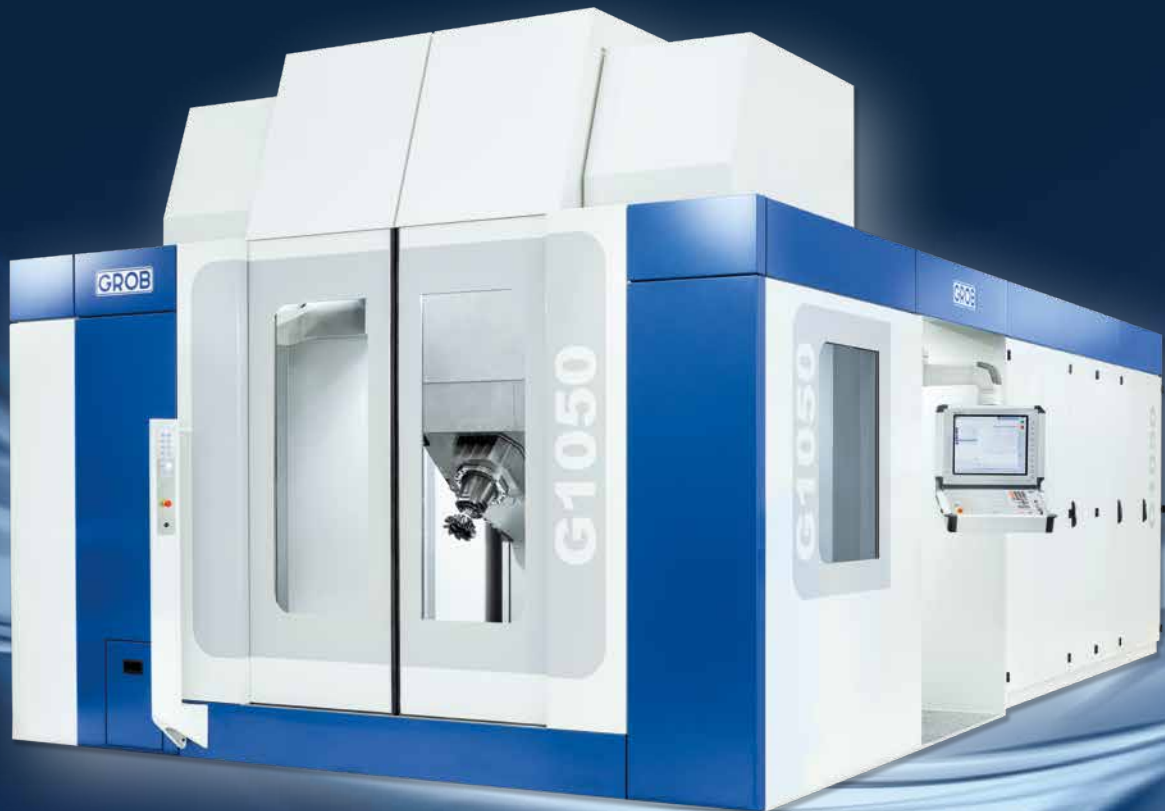




G-SERIES

G1050

LARGE MACHINING CENTER

INNOVATIVE AXIS CONCEPT



For a diverse mix!

The large machining center G1050 is a new machine concept, developed by GROB to offer customers universal machining centers and system machines with the ideal pallet size for accommodating large components. A pallet size of 800 x 800 mm to 1,000 x 1,250 mm is perfectly suitable for machining engine components for trucks, commercial and construction vehicles and tractors.

In the universal machining center business too, the G1050 offers the perfect machine concept for general machine construction, the aviation industry, mold construction and energy technology.

Thanks to the 4- or 5-axis module system, the machine can be optimally geared to meet any customer requirement.

THE BENEFITS TO YOU

⚙️ EXCEPTIONALLY LARGE WORK AREA

Machining of large parts up to an interference diameter of 1,600 mm and a height of 1,600 mm possible

⚙️ EXCELLENT CHIP FALL (ALSO SUITABLE FOR DRY MACHINING)

Perfect chip transport through steep machine bed slants in the work area

⚙️ VERY GOOD CHIP-TO-CHIP TIME

Time-optimized tool changer arm for tool weights of up to 50 kg (see Technical Data, from p. 26)

⚙️ MAXIMUM RIGIDITY

Extremely wide guide distances guarantee outstanding machine rigidity

⚙️ TOOL LENGTH OF UP TO 850 mm

Oversize tools of up to 850 mm can be used as standard

One concept for a broad range of industries

Our G1050 large machining center in the 4-axis and 5-axis version offers a broad range of applications in various sectors that specialize in the machining of large components.

Thanks to the unique swivel milling head in the 5-axis version developed by GROB, the G1050 is able to switch from horizontal to vertical machining in a matter of seconds.

Benefit from the process reliability, cost-efficiency and durability of our machine concept.



TRUCKS AND COMMERCIAL VEHICLES

Ideally suited for large components (e.g. axles) due to the higher-than-average tilt and interference diameter



MECHANICAL ENGINEERING

Broad range of applications with selection options of motorized and gear spindles up to 2,400 Nm



AEROSPACE

Ideally suited for machining high-strength materials such as titanium and super alloys, thanks to the stable machine concept



ENERGY TECHNOLOGY

Convincing dynamic response during 5-sided machining through integrated feed axis "W" in the 5-axis version



DIE AND MOLD INDUSTRIES

Optimal machining options of complex milling contours

MACHINE CONCEPT

THE BENEFITS TO YOU at a glance

- ⊕ High productivity
- ⊕ Maintenance access
- ⊕ Optimized availability
- ⊕ Compact design

CAN BE INSTALLED ANYWHERE

No special foundation required to install the machine

MACHINE BED

Intrinsically-stiff welded design for maximum machine rigidity; completely thermally decoupled from emulsion and chips

COOLING CONCEPT

Maximum thermal stability through temperature control of the guiding X'-, Y- and Z-axes, as well as the rotary table axis

NC ROTARY TABLE

Highly-dynamic and directly driven table with generously dimensioned axial radial bearing for optimized tilt resistance

PALLET CHANGER

Reduced non-machining times with pallet loading and unloading for a load weight of up to 2,300 kg

INTEGRATED DISK-TYPE TOOL MAGAZINE

Up to 237 tool pockets with a maximum length of 850 mm and a maximum weight of 50 kg; expandable by additional tool magazine

