Always state Serial No and Voltage/frequency if you have technical questions or when ordering spare parts. You will find the Serial No. and Voltage on the front cover of this manual or on an attached label below. If in doubt consult the rating plate of the machine itself. We may also need the Date and Article No of the manual. This information is found on the front cover.

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**Service Manuals:** Struers Service Manual may only be used by a trained technician authorised by Struers. The Service Manual may only be used in connection with Struers equipment covered by the Service Manual.

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**Struers A/S**
Pederstrupvej 84
DK-2750 Ballerup
Denmark
Telephone +45 44 600 800
Fax +45 44 600 801
LaboDoser
Instruction Manual

LaboDoser
Safety Precaution Sheet

To be read carefully
before use

1. The operator should be fully aware of the use of the apparatus according to the Instruction Manual.

2. The apparatus must be placed in an adequate working position.

3. Alcohol based consumables: follow the current safety rules for handling, mixing, filling, emptying and disposal of the alcohol-based liquids. Struers recommend the use of an external exhaust system.

4. Disconnect the power to LaboDoser when changing tubes.

5. If you observe malfunctions or hear unusual noises - stop the apparatus and call technical service.

The equipment should only be used for its intended purpose and as detailed in the Instruction Manual. The equipment is designed for use with consumables supplied by Struers. If subjected to misuse, improper installation, alteration, neglect, accident or improper repair, Struers will accept no responsibility for damage(s) to the user or the equipment.

Dismantling of any part of the equipment, during service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).
Disposal

Equipment marked with a WEEE symbol \(\text{̔} \) contain electrical and electronic components and must not be disposed of as general waste.
Please contact your local authorities for information on the correct method of disposal in accordance with national legislation.
User's Guide

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1. **Getting Started**

**Checking Contents of Packing**

1. LaboDoser
1. Nozzle Block, complete
1. Finger screw
4. Bottles, 500ml
1. Set of Instruction Manuals

**Getting Acquainted**

Take a moment to familiarise yourself with the location and names of all the LaboDoser components.

LaboDoser with LaboPol and LaboForce

- ① Front panel with display
- ② Nozzle block
- ③ Grinding/Polishing machine with specimen mover
Setting Up

Electrical Connection and Communication

- Connect LaboDoser to both sockets on the back of the grinder/polisher marked:
  - The cables of LaboDoser should be connected as follows:
  - The power cord must be plugged into socket ①, and the communications cable into the socket ②.

  ![Diagram of LaboDoser connections]

- To enable communication set switch ③ to ‘on’.
- Then connect the appropriate cables from the LaboForce to the Y-extensions on the cables from the LaboDoser.

Mounting the Nozzle Block

The nozzle block is mounted underneath the LaboForce.

- Loosely fit the finger screw into the pre-drilled hole underneath LaboForce.
- Guide the bottom plate of the nozzle block onto the finger screw and the positioning pin underneath the LaboForce, and re-tighten the finger screw.

Filling with Consumables

The Bottles can be used for DP-Suspension, DP-Lubricant or the all-in-one suspensions DiaPro or DiaDuo.

- When filling with DP-Suspension, start with the coarse grain sizes in bottle no.1, for example, and move to the finer grain sizes in the bottle no. 2, 3, or 4. So the change will be from the coarse grain size towards the finer, as in the preparation process.
- The same process applies to the lubricants: start with the lubricant to be used first, followed by the lubricant used for final polishing.
2. Basic Operations

Using the Controls
Front Panel Controls of LaboDoser

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timer</td>
<td>Allows to set the preparation time between 0:00 and up to 10:00 :</td>
</tr>
<tr>
<td>Dosing Controls</td>
<td>Sets the dosing level for suspension and lubricants between 1 and 10.</td>
</tr>
<tr>
<td>Selection button</td>
<td>Starts/stops the peristaltic pump.</td>
</tr>
<tr>
<td>LED indicator</td>
<td>A green LED next to each selection button indicates the selected pump.</td>
</tr>
</tbody>
</table>
**Before the Preparation**

**Adjusting the Dosing Level**

- On the controls, turn the knob of the respective bottle to the desired dosing level. Levels 1-5 are used for diamond suspensions and levels 5-10 are used for lubricants and all-in-one suspensions.

![Dosing Levels Graph](image)

**Adjusting the Preparation Time**

- Turn the knob for the timer to the required preparation time.

**Pre-Dosing**

The preparation discs should be pre-dosed to ensure that they are lubricated before starting the preparation process.

<table>
<thead>
<tr>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New preparation discs should be dosed with an appropriate amount of abrasive as well as lubricant before using for the first time.</td>
</tr>
</tbody>
</table>

- Move the LaboForce into the upper position.
- Press Start to rotate the disc on LaboPol.
- Press the selection button for the bottle(s) containing the correct suspension and/or lubricant.
- Release the selection key after the correct amount has been applied.
- Press Stop on the LaboPol.
Running a Preparation Method

Selecting the Bottles

- Press START ♦ on the grinding/polishing machine and all connected machines will start simultaneously.
- Immediately after pressing start, select the bottles with the required suspension and/or lubricant by pressing the button.
- When the preset time has expired LaboPol, LaboForce and LaboDoser will stop simultaneously.

