

ELECTROCHEMICAL MARKING MACHINES

MODEL : HD-600

OPERATION MANUAL

Standard Accessories :

1. Main unit controller HD-600.....	1 set
2. Marking stamps.....	2 pcs
3. Chemical liquid 100c.c.....	2 bottles
4. Connection wire of marking stamps.....	2 sets
5. Felt set.....	20 pcs
6. Wooden case(with stainless steel board).....	1 carton
7. Fuse.....	2 pcs
8. Operation Manual.....	1 copy

Introduction of Electrochemical Marking Machines

1. Principle :

Electrochemical marking machine is a combination of electronic and chemical technology, and it makes use of the power output through marking stamps, stencil (patterns & words), and chemical electrolyte to do electrical discharge on the metal workpiece. By this processing, the patterns or words will be stamped on the surface of metallic products forever without being stripped off and deformed, and further, no burr or stress, etc. Poor factors come out. Moreover, the color can be directly stamped on the surface of metal for beautiful purpose and practical use.

2. Scope of Application :

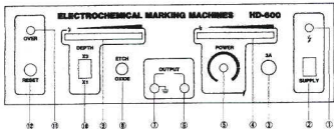
For various series of steel materials, copper, aluminum, alloy, magnesium, and chromium, etc. It is suitably used for metallic materials which include machine tools, fittings, hand tool's bearing, and automobile parts, etc. Metallic products. Wide range of application.

Oxide can be done on the metallic surface or on different shapes (such as : cylindrical sphere), easy to operate, accurate setting, with best oxide effect and high speed.

3.Coordinating Conditions :

- (1) Patterns and words required to stamp on the metallic surface have to be produced as Stencil for oxide and stamping or marking.
- (2) Different metallic materials have to mate with different electrolyte for the ideal effect. Therefore, welcome the actual object sample provided for

stamping, so that we may provide the best condition for you.



- (1) Power lamp
- (2) Power switch
- (3) Fuse
- (4) OXIDE capability indicator
- (5) OXIDE capability adj. Knob
- (6) Output terminal (connecting to marking stamps)
- (7) Output terminal (connecting to the bottom plate)
- (8) OXIDE/ETCH selector
- (9) OXIDE current indicator
- (10) OXIDE current indicator range selector
- (11) Short-circuit/Over lamp
- (12) Short-circuit/Over protector Reset switch

Direction of Panel :

1. Power Lamp : When the power is connected, this lamp is lighted.
2. Power Switch : When set at "1", the power is ON. When set at "0", the power is OFF.
3. Fuse : When overload or short-circuit and other abnormal conditions, the fuse will be broken off. (When replacing the fuse, make use of a sharp object insert it into the hole beside fuse base and the fuse will jump automatically. After it is replaced, then press it.)
4. OXIDE Capability Indicator : This indicator can mate with the capability strong/weak adj. Knob 5 at free choice. (Oxide pressure can be adjusted according to the actual marking object.)
5. OXIDE Capability Adj. Knob : This adj. Knob is to adjust the power size of capability for mating to the stamping surface of actual object and marking material quality, etc. To get the best effect on oxide and marking. Also,

the marking condition can be read clearly from the indicator.

6. Output Terminal (connecting to marking stamps) : This output terminal is black negative (-) output to connect to the marking stamps.
7. Output Terminal (connecting to bottom plate) : This output terminal is red positive (+) output to connect to the bottom plate, i.e. workpiece.
8. OXIDE/ETCH Selector : This selector is for either OXIDE or ETCH function. When set to OXIDE, the pressure output is AC. And thus the patterns and words will be stamped or marked on the workpiece through stencil. When set to ETCH, the pressure output is DC. Thus, the patterns and words will be stamped or marked on the workpiece through stencil with deep effect.
- ☆ *Either OXIDE or ETCH, the workpiece's materials (such as : stainless steel, black iron, aluminum, copper, and carbon steel, etc.) Shall be given different coded chemical liquid for the best effect.*
9. OXIDE Current Indicator (DEPTH) : This indicator is to show up the inducting current. If the contact surface is larger (i.e. stencil area is larger, the conducting current will be bigger), the condition of oxide will be shown up whenever the oxide marking is required to ensure the quality.
10. OXIDE Current Indicator, Range Selector : This switch is used for selecting the range of application, for example, if the stencil area is big, then the indicator will be fully lighted. When set to *1 position, the indicator will be weakly lighted. If stencil area is small, then set to *3 position to enlarge the indication.
11. Short-circuit/Overload indicator : When short-circuit or overload is occurred, this indicator will be lighted automatically and the power will be cut off automatically.
12. Short-circuit/Over protector Reset : When short-circuit or overload is occurred, the protector inside the marking machine will power off automatically. If wanted to continuous marking, press RESET. The indicator is unlighted.

