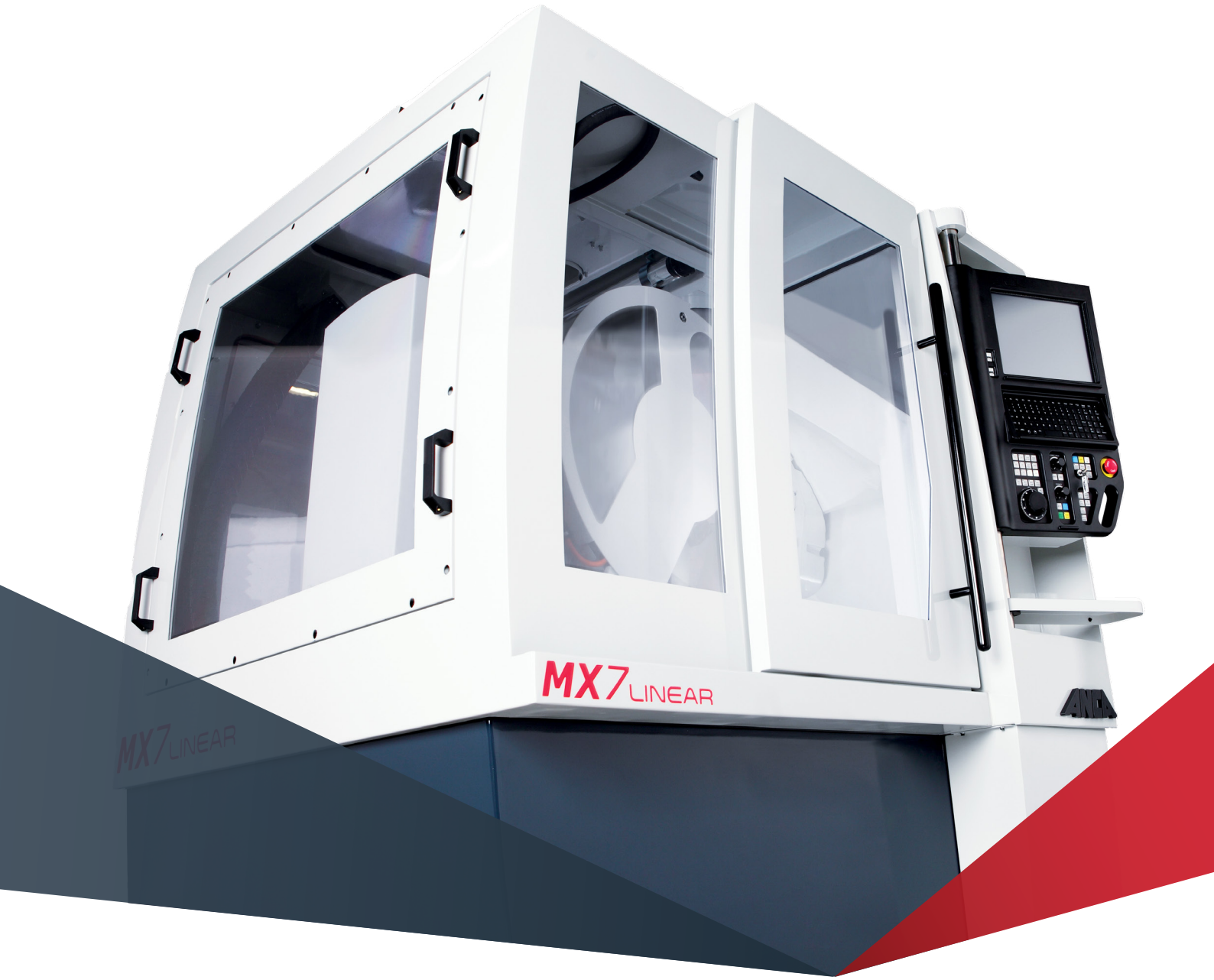
MX LINEAR



ANCA
CNC MACHINES

MX LINEAR

A POPULAR TOOL GRINDER JUST GOT BETTER

The MX Linear tool grinder range is specifically designed to meet the needs of tool production facilities seeking maximum output while remaining flexible to customer requirements. The machines include new technology cylindrical linear motors that enable them to achieve even higher levels of accuracy and performance.

