

Finepart

Beyond cutting edge

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

Enjoy Swedish ultra-accuracy for virtually all materials.

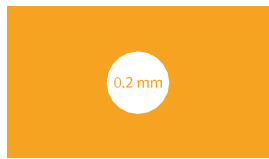


FINECUT WMC500II – 5-AXIS, TYPE ABX

For fast cutting without taper

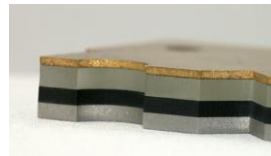
- ✓ Cutting width to 0.2 mm
- ✓ 5-axis cutting with tool center point control
- ✓ Boosts productivity with taper angle control
- ✓ Corner optimization by jet motion strategy
- ✓ All functionality of the Finecut WMC500II type 3X included

Micro abrasive waterjet technology



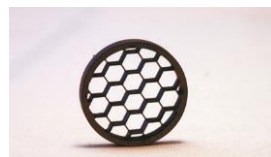
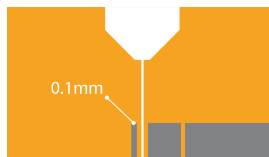
How small is the jet?

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.



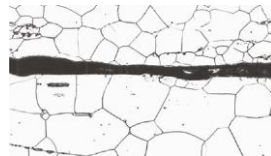
Fixturing solutions for complex geometry

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.

5-AXIS, TYPE ABX

Cut precise part faster with taper elimination

With the ABX configuration the Finecut 5-axis waterjet machining center can cut 3D geometries with straight or slanted edges up to 15 degrees. This model enjoys the very high precision of the 3 axis Finecut machines with added capability to tilt the jet.

By adding 5 axis capability, the jet can be tilted to cut oblique angles. Moreover, the taper in the cut can be compensated and speeds will not need to be reduced more than to meet an adequate surface quality. The jet angle adjustment can also avoid jet kick-back at lower part of inner corners. This is a time saver and brings you potential to significantly increase productivity which quickly returns its investment cost



Finecut WMC500II – type ABX

Cutting system with tiltable jet

This machine enables a combination of the full versatility of filling the 500x500 mm work envelope with parts, with the benefits of being able to tilt the jet in any direction while cutting.

The ABX 5-axis configuration has its A- and B-axes attached to the Z-axis to enable it to tilt the nozzle assembly. The A- and B- axis movement work synchronously and enables a full 5-axis control with tool center point (TCP) functionality. This means that motions are programmed around the tip of the focusing tube.



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 ABX

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*: $\pm 2,5 \mu\text{m}$
- Repeatability*: $\pm 2 \mu\text{m}$
- 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

Extra features for ABX

- Work envelope 500 x 500 mm with taper angle control capability
- $\pm 15^\circ$ tilting capability on A- and B-axis
- Selection to run in 3X + 2X rotation axis mode or using 5 axis Tool Center Point (TCP) programming
- Possibility to set up safe zones to prevent tilting jet from damaging fixtures.

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

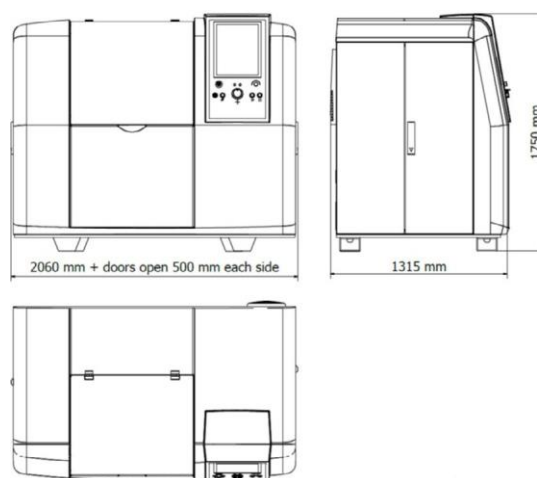
The Finecut machine is a compact fully integrated high-precision waterjet machining center. It has a compact footprint so it is easy and convenient to place in your workshop. The fully encapsulated design keeps water and grit in the machine, so it can operate alongside your other CNC machines.

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

Finepart

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