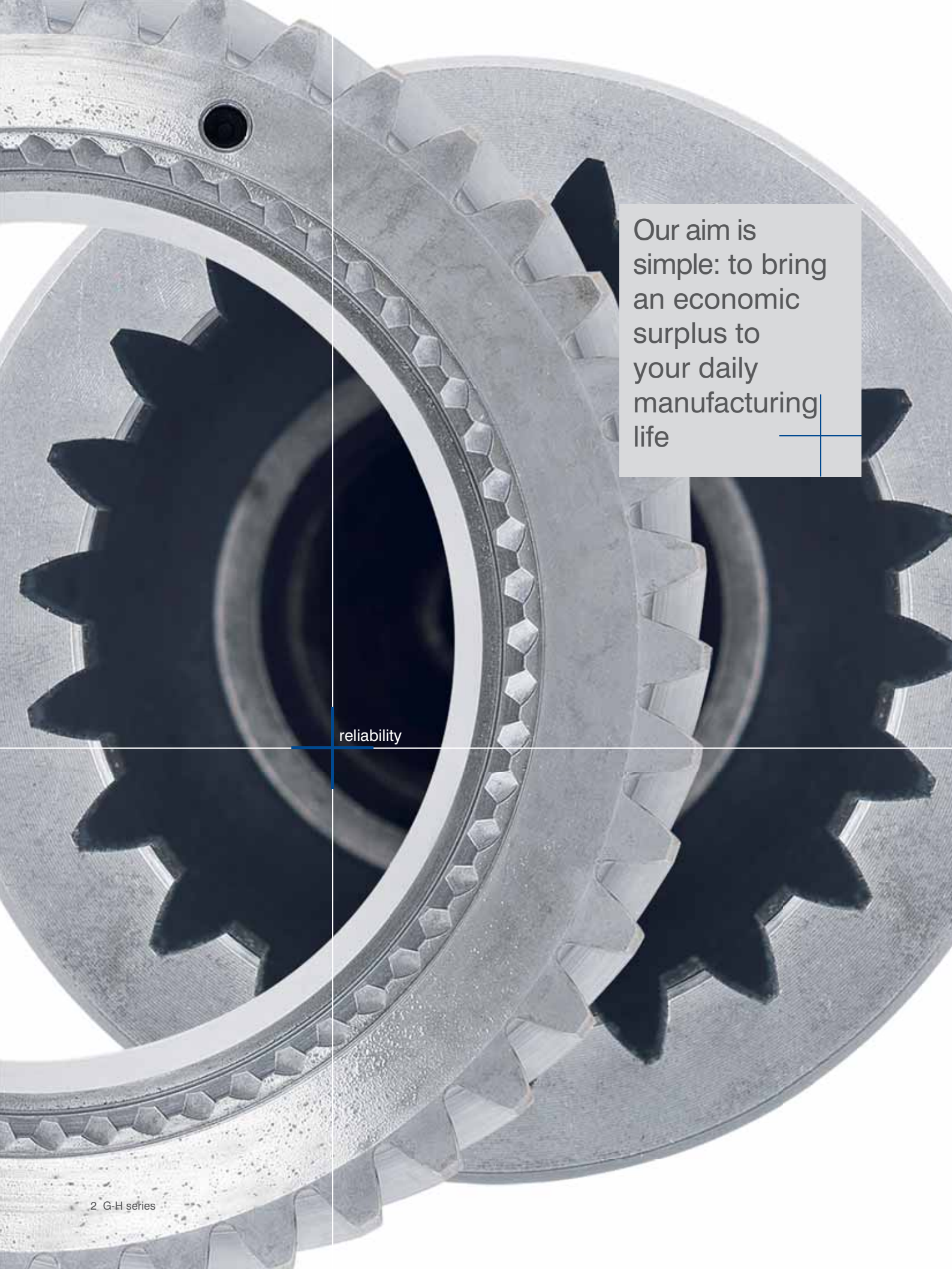




G-H series
horizontal grinding machines
for gears, rotors and screws

A high-contrast, close-up photograph of several interlocking industrial gears. The gears are made of a dark, metallic material, possibly steel, and show signs of wear and use. The teeth of the gears are sharp and pointed, creating a complex, repeating geometric pattern. The lighting is dramatic, with deep shadows and bright highlights that emphasize the texture and form of the metal.

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

reliability

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.

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.

know-how



Horizontal machines



G 375 H Profile grinding machine up to \varnothing 375 mm



G 500 H Profile grinding machine up to \varnothing 500 mm



GP 500 H Profile grinding machine with two electro-spindles



GR 500 H Screw and rotor grinding machine with one ceramic wheel



GRX 500 H Rotor grinding machine with two grinding wheels



GT 500 H Screw and rotor grinding machine with two grinding wheels



GW 3600 H Profile grinding machine for screw-type workpieces up to 3600 mm

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

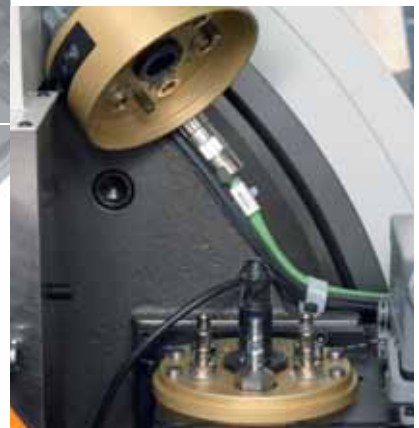
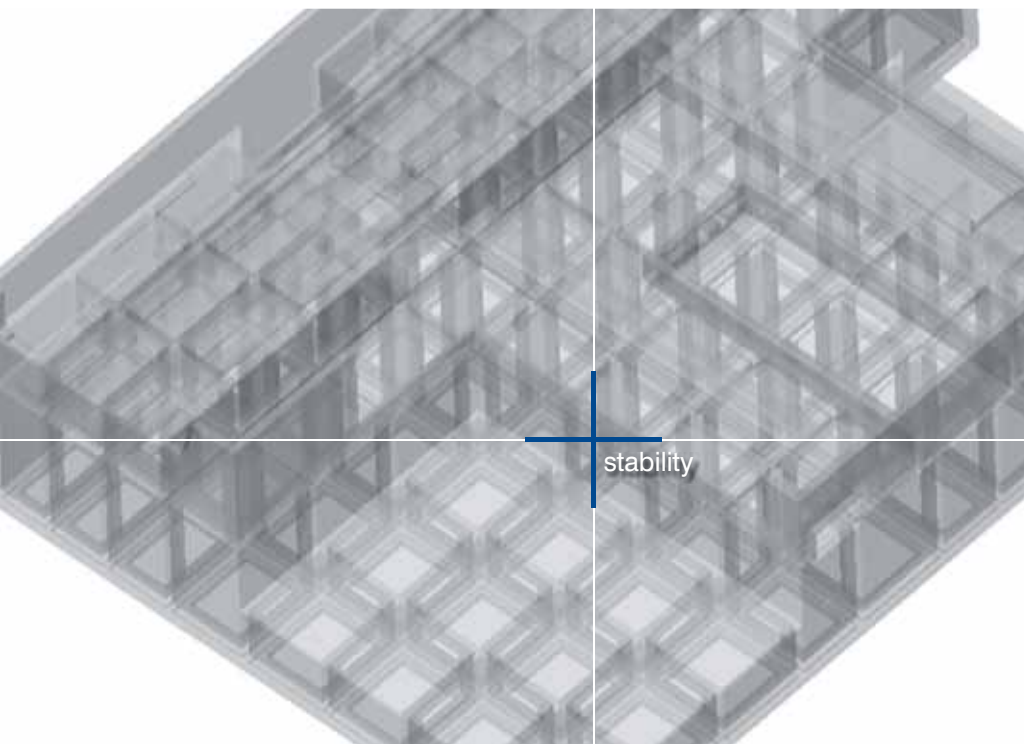
A heavily ribbed structure eliminates the risk of vibration or push and pull phenomena caused by moving machine components. To ensure maximum thermal stability, the machine bed is flooded with recirculating coolant. A new evacuation system transfers swarf from the work area to the filtration unit. Any 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
- + Recirculating 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
- + Higher work range
- + Longer X- and Z-axis travel



