



The Electropolisher Series

Tabletop Electropolishing Equipment



MODEL E1085-IS



MODEL E299



MODEL E399



MODEL E782-EP



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Features & Specs



Electropolishing Procedure

1. *Prepare Metal (Pre-cleaning). Ultrasonic cleaning is an excellent way to remove oils, debris and other impediments that will distort the polishing results*
2. *Electropolishing Process*
3. *Post Cleaning (Rinsing and drying). Important to remove the residual electrolyte and clean and rinse the part. Ultrasonic cleaning can again be used for this step, as well as warm air drying*

Electropolishing, sometimes called reverse electroplating, is an electrochemical process which polishes a metal surface by removing a microscopic amounts of material from the work piece. Electropolishing is generally used to remove a very thin layer of material from the surface of a metal part. The process is of interest because of its ability to enhance the material properties of metal parts in addition to changing their physical dimensions.

Electropolishing offers a number of benefits to metal surfaces such as:

- Removal of impurities and improvement of corrosion resistance of a metal surface. (PASSIVATES)
- Improvement of the appearance of a metal surface (HIGH LUSTER)
- Improvement of the surface resistance to stain and bacteria.
- The microstructure of the surface can be more accurately inspected.
- Removal of surface defects improving the strength of certain metals.

Some of the features of our equipment are as follows:

- 304 stainless steel cabinet
- Digital timer with push button start, capable of controlling down to 0.1 seconds.
- Units have a voltage regulator with digital DC Voltmeter and digital DC Amp meter.
- Digital temperature controller. A cooling fan is also installed to blow ambient air on the side of the tank. This fan can be turned off if not needed.
- Inert cathodes
- The unit will be wired for 120 vac.
- One year warranty on parts and labor

ESMA has developed electropolishing solutions for stainless steel, chrome- co-balt, and high nickel alloys and has experience with electropolishing of small parts in the Dental, Orthodontic and Medical Device Industries. Anode holders and cathodes are made of inert materials and are utilized to prevent contamination of the electrolyte bath.

Units can be modified with Teflon tanks and cooling coils to be used for nitinol which uses electrolytes that require cooling.

Model E782-EP houses an electropolishing cell, dip tank, and 2 ultrasonic rinse tanks in a single tabletop unit, for a complete, self-contained polishing system.

MODEL #	UNIT DIMENSION	TANK CAPACITY	CURRENT CAPACITY
E1085-1S	17"x 11"x 10"	0.5 gallon (6" x 6" x 6")	12
E299	14"x 18"x 17"	1 gallon (6" x 6" x 12")	25
E399	20"x 18"x 17"	2 gallon (6" x 6" x 18")	50
E782-EP	46"x 18"x 12"	1 gallon (6" x 6" x 12")	25 or 50

✓ UNPRECEDENTED WARRANTY

✓ OVER 30 YEARS OF SUCCESSFUL IN-FIELD HISTORY

✓ ALL STAINLESS STEEL CONSTRUCTION

✓ SINGLE PUSH-BUTTON ACTIVATION



INSTRUCTIONS FOR ELECTROPOLISHER MODEL E1085-1S



INTRODUCTION

Unit E1085-1S is used to polish small stainless or chrome-cobalt parts. With proper fixturing the unit will automatically reproduce the required polish.

The unit, constructed of stainless steel, is built to give years of reliable, trouble-free operation. The cathodes and holding assemblies are built of non-corroding alloys. Polishing solution temperature is automatically controlled by heater-cooling fan combination. The unit is designed for small scale production and R & D applications.

PLEASE READ CAREFULLY THE INSTRUCTIONS BEFORE OPERATING

INSTALLATION

Unpack, place unit on counter, and connect black wire on tank to binding post of cabinet. Pour the electropolishing solution into tank to one inch from top of tank. For stainless steel use Esma E972 and for chrome-cobalt alloys use Esma E272.

Safety Precautions: The system is designed with maximum safety features. The electropolishing solutions are mildly acidic solutions and certain precautions are recommended.

- Wear safety goggles when pouring the liquid into tank. If solution gets on your skin, rinse off with plenty of water. In case of eye contact-rinse off with plenty of water and seek medical attention.
- Solution will damage cloth and carpeting.
- A small amount of solution mist is emitted during polishing: avoid inhaling-install near exhaust or ventilated area.

Connect unit to 220VAC outlet.

OPERATION

Turn MAIN power switch ON, and set temperature control to proper temperature. Generally, 110° to 120°F is a good set point. See attached instructions for the OMRON E5GN controller. The unit has been set for 110°F with proportioning (PID) control. In approximately 20 minutes, when temperature gets within a few degrees of set point, the cooling fan will turn on and start proportioning.

