

MANUAL FOR



SLEDD - SERIES AUTOCLAVE

#7410-3568 #7410-4072

CE

Sr No Autoclave :

PICKING LIST

VERTICAL AUTOCLAVE - SLEDD #7410-3568,#7410-4072 SR NO

1	The Autoclave	[]
2	Manual- 2810-06	[]
3	Warranty Card	[]
4	Test Report	[]
5	Pressure Gauge Calibration Certificate and Traceability	[]
6	Temperature controller Calibration Certificate and Traceability	[]
7	'X' Stand SS	[]
8	Carrier SS Wire Mesh (Basket)-1 nos with separator	[]
9	Drain/Exhaust Carboy	[]
10	Silicone pipe Ø8 X 11 - 1 mtr	[]
11	Horse clip Qty - 2no	[]
12	Spare Gasket	[]
	Checked By	

Dear Customer,

- a. Thank you for the confidence in *EQUITRON Single Lever Series Autoclave* and we hope that it meets your expectations.
- b. Please read this manual thoroughly before starting the equipment and in order to operate it in an efficient manner.
- c. Please use the equipment in accordance to this Manual for keeping it in a good condition.
- d. Please contact the Dealer if the machine encounters a problem. We ensure quality service and customer support.
- e. We operate on a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without prior notice.

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MEANING OF SYMBOLS:

	This symbol draws attention to the user manual, for example, <u>Check water level in the chamber and add water before each sterilization cycle.</u>
	This symbol warns about hot surfaces and should not be touched during operation
	This symbol indicates location of grounding protection on product.
BE CAREFUL	This symbol is a cautionary symbol for taking precautions and / or highlighting hazards.

1.0 INTRODUCTION:

1.1 Basic information:

EQUITRON Single Lever Series Autoclave - with drying is used for Sterilization purpose. It has a temperature range upto 134°C for fast sterilization. Also an option of drying is provided after Sterilization. In drying process, while exhausting, the chamber water is removed, and with the help of an externally fitted band heater, chamber walls are heated upto predefined limit. Due to heat generated and absence of water, the load would get dry.



1.2 Intended use:

EQUITRON Single Lever Series Autoclave can be used for numerous medical and laboratory applications in market sectors such as food, dairy, universities, colleges, agriculture, healthcare and industries such as pharmaceuticals, chemical, biotech etc.

These Autoclaves are intended to sterilize :

- a. Unwrapped solid instruments
- b. Non-porous loads
- c. Media preparation
- d. Sterilization of Media as well as Surgical instruments.
- e. For discard or prior to discard.
- f. Dentistry
- g. Metallurgy

Autoclaves are found in many Medical Settings and other places that need to ensure sterility of an object.

2.0 UNPACKING:

While unpacking the consignment, please insure that following materials are intact, else contact to dealer / manufacturer.

2.1 Material shipped :

- a. The Autoclave, fitted with a MCB,Controller and a Solenoid Valve.
- b. Mains cord (3 meter long)
- c. Drain/Exhaust Carboy
- d. Pipe, 1/2 meter, Ø8 X 11 mm
- e. Hose clips (2 nos)
- f. This manual
- g. Calibration certificate and test reports
- h. Warranty card

2.2 General safety precautions:

- a. Observe all standard laboratory safety and accident prevention rules and regulations.
- b. The *Autoclaves* are made for **Sterilization Purpose** and should not be used for any other purpose.
- c. Before connecting the equipment to a power socket, please ensure that line supply matches that of the instrument rating.
- d. Never touch the steam outlet and the *Autoclave's* outer body when it is in operation. It may cause burns. Equitron medica private limited would not be responsible for such inadequate actions.
- e. Don't allow patients, mostly children to touch the Autoclave.
- f. Before using the Autoclave make sure that the internal chamber is clean and free from residue.
- g. For effective sterilization, steam needs to penetrate the autoclave load uniformly, so an autoclave should not be overcrowded, and the lids of bottles and containers must be left ajar.
- h. Before opening up the *Autoclave* at end of the cycle, open the lid after 5 mins when the pressure in PG shows zero / purge valve comes down
- i. Never apply any force to open an Autoclave.
- j. You must use distilled water to extend the life of sterilizer.
- k. It is suggested that you use a matched instrument hand clip to take out the equipment to avoid scalding.
- I. The Autoclave should not operate in an enclosed area like cupboards.
- m. There are no serviceable parts inside the chamber; an authorized personnel should service the equipment.

