



## VWR Bench top autoclaves

### VAPOUR-Line *lite* - VAPOUR-Line *lite P*

# INSTRUCTION MANUAL

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## Use of the manual

Using this manual will help you use this instrument efficiently. The manual should be kept in a convenient place near the instrument for ease of use.

## Safety Information

- Use the device only for the indicated purposes
- The device must be correctly installed according to these instructions, before starting any operation
- Never disconnect the device by pulling the electrical cable from the socket
- Electrical cables should be replaced immediately when damaged
- While removing the item connected to a power source, pay attention to the electrical connection cable
- Always disconnect from the power source when:
  - A. Repairing or carrying out maintenance work; these operations must be carried out by qualified staff only
  - B. Cleaning the unit
  - C. Use original spare parts and accessories for any replacement

Do not use this device in the presence of explosive gases

### Precautions during installation

When the electrical system socket is not compatible with device, replace it paying attention to the following coded cable colours.

Brown: Live - Blue: Neutral - Yellow/green: Earth

Be aware that the voltage and frequency of the electrical system being used is compatible with the device.

The device must be connected to a ground wire. For any questions please contact a qualified electrician. Before starting up the device, be sure that the ventilation grids are totally free of obstruction.

## Unit description

The steam steriliser 'VAPOUR-LINE *lite*' consists of:

### **Pressure gauge (pos.1)**

The pressure gauge registers pressure (PSI). The pointer moves around the dial indicating precisely the pressure within the unit.

### **Pressure gauge adaptor**

The pressure gauge adaptor connects the pressure gauge to the vessel cover.

### **Pressure regulator (pos. 2)**

The pressure regulator is a solid one-piece unit. Accurate pressure readings can be controlled and maintained by adjusting heat settings.

### **Air vent pipe**

The pressure regulator fits over the vent pipe and allows excess pressure to be released.

### **Air vent cover lock (pos. 8)**

The air vent/cover locks automatically 'vents' or exhausts air from the vessel and acts as a visual indication of pressure in the unit.

### **Locking bracket**

The locking bracket on the inside of the vessel body engages with the air vent/cover lock to prevent the cover from being opened when there is pressure in the unit.

### **Sealing ring (pos. 3)**

The sealing ring fits into the vessel cover and forms a pressure-tight seal between cover and body during sterilisation.

### **Overpressure plug**

The overpressure plug is located in the vessel cover. It will automatically pop out and release steam in case the vent pipe becomes clogged and pressure cannot be released normally.

Litebox loading basket (pos. 4)

Vessel and lid with two periferal handles

Electronic device for thermoregulation (pos.5)

Main switch (pos. 6)

Optional printer (pos. 7)

## Electrical supply

220 - 240 V - AC single phase, 1300 W.

This unit must be earthed. It is delivered with a mains plug with safety contacts.

If replacing the mains plug, the mains lead (coloured green and yellow) must be connected to the earth terminal on the new plug.

*If using a mains supply without a protective earth, the unit must be connected to a safe earth.*

## Before using for the first time

- 1) Remove the air vent/cover lock from the vessel cover.

The cup portion of the air vent/cover lock, on the inside of the cover, unscrews from the pin.

- 2) Remove the sealing ring by simply pulling from the sealing ring groove.
- 3) Wash the cover and body with hot, soapy water. Do not submerge the cover in water or let the gauge come in contact with any liquid. The inside mechanism of the gauge may be damaged if it is submerged or if water is allowed to run over it. Scrub the sealing ring groove to remove the manufacturing oils. Scour the inside of the canner body and cover with a non alkaline, aluminium cleaner or a steel wool pad. Rinse with warm water and dry.
- 4) Re-insert the air vent/cover lock making sure the small gasket is in place.
- 5) Replace the sealing ring in the sealing ring groove.  
The sealing ring is pre-lubricated; therefore, it is not necessary to apply oil to it. Frequent oiling may cause swelling of the sealing ring.
- 6) If the cover is difficult to open or close use a pastry brushes, a piece of cloth or your fingertips to apply a light coating of oil to the underside of the lugs on the vessel body. The cover should open and close easily.

