



REPORT No. 12492

Requested by	:	Attn. Mr. Barbera NUPIGECO SpA-Sacsonago VIA S. Ferrario Zone Ind. SUD-Ovest 21052 BUSTO ARSIZIO (VA) ITALY
At the expense of	:	Idem
Copy to	:	Attn. Mr. B. Defraeije NUPIGECO BENELUX Kommenstraat 20 1070 Brussel
Concerning	:	Evaluation of PE electrofusion unit NUPIGECO 00E9001 and 00E9001L Your reference : No. 14AO-00927 - F02435 - 17/02/14. Offer by E-mail of 6/02/2014 to Mr. Barbera. Your order of 5 February 2014.
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Evaluation of electrofusion control units for ø20 to ø630 mm

NUPIGECO ref. 00E9001 and 00E9001L

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GONTRODE HEIRWEG 130 - B-9090 MELLE

TEL. +32 (0)9 272 50 70 - FAX +32 (0)9 272 50 72

KBC - IBAN : BE26 4470 0399 7129 - BIC : KREDBEBB

BNP PARIBAS FORTIS - IBAN : BE68 2900 0834 3334 - BIC : GEBABEBB

BTW/TVA/VAT : BE 0406 633 106 - E-MAIL : info@becetel.be - WEBSITE : www.becetel.be



1 Introduction

In the present report the conformity of the electrofusion control units NUPIGECO/ELOFIT ref. E9001/220 and E9001L/220 (abbreviated in the report as “control units”) for the electrofusion of PE pipes, has been checked by Becetel. The “Construction requirements” as well as the “Operation procedures”, the “Operation requirements”, the “Mechanical performance”, the “Technical file” and the “Marking” of the control units have been verified according to ISO 12176-2: “Plastics pipes and fittings – Equipment for fusion jointing polyethylene systems – Part 2: Electrofusion”

The electrofusion box NUPIGECO/ELOFIT E9001/220 is suitable for welding electrofusion fittings, from \varnothing 20 mm to \varnothing 630 mm with a maximum power of 4000 VA (4kVA) (weight: 25,2 kg), whereas the electrofusion box NUPIGECO/ELOFIT E9001/220L is suitable for welding electrofusion fittings, from \varnothing 20 mm to \varnothing 160 mm with a maximum power of 2000 VA (2kVA) (light version, weight: 13 kg).

The control protocol, with technical data of E9001/220 and E9001/220L, is included in Annex 1. A summary of the findings of both electrofusion machines is included in this report.

2 Construction requirements

2.1 General

The electrofusion control unit is a single unit in which the control panel and the regulation system are integrated. The input power requirements for the connection to a power generator are provided by the manufacturer of the box. The portable control unit with its frame and associated input cable (of 4 m) has a weight of 25,2 kg for NUPIGECO/ELOFIT E9001 and 13,0 kg for NUPIGECO/ELOFIT E9001L.

Both control units do not start the fusion cycle if the introduced fusion parameters are out of the specified working range of the control unit.

The following requirements are fulfilled:

- The control units are designed to allow ease of calibration and maintenance.
- The control units are designed and constructed to allow its safe use in normal field conditions.
- The control units (steel case (painted red) with aluminium front panel (painted yellow) (see photographs) and its accessories are designed so that there is no risk of corrosion or mechanical damage due to transport and handling in the field, likely to impair the performance of the control unit.
- The control input panel is delivered in a plastics box and is protected from impact damage during transport and handling.

Remark: Modern control units are not equipped anymore with a removable PCMCIA card.

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2.2 Electrical safety

Both control units are protected according to IEC 60529. The protection against direct contacts is at least IP54. The protection against the ingress of moisture is in accordance with class IP54. All printed circuit boards are protected (varnished) against the effects of condensation. No water can lodge or accumulate in switches or buttons mounted on both control units.

2.3 Cables

2.3.1 General

Input and output cables can not be disconnected.

A cable winding or storage facility is provided on the control unit.

The cables satisfy the required conditions for safe operation of portable power supplies (i.e. earthed systems) and safety features fitted to the control unit.

2.3.2 Input cable

The permanently attached input power cable has a length of 4 m and a facility for input cable winding, storage and protection during transport is available on the control unit. The cable is flexible within the operating and storage conditions (i.e. -18°C to $+55^{\circ}\text{C}$).

