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1. Device data
(to be completed by customer during installation)

Type:

Serial no.:
Place of installation:
Date of installation:
Inventory no.:

2. Important address

Distributed by:
SARSTEDT AG & Co.
P.O. Box 12 20
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info@sarstedt.com
www.sarstedt.com

3. Important notes

Read the safety instructions in this manual before putting the device into operation!

A sound knowledge of the contents of these operating instructions is a basic requirement to ensure correct use and trouble-free operation of the device.

Please keep these instructions in a safe place for future reference.

Copyright:
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Technical modification reserved!
Nümbrecht, March 2015
SARSTEDT AG & Co.
3.1. Explanation of symbols
These operating instructions contain important symbols to indicate dangers and possible operating errors.

The "Caution" symbol means that in this section:
- Important information is given.
- An immediate or possible risk of danger to life and limb of persons is described.
- A note on dangerous situations is given.

Non-observance of these symbols can lead to minor, serious, or even life-threatening injuries as well as to material damage.

Warning of hazardous electrical voltage!

Warning against harmful or irritating substances!

- Failure to observe this symbol can result in severe harm to health.
- Always comply with the applicable accident prevention regulations (APF) when handling these substances.

This “Info” symbol refers to notes regarding proper use of the device or to general, explanatory information. Non-observance of these notes or information can lead to the device being operated incorrectly or even becoming damaged.

Additional symbols contain notes on the topic displayed in the symbol, for example accident prevention regulations, supply voltage, maintenance, or disposal.

3.2. Device-specific safety notes
This device has been built according to the latest state of the art and the accepted principles of safety engineering.
All relevant safety information and guidelines, as well as regulations for safety at work and accident prevention regulations for laboratory use must be observed.
Nonetheless, danger can arise for the user or third parties during operation, as well as damage to the device or other material assets.

The device may only be used:
- for the intended purpose
- in technically safe and perfect condition.
- in adherence with the current accident prevention regulations.
- for the separation of materials of varying density or particle size suspended in a fluid.
- with a maximum sample density of 1.15 g/cm³.

3.3. Responsibilities of the owner
The device owner is responsible for ensuring that only such persons are allowed to operate the device, who have read these instructions and understand them. This should be confirmed by the person’s signature. Moreover, the observance of safety regulations by personnel should be checked at regular intervals.

3.4. Responsibilities of operating personnel
Before working with the device for the first time, the operator must:
- read these operating instructions.
- observe the applicable rules and the regulations for accident prevention.
5. Description of the centrifuge

The centrifuge SMC 6 is a table-top centrifuge with horizontal rotor designed for continuous operation. The horizontal rotor contained in the standard delivery schedule and the tube holders can accommodate up to 6 specimen tubes. The special horizontal rotor facilitates a fast and simple specimen charge and complete horizontal separation.

A lid safety switch prevents the centrifuge from operating when the lid is open. The yellow "LATCH" indicator at the front of the centrifuge lights up as soon as the lid has been correctly locked. In addition to the lid safety switch, the SMC 6 is equipped with a "0 rpm" lid locking system. This safety system keeps the lid closed at all times (even in the event of a power failure) and ensures that the lid can be unlocked only when the rotor has come to a standstill.

5.1. Delivery Schedule

Standard delivery schedule
1 x Centrifuge SMC 6 with horizontal rotor 6 x SARSTEDT-No. 90.184.550
6 x tube holder, 100 mm
6 x tube holder, 75 mm
1 x power cord
1 x operating instruction

6. Transport, installation and connection

6.1. Unpacking

- Check that the packaging shows no signs of damage.
- In case of transport damage, please contact the shipping agent immediately. Observe the notification periods of the different freight carriers (railway, mail, parcel service, trucking company, etc.). It can be as short as 24 hours.
- Check the scope of delivery for completeness.
- Defects and damage must be notified immediately to SARSTEDT AG & Co.

6.2. Installation

- Position the centrifuge on a firm, vibration-free and flat surface.
- Maintain a safety zone around the centrifuge of at least 30 cm.
- During centrifuging, no person or dangerous substance must come within the safety zone.
- During operation, no contact must occur with other equipment or objects.
- Do not place vibration-sensitive objects or samples on the installation surface.
- There must be sufficient space above the installation surface to open the centrifuge lid.
- Ensure that there is adequate air circulation to prevent the samples and the centrifuge from overheating.
- The installation location must always be well ventilated.

