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seward
World leaders in sample preparation

Celebrating
50 YEARS
1972 - 2022
of Stomacher®

Stomacher® 3500 Thermo

User Manual



www.seward.co.uk

Thank you for purchasing this Seward product

This manual contains operating instructions for the **Stomacher® 3500 Thermo**.

The **Seward Stomacher®** was originally developed in conjunction with Unilever's Research Centre at Colworth House; Bedfordshire as a solution to many of the problems previously experienced in microbiological sample preparation.

The **Seward Stomacher®** is a unique homogenising instrument in which the sample is blended within a special disposable bag. The instrument acts on the bag in an action similar to the action of a stomach, hence the name **Stomacher®**.

The instrument is comprised of an electric motor-driven worm gear unit with twin output shafts coupled to flexible crank mechanisms, which in turn operate two reciprocating paddles. An important feature of the system is that the working parts do not come into direct contact with the sample being processed. The main body of the instrument is aluminium alloy, finished with durable hygienic paint; the door and linkage assemblies are stainless steel. All the control functions and displays are ergonomically grouped and conveniently situated.

Seward have continually developed the **Stomacher®** to maintain its position as the market leader ensuring exacting performance, high quality and exceptional reliability.

This manual provides the user with all the information to install, operate and maintain the **Seward Stomacher®**. Please read the manual carefully before using this equipment.

CAUTION: - This equipment should not be used if damaged in any way. If in doubt please contact your local **Seward** authorised service centre.

Should any other questions arise please do not hesitate to contact the **Seward Customer Service Department** on:-

Telephone: +44 (0)1903 524 600

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www.seward.co.uk

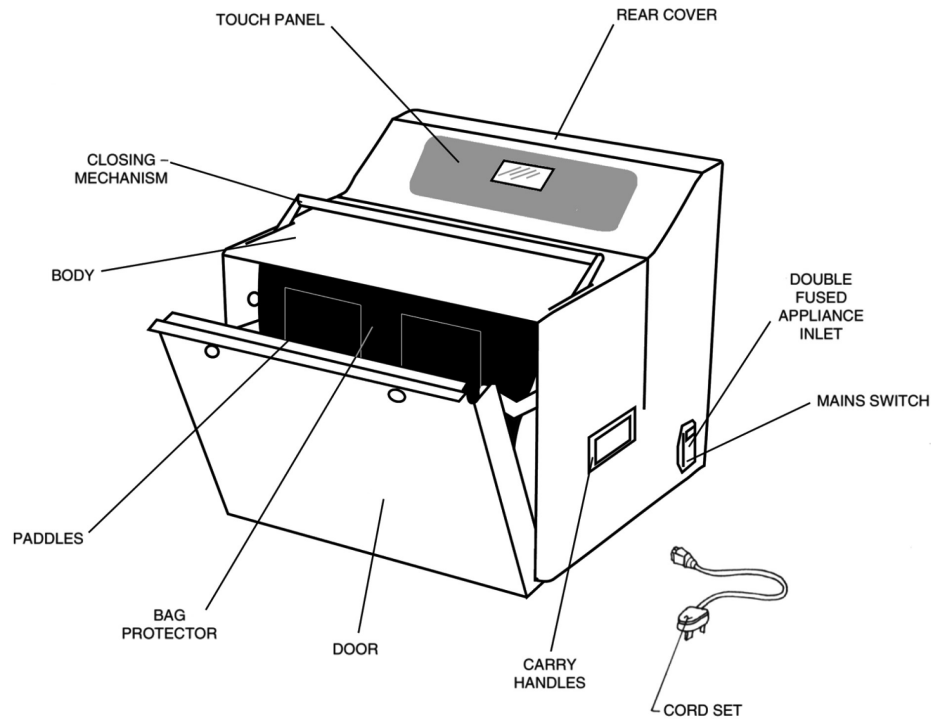
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Stomacher® 3500 Biowasher

General layout



1. OPERATION

1.1 Preparing For Use

Upon receipt of your Seward Stomacher® inspect the shipping carton for any signs of damage. Carefully unpack and inspect the instrument, reporting any obvious damage or missing parts to the supplier/dealer/carrier as appropriate.

The carton should contain the following items: -

1. One **Seward Stomacher®**.
2. Power cord set.
3. Quick start instruction pack including sample bags.

Retain the shipping carton in case of a need to return the instrument or for long term storage.

We have tried to provide the correct power cord for your market area, although if you find that the plug is not compatible with the socket outlet available it will be necessary to obtain a suitable alternative cord set.

CAUTION: - **Seward Stomachers®** are designed to operate in ambient temperatures above 10°C Therefore, if the instrument has been stored or transported at temperatures below 10°C it should be left in an ambient greater than 10°C, for at least two hours prior to use.

