

# HEAVY DUTY CYLINDRICAL GRINDING SOLUTIONS

HG/WT





# Heavy duty cylindrical grinding solutions

HG - WT

Strategic industries such as energy, transmissions, railway, capital goods, and aerospace require innovative solutions that ensure maximum profitability.

In this catalog we present our heavy duty horizontal grinding machine range, conceived

in close collaboration with end users to provide a complete, tailor-made solution, comprising the machine itself and all related processes.

Our heavy duty grinding machines are designed for machining high-value workpieces, up to 196.85 in. (HG) and up to 314.96 in. (WT) in length.



Innovative solutions

# Grinding machine range



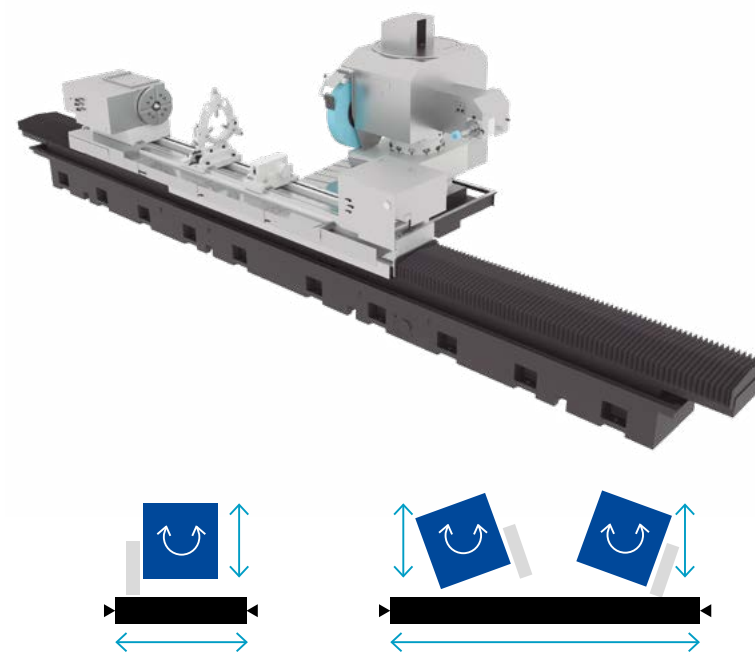
## HG

### For the highest precision

This cylindrical grinding machine has been designed for a wide range of applications that require the highest precision.

Complex processes with in-process measuring, special dressing systems and custom enhancements have been developed accordingly.

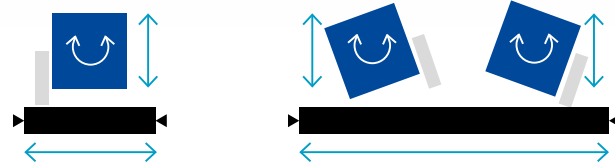
See this machine in action:



↔ 196"

🔔 11,023 lbs

∅ 41"



#### TECHNICAL CHARACTERISTICS

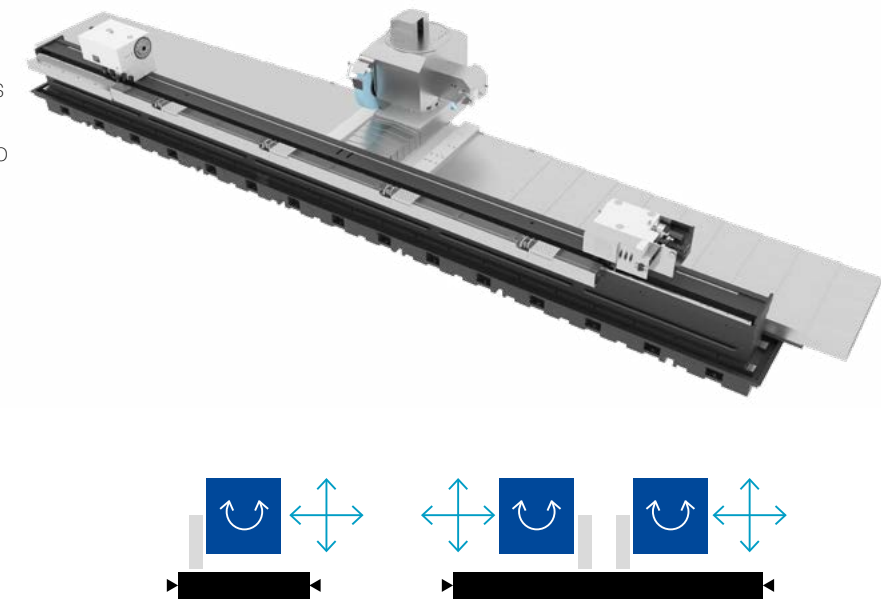
		HG-72	HG-92
Max. distance between centers	39.4 in	78.7/157 in	118/196 in
Max. diameter to be ground (*not available with MDM)	∅19.6*/25.2 in	∅25.2/33.1 in	∅33.1/41 in
Max. weight between centres	551 lb	3,307 lb	11,023 lb
Max. grinding wheel diameter (*not available with B-axis)	∅24/30 in	∅24/30/36* in	∅30/36/40* in
Wheelhead power	29.5/40.2 hp	29.5/40.2/60.3 hp	40.2/60.3/80.4 hp
Max. wheel peripheral speed	11,811/23,622 sfpm	11,811/23,622 sfpm	11,811/23,622 sfpm
MDM multi-diameter measurer	15.7 in	15.7/23.6 in	15.7/23.6/31.5 in

## WT

### XXL heavy duty grinding machine

It maintains the classic advantages of cross slide machines, without sacrificing quality: Minimized footprint and stationary parts (no unnecessary movements).

