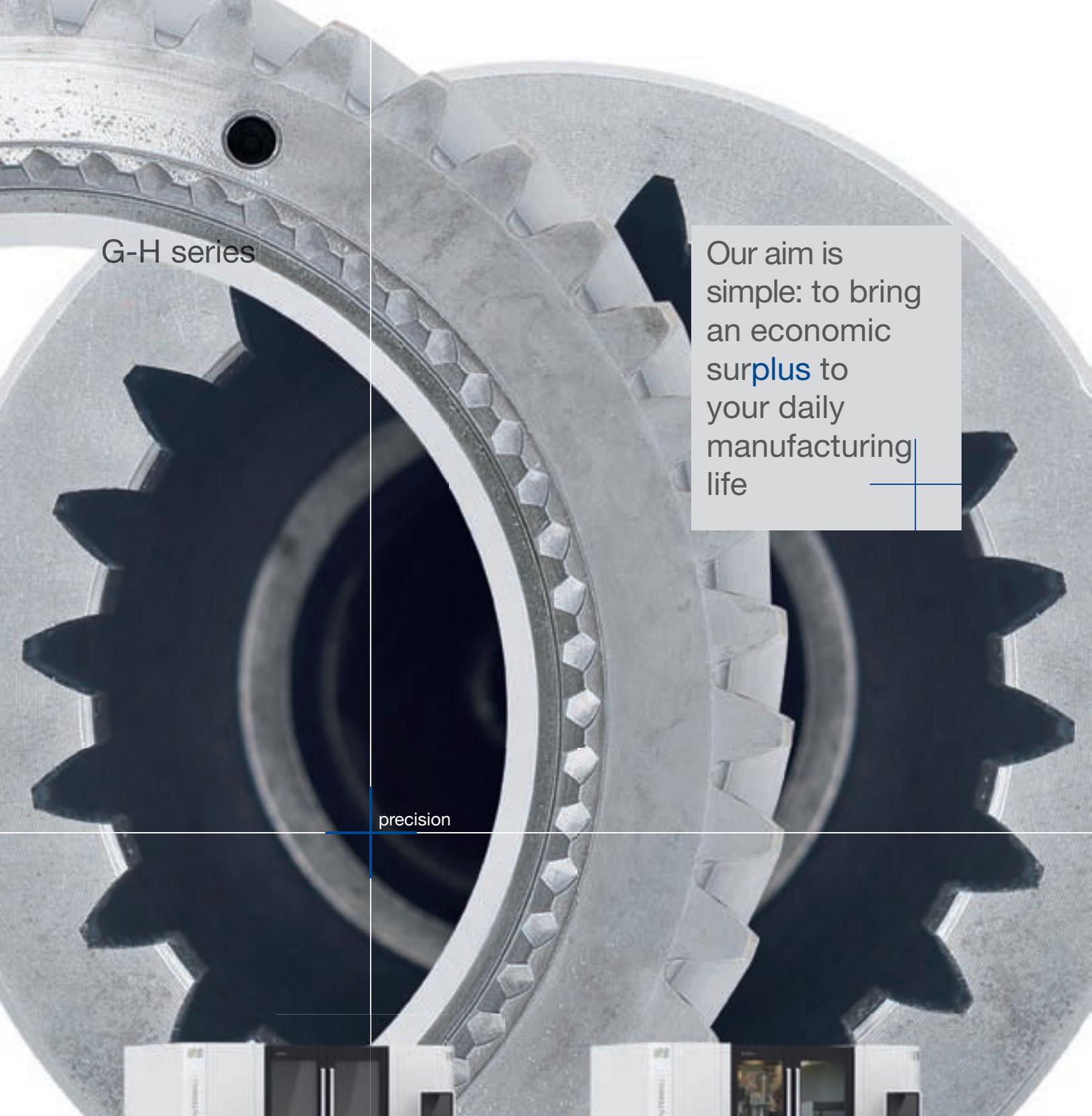


G-H series  
horizontal grinding machines



G-H series

Our aim is simple: to bring an economic surplus to your daily manufacturing life

precision



G 500 H for external and internal gears with manually actuated Y axis



GP 500 H for roughing and finishing in a single setup with automatic Y axis



## The new G-H series of grinding machines for gears, shafts, worms, rotors and screws. One universal solution adapted to your specific application – now for workpieces up to 500 mm in diameter

Based on the widely acclaimed S 375 G, the new G-H series presents numerous enhanced features and extends the traditional series to include new model versions.

Although Samputensili grinding machines are based on a modular design concept, we craft each and every machine with a wide range of options to suit your individual needs, guaranteeing you the efficient manufacturing of top quality parts.

This modular, extremely versatile and universal series is ideally suited to single pass creep feed profile grinding of external spur and helical gears, crown gears, shafts, worms, rotors and screw threads. Optionally it is also possible to grind spur or helical internal gears. Owners of a GT version also add generating grinding to their process capabilities.

We offer you an ad hoc solution for any of the above applications so that your machine is constructed with the right options for you. All machines are then supported by special software packages, translating our know how into your manufacturing success.



GT 500 H for profile and generating grinding, with NC controlled Y axis (tool shifting)



GR and GRX for screw-type workpieces, without Y axis

## The new G-H series features an array of innovations and components shared by all machine variants

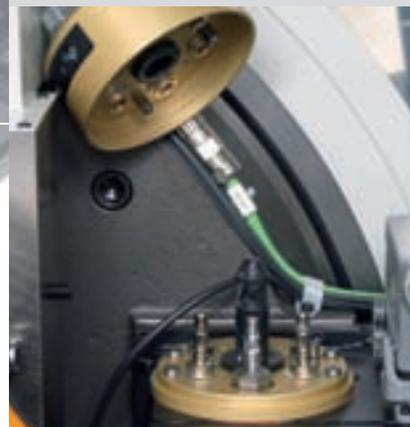
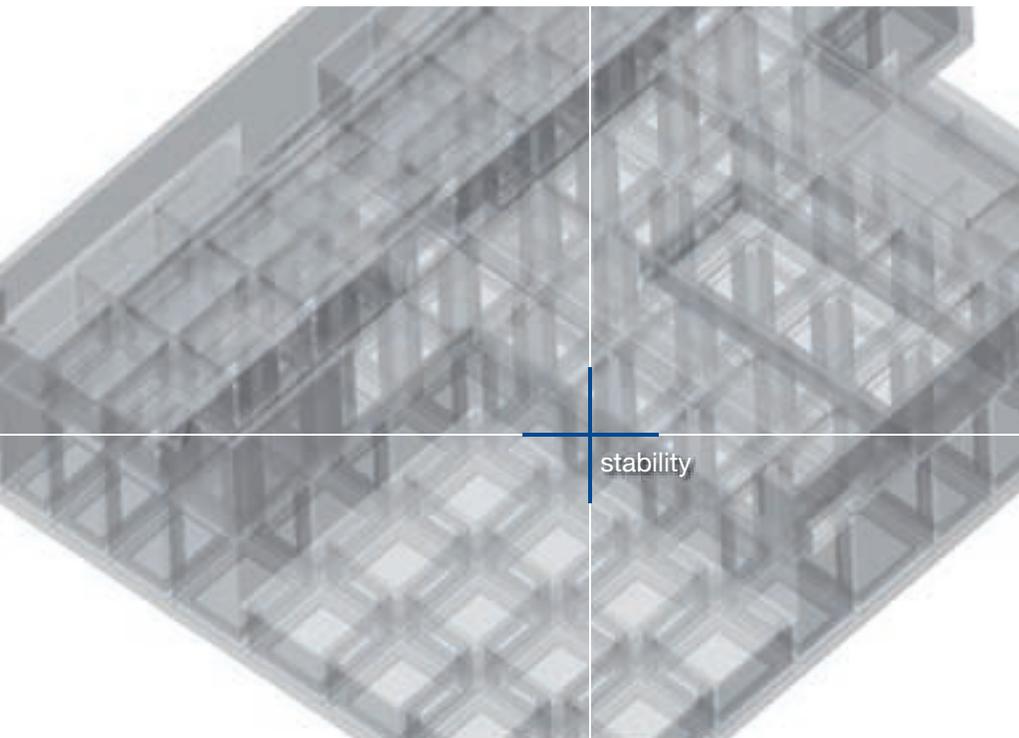
A heavily ribbed structure eliminates the risk of vibration or push and pull phenomena caused by moving machine components. To ensure maximum thermal stability, the machine bed is flooded with re-circulating coolant. A new evacuation system transfers swarf from the work area to the filtration unit. Any residue is flushed by additional coolant nozzles so that even the most resistant swarf nests are easily discharged, guaranteeing a clean work area at all times.

In terms of work range, workpiece diameter, X-axis travel and Y-axis travel have all been increased. Standard grinding spindle power has practically doubled and even more spindle options are now available.

Direct and linear drives, and digital scales and encoders, supported by a sturdy base and prismatic guides, make for unbeatable quality.