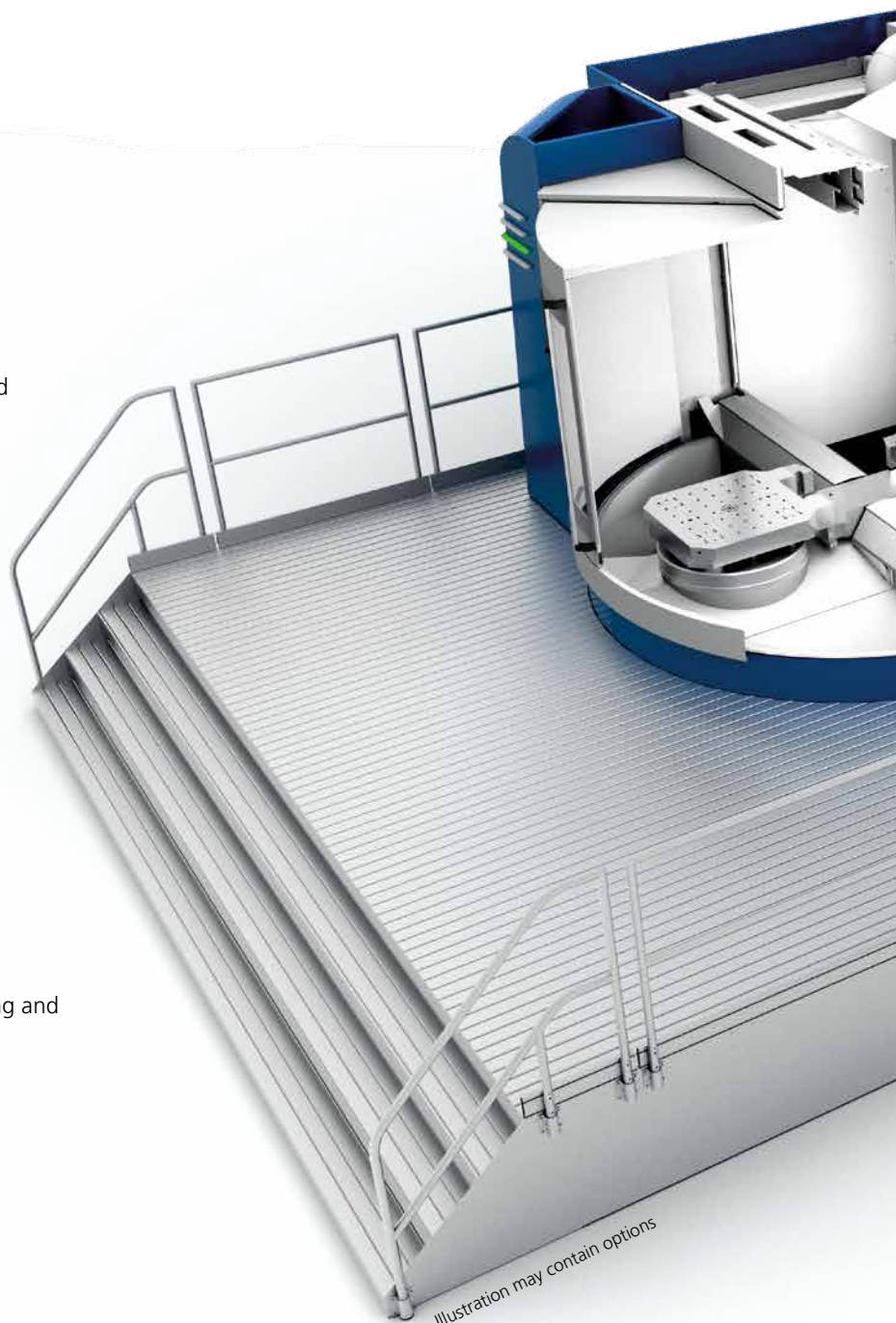


Illustration may contain options

- ⊕ High visibility
- ⊕ Optimum accessibility
- ⊕ Flexible applications
- ⊕ Round-the-clock service



MOTORIZED AND GEAR SPINDLES

Broad range of applications with machining spindles with up to 100 kW of output and 2,400 Nm of torque

EXCELLENT CHIP FALL

Guided chip transport through steep machine bed slants in the work area; also for dry machining operations

FLUID CABINET

Maintenance access for short machine downtimes geared towards meeting the tough requirements of the automotive industry

ADDITIONAL OPERATOR DOOR

Optimal access to the work area for continuous process monitoring

CONTROL SYSTEMS

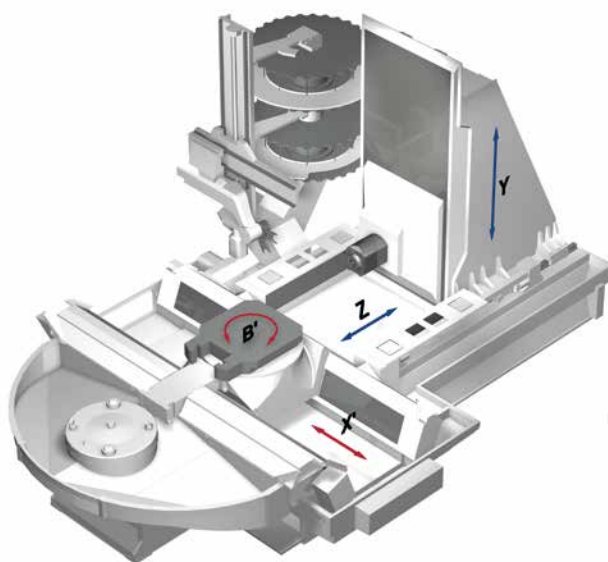
Latest generation of control systems from leading manufacturers with attractive control panel design

Maximum flexibility – even with large part dimensions

Optimized arrangement of the axes between part and machining spindle for even more efficient machining operations with symmetrical force transmission and high machine rigidity.

Axis arrangement and drive concept

Depending on customer requirement, the G1050 large machining center is available as a 4-axis version or as a 5-axis version with the specially developed swivel milling head.



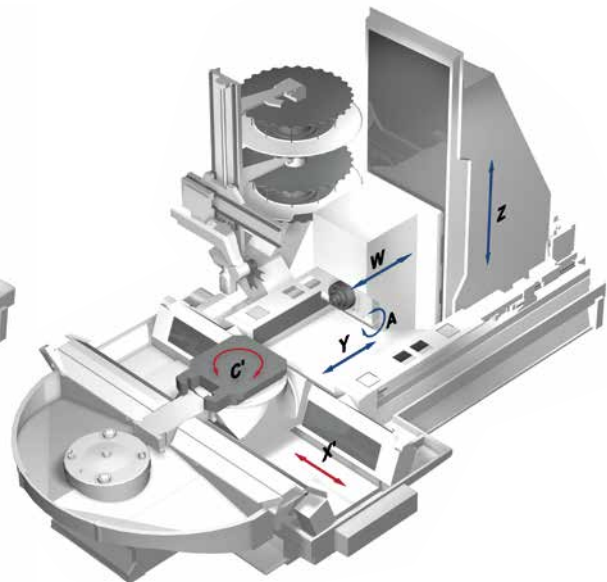
G1050 – 4-axis version

Axis arrangement

- Linear X'-axis and rotary B'-axis move the part
- Linear axes Z and Y move the machining spindle

Drive concept

- Two symmetrically-arranged ball screws in the X'- and Y-axis (servomotor drive)
- One central ball screw in the Z-axis (torque motor drive)
- Dynamic, wear-free torque motor in the B'-axis



G1050 – 5-axis version

Axis arrangement

- Linear X'-axis and rotary C'-axis move the part
- Linear axes Y and Z move the machining spindle
- A-axis moves the swivel milling head with integrated machining spindle between the horizontal and vertical position
- The machining spindle can be advanced separately via the W-axis

Drive concept

- Two symmetrically-arranged ball screws in the X'-, Z-, and A-axis (servomotor drive) and in the Y-axis (torque motor drive)
- One central ball screw in the W-axis (torque motor drive)
- Dynamic, wear-free torque motor in the C'-axis

Swivel milling head specially developed for the 5-axis version

Permits precise part machining through a cantilever load in horizontal spindle position as well as a large range of the vertical spindle across the table center.

W-feed-axis integrated into the swivel milling head

In the 5-axis version, a compact "W" feed axis with a travel of 300 mm is integrated into the swivel milling head.

THE BENEFITS TO YOU

- ⊕ Fast plunging into part contours
- ⊕ Boreholes and threads set without movement of the main axes
- ⊕ Machining in various angular positions without interpolation of the main axes



MACHINE COMPONENTS

Quality components and extensive functions included in the basic equipment

Machining spindle and tool magazine form the heart of all GROB universal machining centers. Components optimally matched to the machine size of the G1050 can be individually and flexibly combined to suit customer requirements.

Machining spindle



Work area



Disk-type tool magazine*



Tool changer arm



* 2-disk magazine included in the standard version
4-disk magazine is optional

Centralization of all maintenance-relevant machine components

The central, ergonomic arrangement of the machine components guarantees optimal accessibility to fluid cabinet and electrical cabinet as well as easy access for preventive maintenance and inspection.

