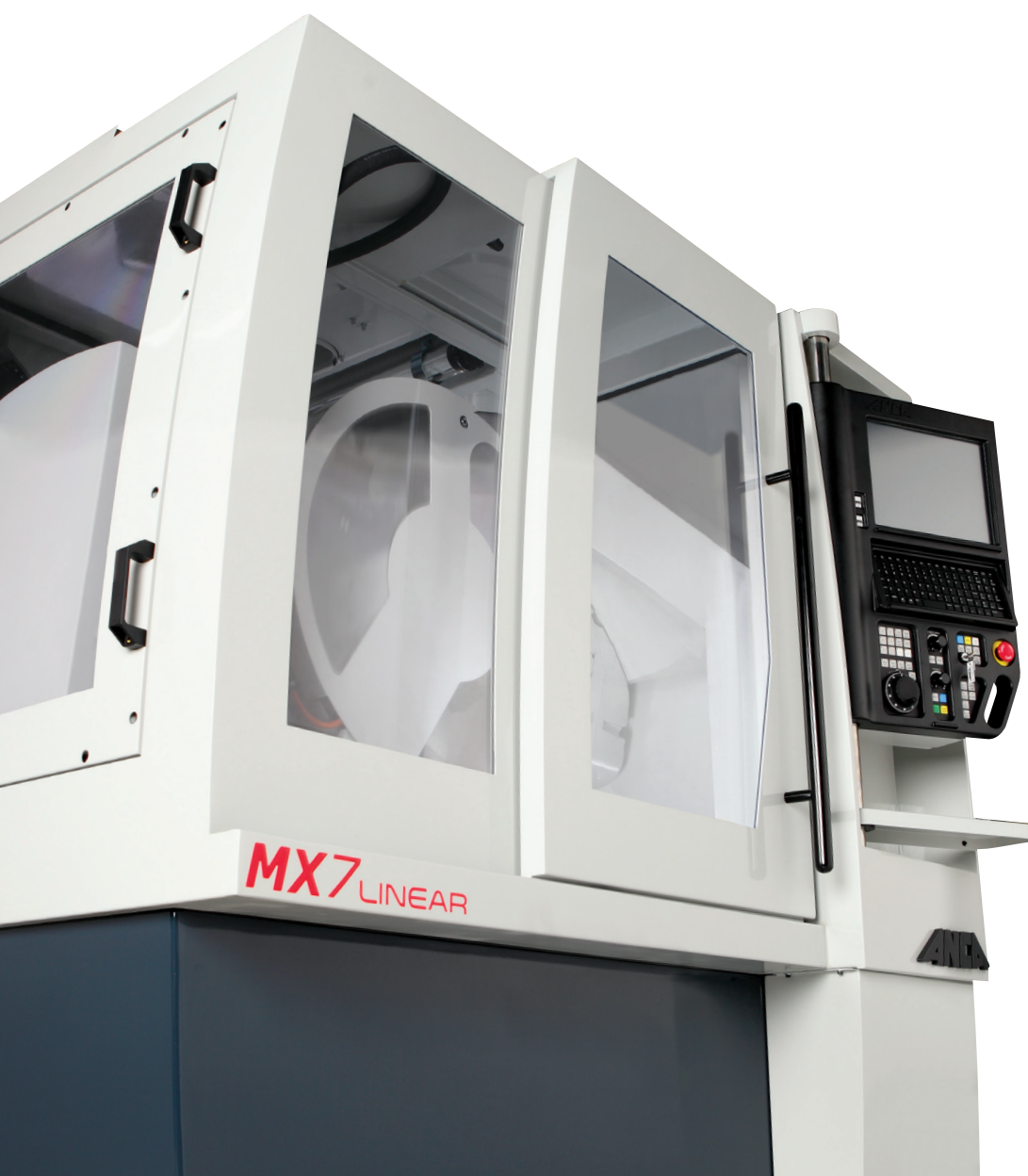
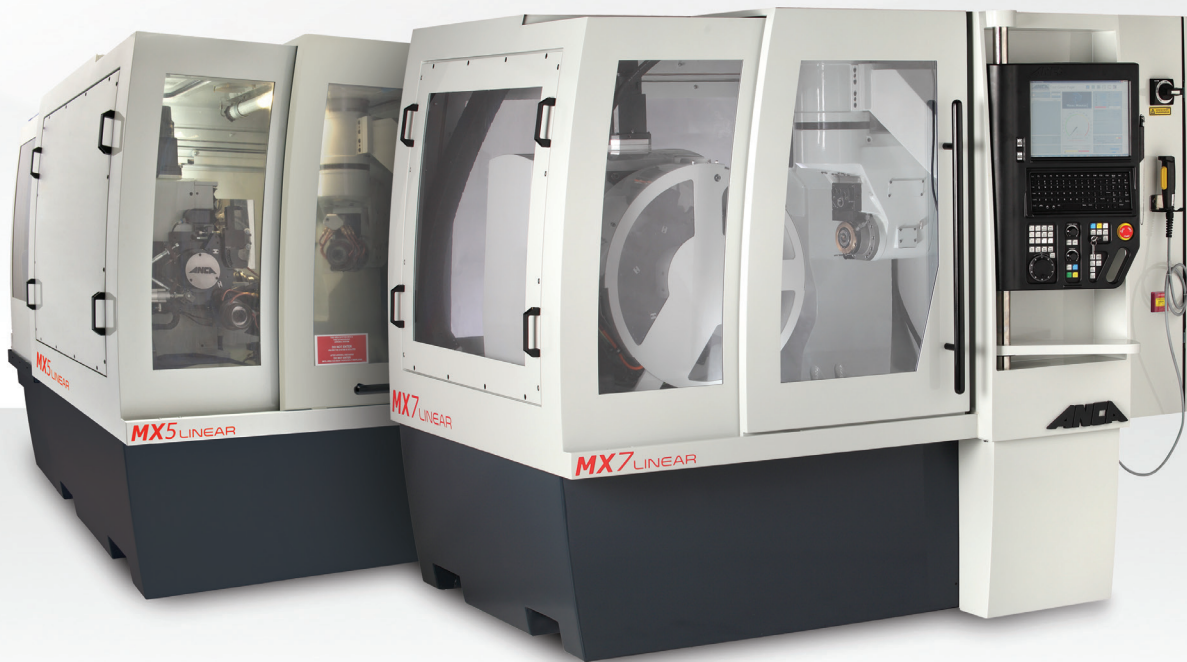


