



TECHNICAL SPECIFICATIONS

\ ONA NX3F

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MACHINE

X,Y-travels	400 x 300	mm
X travels (NOR ATC)	550	mm
Z-travel	300	mm
C-travel	360	°
X,Y,Z axes positioning resolution	0.001	mm
C-axis positioning resolution	0.001	°
X,Y axes maximum movement speed	3000	mm/min
Z axis maximum movement speed	9000	mm/min
C axis maximum rotation speed	40	rpm/min
Tank	fixed	
Tank dimensions	920 x 590 x 350	mm
Workpiece maximum dimensions	830 x 550 x 230	mm
Work table dimensions	600 x 400	mm
Maximum distance between head and table with C-axis		
Without C-axis	550	mm
With C-axis	470	mm
Maximum dielectric height	280	mm
Maximum workpiece height	230	mm
Maximum workpiece weight	750	kg
Maximum electrode weight (1)	50	kg
Maximum electrode weight with C-axis (2)	25 / 12	kg
Allowable weight on electrode changer (3)	50 / 10	kg
Weight of the machine only	2500	kg
Total surface required	1750 x 1590	mm
Maximum height of the machine	2210	mm
Maximum power required for 100 A	10	KVA

GENERATOR

Power	100	A
Programmable intensities	12	No
Ignition voltage	80-120-160-200	No
Graduation of Pulse-On (Ti)	from 1 to 6500 microseconds	
Graduation of Pulse-Off (To)	from 1 to 6500 microseconds	
Maximum stock removal rate with copper	500	mm ³ /min
Maximum stock removal rate with graphite	600	mm ³ /min
Volumetric wear of copper electrode	0,2	%
Volumetric wear of graphite electrode	0,1	%
Best Surface finish	0	VDI

CNC

Keyboard	Membrane, dust-resistant
Screen	15" TFT colour
External interface	USB, RJ-45 and Ethernet
Memory	1 GB
Minimum programmable & controllable increment	0.001 mm / 0.001°
Maximum programmable dimension	+/- 9999.999
Pointer	Trackball
Remote control	Standard

- (1) On electrode holder plate.
- (2) Static / Dynamic, depending on geometry.
- (3) Total weight / Maximum unitary load.

\ TECHNICAL DESCRIPTION

ONA NX3F Electrical Discharge Machine, consisting of Machine-Tool, Microfine Generator, Dielectric Filtration System and CNC Control Unit.

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

HEADSTOCK AND WORKING TABLE

To ensure very high precision, the X, Y and Z axes are positioned by servomotors and ball-mounted spindles of superb quality, controlled by glass scale close loop CNC. Sliding takes place on high precision guides (RUE type, manufactured by INA).

The use of glass scales makes it possible to determine axis position directly, and to know at any moment exactly where the electrode is. In the interest of simple maintenance, transmission from motor to ball-screws is via notched belts. This highly rigid and precise guidance system will accommodate a heavy load. Friction is minimized and the long life of the system is ensured.

CNC

Up to **4 axes simultaneously controlled** by the CNC.

Burning Expert System (BES): Performance 100% without supervision.

Linear, circular and helical interpolation.

Programming language: **ISO standard assisted or ASCII.**

X, Y, Z axes can be interchanged by program.

A-SPACE function (Axis for erosion in SPACE): Any programmable CNC function (spheres, taper machining, orbital machining, vectors, etc.) can be carried out in any direction of the space.

All generator parameters can be adjusted or modified from the program.

Alarms and diagnostics displayed on the TFT (program registers, orbiting times, regimes' times).

Graphical display: Orbit that is being executed / Multi-cavities / Contouring / Efficiency of the Burning Expert System (BES).

Modes of execution: Manual / Automatic / Single block / Dry run / Machine locked.

Positioning: Manual incremental / Manual continuous / Automatic by program.

Cartesian and polar coordinates (vectors).

Strategies: Automatic program generation.

User's technological tables.

Technology tables and specific **strategies for ribs**.

Technology tables specifically intended for **large surface areas**.

Machine-zero: Can be automatically positioned in X, Y, Z, C axes.

Automatic centering in interiors, exteriors and faces in any plane defined by the main axes X, Y, Z.

3D SETUP - Automatic cycles of measurement in any direction of the space: Automatic centering in interiors, exteriors, angles, faces and midpoint of a piece in any direction of the space / Automatic alignment of the machine-axes to the workpiece-axes and automatic correction of the program, the orbits and C axis / Manual movements according to the main axes and the axis of erosion.

C axis lock by program.

Programmable centering tolerance.

Absolute / Incremental modes.

Inches / Metric modes.

Axes functions: Mirror image (independent X, Y, Z) / Axis displacement (0.001 mm) / Rotation (0.001°).

Macros and subroutines.

Stops: Programmable according to times or status of the input signals.

Configuration of the work area.

Anti-collision: It avoids the possibility of breaking the electrode on the event of a collision with the workpiece.

Jumps: Conditional and not conditional. Repetition function.

Electrode centre **errors correction**.

File system to store different file types: programs, technologies, offsets, traverses, compensations, and history. File browser.

Compensations: Vertical and horizontal gap compensation / Electrode radius compensation / Positioning error compensation.

External automatisms controlled by program.

Programmed cycles: Circular and square orbiting / Circular and square orbiting at 45° / Vectorial erosion / Taper erosion (circular and square, increasing or decreasing) / Spherical erosion (circular and square, increasing or decreasing) / Helical erosion (internal or external) / Orbital erosion with ANGUL function.

Automatic return to origin.

Automatic switching off: Completion of the job / alarm / programmed stop.

Automatic re-start after power failure.

Flushing: Programmable / Continuous / Intermittent / Vacuum.

External interface: USB (mobile flash disk), RJ45 connector and Ethernet.

Off-site transmission of **automatic messages to a PC or mobile phone.**

FILTRATION SYSTEM

Standard: **Paper cartridge** filtering system.

- 2 paper cartridges.
- Filtering quality: 3-5 microns.
- Total capacity: 370 l.

Dielectric oil must be approved by ONA to assure the proper filtration.

INSTALLATION REQUIREMENTS

In order to ensure a correct installation and optimum functioning of the machine, it is recommended to take the following points into consideration:

Electrical:

- The machine can absorb an input voltage variation of $\pm 10\%$. In case voltage fluctuation becomes larger, a voltage stabilizer will need to be used.
- Grounding: Individual. Impedance: 10 ohm maximum.

Dielectric chiller:

- For very precise and accurate jobs, the use of one dielectric chiller is recommended. For those jobs in which the number of Amp. requested is more than the nominal of the machine (100 A), the use of a chiller is a must.

Air:

- When the machine is equipped with a "C" axis and/or automatic tool changer, or one pneumatic electrode-holder is used, one 6 bar dry air connection is needed.

Environmental conditions:

- Environmental temperature: $20^{\circ}\text{C} \pm 1^{\circ}\text{C}$.
- Humidity: max. 75 %
- Vibration: max. 0,5 G.

Regulations:

Complies with all applicable provisions of Directive 2006/42 / EC of the European Parliament and of the Council of 17 May 2006, on machinery. In addition, it complies with all applicable provisions of the following directives:

- Directive 2014/35 / EU of the European Parliament and of the European Council of 26 February 2014 on the approximation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits.
- Directive 2014/30 / EU of the European Parliament and of the European Council of 26 February 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility.



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