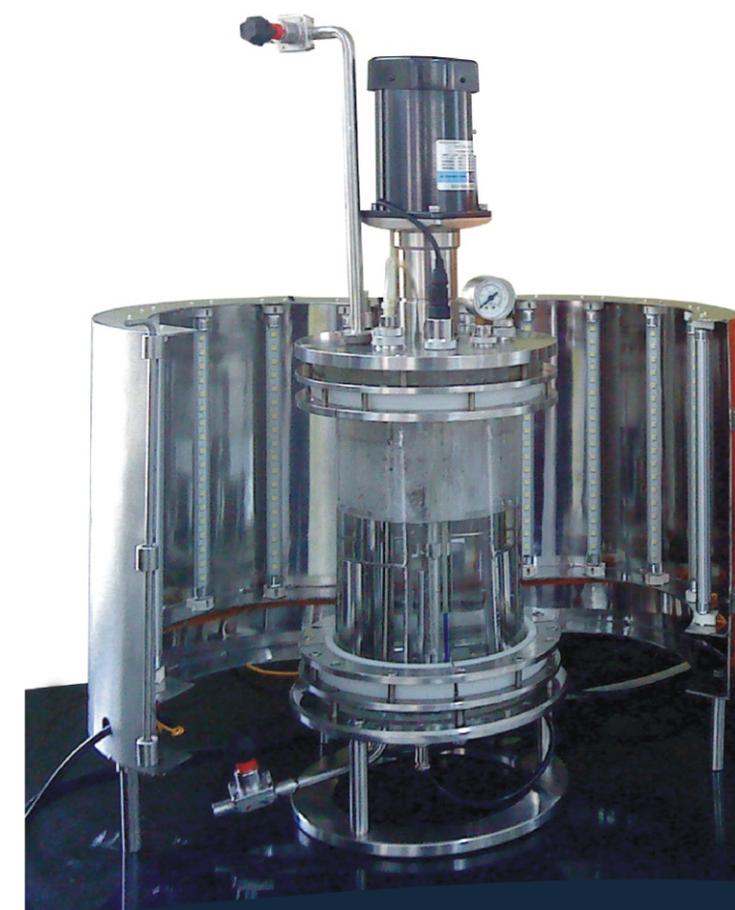


## Automated System Features

- ▶ Fully Automatic Sterilization of vessel in single Start Command (Optional).
- ▶ Choice of having Empty vessel, Medium charged vessel sterilization.
- ▶ Automated sterilization of Filters used (Optional).
- ▶ Choice of having various HMI screen sizes.
- ▶ Easy Upgradation for Bio SCADA software.
- ▶ Online Sterilization of Flush Bottom valve and Sampling valve.
- ▶ Unique Push release design ensures no dead volume in sampling valve.
- ▶ In-House Validation documents can be provided on request.
- ▶ FAT can be done at Extra Cost.

## Our Other Specialized Products

- ▶ Kjeldahl Digestion and Distillation Unit
- ▶ Autoclaves
- ▶ Shakers
- ▶ Co2 Incubators
- ▶ BOD Incubators
- ▶ Ultra Low Temperature Freezer
- ▶ Lyophilizer
- ▶ Ice Flaking Machine



**FERMENTER / BIOREACTOR**

## Borg Scientific

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# Lab Fermenter - Bench Top - LF Series

## Technical Specifications

### VESSEL

- Available Sizes: 3/5L, 5/7L, 7/10L, 10/13L -Other sizes on request.
- Material & Finish: - Borosilicate Glass vessel, Autoclavable / In-situ Sterilizable (All models) - 316L Ra <0.8 m Stainless Steel Head Plate
- Temperature Control via Heating Fingers placed inside the vessel or via Hot water circulation for Double Jacketed glass vessel, as per customer choice.

