.: 3.5 sec.	–	•	•
12,000 rpm. // SK40 / HSK-A100* 69.7 / 56.3 hp., 317.2 / 221.3 ft./lbs. // 0–12,000 rpm.: 4.5 sec.	–	•	•
8,000 rpm. // SK50 / HSK-A100* 37.5 / 25.5 hp., 536.2 / 362.9 ft./lbs. // 0–8,000 rpm.: 1.8 sec.	–	•	–
6,300 rpm. // SK50 / HSK-A100* 42.9 / 33.5 hp., 811.3 / 553.2 ft./lbs. // 0–6,300 rpm.: 3.0 sec.	–	–	•
Aerospace spindles			
15,000 rpm. // HSK-A100 134.1 / 107.3 hp., 132.0 / 105.5 ft./lbs. // 0–15,000 rpm.: 1.3 sec.	–	special option	special option
30,000 rpm. // HSK-A63 114.0 / 91.2 hp., 29.5 / 23.6 ft./lbs. // 0–30,000 rpm.: 2.8 sec.	–	special option	special option

FD – Milling / turning machines: Spindle selection Speed // Tool holder Power, torque (40 / 100% DC) // Run-up time	DMU 60 FD DMC 60 FD	DMU 125 FD DMC 125 FD	DMU 160 FD DMC 160 FD
12,000 rpm. // HSK-A63 38.9 / 25.5 hp., 95.9 / 64.2 ft./lbs. // 0–12,000 rpm.: 2.0 sec.	standard	–	–
10,000 rpm. // HSK-A100 59.0 / 42.9 hp., 212.4 / 137.9 ft./lbs. // 0–10,000 rpm.: 3.5 sec.	–	standard	standard
12,000 rpm. // HSK-A100 69.7 / 56.3 hp., 317.2 / 221.3 ft./lbs. // 0–12,000 rpm.: 4.5 sec.	–	•	–
8,000 rpm. // HSK-A100 37.5 / 25.5 hp., 536.2 / 362.9 ft./lbs. // 0–8,000 rpm.: 1.8 sec.	–	•	standard
6,300 rpm. // HSK-A100 42.9 / 33.5 hp., 811.3 / 553.2 ft./lbs. // 0–8,000 rpm.: 3.0 sec.	–	–	•

• Optionally available, * Optional

1: Compact 132.1 gal. coolant tank, screen filter and 580.2 psi. internal coolant supply **2:** Tool break control during machining operations (mechanical) **3:** HSK tool taper cleaning (mechanical) **4:** Control cabinet construction according to automotive standards **5:** Maintenance-friendly fluid box

DMU P/FD and DMC U/FD duoBLOCK® Series

Reliable and efficient production, simple and quick maintenance.

The duoBLOCK® Series offers reliable and efficient production thanks to extensive process optimization features. Specially designed coolant and production packages are available as well as expansion features for automated production. In terms of maintenance and service, the latest duoBLOCK® has easily accessible maintenance doors and control cabinets, clear equipment labeling and a service-friendly fluid box.

Optimal process reliability

Chip removal and coolant systems

+ 580.2 psi. internal coolant supply through the spindle center, chip conveyor, Rotoclear comes standard
  DMU: 132.1 gal. compact coolant tank, screen filter
  DMC: 258.9 gal. compact coolant tank, paper band filter
+ Production packages with a max. 1,160.3 psi. internal coolant supply (optional)
+ Coolant tempering (optional)

Measuring and proofing (options)

+ Mechanical tool break control during machining operations
+ Tool measuring and tool break control with a laser
+ Infrared measuring probe

Maintenance and service

+ Large and easily accessible service and control cabinet doors
+ Single conductor indicator and clear equipment labeling in the control cabinet
+ Maintenance-friendly fluid box (lubrication, hydraulics and pneumatics)
+ Color-coded signs for various media lines

Automation options

+ Multi-channel clamping hydraulics through the table center for up to 3,480.9 psi.
+ Motor driven setup area and automatic setup area door
+ Rotary storage for up to 12 pallets in the system
+ Individual automation interfaces for workpiece and pallet handling systems

DMU P/FD and DMC U/FD duoBLOCK® Series

High-performance milling, drilling and threading.


1


2


3

Motor spindle featuring 12,000 rpm. / 37.5 hp. / 89.2 ft./lbs.*

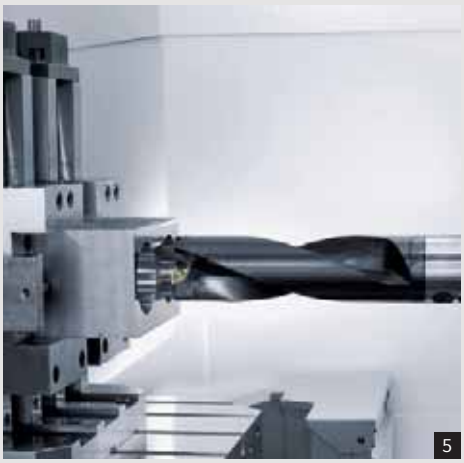
	1 Power milling	2 Power drilling	3 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**13.7 in.³/min.**	**12.5 in.³/min.**	–
Tool	milling head D = 80 (6 blades)	insert drill D = 44	threading tap drill, M20
Spindle speed	995 rpm. (9,842.5 ipm.)	905 rpm. (4,921.3 ipm.)	240 rpm. (590.6 ipm.)
Feed	58.7 ipm. (0.01 in.)	5.3 ipm. (0.006 in.)	23.5 ipm. (0.1 in.)
Cut depth / width	0.1 in. / 2.4 in.	2.8 in. / –	– / –
Thread depth	–	–	0.8 in.

Motor spindle featuring 18,000 rpm. / 46.9 hp. / 95.9 ft./lbs.

	1 Power milling	2 Power drilling	3 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**14.8 in.³/min.**	**13.1 in.³/min.**	–
Tool	milling head D = 80 (6 blades)	insert drill D = 44	threading tap drill, M24
Spindle speed	995 rpm. (9,842.5 ipm.)	905 rpm. (4,921.3 ipm.)	80 rpm. (236.2 ipm.)
Feed	63.4 ipm. (0.01 in.)	5.6 ipm. (0.006 in.)	9.4 ipm. (0.1 in.)
Cut depth / width	0.1 / 2.4 in.	2.8 in.	–
Thread depth	–	–	0.8 in.

