



## HORIZONTAL CYLINDRICAL AUTOLAVES

- Sterilization at Standard 121'c & 134'c Cycles
- PLC based automation, with 6 per programmed cycles and additional user defined cycles.
- Robust SS construction for door, chamber ,jacket and steam generator.
- Automatic Sliding doors sealed with the help of a silicone door gasket.
- State of the art Supervisory Control & Data Acquisition.
- Software allows remote operation & monitoring of the machine.
- Audio Alarm Facility.
- Visual Display of HML Screen for Error massages.
- Security System by provided Supervisory codes and Password Protection.

### Specifications

Sr.	Item	Description
1	Size	As Per Size
2	Chamber & Jacket	SS 316 (Thickness:-4mm) & SS 304 ( Thickness :- 3mm )
3	Door	SS 316 plates on contact & non-contact Sides
4	Hinge & Locking Rod	SS 304
5	Central Locking parts	CI Casting, Wrinkle-black painted

6	<b>Shooting Bolts</b>	Tempered, Chrome coated
7	<b>Outer Insulation</b>	SS
8	<b>Operating Pressure</b>	2.1kg/cm <sup>2</sup>
9	<b>Operating Temperature</b>	121 / 134°C / Bowie – dick Cycle
10	<b>Stand</b>	SS 304 Round Pipe
11	<b>Operation</b>	Auto/Manual
12	<b>Steam Generator</b>	SS 304.
13	<b>Heating</b>	2 Industrial immersion heaters of 9Kw each
14	<b>Other accessories</b>	Steam trap, pressure switch, float switch , Temp Sensor ,Pressure Transmitter ,Pressure Gauge , Temp Gauge , Non return valve , Y type solenoid valves , Vacuum Pump etc.
15	<b>Automation Hardware</b>	PLC Make: Schneider HMI Make: Schneider. , 7" Digital Display
16	<b>Loading Tray</b>	Fabricated with SS 304
17	<b>Wheels</b>	Castor Wheel on all 4 stands

<b>Working Pressure</b>	Chamber & Jacket 2.5kg/cm <sup>2</sup>
<b>Hydro test Pressure</b>	Chamber 3.0 Kg/Cm <sup>2</sup> & Jacket 4.0Kg/cm <sup>2</sup>
<b>Inner Chamber</b>	Fabricated with SS 316
<b>Jacket</b>	Fabricated with SS 304
<b>Design Temperature</b>	121 & 134 degree centigrade
<b>Vacuum</b>	Full
<b>Door</b>	door and shall be fabricated from SS 304. maximum operator safety: - <ul style="list-style-type: none"> <li>• Process-lock to prevent opening of the door during the process.</li> <li>• Process-lock to prevent the opening of the door after successful completion of the cycle.</li> </ul>
<b>Insulation</b>	The sterilization chamber should be insulated with minimum of 50-mm thick R. B. Glass Wool, which is held in place by an outer cover of SS 304.

<b>Vacuum Break Filter</b>	A 0.3-micron vacuum break Air filter is to be provided on the sterile side for pressure equalization after vacuum creation.
<b>Piping Package:</b>	All process piping in contact with the chamber shall be fabricated from SS 304 with argon welding. All connections and fittings used are sanitary tri-clamp with silicone seals. All non-contact piping shall be fabricated from SS 304 with argon welding. All drain lines and exhausts to be connected to a drain manifold. The pipelines should have a 2% slope for full draining to prevent contamination. All pneumatic lines shall be polyurethane with aluminium die-cast connectors.
<b>Valve Package</b>	The process valves in contact with the chamber should be SS 304 contact parts with Teflon seat and triclamp connections. All non-contact valves should be SS 304 contact parts with Teflon seat. All automatic valves to be pneumatically actuated angle valves. The valves to be actuated by instrument air controlled via solenoid valves.
<b>Steam Accessories</b>	The jacket and chamber are to be provided with an over pressure safety valve. The chamber is to be provided with a steam trap.
<b>Surface Finish</b>	The inside of chamber and doors are to be finished to a surface finish better than 0.8 Ra value. All other noncontact parts are to be polished to a surface finish better that 180 grit.
<b>Process Management System</b>	The sterilizer is to be designed to perform a wide range of test and production programs to meet the latest regulatory requirements.
<b>Temperature and pressure sensors</b>	Two sensors to be provided; one inside the chamber and one at drain outlet. For accurate process control and recording, all sensors are connected to the PLC and Recorder. The system must have a least count of 0.10 C. A pressure transmitter to be connected to the chamber. The system should have a Pressure least count of 0.002 bars. All utility lines to be provided with a pressure switches for generating an alarm in case of utility failure.
<b>Electrical Switchgear</b>	The control cabinet to be provided with a main isolator for the three-phase supply and a separate switch for the control supply. The fascia of the control panel is provided with indication LED's and switches for operation. All the switchgear :- Schneider
<b>Process recording</b>	dot matrix data printer for recording – date, time, process parameters, process status, etc shall be provided alarms with machine.
<b>Control Panel</b>	Control system to be provided user friendly HMI as a front end user interface. Following minimum attributes shall be provided  <ul style="list-style-type: none"> <li>• RS 232 port for data communication.</li> <li>• In-built Real Time Clock with date and time function.</li> </ul>

