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Millennium Signatures
MARKING SYSTEMS

Model MS-400 Instruction Manual



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MODEL MS-400-cc SOLID STATE POWER UNIT

MARKING AND OPERATING PROCEDURES

You have just purchased the industry's most durable, technically advanced 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.

For additional information please contact Millennium Signatures Marking Systems or refer to our General Information Guide for Electro-Chemical Etching Equipment, Accessories and Supplies.

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MAIN FEATURES:

- “AC-DC” Selection
- “Voltage” Selection
- “Automatic Mode” Selection
- Two individually timed selector dials, calibrated from 0.2 to 3.1 to automatically control the machine cycle time
- “Power Pulse” Selection
- Two individually timed selector dials, calibrated from 0.2 to 2.4 to automatically control power pulsing
- Foot Pedal (optional), Manual, or Automatic Operator Selection
- 2-“3.0” Amp Fuses for Power Unit Protection Against Overloading
- Low Profile Housing to Easily Accommodate Restricted Areas
- Built-in Alarm to Alert Operator of Amperage Overload

NOTE:

A) 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.

B) Your power unit is designed to work from a 110-120 AC volt outlet only. (220 is available upon request.)

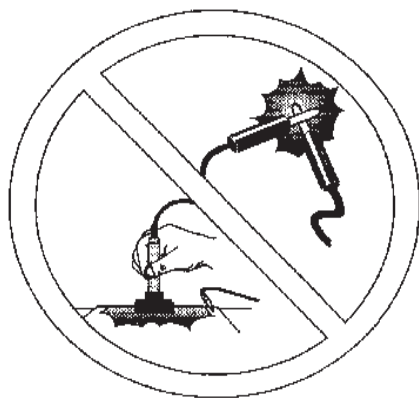


ILLUSTRATION 1-A

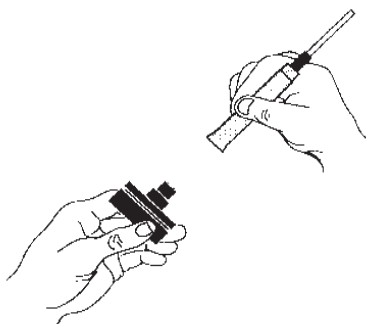


ILLUSTRATION 2-A

MANUAL OPERATION:

A) All four (4) adjustment dials (Figs. 1 & 9) are inactive during manual operation. Use only the following buttons: “ON-OFF” (Red), “AC-DC” (Blue), “POWER SELECTION A thru F (White). Make sure the “TIMERS ON” and “REPEAT” buttons are in the up (off) position. (See Figs. 2,3,5 and 8, illustration 3-A). Turn the power unit on. Choose the proper current setting. AC produces a black etch. DC produces a white etch and is also used when deeper etching is required. A white etch may be more desirable when marking various metals such as black oxide or brilliant highly reflective material finishes such as Polished Stainless Steel or Chrome. This will produce a matte finish etch which contrast with the bright reflective finish making it more easily visible.

SET-UP AND OPERATION

The Model MS-400-cc Power Unit is designed to operate manually, semi-automatically or automatically. Follow the set-up and operating instructions given for your application.

MANUAL SET-UP

- A) Plug your unit into a 110-120 Volt (AC) outlet only.
- B) In the manual mode only two (2) wires are required.
Plug the Black wire into the “Monode” jack on the front of the unit (Figure 4, Illustration 3-A) and the Red wire into the “Ground” jack (figure 6, Illustration 3-A).
- C) Clip the ground clip attached to the Red wire directly to the part being marked to a grounding plate or fixture.
- D) Plug the opposite end of the Black wire into the end of the H-100 Holder (Hand Marker – Handle)

B) The Model Ms-400-cc Power Unit is equipped with six power settings: **A= 5 Volts, B= 8Volts, C= 11 Volts, D=14 Volts, E= 17 Volts, F=20 Volts.** Depress any one of the white power setting buttons to select the desired voltage. Always use the lowest power setting possible to prolong your stencil life. The more current passing through the stencil, the more heat is generated. The more heat generated the more damage is potentially being done to your stencil. This applies to all stencil types including Long Life Fabric Stencils, Standard Paper Stencils and High Resolution Thermal Printed Paper Stencil product.

C) Apply one of Millennium Signatures Marking Systems formulated electrolytes to the monopad.