*Comparable values for the 12,000 rpm. (38.9 hp., 95.9 ft./lbs.) and 24,000 rpm. (34.9 hp., 62.7 ft./lbs.) motor spindle


4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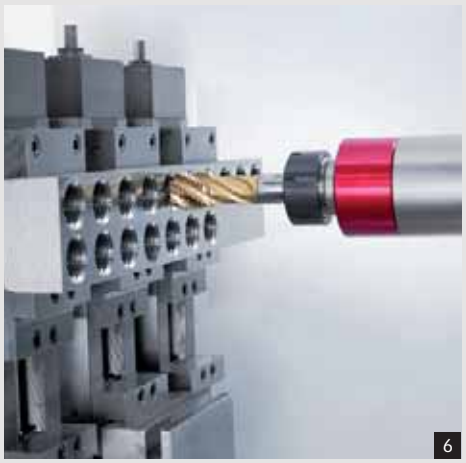
6

Motor spindle featuring 10,000 rpm. / 59.0 hp. / 212.4 ft./lbs.

	4 Power milling	5 Power drilling	6 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**49.6 in.³/min.**	**43.2 in.³/min.**	–
Tool	milling head D = 100 (7 blades)	insert drill D = 70	threading tap drill, M30
Spindle speed	1,255 rpm. (15,511.8 ipm.)	1,023 rpm. (8,858.3 ipm.)	106 rpm. (393.7 ipm.)
Feed	114.2 ipm. (0.01 in.)	7.3 ipm. (0.007 in.)	14.6 ipm. (0.1 in.)
Cut depth / width	0.1 / 3.1 in.	– / 3.9 in.	– / –
Thread depth	–	–	1.2 in.

Motor spindle featuring 12,000 rpm. / 69.7 hp. / 317.2 ft./lbs.

	4 Power milling	5 Power drilling	6 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**61.0 in.³/min.**	**50.6 in.³/min.**	–
Tool	milling head D = 160 (9 blades)	insert drill D = 80	threading tap drill, M42
Spindle speed	1,000 rpm. (19,685.0 ipm.)	900 rpm. (8,858.3 ipm.)	46 rpm. (236.2 ipm.)
Feed	70.9 ipm. (0.008 in.)	6.5 ipm. (0.007 in.)	8.1 ipm. (0.2 in.)
Cut depth / width	0.2 / 4.7 in.	4.7 in. / –	– / –
Thread depth	–	–	1.6 in.

DMU P/FD and DMC U/FD duoBLOCK® Series

High-performance milling, drilling and threading.


1


2


3

Gear spindle featuring 8,000 rpm. / 37.5 hp. / 536.2 ft./lbs.

	1 Power milling	2 Power drilling	3 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**34.8 in.³/min.**	**25.8 in.³/min.**	–
Tool	milling head D = 125 (10 blades)	insert drill D = 80	threading tap drill, M42
Spindle speed	400 rpm. (6,299.2 ipm.)	400 rpm. (3,937.0 ipm.)	46 rpm. (236.2 ipm.)
Feed	44.9 ipm. (0.01 in.)	8.1 ipm. (0.2 in.)	8.1 ipm. (0.2 in.)
Cut depth / width	0.2 / 3.9 in.	3.1 in. / –	– / –
Thread depth	–	–	1.6 in.

Gear spindle featuring 6,300 rpm. / 42.9 hp. / 811.3 ft./lbs.

	1 Power milling	2 Power drilling	3 Threading
Workpiece material	**steel (Ck45)**	**steel (Ck45)**	**steel (Ck45)**
Material removal rate	**42.4 in.³/min.**	**28.8 in.³/min.**	–
Tool	milling head D = 160 (12 blades)	insert drill D = 100	threading tap drill, M48
Spindle speed	268 rpm. (5,315.0 ipm.)	400 rpm. (4,921.3 ipm.)	100 rpm. (590.6 ipm.)
Feed	38.0 ipm. (0.01 in.)	2.4 ipm. (0.006 in.)	19.7 ipm. (0.2 in.)
Cut depth / width	0.2 / 4.7 in.	3.9 in.	–
Thread depth	–	–	2.0 in.

Milling / turning: DMU / DMC 60 / 125 / 160 FD duoBLOCK® performance turning.

DMU / DMC 60 FD – 49.6 hp. power / 737.6 ft./lbs. torque
1,200* rpm. max. speed / 2,434.0 ft./lbs. holding torque

Material	**Ck45**
Material removal rate	**24.7 in.³/min.**
Cut depth	0.17 in.
Feed	0.017 in. /rev.
Cut diameter	19.7 in.
Cut speed	7,874.0 ipm.
Speed	127 rpm.

DMU / DMC 125 FD – 46.9 hp. power / 3,982.8 ft./lbs. torque
500 rpm. max. speed / 4,572.9 ft./lbs. holding torque

Material	**Ck45**
Material removal rate	**61.0 in.³/min.**
Cut depth	0.4 in.
Feed	0.019 in. /rev.
Cut diameter	35.4 in.
Cut speed	7,874.0 ipm.
Speed	70 rpm.

DMU / DMC 160 FD – 92.5 hp. power / 5,384.2 ft./lbs. torque
400* rpm. max. speed / 9,957.1 ft./lbs. holding torque

Material	**Ck45**
Material removal rate	**87.9 in.³/min.**
Cut depth	0.5 in.
Feed	0.02 in. /rev.
Cut diameter	35.4 in.
Cut speed	7,874.0 ipm.
Speed	71 rpm.

* Specification for 10 min. DC, bearing cooling required.

DMU P/FD and DMC U/FD duoBLOCK® Series

Spindles for special materials // application examples.

Aerospace spindle – Machining of aluminum with up to 3.4 gal./min.
Powerful milling with a 15,000 rpm. motor spindle (132.0 ft./lbs., 134.1 hp.)

Workpiece material	**AlMgSi**
Material removal rate	**833.0 in.³/min.**
Tool	milling head D = 80 (5 blades)
Spindle speed	8,000 rpm. (79,094.5 ipm.)
Feed	767.7 ipm. (0.019 in.)
Cut depth / width	0.39 / 2.8 in.

5X torqueMASTER® – Machining of titanium
Powerful milling with an 8,000 rpm. gear spindle (536.2 ft./lbs., 37.5 hp.)

Workpiece material	**titanium – Ti 6Al 4V**
Material removal rate	**21.3 in.³/min.**
Tool	insert mill D = 50 (4 blades)
Spindle speed	363 rpm. (2,362.2 ipm.)
Feed	8.0 ipm (0.005 in.)
Cut depth / width	1.7 / 1.6 in.

Powerful milling with a 6,300 rpm. motor spindle
(811.3 ft. / lbs., 42.9 hp.)

Workpiece material	**titanium – Ti 6Al 4V**
Material removal rate	**31.5 in.³/min.**
Tool	insert mill D = 80 (4 blades)
Spindle speed	239 rpm. (2,362.2 ipm.)
Feed	6.8 ipm. (0.007 in.)
Cut depth / width	2.4 / 2.0 in.

Angle cutter for internal machining
e.g. grooves, holes, etc.

