Marking Systems for
Products and Packing

Electrolytic Marking Systems
Laser Marking Systems
Punch marking / Scribing
Impulse Jet Systems
Pad Printing
Identification System
Special Purpose Machines

ÖSTLING

OPERATING INSTRUCTIONS
EU DIGITAL 300
Manual unit for
electrolytic marking

Östling/Tykma Marking Systems
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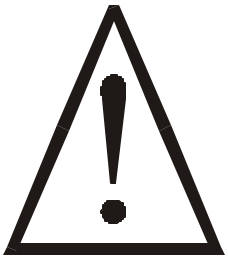
EuDIGITAL300_e.doc
Version 05/99

Safety tip



- Only authorised persons may open the machine. Unplug the machine before opening.
- In handling the electrolyte you expose yourself to organic and inorganic oxide substances in conjunction with natural water.
- Please request a safety manual for each Electrolyte number 91/155/EWG.

Application

The below described unit is designed to mark products with metal, electrically conductive surfaces in conjunction with electrolyte. Proper functioning of this unit depends upon correct treatment and maintenance of the system. The operation and maintenance instructions must be studied carefully by all operating personnel before the system is used.

Copyright

Liability

For any error in shipment or damage caused during shipment our liability is limited to those conditions outlined in the Terms of Delivery. Duration of the warranty is stated in the Terms and Conditions. We are not responsible for damage caused from improper handling of the equipment or for damage caused by disregarding the operating instructions.

EU - Conformity explanation

Manufacturer: ÖSTLING Markiersysteme GmbH

Address: Brosshauserstraße 27
D - 42697 Solingen

Product description: Marking Control unit

Type: EU DIGITAL 300

The above product is in compliance with the following European guidelines:

Number: 89/336/EWG EMC-Guidelines

Text: EN 50081-1 Generic Emission Standard
Residential, Commercial and Light Industrial Premises

EN 50082-1 Generic Immunity Standard
Residential, Commercial and Light Industrial Premises

The included Owner's manual constitutes a part of this statement.

Manufacturer: ÖSTLING Markiersysteme GmbH

Place, Date: Sol | 1999

Legally binding signature:

Rolf Östling

This statement is in accordance with the general guidelines, including no assurance of quality.

The safety precautions included in the product documentation are to be heeded.

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1.0 Description of function

The system EU DIGITAL 300 is suitable for marking products with metallic electrically conductive surfaces, whether they be hardened, large, small, flat or round.
The input voltage of the system is 100 V or 200 V (AC), and the output voltage can be set continuously from 0 to 30 V (AC or DC), at a capacity of 310 VA. The mains frequency (50 or 60 Hz) is recognised by the system automatically and displayed in the service menu.
The system includes a built-in timer so that marking time can be set continuously between 0.1 and 20 s.
The one-digit illuminated display shows operation parameters. This text can be set in English, German, French or Japanese - other languages available upon request.

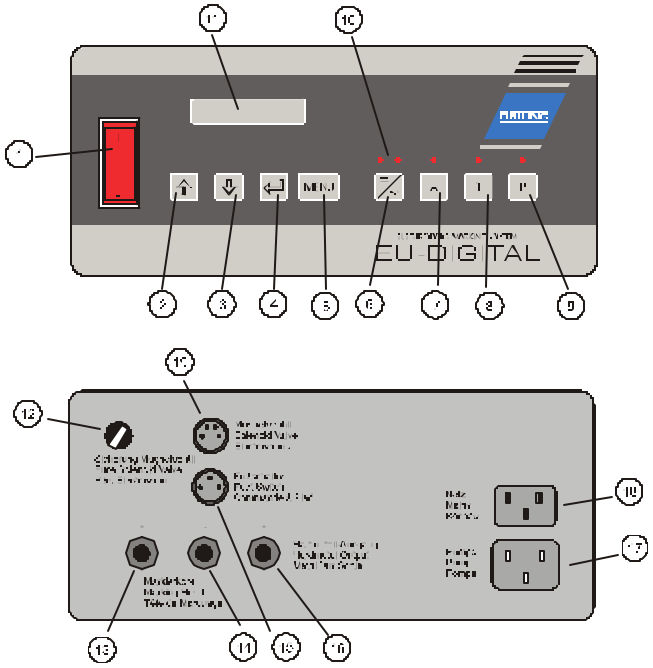
2.0 Technical data

	EU DIGITAL 300
Input voltage (internally adjustable)	100 V or 200 V, AC (50/60 Hz)
Output voltage	0 - 30 V (AC or DC)
Power	310 VA
Dimensions (H x W x D)	140 x 380 x 220 mm
EMC tested	EN 50081-1; EN 50082-1