Rear view of the G1050



Machine cooling unit



Fluid cabinet (rear view of the machine)



Fluid cabinet (side view of the machine)



Illustrations may contain options

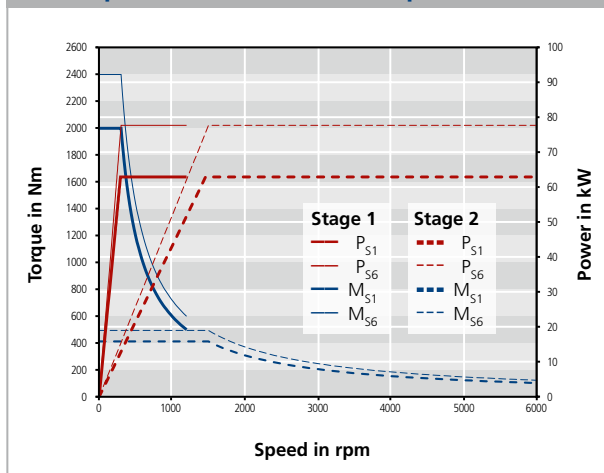
GROB motorized spindles and gear spindle

From the broad selection of spindles, the machine spindles designed and produced by GROB itself are the preferred choice for optimized process design.

These are optimally matched to the G-modules and have optimized quality features:

- Shortest ramp-up times
- Good accessibility and maintenance
- Suitable for all standard cutting fluids
- Universal applicability
- Best mechanical characteristics
- Durability

Gear spindle 2,400 Nm, 6,000 rpm



THE HIGHLIGHTS OF THE GROB GEAR SPINDLE

- + Two-stage shift transmission
 - High torque and high performance
- + Vast cutting volume
- + Active boring head support (optional) for use of angular cutters/boring heads
- + Water-cooled spindle, gear and drive units

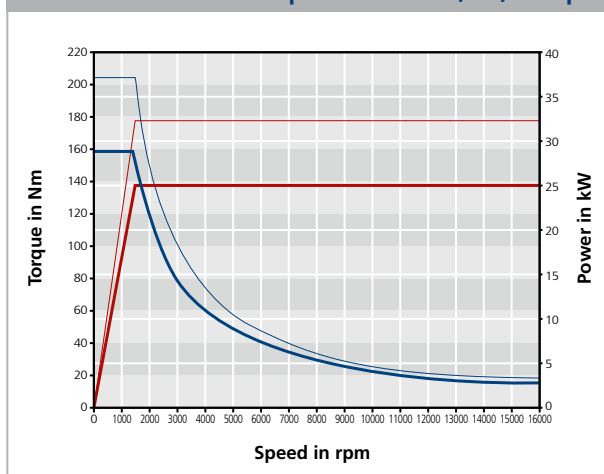
P: power in kW

M: torque in Nm

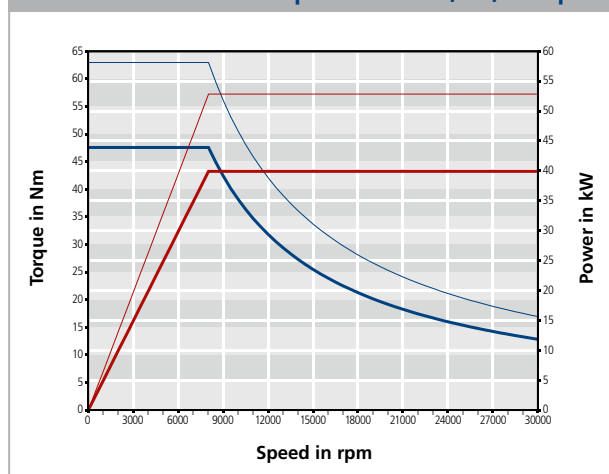
S1: 100 % duty cycle (ED)

S6: 40 % duty cycle (ED)

HSK-A63 | Motorized spindle 206 Nm, 16,000 rpm



HSK-A63 | Motorized spindle 63 Nm, 30,000 rpm



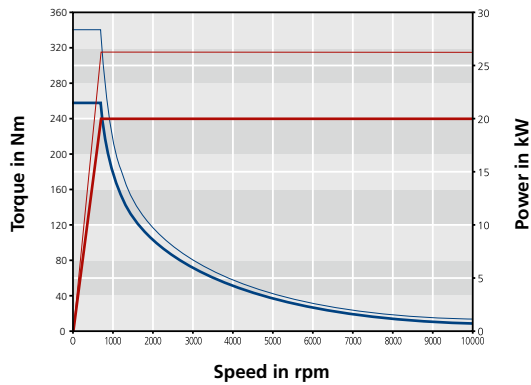
— power S1: 100 % duty cycle

— power S6: 40 % duty cycle

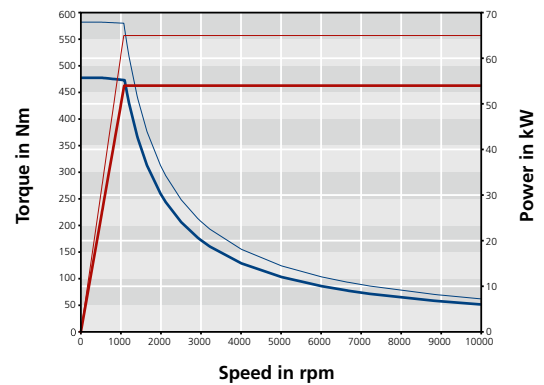
— torque S1: 100 % duty cycle

— torque S6: 40 % duty cycle

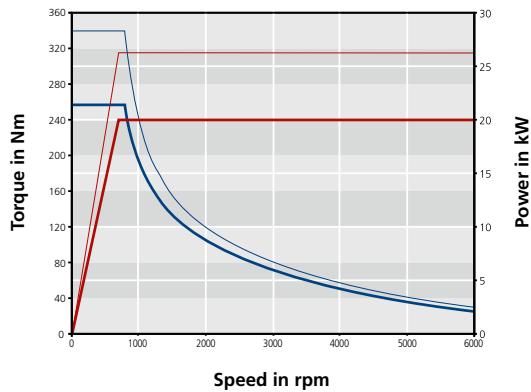
HSK-A100 | Motorized spindle 340 Nm, 10,000 rpm
(standard on 4-axis version)



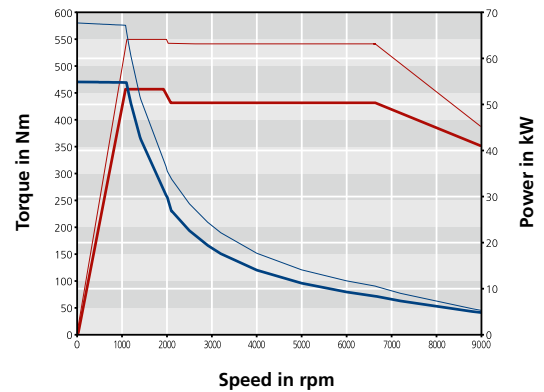
HSK-A100 | Motorized spindle 582 Nm, 10,000 rpm
(standard on 5-axis version)



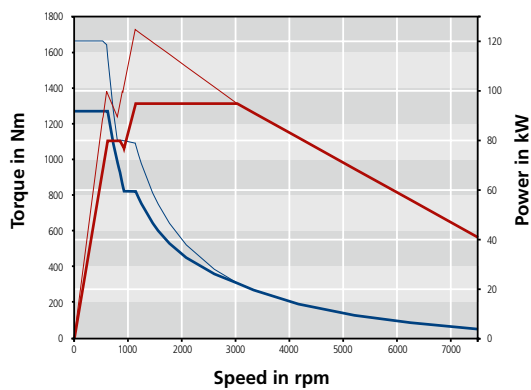
HSK-A100 | Motorized spindle 340 Nm, 6,000 rpm



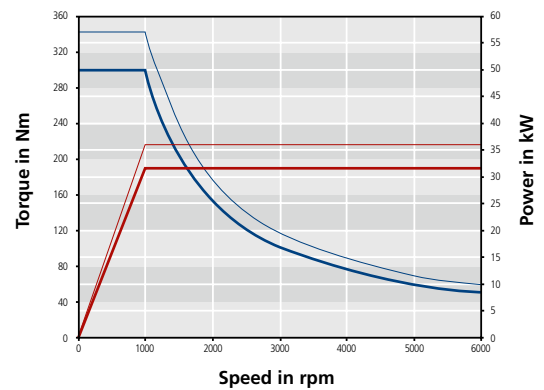
HSK-A100 | Motorized spindle 575 Nm, 9,000 rpm