+ Easy retooling directly via the standard tool magazine
+ Available for all tool holders, e.g. SK40, HSK-A63, SK50, HSK-A100
+ Maximum stability through torque supports
+ Swivel range dependent on whether a fixed or dynamic tool is used
+ Internal coolant supply dependent upon the tool

U-axis for any contouring and turning

+ Easy retooling directly via the standard tool magazine
+ Connection with the U-axis via actuator system
+ Programming and control as a full NC-axis
+ Ideal for grooves, contours or undercuts
+ Max. 0.9 in. travel with SK40 / CAT 40 / HSK-A63
+ Max. 2.0 in. travel with SK50 / CAT 50 / HSK-A100

Finishing of a tire mold segment
Complete machining on a DMU 60 P duoBLOCK®

Industry	**mold making**
Material	**40CrMnMo7**
Tool	ball mill with ø 0.2 in.
Spindle / Power / Torque	18,000 rpm. / 46.9 hp. / 87.8 ft./lbs.

Production focus: 5-axis simultaneous machining with an NC-controlled B-axis and NC-rotary table; surface finish of Ra < 0.000008 in. - Use of a multi-clamping device

Finishing of a pelton wheel from one piece – ø 29.5 in.
Complete machining on a DMU 125 FD duoBLOCK®

Industry	**energy technology**
Material	**1,4313 forged**
Tool	ball mill with ø 0.6 in.
Spindle / Power / Torque	10,000 rpm. / 59.0 hp. / 212.4 ft./lbs.

Production focus: Outer contour turning; roughing and finishing of the inner and outer vane with 5-axis simultaneous machining; no additional finishing required

Finishing of a drum made of titanium – ø 34.6 in.
Complete machining on a DMU 125 FD duoBLOCK®

Industry	**aerospace**
Material	**titanium – Ti 6Al 4V**
Tool	ball mill with ø 0.5 in.
Spindle / Power / Torque	8,000 rpm. / 37.5 hp. / 536.2 ft./lbs.

Production focus: Heavy machining with 536.2 ft. / lbs. in 5-axis simultaneous operation; turning of the outer and inner side; complete machining in two setups

Finishing of a chassis made of titanium – ø 34.6 in.
Complete machining on a DMC 160 FD duoBLOCK®

Industry	**aerospace**
Material	**titanium – Ti 6Al 4V**
Tool	ball mill with ø 0.5 in.
Spindle / Power / Torque	6,300 rpm. / 42.9 hp. / 811.3 ft. / lbs.

Production focus: Heavy machining with 811.3 ft. / lbs. in 5-axis operation; finishing in positioned 5-axis operation; complete machining in two setups

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6

1: DMC U as pallet magazine with a container option **2:** Production system with three machining centers, 2-level linear magazine with 52 slots and a central tool magazine with 400 slots (24,000 rpm. HSC pick-up spindle) **3:** Production cell for hydraulic components **4:** Fully automated production of gear boxes **5:** DMC 100 U duoBLOCK® with an RS10 rotary magazine **6:** RS5 rotary magazine

duoBLOCK® – The foundation for custom automation solutions.

	Workpiece handling Machines with and without pallet changers	**Pallet handling** Machines without pallet changers	**Pallet handling** Machines with pallet changers
Automation solutions			
Articulated robot arm	•	•	•
Gantry loader	•	•	•
RS5: 5x rotary storage (7 pallets in the system)*	–	–	•
RS10: 10x rotary storage (12 pallets in the system)*	–	–	•
Flexible pallet systems (linear storage)	–	–	•
Expansion / Peripheral equipment			
Central tool magazine	–	–	•
Cleaning	•	•	•
Deburring	•	•	•
Measuring	•	•	•
Workpiece labeling	•	•	•

* DMC 160 U / FD RS4 rotary storage (6 pallets in the system)

Combined pallet and workpiece handling
on the DMU 100 P duoBLOCK®

DMU P/FD and DMC U/FD duoBLOCK® Series

Unbeatable range of materials with ULTRASONIC and milling on one machine.

The latest generation ULTRASONIC HSK actuator system combines ULTRASONIC hard machining of advanced materials (e.g. lightweight structures made of Zerodur, embossing tools made of carbide, wear parts made of ceramic for the pump, textile and valve industries) with conventional 5-axis milling based on an HSK-A63 / A100 interface. The conventional tool rotation is inductively superimposed with an additional ULTRASONIC oscillation in the axial direction.


1


2


3


4

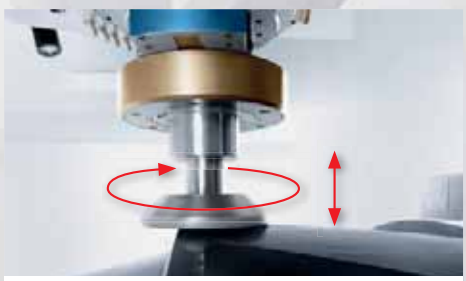
1: Thin lightweight structures made of Zerodur **2:** Pump housing made of Si-quartz
3: Camera body made of silicon nitride **4:** Mounting plate made of silicon carbide

Working principle – Flexible ULTRASONIC integration via HSK

ULTRASONIC advantages

+ Reduced process forces for excellent surface quality of Ra < 0.000008 in., minimized micro-cracks in the material, longer tool life
+ Up to 2x higher removal rates compared to conventional grinding
+ Self-sharpening of the cutting edge through micro-fragments in the diamond grains
+ Optimized particle rinsing in the work zone


max. 18,000 rpm.


max. 8,000 rpm.

		HSK-A63	HSK-A100
Max. milling speed	rpm.	24,000	10,000
Max. ULTRASONIC speed	rpm.	18,000	8,000
Tool interface		ER 20 H7 shrink	ER 20 H7 shrink
easySONIC control (automatic ULTRASONIC frequency recognition)		○	○

○ Optional

Exclusive DMG MORI Technology Cycles

MPC – Machine Protection Control

Machine protection via quick shut-off

Vibration sensors on the milling spindle

Shut-off function with a teach feature

Process monitoring via bar graphs

Bearing condition diagnosis for the milling spindle

MPC Machine Protection Control

SGS – Spindle Growth Sensor

Improved accuracy by measuring spindle displacement

Measuring the axial displacement of the rotor relative to the stator in real time

Compensation of actual displacement via the CNC control

SGS Spindle Growth Sensor

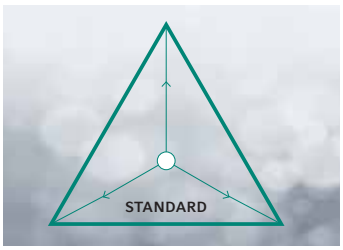
Grinding

Machining with the best surface quality

Grinding on a universal milling machine

For inner, outer and face grinding

Dressing cycles for adjusting the grinding disc



ATC – Application Tuning Cycle

Process optimization at the push of a button

Practical feed drive tuning

Fast machining with maximum parts quality, regardless of workpiece weight

ATC Application Tuning Cycle

3D quickSET®

Fast and simple for the best precision

Toolkit for checking and adjusting kinematic precision on 4-axis and 5-axis machine configurations

For all head variants and table axis

3D quickSET

L-measuring probe package

Expanded measuring capabilities with the L-measuring probe

Measurement of ridges and grooves

Measurements for difficult-to-access areas

Single point measurement

Packages with manual and automatic calibration solutions

Interpolation turning

Manufacturing of sealing surfaces and cut-ins without a milling/turning table

Machining takes place in a circular motion around or within the workpiece

Spindle is oriented at a right angle to the direction of travel

Multi-tool

Faster through efficient tool use

Multiple “sister tools” on one base tool holder

Reduce tool change times and required magazine slots

1: Turning **2:** Threading
3: Gear hobbing with standard tools

DMU P/FD and DMC U/FD duoBLOCK® Series

Gear production – Complete machining.