2.3.3 Output cable

The nominal length of the output cables is 4 m. It is flexible within the normal operating and storage conditions (i.e. -18°C to $+55^{\circ}\text{C}$).

The output cables are suitable for the following functions:

- supply of electrical power to the fitting;
- sensing and feedback of the applied fitting voltage;
- supply and return identification voltage for the fitting verification procedure (resistance sensing).

2.4 Cable Connectors

The connectors conform to the requirements given in IEC 60529 for use in outside weather conditions (see Annex 2).

They have the following features and are capable of the following performance requirements:

- the contact resistance is as low as practicable;
- the connectors sense the applied voltage (5 V to 42 V);
- the connectors allow easy attachment of the cables;
- the design of the connectors provide protection against direct human contact when connected to the fitting during the fusion cycle.

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2.5 Switches

Both control units have the following operator controls:

- An "ENT" button (start) to initiate the cycle or validate the display option.
- An "ESC" button (stop). Under all fault conditions the operation of this button causes a break in the output circuit.
- A MAIN switch. The operation of this switch causes a physical break in the input circuit under all fault conditions.

Overload protection is fitted to the input side of the control unit (a slow thermal fuse is installed).

2.6 Display

Both displays are clearly visible in bright sunlight and in subdued light conditions.
LCD, 4 lines x 20 columns (characters) backlight.

2.7 Temperature sensing element for fusion energy compensation

Both control units are equipped with a temperature sensing element for measurement of ambient temperature with an accuracy of $\pm 1^{\circ}\text{C}$ in the range -18°C to $+55^{\circ}\text{C}$.

The external temperature sensing element is mechanically protected.

2.8 Input data decoder

Both control units are equipped with an input decoder for reading the input data received from the manual keyboard or from the automatic system using a barcode.

The control units use automatic recognition of fusion data according to the system described in ISO 13950 (Plastics pipes and fittings -- Automatic recognition systems for electrofusion joints) and are programmed to allow decoding of the data.

It is not possible to introduce or to modify the input data once the fusion cycle has been started.

2.9 Numeric data output connectors

2.9.1 General

Both control units are equipped with a data retrieval unit which allows the retrieval of stored fitting and fusion data. The data retrieval unit includes the following components:

- memory for storage of the respective data (internal memory for 10.000 welding cycles).
- USB-interface for data transmission (communication) and serial printer.

The control unit has an incorporated routine facilitate data downloading (operated from the front panel).



2.9.2 Memory

The installed memory forms an integral part of the box. The capacity of the memory of both control units allows storage of 10.000 complete fusion records following ISO 12176-4 (10.000 fusion cycles in the buffer of the box). A warning program is included to prevent loss of data. In case of memory overflow, the oldest data are deleted/overwritten.

2.9.3 Interface

Both control units are equipped with data retrieval and have an interface available to download the data stored in the memory to other electronic devices (e.g. personal computer, printer) for analysis and/or display and for storage of the data.

The interface is a USB-connector for a pressure and a barcode reader.

2.9.4 Data protection

To prevent loss of data, fusion data are recorded continuously during the fusion operation. In case of an interruption of the current, fusion data remains available for control purposes.

2.10 Transformers

The transformers of both control units are safety isolating transformers conforming to EN 60742 (imbedded in resin).

3 Operating procedures

(See Annex 3)

3.1 Supply control

When the measured values (frequency or output voltage) are out of tolerance, the control units give an audible and visual warning signal and the display indicates the source of the fault. (Error Messages – see Annex 4).

3.2 Data input

3.2.1 Manual input

Manual input is possible. Nevertheless both control units are designed to introduce process parameters as applicable, including voltage and time.

3.2.2 Automatic input

Both control units are provided with a system for automatic data introduction (barcode) and are able to decode data stored in accordance with ISO 13950.

The automatic input control unit displays the necessary information to permit the operator, if necessary, to check the displayed information with the references of the fitting being connected.

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3.3 Data validation

3.3.1 General

When data input is required to start the fusion process, verification is available to check if the data introduced corresponds to the connected fitting. This operation is done by the operator and/or the control unit.

If the validation shows that the introduced data corresponds with the fitting connected, they are accepted. If not, the control box locks its fusion program and gives a negative sign.

If any single part of the introduced fusion program cannot be realised by the control unit, the fusion cycle is prevented from starting and the reason is displayed.

3.3.2 Data validation by both control units

Both control units are equipped with a procedure which checks the connected fitting by measuring the electrofusion voltage (see Annex 5) and current and comparing it with the introduced data.

