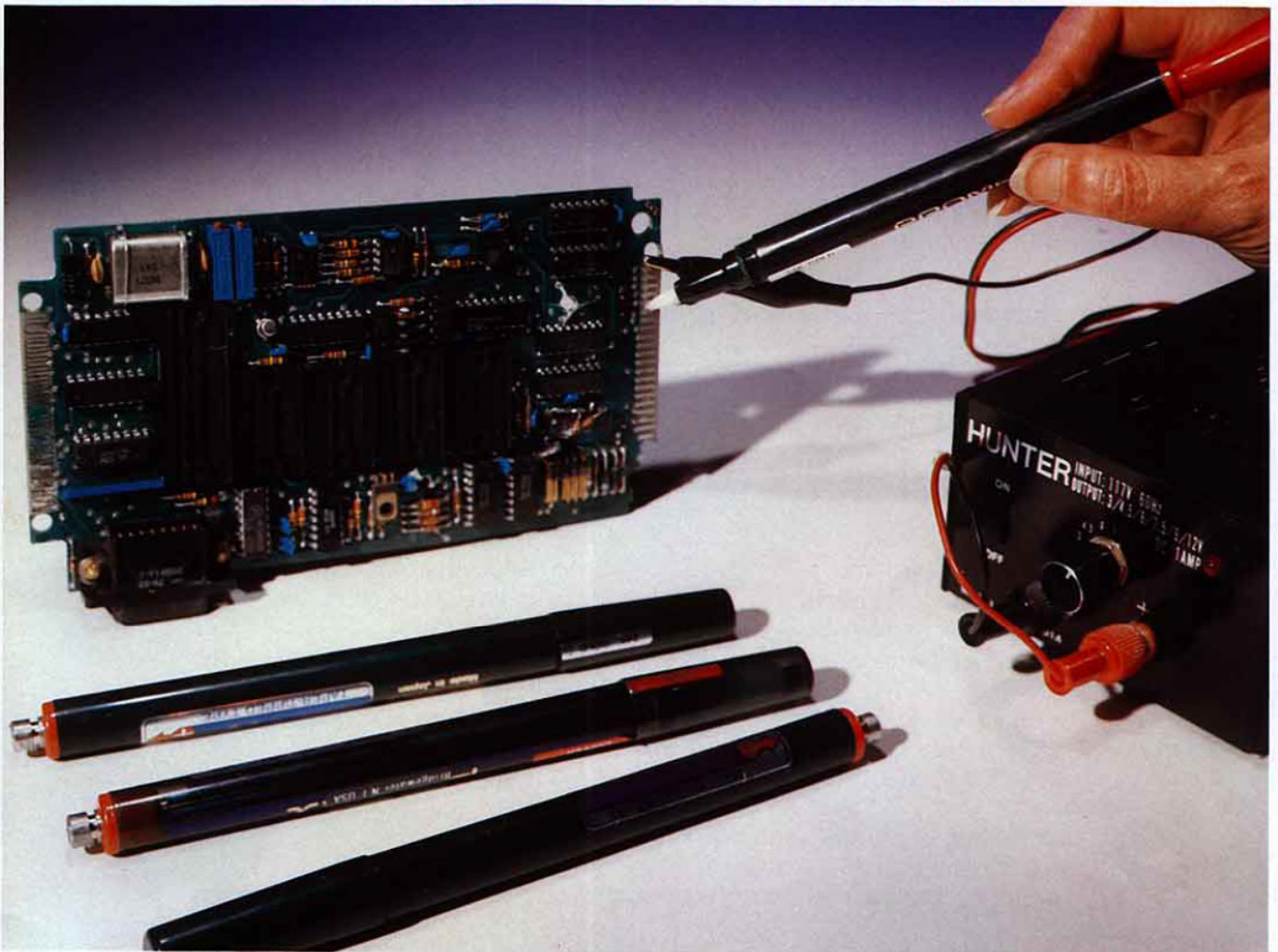


HUNTER MICRO-METALLIZER PENS

ULTRA-COMPACT ELECTRO PLATING SYSTEM WITH MARKER PEN CONVENIENCE



This new, low-cost system has been developed specifically to provide a simple and convenient electro-plating capability for such applications as scientific and engineering development, electronic repairs, specialized production, dental work and special art-work, and restoration. Completely self-contained and portable it is equally useful in lab, office or shop. Utilizing special disposable cartridge-pens this system permits an instantaneous selection from a wide variety of plating possibilities without the necessity for expending time, effort and expense in preparing special plating solution. Above all, it is simple to use with no special skill required!

