

A detailed close-up photograph of a metal turning process. A polished, cylindrical metal workpiece is mounted on a lathe. A cutting tool is visible on the left, having just finished a pass, leaving a smooth, reflective surface on the workpiece. The background is dark and out of focus, emphasizing the precision of the machining.

# TURNING AND GRINDING SOLUTIONS

---

*EVOLVING WITH YOU*



**DANOBAT**

# ADVANCED TURNING AND GRINDING SOLUTIONS

## WHO WE ARE

We specialise in the design, development and manufacture of machine tools, high value-added production systems and fully flexible solutions, adapted to our customer's needs.

We offer technologically advanced services for demanding industries such as aeronautics, automotive manufacture, capital goods, rail and power generation.

We are committed to developing innovative solutions and have a strong research element. We form part of DANOBATGROUP the machine tools division of Mondragon Corporation, one of the largest industrial groups in Europe.

## CLOSE TO OUR CUSTOMERS

Internationalisation has been an ongoing process. One of our prime objectives has been to build a physical presence on overseas markets. In this way, we can ensure direct dialogue with customers and provide a specialised local technical service.

We have state-of-the-art production plants in Spain and Germany and a sophisticated sales and service network covering 40 countries.



**DANOBATGROUP**

Turnover 260 M€

Workforce 1,300



Turnover 11,582 M€

Workforce 74,060



## **CUSTOMISED SOLUTIONS**

We go far beyond merely supplying machinery. We also work as a technological partner providing engineering solutions and services. These solutions are conceived in close collaboration with end users resulting in a product comprising the machine itself and all related processes, tools and accessories, hence offering a complete final tailor-made solution.

## **PARTNERSHIP**

Our philosophy consists of supplying our customers with a complete machining solution in the shortest delivery time. In developing these solutions, the participation of the client together with our knowledge, are the keys for success of a project. The ideas are based on both our customer's experience as well as ours. Thanks to the enormous process knowledge of the customers, we can progress in the specialisation and in the supply of the ideal solution for each application.

# EXPERT SOLUTIONS FOR A SMART WORLD

## INNOVATION IN OUR GRINDING LAB

Our Technological Research and Development Centre includes a grinding laboratory. With a constant, controlled temperature and humidity, the laboratory is equipped with advanced machinery and measuring equipment.

Its main mission is to work with users to develop top-level customised solutions, through machining tests, simulations, tests, improvements in production processes and machine optimisation.

## A HIGH LEVEL OF TECHNOLOGY

In-house developed precision spindles and measurement systems, direct drive motors in linear and rotary axes, hydrostatic technology, home-made advanced software, specialized know-how of superabrasive grinding wheels and cutting tools are just a few examples of our technological capacity.

DANOBAT solutions stand out for their technology but at the same time many parts are manufactured with fine craft skills in order to guarantee maximum quality. For instance, machine guides are hand scraped and all machine components are supplied by top manufacturers that do not jeopardise machine quality and its process.



## DANOBAT DIGITAL

In order to advance in the construction of smart factories, where all equipment is interconnected and can operate autonomously, we have a value proposition consisting of our own development solutions based on the latest advances in digital technology, our accumulated experience and over 65 years' experience in machine tools and production systems.

Our digital offer centres on the development of own solutions with advanced technologies such as Smart HMI, Data System and Control System.

## DANOBAT SERVICES

We offer high value-added services, designed to provide intelligent machine management, incorporating technological advances that allow life cycles to be extended, improving maintenance strategies and optimising production.

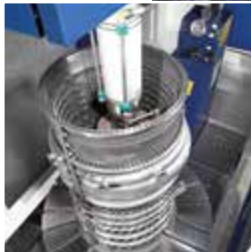
We have an extensive network of experts operating close to our customers, further proof of our quest to be "Your lifecycle partner".

# SOME REFERENCES

We endeavour to innovate, to do things better and to add value to the market. The continuous investment in R&D&I makes it possible to offer high-tech competitive solutions for the machining of critical components of the most demanding industries, such as automotive and power generation.

## AEROSPACE

AIR FRANCE INDUSTRIES  
AMERICAN AIRLINES  
DELTA AIR LINES  
EMIRATES  
GE AVIO AERO  
GENERAL ELECTRIC  
HAESL  
IBERIA AIRLINES  
ITP  
JAL  
KLM  
LUFTHANSA  
MESSIER DOWTY  
PRATT & WHITNEY  
ROLLS ROYCE  
SAESL  
SAFRAN  
SR TECHNICS  
THAI AIRWAYS  
TURKISH AIRLINES TECHNIC  
UNITED AIRLINES



## POWER GENERATION

ALSTOM POWER  
AKER SOLUTIONS  
ATA GEARS  
CAMERON  
EICKHOFF WIND POWER  
GAZPROM  
GE AVIO AERO  
GENERAL ELECTRIC  
GAMESA  
MAN DIESEL  
MOVENTAS OY  
NOV  
OMK  
ROLLS ROYCE  
SEW EURODRIVE  
SIEMENS  
SOLAR TURBINES  
TENARIS  
TPCO  
TUBOS REUNIDOS  
US STEEL  
VALLOUREC  
VESTAS  
VOITH TURBO



## CAPITAL GOODS

BALL  
BHS CORRUGATED  
EICKHOFF  
HEIDELBERG  
HERAEUS QUARZGLAS  
ISCAR  
KENAMETAL  
KERSTEN  
MM MADERN  
MOVENTAS  
RENK  
REILOY METALL  
RISHI LASER  
SANDVIK  
SEW EURODRIVE  
SMS MEER  
STORK  
WALLRAM  
ZF