CE

2.1 Operating elements

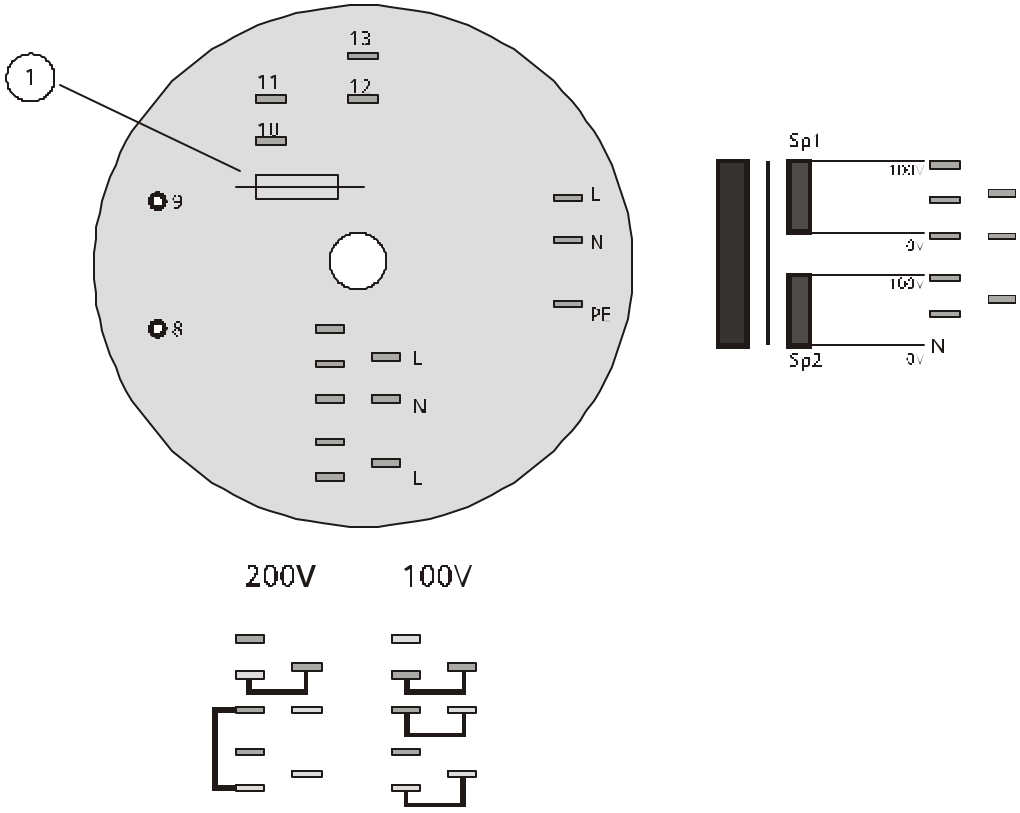
pos. 1 Main switch ON - OFF
pos. 2 Key ↑ (values increased)
pos. 3 Key ↓ (values decreased)
pos. 4 Key ↵ (Enter)
pos. 5 Key MENU
pos. 6 Key =/~ (DC/AC)
pos. 7 Automatic Key
pos. 8 Timing Key
pos. 9 Pump Key
pos. 10 LED DC/AC
pos. 11 Display
pos. 12 Magnet valve fuse
pos. 13 Positive cable connection
pos. 14 Negative cable connection
pos. 15 Foot switch connection
pos. 16 Hard metal output (option)
pos. 17 Pump connection
pos. 18 Main connection cable
pos. 19 Solenoid connection



2.2 Setting the input voltage

This work may be carried out by specially trained staff only. Before the required operating voltage can be set, the system must be opened. The mains plug must be disconnected before the system is opened.

Bird's eye view of transformer



The bridges available enable the following input voltages (see drawing): 100 V or 200 V.

The mains frequency in use (50 / 60 Hz) is recognised automatically by the system and displayed in the service menu (see point 5.4).