<p><b>Safety</b></p>	<p>The process management system shall be provided with a series of safety and alarm features are as follows:</p> <ul style="list-style-type: none"> <li>• Cycle over.</li> <li>• Too long time to create vacuum. <ul style="list-style-type: none"> <li>• pressure Achieve.</li> <li>• Utility Failure Alarm. <ul style="list-style-type: none"> <li>• Low water level</li> </ul> </li> <li>• Jacket pressure over</li> <li>• chamber pressure over.</li> </ul> </li> </ul>

**1.0 :OPERATING PROCEDURE FOR AUTO RUN CYCLE ‘ START SWITCH’**

1.1 : **Pre – Heating Phase:** Automatically ‘Heater’ of boiler is ‘ON’ position ( If Water level is low automatically fill sufficient level water) , after achieving set steam pressure in boiler then automatically open the ‘Steam Inlet Valve’ and pass the steam in jacket to pre – heat the chamber as per set value and automatically stop the ‘Steam Inlet Valve’

1.2 :**Pulsation Pre- Vacuum Phase:**Start automatically ‘Vacuum Pump ’and ‘Vacuum Valve ’after achieving set pressure then stop ‘Vacuum Pump’ and ‘Vacuum Valve’.

1.3 :**Pulsation Vacuum Hold Phase:** After achieving vacuum hold as per set value ( show in pressure gauge).

1.4 :**Pulsation Pressure Phase:** Open automatically ‘Steam Inlet Valve’ replace the filtered steam as per set value (show in pressure gauge & HMI screen ‘Analog value’ ),as per set value of pulses nos. Repeat process of step no. 8.10.5 to 8.10.7.

1.5 :**Pulsation Pressure Hold Phase:** After achieving pressure hold as per set value ( show in pressure gauge).

1.6 :**Pre – Sterilization Phase:** Automatically open the ‘Steam Inlet Valve ’and pass the steam in jacket to heat the chamber as per set temperature value.

1.7 :**Sterilization Phase :** After achieving set temperature value hold the temperature as per set time value.

1.8 :**Sterilization Exhaust Phase:** Automatically open the 'Exhaust Valve' and remove pressure from the chamber.

1.9 :**Post Vacuum Phase:** Start automatically 'Vacuum Pump 'and 'Vacuum Valve 'after achieving set pressure then stop 'Vacuum Pump' and 'Vacuum Valve'.

1.10 : **Post Vacuum Hold Phase:** After achieving vacuum hold as per set value ( show in pressure gauge).and after completion of vacuum hold automatically open the ' Air Inlet' and replace the filtered air from clean area up atmospheric then displayed the '**CYCLE OVER**' status on HMI.

1.11 : Ensure the chamber pressure completely release or 0.0 kg/cm2 on the display on controller.

1.12 : If not require, close the valve all utility supply for Steam sterilizer.

1.13 : Open the door of lording side.

1.14 : Turn 'OFF' the UPS supply controller.

1.15 : Turn 'OFF' the main power supply switch

## 2.0 HORIZONTAL CYLINDRICAL AUTO CLEAVE

Sr. No.	Chamber			
	Model no.	Diameter	Depth	Volume
1	PBT/HC/SS-81	400	600	81
2	PBT/HC/SS-125	500	600	125
3	PBT/HC/SS-185	500	900	185
4	PBT/HC/SS-248	500	1200	248
5	PBT/HC/SS-310	500	1500	310