



THINK BIG, GRIND SMALL

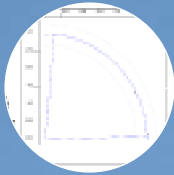
BOASTING UNPARALLELED ACCURACY
AND EXCEPTIONAL QUALITY, THE
FX ULTRA TAKES HIGH QUALITY TOOL
MANUFACTURING TO NEW HEIGHTS.

ANCA
CNC MACHINES

FX
ULTRA

PREMIUM PERFORMANCE CUTTING TOOLS

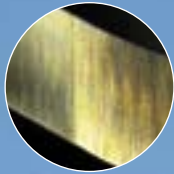
LINE FORM ACCURACY
+/-0.002MM



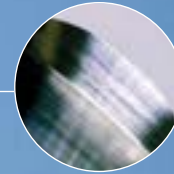
LINEAR CHISEL FOR CENTRE CUTTING



INVISIBLE OD & BALL TRANSITION



SMOOTHER GASH SURFACE



BALL RELIEF AT 45 DEGREES



Cutting tools like ballnose, corner radius, barrel shape ballnose, and double corner radius endmills are widely used in diemold, aerospace, power generation and other industries. The surface finish, quality, accuracy, and runout are critical for performance and cutting life in all applications.

The FX ULTRA package includes nanometre or micro degree resolution changes to linear and rotary axis, new servo control algorithms, MTC (Motor Temperature Control), and major mechanical changes. These smoothing parameters provide greater control for the velocity and acceleration/deceleration along with machine jerk limits.

LESS THAN 0.002MM RUNOUT ON CUTTING EDGE WITH REFERENCE TO SHANK



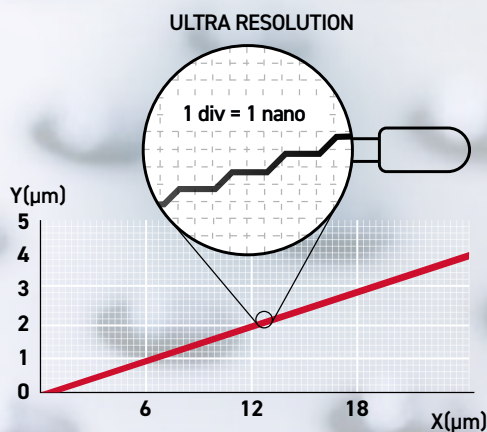
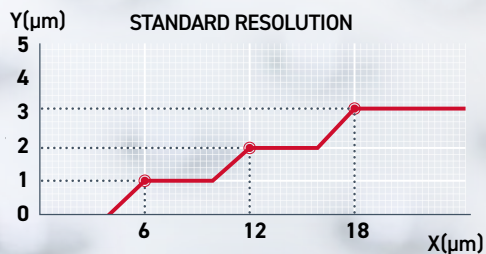
Designed for high quality tools down to 0.1mm, the new FX ULTRA is the latest game-changing innovation in ANCA's premium ULTRA machine range.



Introducing new one nanometre axis resolution, a new servo control algorithm and LaserUltra to maintain consistency and accuracy in the grinding process – this is the best solution in the market.

The FX ULTRA introduces cutting-edge technologies that revolutionise precision grinding for high quality tools down to 0.1mm diameter. New software, hardware and design features significantly improve surface finish, accuracy, and controlled runout, ensuring batch consistency from the first ground tool to the last. These advancements ensure that the FX ULTRA is the go-to solution for precision grinding in industries that rely on small tools, including electronics, telecommunications, medical devices, aerospace, automotive, diemold, and general machining.

More than a machine, the optimised design is possible due to ANCA's vertical integration as these levels of robust and scalable improvements can only be achieved when considering the entire machine as a system. ANCA's CNC control system is unique, offering a higher level of accuracy and flexibility which is unparalleled in the market and includes a premium package of performance and ongoing specialist service support.



NANOMETRE LEVEL CONTROL

ANCA's newly invented state-of-the-art servo control algorithm allows silky smooth motion of an axis with the use of a unique algorithm and nanometre measurement in the control system.

This unique algorithm allows an ultra-fast response to internal or external disturbances (such as irregularities coming from the linear rail, bearings or friction) being introduced into the machines.

This ensures outstanding tracking performance. It also allows ultra-performance of the servo system without using a complex, complicated, or expensive mechanical system.

Other benefits include significantly reduced reversal errors down to nanometre scale when an axis reverses its direction during grinding - removing any reversal marks on a tool.

Nanometre level control reduces the need for secondary operations like finishing or sparkout resulting in better cycletime, and higher productivity of high-quality cutting tools.