The 24 V, DC output is additionally secured with a fuse (pos. 1). The prevents the destruction of the internal bridge equaliser in the case of overloading (> 1A) which might be caused for example by short circuiting. The fuse performance can be seen on the label on the transformer.

3.0 Programming procedure

After being switched on, the unit will be in the Main Menu mode (see point 3.1). The values and settings last adjusted will be kept when the unit is switched off.

The display shows for example U=08,0V MT=04,0s

- The keys A, T, P and the START-Input (foot switch) can be operated within the main menu only.
- The keys MENU, ↑, and ↓ have no function within the main menu.
- The key ↵ is used to leave the main menu and enter the sub menu *marking voltage*.

3.1 Marking voltage

Within the sub menu *marking voltage* only the keys ↑, ↓, ↵, MENU and =/~ can be operated.

- The key =/~ allows you to switch between DC and AC voltage. The LED's above the key show the present current flow.
- The key ↑ (pos. 2) increases, the key ↓ (pos. 3) decreases the output voltage by 0.2 Volt (U_{min} = 0.2 V; U_{max} = 30.0 V) each.
- By operating the key ↵ the adjusted value is accepted.
- By operating the MENU key (pos. 5) the adjusted value is not accepted, and the main menu is re-entered.
- From the sub menu *marking voltage adjustment*, you may enter the sub menu
  marking time.

3.2 Marking time

In the sub menu *marking time* only the keys ↑, ↓, ↵ and MENU can be operated.

- The key ↑ increases, the key ↓ decreases the marking time MT by 0.1 second each (MT_{min} = 0.1 s; MT_{max} = 15.0 s).
- By using the key ↵ the new value is accepted, and you will re-enter the main menu.
- By using the key MENU the new value is not accepted, and you will re-enter the main menu.
- If the pumping time option is activated, it is possible to enter the sub menu *pumping time.*

3.3 Pumping time (Option)

In the sub menu pumping time only the keys ↑, ↓, ↵ and MENU can be operated.

- The key ↑ increases, the key ↓ decreases the pumping time PT by 0.1 second each (PT_{min} = 0.1 s; PT_{max} = 10.0 s).
- By operating the key ↵ the new value is accepted, and you will re-enter the main menu.
- By operating the key MENU the new value is not accepted, and you will re-enter the main menu
- If the option retarder is activated, you may enter the sub menu Retarder.

3.4 Retarder (Option)

In the sub menu *retarder* only the keys ↑, ↓, ↵ and MENU can be operated.

- The key ↑ increases, the key ↓ decreases the retarder by 0.1 second each (RT_{min} = 0.1 s; RT_{max} = 10.0 s).
- By operating the key ↵ the new value is accepted, and you will re-enter the main menu.
- By operating the key MENU the new value is not accepted, and you will re-enter the main menu.

3.5 Counter (Option)

You can see the actual value of markings on the display:

Counter= 00022

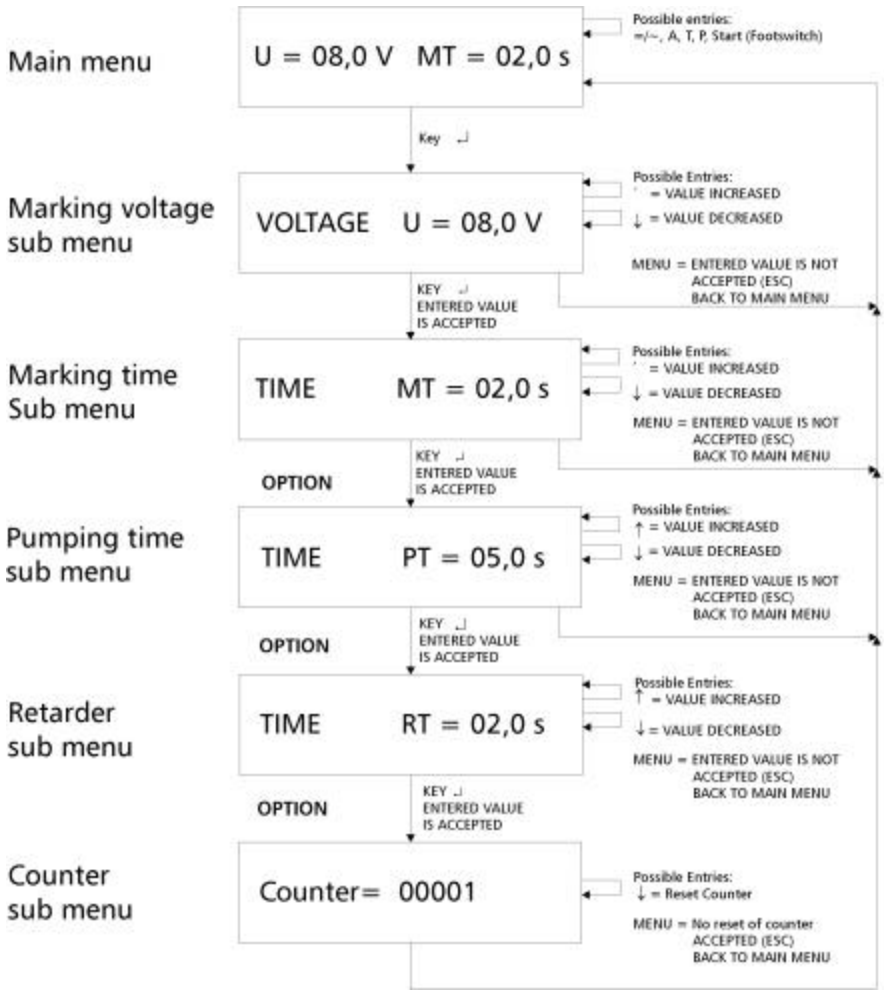
By operating the key ↓ the counter will be reset.

