

# Bioreactor/Fermenter

## Controlled & Aseptic Environment

Fermenter is a closed system designed for aseptic processing. It allows sterilization through steam without disassembly or relocation, ensuring a contamination-free environment suitable for critical applications such as fermentation.

Fermenter are engineered for fully closed aseptic operation with air is being sterilized via 1-micron pre air filter and 0.2µm main air inlet and exhaust filter sterilizable grade filters to provide both sparge and overlay aeration. Fermenter is skid mounted and delivered as a complete system encompassing all necessary piping, valves and instrumentation so that utilities need only be connected at one centralized point.

Top Dish: Fermenter vessel is provided with Tori spherical dish made of SS-316/316L, consist of SS-316/316L ports, Agitation assembly, Septum Ports, Inoculation ports, Pressure Gauge, Pressure Transmitter, Charging Port, Safety Valve, Dosing Ports etc.

**Fermenter Piplining:** Fermenter is equipped with fully integrated welded piping and instrumentation system, designed to support all process functions. All pipeline is constructed from SS, conforming to ASME BPE and GMP standards for hygienic design. All aseptic piping is self-cleaning. Process piping is made of SS316 and utility piping is made of SS304. Piplining is fitted with pneumatic valves, NRV, Ball Valves, Angle Valves, Needle Valves, Diaphragm Valves, Steam Trap etc.

Surface Finish & M.O.C: All Contact Parts are SS-316/316L and non-contact parts are SS-304.

Gasket and O-rings: Silicone/EPDM Material Food Grade

Inner Surface: 220 Grit Finished & Mirror Polished Ra ± 0.4µm

External Finish: 180 Grit Matt finish Ra ± 1.6µm

**Sampling system:** Fermenter system consists of zero dead leg sampling valve, diaphragm valve, steam lock valve that allows safe, aseptic withdrawal of culture samples during the process without contaminating the vessel

**Harvesting system:** The fermenter is equipped with a zero dead leg flush valve mounted at the bottom to ensure complete and contamination-free harvesting. The harvest outlet is a sanitary diaphragm valve, designed for aseptic discharge. A clean steam supply valve is also provided at the outlet, allowing the line to be sterilized prior to product transfer, ensuring sterile conditions during harvest.

**Controls and Instrumentation:** The fermenter system is integrated with a state-of-the-art control and instrumentation platform, enabling precise monitoring and automated control of all critical process parameters.

**Accessories:** Fermenter will be provided with all necessary piping, tubing, 2 nos. standard borosilicate glass bottles, PTFE air filters, Clamps etc.

Model	LB-FM-65L	LB-FM 160L
Working Volume	50L	100L
Vessel	Cylindrical	
Material of Construction		
All wetted parts	SS-316/316L, Borosilicate Glass	
Jacket/Limpet/Non-Contact Part	SS-304/Borosilicate Glass	
Leg Support	Leg Support – SS -304	



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Finishing		
Inner Surface	220 Grit Finished & Mirror Polished Ra ± 0.4µm	
External Surface	180 Grit Matt finish Ra ± 1.6µm	
Design Guidance		
Pressure	Up to - 2.0 Kg/cm2	Up to - 3.5 Kg/cm2
Temperature	10 – 140°C	
Temperature Control		
Type	PID, Based fully automatic	
Range	0-60°C	
Temperature Sensor	PT 100, SIP Enabled	
Measurement Precision	± 0.1C	
Control & Type	Variable Frequency Drive, Fully Automatic	
RPM	50-500	20-200
Motor Type	Servo Motor	AC Motor
Ports		
Top	Feeding Septum port – 4 nos, CIP Port Inoculation port – Septum port, Instruments – Pressure Gauge, Pressure Transmitter, Air Exhaust, Safety Valve	
Side	pH Port DO Port Temp. Sensor port Spare Port Sampling Port Light Glass Air Sparger Inlet, Air Overlay port Jacket inlet, Jacket Outlet	
In Bottom	Flush Bottom Valve	
Sampling System		
Type	Sampling Valve with complete assembly consists of Steam in, Steam lock and Sampling Valve. Whole assembly is In-Situ Sterilizable	
Harvesting System		
Type	Harvesting valve with Steam in valve, Transfer valve and Drain Valve. Whole assembly is In-Situ Sterilizable	
SIP System		
Type	Auto SIP System	
Requirements	121 Deg. C in all wet process area	
Validation	As per ASME BPE	



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M: +91 8130383561, 9350831213 | E: [cto@luxmed.in](mailto:cto@luxmed.in) | Scan & Send Message:



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