See this machine in action:



↔ 315"

🔔 33,069 lbs

∅ 61.4"



#### TECHNICAL CHARACTERISTICS

	WT-72	WT-92	WT-100
Max. distance between centers	118/236 in	118/315 in	157/315 in
Max. diameter to be ground (*not available with MDM)	∅25.2/33.1 in	∅33.1/41 in	∅41/48.8/61.4 in
Max. weight between centers	3,307 lb	11,023 lb	17,637/33,069 lb
Max. grinding wheel diameter (*not available with B-axis)	∅30/36/40* in	∅30/36/40/50* in	∅30/40/50* in
Wheelhead power	40.2/60.3/80.4 hp	40.2/60.3/80.4 hp	40.2/60.3/80.4 hp
Max. wheel peripheral speed	11,811/23,622 sfpm	11,811/23,622 sfpm	11,811/23,622 sfpm
MDM multi-diameter measurer	15.7/23.6 in	15.7/23.6/31.5 in	23.6/31.5 in

# Core technology

## Quality is an investment when you grind high-value parts

When grinding high-value parts, quality is an investment. We have taken care of every detail on the HG/WT to make these machines stand out:

- Minimum overhangs
- Large guideways with wide space
- Ballscrew and bearings support dimension
- Internal cooling pipes
- High-end components

### Workheads & tailstocks

- Designed with selected materials to optimise temperature control and spindle performance
- High roundness accuracy
- Easy to connect with different clamping and driving systems
- Pneumatic lifting systems for comfortable setups

### Machine structure

- Unique and rigid structure
- Made of stress-relieved pearlitic cast iron for optimum grinding accuracy
- Coolant channels for thermal stability
- Proven behaviour against vibration and thermal effects

### Swiveling B axis

- Automatic swivel, with torque motor to eliminate backlash and minimize maintenance
- Mechanical locking and pneumatic unlocking system
- Repeatability:  $\pm 0.00004$  in. on 25.6 in. radius

### Grinding spindle heads

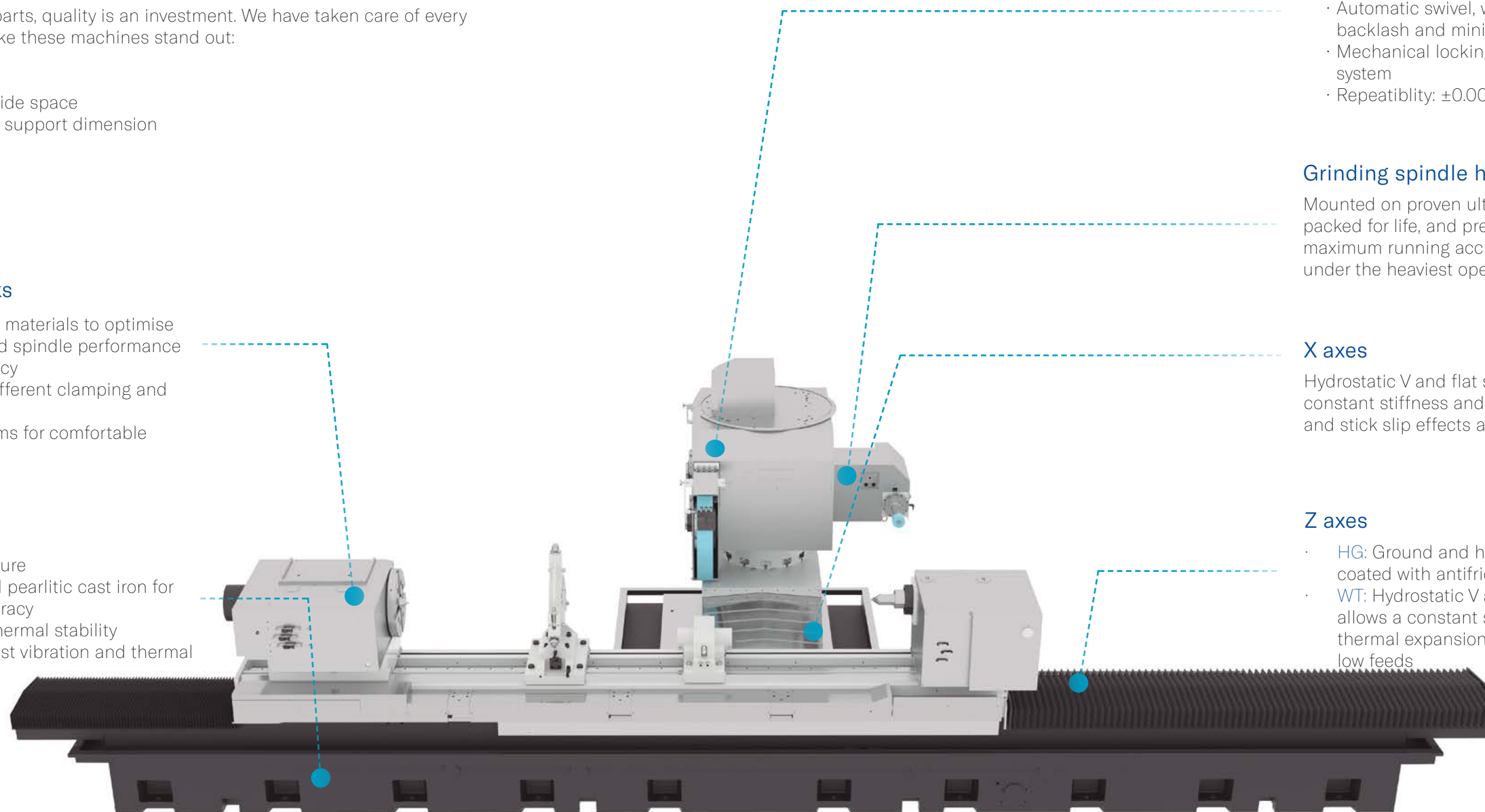
Mounted on proven ultra-precision bearings, grease packed for life, and pre-load calculated for the maximum running accuracy and optimum stiffness under the heaviest operating conditions