3.0 INSTALLATION:

3.1 Environmental conditions:

- ✓ Ambient temperature : 5 °C-40 °C
- ✓ Relative humidity: $\le 85\%$

3.2 Utilities required:

Electric supply: 230V AC, 50Hz, single phase

Please ensure that proper grounding of the point prior to connecting the AUTOCLAVE to mains.

Water: The *Autoclave* uses a distilled water or demineralized water for steam generation. Please ensure supply of the same.

3.3 Placement:

- a. Autoclave should be placed on a level ground and should preferably be away from a major heat / humidity source.
- b. Arrange the equipment with a clearance of 1 meter on the right side and 12 cm from rear side.
- c. If the equipment is installed in a place which is 800 m or higher than sea level (i.e. Under low pressure) its specifications (viz. purging temperature) are subject to change. In this case be sure to contact manufacturer or dealer.
- d. The autoclave drain and exhaust outlet on the rear side should be connected to Drain/Exhaust Carboy.
- e. Avoid installing the equipment in a place where its body may be exposed to water or chemicals or where corrosive and explosive gases may be produced nearby.
- f. Avoid placing the equipment directly under a fire detector. If you open the lid immediately after completion of operation, steam comes out of the working chamber, and may activate the detector.

3.4 Setup:

- a. The autoclave 7410-3568 needs a 15 A wall socket and #7410-4072 will need a MCB of 25A. Please ensure proper earthing.
- b. The X stand at bottom should not be obstructing the water level sensor.

4.0 **OPERATION**:

The drain valve should never be opened when the Autoclave is under pressure.

- a. Open the Autoclave lid by pressing down the lid handle and turning the lever in anti clockwise direction.
- b. Remove the Baskets but leave the heater Cover X stand inside.
- c. Ensure that the drain valve at the bottom of the Autoclave is closed.



d. Pour DISTILLED WATER into the Autoclave (Do not pour water directly on Water Level Float Switch) up to the Heater Cover X stand.

e. Load the Autoclave, close the lid by turning the lever in clockwise direction.

Please do not spill any chemical or any liquid inside the chamber.

Before closing the lid, please check that there are no foreign matters in the portion of the lid which is in contact with the lid packing. Foreign particles may cause steam leakage.

- f. Switch ON the MCB.
- g. The initial screen with 'Medica Instrument' display will be shown.
- h. The display will change to Main screen. Where Actual and set temperature will be displayed.
- i. If acceptable press F3 to start the cycle.
- j. To change the settings, refer to controller setings clause.
- k. When cycle starts, message window will show 'tmp', upper window will show actual temperature value and lower display will show set temperature value.
- I. Temperature will rise gradually upto set point.
- m. The Solenoid Valve will remain open up till the temperature reaches approximately 99-100°C in order to purge the stale air enclosed in the Autoclave, after which it will automatically close.

Purging depends upon boiling temperature of water. This boiling point differs as per altitude.

Boiling point (Purge set point) (in ^e C)
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.0

For setting appropriate Purge set point refer table below:

- n. After this, the temperature and pressure will gradually rise, which will be indicated by the controller and Pressure Gauge.
- o. The TIMER will start its countdown after the set temperature is attained.
- p. The message screen will show 'str', upper display will show actual temperature value and lower screen will show Soak Timer value.
- q. During the countdown the temperature and hence the pressure will be maintained by the controller by switching ON / OFF the heater.

- r. During this period of countdown, the Safety Valve may leak slightly, which is normal.
- s. After elapse of the set time, if drying is enabled (by setting drying timer to a certain value) solenoid valve will open and steam + water will be drained to carboy connected. Ensure secure clamping of the pipe connected to Carboy to prevent any accidents.
- t. A band heater will start and it is controlled at 100°C through externally connected thermostat.
- u. The message window will show 'dry'. Exhaust valve will remain on throughout the drying phase.
- v. Band heater will be controlled at 100°C till drying timer overs.
- w. After elapse of drying timer, message window will show 'End Of Cycle' and buzzer will sound for 30 seconds.
- x. To start a fresh new cycle, please turn off the MCB and again turn it on, then start the cycle.
- y. Open the lid ONLY AFTER THE PRESSURE GAUGE SHOWS '0'. Do not attempt to open the lid at even 1 or 2 psi. 'Pressure interlock' given for the lid. So if there is any residual pressure in the chamber lid will not open.