CAUTION: - Before connecting the instrument to a power supply, check that the voltage and frequency details shown on the instrument are compatible with your mains electrical supply. The instrument must only be connected to a protectively earthed mains electrical supply. In the event of uncertainty, a competent qualified electrician should be consulted.

CAUTION: - Ensure that the instrument is not positioned directly against a wall or other equipment such that the ventilation slots are obstructed or restricted; we recommend that a minimum of 75mm (3") clear space around the unit is maintained.

CAUTION: - If this equipment is used in a manner not specified by Seward, protection provided by the equipment may be impaired.

Connect the **Seward Stomacher®** to the mains electrical socket using the power cord supplied. Ensure that the door is properly closed with the slotted lower hinge lugs located fully into the pivot points. Operate the power switch, which should illuminate indicating that the instrument is now ready for use.

1.2 Processing

The **Stomacher® 3500 Thermo** is factory-set with a 10mm paddle clearance between the inner face of the door and the fully extended paddles. Although suited to a wide range of applications these settings are by no means suitable for all sample processing and adjustment may be necessary for your application.

Provision for this adjustment is provided inside the instrument. Since this requires the removal of the rear cover a competent qualified technician should carry out this work.

1.3 Paddle Adjustment

Switch off and disconnect the instrument from the mains electrical supply. Turn the instrument over, suitably supporting it to prevent damage. Remove the rear cover and slacken the socket cap screws holding the motor carriage to the main body via the slotted holes. Do not slacken any of the screws within the carriage assembly or the motor alignment will be lost. Remove the large hexagon headed blanking plug (if fitted) from the rear chassis to access the adjusting screw. Turn the adjusting screw until each paddle just touches the inside face of the door when they are at their maximum forward stroke position, this can be tested by manually rotating the gearbox output shaft.

If the instrument is run briefly the alternate tapping noise of each paddle touching the door should just be audible. Take up any backlash in the adjusting screw and turn the screw back one to one and a quarter turns. This is the minimum clearance setting.

For a greater paddle clearance, each additional backward turn of the adjusting screw increases the clearance by 1.5mm up to a maximum of 10mm.

When adjustment is complete always re-tighten the socket cap screws, replace the hexagon headed blanking plug where fitted, and replace the rear cover.

The **Stomacher® 3500 Thermo** is fitted with a neoprene rubber protective lining to the stomaching chamber to prevent any possibility of the bags being trapped behind the paddles, especially when using relatively small sample volumes.

Do not attempt to run the instrument without the protective lining in place

1.4 After Processing

Due to the infinite variety of samples that may be processed in a **Stomacher®** it is not possible to provide definitive procedures for every application, or give any undertaking, implied or otherwise, as to the validity of any method used. **Seward Limited** maintain a library of reference papers covering practical experience with the **Stomacher® system** over many years and these details are available to users upon request.

2. APPLICATION

There are no set rules in the application of the **Stomacher®** instrument and the following is intended as a guide only and not to restrict laboratory technique.

2.1 Bag Selection and Filling

For best results it is recommended that only genuine **Seward Stomacher® Bags** be used. Deep frozen foods should not harm the bags but hard particles such as bone, grit, fruit-stones and seeds may cause puncturing. Where a marginal condition exists or any hazardous material is being blended it is recommended that two bags are used one inside the other.

If required, several bags may be processed simultaneously providing the total volume does not exceed 3500 ml. When doing so, it is recommended that they be layered vertically so that the 'load' is fairly evenly distributed over the paddle faces.

For volumes greater than 3500ml, an alternative **Stomacher®** model should be used.

2.2 Speed Selection

The NORM. (normal) speed is suitable for the vast majority of applications and the instrument will always set automatically to that position upon powering up. If an alternative speed setting is desired this may be selected either prior to or during operation of the instrument. When depressed a short signal will be heard and the corresponding small indicator lamp at the top corner of the touch pad will illuminate.

The LOW speed may be more suitable for delicate work e.g. cell separation to reduce or avoid cell damage. Use of the HIGH speed can provide better agitation when blending predominantly liquid substances possibly reducing the processing time. In the event of the power being interrupted the speedsetting will always revert to NORM.

2.3 Control Key Functions

The touch control panel, located on top of the **Stomacher®**, has the following functions:

1. POWER switch: powers up the **Stomacher®** and is illuminated when on.
2. TEMPERATURE CONTROLLER: allows the desired temperature setting to be selected between 20 and 50°C. The upper (green) display indicates the actual temperature and the lower (orange) display indicates the set or target temperature.