## AUTOMOTIVE & INDUSTRIAL VEHICLES

BOSCH  
CATERPILLAR  
DAIMLER  
DANA  
DELPHI  
DONG FENG  
EATON  
FORD  
GETRAG  
JOHN DEERE  
MAHLE  
PSA  
RENAULT  
SCANIA  
SHANGHAI AUTOMOBILE GEAR WORKS  
TRW  
VOLVO POWERTRAIN  
VOLKSWAGEN  
ZF



## RAILWAY

ALSTOM  
BHP BILLITON  
BOMBARDIER  
CAF  
COFMOW  
CSR  
CNR  
DUBAI METRO  
EUSKOTREN  
FIRST GREAT WESTERN  
GHH-BONATRANS  
GREENBRIER  
INDIAN RAILWAYS  
LE TRAMWAY RABAT  
LUCCHINI RS  
METRO MADRID  
RENFE  
RIO TINTO  
SIEMENS  
TVSZ





# SECTORS

**WE WORK  
FOR THE MOST  
DEMANDING  
SECTORS  
WORLDWIDE**

## **AEROSPACE**

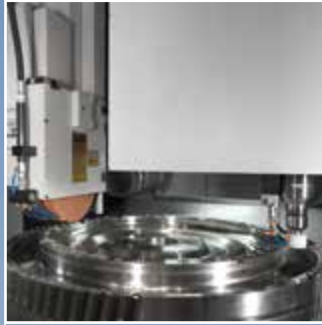


## **AUTOMOTIVE & INDUSTRIAL VEHICLES**





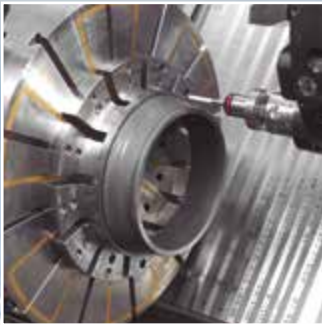
## POWER GENERATION



## RAILWAYS



## CAPITAL GOODS



# DANOBAT DIGITAL

## SMART HMI

An intelligent interface for intuitive operation that assists the operator and helps optimise machining processes.

This development installed in our machines allows:

- Centralised information
- Fast and simple access to information
- Improved usability thanks to its design

Smart HMI also allows optimisation of maintenance cycles by showing:

- Information on part status based on usage
- Automatic notice of maintenance work
- Maintenance instructions with tutorial videos to facilitate tasks
- Improvements in machine reliability thanks to self-diagnosis operations
- Direct access by DANOBAT service technicians to machines to improve customer/supplier interaction.

The HMI also has the following functions:

- Logical control operation
- Programming aids
- On-screen documents
- Monitoring of energy consumption

## DATA SYSTEM

A platform for data capture, storage and processing which enables machine status to be monitored.

The Data System technology allows:

- Real-time information on the situation and operation of the manufacturing process
- Improvements in decision-making thanks to the extensive information available
- Machine monitoring, anywhere, any time.
- Establishment of patterns, identification of trends, and anticipation of faults, all based on historical data, thus improving machine performance and availability
- Improved process efficiency
- Improved energy efficiency

## CONTROL SYSTEM

An advanced system, which allows integrated monitoring and automated operation of complex manufacturing lines comprising different machines and equipment.

The software allows control, monitoring and supervision of the entire machining process, including both machines and handling systems.

