WEMA GLAUCHAU

WOTAN® S3A

EXTERNAL CYLINDRICAL GRINDING MACHINE

for the cost-effective production of highly precise small and medium-sized parts with a compact design

THE NSH GROUP

WOTAN® S3A INFO

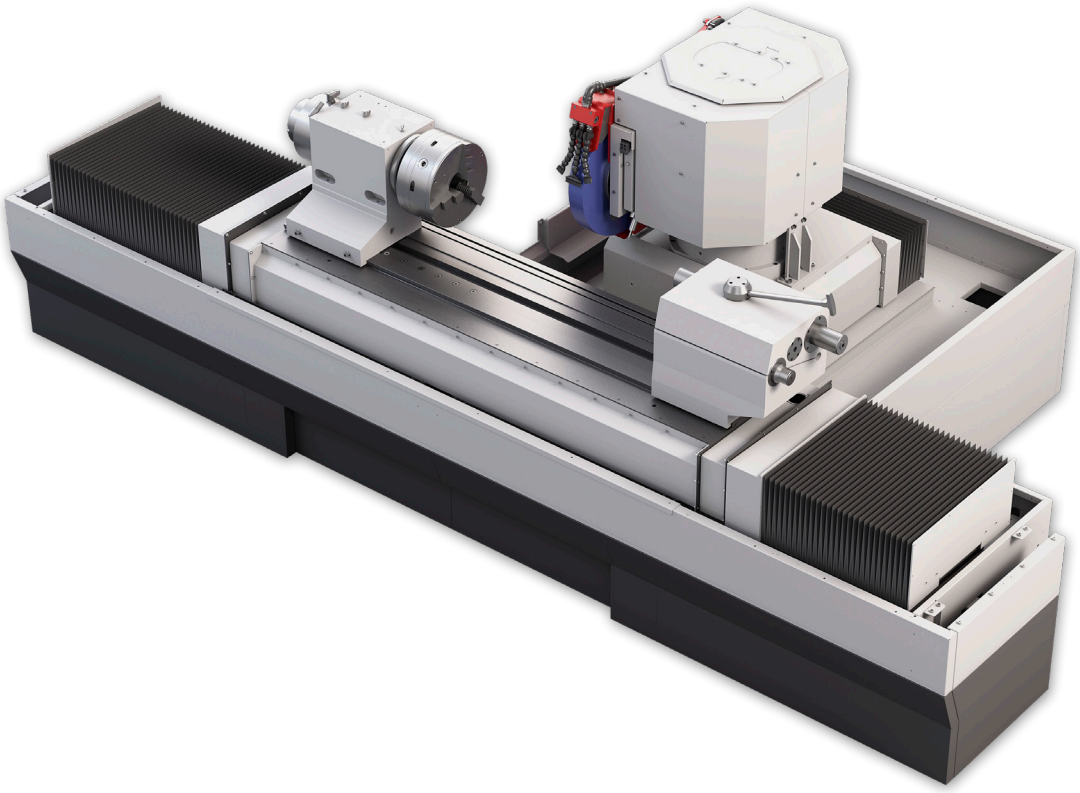
The compact machine for cost-effective production

With its WOTAN® S3A series, WEMA Glauchau completes its offer to have all grinding jobs performed by a compact external cylindrical grinding machine. Thanks to its intelligent machining strategy and the small design, the machine is particularly suitable for the cost-optimized processing of small and medium-sized workpieces.

The machine's center height reaches 225 mm when using a steady rest or 275 mm for self-supporting components that do not require a steady rest. Depending on the job, you can select between 1 000 mm, 1 600 mm and 2 000 mm as the distance between centers.

As regards the weight of the workpieces, our currently smallest machine is in no way inferior to our ›large‹ machines – a massive and very rigid machine base allows workpiece weights up to 600 kg without causing any problems.

Our modular strategy makes it possible to optimize every machine for its future grinding jobs, thus creating an optimal combination of flexibility and efficiency.



A MACHINE COVERING EVERYTHING:

› chuck parts
› ›between-center parts‹
› wave-shaped parts, which can be supported optionally by a steady rest
› and much more.

You need to have external diameters and external plane surfaces processed?
No problem – the **S3**A offers the ideal solution.

Do you also require internal grinding in addition to external machining?
This machine is the perfect solution for that as well.

Our modular and flexible machine design makes it possible to accomplish the most diverse processing jobs without long set-up times.

The machine's basic configuration is made up of two CNC-controlled linear axes. The Z-axis and the X-axis rest on a hydrostatic bearing and are driven directly by a linear motor. These components make it possible to perform fast and very precise movements. Nor are the axes subjected to the typical wear and tear as the result of the guidance and drive concept, as this happens with ball screw drives or motion rolling guide units.

Apart from the workpiece spindle, further modules – such as tailstock, steady rests or in-process measuring systems – are located on the Z-axis (machine table).

The grinding unit which – based on the known WEMA principle – can be individually configured is also put up on the X-axis.