G 375 H



The Sambutensili horizontal grinding machine G 375 H is based on a modular design concept, with a wide range of options and it is engineered to suit your individual needs, guaranteeing you efficient, top quality manufacture.

This universal machine is ideally suited to grind external spur and helical gears, crown gears, worms, rotors for air compressors and screws for hydraulic pumps with form-grinding wheel and single index profile grinding.

Optionally it is also possible to grind spur or helical internal gears.

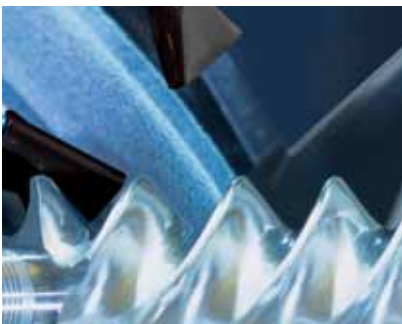
We can offer you ad hoc solutions for any of the above applications so that your machine is manufactured with the right options for you.

The G 375 H is supported by special software packages, which translate our know-how into your manufacturing success.

Particular attention has been paid to the state-of-the-art solutions that allow a fast and cheap tool change.

at a glance

- + High stability of the process thanks to the high stable structure
- + High reliability thanks to direct motors
- + Excellent quality of the end products thanks to the high precision of the machine
- + Versatile and Flexible production
- + Short setup time to switch from a type of production to another



Rotor grinding with a corundum wheel

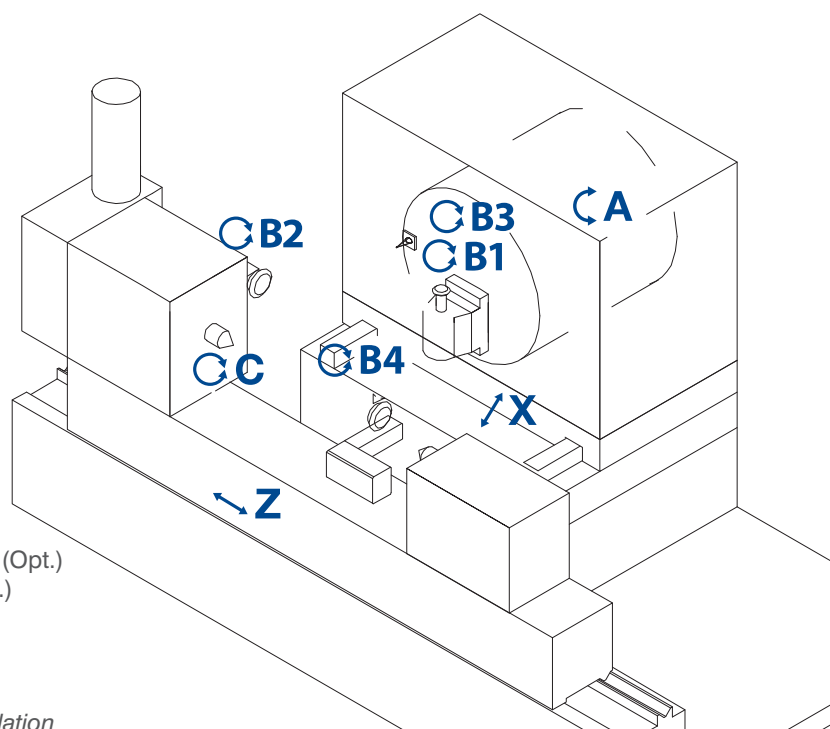


Grinding of helical internal gear



Grinding large module gears with electroplated CBN grinding wheel

productivity



- A Tool head swivel
- C Workpiece table rotation
- B1 Tool spindle rotation
- B2 Dressing spindle rotation
- B3 Dressing spindle rotation for internals (Opt.)
- B4 Tool spindle rotation for internals (Opt.)
- X Radial travel
- Z Axial travel

Tangential travel manually adjustable
Dressing process by machine axis interpolation

G 500 H



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

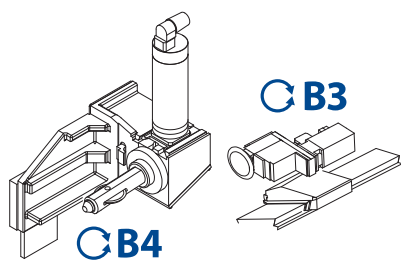
- + Universal solution for a wide range of gears, shafts and screw-type workpieces
- + Flexible manufacturing of small or large lots
- + Creep feed grinding
- + Integrated checking