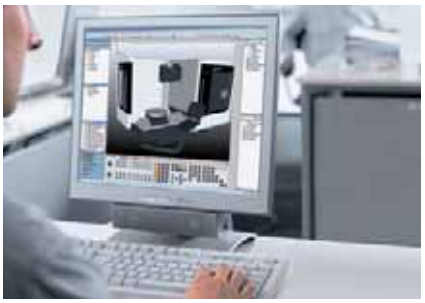
Highlights

+ Complete production on one machine for economical investment and efficient use of space:
  - 1 Turning
  - 2 Drilling
  - 3 Gear hobbing
+ Soft and hard machining
+ Gear quality
  Bevel gear DIN ≤ 5
  Spur gear DIN ≤ 6
  (depending on the pitch circle diameter)

DMG gearMILL® software – Software packages for various gear milling operations

DMG gearMILL® gearing software highlights

+ **Calculation of the tooth gap geometry for spur gears** straight, helical, double helical (herringbone), and couplings
+ **Calculation of the tooth gap geometry for bevel gears** straight, helical, spiral, shaft angle equal to or not equal to 90°, with or without axial offset (hypoid)
+ **Calculation of the tooth gap geometry of worm gears,** worm gear module, ZA flank form, ZN flank form, ZI flank form
+ **Generation of individual tooth contact patterns**
+ **Individual flank lines and profile modifications**
+ **Generation of 4-axis and 5-axis milling paths**
+ **Generator for 3D measurement data**
+ **Machine simulations**
+ **Quality control on the CNC milling machine with output log**
+ **Individual training concept with technology transfer**



DMG MORI Energy Save

Intelligent technology reduces energy costs by up to 20% over the complete lifecycle of your DMG machine tool.

DMG AUTO*shutdown*:
Intelligent standby control prevents inefficient energy consumption during machine idling.

DMG GREEN*mode*:
Faster processing and greater energy savings thanks to intuitive feed control.

DMG Virtual Machine

Unique – your DMG machine with identical 1:1 simulation on a PC

+ Efficient production start through optimal preparation
+ Accurate per-part time calculation through PLC integration
+ Full availability of cycles and NC functions
+ Maximum process reliability through potential collision analysis and work area evaluation
+ Authentic machine model with exact work area representation
+ Up to 80% faster setup and retooling

DMG Netservice

Green light for your machine

+ Immediate analysis and technical support for your DMG machine
+ Increased machine availability
+ Reduced service, personnel and travel costs
+ Faster, bi-directional data exchange
+ Impenetrable data security via ISDN or Internet VPN access

SIEMENS 840D solutionline

+ Easy interactive programming with identical "look & feel" for turning and milling operations
+ New SINUMERIK Operate user interface
+ ATC*, 3D quickSET®*
+ Powerful processor (1.85 GHz) and control unit, 1 GB of RAM
+ Quick block processing, approx. 2.5 ms
+ Look-ahead function for 99 blocks
+ Graphical simulation during setup with an overview
+ 3D representation; synchronous graphics during machining
+ 3D production, optional 3D tool correction through surface normal vector
+ MDynamics, optional optimization for surface quality and speed, as well as smooth surface transitions

* Optional

HEIDENHAIN iTNC 530

+ **HSCI – HEIDENHAIN Serial Controller Interface**
+ Shopfloor or DIN/ISO programming
+ Fastest programming through plain text dialogue
+ Graphical programming
+ Collision Monitoring
+ ATC*, 3D quickSET®*
+ Powerful processor (1.85 GHz) and control unit
+ Faster program execution with exceptional surface quality, block processing time of approx. 0.5 ms
+ Look-ahead function for 1,024 blocks
+ Faster simulation and more accurate graphical representation during test runs
+ Improved performance with Collision Monitoring and the 5-axis functions (e.g. TCPM Tool Center Point Management)

* Optional

Control technology

DMG ERGO*line*® Control – High-end CNCs for reliable processes and maximum precision.

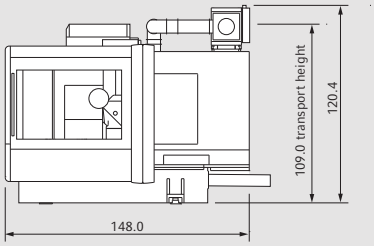
Intelligent control systems today directly impact operating performance, process efficiency, component precision and the overall user experience. DECKEL MAHO works with the global market leaders Siemens and Heidenhain to deliver high-quality control systems that are further enhanced through our own unique software solutions, including DMG Virtual Machine and DMG Process Chain.

