



*Millennium Signatures*  
Marking Systems Inc.

# Model MS-311 Instruction Manual



12-1550 Yorkton Crt.  
Burlington, Ontario, Canada  
L7P 5B7

Phone: (905) 639-0909

Fax: (905) 639-0919

E-mail: [info@millenniumsignatures.com](mailto:info@millenniumsignatures.com)

## OPERATING INSTRUCTIONS

You have just purchased the industry's most durable, technically advanced DEEP ETCH Electro-Chemical Etching Power Unit available today. Please review the following operating procedures to prevent damage to your unit and to achieve good marking results.

### FEATURES:

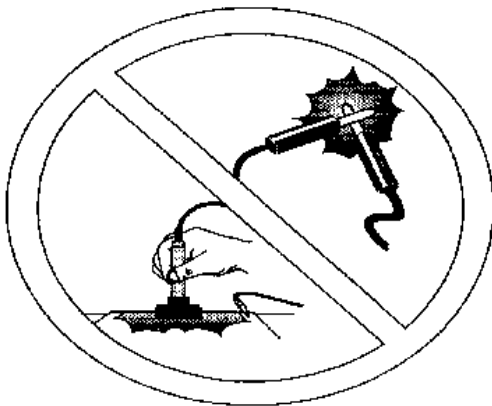
- AC-DC Selection
- “Low/High” Voltage Selection
- High Power Indicator Light
- Deep Etch Capabilities up to .005”+
- Smooth Action Dial “Power Selection Switch:
- Quick Change “3.0” Amp Fuse for Power Unit Protection Against Overloading

**NOTE:** To avoid short circuits (See illustration 1-A), do not cross the leads or make contact between the marker and the grounded surface when both surfaces are bare. Your power unit is designed to work from a 110-120 AC volt outlet only. (220 is available upon request)

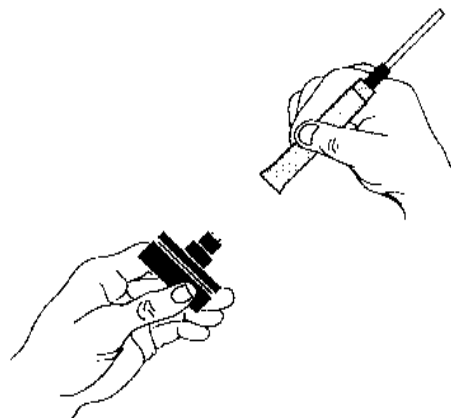
### SET-UP:

**A)** Plug your unit into a 110-120 AC Volt outlet only.

**B)** Plug the #200 Wire Cord Set into the power unit. The wires and jacks are color coded for your convenience (Illustration 3-A Fig. 5& 6). The black wire is connected to the marking head.



**ILLUSTRATION 1-A**



**ILLUSTRATION 2-A**

**C)** Clip the red wire to a metal plate or the substrate (surface to be marked).

**D)** Plug the black lead into the H-100 holder.

**E)** Insert the marker (the black carbon head, with a reservoir to hold electrolyte) into the H-100 holder. The friction fit of these parts does not require force. (See Illustration 2-A)

**F)** The stencil may also be attached to the marker if so desired by following the procedure outlined above

**G)** If a “roll marking” technique is desired, follow the instructions provided in the section called “Roll Marking Application”.

## OPERATION

### SURFACE ETCHING:

**A)** Push the “POWER” switch (Illustration 3-A, Fig. 2) up to turn the unit on.

**B)** Choose the proper current setting. Push the “CURRENT” switch (Fig. 3) up to choose AC to produce a black mark. Push the switch down to choose DC to produce a white mark. (A white mark may be desirable for etching various materials such as black oxide or highly reflective finishes such as chrome.)

**C)** The Millennium Signatures Model 311 Power Unit is equipped with 12 power settings. The 6 “low” settings are used for surface etching. Flip the “HI/LOW” switch (Fig. 4) down to “low”. With the power switch set on “low” the power settings are: **A**=5 Volts, **C**=11 Volts, **D**=14 Volts, **E**=17 Volts, **F**=20 Volts. (See Fig. 7) the “high” setting is used for “deep etching” only. See the section called “Deep Etching”. Always use the lowest power setting possible to achieve desired results in order to prolong the life of your stencil.

**D)** Apply one of Millennium Signatures X4R-series electrolytes to the monopad.

**E)** You are now ready to mark your part. Firmly press the marker to the grounded substrate. Contact should not exceed 2-3 seconds for a good surface etch.

**F)** Wipe the etched area with Millennium Signatures Standard Neutralizer formulation to instantly neutralize any residual sodium content left on the surface of the part. Millennium Signatures neutralizers are good for both ferrous and nonferrous alloys. X4R-900 is an environmentally safe solution and is recommended for neutralizing in even the toughest environmental conditions.

**G)** After the part is dry, apply Millennium Signatures RPO (Rust Protective Oil) product for additional rust protection for your part.

## DEEP ETCHING:

Flip the “POWER” switch up to “high” to deep etch. When the unit is set on high a red warning light will be visible above the “High/Low switch” (Fig. 8).