HSK-A100 | Motorized spindle 1,666 Nm, 7,200 rpm



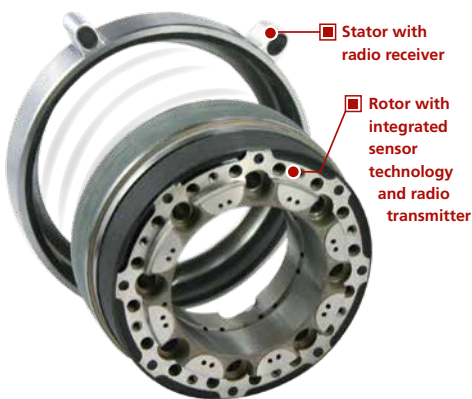
HSK-A100 | Motorized spindle 344 Nm, 6,000 rpm
(motorized spindle with cross-feed)



— power S1: 100 % duty cycle — power S6: 40 % duty cycle — torque S1: 100 % duty cycle — torque S6: 40 % duty cycle

MACHINE COMPONENTS

Spindle options



Detailed information on request

GROB Spindle Diagnostics (GSD)

GROB spindle diagnostics is a system that automatically monitors the condition of the machining spindle (Condition Monitoring).

THE BENEFITS TO YOU

- ⊕ Service life of the machining spindle extended through identification of critical operating states
- ⊕ Process optimization/reduction of tool wear
- ⊕ Machine down-times avoided through scheduled maintenance

GROB Chip-in-Spindle Detection System (SiS)

This system is able to detect at an early stage tool clamping faults caused by chips between the plain surface and the spindle nose from 10 µm.

THE BENEFITS TO YOU

- ⊕ Reject components and radial runout avoided
- ⊕ Damage caused by machining faults prevented
- ⊕ Optimized machining process
- ⊕ Protection of tool and machining spindle
- ⊕ Higher degree of process stability

SPINDLE TYPE ◀ ▶ MACHINE • AVAILABILITY AT A GLANCE !

Tool interface* for short hollow taper tools acc. to ISO 12164-1	HSK-A63	HSK-A63	HSK-A100	HSK-A100	HSK-A100	HSK-A100	HSK-A100	HSK-A100	HSK-A100
Spindle bearing Diameter at front bearing [mm]	80	65	120	100	110	100	110	120	100
Speed n _{max} [rpm]	16,000	30,000	6,000	10,000	10,000	6,000	9,000	7,200	6,000
Max. drive power at 100%/40% duty cycle [kW]	25/32	40/53	63/78	20/26	54/65	20/26	54/65	80/100	31.5/36
Max. spindle torque at 100%/40% duty cycle [Nm]	159/ 206	48/ 63	2,000/ 2,400	262/ 340	478/ 582	262/ 340	470/ 575	1,273/ 1,666	301/ 344
Spindle bearing lubrication ▶ Lifetime grease lubrication	●	—	●	●	●	●	●	●	●
▶ Oil/air lubrication	●	●	—	—	—	—	—	—	—
G1050 – 4-axis version	●	●	●	●	—	●	●	●	● ***
G1050 – 5-axis version	●	—	—	—	●	—	—	—	—

* Optional tool interfaces on request

** Motorized spindle with cross-feed

*** In combination with a SIEMENS machine control system

Further spindle versions on request

Diverse machining options with powerful rotary tables

Various rotary table versions to choose from, depending on requirements.
The powerful rotary tables are based on the latest torque motor technology and offer optimized dynamics.

Rotary table versions for the large machining center G1050			
Table versions	Rotary table versions		
Figures			
Table designations	Rotary table with T-slots arranged in parallel (standard)	Rotary table with grid hole pattern	Rotary table with pallet clamping system
Type of drive A'-/B'-axis	Torque motor		
Angle of rotation B'-axis [°]	n x 360		
Max. speed B'-axis [rpm]	60		
Aligning slots (quantity/width/quality) Clamping slot (quantity/width/quality)	1 x 18 H7 10 x 18 H12	—	—
Table diameter [mm]	1,350	1,010	1,010
Interference diameter [mm]*	1,600		
Max. permissible loading weight incl. clamping fixture [kg]	4,000	4,600	**
Fluid connections	12	12	8

* Maximum part size with restrictions on machines with pallet changers

** Depending on pallet size

Pallet clamping systems (option)				
Pallet size [mm]	800x800	1,000x800	1,000x1,000	1,000x1,250
Max. pallet load [kg]	4,150	4,050	3,950	3,800

Tool magazine – diverse combinations

GROB tool magazine technology is set apart by fast chip-to-chip times, a smaller space requirement and optimized accessibility.



2-disk magazine (standard)

- Arrangement based on two disk-type tool magazines arranged on top of one another
- Tool change process via fast tool changer arm with swiveling double gripper
- Loading/unloading during the machining operation
- Tool magazine disks can be accessed at any time
- An imminent tool change starts as soon as the magazine door is closed
- Also available as a version for extra-long tools of up to 850 mm (see Technical Data, from p. 26)

4-disk magazine (option)

- Arrangement based on four disk-type tool magazines arranged on top of one another
- Tool change process via fast tool changer arm with swiveling double gripper
- Loading/unloading during the machining operation
- Tool magazine disks can be accessed at any time
- An imminent tool change starts as soon as the tool magazine door is closed
- Also available as a version for extra-long tools of up to 850 mm (see Technical Data, from p. 26)

DISK-TYPE TOOL MAGAZINE ◀▶ MACHINE • AVAILABILITY AT A GLANCE !

	2-disk magazine				4-disk magazine			
Tool interface*	HSK-A63	HSK-A63	HSK-A100	HSK-A100	HSK-A63	HSK-A63	HSK-A100	HSK-A100
Number of tool pockets	117	105**	57	51**	237	225**	117	111**

* Optional tool interfaces on request

** For tool lengths > 500 mm



Additional tool magazine TM (option)

The additional tool magazine increases the tool capacity of the basic machine.

- Blockwise setup of up to six HSK-A63 tools on TM200, TM309 and TM374 and up to five HSK-A100 tools on TM180 and TM251
- Additional tool magazine equipped with tools during the machining operation
- If the tool intended for the next machining operation is already in the disk-type tool magazine of the basic machine, the machining time is not impaired
- Tool and magazine management via an industrial control system (Beckhoff-TwinCAT) with screen and keyboard

NUMBER OF TOOL POCKETS ▶ G1050

Basic machine			Additional tool magazine TM Total number of tools of the basic machine and the TM				
Motorized spindle	Tool interface	Number of tool pockets	With SIEMENS or HEIDENHAIN control system				
2-disk magazine			TM200	TM309	TM374	TM180	TM251
For all spindle types	HSK-A63	117	300	409	474	—	—
	HSK-A63	105*	288	397	462	—	—
	HSK-A100	57	—	—	—	228	299
	HSK-A100	51*	—	—	—	222	293
4-disk magazine			TM200	TM309	TM374	TM180	TM251
For all spindle types	HSK-A63	237	420	529	594	—	—
	HSK-A63	225*	408	517	582	—	—
	HSK-A100	117	—	—	—	288	359
	HSK-A100	111*	—	—	—	282	353

* For tool lengths > 500 mm

MACHINE COMPONENTS

Powerful CNC control systems

With all GROB large machining centers, any of the latest CNC control systems from the market leaders can be chosen.

Available machine control systems from SIEMENS (840D sl) and HEIDENHAIN (TNC 640).



Choose from a broad range of accessories

We offer a broad range of tried and proven accessories for diverse applications and for increasing efficiency. Expand your G1050 to suit your particular requirements.

