*#4wins*

# 4-AXIS UNIVERSAL MACHINING CENTERS.

*This is who we are*

# GROB-WERKE.

*Technology at its best*

# STEP WITH US INTO A GREEN FUTURE.

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. We also value 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 CO2 footprint.

*OUR PRODUCT RANGE.*

*#machiningtechnology #universalmachiningcenters #assemblyplants #electromobility #automation #additivemanufacturing #digitalization #usedmachines #service*

*Concentrated competence worldwide*

# INTELLIGENT TECHNOLOGY IS HUMAN.

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

## RESEARCH & DEVELOPMENT

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.

## ASSEMBLY

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

## ENGINEERING

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

## COMMISSIONING

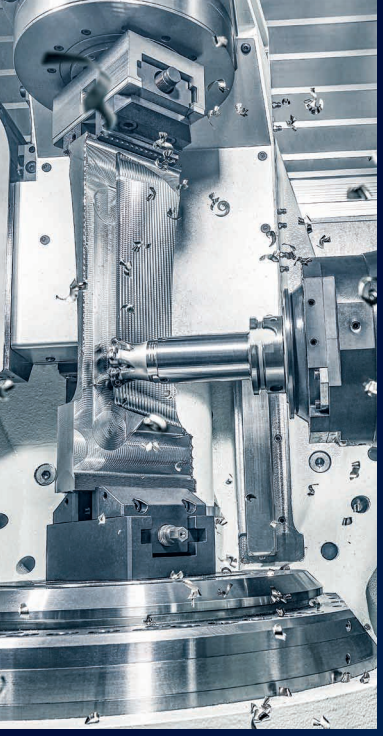
With simulation techniques and virtual commissioning, we achieve the highest adherence to delivery dates and product quality.

## PRODUCTION

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.

## TECHNICAL APPLICATION CENTERS

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.