Guarantee and liability claims are excluded, if they are based on one or more of the following causes:

- use of the device for other than the intended purpose.
- improper installation, commissioning, operation, or maintenance of the device.
- operation of the device with defective safety fittings or incorrectly attached or non-functional safety or protective equipment.
- non-observance of the notes in these operating instructions regarding transport, storage, installation, commissioning, operation, maintenance, setting up, or disposal.
- unauthorized modifications to the device.
- catastrophic failure due to external cause and/or force majeure.
- incorrect repairs.

4. Other information
4.1. Guarantee and liability

The "Delivery and Payment Conditions" of SARSTEDT AG & Co. always apply. These are printed on the reverse side of the invoice.

During the warranty period, the device may only be repaired by SARSTEDT AG & Co. or by persons authorized by SARSTEDT AG & Co. In case of improper use or repair, the warranty will be void.

The device complies with the international standard.

Guarantee and liability claims are excluded, if they are based on one or more of the following causes:

- use of the device for other than the intended purpose.
- improper installation, commissioning, operation, or maintenance of the device.
- operation of the device with defective safety fittings or incorrectly attached or non-functional safety or protective equipment.
- non-observance of the notes in these operating instructions regarding transport, storage, installation, commissioning, operation, maintenance, setting up, or disposal.
- unauthorized modifications to the device.
- catastrophic failure due to external cause and/or force majeure.
- incorrect repairs.

Operating Instructions Centrifuge SMC 6
6.3. Commencing operation

Caution before first use!

- Check that the actual supply voltage corresponds with the stated supply voltage.
- Comply with the permitted ambient conditions for the machine.
- In the cold season, after delivery and unpacking, wait approx. 1 hour until the centrifuge has reached ambient temperature (18 °C to 23 °C).
- The control elements are shown in Section 7.

For safety reasons, the locking system is always activated.

- The user can switch it off for approx. 15 seconds by pressing the “OPEN/(EMERGENCY STOP)” button briefly. This is possible only with the centrifuge switched on and the rotor at a standstill.
- At the end of a centrifugation, the lid is automatically unlocked for approx. 60 seconds.

Procedure:

- Connect centrifuge with the power cord to the power supply.
- Press “OPEN/(EMERGENCY STOP)” button.
- “UNLOCKED” display lights up.
- Turn lid knob in counter clockwise direction and open lid.
- There should be no foreign bodies in the rotor chamber.
- Turn rotor by hand and check whether it runs freely and horizontally and that the screw in the middle of the rotor is tightened firmly. If this is not the case, the centrifuge must not be put into operation.
- Insert empty tube holder into the rotor and check that it is fitted correctly.
- The rotor must be loaded evenly.
- Close lid and turn lid knob in clockwise direction to end position.
- “LATCH” display lights up.
- The centrifuge will only start running if the lid has been closed correctly.
- Press “START” button and perform a test run.
- “RUN” display lights up.
- Apparatus accelerates, tube holders slip into a horizontal position.
- Pay attention to the running noise of the centrifuge. There should be a soft hum. In the case of loud or unusual noise stop centrifuge immediately by pushing the “OPEN/(EMERGENCY STOP)” button and then check the above points once again.
- Press “OPEN/(EMERGENCY STOP)” button.
- The test run is ended and the rotor braked to a standstill.
- The centrifuge is now ready for operation.

7. Operation

7.1. Control elements

1. Lid
2. Lid knob
3. Safety lock
4. Counter (at the bottom)
5. Fuse (at the bottom)
6. Mains connection – power switch (rear side of device)
7. LED “RUN”
8. LED “LATCH”
9. LED “UNLOCKED”
10. “START” button
11. “OPEN/(EMERGENCY STOP)” button

7.2. Counter

The cycle counter keeps a count of the total number of machine runs for servicing and maintenance records. The counter is located at the bottom.

In order to exclude transport damage and to check correct installation, carry out a test run when starting up the centrifuge.
7.3. Loading the rotor

The centrifuge must be evenly loaded for it to function properly.

To ensure even loading, comply with the following rules when loading the horizontal rotor for six tube holders:

- Opposite-located tube holders must be identical.
- Opposite-located tube holders must either be empty or loaded with the same number of samples of the same weight.
- When centrifuging an uneven number of samples, insert a tube filled with water as a counterbalance.

7.4. Centrifugation

If a problem occurs during operation which makes it necessary to switch off the centrifuge, push the “OPEN/(EMERGENCY STOP)” button immediately.