DMU P/FD and DMC U/FD duoBLOCK® Series

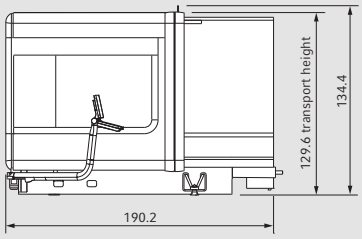
Floor plans

DMU 60 P / FD duoBLOCK®

Side view



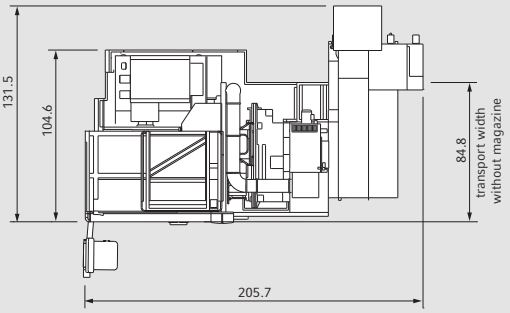
DMU 100 P duoBLOCK®



DMU 60 P duoBLOCK®

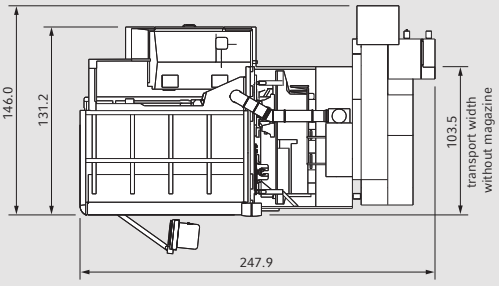
Top view with 40-slot chain magazine

Footprint is 187.3 ft.²



DMU 100 P duoBLOCK®

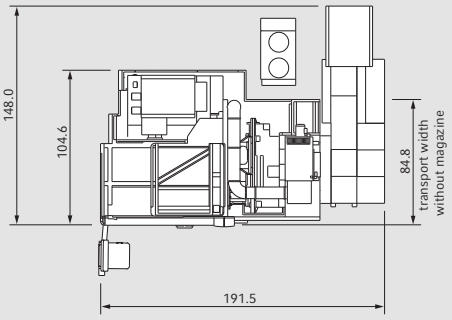
Footprint is 251.9 ft.²



DMU 60 FD duoBLOCK®

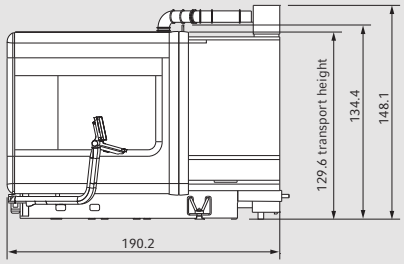
Top view with 40-slot chain magazine

Footprint is 197.0 ft.²

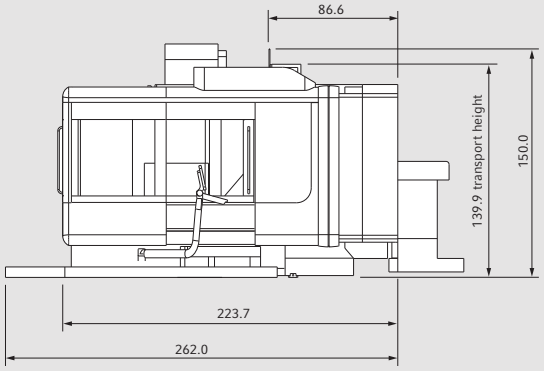


DMU 125 P / FD duoBLOCK®

Side view



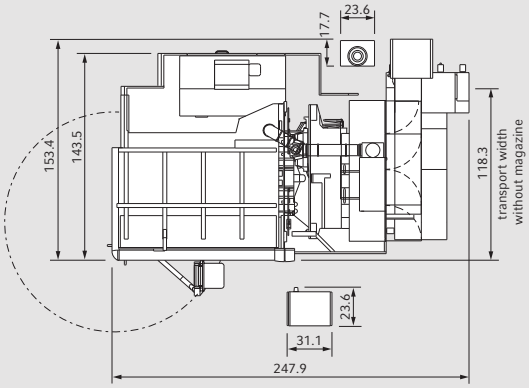
DMU 160 P / FD duoBLOCK®



DMU 125 P / FD duoBLOCK®

Top view with 40-slot chain magazine

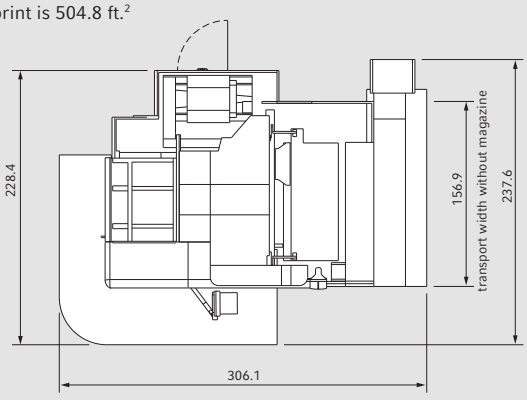
Footprint is 263.7 ft.²



DMU 160 P duoBLOCK®

Top view with 60-slot chain magazine

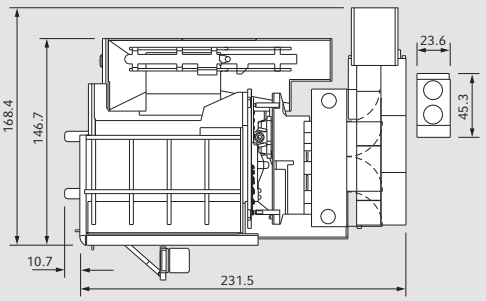
Footprint is 504.8 ft.²



DMU 125 P / FD duoBLOCK®

Top view with 40-slot chain magazine

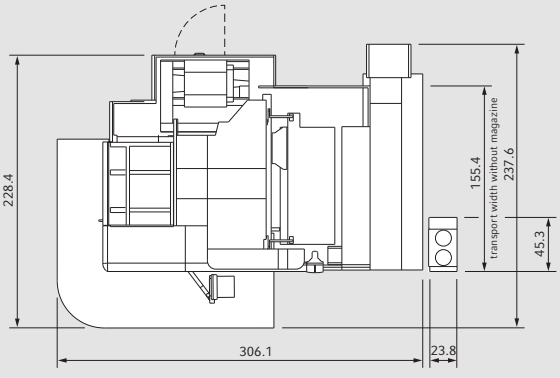
Footprint is 283.1 ft.²



DMU 160 FD duoBLOCK®

Top view with 60-slot chain magazine

Footprint is 504.8 ft.²

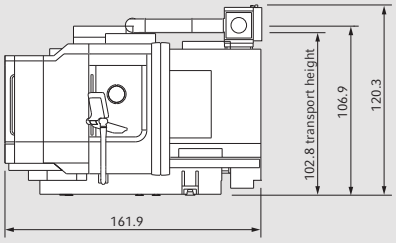


DMU P/FD and DMC U/FD duoBLOCK® Series

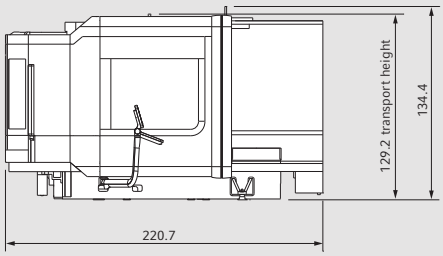
Floor plans

DMC 60 U / FD duoBLOCK®

Side view



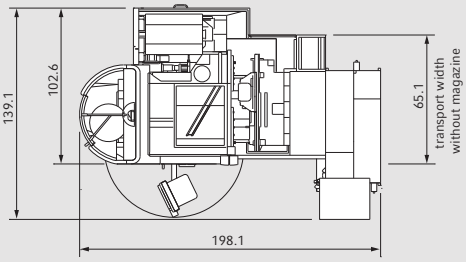
DMC 100 U duoBLOCK®



DMC 60 U duoBLOCK®

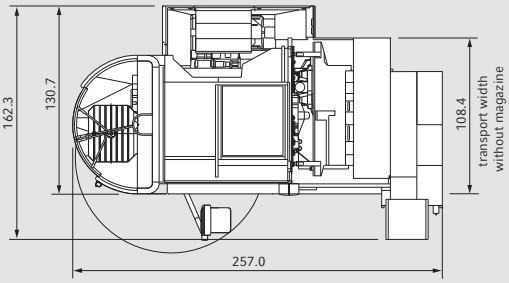
Top view with 60-slot chain magazine

Footprint is 191.6 ft.²



DMC 100 U duoBLOCK®

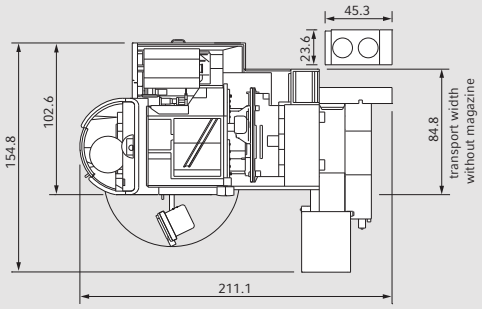
Footprint is 289.5 ft.²



DMC 60 FD duoBLOCK®

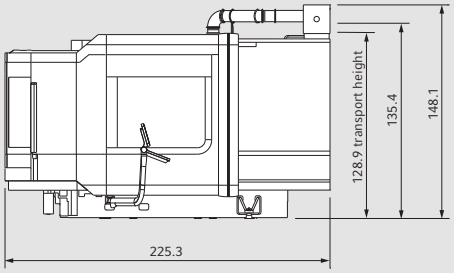
Top view with 60-slot chain magazine

Footprint is 227.1 ft.²

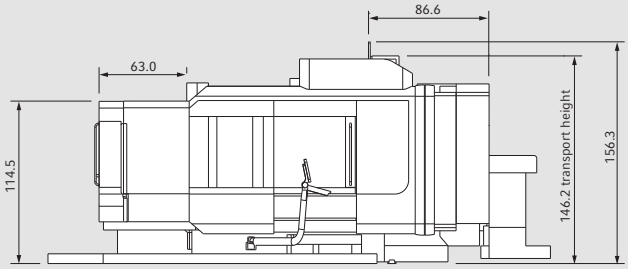


DMC 125 U / FD duoBLOCK®

Side view



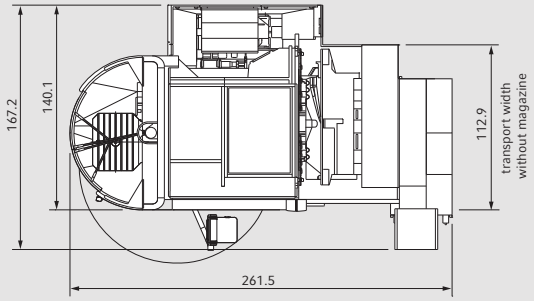
DMC 160 U / FD duoBLOCK®



DMC 125 U / FD duoBLOCK®

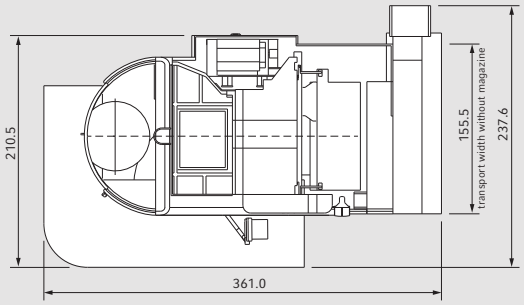
Top view with 60-slot chain magazine

Footprint is 303.5 ft.²



DMC 160 U duoBLOCK®

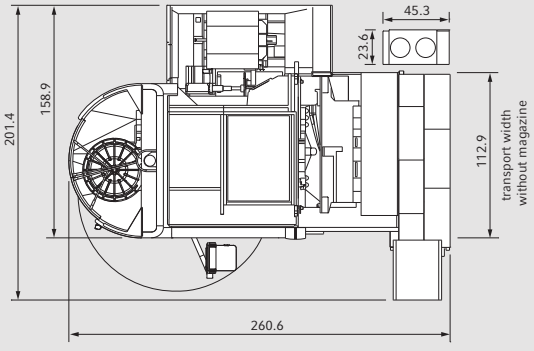
Top view with 60-slot chain magazine



DMC 100 U duoBLOCK® 125 FD duoBLOCK®

Top view with 60-slot chain magazine

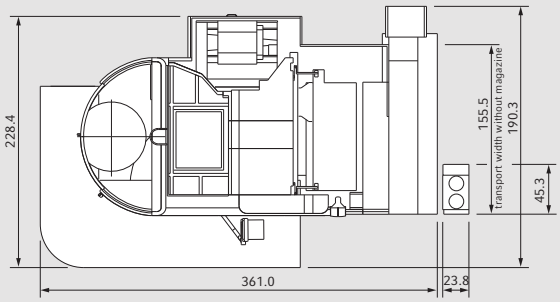
Footprint is 364.9 ft.²



DMC 160 FD duoBLOCK®

Top view with 60-slot chain magazine

Footprint is 595.2 ft.²



DMU P/FD and DMC U/FD duoBLOCK® Series

Technical data

Machine type		DMU 60 P dB	DMU 100 P dB	DMU 125 P dB
Work area				
X- / Y- / Z-axis	in.	23.6 × 27.6 × 23.6	39.4 × 49.2 × 39.4	49.2 × 49.2 × 39.4
Distance spindle center - pallet				
Horizontal milling head	in.	2.0–25.6	2.0–41.3	2.0–41.3
Vertical milling head	in.	5.9–29.5	5.9–45.3	5.9–45.3