3.6 Original settings

All settings can be reset to their original settings by depressing the key MENU and turning the unit on.

Output voltage	U = 08,0 V
Marking time	MT = 02,0 s
Pumping time	off; PT = 0,00 s
Retarder	off; RT = 0,01 s
Type of output voltage: AC	AC-LED = on; DC-LED = off
Timer function	off; T-LED = off
Output magnet valve (24 V)	off; A-LED = off
Output pump (230 V)	off; P-LED = off
Counter	00000
Language	German

3.7 Program structure



4.0 System start up

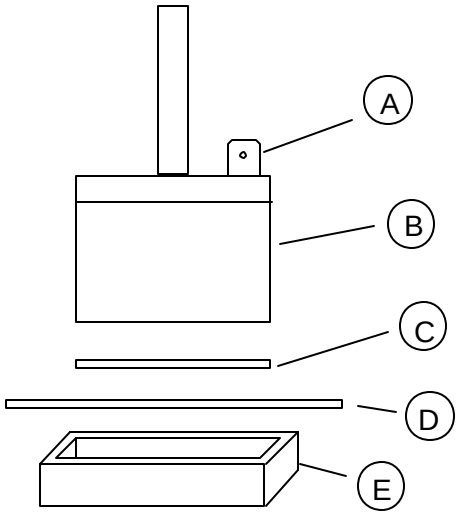
- The handle serves to carry the unit or to put it on an angle. The two buttons on the side of the handle allow you to adjust the face of the machine by 30° increments.
- The sockets (pos.13 and 14) are provided with a captive insulated head, so that both a cable with a banana plug or with a suitable cable sleeve can be used.
- Push the banana plug of the red positive cable in the socket (pos. 13).
- Connect the other end of the red positive cable to the spade terminal of the marking head (pos. A).
- Push the banana plug of the blue cable into the black socket (pos. 14)
- Connect the other end of the blue negative cable to a conductive base plate, or directly to the product.
- Push the foot switch into the input socket (pos. 15).
- Power comes to the EU DIGITAL 300 by means of a main cable, which is to be connected to an input plug (pos. 18). Be sure to see for which input voltage the unit is designed (see type plate).

4.1 Preparing the marking head

4.1.1 Marking head for black marking

Prepare a bit of black felt with the same size as the marking area of the marking head. For best results we recommend that you soak the felt in clean water then wring it out so that it is moist. Fit the leading net over the felt on the marking head. Place the marking net so that ca. 15 mm stands overlaps the marking head on each side. **Now place the net on top of the marking head and place the net so that you may begin marking**. Now place the felt on the marking head and lay the net so that you may fasten it to the cassette.