Be sure the vent pipe is open before each use by holding the cover up to the light and looking through the vent pipe. If the vent pipe is blocked, excess pressure cannot be released through it.

Pressure will continue to build until the over pressure plug pops out of its cover opening.

Pressure is indicated on the dial gauge which registers the pressure inside the unit at all times. The pointer will move across the dial as pressure is increased or reduced within the vessel. The one-piece regulator is designed to rock only at 15 pounds pressure.

Do not strike the rim of the vessel body with any utensil as this will cause nicks which may damage the rim and allow steam to escape. Pouring water into a dry overheated vessel may crack the metal.

The vessel has been designed so the cover will go on in only one position and rotate only in the directions indicated for closing and opening. Press down on the cover handles to compress the sealing ring and make the cover easier to close. The cover has the words CLOSE/OPEN embossed on the top surface near a cover handle. Align the 'V' on the cover with the mark on the body handle

for proper cover and body alignment. Turn the cover in the direction indicated to close until the cover handles are centred directly above body handles.

Do not rotate the cover beyond this point.

When the cover is rotated to the closed position, the air vent/cover lock passes under the locking bracket. When the handles are aligned, one over the other, the pressure regulator is placed on the vent pipe and heat is applied, pressure will then begin to build within the vessel.

At this point, the air vent/cover lock lifts and locks the unit. The cover will remain locked as long as there is pressure in the vessel. When pressure is reduced completely, the air vent/cover lock drops allowing the unit to be opened.

## **Preliminary operations**

- 1) This steam steriliser must only be used for a maximum pressure of 1.08 bar (121 °C).
- 2) The steam steriliser should be positioned in an area where there is adequate means for removal of steam.
- 3) Connect plug to mains supply.
- 4) Introduce distilled water or demineralised water into the sterilisation chamber to cover the heating system. Using distilled water avoids the production of calcareous deposits on the heating element. 20 minutes of sterilising will use approximately 500 ml of water.
- 5) Two displays are lit on time/temperature command panel.
- 6) Before programming, it is necessary to erase the protection of the parameters (safety keys), see paragraph 16.

## **Sterilisation temperature setting**

- 1) 5.1 Press 'ENTER' four times in quick succession to obtain 'SP1' on lower display.
- 2) 5.2 Select the sterilisation temperature using the arrows. The sterilisation temperature will be shown on the upper display.
- 3) 5.3 Press 'ENTER' to save to memory.

## **Sterilisation time setting**

- 1) Press 'ENTER'. 't in 1' appears on the lower display.
- 2) Select the sterilisation time using the arrows. The sterilisation time will be shown on the upper display.
- 3) Press 'ENTER' to save to memory.
- 4) Starting values will be shown on the display after 30 seconds (vessel actual temperature and the word 'OFF').

## Delay cycle

- 1) Press 'ENTER' until the 'dELY' parameter is shown on lower display
- 2) Select the delay time using the arrows. The delay time will be shown on the upper display
- 3) Press 'ENTER' to save to memory.

## Sterilisation cycle

- 1) Press the 'START/STOP' button for 3 seconds to start the cycle.
  - a) The following indicators will be shown:
  - b) Flashing LED until the selected sterilisation temperature is reached on lower display
  - c) Vessel actual temperature on upper display
  - d) Programmed temperature on lower display
  - e) 'HEATING' LED on, during heating time
  - f) 'AUTOCONTROL' LED on for automatic control of selected parameters
- 2) When the sterilisation temperature has been reached, the time left to reach end of the cycle is shown on the lower display.
- 3) The end of the sterilisation cycle is indicated by an acoustic alarm for ten seconds. The 'CYCLE END' LED will light up for ten seconds.
- 4) The upper display will show the actual vessel temperature; the lower display will show the word 'OFF'.
- 5) At the end of vessel cooling, open the lid to take out the sterilised material.