Distance spindle nose - pallet center				
Horizontal milling head	in.	–5.9 to 21.7	–7.9 to 41.3	–7.9 to 41.3
Vertical milling head	in.	–9.8 to 17.7	11.8 to 37.4	–11.8 to 37.4
Table / Clamping surface / Workpieces				
NC rotary table	rpm.	40	30	30
Milling / turning table	rpm.	–	–	–
Table dimensions	in.	ø 24.8	ø 43.3 x 35.4	ø 49.2 x 43.3
Max. table weight	lbs.	1,543.2	4,850.2	5,511.6
NC controlled swivel milling head (B-axis)		standard	standard	standard
Swivel range (0 = vert. / 180 = horiz.)	degrees	–30 / +180	–30 / +180	–30 / +180
Rapid traverse and feed	rpm.	30	30	30
5-axis options				
NC controlled swivel milling head (A-axis)		–	•	•
Swivel range (0 = vert. / –90 = horiz.)	degrees		–120 / +10	–120 / +10
Rapid traverse and feed	rpm.		25	25
5X torqueMASTER® – NC controlled B-axis gear spindle		–	•	•
Swivel range (0 = vert. / 180 = horiz.)	degrees		–10 / +180	–10 / +180
Rapid traverse and feed	rpm.		23	23
Main drive				
Integrated SK40 motor spindle	rpm.	12,000	12,000	12,000
Integrated HSK-A63 motor spindle	rpm.	–	–	–
Integrated HSK-A100 motor spindle	rpm.	–	–	–
Power (40 / 100% DC)	hp.	37.5 / 25.5	37.5 / 25.5	37.5 / 25.5
Torque (40 / 100% DC)	ft./lbs.	89.2 / 60.5	89.2 / 60.5	89.2 / 60.5
Tool changer				
Tool holder		SK40	SK40	SK40
Tool magazine	slots	40 / chain	40 / chain	40 / chain
Linear axes (X / Y / Z)				
Feed / rapid traverse speed	ipm.	2,362.2	2,362.2	2,362.2
Acceleration	ft. / sec.^{2}	19.7 / 19.7 / 16.4	19.7 / 16.4 / 19.7	19.7 / 16.4 / 19.7
Feed force	lbf.	2,248.1	2,697.7 / 3,596.9 / 3,596.9	2,697.7 / 3,596.9 / 3,596.9
Machine data				
Standard machine footprint incl. chip conveyor, without internal coolant supply	approx. ft.^{2}	187.3	251.9	263.7
Machine height (standard machine)	in.	109.0	134.4	134.4
Machine weight	lbs.	23,369.0	39,242.3	41,446.9
Controls				
DMG ERGO*line*® control with a 19" display				

	DMU 160 P dB	DMU 60 FD dB	DMU 125 FD dB	DMU 160 FD dB
	63.0 × 49.2 × 43.3	23.6 × 27.6 × 23.6	49.2 × 49.2 × 39.4	63.0 × 49.2 × 43.3
	2.0–45.3	0.8–24.4	0.8–40.2	0.6–43.9
	5.9–49.2	4.7–28.3	4.7–44.1	4.5–47.8
	–7.9 to 41.3	–5.9 to 21.7	–7.9 to 41.3	–7.9 to 41.3
	–11.8 to 37.4	–9.8 to 17.7	–11.8 to 37.4	–11.8 to 37.4
	15	–	–	–
	–	50 / 1,200	20 / 500	20 / 400
	ø 59.1 x 49.2	ø 27.6	ø 49.2	ø 59.1
	8,818.5	1,322.8	5,070.6	8,818.5
	standard	standard	standard	standard
	–30 / +180	–30 / +180	–30 / +180	–30 / +180
	30	30	30	30
	•	–	•	•
	–120 / +10		–120 / +10	–120 / +10
	25		25	25
	•	–	•	•
	–30 / +180		–10 / +180	–30 / +180
	23		23	23
	12,000	–	–	–
	–	12,000	–	–
	–	–	10,000	10,000
	37.5 / 25.5	38.9 / 25.5	59.0 / 42.9	59.0 / 42.9
	89.2 / 60.5	95.9 / 64.2	212.4 / 137.9	212.4 / 137.9
	SK40	HSK-A63	HSK-A100	HSK-A100
