#YourAccessToSuccess



5-AXIS UNIVERSAL MACHINING CENTERS



This is who we are

GROB-WERKE



Technology at its best STEP INTO A GREEN FUTURE WITH US

At GROB, we strive for continuous progress and improvement. Not only do we strive to develop outstanding solutions and products for our customers, but we also seek to make a contribution to our environment and future generations. This is firmly anchored in our corporate philosophy and lived every day.

We therefore utilize photovoltaics and geothermal energy in our locations and support a wide variety of social projects. But we also place great emphasis on SUSTAINABILITY in our internal departments. Our products are based on the highest energy efficiency and regenerative drive systems. We integrate our supplier network in reducing the carbon footprint.

Excellence in sustainable technology



OUR PRODUCT RANGE

#MachiningTechnology #UniversalMachiningCenters #AssemblyPlants #Electromobility #Automation #AdditiveManufacturing #Digitalization #NewAndQualityCheckedUsedMachines #Service

Concentrated competence worldwide

INTELLIGENT TECHNOLOGY IS HUMAN

For generations, we at GROB have lived and experienced this principle by making customer requirements the focus of our work. The result is sophisticated technology creating more efficient production processes worldwide and delivering highest quality.



With a high degree of creativity and technical intuition, as well as the best engineering expertise, our developers have worked hard to earn the reputation of being a technology leader.



From pre-assembly to machine assembly to process commissioning – our employees demonstrate their expertise with optimally coordinated workflows.



With method development and structured problem solving, our employees in Engineering develop innovative concepts representing milestones for precision, dynamics, and reliability.



COMMISSIONING

With simulation techniques and virtual commissioning, we achieve the highest adherence to delivery dates and product quality.



The high degree of vertical integration along the entire value creation chain, numerous machining technologies and our employees' distinctive specialist knowledge create the best conditions for state-of-the-art production.



Our production plants in Germany, Brazil, the USA, China, Italy and India have technical application centers for the machining and electromobility sectors, where our customers can experience GROB technologies up close.