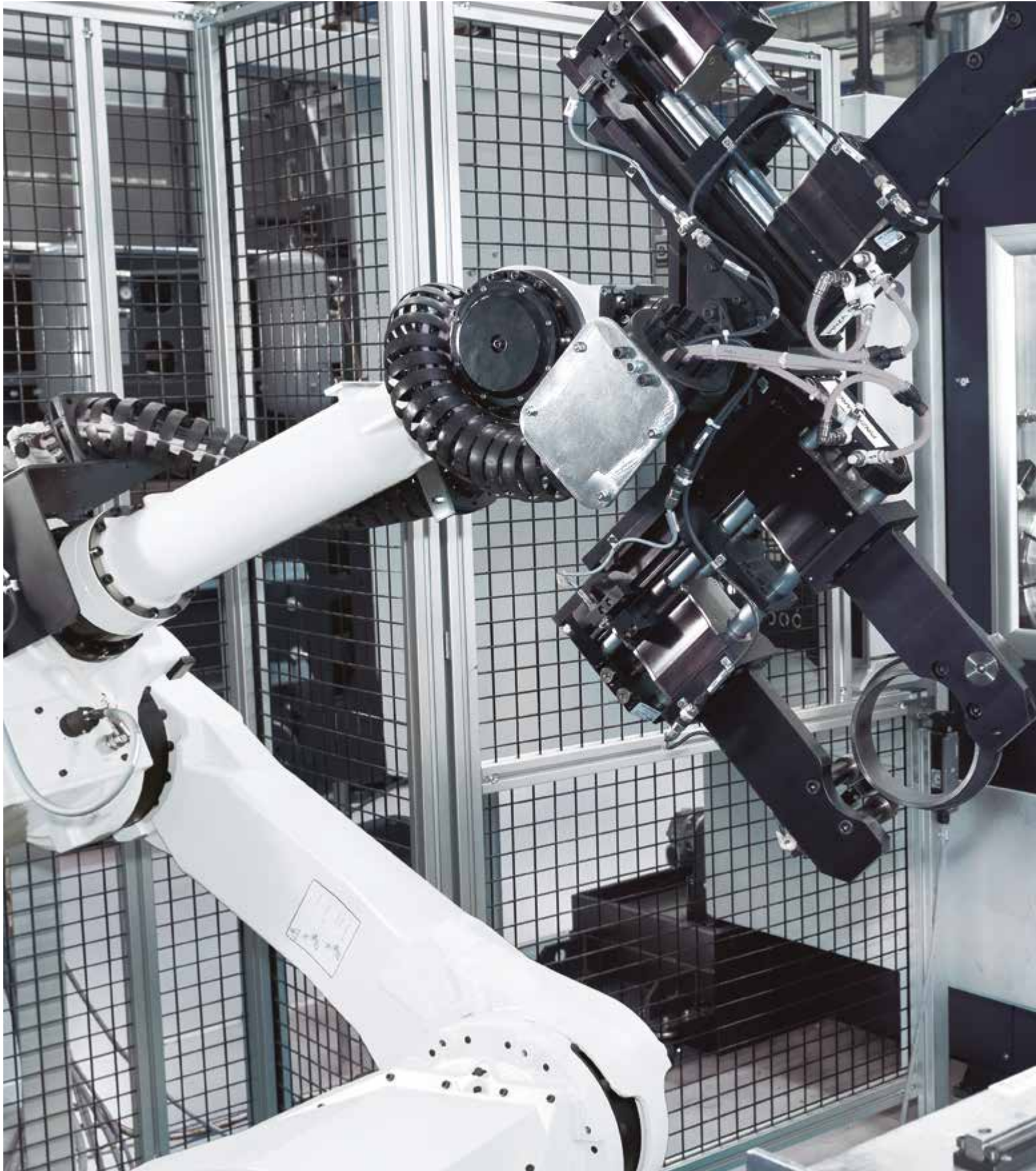






# TURNING

**MORE THAN JUST TECHNOLOGY,  
PRECISION OR RELIABILITY,  
WE ARE TALKING ABOUT PROVIDING  
THE SOLUTION YOU NEED,  
WHEN YOU NEED IT**







# LATHES FOR AUTOMOTIVE WHEELS

TV/NI







TECHNICAL CHARACTERISTICS		TV-650	NI-750
Swing diameter	mm	880	840
Main motor power	kW	93	38
Main spindle speed	rpm	3000	3000
Machine net weight	kg	16500	11500

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- 4 axes vertical lathe, TV-650, especially designed for machining aluminium wheels up to 24".
- Machine bed, headstock and crossed slides made from high quality cast iron, giving extraordinarily high compression strength, high damping power, high rigidity and thus better surfaces.
- Large interior space, resulting in excellent chip removal.
- Linear guides for all axes, resulting in faster movements and more accurate slide positioning.
- Pallet changer rotation by means of an auxiliary motor for faster rotation, higher accuracy, less maintenance and longer life.
- Automatic 3" clamping chucks.
- Intermediate clamping chuck integrated onto the main spindle.
- Workpiece spindle with built-in motor (93 kW at 100%) achieving better dynamics and greater stability.
- Easy integration into automatic production lines.



# HARD TURNING LATHES

LT





TECHNICAL CHARACTERISTICS		LT-400
Turning diameter	mm	400
Turning diameter with tailstock	mm	n.a./150
Workpiece weight	kg	80/300
Headstock speed	rpm	10000/4000
Slide repeatability	µm	± 0.1

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- The LT is a high precision hard turning machine that has been developed to suit specific applications of customers such as bearings, ballscrew nuts, dies & moulds, hydraulic components and non-round workpieces.
- The machine base is made from natural granite, which, weighing 7 tonnes, is the reference plane of the machining area. Because of its properties, natural granite provides high thermal and dynamic stability.
- Linear motors in X and Z axes ensure the best interpolation properties as well as short idle times.
- The rotary axes are driven by built-in, maintenance-free motors for rapid and precise movements providing excellent output and quality.
- Hydrostatic technology for the head and the X and Z axes: enhanced vibration damping, absence of wear, greater precision and thermal stability.
- It can be automated by means of DANOBAT designed loading systems, such as integrated gantry or robotised systems.





# VERTICAL LATHES

TV





TECHNICAL CHARACTERISTICS		TV-1000	TV-1500
Swing diameter	mm	1100	1600
Main motor power	kW	80	200
Torque	Nm	60000	90000
Component weight + chuck	kg	4000	6000
Main spindle speed	rpm	600	350

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Machine with cross-slide configuration for maximum accuracy: as the cross slides are guided over the entire stroke length a constant torque is ensured irrespective of where the cutting tool is working (thus in contrast to the ram saddle concept, constant guidance is ensured in all stroke position).
- Up to TV-1000 the guidance is done by means of roller linear guides. From TV-1000 the guidance can be done by means of roller linear guides (standard) or hydrostatic technology which allows higher cutting forces with more accuracy and free maintenance.
- TV machines have been conceived for high speed and minimum idle times as well as maximum rigidity and torque.
- Automatic tool changer is available in all sizes to optimise productivity and flexibility.
- Precision and quality in turning, hard turning, grinding, milling, drilling and measuring operations. They can also incorporate special heads/spindles for the most demanding customisations.
- DANOBAT vertical lathes have been designed to be integrated into automatic cells with gantry or robot solutions, which can be also supplied together with f.i. measuring or washing machines.



