





ONA AF: A perfect combination of robustness, high-cutting rates, accuracy and cost-effectiveness

Easycut digital generator: top productivity and excellent surface finish

Surface integrity 100% preserved.
High cutting rates: 450 mm²/ minute (42 in²/hour)
Best surface finish: 0.2 µm Ra (8 µin Ra).

Easy to handle, user-friendly CNC:

Up to 6 axes controlled, 5 of them (B, X, Y, U, V)
simultaneously.
Maximum level of remote supervision and control.
Automated generation of programs with the
Strategy Generation Wizard.

Robust mechanical structure that assures a lasting accuracy:

Made in Europe, using top quality parts supplied
by top European manufacturers.
Low-maintenance wire threading system (no
consumable parts).
Mechanical protection provided by an ultra-
sensitive anticollision system.

100% ecological filter without consumable cartridges:

The mineral particles used for filtering will never
have to be replaced.
The only waste generated is the debris of the
material being machined.
Excellent filtering quality (3 µm) that remains
stable throughout the entire life of the system.



2008-2009 Spanish Design Prize in Machine Tools



Easycut generator: maximum productivity and excellent surface finish



100% electrolysis free cutting without compromising the cutting speed (450 mm²/minute - 42 in²/hour)

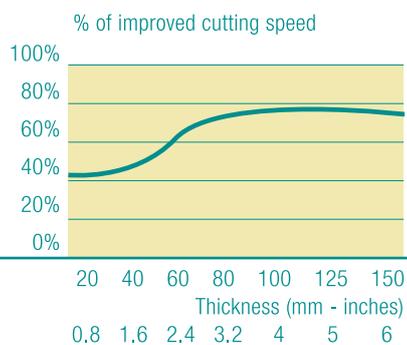
The new high power, digital Easycut generator has been developed in order to achieve the highest cutting rates (450 mm²/minute with 0,33 mm wire - 42 in²/hour with 0.013 in wire) possible in EDM, while being 100% electrolysis free.

Time savings in rough and skim cuts

The high cutting rates provided by the Easycut generator (even in the skim cuts) make it possible to cut high precision parts in a much shorter time.

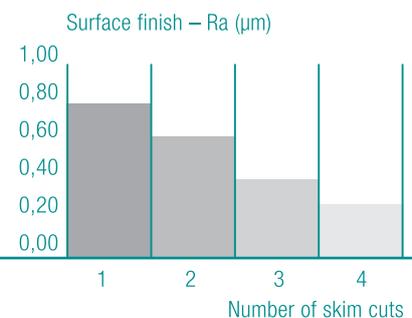
Improved cutting speed of the ONA easycut generator with regards to conventional systems.

Type of wire: brass Ø 0.25 mm - 0.010 in



Material: Steel (X210 CrW12)

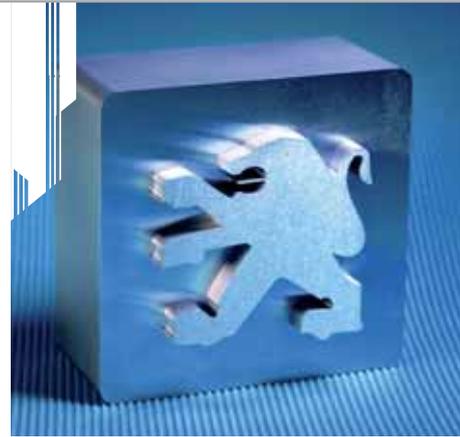
Type of wire: brass Ø 0.25 mm - 0.010 in



Surface integrity 100% preserved. Best surface finish: 0.2 µm Ra - 8 µin Ra

The ONA Easycut generator fully preserves the surface integrity of the workpiece. It avoids completely the electrolytic corrosion even for long machining times while preventing the oxidation, pitting corrosion and deterioration of the workpiece surface.