# MX LINEAR



**ANCA**  
CNC MACHINES



# MX LINEAR

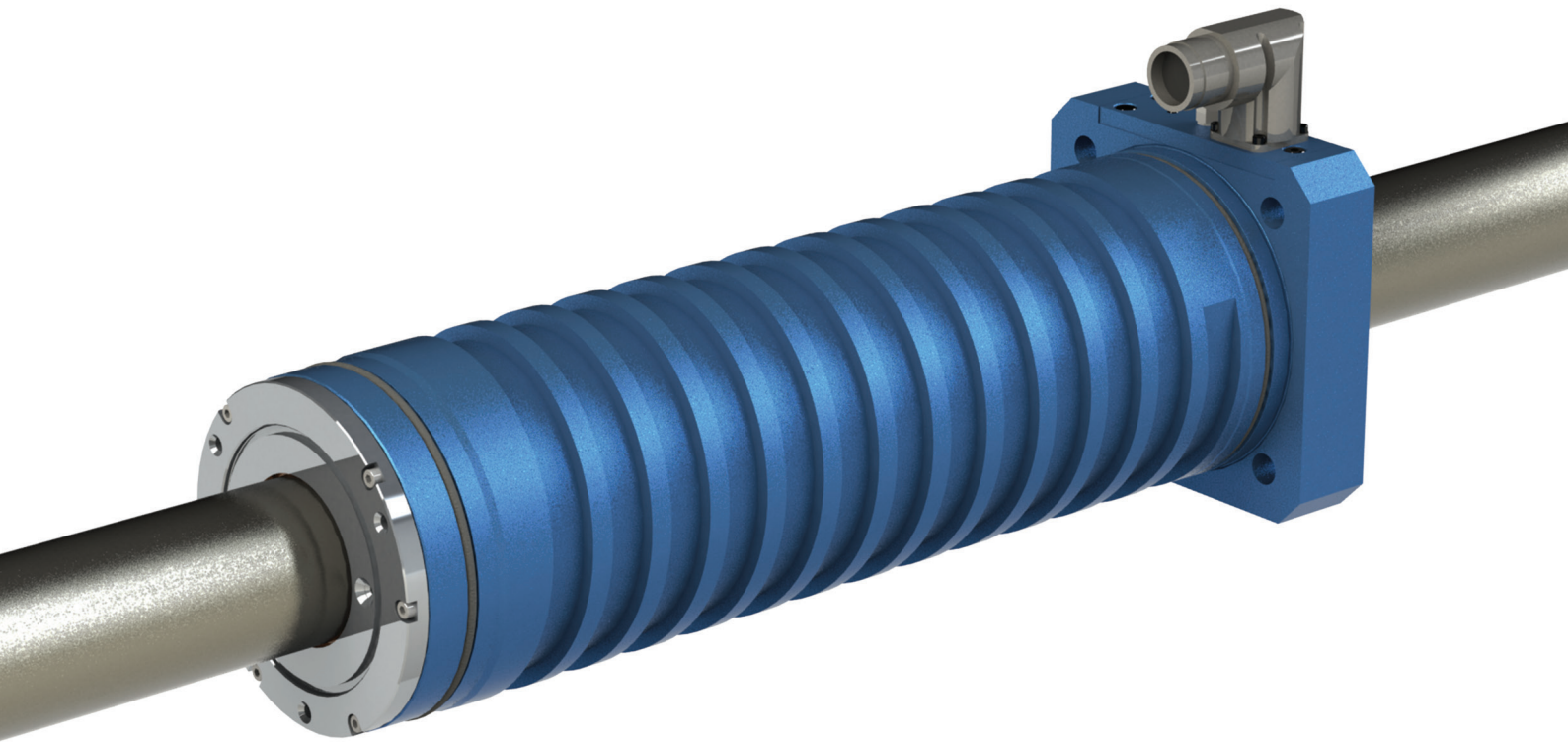
A popular tool grinder  
just got better

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.