The measured value is displayed for resistance verification. For the resistance control (see Annex 6), the calculation shall be based on the resistivity of the coil (data in the memory of the control unit or data introduced together with the fusion parameters) and the measured ambient temperature.

3.3.3 Data validation by the operator

After displaying control data, both control units require the operator to indicate manually that he has validated the displayed information, by pressing "ENT".

3.4 Operations before cycle starting

After displaying control data, the operator shall have to validate the displayed information by manual intervention, by pressing "ENT".

3.5 Fusion cycle

3.5.1 Fusion time

All relevant information concerning time is displayed during the fusion cycle.

3.5.2 Incidents during fusion cycle

Any interruption in the input or output circuit requires a complete restart of the fusion procedure.

If there is any fault or interruption during the fusion cycle, both fusion boxes display an encoded message. (Error Messages – see Annex 4).

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3.5.3 Other programs

The control units are provided with several programs, e.g.:

- operator's identification;
- job order identification;
- fusion ramps which reduce the current peak at the beginning of the fusion cycle.

4 Operation requirements

4.1 General

The required accuracy is applicable at maximum and minimum ambient temperatures and is maintained for at least 12 months without adjustment.

4.2 Energy supply

The control units are capable of operating satisfactorily from a mains supply or from a generator.

Both control units used, with a portable generator, take into account harmonic distortion, inductance and reactance levels of the generator, which might affect its available maximum power output.

The input voltage is 230V, 110 V or 48V (with a maximum tolerance of 20%) according to the model used.

The input frequency range is 50 Hz/60 Hz.

4.3 Coil resistance measurement/Continuity check

The accuracy of the electrofusion boxes for the measurement of the resistance is within $\pm 5\%$.

4.4 Energy supply

4.4.1 Energy regulation

Both control units regulate the voltage within the fusion cycle and control an energy value.

Voltage regulation

The regulated output voltage is stabilised within a range of max 1,5 % (see Annex 5) of the nominal set regulated voltage of the box, without exceeding ± 0.5 V.

The control unit circuitry uses the voltage sensed at the fitting or on the transition plug, to control the voltage to the electrofusion fitting.

This voltage regulated box has a design current transient range up to 100 A (maximum peak).

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Including the steps of progressive voltage increase, the prescribed level of the required regulated voltage is obtained within 2 seconds (minimum power) and 10 seconds (maximum power).

4.4.2 Fusion times

For both control units the fusion cycle time is controlled to an accuracy of $\pm 1 \%$ within operation conditions.

4.4.3 Power overload

Both control units are able to tolerate an overload of 15 % of the nominal power output for at least 1 min.

4.5 Control devices

4.5.1 General

Both control units are equipped with the following safety devices, operational during the complete fusion cycle where these safety devices interrupt the fusion cycle within the specified time, and are indicated on the display and on the data recorder, if present.

4.5.2 Obligatory control devices

4.5.2.1 Output regulated voltage

When the value of the regulated voltage exceeds $\pm 2 \%$ of the predefined value for more than 5 % of the nominal fusion time with a maximum of 3 s, the fusion cycle is interrupted.

4.5.2.2 Break in output circuit

Both control units measure continuity across the voltage sense points at the fitting or in the transition plug. The continuity of this circuit is continuously monitored during the fusion cycle. If a break (open circuit) occurs in the output circuit the control unit switches off in less than 1 s and a fault condition is indicated.

4.5.2.3 Fusion cycle stop

For both control units the complete fusion cycle is interrupted immediately when activating the fusion cycle stop.

4.5.3 Optional control devices

4.5.3.1 Input voltage

If the input voltage exceeds the control unit range with $\pm 20\%$, the fusion cycle is interrupted when 4.5.2.1 is not respected.



4.5.3.2 Frequency

If the input frequency exceeds the control unit range (50 Hz/60 Hz), the fusion cycle is interrupted when 4.5.2.1 is not respected.

4.5.3.3 Uncontrolled short circuit

When an involuntary short circuit provokes an increase of the current, the fusion cycle is interrupted.

4.5.3.4 Counter

The control unit is equipped with a counter for recording or displaying the total number of fusion cycles.

4.6 Electromagnetic compatibility (EMC)

The electrofusion control unit conforms to the standard IEC 1000-3.2.

Part 3 of the standard {Limits-section 2: Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)} specifies the limits of harmonic components of the input current which may be produced by equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems.

