

Finepart

Beyond cutting edge

Your world-leading provider of non-thermal precision cutting.

Enjoy Swedish ultra-accuracy for virtually all materials.



FINECUT WMC 500II

Premium 3-axis system

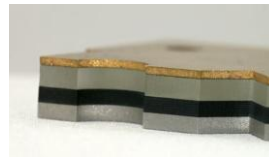
- ✓ Cutting width down to 0.2 mm
- ✓ Designed for ultimate precision
- ✓ Highly dynamic and fully encapsulated motion system
- ✓ Flexible fixtures for different applications
- ✓ Intuitive HMI
- ✓ Easy set-up. Easy to operate. Easy to service.

Micro abrasive waterjet technology



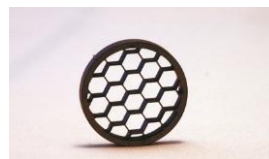
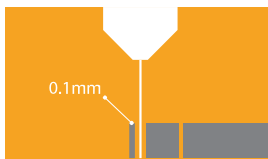
How small is the jet?

Whereas traditional abrasive waterjets have diameters down to 0.38 mm, micro abrasive waterjets are even finer. Typical micro abrasive waterjets are 0.3 mm and 0.2 mm.



Cuts through layers of different materials

The micro abrasive waterjet is effective also in combined materials that have disparate properties, such as carbon fibre reinforced epoxy with titanium inlays.



Narrow parallel cuts, ideal for thin sections

Even if the jet velocity is high, the force of the jet is low. Consequently, thin sections down to 0.1 mm can be cut without damaging the material.



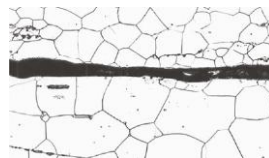
Fixturing solutions for complex geometry

The jet cuts omnidirectionally while the fixturing solutions reorient the workpiece. The movement of the jet and the workpiece is synchronized, allowing highly complex geometries and shell structures to be created.



High tolerances and fine finish

Depending on the part material and size, tolerances can come down to ± 0.01 mm. The technology can accomplish surface roughness values below $1.6 \mu\text{m}$ (Ra). For hard materials, roughness values can be down to $0.8 \mu\text{m}$ (Ra).



Non-thermal cutting

The micro abrasive waterjet is a non-thermal cutting process and does not change the material. Surfaces produced will be free from adverse mechanical and thermal effects. Also, no subsequent processing is required.

Finecut WMC500II -3X

The Finecut Fine Abrasive Waterjet cutting system is the proprietary cutting system of Finepart. It was developed to accompany the Finecut Waterjet Machining Center and together they bring the waterjet technology to a whole new level of precision.

The micro abrasive waterjet process is a particle erosion based, non-thermal cutting process. This process can cut virtually all materials, produces an excellent surface finish and does not change the material properties. Moreover, the process can pierce starting holes in the part and cut complex contours with minute features having radii down to 0.1 mm.



Nitinol clip. Thinnest segments 0.1 mm. Tolerance $\pm 10 \mu\text{m}$.

Finecut WMC500II

Your accurate solution

The Finecut™ WMC 500 II is a new generation of precision machine tool using waterjet technology. The machine has a conceptual design that differs from traditional waterjet cutting tables in order to optimize accuracy. In the Finecut™ machine the work is clamped to the machine work table, being mechanically coupled to the motion system. The catcher tank that dissipates the jet energy after cutting is separated from the work table structure in rubber suspension in order to minimize the influence of vibration. The Finecut machines feature our own Finesoft HMI user interface and high-end control & servo system granting simplicity in operation without compromising ultimate precision, reliability and versatility.



Designed for precision

To produce narrow tolerance parts, the micro abrasive waterjet cutting system must also be accompanied by a very precise motion capability that accurately reproduces the programmed geometry. The Finecut machine have been designed to optimise the part precision to a new level.

1. Dynamic, high precision motion system featuring linear motors and ultra-high resolution thermally stable positional feedback
2. Cutting table mechanically attached to the motion equipment for ultimate precision
3. Rigidly built machine tool frame
4. Easy set-up of machine fixtures for a wide variety of different applications with optional solutions including live fixturing with synchronous motion.
5. Software and operators panel developed especially for abrasive waterjet cutting.