Material: steel (X210 CrW12)
Wire: Ø 0.25 mm - 0.010 in
No of cuts: 1 cut and 3 skim cuts
Surface finish: 16 VDI – Ra 0.4 µm



Customer (DIN) Following	
Final roughness (µm)	0.20 µm
Final roughness (µin)	0.80 µin
Final roughness (VDI)	16
Pt	4.229 µm
Wt	0.474 µm
Ra	0.400 µm
Rq	0.503 µm
Rz	2.820 µm

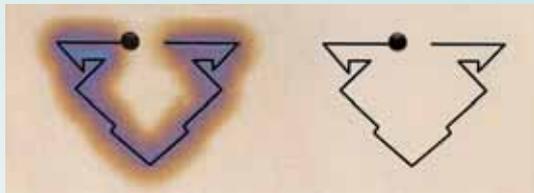


Steel and ferrous materials

The recast layer is very thin in the rough cut, disappearing completely after two skim cuts, while preserving the original surface integrity of the workpieces.

Nickel-based alloys

This sort of materials, like INCONEL, are widely used in the aerospace industry. The Easycut generator makes it possible to get cutting rates and surface finishes very similar to those achieved with steel parts.



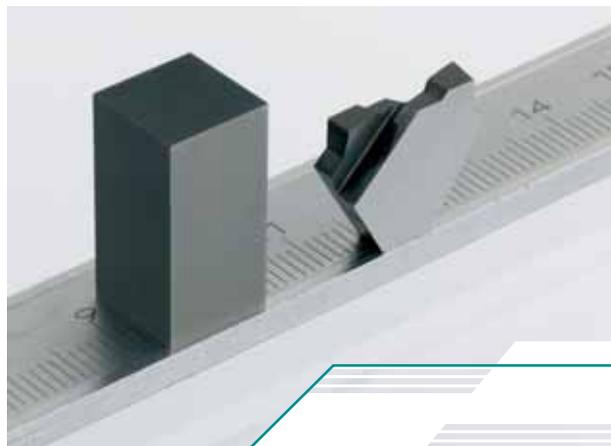
Cutting of a titanium alloy:
 Without anti-electrolysis system / With anti-electrolysis system

Titanium and aluminium alloys

The Easycut generator fully prevents the oxidation and decoloration that might occur in the surface of the workpieces, no matter whether they require several skim cuts or just one rough cut.

Tungsten carbide and PCD

The Easycut generator reduces the depletion of the workpiece binder, preserving the integrity of the material surface. With Tungsten carbide, a best surface finish of 0.2 µm Ra - 8 µin Ra (6 VDI) can be achieved.



Robust mechanical structure that assures a lasting accuracy

ONA: robustness and reliability since 1952

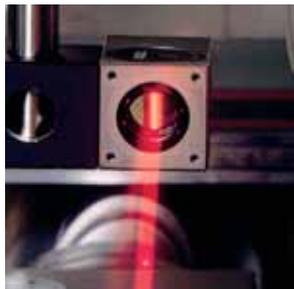
The new ONA AF series feature the traditional robustness and reliability that have been a landmark of all ONA machines since 1952.

Made in Europe

Machines manufactured in the ONA central production unit, certified by ISO9001 and ISO14001 standards and complying with EC electromagnetic safety and compatibility standards.

Top quality European components

ONA manufactures all its machines using components supplied by top European manufacturers to assure the best performance and quality.



Collision protection system

All machines feature (as standard) a collision protection system with ultra-sensitive load sensors.

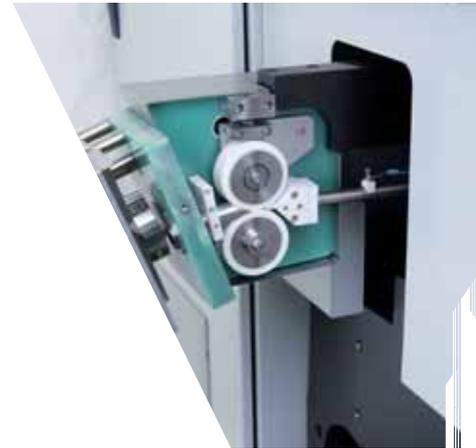
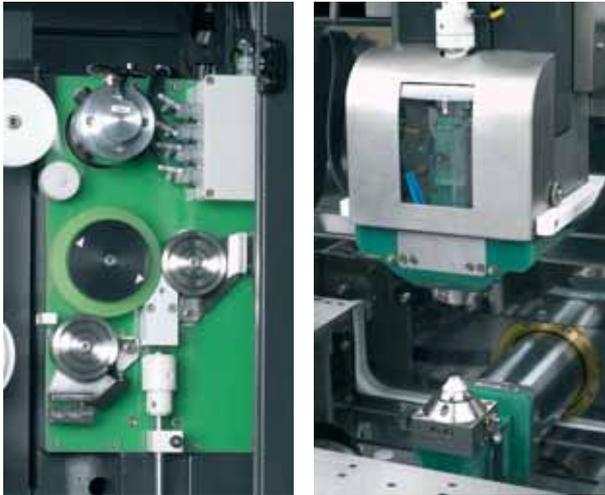
Certified accuracy

