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DMG MORI

Highly productive compact machining centre

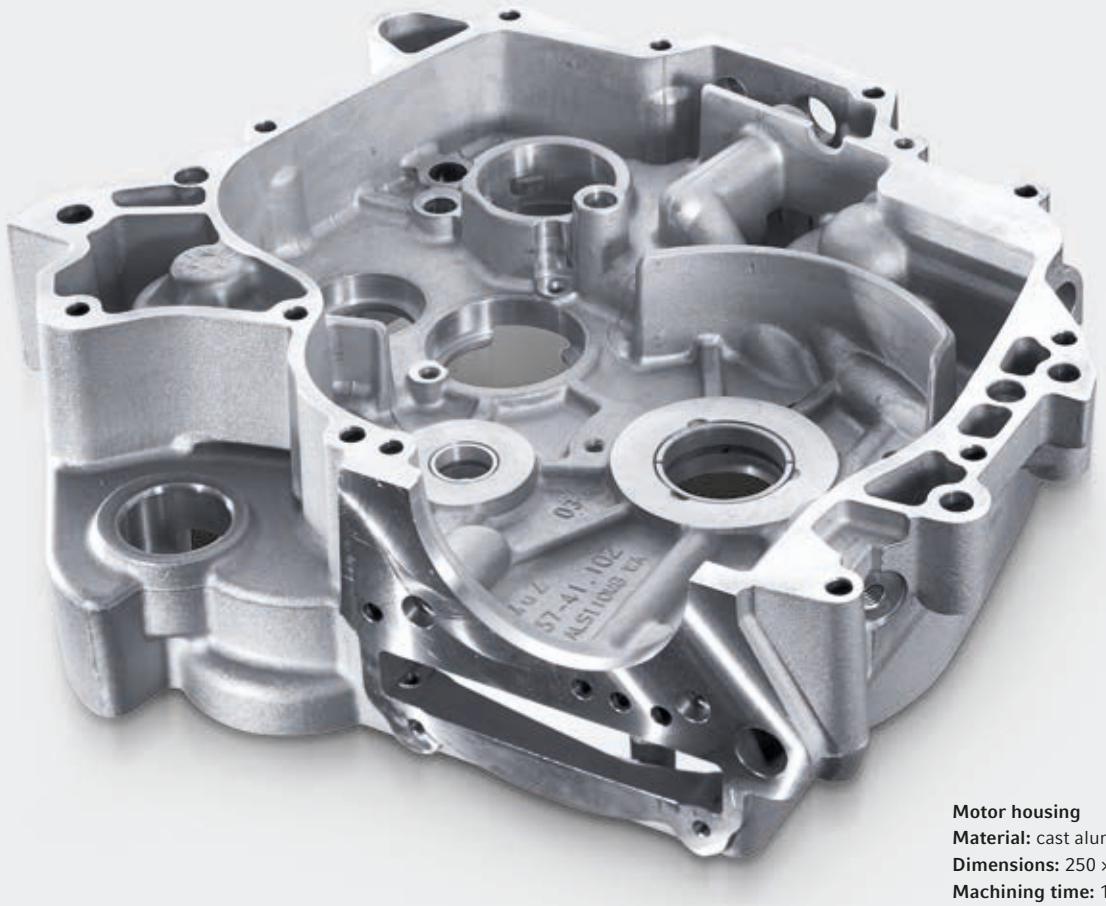
MILLTAP

MILLTAP 700

MILLTAP 700

DMG MORI MILLTAP 700 – efficient and economical for maximum productivity.

With the MILLTAP 700, DMG MORI has created the standard for highly productive, compact machining centres. The new development allowed numerous improvements to be made to the conventional tapping centre design. Developed for demanding machining processes involving small to medium-sized components, the MILLTAP 700 excels due to its reliable performance in series production and its ability to be configured for full automation. This highly productive, compact machining centre has been seamlessly integrated into the successful DMG MORI product portfolio: tried and tested, innovative quality for efficient machining performance!



