MASTER SERIES

CNC WORKING CENTRE FOR GLASS

INTERMAC

LATEST-GENERATION TECHNOLOGY

THE MARKET CALLS FOR

a change in production processes to meet the ever-growing request for personalised products to satisfy customers' specific needs. This is coupled with the need to maintain high quality standards whilst offering product customisation with quick and clearly-defined delivery times.

INTERMAC RESPONDS

with manufacturing technologies that enhance and support technical abilities and knowledge of processes and materials. The **Master Series** is the range of Made in Intermac work centres dedicated to glass machining for the products that are typical of the furniture, automotive, building and domestic appliance sectors. It represent the best solution in terms of performance and productivity, and is suitable for high-speed machining of small and large production batches. The all-new and improved Master range maintains the quality and reliability that has always characterised Intermac technology, making it an industry-leading company and an iconic point of reference in its field.

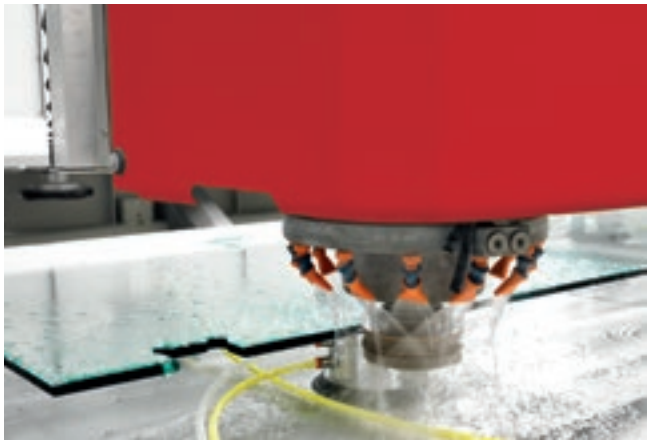
MASTER SERIES

- UNPRECEDENTED QUALITY AND FINISH.
- FLEXIBILITY AND VERSATILITY IN ALL MACHINING OPERATIONS, GUARANTEEING UNEQUALLED PRODUCTIVITY.
- SUPERB PERFORMANCE EVEN WHEN CARRYING OUT THE MOST COMPLEX MACHINING OPERATIONS.
- HELIX INTEGRATED BORING SYSTEM: EXCLUSIVE INTERMAC TECHNOLOGY.
- REDUCED TOOLING TIMES.
- FUNCTIONAL DESIGN AND ERGONOMIC PROTECTION FOR OPTIMUM VISIBILITY AND MAXIMUM SAFETY DURING MACHINING.
- EXCELLENT PRODUCTION EFFICIENCY THANKS TO THE PERFECT INTEGRATION WITH ROBOTS FOR THE PRODUCTION OF LARGE BATCHES.

UNPRECEDENTED QUALITY AND FINISH

The Master Series is able to perform the most complex and diverse machining operations, ensuring the very finest finish quality on large sheets of structural glass, unique design objects or small glass products for the world of lighting.

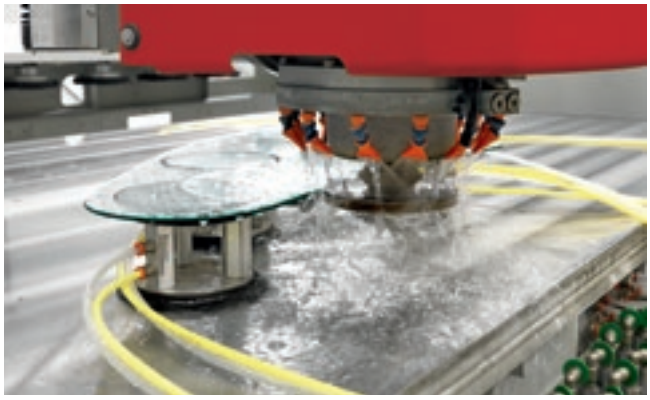
Milling.



Peripheral grinding of the cutting edge.

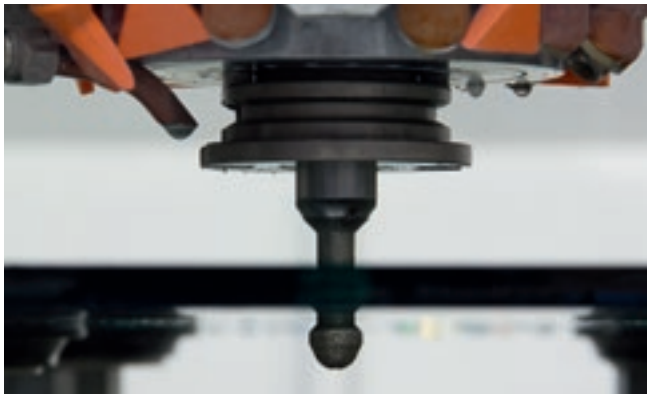
3 AXIS MACHINING GUARANTEES MAXIMUM RELIABILITY AND ACCURACY FOR THE PRODUCTION OF BATHROOM UNIT TOPS, SHOWER ENCLOSURES AND GLASS FOR DOMESTIC APPLIANCES.

The Master Series is the best solution for overcoming new challenges and boosting competitiveness, enabling companies to excel in high-speed machining of small and large production batches.



High-speed grinding.

Grinding of ultra thin glass.



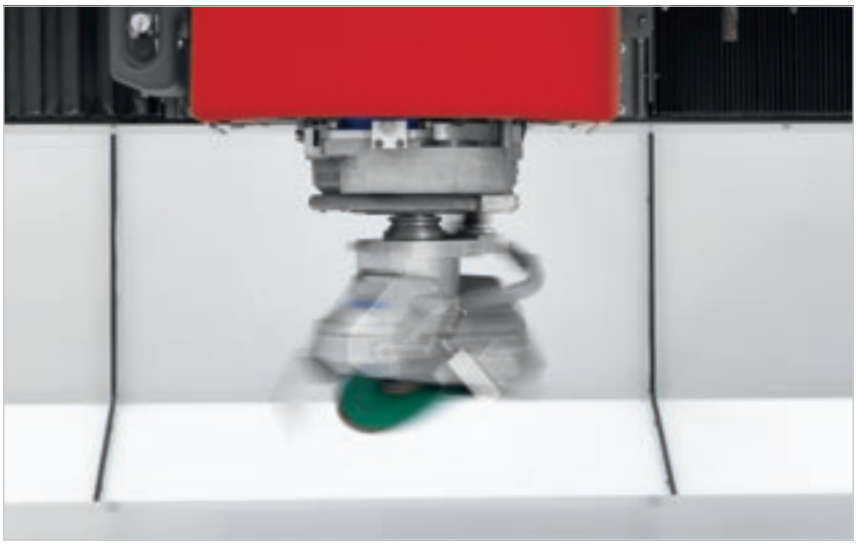
Boring integrated with the Helix system.

Boring from above.

Surface writing.

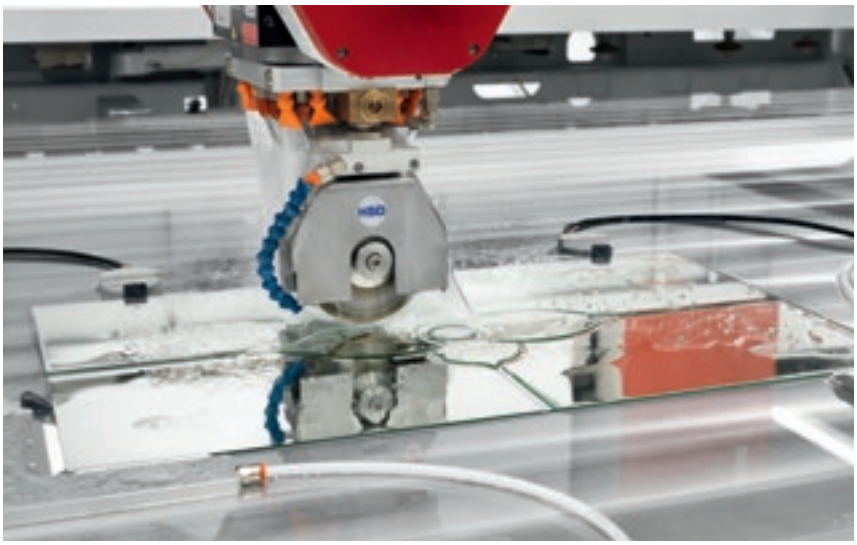
MAXIMUM FLEXIBILITY

The addition of the infinite rotary C Axis on 3-axis configurations of the machine enables perfect execution of machining operations, with fluidity and precision.



C axis.

Cup grinding with aggregate.