D) You are now ready to mark your part. Position your stencil on the part. Using only very gentle pressure apply the marking head by pressing the damp monopad against the stencil making sure to cover the exact areas on the stencil where the image appears. Results should happen immediately and contact with the part should not exceed 2-3 seconds for conventional surface etching applications.

E) Removing the hand marker from the part. Then remove the stencil from the surface of the part to reveal your etched results. Due to the fact that the electrolyte is sodium based and the residue left behind could continue to cause some surface oxidization, it is highly recommended that you use a clean cloth or sponge to wipe the surface of the part effected by the marking with a neutralizer that is designed to neutralize any traces of sodium remaining. It is recommended that our Standard Neutralizer Formula or our Heavy Duty Concentrated X4R-900 Neutralizer is used for this process.

F) After the part is dry, our MS-RPO (Rust Protective Oil) product can be applied to the area for additional protection is desired.

[SEMI-AUTOMATIC SET-UP WITH AN AM10-A OR 30T MARKER:](#)

A) Plug your power unit into a 110V AC power outlet.

B) Connect the four wire cord set to the corresponding jacks on the power unit and the marking machine, for example: black to black, yellow to yellow, and green to green. The red lead is the ground. Be sure the ground lead is properly grounded to the part or fixture in semi-automatic marking operations.

Please note: on applications using marking from the bottom up or simultaneous top and bottom marking, request set-up information from your sales representative.

C) Plug the footswitch into the back of your power unit.

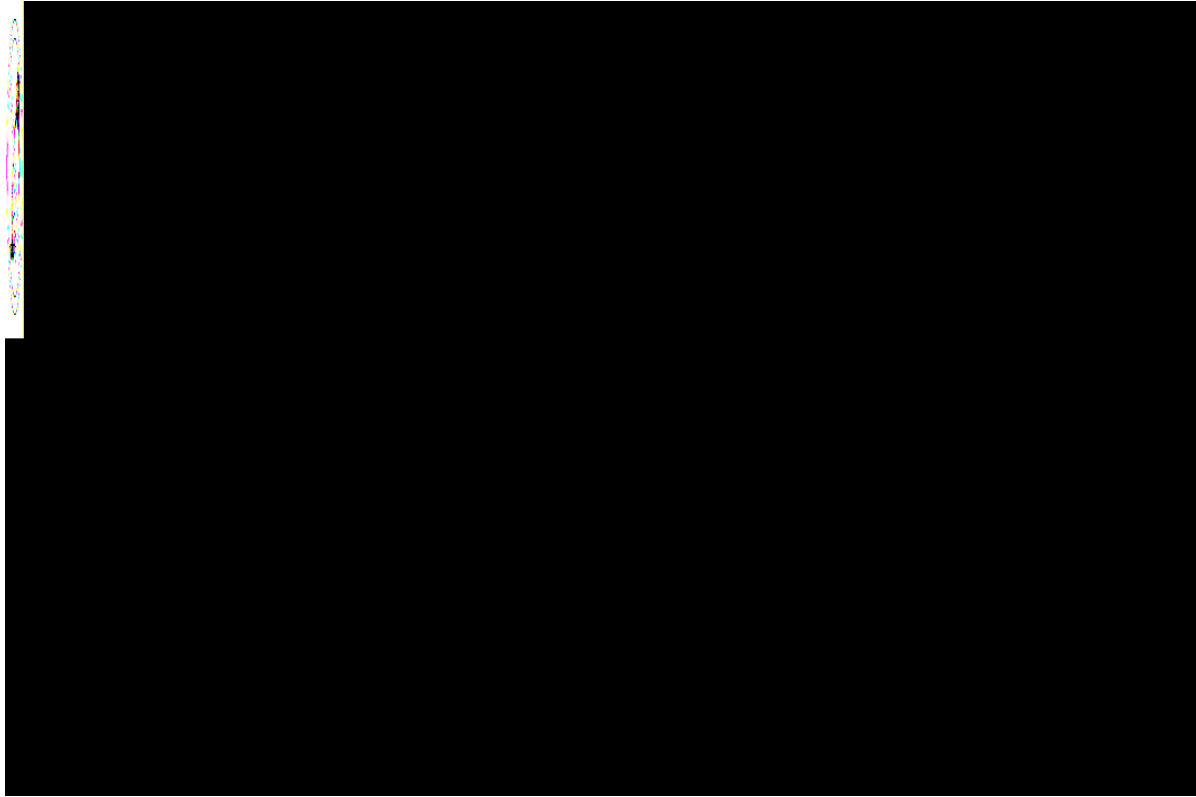
D) Place the appropriate monopad on the marking head and attach the insert stencil, cap stencil, or flat stencil as required.