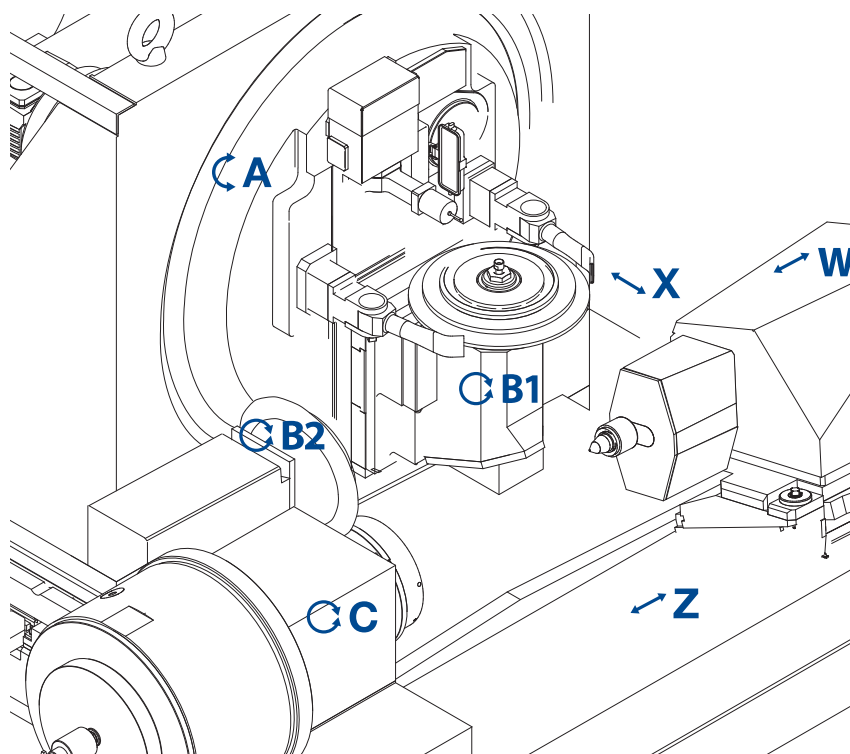
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universality



- A Tool head swivel
- B1 Tool spindle rotation (externals)
- B2 Dressing spindle rotation (ext.)
- B3 Dressing spindle rotation for internals (option)
- B4 Tool spindle rotation for internals (option)
- C Work spindle rotation
- X Radial travel
- Z Axial travel
- W Tailstock axial travel (opt.)

*Tangential travel manually adjustable
Dressing process by machine axis
interpolation*



GP 500 H



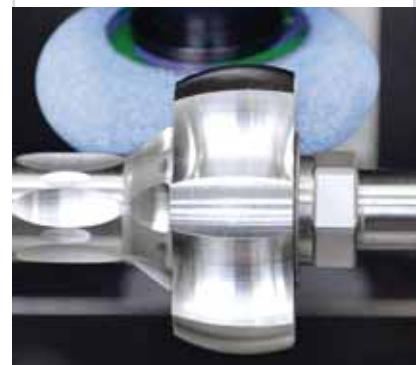
The GP 500 H mounts an additional NC axis, allowing you to work with two separate spindles instead of just one. Both spindles can accommodate one grinding wheel or even two-wheel sets.

Single gears are roughed on the first spindle and finish ground on the second, with one grinding wheel mounted on each spindle. Two gears 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.

at a glance

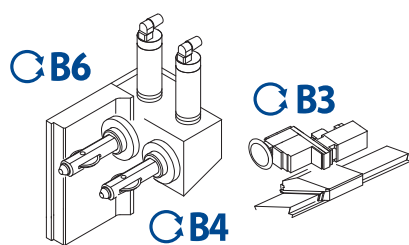
- + Roughing and finishing in a single setup without the need for tool change
- + Profile grinding of gears, shafts with separate gears, rotors, worms and screwtype workpieces
- + Internal grinding with the twin spindle principle
- + Fast format changes via quick-change adaptors
- + Modular Softwares





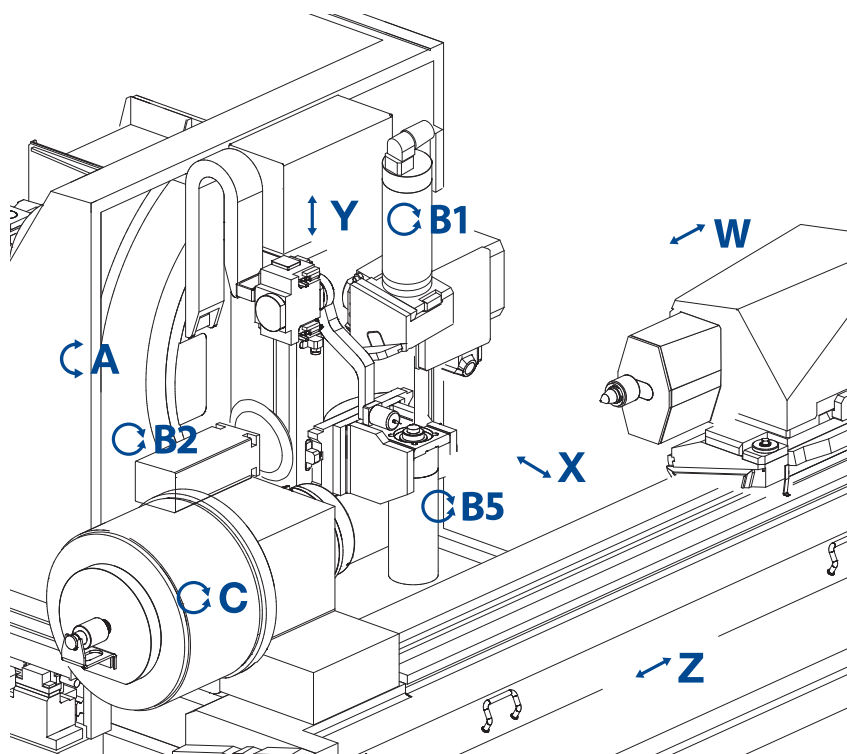
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precision



- A Tool head swivel
- B1 Tool spindle rotation (ext. top)
- B2 Dressing spindle rotation for externals
- B3 Dressing spindle rotation for internals (option)
- B4 Tool spindle rotation (int. right)
- B5 Tool spindle rotation (ext. bottom)
- B6 Tool spindle rotation (int. left)
- C Work spindle rotation
- X Radial travel
- Y Tangential travel (automatically)
- Z Axial travel
- W Tailstock axial travel (opt.)

Dressing process by machine axis interpolation



GT 500 H



The GT 500 H gear grinding machine is ideal for both prototyping tasks and efficient grinding of medium and large gear batches. Thanks to an additional tool shifting Y axis, it can work with two different grinding wheels, one dedicated to roughing and one dedicated to finishing.

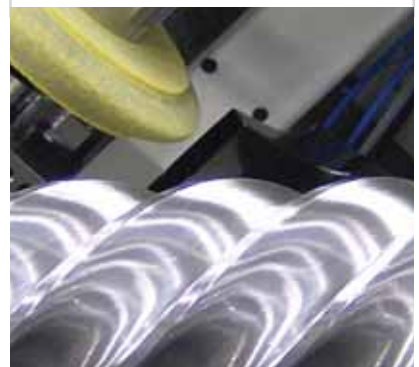
All standard lead and profile corrections can be generated by a dressing device of your choice, and, thanks to

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.