# GRINDING

TECHNOLOGY THAT MAKES YOU GROW

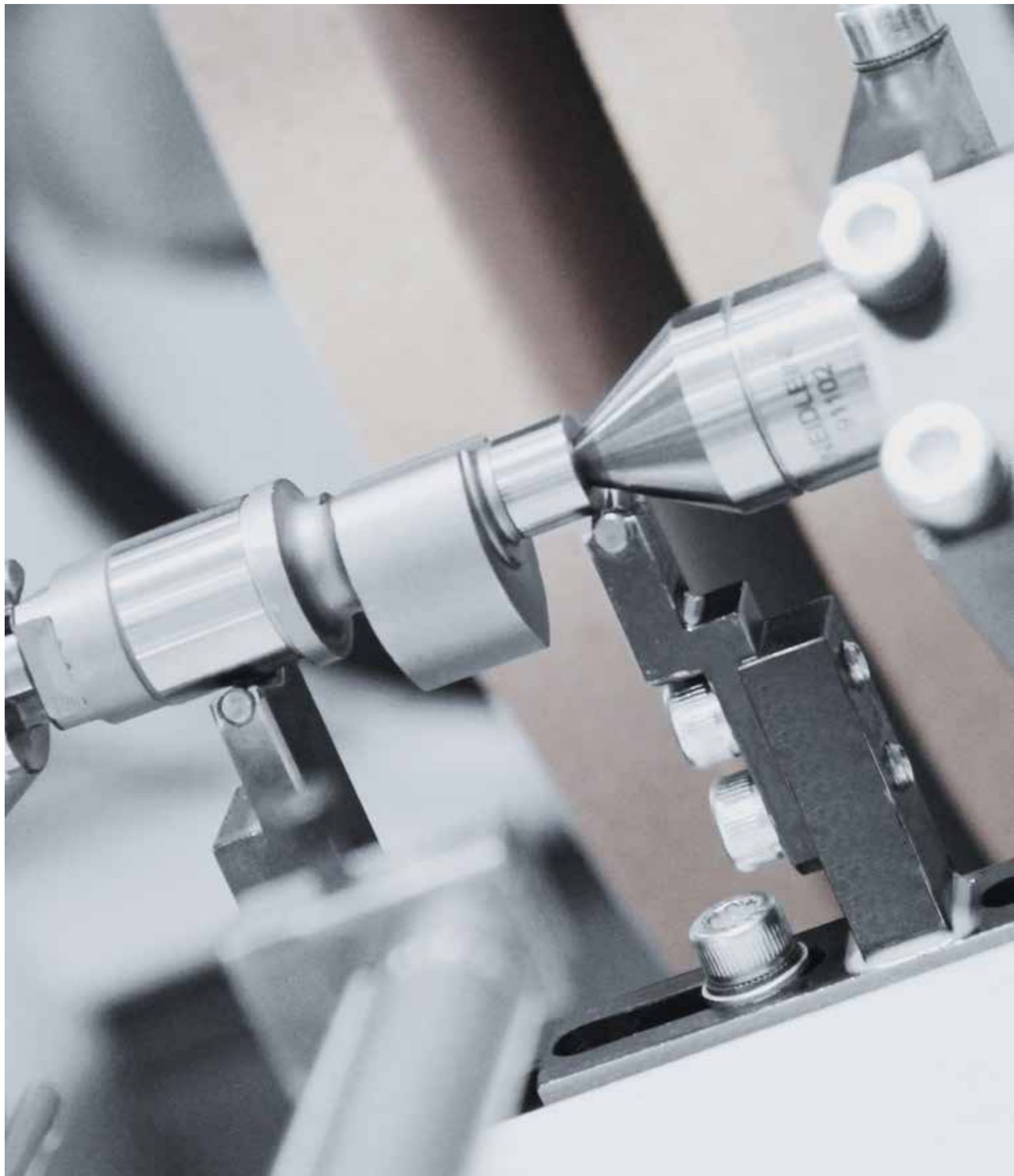






# EXTERNAL GRINDING MACHINES

CG/PG







TECHNICAL CHARACTERISTICS		CG-600	CG-1000	PG-600	PG-1000
Distance between centres	mm	600	1000	600	1000
Diameter to be ground	mm	440	440	440	440
Weight between centres	kg	80/250	80/250	500	500
Grinding wheel diameter	mm	610	610	910	910
Wheel peripheral speed	m/s	60	60	60	60

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

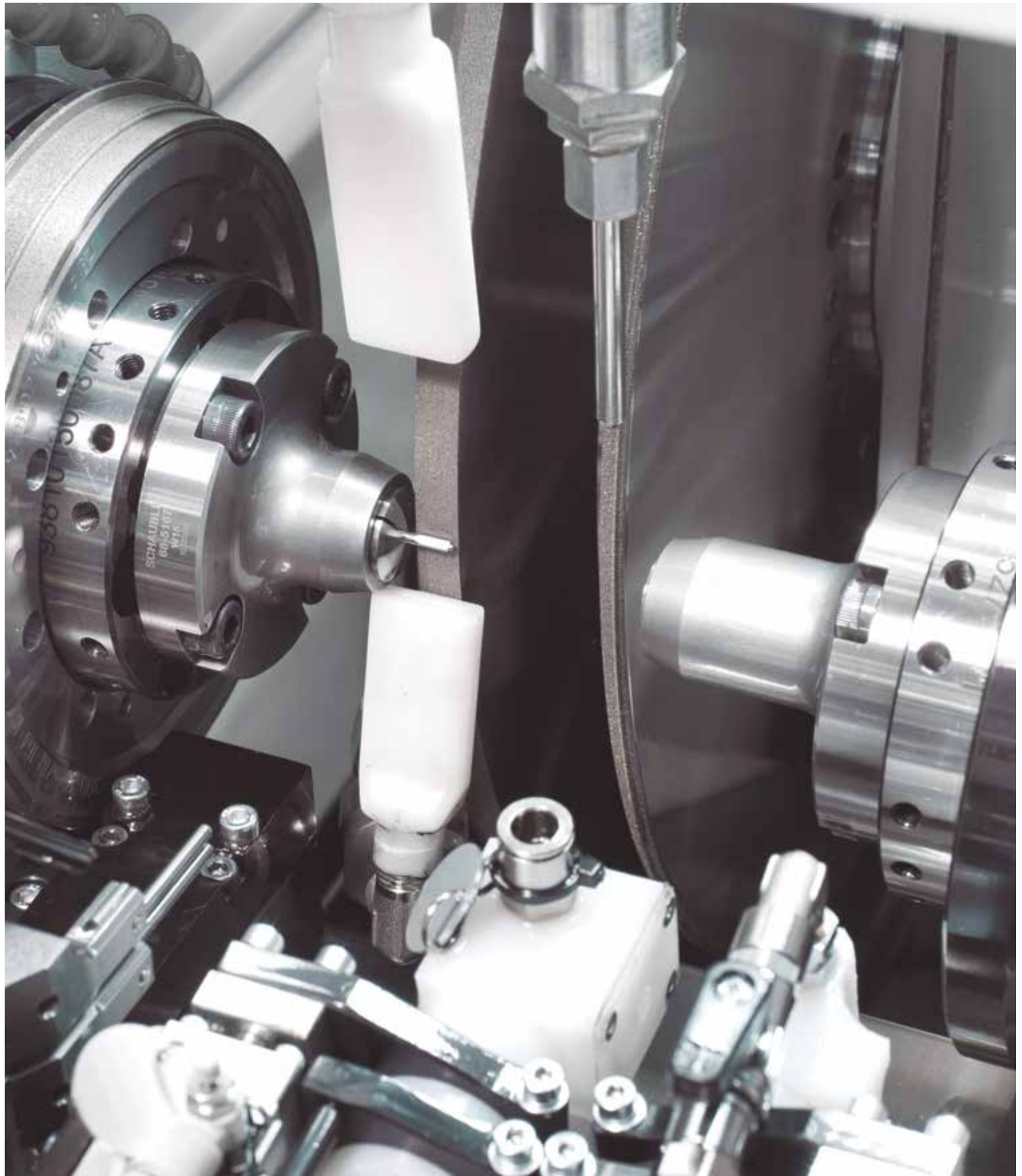
- The compact design with small footprint combined with its high rigidity make the CG the perfect grinding machine to work in the most exigent industrial and production environments. A robust and reliable grinding machine, the capacity to hold a grinding wheel of up to 610 mm in diameter, make this model the most attractive to those customers making high production series.
- The different machine configurations give the option to accommodate more than one grinding wheel based on the customer requirements
- An automatic loading system can be easily incorporated, in the way of different technologies like robot, external or integrated gantry and custom made manipulation systems.
- For customers requiring the grinding of bigger parts, the PG model offers a production solution that can accommodate parts of up to 1000 mm length and wheels of maximum 910 mm in diameter and wheel width of 380mm. These specifications define the extreme capacity of this machine model.





