

PRECISION & HIGH PRODUCTION CENTRELESS GRINDING SOLUTIONS ESTARTA



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 our clients' competitiveness. We offer resourcefulness and engagement to bring innovative and personalised answers to 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 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, backing for innovation and, of course, a corporate culture that places value on people and puts the customer at the heart of its organisational system.

We boost change



Innovative Solutions

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

Our mission is to provide a response tailored to the requirements of our customers, based on our expertise in the technologies applied to industrial manufacturing with intelligence, commitment, creativity, rigour 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 advances in digital technology are at the service of our customers, and we focus on developing our own solutions using advanced technology.

- 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 the services the industry needs, such as corrective maintenance strategies and spare parts services, but we always try to go one step further and anticipate changes in the sector. Accordingly, we provide a broad range of high value-added services which are completely customised to meet the challenges faced by our customers.

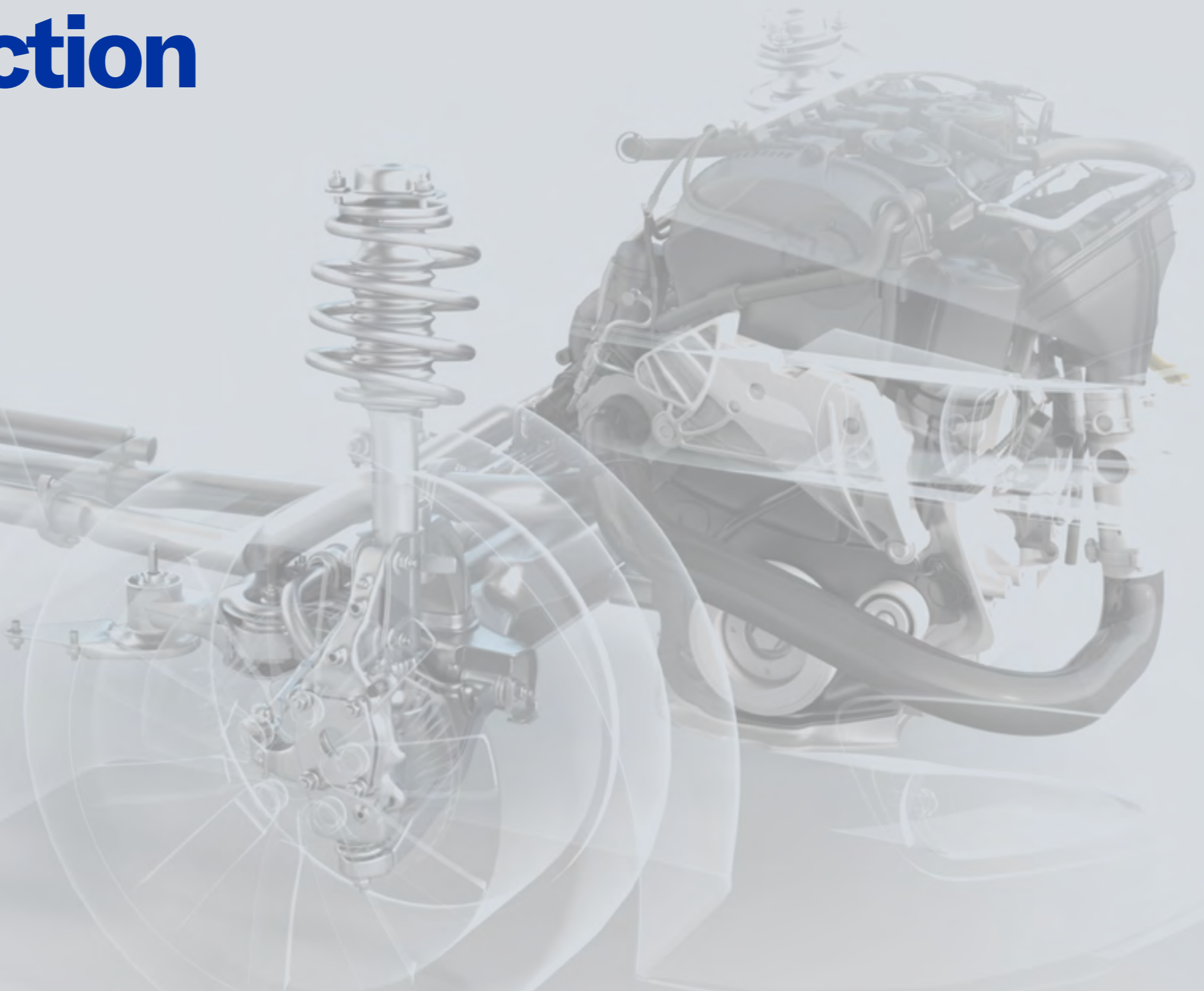
- Process simulation.
- Production simulation.
- Advanced training.
- Inspections & quality control checks.
- Maintenance service.
- All-round spares maintenance.
- Software & hardware enhancements.
- Process optimisation.
- Obsolescence management.