### X axes

Hydrostatic V and flat slideways. Oil layer allows a constant stiffness and improves thermal expansion and stick slip effects at low feeds

### Z axes

- HG: Ground and hand scraped V and flat, coated with antifriction material
- WT: Hydrostatic V and flat slideways. Oil layer allows a constant stiffness and improves thermal expansion and stick slip effects at low feeds





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# Software

## DoGrind+: An intuitive easy-to-use software

### Grinding program

- With the simple input of the part dimensions and the material, it generates the grinding program for you
- Easily edit complex tool and part geometries

### Monitoring

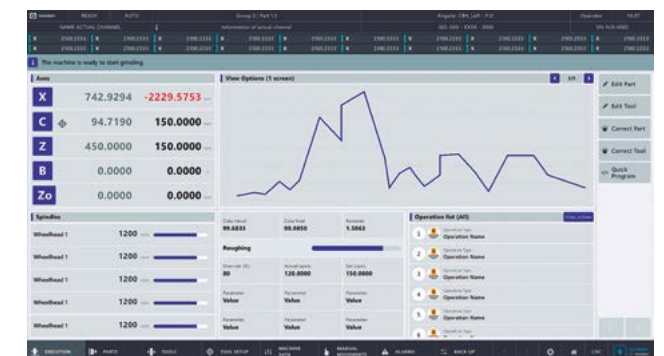
- Total control in a single dashboard view
- Integration with ERP or external databases
- Measurement viewer app for results analysis and part traceability



### Execution

Most relevant machining information displayed in a single view.

- Machining cycle progress
- Key process variable display
- Alarm visualization with troubleshooting



### Operations

A clearer, more comprehensive list of operations showing the main parameters so that they are easier for the user to understand.

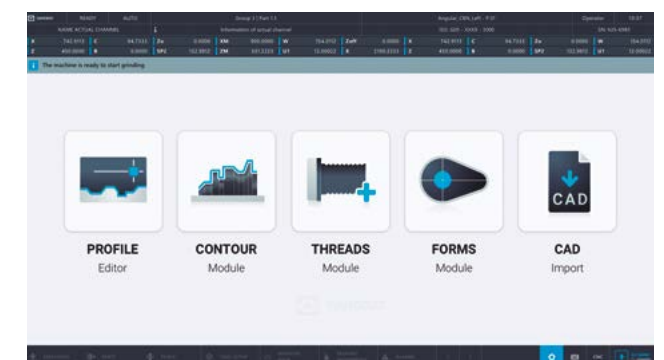
- Intelligent cycle library based on machine configuration for grinding, dressing and measuring operations
- Easy navigation and configurable structure definition
- Quick program operations for fast and easy programming



### Integrated modules

Multiple optionally integrated modules:

- Profile editor
- Contour module
- Threads module
- Forms module
- CAD files import





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# MDM: Automatic in- and post-process gauge



Absolute, multi-diameter in-process and/or post-process measuring system for interrupted and continuous diameters, including automatic measuring of roundness and cylindricity within complete machine work envelope.

Different models for different diameter ranges to optimize the measurements in each application.

- Precision  $\pm 0.00006$  in.
- Repeatability  $0.00008$  in.
- Resolution  $0.000004$  in.