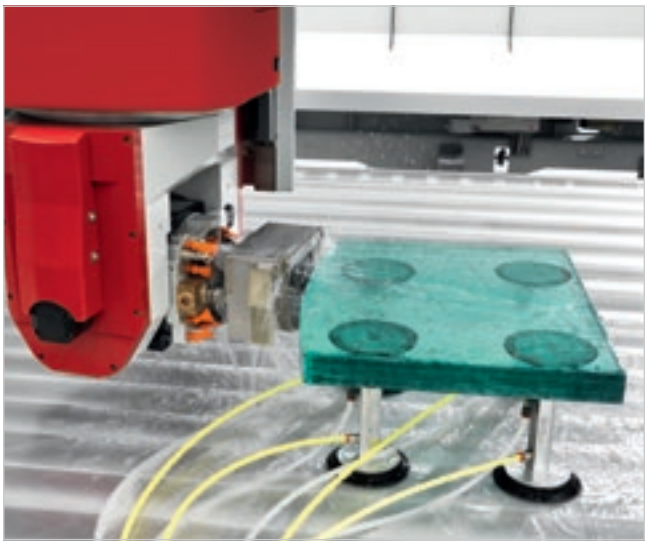


Scoring.

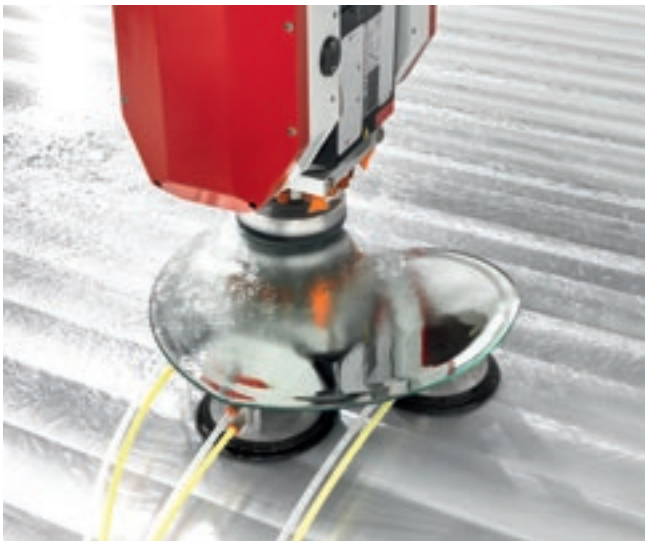
Boring from below.

ENDLESS POSSIBILITIES

The solid high-tech 5-axis working head with INFINITE C axis and the -90 ° to +90 ° tilting A axis enable all machining operations to be completed perfectly, with the renowned quality offered by Intermac work centres.



Cup grinding of shaped float and layered glass,



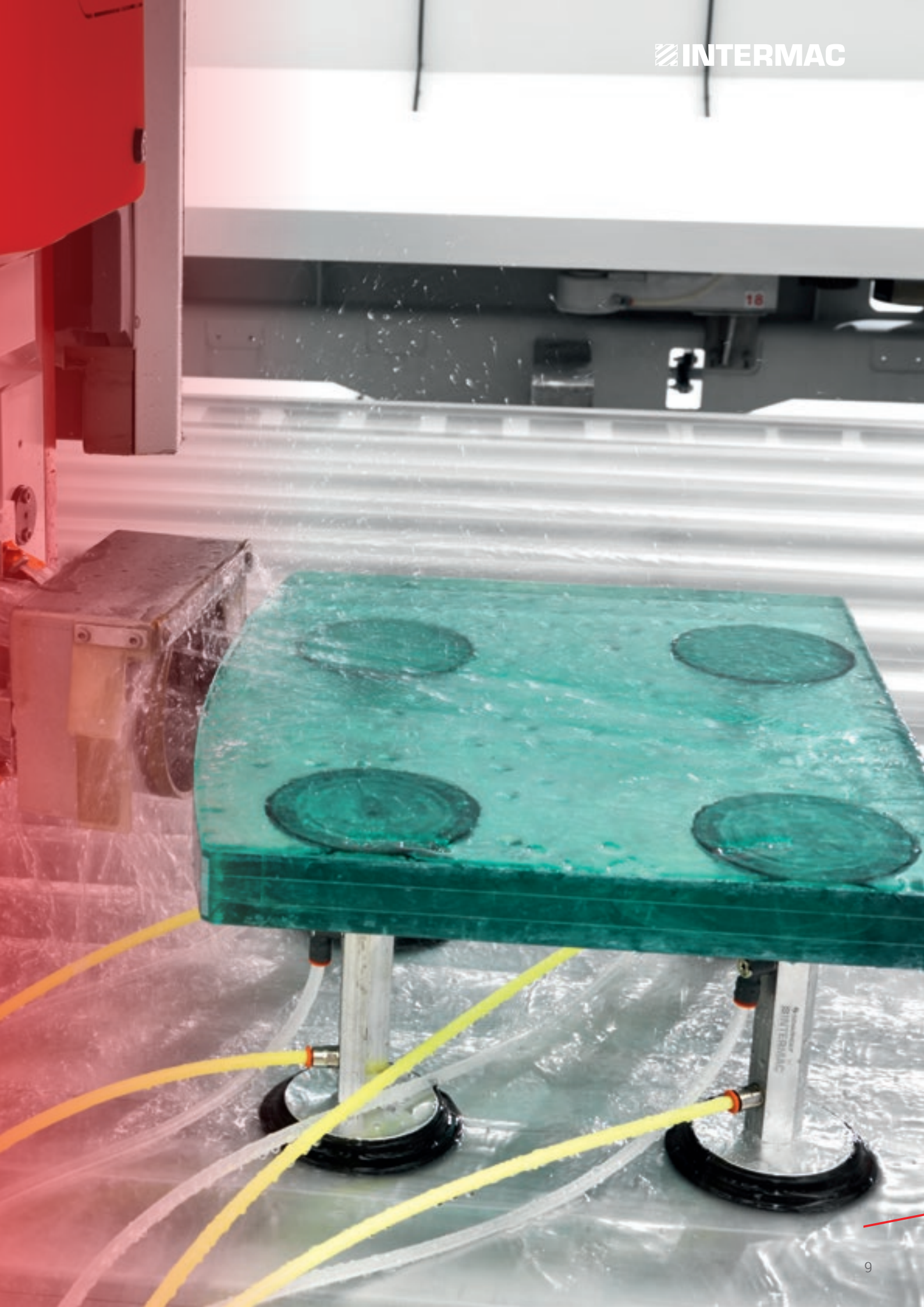
Shaped bevel.

INNOVATION

5-AXIS TECHNOLOGY

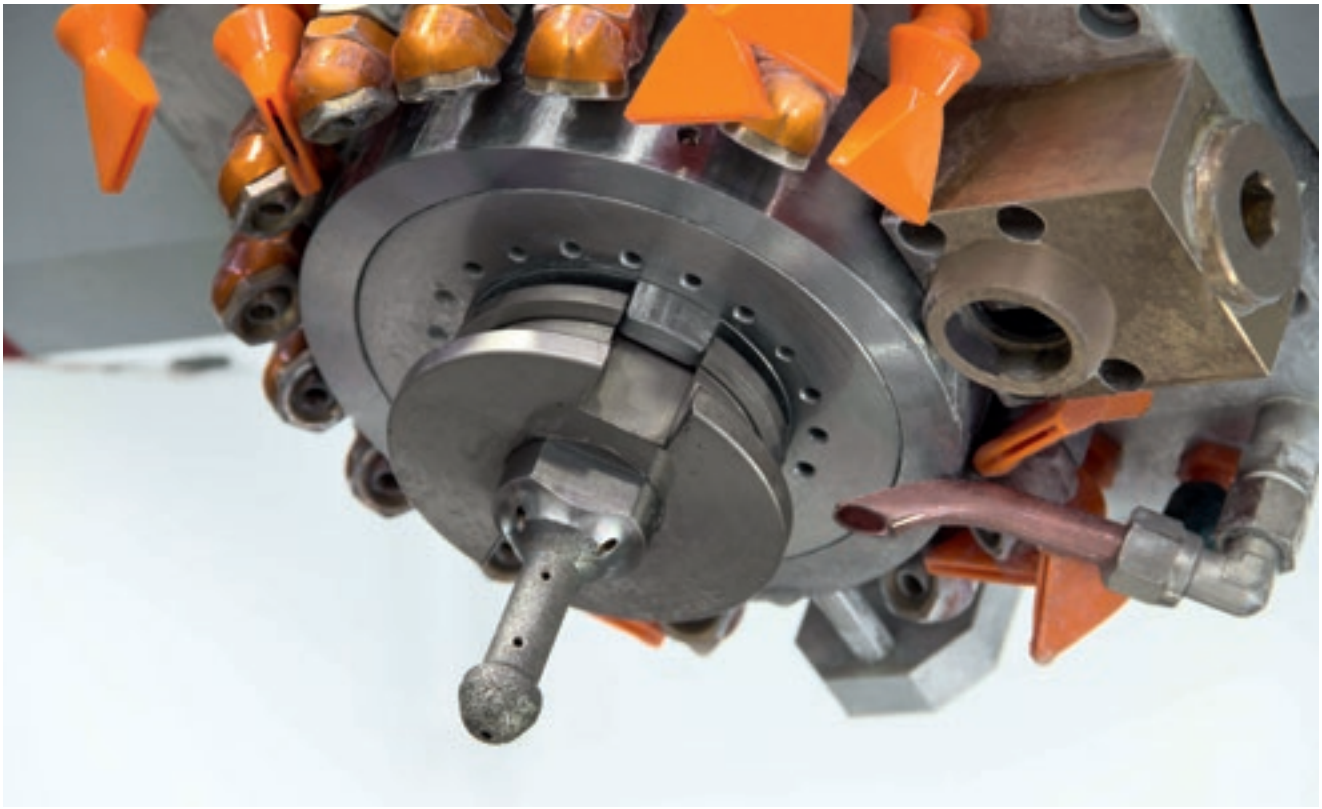
High-level technology for the best results with maximum ease of use.