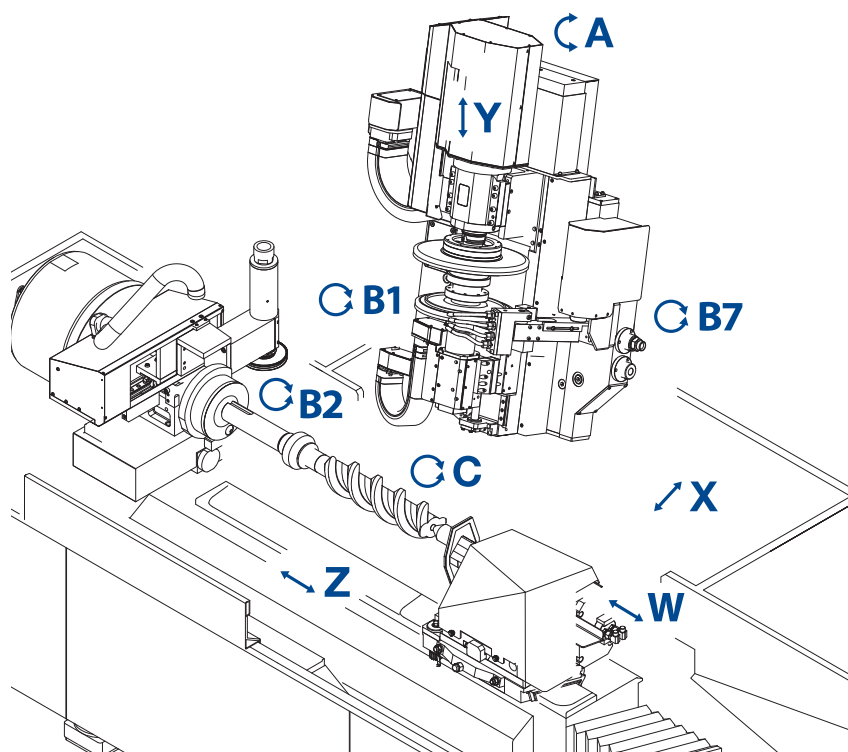
Plus, with its absolute speed values, the GT 500 H will realise the lowest possible cycle times and has vast potential to accommodate future generations of grinding tool abrasives.

at a glance

- + Highly efficient grinding with CBN or ceramic tools
- + Flexible manufacturing of small or large lots
- + Integrated checking
- + Loading and unloading automation solutions available



efficiency



- A Tool head swivel
- B1 Tool spindle Rotation
- B2 Dressing Spindle Rotation
- B7 Coolant nozzle travel
- C Work spindle rotation
- W Counterstock Axial travel
- X Radial travel tool head
- Y Wheel spindle tangential travel Z

*Dressing process by interpolation
machine axis interpolation*

GR 500 H



The GR 500 H has been specifically designed for efficient high precision grinding of a wide range of screw-type profiles including worms, ball screws, rotors, hydraulic pump screw.

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 solid as well as hardened steel. With a dressing unit for ceramic bonded grinding wheels and an integrated checking unit, the GR is perfect for the prototyping and

for the production 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.

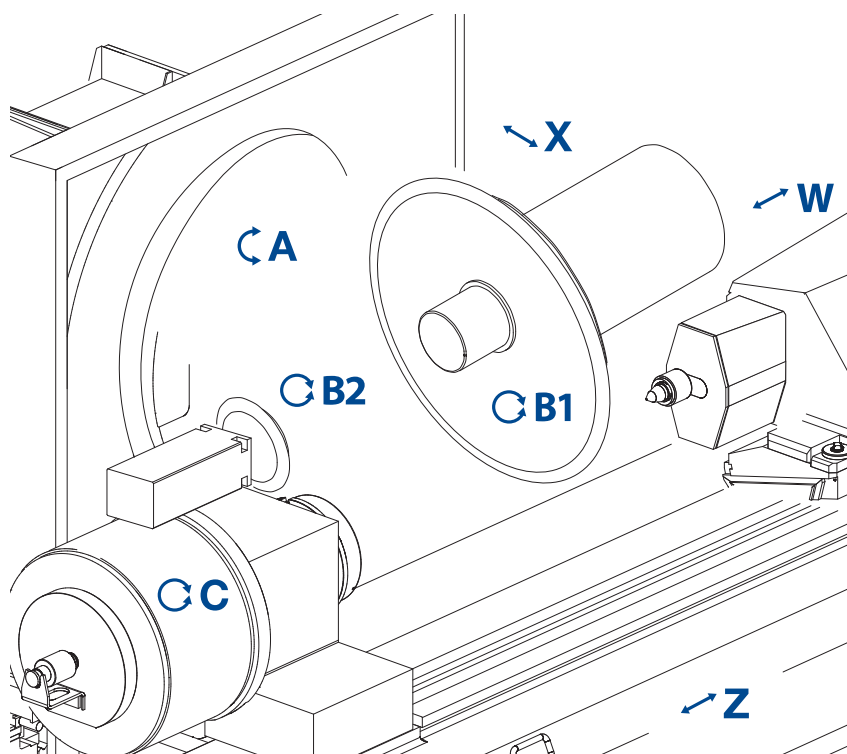
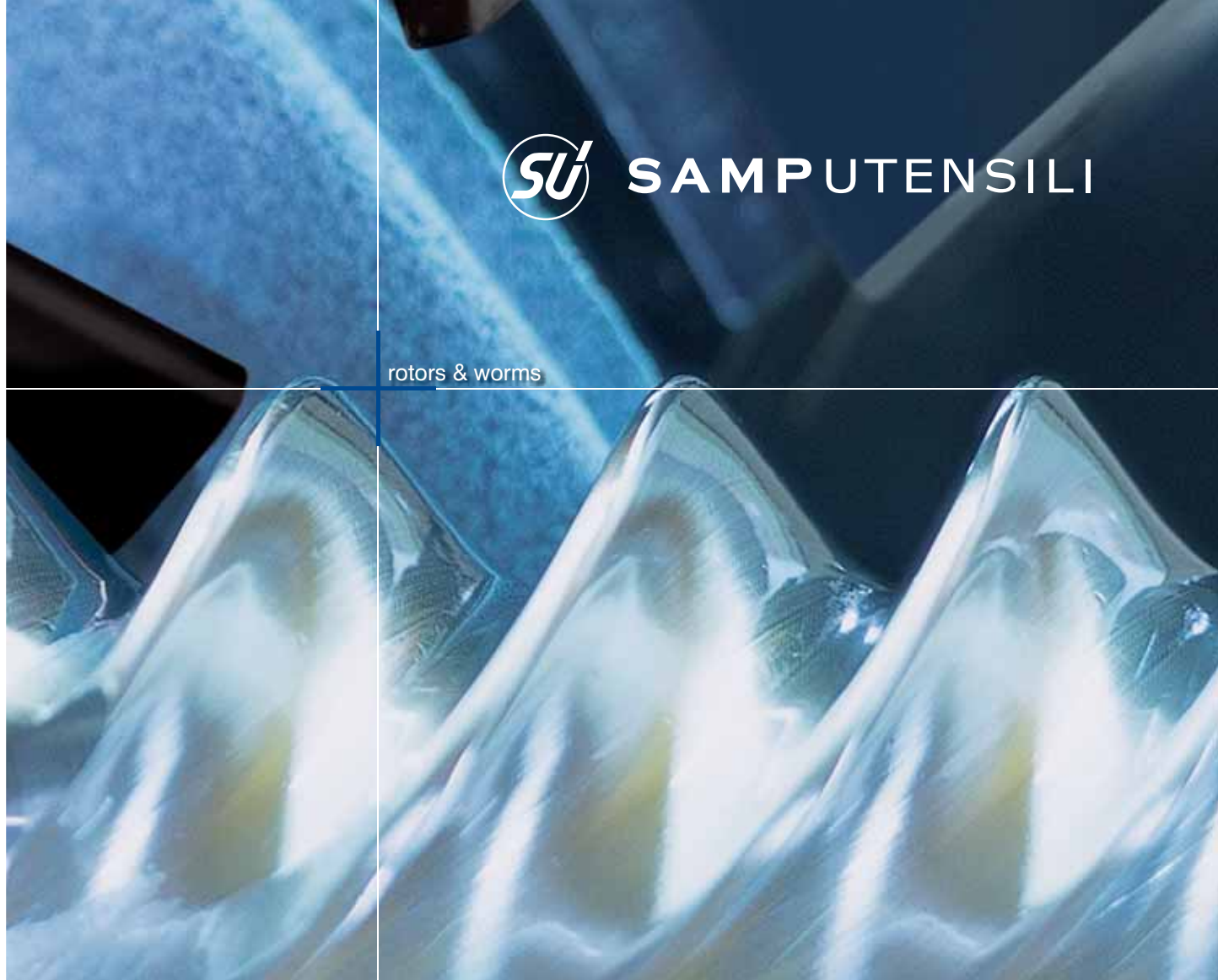
The GR 500 H comes with a specific software package for screw-type workpieces, developed and tested under real manufacturing conditions.