Precision & high production centreless grinding solutions

ESTARTA

Our customers set us increasingly complex challenges. Production and precision requirements continue to become tougher, but industrial firms are calling not just for more and better manufacturing but also for greater versatility and automation to make them more competitive on the market.

In response to these demands, we now present our range of ESTARTA centreless grinders, a family of solutions intended for the toughest production work, guaranteeing flexibility and precision without neglecting the customisation required for turnkey projects and adaptations to the specific needs of each customer.



Expertise

We specialise in the development of advanced solutions for the manufacture of high value-added components in industries where the most stringent standards are required in results.

We have broad experience in highly complex machining processes, and work with firms which are leaders in their different fields to design fully customised solutions.

We cover preliminary engineering work, machining process studies, the technical specifications of equipment, installation requirements and the personnel required to operate machines and production lines.

All-round solutions

At Danobat we can offer all-round solutions for the partial or complete manufacturing of strategic components such as shafts for electric motors on vehicles.

In the field of partial integration, we can incorporate ancillary operations into grinding solutions. These include cleaning, SPC stations, deburring, super-finishing and storage in baskets and on pallets. In the field of full integration, we offer complete machining lines that handle not only grinding but also the additional operations required to guarantee component machining.

Specialising to attain excellence

Our workforce is highly specialised, with high-level technical qualifications. Our goal is to develop the grinding solution best suited to each different production requirement of each different customer.

Our team of experts work closely with customers to provide solutions tailored to their needs and to tackle each different stage of the process of developing those solutions effectively.





Project team

This unit has a key role in the success of our projects, as it handles the task of compiling all the information required and passing on the specific requirements of each customer to the rest of the team and to our network of suppliers. As well as compiling information, the unit also draws up technical and commercial quotes.

Process and testing team

This team specialises in grinding. Its members are always up to speed with the latest technical developments on the cutting edge of technology. It determines the characteristics of the process and the solution best suited to each scenario.

The experts in this unit also anticipate and specify such major issues for customers as the useful lifetimes of tools, workpiece changeover times, machine energy consumption and life-cycle cost, among others.

To ensure that these tasks are completed and checked with the necessary rigour, at Danobat we have a network of centres of excellence equipped with a large number of latest-generation machines which enable us to conduct trials with our customers and internal tests to check tools, processes and technologies.

Our goal is to offer a facility with actual working conditions where the capabilities of machines can be checked, so that new manufacturing processes can be undertaken with full assurances and without risks. Our centres of excellence also enable us to optimise manufacturing processes at customers which are already up and running.

Technical team

The mission of this team is to specify what type of machine is best suited to the travel requirements, clamping/work holding systems and loading/unloading solutions in each case.