### New common features at a glance

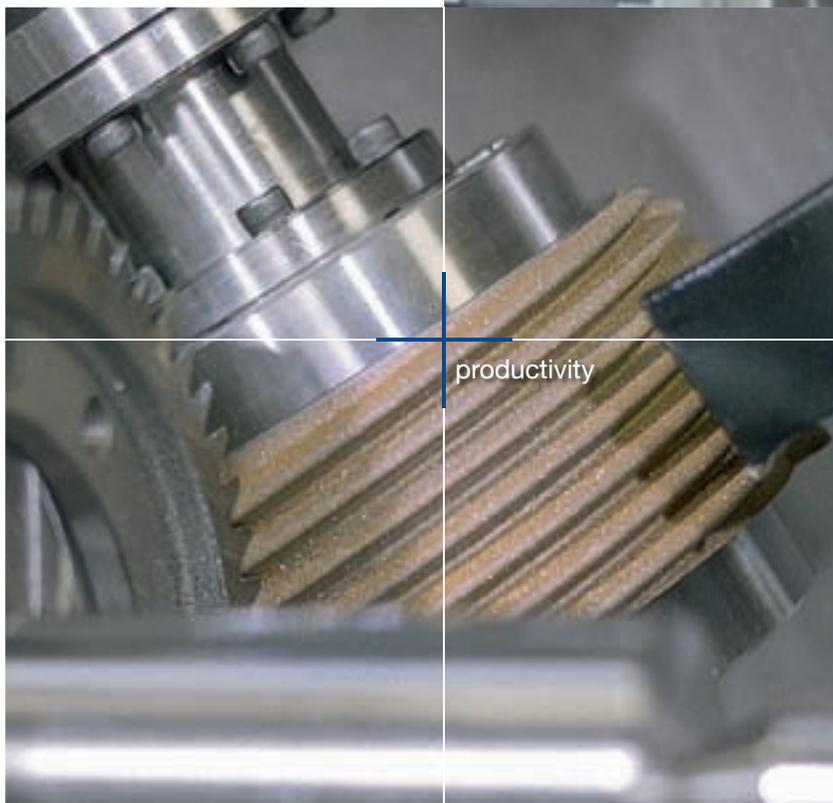
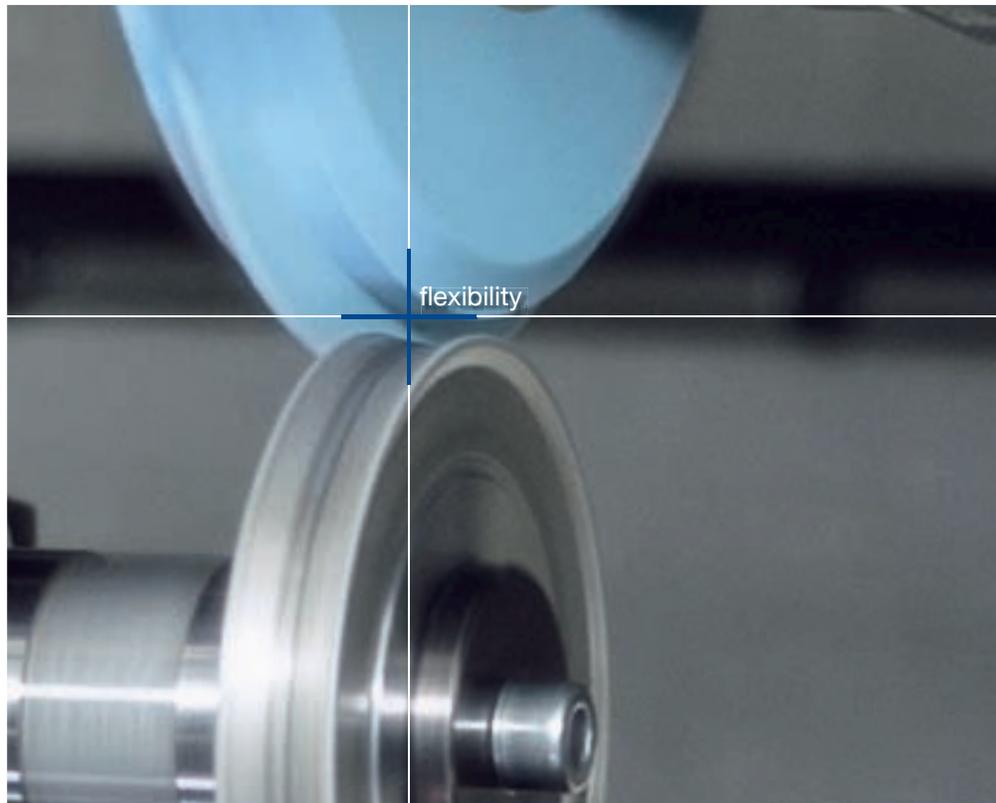
- + Ribbed steel structure for optimum vibration damping
- + Re-circulating coolant, additional flushing and direct swarf evacuation for optimum thermal stability
- + Direct drives and linear motors
- + Quick-change adapter for spindle drives
- + HSK adapter for fast tool changes
- + Precision-ground slides for linear movements
- + Flat and prismatic guides
- + Direct linear scales
- + Additional spindle variants
- + Higher work range
- + Longer X- and Z-axis travel





## Be flexible today and prepared for tomorrow, using electroplated CBN or dressable ceramic tools

All machines in the G-H series (with the exception of the GR and GW series) are engineered to mount both dressable ceramic or electroplated CBN grinding wheels. Depending on your lot size and in-house requirements in terms of flexibility, efficiency, tool costs and surface requirements, you are free to choose the tool technology that best suits you.



## Electroplated tools designed for you

Either ceramic or electroplated CBN grinding tools are available from Samputensili including roughing and finishing tools which are backed up by our extensive application know how.

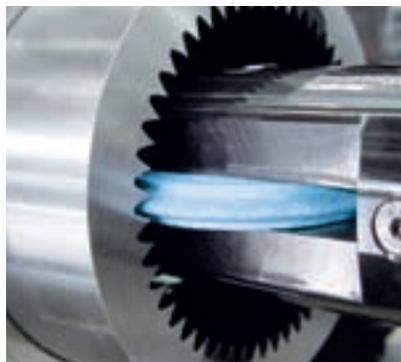
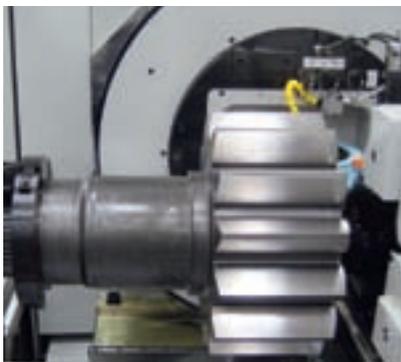


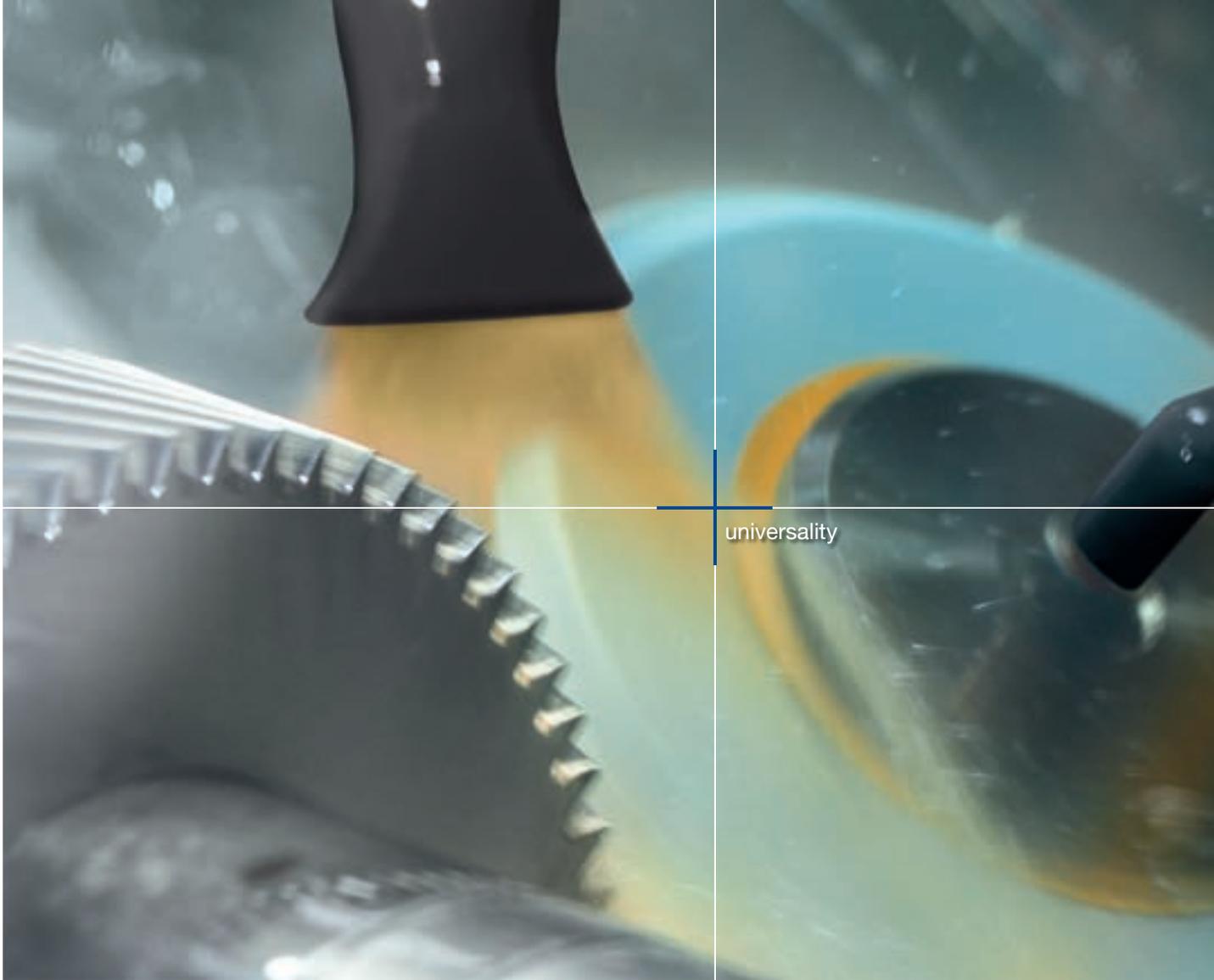
The G 500 H is the universal and extremely flexible base machine of the G series and it is ideal for single pass creep feed grinding of external spur and helical gears, crown gears and shafts, worms, rotors and screw-type workpieces up to 500 mm in diameter. Optionally it is possible to grind spur or helical internal gears.

Quick-change spindles and ceramic tool technology, combined with a flexible dressing unit and modular software packages guarantee rapid format change and unmatched process versatility.