	60 / chain	40 / chain	40 / chain	60 / chain
	2,362.2	2,362.2	2,362.2	2,362.2
	16.4 / 13.1 / 16.4	19.7 / 19.7 / 16.4	19.7 / 16.4 / 19.7	19.7 / 13.1 / 16.4
	3,372.1 / 3,372.1 / 2,248.1	2,248.1	2,697.7 / 3,596.9 / 3,596.9	3,372.1 / 3,372.1 / 2,248.1
	504.8	197.0	283.1	504.8
	148.9	120.4	148.1	148.9
	77,161.8	26,455.5	41,667.4	77,161.8

DMU P: Siemens 840D solutionline, HEIDENHAIN iTNC 530, HEIDENHAIN MillPlus iT V610
DMU FD: Siemens 840D solutionline FD

DMU P/FD and DMC U/FD duoBLOCK® Series

Technical data

Machine type		DMC 60 U dB	DMC 100 U dB	DMC 125 U dB
Work area				
X-axis / Y-axis / Z-axis	in.	23.6 × 27.6 × 23.6	39.4 × 49.2 × 39.4	49.2 × 49.2 × 39.4
Distance spindle center - pallet				
Horizontal milling head	in.	0.8–24.4	0.8–40.2	0.8–40.2
Vertical milling head	in.	4.7–28.3	4.7–44.1	4.7–44.1
Distance spindle nose - pallet center				
Horizontal milling head	in.	–5.9 to 21.7	–7.9 to 41.3	–7.9 to 41.3
Vertical milling head	in.	–9.8 to 17.7	11.8 to 37.4	–11.8 to 37.4
Table / Clamping surface / Workpieces				
NC rotary table	rpm.	40	30	30
Milling / turning table	rpm.	–	–	–
Table dimensions	in.	ø 24.8 x 19.7	ø 39.4 x 31.5	ø 39.37 x 31.5
Max. pallet weight	lbs.	1,322.8	4,409.2	4,409.2
NC controlled swivel milling head (B-axis)		standard	standard	standard
Swivel range (0 = vert. / 180 = horiz.)	degrees	–30 / +180	–30 / +180	–30 / +180
Rapid traverse and feed	rpm.	30	30	30
5-axis options				
NC controlled swivel milling head (A-axis)		–	•	•
Swivel range (0 = vert. / –90 = horiz.)	degrees		–120 / +10	–120 / +10
Rapid traverse and feed	rpm.		25	25
5X torqueMASTER® – NC controlled B-axis gear spindle		–	•	•
Swivel range (0 = vert. / 180 = horiz.)	degrees		–10 / +180	–10 / +180
Rapid traverse and feed	rpm.		23	23
Main drive				
Integrated SK40 motor spindle	rpm.	12,000	12,000	12,000
Integrated HSK-A63 motor spindle	rpm.	–	–	–
Integrated HSK-A100 motor spindle	rpm.	–	–	–
Power (40 / 100% DC)	hp.	37.5 / 25.5	37.5 / 25.5	37.5 / 25.5
Torque (40 / 100% DC)	ft./lbs.	89.2 / 60.5	89.2 / 60.5	89.2 / 60.5
Tool changer				
Tool holder		SK40	SK40	SK40
Tool magazine	slots	60 / chain	60 / chain	60 / chain
Linear axes (X / Y / Z)				
Feed / rapid traverse speed	ipm.	2,362.2	2,362.2	2,362.2
Acceleration	ft./sec.^{2}	19.7 / 19.7 / 16.4	19.7 / 16.4 / 19.7	19.7 / 16.4 / 19.7
Feed force	lbf.	2,248.1	2,697.7 / 3,596.9 / 3,596.9	2,697.7 / 3,596.9 / 3,596.9
Machine data				
Standard machine footprint incl. chip conveyor, without internal coolant supply	approx. ft.^{2}	191.6	289.5	303.5
Machine height (standard machine)	in.	106.9	134.4	135.4
Machine weight	lbs.	26,455.5	40,785.5	43,651.5
Controls				
DMG ERGO*line*® control with a 19" display				