A complete selection of pens is available for a wide variety of plating requirements. Power can be supplied by your own variable D.C. supply capable of supplying up to 12 volts at 0.1 amp or our variable voltage power supply.

FEATURES:

- Fully-integrated system
- Ultra-compact & portable
- Can be used anywhere
- Produces high-quality results
- Partial and selective plating possible
- Instantaneous selection of type of plating
- Solutions sealed in cartridge-pens - Protected against contamination
- No skill required
- 110 volt operation

HUNTER MICRO-METALLIZER PENS

- Partial plating can be done easily without specialized skill. The scope of use is unlimited in work that requires partial or selective plating of surface, in making experimental models, in various repairs and in work that requires manual processing such as finishing or repairing craft work and precious metals.
- One of the most important features of this plating system is that each solution is self-contained in its own marker-type pen. There is no need to prepare special plating baths or solutions. Simply connect the desired pen to the power supply and start plating!
- The Hunter plating pen is disposable and non-refillable. The plating solution is thus fully protected from accidental contamination.
- The optional variable voltage power supply is extremely compact and portable. It is normally supplied for 110 volt, 60 HZ operation but can also be supplied for 230 volt operation if desired.

Note: These units are not applicable for aluminum surfaces.

Some Typical Applications of the Hunter Micro-Metallizer System

Electronics

- Repair of P.C. Boards
- Repair of contact fingers
- Repair of micro-wave components
- Experimental work on contact surfaces

General Lab Work

- Repair of instruments

Dental Labs

- Gold Plating of crowns and other metal surfaces

Optical

- Replating of frames
- Instrument repair

Jewelry and Arts/Crafts

- Repair and touch-up
- Special effects. (Selective plating of engraved designs)
- Can be used anywhere
- Produces high-quality results



PLATING REQUIREMENTS

PENS	CATALOG NO.	VOLTAGE D.C.	
Absorbent	PL-1002	10V-12V	For cleaning all metals, except stainless steel prior to plating
Gold-24K	PL-1003	6V-8V	Plates over gold, nickel and silver.
Gold-18K	PL-1004	6V-8V	Plates over gold, nickel and silver.
Gold-14K	PL-1005	6V-8V	Plates over gold, nickel and silver.
Nickel	PL-1006	5V-6V	Plates over copper. Apply copper flash using copper pen to non-copper surfaces
Black Nickel	PL-1007	8V-10V	Same as nickel.
Silver	PL-1008	5V-6V	Plates over any metallic surface except aluminum or chromium.
Chrome-Color	PL-1009	6V-8V	Plates over copper. Apply copper flash using copper pen to non-copper surface.
Copper	PL-1010	6V-8V	Plates over any metallic surface except aluminum or chromium.
Rhodium	PL-1011	8V-10V	Plates over nickel. Non-nickel surfaces should be first flashed with copper, and then with nickel.
Tin	PL-1012	6V-8V	Plates over any metallic surface except aluminum or chromium.
Zinc	PL-1013	6V-8V	Plates over any metallic surface except aluminum or chromium.
Absorbent for Stainless Steel	PL-1014	10V-12V	For cleaning and activating stainless steel.
Palladium	PL-1015	6V-8V	Plates over nickel. Non-nickel surfaces should be first flashed with copper, and then with nickel.
Gold 24K-Heavy	PL-1016	6V-8V	Plates over gold, nickel and silver.
Gold 18K-Heavy	PL-1017	6V-8V	Plates over gold, nickel and silver.
Silver-Heavy	PL-1018	5V-6V	Plates over any metallic surface except aluminum or chromium.
Copper-Heavy	PL-1019	6V-8V	Plates over any metallic surface except aluminum or chromium.
Nickel-Heavy	PL-1020	5V-6V	Plates over copper. Apply copper flash using copper pen to non-copper surface.
Connector Cables	PL-1001		For use with power supply.
Power Supply (Optional)	PL-1000	110V 60HZ or 220V 50HZ	

NOTE: In the case of zinc die-castings or steel it is recommended that a copper flash be applied prior to the application of any other plating.