at a glance

- + Dedicated 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



rotors & worms



- A Tool head swivel
- B1 Tool spindle rotation
- C Work spindle rotation
- B2 Dressing spindle rotation
- X Radial travel
- Z Axial travel
- W Tailstock axial travel (opt.)

*Dressing process by interpolation
machine axis interpolation*

GRX 500 H



The GRX 500 H is a larger version of the GR. The machine is suitable for the manufacture of very large screws and rotors.

Especially adapted to grind with CBN, the GRX 500 H also makes working with dressable ceramic wheels or even combinations of the two easy. An integrated measuring unit also makes the correction on board.

For more efficient handling, you can link the GRX 500 H to an external robot device and connect it directly with an external measuring unit.

Like the GR, the GRX 500 H comes with a rotor-specific software package, developed under real manufacturing conditions.

at a glance

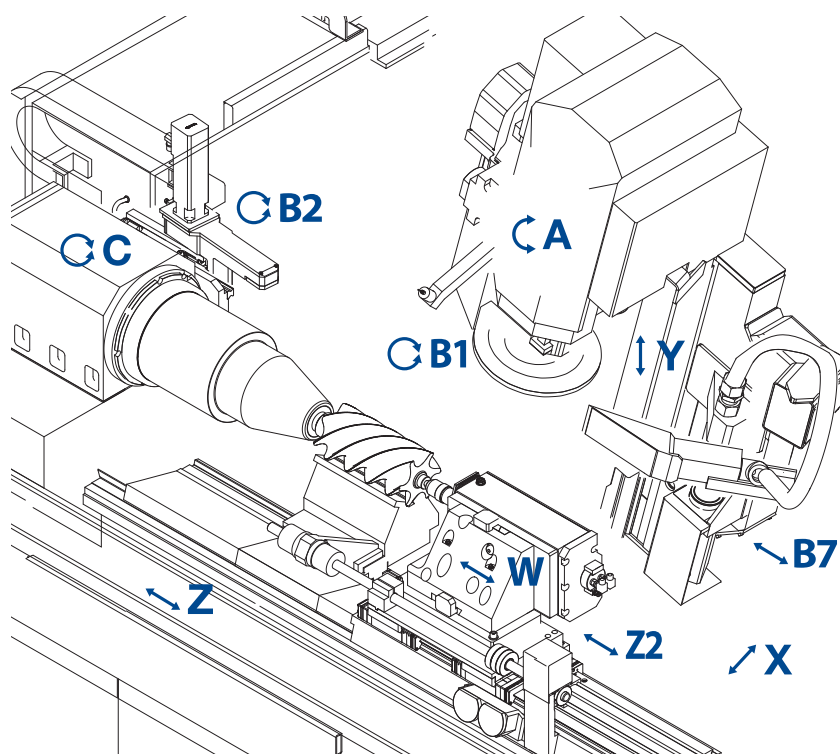
- + Special machine version for the manufacture of large rotors
- + Extra powerful main spindle for high stock removal
- + Double tool setup for roughing and finishing on one spindle
- + Tried and tested rotor manufacturing software
- + Integrated measuring
- + Connection with measuring unit by means of external PC software for the closed-loop manufacturing checking





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large rotors



- A Tool head swivel
- B1 Tool spindle rotation
- C Work spindle rotation
- B2 Dressing spindle rotation
- B7 Coolant nozzle travel
- X Radial travel
- Y Tangential travel
- Z Axial travel
- W Tailstock axial travel (opt.)
- Z2 Tailstock slide travel (opt.)

GW 3600 H



The GW 3600 H is a special machine for the high precision grinding of long screw-type profiles, such as 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.