LARGE SELECTION OF SPINDLES

Depending on the accuracy requirements, the workpiece spindle can be designed as belt-driven or directly driven spindle or as spindle with a hydrostatic bearing. If the workpiece spindle is equipped with a measuring system (C-axis), you can perform high-precision non-round & surface grinding operations in various facets on a cylindrical grinding machine.

THE TAILSTOCK CAN BE INDIVIDUALLY CONFIGURED

Of course, the tailstock can also be individually configured in accordance with your requirements and needs. In order to do so, you can choose between four variants, ranging from a spring-loaded tailstock with manual unclamping, through partially or fully hydraulic versions, to a synchronous tailstock.

WITH OR WITHOUT GRINDING SPINDLE REVOLVER

In its basic version, the grinding unit can be equipped with a single grinding tool, without a swivelling spindle revolver.

The efficiency and productivity can be considerably increased when a variably swiveling spindle revolver (directly driven round table) is put up on the X-axis which can be fitted with up to 4 grinding tools. You can decide all by yourself on the proportion of external to internal grinding wheels (i.e. their number) that you wish to use in accordance with your current and future scenarios.

GRINDING SPINDLES ACCORDING TO YOUR NEEDS

Flexibility is also the guiding principle, when it comes to designing the grinding spindles. Depending on your specific grinding job, you can choose, in the case of each individual spindle, between a directly driven and a belt-driven one.

DRESSING OPTIONS

We can offer you different dressing equipment that is suitable for the grinding wheel required for the job to be done.

Ideal for conventional grinding wheels are our stationary dressing tools that will quickly get your wheel back into shape.

We can also offer you a dressing spindle with a driven dressing tool, so as to enable you to sharpen your crystalline boron nitride (CBN) grinding wheels.

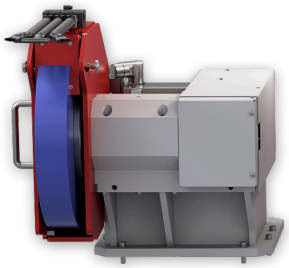
NUMEROUS OPTIONS AVAILABLE

To further optimize processes, you can complement your individually configured machine with numerous options:

- scanning measurement sensor (for external thread regrinding)
- in-process measuring system
- automatic workpiece changing system
- spark-in control during grinding and dressing (e.g. by way of acoustic emission (AE) sensors)

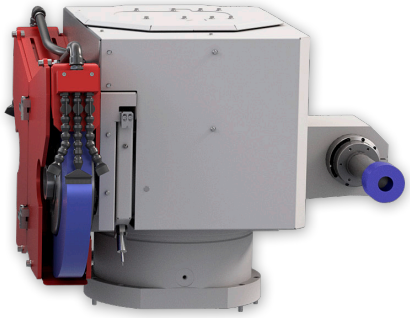
Define your production job and we shall configure your individual optimal solution together with you. Alternatively, you may also make inquiries about the specific setup you have planned.

Example configuration of a **WOTAN® S3**A grinding unit



- 1 × external grinding wheel (ø 500)
- 1 × measurement sensor

- 2 × external grinding wheels (ø 500)
- 1 × measurement sensor



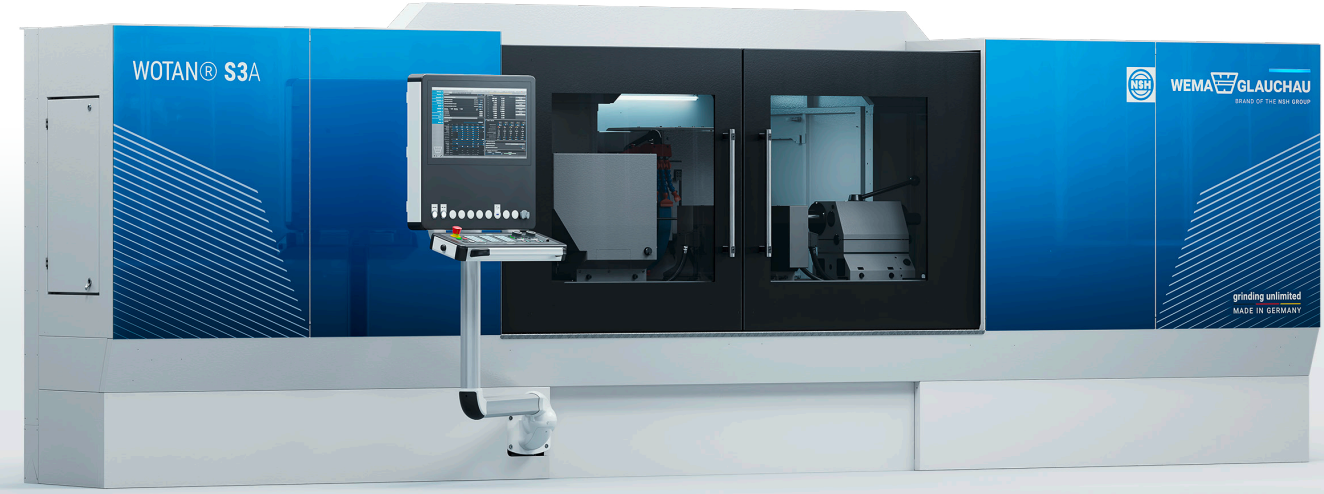
- 2 × external grinding wheels (ø 500),
- 1 × internal grinding spindle
- 1 × measurement sensor

