



# Standard Operating Procedure

## Struers Labo-Pol21 & Labo-Force 3

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<b>School:</b>	Engineering	<b>Campus:</b>	Waurm Ponds	<b>Location:</b>	KE2.101
<b>Date Prepared</b>	04/01/2019	<b>Date to be Reviewed:</b>	04/01/2020		
<b>Category Rating:</b>	<b>Specific Training Required</b>				

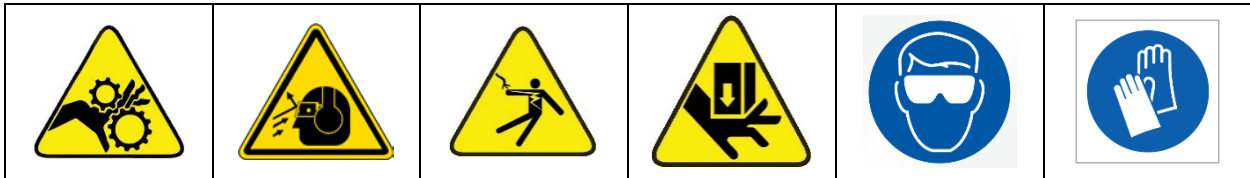
### SCOPE & PURPOSE:

The purpose of this SOP is to show students, researchers and staff how to operate the grinder and polisher safely.

### TRAINING REQUIREMENTS:

User will have completed Level 1 online and Level 2 materials labs inductions, and need to be trained in a level 3 induction by technical staff. Before using this equipment, required safety documentation must be completed and signed off by the technical staff and the user's supervisor.

### POTENTIAL HAZARDS/HEALTH EFFECTS:



- Entanglement with moving parts of the plant.
- Crushing due to contact with moving parts of the plant.
- Friction due to moving parts of the plant.
- Striking due to workpieces being ejected.
- Electrical due to possible water spillage near powerpoint.
- Slipping due to slippery surfaces if water get onto floor.
- Injury due to chemical and dust hazards.

### MANDATORY CONTROLS:

- ✓ Safety Glasses
- ✓ Nitrile Gloves
- ✓ Lab Coat
- ✓ Enclosed Footwear
- ✓ Training provided
- ✓ Project Safety Assessment
- ✓ SDS Available
- ✓ First Aid Available
- ✓ Easy to use Controls

### Precaution Requirements:

**DO NOT USE AFTERHOURS (OUTSIDE OF MON – FRI 8AM – 6PM) WITHOUT TECHNICIAN AUTHORISATION.**

- Under no circumstances is grinding to be performed without lubricant (e.g. water).
- Know your metallographic preparation method and required consumables before commencing the grinding/polishing steps.
- If using water as lubricant, the water tap must be on for the cooling system to operate.
- For grinding of thin samples or sample with specific geometries, a proper fixture must be designed and used after approval of the technical staff.
- In terms of samples larger than 30 mm in length or diameter, user should consult with the technical staff first.
- Long hair must be tied back and bracelets must be taken off.
- Do not grind/polish nano-materials or their composites unless a safety assessment is completed and approved by technical staff.

### INSTRUCTIONS:

**Booking Procedure:** must have a booking in the outlook calendar \*G SEBE ENG Lab Eqpmnt KE2.101.02 Grinding machine (even if free and available).

### **Before Use:**

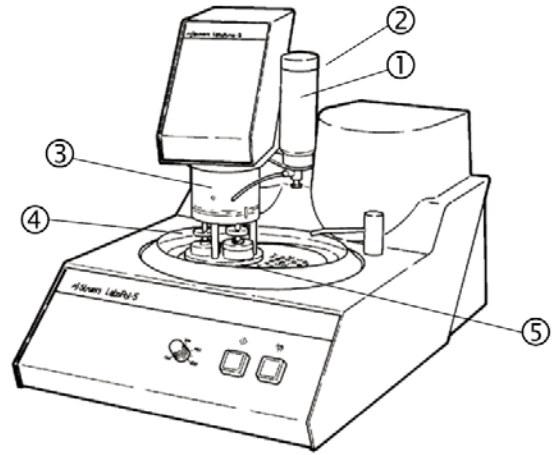
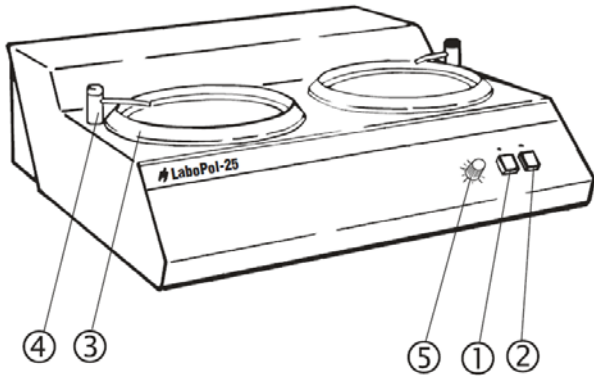
- Install the required abrasive paper/pad onto the specimen grinding wheel;
  - Place abrasive paper on the turntable, and secure it with the metallic ring, or