# LinX Linear Motors

## **Performance**

The MX Linear range uses ANCA LinX Linear Motors for axis motion (X & Y axes). In conjunction with linear scales, a high level of machine precision and performance is able to be achieved, resulting in superior tool accuracy and surface finish. With LinX Linear Motors there is no loss of machine accuracy over time due to wear and it is not affected by temperature variations. The LinX Linear Motor has higher axis speed and acceleration leading to reduced cycle times. It achieves this while maintaining a smoother axis motion.

## **Unique Cylindrical design**

Existing flat bed type of linear motors can have some drawbacks when used with tool grinders. A cylindrical design overcomes these drawbacks which is why ANCA developed this particular design of Linear Motor for their new MX Linear range.

## **Reliable**

The cylindrical LinX Linear Motors experience less wear as there are no contacting parts. They have been specially designed for a lifetime of operation in harsh grinding environments. As the magnetic field is cylindrical there is no additional down force on the rails or machine base.

## **Rated to IP67**

With the unique cylindrical design the LinX Linear Motor is sealed to IP67. This sealing keeps out grinding contamination helping to extend the life of the linear motor.

## **Does not need a separate chiller unit**

The LinX uses less energy than an equivalent flat bed style linear motor and has the same power consumption as a ballscrew system but with more efficiency. The design of the motor also naturally isolates any heating effects from the

machine. Because of this reduced heat load the LinX does not need a separate chiller unit and uses the machine's regular coolant system reducing required floor space and power.

# MX5<sub>LINEAR</sub>

Quality has just  
become more  
affordable

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.

## OVERVIEW

- The MX5 Linear uses ANCA LinX Linear Motors for axis motion (X & Y axis)
- 26 kW (35 HP) peak spindle power
- Linear scales as standard
- Compact machine with strength, power and versatility
- RoboMate or FastLoad-MX automatic tool loading options
- 2-station wheel pack with max. of 4 wheels each
- Includes integrated wheel dresser
- The MX5 Linear is ideal for grinding tools up to 16mm (5/8") diameter





# MX7 LINEAR

The next  
generation  
manufacturing  
machine

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) permanent magnet spindle provides high torque at lower RPM which is ideal for carbide grinding and a wide range of other applications.

The MX7 Linear is a hard-working, high productivity system with unique features that enable it to handle varied batch sizes with minimum set-up time. The new cylindrical linear motor design increases reliability further and ensures a superior surface finish.

## OVERVIEW

- **38 kW (51 HP) peak spindle power**
- **The MX7 Linear machine is ideal for high volume production for tools up to 25 mm (1") diameter**
- **Uses ANCA LinX Linear Motors for axis motion (X & Y axis)**
- **Linear scales as standard**
- **Standard 6-station wheel changer that stores & changes up to 6 wheel packs**
- **Automation options include RoboMate or FastLoad-MX Compact Loader**
- **Includes integrated wheel dresser**