MX machines have been proven in the market place to provide superior performance in today's production environment. MX machines have a rigid design ensuring tool accuracy based around the bi-symmetrical gantry. They now include as standard the latest advances in technology including linear motors and linear scales.

Incorporating ANCA's 40 years of software experience, ANCA's ToolRoom software ensures the MX Linear machines will efficiently handle any manufacturing or regrinding challenge you have.

MX7 LINEAR

The ANCA MX7 Linear is a powerful, versatile CNC tool grinder designed for production grinding. It is built to meet the demands of high output, high precision manufacturing. The powerful 38 kW (51 HP) Synchronous spindle provides high torque at lower RPM which is ideal for carbide grinding and a wide range of applications.

The MX7 Linear can combine multiple operations to manufacture complete tool from blank in one setup to reduce setup times and material handling. The Headstock has the ability to spin at higher RPMs to support peel grinding operations along with other grinding operations to shorten the manufacturing process.

MX5 LINEAR

Designed with volume producers in mind, the MX5 Linear has the flexibility to manufacture mixed batches. The MX5 Linear includes the most important features of the premium MX platform, such as the bi-symmetrical gantry which supports the grinding wheel and spindle. Evenly straddling the tool centre line, the gantry provides extra rigidity for consistently accurate tools.

The new MX5 Linear has all the rigidity, stability and accuracy characteristics of the proven MX7 Linear, in a machine that is affordable to more customers.

POWERED BY LINX®

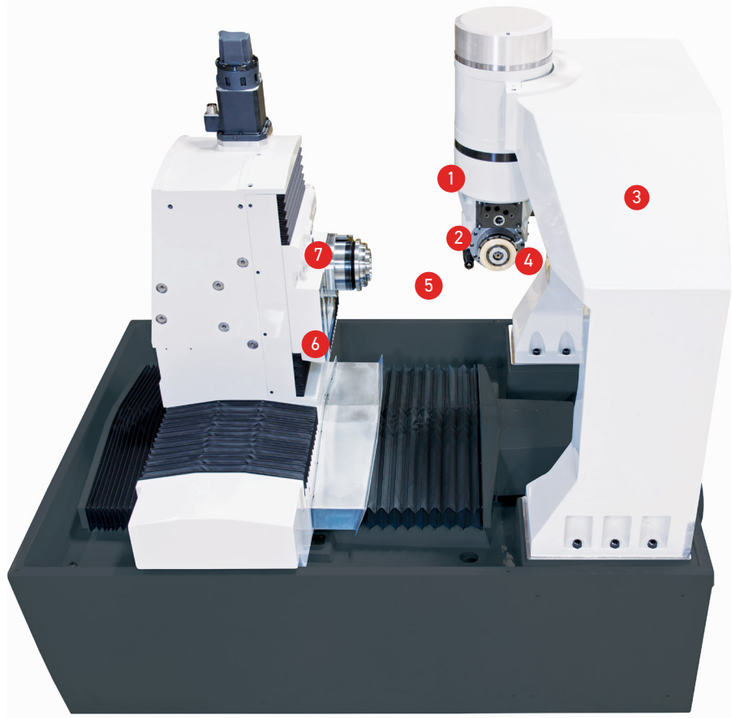
Our LinX® linear motor technology for axis motion (X and Y axes), in conjunction with linear scales, achieves superior precision and performance.

Specially designed for a lifetime of operation in harsh grinding environments, the LinX® motors have a cylindrical magnetic field which means there is no additional down force on the rails or machine base.

With no temperature variations (meaning no need for a separate chiller unit), and being sealed to IP67, there is minimal wear and tear so that the machine accuracy remains over the lifetime of the machine. The LinX® linear motor has higher axis speed and acceleration, leading to reduced cycle times while maintaining a smoother axis motion.

ENHANCED ACCURACY

UPGRADED TECHNOLOGY



1. CONTROL PANEL

Including touch screen. Intuitive layout enables quick & easy machine set-up.

2. SOFTWARE

ANCA's market leading versatile & intuitive tool design software is easy-to-use.

3. TOOL / WHEEL MEASUREMENT OPTIONS

Automated for increased productivity. LaserUltra tool measurement and compensation system. iView tool measurement. Wheel Probe for automatic wheel qualification.

4. COMPACT & RIGID DESIGN

A small machine footprint with a large working envelope. It has minimal axis movements during grinding which reduces cycle time and increases accuracy.

