

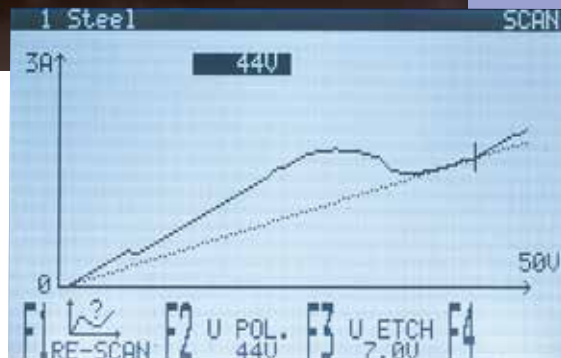
# LectroPol-5

 **Struers**

**Automatic, micro-processor controlled electrolytic polishing and etching of metallographic specimens**



- Scanning function for easy determination of parameters
- Built-in safety features
- Database with methods for various materials
- Short polishing times and maximum reproducibility





Stainless Steel,  
500x, DIC

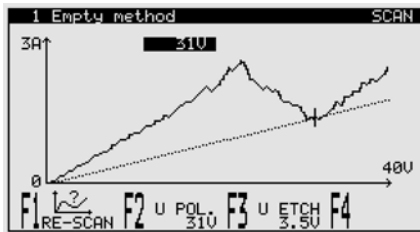


Copper,  
500x, DIC

### Scanning function for easy determination of parameters

LectroPol-5 is equipped with a unique scanning function. The sample is placed on the polishing table and a pre-defined voltage range is scanned to determine the current density curve.

This curve is used to define the correct voltage for both polishing and etching.



Instead of time consuming trial and error testing of parameters it is now easy to find the correct settings after a single scan of a new sample material.

Electrolytic polishing has now lost a lot of its "mystery" and is used in a more scientific way to prepare metallographic samples.

### Built-in safety features

With LectroPol-5, all functions are controlled through the advanced software. An increase in electrolyte temperature above a pre-defined limit will automatically result in either a warning or shut-down of the procedure in progress.

Also voltage and current are monitored constantly and if the limits of Lectro-Pol-5 are reached, settings are reduced automatically.

Thus maximum safety for both operator and equipment is provided.

### Database with methods for various materials

10 polishing/etching methods for various materials are included with LectroPol-5. A whole range of materials can thus be prepared immediately, without any lengthy and time consuming trials. These methods can also be used as starting point for the development of methods for other materials. 20 user-defined methods can also be saved in the database of LectroPol-5.

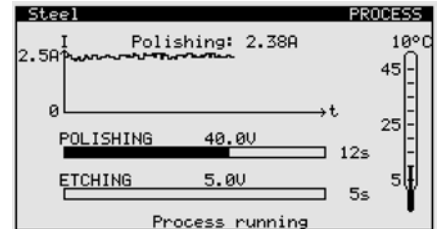
### Short polishing times and maximum reproducibility

Electrolytic polishing and etching have the advantage of very short preparation times compared to normal mechanical specimen preparation. Microprocessor control and database functions result in always the exact same parameters being used. LectroPol-5 combines both short preparation times and high reproducibility and is thus the ideal choice for fast quality control requirements.

LectroPol-5 consists of two separate units, the control unit and the polishing unit.

### The control unit

Both the power supply and the programming and monitoring functions are incorporated in the control unit. The unit is operated on the touch pad and on the backlit graphic display all parameters are presented. Upon pressing the Start button, the display

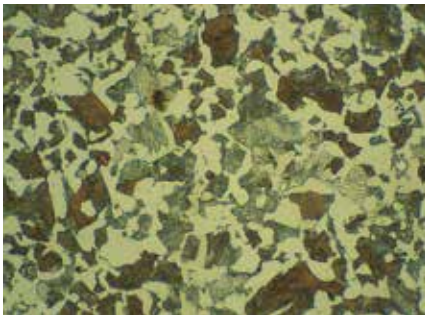


changes, and the ongoing process can be monitored. Parameters like current, electrolyte temperature and elapsed polishing/etching time are displayed. Both the display of parameters before and the display of actual values after process start provide an exceptional amount of immediately useable information. Deviations from one process to the next can be detected straightaway, and necessary measures can be taken. Required changing of electrolyte can be detected before changes of the polishing result will be noticed.

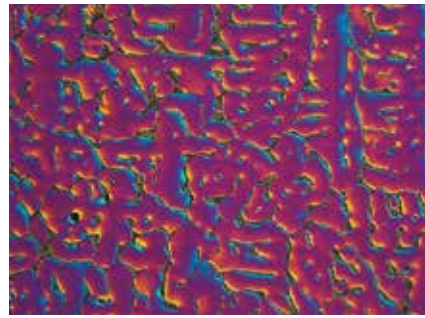
### The polishing unit

The design as a separate unit makes it possible to place the polishing unit away from the control unit. If required the polishing unit can be set up in a fume cabinet while the control unit is set up outside. With an additional start and stop key the process can also be started directly from the polishing unit. The electrolyte is stored in easily exchangeable electrolyte containers which are inserted into the polishing unit.