5-axis universal machining centers by GROB

THE RIGHT CONCEPT FOR YOUR INDUSTRY

5-AXIS UNIVERSAL MACHINING CENTERS

Machine concept

Machine components

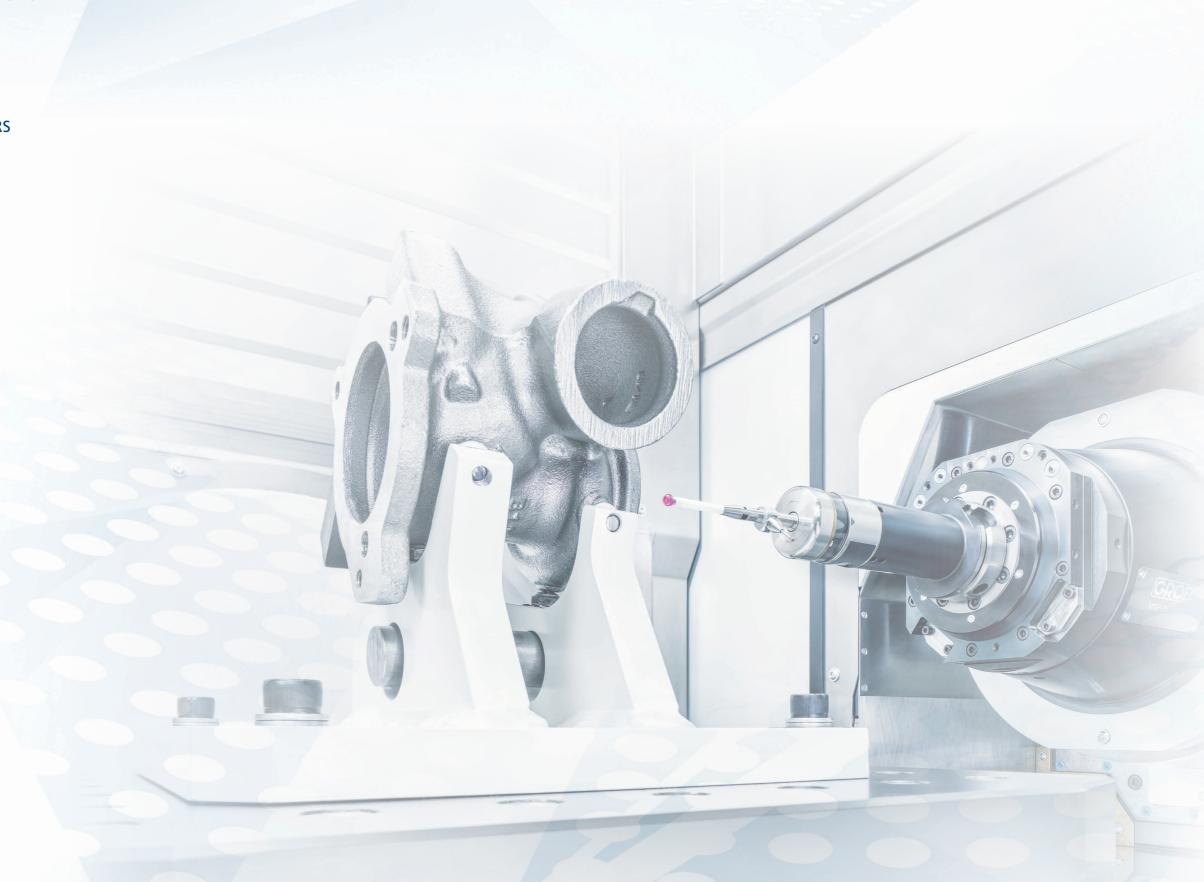
Technical data

TECHNOLOGY OPTIONS

AUTOMATION SOLUTIONS

DIGITALIZATION

SERVICE







Smart entry into GROB technology

THE ACCESS-SERIES

Short payback period with best machining quality: No matter whether mechanical engineering or automotive – our basic models G350a and G550a cover a convincingly broad range of possible applications. The access-series meets the broadest range of part requirements, offering customers an exclusive entry into the unique GROB technology.

- High productivity and process reliability
- Optimized availability and durability
- Excellent maintainability
- Designed for automation solutions



OUR PORTFOLIO #G350a #G550a

Smart and cost-conscious entry

THE BASIC MODELS G350a AND G550a

The option of modular expansion with automation packages makes the G350a and G550a base models the perfect solution for your efficient and cost-conscious production facility. Three linear axes and two rotary axes permit 5-sided machining.

The drive concept is based on a ball screw and for the G550a on a weight compensation in the Y-axis. A torque motor in the B-axis ensures dynamic and wear-free machining of parts.

ERGONOMIC AND SAFE

- Perfect view of the machining operation through a laminated glass safety screen
- Wide-opening work area doors for optimized accessibility and crane loading

MACHINING • With excellent chip fall

UNIQUE OVERHEAD

and reduced heat input into the part



SELECTION BETWEEN DIFFERENT MACHINE CONTROL SYSTEMS

• Choice between SIEMENS or HEIDENHAIN machine control systems

DISK-TYPE TOOL MAGAZINE

• Fast chip-to-chip times thanks to the integrated disk-type tool magazine with double gripper technology

EFFICIENT MACHINE COOLING

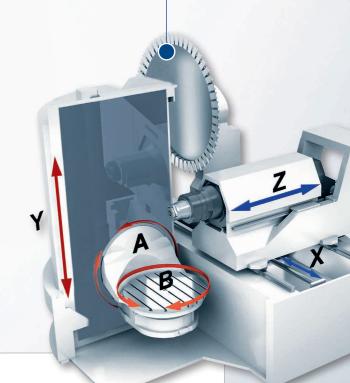
• Active temperature control of machine components

STABLE SPINDLE AXIS

 Special design for consistent stability in every machining position

UNIQUE AXIS CONCEPT

- Optimally designed operating point (TCP) for especially high cutting volume
- Longest Z-travel path of this machine class
- Extremely large swivel range of 230° in the A-axis
- Largest possible part in the work area can be machined with maximum tool length



Optimal chip fall

OVERHEAD MACHINING & ADDITIONAL ANGULAR POSITIONS

Due to the slim spindle design and the extremely large swivel range of the A-axis, the table can be positioned in various angular positions. This permits optimum accessibility to the part for the tool.

Thanks to the unique axis arrangement with horizontal spindle bearing, chips fall directly into the chip shaft and the part remains largely free of interfering chip accumulations.







UNIQUE AXIS CONCEPT

- Best tool life due to perfect chip fall
- Simple cleaning of components ahead of the part/pallet change
- No cutting fluid residue in the part
- No heat input into the machine from chips left on part, clamping equipment, and machining table



Tunnel concept

PART MACHINING WITH MAXIMUM TOOL LENGTH

Thanks to the special axis concept, the full tool length can be employed in any axis position, even with maximum part size. The "tunnel" concept allows the entire work area to be utilized, since the motorized spindle and tool can fully retract from the work area towards the rear.