Each machine is laser-tested according to the VDI 3441 (axes positioning) and ISO 230-4 (circularity) standards.

Direct control positioning of the X, Y, U, V axes

High precision glass scales on the X,Y,U,V axes are used in all ONA AF machines.

Low maintenance, reliable wire threading system



Wire chopper

Reliable and accurate for wire diameters ranging from 0.1 to 0.33 mm (0.004 - 0.013 in)

The guidance and feed system is stable and accurate, utilizing 0.10 mm (0.004 inches) diameter wire. The wire system also has the pulling capacity required for work with thick wires, with diameters up to 0.33 mm (0.013 inches).

Wire spools up to 16 kg. (35 lb)

The ONA AF spool system can handle spools of the following types: DIN 125, DIN 160 y DIN200 (16 kg maximum - 35 lb maximum).

Highly reliable with all wire types

- The built in automatic threading system can handle a large variety of diameters (from \varnothing 0.10 mm to 0.33 mm - from 0.004 to 0.013 in) and wire types (coated or uncoated).
- The maximum height for threading is equal to the maximum travel on the Z axis.
- Minimal maintenance required due to wear-resistant elements and optimized design.
- Threading is possible in both flushing mode or during immersion, with no need for the work tank to be emptied.
- Minimum threading hole diameter: 0.5 mm (0.02 inches).

Phase 1:
Heats,
stretches,
thinnens and
cuts wire



Phase 2:
Threading



100% ecological filter and without maintenance costs (optional)



The ONA AF machines are equipped with a standard paper cartridge filtering system. As an option the machine can be purchased / equipped with the patented ONA Mineral Filtering System.



European award for the Environment
Ecoefficiency category

Major advantages of ONA filtration system (option)

- **100% environmentally friendly.** This is the first filtration system with no consumable agent to replace or dispose of. The only waste generated is that of the material being machined.
- **No operating costs ever.** The precisely ground mineral, used for filtering, never needs to be replaced. Therefore consumable costs are reduced to "zero"
- **Valid for all types of materials.** Specially recommended when cutting aluminium parts (cartridge life is very short).
- **3 µm filtering quality.** Remains stable throughout the lifetime of the system.
- **Maximum productivity.** The filtration system provides a constant supply of clean dielectric. Machining is not interrupted for servicing the filtration system even for sludge removal.



Major savings

Example related to conventional cartridge filter:

Thanks to the ONA filtration system it is possible to obtain a cleaner production process. No consumable agent has to be replaced or disposed of.

2 Cartridges	100 €/u.
Hourly EDM fee	25 €/h.
Operator wages	25 €/h.
Cartridges life	150/200 h.
Cartridges-changing downtime	0,5 h.

Total costs

2 Cartridges at 100 €	200 €
Downtime (0,5 h x 25 €)	12,5 €
Wages (0,5h. x 25 €)	225 €

ONA mineral filter allows to save around
5625 euros/year

New CNC ONA-W64: Easy, automated operation



6 axes controlled

All AF machines feature the latest generation ONA-W64 CNC that can control up to 6 axes, 5 of them (B, X, Y, U, V) simultaneously. The machine can feature a rotary axis fully controlled by the CNC.

CNC enabled with the maximum level of remote supervision and control

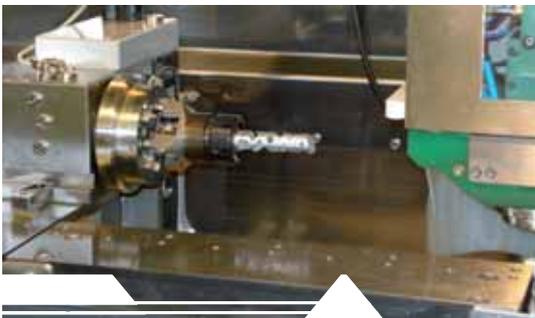
- Network connection.
- Delivery of automatic messages.
- Monitoring and remote control of the machines.
- Open control and supervision protocol.

