HEAVY DUTY CYLINDRICAL GRINDING SOLUTIONS
HG-WT
Innovative solutions for a better future

At Danobat, we are committed to introducing positive change in people, business and the environments we work in. We do this by developing innovative solutions that enable us to face future challenges.

We generate high value technological solutions that improve your competitiveness. We offer resourcefulness and engagement to bring innovative and personalised answers to your different challenges. We are committed to the process and the results from the beginning right through to the end, and adapt to each necessity, offering you assurance and guaranteeing a 100% meaningful experience.

We are experts in the design and manufacture of precise, high added value, customised solutions. Our process has become an attitude and a way of doing things: the Danobat way. Qualified specialists, in-house technology, focused on innovation and of course a corporate culture that places value on people and puts you at the heart of its organisational system.
We boost change

Innovative Solutions
We specialise in producing high value-added, innovative technological solutions that help the industry to become more competitive.

Our mission is to provide a solution tailored to your requirements and based on our expertise in the technologies applied to industrial manufacturing, combined with intelligence, commitment, creativity, rigor and professionalism.

- Holistic solutions
- Grinders
- Lathes
- Measuring systems
- Advanced engineering services
- System integration
- Automation

Digital Focus
Digital technology has transformed the way in which we shop, travel and communicate. We think and act digitally. We are interconnected and so are our production systems and equipment. The latest digital technology is available to you, continuously being developed at Danobat, using our own advanced and state of the art methods, processes and technologies.

- Danobat Digital Suite - Intuitive interfaces
- Data System - Connected machines
- Control System - Digital factory
- Smart Machining - Smart components
- Real-time, remote information
- In-house software for controlling machines, cells and lines

Advanced Services
At Danobat, we offer services and support the industry has come to expect, such as preventive and corrective maintenance strategies, spare parts, remote diagnostics and more. To take it a step further, we always anticipate changes ahead of time to assure our customers stay ahead of the curve.

Accordingly, we provide a broad range of high value-added services which are completely customised to meet the challenges faced by you.

- Process simulation
- Production simulation
- Advanced training
- Inspections & quality control checks
- Maintenance service
- All-round spares maintenance
- Software & hardware enhancements
- Process optimisation
- Obsolescence management
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.
Innovative Solutions

Horizontal grinding range

HG
Moving table configuration

These cylindrical grinding machines have been designed to fulfill the requirements of a wide range of applications up to 5000 mm in length.

The most demanding industries can benefit from customised machine configurations for turbine shafts, large transmissions, axles for rail units and landing gear components, among other examples.

Complex processes with in-process measuring, special dressing systems and custom enhancements have been developed accordingly. The concept of independent axes is ideal for a single or double wheelhead to optimise versatility with sequential operations.

<table>
<thead>
<tr>
<th>TECHNICAL CHARACTERISTICS</th>
<th>HG-62</th>
<th>HG-72</th>
<th>HG-92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. distance between centres</td>
<td>2000 mm</td>
<td>4000 mm</td>
<td>5000 mm</td>
</tr>
<tr>
<td>Max. diameter to be ground</td>
<td>500 mm</td>
<td>840 mm</td>
<td>1040 mm</td>
</tr>
<tr>
<td>Max. weight between centres</td>
<td>500 kg</td>
<td>1500 kg</td>
<td>5000 kg</td>
</tr>
<tr>
<td>Max. grinding wheel diameter</td>
<td>760 mm</td>
<td>935 mm</td>
<td>1060 mm</td>
</tr>
<tr>
<td>Max. wheelhead power</td>
<td>22 kW</td>
<td>45 kW</td>
<td>45 kW</td>
</tr>
<tr>
<td>Max. wheel peripheral speed</td>
<td>60/100 m/s</td>
<td>60/100 m/s</td>
<td>60/100 m/s</td>
</tr>
</tbody>
</table>

WT
Cross slides configuration

With capacity for components of up to 15 tons in weight and 10000 mm in length, the WT machine range can grind even the heaviest cylindrical workpieces.

High end and customised solutions provide key benefits to some of the largest manufacturers with special grinding requirements for processing extrusion screws, printing rolls, machine tool components, electrical motor shafts and many other parts.