	DMC 160 U dB	DMC 60 FD dB	DMC 125 FD dB	DMC 160 FD dB
	63.0 × 55.1 × 43.3	23.6 × 27.6 × 23.6	49.2 × 49.2 × 39.4	63.0 × 55.1 × 43.3
	2.0–45.3	0.8–24.4	0.8–40.2	0.4–43.7
	5.9–49.2	4.7–28.3	4.7–44.1	4.3–47.6
	–7.9 to 41.3	–5.9 to 21.7	–7.9 to 41.3	–7.9 to 41.3
	–11.8 to 37.4	–9.8 to 17.7	–11.8 to 37.4	–11.8 to 37.4
	15	–	–	–
	–	50 / 1.200	20 / 500	20 / 400
	ø 49.2 x 39.4	ø 24.8	ø 43.3	ø 55.1
	6,613.9	1,102.3	4,409.2	6,613.9
	standard	standard	standard	standard
	–30 / +180	–30 / +180	–30 / +180	–30 / +180
	30	30	30	30
	•	–	•	•
	–120 / +10		–120 / +10	–120 / +10
	25		25	25
	•	–	•	•
	–30 / +180		–10 / +180	–30 / +180
	23		23	23
	12,000	–	–	–
	–	12,000	–	–
	–	–	10,000	10,000
	37.5 / 25.5	38.9 / 25.5	59.0 / 42.9	59.0 / 42.9
	89.2 / 60.5	95.9 / 64.2	212.4 / 137.9	212.4 / 137.9
	SK40	HSK-A63	HSK-A100	HSK-A100
	60 / chain	60 / chain	60 / chain	60 / chain
	2,362.2	2,362.2	2,362.2	2,362.2
	16.4 / 13.1 / 16.4	19.7 / 19.7 / 16.4	19.7 / 16.4 / 19.7	19.7 / 13.1 / 16.4
	3,372.1 / 3,372.1 / 2,248.1	2,248.1	2,697.7 / 3,596.9 / 3,596.9	3,372.1 / 3,372.1 / 2,248.1
	595.2	227.1	364.9	595.2
	155.2	120.3	148.1	155.2
	94,798.8	26,455.5	43,651.5	94,798.8

DMC U: Siemens 840D solutionline, HEIDENHAIN iTNC 530, HEIDENHAIN MillPlus iT V610
DMC FD: Siemens 840D solutionline FD

DMU P/FD and DMC U/FD duoBLOCK® Series

Options

Machine type Options	DMU 60 P dB (DMC 60 U dB)	DMU 100 P dB (DMC 100 U dB)	
Table options			
Clamping hydraulics (2/4) for the work table and setup area	•	•	
RS5 / RS10 pallet rotary storage, incl. 5 / 10 pallets (only for DMC machines)	•	•	
Tool holder			
HSK-A63 / BT 40 / CAT 40 (HSK on milling / turning machines, FD, comes standard)	•	•	
HSK-A100 / BT 50 / CAT 50 (HSK on milling / turning machines, FD, comes standard)	–	•	
Automation / Measuring / Monitoring			
3D quickSET®	•	•	
Infrared measuring probe: HEIDENHAIN TS 640 / Renishaw PP60 (OMP 60)	•	•	
Tool measuring in the work area, Blum NT-hybrid laser	•	•	
Mechanical tool breakage monitoring in the tool magazine	•	•	
Combination tool measuring in the work area, laser system for milling tools, 3D probe for turning tools	–	–	
4-color signal lamp	•	•	
Coolants / Chip disposal			
Production package: 132.1 gal. coolant system, screen filter, 580.2 psi. internal coolant supply	standard	standard	
Production package: 158.5 gal. coolant system, paper band filter, 580.2 psi. internal coolant supply	•	•	
Production package: 258.9 gal. coolant system, paper band filter, 580.2 psi. internal coolant supply (standard on DMC machines / only with an 1,160.3 psi. coolant supply or cooling on DMU machines)	–	–	
Production package: 258.9 gal. coolant system, paper band filter, 580.2 psi. /1,160.3 psi. internal coolant supply (2 pressure stages)	•	•	
Coolant tempering for the 258.9 gal. internal coolant supply	•	•	
Spray gun with a pump, 14.5 psi. / 10.6 gal. / min.	•	•	
Minimal lubrication internally through the spindle center and externally via nozzles	•	•	
Oil and emulsion mist separator	•	•	
Air blast cooling unit through the spindle center	•	•	
iTNC 530 / MillPlus control options			
Application Tuning Cycle (ATC)	•	•	
iTNC 530 electronic hand wheel	•	•	
Control panel for tool magazine loading station	•	•	
2nd processor with Windows 2000	•	•	
Siemens 840D solutionline control options			
Siemens 840D electronic hand wheel	•	•	
Siemens control panel for tool magazine loading station	•	•	
3D processing, 3D tool compensation on surface normal vector	•	•	
TRANSMIT-lateral surface transformation (milling of cylindrical paths)	•	•	
CompCad compressor function for high-speed machining	•	•	
General options			
Laminated safety glass for the work area window	•	•	
Operating mode 4 (process monitoring during production)	•	•	
Accuracy package for greater precision	•	•	

• Optional, – Not available

	DMU 125 P dB (DMC 125 U dB)	DMU 160 P dB (DMC 160 U dB)	DMU 60 FD dB (DMC 60 FD dB)	DMU 125 FD dB (DMC 125 FD dB)	DMU 160 FD dB (DMC 160 FD dB)
	•	•	(DMU upon request) •	•	•
	•	• (RS4)	•	•	• (RS4)
	•	•	standard	–	–
	•	•	–	standard	standard
	•	•	•	•	•
	•	•	•	•	•
	•	•	–	–	–
	•	•	•	•	•
	–	–	•	•	•
	•	•	•	•	•
	standard	–	–	–	–
	•	–	standard	standard	–
	–	standard	–	–	standard
	•	•	•	•	•
	•	•	•	•	•
	•	•	•	•	•
	•	•	•	•	•
	•	•	standard	standard	standard
	•	•	•	•	•
	•	•	–	–	–
	•	•	–	–	–
	•	•	–	–	–
	•	•	–	–	–
	•	•	•	•	•
	•	•	•	•	•
	•	•	•	•	•
	•	•	•	•	•
	•	•	•	•	•
	•	•	standard	standard	standard
	•	•	•	•	•
	•	•	•	•	•

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