Tool cleaning device

Combined, GROB-patented brushing/blow-off device for cleaning the tapered/contact surface of the tool interface

Tool coding

Write-read unit for tools with tool coding for reducing setup times and preventing errors during data input

Decentralized work area mist collecting system

An emulsion mist separator with various performance levels is available for keeping the work area clean

Machine platform

Machine platform for a machine version with or without pallet changer; can be installed anywhere in the production hall

High-pressure cutting fluid system

In addition to the 23-bar standard version, high-pressure pumps with 38 or 80 bar are also available for generating the cutting fluid high pressure

Continuous cooler

An external continuous cooler for cooling the cutting fluid is available for all high-pressure cutting fluid pump versions

Hand-held controllers

Hand-held controllers with keys for selecting the axis directions, feed, rapid travel, emergency stop and for acknowledging axis movements

Electromechanical tool breakage detection device

Tool breakage detection via a tactile tool breakage detection device for monitoring process during machining

Touch probe

Touch probe for aligning and measuring parts and clamping fixtures, as well as setting zero and reference points for downstream machining

Machine status lamp

A three-color light is used to visually indicate the machine status. A distinction is drawn between automatic mode (green), warning (yellow) and malfunction (red)

Oil skimmer

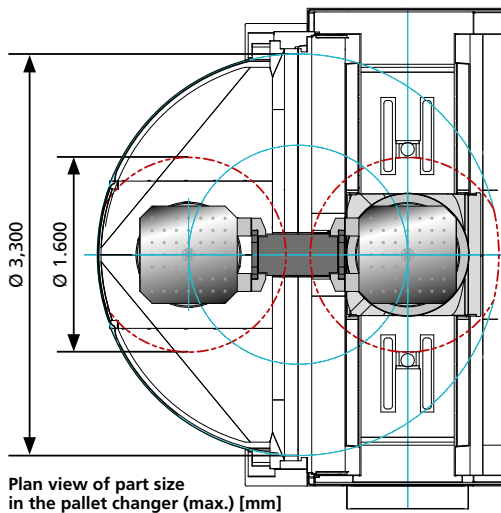
The oil skimmer is used to remove hydraulic and/or lubricating oil from the cutting fluid surface. This keeps the cutting fluid as clean as possible.

Laser measurement system for milling tools

Contactless, optical tool monitoring/measurement of rotating tools (e.g. milling cutters, drills); on request

Pallet changer system

Improved productivity through retooling during part machining by means of a double pallet changer system.



Functional principle of the double pallet changer system

- Pallets are interchanged between setup station and work area of the machine by means of a rotating pallet changer.
- The pallets are clamped on the rotary table and setup station of the machine by a pallet clamping system built into the machine table.
- A high degree of process reliability is guaranteed by an integrated seating check system and by flushing the zero point clamping system during the pallet change sequence.

Pallet design

The standard pallet has a grid hole pattern on the top.
A pallet surface with T-slots is also available as an option.



THE BENEFITS TO YOU

- + Retooling or loading and unloading of the parts to the machine setup station during the machining operation
- + Double pallet changer system compactly integrated into the machine
- + Optimized access to the rotatable and lockable setup station
- + Fast exchange of pallets between work area and setup station
- + Seating check system for the pallets already located in the pallet changer system
- + Wide-opening setup station doors with crane loading capability

PALLET CHANGER SYSTEM ◀ ▶ MACHINE • AVAILABILITY AT A GLANCE !

	Pallet size [mm]*	Pallet surface with grid hole pattern [mm]	Pallet surface with T-slots [mm]	Maximum pallet load [kg]	Pallet change time [s]**
G1050 – 4-axis version / 5-axis version	1,000 x 1,000	Thread M16; grid 100	Width 18; spacing 100	2,300	21

* Optional: 800x800, 1,000x800 and 1,000x1,250

** Time value without seating check system

Customized automation solutions

For decades now, our customers in large-scale production have been relying on GROB automation solutions. The experience garnered is fed straight into our automation solutions, making GROB a strong partner – for solutions with part storage systems through to highly-flexible manufacturing systems.

Flexible manufacturing system

In a flexible manufacturing system, the workflow between several machining centers, pallet storage system, setup stations and pallet changing devices can be fully automated to suit the customer's specific requirements. This allows unmanned shifts or shifts with reduced manning, the result being substantially higher machine utilization capacity, availability and hence increased productivity.



Equipment features of the illustrated design:

- 2 large, interlinked machining centers G1050
- Pallet storage system with 24 pallet storage positions
- 2 setup stations
- Pallet handling via a pallet changing device in the high-rack storage system

THE BENEFITS TO YOU

- + Cost-effective production through increased machine utilization capacity and flexible deployment
- + Complete solution from a single source
- + Operator-friendly production management with a convenient production control software for operating an automated and integrated system
- + Stable process quality
- + Optimized use of space with compact component parts
- + Optimum pallet access at the setup station
- + Customized expansions with machining centers, setup stations and pallet storage positions
- + Valuable experience garnered from a host of automation projects

SOFTWARE OPTIONS

GROB-NET⁴Industry

GROB-NET⁴Industry uses web technology to create cross-plant transparency throughout the production process. The applications within GROB-NET⁴Industry modularly developed by GROB, network and digitalize production processes to facilitate paperless communication – for even greater productivity.

GROB⁴Line



The machine in sight via smartphone

- Proactive messages from the machine and notification in case of machine shutdown
- Mobile access to the machines

GROB⁴Analyze



Feedback from the machine for the CIP process

- Visualization of stored machine states
- User-friendly data preparation for the improvement process

GROB⁴Coach



Programming, simulation, training

- Programming of part programs
- Effective, PC-supported training software for CNC novices and experts

GROB⁴Simulate



Complex processes and parts simply simulated

- Avoidance of collisions
- Simulation of the actual NC code and the mean values

GROB⁴Interface



Easy route to machine communication

- Data transfer straight from the machine control system
- Information retrieval without additional hardware having to be installed

GROB⁴Connect



Connection from the real world to the ERP system

- Coupling the machine to the ERP system
- Transmission of all production-relevant data to machine operators via web technology

GROB⁴Portal



Secure access to the Cloud

- Convenient administration of the applications at one interface
- Access to all applications with just one login

GROB⁴Automation



Intuitive production control software for unmanned operation

- Support for unmanned shifts with simple operation
- Autonomous part management

GROB⁴Track



Machine axes in view at all times

- Machine state monitoring
- Reduction of unscheduled machine downtimes

GROB⁴Care



Service and maintenance portal

- Convenient procurement of spare parts via an online portal without great effort
- Clarification of part availability and display of customer-specific prices

Software option packages – the specialist solution

Depending on where your main focus for the machining of large components lies, you can employ additional software options from GROB to systematically gear your large machining center to suit your particular requirements.

CYCLE 996 (for SIEMENS control system) | KinematicsOpt (für HEIDENHAIN control system)

CYCLE996 or KinematicsOpt are control-specific kinematic cycles for machine calibration.

Mode of operation

- Determination of the current kinematics via a 3D touch probe and a high-precision gauge ball
- Display of measured values for analyzing the geometric deviation
- Provisioning of the measurement results in the kinematics table for the swivel cycles to optimize the swivel accuracy, e.g. CYCLE 800 (SIEMENS) or plane function (HEIDENHAIN)

Specific feature

- In order to achieve improved accuracy, the respective swivel cycle must be used.

GROB kinematic measurement inspection equipment set

In addition to the kinematic measuring cycles, all measuring instruments are supplied in an inspection equipment set.