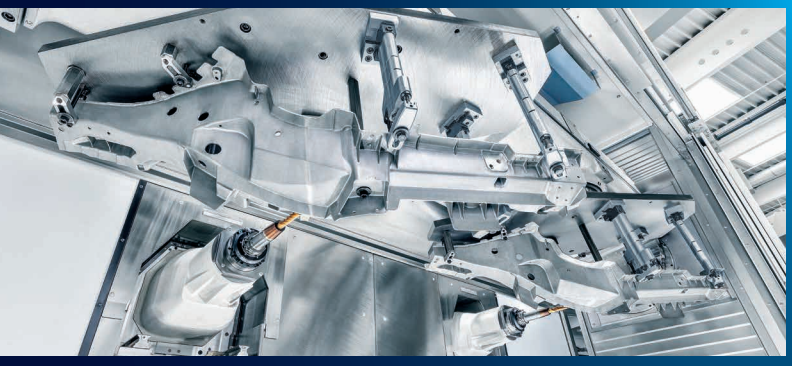

TAZ
TECHNOLOGIE- UND ANWENDUNGSZENTRUM

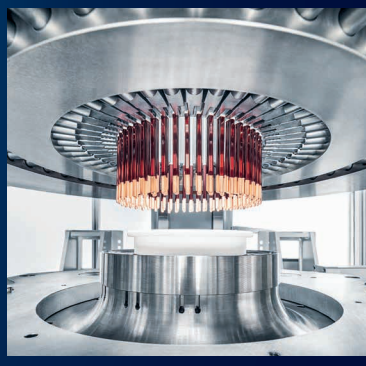

GROB
G550


GMP300


GROB G550 access

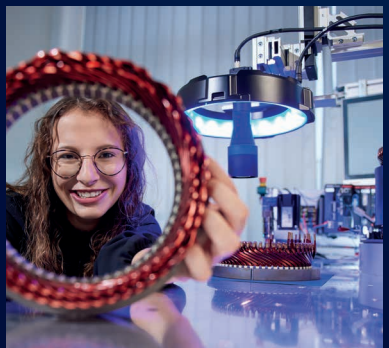

GMZ
GEBRAUCHT-
MASCHINENZENTRUM
GROB






GROB
G4P2050


Location
Operating ...
GROB-Line



*4-axis universal machining centers by GROB*

# THE RIGHT CONCEPT FOR YOUR INDUSTRY.

## 4-AXIS UNIVERSAL MACHINING CENTERS.

Machine concept

Machine components

Machine characteristics

Technical data

## AUTOMATION SOLUTIONS.

## DIGITALIZATION.

## SERVICE.

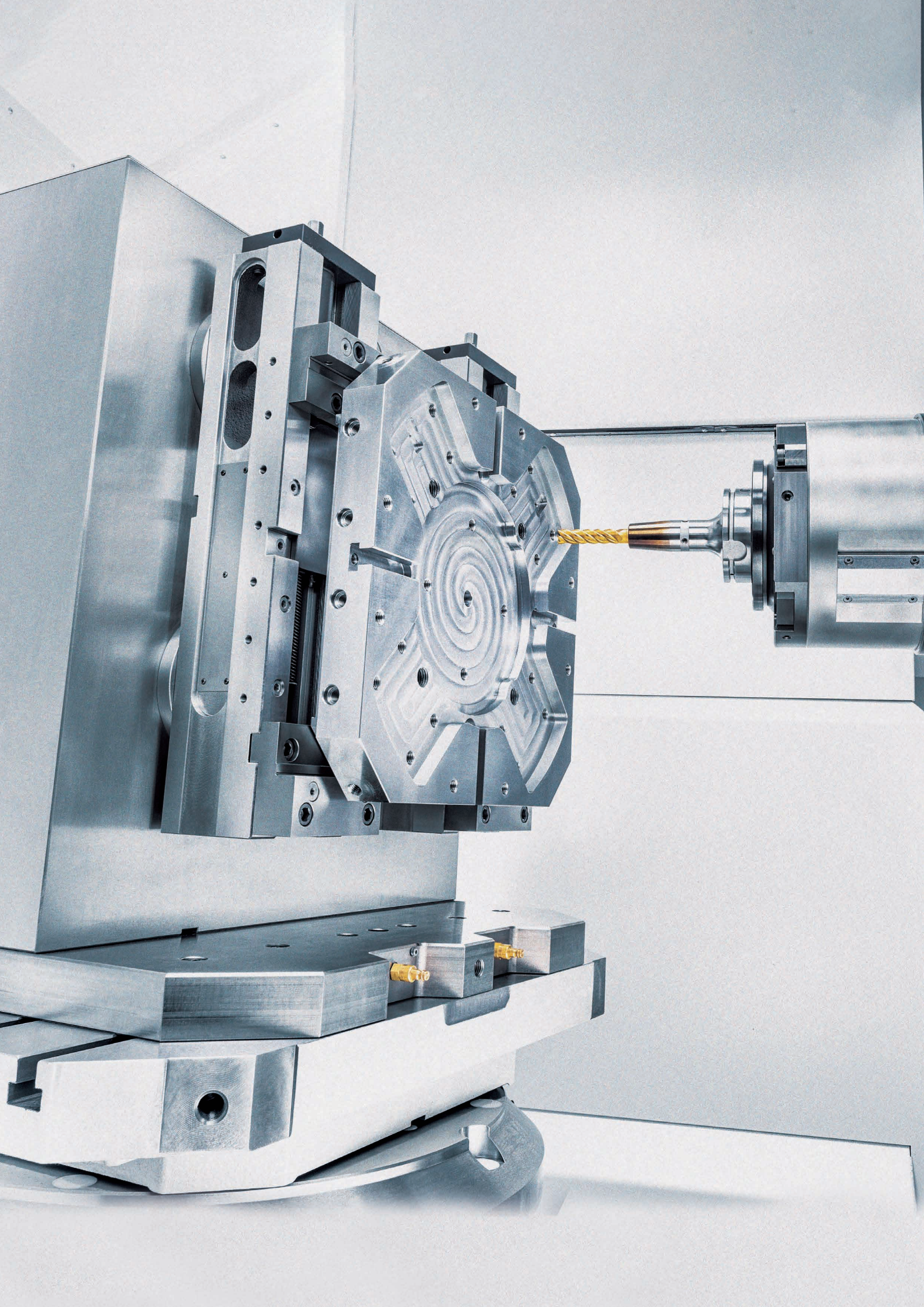
AUTOMOTIVE

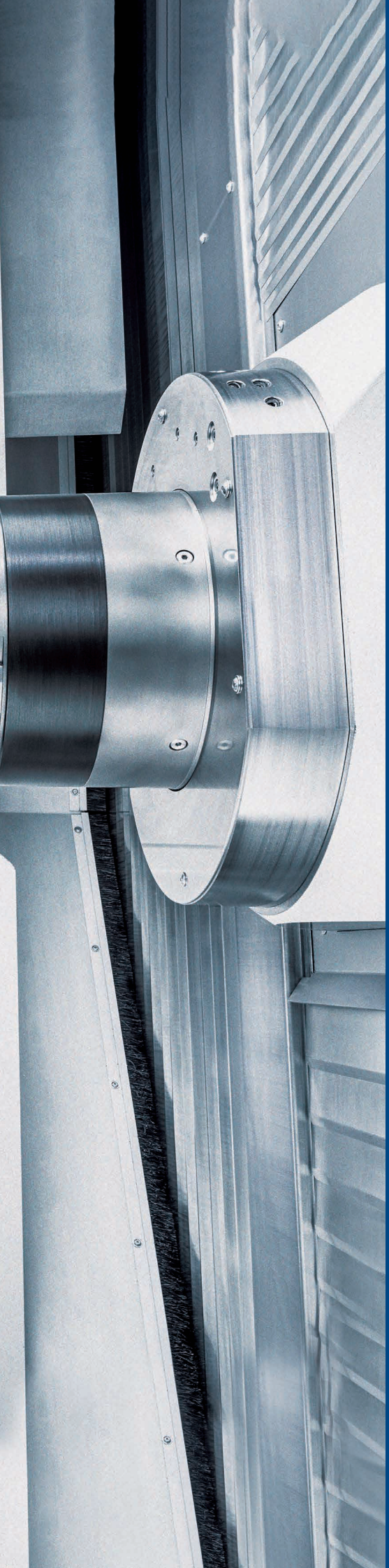
DIE AND MOLD INDUSTRIES

MECHANICAL ENGINEERING

ENERGY TECHNOLOGY

AEROSPACE





*A machine series tailored to your needs*

# 4-AXIS UNIVERSAL MACHINING CENTERS BY GROB.

The 4-axis universal machining centers G440, G640 and G840 offer our customers a heavy-duty machine series, which at the same time guarantees robust, optimal, and dynamic processes.

No matter whether aerospace, mechanical engineering, die and mold industries, automotive or energy technology – our 4-axis universal machining centers cover a convincingly broad range of possible applications.

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

*OUR PORTFOLIO.*

*#G440 #G640 #G840*

*Highly resilient and dynamic*

# OPTIMALLY DESIGNED AXIS AND DRIVE CONCEPT.

High productivity, reliable components, and unique durability characterize the 4-axis series. Thanks to extensive configuration options, our machining centers can be perfectly matched to the requirements of your production.

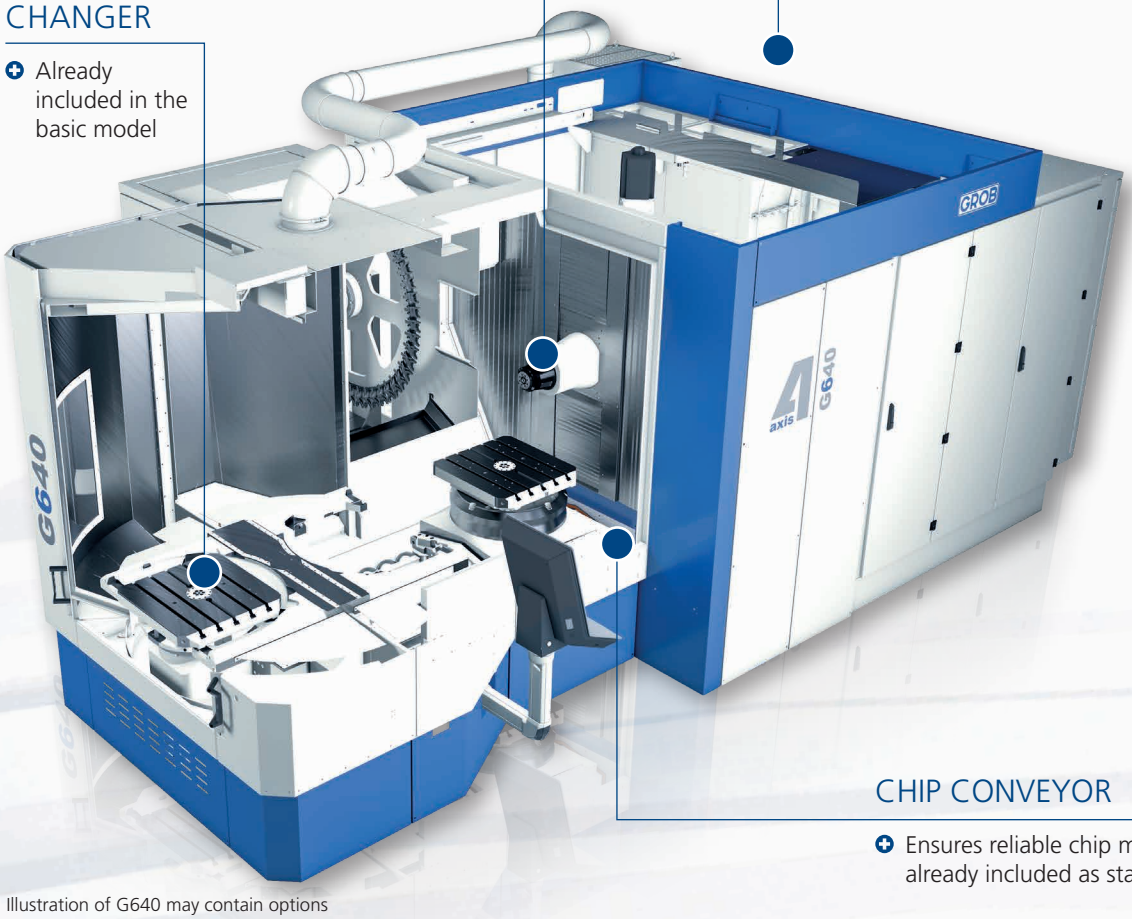
Depending on the equipment, the drive concept is based on one ball screw drive arranged in the mass center or two symmetrically arranged ball screw drives in the Y-axis. The torque motor in the B-axis, which is already installed in the standard model, also enables a fast positioning movement with maximum precision.

## WIDE SELECTION OF MOTORIZED SPINDLES

- Different spindle types are available depending on the machine type

## PALLET CHANGER

- Already included in the basic model




## CHIP CONVEYOR

- Ensures reliable chip management; already included as standard

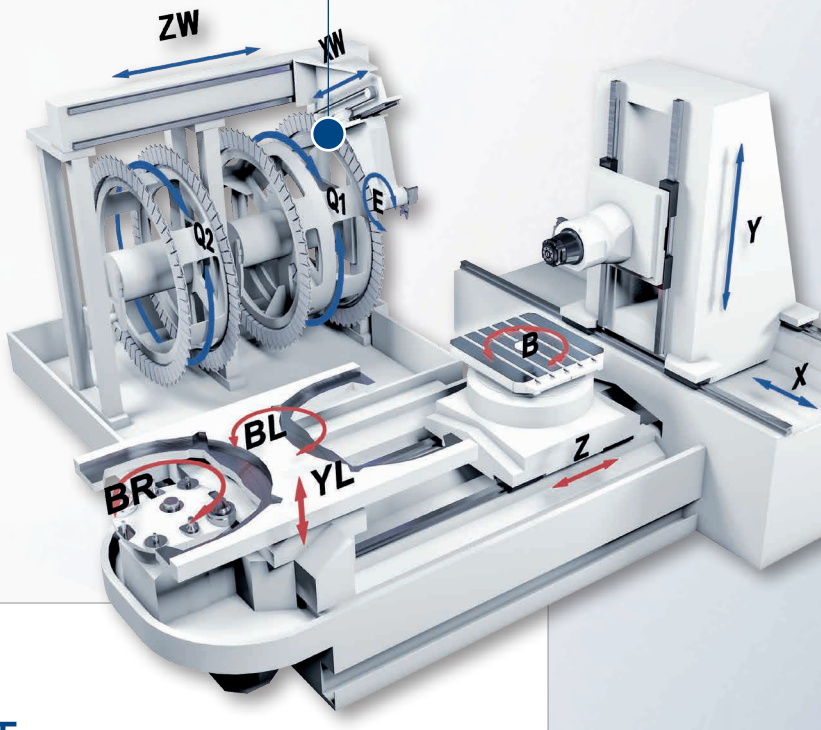
Illustration of G640 may contain options

## DISK-TYPE TOOL MAGAZINE

- Individually configurable as desired

## EFFICIENT MACHINE COOLING

- Available in different packages and can be extended with various additional options




# UNIQUE AXIS CONCEPT

- Topology optimization for a perfect combination between stability, cushioning, and dynamics
- A diverse range of options in a modular design for customized machines

*Machine components*

# MOTORIZED SPINDLES BY GROB.

## GROB SPINDLE DIAGNOSTICS (GSD) – OPTION

GROB Spindle Diagnostics is a system that automatically monitors the condition of the motorized spindle. It also monitors the vibrations that occur during machining.