Motor housing
Material: cast aluminium
Dimensions: 250 × 220 × 100 mm
Machining time: 16 min 35 sec

1: Adapter plate (consumer electronics) / material: aluminium / dimensions: 87 × 60 × 10 mm / machining time: 2 min 50 sec
2: Pump housing (automotive industry) / material: cast aluminium / dimensions: 120 × 150 × 80 mm / machining time: 38 sec
3: Centre plate (electrical engineering) / material: aluminium / dimensions: 50 × 8 mm / machining time: 2 min 35 sec
4: Clamping bridge (optics) / material: brass / dimensions: 120 × 12 × 8 mm / machining time: 4 min 48 sec
5: Optical housing (optics) / material: steel / dimensions: 42 × 45 × 36 mm / machining time: 19 min 45 sec
6: Plug panel (communications technology) / material: steel / dimensions: 75 × 80 × 2 mm / machining time: 55 sec


1


2


3


4


5


6

Maximum efficiency in every industry

With the MILLTAP 700, you are well equipped to face challenges in almost every high-tech sector, ranging from complicated work in the aerospace industry to intricate requirements in medical technology.

Sectors

+ Automotive industry
+ Consumer electronics
+ Electrical engineering
+ Pneumatics
+ Hydraulics
+ Aerospace
+ Medical technology
+ Machine construction
+ Optics

In the dynamic world of today where the life cycle of products decreases on a daily basis, flexible production processes have become indispensable. By meeting these requirements, DMG MORI is carrying out pioneering work. The group has developed a new standard combining two demanding machining processes into one highly developed machine. The result: the highly productive, compact machining centre MILLTAP 700. It uses systems with unique milling performance and features a more rapid tool change system than conventional tapping centres.

MILLTAP 700

Stunningly fast and unfailingly precise.

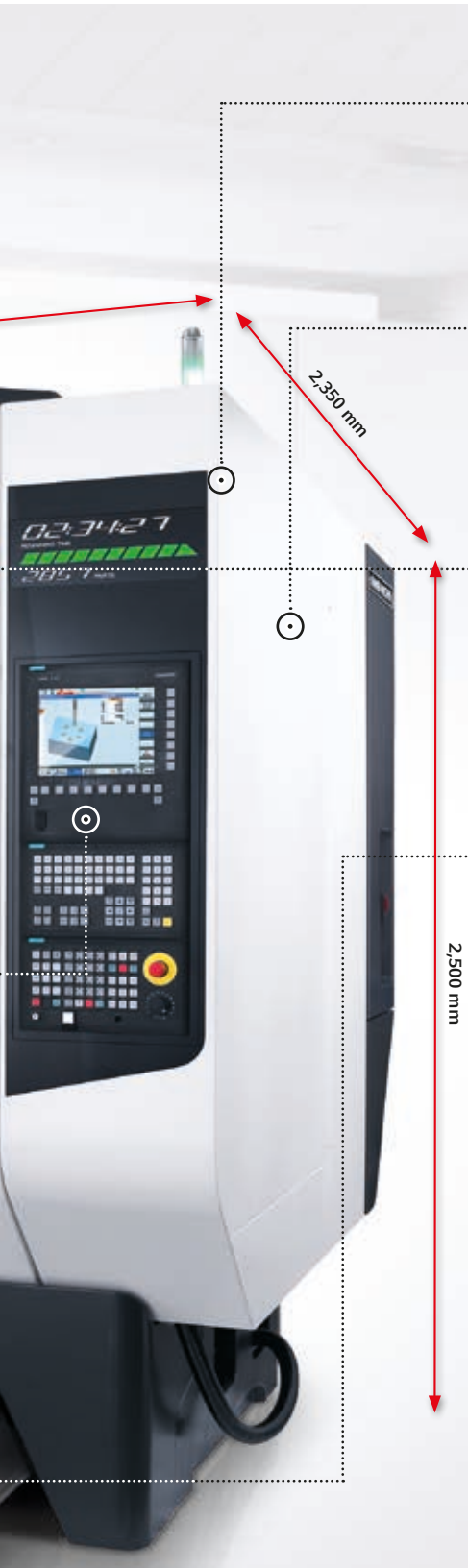
The MILLTAP 700 compact machining centre was the first joint development of DMG and MORI SEIKI. This highly productive machine stands out thanks to its patented tool changer (tool change time of 0.9 sec.), stable, rigid design for high performance milling and the best control technology with Operate 4.5 on SIEMENS 840D solutionline. As the only machine in its class, the MILLTAP 700 can be equipped with optional linear scales in X / Y / Z. As a result, it can guarantee the highest levels of repeatability and long-term accuracy.