# EXTERNAL GRINDING MACHINES

LG





TECHNICAL CHARACTERISTICS		LG-200	LG-400	LG-600	LG-1000
Distance between centres	mm	200	400	600	1000
Diameter to be ground	mm	200	290	290	290
Weight between centres	kg	30	50	50	50
Grinding wheel diameter	mm	400	500	500	500
Wheel peripheral speed	m/s	35/140	35/140	35/140	35/140

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- High precision component grinding, such as hydraulic components, automotive parts and cutting tools.
- The machine's natural granite base and the linear motor driven slides provide the high accuracy and thermal stability required for these highly demanding applications. These specifications also allow the grinding of non-round components.
- The use of a water cooled electrospindle makes possible the combination of conventional and high speed grinding. This produces a maximum peripheral wheel speed of 140 m/s and covers the range necessary for grinding with conventional abrasive or super abrasives with maximum torque.
- Versatile and flexible machine with the direct driven B axis and the use of multiple wheels.
- Requirements of completely automated manufacturing processes are fulfilled with the incorporation of customised DANOBAT automatic loading systems, e.g. integrated gantry or robot solutions, guaranteeing minimum loading and unloading time (2-6 sec depending on applications).



# INTERNAL GRINDING MACHINES

## ID



TECHNICAL CHARACTERISTICS		ID-200	ID-400
Internal grinding diameter	mm	100	200
Internal grinding length	mm	100	200
Work swing	mm	215	560
Workpiece length (incl. clamping system)	mm	200	400
Workpiece weight (incl. clamping system)	kg	40	80/180
X and Z axis stroke	mm	400/200	425/475

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- High precision machines for internal, external and face grinding, suitable for single part manufacturing and high production. The ID can also incorporate a spindle turret and measuring head.
- Designed for the grinding of gear parts, cutting tools, bearings, non-round discs and hydraulic components.
- The machine's natural granite base and the linear motor driven slides provide the high accuracy and thermal stability required for the highly demanding applications and also allow the grinding of non-round components.
- Requirements of completely automated manufacturing processes are fulfilled with the incorporation of customised automatic loading and unloading systems such as integrated systems, robot solutions or external gantries.
- The powerful and user-friendly software includes an intuitive interface, optimally adapted to the machine as well as to the requirements of our customers.





# INTERNAL AND RADIUS GRINDING MACHINES

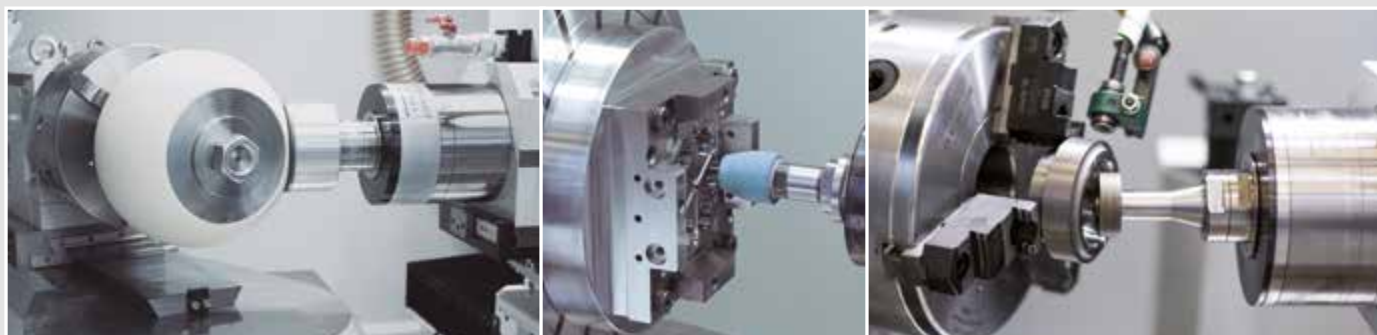
IRD



TECHNICAL CHARACTERISTICS		IRD-200	IRD-400
Internal grinding diameter	mm	100	200
Internal grinding length	mm	100	200
Work swing	mm	215	360
Workpiece length (incl. clamping system)	mm	200	400
Workpiece weight (incl. clamping system)	kg	40	80/180
"B" axis swiveling range	°	+91/-15	+91/-15
X and Z axis stroke	mm	400/200	425/475