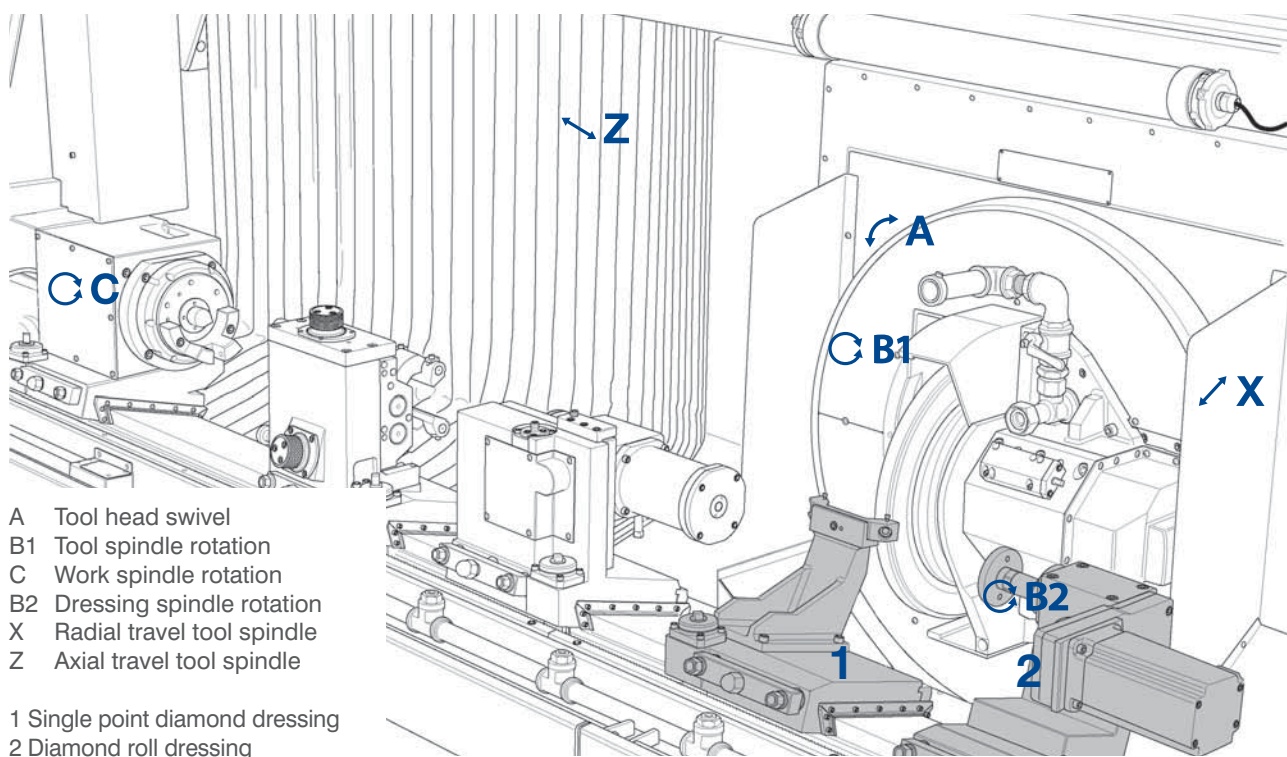
You will receive your GW 3600 H together with the appropriate software and the required grinding and dressing tools to make your screw production soar.

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

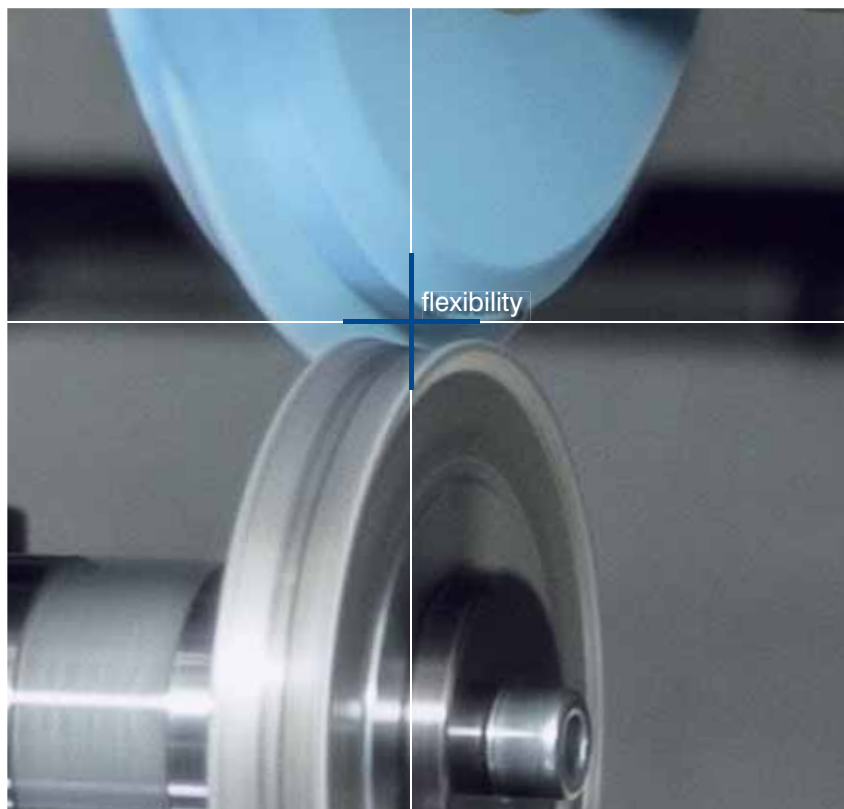


extruder and ball screws



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.

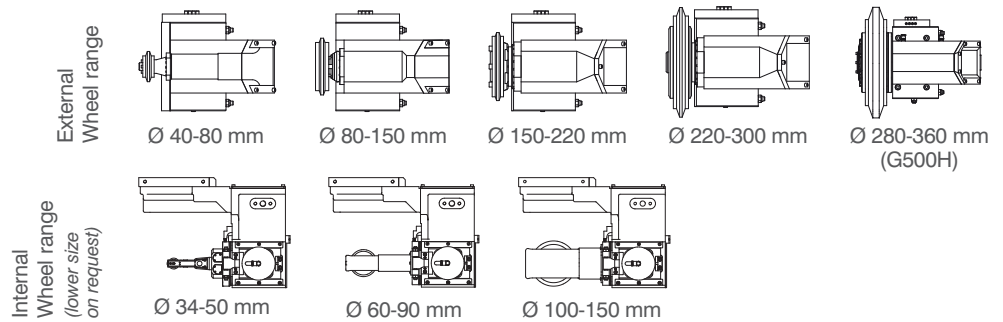


Electroplated tools designed for you

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.