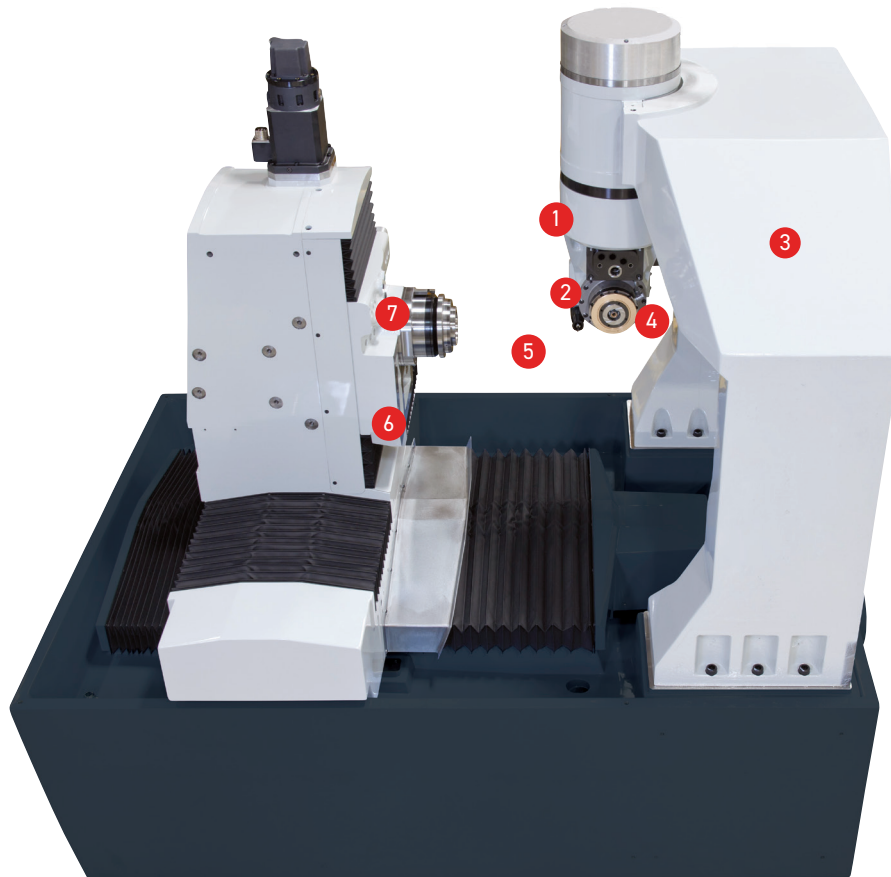


# Machine Overview



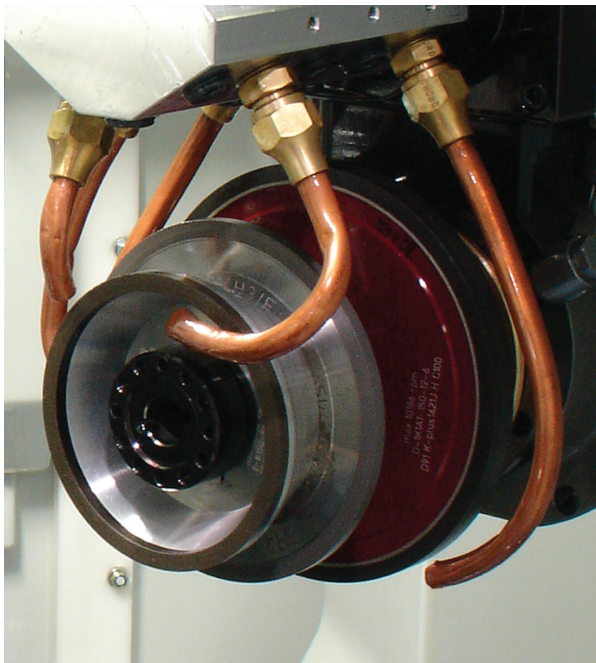
- ① **Control Panel** – including touch screen. Intuitive layout enables quick & easy machine set-up
- ② **Software** – ANCA's market leading versatile & intuitive tool design software is easy-to-use
- ③ **Tool / Wheel Measurement Options** – automated for increased productivity. LaserPlus tool measurement 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 times
- 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)** – 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 **Permanent Magnet 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

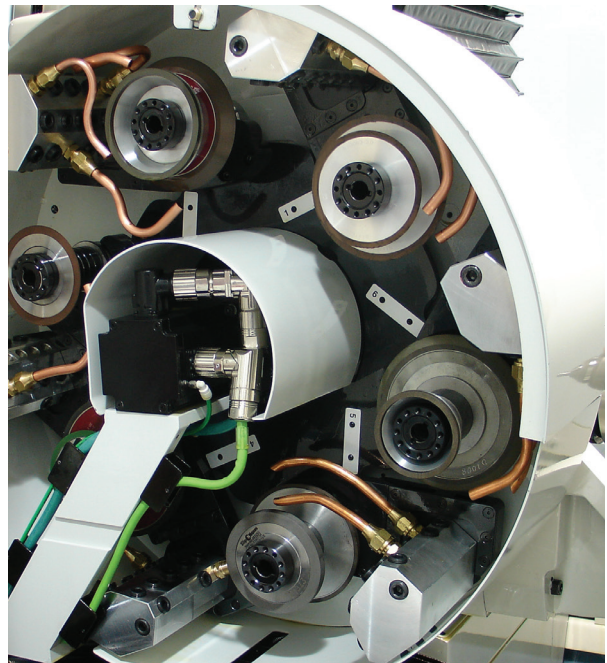
# Power & Flexibility



## Permanent Magnet 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 of 20 kW / 27 HP (S1) for MX7 Linear
- Spindle power rating of 14 kW / 19 HP (S1) for MX5 Linear



## Wheel Pack Changer

Increases machine productivity and flexibility.

- Approximately 15-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.

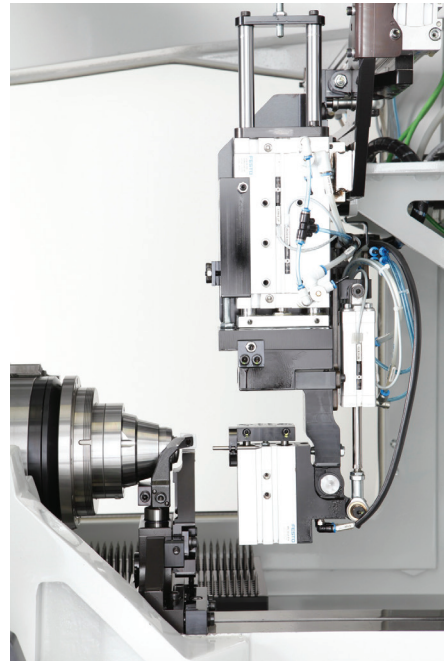
- Proven Fanuc reliability
- Designed with high levels of safety and ergonomics
- Available with 2 pallets (standard) or 4 pallets (optional)
- Cost-effective, efficient and fast
- Includes high capacity pallets

The RoboMate can load tool diameters from  $\varnothing 3$  mm (1/8") to  $\varnothing 32$  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 73"