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- High precision grinding machines with integrated rotary axis in the workhead base.
- The CNC controlled motor and the 3 axes interpolation software allow the grinding of different radii without manual resetting of the pivot points.
- Spindle turret for highest versatility with up to 4 spindles.
- Prepared for internal, external, radius, face and non-round grinding, ideal for the machining of forming and cutting tools.
- The machine's natural granite base and the linear motor driven slides provide the high accuracy and thermal stability required for the highly demanding applications and also allow the grinding of non-round components.
- Requirements of completely automated manufacturing processes are fulfilled with the incorporation of customised automatic loading and unloading systems such as integrated systems, robot solutions or external gantries.
- The powerful and user-friendly software includes an intuitive interface, optimally adapted to the machine as well as to the requirements of our customers.



# INTERNAL AND UNIVERSAL GRINDING MACHINES

## ILD



TECHNICAL CHARACTERISTICS		ILD-400	ILD-500	ILD-600	ILD-700	ILD-700 U
Internal grinding length	mm	400	250	400	400	400
External grinding length	mm	150	150	150	400	400
Work swing	mm	600	600	600	700	760
Workpiece length (incl. clamping system)	mm	800	1300	1300	500	500
Workpiece weight (incl. clamping system)	kg	500	500	500	500	500
“B” axis swiveling range	°	+20/-10	+20/-10	+20/-10	optional +25/-25	+25/-25
X and Z axis stroke	mm	450/550	425/475	450/550 450/700	700/700	420/700/U700

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- The ILD internal universal grinding machines provide high-precision tool machining for internal, external and face grinding of large workpieces, up to 1300 mm long (ILD 500) or a work swing over table of up to 760 mm (ILD-700 U). Perfect for grinding of spindle housings, shafts, tool holders, roller bearings, hydraulic components and machine tool components using the latest technology.
  - Depending on the requirements, the machines can be equipped with a turret for up to 4 grinding spindles and a measuring probe as well as an integrated automation.
  - Various dressers such as single point diamond, rotary dressing disc, dressing turret, swivelling radius dresser as well as profile roll dresser can be implemented.
- The machine's natural granite base and the linear motor driven slides provide the high accuracy and thermal stability required for the highly demanding applications and also allow the grinding of non-round components.
  - The powerful and user-friendly software includes an intuitive interface, optimally adapted to the machine as well as to the requirements of our customers.



# SIMULTANEOUS GRINDING MACHINES

## IED



TECHNICAL CHARACTERISTICS		IED-400
Internal grinding diameter	mm	300
External grinding diameter	mm	250
Work swing	mm	300
Workpiece length (incl. clamping system)	mm	250
Workpiece weight (incl. clamping system)	kg	80/180
X and Z axes stroke internal grinding	mm	220/460
X and Z axes stroke external grinding	mm	320/220

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Simultaneous machines for internal and external diameter or face grinding. The machines are equipped with best quality components, produced with the highest accuracies and reduce the idle times to the minimum.
- Designed and manufactured for the grinding of gears, injection components, transmission components and other machine parts.
- The machine's natural granite base and the linear motor driven slides provide the high accuracy and thermal stability required for the highly demanding applications and also allow the grinding of non-round components.
- Requirements of completely automated manufacturing processes are fulfilled with the incorporation of customised automatic loading and unloading systems such as integrated systems, robot solutions or external gantries.
- The powerful and user-friendly software includes an intuitive interface, optimally adapted to the machine as well as to the requirements of our customers.





# **CENTRELESS GRINDING MACHINES**

ESTARTA





TECHNICAL CHARACTERISTICS		ESTARTA-200	ESTARTA-250	ESTARTA-400	ESTARTA-650
Component size	mm	0.5-50	1-100	1-100	5-250
Infeed grinding length	mm	200	250	400	650
Grinding wheel dimensions (OD x width x ID)	mm	ø610 x 200 x ø304.8	ø650 x 250 x ø304.8	ø650 x 400 x ø304.8	ø650 x 650 x ø304.8
Grinding wheel peripheral speed	m/s	20-120	63-120	63-120	63-120
Regulating wheel dimensions (OD x width x ID)	mm	ø305 x 200 x ø127	ø400 x 250 x ø203.2	ø400 x 400 x ø203.2	ø400 x 650 x ø203.2
Main motor	kW	20	30-45	37-75	55-110
Net weight	kg	10000	12500	13000	16500

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- ESTARTA series is an innovative centreless grinding machine range with cutting-edge technology including natural granite machine beds, direct driven dressing systems with linear motors, etc.
- Maximum productivity ensured by its high rigidity, vibration damping design and the possibility of cutting speeds up to 120m/s.

- These machines, with fixed work-center, have been designed from the beginning as a complete solution, so the possibility to incorporate different and customised automatic loading systems is complete. We have extensive experience in developing this kind of customised solutions, e.g. gantry loaders or robot solutions. There is also the possibility to integrate different accessories as measuring devices, cleaning stations or others.





