The CUT 2000 and CUT 3000 have been designed to yield both extreme precision and a perfect surface.
A reputation for very high precision
The machining precision is the result of a set of technical choices, such as the mechanical concept, the machining process, and wire guidance. Each element composing the CUT 2000/3000 has been thought through and implemented in the smallest details, with the sole objective of ensuring high precision for the entire lifetime of the machine.

The challenge is met by miniaturization
More and more, tools require the use of wires of very fine diameters. The CUT 2000/3000 range has been designed to meet this challenge. They machine with wires as small as 0.05 mm (0.002 in) in diameter.

Quality of the Ra 0.05 µm (2 µin) surface: a critical asset for tools of high requirements
The surface quality is an important parameter for good functioning of precision tools. This is why the CUT 2000/3000 are designed to achieve and finishing quality up to Ra 0.05 µm (2 µin).
Two wires to double productivity
The third-generation automatic wire changer gives the CUT 2000/3000 polyvalence, ease of use, and unequaled productivity. Each user, according to his needs and his imagination, will improve the profitability of his equipment by using one or more of the exclusive possibilities offered by two wire circuits.
A concept dedicated to high precision

**Mechanics**

The mechanical structure is adapted to the requirements for very high precision. Thanks to the concept of the crossed table situated directly under the piece to be ground, the high-precision guides and high-precision glass scales are situated as close as possible to the machining zone. This choice contributes to maximizing precision and repeatability of positioning. The play in inversion is almost eliminated.

**Thermal stability**

All components of the machine that dissipate heat are cooled by water circulation, thus the EDM generator and all pumps have their own cooling systems. All equipment is thus preserved against parasitic heat sources induced by the machine. This thermal stability contributes to guaranteeing the very high precision expected of this machine.

**Swiss production**

The ultra-modern assembly line meets the criteria for Swiss quality. Each individually calibrated machine is delivered with a certificate of quality proving its conformity with the requirements of all GF AgieCharmilles machines. The measurement and regulating data are stored in the machine and can be consulted or called up at any time.
The compact structure reduces the machine footprint on floor space. Floor space is an important issue in workshops. The concept of the CUT 2000/3000 takes this imperative into account. They are remarkably economical in terms of floor space consumed, through both the dimensions of the machine and the need for accessibility for maintenance.

Ergonomics and comfort in service of performance

The retractable trough gives remarkable access and a view of the entire work zone. This ease of operation in preparing for machining contributes to achieving the objective of high quality delivered by the CUT 2000/3000. Ongoing maintenance is facilitated by easy access to the filtering layers in front of the machine and the wire magazine. Dead times are reduced to the minimum.
Great flexibility in the choice of wire diameter
One system of wire guides permits the use of all wire diameters from 0.05 to 0.30 mm (0.002 – 0.012 in). This exclusive CUT 2000/3000 characteristic is not due to chance. The concept of all components involved in the movement of the wire is based on the long experience of GF AgieCharmilles engineers in the service of high precision and flexibility of use. No additional cost is incurred when another wire diameter is necessary for manufacturing a new tool. Use of another wire diameter does not require any additional adjustment.

Small wire diameters are extremely sensitive to variations occurring during the movement. The stability of the wire in speed, tension, and position is a major success factor in high-precision micromachining.
Reliable Threading
The reliability of the automatic threading is the key to success for long-term operation without monitoring. Thanks to the exclusive system of open guides, passage of the wire, although very fine, is actually facilitated through guides. This very delicate point is eliminated on the CUT 2000/3000 to achieve highly reliable threading, without defect, for wire diameters up to 50 microns.

Automatic search for the starting hole with Smart Threading
This function permits continuity of machining when the starting front hole has been created in a position slightly shifted with respect to the programmed threading position. This function is particularly useful when the starting holes are very small. Thanks to Smart Threading, the diameter of the starting hole can be as small as the diameter of the wire plus 50 microns.
Automatic wire changer

Numerous opportunities exist for benefitting from the automatic wire changer. Today, each user has a large choice of available wires. The CUT 2000/3000 can be equipped with the wire pair that best corresponds to the desired gain in productivity or quality of its application. In order to gain productivity, the best wire will be selected depending on the sequence of machining steps. For the outline, a rapid wire or a large section is preferable, while in finishing, this wire is less desirable and is replaced by pair of less expensive brass wires. Finally, the overall cost of the wire is lower for a shorter machining time. For a gain in quality, the automatic wire changer permits the type of wire to be selected depending on the geometry or the desired surface quality.

For machining with a significant taper angle, a flexible wire is preferred. For a very fine surface, a more expensive, high-quality or zinc-coated wire is used to achieve the objective. If a very fine wire is necessary in order to achieve small radii, a larger wire can be use for the outline to gain time savings, increased comfort in use, and an increase in cutting heights. Another significant advantage: autonomy of operation is doubled.
The IPG generator
The CUT 2000/3000 is aimed at demanding users with very different needs. In order to satisfy them, the Intelligent Power Generation (IPG) generator accommodates a very large range of machining systems, permitting a very high degree of precision (associated with perfect surface quality). This digital generator controls the energy of each spark with great precision, which is essential when very fine wires are used, as well as providing a very fine surface quality up to Ra 0.05 µm (2 µin).