WOTAN® S3A at a glance:

	WOTAN® S3A
Working area of the machine	
Distance between centers	1000 / 1600 / 2000 mm
center height with/without steady rest	225 / 275 mm
Workpiece weight	600 kg
Workpiece spindle headstock	
belt-driven & roller bearings workpiece spindle	
› concentric run-out external taper and plane surface	1 µm
› concentric run-out internal cone	1 µm
› speed	500 rpm
› measuring system (C-axis)	none
› short-taper spindle nose	short taper A5
› Internal cone of the spindle	MK 6
› driving power	3.7 kW
Directly driven & roller bearings workpiece spindle	
› concentric run-out external taper and plane surface	1 µm
› concentric run-out internal cone	1 µm
› speed	400 rpm
› measuring system (C-axis)	integrated
› spindle nose	Short taper A6
› Internal cone of the spindle	MK 6
› driving power	6.4 kW
Directly driven & hydrostatic bearing workpiece spindle	
› concentric run-out external taper and plane surface	0.3 µm
› concentric run-out internal cone	Without internal cone
› speed	500 / 1000 rpm
› measuring system (C-axis)	integrated
› spindle nose	Short taper A6 / A5
› Internal cone of the spindle	Without internal cone / MK5
› driving power	5,2 kW / 1,8 kW
tailstock	
› spring clamping and unclamping	standard
› spring clamping with hydraulic unclamping	option
› hydraulic clamping and unclamping	option
› synchronous tailstock (rotating)	option
› cylinder correction	±0.080 mm
› sleeve travel	80 mm
› sleeve diameter	80 mm
› tailstock internal taper	MK 5

	WOTAN® S3A
Z-axis (workpiece)	
guidance system	hydrostatic
driving system	directly driven
axis travel	1300 / 1900 / 2300 mm
speed	20 m/ min
resolution of the scale	0.000 01 mm
calculation accuracy in the control system	0.0001 mm
minimum infeed increment	0.001 mm

X-axis (grinding unit)	
guidance system	hydrostatic
driving system	directly driven
axis travel	450 mm
speed	20 m/min
resolution of the scale	0.000 01 mm
calculation accuracy in the control system	0.0001 mm
minimum infeed increment	0.0005 mm



Grinding unit	
number of possible grinding tools	up to 4
continuously variable speed adjustment	standard
processing with Corundum grinding wheels or CBN-grinding wheels	standard
scanning measurement sensor (for external thread regrinding)	option
grinding spindle revolver (directly driven round table)	option
swiveling range	270°
calculation accuracy in the control system	0.000 1°
External grinding	
taper mount of the external grinding spindles	1:7,5
driving power	
› belt-driven external grinding spindle	14.6 kW
› directly driven ext. grinding spindle	15 kW / 20 kW
› further ones on request	
grinding wheel dimensions	
› 55 m/s	Ø500 x 80 x 203,2 mm
› 63 m/s	Ø500 x 80 x 203,2 mm
automatic balancing system	standard
Internal grinding	
› internal grinding depth (more on request)	currently 350 / 450 mm
› spindle type	directly driven/ belt-driven

The internal grinding diameter and the grinding depth depend on the component's wall thickness and the dresser.

Machine control & operation	
SINUMERIK from SIEMENS	standard
proprietary operator interface WOP™ Touch	standard
option of remote diagnosis	standard
CNC knowledge required for operating the machine	none
Other items	
spark-in control	
› spark-in control via power shut-down	standard
› spark-in control via acoustic emission / structure-borne sound	option
In-process measuring system	option
steady rest	option
automation / loading portal	option
preservation facility etc.	option
laser measurement of the machine in the factory	option
laser measurement at the customer's site	option
maintenance contract	option
spare and wear part package	option
operator training / production support	option

Please do not hesitate to get in touch with us, if you require further information about the specifications.

WOTAN®-I
INTERNAL GRINDING

WOTAN®-U
UNIVERSAL GRINDING

WOTAN®-A
EXTERNAL GRINDING

WOTAN®-W
ROLLING BEARING

Special Solutions
TAILORED PRODUCTS

Our experts will accompany you on the way from the first inquiry to the after-sales service thus ensuring the daily operations of your machine, so that you will get an optimal grinding machine from us.

- exact agreement of the requirements
- individual offer for a grinding machine
- individual design
- production
- quality assurance
- test grinding
- pre-acceptance of the machine
- delivery & installation
- training & familiarization
- after-sales service

We will be pleased to demonstrate the potential of all our WOTAN® machines at our headquarters in Glauchau, where we also accept grinding jobs for test purposes and on a contract basis.

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