The 5-axis head with endless rotation C axis and tilting A axis (from -90° to +90°) ensures excellent flexibility and pushes the limit for the execution of complex machining operations.



REVOLUTIONARY BORING

Helix is the Diamut tool that, when combined with Intermac software, exceeds all the limits of the traditional boring systems, using one single tool for all the boring, grinding and countersinking operations on glass sheets of up to 19mm.

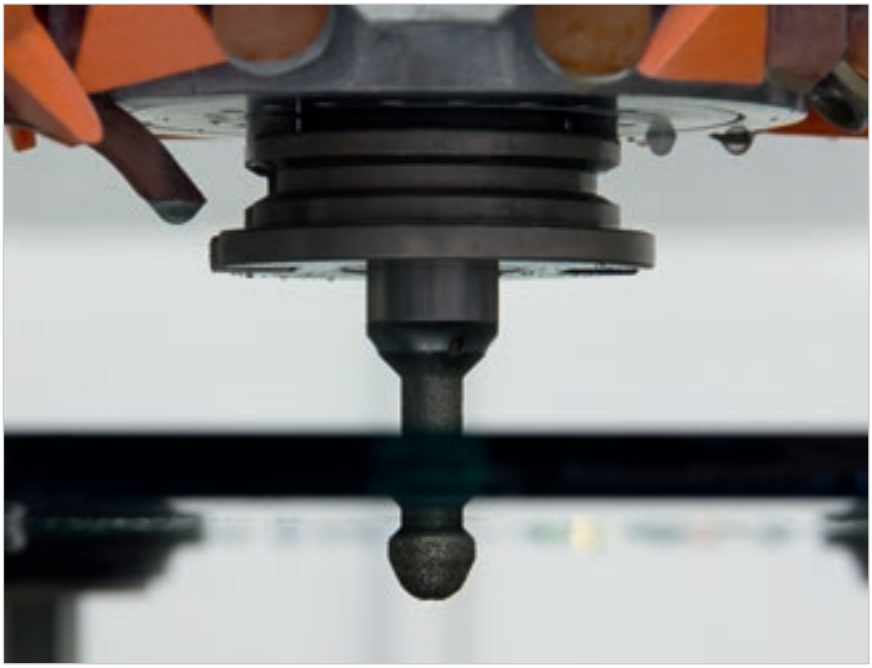


The new standard for boring operations.
Helix System was born of the desire to develop a revolutionary boring system unlike anything that has been seen on the market to date, capable of drilling holes with integrated upper and lower countersink on glass sheets up to 19mm thick, using a single tool on CNC machines.

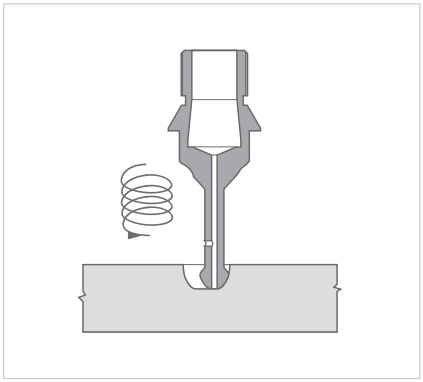
DEVELOPED, PATENTED QUALITY

Innovation created by a team of Diamut and Intermac experts, Helix System is the perfect blend of hardware and software that emerges in the whole range of Master processing centres.

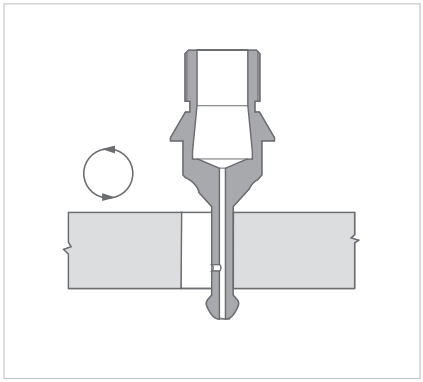
INTEGRATED BORING SYSTEM



An innovative tool, managed by specific software.

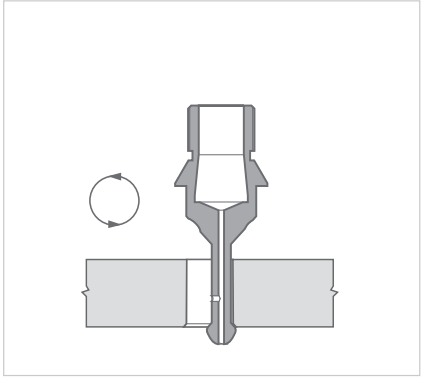


1_Boring with helical movement

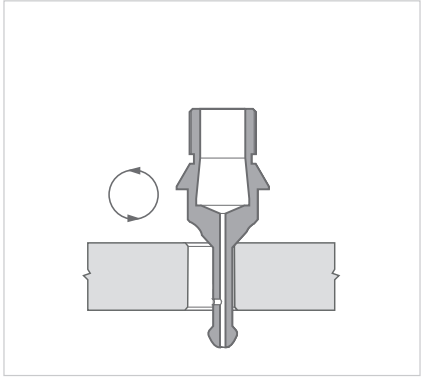


2_Lateral grinding

- Maximum finish quality
- Machining tolerances are halved
- Holes with different diameters using just one tool
- Can also be used on laminated glass
- Integrated upper and lower countersinking
- Machining operations on any part of the sheet.