# HEAVY DUTY GRINDING MACHINES

HG/WT







TECHNICAL CHARACTERISTICS		HG-62	HG-72	HG-92	WT-62	WT-72	WT-92	WT-100
Distance between centres	mm	2000	4000	5000	2000	8000	8000	8000
Diameter to be ground	mm	440	640	1000	440	640	1000	1000
Weight between centres	kg	500	1500	5000	500	1500	8000	15000
Grinding wheel diameter	mm	760	915	1060	610	1060	1220	1220
Wheelhead power	kW	30	45	45	15	45	45	45
Wheel peripheral speed	m/s	45/60	45/60	45/60	45/60	45/60	45/60	45/60

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- DANOBAT heavy duty grinding machines can have moving table or cross slide configuration to better adapt to customer's needs.
- Designed to fulfill the requirements of a wide range of applications that combine external, internal, face and taper grinding of components such as: transmission shafts, electric motor shafts, gas and wind turbine shafts, railway shafts, machine tools shafts, landing gear components, etc.
- Corundum, CBN or diamond wheels can be used.
- The machine base and sub-assemblies are made of stabilized pearlitic cast iron.
- HG and WT grinders can be equipped with a wide range of wheelhead configurations: straight, angular and "B" axis which is driven by an integrated torque motor. Wheels are assembled on hydrostatic bearing spindles, roller bearing or on DANOBAT designed electrospindles.
- In order to obtain the maximum machine performance they can be equipped with in-process measuring systems, automatic wheel balancing system incorporating gap and crash, axial positioning system and taper correction, among others.



# VERTICAL GRINDING MACHINES

VG / DVG





TECHNICAL CHARACTERISTICS		VG-600	VG-800	VG-1000	VG-1500	VG-2000	DVG-2500	DVG-3000	DVG-4000
Grinding diameter	mm	600	800	1000	1500	2000	2500	3000	4000
Grinding height	mm	500	500/700	500/1000	500/1000/1500	500/1000	700	700	700
Table load	kg	1200	1200	2000	3000	3000	15000	15000	15000
Max. C axis speed	rpm	300	300	300	150	100	150	80	50

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Multipurpose high precision machine resulting in maximized output by allowing a wide range of machining operations in a single part setup.
- Typical operations performed by these vertical grinding machines include grinding, measuring and turning. Moreover, other auxiliary machining processes such as deburring, milling and drilling can also be incorporated.
- Stabilised pearlitic cast iron, direct driven technology and hydrostatic C axis guarantee maximum rigidity, high accuracy and optimum surface finish.
- Designed to suit specific applications of our customers ranging from universal configuration machines to the most demanding customisations. This modularity provides flexibility to achieve the shortest lead time and optimum cost for a machine made to order.





# BLADE TIP GRINDING AND MEASURING MACHINES

mBTG / DANTIP





TECHNICAL CHARACTERISTICS		mBTG-400	mBTG-800	DANTIP
Grinding diameter	mm	410	800	1500
Grinding length	mm	600	860	1500
Component length	mm	750	1400	2000
Component speed	rpm	10-7000	10-7000	10-4500
Wheelhead swivel	degrees	-10/+200	-10/+200	-10/+200

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Precision grinding, deburring and measuring of the blade tips of gas turbine engine rotors. These machines grind the blade tips of the rotor while they are being spun at high speed, (up to 7000 rpm) thereby presenting the blades to the grinding wheel under the appropriate operating conditions. This feature ensures the highest degree of accuracy that can be obtained with current technologies.
- Diametric tolerances can be held to 0.025 mm. This achievement is regarded as very important, because the clearance between the rotor blade tips and the outer housing has a critical bearing on the engines performance.
- mBTG is typically used to grind and measure rotors such as CT7/T700, RTM322, CFM56, CF34, V2500, TP400, F404 and J85 among others and DANTIP is used for large engine rotors.
- These machines can be supplied forming "Match Machining Cells" with DANOBAT VG vertical grinders as a complete solution for match machining and measuring the rotors and casings of the same engine.



# GRINDING MACHINES FOR AIRCRAFT LANDING STRUTS

DANUNI



TECHNICAL CHARACTERISTICS		DANUNI 2500/2500	DANUNI 3050/3400	DANUNI 4100/3400
Swing in gap	mm	2500	3050	4100
Length between centres	mm	2500	3400	3400
Width of gap	mm	800	1400	1400
Swing over the table	mm	840	1600	1600
External diameter ground	mm	610	610	610
Grinding wheel dimensions	mm	915 x 75	915 x 75	915 x 75
External spindle power	kW	30	30	30
Internal spindle power	kW	9	20	20

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Designed for precision external and internal grinding of different aircraft landing gear struts, such as complex shaped pistons in internal diameters and external diameters in cylinders.
- The DANOBAT Gap Bed Grinding Machine revolutionises the grinding process because it can swing the whole component between centres. With DANUNI range customers can obtain a reduction of up to 50% in machining overhaul times due to the integration of OD and ID operations in one machine, providing a fast R.O.I.
- The machines are offered in different sizes, models and configurations depending on the application and customer requirements. Landing gear components requiring a swing of up to 4100 mm can be handled. In addition the machine can grind internal bores up to 2550 mm in length.





# SURFACE GRINDING MACHINES

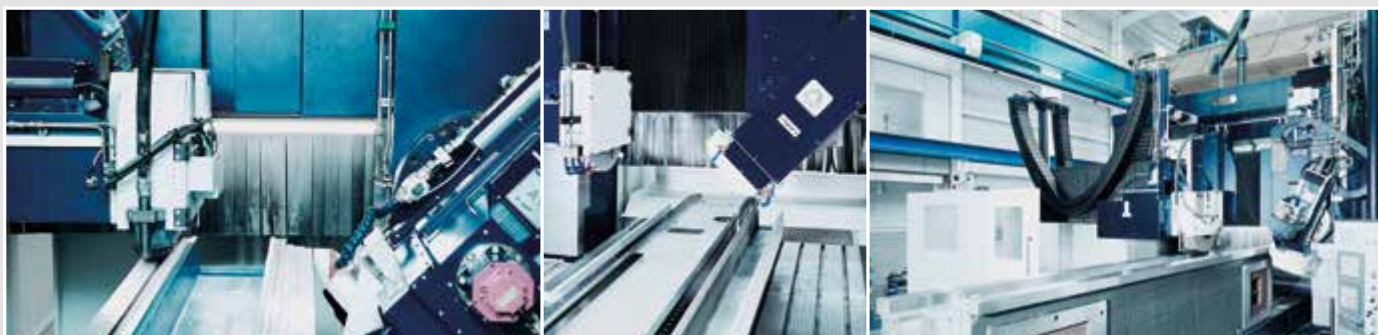
SGD



TECHNICAL CHARACTERISTICS		SG
Table length	mm	up to 14000
Table width	mm	up to 3000
Wheel dimensions	mm	760 x 200
Height to be ground	mm	2000
Wheelhead power	kW	37

(\*) Based on customer's requirements, other machine capacities & configurations could be taken into account.