LASERULTRA

LaserUltra is part of the FX ULTRA package to maintain consistency and accuracy of the grinding process which includes wheel wear compensation. Its analog capability can maintain $\pm 0.002\text{mm}$ line form accuracy of any profile which includes ballnose and corner radius tools.

The analog scanning of cutting edges is a fast and reliable process for several tool types of various diameters and lengths which reduces setup times and scrap.

iBALANCE

Tool and wheel performance can be further optimised by iBalance software, which guides a user to the optimal grinding position and RPM for vibration monitoring and balancing the wheelpack inside the machine.

Correctly balanced wheelpacks result in superior surface finish and reduced wheel wear due to the elimination of wheel vibration. This leads to increased wheel life and better quality tools.

TOOL RUNOUT COMPENSATION

A major inclusion in the FX ULTRA package is the total tool runout measurement and compensation operation in iGrind. When an endmill is in rotation it is important that each tooth hits at the exact same spot along the workpiece for longer tool life and efficient cutting.

Every tool in the batch can be measured and compensated for runout to make sure the entire batch is within a tolerance of 0.002mm . It is another piece of assurance that the first endmill will be as good as the last.

MOTOR TEMPERATURE CONTROL (MTC)

MTC is a patent pending innovation built into the motor spindle drive firmware. Smart control algorithm actively manages and maintains the temperature of motorised spindles in the FX ULTRA.

Dramatically reduced machine warmup time means production can start sooner, once the machine has reached thermal stability. This improves productivity and machine use. Consistent thermal stability of the spindle over time regardless of changes in load or speed, or coolant temperature, greatly improves the dimensional stability of grinding results.



EXTENDED WARRANTY

The FX ULTRA comes with a 3-year extended warranty for parts and labour, and a 5-year warranty on linear motors - a unique ANCA technology innovation.



GRINDING BEST PRACTICES

Experienced application engineers train and educate your team in the best grinding practices to make sure the ULTRA can produce high quality tools from the first day of production.



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	0.000001 mm 0.000000039"	0.000001 mm 0.000000039"	0.000001 mm 0.000000039"	0.000001 deg	0.000001 deg
Travel	540mm 21.1"	317mm 12.5"	217mm 8.6"	264 deg	360 deg

SOFTWARE AXES (PATENTED)

B, V, U, W

WORKPIECE*

Diameter 200 mm (7.8") max. weight 20 kg (44 lb) max.

DRIVE SYSTEM

ANCA Digital AMD5x (EtherCAT standard)

MACHINE DATA RANGE

Grinding spindle:

10,000 RPM & HSK40F Taper
Integral direct drive
Spindle - Single Ended induction

Spindle Power:

12 kW (16 HP) peak (FX5 ULTRA) $\varnothing 0.1\text{mm} > \varnothing 16\text{mm}$
19kW (25.4 HP) peak (FX7 ULTRA, FX5 ULTRA option) $\varnothing 0.1\text{mm} > \varnothing 20\text{mm}$

Grinding wheel: Max. diameter 203 mm (8")

Wheel bore: $\varnothing 31.75\text{mm}$ (1.25"), $\varnothing 32\text{mm}$ and $\varnothing 20\text{mm}$ options

Wheel packs: option of 2 or 6 auto wheel changer (max 4 wheels per pack)

AUTOMATION RANGE

Fanuc (FX7 ULTRA, Option on FX5 ULTRA) max capacity 880 x $\varnothing 3\text{mm}$ tools
AR300 (FX5 ULTRA) max capacity 340 x $\varnothing 3\text{mm}$ tools

OTHER DATA

Electrical power: 14.5 KVA (16 KVA with robot)

Probe system: Renishaw

Coolant system: External

Machine base: ANCAcrete (polymer concrete)

Floor plan:

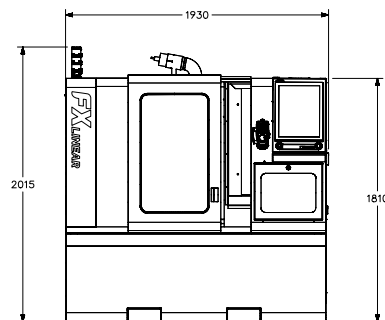
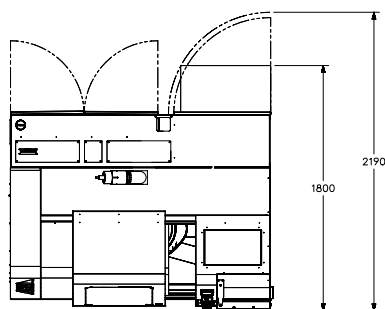
Width: 1930 mm (76")
Depth: 1800 mm (70")
Height: 1810 mm (71")
Weight: 4500 kg / 9920 lbs

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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ANCA
CNC MACHINES