## FastLoad Compact Loader

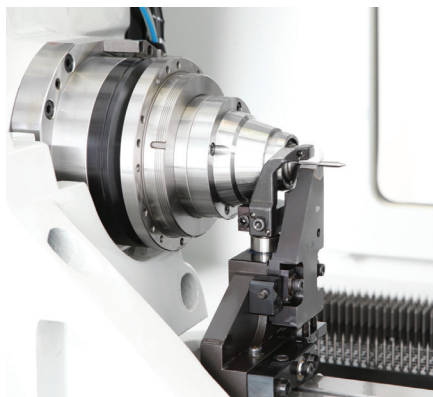
*(MX5 Linear/MX7 Linear option)*

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

Accuracy & Repeatability

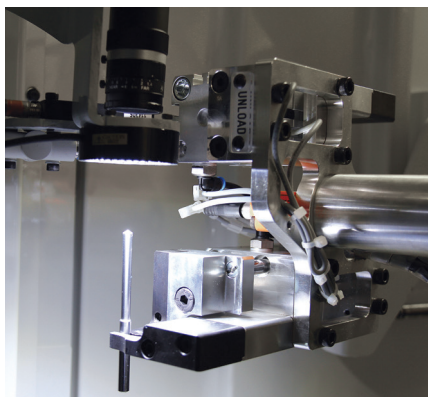


## MicroPlus

MicroPlus provides less than 3 micron tool runout. It is ANCA's #1 high accuracy workholding and tool support system. The MicroPlus system consists of the Flexi-Chuck assembly for workholding, and the Overhead Top Clamp Assembly (OTC) for tool support. The Flexi-Chuck clamps and rotates the tool. The patented design allows the tool and the internal components to move independently of each other, minimising any misalignment.

The OTC consists of a V-block that supports the tool and a rigid overhead metal finger that holds the tool in place. The OTC provides alignment accuracy for the tool.

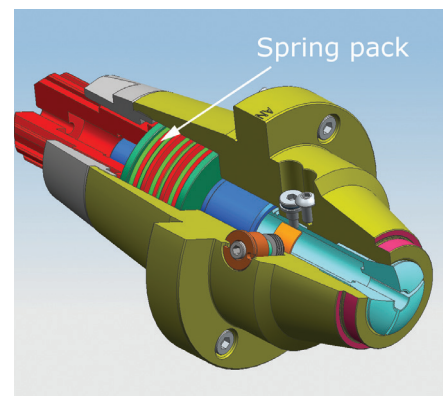
- **Less than 3 micron (0.0001") runout**
- **Elimination of radial and axial runout**
- **Option available for MX5 Linear and MX7 Linear tool grinders**



## RoboMate Vision System

The new RoboMate Vision System detects internal coolant holes on drills that deliver coolant directly to the tip of the drill. The RoboMate Vision System uses the robot to place the drill under the camera before loading it into the machine. The camera ensures it is loaded into the collet in the correct orientation for flute grinding. This is a faster option than using touch probe digitising of coolant holes.

- **Automated detection of coolant holes**
- **Reduced set-up and cycle times**
- **Non-contact measurement removes possibility of tool damage**
- **Option available for MX5 Linear and MX7 Linear tool grinders**



## PREMIER Collet Adaptors

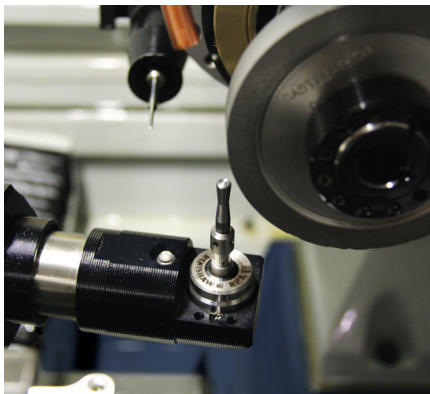
ANCA's new PREMIER Collet Adaptors provides operators with a premium workholding range. The PREMIER Collet Adaptors use a new totally internal clamping mechanism. The spring pack in the adaptor provides the tool clamping force and prevents possible runout that was previously added if misalignment occurred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



# Accessories

Productivity & Profit



## 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 arm 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.

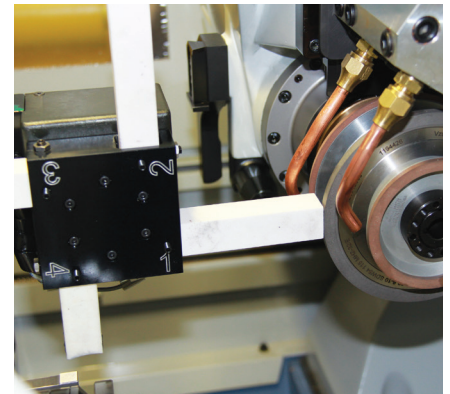
- Automatically measures a wide variety of wheel shapes
- Eliminates the need to manually qualify the wheel pack
- Eliminates the need to remove the wheel pack from the grinder
- Increases machine productivity
- Reduces first tool rejections
- Option available for MX5 Linear and MX7 Linear tool grinders



## 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.

- Eliminates the need to remove a tool from the grinder in order to check the dimensions
- Reduces errors caused by relocating and manually compensating
- 300x and 100x magnification options
- Provides measuring accuracy to 2 microns
- Option available for MX5 Linear and MX7 Linear tool grinders



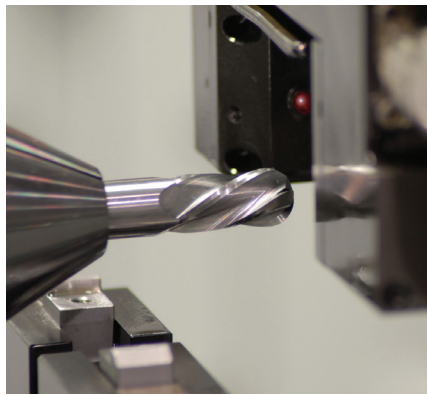
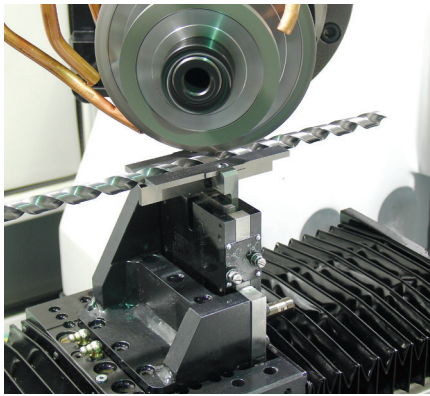
## Auto-Stick