5. POLYMER BASE (ANCACRETE)

Provides maximum thermal stability and dampening properties. It has high thermal mass, which means its behaviour under thermal load is very predictable.

6. AUTOMATION OPTIONS

RoboMate for high volume tool production or FastLoad-MX Compact Loader for low-volume.

7. LINEAR MOTORS (LINX®)

LinX® and linear scales improve precision and performance for superior tool accuracy and surface finish.

8. WHEEL CHANGER

2-station wheel changer included as standard for MX5 and a 6-station with the MX7. Loads wheel packs and coolant manifolds for maximum productivity.

1. RIGID DESIGN

The grind wheel is positioned near to the C-axis centre line for superior accuracy.

2. SPINDLE DESIGN

HSK50F taper provides increased rigidity and accuracy for an improved tool surface finish.

3. BI-SYMMETRICAL GANTRY

Is a proven design for ultra-high precision grinding. Evenly straddling the tool centre line, it delivers superior rigidity and maximum resistance to from thermal growth. It also keeps vibrations to a minimum.

4. SYNCHRONOUS SPINDLE

Provides higher torque at lower RPM which is ideal for carbide grinding.

5. EASY ACCESS

Ergonomically designed for the operator. There is easy access to the headstock work-holding, wheel pack and spindle for quick set-up and job changeover.

6. TOOL SUPPORT

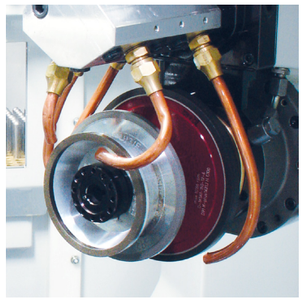
Several tool support options can be mounted from the Z-Axis ensuring tools are supported accurately. These include the Steady bed, Pop-Up Steady, Travelling Steady (P-Axis) and MicroPlus systems.

7. WORK-HOLDING OPTIONS

And an ISO 50 taper workhead. A variety of precision work-holding options cater for a range of tool types.

POWER & FLEXIBILITY

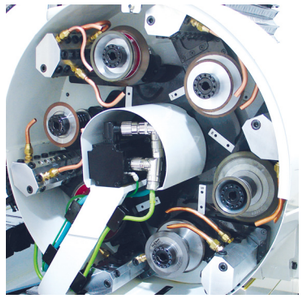
SYNCHRONOUS SPINDLE



Outstanding spindle performance across the entire spindle working range.

- High torque at lower RPM particularly suited for carbide grinding
- Position controlled axis (Q-axis), ensures accurate and repeatable wheel pack changes
- 10,000 RPM maximum
- Spindle power rating for MX5 Linear – 26 kW (35 HP) peak
  14 kW (19 HP) S1
- Spindle power rating for MX7 Linear – 38 kW (51 HP) peak
  20 kW (27 HP) S1

WHEEL PACK CHANGER



Increases machine productivity and flexibility

- Approximately 20-second wheel change time
- MX7 Linear has 6 HSK wheel packs
- MX5 Linear has 2 HSK wheel packs
- Coolant manifolds are also changed
- MX5 Linear wheel packs – 2 x 203mm (8") max
- MX7 Linear wheel packs – 3 x 203mm (8") max
  6 x 152mm (6") max

AUTOMATION

ROBOMATE LOADER

(MX5 Linear/MX7 Linear option)

ANCA's RoboMate robot loader is a versatile and flexible automation solution that is equally efficient on a range of ANCA CNC tool and cutter grinders. Using the accuracy and reliability of the Fanuc robot, RoboMate takes the tool directly from the pallet to the collet in a single grip.

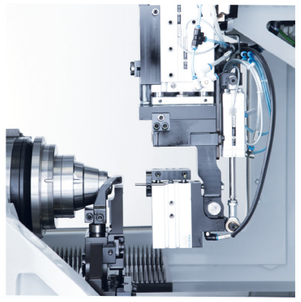
- Proven Fanuc reliability
- Designed with high levels of safety and ergonomics
- Available with 2 pallets (standard) or 4 pallets (optional)
- Cost-effective, efficient and fast
- Includes high capacity pallets

The RoboMate can load tool diameters from Ø3 mm (1/8") to Ø32 mm (1 1/4")