Other Functions

Cleaning the Tubes

When exchanging a bottle with one grain size of DP-Suspension for another grain size of DP-Suspension, or one lubricant for another lubricant, always clean the tubes of LaboDoser to avoid any cross contamination.

- Remove the suspension or lubricant bottle to be exchanged.
- Move the LaboForce into the upper position, set the timer on the LaboDoser to ∞ and press Start on the LaboPol. Place the tube from the bottle to be exchanged in a container filled with water.
- Insert a container under the dosing nozzle and press and hold the selection button for the bottle to be exchanged. The pump is activated now and will pump water through the tube.
- When the tube has been cleaned sufficiently remove the container with water. Continue to run the pump to remove the water from the tube.
- Insert the bottle with the new suspension or lubricant and press the selection button to fill the tube with the new consumable.
- Press Stop on the LaboPol.
3. Maintenance

Daily

- Clean all accessible surfaces with a moist cloth.
## 4. Trouble-shooting

<table>
<thead>
<tr>
<th>Error</th>
<th>Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosing active but no dosing liquid</td>
<td>Tube empty</td>
<td>Press the selection button until the liquid has filled the tube completely. (Remember first to start the LaboPol after moving the LaboForce into the upper position.)</td>
</tr>
<tr>
<td>Tubes clogged</td>
<td>LaboDoser has not been used for some time and the tubes are clogged</td>
<td>Clean the tubes as described in the section on <em>Cleaning the Tubes.</em></td>
</tr>
</tbody>
</table>
|                                      | The tubes in the peristaltic pumps may be "glued" together, clogging the passage of any liquid. | ■ Fill a syringe with water and carefully press water into the inlet tube of the pump, while activating the selection button. (Remember first to start the LaboPol after moving the LaboForce into the upper position.)  
■ Keep pressing water into the tube until the adhesion loosens and the tube allows the water to pass through. |
# 5. Technical Data

<table>
<thead>
<tr>
<th>Subject</th>
<th>Specifications</th>
<th>Metric/International</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions and Weight</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>165 mm</td>
<td>6.5”</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>350 mm</td>
<td>13.8”</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>158 mm</td>
<td>6.2”</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>2 kg</td>
<td>4.4 lbs</td>
<td></td>
</tr>
<tr>
<td><strong>Dosing Levels</strong></td>
<td>Suspensions</td>
<td>Levels 1–5: 0.20 – 1.15 ml</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lubricants and all-in-one suspensions</td>
<td>Levels 5–10: 1.15 – 8.50 ml</td>
<td></td>
</tr>
<tr>
<td><strong>Subject</strong></td>
<td>Specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>Safety Standards</td>
<td>Please refer to the Declaration of Conformity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surrounding temperature</td>
<td>5–40°C/41–104°F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>0-95% RH non condensing</td>
<td></td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>Voltage frequency</td>
<td>100 – 240V, 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power consumption 50/60Hz</td>
<td>20VA</td>
<td></td>
</tr>
</tbody>
</table>
Quick Reference

Setting the Preparation Time

- Set the required preparation time on the timer button.
- Press the selection button on the front panel section to select the desired suspension and/or lubricant type.

Dosing

- Set the correct dosing level on the dosing controls for the respective bottle(s)
- Press Start on the LaboPol.
- Press the selection button for the respective bottles.
- Wait for the equipment to stop (process time expires).
# Declaration of Conformity

| Manufacturer | Struers ApS  
Pederstrupvej 84  
DK-2750 Ballerup, Denmark  
Telephone +45 44 600 800 |
|--------------|---------------------------------------------------------------|

**Herewith declares that**

<table>
<thead>
<tr>
<th>Name:</th>
<th>LaboDoser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No.:</td>
<td>05406116</td>
</tr>
<tr>
<td>Function:</td>
<td>Dosing unit</td>
</tr>
<tr>
<td>Type No.:</td>
<td>540</td>
</tr>
</tbody>
</table>

fulfils all the relevant provisions of the:

- **Machinery Directive 2006/42/EC**  
  according to the following standard(s):  

and is in conformity with the:

- **EMC Directive 2014/30/EU**  
  according to the following standard(s):  

- **RoHS Directive 2011/65/EU**  
  according to the following standard(s):  
  EN 50581:2012.

**Supplementary Information**  
The equipment complies with the following standards:  

The above has been declared according to the global approach, module A.

**Authorized to compile the Technical File:**

![Signature]

Klaus Tvenge  
Director of Business Development  
Struers ApS  
Pederstrupvej 84  
DK-2750 Ballerup, Denmark  

Date of Issue: 2017.10.05
Always state Serial No and Voltage/frequency if you have technical questions or when ordering spare parts.