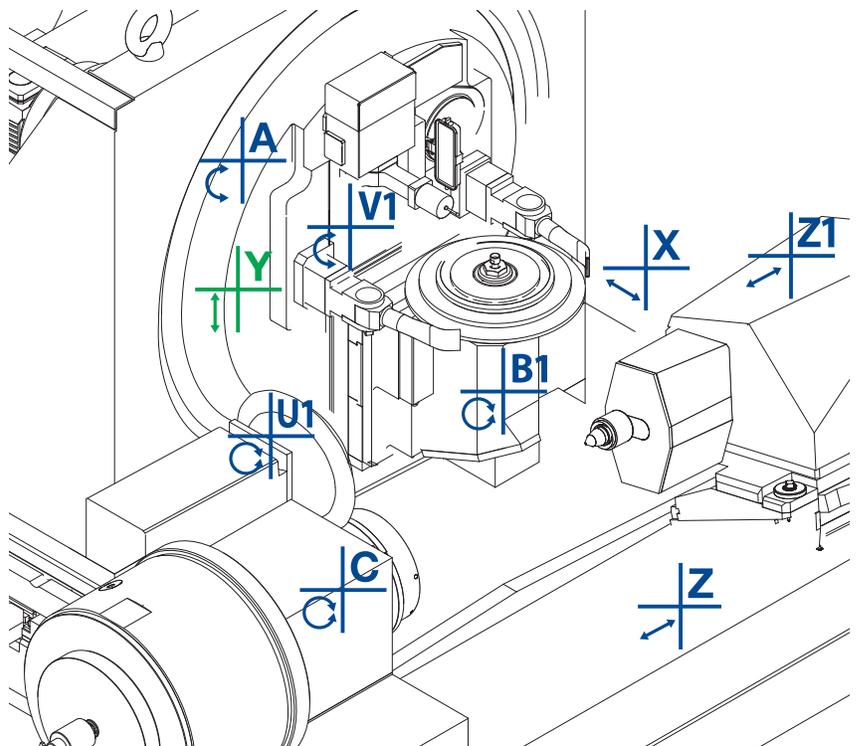
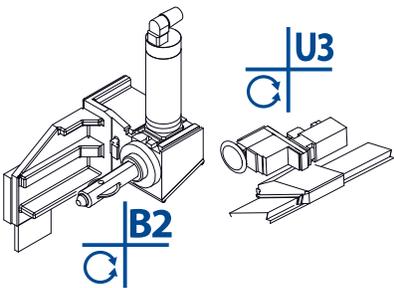
## at a glance

- + Universal solution for a wide range of gears, shafts and screw-type workpieces
- + Flexible manufacturing of small or large lots
- + Creep feed grinding
- + Integrated checking





universality



- A Tool head swivel
- B1 Tool spindle rotation (externals)
- B2 Tool spindle rotation (internals)
- C Work spindle rotation
- U1 Dressing spindle rotation (ext.)
- U3 Dressing spindle rotation (int.)
- V1 Measuring unit swivel (option)
- X Radial travel
- Z Axial travel
- Z1 Tailstock travel (option)
- Tangential travel manually adjustable
- Dressing process by interpolation



GP

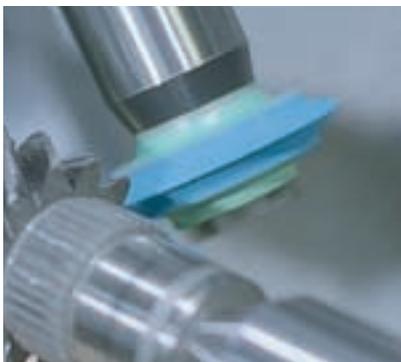
## at a glance

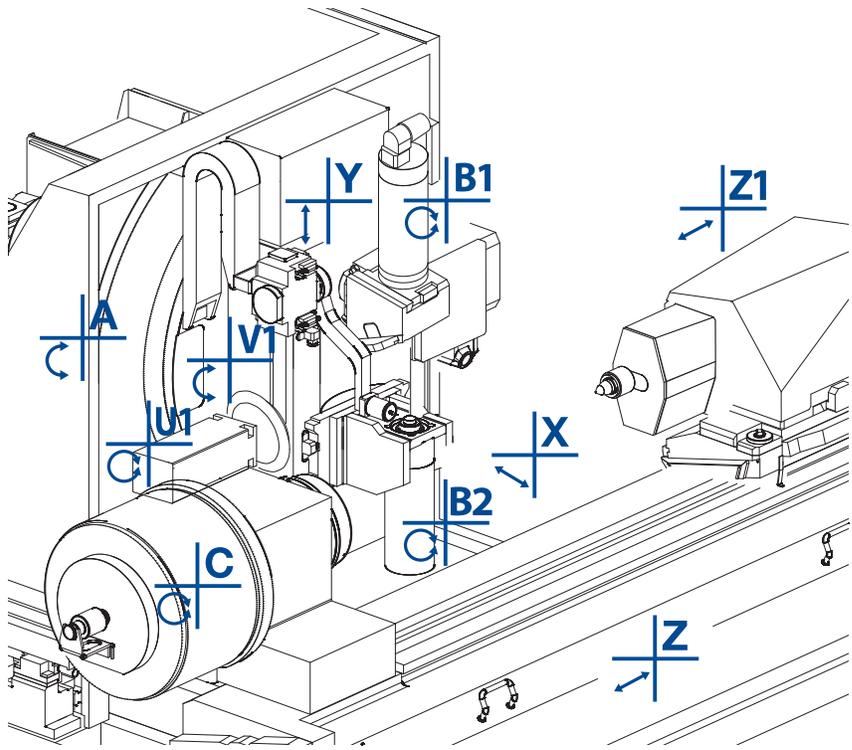
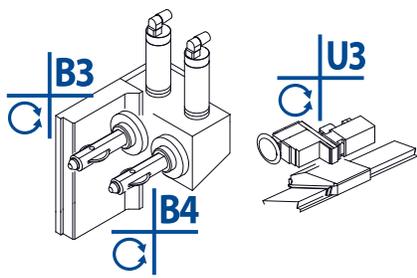
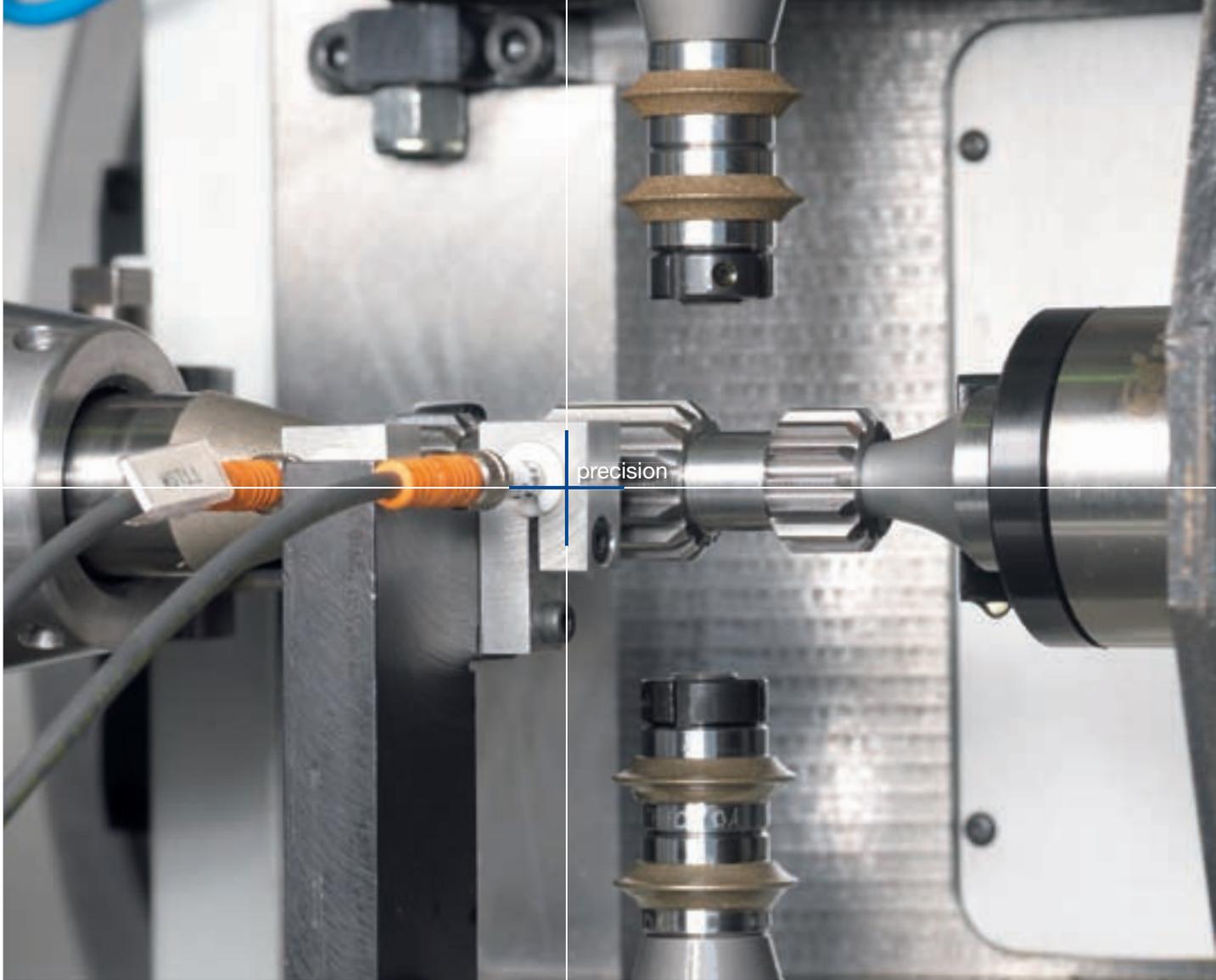
- + Roughing and finishing in a single setup without the need for tool change
- + Profile grinding of gears, shafts with separate gearings, rotors, worms and screw-type workpieces
- + Internal grinding with the twin spindle principle
- + Fast format changes via quick-change adaptors and modular software

The GP 500 H mounts an additional NC axis, allowing you to work with two separate spindles instead of just one. Both spindles can accommodate one grinding wheel or even two-wheel sets.

Single gearings are roughed on the first spindle and finish ground on the second, with one grinding wheel mounted on each spindle. Two gearings on one shaft can be roughed and finished with wheel sets on each spin-

dle without the need for tool changes. Spindle variants are available with different power outputs and speeds for different grinding wheel sizes. Even internal gear manufacture no longer requires tool change thanks to this new twin drive principle.