Operate 4.5 on SIEMENS 840D solutionline

+ User-friendly DIN / ISO programming of Operate 4.5 on SIEMENS 840D solutionline with a 10.4" monitor.
+ Simple and efficient to program with highly dynamic contouring accuracy.
+ The ShopMill and SINUMERIK MDynamics provide a range of graphical programming options and high speed cutting cycles.

Up to 30 % smaller installation width

+ 10 % smaller footprint compared to similar machines.
+ Thanks to the innovative machine concept and the unique, optimised narrow table design.



Optimal energy efficiency

+ Save 30 % energy with the optimised drive and the new SIEMENS Sinamics 120 drive package.

Maximum precision

+ With the new machine concept and optional linear scale measurement system.
+ Ideal for long-term accuracy and repeatability.

High performance tool change system

+ With a tool change time of 0.9 second, chip-to-chip time less than 1.5 seconds, 15 (optionally 25) tool pockets, 60 m/min rapid traverse in all axes and acceleration of 18 m/s² in the Z-axis.

Optimised chip removal & simple chip disposal

+ Central chip tray and 670 mm wide chip conveyor for efficient disposal.
+ The axis covers and funnel-shaped machine bed guarantee optimum chip removal.
+ Easy chip evacuation during machining. A unique front drawer construction carries a removable chip tray for easy chip disposal* from the MILLTAP 700.
+ Alternatively, the MILLTAP 700 is also available with a chip conveyor*.

Stability

+ The horizontally assembled linear guideways for the X-axis has the advantage of stability and more accuracy for high performance milling operations.
+ Lower investment costs, less frequent need for maintenance and repairs and fewer wear parts thanks to the optimised design – mainly with respect to the axis covers and the tool change concept.

* Optional

NEW // Operate 4.5 on SIEMENS 840D solutionline

+ Simple and efficient to program for unbeatable machining cycles
+ Stable base frame design for high performance milling

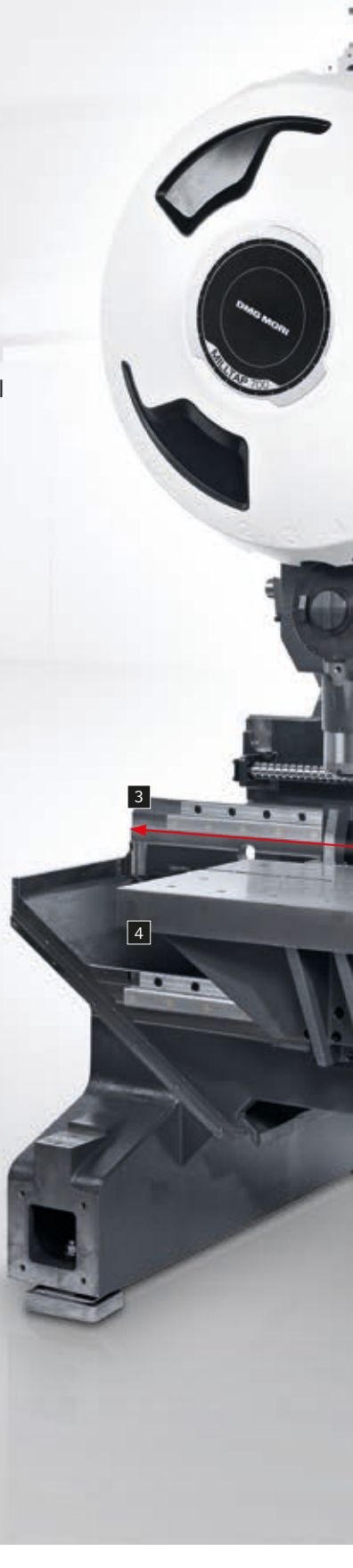
MILLTAP 700

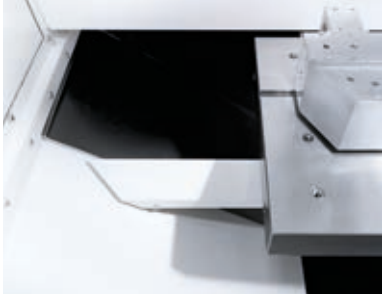
Optimised high performance features for more safety in your production.