## Highlights

- Measures and certifies in/post-process, saving machining time and avoiding scrap
- Dimensional tolerances are guaranteed from the first part in IT3 up to diameter 3.15 in. and IT2 from 3.15 in. onwards
- Fully integrated into DoGrind+ HMI for easy operation and handling of the meter

## Prior to machining

- Measures the oversized material on the part to ensure it is machinable
- Ensures that the part was assembled properly and the machining program is free of dimensional errors

## The data it outputs

- Automatic metrological reports with dimensional and geometrical measurements
- Roundness, radial run-out, cylindricity, concentricity, coaxility, diameters, discontinuous diameters etc.
- Scanning for slender parts and back-and-forth machining

## How the data is displayed

You will be able to evaluate the behavior of the process thanks to continuous 3D visualizations.



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# Customization

## Grinding of different materials

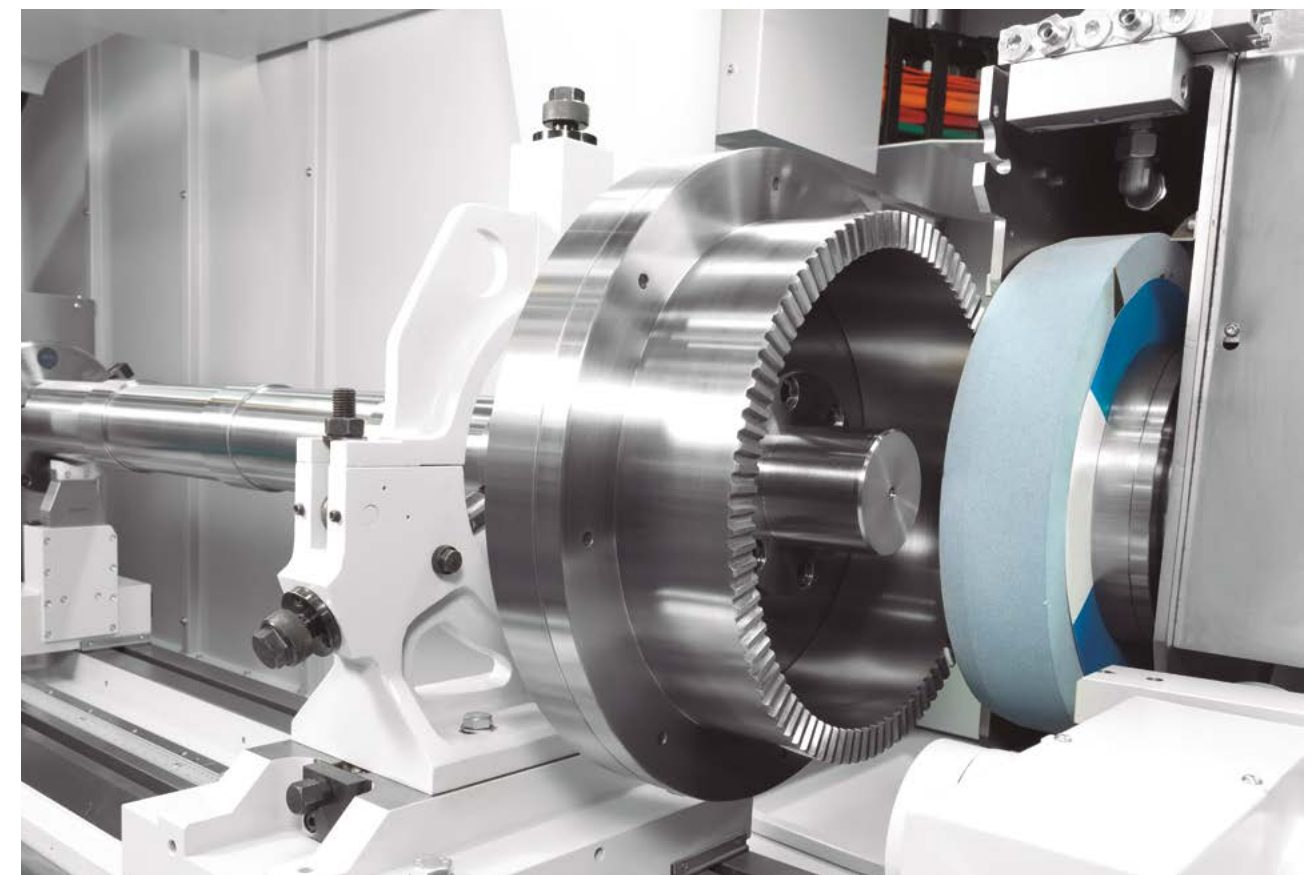
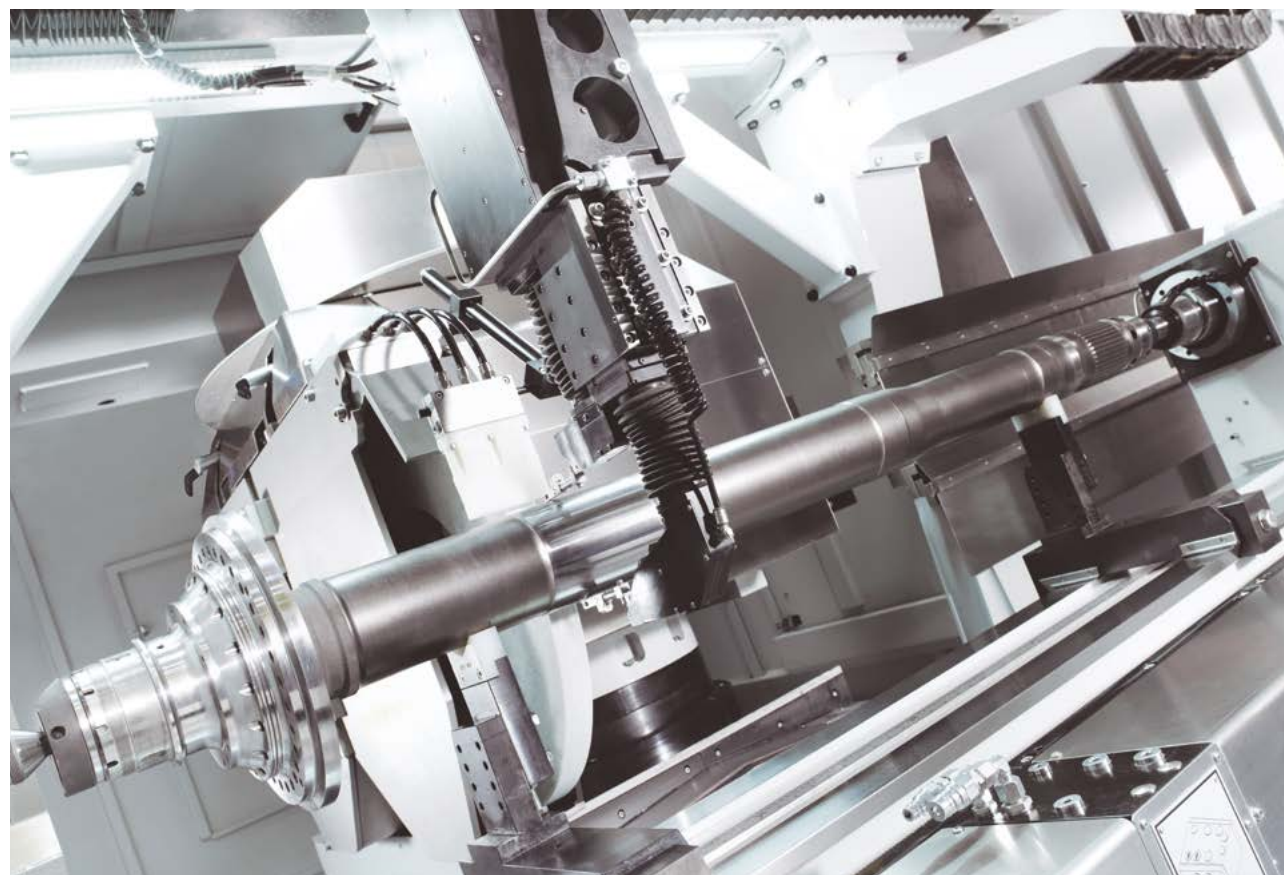
We are experts in grinding different materials:

- Grinding of all types of coatings (HVOF, chrome, etc.)
- Innovative system for conditioning vitrified diamond wheels

## Super precision and complex shapes

Some components require super precision or have complex shapes. In our machines, it is possible to grind curvic, non-round or eccentric parts, among others.

To ensure an optimal finish, and without reversing marks, the high dynamic X carriage allows a constant speed to be maintained throughout the part profile.



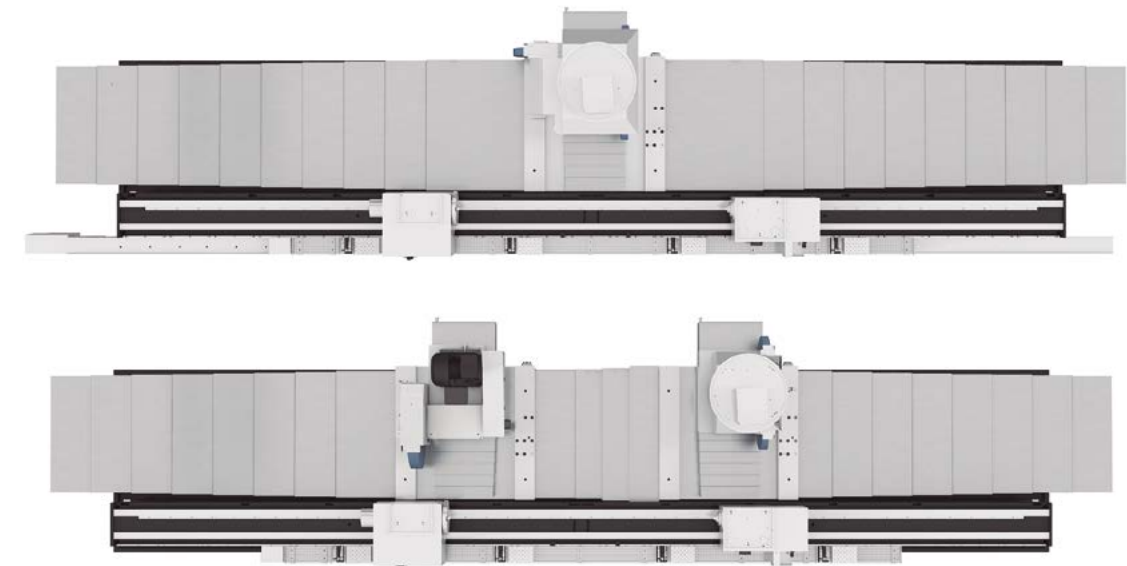
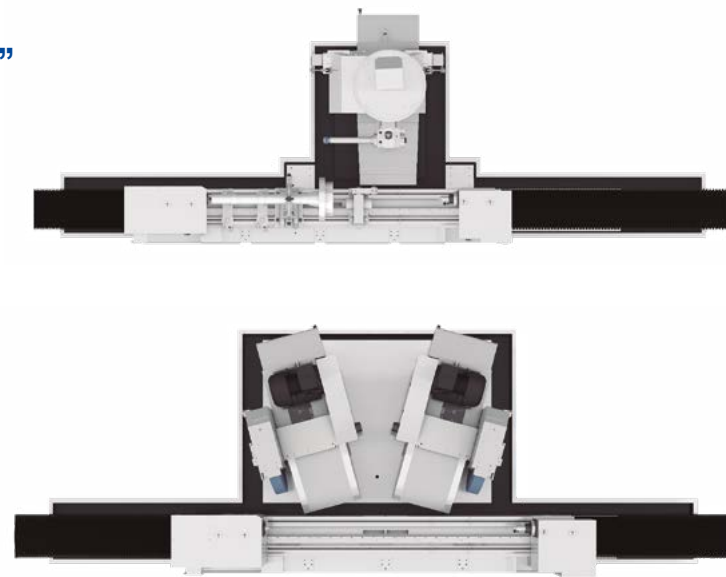


# Customization

## HG/WT: the “Swiss Army knife” of large grinding machines

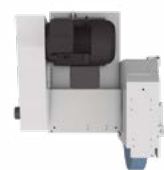
The main feature of our heavy duty horizontal grinding machines lies in its capacity to meet all part-grinding needs, flexibly and the possibility of adapting the machine to the customer's requirements.

The HG/WT solutions integrate multiple operations in a single setup such as ID/OD grinding, measuring systems and super-finishing, among others.



## Wheelheads

Straight



S1



S5

Angular

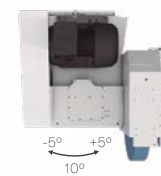


A1

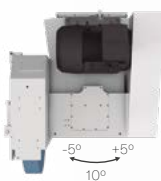


A5

BL-axis (B-axis with limited swiveling)