Windows-like interface

The Windows-like graphical interface makes life easier for the operator, while providing a higher automation capability.

Automatic measurement cycles

The ONA-W64 CNC includes an extensive set of automatic measurements to simplify the tasks of completion the job to be carried out on the machine. As an example, the automatic alignment can take automatic measurements of the deviation of the piece with respect to the main axes. It also automatically corrects the program according to the position of the workpiece on the table.



Automatic strategy: a simple effective tool for programming at the highest level

The function of this automatic programming system for wire is to generate programs automatically so that via a brief questionnaire the user without much experience can easily produce a technologically complex workpiece. A geometry defined by the user is incorporated into the final program, while the program generator chooses the right technology, along with various options that are made available to the operator.

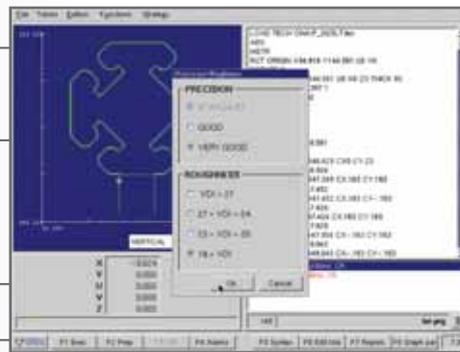


- Choice of characteristics and priorities.

- Choice of precision and roughness levels.

- Analysis:
 - Sample of criterion to be used.
 - Estimate of theoretical velocity.
 - Choice of clearance.

- Program generation.



Workpiece thickness: 400 mm - 16 inches
 Material: steel (X210 CrW12)
 Wire: \varnothing 0.25 mm - 0.010 inches
 No of cuts: 1 cut and 1 skim cut
 Verticality precision: 9 μ m/side