The pump, driven like a magnetic stirrer, and the cooling coils are lowered into the container. On the polishing table the sample is positioned and electric contact is established through the anode arm. Two different polishing units are available.



Medium Carbon Steel, 500x



Aluminium alloy cast, 200x, DIC

### With advanced cooling control

LectroPol-5 is equipped with a built-in measuring and control system, constantly monitoring the electrolyte temperature. As soon as a pre-set temperature is reached, a solenoid valve in the polishing table is activated, allowing water from the water mains or liquid from an external cooling unit to run through the cooling coil in the electrolyte container. This saves precious resources as the flow of cooling water is limited to the periods where the electrolyte temperature is above a pre-set limit.

If no water or cooling unit is connected, or the electrolyte temperature for some other reasons increases further, a warning can be displayed and eventually LectroPol-5 will shut off the process automatically.

### For polishing at sub-zero temperatures

With this unit, the stainless steel cooling coils are led directly to the back of the polishing unit. There they can be connected to an external cooling unit. The external cooling unit takes over the temperature control and regulation of the electrolyte. With this set-up, materials can be polished at sub-zero temperatures.

### External etching

LectroPol-5 is also prepared for external etching. This is often used when different electrolytes have to be used

for polishing and etching. Also with external etching a time can be set, and LectroPol-5 will automatically detect when the specimen is lowered into the external etching bowl. Then the countdown is running, and the voltage is terminated when the pre-set time has expired.

### Accessories

Apart from the standard equipment, we can offer additional accessories for special applications.

### Switchbox

To avoid the constant cleaning when changing between different electrolytes, LectroPol-5 can be equipped with two polishing tables and a switchbox to change between these two tables.

### Extension arm

For the preparation of high specimens an extension arm can be mounted.



The transparent masks facilitate monitoring the electrolyte level and the adjustment of the electrolyte flow.



## Technical Data

### Power Supply

50/60Hz (max. load 9.8A)	1 x 100V / 120V
50/60Hz (max. load 4.9A)	1 x 220V / 240V

### Output voltage/current

Polishing	0 - 100V	(1V steps) / 6A
Etching	0 - 25V	(0.5 V steps) / 6A
External Etching	0 - 15V	(0.5 V steps) / 1.5A

### Software and Electronics

Display	128 x 240 dots (16 x 40 characters)	
Controls	Touch pad	
Database	10 Struers methods + 20 user definable methods	

## Dimensions and Weight

	Control unit	Polishing unit
Width	385 mm / 15.2"	220 mm / 8.7"
Depth	350 mm / 13.8"	350 mm / 13.8"
Height	160 mm / 6.3"	160 mm / 6.3"
Weight	18 kg / 40 lbs	6.3 kg / 14 lbs

## Specifications

### LectroPol-5

Fully automatic, microprocessor controlled electrolytic polishing and etching apparatus. Complete with control unit, polishing unit (04936201) and external etching unit (02250121). One set of masks (04936915) and two electrolyte containers (04936902) included.

	Cat. no.
Control unit with external etching unit	04936233
Polishing unit with one set of masks (04936915) and two electrolyte containers (04936902)	04936201
Polishing unit for low temperature, with one set of masks (04936915), one cathode (04936908) and two electrolyte containers (04936902). External cooling unit and tubing for connection to the external cooling unit are not included and have to be sourced alternatively. Internal dia. of tubing to be used, 6 mm	04936202
Switchbox for the connection of two polishing units to a LectroPol-5 Control Unit.	04936911
Extension Arm, for the preparation of specimens up to 100 mm high. Can be mounted on pol. unit 04936202 and on pol. unit 04936201 from serial no. 4935250	04936909
1 set of masks (0,5, 1, 2, 5 cm <sup>2</sup> and 1 without aperture.)	04936915
1 set of 5 masks 0,5 cm <sup>2</sup>	04936916
1 set of 5 masks 1 cm <sup>2</sup>	04936917
1 set of 5 masks 2 cm <sup>2</sup>	04936918
1 set of 5 masks 5 cm <sup>2</sup>	04936919
1 set of 5 masks without aperture	04936920
Electrolyte container with lid	04936902
External etching unit	02250121

## List of Electrolytes

A2	A3	D2
Aluminium	Martensitic Steel	Brass
Iron	Molybdenum	Copper
Nickel	Stainless Steel	Gold
Silver	Titanium	
Stainless Steel	Vanadium	
Steels	Zirconium	
Tin		
Titanium		

Struers' equipment is in conformity with the provisions of the applicable International Directives and their appurtenant Standards. (Please contact your local supplier for details)

Struers' products are subject to constant product development. Therefore, we reserve ourselves the right to introduce changes in our products without notice.

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