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 and MX7 Linear tool grinders with 1-4 sticks

# Accessories

Performance & Quality



## Travelling Steady (*P-Axis*)

The Travelling Steady provides the machine with an additional axis (P-axis) which keeps the tool support directly underneath the grinding point at all times. The Travelling Steady provides support under the wheel during heavy fluting operations on long slender tools with a high aspect ratio (length: diameter). It comes in 3 variations: Arobotech (Hydraulic), Bush and Tailstock.

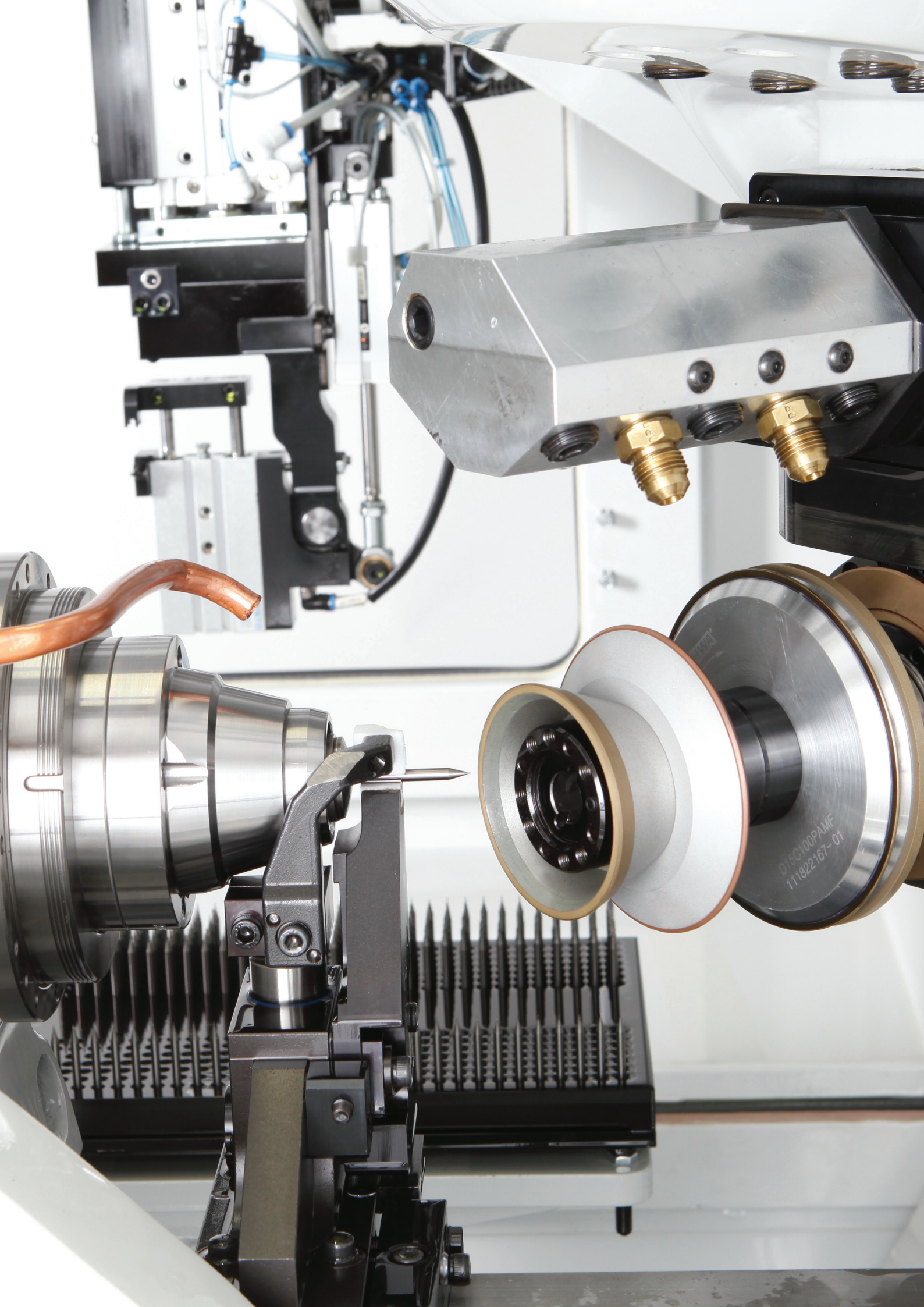
- Ensures rigid support for long tools
- Reduction of vibration and chatter when grinding
- Support of drills with a back taper is possible
- Increased machine output and high productivity
- Higher feedrates and reduced cycle times are possible