MAX. TOOL LENGTH ➤ [mm]		
	G350 a	G550 a
Single disk-type tool magazine HSK-A63	365	465
Compact double disk-type tool magazine HSK-A63 (outside/inside)	365/200	465/200
Single disk-type tool magazine HSK-A100	_	500
Compact double disk-type tool magazine HSK-A100 (outside/inside)	_	500/200

Machine components

GROB MOTORIZED SPINDLES



GROB SPINDLE DIAGNOSTICS (GSD) - OPTION

GROB Spindle Diagnostics is a system that automatically monitors both the condition of the motorized spindle (condition monitoring) and the vibrations that occur during machining.

- System for automatic condition monitoring of the motorized spindle
- Vibrations that occur are monitored during machining and switched off if they exceed limits
- Service life of the motorized spindle extended through identification of critical operating states
- Perfect process optimization is possible
- Machine downtimes avoided through scheduled maintenance

Spindle types – Availability at a glance!

Standard

Option

- Not available

SPINDLE TYPE ↔ MACHINE					
Tool interface for hollow taper shanks acc. to ISO 12164-1	HSK- A63	HSK- A63	HSK- A63	HSK- A100	HSK- A100
Spindle type	5	9/25	1	7	3
Speed n _{max} [rpm]	12,000	16,000	18,000	9,000	10,000
Max. spindle torque at 100 %/40 % duty cycle [Nm]	63.7/ 82.8	159/ 206	34.6/ 46.6	470 <i>/</i> 575	262/ 340
Spindle bearing Ø at front bearing [mm]	70	80	70	110	100
Max. drive power at 100 %/40 % duty cycle [kW]	40/ 52	25/ 32	29/ 39	54/ 65	20/ 26
Spindle bearing lubrication ▶ Lifetime lubrication	•	•	•	•	•
▶ Oil/air lubrication	_	0	_	_	_
G350a	•	0	0	_	_
G550a	•	0	0	0	0

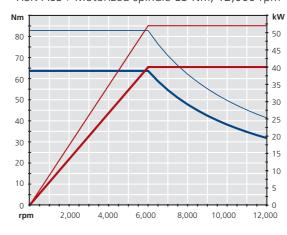
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Torque - rotational speed - output

MOTORIZED SPINDLE VERSIONS

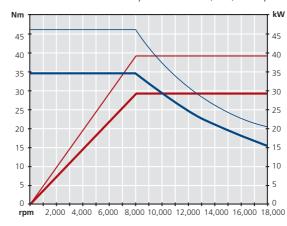
TYPE 5:

HSK-A63 ▶ Motorized spindle 83 Nm, 12,000 rpm



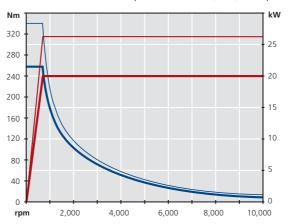
TYPE 1:

HSK-A63 ▶ Motorized spindle 47 Nm, 18,000 rpm



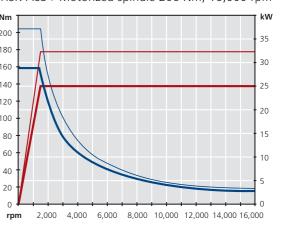
TYPE 3:

HSK-A100 ▶ Motorized spindle 340 Nm, 10,000 rpm



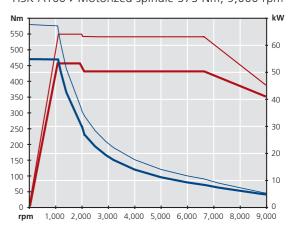
TYPE 9/25:

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



TYPE 7:

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



— Power S1: 100 % duty cycle — Power S6: 40 % duty cycle — Torque S1: 100 % duty cycle — Torque S6: 40 % duty cycle

Tilting rotary table

TABLE VERSIONS G350a

TECHNICAL DATA – ROTARY AXES	
A-axis swiveling angle [°]	-185/+45
Max. A-axis rotational speed [rpm]	12
A-/B-axis drive type	Worm gear/ torque motor
B-axis angle of rotation [°]	nx360
Max. B-axis rotational speed [rpm]	50