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Place and secure the magnetic MD grinding disc on the turntable so that the edges are smooth and there is little overhang around the circumference.

### Controls:





- ① Start switch
- ② Stop switch
- ③ Turntable
- ④ Water tap
- ⑤ Speed selector (LaboPol-25 only)



- ① Drip lubricator (accessory)
- ② Handle (Behind ①, not shown)
- ③ Spring housing
- ④ Adjustment screw
- ⑤ Specimen mover plate

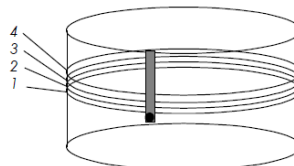
### Operation:

#### 1) Manual Grinding using Labo-Pol:

1. Press the green  'START' button.
2. Apply the required lubricant – turn the black knob to turn on water or add diamond suspension.
3. Remove (trim) the sharp corners of your sample.
4. Apply even pressure across the sample on the grinding surface.
5. Add lubricant as required.
6. Rotate sample 90 degrees every few minutes to avoid sloping.
7. Grind until previous deformation is removed and all striations are in one direction – this can be checked using the naked eye or an optical microscope.
8. When finished, turn OFF water if using, press the red  'STOP', and proceed to the next grinding step.
9. Repeat steps 1-8.

#### 2) Grinding/Polishing using Labo-Force:

1. Engage the Labo-Force into the operation position by pulling it down.
2. Lift the thrust pad on the adjustment screw to make room for the specimen.
3. Place specimens into one of the holes of the specimen mover plate and lower the thrust pad.
4. Adjust the force by turning the adjustment screw according to the figure to the right.
5. Apply the required lubricant – turn the black knob to turn on water or add diamond suspension.
6. Press the green  'START' button.
7. Add lubricant as required.
8. Grind until previous deformation is removed and all striations are in one direction – this can be checked using the naked eye or an optical microscope.
9. When finished turn OFF water if using, press the red  'STOP', and proceed to next grinding/polishing step.
10. Repeat steps 1 – 9.



Indication	Force
(0)	0-5 N
1	10 N
2	20 N
3	30 N
4	40 N



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### After Use:

- Remove the grinding/polishing wheel (s) and remove/clean ground material from collection channel.
- Dispose of grinding paper or dry magnetic MD disc if not re-useable.
- Wipe clean the grinding/polishing wheel(s), metallic ring and plastic guard, then dry with paper towel.
- Clean bench top and the equipment from stains and spots.
- Locate grinding/polishing wheel(s), metallic ring and plastic guard.

### GENERAL CARE & MAINTENANCE:

- Clean with a damp cloth of water and household detergent.
- Ensure collection channel, turntable plate (grinding/polishing wheel(s)), securing ring, spring housing (Labo-Force) and specimen moving plate (Labo-Force) are clean and dry.

### REPAIRS & CERTIFICATION/VALIDATION SCHEDULE:

Reporting faults/concerns of equipment procedure: Technical Staff.

Supplier service and maintenance is conducted annually.

### SPILLS/ ACCIDENT REPORTING PROCEDURE:

Spills procedure (Chemical):

- Wear lab coat, safety glasses and gloves to prevent eye and skin contamination and inhalation of vapours.
- Open Spill kit.
- Use absorbent material to contain spill.
- Prevent run-off into drains if there are high-consequence chemicals or materials involved in the process.
- Contact technical staff for assistance.
- Dispose of contaminated materials in accordance with dangerous goods class stated in materials SDS.

Report spills/incidents to: Technical Staff.

### In case of Emergency:

- Stop process immediately.
- Contact Technical Staff.
- Alert others if nearby.
- If a serious injury has occurred call 000.
- Turn power off at wall.

### WASTE PROCEDURE:

Dispose of chemical waste according to the DG class. Refer to SDS for further information.