### AGITATION

- Agitation is equipped with 3 Rushton Turbines (Microbial culture) or 2 Marine impeller (Cell culture).
- Lip Seal or Single mechanical seal
- Number of Baffles : 4 - cage type. (Welded to Vessel for SS vessels)
- Adjustable Speed 100 - 1000rpm (Microbial) or 50 - 500rpm (Cell Culture)

### AERATION

- Adjustable air flow via Rotameter or Mass flow using inbuilt diaphragm pump.
- Air Inlet with 0.2 m absolute filter, L - sparger or Ring sparger option available.
- Supplementary gas lines for O2, N2, CO2 gases, rotameter and Solenoid Valves etc.(Optional)



### ACCESSORIES

- Three Fixed Speed Peristaltic Pumps for acid, alkali and feed addition. Additional Variable Speed Peristaltic pumps are available optionally for Fed-batch and Continuous culture applications.
- Five ports (12mm) for Probes, Heaters, Cooling fingers and Sensors.
- Three Bottom ports for Heaters, Cooling fingers, Temperature sensor (All In-Situ models).
- Inoculation port for Sterile addition (Septum technique) Sample / Harvest tube from Top plate port. Acid & Alkali, Media transfer port.

### INSTRUMENTATION - CONTROL SYSTEMS

- Modular Control systems, with Micro controller for all parameters or Integrated 5.7" LCD screen based Microprocessor control system with options for controlling all parameters.
- Options include Software based parameter setting, Logging and control, clubbed with real time data acquisition and graphical display.
- Control types include : PID, Digital On/Off and others. Cascade mode for advanced control strategies.
- PLC based Touch Screen HMI control includes trends of all parameters used.

#### Models to Choose

Model	Working Volume	Total Volume	Glass	Stainless Steel	Autoclavable	In-situ Sterilizable
LF 3.0	3 L	5 L	☑	☑	☑	☑
LF 5.0	5 L	7 L	☑	☑	☑	☑
LF 7.0	7 L	10 L	☑	☑	☑	☑
LF 10.0	10 L	13 L		☑		☑

All SS Vessels are In-Situ Sterilizable

# Pilot Fermenter - Skid, Platform Mounted - PF Series

## Technical Specifications

### VESSEL

- Available Sizes: 15L, 20L, 30L, 50L, 75L, 100L, 200L, 300L, 500L - Other sizes on request.
- Material & Finish:
  - Stainless Steel SS316
  - 316L Ra <0.8 m Stainless Steel Head Plate
  - Jacketed Vessel Temperature Control via passing steam inside the Jacket and as well as purging steam through the Sparger.

### AGITATION

- Agitation is equipped with 3 Rushton Turbines (Microbial culture) or 2 Marine impeller (Cell culture).
- Multi Spring Mechanical Seal Glycerine Lubricated, optionally condensate cooled type can be provided.
- Number of Baffles : 4 Adjustable Speed 100 - 750rpm (Microbial) or 50 - 500rpm (Cell Culture)

### AERATION

- Adjustable air flow via Rotameter or Mass flow using external air compressor
- Air Inlet/Outlet with 0.2 m absolute filter in-situ sterilizable, ring sparger.
- Condensor on exhaust line (Optional)
- Supplementary gas lines for O2, N2, CO2 gases, rotameter and Solenoid Valves etc.(Optional)

### ACCESSORIES

- Three Fixed Speed Peristaltic Pumps for acid, alkali and Antifoam addition. Additional Variable Speed Peristaltic pumps are available optionally for Fed-batch and Continuous culture applications.
- Top ports for Foam Sensor, Pressure gauge, Media charging port, Light port, PRV, Air exhaust etc. Four Side ports for Sampling, pH Probe, DO Probe, Temperature sensor Three side ports in the top for Inoculation, Acid, Alkali addition
- Additional ports for Gas mixing station and other accessories available on request.

### INSTRUMENTATION - CONTROL SYSTEMS

- Modular Control systems, with Micro controller for all parameters or Integrated Touch Screen Based
- PLC control system with options for controlling all parameters. Options include software based parameter setting, Data logging and control, clubbed with real time data acquisition and graphical display.
- Control types include: PID, Digital On/Off and others. Cascade mode for advanced control strategies. PLC based Touch Screen HMI control includes trends of all parameters used.