A-/B-axis arrangement

MAXIMUM PART SIZE



iviax. B-axis rotational speed [rpm]	50			
TILTING ROTARY TABLE WITH T-SLOTS ARRA	ANGED IN PARALLEL (STANDA	ARD)	A-/B-axis max. [mm]	B-axis max. [mm] (for A-axis 0°)
Basic machine	_			
Aligning slots (quantity/width/quality)	1 x 14 H7			Ø 500
Clamping slot (quantity/width/quality)	4x14 H12		Ball R415	999
Table diameter [mm]	570		A-axis	457
Interference diameter [mm]	720		Ø 620 Top edge of rotary table	Ø 620 Ø 720
TILTING ROTARY TABLE WITH PALLET (OPTIO	ON)		A-/B-axis max. [mm]	B-axis max. [mm] (for A-axis 0°)
Basic machine with pallet				
Pallet size [mm]	400×400		Ball R415	611.5
Max. pallet load [kg]	340		Ø 600** Top edge of pallet Top edge of pallet	Ø 600** Ø 720*
Basic machine with pallet changer				
Pallet size [mm]	400×400		Ball R415	© 500 B710
Max. pallet load [kg]	340		Center of A-axis OF Top edge of pallet	009 0 000 0000

^{*}Usable range without pallet storage system **Usable range with pallet storage system Subject to technical changes without prior notice

Tilting rotary table

TABLE VERSIONS G550a

TECHNICAL DATA – ROTARY AXES	
A-axis swiveling angle [°]	-185/+45
Max. A-axis rotational speed [rpm]	12
A-/B-axis drive type	Worm gear/ torque motor
B-axis angle of rotation [°]	nx360
Max. B-axis rotational speed [rpm]	50

A-/B-axis arrangement

MAXIMUM PART SIZE



iviax. B-axis rotational speed [rpm]	50			
TILTING ROTARY TABLE WITH T-SLOTS ARRANG	GED IN PARALLEL (STANDA	ARD)	A-/B-axis max. [mm]	B-axis max. [mm] (for A-axis 0°)
Basic machine				
Aligning slots (quantity/width/quality)	1 x 14 H7			Ø 850
Clamping slot (quantity/width/quality)	6x14 H12		Ball R525 Center of	\$50
Table diameter [mm]	770		4-axis	280 8
Interference diameter [mm]	900		Ø 900 Top edge of rotary table	Ø 900
TILTING ROTARY TABLE WITH PALLET (OPTION)			A-/B-axis max. [mm]	B-axis max. [mm] (for A-axis 0°)
Basic machine with pallet				
Pallet size [mm]	630×630		Ball R525	Ø 850
Max. pallet load [kg]	600		Center of A-axis 900 Top edge of pallet	Ø 900 D
Basic machine with pallet changer				
Pallet size [mm]	630×630		Ball R525	R ₉₀
Max. pallet load [kg]	600		Center of A-axis	8855 8855 00 9000

Subject to technical changes without prior notice

Versatile combinations

TOOL MAGAZINES BY GROB

GROB tool magazine technology is set apart by fast chip-to-chip times, a small space requirement, and optimized accessibility. You will also profit from fast tool change thanks to a highly dynamic tool changer arm with a swiveling double gripper, loading and unloading in parallel to machining operation, and permanent access to the tool magazine disk.



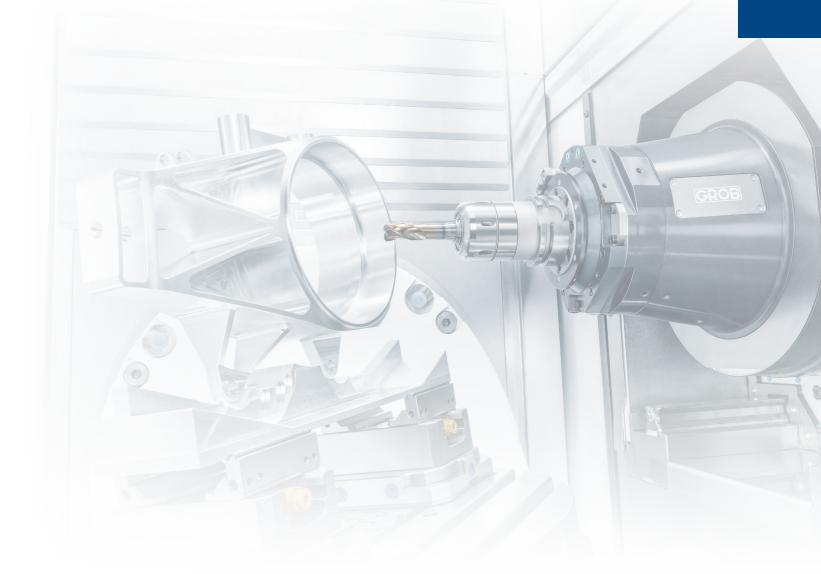
SINGLE/COMPACT DOUBLE DISK-TYPE TOOL MAGAZINE