Centreless grinding range



ESTARTA-175/250

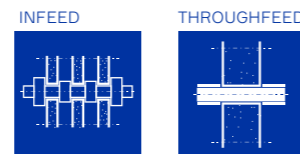
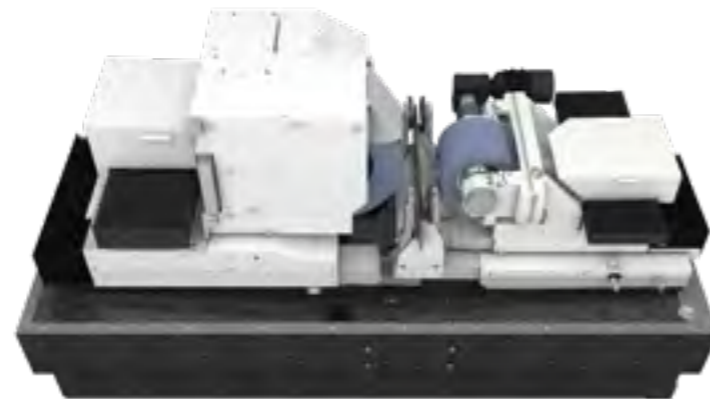
Short production runs
Small to medium-sized workpieces

The machines in this family are designed for both infeed and throughfeed grinding.

They have cantilever grinding wheelheads to ensure fast component changeovers. They also have double support regulating wheelheads to ensure optimal stiffness.

These two models are therefore the perfect solution for high-precision work on small to medium-sized workpieces and operations involving the manufacture of short production runs, in which fast component changeovers are critical.

ESTARTA grinding machines can work at high speeds (120 m/s) for applications with CBN wheels, thus optimising cycle times.



TECHNICAL CHARACTERISTICS

	ESTARTA-175	ESTARTA-250
Maximum workpiece diameter	40 mm	150 mm
Grinding wheel diameter (OD x width x ID)	ø508 x 175 x ø304,8 mm	ø650 x 250 x ø304,8 mm
Grinding wheel peripheral speed	20/120 m/s	20/120 m/s
Regulating wheel diameter (OD x width x ID)	ø305 x 175 x ø127 mm	ø400 x 250 x ø203,2 mm
Main motor	11-22 kW	22-37 kW
Net weight	8000 kg	12000 kg

ESTARTA-400/650

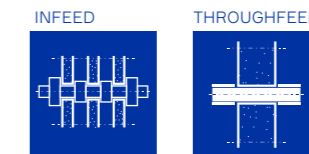
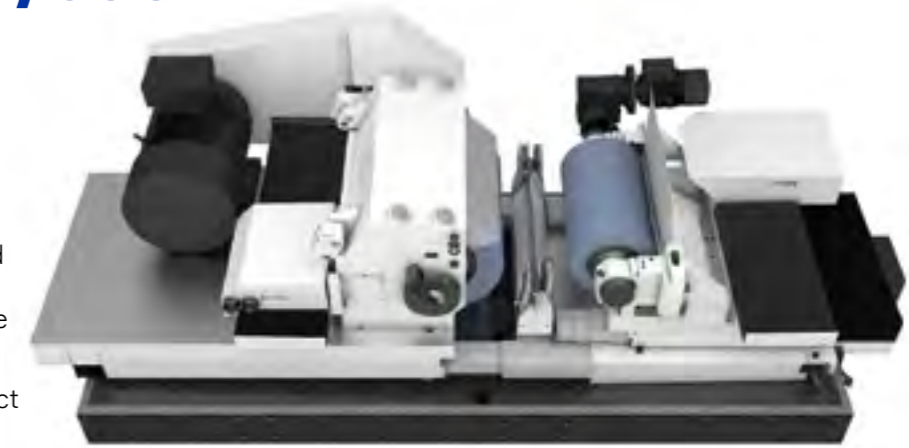
High production
Medium to large workpieces

The machines in this family are designed for both infeed and throughfeed grinding.

They have both a grinding wheelhead and a double support regulating wheelhead to ensure optimal machine stiffness.

These two models are thus the perfect solution for high-precision, high-production work.

ESTARTA grinding machines can work at high speeds (120 m/s) for applications with CBN wheels, thus optimising cycle times.