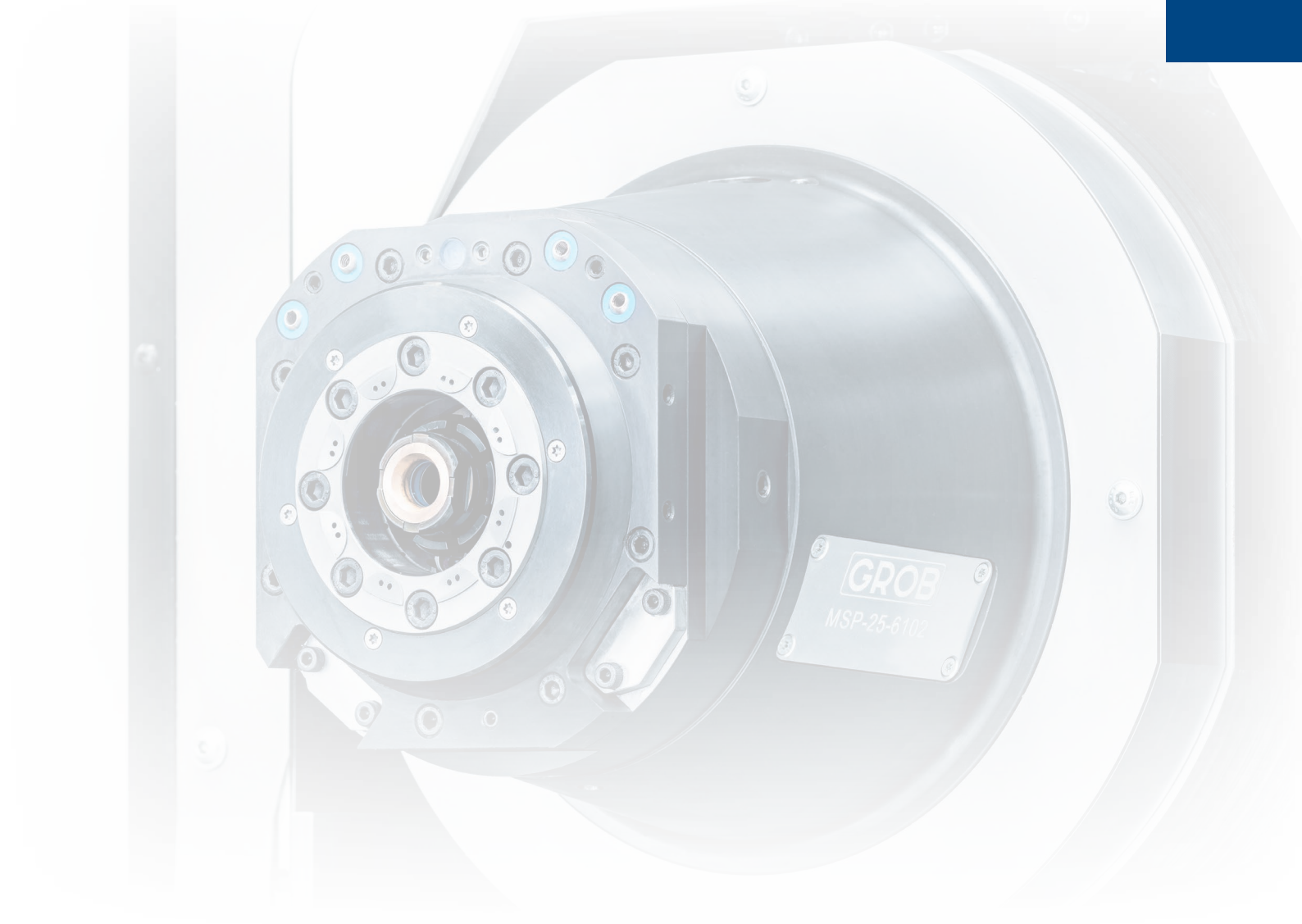
- System for automatic condition monitoring of the motorized spindle
- Vibrations that occur are monitored during machining and switched off if they are exceeded
- Service life of the motorized spindle extended through identification of critical operating states
- Perfect process optimization is possible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

## Spindle types – Availability at a glance!

**SPINDLE TYPE ◂▸ MACHINE**

| **Tool interface**[1] for short hollow taper tools acc. to ISO 12164-1/ taper shanks[2] according to DIN ISO 7388 | **HSK-A63** | | **HSK-A63/ SK40**[3] |
|---|---|---|---|
| Spindle type | 5 | 13 | 25/35 |
| Max. spindle torque at 100 %/40 % duty cycle [Nm] | 63.7/ 82.8 | 47.7/ 63.2 | 159.2/ 206.5 |
| Spindle bearing Ø at front bearing [mm] | 70 | 65 | 80 |
| Speed $n_{max}$ [rpm] | 12,000 | 30,000 | 16,000 |
| Max. drive power at 100 %/40 % duty cycle [kW] | 40/ 52 | 40/ 53 | 25/ 32 |
| **G440** | • | ○ | ○ |
| **G640** | • | ○ | ○ |
| **G840** | — | — | — |

[1] Optional tool interfaces on request
[2] Spindles with BIG PLUS® interface
[3] DIN ISO 7388 form A/U/J (45°)
[4] Gear spindle



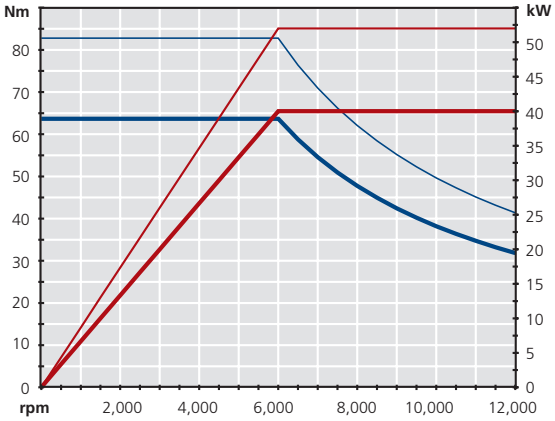

| | HSK-A100 | HSK-A100 / SK50 (3) | HSK-A100 | | |
|---|---|---|---|---|---|
| | 3 | 7 / 37 | 29 | 8 | F2 |
| | 262 / 345 | 470 / 575 | 226 / 265 | 1,273 / 1,666 | 2,000 (4) / 2,400 |
| | 100 | 110 | 100 | 120 | 120 |
| | 10,000 | 9,000 | 13,000 | 7,200 | 6,000 |
| | 20 / 26 | 54 / 65 | 64 / 75 | 80 / 100 | 63 / 78 |
| | ○ | — | ○ | — | — |
| | ○ | ○ | ○ | — | — |
| | • | ○ | ○ | ○ | ○ |