- Designed for precision grinding of machine tool beds and guideways, and complex heavy and large components.
- Double column slideway surface grinding machines with fixed or mobile cross rail and tangential and/or universal wheel heads.
- DANOBAT machines take into account the very latest technical and economic advances in grinding machine technology and machine tool control.
- The machine configuration incorporates many mechanical and electrical in built safety features to ensure safe operation of the machine and protection of the component from damage.



# DANOBAT SERVICES

**FOR MORE RELIABLE, PRODUCTIVE  
AND LONG-LASTING EQUIPMENT**

## **ADDING VALUE**

Our team of experts creates customised designs, tailoring our advanced services to our customers' needs. In this way, we add value to our machines by upgrading them and incorporating new devices and functions to improve operation.

## **PRODUCTION OPTIMISATION: KNOWLEDGE OF THE PROCESS TO OBTAIN MAXIMUM PERFORMANCE**

We monitor machine productivity parameters—such as production cycles, equipment availability and downtime—to identify patterns and trends and draw conclusions that will allow us to design new solutions to optimise production processes.

## **ENGINEERING TO NEUTRALISE OBSOLESCENCE**

We offer personalised solutions where machine components and parts have been discontinued or where the technologies used are no longer operative. We perform reengineering to allow equipment to continue operating with the incorporation of upgraded solutions.



## UPGRADES: CONSTANTLY UPDATED MACHINES

This service ensures that machines remain at the technological cutting-edge, despite the passing of time. We install operating upgrades and new functions to extend machine life cycle, improving their performance and increasing their worth.

The programme includes the following services:

- Retooling to adapt machining processes to customers' needs. This programme consists of new tools, toolings and machining processes
- Gauge and control replacement
- Software and hardware upgrades



# DANOBAT SERVICES

## MAINTAINING YOUR EQUIPMENT

To gain maximum performance from equipment and ensure the quality of the parts manufactured, we offer advanced maintenance services, intelligent parts management and an extensive network of experts in our customers' locations. Our asset maintenance offer is further complemented by the services and developments on offer in our 4.0 value proposition.

## SPARE PART MANAGEMENT: INTELLIGENCE TO ENSURE RELIABILITY

We provide intelligent management of machine spare parts and consumables. The service allows us to guarantee equipment operation, reduce downtime and save costs.

- Spare parts and consumables for the whole life cycle
- Spare parts sales plan tailored to needs

## LOCAL SERVICE NETWORK: PROXIMITY AND EFFICIENCY

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

- Expert knowledge
- Efficiency
- Proximity



## **MAINTENANCE: THE BEST WAY TO CORRECT A FAULT IS TO PREVENT IT HAPPENING**

We offer our clients advanced maintenance services based on our knowledge of the machines and the manufacturing processes to increase equipment availability, enhance reliability, avoid unscheduled downtime, improve performance and anticipate faults.

- Predictive maintenance
- Preventative maintenance
- Corrective maintenance



**SPAIN H.Q.**  
**DANOBAT**

Arriaga kalea 21  
E-20870 Elgoibar  
Gipuzkoa · Spain  
T + 34 943 748 044  
danobat@danobat.com  
www.danobatgroup.com

**GERMANY & CENTRAL EUROPE**  
**DANOBAT-OVERBECK**

Konrad-Adenauer-Str. 27  
35745 Herborn  
Germany  
T + 49 (0) 2772 801 0  
info@overbeck.de  
www.danobatooverbeck.de

**ITALY**  
**DANOBAT**

Regione Cartesio 58  
15012 Bistagno (AL)  
Italia  
T + 39 0144 441615  
danobatsrl@danobat.com

**RUSSIA**  
**DANOBATGROUP RUSSIA**

Ul. Argunovskaya 3/1  
129075 Moscow  
Russia  
T + 7 499 685-16-42  
info@danobatgroupussia.ru

**UNITED KINGDOM**  
**DANOBAT - NEWALL**

1 Sturrock Way · Bretton  
Peterborough  
Cambs · PE3 8YF  
United Kingdom  
T + 44 (0) 1733 265566  
sales@newall-uk.com

**USA & CANADA**  
**DANOBAT**

5515B FM 1960 East  
Humble, Texas 77346  
USA  
T + 1 281 812 4259  
danobatusa@danobatusa.com

**BRAZIL**  
**DANOBAT**

Alameda Santos, 2335  
7º andar - Conj. 71  
01419-200 Sao Paulo  
Brazil  
T +55 113 082 90 80  
danobatbrasil@danobatbrasil.com.br

**CHINA**  
**DANOBATGROUP CHINA**

Room 907B · Tower A, Phoenix Place  
5A Shuguang Xili, Chaoyang District  
Beijing P.R.C. 100018  
China  
T + 86 10 6467 3639  
info@danobat.cn

**INDIA**  
**DANOBATGROUP INDIA**

Office No-7 · Business Avenue  
2nd Floor · Niyoshi Park Road  
Sanghvi Nagar · Aundh  
Pune 411 007, Maharashtra  
India  
T +91 20 66 094531  
danobatgroupindia@danobatgroup.com