- Maximum tool length 350 mm (14")
- The size of the loader is:
  L 2379 mm x W 722 mm x H 1865 mm
  L 94" x W 28" x H 7

FASTLOAD COMPACT LOADER

(MX5 Linear/MX7 Linear option)

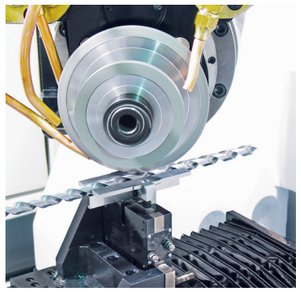


The FastLoad is a unique loading system that is fully contained within the machine canopy. It is designed to be a low-cost solution for customers seeking automation and is perfect for low-volume production runs. The FastLoad-MX is designed for the MX range of machines.

- Uses existing machine axes for pallet movement & tool loading
- Capable of loading round shank tools
- No increase in footprint over the machine base
- No need to change gripper fingers between batches
- Diameter range 2 - 20 mm (1/16" - 3/4")
- Maximum tool length 150 mm (6")
- Load time of approximately 24 seconds

ACCESSORIES

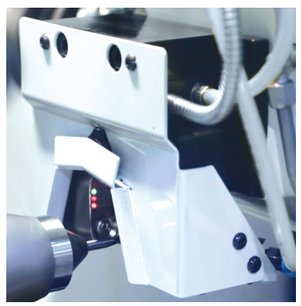
TRAVELLING STEADY



The Travelling Steady (P-axis) provides the machine with an additional programmable axis for support of tools with long aspect ratio (length : diameter). Different tooling options are offered. Hydraulic Arobotech and standard bush are typically used for grinding of long drills, keeping the support under the grinding wheel at all times. Tailstock will support tools with a centre at the end.

- Ensures rigid support for long tools
- Reduction of vibration and chatter when grinding
- Fully programmable position
- Arobotech supports helical drills with a back taper
- Tailstock has programmable force control
- Increased machine output and high productivity
- Higher feedrates and reduced cycle times are possible

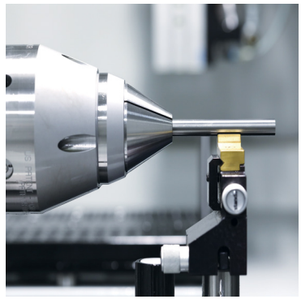
LASERULTRA



The LaserUltra system provides accurate and repeatable measurement of tools inside the machine. The LaserUltra can automatically measure OD, run-out, EOT, Ballnose, Corner radius and all profile tools. An air blast unit on the laser ensures that coolant or contaminants do not interfere with the measurement process.

- Faster set-up times
- Less scrap
- No need to remove the tool from the machine
- Increased efficiency
- Laser OD SPC (Statistical Process Control) cycle also available
- Laser is permanently mounted inside the machine

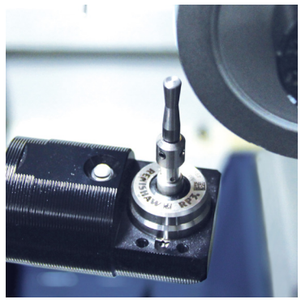
PREMIERPLUS COLLET ADAPTORS



ANCA's new PREMIER Collet Adaptors provides operators with a premium workholding range. The PREMIER Collet Adaptors use a new totally internal clamping mechanism. The spring pack in the adaptor provides the tool clamping force and prevents possible runout that was previously added if misalignment occurred between the drawbar and the collet.

- Reduces tool runout for improved tool quality
- Available in W20, W25 and B32/45 versions
- PCA (Precision Collet Adaptor) versions also available
- Option available for MX5 Linear and MX7 Linear tool grinders

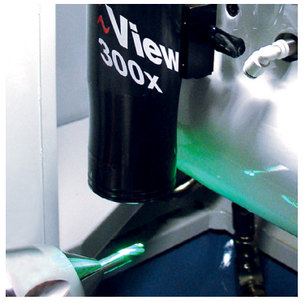
WHEEL PROBE



The auto wheel pack qualification probe is used to accurately measure grinding wheels inside the machine. The Wheel Probe uses a Renishaw probe to qualify the wheel pack. It is possible to measure the front surface location, back surface location, wheel diameter and toroid radius of a grinding wheel. It eliminates the need for operator intervention which ensures consistent measurement results.

