



# PHARMA DEVILS

PRODUCTION DEPARTMENT

## STANDARD OPERATING PROCEDURE

**Title:** Cleaning, Calibration and Operation of Vertical Autoclave

<b>SOP No.:</b>		<b>Department:</b>	Microbiology
		<b>Effective Date:</b>	
<b>Revision No.:</b>	00	<b>Revision Date:</b>	
<b>Supersede Revision No.:</b>	Nil	<b>Page No.:</b>	1 of 6

### 1.0 OBJECTIVE

To lay down procedure for cleaning, calibration and operation of vertical autoclave.

### 2.0 SCOPE

This SOP is applicable for vertical autoclave, Make - Electron in microbiology laboratory.

### 3.0 RESPONSIBILITY

Prepared by - Executive Microbiology

Checked by - Assistant Manager Microbiology / QC

Approved by - Head QA, QC

### 4.0 PROCEDURE

#### 4.1 Programming Sequence Adjustment

4.1.1 Connect the power cord of the vertical autoclave to the main supply.

4.1.2 Switch on the main power supply.

4.1.3 Switch on the machine by pulling down its power button.

4.1.4 Press the PROG key to set the desired parameter. The LCD screen will display as under

Set Temp (<sup>0</sup> C)  
121.1

4.1.5 The current set value is appeared. Change the value using the <UP> & <DOWN> cursor and press the < ENTER > key to register the change made.

4.1.6 After setting the temperature the second parameter of program i.e. time will appeared on LCD screen as under

Set Time (mins)  
030

4.1.7 The current set value is appeared. Change the value using the UP & DOWN cursor and press the ENTER key to register the change made.



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**4.1.8** The LCD screen will then show the following option to set CALENDER, TIME & YEAR respectively. The value can be change by using the <UP > and < DOWN > cursor & Press the < ENTER > key to register the change made.

4.1.8.1 The range of setting of Calendar

Date (MM: DD)  
11:11

The range is from 01: 01 to 12:31 in month & day form.

4.1.8.2 The range of setting of time

Time (HH: MM)  
09:30

The time range is from 00: 00 to 23: 59 in hour and minutes.

4.1.8.3 The range of setting of Year

Year (YYYY)  
2007

4.1.9 For setting in printer, after entering the year the LCD screen will display.

Printer Baud  
19200

Baud rate is the rate at which the data is transferred to serial printer. The baud has different range i.e. 1200,2400,4800,9600 & 19200 which may be selected using the UP & DOWN cursor & Press the < ENTER > key to register the change made.

**4.1.10** The following signals are also displayed on screen on event.

4.1.10.1 Water low level - with audio alarm.

4.1.10.2 Sensor open - If the probe is open

## **4.2 Operation of Vertical Autoclave**

4.2.1 Unscrew the locking bolts of autoclave.



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- 4.2.2 Open the lid of the autoclave using pedal lifting device and remove the carriers / basket and ensure that the chamber is clean.
- 4.2.3 Pour the purified water / water for injection in the autoclave chamber up to the level of level of water level sensor ball.
- 4.2.4 Make sure Ball should be perpendicular to the sensor stand.
- 4.2.5 Keep the SS carriers / basket over the stand along with the item to be sterilized.
- 4.2.6 After loading the autoclave close the autoclave lid carefully using the pedal lifting device and securely tight the fly nuts of opposite direction one after another to ensure the proper & even sealing of vessel.
- 4.2.7 Connect the rubber tubing preferably to the nozzle of solenoid valve to for safe outlet of purged steam/air.
- 4.2.8 Switch on the mains and LCD screen will display as

Fully Automatic  
Logger & Controller

- 4.2.9 The display then change and showing the ambient temperature value of the chamber along with asking for the print of the previous cycle. If require press the < P > key print out will come.

A: T<sup>0</sup> C B: T<sup>0</sup> C  
Print?

- 4.2.10 Now the LCD screen will display as

A: T<sup>0</sup> C B: T<sup>0</sup> C  
C: T<sup>0</sup> C D: T<sup>0</sup> C

‘T’ is the temperature and .A, B, C, D showing different zone of the chamber where the sensor is placed to check the temperature at different height. ‘A’ is the reference temperature sensor at the top.

- 4.2.11 Press the < start > key to initiate the process.
- 4.2.12 Some steam will purge out from the purging system till the temperature reaches to 100<sup>0</sup>C.
- 4.2.13 Heating will continue till the temperature reaches to 121 .1<sup>0</sup> C and pressure 15 psi.
- 4.2.14 As the set temperature attained the timer will be activated automatically to count down the cycle duration and the sterilization process starts. The screen will display as



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A: 121.1 B: 121.1  
STERILIZING 3 0

4.2.15 During the sterilization cycle the heater will be automatically 'on' or 'off' to maintain the set temperature.

4.2.16 As the sterilization time over the heater is put off and steam exhaust occur automatically through solenoid valve, till the temperature drops to 100 ° C. The screen will display as

A: 121.1 B: 121.0  
E X H A U S T

4.2.17 As the temperature reaches < 100.0° C, The display will be as

A: 8 5.0 B: 8 5. 0  
E N D O F C Y C L E

4.2.18 Press the < P > key for the printout.

4.2.19 When the temperature <80 ° C loosen the fly nut from opposite direction simultaneously as they have close.

4.2.20 Open the lid by pressing the peddle by foot and lock it, move the lid towards left side keeping the face behind, to avoid injury.

4.2.21 Remove the material from the autoclave when it is cool and maintain the record.

#### 4.3 Cleaning

4.3.1 Switched off the power supply to the instrument and remove its power cord from the main supply.

4.3.2 Clean the interior and exterior surface of the autoclave with a clean dry soft cloth everyday before use.

4.3.3 After cleaning cover the lid of the autoclave every time.

#### 4.4 Calibration

Temperature sensors, Pressure gauge and digital display units of temperature sensors are to be calibrated once in six months by service contractors.



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### 5.0 SAFETY & PRECAUTIONS

- 5.1 Never switch on the autoclave when it is empty.
- 5.2 Under no circumstance, the lid of the autoclave should be unlocked as long as the pressure gauge shows some pressure.
- 5.3 Care should be taken that the top lid of the autoclave is always closed properly, avoiding any chance of any accidents.
- 5.4 Always ensure that proper earthing is available to autoclave, otherwise there is a danger of getting shock to the person operating the autoclave.
- 5.5 Use preferably water for injection / purified water to prevent the scaling of the hardness of water over the heater to ensure the long life performance.
- 5.6 Switch off immediately if the water level alarm sounds and pore the water in the autoclave.
- 5.7 Switch off immediately if the extra safety valve at 20 psi pressure is activated.

### 6.0 REVISION HISTORY

Revision No.	Reason for Revision	Superseded from & date
00	First Issue	-----

### 7.0 REFERENCES

Not applicable.

### 8.0 ABBREVIATIONS

SOP : Standard Operating Procedure

°C : Degree Centigrade

### 9.0 ANNEXURES

**Annexure - I** : Cleaning record of vertical autoclave



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### ANNEXURE - I

#### CLEANING RECORD OF VERTICAL AUTOCLAVE

Date of Cleaning	Vertical Autoclave ID	Done By	Checked By	Remarks
	Cleaning Status (Done / Not done)			

√ : Cleaning done