Variocut: optimal cutting speed in all circumstances
The high cutting speed is the basis of the productivity of the equipment. When the height of the piece varies, the Variocut system permanently optimizes the power of the spark in order to avoid wire breaks and to maintain maximal cutting speed for the outline system. Thanks to Variocut, the speed variation does not affect the precision of the machining at all. The surface remains homogeneous, and parallelism is constant.

Perfect contour cuttings thanks to the AWO and WBC functions
In order to make a high-performance punching and stamping tool function with a play of a few microns, a contour precision and perfect parallelism of the ground shapes must be assured. The CUT 2000/3000 achieves exceptional performance thanks to automatic adjustment systems for the position and straightness of the wire. The Wire Bending Control (WBC) system compensates automatically for the bending of a wire subjected to spark forces, and the Advanced Wire Offset (AWO) functions compensate for the wear of the wire during finishing machining, for which parallelism of the surfaces thus ground is almost perfect.

Smoothsurf, a step forward in surface uniformity
A fine and homogenous surface quality is an important criterion when a polishing phase is planned following the electrical discharge machining. The Smoothsurf module permits the high level of regularity required in the production of plastic injection molds or powder-compression molds to be achieved. The time dedicated to polishing is considerably reduced, and the productivity of the workshop is increased.
User sequence: The machining sequence can be modified at the last minute.
It is sometimes difficult to respect the advance planning of the work envisioned for the day in the workshop. It can then be useful to modify the machining sequences, especially for managing the removal of waste at a time when personnel will be present.
The CNC Vision 5 permits modification of each step in the machining order, regardless of the number of work holes in progress. The result: a significant increase in workshop productivity.

Face unexpected situations easily thanks to the Job Management System
It is very common to be confronted with a change in priorities in the flow of production in the workshops. Insertion of an urgent machining job into the work in progress can be done in a simple, rapid, and reliable manner. The Job Management of the CNC Vision 5 provides a solution that permits suspension of the machining in progress in a simple and intuitive manner, insertion of the urgent work, and resumption of the previous work exactly at the place where it was before being interrupted.

Powerful remote control
Thanks to its liquid crystal display (LCD) touch screen, the operator has rapid access from the machining zone to a large number of useful functions for efficient work preparation.
Saving energy – an economical and ecological necessity

In order to control the costs of production, energy economy has become a priority in many workshops. Reducing the consumption of energy likewise contributes to the strategy of protection against climate warming. The Econowatt module manages the electric power of the machine in order conserve energy when the machine is working unmonitored. When machining is completed or interrupted, the electrical power is reduced to a minimum, less than 1 kW, or cut completely, depending on the parameters of the machine. Automatic return to operation occurs sufficiently in advance so that the machine is heat-stable when machining commences.
Autonomy and automation

The CUT 2000/3000 can be integrated effectively into an automated workshop. Autonomy of operation is assured with a 25-kg wire magazine and by a chopper to recover all used wire.

Communication/supervision
The Vision 5 command permits a dialogue with a host computer. Integrated into a workshop with automated production, the machine can be controlled remotely and sent all information related to the machining process.

Five controlled servo axes
The machine can be equipped with a rotating axle acting as a slave to the movement of the XYUV axes. This function permits execution of complex shapes that otherwise would be impossible.
**Automation for more productivity**

With its retractable trough, which frees space around the work zone, the CUT 2000/3000 is the ideal machines to be equipped with an automatic pallet changer. The programmable dielectric level permits pieces of variable height to be installed, up to 250 mm (9.84 in) high.

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**Gain preparation time with Advanced Setup**

Placement of the piece is an important operation that determines the final quality of the work. A permanent goal in all workshops is to reduce the time and cost dedicated to this operation. The Advanced Setup system is the solution, thanks to its automatic measurement that places the wire perpendicular to the surface of the piece to be machined. This operation is likewise possible automatically when the piece is palletized.
**Milling**  
High-Speed and High-Performance Milling Centers
In terms of cutting speed, HSM centers are 10 times faster than conventional milling machines. Greater accuracy and a better surface finish are also achieved. This means that even tempered materials can be machined to a condition where they are largely ready to use. One essential advantage of HSM is that with systematic integration, the process chain can be significantly shortened. HSM has developed alongside EDM into one of the key technologies in mold and tool making.

**EDM**  
Electric Discharge Machines
EDM can be used to machine conductive materials of any hardness (for example steel or titanium) to an accuracy of up to one-thousandth of a millimeter with no mechanical action. By virtue of these properties, EDM is one of the key technologies in mold and tool making. There are two distinct processes – wire-cutting EDM and die-sinking EDM.

**Laser**  
Laser ablation
Laser ablation supplements and extends the technologies offered by GF AgieCharmilles. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser ablation, compared to conventional surface treatment using manual etching processes, offers economic, ecological and design advantages.

**Customer Services**  
Operations, Machine and Business Support
Customer Services provides with three levels of support all kind of services for GF AgieCharmilles machines. Operations Support offers the complete range of original wear parts and certified consumables including wires, filters, electrodes, resin and many other materials. Machine Support contains all services connected with spare parts, technical support and preventive services. Business Support offers business solutions tailored to the customer’s specific needs.

**Automation**  
Tooling, Automation, Software
Tooling for fixing workpieces and tools; automation systems and system software for configuring machine tools and recording and exchanging data with the various system components.