## LaserPlus

The LaserPlus system provides accurate and repeatable measurement of tools inside the machine. The LaserPlus can automatically measure OD, run-out, EOT, ball nose and corner radius profile tools. Typically, the LaserPlus can achieve +/- 3 microns accuracy or better. 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 cycle also available
- Laser is permanently mounted inside the machine
- Option available for MX5 Linear and MX7 Linear tool grinders





# Software

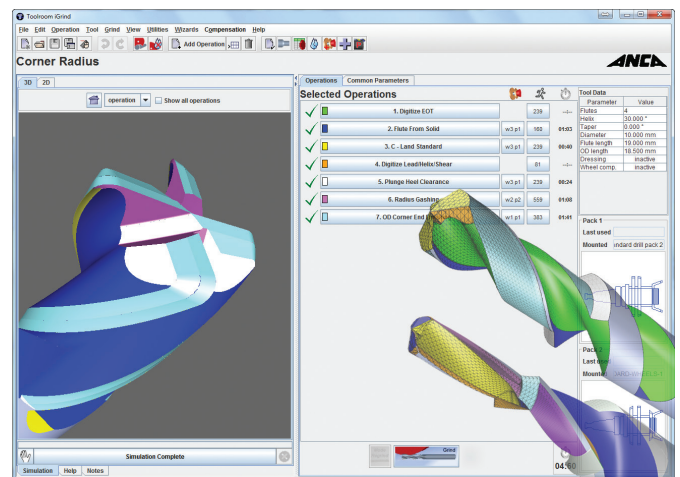


ANCA's versatile software is what sets ANCA and its customers ahead of the competition. ANCA has 40 years of tool grinding experience and is well-known for its user-friendly and flexible tool design software.

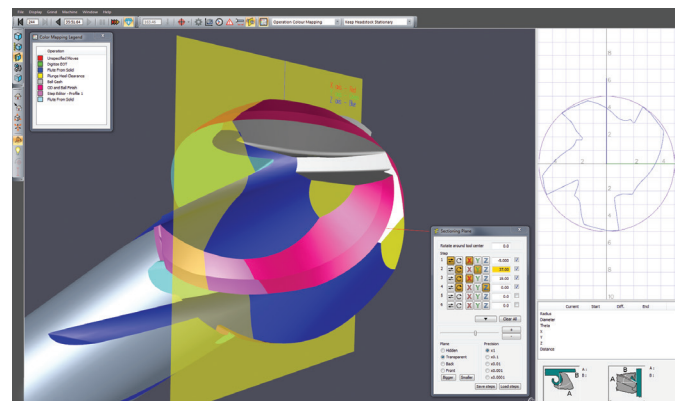
ANCA's ToolRoom software suite caters for a wide range of tool types and applications with an easy-to-use interface to input tool geometry parameters. ToolRoom ensures that the MX Linear machines will efficiently handle any regrinding or manufacture challenge.

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.



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.





# Service

## **Comprehensive Global Network of Service Centres**

We have a global network of ANCA service centres and maintain one of the most experienced machine tool field service teams in the world. Our service technicians are OEM factory trained and provide the highest quality level of service to keep your tool grinder up and running.

## **Technical Queries & Application Support**

Our factory trained service technicians are able to provide technical support and advice to keep your machine running at peak performance. ANCA also has an extensive network of applications engineers who can provide tool grinding solutions at a local level.

## **Training**

Machine training can be made available with a machine order or purchased separately at a later date. Training is provided in a wide range of topics, including robotics and machine maintenance.

## **Preventative Maintenance**

Prevent unexpected downtime by regularly maintaining your ANCA tool grinder. The user manual will advise what should be done to keep your machine in premium condition on a day-to-day basis. ANCA can help you further ensure you extend the life of your machine with its scheduled maintenances.

## **Service Contracts/Maintenance Agreements**

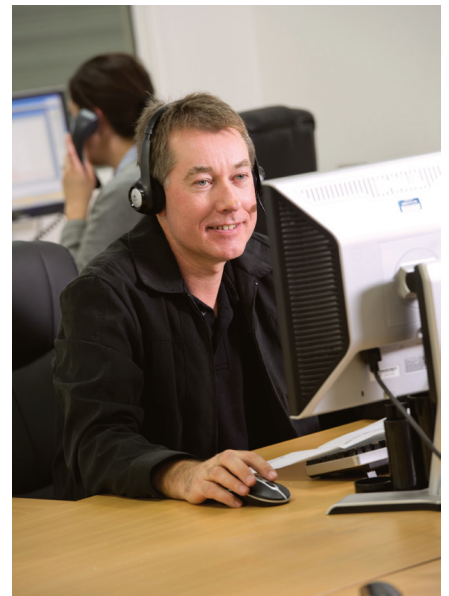
To keep your machine running in peak condition and to minimise machine downtime an ANCA service contract/maintenance agreement can help you identify potential problems before they occur. This means you have one less thing you need to worry about. Please contact your local ANCA branch for a customised quote.

## **Replacement Parts**

ANCA are able to provide Original Equipment replacement parts to ensure the high quality of your machine is maintained throughout its lifetime.

## **Software & Hardware Upgrade Programs**

ANCA CNC tool grinders are known to have long service lives and software and hardware is updated frequently. The Service Department can assist you with updates for your machine to take advantage of more recent technology.





## MX5 LINEAR

ANCA's most economical bi-symmetrical gantry based machine. Includes 2 station wheel changer.