The cross-slide configuration keeps the heavy parts stationary while also optimising the machine’s footprint. The structure can be used for a single or double wheelhead to maximise productivity with simultaneous grinding operations such as our WT-72 for mass production of axles for rolling stock and rear axles for trucks.

<table>
<thead>
<tr>
<th>TECHNICAL CHARACTERISTICS</th>
<th>WT-72</th>
<th>WT-92</th>
<th>WT-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. distance between centres</td>
<td>6000 mm</td>
<td>8000 mm</td>
<td>10000 mm</td>
</tr>
<tr>
<td>Max. diameter to be ground</td>
<td>840 mm</td>
<td>1040 mm</td>
<td>1250/1600 mm</td>
</tr>
<tr>
<td>Max. weight between centres</td>
<td>2500 kg</td>
<td>5000 kg</td>
<td>8000/15000 kg</td>
</tr>
<tr>
<td>Max. grinding wheel diameter</td>
<td>1060 mm</td>
<td>1250 mm</td>
<td>1250 mm</td>
</tr>
<tr>
<td>Max. wheelhead power</td>
<td>45 kW</td>
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</tr>
</tbody>
</table>

Heavy duty cylindrical grinding solutions www.danobatgrinding.com
Core technology

Machine structure
- Made of stress-relieved pearlitic cast iron
- Optimised with finite element calculation
- Stability and rigidity required for optimum grinding accuracy
- Coolant channels especially designed to guarantee maximum thermal stability

X and Z axes
- Axes architecture design through the centre of gravity for eliminating vibration
- Moving slides with ground and hand-scraped V and flat guideways, including antifriction coating to avoid thermal expansion and stick-slip effects
- CNC servomotor with direct coupling and screw
- High resolution linear glass scale for high positioning accuracy and repeatability

Swivelling B-axis
- Infinite programmable CNC B-axis with large swivelling range
- Direct drive torque motor to eliminate backlash and minimise maintenance
- High resolution rotary scale for angular precision positioning
- Mechanically locked when in stationary position, pneumatically unlocked during positioning
- Thanks to Danobat’s B-axis design with integrated, high resolution rotary encoder, repeatability of ±0.005 arc sec ±1 um can be achieved by measuring at a radius of 650 mm from the centre of the B-axis
- Positioning accuracy ± 1.5 arc sec
Grinding spindles “S1” & “S2”

• High quality spindles customised to fit customer requirements
• DANOBAT spindles are 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
• Direct drive motor spindle. Designed with selected materials to optimise temperature control and spindle performance
• Frequency drive controlled for constant surface speeds
• Separate, close loop coolant circuit for optimised temperature control

Workheads & tailstock

• Modular design adaptable to customer requirements
• Designed with selected materials to optimise temperature control and spindle performance
• Air-purge feature for easy positioning and setup

Core technology

Precision assemblies

Specialised precision assemblies, staffed by a qualified fitters team with broad experience in bearing and spindle elements.

Each assembly is performed in a clean-room environment at a controlled temperature and documented to ensure traceability and interchangeability if replacements are needed.

The quality control checks run at all stages of the assembly process, ensure precision and provide a test bench where every single component undergoes running-in tests.

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Modular wheelhead
We have an extensive portfolio of wheelhead options to allow multiple operations in one setup - from straight to angular approach to swiveling BL-axis for OD and taper grinding to fully programmable B-axis, allowing a combination of OD, ID grinding wheels and measuring systems, covering a wide range of customer applications.

**Wheelheads**

<table>
<thead>
<tr>
<th>Straight</th>
<th>Angular</th>
<th>BL-axis (B-axis with limited swivelling)</th>
<th>Swivelling B-axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>A1</td>
<td>BL1</td>
<td>B1</td>
</tr>
<tr>
<td>S5</td>
<td>A6</td>
<td>BL5</td>
<td>B9</td>
</tr>
</tbody>
</table>

HG. Moving table configuration with single wheelhead or double wheelhead for sequential grinding.