With the power switch set on “high” the power settings are: **A**=26 Volts, **B**=28 Volts, **C**=31 Volts, **D**=34 Volts, **E**=37 Volts, **F**=40 Volts. Keep in mind that the higher the power settings, the shorter the life of your stencil.

Best results are achieved by using a series of short dwells to minimize heat build-up. The more short dwells used, the deeper the etch. Always use Millennium Signatures Deep Etch Monopads as they are produced using a special felt material that contains no oil and wax or additional contamination that has otherwise proven to interfere with the etching process and also Millennium Signatures X4R-series electrolytes for best results.

## HOUSEKEEPING:

It is important to keep your unit free of oxidation, and salt build-up. This will ensure years of dependable, trouble free operation.

**A)** Keep the cord ends, alligator plug, marking heads and grounds clean. If corrosion appears, use a light abrasive such as emery cloth to clean it off.

**B)** To prevent corrosion build-up, separate the marking head from the H-100 holder at the end of each day. Remove the top plate of the B-1220 or B-2045 bench fixture when it is not in use. Following these simple steps will keep the two surfaces fusing together, ensuring good electrical contact. This will allow quick changeover between runs.

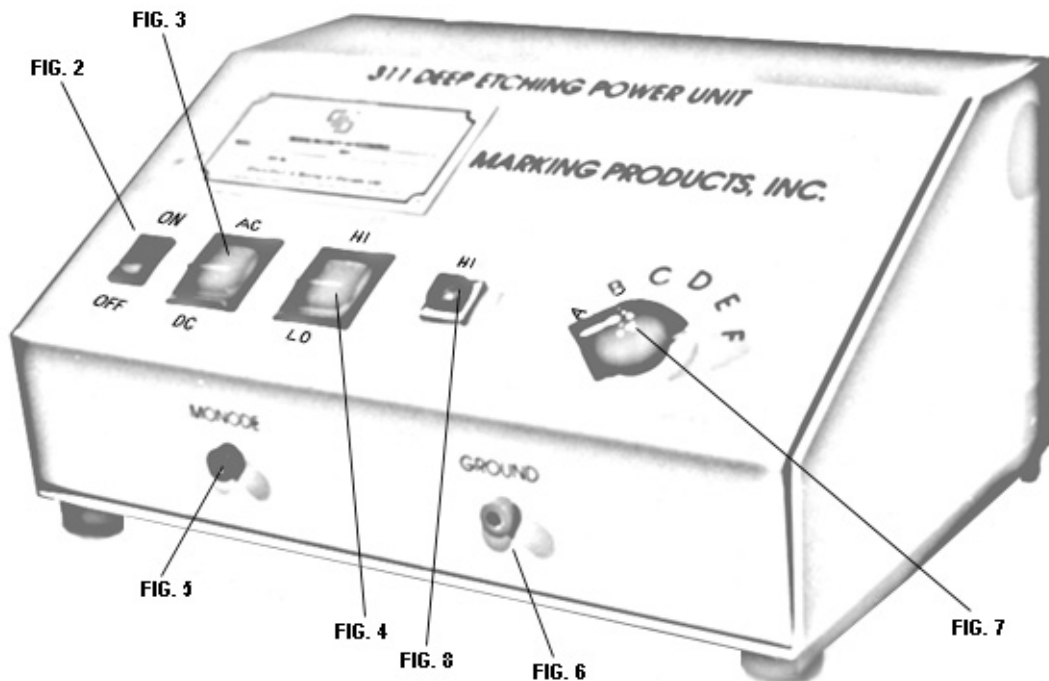


ILLUSTRATION 3-A

C) Millenniums Signatures Long Life Fabric Stencils and Monopads are designed to be used again and again. Simply rinse them under cold water and place them on some toweling to air dry for future use.

## **FOR ROLL MARKING APPLICATIONS**

(OPTIONAL) MS-1220 / MS-2045 Bench Fixture is required

**NOTE:** To avoid short circuits (See illustration 1-A), do not cross the leads or make contact between the marker and the grounded surface when both surfaces are bare.

### **DIRECTIONS:**

**A)** Plug the black wire into the jack of the bench fixture.

**B)** Remove the top plate (carbon) from the fixture.

**C)** Pour the recommended electrolyte into the well.

**D)** Replace the top plate.

**E)** Place a monopad (blue side out) on the top plate, and secure it with the enclosed “O” ring. Make certain that the sides of the pad are tucked down inside the well. This will ensure that your pad will draw the fluid without operator assistance. Use either a *B-1220-3*, *B-1220DE*, *B-2045-3*, or a *B-2045DE* monopad for best results.

**F)** Place the stencil over the pad with the reading face down, as if to read the information from the bottom of the fixture. Slide the “O” ring over the stencil pad and top plate until it snaps into the machined groove.

**G)** Connect the hand ground (flat bottom or knife edge) to the ground jack of your power unit.

**H)** Place the substrate (surface to be marked) on the stencil in front of the reading. Place the hand ground on the substrate, and roll the substrate over the reading, using moderate pressure.

**I)** Apply Millennium Signatures Standard Neutralizer to any area of the substrate that has come into contact with the electrolyte.

**J)** For added protection, apply Millennium Signatures Rust Protective Oil (RPO) product. It is always a good practice to apply oil to ensure rust and corrosion protection.

**If you have any questions or require additional accessories or supplies contact**

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