The harmonic components of the input current have been measured by Becetel with a Fluke 43 Power Quality Analyser and these components satisfy table 1 of this standard (Limits for Class A equipment) and conform to the requirements of this standard.

5 Mechanical performances

5.1 Shock resistance test

The assembled control unit is capable of withstanding the shock test given in IEC 60068-2-27 as described below and following the figure in annex C of the standard ISO 12176-2.

Level	: 50 g (acceleration);
Pulse duration	: 8 ms to 15 ms;
Shock wave	: half-sine;
Number of shocks	: 3 per axis X, -X, Y, -Y, Z, -Z (total of 18 shocks);
Where Y is the axis vertical to normal datum plane;	
X is the axis parallel to normal datum plane;	
Z is the axis parallel to normal datum plane and 90° to X.	

After testing, the control units still attain the requirements of this standard.

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GONTRODE HEIRWEG 130 - B-9090 MELLE

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5.2 Vibration test

The assembled control unit is capable of withstanding the vibration test as described below and following the figures of annex D of the standard ISO 12176-2.

- Level : 2.186 g (RMS average acceleration);
- Frequency : 1,25 Hz to 10 Hz, + 20 dB/oct;
10 Hz to 20 Hz, 0,1 g²/Hz;
20 Hz to 500 Hz, - 4,2 dB/oct;
- Test duration : 10 min per axis X, Y, Z (test starts after arriving at maximum level);
- Where Y is the axis vertical to normal datum plane;
X is the axis parallel to normal datum plane;
Z is the axis parallel to normal datum plane and 90° to X.

After testing, the control unit still attains the requirements of this standard.

6 Technical file

The manufacturer provided a technical file containing the following information:

- Classification: P24US1VAKDX (see Annex 7);

Additional information on control unit or in technical file (see Annex 8 – Technical data sheets):

- soft start: yes;
- ambient temperature compensation: yes;
- fitting temperature compensation: no;
- fusion data recorder: yes.

7 Marking

The marking on the control unit includes the following:

- manufacturer's identification;
- model;
- serial number;
- manufacturing period;
- classification;
- input voltage;
- input frequency;
- output power (single point value).

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8 Remark

The NUPIGECO/ELOFIT electrofusion unit with reference E9001L concerns the light version of the NUPIGECO/ELOFIT electrofusion standard unit (range: \varnothing 20- \varnothing 630; weight: 25,2 kg ; capacity: 4000 VA) with reference 00E9001.

This light version is identical to the standard 4000 VA-version, but is limited to a maximum capacity of 2000 VA to be used for a diameter range from \varnothing 20 to \varnothing 160. As a consequence the weight of this unit is limited to 13 kg.

See technical data in Annex 8.

9 Conclusion

The NUPIGECO/ELOFIT ref. E9001/220 and E9001L/220 electrofusion control units satisfy the requirements listed in ISO 12176-2.

Melle, 22 July 2014.

ir. J. VIENNE
Staff Member

Prof. ir. Ph. VANSPEYBROECK
General Director



ANNEX 1

Control protocol for E9001/220 and E9001/220L

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Control protocol

Machine Type : E 9001/220	Serial Number : 301430
Date of test : 03/03/14	

1. Visual controll

Surface	POSITIVE
Assembly	POSITIVE
Marking	POSITIVE
Components	POSITIVE

2. Calibration Check

Ref Ohmnical value ± 0.05 ohm	Machine value	Result
0.5	0.51	POSITIVE
1	1.03	POSITIVE
3	3.02	POSITIVE

Ref HighVoltage value ± 10 V	Machine value	Result
220 V	227 V	POSITIVE

Ref. Voltage Value $\pm 2\%$	Machine value	Result
30.00	30.03	POSITIVE
35.00	35.11	POSITIVE
40.00	40.09	POSITIVE

Ref temperature value ± 1 °c	Machine value	Result
20.0	20.0	POSITIVE

3. ElectroFusion tests

Condition:

30v / 0.90 Ohm

100 sec

Result : POSITIVE

Condition:

40v / 0.90 Ohm

100 sec

Result : POSITIVE

Next calibration date : 03/2016

Machine conformity Checked : POSITIVE

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Sede Legale, Amministrativa e Stabilimento : Via Stefano Ferrario Z.I. sud-ovest 21052 Busto Arsizio (VA) ITALIA Tel. 0331-344211 -Fax 0331-351860 Cod. Fisc. e Part. IVA 03039640127	Sede Legale, Amministrativa e Stabilimento : Via Stefano Ferrario Z.I. sud-ovest 21052 Busto Arsizio (VA) ITALIA Tel. 0331-344211 -Fax 0331-351860 Cod. Fisc. e Part. IVA 03039640127