- Automatically measures a wide variety of wheel shapes
- Eliminates the need to manually qualify the wheel pack
- Eliminates the need to remove the wheel pack from the grinder
- Increases machine productivity
- Reduces first tool rejections
- Option available for MX5 Linear and MX7 Linear tool grinders

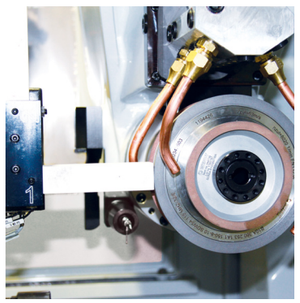
IVIEW



iView is a measuring system that is able to measure the ground tool while it is still in the work-holding on the machine. The image of the ground tool as taken by the iView camera is compared with an ideal overlay shape generated by the software. The tool size can then be compensated automatically based on the overlay displayed on the machine screen.

- Eliminates the need to remove a tool from the grinder to check the dimensions
- Reduces errors caused by relocating and manually compensating
- 300x and 100x magnification options
- Provides measuring accuracy to 3 microns
- iView is permanently mounted inside machine

AUTO-STICK



Automatic wheel conditioning system. Used for in-between cycle conditioning (sticking) of resin bonded CBN and diamond grinding wheels. Regular sticking of grinding wheels will ensure maximum results and help wheels last longer. When continually grinding, wheels become glazed, or loaded. The sticking process exposes the diamond and removes chips (swarf) embedded in the wheel so the wheel cuts better.

- Reduces tool burn and wheel glazing
- Improves feed rates and reduces cycle times
- Increases life expectancy of grinding wheels
- Saves time and increases operator safety
- Option available for MX5 Linear & MX7 Linear tool grinders with 1 - 4 stick

SOFTWARE

TOOLROOM

ANCA's ToolRoom software suite caters for a wide range of tool types and applications with an easy-to-use interface to input tool geometry parameters. ToolRoom ensures that the MX Linear machines will efficiently handle any regrinding or manufacture challenge.

The machine operator is able to easily and quickly set up or modify tool programs, depending upon the required tool type. For more proficient users, advanced software pages exist to access complex tool designs and operations. ToolRoom supports the grinding of drills, end mills, profile tools, burrs, routers and many other special applications.

CIM3D

CIMulator3D simulates the programmed tool path exactly as it would be ground on the machine. New tool programs can be verified for size, shape, machine clearance and even cycle time estimates. CIMulator3D maintains continuous work flow through the machine by reducing development time and trial grinding.

ANCA was the first to introduce true 3D simulation technology for CNC tool and cutter grinding. CIM3D delivers advanced tool simulation quality and an enhanced user-friendly interface for high performance and increased efficiency.

TOOLDRAFT

ToolDraft is used for creating 2D cutting tool drawings from a simulated tool or direct from ToolRoom. This is built on the foundation of CIM3D engine projecting a 3D model into accurate 2D projection views. This will help customers to create drawings of cutting tools manufactured on ANCA machines without relying on third party software.

- Dimension all tool features with tolerances and surface finish requirements
- Annotate drawing with text, images, and drafting symbols from the drafting symbols library.
- Load and save customer defined drawing templates with defined text, line and colour styles
- Export drawing as PDF or DXF with ability to print drawing.

MANAGEMENT SUITE

Management Suite provides customers with the ability to manage their tool production, tool files and wheel files. This standalone software comes with three main features:

- REDAX monitors machine production 24/7 in real-time and delivers up-to-date information, greatly enhancing the visibility and control of the tool manufacturing operation. This system will enable customers to improve the productivity of their machines by reducing machine downtime, analysing tool production, and past production history.
- Wheel management is a server-based wheel library which provides means to easily share wheel packs and qualification data between machines.
- Tool management is a server-based application which makes it easy to transfer grinding files between simulators and machines. This also maintains version control and history of all tool files, and has read/write user permissions for better control of tool files.