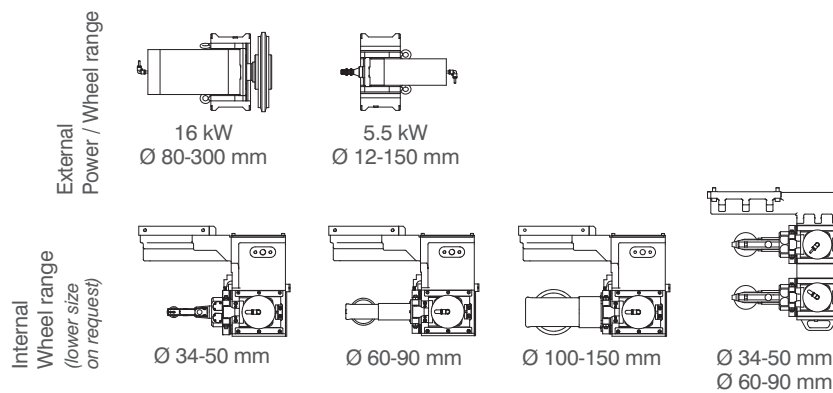
Basic spindle variants for internal and external profile grinding with dressable and electroplated wheels

G 375 H G 500 H



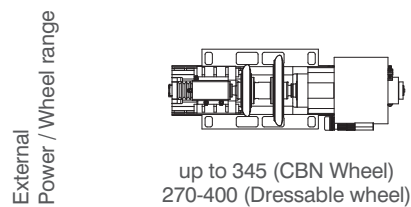
GP 500 H

Single or double spindle for profile grinding



GT 500 H GRX 500 H

Electro spindle with counter-support for two or one grinding wheel



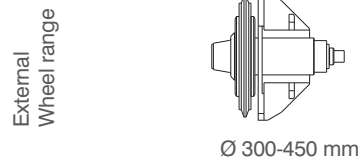
GR 500 H

Double spindle for profile grinding



GW 3600 H

Double spindle for profile grinding



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. An integrated "touch" sensor checks the contact between the roll and the wheel, allowing the activation of the dressing passes and controlling the good quality of the dressing.

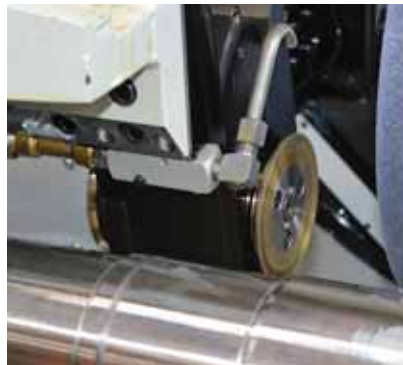
Using the right workpiece support is fundamental to prevent bending or

vibration during the grinding process. 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 customised for perfect fit
- + Integrated on-machine inspection and closed loop manufacturing with automatic profile correction
- + Various high-performance grinding spindles



From left to right:

Coolant filtration unit for steel or cast iron machining

Double flank dressing

Dressing unit for internal profile grinding wheels

Workpiece support for long workpieces



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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.

Integration

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.

Closed loop manufacturing

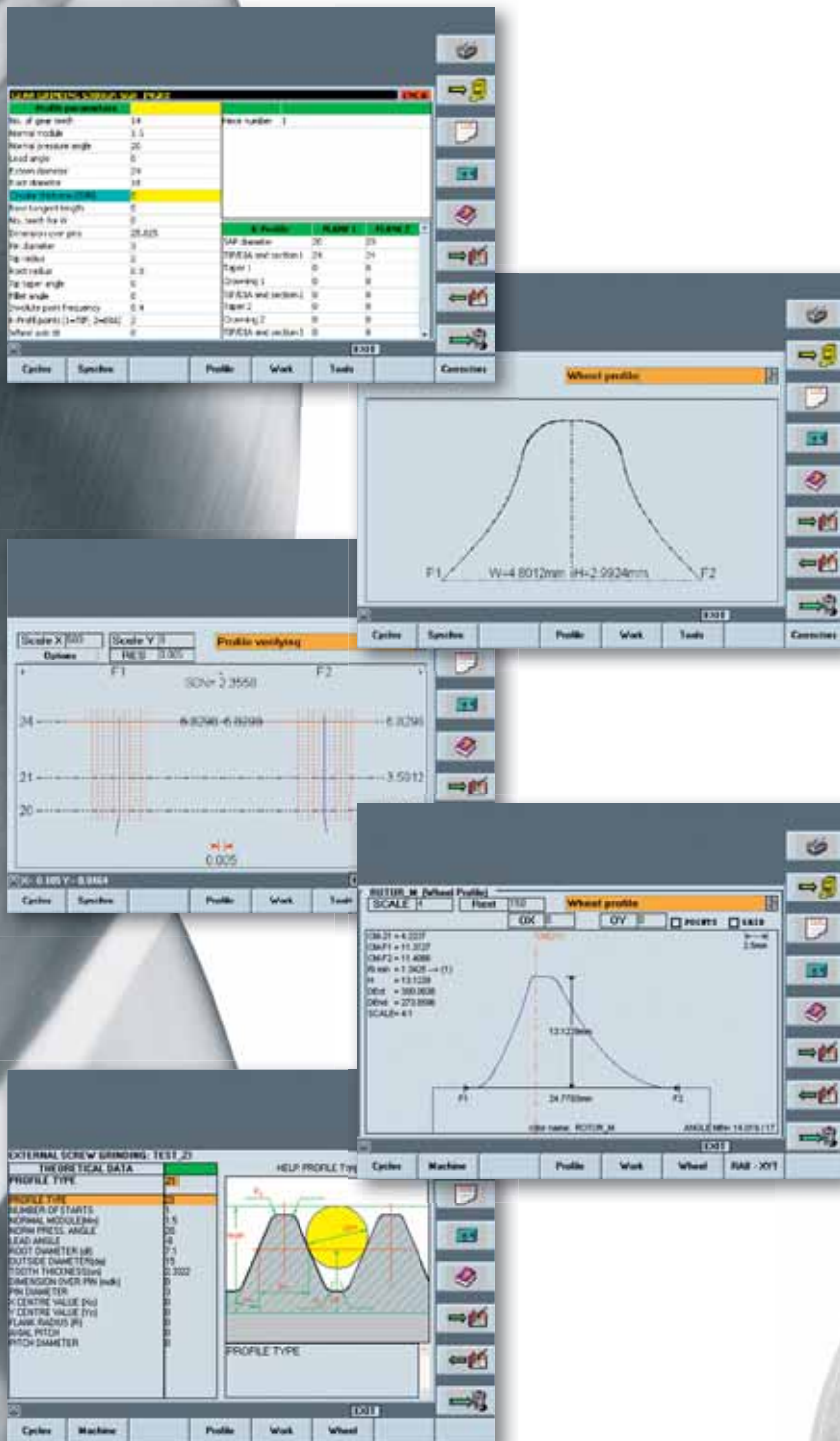
- + Automatic stock division
- + Dressing of grinding wheel
- + Profile grinding of rotor
- + Profile inspection on-board or via external measuring unit (closed-loop)
- + Correction of any deviating values
- + Redressing of grinding wheel
- + Finish grinding of rotor

Software for the most demanding applications made easy

With the user-friendly Samputensili menu-guided operator interface running in a true Windows® environment, users are guided through the manufacturing process via easy and intuitive entry and demonstration screens and are supported by data validation and error correction software.