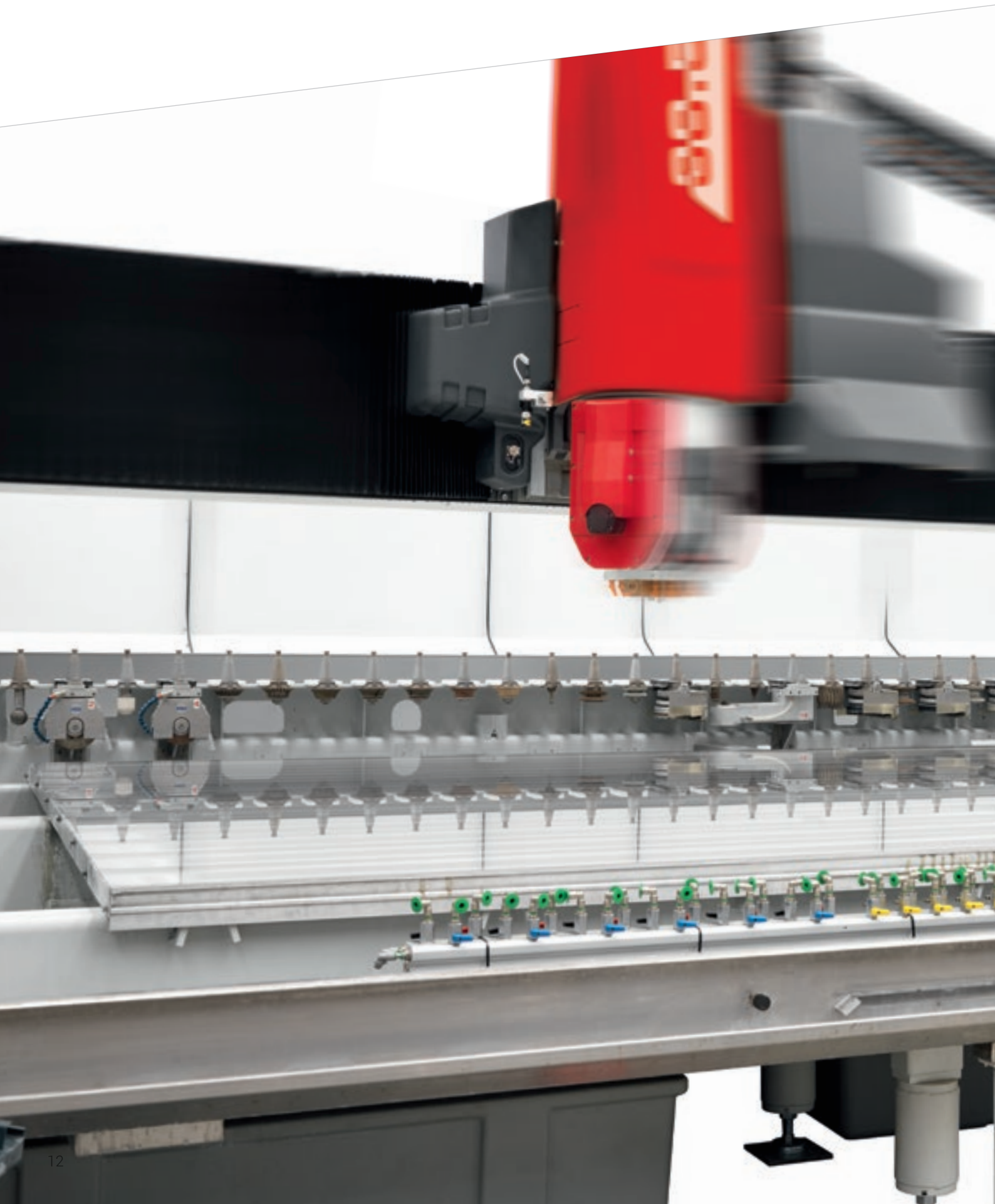


3_Lower countersinking



4_Upper countersinking

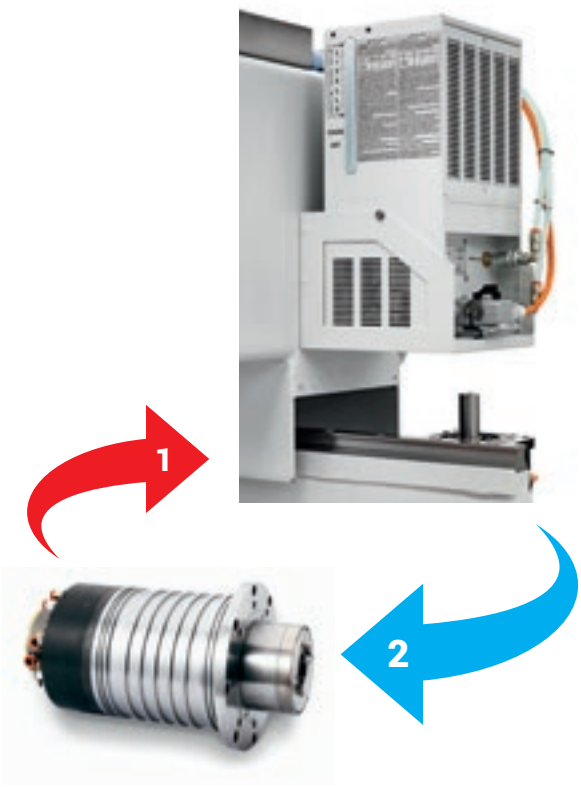
SUPERB PERFORMANCE



Maximum acceleration and axle speeds, minimising waiting times and enabling cycle times to be reduced.

The Master range guarantees fantastic performance thanks to the possibility of machining one or two glass sheets at the same time.

MAXIMUM MACHINING RELIABILITY AND PRECISION

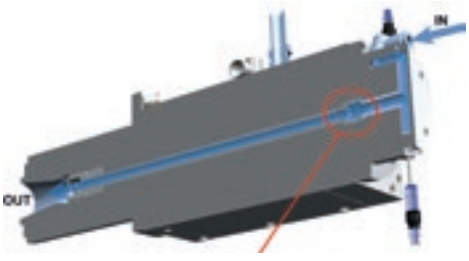


The Master range is fitted with spindles manufactured by HSD - a world leader in its sector. They guarantee optimum power, compact dimensions and extremely high finishing standards.

- **+60% spindle lifespan and noise reduction**
  thanks to 4 ceramic bearings that offer greater resistance to mechanical stress.
- **Greater reliability**
  thanks to the use of stainless steel and the 55mm spindle shaft.

Glycol-based cooling systems with a closed circuit that guarantees constant results over time and resistance to the maximum machining stress levels.

1. **High-temperature fluid**
   (cooling system with heat exchanger).
2. **Low-temperature fluid**



DPC (patented) - Controlled loss distributor
A patented system that ensures excellent reliability and a long lifespan, thanks to the innovative seal system with no mechanical contact.

Spindle absorption is constantly measured by the NC, and the pressure exerted by the tool on the piece is then proportionally adjusted to guarantee the best possible finish quality.

The entire Master range is equipped with an integrated system for the automatic greasing of the movement axes, ensuring constant and precise maintenance every day.

CUSTOMISABLE ACCORDING TO REQUIREMENTS

The machine work table is an extremely rigid structure upon which is placed an aluminium worktable calibrated to grant maximum flatness of the work area, fundamental for first class machining results. The machine is designed to work in twin-station mode too.

The beam is moved by means of twin-motor gantry technology to ensure greater accuracy and a longer lifespan.

The size of the work table is optimised for all production requirements.

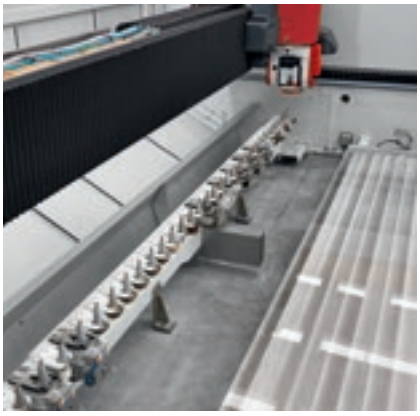
The height of the work table (730 mm, with optional 525 mm version available) simplifies loading and unloading of panels in line with requirements, to facilitate the handling of large sheets.

Compact width and height for smaller working dimensions.

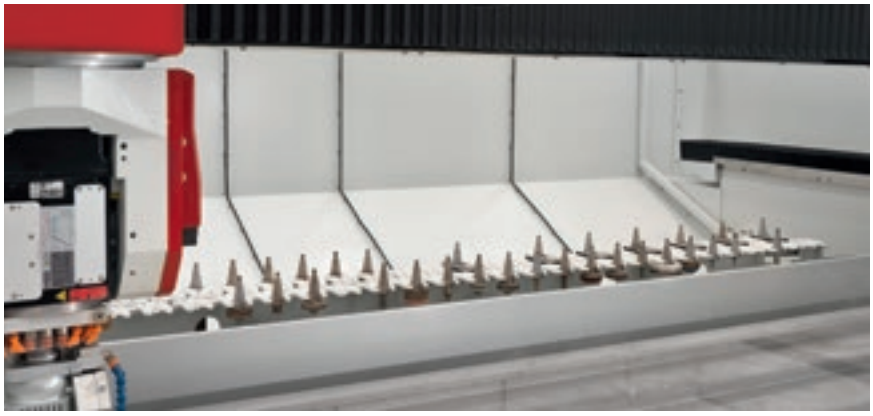
Master 45.5 processing centres can also be configured in the Plus version for companies that need to machine particularly thick pieces.

WIDE RANGE OF TOOLS READY TO USE ON THE MACHINE

The Master Series offers the option of equipping the machine with a large number of ready-to-use tools for any type of machining operation, with automatic loading via the working unit.



Rear single row magazine.



Rear dual row magazine.

Rotary tool magazine on which the tools can be safely loaded even while the machine is working.

Tool change
up to 10 seconds
The fastest solution in the world of glass, thanks to the 8-position revolver magazine on the head.

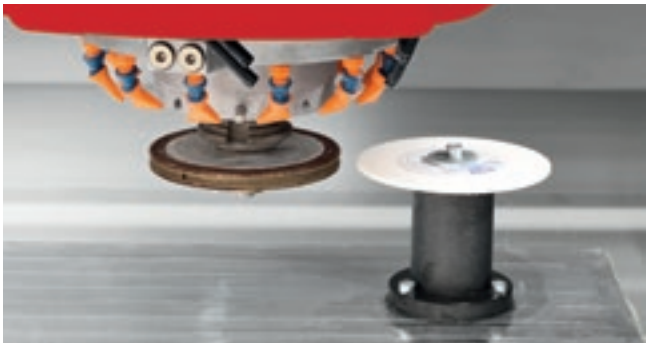
THE REAR MAGAZINE GUARANTEES A WIDE SELECTION OF TOOLS AVAILABLE IN THE MACHINE, READY TO CARRY OUT NUMEROUS MACHINING OPERATIONS.

MAXIMUM RESULTS THANKS TO THE ABILITY TO EQUIP THE MACHINE WITH HIGH QUALITY COMPONENTS.

The mechanical pre-setter checks the degree of wear on the diamond tools (with a frequency set by the machine operator) and automatically updates the tool parameters in the machine control system, thereby guaranteeing consistent machining results over time and preventing potential errors.