TECHNICAL CHARACTERISTICS

	ESTARTA-400	ESTARTA-650
Maximum workpiece diameter	150 mm	250 mm
Grinding wheel diameter (OD x width x ID)	ø650 x 400 x ø304,8 mm	ø650 x 650 x ø304,8 mm
Grinding wheel peripheral speed	20/120 m/s	20/120 m/s
Regulating wheel diameter (OD x width x ID)	ø400 x 400 x ø203,2 mm	ø400 x 650 x ø203,2 mm
Main motor	37-90 kW	55-110 kW
Net weight	12500 kg	16500 kg

Core technology

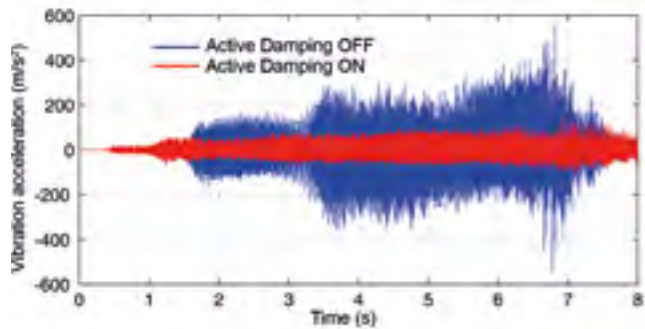
Natural granite bed

- Machine bed manufactured from natural granite.
- Best thermal stability properties. Consistency of dimensional accuracy on ground workpieces over time.
- It also ensures optimal vibration damping.



Exclusive vibration damping system (optional)

- This active vibration damping system developed in-house enables tough cycle time requirements to be met in which the workpiece ground is not the limiting factor.
- Stable development over a broader range of grinding heights and regulating wheel spin speeds means that machine adjustment is simpler.
- This solution also offers the option of incorporating workrest blades with anti-vibration systems if the workrest blade thickness is a limiting factor in the process.



Linear motors on diamond dressers

- High precision in wheel profiling is obtained because movements are not mechanically transmitted but controlled by an optical scale, which makes for precise interpolation on both axes.
- The absence of mechanical wear means that precision is guaranteed throughout the useful lifetime of the machine.
- With no wear in the mechanical transmission, maintenance levels are also low.
- Speed and acceleration are high, with faster between-wheel and return movements than in conventional systems, thus reducing diamond dressing times.



High-stiffness direct drive on main slides

- Large diameter ballscrew.
- Low clearance between ballscrew & guidance system and with wheel centre to ensure optimal stiffness.



ECO-FRIENDLY

- Hydraulic components have been eliminated and all other machine components have been minimised: there are now 23% fewer than in the equivalent model in the previous range. This minimises maintenance and optimises reliability.



- The machine is manufactured using natural materials, with less energy consumption.
- The solution includes standby software functions and has no chiller.



Core technology

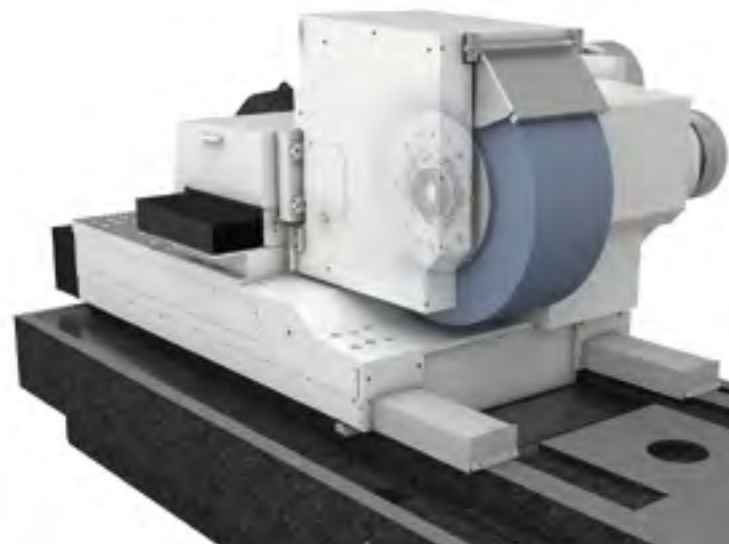


Precision assemblies unit

Specialised precision assemblies unit, staffed by 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 performed at all stages of the assembly process ensure precision and provide a test bench where every single component undergoes running-in tests.



Cantilever spindle support

At Danobat we have developed our own cantilever head for a grinding wheel peripheral speed range of 20-120 m/s, making for rapid component changeovers.

The shaft spins on two sets of high precision bearings for radial and axial stresses. The front support is built into the wheel assembly area, which minimises the cantilever, increases stiffness and enhances precision by minimising the effect of dilation in the head.