Machine Type : E 9001L/220	Serial Number : 3000111
Date of test : 08/05/14	

1. Visual controll

Surface	POSITIVE
Assembly	POSITIVE
Marking	POSITIVE
Components	POSITIVE

2. Calibration Check

Ref Ohmnical value ± 0.05 ohm	Machine value	Result
0.5	0.51	POSITIVE
1	1.03	POSITIVE
3	3.02	POSITIVE

Ref HighVoltage value $\pm 10V$	Machine value	Result
220 V	227 V	POSITIVE

Ref . Voltage Value $\pm 2\%$	Machine value	Result
30.00	30.03	POSITIVE
35.00	35.11	POSITIVE
40.00	40.09	POSITIVE

Ref temperature value ± 1 °c	Machine value	Result
20.0	20.0	POSITIVE

3. ElectroFusion tests

Condition:

30v / 0.90 Ohm

100 sec

Result : POSITIVE

Condition:

40v / 0.90 Ohm

100 sec

Result : POSITIVE

Next calibration date : 05/2016

Machine conformity Checked : POSITIVE

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ANNEX 2

Conformity of connectors to IEC 60529

Class IP 54

for E9001/220 and E9001/220L

They have the following features and are capable of the following performance requirements:

- the contact resistance is as low as practicable;
- the connectors sense the applied voltage (5 V to 42 V);
- the connectors allow easy attachment of the cables;
- the design of the connectors provide protection against direct human contact **when connected** to the fitting during the fusion cycle.

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ANNEX 3

Operating procedure for E9001/220 and E9001/220L

See User Manual with the unit.

The procedure is mainly as follows:

Check power supply compatibility.

Check the good condition of the unit especially the cable and connection.

Make sure the unit is switched off prior to start an associated generator power supply.

Switch on the unit after stabilisation of the generator (if using one).

Follow the different steps indicated on the display.

Prepare the assembly (scraping / cleaning).

Read the associated barcode to the fitting to be fused.

Check the accordance of the display reading with the fitting connected.

Validate.

In case of any problem, the fusion can be stopped by pressing the STOP red button, or by switching off the unit.

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ANNEX 4

Error messages of the operating instructions for E9001/220 and E9001/220L

Error code	Error type	Error description	Action recommended
0	Ok	During printing, indicate that the welding went normally.	No action
2	Ambient temperature out of tolerance	The ambient temperature is below -10°C or above +45°C.	Check if the temperature displayed on the screen corresponds with the ambient temperature. Avoid direct exposure to the sun. Contact our helpline team if the value read by the machine doesn't correspond with the temperature.
4	Short circuit/overload	The current has exceeded its limit (partial short circuit or fitting from another manufacturer).	Replace the fitting.
5	Open circuit	Defective fitting or cables improperly connected to the fitting.	Check the connection with the fitting. Check the good condition of the connectors.
6	Regulation	Extension of the cable out of tolerance.	Verify that the diameters of the used extension cords comply with the recommendations.
11	Full memory	The memory of the welding machine has reached its maximum.	Transfer the data as soon as possible or press the escape button to continue welding.
12	Max. internal temperature	The temperature inside the machine exceeded 80°C.	Wait until the machine has cooled down.
13	Interruption of the power supply	A problem with the power supply has occurred during the welding.	Once the power supply is restored, wait until the fitting has cooled down completely before restarting the welding cycle from the beginning.
14	Empty memory	The memory doesn't contain data to transfer.	No welding data can be transferred or printed.
22	Manuel shutdown	The ESCAPE button was pressed during the welding.	Wait until the fitting has cooled down completely before restarting the welding cycle from the beginning.
23	Power supply out of tolerance	The supply voltage is higher or lower by more than 20% compared to the normal operating voltage.	Make sure that the source of the power supply or the generator is functioning correctly.