• Vertically adjacent magazine disks (disks can be rotated individually)



ADDITIONAL TOOL MAGAZINE TM (OPTION)

- Increases the basic machine's tool capacity with block-wise setup of up to:
 - ▶ six HSK-A63 tools for TM200
 - ▶ five HSK-A100 tools for TM180
- The additional tool magazine can be equipped with tools during the machining operation
- Tool provision in parallel with machining
- Tool and magazine management through the control system of the machine



Number of tool pockets

G350a/G550a

G350a → BASIC MACHINE ↔ ADDITIONAL TOOL MAGAZINE TM					
Motorized spindle Tool Number of tool pockets(1) Total number of tools of the basic machine and the TM					
Single disk-type tool magazine		TM200			
For all originals to see	HSK-A63	34/40	228/234		
For all spindle types	HSK-A63 ⁽²⁾	50/60	244/253		
Compact double disk-type tool magazine		TM200			
For all spindle types	HSK-A63 ⁽²⁾	90/100	_		

G550a ► BASIC MACHINE ◆ ADDITIONAL TOOL MAGAZINE TM						
Single disk-type tool magazine		TM200	TM180			
For all spindle types	HSK-A63	50/60	244/253	_		
For all spindle types	HSK-A100 ⁽²⁾	30/34	_	204/208		
Compact double disk-type tool magazine		TM200	TM180			
For all spindle types	HSK-A63 ⁽²⁾	90/100	_	_		
roi all spiriule types	HSK-A100 ⁽²⁾	46/50	_	_		

(1)Depending on machine configuration

⁽²⁾Option

Subject to technical changes without prior notice

GROB⁴Pilot

YOUR POWERFUL MACHINE **CONTROL PANEL**

The innovative GROB4Pilot machine control panel offers the machine operator a convenient working environment on the machine through a multi-functional user interface. The entire production process – from the CAD model to the NC simulation – is now digitally mapped on the GROB4Pilot control system itself.

- Enhanced user comfort thanks to simplified and intuitive machine operation
- Access to the GROB-NET⁴Industry platform
- Expanded applications for increased efficiency
- Paperless production is possible

24" MULTI-TOUCH DISPLAY

• For intuitive operation

2x POWERRIDE

• Convenient operation thanks to multifunctional assignment

OPTIMIZED KEYBOARD

• For easy input



FULLY-AUTOMATED HOMING AT THE PUSH OF A BUTTON

• From any position – our universal machining centers as well as automated systems automatically move to the home position

3D-SPACEMOUSE® (OPTION)

• For controlling CAD applications



FLEXIBLE DISPLAY LAYOUT

• Free division into up to three apps

AVAILABLE CNC CONTROL SYSTEM PROVIDERS FOR GROB4PILOT

SIEMENS SINUMERIK ONE HEIDENHAIN TNC7 G350a G550a

The implementation of GROB⁴Pilot can differ between SIEMENS and HEIDENHAIN

Standard

Option

• For alternative screen use in addition to the multi-touch function

TRACKBALL

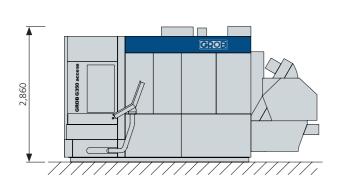
Example illustration

Footprint

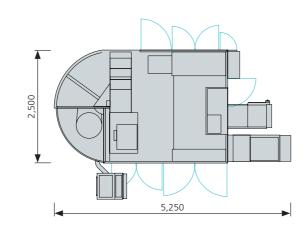
G350a



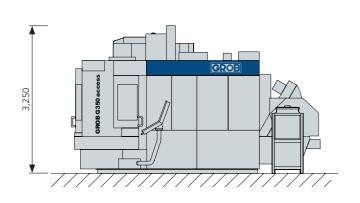
Basic machine

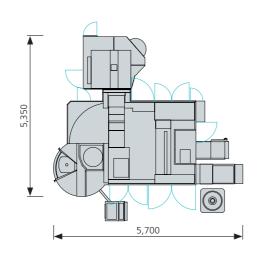


Side view/top view max. [mm]