Wt. Cross-slide configuration with single wheelhead or double wheelhead for sequential and simultaneous grinding.
Innovative Solutions

Accessories


Dressing systems. 1. Resin-bonded diamond wheel truing system / 2. Dressing disc spindle / 3. Internal grinding wheel dressing system / 4. Standard chisel diamond holder

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

These are some of the technological solutions, which add high value to your manufacturing application manufacturing, helping your company to be even more competitive.

Our team of experts, with a high degree of specialisation, is at your service to study your manufacturing requirements with a commitment to provide a creative, competitive and intelligent machine solution that will exceed your expectations.

All of these solutions are backed by advanced engineering services, meaning that working in partnership with your organisation, we can anticipate future trends in the industry.

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

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

Fully integrated software for easy programming and visualisation of grinding operations for the most demanding tolerance requirements.

Precision ± 1.5 µm
Repeatability 2 µm
Resolution 0.1 µm

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Heavy duty cylindrical grinding solutions

www.danobatgrinding.com
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


Innovative Solutions

Heavy duty cylindrical grinding solutions

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Innovative Solutions

Applications

Printing rolls
- High accuracy and surface finish requirements obtained due to hydrostatic wheelhead guideway system
- Customised software for concave and convex contour grinding
- Straight wheel up to Ø 1250 mm
- Danobat absolute, multi-diameter measuring system, fully integrated in main control panel

Extrusion screws
- Fully automatic grinding of extrusion screws
- Combined solution with measuring systems and CNC-controlled auto-centering steady rests to maximise production capacity
- The ideal solution for geometrically complex workpieces
- Grinding of all types of materials: Molybdenum, Inconel, HVOF, chromium, tungsten carbide, steel and ceramic alloys, among others

Transmission shafts
- High accuracy requirements obtained due to optimised machine components and rigid machine setup
- Multi-wheel B-axis setup allows for sequential processing of both ends of gear shaft
- Reduced setup times due to programmable tailstock positioning axis over a large table range
- Integrated burnishing attachment
- Automatic taper measuring

Assembled gas turbine rotors
- Automatic face-driving systems to grind complete parts in a single set up
- Angular grinding approach on both sides with programmable CNC swiveling B-Axis
- Integrated solution consisting of automatic measuring system, auto-centering function and auto-follow steady rest, resulting in maximisation of production throughput
- The ideal solution for geometrically complex workpieces: Conical, cylindrical, screws with variable pitch angles, hardened screws and more

Rotor shafts
- Internal / external grinding
- Machine solution tailored towards grinding of base material, chrome plated as well as tungsten carbide coated areas
- Specific dressing and truing device for diamond grinding wheels
- Customised part driving solutions
- Additional coolant filtration unit with fine filtering capabilities for tight surface finish requirements
- Capabilities to integrate fine-grinding and superfinishing attachments

Electric motors
- Integration of all operations in one single setup
- Optimisation of cycle time and throughput due to the integration of all operations into one setup
- Capability for wet or dry grinding depending on customer’s engine manual
- Customised clamping and driving fixtures for each rotor type
In order to advance towards the creation of smart factories, where all equipment is interconnected and can operate autonomously, we have a value proposition for you, comprising of solutions developed in-house. These solutions combine the latest digital technology and over 65 years of experience in machine tools and production systems. Danobat’s digital offering focuses on three main benefits: Solution efficiency, user friendliness and autonomy.

**Data System**

A platform for data capture, storage and processing to deliver the right information for monitoring machine condition. This is the ideal decision-making tool for optimising machine utilisation.

The technology allows you to:

- Get real-time and historical information on a wide range of key machine parameters.
- Monitor your machine anytime, anywhere.
- Get automatic reports to support your decision making.
- Improve machine utilisation by anticipating any system failure.
- Work with optimised machining processes to get best quality with minimum energy consumption.
- Connect easily to corporate IT systems (ERP, MES, PLM ...).
Danobat Digital Suite

User-friendly interface for intuitive operation that assists the operator and helps in optimising machining processes.

Based on its long experience, Danobat understands the machine user’s needs and has designed a programming assistant that makes it quick and easy to follow the most complex cycles.

EXECUTION
Most relevant machining information displayed in a single view.
• Machining cycle progress
• Key process variable display
• Alarm visualisation 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 cycles 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 optional integrated modules:
• Profile editor
• Contour module
• Threads module
• Forms module
• CAD files import
Danobat offers worldwide specialised services to support you throughout the life cycle of your equipment. From engineering services for the design of machining processes and set up of the machine to technical service and spare parts and retooling of your existing machines for a new family of parts.