• Standard version with HSK application ○ optional — not available

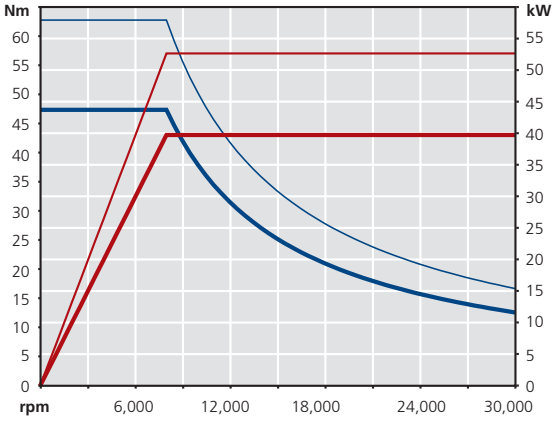
*Torque – rotational speed – output*

# MOTORIZED SPINDLE VERSIONS.

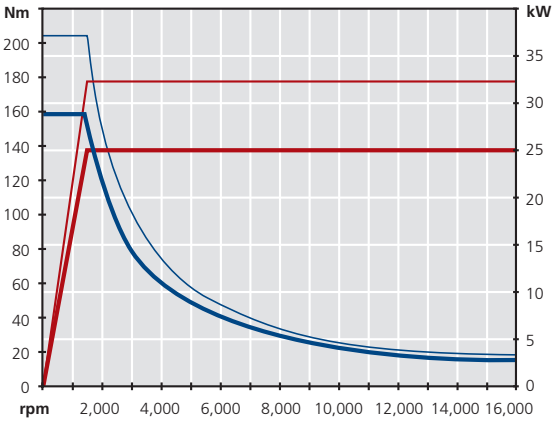
**TYPE 5:**
HSK-A63 ▸ Motorized spindle 83 Nm, 12,000 rpm




**TYPE 13:**
HSK-A63 ▸ Motorized spindle 63 Nm, 30,000 rpm

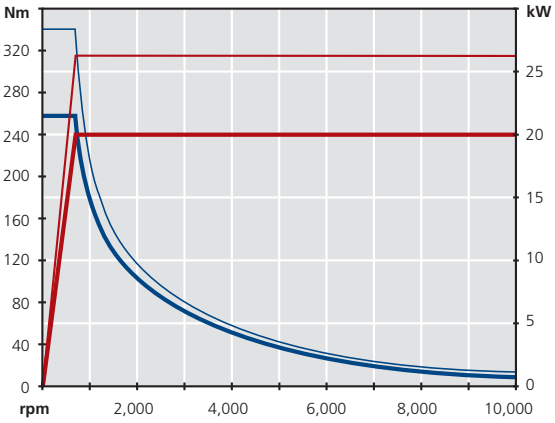



**TYPE 25 / 35:**
HSK-A63 ▸ Motorized spindle 206 Nm, 16,000 rpm

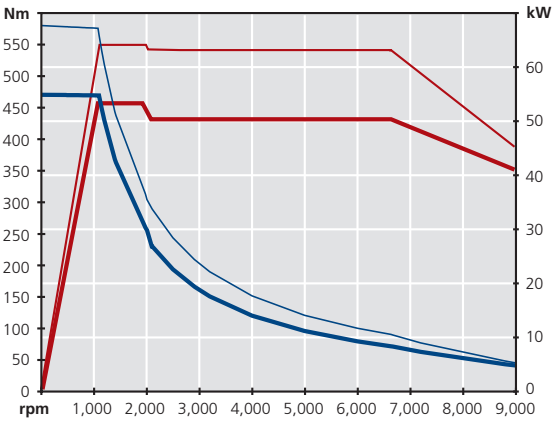



*DIN ISO 7388 form A/U/J (45°)

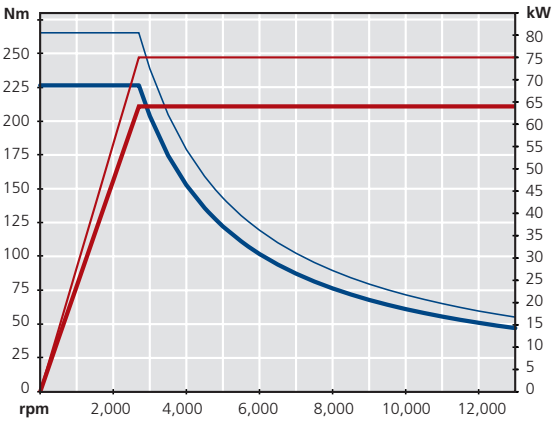
**TYPE 3:**
HSK-A100 ▸ Motorized spindle 345 Nm, 10,000 rpm



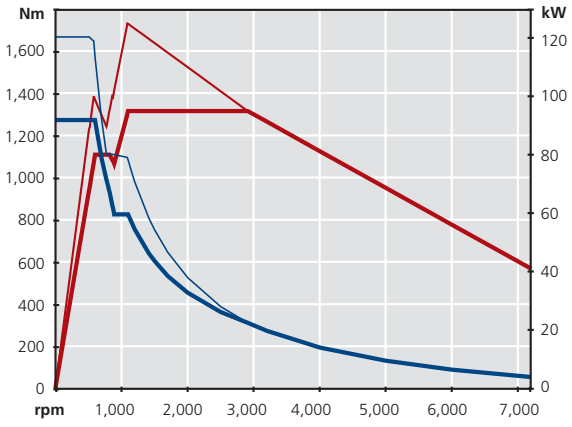

**TYPE 7 / 37:**
HSK-A100 ▸ Motorized spindle 575 Nm, 9,000 rpm




**TYPE 29:**
HSK-A100 ▸ Motorized spindle 265 Nm, 13,000 rpm

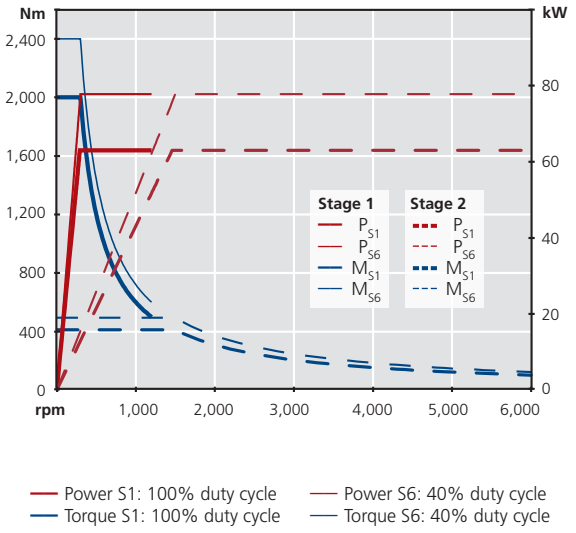


**TYPE 8:**
HSK-A100 ▸ Motorized spindle 1,666 Nm, 7,200 rpm




*DIN ISO 7388 form A/U/J (45°)

**TYPE F2:**
HSK-A100 ▸ Motorized spindle 2,400 Nm, 6,000 rpm




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

## Your benefits at a glance

- Shortest ramp-up times
- Easy access and preventive maintenance
- Suitable for all standard cutting fluids
- Exceptionally long service life

*Versatile combinations*

# TOOL MAGAZINES BY GROB.

The 4-axis universal machining centers offer versatile possibilities in the area of the tool magazine. Depending on the machine type, the tool magazine can be configured according to your needs and desires. It is very easy to extend or replace the magazines in your machine even after delivery via "Plug & Play".

You can also benefit from the use of a highly dynamic tool changer arm or a pick-up variant.