Basic machine with pallet changer, additional tool magazine and cooling unit





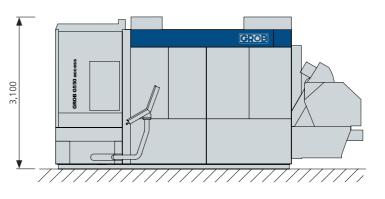
Footprint

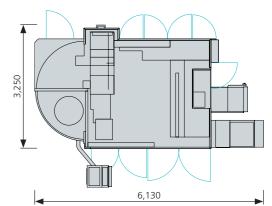
G550a



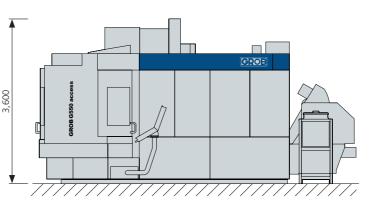
Side view / top view max. [mm]

Basic machine



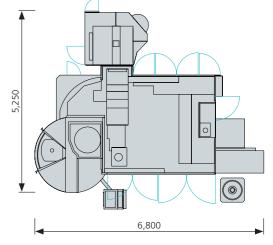


Basic machine with pallet changer, additional tool magazine and cooling unit



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

operating areas or emulsion and chip disposal



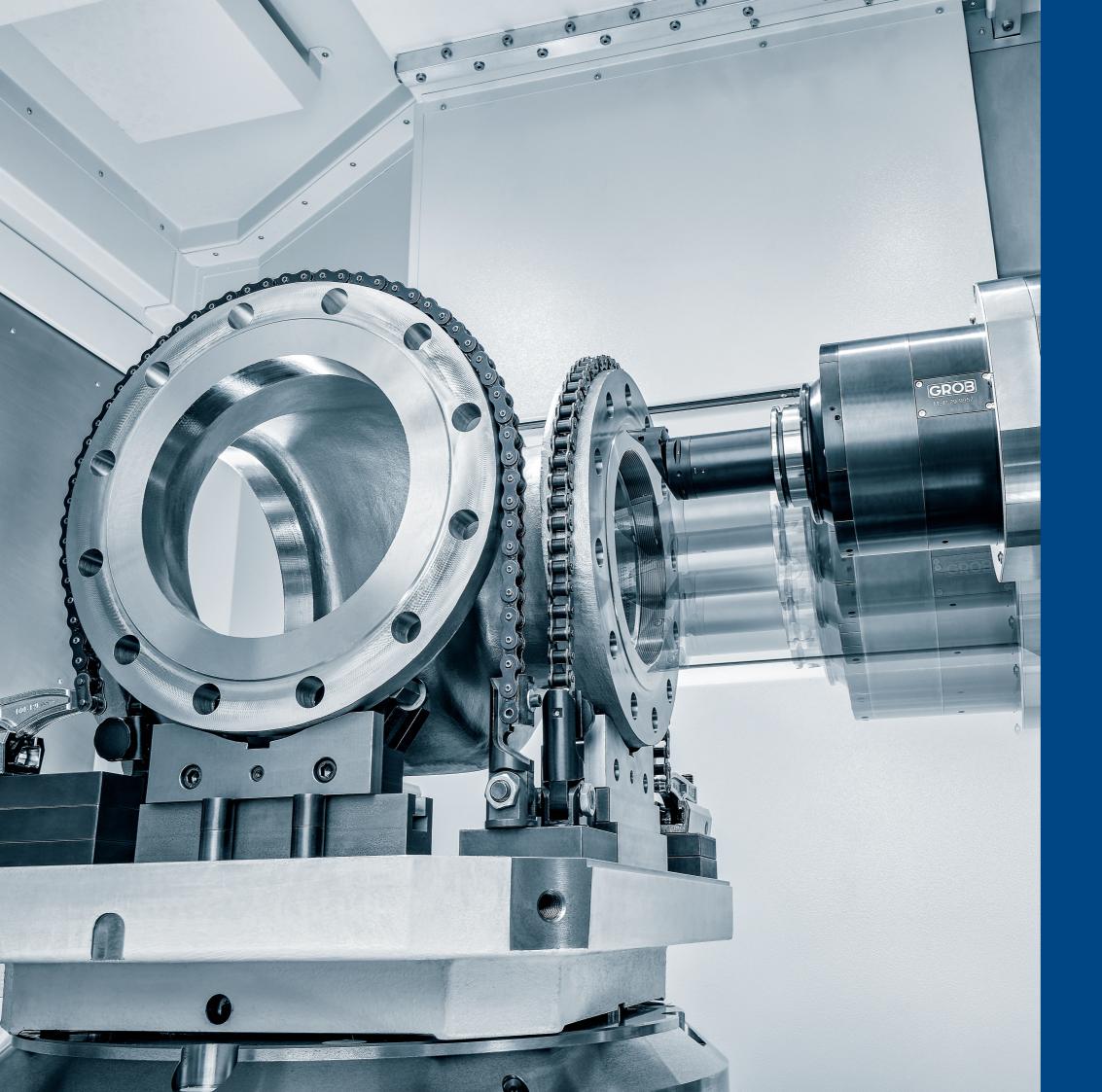
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Technical data – overview