This system is easy to maintain and highly durable.



Twin-Grip spindle support

We make our own shafts for a range of grinding wheel peripheral speeds from 20 to 120 m/s.

Shafts spin on two sets of high precision bearings for radial and axial stresses, which gives high stiffness to the whole system, even at high speeds and during the toughest grinding jobs.

At Danobat we also have interchangeable shafts available for customers so as to avoid machine stoppages due to maintenance or other incidents.

The system is easy to maintain and highly durable.



Grinding wheel disc diamond dresser electro-spindle

A disc profiler with an electro-spindle with a maximum spin speed of 20,000 rpm.

The electro-spindle drive with no mechanical transmission does away with any vibration that could result in quality problems in the workpiece.

Thanks to its three pairs of bearings, this system is stiffer than others available on the market.

Rapid component changeover



Automatic grinding wheelhead opening

The double support head opens automatically, thus considerably reducing wheel changeover times.

No operator intervention is required, so maximum safety is guaranteed.



Automatic taper adjustment

The taper of the regulating wheel can be adjusted with no operator intervention.

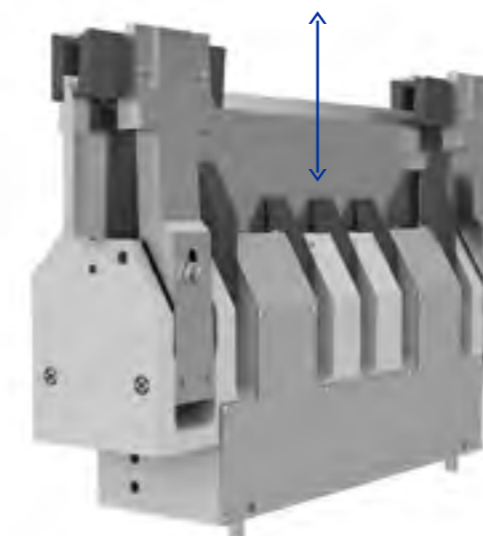
If a post-process measuring unit is available to measure the taper of the workpiece, it can also be corrected automatically.



Automatic workrest blade locking

This option reduces workrest blade changeover times by more than two thirds.

The system features pneumatic release and mechanical clamping to minimise air consumption and maintenance.



Automatic workrest blade height regulation

This option enables new working heights to be set with no operator intervention.

An electrical system is used for adjustment, to minimise power consumption and maintenance.

Automated solutions



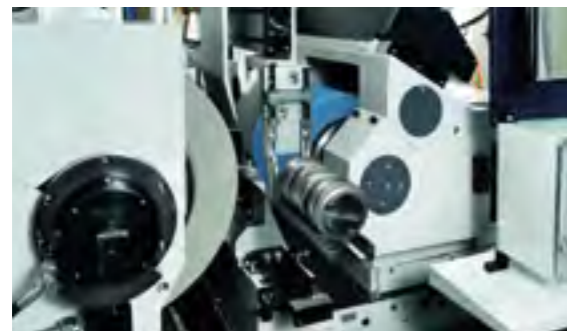
To guarantee short production times and thus increase productivity, a number of automation systems can be built into ESTARTA machines. At Danobat we draw up turnkey solutions for numerous applications that can be tailored to the needs of our customers.

INFEED



External gantry

- Loading/unloading times of <6 seconds on standard machines.
- This solution enables various machines to be connected and various workstations to be managed (cleaning, measuring, SPC, unloading, etc.).



Integrated gantry

- Loading/unloading times of ≤ 3.5 seconds on standard machines.
- This solution, developed by Danobat, enables heavyweight components to be handled.



Robot

- A flexible solution for workpiece loading and clamping.
- Rapid component changeover.
- Loading and unloading using pallets.