## SINGLE DISK TO SIX-DISK MAGAZINES

- Vertical, serial magazine disks for the G440, G640, and G840
- Fast tool change with a highly dynamic tool changer arm or pick-up variant

## TOWER MAGAZINE

- Vertical magazine disks arranged on top of each other for the G440, G640, and G840
- Loading during the machining operation
- Parallel setup of up to five tools

**G440 ▸ BASIC MACHINE ◂▸ DISK-TYPE TOOL MAGAZINE**

| **Disk-type tool magazine** | **Single~** | **Compact double~** | | **Compact triple~** | | **Four~** | | **Six~** | **Tower~** |
|---|---|---|---|---|---|---|---|---|---|
| **Tool interface**[1] for short hollow taper tools acc. to ISO 12164-1/ taper shanks[2] according to DIN ISO 7388 | HSK-A63 | HSK-A63 | HSK-A100 | HSK-A63 | HSK-A100 | HSK-A63/ SK40[3] | HSK-A100/ SK50[3] | HSK-A100 | HSK-A100 |
| Number of tool pockets | 50 | 117 | 57 | 177 | 87 | 237 (227)[4] | 117 (112)[4] | 172 (167)[4] | 238/ 476 |
| Max. tool length [mm][5] | 500 | 500 | 280 | 500 | 260 | 500 (530)[4] | 500 (530)[4] | 260 (530)[4] | 500 (530)[4] |
| Max. tool diameter [mm] ▸ No diameter restrictions for adjacent pockets | 90 | 72 | 72 | 120 | 120 | 72 | 120 | 120 | 150/ 120 |
| ▸ Diameter restrictions for adjacent pockets | 170 | 170 | 170 | 280 | 280 | 170 | 280 | 280 | 280 |
| Max. tool weight [kg] | 12 | 12 | 12 | 35 | 35 | 12 | 35 | 35 | 35 |
| Max. torque around gripper groove [Nm] | 12 | 12 | 12 | 40 | 40 | 12 | 40 | 40 | 40 |
| Pick-up magazine | • | — | — | — | — | — | — | — | — |
| Tool changer arm | — | • | • | • | • | • | • | • | • |

[1] Optional tool interfaces upon request
[2] Spindles with BIG PLUS® interface
[3] DIN ISO 7388 form A/U/J (45°) (number of tool pockets differs for SK50)
[4] Long tool only possible on first disk
[5] Lengths in relation to HSK

*Number of tool pockets*

# G440 / G640 / G840

## G640 ▸ BASIC MACHINE ◂▸ DISK-TYPE TOOL MAGAZINE

| Disk-type tool magazine | Single~ | Compact double~ | | Compact triple~ | | Four~ | | Six~ | Tower~ |
|---|---|---|---|---|---|---|---|---|---|
| **Tool interface**[1] for short hollow taper tools acc. to ISO 12164-1/ taper shanks[2] according to DIN ISO 7388 | HSK-A63 | HSK-A63 | HSK-A100 | HSK-A63 | HSK-A100 | HSK-A63/ SK40[3] | HSK-A100/ SK50[3] | HSK-A100 | HSK-A100 |
| Number of tool pockets | 50 | 117 | 57 | 177 | 87 | 237 (227)[4] | 117 (112)[4] | 172 (167)[4] | 238 (476)[4] |
| Max. tool length [mm][5] | 500 | 500 | 280 | 500 | 260 | 500 (680)[4] | 500 (680)[4] | 545 (680)[4] | 500 (680)[4] |
| Max. tool diameter [mm] ▸ No diameter restrictions for adjacent pockets | 90 | 72 | 72 | 120 | 120 | 72 | 120 | 120 | 150/ 120 |
| ▸ Diameter restrictions for adjacent pockets | 170 | 170 | 170 | 280 | 280 | 170 | 280 | 280 | 280 |
| Max. tool weight [kg] | 12 | 12 | 12 | 35 | 35 | 12 | 35 | 35 | 35 |
| Max. torque around gripper groove [Nm] | 12 | 12 | 12 | 40 | 40 | 12 | 40 | 40 | 40 |
| Pick-up magazine | • | — | — | — | — | — | — | — | — |
| Tool changer arm | — | • | • | • | • | • | • | • | • |

## G840 ▸ BASIC MACHINE ◂▸ DISK-TYPE TOOL MAGAZINE

| Disk-type tool magazine | Compact double~ | Compact triple~ | Four~ | Six~ | Tower~ |
|---|---|---|---|---|---|
| **Tool interface**[1] for short hollow taper tools acc. to ISO 12164-1/ taper shanks[2] according to DIN ISO 7388 | HSK-A100 | HSK-A100 | HSK-A100/ SK50[3] | HSK-A100 | HSK-A100 |
| Number of tool pockets | 57 | 87 | 172 (167)[4] | 172 (167)[4] | 238/476 |
| Max. tool length [mm][5] | 280 | 260 | 545 (830)[4] | 260 (530)[4] | 500 (530)[4] |
| Max. tool diameter [mm] ▸ No diameter restrictions for adjacent pockets | 72 | 120 | 120 | 120 | 150/ 120 |
| ▸ Diameter restrictions for adjacent pockets | 170 | 280 | 280 | 280 | 280 |
| Max. tool weight [kg] | 12 | 35 | 35 | 35 | 35 |
| Max. torque around gripper groove [Nm] | 12 | 40 | 40 | 40 | 40 |
| Pick-up magazine | — | — | — | — | — |
| Tool changer arm | • | • | • | • | • |

[1] Optional tool interfaces upon request
[2] Spindles with BIG PLUS® interface
[3] DIN ISO 7388 form A/U/J (45°) (number of tool pockets differs for SK50)
[4] Long tool only possible on first disk
[5] Lengths in relation to HSK

*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

## OPTIMIZED KEYBOARD

- For easy input

## 3D-SPACEMOUSE® (option)

- For controlling CAD applications

**AVAILABLE CNC CONTROL PROVIDERS FOR GROB⁴PILOT**

| | SIEMENS 840D sl | SIEMENS ONE |
|---|---|---|
| **G440** | • | • |
| **G640** | • | • |
| **G840** | • | • |

## FLEXIBLE DISPLAY LAYOUT

- Free division into up to three apps

## 24" MULTI-TOUCH DISPLAY

- For intuitive operation

## 2x POWERRIDE

- Convenient operation thanks to multifunctional assignment


## TRACKBALL

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

Example illustration

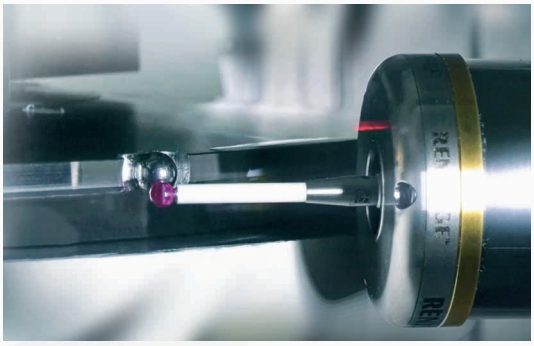
*Perfect accuracy – Automatic – any time*

# SOFTWARE OPTIONS.

GROB has set the standard for machine calibration accuracy with the GROB swivel axis calibration (GSC). With the new GSC Advanced option, the machine calibrates itself fully automatically, permanently maintaining phenomenal accuracy.

## GSC-4X (SWIVEL AXIS CALIBRATION)

- Complete package for calibrating the machine geometry
- Calibrates rotary axis errors
- Measurement of space accuracy using 4X Check
- Application via user-guided dialogs
- Detection of sensing errors prevents miscalibration (only with SIEMENS control system and high-precision touch probe, e. g. RMP600)



## GSC ADVANCED (option)

- Expansion of GSC Classic to make machine calibration even more intuitive and take it to the next level
- The machine recognizes the need for calibration fully automatically and uses the non-removable calibration sphere for it (without operator interaction e. g. during pallet change)

## ENERGY EFFICIENCY PACKAGE

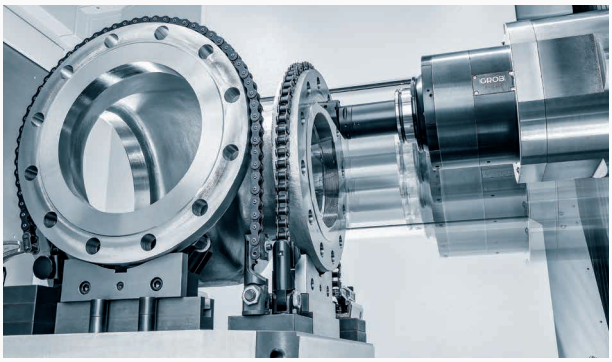
- For efficient use of energy by reducing the power consumption of 4-axis universal machining centers with a SIEMENS control system
- Shut-down strategies for machine cooling unit, chip conveyor, and various fans
- Optimized control strategy for motorized spindle and axis drives
- Timed machine shutdown

## GROB KINEMATICS SET

- All measuring equipment needed for calibrating the machine or touch probe are included in this case. The parts are only used during calibration of the touch probe or machine. Therefore, only one set is sufficient for all machines.
- One carbon magnetic base
- A high-precision calibration sphere with unique test ID
- Mounting material for the bases
- Parallel gauge block
- Calibration ring
- Lever-type dial indicator