- A Tool head swivel
  - B1 Tool spindle rotation (ext. top)
  - B2 Tool spindle rotation (ext. bottom)
  - B3 Tool spindle rotation (int. left)
  - B4 Tool spindle rotation (int. right)
  - C Work spindle rotation
  - U1 Dressing spindle rotation (ext.)
  - U3 Dressing spindle rotation (int.)
  - V1 Measuring unit swivel (option)
  - X Radial travel
  - Y Tangential travel (automatically)
  - Z Axial travel
  - Z1 Tailstock travel (option)
- Dressing process by interpolation



The GT 500 H gear grinding machine is ideal for both prototyping tasks and efficient grinding of medium and large gear batches. With an additional tool shifting axis, it caters for both profile and continuous generating grinding processes.

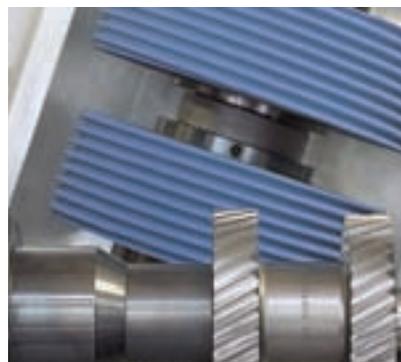
All standard lead and profile corrections can be generated by a dressing device of your choice, and, thanks to this machine's superior flexibility,

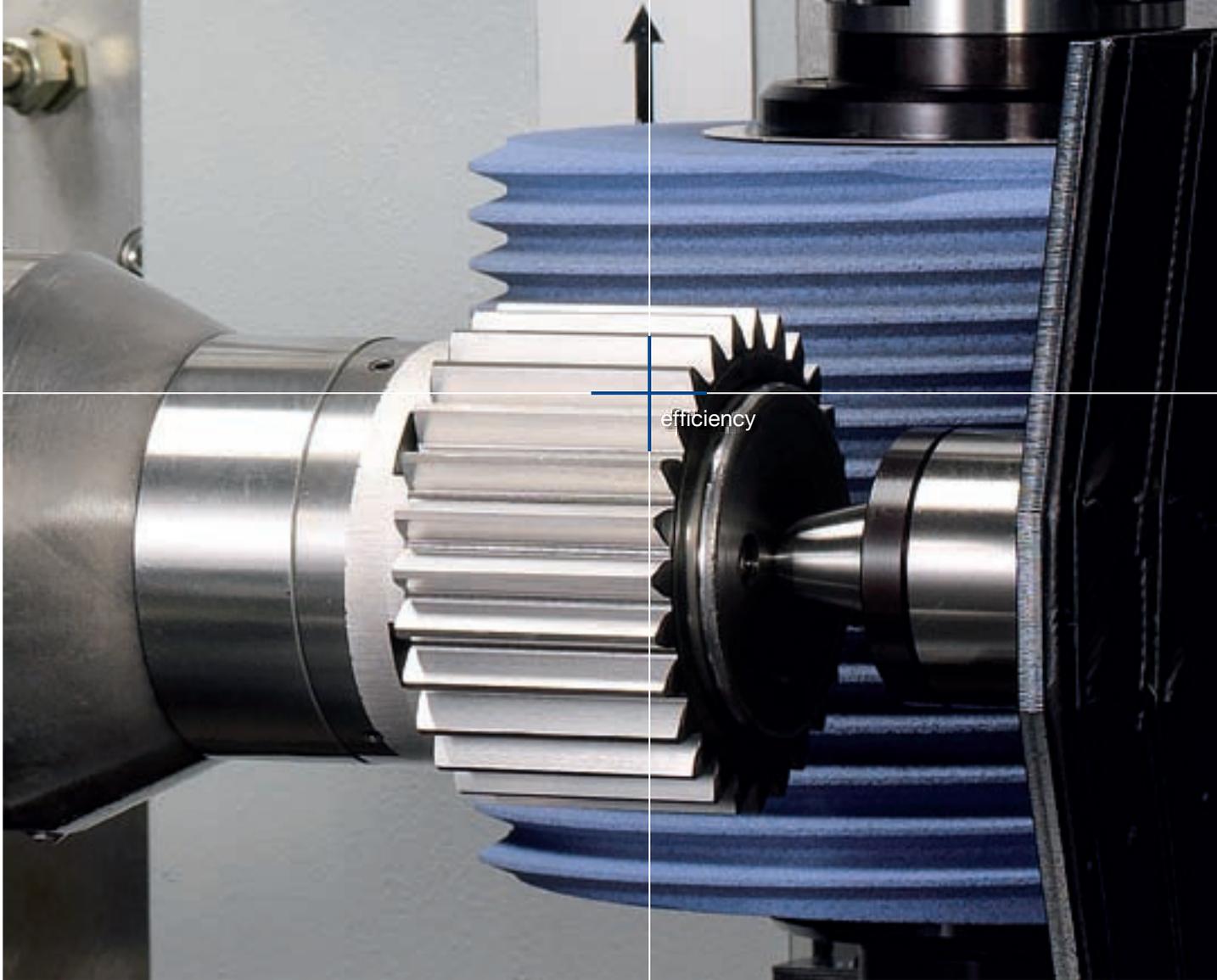
you can also apply the most appropriate technology for the given task and even combine different kinds of roughing and finishing processes to maximise efficiency.

Plus, with its absolute speed values, the GT 500 H will realise the lowest possible cycle times and has vast potential to accommodate future generations of grinding tool abrasives.

## at a glance

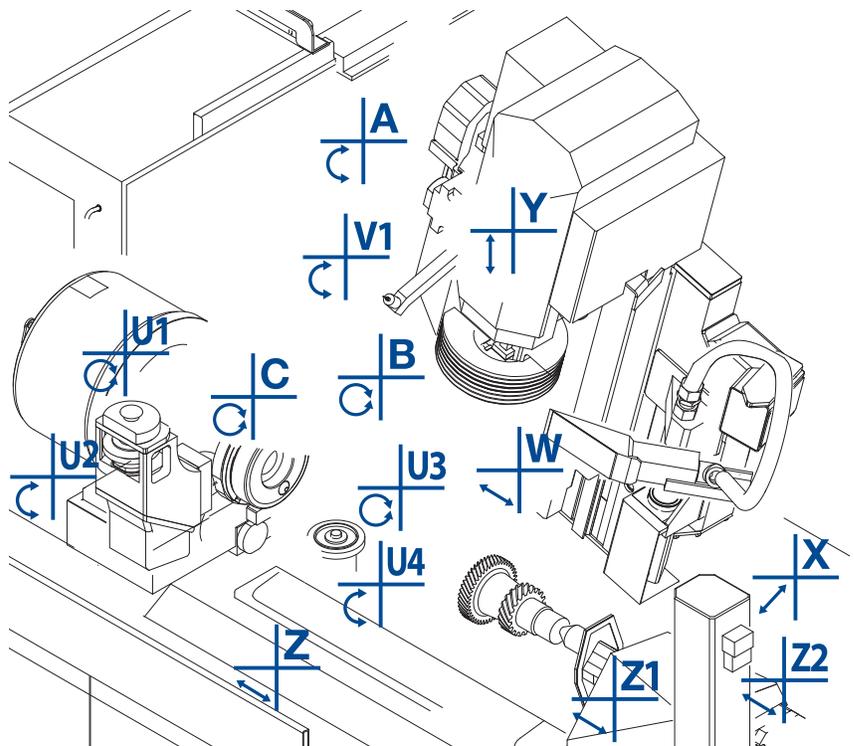
- + Highly efficient generating grinding with CBN or ceramic tools
- + Flexible manufacturing of small or large lots
- + Integrated checking
- + Automation solutions available





efficiency

- A Tool head swivel
  - B Tool spindle rotation
  - C Work spindle rotation
  - U1 Dressing spindle rotation (main)
  - U2 Dressing spindle swivel (main)
  - U3 Dressing spindle rotation (secondary)
  - U4 Dressing spindle swivel (secondary)
  - V1 Measuring unit swivel (option)
  - W Coolant nozzle travel
  - X Radial travel tool head
  - Y Tangential travel tool head
  - Z Axial travel work spindle
  - Z1 Tailstock travel (option)
  - Z2 Tailstock slide travel (option)
- Dressing process by interpolation





# GR

## at a glance

- + Special machine version for the manufacture of rotors and screw-type workpieces
- + Powerful main spindle for high stock removal rates
- + Specific software packages for rotor and screw production are also available
- + Specific dressing unit
- + Standard and special work-piece support solutions
- + Automation by portal loader or robotic device