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Continued

Error code	Error type	Error description	Action recommended
31	Resistance out of tolerance	The resistance of the fitting is out of the permitted tolerances or the welding cables are not properly connected.	Verify that the connectors are properly connected to the fitting and read the barcode again; if this doesn't work, change the fitting. Contact the technical support team if the problem is persistent.
101	RAM memory	The data of the RAM memory and the hour/date are invalid.	It is possible the internal battery is discharged. Reset the date/hour and contact the support team if the problem is persistent.
102	Fracture welding cable	The welding cable is damaged.	Do not weld and replace the damaged pieces.
103	Internal temperature sensor	The internal temperature sensor is broken.	Contact the support team.
200	Manuel shutdown of the operator	The operator has interrupted the pressure test by pressing the ESCAPE button.	The test can be resumed by following the instructions on page 14.
201	Low pressure	The test pressure is lower than the minimum allowable value.	Locate and repair the leak, repeat de test procedure from the beginning.
202	Empty memory	No data in the pressure memory.	No action.

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ANNEX 5

Voltage regulation on unit NUPIGECO E9001/220

Comparison between the nominal voltage displayed on the unit and the real voltage (and the deviation in %).

Ω Value used	Nominal Voltage Value	Real voltage value measured using a FLUKE 45 dual display multimeter	Deviation
0.71 Ω	10 V	9,97 V	-0,30 %
0.72 Ω	15 V	14,80 V	-1,35 %
0.73 Ω	24 V	24,01 V	+0,04 %
0,74 Ω	40V	40,09 V	+0,22 %
3,29 Ω	10 V	10,01 V	+0,10 %
3,30 Ω	15 V	15,01 V	+0,07 %
3.32 Ω	24 V	24,10 V	+0,41 %
3.32 Ω	40 V	40,20 V	+0,50 %

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ANNEX 6

Accuracy of the electrofusion box for the measurement of the resistance on unit NUPIGECO E9001/220

The measured values are done with 6 measurements on the same load to obtain the measured value and its deviation.

Nominal Ω Value	Ω value measured using a KETHLY 2700 multimeter	Measured Ω Value Unit NUPIGECO	Deviation
0,70 Ω	0,699 Ω	0,70 Ω	- 0.00 %
0,90 Ω	0,924 Ω	0,92 Ω	- 0.47 %
1,70 Ω	1,702 Ω	1,70 Ω	-0,01 %
3.00 Ω	3,125 Ω	3,12 Ω	- 0.16 %
5.0 Ω	4,540 Ω	4.51 Ω	- 0.67 %
10.00 Ω	10,423 Ω	10.39 Ω	- 0.32 %

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ANNEX 7

Classification related to output regulation for NUPIGECO E9001/220

Note: Control units are classified with regard to electrical and process characteristics. Eight key letters identify these two characteristics and are defined in table A.1 to table A.8 respectively.

A.1 Electrical characteristics

A.1.1 Input voltage

Key letter no. 1: The input voltage is divided in two classes as defined in table A.1.

Table A.1 – Classification related to the nominal input voltage

Key letter	P2
Definition	50 V to 240 V

A.1.2 Output power

For classification, the output power is defined at the reference voltage for a 60 % duty cycle. A single point value is marked on the unit.

Key letter no. 2: The output power is divided in five classes as defined in table A.2.

Table A.2 – Classification related to the output power

Key letter	4
Definition	> 3 and ≤ 4 kW

A.1.3 Regulation

Key letter no. 3: The regulation is divided in four classes as defined in table A.3.

Table A.3 – Classification related to the output regulation

Key letter	U	
Definition	Voltage regulation	Energy control

A.1.4 Output voltage

Key letter no. 4: The output voltage is divided in two classes as defined in table A.4.

Table A.4 – Classification related to the output voltage

Key letter	S1
Definition	8 V to 48 V



A.2 Process characteristics

A.2.1 Fusion parameters

Key letter no. 5: The fusion parameters are divided in two types as defined in table A.5.

Table A.5 – Classification related to the fusion parameters

Key letter	V
Definition	Variable fusion parameters

A.2.2 Data introduction

Key letter no. 6: The data introduction is divided in two types as defined in table A.6.

Table A.6 – Classification related to the data introduction

Key letter	K A
Definition	Manual and automatic input

A.2.3 Data retrieval

Key letter no. 7: The data retrieval is indicated as defined in table A.7.

Table A.7 – Classification related to the data retrieval

Key letter	D
Definition	Equipped with Data retrieval

A.2.4 Number of fitting trade marks

Key letter no. 8: The number of manufacturers used is divided in two types as defined in table A.8.