With a tool change time of 0.9 second and a chip-to-chip time less than 1.5 seconds, the mechanically driven, high speed tool change system ensures efficient tool exchange where the complete magazine drive, with 15 or 25 tool pockets, is integrated into the spindle head.

The machine has an extremly dynamic tool change concept and rapid traverses of up to 60 m/min. AC drives power the inline main spindle and all linear axes in order to generate the performance to be expected of a highly productive, compact machining centre with maximum milling performance.

The standard inline spindle generates up to P_{max} = 25 kW / P = 4.5 kW 100 % DC (optionally with 24,000 rpm to P_{max} = 20 kW / P = 4 kW 100 % DC). Over-sized ball screws and widely-spaced linear guideways as well inherently stable connections between the bed and table elements generate maximum precision, even under heavy duty operation.





Reduced costs

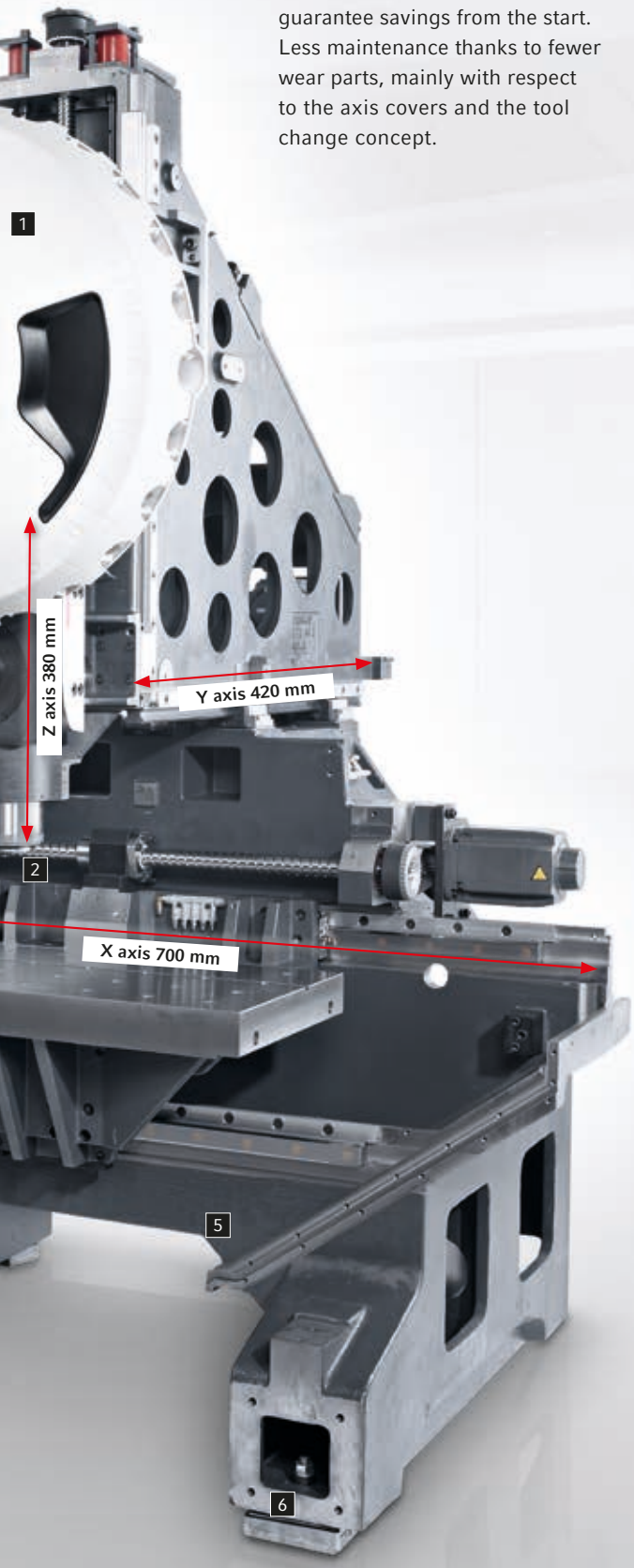
The low investment costs and high availability of the MILLTAP 700 guarantee savings from the start. Less maintenance thanks to fewer wear parts, mainly with respect to the axis covers and the tool change concept.