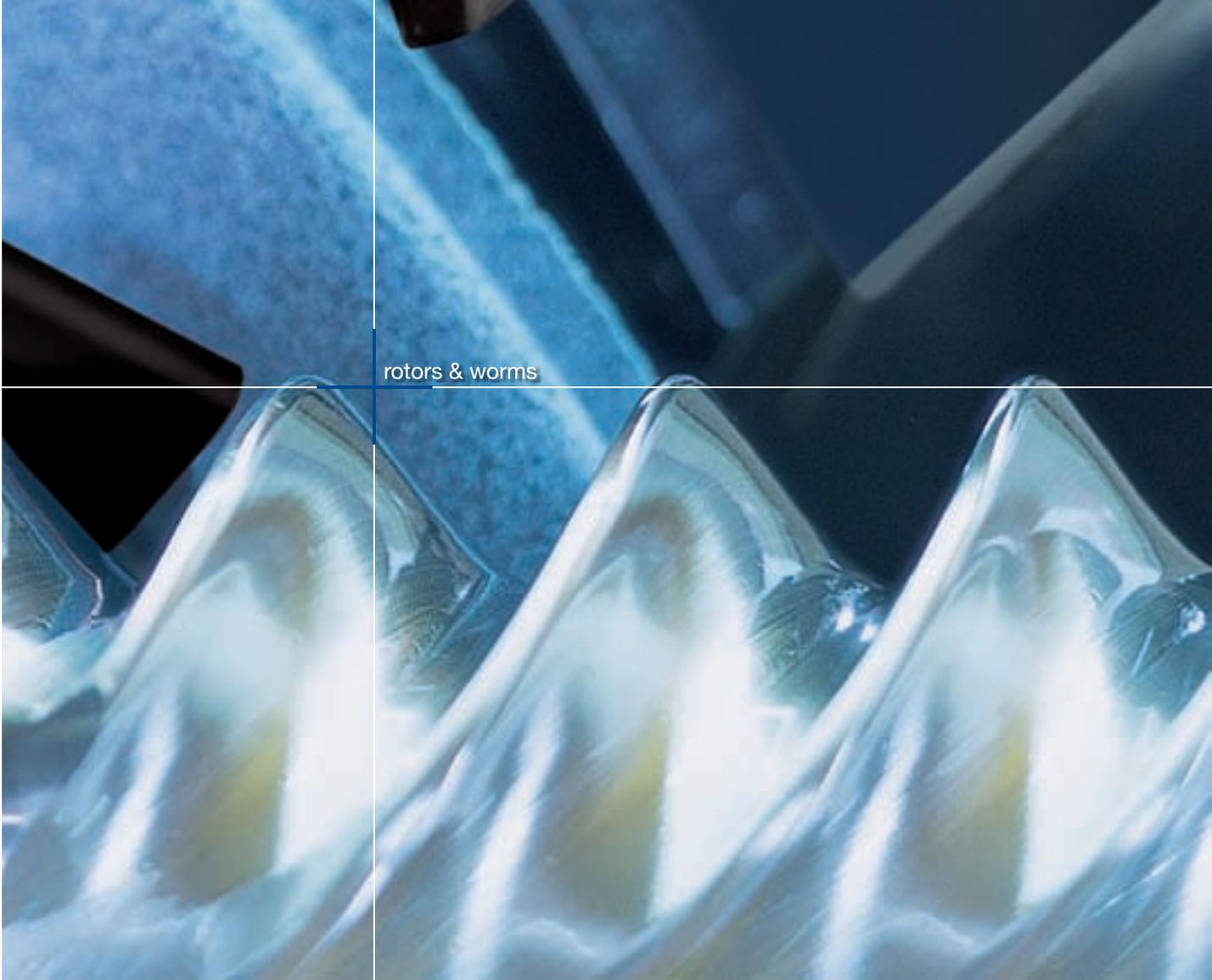
The GR 500 H has been specifically designed for efficient high precision grinding of a wide range of screw-type profiles including rotors, cylindrical and tapered worms, simple or barrier-type screw segments and workpieces with constant or variable leads. The high performance grinding spindle is generously motorised and the machine is designed with an appropriately sized coolant filtration system meaning you can grind workpieces from a solid as well as hardened worms. With a dressing unit for ceramic bonded grinding wheels and an integrated checking unit, the GR is perfect for top quality flexible pro-

duction of the smallest lots or mass production applications alike, making it a very flexible asset.

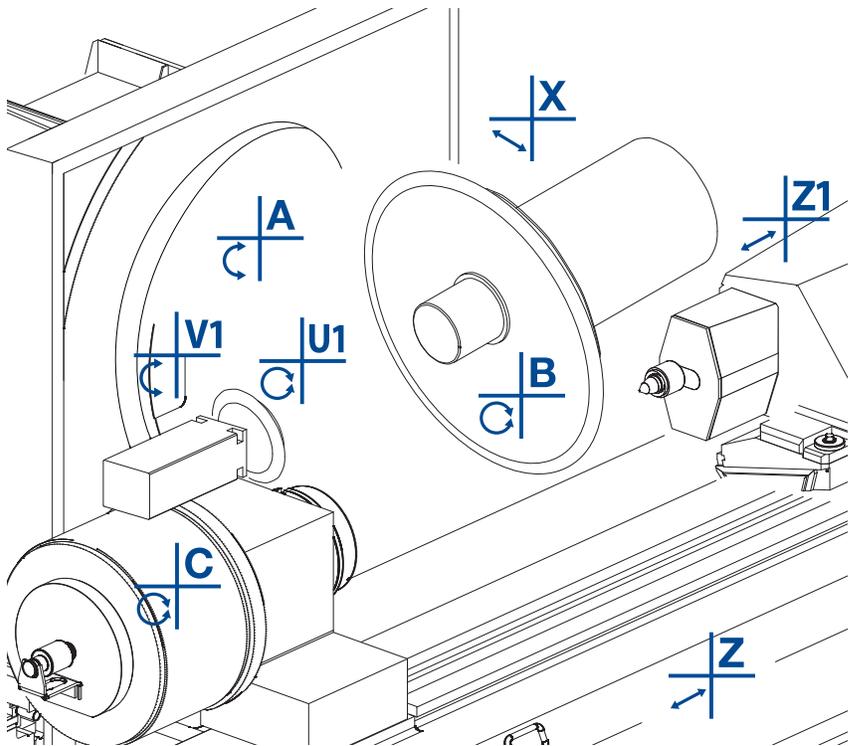
Connection to a portal loader and direct communication with an external measuring unit enhance the efficiency of your production process.

The GR 500 H comes with a specific software package for screw-type workpieces, developed under real manufacturing conditions.





rotors & worms



- A Tool head swivel
  - B Tool spindle rotation
  - C Work spindle rotation
  - U1 Dressing spindle rotation
  - V1 Measuring unit swivel (option)
  - X Radial travel
  - Z Axial travel
  - Z1 Tailstock travel (option)
- Dressing process by interpolation



# GRX

The GRX is a larger and stronger version of the GR. Its powerful twin spindle and extremely stable bed design make it a must for the manufacture of very large screws and rotors.

Especially adapted to grind with CBN, the GRX also makes working with dressable ceramic wheels or even combinations of the two easy. An integrated measuring unit also makes the correction of rotor prototypes

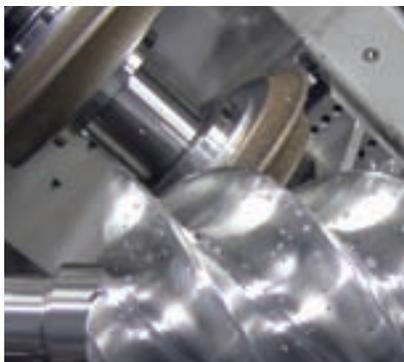
and pre-production pieces more straightforward.

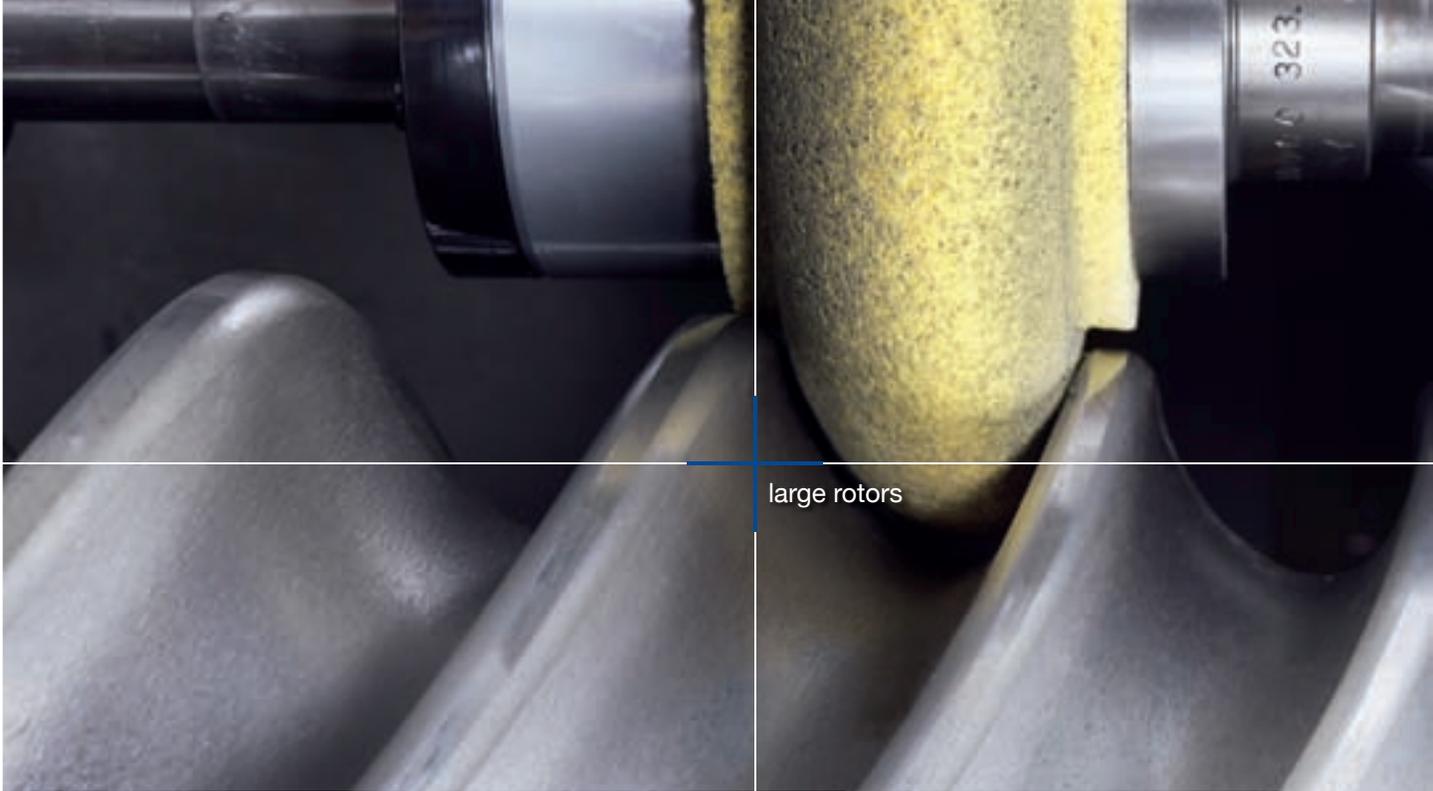
For more efficient handling, you can link the GRX to an external robot device and connect it directly with an external measuring unit.

Like the GR, the GRX comes with a rotor-specific software package, developed under real manufacturing conditions.