*Interpolation turning and gearing cycles*

# SOFTWARE OPTIONS.

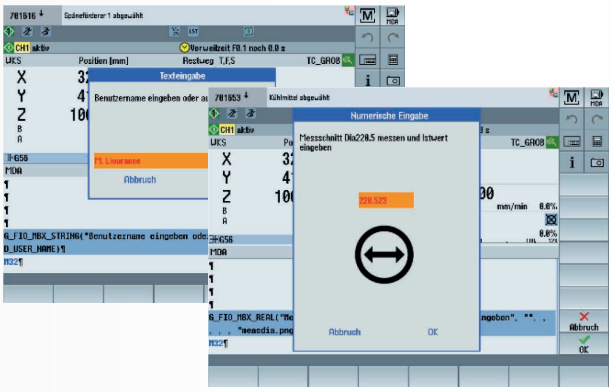


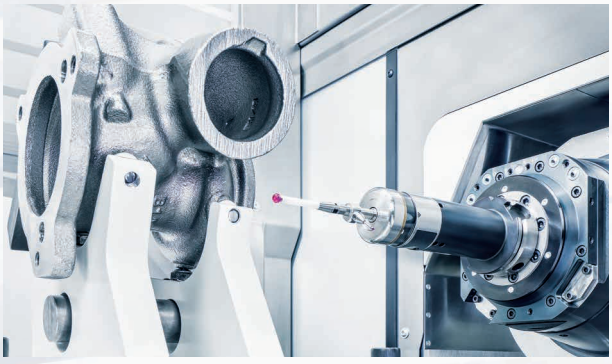
## INTERPOLATION TURNING PLUS

- As a pure software solution, it enables any turning operations on GROB universal machining centers – including turning operations that are not coaxial to the B-axis
- The software solution simulates a diameter axis (transverse slide) by means of simultaneous interpolation of the X-axis, Y-axis, and motorized spindle
- Programming and handling correspond to that of a CNC turning machine and can be combined with a spindle operation

## FILE INPUT OUTPUT (FIO)

- FIO is installed on our 4-axis machines as standard. It lets you create various actions directly from the NC program
- Comprehensive file operations (read/write lini files)
- Individual user queries in the form of pop-up dialogs
- Option of extensive text formatting; output in the form of text windows or text files



## WAY MEASUREMENT SOFTWARE

- The rough parts are positioned as on measuring machines – the clamping points can be freely selected without rough part alignment
- WAY allows for probing geometric elements with any number of points and fitting them in with Best Fit. The additional sensing points also make it possible to determine shape accuracy (e. g. roundness)
- Rough part deviations are identified directly in the machine and compensated for during machining

*Availability at a glance*

# CNC CONTROL SYSTEM (options).

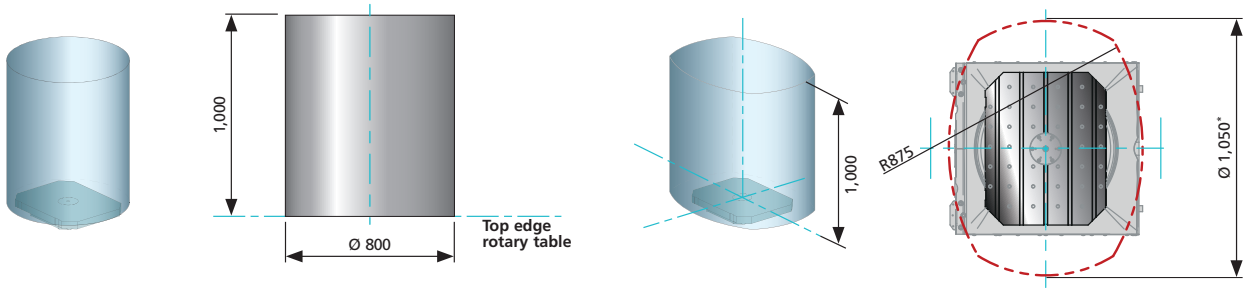
| | SIEMENS 840D sl | SIEMENS ONE |
|---|---|---|
| Swivel axis calibration GSC | • | • |
| Swivel axis calibration GSC Advanced | • | • |
| Energy Efficiency Package EEP | • | • |
| Interpolation turning PLUS | • | • |
| Hobbing (G_GEAR_HOB) | • | • |
| Gear skiving (G_GSK) | • | • |
| WAY Coordinate measurement software | • | • |
| WAY Light Coordinate measurement software | • | • |
| Speed Feed Tools (G_SFT) | • | • |
| Extended tool change (G_UTL_TC) | • | • |
| Read & write Matrix code (G_UTL_MC) | • | • |
| Setup table height (G_GSC_TTH) | • | • |
| Setup touch probe (G_OCTC)(G_UTL_MC) | • | • |
| Tool sorting close to the spindle (SNS) | • | • |
| A / C Kinematics change | — | — |

# *Maximum part size and loading specifications Footprint*

# G440

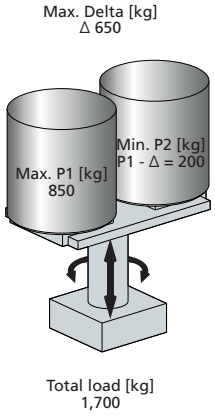
## Maximum part size [mm]

| Standard | Option |
|---|---|




## Loading specifications

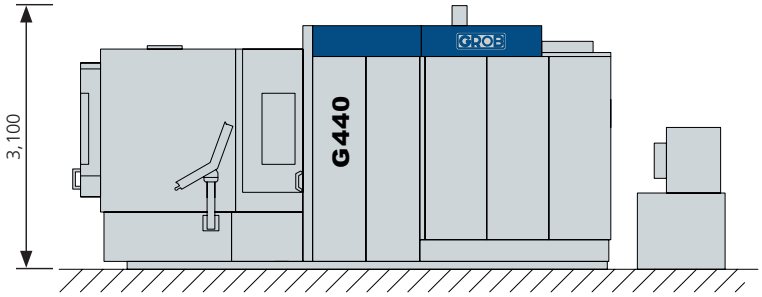
| Standard |
|---|

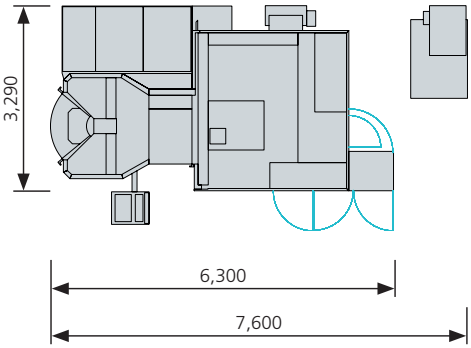



* Optionally extended interference diameter with flattened diameter

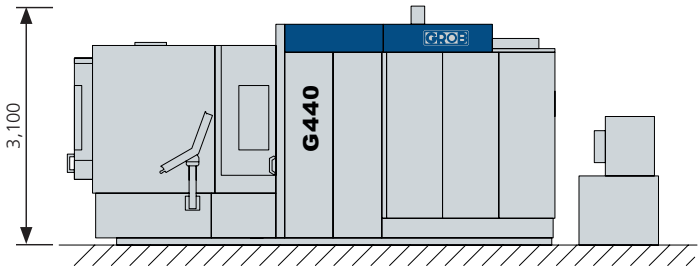

## Side view / top view max. [mm]

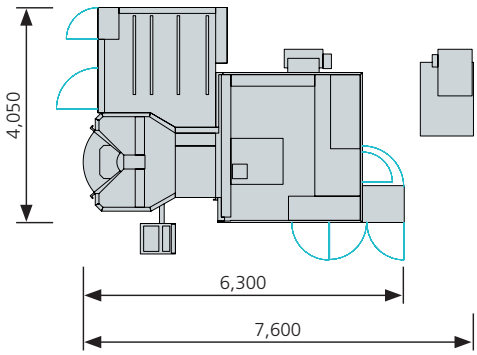
### Basic machine with compact magazine and small cooling unit




### Basic machine with large tool magazine and premium cutting fluid system




Dimension values [mm] not taking into account preventive maintenance and operating areas or emulsion and chip disposal