THROUGHFEED

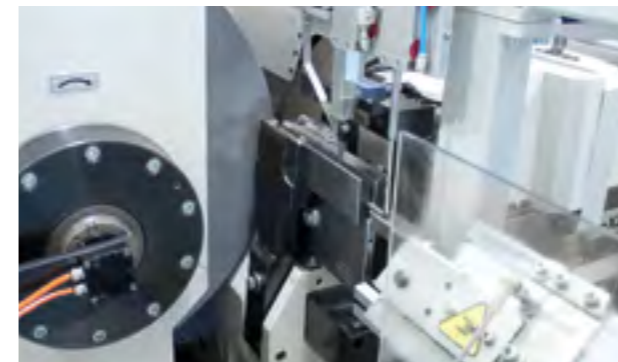


- A loading and unloading system for workpieces sensitive to contacts or marks, in which there is no contact between the grinding areas.
- A solution conducive to rapid component changeovers.
- Workpieces can be loaded continuously without stopping the machine.



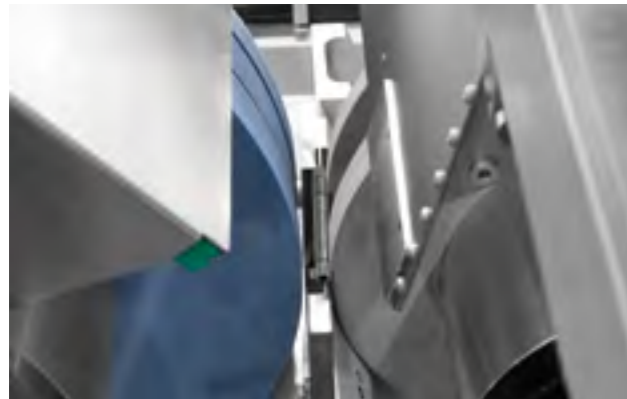
- A highly autonomous, versatile loading/unloading system.
- A solution for a wide range of workpieces, e.g. with diameters from 3.5 to 26 mm and lengths from 50 to 1000 mm. Other ranges are also available.
- Conducive to rapid component changeovers.

HYBRID. INFEED - THROUGHFEED



- A solution for machines which are required to work with both throughfeed and infeed systems.
- The throughfeed loading unit can load workpieces for infeed grinding via a built-in gantry.

Applications



Electric motor shafts

- Grinding of 4 workpieces per cycle, all with different diameters.
- Floor-to-floor cycle time <3.5 seconds per workpiece.
- Highly autonomous automatic loading and post-process measuring with feedback to the machine.



Shock absorber rods/Steering racks

- High-speed rod and rack manufacturing lines, thanks to high-stiffness machines with wheel widths of up to 650 mm.
- As an option, complete manufacturing lines can be provided, including hardening, straightening, etc.
- Solutions for the various grinding operations required for steering racks, using both infeed and throughfeed systems.

Hard metal bars (tools)

- The extremely high stiffness of ESTARTA machines makes them the optimal solution for grinding hard metal bars.
- They are capable of eliminating large quantities of excess material and can increase productivity by as much as 50%.
- The ideal solution for roughing, finishing and super-finishing operations (roughness level $Ra < 0.05\mu m$).



Surgical instruments

- A highly compact, fully automatic machine with a minimum of 6 CNC axes, thus facilitating the grinding of surgical instruments in various shapes and a range of diameters.
- Fast and easy adjustment of the machine and the loading device for grinding small batches of workpieces, when component changeover times are a highly critical factor.
- Expertise in the technical requirements for grinding materials used for surgical instruments.



Bits/Taps

- Throughfeed grinding of bits with automatic taper generation before and after grooving.
- Grinding of bits over 650 mm long.
- Infeed grinding of taps (up to 5 workpieces per cycle).
- Grinding of pre-formed taps or from blank to final dimensions.



Steel bars/Hydraulic cylinders

- A fully automatic solution for grinding bars with minimal operator intervention.
- Machine and loading unit adjustments are made automatically.
- Experts in grinding bars made of different materials (duplex and super duplex stainless steel, zirconium, titanium, etc.).
- Automatic workpiece return for multipass grinding.

Applications



Bearing needles/rings

- A machine for **bearing needles**, with a grinding wheel of up to Ø 650 x 350 mm, enabling very high production rates to be obtained while guaranteeing the required quality.
- A machine for **bearing rings**, with a grinding wheel of up to Ø 650 x 650 mm and a power rating of up to 110 kW, enabling very high production rates to be obtained.
- Turnkey solutions for both workpieces, including loading/unloading systems and post-process measuring.