BL1



BL5

Swiveling B-axis



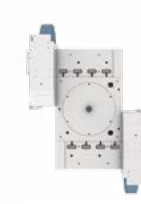
B1



B2



B5



B6



B8



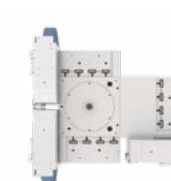
B9



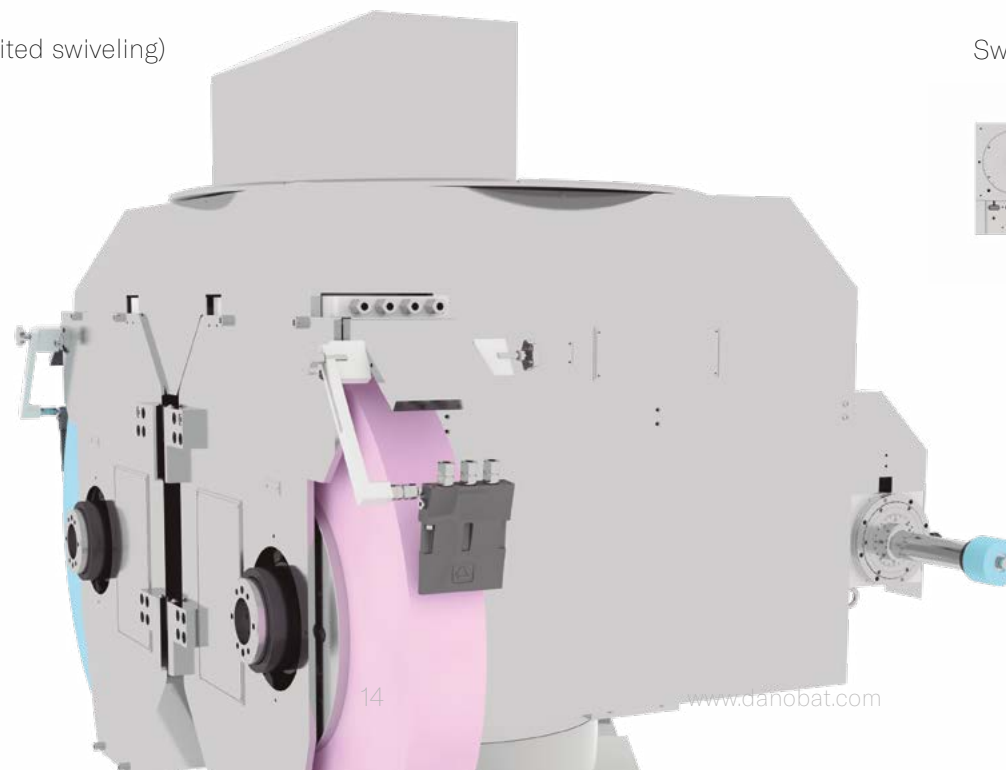
B10



B11



B12





# Customization

More info:



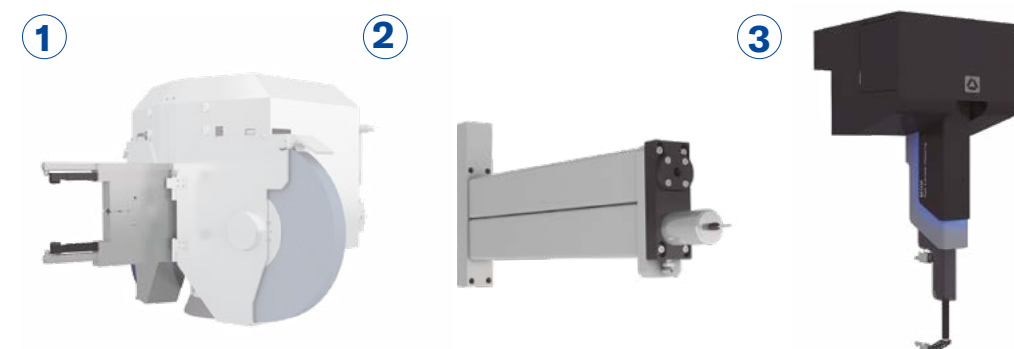
**Dressing systems.** 1. Hybrid dressing system for vitrified or resin bonded diamond wheels / 2. Swiveling arm for dressing spindle parking/working position / 3. Internal grinding wheel dressing system / 4. Standard chisel diamond holder



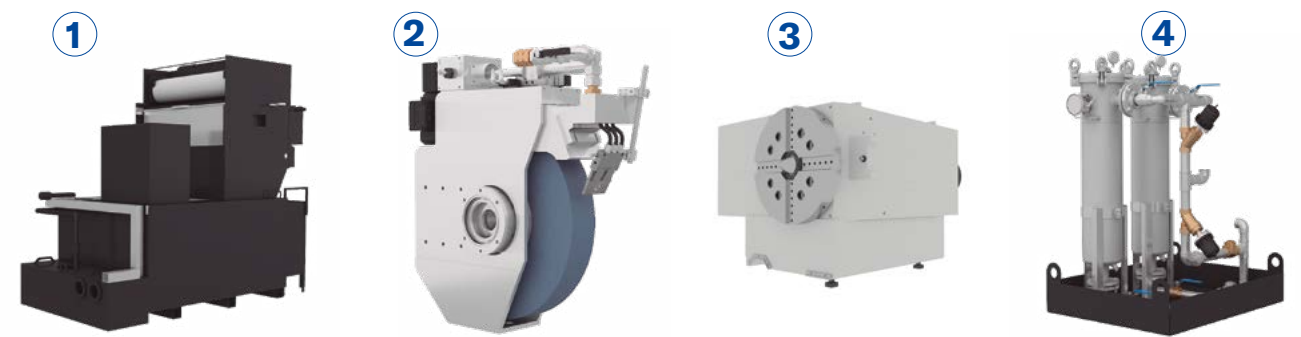
**Tooling.** 1. Automatic clamping & driving systems for railway axle application / 2. Internal grinding steady rests / 3. External grinding steady rests / 4. CNC self-centering steady rest



**Measuring systems.** 1. Non-contact measuring type / 2. Touch probe / 3. Danobat MDM



**Coolant systems.** 1. Coolant filtering system / 2. 3D printed nozzles with automatic wear compensation / 3. High pressure wheel cleaning / 4. Fine filtering system



