

RECTANGULAR HORIZONTAL AUTOCLAVES

- **Sterilization at Standard 121'c & 134'c cycles.**
- **PLC based automation, with 10 per programmed cycles and additional user defined cycles.**
- **SS construction for door, chamber , jacket and steam generator.**
- **Automation 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.**
- **Reports generated by the software in any data file.**
- **Audio & Display of Alarm Facility.**
- **Visual Display of HMI Screen for error messages.**
- **Security System by Provided Supervisory codes and Password Protection.**

Sr.	Item	Description
1	Size	24" (600 mm) x 24" 600 mm) x 48" (1200mm) (450 litter)
2	Chamber & Jacket	SS 316 & SS 304
3	Door	SS 304 plates on contact & non-contact Sides
4	Hinge & Locking Rod	SS 304
5	Central Locking parts	CI Casting, Wrinkle-black painted
6	Shooting Bolts	Tempered, Chrome coated
7	Outer Insulation	SS 304
8	Operating Pressure	2.1kg/cm ²
9	Operating Temperature	121 / 134°C / Bowie – dick Cycle
10	Stand	SS 304 Round Pipe
11	Operation	Auto/Manual
12	Steam Generator	SS 304.
13	Heating	2 Industrial immersion heaters of 9Kw each
14	Other accessories	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	Automation Hardware	PLC Make: Schneider HMI Make: Schneider. 7" Digital Display
16	Handling Accessories TRAY	Fabricated with SS 304
17	Process Reports With Printer & USB	Reports are generated by the software for each and every cycle in Detailed Report

18	Wheels	Castor Wheel on all 4 stands
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Specifications

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Working Pressure	Chamber& Jacket 2.5 kg/cm ²
Hydro test Pressure	Chamber 3.5 Kg/Cm ² & Jacket 4.0 Kg/cm ²
Inner Chamber	Fabricated with SS 316
Jacket	Fabricated with SS 304
Design Temperature	121 & 134 degree centigrade
Vacuum	Full
Door	<p>door and shall be fabricated from SS 304. maximum operator safety: -</p> <ul style="list-style-type: none"> • Process-lock to prevent opening of the door during the process. • Process-lock to prevent the opening of the door after successful completion of the cycle.
Insulation	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.
Vacuum Break Filter	A 0.3-micron vacuum break Air filter is to be provided on the sterile side for pressure equalization after vacuum creation.
Piping Package:	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.
Valve Package	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.

Steam Accessories	The jacket and chamber are to be provided with an over pressure safety valve. The chamber is to be provided with a steam trap.
Surface Finish	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.
Process Management System	The sterilizer is to be designed to perform a wide range of test and production programs to meet the latest regulatory requirements.
Temperature and pressure sensors	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.
Electrical Switchgear	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
Process recording	dot matrix data printer for recording – date, time, process parameters, process status, etc shall be provided alarms with machine.
Control Panel	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"> • RS 232 port for data communication. • In-built Real Time Clock with date and time function.
Safety	The process management system shall be provided with a series of safety and alarm features are as follows: <ul style="list-style-type: none"> • Cycle over. • Too long time to create vacuum. <ul style="list-style-type: none"> • pressure Achieve. • Utility Failure Alarm. • No sharp corners should be present. <ul style="list-style-type: none"> • No welding edges. • Low water level • Jacket pressure over • chamber pressure over.

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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



Sr. No.	Chamber				
	Width	Height	Depth	Volume(m ² /ft)	Capacity(liter)
1	450mm	450mm	900mm	0.18/6.75	180
2	600mm	600mm	1200mm	0.432/16	432
3	600mm	600mm	1500mm	0.54/20	540
4	900mm	600mm	1500mm	0.81/20	810