The dressing devices are positioned near the working area for fast, easy tool dressing operations that guarantee constant top quality and speedy execution. The dressers make the Master fully automatic, even for the longest machining operations, which means that manual operations are also simplified.

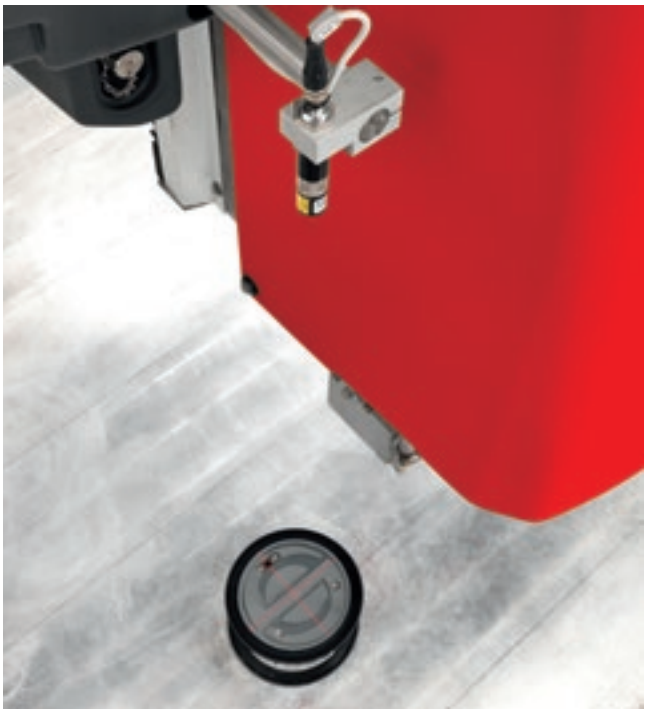
Finishing wheel dressing.



Diamond wheel dressing.

Drill dressing
The dressing device is placed near the working area for the immediate dressing of tools, to guarantee the best quality and quickest execution all the time.

REDUCED TOOLING AND SET-UP TIMES

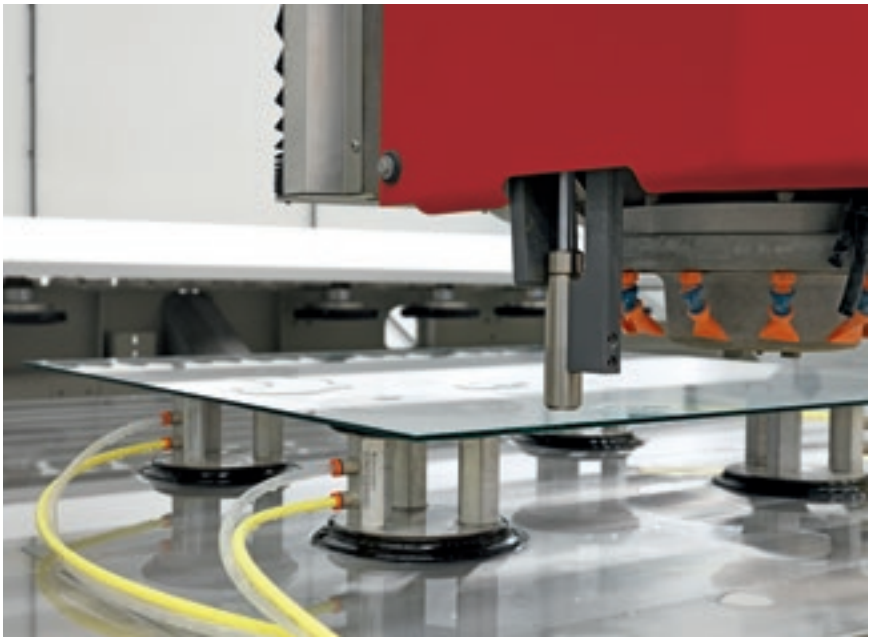


The operator saves 20% of the time traditionally needed for preparing the work table using standard methods, thanks to the cutting-edge laser devices.

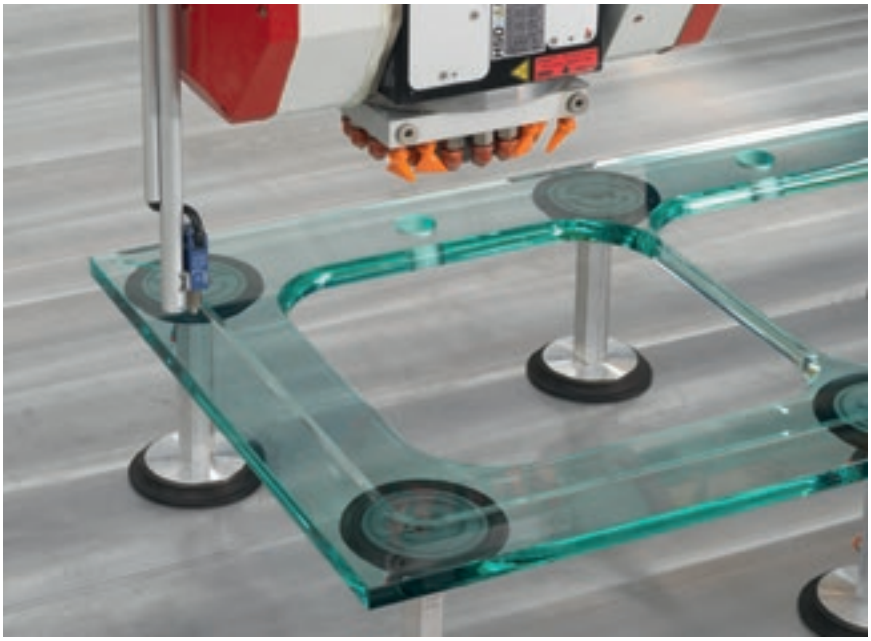
The cross-hairs laser guides the operator through the positioning of suction cups and stops, speeding up the preparation of the work surface.

The laser projector is used to made the preparation of the working area quick and easy, reproducing the position of all the suction cups and pieces to be machined on the table and preventing head movements.

The on-board laser device allows the panel to be placed on the work table without having to use mechanical stops, ensuring maximum precision with significant time savings. Particularly useful in the presence of large sheets that are heavy and occupy the entire work table.



Head with 3 axes.



Head with 5 axes.

EASE OF USE

Extremely easy to use, thanks to the ergonomic console and user-friendly operator interface.

The use of a PC with Windows guarantees a particularly easy, user-friendly approach for the operator and allows for CAD-CAM programming directly beside the machine.

Console with mobile arm for improved organisation and management of work.

The user interface in a Windows environment allows the operator to:

- **easily set the work list to optimise production**
- **rapidly handle the work origins and tool parameters**
- **see the execution time for each piece.**

Optimum convenience in the operations thanks to a hand-held terminal with:

- Quick, simple positioning of the stops and suction cups thanks to the option of tooling the work table with doors open.
- Simplified tool preparation, thanks to the optimum control of the working head directly on the piece to be machined. No limits between operator and Master
- Machining speed control
- Emergency button always near the operator's hand
- Start buttons for the two machining stations
- Machining pause and restart button.

THE MOST SIMPLE ANSWER

WITH OVER 6,500 PACKAGES INSTALLED AND USED BY SATISFIED CUSTOMERS IN 180 COUNTRIES THROUGHOUT THE WORLD, ICAM IS A HIGHLY RELIABLE AND ROBUST SOFTWARE THAT COMBINES TOP PERFORMANCE WITH EXTREMELY EASY USE.

- **Ease of use**
  A simple, powerful interface for working quickly and easily.
- **Time savings**
  Positioning of stops and suction cups within t he CAD/CAM environment, minimising tooling times even when the project is subject to modifications.
- **Innovative**
  A unified interface
  for the CAD and CAM environments.
- **Automated**
  The parametric library and "Indoor" module allow machining operations to be generated quickly and automatically in accordance with the item being created.
- **Service quality**
  The expertise of the Service Worldwide network.

ICAM

DESIGNED TO MEET THE REAL PROGRAMMING NEEDS OF MASTER WORKING CENTRES, WITH THE AIM OF MAKING THE JOB QUICKER AND EASIER. SOLUTIONS BASED ON THE STANDARDS BUT FOCUSED ON THE FUTURE.

PROTECTION AND SAFETY FOR ALL MACHINING OPERATIONS

Intermac has always paid the utmost attention to the health and safety of its customers. The protection of every operator during the use of the machine is of vital importance, preventing any possible distraction or error that could lead to inconvenience or even accidents.

One indispensable condition for obtaining any sort of financing is the respect of the machinery directives and workplace health and safety regulations.