Included components

- Two carbon magnetic bases with high-precision gauge ball for screwing in
- Parallel gauge block
- Magnetic foot with switchable permanent magnets
- Precision lever-type dial indicator, scale division value: 0.002 mm
- High-precision measuring ring and other accessories



Energy efficiency package

For efficient energy usage by reducing the machine's power consumption.
(Available for SIEMENS control system)

OPTION PACKAGE ◀ ▶ MACHINE • AVAILABILITY AT A GLANCE !				
	GROB inspection equipment set	CYCLE996	KinematicsOpt	Energy efficiency package
SIEMENS 840D sl	•	•	—	•
HEIDENHAIN TNC 640	•	—	•	—

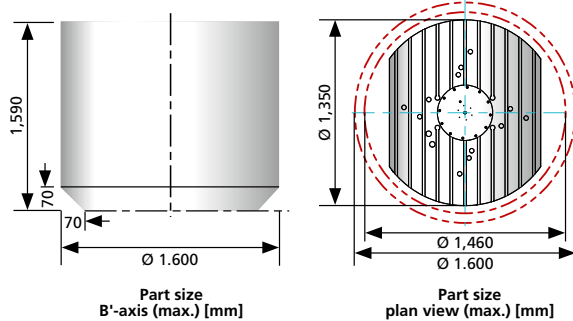
MACHINE CHARACTERISTICS



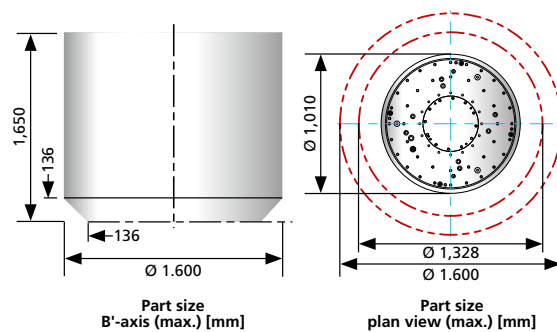
G1050 ▶ Maximum part size ▶ Basic machine

4-axis version

Rotary table with T-slots

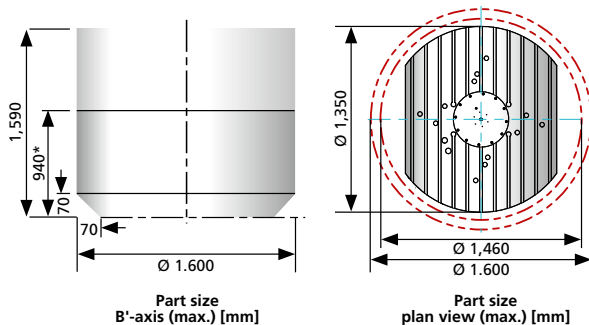


Rotary table with grid hole pattern

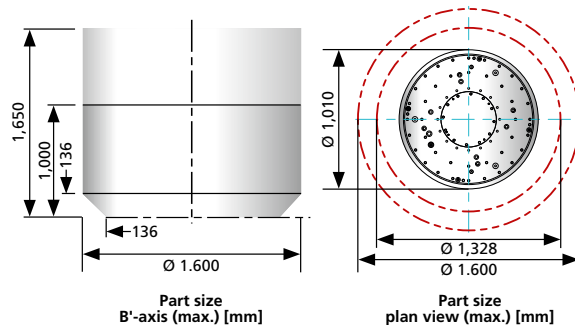


5-axis version

Rotary table with T-slots



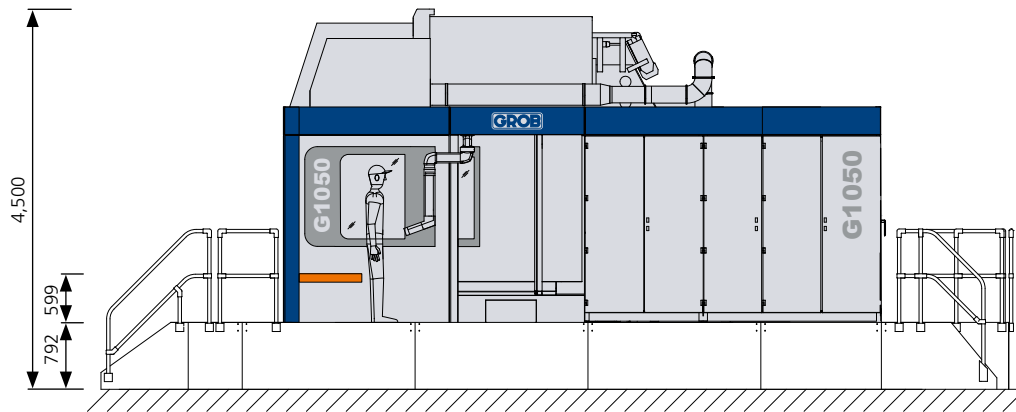
Rotary table with grid hole pattern



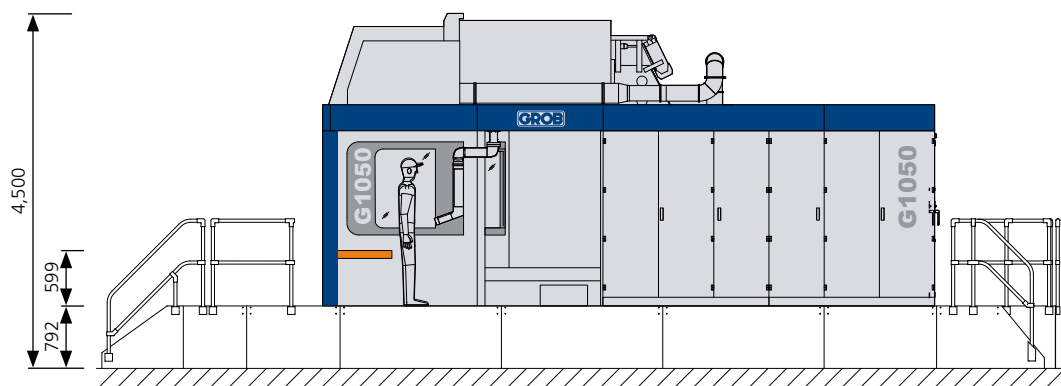
* Maximum part size for vertical spindle position

G1050 ▶ Dimensioning ▶ Basic machine

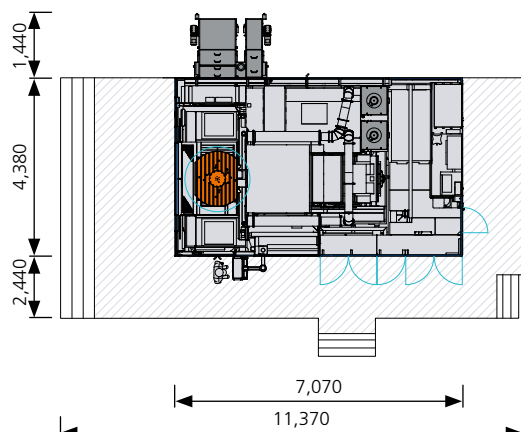
4-axis version (side view)



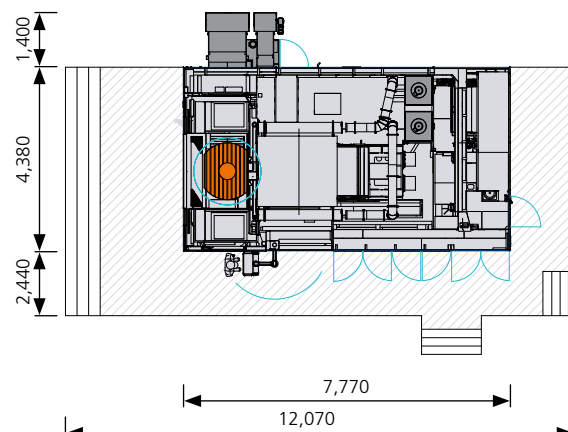
5-axis version (side view)



4-axis version (plan view)



5-axis version (plan view)



Dimension values [mm], not taking into account preventive maintenance and operating areas

Machine concept
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Machine components
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Software options
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Machine characteristics
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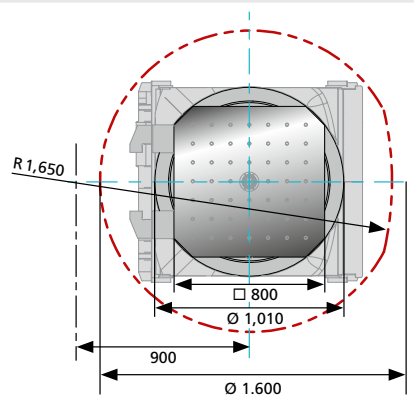
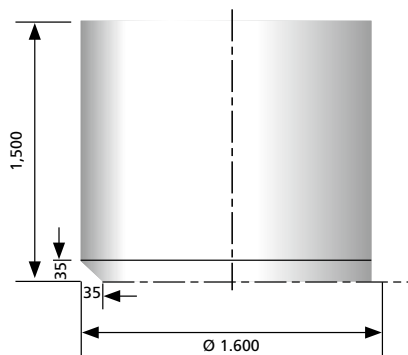
Technical data
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MACHINE CHARACTERISTICS