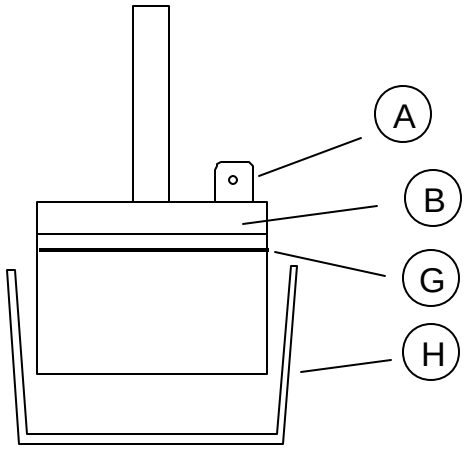
pos. A Spade terminal
pos. B Graphite
pos. C Felt
pos. D Conductive net
pos. E Cassette



4.1.2 Marking head for deep marking

Cut a piece of green felt in the width of the marking head. Lay the felt around the marking head and secure it with an O-ring. (pos. G). **No conductive net is needed here.**

pos. A Spade terminal
pos. B Marking head
pos. G O-Ring
pos. H Felt



4.2 Moisten the felt with electrolyte

Before you use the marking head, we recommend you rinse the felt with clean water so that the felt is wet. After you wring out excess water from the felt, you can effectively use the electrolyte. In order to achieve an optimal marking quality it is important to keep the felt moist.

4.3 Stencil types

Should you need an Östling permanent stencil (e.g. medilon) please turn to point 5 *etching process*.

In order to make your own stencils quickly and professionally, please ask about our customised stencil printing systems. This includes an Östling PT 220, 550, and 24 pin printer as well as all necessary software.

4.4 Hard metal output (option)

If the system is fitted with a hard metal output there will be a second red laboratory clamp on the reverse side (pos. 16). This output is set permanently for 10 V, AC. This voltage cannot be changed via the keyboard. In addition, the automatic and timer functions are not active here.

5.0 Etching process

- Depending upon marking needs (see point 9) use the DC/AC key (pos. 6) to set the marking type.
  AC (Alternating current) for black marking. The right hand light is lit.
  DC (Direct current) for a deep mark. The left hand light is lit.
- In the sub menu *voltage setting* (see point 3) the output voltage can be infinitely set from 0 - 30 V. The display (pos. 11) shows the current setting.
- **Hand-operation**
  Marking without the timer
  Place the product to be marked on a base plate or similar device. Place the stencil on the product. Press the prepared marking head lightly on the product to be marked. The marking time usually takes between 1-1,5 seconds for the black etching, and 3-5 seconds for deep marking.
- **Attention: In order to prevent a short circuit, be sure that the marking head does not come in contact with the base plate.**
- **Automatic-function**
  Marking with the timer
  With the foot switch you may begin the built-in timer. With the =/~ key (pos. 6) You may choose alternating current AC and in the submenu *current strength* (see Point 3) you may begin marking with the foot switch. When finished, touch the Automatic key (pos. 7) and Timer (pos. 8). The voltage returns to 0 Volt and is saved only in the sub menu time (pos. 6). At the same time at the outlet Solenoid valve (pos. 19) a Voltage of +24 V, DC is on, with this it is possible to connect a tungsten carbide outlet. (option for Östling semi-automatic machines)
- After the stencil is positioned, tap the foot switch. Marking then begins with the previously entered marking time.
- If the option counter is activated and the unit is working in Automatic function with timer, the display shows after a few seconds the actual value of markings:

Counter = 00000

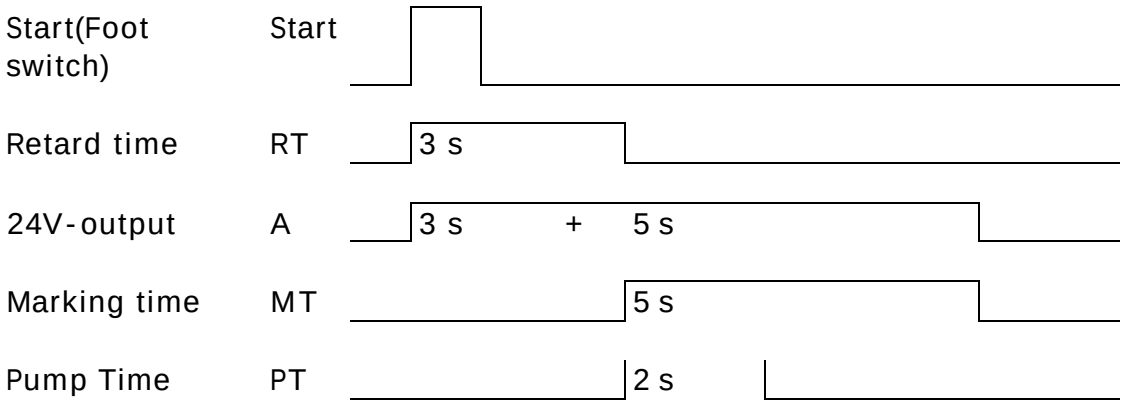
The counter adds the marking process (s. display). After a product charge has been marked and the required counter reading has been reached, the counter can be returned to zero (see point 3.5).