Optimum chip removal and simple chip disposal

Free chip removal is guaranteed due to the horizontal linear guideway in the X-axis on two different levels and the bridge design. Chips can also be disposed of during machining with the optional coolant package.

High performance tool change system

+ Mechanically driven, high speed tool change system
+ Tool change time of 0.9 sec
+ Chip-to-chip time less than 1.5 sec
+ With 15, or optionally 25, magazine pockets
+ Rapid traverses of 60 m/min in all axes



Large axis stroke

The machine concept features the largest possible working area with travels of 700 × 420 × 380 mm and an unbeatably small footprint.

Highly dynamic spindle

With a maximum torque of 45 Nm, a speed of 10,000 rpm (optionally 24,000 rpm) and a spindle drive of up to 25 kW, the MILLTAP 700 is far ahead of all competition. The symmetrical headstock guarantees optimal stiffness and thermal stability.

NEW // Optional high-torque spindle 10,000 rpm and up to 78 Nm.

Highly dynamic axis drives

32 mm ball screw spindles, up to 18 m/s² acceleration, 60 m/min rapid traverse and size 35 linear guides ensure dynamic and precise movements with optimal contouring accuracy and minimal cycle times.

Work table and ergonomics

The stable, triangular table design and the large linear guideway distances give maximum stability for machining workpieces up to 400 kg.

Chip removal and chip conveyor

The funnel-shaped bed and the stationary cover in the X-axis ensure optimal chip flow and process safety. The removable chip tray provides easy and clean chip disposal, even during machining with the optional coolant package. The MILLTAP 700 is also available with an optional chip conveyor.

Machine design

The C-frame construction from robust cast iron components provides considerable machine stiffness. The high rigidity guarantees optimal surface finish and extended tool life.

3D control technology: Everything at a glance

Simple and efficient to program for dynamic cutting cycles.

HMI user interface

SINUMERIK Operate, incl. animated elements and cycle support SINUMERIK programGUIDE.

9 MB NC data memory

(maximum, dependent on manufacturer cycles). Optional additional 2GB C/F card.

Block processing 4 ms

Tool and datum setting management

Tool management with tool live monitoring and graphical display of the tools and tool types. Clear view of the active datum and all adjustable datums at a glance.

MILLTAP 700

Operate 4.5 on SIEMENS 840D solutionline – fast, easy, efficient.

The Operate 4.5 on SIEMENS 840D solutionline modular universal control system is a highly dynamic control concept distinguished by its new Operate 4.5 user interface, 10.4" monitor and easy operation. In combination with the SINAMICS S120 modular drive system and spindle motors, the control concept of the MILLTAP 700 has opened up a wide range of performance capabilities.

1 Hardware: 32-bit multiprocessor system for milling
2 Monitor: 10.4" TFT flat screen OP010S
3 Control: Control panel, OMP user panel with thin client unit

Program management

Explorer-style program management, including network drive management and USB interface.

CNC programming

ProgramGUIDE with SINUMERIK technology cycles and G-code programming, including animated elements and a graphical quick view.

Technology cycles

Comprehensive package of standard cycles for drilling, tapping and milling, including a geometry calculator for workpiece contours.

Optional

ShopMill and SINUMERIK MDynamics.

Simulation

Graphical simulation of the machining process in plan view and other views such as isometric, including automatic calculation and display of the machining time. Quick mould construction view. QuickViewer from G-code programs.

Block search

Block search, with or without program calculation, to any block in the NC program and repositioning to continue machining.