## MX7 LINEAR

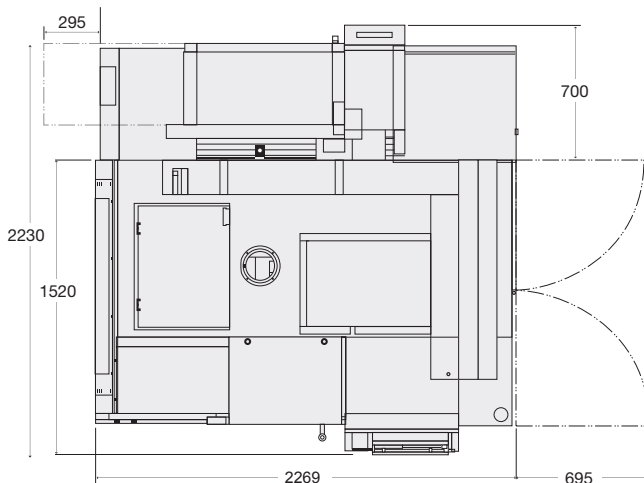
Same design as the MX5 Linear, but with more spindle power and 6 station wheel changer.

Spindle Power	26 kW (35 HP) peak 14 kW (19 HP) S1	38 kW (51 HP) peak 20 kW (27 HP) S1
Wheel Packs	2 x Ø 203 mm (8") max	3 x Ø 203 mm (8") max or 6 Ø x 152 mm (6") max
Loader Type	FastLoad-MX (option) RoboMate (option)	FastLoad-MX (option) RoboMate (option)
Loader Tool Capacity (with loader)	FastLoad-MX: 245 x Ø 3 mm 156 x Ø 6 mm 42 x Ø 16 mm RoboMate: 2520 x Ø 3mm 1560 x Ø 6 mm 462 x Ø 16 mm 189 x Ø 25 mm	FastLoad-MX: 245 x Ø 3 mm 156 x Ø 6 mm 42 x Ø 16 mm RoboMate: 2520 x Ø 3mm 1560 x Ø 6 mm 462 x Ø 16 mm 189 x Ø 25 mm
Spindle Orientation	Yes	Yes
Linear Scales	Standard	Standard
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)
LaserPlus	Option	Option
Automatic Wheel Probe	Option	Option
iView (semi-automatic tool inspection)	Option	Option

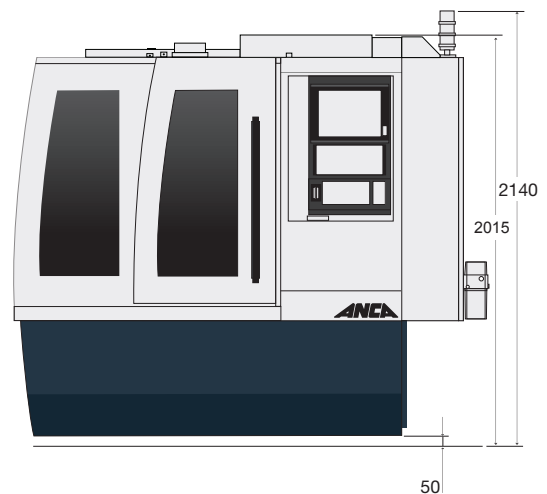
# Technical Specifications

	MX5 Linear	MX7 Linear
<b>Machine structure</b>	Bi-symmetrical gantry	Bi-symmetrical gantry
<b>Travel axis</b>	X-axis: 540 mm / 21.2" Y-axis: 510 mm / 16.1" Z-axis: 215 mm / 8.4" C-axis: 264° A-axis: 360° Q-axis: 360°	X-axis: 540 mm / 21.2" Y-axis: 510 mm / 16.1" Z-axis: 215 mm / 8.4" C-axis: 264° A-axis: 360° Q-axis: 360°
<b>Tool length (max)*</b> <i>*flute length may vary depending on tooling &amp; program</i>	300 mm (12")	300 mm (12")
<b>Maximum tool diameter*</b> <i>*dependent on tooling &amp; program</i>	200 mm (7.87")	200 mm (7.87")
<b>Loader type</b>	FastLoad-MX RoboMate	FastLoad-MX RoboMate
<b>Spindle orientation</b>	Yes	Yes
<b>Spindle type</b>	Single ended permanent magnet	Single ended permanent magnet
<b>Touch screen</b>	Yes	Yes
<b>Pneumatic Collet Actuator</b>	Yes	Yes
<b>Weight</b>	5500 kg / 12,125 lbs	5500 kg / 12,125 lbs
<b>Dimensions</b>	2320 mm (92") W 2240 mm (88") D 2015 mm (80") H	2320 mm (92") W 2240 mm (88") D 2015 mm (80") H
<b>Drive system</b>	Direct drive LinX Linear Motors (X & Y axes) Direct drive ball screw (Z-axis)	Direct drive LinX Linear Motors (X & Y axes) Direct drive ball screw (Z-axis)
<b>Touch probe</b>	Yes	Yes
<b>Electrical power</b>	25 KVA	25 KVA
<b>CNC data</b>	ANCA AMC5, EtherCAT, High performance CNC, 8GB RAM, H/D 64GB SSD, Processor i7	
<b>Machine base</b>	ANCAcrete (polymer concrete)	ANCAcrete (polymer concrete)

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



Shown with RoboMate loader



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