The set temperature can be adjusted by: - Press the (STAR) and s (ARROW UP) keys to increase the set temperature. Press the and t (ARROW DOWN) keys to decrease the set temperature. Once set this data is stored until reset and retained when the **Stomacher** is switched off.
3. HEATER ON/OFF switch: the temperature controller will automatically adjust the heater when the HEATER switch is in the on position. The LED adjacent to the switch will illuminate to indicate when the heater is switched on.
4. CYCLE TIME CONTROLLER: allows the desired cycle run time setting to be selected between 0 and 99 minutes, 59 seconds. The upper display indicates the cycle run time remaining and counts down. The lower display indicates the set cycle run time. The cycle run time can be adjusted by pressing the appropriate green button on the controller to increment each digit in turn. Once set this data is stored until reset even if the **Stomacher®** is switched off.
5. The CYCLE switch enables the operator to select either of the following: -

TIMED - The **Stomacher®** runs at the selected speed for the duration of the selected time.

STOP - The **Stomacher®** will not run, but is still powered up. This switch does not control the heater.

CONTINUOUS - The **Stomacher®** runs at the selected speed continuously.
6. SPEED selector switch: enables LOW, MEDIUM or HIGH speed to be selected by turning the switch to the appropriate position.

3. INSTRUCTIONS FOR USE

3.1 Instructions For Use Without Heater Function

1. Open the door by raising the handle fully upward and back. This gives access to the paddle compartment.
 2. Place the **Stomacher® Bag(s)** into the paddle compartment leaving 50 to 60mm protruding above the bag clamp and close the door thus clamping the bag(s).
 3. When switching on, the POWER switch illuminates.
 4. Select desired speed.
 5. If a timed cycle is required set the TIMER CONTROLLER as previously described.
 - 6A Setting the CYCLE switch to the TIMED position initiates the stomaching process, which will continue until either: -
 - The timed cycle has timed out.
 - The CYCLE switch has been set to the STOP position
 - The door has been opened.
 - The power has been switched off.
 - 6B Setting the CYCLE switch to the CONTINUOUS position initiates the stomaching process, which will continue until either: -
 - The CYCLE switch has been set to the STOP position.
 - The door has been opened.
 - The power has been switched.
- WARNING:** Opening the door during the operating cycle causes the instrument to stop. However, this **must not** be considered as the normal method for stopping the instrument.
7. After processing, simply open the door and remove the **Stomacher® Bag(s)**. The instrument is immediately ready for processing the next sample.

3.2 Instructions For Use With Heater Function

1. Open the door by raising the handle fully upward and back. This gives access to the paddle compartment.
 2. Place the **Stomacher® Bag(s)** into the paddle compartment leaving 50 to 60mm protruding above the bag clamp and close the door thus clamping the bag(s).
 3. When switching on, the POWER switch illuminates.
 4. Set the desired processing temperature as previously described in 8.2.1 and switch the heater on.
 5. Select the desired speed.
 6. If a timed cycle is required set the TIMER CONTROLLER as previously described.
 - 7A Actuating the cycle switch to the TIMED position initiates the stomaching process, which will continue until either: -
 - The timed cycle has timed out.
 - The CYCLE switch has been set to the STOP position.
 - The door has been opened.
 - The power has been switched off.
 - 7B Setting the cycle switch to the CONTINUOUS position initiates the stomaching process, which will continue until either: -
 - The CYCLE switch has been set to the STOP position.
 - The door has been opened.
 - The power has been switched off.
- WARNING:-** Opening the door during the operating cycle causes the instrument to stop. However, this **must not** be considered as the normal method for stopping the instrument.
- 8 After processing, simply open the door and remove the **Stomacher Bag(s)**. The instrument is immediately ready for processing the next sample.

NOTE: -

A motor electrical current limiting device is incorporated into the control circuit

Upon initial start up a short time may elapse before the motor builds up torque and runs normally. This condition is more likely to prevail under the following circumstances: -

- i) Upon initial start up following a period of transportation or storage.
- ii) The instrument has been stored or located in a cold environment (less than 10°C allowing the rubber connectors to become stiff).

For condition (i) run the instrument for 5-10 minutes, preferably with a number of stop-start cycles. For condition (ii) allow the instrument to stand in a warm environment as detailed in Section 8.3, followed by a short period of running with stop-start cycles.

4. MAINTENANCE

4.1 Cleaning

The instrument should be kept externally clean by wiping over periodically with a cloth dampened with mild liquid detergent. **Do not** use any solvent-based cleaning agents, as they will damage the paint finish. First switch the instrument off and disconnect from the mains electrical supply before wiping down all the surfaces including the control panel.

CAUTION: - Ensure the equipment is switched **off** and unplugged from the mains electrical supply before cleaning near any electrical components.

To facilitate cleaning the processing chamber, the door hinge lugs are open slotted to enable the door to be lifted from the lower pivot pins. To do this open the door in the normal way by lifting the lid fully upward and back then pull the door sharply upwards.