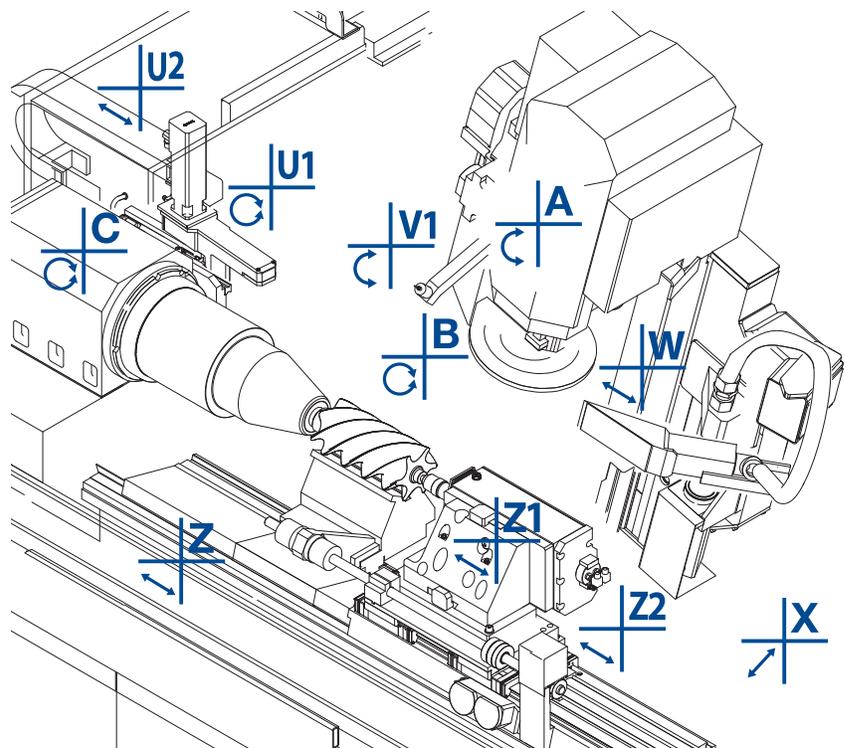
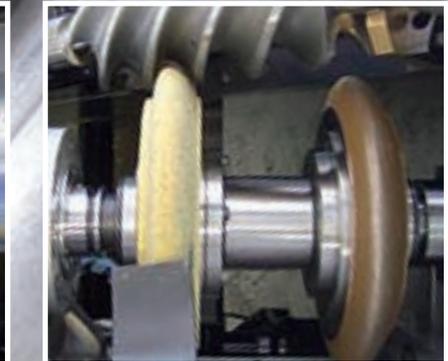
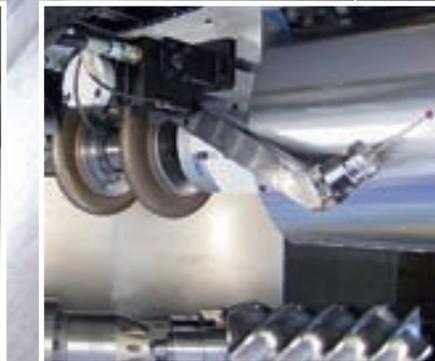
## at a glance

- + Special machine version for the manufacture of large rotors
- + Extra powerful main spindle for high stock removal
- + Double tool setup for roughing and finishing on one spindle
- + Tried and tested rotor manufacturing software
- + Integrated measuring and optional closed-loop manufacturing





large rotors



- A Tool head swivel
- B Tool spindle rotation
- C Work spindle rotation
- U1 Dressing spindle rotation
- U2 Dressing spindle axial travel
- V1 Measuring unit swivel (option)
- W Coolant nozzle travel
- X Radial travel
- Z Axial travel
- Z1 Tailstock travel (option)
- Z2 Tailstock slide travel (option)



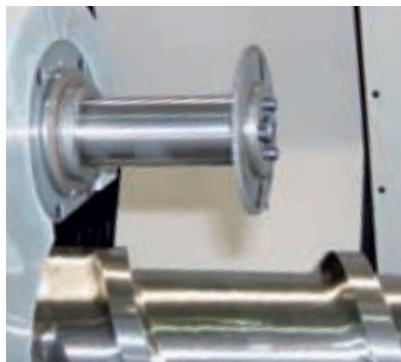
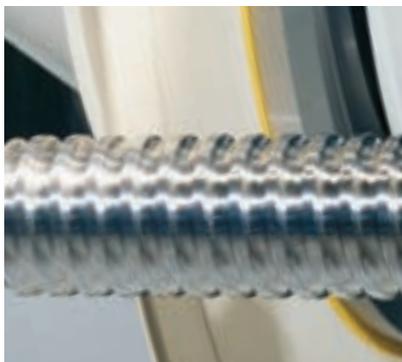
The GW 3600 H is a special machine for the high precision grinding of very long screw-type profiles, for example extruder screws for plastic injection moulding or ball screws. Equipped with a powerful grinding spindle for large grinding wheels and workpiece supports adapted to each application you will produce worry-free screws up to a length of 3600 mm. With its

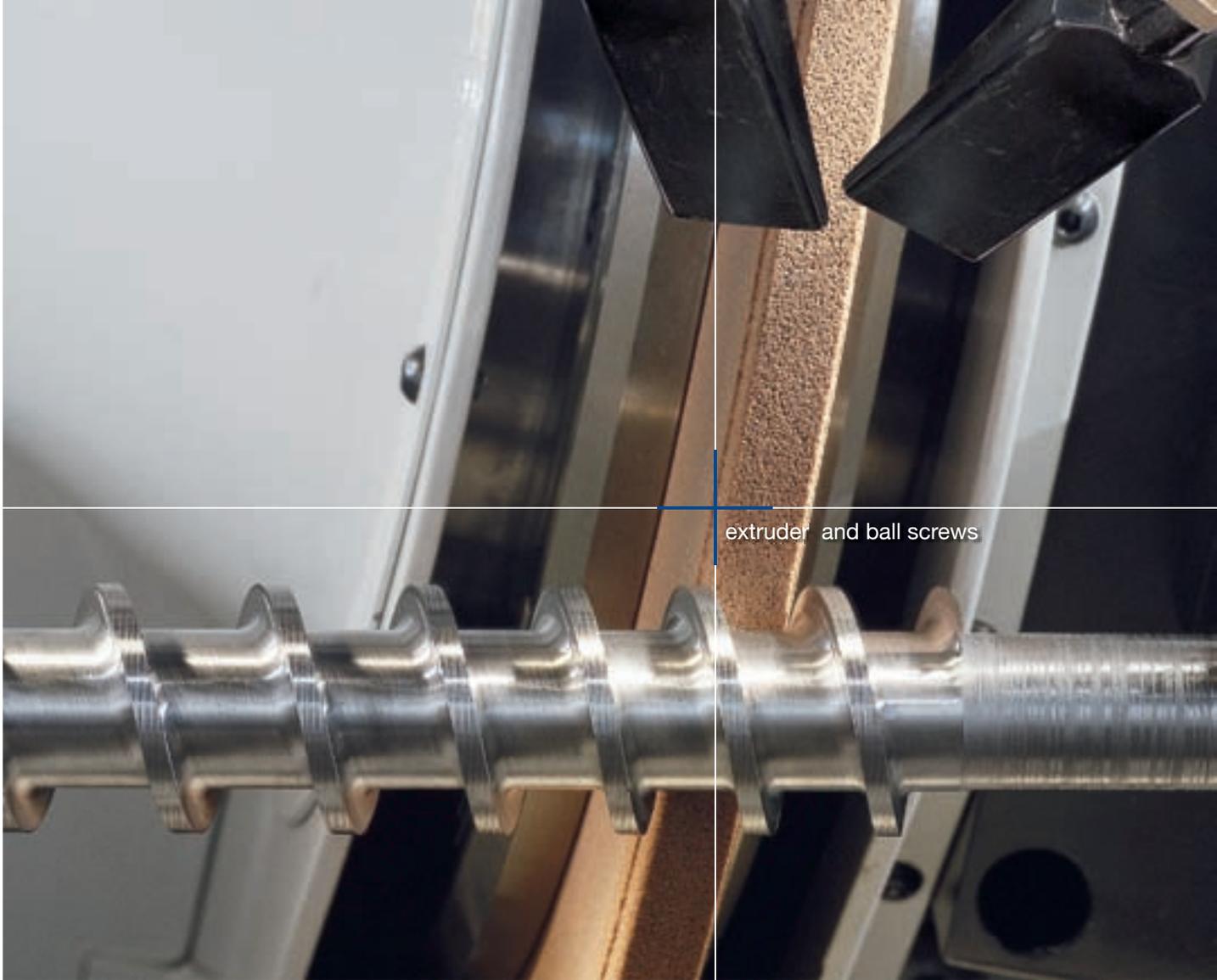
optional dressing units for ceramic bonded grinding wheels the machine is prepared for flexible mass production requirements.

You will receive your GW 3600 H together with the appropriate software and the required grinding and dressing tools to make your screw production soar.