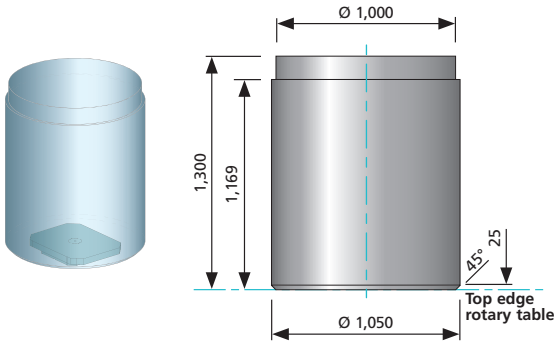
Illustrations may contain options

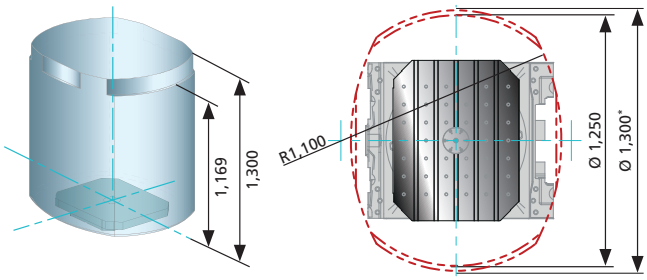
# *Maximum part size and loading specifications Footprint*

# G640

## Maximum part size [mm]

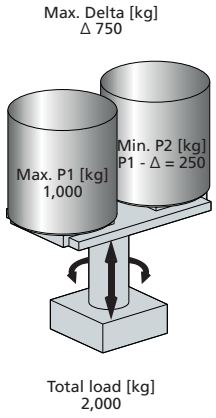
| Standard | Option |
|---|---|

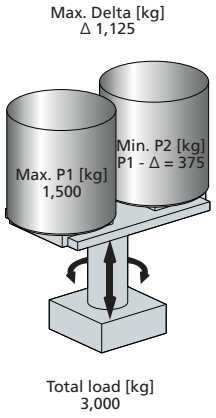



## Loading specifications

| Standard | Option |
|---|---|

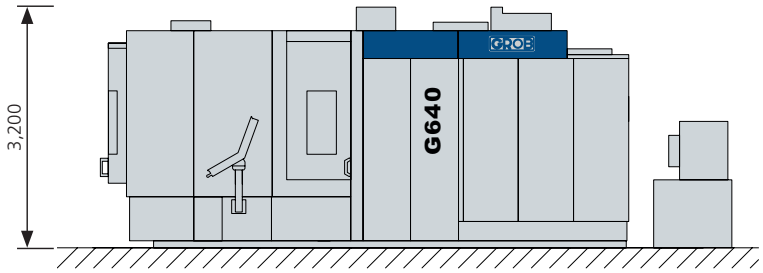


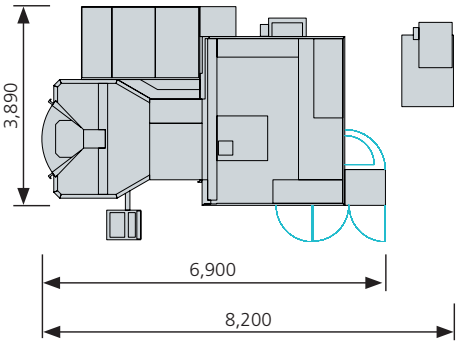




* Optionally extended interference diameter with flattened diameter

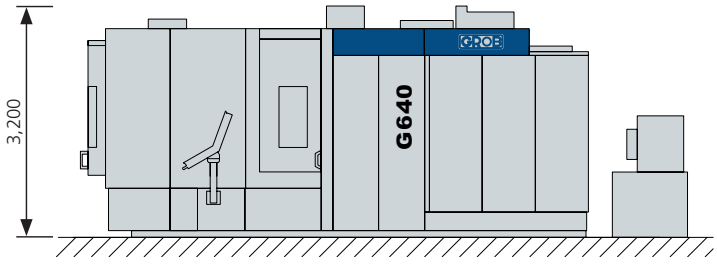

## Side view / top view max. [mm]

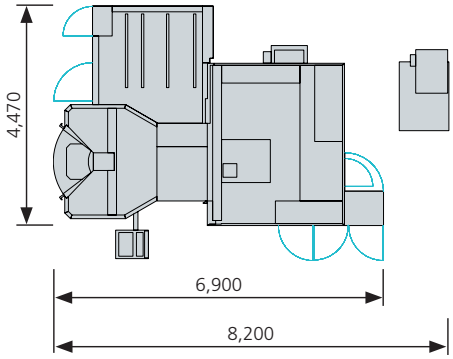
### Basic machine with compact magazine and small cooling unit




### Basic machine with large tool magazine and premium cutting fluid system




Dimension values [mm] not taking into account preventive maintenance and operating areas or emulsion and chip disposal

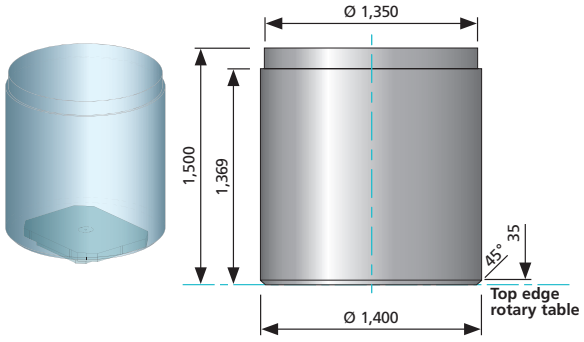
Illustrations may contain options

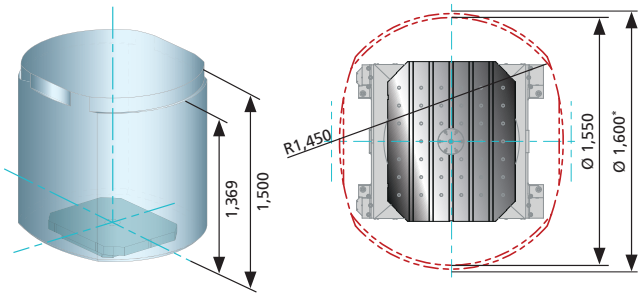
# *Maximum part size and loading specifications Footprint*