Note: After marking rinse the marking head and the stencils in clean water.

Example: Diagram of a Marking session

A and T depressed, P not depressed = 5,0 s — Marking time MT
Pump switch = ON — Pump time PT = 2,0 s
Retarder switch =ON — Retard time RT = 3,0 s

Execution diagram:



The display shows what is happening at the moment. For example, when the retard time is activated, the display will switch from marking time (MT) to retard time (RT).

6.0 Maintenance

Regular maintenance is not necessary.

Should there be a problem, however, please contact our service department. Opening the unit without proper authorisation voids the warranty.

7.0 Accessories

In order to further economise your marking system, we offer a hand marking station. This consists of a set plate fastened with T- Nuts, two jiggings and an X-Y-Z stencil holder.
With this hand marking system the product is fastened to the jiggings and the stencil holder assists in fastening the stencil properly to mark the product properly.

For further questions please ask our technicians in order to properly outfit you with the appropriate accessories. They can offer customer specific help and tailor to your specific needs. Several different types of jiggings, marking heads and other accessories are available to customise your operation.

8.0 Trouble shooting

8.1 Problem: No mark at all

Please check:

- Is the main power cable connected and the etching machine switched on?
- Are the electrode cables correctly connected?
- Has the voltmeter been activated?
- Is the over current protection button on the etching unit in the set position?
- Is the marking head moistened with electrolyte?

Note:

- You can only mark products which conduct electricity.
- Painted, anodised or otherwise coated surfaces are not suitable for marking by electrolytic etching.

8.2 Problem: Mark is not clear

- Make sure that the stencil is clean.
- Wash the stencil in water to remove oxides.
- Also make sure that the surface of the product is clean. Wipe off dirt or excess oil with a dry cloth before marking.
- Is the marking head moistened with electrolyte?
- Normal usage yields slight discoloration of the stencil, for this reason we recommend that you change stencils from time to time.

8.3 Problem: Black spots around the mark

- The stencil is old and holes have developed in the red portion of the stencil. Replace the stencil with a new one, or prolong the life of the old stencil by covering over the damaged areas with adhesive tape.

8.4 Problem: Magnetic valve does not activate

- Check the fuse on reverse side of system
- If this fuse is not defective check the fuse on the transformer (see page 6). For this the system must be opened!

Hints:

Please contact us if:

- **you have technical problems.**
- **you need marked samples.**
- **you need any additional accessories such as marking heads in different sizes, felt, electrolyte for other types of materials, stencil covers, jiggings, etc.**
- **you need information about our other products such as pad printing, needle embossing, laser marking, or ink-jet-systems.**

9.0 Choice of electrolytes

Type of marking	Type of voltage	Voltage	Marking time	Felt	Material	Electrolyte	Remarks
Black-etching	AC	8 V	1-2 s	Black with conductive net	Stainless steel	6744, 70 ,72 ,SP1	Neutralise with N8
					Alloyed Steel	6744	Neutralise with N8
					Steel	676, 74, 67/10/3, 676R74	Corrosion free electrolyte
					Chrome , Nickel	75	The marking time is dependent on coating thickness with chrome products.
					Zinc coated	639, 6578	In case of unclear marking, send us sample.
					Titanium	6578	
					Hard metal	332/2	Depending of alloy, the hard metal option may be necessary.
White-etching	AC	8 V	1-2 s	Black with conductive net	Black oxidised (Homo steamed)	114 Soft 119 Medium 117 Strong	Neutralise with N8
Deep-Etching	DC	approx. 20 -25 V	> 3 s	Green	Brass	DE40, DE90	In the case of deep etching the marking time is dependent on the desired depth. This can last up to a few minutes.
					Aluminium	DE40, DE90	

Electrolyte must be discarded after the marking process is complete !

ÖSTLING - World Wide

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