☆ *Be careful after the marking on workpiece is finished, the workpiece shall be cleansed completely, wiped off and treated with rust-proof to avoid being rusted.*

CAUTIONS :

1. This controller is AC 110V or 220V, and keep attention to voltage specification label for correct use.

2. When marking the patterns or words or code no. On the workpiece, it has to be produced as Stencil or printed on stencil paper for the easy marking.
3. Function of attachments :
 - (1) Conducting stainless steel plate : Cable and plug will conduct the electrode to the stainless steel. When marking, the workpiece shall be placed on its upper part for conducting.
 - (2) Connecting wire : It is divided into two sets.
 - 1) One set will connect the output pressure to the outside working bench.
 - 2) Another set will make use of conducting plate for conducting. Another wire will connect to the marking stamps.
 - (3) Marking stamps : Enclosed with felt set. When using, after connect to the power, the felt set will stain with electrolyte and until it is wetted for marking.
 - (4) Electrolyte : The chemical liquids used for marking will be stated below for different functions :
 - HD-101A : Black words pattern for ETCH marking.
 - HD-501 : Rust-proof liquid, after the marking is finished, it can be applied on the marking part. Or put the finished workpiece into this liquid for rust-proof purpose.
 - HD-103 : Chemical liquid used for marking, and black words pattern with long lasting rust-proof purpose.
 - (5) Felt set : Attached to electrolyte, after used for a certain time, please renew the felt set for clean purpose.
 - (6) When marking or stamping, place the workpiece on the conducting plate, stencil shall be placed on the workpiece. Then, let marking stamps work 3-4 times on the workpiece for the best effect.
4. The electrolyte is a kind of chemical liquid, so don't drink it. After the marking is finished, wash your hand with water.

Direction of Operation :

1. Set power switch SUPPLY to 1 (ON) position.
2. Adjust POWER knob to appropriate position, on upper indicator, the adjustment condition can be shown up. We suggest you to adjust the position of red and yellow lamp to get the est marking effect. If ETCH is required, then continued adjust to strong position (Green lamp is lighted).
3. If selected for OXIDE or ETCH, the marking will keep metallic surface

bright color for the clear mark. If ETCH is required, then metallic surface will be marked deeply to let color become weak. Select by yourself.

4. Selecting DEPTH at x3 position, the marking can be chosen. The marking result of each time will be shown on the fixing position of the indicator. If when marking, the position on indicator is different or become smaller and smaller, then maybe the chemical liquid is not too much or poor connection of workpiece. So, please add in the chemical liquid or adjust the working position.
5. First wet the felt set on the marking stamps, and put workpiece on the conducting plate. Then, place and fix the stencil on the workpiece, making use of the sliding times of marking stamps on stencil, the patterns on stencil can be marked or stamped on the workpiece.
6. After testing for several times, the best marking effect can be obtained.
7. After marking, clean stencil and marking stamps with water for long service life.

How to select the electrolyte (chemical liquid) :

<i>NO.</i>	<i>Marking on metallic material</i>	<i>Metallic surface treatment</i>	<i>Color</i>	<i>Remark</i>
HD-103	Iron, high carbon steel, stainless steel.	Grinding surface	Black	For ETCH.
VC-23	Iron, high carbon steel, stainless steel.	Grinding surface	Black	Neutral liquid with best rust proof.

Material Safety Data Sheet

I. PRODUCT IDENTIFICATION

Water-based cleaning compound.

Mixture of surfactants, detergents, softening agents, inhibitors and emulsifiers in water.

PRODUCT NAME: VC-23 Chemical liquid

II. Compositional Identification Data

Pure substance		
English name	Chemical liquid	
Synonym	Grinding Liquid	
CAS No.	151-21-3	
Percentage of hazardous ingredients	SDS(Sodium dodecyl sulfate)30%	
Mixture	Water and Citrate Buffer	
Chemical Property	Viscous Liquid	
English name of hazard	Concentration percentage	Classification and format of hazard
SDS	30g/KG Sowollow	

III. Hazardous Identification Data

The most hazardous effect	Health hazardous effect: Irritating and corrupting to eyes and skin	
	Environmental effect: Foaming	
	Physical and chemical hazard: N/A	
Cardinal symptoms		
Classification of hazard	Mild Irritation	

IV. First-Aid Procedures

First-aid procedures of overexposure	
Nose	N/A
Skin	Rinse immediately with large volume of cold water
Eye	Rinse immediately with large volume water at least 5 minutes, and seek medical advice
Mouth	Drink with large volume water/milk, and seek medical advice
Follow the doctor's advice	

V. Fire and Explosion Measure

Extinguishing media	Non-flammable
Possible hazard	N/A
Specially extinguishing procedures	N/A
Special protection of fireman	N/A

VI. Remedy of Escape

Personal	Wear suitable protection	
Environmental	Waste Liquid exhaust through waste water processing station	
Clear procedures	Wash with water until foam-clear	

VII. Safety and Storage

Safety	Only stack up to 3 barrels, and don't put anything above or below	
Storage	Avoid extreme heat or cold	Exp. Time: 3 years

IIX. Protection

Engineering control	N/A	
Control parameter	N/A	
Personal protection	Hand: Wear gloves Eyes: Wear glasses Skin/body: Wear protective clothing	
Sanitary custom	After using, rinse with soap and water	

IX. Physical and Chemical Property

Appearance	Slightly Brown liquid
Odor	Acidulous
Boiling point	230°F approx
PH	5 ± 0.1
Analytical temperature	> 2°C
Normal temperature	22-210°F
Vapor density	N/A
Vapor pressure	N/A
Density	1.05
Solubility	Infinite soluble with water
Explosive limit	Non-flammable and non-explosive

X. Reactivity Data

Stability	Stable
Avoidable condition	Don't mix with the other reagents or solvent
Hazardous Reaction	N/A