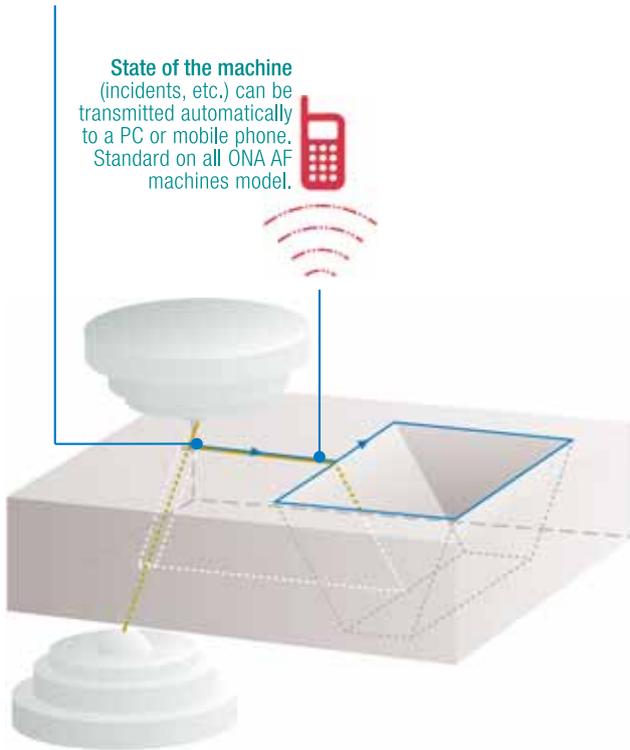
Features of the CNC

- **Up to 6 axes controlled, 5 of them (B, X, Y, U, V) simultaneously.**
- **Linear and circular interpolation (XY-UV).**
- **Programming language: ISO standard assisted.**
- **Axes speed:**
 - Cutting: 0.1 to 600 mm/min - 0.004 to 24 in/min.
 - Dry run: 2000 mm/min - 80 in/min.
 - Manual: 0.1 a 2000 mm/min - 0.004 to 80 in/min.
- **The value of the generator parameters** can be adjusted or modified from the program.
- **Output signals activate/deactivate** (optional).
- **Alarms and diagnostics** displayed on the display.
- **Execution:**
 - Manual.
 - Programmed.
 - Single block.
 - Dry run. Machine locked.
- **Short circuit back up.**
- **Auto power cut by:**
 - End of program.
 - Alarm.
 - Programmed stop.
- **Auto switch on after power failure.**
- **Optional stop.** Program can be interrupted.
- **Start point return** and go to the previous position
- **Enhanced corner surface cutting.** The CNC, working through a cutting control system, automatically ensures against inaccuracies when the radius and sharpest corners of the workpiece are being cut.
- **Absolute/incremental modes.**
- **Inches/metric full conversion.**
- **Geometric changes:**
 - Figure displacement (each 0.001 mm - 0.00004 in).
 - Figure rotation (each 0.001°).
 - Mirror image independent on axes X and Y.
 - Axis exchange.
 - Scale magnification (from 0.001 up to 99.999).
- **Dwell:** programmed as a time function or as input state function.
- **Allowed working zone definition.**
- **Jumps:** conditional and non-conditional with function repetition.
- **Centering in inner cavities (slots, holes, etc.).**
- **Edge searching with tolerance.**
- **Vertical position search and vertical position return.**
- **Programmed path graphic display**, with current working position.
- **Cutting length and current cutting speed** in mm/min display.
- **Consumable life monitoring (i.e. :wire, guides, etc.).**
- **Types of taper cutting: sharp corner taper cutting , constant corner taper cutting (ISOCONO), constant radius taper cutting (ISORADIUS).**
- **Edge rounding and chanfer functions.**
- **Automatic rounding of negative radii.**
- **User's technological tables and strategies.**
- **Automatic strategy: generation of programs automatically via a brief questionnaire.**
- **External interface:** Ethernet card, RJ45 connector and USB.
- **Off-site transmission of automatic messages by the CNC** to a PC or mobile telephone.
- **Technology tables, programs, offset points, compensations and history** are saved in different types of files, which can be browsed through Windows Explorer.

The Start Point Control Function (SPC)

automatically controls the initial and final cutting of the workpiece, with the wire at any position on the U axis or on the V axis. Thus it is possible to start erosion without preliminary calculation of any kind (offset, corner rounding, etc.) whether erosion be vertical, tapered, or programmed on four axes.

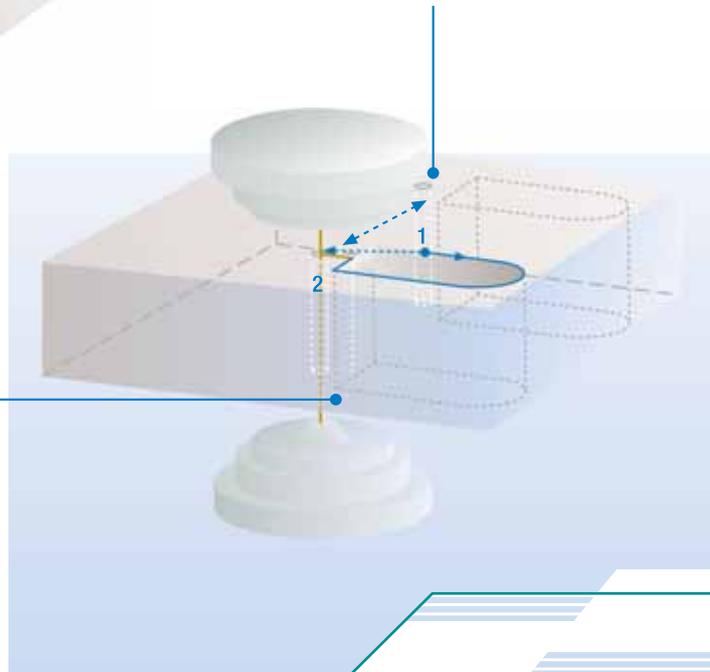
State of the machine (incidents, etc.) can be transmitted automatically to a PC or mobile phone. Standard on all ONA AF machines model.



Programmable control of the Z axis, or fifth axis

CNC control of the Z axis is standard on all ONA AF machine models. It is very useful in the cutting of workpieces of various heights, since the Z positioning and the correspondent cutting strategy can be programmed.

JUMP function: if a workpiece cannot be realized, the machine moves on to the next.