Procedure:

- Press “OPEN/(EMERGENCY STOP)” button to unlock the lid (the “UNLOCKED” display lights red up) and open lid.
- Insert specimen tubes in the tube holders. Make sure they are evenly loaded. Close lid and turn lid knob to end position in clockwise direction. The “LATCH” display lights yellow up in order to show correct interlocking.
- If the lid knob is not snapped in completely, the “LATCH” display will not light up and it will not be possible to put the centrifuge into operation.
- Press the “START” button.
- The rotor will start to turn. The “RUN” display lights red up.
- At the end of the running time the “RUN” display goes out and the rotor break is applied until it comes to a complete standstill.
- The “UNLOCKED” display lights up; the interlocking mechanism is deactivated thereby facilitating access to the rotor chamber. After expiry of the automatic unlocking time the lid can be unlocked with idling rotor using the “OPEN/(EMERGENCY STOP)” button.
- Turn lid knob in an anticlockwise direction and open lid.
- Remove specimens.
- The centrifuge can be put into operation immediately again.

Recommended conditions for centrifugation of S-Monovettes with gel preparation:

- Tube holder 100 mm  g-force  2,000 x g (= fix set) / 15 min / 20 °C
  (within 4 hours after blood collection)
- Serum-gel
- Li-Hep-gel  g-force  2,000 x g (= fix set) / 20 min / 20 °C
  (within 4 hours after blood collection)

Concerning centrifugation conditions for other type of blood collection tubes refer to data provided by manufacturers.

8. Technical data

Machine data

| Apparatus: | Centrifuge SMC 6 |
| Rotor: | horizontal rotor 6 x |
| Tube holder: | 6 pieces |
| Order number: | SARSTEDT No. 90.184.550 |
| Centrifuge motor: | 1/30 HP PSC Motor |
| Kinetic energy: | < 200 Nm |
| Timer: | electronic, continuous operation or 1-30 minutes +/- 1 % |
| Speed: | max. 3.800 +/- 100 min⁻¹ |
| RCF: with tube holder 100 mm | max. 2.016 x g +/- 90 x g |
| RCF: with tube holder 75 mm | max. 1.664 x g +/- 90 x g |
| Time preset: | 15 min |
| Power supply | 115/230 V ~, ± 10 %, |
| Power consumption: | 200 watts |
| Frequency: | 50/60Hz |
| Fusing: | 4.0 A, re-startable |
| Ambient conditions | Admissible ambient temperature: 16 °C bis 32 °C |
| Maximum relative humidity: | 90 %, non-condensing |
| Dimensions: | Width x depth x height: 22 x 30 x 35 cm |
| Weight: | approx. 5,4 kg |
| Loading the rotor | Max. tube size: 17 mm x 100 mm |
| | 17 mm x 75 mm |
| Number of tubes: | 6 |
9. Maintenance and servicing

9.1. Service address

Should you have questions or problems concerning the device, please contact the customer service department of DESAGA GmbH / SARSTEDT-GRUPPE in Wiesloch or your local SARSTEDT sales office. Remember to specify the Serial no. of the device.

DESAGA GmbH / SARSTEDT-GRUPPE
Serviceabteilung
In den Ziegelwiesen 1-7
D-69168 Wiesloch
Phone: +49 62 22 / 92 88 65
Fax: +49 62 22 / 92 88 60

9.2. Cleaning

- The regulations for cleaning the device must be observed.
- Inattentive cleaning or non-observance of the regulations can cause malfunctions!
- Disconnect the device from the mains supply before cleaning.
- Disinfect the apparatus before cleaning.
- No liquid may be permitted to enter the device during cleaning.
- Clean the housing surfaces with a damp cloth. A soap solution may be used. Carefully dry the device after cleaning.
- Do not use scouring agents or aggressive cleaning liquids or solutions (except alcohol) under any circumstances.
- Isopropanol may be used in case of severe soiling.
- Fully/partially halogenated hydrocarbons, ketones, esters, and other chemicals not specified by the manufacturer may damage the rotor and tube holders and may not be used.

Example for a disinfectant:
The following aqueous solution can be used as a disinfectant:
25 g ethanol 96 %, 35 g 1-propanol, 0.1 g glyoxal ad 100 g aqua dest.
If necessary, repeat the application of disinfectant.

9.3. Rotor removal and installation

- Open the lid lock using the “OPEN/EMERGENCY STOP” button.
- Pull out the mains plug.
- Remove the tube holder.
- Losen and remove the rotor nut in the centre of the rotor using a 13 mm wrench (open counterclockwise direction).
- Pull off the rotor in an upwards direction.

The rotor is refitted in the reverse order.

Ensure that the rotor is seated firmly on the axle after fitting and is correctly screwed on.