Note that the door **must not** be removed on the **Stomacher 3500 Thermo** except by a qualified technician as the procedure is more involved due to the electrical connections to the heater blanket, however the neoprene sheet can be removed to assist cleaning.

A small handled brush may be helpful for cleaning. It is recommended this procedure be carried out immediately in the event of any spillage. Refitting of the door is the reversal of the above procedure; ensure the door hinge lugs are fully engaged on both sides before commencing use.

4.2 Replacing Primary Fuses

The primary fuses can only be removed with the aid of a tool, typically a screwdriver, since they are not considered operative replaceable. In the event of a fuse failure we recommend the equipment and mains electrical supply is checked by a competent qualified electrician.

WARNING: - When replacing fuses ensure they are replaced with fuses of the same rating and specification, refer to the appropriate model specification section of this manual. Please contact **Seward Technical Service** if in doubt.

4.3 Servicing and Spare Parts

Suitably qualified persons should only carry out internal servicing and maintenance. A Maintenance Manual is available giving full details of servicing and repair procedures, wiring diagrams, parts identification and general assembly drawings. We recommend as a matter of routine that the instrument is inspected and serviced at least every six months or sooner if extensively used.

CAUTION: - This equipment should not be used if damaged in any way. If in doubt please contact your local **Seward Ltd** authorised service centre.

5. WARRANTY AND SERVICE POLICY

All **Seward Stomachers®** are protected by a 36-month warranty covering faulty workmanship and materials. In the event of a fault developing within this period please contact **Seward Customer Service** who will organise the collection/return of the instrument for warranty repair and/or replacement at Seward's discretion.

The warranty is void if the instrument has been damaged as a result of unauthorised service, modification or subject to neglect, misuse, and accident, improper installation or operation.

6. COMPLIANCE

Seward Stomachers® are designed and manufactured to conform to the following standards: -

- IEC 61010-1 : 1990 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use.
- This equipment complies with the essential requirements of the European Council Directive 2006/42/CE relating to EMC and carries the CE mark.
- A full list of compliance is detailed on our declaration of conformity and available on our website or from our customer services team.

7. STORAGE AND TRANSPORT

Recommended storage and transport conditions are:-

Ambient Temperature Range -20 to + 50°C

Relative Humidity Range 10 - 90%

Seward Stomachers® should ideally be stored in a clean environment and for long periods of storage it should be re-packed in the original packaging.

Seward Stomachers® should be transported in the original packaging.

8. STOMACHER® 3500 THERMO - SPECIFICATIONS

Model	American	EU and UK Product
Cat No.	3500/002/AM	3500/002/EU
Dimensions	480mm W x 480mm D x 520mm H (unpacked)	480mm W x 480mm D x 520mm H (unpacked)
Weight	40kg (unpacked)	40kg (unpacked)
Supply Voltage	100-120V	100-120V(EU) 220-250V(UK)
Supply Frequency	50-60Hz	50-60Hz
Mains Inlet Fuses*	T6.3A 250V 5x20mm, breaking capacity: 63A @ 250V	T3.15A 250V 5x20mm, breaking capacity: 35A @ 250V
Transformer Fuse*	T250mA 250V 5x20mm, breaking capacity: 35A @ 250V	T250mA 250V 5x20mm, breaking capacity: 35A @ 250V
PCB Fuse*	T10A 250V 5x20mm, breaking capacity: 100A @ 250V	F2.5A 250V 5x20mm, breaking capacity: 100A @ 250V
Insulation	Class 1 (Earthed)	Class 1 (Earthed)
Installation	Over Voltage Category II	Over Voltage Category II
Pollution	Pollution Degree 2	Pollution Degree 2
Duty Cycle	Continuous	Continuous
Rated Load	420W (of which heater is 300W)	420W (of which heater is 300W)
Disposable Bag	380mm x 508mm	380mm x 508mm
Minimum Recommended Capacity	1000ml	1000ml
Maximum Recommended Capacity	3500ml	3500ml
Maximum Recommended Sample Temperature	20-50°C	20-50°C
Recommended Operating Ambient Temperature Range	10-35°C	10-35°C
Recommended Operating Relative Humidity Range	10-89%	10-89%
Adjustable Timer Settings	0-59 seconds or continuous	0-59 seconds or continuous
No Load Paddle Speeds (@ nominal 20°C)	125rpm (±5%) LOW 150rpm (±5%) NORM. 175rpm (±5%) HIGH	125rpm (±5%) LOW 150rpm (±5%) NORM. 175rpm (±5%) HIGH
Paddle Clearance	0-20mm	0-20mm

* Only these or equivalent UL-approved fuses should be used