## Panel commands

START/STOP	To start/stop the programme
▼▲	Arrows selection
ENTER	Multifunctional button: - To memorise selected parameters - To switch from one function to another - To control the selected programme
GREEN LED	Flashes until selected temperature has been reached
CYCLE END LED	On at the end of the sterilisation cycle for ten seconds
HEATING LED	On during heating time
AUTOCONTROL LED	On to indicate that the automatic



	system is controlling the selected parameters
°C LED	The temperature is indicated in degrees Celsius

#### NOTES:

All programming operations must be performed in quick sequence otherwise the programming device zeros. The programme can be stopped by pressing the 'START/STOP' button for more than five seconds. The only parameters that need to be selected are (SP1) temperature and (t in 1) time. The selected parameters remain memorised even after the instrument is turned off.

## **Cleaning after use**

- 1) The outside surface may be kept bright and shiny by cleaning with a good silver polish or simply by washing with soap and water. Iron and various minerals in water may darken the inside but this discoloration will in no way affect sterilisation. These stains are harmless and may be removed by using a solution of water and cream of tartar. For each quart of water, use one tablespoon of cream of tartar. Pour enough solution into the vessel to cover the discoloration (do not fill over 2/3 full), then close cover securely. Place regulator on vent pipe and heat until 15 pounds pressure is reached. Switch off and allow the unit to stand for two to three hours. Remove regulator, open and empty contents. Scour thoroughly with a soap impregnated steel wool cleaning pad; wash, rinse and dry.
- 2) Each time the vessel is washed, remove the sealing ring and wash in warm, soapy water, rinse, dry and replace in cover.
- 3) The air vent/cover lock may be removed for occasional cleaning or for replacing the small gasket. Wash all parts in warm, soapy water. Use a soft cloth or small nylon brush to clean the cover hole. The small gasket must be in place when reassembling the air vent/cover lock.
- 4) The overpressure plug can be removed for cleaning by pulling it out of its opening from the bottom part of the cover. After cleaning, reinsert the plug by pushing the round side of the plug into the opening from the bottom part of the cover. When the overpressure plug is properly installed the word (TOP) will be visible when viewing the outside of the cover. The dented portion of the overpressure plug is visible when the bottom part of the cover is viewed. If the overpressure plug is ever forced out of its cover opening due to excess pressure while sterilising, it is important to have the vessel properly inspected before further use. Do not attempt to replace the overpressure plug and ask for servicing.
- 5) Be sure the vent pipe is open before each use. Clean the vent pipe with a small brush or pipe cleaner.
- 6) When your unit is not in use, invert the cover on the body and store in a dry place. Storing the unit with the cover locked on may deform the sealing ring.

## General maintenance

1) CAUTION: To ensure safe operation and satisfactory performance, replace the overpressure plug every time you replace the sealing ring, or sooner if it becomes hard or deformed. In any case replace the overpressure plug every 2 years. Failure to follow these instructions could result in bodily injury or property damage.

2) If the body or cover handles become loose, tighten with a screwdriver.

3) If leakage of moisture or steam develops while using your unit, check the following possible causes:

The formation of a small amount of moisture under the pressure regulator is normal when heating first begins.

This condensation is a result of the temperature of the pressure regulator being lower than the rest of the vessel. If excess condensation continues, the vent pipe may be loose and should be tightened with an adjustable wrench.

Leakage between the cover and body is usually caused by shrinkage of the sealing ring after prolonged use. Replace the sealing ring, overpressure plug and pressure gauge adaptor.

A small amount of leakage around the air vent/cover lock is normal when sterilising first begins. If leakage continues, the cover handles may not be fully aligned with the body handles and, therefore, the cover lock cannot engage. Clean the air vent/cover lock occasionally to ensure that it operates correctly.

A small amount of steam or moisture may be visible around the overpressure plug as sterilisation begins.

This will stop when the overpressure plug seals. If leakage continues, clean or replace the overpressure plug.

4) If the pressure vessel becomes difficult to open or close and the sealing ring has expanded, replace the sealing ring.