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Technical data

		MILLTAP 700
Working area		
X- / Y- / Z-axis	mm	700 / 420 / 380
Distance from table to spindle nose	mm	200–580
Table / workpiece mounting surface / workpieces		
Table size (L × W)	mm	840 × 420
Max. load	kg	400
Main drive		
Spindle speed	rpm	10,000 / 10,000 high torque* / 24,000*
Torque (max.)	Nm	45 / 78* / 40*
Torque (S1 100 % DC)	Nm	8 / 30* / 8*
Spindle power (max.)	kW	25 / 16.3* / 20*
Spindle power (S1 100 % DC)	kW	4.5 / 6* / 4*
Min. acceleration time to 10,000 rpm	ms	240 / 750* / 40*
Tool changer		
Toolholder interface		BT30 / BBT30 (BIG+)*
Tool magazine	pockets	15 / 25*
Maximum tool diameter	mm	80
Maximum tool length	mm	250
Maximum tool weight per pocket	kg	3
Maximum symmetrical magazine load (15 / 25 pockets)	kg	25 / 33*
Maximum asymmetrical magazine load (15 / 25 pockets)**	kg	20 / 25*
Chip-to-chip time (15 / 25 pockets)	sec	1.5 / 1.7*
Linear axis (X / Y / Z)		
Feed rate (X / Y / Z)	m/min	60 / 60 / 60
Rapid traverse (X / Y / Z)	m/min	60 / 60 / 60
Acceleration (X / Y / Z)	m/s^2	10 / 10 / 18
Maximum feed force (X / Y / Z)	kN	5 / 5 / 5
Linear guideways (X / Y / Z)	size	35
Ball screws (X / Y / Z)	ø × pitch	32 × 32
P_{max} (X / Y / Z) to VDI / DGQ 3441 (indirect / direct measurement system)	mm	0.020 / 0.008
P_{max} (X / Y / Z) to JIS B6330-1980 (indirect / direct measurement system)	mm	0.010 / 0.005
Machine data		
Width × depth without chip conveyor	mm	1,650 × 2,340
Machine height / with roof	mm	2,500 / 2,580
Machine weight	kg	3,400

Control	
Operate 4.5 on SIEMENS 840D solutionline with 10.4" monitor	•

* Optional, ** Tool weight only on one half of the magazine wheel

MILLTAP 700

Performance and machining examples with a 10,000 rpm spindle (standard spindle)

Tool	Diameter (mm)	Spindle speed (rpm)	Feed rate (mm/min)	Depth of cut (mm)	Width of cut (mm)	Spindle load (%)	Feed / rev (mm)	Material removal (cm^3)	Material
Face-milling cutter	63	1,800	2,200	1.5	42	105	1.22	139	Ck45
Face-milling cutter	63	2,000	3,100	1.5	40	105	1.55	186	Ck45
Face-milling cutter	40	2,387	1,430	5	28	105	0.6	200	Ck45
Face-milling cutter	35	2,100	2,200	2.5	35	105	1.05	193	Ck45
Face-milling cutter	35	2,550	2,800	2.5	24.5	105	1.125	172	Ck45
Face-milling cutter	50	5,400	8,600	5	37.5	100	1.6	1,613	Aluminium
Face-milling cutter	40	10,000	12,000	5.5	30	105	1.2	1,980	Aluminium
End mill cutter	10	10,000	550	10	10	20	0.055	55	Aluminium
VHM drill	20	3,660	550	40	20	75	0.15	–	Aluminium
VHM drill	19.5	330	50	25	19.5	70	0.15	–	HRC 56 steel
HSS tap	M1.2	1,300	325	3	–	5	0.25	–	SUS304
HSS drill	1.13	4,500	120	4	–	5	0.027	–	Aluminium
HSS tap	M1.2	1,300	325	3	–	5	0.25	–	Aluminium
HSS drill	2.5	8,000	450	12	–	5	0.056	–	Aluminium
HSS tap	M3	4,000	2,000	9	–	5	0.5	–	Aluminium

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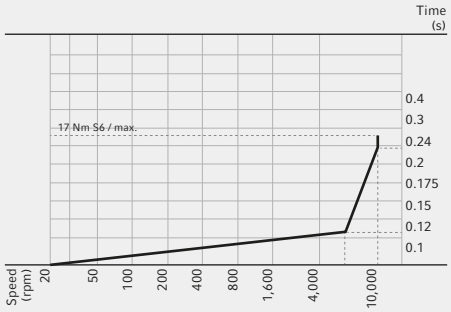
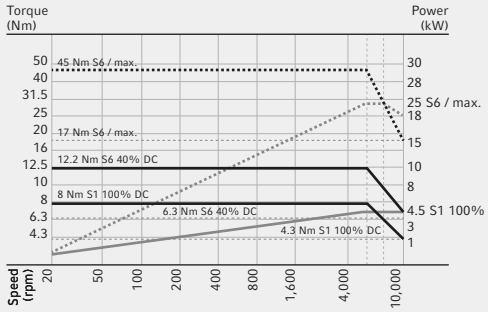
Power diagrams