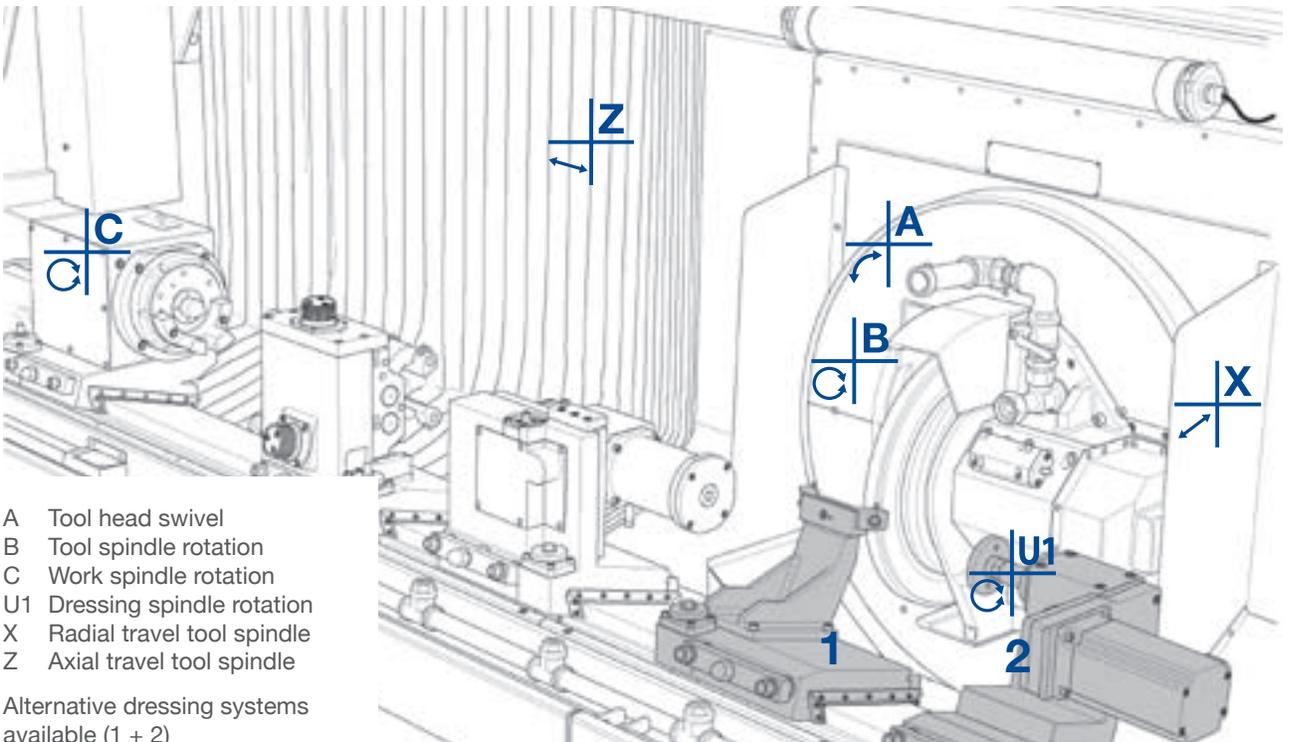
## at a glance

- + Special machine version for the manufacture of extra long screw-type workpieces
- + One powerful grinding spindle
- + Specific dressing unit for large grinding wheels
- + Specific screw manufacturing software packages
- + Standard and special workpiece support solutions
- + Linkable to an external measuring unit for closed-loop manufacturing





extruder and ball screws



- A Tool head swivel
- B Tool spindle rotation
- C Work spindle rotation
- U1 Dressing spindle rotation
- X Radial travel tool spindle
- Z Axial travel tool spindle

Alternative dressing systems available (1 + 2)

# options

Depending on your application, the machines in the G-H series are equipped with various options.

Samputensili dressing units utilise universal dressing rolls and generate profiles calculated by the machine software. Dressing stock volumes are determined by an integrated sensor, which means the number of dressing passes is now limited to those that are actually necessary, making dressing cycles faster and reducing unproductive auxiliary times.

When processing longer workpieces like extruder screws, using the right

workpiece support is fundamental to prevent bending or vibration during the grinding process and to secure the workpiece during clamping. Whether you work with rotors, circulating ball spindles, pumps or extruder screws, we find the right solution to guarantee the quality you need.

The correlation between stock removal and the ability of a machine to supply a consistent flow of pure coolant is essential for trouble-free production and constant top quality. We recommend and supply you with the right filtration unit for your application

## at a glance

- + Different dressing options depending on the application
- + Coolant filtration units for steel and cast iron machining
- + Workpiece support systems made for perfect fit
- + Integrated on-machine inspection and closed loop manufacturing
- + Various high-performance grinding spindles



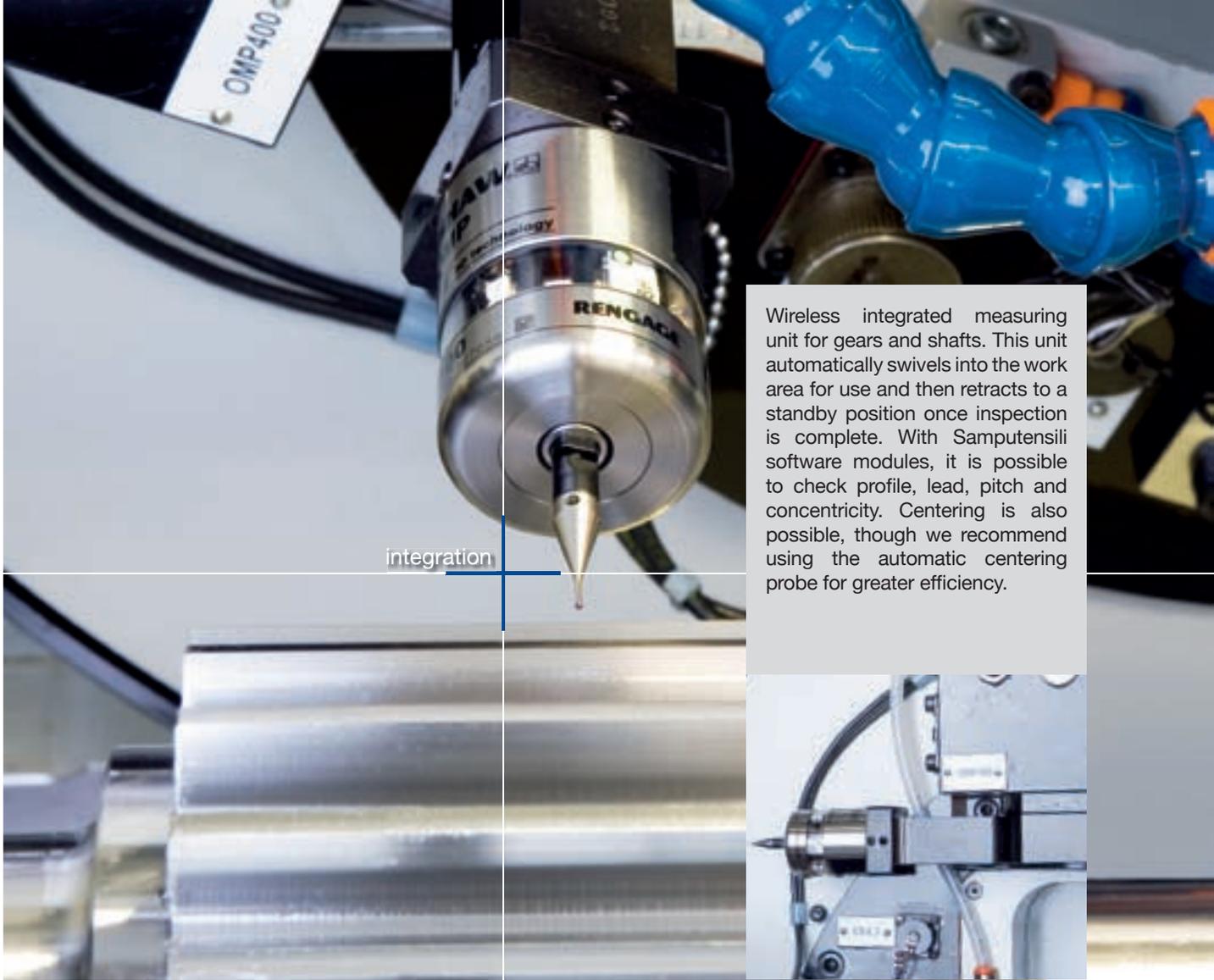
From left to right:

Coolant filtration unit for steel machining.

Double flank dressing on GT

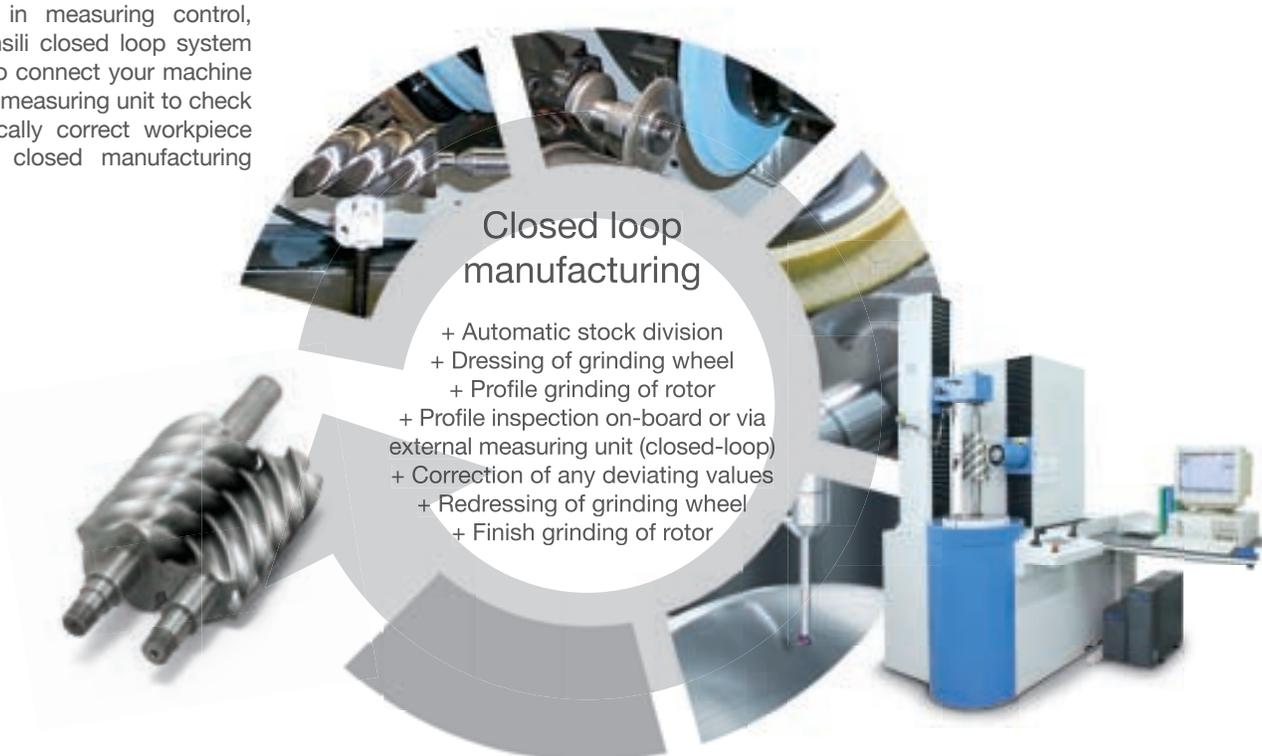
Dressing unit for internal profile grinding with ceramic wheels

Workpiece support for extruder screws.