5) IMPORTANT: In time, the sealing ring may shrink and the air vent/cover lock, small gasket, overpressure plug and pressure gauge adaptor may become hard and deformed. When this happens, replace the sealing ring, small gasket, overpressure plug and pressure gauge adaptor. The sealing ring, overpressure plug and pressure gauge adaptor should be replaced at least every 2 years.

Before inserting a new sealing ring, clean the sealing ring groove with a brush. To ensure safe operation of your unit, it is recommended that the pressure gauge adaptor and overpressure plug be replaced whenever the sealing ring is replaced.

6) Anti-corrosion technique: When two different metals, with different chemical properties, come in contact through an electrolyte an electron exchange is established. This process is known as galvanic corrosion which starts oxidation of the weakest metal. In an aluminium autoclave this

natural effect can eventually lead to severe damage to the vessel.

To prevent this corrosion, all aluminium autoclave are equipped with a special device called sacrificial body (Cat. No. PBIB58013). This device is a small disc fixed with a screw to the vessel body and is made of a metal that is more easily oxidised than aluminium. This means that the galvanic current will flow through the sacrificial body which will be corroded instead of the autoclave vessel. If the sacrificial body has been completely worn out, the autoclave vessel will begin to corrode, so it is mandatory to periodically check the sacrificial body status and replace it before it wears out. It is advisable to order some spare sacrificial bodies in order to always run the autoclave with a sacrificial body in it.

## Heating element replacement

Disconnect the electric supply, unscrew the two fixing nuts on the outside bottom of the sterilisation chamber and insert a new heating element. To re-assemble, repeat the same steps in reverse order. Ensure that the water level in the sterilisation chamber always covers the heating element.

## Temperature/pressure rates

Temperature( °C)	100	102	105	109	112	115	119	120
Pressure (PSI)	0	1.45	2.90	5.80	7.25	10.15	13.05	14.50

## Spare parts

Description	Cat. No.
Manometer	PBIB32828
Heating element 200 V, 1300 W (110 V on request)	PBIB64703
Programmer for thermoregulation (VAPOUR-Line <sup>lite</sup> )	PBIB77709
Cover gasket	PBIB8174
Overpressure plug	PBIB19113
Main switch	PBIB67101
Relay SS	PBIB53301
Thermoprobe	PBIB66048
Sacrificial body	PBIB58013
Fixing cover device	PBIB19114
Pressure regulator	PBIB22721
Controller for autoclave	PBIB77709
Main switch	PBIB67101
Solid state relay	PBIB53301

## Visual programmer codes and description of the related parameters

In normal conditions the programmer should show on the display the function parameters as listed in the table below.

The parameters can be shown by the 'ENTER' multifunctional key.

The only values that can be modified by the operator are:

'nnn' = parameter protection key

'SP1' = sterilisation temperature

't in ' = sterilisation time

'dELY' = starting cycle waiting time

FUNCTIONS	PARAMETERS	DESCRIPTION
Snrt	ON	Automatic parameter control
nnn	ON/OFF	Parameter protection key
dELY	0	Starting cycle waiting time
SP1	Sterilisation temperature	Sterilisation temperature
Grd1	Inf	Configuration parameters, do not modify
t in 1	Sterilisation time	Sterilisation time
SP2 0	0	Configuration parameters, do not modify
Grd2	Inf	Configuration parameters, do not modify
t in 2	0	Configuration parameters, do not modify
rPt 0	0	Configuration parameters, do not modify
AL1 0	0	Configuration parameters, do not modify
HSA1	0.1	Configuration parameters, do not modify
CY1	4	Configuration parameters, do not modify
rL	0	Configuration parameters, do not modify
rH	125	Configuration parameters, do not modify
OLH	100	Configuration parameters, do not modify

## Setting the parameter safety key

Selected parameters should be protected to avoid tampering:

- Press 'ENTER' several times until the word 'nnn' shows on the display
- Select a number other than 3 using the arrow keys and press 'ENTER'

This number will be requested any time the set parameter is changed.