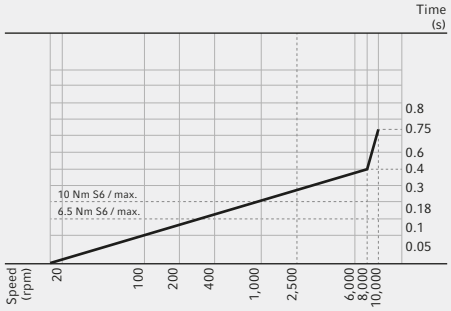
10,000 rpm spindle / time



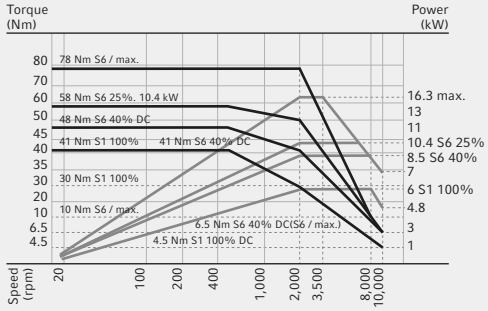
10,000 rpm spindle / power



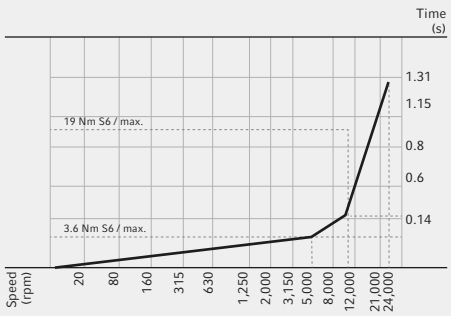
10,000 rpm high torque spindle / time



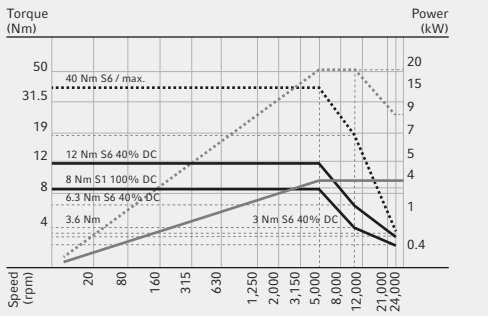
10,000 rpm high torque spindle / power



24,000 rpm spindle / time



24,000 rpm spindle / power



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Floor plans

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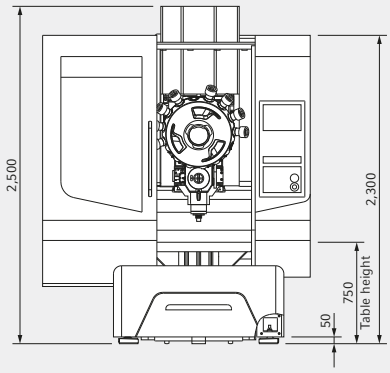
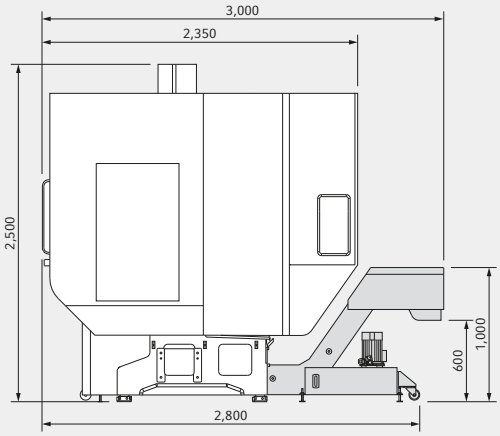
Front view



Side view



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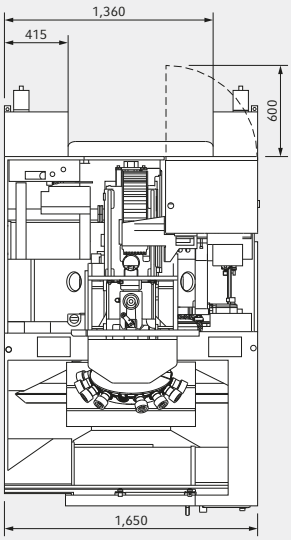
Plan view



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