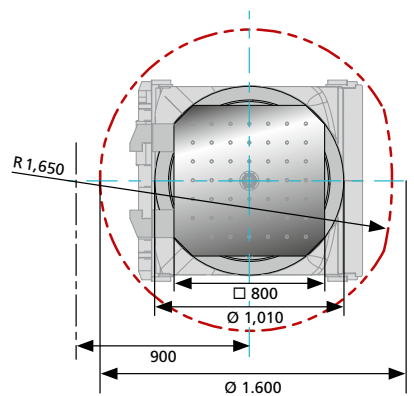
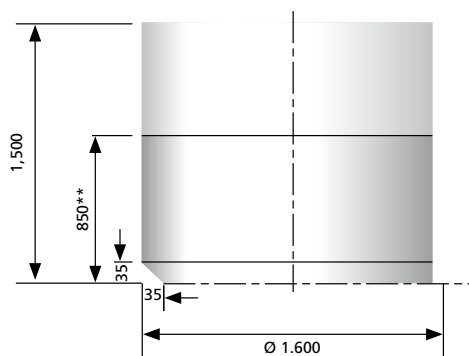


G1050 ▶ Maximum part size ▶ With pallet changer *

4-axis version



5-axis version

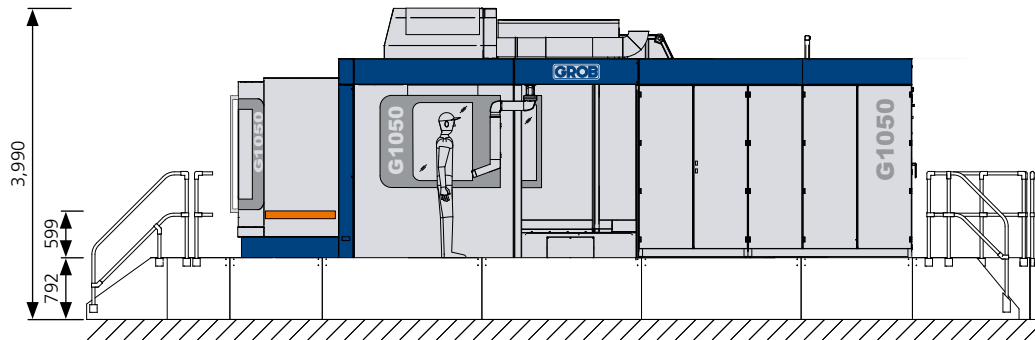


*Maximum part size with restrictions

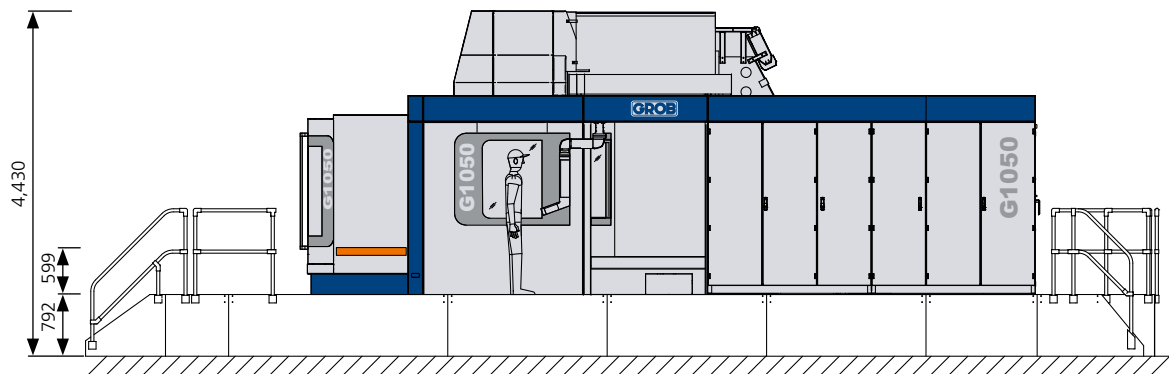
** Maximum part size for vertical spindle position

G1050 ▶ Dimensioning ▶ With pallet changer

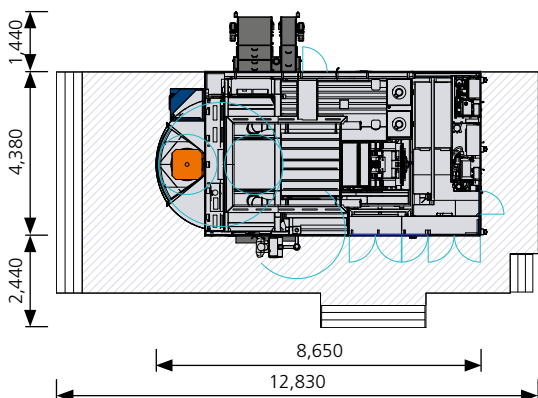
4-axis version (side view)



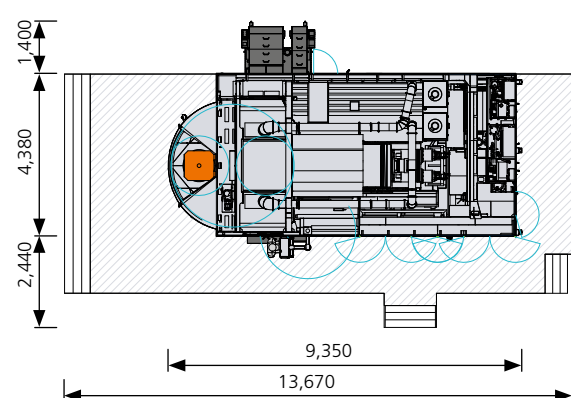
5-axis version (side view)



4-axis version (plan view)



5-axis version (plan view)



Dimension values [mm], not taking into account preventive maintenance and operating areas

TECHNICAL DATA

HSK-A63

	G1050 – 5-axis version			
SLIDE				
Working travels in X'-/Y-/Z-/W-axis [mm]	1,600/1,700/1,540/300			
Speeds in X'-/Y-/Z-/W-axis [m/min]	60/60/50/35			
Max. acceleration in X'-/Y-/Z-/W-axis [m/s²]	4 ⁽¹⁾ 6/5/4.6/4.6			
Max. feed force in X'-/Y-/Z-/W-axis [kN]	8/8/8/10			
Accuracy (ISO 230-2:2006)	0.010			
► Positioning accuracy in X'-/Y-/Z-axis [mm]				
► Repeat precision of positioning in X'-/Y-/Z-axis [mm]	<0.005			
MAIN SPINDLE				
Tool interface ⁽²⁾ for short hollow taper tools acc. to ISO 12164-1	HSK-A63			
Diameter at front bearing of spindle bearing [mm]	80			
Speed n _{max} [rpm]	16,000			
Max. drive power at 100%/40% duty cycle [kW]	25/32			
Max. spindle torque at 100%/40% duty cycle [Nm]	159/206			
Chip-to-chip time t ₁ according VDI 2852 [s] relative to speed [rpm] (SIEMENS 840D sl)	5.6 to n = 11,000			
DISK-TYPE TOOL MAGAZINE	2-disk magazine		4-disk magazine	
Tool interface ⁽²⁾ for short hollow taper tools acc. to ISO 12164-1	HSK-A63	HSK-A63	HSK-A63	HSK-A63
Number of tool pockets in disk1 2 3 4 (extra-long tools)	57 60	45 60 (48+12)	57 60 60 60	45 60 (48+12) 60 60
Max. tool length [mm] (extra-long tools)	Disk 1: 500 Disk 2: 300 –	Disk 1: 500 Disk 2: 300 (850) –	Disk 1: 500 Disk 2: 300 Disk 3-4: 300	Disk 1: 500 Disk 2: 300 (850) Disk 3-4: 300
Max. tool diameter [mm]				
► No diameter restrictions for adjacent pockets	68		68	
► In case of unoccupied adjacent pockets	235		Disk 1-2: 235 Disk 3-4: 170	
Max. tool weights [kg] (per pocket / per disk)	12/180		12/180	
Max. torque around gripper groove [Nm]	12		12	
PART				
Table load [kg]	4,000			
Interference diameter [mm]	1,600 ⁽³⁾			
CONNECTION RATINGS				
Power requirements at 3 AC 400 V/50 Hz [kVA]	at least 78			
Compressed air [bar]	5			
WEIGHT (approx.)				
Total weight [kg] (without/with pallet changer)	48,000/51,000			
EQUIPMENT LEVELS				
Automatic pallet changer	2-fold			
Pallet size [mm]	1,000 x 1,000 (optional: 800 x 800, 1,000 x 800 and 1,000 x 1,250)			
Max. pallet load [kg] ⁽⁴⁾	2,300			
Tool magazine expansion	TM200; TM309; TM374 (HSK-A63)		TM180; TM251 (HSK-A100)	