Note : Open the lid after 5 mins when the pressure in PG shows zero / purge valve comes down.

z. To avoid recontamination of material, please remove the sterilized material at the earliest after total exhaust of pressure. The Purge Valve cum Vacuum Breaker will allow air to enter inside the chamber to prevent a vacuum within.

Keep the lid open for 15 minutes or more between operations when the equipment is operated continuously. Check to see that temperature in the working chamber is 50°C or below before starting the next operation.

The maximum load volume of the Autoclave is <u>70%</u> of its drum/carrier size.



Please do not open the lid when temperature is above 90 °C

5.0 CONTROLLER SETTINGS:



- a. The above display is explained as follows:
 - 1) Message window: The message window will show the phase of cycle. Meanings of controller Messages are given in below table.

Message	Meaning
tmp	Temperature. This message is displayed when cycle is not started OR in heating phase.
str	Sterilization phase
dry	Drying phase

 Group <u>YELLOW</u> LED: Group <u>YELLOW</u> contains digital inputs. These inputs can be explained as follows:

Condition of LED	Meaning
1 Number LED is not glowing	Water level low
1 Number LED is glowing	Water level is adequate
2 Number LED is not glowing	Door is open
2 Number LED is glowing	Door is closed.
4 Number LED is not glowing	Cycle in running stage
4 Number LED is glowing	End of cycle.

3) Group <u>RED</u> LED: Group <u>RED</u> contains digital outputs. These outputs can be explained as follows

Condition of LED	Meaning
1 Number LED is not glowing	Heater is OFF
1 Number LED is glowing	Heater ON
2 Number LED is not glowing	Solenoid valve is OFF
2 Number LED is glowing	Solenoid valve is ON
3 Number LED is not glowing	Band heater is OFF
3 Numbar LED is glowing	Band heater is ON
4 Number LED is glowing	Indicates Exhuast of water drain

4) Actual temperature: This window displays the actual temperature of Autoclave chamber.

- 5) Set value: The lower window shows set value of temperature in heating phase and time in sterilization phase.
- 6) Set key: To set various parameters related to cycle.
- 7) F1 (Shift) key: To shift the digit while setting parameters.
- 8) F2 (Down) key: To decrement the value while parameter setting and to 'STOP' the cycle.
- 9) F3 (Up) key: To increment the value while parameter setting and to 'START' the cycle.

10) ENT (Enter) key: To register the changes done in parameters.

b. Original factory settings are

Temperature:	134ºC	Sterilizing time:	07 min
Purge temperature :	100ºC	Drying time:	15 min

This screen denotes "WATER LEVEL LOW" So, pour Adequate Water.



a. To alter the settings press set key for once. The below screen will appear.



 b. When you press Set key the above screen will appear, press F1 (shift) key to go into alter mode, the values on upper screen will start to blink, using F2 (down), F3 (up) and F1 (shift) key, set desired set temperature value. Press Ent (Enter) key to register the value. Press set to go to next parameter. The screen below will appear. Temperature set point can be set upto $134^{\circ}C$



c. The next parameter to be set is sterilization time, press F1 (shift) key to go into alter mode, the values on upper screen will start to blink, using F2 (down), F3 (up) and F1 (shift) key, set desired value. Press Ent (Enter) key to register the value. Press set to go to next parameter. The screen below will appear. Timer limit is 1 to 99 min.



The next parameter to be set is purge temperature, refer to the table given in 'Operation' clause, to set appropriate value. press F1 (shift) key to go into alter mode, the values on upper screen will start to blink, using F2 (down), F3 (up) and F1 (shift) key, set desired value. Press Ent (Enter) key to register the value. Press set to go to next parameter. The screen below will appear.