9.4. Regular maintenance

It is recommended, depending on the amount of use and the external conditions, that the rated speed and the electrical safety be checked every 1-2 years to ensure continuing safe operation.

It is recommended that the rotor chamber be cleaned every 6 months or if a tube breaks.

It is to replace the tube holders after 5,000 machine runs or the latest after 24 months of use.

The repeated inspections in accordance with accident prevention regulations (UW) published as „Technical Rule BGR 500“ do not apply to the models of Series SMC 6 and LC24 as these conform to the following criteria:

Enclosed laboratory centrifuges
Kinetic energy <10,000Nm
Power consumption <500 W
9.5. Programming

How to check program parameter settings
1. Use the cable to connect the centrifuge to the mains supply.
2. Press the “OPEN/STOP” button and open the lid.
3. Hold the “START” button (3 sec.) until the “LATCH” display starts flashing. Release the button.
4. After pressing the “START” button, the number of beeps (each beep equals one minute, maximum number of beeps: 30 = 30 minutes) indicates the preset centrifugation time.
5. Now press the “START” button once again to count the number of beeps (each beep equals 100 the rpm, maximum number of beeps: 38 = 3,800 the rpm) indicating the preset the rpm.
6. Press the “START” button once again to count the number of beeps (each equals one factor of sensitivity to imbalance, maximum number of factors: 10 = maximum sensitivity) indicating the preset sensitivity to imbalance.

How to set program parameters
1. Use the cable to connect the centrifuge to the mains supply.
2. Press the “OPEN/STOP” button and open the lid.
3. Hold the “START” and “OPEN/STOP” buttons (3 sec.) until the “LATCH” display starts flashing.
4. Release the buttons.
5. Press the “START” button once per minute of the desired centrifugation time. The time can be set within a range of 1 to 30 minutes.
6. Press the “OPEN/STOP” button to save the setting. You can now program the rpm setting.
7. Press the “START” button to program the rpm. Press once to increase by 100 rpm (e.g. press “START” ten times for 1,000 rpm), min. rpm = 1,000; max. rpm = 3,800.
8. Press the “OPEN/STOP” button to save the setting. You can now program the braking force.
9. Press the “START” button to program the braking force (once = off, 10 times = maximum force). The preset braking force is 6.
10. Press the “OPEN/STOP” button to save the setting. You can now program the sensitivity to imbalance.
11. Press the “START” button to program the sensitivity (once = off, twice = minimum sensitivity, 10 times = maximum sensitivity). The preset sensitivity to imbalance is 6.
12. Press the “OPEN/STOP” button to save the setting and exit the centrifuge settings.

9.6. Access to the rotor chamber during a power failure

In the event of a power failure, it may be impossible to unlock the lid in the usual manner. If this happens, you can gain access to the rotor chamber by removing the label in front of the lid lock and manually deactivating the locking mechanism with a pen (see illustration). Pull the mechanism in the direction of the control panel, unlock it and open the lid. Then re-stick the label in position.

If the centrifuge is damaged, have it checked by a technician before further use!

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Dear Customer,

Please complete the contamination questionnaire before you return the instrument to the service department of DESAGA GmbH / SARSTEDT-GRUPPE or to your local SARSTEDT sales representative for maintenance or repair.

<table>
<thead>
<tr>
<th>Firm:</th>
<th>Department:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town:</td>
<td>Street:</td>
</tr>
<tr>
<td>Name:</td>
<td>Telephone No.:</td>
</tr>
<tr>
<td>Name of Instrument/Artikel:</td>
<td>SN:</td>
</tr>
</tbody>
</table>

- The instrument is free from dangerous substances
- The instrument came into contact with the following dangerous substances

<table>
<thead>
<tr>
<th>Groups of substances</th>
<th>Substance name</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ toxic</td>
<td></td>
</tr>
<tr>
<td>☐ acridly</td>
<td></td>
</tr>
<tr>
<td>☐ explosive</td>
<td></td>
</tr>
<tr>
<td>☐ radio-active</td>
<td></td>
</tr>
<tr>
<td>☐ contagiously danger substances</td>
<td></td>
</tr>
<tr>
<td>☐ igniting subst.</td>
<td></td>
</tr>
<tr>
<td>☐ Other hazardous subst.</td>
<td></td>
</tr>
<tr>
<td>☐ The instrument has been decontaminated according to the legal regulations.</td>
<td></td>
</tr>
</tbody>
</table>

(Please cross off if applicable!)

**Description of the decontamination:**

<table>
<thead>
<tr>
<th>Date:</th>
<th>Signatur:</th>
</tr>
</thead>
</table>