⁽¹⁾ Eco version ⁽²⁾ Use of other tool interfaces on request ⁽³⁾ With pallet changer version with restrictions in the work area

⁽⁴⁾ Relative to a pallet size of 1,000 x 1,000

	G1050 – 4-axis version			
	1,600/1,200/1,300/–			
	60/60/60/–			
	4 ⁽¹⁾ 6/4.5 ⁽¹⁾ 6.5/5/–			
	8/8/10/–			
	0.010			
	<0.005			
	HSK-A63		HSK-A63	
	80		65	
	16,000		30,000	
	25/32		40/53	
	159/206		48/63	
	5.3 to n = 10,000		5.3 to n = 15,000	
2-disk magazine			4-disk magazine	
	HSK-A63	HSK-A63	HSK-A63	HSK-A63
	57 60	45 60 (48 + 12)	57 60 60 60	45 60 (48 + 12) 60 60
	Disk 1: 500 Disk 2: 300 –	Disk 1: 500 Disk 2: 300 (850) –	Disk 1: 500 Disk 2: 300 Disk 3-4: 300	Disk 1: 500 Disk 2: 300 (850) Disk 3-4: 300
	68		68	
	235		Disk 1-2: 235 Disk 3-4: 170	
	12/180		12/180	
	12		12	
	4,000			
	1,600 ⁽³⁾			
	at least 78			
	5			
	40,000/43,000			
	2-fold			
	1,000 x 1,000 (optional: 800 x 800, 1,000 x 800 and 1,000 x 1,250)			
	2,300			
	TM200; TM309; TM374 (HSK-A63)		TM180; TM251 (HSK-A100)	

Subject to technical changes without prior notice

TECHNICAL DATA

HSK-A100

		G1050 – 5-axis version	
SLIDE			
Working travels in X'-/Y-/Z-/W-axis [mm]		1,600/1,700/1,540/300	
Speeds in X'-/Y-/Z-/W-axis [m/min]		60/60/50/35	
Max. acceleration in X'-/Y-/Z-/W-axis [m/s ²]		4 ⁽¹⁾ 6/5/4.6/4.6	
Max. feed force in X'-/Y-/Z-/W-axis [kN]		10/13.5/15/10	
Accuracy (ISO 230-2:2006)		0.010	
► Positioning accuracy in X'-/Y-/Z-axis [mm]			
► Repeat precision of positioning in X'-/Y-/Z-axis [mm]		<0.005	
MAIN SPINDLE			
Drive unit: standard	Tool interface ⁽²⁾ for short hollow taper tools acc. to ISO 12164-1	HSK-A100	
	Diameter at front bearing of spindle bearing [mm]	110	
	Speed n _{max} [rpm]	10,000	
	Max. drive power at 100%/40% duty cycle [kW]	54/65	
	Max. spindle torque at 100%/40% duty cycle [Nm]	478/582	
	Chip-to-chip time t ₁ according VDI 2852 [s] relative to speed [rpm] (SIEMENS 840D sl)	5.6 to n = 6,000	
Drive unit: options	Tool interface ⁽²⁾ for short hollow taper tools acc. to ISO 12164-1		
	Diameter at front bearing of spindle bearing [mm]		
	Speed n _{max} [rpm]		
	Max. drive power at 100%/40% duty cycle [kW]		
	Max. spindle torque at 100%/40% duty cycle [Nm]		
	Chip-to-chip time t ₁ according VDI 2852 [s] relative to speed [rpm] (SIEMENS 840D sl)		
DISK-TYPE TOOL MAGAZINE		2-disk magazine	4-disk magazine
Tool interface ⁽²⁾ for short hollow taper tools acc. to ISO 12164-1		HSK-A100	HSK-A100
Number of tool pockets in disk1 2 3 4 (extra-long tools)		27 30	21 30 (24+6) 30 30
Max. tool length [mm] (extra-long tools)		Disk 1: 500 Disk 2: 300 –	Disk 1: 500 Disk 2: 300 (850) Disk 3-4: 300
Max. tool diameter [mm]			
► No diameter restrictions for adjacent pockets		130	130
► In case of unoccupied adjacent pockets		325	Disk 1-2: 325 Disk 3-4: 260
Max. tool weights [kg] (per pocket / per disk)		50/300	50/300
Max. torque around gripper groove [Nm]		80	80
PART			
Table load [kg]		4,000	
Interference diameter [mm]		1,600 ⁽⁴⁾	
CONNECTION RATINGS			
Power requirements at 3 AC 400 V/50 Hz [kVA]		at least 78	
Compressed air [bar]		5	
WEIGHT (approx.)			
Total weight [kg] (without/with pallet changer)		48,000/51,000	
EQUIPMENT LEVELS			
Automatic pallet changer		2-fold	
Pallet size [mm]		1,000 x 1,000 (optional: 800 x 800, 1,000 x 800 and 1,000 x 1,250)	
Max. pallet load [kg] ⁽⁵⁾		2,300	
Tool magazine expansion		TM200; TM309; TM374 (HSK-A63)	TM180; TM251 (HSK-A100)

⁽¹⁾ Eco version ⁽²⁾ Use of other tool interfaces on request

⁽⁴⁾ With pallet changer version with restrictions in the work area

⁽³⁾ Motorized spindle with cross-feed

⁽⁵⁾ Relative to a pallet size of 1,000 x 1,000

G1050 – 4-axis version					
	1,600/1,200/1,300/–				
	60/60/60/–				
	4 ⁽¹⁾ 6/4.5 ⁽¹⁾ 5/5/–				
	20/20/20/–				
	0.010				
	<0.005				
	HSK-A100				
	100				
	10,000				
	20/26				
	262/340				
	5.3 to n = 7,000				
	HSK-A100	HSK-A100	HSK-A100	HSK-A100	HSK-A100 ⁽³⁾
	120	100	110	120	100
	6,000	6,000	9,000	7,200	6,000
	63/78	20/26	54/65	80/100	31.5/36
	2,000/2,400	262/340	470/575	1,273/1,666	301/344
	5.3 to n = max	5.3 to n = max	5.3 to n = 6,000	5.3 to n = 4,500	On request
2-disk magazine			4-disk magazine		
	HSK-A100	HSK-A100	HSK-A100	HSK-A100	
	27 30	21 30 (24+6)	27 30 30 30	21 30 (24+6) 30 30	
	Disk 1: 500 Disk 2: 300 –	Disk 1: 500 Disk 2: 300 (850) –	Disk 1: 500 Disk 2: 300 Disk 3-4: 300	Disk 1: 500 Disk 2: 300 (850) Disk 3-4: 300	
	130		130		
	325		Disk 1-2: 325 Disk 3-4: 260		
	50/300		50/300		
	80		80		
	4,000				
	1,600 ⁽⁴⁾				
	at least 78				
	5				
	40,000/43,000				
	2-fold				
	1,000×1,000 (optional: 800×800, 1,000×800 and 1,000×1,250)				
	2,300				
	TM200; TM309; TM374 (HSK-A63)			TM180; TM251 (HSK-A100)	

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