TECHNICAL SPECIFICATIONS

MX5 LINEAR

MX7 LINEAR

Spindle Power	26 kW (35 HP) peak 14 kW (19 HP) S1	38 kW (51 HP) peak 20 kW (27 HP) S1
Loader Tool Capacity (with loader)	FastLoad-MX (Option): 245 x Ø 3 mm 156 x Ø 6 mm 42 x Ø 16 mm RoboMate (Option): 2520 x Ø 3mm 1560 x Ø 6 mm 462 x Ø 16 mm 189 x Ø 25 mm	FastLoad-MX (Option): 245 x Ø 3 mm 156 x Ø 6 mm 42 x Ø 16 mm RoboMate (Option): 2520 x Ø 3mm 1560 x Ø 6 mm 462 x Ø 16 mm 189 x Ø 25 mm
Linear Scales	Standard on X & Y-axes, optional on the Z-axis	Standard on X & Y-axes, optional on the Z-axis
Tool Load Time	FastLoad-MX 24 sec RoboMate 15 sec	FastLoad-MX 24 sec RoboMate 15 sec
Pneumatic Collet Actuator	Yes	Yes
MicroPlus	Option	Option
Overhead Top Clamp	Option	Option
Pop-up Steady	Option	Option
Manual Tailstock	Option	Option
Headstock Mounted Coolant Outlet	Yes	Yes
Auto-Stick	1 to 4 Sticks (option)	1 to 4 Sticks (option)
LaserUltra	Option	Option
Automatic Wheel Probe	Option	Option
iView (semi-automatic tool inspection)	Option	Option
iBalance	Option	Option

TECHNICAL SPECIFICATIONS

CNC DATA

ANCA AMC5 G2 High Performance CNC, High Speed SSD, Ethercat, Intel processor, Windows 10.

MECHANICAL AXES

	X-axis	Y-axis	Z-axis	C-axis	A-axis
Resolution	0.0001 mm 0.0000039"	0.0001 mm 0.0000039"	0.0001 mm 0.0000039"	0.0001 deg	0.0001 deg
Travel	540mm 21.1"	510mm 16.1"	215mm 8.4"	264 deg	360 deg

SOFTWARE AXES (PATENTED)

B, V, U, W

WORKPIECE*

Diameter 200 mm (7.8") max., weight 20 kg (44 lb) max., productive up to Ø20 mm, Tool Length 300mm (12")

DRIVE SYSTEM

ANCA Digital AMD5x (EtherCAT standard)

MACHINE DATA

Grinding spindle:

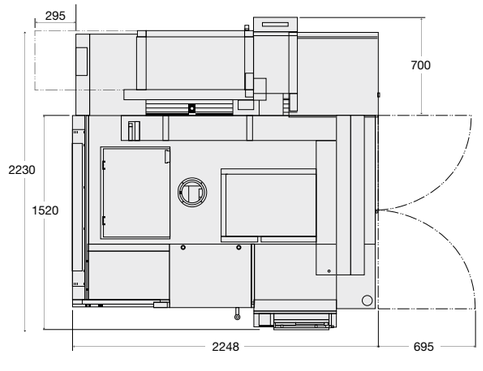
- –ANCA bi-directional
- –10,000 RPM
- –Integral direct-drive
- –Spindle - Single ended Synchronous Motor

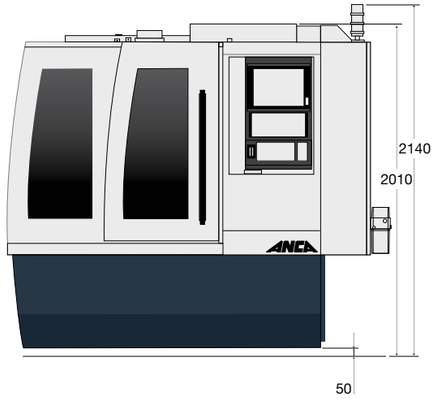
Grinding wheel: Max. diameter 203 mm (8")
Wheel bore: 31.75 mm (1.25"), 32 mm and 20 mm
Wheel packs: Single wheel pack - options of 2 and 6 auto wheel changer (max 4 wheels per pack)

OTHER DATA

Electrical power: 14.5 KVA (16 KVA with robot)	Probe system: Renishaw
Coolant system: External	Machine base: ANCAcrete (polymer concrete)
Floor plan: Width: 2320 mm (92") Depth: 2240 mm (88") Height: 2015 mm (80") Weight: 5500 kg / 12,125 lbs	Colour: RAL 7035 / RAL 5008
	Control panel: Full touch screen (19")
	Machine Structure: Bi-Symmetrical Gantry

* ANCA reserves the right to update or amend specifications without prior notice.





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