Table A.8 – Classification related to the number of fitting trade marks

Key letter	X
Definition	Polyvalent

A.3 Complete classification

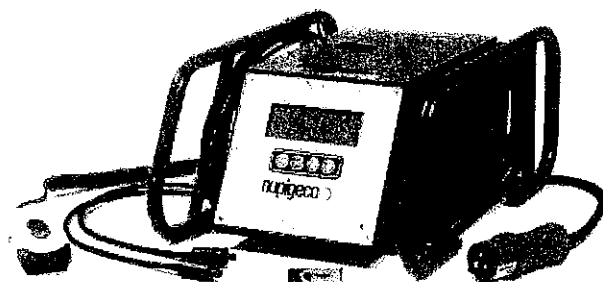
The complete classification of a control unit is given in table A.9.

Table A.9 – Complete classification

Key letter	P24US1VKADX
Definition	See below

Low voltage Input (50 V to 240 V) – 4 kW – Voltage regulation – Safety very low voltage (5 V to 42 V) – Variable fusion parameters – Automatic data introduction – Data retrieval – Polyvalent.

SALDATRICI WELDING UNITS



ELEMENTI DI BASE FORNITI CON LA SALDATRICE:

- Manuale di istruzione su supporto esterno e guida rapida cartacea
- Supporto per l'installazione del software
- Cassa per il trasporto
- Lettore codice a barre
- Adattatori da 4,7 mm
- Chiave USB (2GB) per l'installazione del software per scarico dati (rapporti di saldatura e prove in pressione)

ACCESSORI E RICAMBI:

- **00SENS:** Dispositivo per collaudo reti in pressione
- **00BCSCAN:** Lettore codice a barre

SALDATRICE AUTOMATICA MULTIFUNZIONE CON LETTORE CODICE A BARRE VERSIONE LEGGERA

CARATTERISTICHE TECNICHE:

Conforme alle direttive CE. Conforme alla UNI 10566 - tipo POLIVALENTE
Lettura dei parametri tramite codice a barre conformi alla normativa ISO 13950 e introduzione manuale dei parametri tempo e tensione.
Visore con retro illuminazione disposto su 4 righe da 20 caratteri
Memoria di 10.000 parametri di saldatura
8 Memorie da 500 parametri ciascuna relativi a prove in pressione
Campo di lavoro di raccordi fino a 50 Amp. di picco
Sensore di controllo della temperatura ambiente
Alimentazione: 230V / 115V E 50Hz/60Hz
Potenza massima assorbita: 2000 VA
Tensione in uscita da 5 a 42 volts
Cavo di alimentazione: L= 4 m
Cavo di saldatura: L=4 m
Terminali da Ø 4 mm (art. 00S8305) con adattatori da 4,7mm (00S8203)
Dimensioni: 310x350xH170 mm
Peso: 13kg
Grado di protezione: IP 54
Temperatura di lavoro: da -18° a + 55°C

AUTOMATIC MULTIFUNCTION WELDING UNIT WITH BARCODE SCANNER LIGHT VERSION

BASIC EQUIPMENT SUPPLIED WITH THE WELDING UNIT:

- User's handbook on hardware support and quick guide on paper
- Software for data download
- Shipping box
- Barcode scanner
- Adapters with 4,7 mm pins
- USB Key (2GB) to download data (welding report and pressure test)

ADDITIONAL EQUIPMENT AND SPARES:

- **00SENS:** Pressure test unit
- **00BCSCAN:** Barcode scanner

TECHNICAL CHARACTERISTICS:

Conforms with CE requirements. Conforms with UNI 10566 – MULTIFUNCTION type
Barcode reader conforming with ISO 13950 and manual setting of time and voltage.
Illuminated display with 4 lines, 20 characters each
Memory for 10.000 welding cycles
8 Memories with 500 parameters each for pressure tests
Fitting working range up to 50 Amp. maximum peak
Ambient temperature sensor
Power supply: 230V / 115V E 50Hz/60Hz
Maximum power: 2000 VA
Output voltage: from 5 to 42 V
Power cable: L= 4 m
Welding cable: L= 4 m
Connectors - 4 mm (art. 00S8305) with adaptors for 4,7mm (00S8203)
Dimensions: 310x350xH170 mm
Weight: 13kg
Degree of protection: IP 54
Working temperature: from -18° to + 55°C

Codice Code	Voltaggio Voltage	Ø	Imb. Pack.	Peso Weight kg./p.	Volume m³/p.
00E9001L	230V	20-160	1	13,000	0,0104