The next parameter to be set is Drying time, press F1 (shift) key to go into alter mode, the values on upper screen will start to blink, using F2 (down), F3 (up) and F1 (shift) key, set desired value. Press Ent (Enter) key to register the value. Press set to go to next parameter. The screen below will appear. Drying timer set limit is 1 to 99 min



After elapse of sterilization hold time, if dry time is set drying phase screen will be appeared or "End of cycle" will be displayed.



NOTE:

- i. PURGE-SP setting not allowed above 100°C, because chamber temperature will not rise above 100°C.
- ii. While cycle is running, the user is not allowed to change any of the the sterilization parameter.

6.0 GENERAL SPECIFICATIONS:

6.1 Technical specifications:

Model No.	#7410-3568	#7410-4072
Chamber dimensions (Ø xD)	Ø35x78cm (77L)	Ø40x82 cm (107L)
Carriers (optional)	Ø30 X 50 -1 no	Ø35 X 55 cm - 2 nos
Dressing Drums (optional)	Ø330 x 280 mm - 2 nos	Ø380 x 300 mm - 2 nos
Material of working chamber	SS 304	-
Operating Temperature	134ºC	
Heater (kW)	2.5 kW	3.5 kW
Band Heater	0.5 KW	0.75 KW
Current drawn	14 ±1A	17 ±1A
Safety	Low water level alarm	
	Door open hea	ater cut off
	Over tempera	ture alarm
	Safety valve for over pressure protection	
Miniature Circuit Breaker (MCB)	DP 25 A	DP 25 A
Supply	y 230 VAC, 50 Hz, single phase	
Solenoid Valve	Direct acting 2/2, 240 VAC coil, Normally Closed, 6 mm port, 1/4"BSP	
Pressure Gauge	0-60 psi; 60mmØ(21⁄2"); 1⁄4" BSP	
Drain Valve	Bottom connection	
Float Switch	Float Switch SS Float Ball potential free	

Display	7 segment LED display
Temperature Control	Range up to 134.0°C in 0.1°C resolution and a control accuracy of +1°C or better - enabling finer control of the process.
Timer	Range of 1 to 99 minutes - covering all the possible routine sterilization requirements.
Drying timer	Range of 1 to 99 minutes
Analog Input - Temperature	Pt100
Digital Input - Water Level	Float Switch
Digital Input - Door	Door switch
Output 1	Relay - for SSR (Heater)
Output 2	Relay - Solenoid Valve for Purge & Exhaust
Output 3	Relay for Band heater
Alarm Functions	Low water level and End of cycle indicator, audio & visual

6.2 Controller specifications:

7.0 WIRING DIAGRAM



2



8.0 *MAINTENANCE:*

8.1 Cleaning:

- a. Open the drain valve to drain the machine of used Distilled water. Place a suitably sized vessel below the drain valve and open it.
- b. After the chamber is empty, rinse the chamber using water. This will flush any residual matter and small particles. Before flushing please remove any large particles as they may block the drainage valve.

Do not use benzene or thinner to clean the body. Also make sure that the volatile substances such as insecticides do not come into contact with the body as these substance may deteriorate the body or strip its paint.

c. Close Drain Valve and pour distilled water for next cycle.

8.2 Daily maintenance:

- a. The door gasket and the mating surface should be wiped clean each day with a clean, damp cloth. Do not use abrasive cleaners on the gasket or mating surface.
- b. For persistent marks use warm soapy water but ensure any soap residues are completely removed by wiping both the gasket and the vessel again with water using a lint free damp cloth.
- c. Cleaning After Liquid Loads : Biological media tends to boil at a higher rate than other liquids during venting. This causes media to be spattered inside the chamber. Therefore, the chamber must be cleaned daily when you are sterilizing media. Clean as follows:
 - 1) Allow unit to cool.
 - 2) Wipe out chamber and door with a clean, damp cloth.

8.3 Weekly Maintenance:

- a. Clean Chamber, basket at least once a week, the baskets should be removed from the sterilizer chamber.
- b. The Basket and chamber should be thoroughly cleaned to remove any deposits from the surfaces.

Please clean the autoclave once in a week.