SPECIAL OFFERS - SAVE \$\$\$

<p>Deluxe Kit Complete with power supply, connector cables and the following pens:</p> <p>1 ea. Absorbent 1 ea. Silver 1 ea. Gold (24K)</p>	<p>PL-1000K 1 ea. Nickel 1 ea. Chrome Color 1 ea. Copper</p>	<p>Contact Repair Kit Complete with power supply, connector cables and the following pens:</p> <p>1 ea. Absorbent 1 ea. Gold (24K)</p>	<p>PL-1000C 1 ea. Nickel</p>
<p>Heavy Duty Kit Complete with power supply, connector cables and the following pens:</p> <p>1 ea. Absorbent 1 ea. 24K Gold-Heavy 1 ea. Copper-Heavy</p>	<p>PL-1000HD 1 ea. Silver-Heavy 1 ea. Nickel-Heavy 1 ea. Rhodium</p>	<p>Contact Repair Kit - Heavy Duty Complete with power supply, connector cables and the following pens:</p> <p>1 ea. Absorbent 1 ea. Gold (24K)-Heavy</p>	<p>PL-1000CHD 1 ea. Nickel-Heavy</p>

CUSTOM KITS TO YOUR SPECIFICATION. PRICES QUOTED ON REQUEST.
DUE TO THE FLUCTUATIONS IN THE COST OF THE PRECIOUS METALS PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

DESCRIPTION OF OPERATION

Preparation:

The operation of the Hunter Mini-Plating System is extremely simple and consists of the following basic steps:

If the surface to be plated is discolored or oxidized polish thoroughly with a fine metal polish until discoloration or oxide surface is removed. Wipe the surface well with a clean cloth after polishing.

De-Greasing:

Connect the part to be plated to the negative (-) of the D.C. supply. Connect the absorbent pen to the positive (+) of the D.C. supply. Adjust working voltage to 10-12 volts. Hold the tip of the absorbent pen so that its entire surface contacts the part and then lightly rub back and forth in a slow stroking action. Small bubbles will form to remove oil and grease. Rinse after completing degreasing action.

Plating:

Working voltage required for plating varies with the type of plating pen used. The voltage required is indicated on each pen. Adjust voltage to indicated value, connect part being plated to the negative (-) and the plating pen to the positive (+) of the supply. Apply the tip of the pen to the object so that its entire surface is in contact. Move the pen lightly back and forth and the plating will be deposited. Finally, rinse the part in water and wipe with a soft cloth.

TECHNICAL DETAILS

PLATING THICKNESS

Maximum plating thickness attainable with standard pens is 1.5 - 1.8 microns. Heavy type pens can attain 3 - 3.6 microns thickness. Typical times to achieve various thicknesses on a 1" x 1" copper surface are as follows:

Pen Type	2 Minutes	3 Minutes
Gold	0.5 microns	0.8 microns
Palladium	0.5 microns	0.8 microns
Silver	0.5 microns	0.8 microns
Rhodium	0.7 microns	1.0 microns
Nickel	0.4 microns	0.6 microns
Black-Nickel	0.5 microns	0.6 microns
Copper, Zinc, Tin & Chrome Color	0.3 microns	0.5 microns
Gold Heavy-Rapid Type	0.8 microns	1.2 microns
Silver Heavy-Rapid Type	0.8 microns	1.2 microns
Copper Heavy-Rapid Type	0.6 microns	1.0 microns
Nickel Heavy-Rapid Type	0.8 microns	1.2 microns

PLATING COVERAGE

Each pen contains 10 ml. of concentrated plating solution and will plate approximately 300 sq. inches of surface.

Partial List of Users of Hunter Mini-Plating System

Cincinnati Milacron	E.I. DuPont de Nemour	IBM Corporation
Hewlett Packard	Hughes Aircraft	Raytheon
AT&T	R-Tec	U.S. Air Force
The Aerospace Corporation	Texas Instruments	Motorola Inc.
U.S. Army	U.S. Navy	TRW Technar
Martin Marietta	General Motors/Fisher Division	Westell Inc.
K & L Microwave Inc.	Medicomp Inc.	Powerex Inc.
Electro Etch Circuits	Charleston Naval Shipyard	Princeton University
New England Sciences	Harvard University	Aritech
Vectron Laboratories Inc.	NASA Lewis Research Center	Zenith
Argonne National Laboratories	Pacific Gas & Electric Company	King Radio/Bendix
Control Data Corporation	Optek Technology Inc.	Bell Laboratories
Burton Electrical Engineering	National Instruments	G E Company
Leeds & Northrup	Matrox Electronics Systems	Teradyne
Florida Steel Corporation	Miltope Corporation	

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