Technical information

Finecut Waterjet Machining Center 500II type 3X

CNC Control:	Fanuc 31i-B5 and ALPHA Servo Drive with Nano Control
Motion system:	Linear motors and zero backlash reduction gears for precise motion
Absolute encoders:	Thermically stable Invar® linear encoders, 50 nm resolution

Motion Axis

- Linear servo motor drive on X-Y axes motion
- Precision ball screw servo drive on Z
- Max cutting speed: 20 m/min
- Max traverse speed: 40 m/min
- Acceleration: 0.5g (X, Y axes)
- Positioning accuracy*: $\pm 1,5 \mu\text{m}$
- Repeatability*: $\pm 1,5 \mu\text{m}$
- Typical tolerance down to $\pm 10 \mu\text{m}$

* According to ISO 230-2

Cutting System Options

- FAW200: $\varnothing 0.2 \text{ mm}$; jet power 2.3 kW; 0.2 litre/min
- FAW300: $\varnothing 0.3 \text{ mm}$; jet power 5.6 kW; 0.4 litre/min
- FAW400: $\varnothing 0.4 \text{ mm}$; jet power 11.7 kW; 0.9 litre/min
- FAW500: $\varnothing 0.5 \text{ mm}$; jet power 14.6 kW; 1.2 litre/min
- PWJ: Non-abrasive cutting, $\varnothing 0.08 - 0.25 \text{ mm}$

FAW = Fine Abrasive Waterjet, PWJ = Pure Waterjet
Jet power and hp water consumption @ 4000 bar

Work Area

- Cutting envelope (X, Y, Z): 500 mm x 500 mm x 80 mm
- Fixturing area: 700 mm x 700 mm (max depth 700 mm)
- Machine table size: 900 mm x 900 mm (W x D)
- Back door allows for inserting work pieces

The Finecut WMC500II- 3X can be retrofitted with 5-axis manipulation system. All Finecut WMC500II have a 5-axis controller and pre-assembled cable set up for any of our 5-axis manipulation systems.

Three types of cutting systems

Depending on material, part complexity and level of miniaturization our precision cutting can be made with any of our cutting systems that are available in 3 different categories; micro/fine abrasive waterjet, conventional abrasive waterjet and pure waterjet. A range of sizes from 0.2 mm to 0.76 mm is available, whereas the larger jet facilitates a greater cutting power.

Advanced option portfolio

The Finecut can be equipped with several options like measuring probe, 5-axis cutting head, turning axis, High-Frequency Spindle, vision system, and more. We also develop new options that serves the customer's needs for efficient production. All options are retrofittable to existing machines.

A precision machine for any workshop

The Finecut machine is a compact fully integrated high-precision waterjet machining center. It has a compact footprint so it is easy and convenient to place in your workshop. The fully encapsulated design keeps water and grit in the machine, so it can operate alongside your other CNC machines.

The cutting process is powered by an ultra-high pressure pump. Compressed water is supplied from the pump to the Finecut machine through high-pressure hard tubing. If desired, the pump can be placed on a distance from the machine, in another room, or on another floor. Pump functionality including pressure settings are CNC controlled from the Finecut.

CAM Software IGEMS 5x

Programming of 3D models are significantly more demanding than following 2D contours. However, the IGEMS 5X software makes this task easy. IGEMS 5X is available as an upgrade to the standard IGEMS CAD/CAM/AWJ software.

- Make toolpaths from STEP or IGES files.
- Analyses the geometry to optimise for waterjet cutting.
- Automatic speed calculation depending on thickness and cutting parameters.
- Automatic speed ramping depending on geometry.
- Add bridges and tabs to fixate the part in the material.



Always at Finepart

Flexible fixturing for any application

- several solutions for different applications and requirements

State of the Art Machine components

- latest technology for high dynamic capacity and accuracy

Additional functions offer practical solutions

- great assisting techs for improved automation, setup and handling

High-end support systems from reliable partners

- high pressure technologies for enhanced precision and control

User-friendly panel with Finesoft™ software

- easy to use Interface for software & operators panel

Retrofittable developments

- always gain from the latest technology and innovations

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