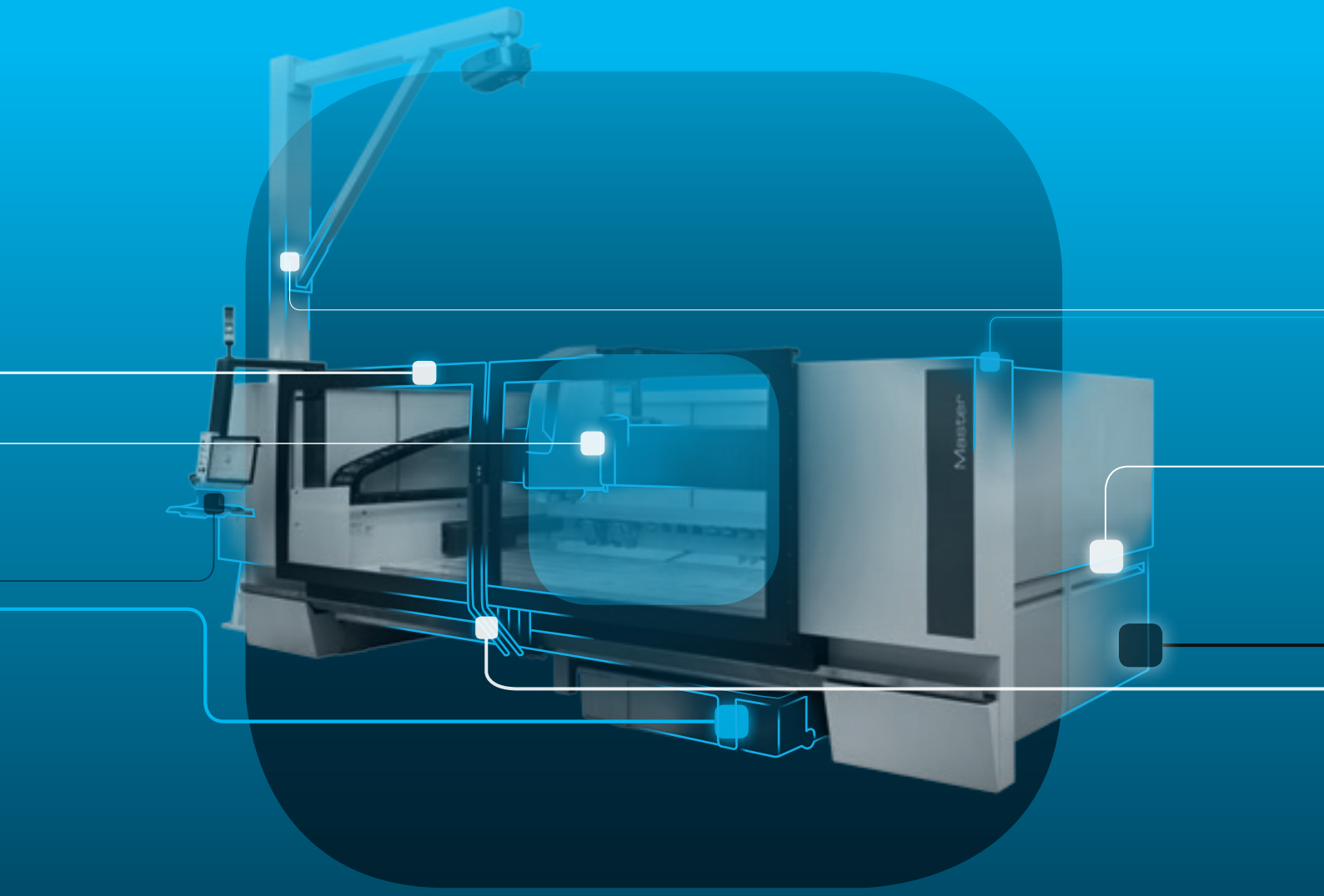
With Master working centres, the operator is protected by:

- Active safety features in the front protection devices and rotation magazine.
- Ergonomic front guards of a suitable height that are also explosion-proof (certified by external bodies with “detonation” tests).
- Side and rear guards made of a metallic material subjected to special anti-corrosion painting cycles.
- Electric and pneumatic systems fully integrated in the machine and protected by closed doors.
- Inaccessibility of moving machine parts.
- A clean working environment (water and machining residues are not dispersed).
- Reduced noise levels, fully complying with the machinery directive.

The Master series is equipped with ergonomic protection devices that enable better visibility of the machining operation during the process.

SOPHIA

GREATER VALUE FROM MACHINES



SOPHIA is the IoT platform created by Intermac in collaboration with Accenture which enables its customers to access a wide range of services to streamline and rationalise their work management processes.

It allows alerts and indicators to be sent to the customer in real time, in relation to production, the machines used and the type of process carried out. These are detailed instructions for more efficient use of the machine.

- 10% CUT IN COSTS
- 50% REDUCTION IN MACHINE DOWNTIME
- 10% INCREASE IN PRODUCTIVITY
- 80% REDUCTION IN PROBLEM DIAGNOSTICS TIME

SOPHIA TAKES THE INTERACTION BETWEEN CUSTOMER AND SERVICE TO A HIGHER LEVEL.

IoT SOPHIA

IoT - SOPHIA provides a comprehensive overview of the specific machine performance features, with remote diagnostics, machine stoppage analysis and fault prevention. The service includes a continuous connection with the control centre, the option of calling for assistance from within the customer app (such calls are managed as priorities), and an inspection visit for diagnostic and performance testing within the warranty period. Through SOPHIA, the customer receives priority technical assistance.

PARTS SOPHIA

PARTS SOPHIA is the easy new, user-friendly and personalised tool for ordering Intermac spare parts. The portal offers customers, dealers and branches the chance to navigate within a personalised account, consult the constantly updated documentation of the machines purchased, and create a spare parts purchase basket indicating the real time availability in the warehouse and the relative price list. In addition, the progress of the order can be monitored at all times.

INTERMAC

in collaboration with accenture

SERVICE & PARTS

Direct, immediate coordination of service requests between Service and Parts. Support for key customers from specific Intermac personnel, in-house and/or at the customer's site.

INTERMAC SERVICE

- Machine and line installation and start-up.
- Training centre for Intermac field technicians and subsidiary/dealer personnel; customer training directly at the customer's site.
- Overhaul, upgrade, repairs and maintenance.
- Remote diagnostics and troubleshooting.
- Software upgrade.

85
Intermac field technicians in Italy and worldwide.

20
Intermac technicians working in Teleservice Centre.

35
certified dealer technicians.

50
training courses in a variety of languages every year.

The Biesse Group promotes, cares and develops direct and constructive relationships with the customers to meet their needs, improve after-sales products and services through two dedicated areas: Intermac Service and Intermac Parts. With its global network and highly specialised team, the company offers on-site and on-line assistance and spare parts for machines and components anywhere in the world, 24/7.

INTERMAC PARTS

- Original Intermac spare parts and spare parts kits customised to suit the machine model.
- Spare part identification support.
- Offices of DHL, UPS and GLS couriers located within the Intermac spare parts warehouse, with multiple daily pick-ups.
- Optimised order dispatch time, thanks to a global distribution network with de-localised, automated warehouses.

95%
of machine downtime orders dispatched within 24 hours.

95%
of orders dispatched on time.

30
spare parts staff in Italy and worldwide.

150
orders processed every day.