- c. Clean the Basket and chamber (especially the bottom of the chamber) with appropriate anti biological cleaners. Wipe all residues from the surfaces with a dampened, lint-free cloth.
- d. Water drain valve might has been jammed by some dust because of use for a long-term. This kinds of impurity come from smeary dust on the instruments being sterilized or some calcification in the water.
- e. Heater coil which is located at the bottom of the chamber should be cleaned with mild soap solution, to ensure long life of component.
- f. Keep inside chamber clean in order to make life of *Autoclave* much longer; please take the following advice for consideration:

1) Use distilled water;

2) The instruments should be cleaned before running the operation; it is good to use specified packing for the instruments with oil or other impurity, don't forget to seal up.

g. There are some impurities and some toxins have been left behind the chamber because distilled water had left behind for a long time, so you need to drain and clean the autoclave regularly.

9.0 PLEASE ENSURE THE FOLLOWING . .

- a. You have read and follow these operating instructions.
- b. The load can be sterilized at the selected temperature.
- c. The load has been cleaned.
- d. The load has been rinsed thoroughly in clean water prior to sterilization to avoid any chemical residues left.
- e. Only distilled, de-ionized or sterile water is used.
- f. The Autoclave is in a draught free area.
- g. The Autoclave is not installed in an enclosed cupboard space.
- h. All other exterior product panels are 50 mm clear of adjoining surfaces to allow air circulation.
- i. The gasket is left ajar when not in use.
- j. Only qualified personnel service the Autoclave.

AND PLEASE DO NOT

- a. ...Lose this handbook.
- b. ...Add any chemicals whatsoever to the water.
- c. ...Attempt to sterilize volatile substances, toxic materials or other unsuitable loads. Refer to your Responsible Person for advice.
- d. ...Place the autoclave in direct sunlight.
- e. ...Place the Autoclave on heat sensitive surfaces.
- f. ...Use inappropriate cleaning materials.
- g. ...Drop or abuse the Autoclave.
- h. ...Use in areas of risk associated with flammable materials or gases.
- i. ...Remove the casing or attempt to service or repair this Autoclave.

10.0 EMERGENCY CONDITIONS:

<i>Emergency conditions that can arise during operation:</i>	Fail-safe condition:
Failure of temperature controller	An independent spring loaded safety valve is provided at 20psi to avoid the bursting of chamber due to over pressure.
If temperature rises beyond control	A thermostat is provided which limits the chamber temperature upto safe level. Which gives an alarm and cut off the heater from supply.
Water level goes below the minimum limit	Process is aborted irrespective of the status of the process, in addition an alarm is generated for audible indication.
Controlling sensor open	Process is aborted irrespective of the status of the process, in addition an alarm is generated for audible indication

11.0 TROUBLE SHOOTING:

Conditions	Solutions
No display present on the controller panel	1. Check the availability of supply
	2. Check whether switch is on or not
No heating is taking place	1. Check SSR connections
	2. Check whether supply is given to the heater.
Steam leakage during operation	1. Check the proper fitting of the gasket
	2. Check the spare parts fitted on the lid
Generation of an alarm	1. Check the water level
	2. Check the sensor connections

WARRANTY

Scope:

- This warranty extends only to the original buyer & may not be extended to a third party without a written consent of manufacturer.
- All products of **MEDICA** are warranted against manufacturing defects for a period of one year from the date of delivery or installation whichever is earlier.
- EQUITRON MEDICA PRIVATE LIMITED will repair the instrument & provide necessary parts (subject to exclusions below) & labour free of charge during warranty period, subject to the instrument being sent to our factory, insured & freight paid.

Restriction:

- a. This warranty does not apply if an attempt has been made to repair, rectify alter or dismantle the product by an unauthorised person.
- b. This warranty also does not cover damages resulting from accident, mishandling, negligence and breakage in transit.
- c. This warranty covers only the main instrument & manufacturer shall not be liable for damages to any accessory connected to it. Liability of EQUITRON MEDICA PRIVATE LIMITED is limited to repairs of our instrument subject to conditions herein.
- d. Under no circumstances would we be liable for any consequential loss, damage or suffering due to any malfunctioning of our product, bonafide or otherwise.

Exclusion:

- All Consumables.
- Items like Heaters, Pressure / Compound / Vacuum Gauges, Pilot Lamps, Lamps all kinds and Switches are excluded form the scope of warranty.

For further support / to register a complaint, please e-mail with Serial Number to:

Customer Support Incharge

EQUITRON MEDICA PRIVATE LIMITED

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Sr No of the product:

