Laboratory Equipment Pty Ltd

INSTRUCTION MANUAL

Autoclave Bench Model +135°C

MODEL: AA9

Introduction
Congratulations on the choice of an Australian made quality product. Labec products are manufactured, tested and calibrated to meet published standard specifications under our strict quality assurance guidelines.

This Instruction Manual is for the guidance of operators of Labec Autoclaves and should be read before the autoclave is connected to the electricity supply.

It is hoped that this manual will supply all the information that the customer should require for satisfactory operation of this product. If, however, there are any questions that remain unanswered please contact the Service Department via the website enquiry page and include the serial number of the unit.

Unpacking
Remove all packing and protective wrapping from both interior and exterior of the autoclave. Check the autoclave for any possible transit damage. Ensure all ordered accessories are present. If any physical damage or shortages are evident, do not discard the packaging material until the autoclave is inspected by the distributor, agent or manufacturer.
NOTE: All claims for shortage or damage must be made within fourteen days (14) from delivery.
Subject to our standard published conditions of sale, we have reasonable grounds to believe that we have ensured, so far as is reasonably practical, that the products listed in our catalogue and brochures have been designed and constructed so as to be safe and without risk to health when properly installed and used in their environment by appropriate and trained personnel, and where applicable, in accordance with our published instructions.

Installation
Electrical
This equipment must be tagged and tested according to AS/NZS3760:2010 prior to use and thereafter every 6 months dependent upon the environment.

A qualified electrician should connect the power supply through the conduit at the back of the autoclave. Access to the terminal block is obtained by removing the right hand side panel of the autoclave. **The frame of the autoclave must be sufficiently earthed using the earth terminal located adjacent to the terminal block.**

It is preferable to locate the autoclave close to a power point and recommended that double adaptors are not used. Check the total wattage if connecting to multipoint outlets. Check the rating plate for power requirements. Installation is to be carried out by a qualified electrician in accordance with the power requirements of the product specifications.

See Appendix B attached**.**

Plumbing
Connect all plumbing in accordance with local authority's regulations.

Location
Select a location free from draught and away from direct sunlight or other heat source. Proximity to a drain for:

1. Waste from the manually operated drain.
2. The outlets servicing the pressure release valve and air vent
3. Adjustable steam release valve at the bottom right hand rear of cabinet.

General
The LABEC Automatic Autoclave is designed and constructed to meet the requirements of the S.A.A. boiler Code and has been approved by the Boiler Inspectors Branch of the N.S.W. Department of Industrial Relations 'Workcover Authority', to operate at pressures up to 138 K.P.A. Regulations require that on installation the autoclave be examined by a licensed boiler inspector and this certificate of inspection be displayed under glass near the autoclave and renewed annually.

Approval Numbers

	NSW	QLD	SA	WA	TAS
AA9	6766-P-87			WA94	
AA13/AA16	674-P-90	BV18716	PV86636/7	WA9489	TA4946
AA18/AA20	673-P-90	BV18717	PV86636/7	WA9490	TA4947

Heating
Heating of the autoclave is by means of stainless tubular element located in the base of the autoclave vessel.

Description of Controls
See Appendix A Attached

Temperature Control
Labec autoclaves are fitted with solid state proportional action temperature controllers which operate from a sensitive thermocouple or Rtd inserted in the working space of the chamber. The controller has been calibrated at 121°C and before any adjustments to temperature settings are made allow the autoclave temperature to stabilise for at least one half hour. For the digital controller fitted please read the enclosed operating instructions when setting the controller temperature. **Note: if you intend using the autoclave at temperatures other than the preset 121°C, you need to adjust the 'AL4' value, using the up or down arrow, set this value equal to the new temperature at which you use the autoclave (you must do this in LVL2 in the controller). Now change the temperature using up and down arrows to the new temperature setting and press start. (AL4 is the value which when reached will activate the timer).**

Important Safety Instructions

Caution
Please observe the following safety measures before using your LABEC equipment.

1. Ensure pressure inside the autoclave is reading zero KPA on the pressure gauge before opening the lid.
2. These autoclaves are **NOT FLAME PROOF** and under no circumstances should inflammable, combustible or explosive material be placed in the autoclave.
3. Low ignition temperature materials and those materials which give off inflammable or explosive vapors should not be placed in the autoclave.
4. Avoid heating substances which give off corrosive vapor.
5. Users are advised of the dangers of heating combustible materials. The manufacturer can recommend special types of elements which will prohibit the autoclaves temperature
6. Observe those rules pertaining to wiring and installation of electrical appliances as recommended by the local supply authority.

Safety Instructions

1. Use full face shield protection when loading and unloading the chamber.
2. Fill only with hose or bucket – do not connect to water mains.
3. Load or unload with gloves which cover forearms or wear long sleeve shirt.
4. If contents are harmful wear an appropriate respirator and filter to prevent inhaling hazardous vapors.
5. Ensure both hands hold lid handles when opening autoclave and ensure no body parts extend over the autoclave.
6. Ensure the baskets are not too heavy when loading and unloading and use correct lifting methods.
7. Keep hands and body away from autoclave when in use to prevent burning and/or scalding.

Operation

1. Connect the autoclave to an alternating current supply of voltage specified on the rating plate mounted on the side or rear of the unit.

DANGER; THIS UNIT MUST NOT BE CONNECTED TO DIRECT CURRENT SUPPLY !

2. Manually fill the boiler with clean water to a level just below the reservoir lip on the front inside edge.
3. Load the autoclave.
4. **Closing the door**- Push the door shut and apply leftwards pressure to the safety handle with your right hand and tighten the door with your left hand until the pin on the bridge piece is located in the "V" or notch of the bridge piece. If leftwards pressure is not applied to the locking pin when closing the door spring on the door will lock in and you will be unable to tighten and seal the door..
5. Switch the mains power on. Turn the temperature controller to the required temperature.
6. Set the timer to the required autoclaving period. The timer has multiple time unit selections which are displayed in the window ie. 0.1 seconds, 0.1 minutes, 0.1 hours, hours, 10's of hours. The time may be selected in any mode from 001 to 300hrs.
7. Press the 'start' button. A red heater lamp should illuminate.
8. The autoclave will switch on and will heat up until the preset temperature is reached.
9. The timer is in operation when a green flashing light in the top left corner is flashing. As the time runs down the green lamp will flash faster until it turns red – this indicates the timer has finished.
10. Solenoid valve & ball valve – when the timer has finished the set cycle time, it will actuate a solenoid valve to release the steam/pressure. The release may be stopped or slowed by opening or partially opening the ball valve at the rear of the cabinet. **NB: If dumping steam it is advisable to connect a waste line to the ball valve!**
11. **Opening the door** – Check the pressure gauge has dropped to zero KPA, this may vary depending on the load mass and temperature. There will be no pressure behind the door when opened. Some steam may still be emitted depending on how long the wait period is. (Alternatively you may open it before reaching zero pressure – by carefully unscrewing the door but not touching the safety handle, only one or two turns until the first sign of steam is visible - stop and allow all the steam to evacuate, around 2 minutes, then completely release the door when no more steam is being emitted and the pressure gauge now reads zero KPA). Release the door turning in an anti-clockwise motion. Push the safety handle to the right, away from the bridge allowing the door to swing open. If it is difficult to open the door after use (due to vacuum in the chamber), switch 'mains' on & energize the solenoid valve (& open the ball valve if closed) to allow air into the chamber. This also can be overcome by leaving the door ajar after use.

External Steam Fittings

1. Spring loaded safety valve pre-set to operate at 138 K.P.A. with padlock.
2. Automatic air vent.
3. Pressure gauge.
4. Solenoid valve & ball valve.