# G840

## Maximum part size [mm]

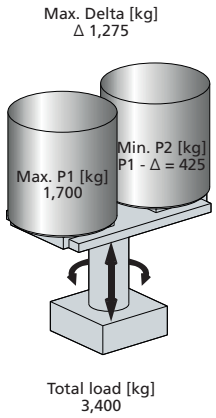
| Standard | Option |
|---|---|

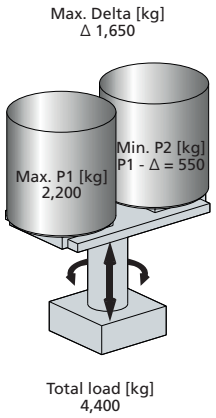



## Loading specifications

| Standard | Option |
|---|---|

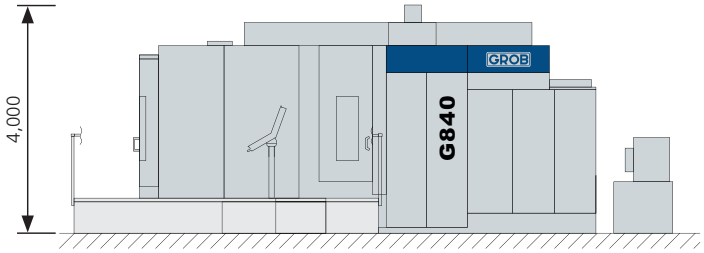


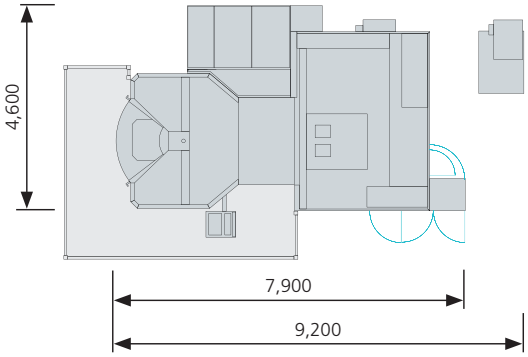




* Optionally extended interference diameter with flattened diameter

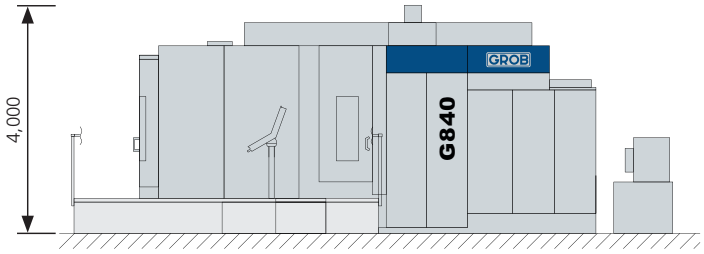

## Side view / top view max. [mm]

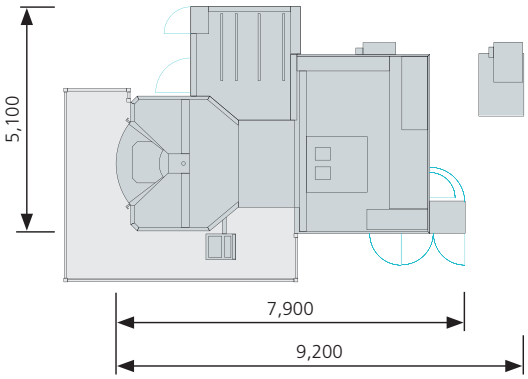
### Basic machine with compact magazine and small cooling unit




### Basic machine with large tool magazine and premium cutting fluid system




Dimension values [mm] not taking into account preventive maintenance and operating areas or emulsion and chip disposal

Illustrations may contain options

# *Technical data – overview*

# G440/G640/G840

| MACHINE TYPE | | G440 | | | |
|---|---|---|---|---|---|
| **SLIDE** | | | | | |
| Working travels in X-/Y-/Z-axis [mm] | | 800/800/800 | | | |
| Max. speeds in X-/Y-/Z-axis [m/min] | | 70/60/60 (80/70/70)[8] | | | |
| Max. accelerations in X-/Y-/Z-axis [m/s²][1] | | 6/6.5/6 (6.5/8/8.8)[8] | | | |
| Max. feed forces in X-/Y-/Z-axis [kN][1] | | 8/8/10 | | | |
| Positioning accuracy[2] in X-/Y-/Z-axis [mm] | | 0.006 | | | |
| Repeat precision of positioning[2] in the X-/Y-/Z-axis [mm] | | <0.0025 | | | |
| **MAIN SPINDLE** | | | | | |
| Drive: Standard | Tool interface for short hollow taper tools ISO 12164/ taper shanks[3] according to DIN ISO 7388 | HSK-A63 | | | |
| | Diameter at front bearing of spindle bearing [mm] | 70 | | | |
| | Speed $n_{max}$ [rpm] | 12,000 | | | |
| | Max. drive power at 100 %/40 % duty cycle [kW] | 40/52 | | | |
| | Max. spindle torque at 100 %/40 % duty cycle [Nm] | 63.7/82.8 | | | |
| | Chip-to-chip time $t_1$ according to VDI 2852 [s][4] Pick-up magazine and tool changer arm | 3.3/2.8 | | | |
| Drive: Options | Tool interface for short hollow taper tools ISO 12164/ taper shanks[3] according to DIN ISO 7388 | HSK-A63 | HSK-A63/SK40[6] | HSK-A100 | HSK-A100 |
| | Diameter at front bearing of spindle bearing [mm] | 65 | 80 | 100 | 100 |
| | Speed $n_{max}$ [rpm] | 30,000 | 16,000 | 10,000 | 13,000 |
| | Max. drive power at 100 %/40 % duty cycle [kW] | 40/53 | 25/32 | 20/26 | 64/75 |
| | Max. spindle torque at 100 %/40 % duty cycle [Nm] | 48/63 | 159/206 | 262/340 | 226/265 |
| | Chip-to-chip time $t_1$ according to VDI 2852 [s][4] Pick-up magazine and tool changer arm | 3.3/2.8 | 3.3/2.8 | —/3.4 | —/3.4 |
| **PART** | | | | | |
| Max. load on pallet [kg] (standard/option) | | 850/— | | | |
| B-axis interference diameter [mm] | | 800 (1,050)[16] | | | |
| Max. part height [mm] (with pallet) | | 1,000 | | | |
| **WEIGHT (approx.)** | | | | | |
| Total weight [kg] (with pallet changer, without tool magazine) | | 16,500 | | | |
| **PROCESS STAGES** | | | | | |
| Pallet size [mm] (standard/option) | | 500x500/500x630 | | | |
| Pallet change time according to VDI 2852 [s][7] | | 12 | | | |

[1] Depending on type of motor spindle and load weight
[2] According to ISO 230-2:2014
[3] Spindles with BIG PLUS® interface
[4] Depending on tool length/opt. dynamic package
[5] Opt. work area expansion with dynamic package
[6] DIN ISO 7388 form A/U/J (45°)
[7] Without seating check
[8] Dynamic package
[9] Opt. work area expansion

| | G640 | | G840 | |
|---|---|---|---|---|
| | | | | |
| | 1,050/800/1,050 | 1,050/1,000/1,050 [9] | 1,400 (1,500) [13]/1,200/1,400 | 1,400 (1,500) [13]/1,400/1,400 [9] |
| | 70/60/60 (80/70/70) [8] | 60/60/60 (70/70/70) [5] | 50/50/50 | |
| | 6/6.5/6 (6.5/8/8.2) [8] | 4.5/5.5/6 (4.5/6.5/8.2) [5] | 4.5/5.5/4.5 | |
| | 10/10/12 | | 12/12/15 | |
| | 0.006 | | 0.006 | |
| | <0.003 | | <0.003 | |
| | | | | |
| | HSK-A63 | | HSK-A100 | |
| | 70 | | 100 | |
| | 12,000 | | 10,000 | |
| | 40/52 | | 20/26 | |
| | 63.7/82.8 | | 262/340 | |
| | 3.5/3.0 (3.8/3.3) [10] | | —/5.0 | |
| | | | | |
| HSK-A63 | HSK-A63/SK40 [6] | HSK-A100 | HSK-A100/SK50 [6,11] | HSK-A100 | HSK-A100 [11] | HSK-A100 | HSK-A100/SK50 [6] | HSK-A100 | HSK-A100 [14] |
| 65 | 80 | 100 | 110 | 100 | 120 | 100 | 110 | 120 | 120 |
| 30,000 | 16,000 | 10,000 | 9,000 | 13,000 | 7,200 | 13,000 | 9,000 | 7,200 | 6,000 |
| 40/53 | 25/32 | 20/26 | 54/65 | 64/75 | 80/100 | 64/75 | 54/65 | 80/100 | 63/78 |
| 48/63 | 159/206 | 262/340 | 470/575 | 226/265 | 1,273/1,666 | 226/265 | 470/575 | 1,273/1,666 | 2,000/2,400 |
| 3.5/3.0 (3.8/3.3) [10] | 3.5/3.0 (3.8/3.3) [10] | —/3.9 [10] | —/3.9 | —/3.9 [10] | —/3.9 | —/5.0 | —/5.2 | —/5.2 | —/5.2 |
| | | | | | | | | | |
| | 1,000/1,500 [12] | | | | | 1,700/2,200 [12] | | | |
| | 1,050 (1,300) [13] | | | | | 1,400 (1,600) [13] | | | |
| | 1,300 | | | | | 1,500 | | | |
| | | | | | | | | | |
| | 22,000 | | | | | 33,500 | | | |
| | | | | | | | | | |
| | 630x630/630x800 | | | | | 800x800/800x1,000 | | | |
| | 14 | | | | | 17 | | | |

[10] With opt. Work area expansion, depending on tool length/opt. dynamic package
[11] Available in combination with the opt. work area expansion
[12] Available independent of opt. work area expansion
[13] Extended interference with flattened diameter
[14] Gear spindle

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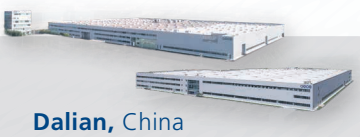

**Dalian,** China

**Pianezza,** Italy

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