INDUSTRY 4.0 READY

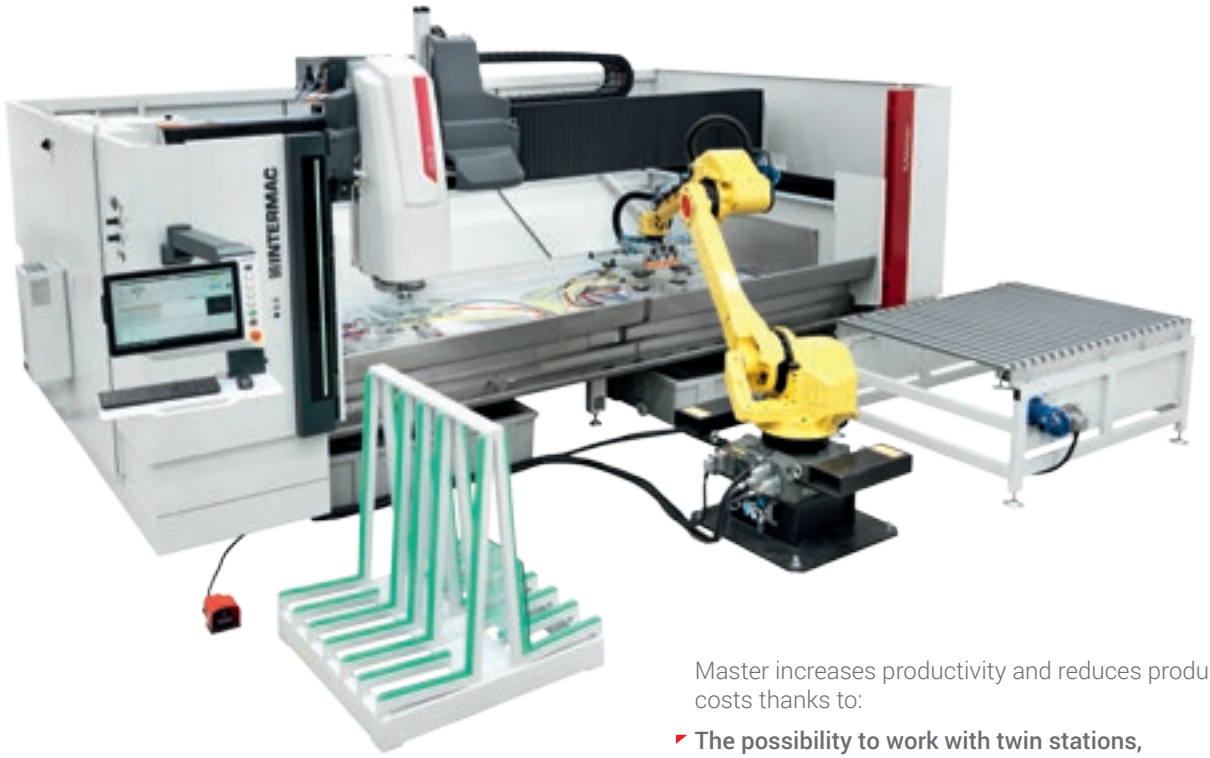
Industry 4.0 is the latest industry frontier, based on digital technologies and machines that speak to the companies. The products can be interconnected with the production processes via smart networks.

Intermac's commitment is to transform our customers' factories with real-time technology, ready to guarantee digital manufacturing opportunities, with smart machines and software packages becoming vital tools that facilitate the daily tasks of people all over the world processing glass, stone, metal and more. Our philosophy is a practical one: to supply entrepreneurs with solid data that can help them to lower their costs, optimise their processes and improve their results.

And that means being 4.0 ready.

EFFICIENT PRODUCTION, WITH NO LIMITS

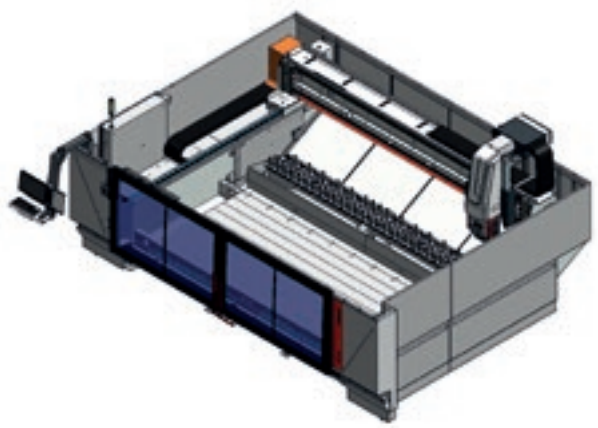
Master can be perfectly integrated in a line with robots and loading/unloading systems. It's the ideal solution for those who need automated solutions for producing large batches (the household appliance field and the automotive, electronic and furnishing sectors).



Master increases productivity and reduces production costs thanks to:

- **The possibility to work with twin stations,** with piece loading and unloading while the machine is running.
- **Reduced work time for the operator**
- **Simplification of the work for the operator,** who only needs to manage the racks at the start and end of the machining batch.
- **Machining operations that require no supervision and have no time limits (24/7)**

TECHNICAL SPECIFICATIONS



OVERALL DIMENSIONS

		Master 33.x	Master 38.x	Master 45.x	Master 45.5 Plus
Overall machine dimensions LxWxH MAX	mm	3490x6250x2805	3895x6750x2805	4420x7455x2805	4420x7455x3380
Overall machine dimensions LxWxH max equipped with side tool magazine	mm	3490x6510x2805	3895x7010x2805	4420x7715x2805	4420x7715x3380
Overall machine dimensions LxWxH max equipped with rear tool magazine single raw	mm	3895x6250x2805	4945x6750x2805	5470x7455x2805	5470x7455x3380
Overall machine dimensions LxWxH max equipped with rear tool magazine double raw	mm	4525x6250x2805	4945x6750x2805	5470x7455x2805	5470x7455x3380

(L=length W=width H=height)
Overall dimensions are intended with closed doors, without considering the hanging control panel (front, side tool magazine, electrical control cabinet). L + 1000 mm considering maximum dimension of hanging control panel.

MASTER - 3 AXIS

		Master 33.3	Master 38.3	Master 45.3
Maximum machinable piece size (3-axis grinding with tool of diameter 100mm)	mm	3,300 x 1,600 *	3,800 x 2,000 *	4,500 x 2,500 *
Z axis stroke	mm	465	465	465
C axis stroke (optional)		∞	∞	∞
Max axis speed (X, Y, Z)	m/min	60, 70, 18	60, 70, 18	60, 70, 18
Work table height ("high table" version)	mm	740 (525)	740 (525)	740 (525)
Electrospindle power In S1 (S6)	kW	15 (18)	15 (18)	15 (18)
Max electrospindle rotation	rpm	12000	12000	12000
Tool coupling		ISO 40	ISO 40	ISO 40
Tool magazine for	up to	53	61	69
Power required	kW / HP	25 / 34	25 / 34	25 / 34

* Depending on the configuration of the tool magazine.

MASTER 5 AXIS

		Master 33.5	Master 38.5	Master 45.5
Maximum machinable piece size (3-axis grinding with tool of diameter 100mm)	mm	3,300 x 1,550 *	3,800 x 2,000 *	4,500 x 2,500 *
Z axis stroke	mm	465	465	465
C axis stroke (optional)		∞	∞	∞
Maximum axis speed (X, Y, Z)	m/min	60, 70, 18	60, 70, 18	60, 70, 18
Work table height ("high table" version)	mm	740 (525)	740 (525)	740 (525)
Electrospindle power In S1 (S6)	kW	15 (18)	15 (18)	15 (18)
Max electrospindle rotation	rpm	12000	12000	12000
Tool coupling		ISO 40	ISO 40	ISO 40
Tool magazine for	up to	53	61	69
Power required	kW / HP	25 / 34	25 / 34	25 / 34

* Depending on the configuration of the tool magazine.

MASTER (5 AXES) PLUS

		Master 45.5 Plus
Maximum machinable piece size (3-axis grinding with a tool with a diameter of 100 mm)	mm	4,500 x 2,500 *
Z axis stroke	mm	650
C axis stroke (optional)		∞
Max axis speed (X, Y, Z)	m/min	60, 70, 18
Work table height ("high table" version)	mm	740 (525)
Electrospindle power In S1 (S6)	kW	15 (18)
Max electrospindle rotation	rpm	12000
Tool coupling		ISO 40
Tool magazine for	up to	69
Power required	kW / HP	25 / 34

* Depending on the configuration of the tool magazine.

The technical specifications and drawings are non-binding. Some photos may show machines equipped with optional features. Biesse Spa reserves the right to carry out modifications without prior notice.

Weighted sound pressure level A (LpA) during machining at the operator's workstation on the vane-pump machine Lpa=79dB(A) Lwa=96dB(A) Weighted sound-pressure level A (LpA) at the operator's workstation and sound power level (LwA) during machining on the cam-pump machine Lwa=83dB(A) Lwa=100d-B(A) Measurement uncertainty K dB(A) 4.

The measurement was carried out in compliance with UNI EN 848-3:2007, UNI EN ISO 3746: 2009 (sound power) and UNI EN ISO 11202: 2009 (sound pressure levels at workstation) during panel machining. The noise levels shown are emission levels and do not necessarily correspond to safe operation levels. Despite the fact that there is a relationship between emission and exposure levels, this may not be used in a reliable manner to establish whether further measures need to be taken. The factors determining the exposure level for the workforce include length of exposure, work environment characteristics, other sources of dust and noise, etc. i.e. the number of other adjoining machines and processes. At any rate, the above information will enable the operator to better evaluate dangers and risks.