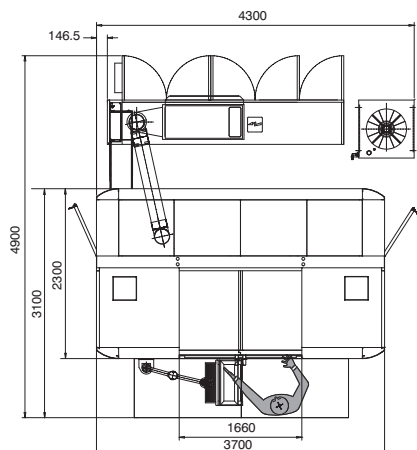
Easy and intuitive data entry interfaces
Wheel profile calculation and visualisation
Simple and direct profile correction options

Point by point rotor grinding wheel profile calculation
Profile inspection with data view and graphics visualization

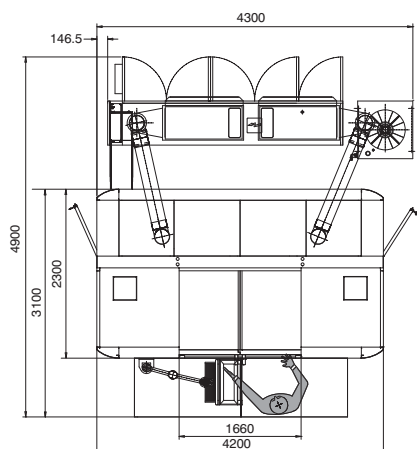


Layout

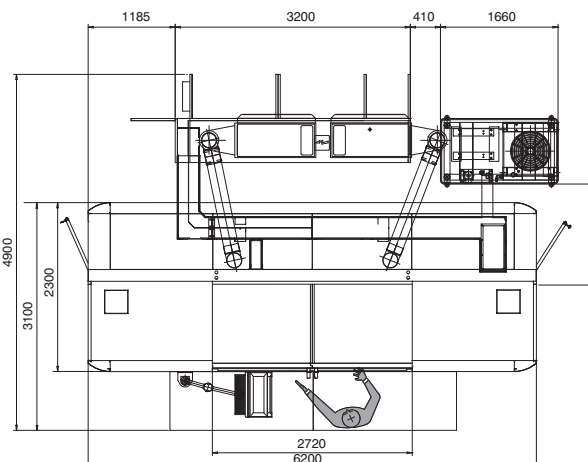
G 375 H



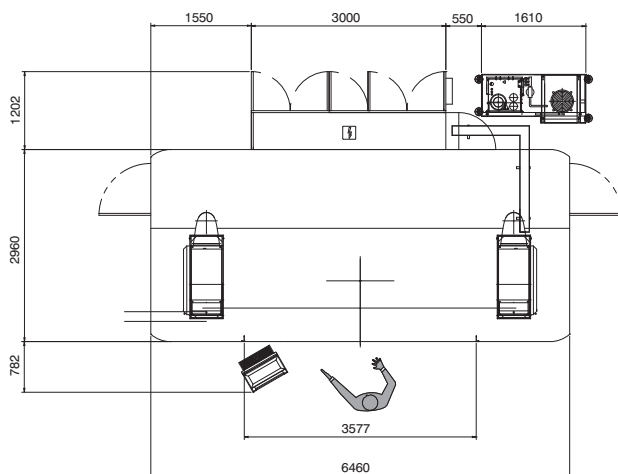
G/GP/GR
GT 500 H



GRX 500 H



GW 3600 H



Technical data

	G 375 H (HL)	G 500 H (HL)	GP 500 H (HL)
Workpiece diameter, max. (mm)	375	500	500
Module range	0.5 / 16	0.5 - 22.0	0.5 - 15.0
Profile depth, max. (mm)	1 / 35	53	35
Tool head swivel range (degree)	- 90 / +180	+/- 90	+/- 90
Centre dist. work spindle / tool spindle (mm)	35 - 340	20 - 445	15 - 380
Workpiece length, max. (mm)	870 (1,450 HL)	1,250 (2,150 HL)	1,250 (2,150 HL)
Axial travel, max. (mm)	650 (1,000 HL)	900 (1,500 HL)	900 (1,500 HL)
Radial travel, max. (mm)	210	330	330
Tangential travel, max. (mm)	n/a	n/a	160
Tool spindle power (opt.) (kW)	23 / 28	20	5.5 / 16
Ceramic wheel diameter (mm)	40 - 360	30 - 360	30 - 300
Ceramic wheel thickness, max. (mm)	60	80 / 105 with shoulders	40
CBN wheel diameter (mm)	30 - 360	30 - 220	15 - 220
CBN wheel thickness, max. (mm)	60	30 / 60	35
Dressing disc diameter, max. (mm)	80 / 100	150	150
Tool spindle speed, max. (rpm)	8,000 / 18,000	32,500*	20,000 / 40,000
Work spindle speed (rpm)	0 - 100	0 - 600	0 - 600
Workpiece weight, max.	350	350	350
Total connected load / with coolant filtration unit (kVA)	83 / 110	120 / 150	120 / 150
Machine weight, including standard equipment (kg)	11,000 (12,500 HL)	15,000 (16,000 HL)	15,000 (16,000 HL)

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



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GT 500 H (HL)	GR 500 H (HL)	GRX 500 H	GW 3600 H
400	400	400	250
6.0	22.0 (35.0 opt.)	35.0 (CBN 22.0)	16.0
1.0 - 20.0 / 1.0 - 25.0 (CBN)	53 / 80	80 (CBN 50)	40
+/- 55	+/- 60	+/- 90	+/- 90
33 - 363	165 - 495	33 - 460	170 - 355
1,000 (1,900 HL)	1,250 (2,150 HL)	1,600	3,800
900 (1,500 HL)	900 (1,500 HL)	1,100	3,000
330	330	405	185
280	n/a	220	n/a
48	20 / 35	50	20 / 35
80 - 280	330 - 500	190 - 340	330 - 450
180	80 / 120 with shoulders	120 / 180	45 / 75 with shoulders
220	n/a	280	n/a
100 profile / 220 worm	n/a	180	n/a
120	150	70	70
0 - 20,000	4,000	8,000	5,000
0 - 1,000	0 - 600	0 - 200	0 - 100
250 / 350 opt.	250 / 350 opt.	350 / 500 opt.	350 / opt.
100 / 130	120 / 150	150 / 190	100 / 150
18,000 (19,900 HL)	15,000 (16,000 HL)	23,000	13,500



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