Indicators

1. An indicating lamp adjacent to the controller will illuminate when the heaters are operating.
2. An amber pilot light will illuminate if the water level is too low.
3. An automatic digital reset timer with multiple time modes will be activated once temperature reaches the set temperature, the timer will then flash “off” until the time has elapsed, then the autoclave will cool until the ‘start’ button is pressed again.
4. If you wish to change the temperature you are using the autoclave at and therefore the temperature at which the timer will begin its timing cycle please call the manufacturers technical department.
5. It is advisable to check the water level after each cycle.

Chart Recorder (Optional - not on all models)

Please read the chart recorder manual before use of the autoclave.

The recorder is programmed to record the autoclave temperature on Channel 1. If the recorder is remote it should be mounted/placed adjacent to the autoclave and then using the leads from the recorder, connected to the matching sockets on the rear of the autoclave body. When positioned and connected to the autoclave, open the door of the recorder, place the chart paper in position and remove the white caps from the pens(the internal door can be opened to access the pens), press the button to switch the recorder ON. Connect the recorder to the MAINS supply and turn ON.

External Steam Fittings

1. Spring loaded safety valve pre-set to operate at 138 K.P.A. (Safety valve).
2. Automatic air vent (air vent 2).
3. Adjustable steam release valve. If autoclaving sealed items, the adjustable steam release valve may be closed to prevent the items exploding or blowing off lids or seals when the autoclave has completed its cycle. In this case it is desirable to allow the autoclave to depressurise gradually before attempting to open the lid. The valve may be partially opened to permit a gradual release of steam (dump valve 5).
4. Pressure gauge.

Internal Temperature Probes (Optional- not on all models)

If the autoclave is fitted with two internal temperature probes. To change these probes you must remove the side panel and unscrew the glands in which they enter the chamber. The probes are ‘K’ type thermocouple autoclave type and are connected to an external plug for monitoring by chart recorder or computer or P.L.C. Included is two blank plugs which you can screw into the vessel if you do not wish to use the internal probes- be sure you use plumbers tape before screwing these into the vessel or replacing them in the vessel.

Maintenance

The cabinet is finished with stainless steel and to maintain appearance should be wiped over with a non abrasive cleanser. The chamber is manufactured from stainless steel and may be cleaned with a solvent and if grained stainless steel chamber a stainless steel scratch pad may be used. The pad should be rubbed in the same direction as the grain pattern of the stainless steel.

The silicone gasket should be cleaned with detergent only, ensuring it is dried completely after washing. To prolong life it may be stored at cool temperatures in a container of water. Gasket lubricant is available to provide prolonged life and better sealing on the gasket.

The locking pins should be regularly greased with high temperature grease to reduce binding in the guides.

WARNING: THIS AUTOCLAVE SHOULD NEVER BE CONNECTED TO MAINS WATER SUPPLY

Troubleshooting

SYMPTOM	REMEDY
No Power (Indicator Light is off)	1. Check autoclave is plugged in and powe switched on. 2. Ensure mains power supply point is functioning by using a test appliance on power socket. 3. Check internal RCD has not tripped.
Failure to heat or maintain temperature (Indicator light is on)	1. The temperature controller is on. 2. The water level is above the low wate sensor and the low water indicating lamp is off.
The timer does not start	1. Check the AL4 value is equal to set value as this value activates the timer.

If the fault cannot be found call your distributor or the manufacturer quoting the serial number of the autoclave from the manufacturers label.

Declaration of Conformity

Each product is thoroughly inspected and tested to not only ensure that it meets the specifications provided, but to also meet Australian Electrical Standard AS3820 and EMC Standard AS/NZ1044:1995,and therefore being accredited with a C Tick label. Labec Autoclaves are constructed in accordance with Australian Standard 1210 and are approved by Workcover Authority of NSW with reciprocal approval by equivalent bodies in all states of Australia.