COMPLETE RANGE OF SOLUTIONS FOR GLASS

INTERMAC

TABLES FOR FLOAT GLASS CUTTING


Genius RS-A


Genius CT-A series


Genius CT-PLUS


Genius CT-RED series

TABLES FOR LAMINATED GLASS CUTTING


Genius LM series


Genius LM-A series

MACHINES FOR LAMINATED AND FLOAT GLASS CUTTING


Genius Comby Lines

LINES FOR LAMINATED OR FLOAT GLASS CUTTING


Genius Lines & Systems

WATERJET


Primus series

DOUBLE ENDING MACHINES AND SYSTEMS


Busetti FK series


Busetti F series


Busetti P series


Customised solutions

WORK CENTRES


Master 23


Master ONE


Master 33.3-38.3-45.3


Master 33.5-38.5-45.5- 45.5 Plus

SPECIAL WORK CENTRES AND AUTOMATIC CELLS


Master 63-65


Master 95


Master 185

SPECIAL WORK CENTRES AND AUTOMATIC CELLS


Master with belts


Master working cell

WORK CENTRES ENGRAVING


Master 34

VERTICAL MACHINES


Vertmax series


V-Loader

VERTICAL WASHING MACHINES


Aqua series

TOOLS FOR GLASS


Diamut tools

STORAGE & HANDLING SYSTEMS

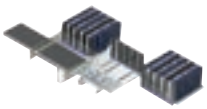
STATIC STORAGE


MOVETRO SERIES - Classifiers

CLASSIC DYNAMIC STORAGE


MOVETRO SERIES - Loading machines

INNOVATIVE DYNAMIC STORAGE FOR MASS PRODUCTION


MOVETRO SERIES - Shuttle storage systems

INNOVATIVE DYNAMIC STORAGE FOR DYNAMIC PRODUCTION


MOVETRO SERIES - Overhead crane - Telescopic loading machines - Arpa

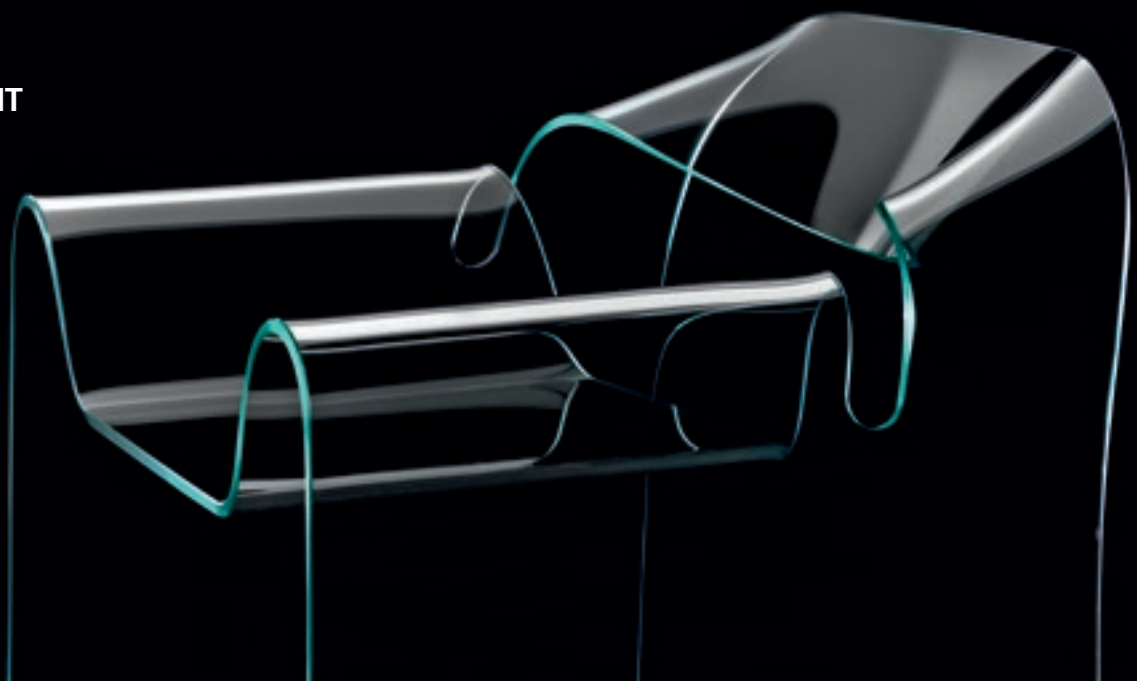
MADE WITH INTERMAC

GLASS ART AND CUTTING-EDGE TECHNOLOGY

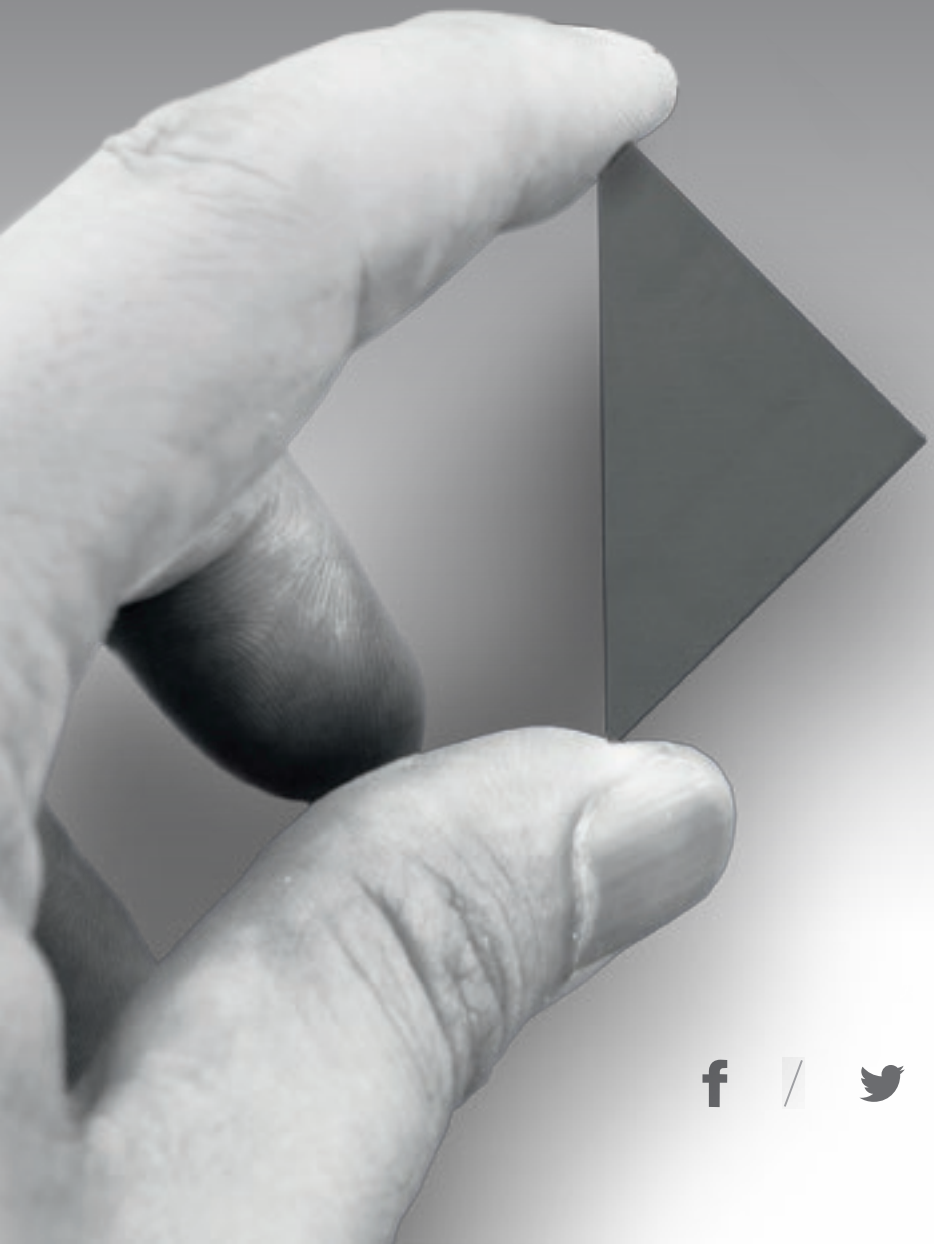
"In Fiam's workshops, we have always tried to respond to designer ideas, even when they were apparently impossible to implement. Designers, like artists, have a creativity that stimulates cutting-edge innovation. So, over time, we have been able to develop new technologies that have allowed us to create unique objects on an industrial scale".
"Everything started with a stool. A glass stool, of course. A photographer friend came to see me in my glass workshop, saw me standing on the stool and took a picture that was published in some newspapers. That's when I thought: why not try to make furniture with this material?
From the first, self-built oven to bend glass sheets through to the first collaborations with artists and designers, it's been an ongoing learning curve.
Along with design innovation, Fiam has always invested in technological innovation too. In this respect, the partnership with Intermac for the development of solutions such as double-edging grinding machines and the Master processing centres range is a strategic one.
Our company has always worked in partnership with internationally-renowned Italian and foreign designers. People like Massimo Morozzi, Rodolfo Dordoni, Giorgetto Giugiaro, Enzo Mari, Cini Boeri through to Vico Magistretti, Ron Arad, Makio Hasuike. Not forgetting Philippe Starck, Daniel Libeskind and Massimiliano Fuksas".

Vittorio Livi,
founder and sole director
Fiam Italia, Italy

FIAMITALIA.IT



LIVE THE EXPERIENC



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