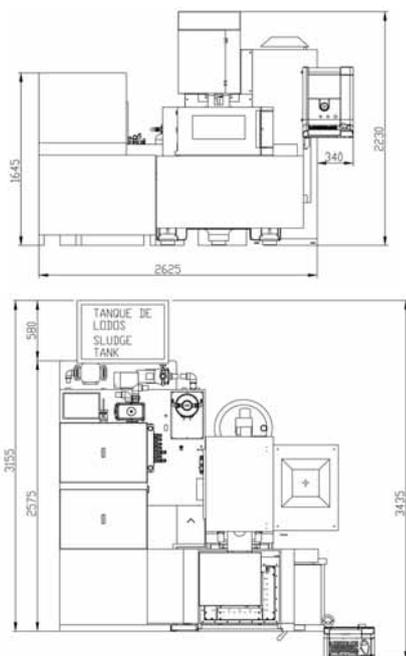


Threading in flushing mode

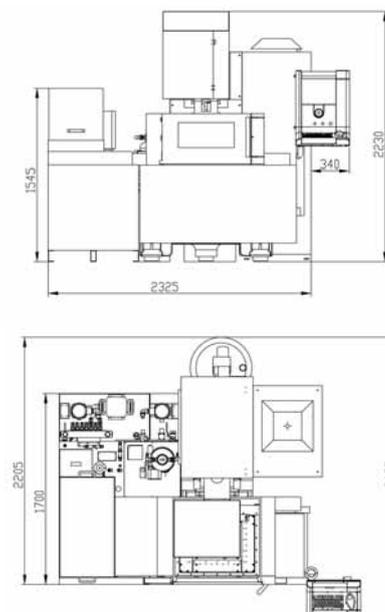
- 1 Automatic recovery of or during immersion erosion point following power failure
- 2 Control of corners and rounding. Optimized strategies for roughing and finishing