We have an extensive network of professionals working in over 40 countries, capable of meeting your needs wherever you are and ensuring fast attention, effectiveness and proximity.

**Danobat Centres of Excellence**

An international centre, working in the machining of high precision components, to help you become more competitive by maximising your efficiency and productivity.

We have the resources required for excellence-based operations: Latest-generation Danobat technology in machining, measuring, software and control, piloted by highly qualified staff working exclusively on our challenges and those of yours.

Our centres of excellence are focal points for cooperation with customers, suppliers and other partners to generate high value applied knowledge in manufacturing processes.

**Original spare parts**

We understand the importance of machine availability to ensure production output. We therefore have a large stock of original spare parts (more than 100,000 item references) ready to be dispatched immediately from different warehouses around the world.

**Corrective and preventive maintenance**

We offer collaboration agreements for regular machine-status checks, to prevent the most common machine issues. Digitisation of manufacturing and our nonstop monitoring solution can help identify patterns and predict future errors. And for any that can’t be predicted, our worldwide service team can help get the machine up and running again to minimise downtime.
Competitiveness is increasing in all sectors and as your needs become more sophisticated, the services you require become ever more complex. Evolving your machine to cater to new needs requires know-how not only of the machine itself but of industries, machining processes and manufacturing environments.

Our expert team can help guide you towards the path of increased competitiveness.

Inspections
We offer all our expertise and knowledge of equipment and processes to you to provide a real picture of your machine’s status.

Process optimisation
We offer detailed studies of your machining processes to assure your equipment is fully utilised to its maximum potential, yielding optimised production, quality and financial results. The optimal solution may include the development of specific machining and measuring cycles and engineering of specialised tools and fixtures.

Production optimisation
With years of experience, dealing with a huge variety of challenges in a wide range of industries, enable us to detect opportunities where others only see problems. A comprehensive analysis of your processes and workflows provides the input we need to develop a simulation model that will help you maximise output.

Retooling & Retrofitting
We can’t predict your future needs, but we can work with you to prepare for them. We perform re-tooling and retrofitting services to help you face new challenges, improve and add new functionality and extend the life cycle of your equipment.

Obsolescence management
Avoid future problems with component availability. Future-proof your machine. We propose and perform changes to obsolete components, anticipating any issues that could halt production due to lack of a spare part that may no longer exists.

Software & hardware updates
Hardware and software are constantly being updated and upgraded. So if you want to keep your machine at the cutting edge, we have the right solution for you.

We install hardware and software upgrades to ensure an extended life cycle and performance improvements.

Advanced training
Get the most from your Danobat machine. Customised training in machine work modes, programming, cycles and specific functions, drive compensation, alarm messages, recovery instructions, preventive maintenance, etc.
How we do it

The Danobat way

If you want to achieve different results, you have to do things differently. That is the Danobat way. Qualified specialists, in-house technology, drive for innovation and, of course, a corporate culture that values people and puts you at the heart of its organisational system, creating an ecosystem that fosters co-creation and generates real, lasting, sincere partnerships.

Our teams ability to understand your daily challenges and provide solutions that bring us together and provide meaningful experience for the mutual benefit of everyone. Commitment, honesty, responsibility and trust to create innovative solutions that are fully customised, useful and profitable.

01 Experts close to you
The experience of our staff and our focus to working alongside our customers are Danobat's key distinguishing features.

02 The value of people
Commitment, enthusiasm, self-motivation, a feeling of belonging, initiative, creativity and adaptability to a changing environment: these are just some of the attributes that define the people that make up Danobat.

03 In-house technology
Precision in results and ease-of-use are our KPI's (key performing indicators) in all the solutions we provide. That's why we specialise in developing intuitive, easy-to-handle in-house technology.

04 Bringing the future closer through innovation
Danobat’s track record can only be understood in terms of its firm, sustained backing for innovation. Since our earliest days, more than sixty five years ago, innovation has been in our very blood. It is now our most recognisable and identifying gene.