Wireless integrated measuring unit for gears and shafts. This unit automatically swivels into the work area for use and then retracts to a standby position once inspection is complete. With Samputensili software modules, it is possible to check profile, lead, pitch and concentricity. Centering is also possible, though we recommend using the automatic centering probe for greater efficiency.

The ultimate in measuring control, the Samputensili closed loop system enables you to connect your machine to an external measuring unit to check and automatically correct workpiece profiles in a closed manufacturing cycle.

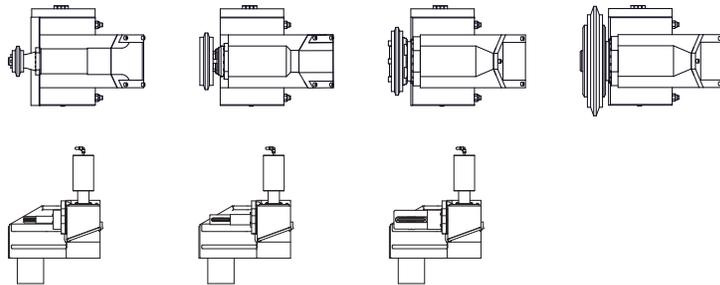




## Basic spindle variants for profile, generating and internal grinding

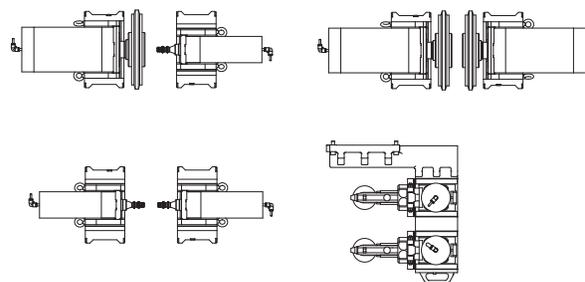
# G

Profile grinding with ceramic and electroplated CBN wheels



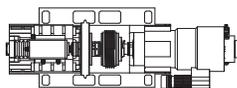
# GP

Double spindle for profile grinding with ceramic and electroplated CBN wheels



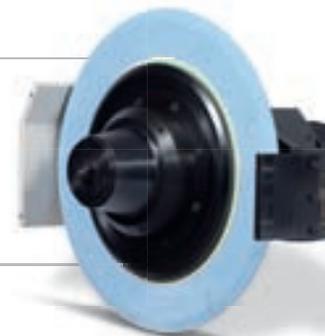
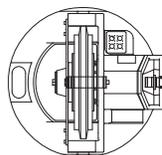
# GT

Twin spindle for profile and generating grinding with ceramic and electroplated CBN tools



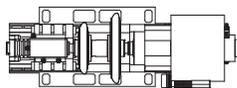
# GR

Profile grinding of screw-type workpieces with ceramic wheels



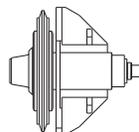
# GRX

Twin spindle for profile grinding of screw-type workpieces with ceramic and electroplated CBN wheels



# GW

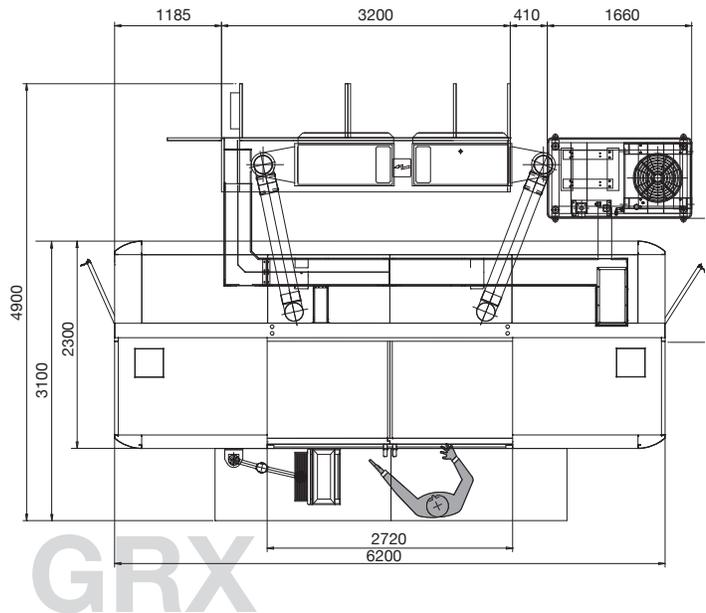
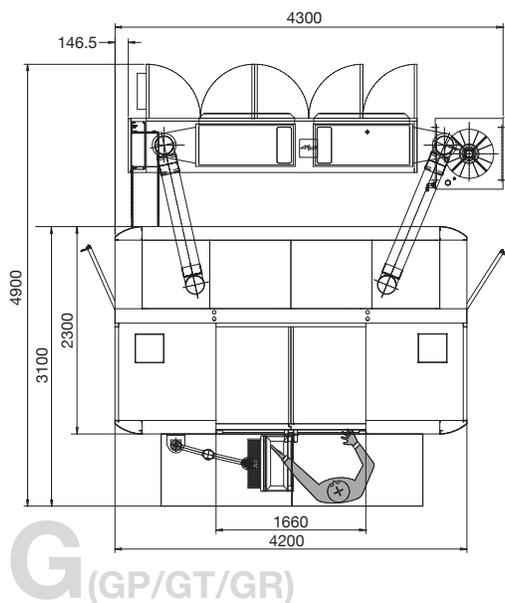
Profile grinding of very long screw-type workpieces with ceramic wheels



## Technical data

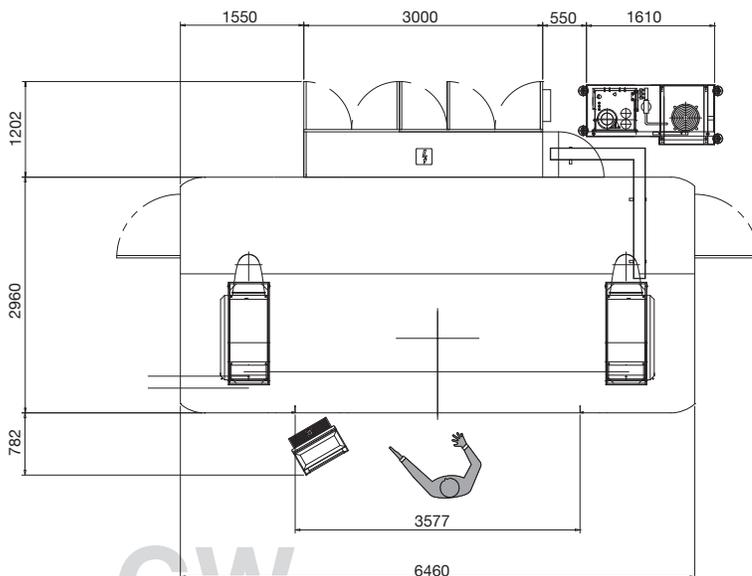
		<b>G 500 H</b>	<b>GP 500 H</b>
Workpiece diameter, max.	mm	500	500
Module, max.	mm	0.5 - 22.0	0.5 - 15.0
Profile depth, max.	mm	52	29
Tool head swivel range	degree	+/- 90	+/- 90
Centre dist. work spindle / tool spindle	mm	20 - 445	15 - 380
Workpiece length, max.	mm	1,250	1,250
Axial travel, max.	mm	900	900
Radial travel, max.	mm	330	330
Tangential travel, max.	mm	n/a	160
Tool spindle power	kW	20	5.5 / 16
Ceramic wheel diameter	mm	40 - 300	30 - 300
Ceramic wheel thickness, max.	mm	40 / 70 with shoulders	40
CBN wheel diameter	mm	30 - 220	30 - 220
CBN wheel thickness, max.	mm	30 / 60	30
Dressing disc diameter, max.	mm	150	150
Tool spindle speed, max.	rpm	32,500*	20,000 / 40,000
Work spindle speed	rpm	0 - 600	0 - 600
Workpiece weight, max.	kg	350	350
Total connected load / with coolant filtration unit	kVA	150	150
Machine weight, including standard equipment	kg	15,500	15,500

\*) Depending on wheel dimensions. Technical data is subject to change without prior notification. Max. values depend on the application.

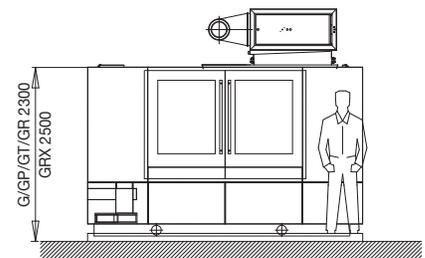


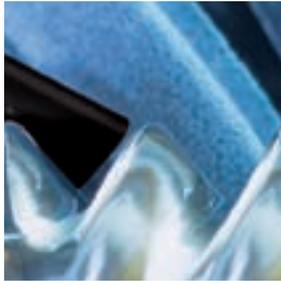
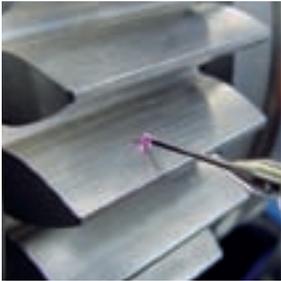


GT 500 H	GR 500 H	GRX 500 H	GW 3600 H
400	400	400	250
6.0 (generating grinding)	n/a	n/a	n/a
1.0 - 20.0 / 1.0 - 25.0 (CBN)	52 / 80	80	40
+/- 90	+/- 90	+/- 90	+/- 90
32.5 - 362.5	165 - 495	32.5 - 460	170 - 355
950	1,250	1,600	3,600
900	900	1,130	3,000
330	330	427.5	185
220	n/a	n/a	n/a
48	20 / 35	50	20 / 35
80 - 280 (worm)	300 - 500	190 - 340	330 - 450
180	80 / 120 with shoulders	145	45 / 75 with shoulders
220	n/a	280	n/a
120	n/a	100	n/a
120	150	70	70
0 - 20,000	4,000	8,000	4,000
0 - 1,000	0 - 600	0 - 600	0 - 400
300	350	450	250
100	150	150	40
27,000	15,500	30,000	18,500



GW





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