**Special spindles.** 1. Hydrostatic spindles / 2. Internal mandrel & spindles



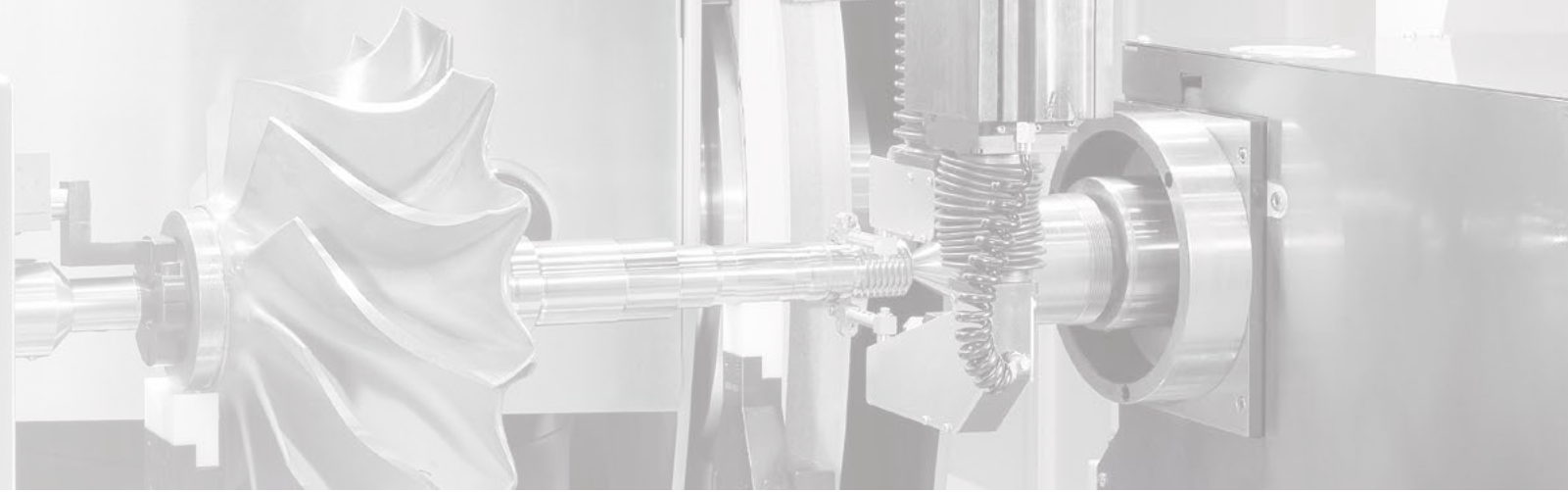
**Machine enhancements.** 1. Hydrostatic leadscrew and nut / 2. C-axis rotary encoder for workhead / 3. Automatic tailstock positioning / 4. Automatic taper correction





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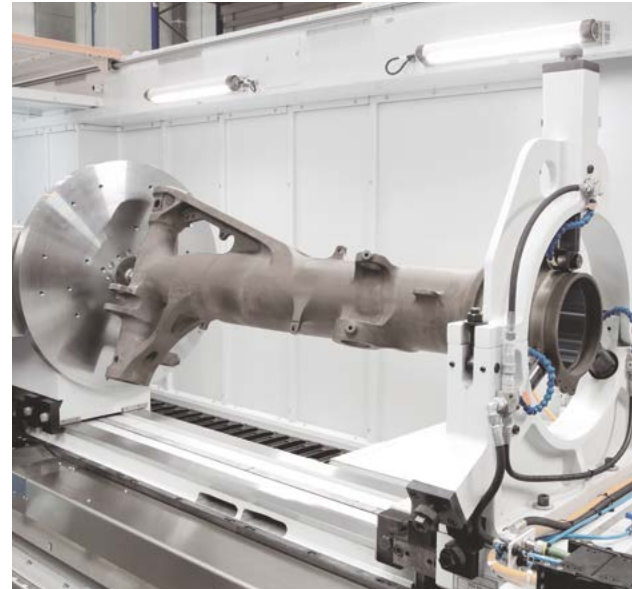
# Applications



Turbine shaft



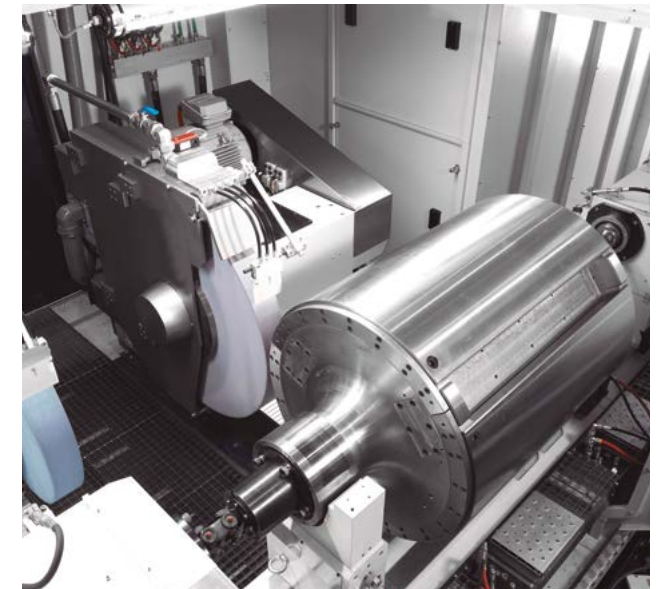
Landing gear



Extrusion screw



Printing and packaging rolls



Gas turbine engine rotor



Screw compressor



Machine tool spindle



Transmission shaft







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