Hydraulic valve slides

- A solution using throughfeed grinding for long production runs and infeed grinding for short runs.
- Workpieces with strict quality requirements (tolerances of <math><2\ \mu\text{m}</math> in diameter, <math><1\ \mu\text{m}</math> in roundness and <math><2\ \mu\text{m}</math> in cylindricity).
- High-precision wheel shafts greatly facilitate the attaining of tough quality requirements.
- The post-process measuring system features rapid set up and automatic feedback to the machine.



Cross spiders

- Up to 4 workpieces per cycle can be ground.
- Dressing of the grinding wheel with diamond roll or dressing disc due to the high accuracy of the dressing systems of the Danobat machines.
- A fully automated solution with workstations for loading/unloading, 90° workpiece turning, post-process measuring, separation of out-of-tolerance workpieces, etc.



Fasteners

- Grinding of fasteners in various materials (titanium, Inconel, stainless steel, etc.).
- Loading solutions to meet different requirements (large batches with high levels of autonomy in loading, small batches with rapid component changeover, etc.).
- System for controlling by CNC the material ground on the fastener surface
- As an option, angular grinding can be provided to ensure optimum grinding quality on fastener faces.



Digital Focus

In order to advance towards the creation of smart factories, where all equipment is interconnected and can operate autonomously, we have a value proposition comprising solutions developed in-house, combining the latest digital technology and over 65 years' experience in machine tools and production systems.

Danobat's digital offering focuses on two main benefits for our customers: solution efficiency and user friendliness.

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.



Main facts:



User friendly and intuitive with outstanding usability.



Centralised information for fast and simple access.



Multiple operation aids for easy, efficient and accurate grinding.



Fully integrated with the latest multi-touch technology.



Digital support: machine documentation, troubleshooting and dynamic preventive maintenance schedule.



Energy efficient solution, thanks to the energy management module.

At Danobat we have developed our own, unique software for our family of centreless grinders. This fully user-friendly system facilitates machine programming and adjustment and permits rapid changeovers from throughfeed to infeed grinding and vice versa.



RUNNING

The main machining information is shown in a single display:

- Progress of the machining cycle.
- Information on parts ground.
- Wheel spin speeds.
- Information on counters and power consumption.



INTEGRATED MODULES

Multiple optional integrated modules & software:

- A solution for the simple development of diamond dressing profiles for both wheels.
- Integrated machine maintenance module.
- Software for automatically generating the regulating wheel profile for throughfeed grinding.

Advanced Services

Danobat offers worldwide specialised services throughout your equipment life cycle. From engineering services for the design of machining processes and set up of the machine to technical service and spare parts.

We have an extensive network of professionals working in over 40 countries, capable of meeting customers' needs wherever they 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 our customers become more competitive by maximising their efficiency and productivity.

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

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 critical importance of machine availability to ensure production output. We therefore have a wide stock of original spare parts (more than 100,000 item references) ready to be dispatched immediately to our customers 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 with rapid attention.





Competitiveness is increasing in all sectors and as your needs become more sophisticated, the services you require also get 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 place all our experience and knowledge of the equipment at your service to provide you with a real picture of your machine's status.

Process optimisation

Detailed studies of machining processes to provide an optimised solution that offers technical, production, quality and financial improvements. The optimal solution may include the development of specific machining and measuring cycles and engineering of specialised tools and fixtures.

Production optimisation

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. An exhaustive 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 control your future needs, but we can work with you to prepare for them. We perform retooling to help you face new challenges and even retrofitting to give your machine a second life-new components, new functionalities and a longer machine life.

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 never arrive.

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.

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, backing for innovation and, of course, a corporate culture that values people and puts the customer at the heart of its organisational system, creating an ecosystem that fosters co-creation and generates real, lasting, sincere partnerships.

A way of working that bring us together and provide meaningful experience for both customers and our own team. 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 on working alongside our customers are Danobat's key distinguishing features.