The parameter protection is erased by doing the following:

- Press the 'ENTER' button several times until the word 'nnn' shows on the display
- Select number 3 using the arrows and press 'ENTER'

The programmer will now no longer request a password.

## Printer recorder (optional)

The autoclave is supplied with a temperature printer connection.

### Printer records:

- Date
- Batch number
- Temperature recorded during the segment of time programmed
- Sterilisation progressive number carried out automatically

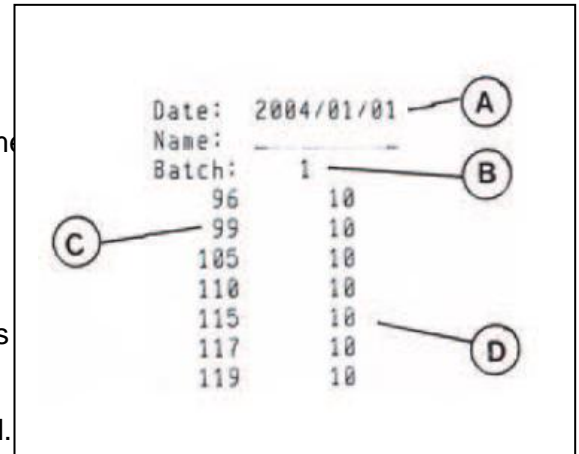
### How to insert the paper

Pressing the two levers (E), open the panel and insert paper as

If the paper is correctly installed the 'pos F' LED light is on.

A flashing LED indicates that the paper is not properly installed.

By pressing button G you can scroll the paper.



### Printer settings

NOTE: The printer must be turned on at the main switch.

#### • HOW TO MODIFY THE DATE:

- Press 'ENTER' twice

Display will show 'OFF'

YEAR

- Change using the ▼▲ buttons
- Press 'ENTER' to confirm
- Do the same for MONTH and DAY

#### • HOW TO MODIFY THE BATCH NUMBER:

(at the end of the cycle, to assign a new number to next cycle)

- Press 'ENTER' twenty times

The display will show 1

n bat

- Bunch: Change using the ▼▲ buttons

- Press 'ENTER' to confirm

#### • HOW TO MODIFY THE PRINTER INTERVAL:

- After modifying the batch, the display will show: '1.00 P.int'

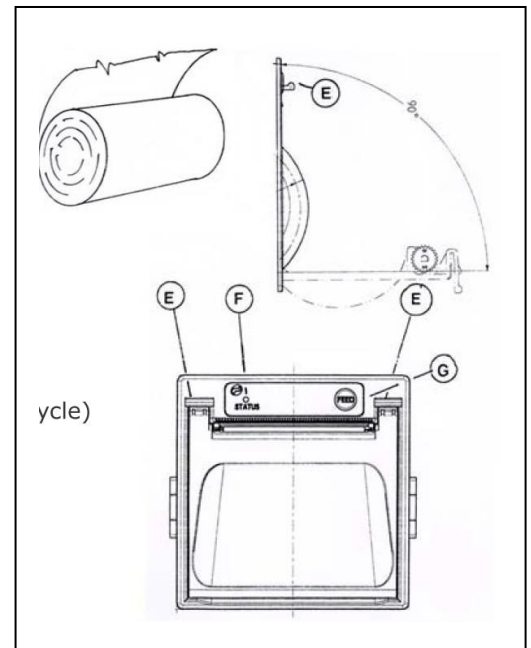
- Change using the ▼▲ buttons

- Press 'ENTER' to confirm

- Display will show: 'OFF'

TEST

- TO EXIT PRESS 'START-STOP' 5 TIMES



# Technical service

## Web Resources

Visit the VWR's website at [www.vwr.com](http://www.vwr.com) for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

**Contact us** For information or technical assistance contact your local VWR representative or visit.

[www.vwr.com](http://www.vwr.com).

## Warranty

**VWR International** warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

### Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

## Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you



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