E) Place the long tube from the #152 electrolyte pump in the open bottle of electrolyte. Prime the pump by rotating quickly clockwise. The pump is adjusted by the small set screw on the stop below the lever.

SEMI-AUTOMATIC POWER UNIT SETTINGS

A) Depress the red “ON” button.

B) Choose the desired current by selecting the blue “AC/DC” button. When the button is in the up position it is set for AC, when depressed it is set for DC.



C) The button identified as “REPEAT CYCLE” should be in the up position. This allows the footswitch to start the marking cycle.

D) Set the cycle time by rotating the dials under the heading “ACCESSORY CYCLE TIME”. (See Fig. 9) To control the amount of time the marking head spends in contact with the part being marked (dwell time), the dial marked “ON” is rotated clockwise to the desired setting. Most dark marking applications require a setting of one to three seconds. The dial marked “OFF” is not used when using a footswitch to start the marking cycle. The “REPEAT CYCLE” button is up.

E) Set the current cycle time with the timers marked “MARKING CURRENT CYCLE TIME”.NOTE: Most etching operators do not use the “MARKING CURRENT CYCLE TIMERS”. They are activated by pushing the “TIMERS ON” button. (Fig. 5)The dial marked “ON” controls the length of time the marking current is delivered to the marking head. The “OFF” timer controls the length of time the current flow is interrupted. These timers continue to alternate timing until the total cycle time, the time set by the “ON” timer, under “ACCESSORY CYCLE TIME” expires. For example: if the total time controlled by the “on” timer under “ACCESSORY CYCLE TIME” is 8 seconds, and the timers under “MARKING CURRENT CYCLE TIME” are “OFF”

1 second and “ON” 2 seconds, the timers would sequence OFF, ON, OFF, ON, OFF and then the head would retract.

These timers are used for applications that require a long marking time. A long marking period builds up heat that breaks down the stencil. These timers pulse the current to the marking head. This prolongs the stencil life and reduces the total marking time needed.

These timers are also helpful in marking contour parts. The “OFF” timer is first to time out. This allows time for the marking head to descend and seat the stencil on the part before the current is supplied. This improves the quality of marks on contoured surfaces.

F) To activate a single machine marking cycle, depress the footswitch.

AUTOMATIC SET-UP:

Set-up for automatic marking is the same as for semi-automatic marking. Refer to the instructions previously given.

AUTOMATIC MARKING WITH AN AM10-A OR AM30-T:

Set-up and control functions are the same as semi-automatic operations except the footswitch is not used to activate each marking cycle. Set the “OFF” time under “ACCESSORY CYCLE TIME” to the amount of time required between marking cycles, for example the amount of time an operator may need to load and unload the part fixture. Push the “REPEAT CYCLE” button (Fig. 3) Use the footswitch to start the automatic marking equipment.

HOUSEKEEPING:

It is important to keep your unit free of oxidation, and salt build-up. This will insure 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 an 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 the day. Remove the top plate of the MS-1220 or MS-2045 bench fixture when it is not in use. Following these simple steps will keep the two surfaces from fusing together, insuring good electrical contact. This will allow quick change over for between runs.

C) Millennium Signatures stencils and pads are designed to be used over and over again. Simply rinse them under cold water and place them on some toweling to dry. They are ready for use whenever you are.

THE MILLENNIUM SIGNATURES MS-1220/MS-2045 BENCH FIXTURES FOR ROLL MARKING APPLICATIONS

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 black jack of the bench fixture.
- B) Remove the top plate (carbon) from the fixture.
- C) Pour the recommended “pH” balanced electrolyte into the well.
- D) Replace the top plate.
- E) Place a monopad (white 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 insure that your pad will draw the fluid without operator assistance. Use either a MS-1220-3, MS-1220DE, MS-2045-3, or MS-2045DE monopads 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) Use Millennium Signatures X4R Series “pH” balanced neutralizer to neutralize any area of the substrate that has come into contact with the electrolyte.
- J) For added protection, apply Millennium Signatures Rust Preventative Oil (RPO). It is always a good practice to apply oil to a clean dry surface.

FOR ADDITIONAL INFORMATION CONTACT
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THANK-YOU