02 The value of people

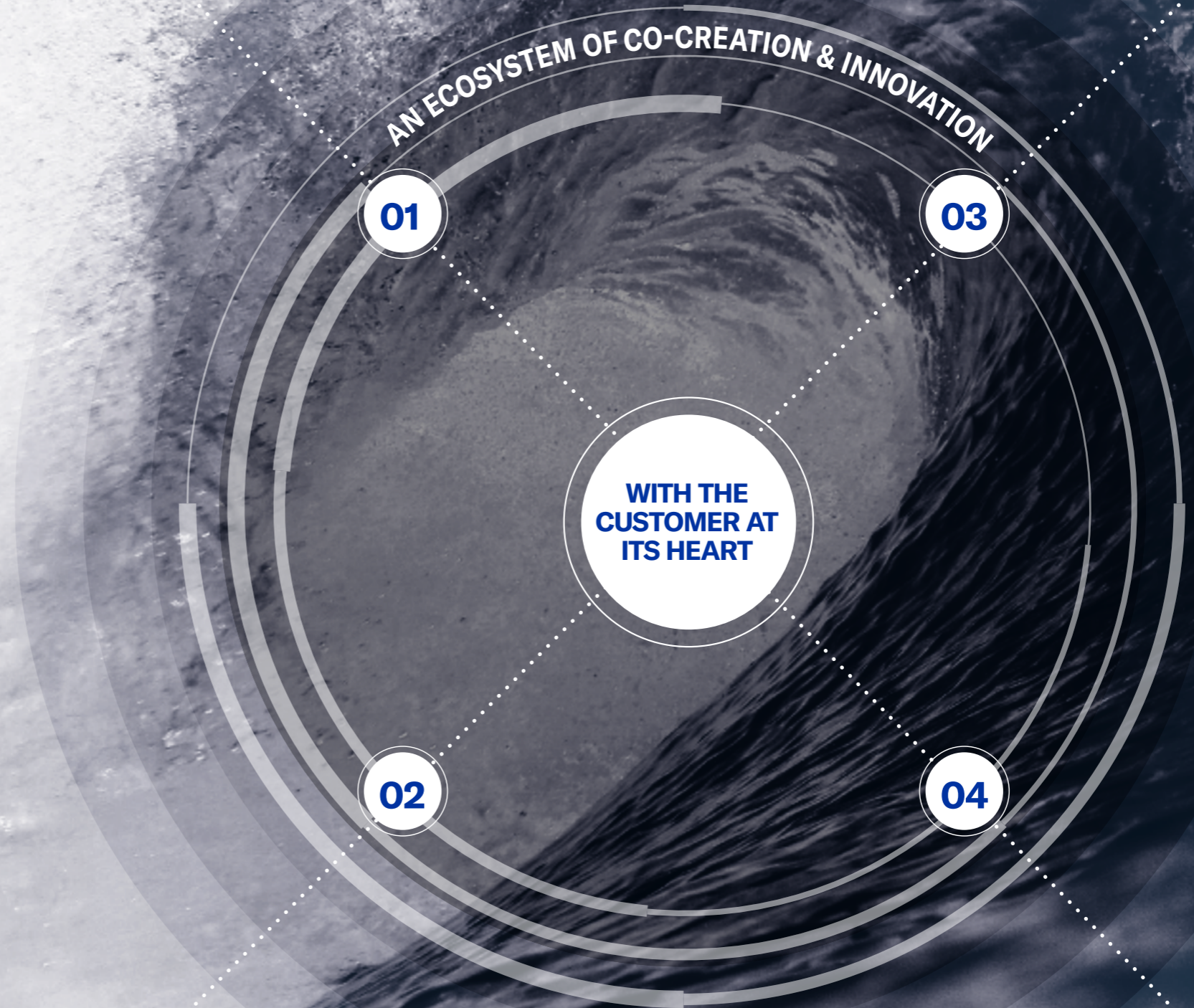
Commitment, enthusiasm, self-motivation, a feeling of belonging, initiative, creativity and adaptability to a changing environment: these are just some of the features that define the people who make up Danobat.

03 In-house technology

Precision in results and ease-of-use are our watchwords in all the solutions we provide. That is 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 years ago innovation has been in our very bones. It is now our most recognisable identifying trait.





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