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Struers A/S
Pederstrupvej 84
DK-2750 Ballerup
Denmark
Telephone +45 44 600 800
Fax +45 44 600 801
Spare Parts and Diagrams

Table of contents

Drawings
LaboDoser, complete ........................................................ 15400001E
Pump, complete .................................................................15400020C
Cat’s paw, complete...........................................................15400010A
Bottle 0.5 liter, complete.....................................................15400030B

Diagrams
Block Diagram....................................................................15403100A

Some of the drawings may contain position numbers not used in connection with this manual.
## Spare Part list for LaboDoser

<table>
<thead>
<tr>
<th>Drawing</th>
<th>Pos.</th>
<th>Part Description</th>
<th>Cat no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15400001</td>
<td>020</td>
<td>Foil front plate, LaboDoser</td>
<td>15400110</td>
</tr>
<tr>
<td></td>
<td>030</td>
<td>PCB, complete</td>
<td>15403010</td>
</tr>
<tr>
<td></td>
<td>070</td>
<td>Button ø6.5/ø2.5x4, black</td>
<td>2GH00020</td>
</tr>
<tr>
<td></td>
<td>080</td>
<td>Button ø14.5-ø3 ELMA</td>
<td>2GD13225</td>
</tr>
<tr>
<td></td>
<td>090</td>
<td>Arrow ø14.5 ELMA</td>
<td>2GD63025</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>Cover ø14.5 ELMA black</td>
<td>2GD53025</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>Pump, complete</td>
<td>15400020</td>
</tr>
<tr>
<td></td>
<td>230</td>
<td>SILICONE-TUBE ø2/ø4</td>
<td>2NU11452</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>SILICONE-TUBE ø2/ø4</td>
<td>2NU11452</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump, complete</td>
<td></td>
</tr>
<tr>
<td></td>
<td>010</td>
<td>Pump 24Vdc SR10/30, 38ml/min</td>
<td>2YP01030</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump cartridge, detachable, 38ml/min</td>
<td>2YP01031</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pump cartridge, detachable, 38ml/min, silicone</td>
<td>2YP01032</td>
</tr>
<tr>
<td></td>
<td>050</td>
<td>SILICONE-TUBE ø2/ø4</td>
<td>2NU11452</td>
</tr>
<tr>
<td>15400020</td>
<td></td>
<td>Cat's paw, complete</td>
<td></td>
</tr>
<tr>
<td></td>
<td>020</td>
<td>ø3 pipe, short</td>
<td>15600141</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottle 0.5 liter, complete</td>
<td></td>
</tr>
<tr>
<td>15400030</td>
<td>010</td>
<td>Plastic bottle ½l natural, without cap</td>
<td>71000044</td>
</tr>
<tr>
<td></td>
<td>020</td>
<td>PU HOSE PU-3 BLACK ø2.9/ø4.3</td>
<td>2NU14032</td>
</tr>
<tr>
<td></td>
<td>030</td>
<td>Lid for bottle, drilled for ø7</td>
<td>15090710</td>
</tr>
<tr>
<td></td>
<td>040</td>
<td>O-ring 39.70-3.53, 70 NBR</td>
<td>2IO35353</td>
</tr>
<tr>
<td></td>
<td>050</td>
<td>Neopren nipple ø2/ø6.5/ø11-1.5</td>
<td>2GK90102</td>
</tr>
<tr>
<td></td>
<td>060</td>
<td>Pipe for bottle</td>
<td>15400120</td>
</tr>
<tr>
<td></td>
<td>070</td>
<td>PU HOSE PU-3 BLACK ø2.9/ø4.3</td>
<td>2NU14032</td>
</tr>
</tbody>
</table>
Stangen i pumpen udlaves med 120 mm Silvfor-stange ø/ø. Det skal være 70 mm trenings over etape, og stangen skal støde symmetrisk i pumpen.
Presses helt i bund.

Spændes så Pos.10 kan drejes med hånden.
Slangenlængden justeres efter montering. Når låget er monteret, skal slangespidsen røre ved bunden i den nederste del af flasken.
Power In from LaboPol
(100-240V /50-60Hz)

Power Out to LaboForce
(100-240V /50-60Hz)

Control Signal
to/from LaboPol

Control Signal
to/from LaboForce

RELAY activated
(contact opens) when
preset time has expired

A1, Printed Circuit Board

A2, Power Supply

A3

Bottom Plate

Bottom Plate Top Cabinet

Control Signal
to/from LaboPol

Control Signal
to/from LaboForce

LABODOSER Circuit diagram

STRUERS A/S
Valhøjs Allé 176
DK-2610 Rødovre
Denmark

+45 5710 3500

LaboDoser Circuit diagram

Sheet 1 of 1

Tuesday, December 16, 2003 11