G350a/G550a

MACHINE TYPE		G350a		G550a				
SLIDE								
Working travels in X-/Y-/Z-axis [mm]		600/770/805			800/9	50/1,020		
Max. speeds in X-/Y-/Z-axis [m/min]		60/42/60			60/42/60			
Max. accelerations in X-/Y-/Z-axis [m/s ²] ⁽¹⁾		5/3/10			6/4/8			
Max. feed forces in X-/Y-/Z-axis [kN] ⁽¹⁾		8/8/8			8/8/10 ⁽¹⁾			
Positioning accuracy* in X-/Y-/Z-axis [mm]		0.006			0.	006		
Repeat precision of positioning* in X-/Y-/Z-axis [mm]		< 0.0025			<0	.0025		
Positioning accuracy* in A-/B-axis [°]		0.0017/0.0011			0.0017	7/0.0011		
Repeat precision of positioning* in A-/B-axis [°]		0.0008			0.0	8000		
MAIN SPINDLE								
Tool interface for hollow taper shanks acc. to ISO 12164-1		HSK-A63			HSH	K-A63		
Diameter of front spindle bearing [mm]		70				70		
Speed n _{max} [rpm]		12,000			12	,000		
Max. drive power at 100%/40% duty cycle [kW]		40/52			40)/52		
Max. spindle torque at 100%/40% duty cycle [Nm]		63.7/82.8			63.7	7/82.8		
Chip-to-chip time t ₁ according to VDI 2852 [s], SIEMENS control system and tool change process: Pick-up		4.5			4	1.8		
Tool interface for hollow taper shanks acc. to ISO 12164-1	HSK-A63		HSK-A63	HSK-A63	HSK-A63	HSK-A100	HSK-A100	
Diameter of front spindle bearing [mm]	80		70	80	70	110	100	
Speed n _{max} [rpm]	16,000		18,000	16,000	18,000	9,000	10,000	
Max. drive power at 100%/40% duty cycle [kW]	25/32		29/39	25/32	29/39	54/65	20/26	
Max. spindle torque at 100%/40% duty cycle [Nm]	159/206		34.6/46.6	159/206	34.6/46.6	470/575	262/340	
Chip-to-chip time t ₁ according to VDI 2852 [s], SIEMENS control system and tool change process: Pick-up	4.5		4.5	4.8	4.8	6.1	5.9	
DISK-TYPE TOOL MAGAZINE	STM	STM	CDTM	STM	CDTM	STM	CDTM	
TOOL INTERFACE	HSK-A63	HSK-A63	HSK-A63	HSK-A63	HSK-A63	HSK-A100	HSK-A100	
Number of tool pockets ⁽¹⁾	34/40	50/60	90/100	50/60	90/100	30/34	46/50	
Max. tool length [mm]	5.7.10	307.00	307.100	30,00	307.100	30,31	10730	
▶ Vertical disk arrangement (outside/inside)	365/—	365/—	365/200	465/—	465/200	500/—	500/200	
Max. tool diameter [mm] ⁽¹⁾								
 No diameter restrictions for adjacent pockets With diameter restrictions for adjacent pockets (outside/inside) 	86/72 160/—	86/72 160/—	86/72 160/72	86/72 160/—	86/72 160/72	140/124 250/—	140/124 250/100	
Max. tool weight [kg]	8	8	8	8	8	22	22	
Max. tilt moment around gripper groove [Nm]	12	12	12	12	12	40	40	
PART						.0	.0	
Table diameter [mm]		570		770				
Max. table load [kg] (without/with pallet)		400/340				0/600		
Interference diameter [mm]		720			900			
A-axis swiveling angle [°]		-185/+45			-185/+45			
Max. A-axis rotational speed [rpm]		12			12			
Type of drive A-/B-axis [mm]		Worm gear/torque motor			Worm gear/torque motor			
B-axis angle of rotation [°]		nx360		nx360				
Max. B-axis rotational speed [rpm]		50		50				
CUTTING FLUID/CHIP DISPOSAL								
Volume of cutting fluid tank [I]		750				150		
Cutting fluid filter flow rate [I]		220			950 220			
CONNECTION RATINGS		220				.20		
						. 42		
Power requirements at 3 AC 400 V/50 Hz [kVA]		at least 42				ast 42		
Compressed air [bar]		5				5		
WEIGHT (approx.)								
Max. total weight [kg] (without/with pallet changer) (incl. part/tool/cutting fluid)		15,100/16,600			21,500)/25,200		
PROCESS STAGES								
Automatic pallet changer		2-fold		2-fold				
Pallet size [mm]		400×400		630x630				
railet size [fillfi]		12.0			13.0			
		12.0			1	3.0		
Pallet change time according to VDI 2852 [s] (2) Tool magazine expansion		12.0 TM200 (HSK-A63)		TM200 (i	1 (HSK-A63)		HSK-A100)	