Lay-outs

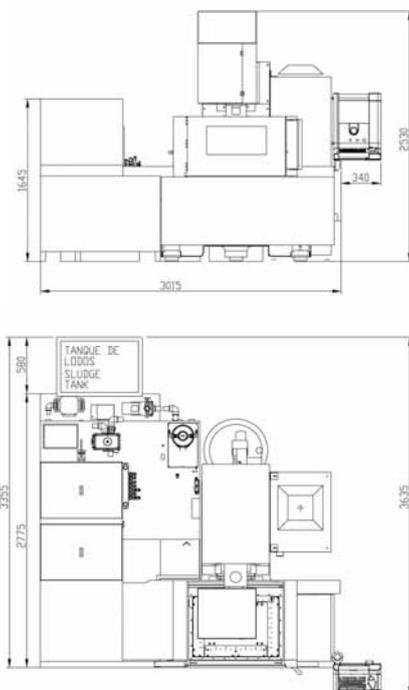
AF25 with mineral filter



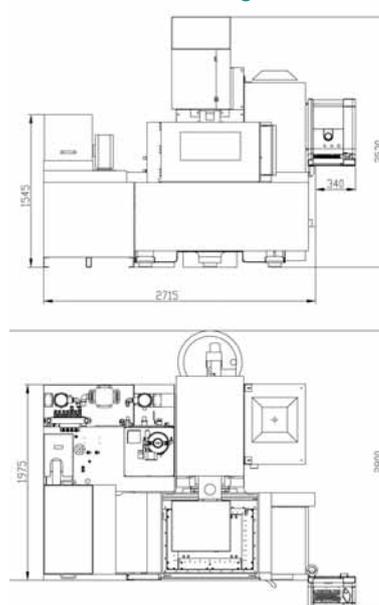
AF25 with cartridge filter



AF35 with mineral filter



AF35 with cartridge filter



Note: the dimensions of the drawings are specified in millimeters

Specifications

	AF25	AF35
Machine		
Machining range (X/Y axis travel)	400 X 300 mm - 15.7 x 11.8 in	600 x 400 mm - 23.6 X 15.7 in
Z axis travel	250 mm - 9.8 in	400 mm - 15.7 in
Auxiliary travels U-V	120 x 120 mm - 4.7 x 4.7 in	120 x 120 mm - 4.7 x 4.7 in
Work tank dimensions	700 x 650 x 250 mm - 27.6 x 25.6 x 9.8 in	1060 x 750 x 400 mm - 41.7 x 29.5 x 15.7 in
Max. workpiece weight	700 kg - 1550 lb	1500 kg - 3300 lb
Max. axes speed	2000 mm/min - 80 in/min	
Maximum taper angle	±30°/87 mm - ±30°/3.4 inches ±27°/100 mm - ±27°/4 inches	
Wire diameter	0.15-0.33 (0.10 mm optional) - 0.006-0.013 in (0.004 in optional)	
Wire spool	DIN 125 - DIN 160 - DIN 200 (16 kg - 35 lb maximum)	
Wire guide	Closed, high-precision diamond guides	
Automatic wire threader unit	Standard	
Wire chopper	Optional	
Cutting technology	submerged	
CNC		
Display	15" TFT color	
Minimum increment programmable and controllable	0,001 mm (0.00004 in) /0,001°	
Max. programmable dimension	9999,999 mm / inches	
Memory capacity	256 MB RAM	
(optionally expandable)	up to 6 Gb	
Keyboard	Membrane, dust resistant	
Hands controller	Standard	
Generator easycut		
Maximum cutting speed (with optional power module)	mm ² /min (in ² /hr)	360 - Ø 0,30 mm (34 - 0.012 in) Xcc wire
for thick wires)	mm ² /min (in ² /hr)	450 - Ø 0,33 mm (42 - 0.013 in) Xcc wire
Best surface finish	Ra	0.2 µm Ra - 8 µin Ra (6 VDI)
Filtering unit		
Paper cartridge filtering system	2 cartridges	
Tank capacity	litres (US gal)	700 (185) - 1000 (265)
General characteristics		
Total weight	kg (lb)	3000 (6.600) - 4000 (8.800)
Max. height	mm (in)	2230 (87.8) - 2560 (100.8)
Total surface required	mm (in)	2320 x 2550 (91 x 100) - 2715 x 2800 (107 x 110)

Opciones

- ONA ecological mineral filter (without maintenance costs)
- CAD CAM software.
- Wire choper
- Rotary B-axis.
- Extra power module for thick wires (Ø 0,33 mm - 0.013 in).
- Kit for thin wires (0.10 mm - 0.004 in diameter)
- Wire guides: 0.10, 0.15, 0.2, 0.3, 0.33 mm (0.004, 0.006, 0.008, 0.012, 0.013 inches) diameter.
- Dielectric temperature control unit.
- ONApure® / E.KO.IONISER automatic water deionization module.

With our commitment to up-to-date technology and design, ONA Electro-erosión reserves its right to introduce modifications in the specifications printed in this brochure without prior notice.



Machinery Made in E.U.

Central

Eguzkitza, 1
Apdo.64
48200 DURANGO
Bizkaia (SPAIN)
Tel.: 94 620 08 00*
Fax: 94 681 85 48
E-mail: ona@ona-electroerosion.com
www.ona-electroerosion.com

USA

ONA EDM USA, INC.
Suite K 1433 West Fullerton Ave.
Addison, IL 60101
Phone: 630-268-1635
Fax: 630-268-2656
info@onaedm.com

France

ONA ELECTRO-EROSION, S.A.R.L.
20 rue Salvador Allende
Z.I. Molina / La Chazotte
42350 LA TALAUDIÈRE
Tel.: (33) 47 77 45 52 52
Fax: (33) 47 77 47 51 34

Italy

ONA ELETTROEROSIONE
Via M. D'Antona 59/61
10040 RIVALTA DI TORINO (TO)
Tel. + 39 011 9020400 / 9063063 / 9063113
Fax. + 39 011 9035589
info@ona.it

Portugal

ONA ELECTRO-EROSION, LDA.
C. Emp. Vilar do Pinheiro
Via José Regio (EN 13) - Fracção 1- Nº 388
4485-860 VILAR DO PINHEIRO
Tel.: 22 - 9289803/4/5/7
Fax: 22 - 9289808
E-mail: ona.portugal@mail.telepac.pt

Poland

ONA POLSKA Sp. z o.o.
05-420 Józefów; Skr. 73
tel.: +48 22 7896827
faks: +48 22 7896715
wojdyga@ona-electroerosion.com