ANNEX 8

Technical data sheets of E9001/220 and E9001/220L

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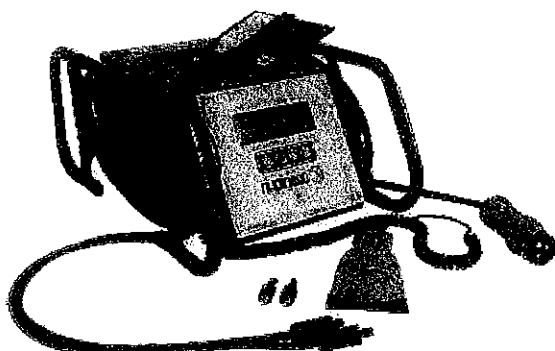
TEL. +32 (0)9 272 50 70 – FAX +32 (0)9 272 50 72

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SALDATRICI WELDING UNITS



SALDATRICE AUTOMATICA MULTIFUNZIONE CON LETTORE CODICE A BARRE

CARATTERISTICHE TECNICHE:

Conforme alle direttive CE. Conforme alla UNI 10566 - tipo POLIVALENTE.
Lettura dei parametri tramite codice a barre conformi alla normativa ISO 13950 e introduzione manuale dei parametri tempo e tensione.
Visore con retro illuminazione disposto su 4 righe da 20 caratteri.
Memoria di 10.000 (*) parametri di saldatura.
8 Memorie da 500 parametri ciascuna relativi a prove in pressione.
Campo di lavoro di raccordi fino a 100 Amp. di picco.
Sensore di controllo della temperatura ambiente.
Alimentazione: 230V / 115V - E 50Hz/60Hz.
Potenza massima assorbita: 4000 VA.
Tensione in uscita da 5 a 42 volts.
Cavo di alimentazione: L= 4 m.
Cavo di saldatura: L=3 m.
Terminali da Ø 4 mm (art. 00S8305) con adattatori da 4,7mm (00S8203).
Dimensioni: 340x450xH220 mm.
Peso: 25,2kg.
Grado di protezione: IP 54.
Temperatura di lavoro: da -18° a + 55°C.

ELEMENTI DI BASE FORNITI CON LA SALDATRICE:

- Manuale di istruzione su supporto esterno e guida rapida cartacea
- Supporto per l'installazione del software
- Cassa per il trasporto
- Lettore codice a barre
- Adattatori da 4,7 mm
- Chiave USB (2GB) per l'installazione del software per scarico dati (rapporti di saldatura e prove in pressione)

(*) Possibilità di richiedere protezione memoria con password

ACCESSORI E RICAMBI:

- **00SENS:** Dispositivo per collaudo reti in pressione
- **00BCSCAN:** Lettore codice a barre

AUTOMATIC MULTIFUNCTION WELDING UNIT WITH BARCODE SCANNER

TECHNICAL CHARACTERISTICS:

Conforms with CE requirements.
Conforms with UNI 10566 - MULTIFUNCTION type.
Barcode reader conforming with ISO 13950 and manual setting of time and voltage.
Illuminated display with 4 lines, 20 characters each.
Memory for 10.000 (*) welding cycles.
8 Memories with 500 parameters each for pressure tests.
Fitting working range up to 100 Amp. maximum peak.
Ambient temperature sensor.
Power supply: 230V / 115V / 48V E 50Hz/60Hz.
Maximum power: 4000 VA.
Output voltage: from 5 to 42 V.
Power cable: L= 4 m.
Welding cable: L= 3 m.
Connectors: 4 mm (art. 00S8305) with adaptors for 4,7mm (00S8203).
Dimensions: 340x450xH220 mm.
Weight: 25,2 kg.
Degree of protection: IP 54.
Working temperature: from -18° to + 55°C.

(*) Memory with password protection on request

BASIC EQUIPMENT SUPPLIED WITH THE WELDING UNIT

- User's handbook on hardware support and quick guide on paper
- Software to download data
- Shipping box
- Scanner for barcode input
- Adapters with 4.7 mm pins
- USB Key (2GB) to download data (welding report and pressure test)

ADDITIONAL EQUIPMENT

- **00SENS:** Pressure test unit
- **00BCSCAN:** Barcode scanner

Codice Code	Voltaggio Voltage	Ø	Imb. Pack.	Peso Weight kg./p.	Volume m³/p.
00E9001	230V	20-630	1	26,000	0,0575