TIMER

An OMRON, Model H3CA solid-state timer has been installed in unit. The timer has been set in Mode H and in seconds (See separate instructions). Simply set the time with the + or – button. After time has been set, push start button and polishing will commence for the set time. The polishing cycle can be stopped at any time by momentarily turning the main switch OFF.

POLISHING (See Diagram 1)

1. Connect part in titanium clip (30D). The part to be polished should be positioned inside cathode but not touching. If cathode touches parts, electrical shorting will occur and the fuse will blow. The cathode can be adjusted up and down. The holding device mounts on tank as follows:

- *Bottom clip (13K) of holder slides onto tank edge so that the center prong of 13K is inside tank (coated surface) and the two outer prongs of clip 13K are positioned outside of tank touching the bare tank wall.

- *Simultaneously as clip 13K is positioned on the tank wall, the threaded rod (34C) of holder is positioned into the clip 13M and post of unit.

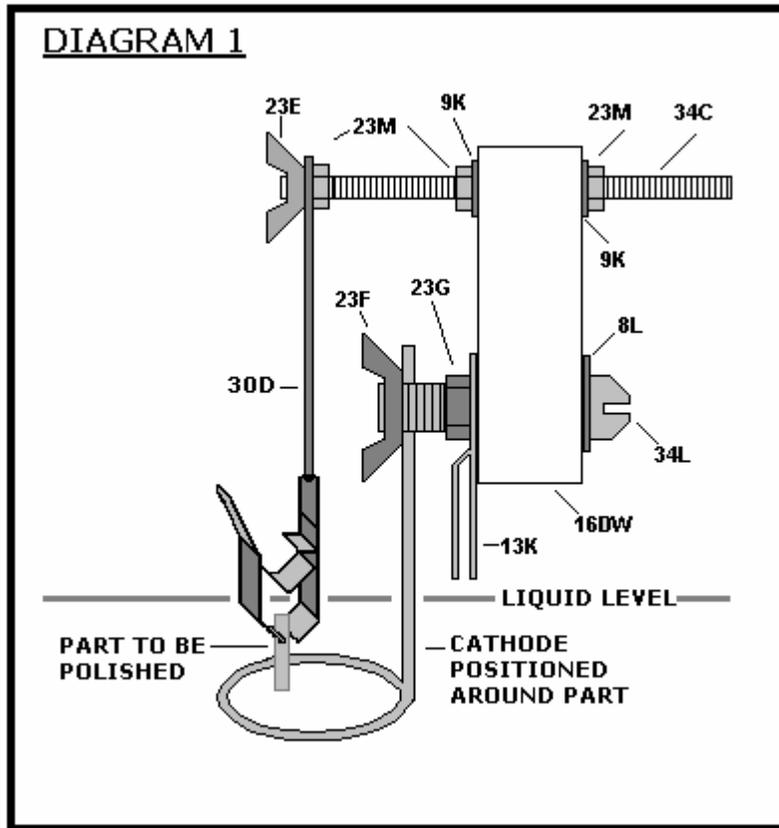
2. Push START button to start the polishing and adjust voltage.

3. After polishing:

- *Remove holder with polished parts, rinse in water.

- *Neutralize part in baking soda solution (teaspoon of soda per cup of water).

- *Rinse under running hot water, then air-dry.



MAINTENANCE

Maintain clean cabinet: wipe off with cloth wetted with mild detergent; polish with a polish for stainless appliances (such as Sheila Shine).

Solution should not be spilled on cabinet; shorting of post 13M may take place-Wipe off!

Replacement of electropolishing solutions. During polishing metal and metal oxides are dissolved, some decomposition and drag-out take place. Replace when action gets slow, solution thick, objectionable odor, non-uniform shine or rapid overheating.

CLEANING POLISHING CELL:

- Shut off unit and unplug power cord from outlet
- Disconnect black wire on tank from binding post on cabinet
- Dispose of solution (dispose properly according to local regulations); rinse tank thoroughly with water, remove any film or build up from inside, wipe tank walls with soft towel or sponge. THE TANK IS COATED, SO DO NOT USE ANY ABRASIVE MATERIAL while cleaning inside the tank. Dry tank with towel; do not pour solution into wet tank.

TROUBLE SHOOTING

<u>Problem</u>	<u>Possible Cause</u>	<u>Corrective Measures</u>
Blowing fuse	-Part touching tank cathode	-Re-position part
	-Solution spilled on cabinet and is wetting base of post	-Remove tank, loosen screw under post, remove post, rinse and dry all parts; reassemble making sure insulating washers are in place
	-None of the above	-Contact manufacturer
Odor emitted during heat up	-Solution present on heating plate	-Shut off unit, remove tank and clean up any solution on heating platform
	-Leaking of tank	-If repeated clean-ups do not eliminate odor tank may be leaking
	-Solution needs changing	-Replace with fresh solution

FOR TECHNICAL ASSISTANCE PLEASE CALL 1-800-276-2466