Perfect accuracy – automatic – any time TECHNOLOGY OPTIONS

Our innovative technologies enable you to monitor the process in real-time and react immediately to changes. By accurately recording process forces, we identify deviations and potential problems early on before they lead to costly failures.

- Process monitoring
- Accuracy
- Productivity
- Precision machining



OUR PORTFOLIO #G350a #G550a





The ideal automation solution for your project AUTOMATION MADE BY GROB

Our customers in small, medium, and large-scale production have been relying on GROB automation solutions for decades. The experience gained is fed straight into our automation solutions, making GROB a strong partner – for solutions with pallet or part storage systems to highly flexible, turn-key manufacturing lines. GROB automation technology allows you to flexibly adapt to capacities and guarantees pallet and part handling perfectly in tune with your needs.

- Mechanical machining and automation from a single source
- Optimal automation for your production plant
- Responsibility for quality and scheduling with one partner
- Turn-key project management



OUR AUTOMATION PORTFOLIO

#PSS-R #PSS-T #PSS-L #GRC
#FlexibleManufacturingSystems
#TurnkeyManufacturingLines

Automation overview

THE IDEAL AUTOMATION **SOLUTION FOR YOUR MACHINE**

GROB offers components manufactured in-house for the entire product portfolio for semi to fully automatic manufacturing with the highest quality standards.

ROTARY PALLET STORAGE SYSTEM (PSS-R)

• Optimum entry into automated and highly efficient production



PALLET CHANGER SYSTEM

• Allows retooling during part machining



• Expands the G-module to a flexible manufacturing cell

LINEAR PALLET STORAGE SYSTEM (PSS-L)

• Highly automated, flexible manufacturing line for a wide variety of part machining processes



GROB ROBOT CELL (GRC)

 Maximum flexibility and customization in manufacturing









Moving into a digital future INDUSTRY 4.0

Transparency and connectivity – our modular GROB-NET⁴Industry web applications let you network and digitalize your production processes across all plants to make your production even more efficient. From planning to engineering to maintenance, GROB-NET⁴Industry combines relevant modules for increasing productivity and offers you an all-round package for modern production in the Industry 4.0 era.

- GROB⁴INTERFACE easy route to machine communication
- GROB⁴CONNECT connection from the real world to the ERP system
- GROB⁴LINE watch the machine on your smartphone
- GROB⁴ANALYZE machine feedback for the CIP
- GROB⁴ANALYZE-OFFICECLIENT flexible data analysis with hall layout function
- GROB⁴BROWNFIELD digital interconnection of various machines
- GROB⁴TDX transfer tool data automatically
- GROB⁴PARTFLOW process transparency for parts
- GROB⁴TRACK machine axes in view at all times
- GROB⁴OPTIMIZATION motorized spindle process evaluation



OUR SOFTWARE PORTFOLIO

#GrobNet4Industry #InteractiveApplication #Cloud4Machine





Friendly, committed, competent GROB SERVICE

From 24-hour service and a comprehensive range of spare parts and training courses to professional machine maintenance and analysis: The GROB service spectrum offers you a comprehensive range of products and services and is available to you worldwide thanks to our global production plants and service branches.

- Worldwide service network
- Available 24/7/360
- One hotline for everything
- We are right where our customers are



OUR SERVICE PORTFOLIO

#Hotline #Webshop #ServiceAgreements #SpareParts #RepairCenter #Overhaul&Optimization #MotorizedSpindleService #GrobTechnicalAcademy

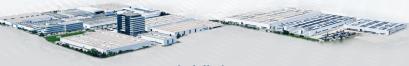
Worldwide throughout the machine service life

GROB – GLOBAL AND INTERNATIONAL

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