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## Jacketed Glass Filter 2L – 50L



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# Jacketed Glass Filter 2L – 50L



## Overview

All-in-one Unit - Reaction and filtration can be finished in the same reactor. Especially for the insulated filtration of material vulnerable to crystallization. It can also be used as polypeptide reactor.

- Capacity: 2L - 50L;
- Full jacket coverage for better insulated filtration;
- Detachable bottom filter;
- Mechanical sealing, resist to chemicals and durable, max vacuum <20 mbar;
- PTFE lid, durable and resist to chemicals;
- Stirring speed range: 0 - 300 rpm;
- Quality borosilicate glass 3.3 (BORO 3.3);
- PTFE flush drain valve, minimized dead space and no leakage, clean discharge;
- Built-in hand lift mechanism.

## Model

Capacity (L)


FR - S 20

# Technical Specification & Configuration

## Parameter

Model	FR-S2	FR-S5	FR-S10	FR-S20	FR-S50
Capacity (L)	2L	5L	10L	20L	50L
Vessel Structure	Double Wall, Fully Jacketed				
Lid Diameter (mm)	180 mm		265 mm		
Nozzle on Lid	5 (NS19×2+NS24+NS29+DN35)		6 (NS24+NS29+NS34×2+DN60+DN50)		
Drain Diameter	10 mm		25 mm		
Temp. Range (°C)	-60 - 200°C				
Max Vacuum (mbar)	< 20 mbar (-0.098MPa)				
Stirring Power (W)	120 W – Gear Motor			180 W – Gear Motor	
Stirring Speed (rpm)	0 – 300				
Glass Material	Borosilicate Glass 3.3 (BORO 3.3)				
Frame Material	SUS304				
Stirring Shaft	SUS304 Covered with PTFE				
Agitator	Propeller				
Filter Housing	PTFE				
Dimension (cm)	35×46×130H	55×48×145H	72×48×165H	75×50×175H	115×80×220H
Power Supply	220V/50Hz				

## Configuration

Model	FR-S2	FR-S5	FR-S10	FR-S20	FR-S50
Seal	Mechanical Sealing				
Speed Controller	Variable Frequency Drive (VFD)				
Reactor Lid	PTFE Lid – Five Nozzles		PTFE Lid – Six Nozzles		
Drain Valve	PTFE Flush Valve				
Digital Display	Stirring Speed, Temperature				
Thermometer	Digital PT100				
Vacuum Meter	Scale				
Reflux Condenser	0.10sqm	0.14sqm	0.40sqm	0.40sqm	0.60sqm
Funnel	250ml	250ml	500ml	1000ml	2000ml
Solid Feeding	Optional – PTFE, DN30		PTFE , DN60		
Bottom Filter	Detachable				
Built-in Hand Lift	Optional		Equipped		
EX Proof 	Optional – EXdIIBT4Gb				

# Features

## Nozzles on PTFE Lid



**PTFE Lid with Lifespan >10years, Vacuum Tight up to <2mbar and Excellent Stirring Stability**

### **Nozzles on Lid (Customizable per request)**

- Solid feeding with pressure release valve
- Liquid feed valve – For liquid feeding and vacuum release
- Thermometer – PT100 digital display thermometer
- Condenser – Optional Distillation Piece or Distillation Separation Receiving
- Funnel – Control liquid feeding speed and volume

## Bottom Discharge Valve



**PTFE Flush Drain Valve**  
No dead space and no leakage.  
Recommended for discharge of solid material. Drift diameter reaches 25mm.

## Solid Feeding Nozzle



**Solid Feeding Nozzle**  
Big size up to 60mm of the solid feeding nozzle is with PTFE stopper which has vacuum release valve for opening up.

For 2L – 5L, it is an optional config.



# Features

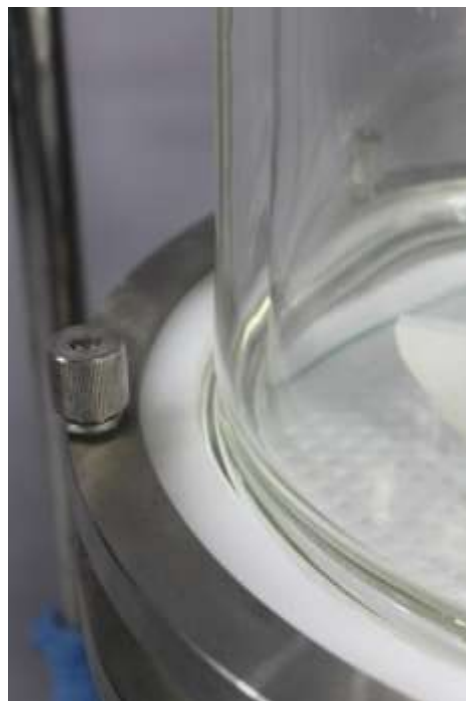
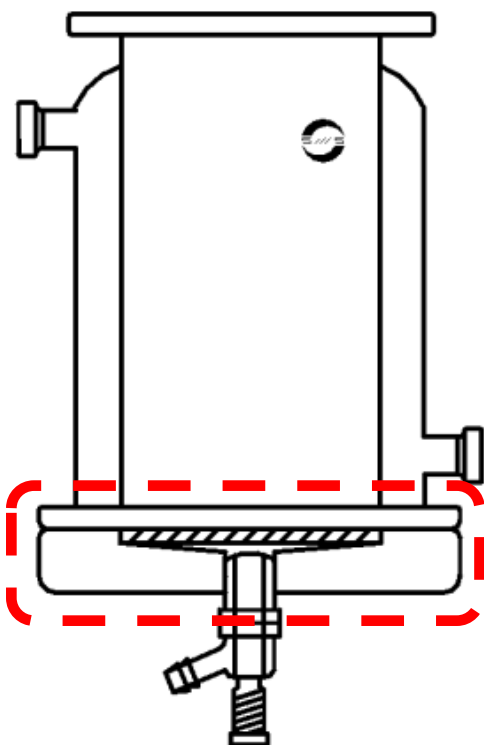
## Detachable Bottom Filter



Filter housing made of PTFE with lifespan >10 years.

- Compact structure for quick and easy install by a single person.
- Easy change of filter. Compatible with all kinds of filter.
- Filter cake can be easily removed.
- Minimized dead space.

## Jacket Full Coverage



Full Jacket for insulated filtration against crystallization

Jacket covers down to the bottom flange, different from the design of top flange, to ensure the material in the vessel is 100% covered by heating or cooling jacket, especially for insulated filtration of material vulnerable to crystallization.

Flush drain valve to minimize dead space.

## Durable Mechanical Sealing for Vacuum Tight

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SiC+PTFE mechanical sealing ensures max vacuum level of <20mbar. Durable and well resistant to chemicals.

The performance and durability of mechanical sealing is generally much better than most O-ring sealing, because most O-rings always swells due to chemical corrosion which jeopardizes the air tightness of reactor.

## Quality Borosilicate Glassware, PTFE/Teflon Stirrer

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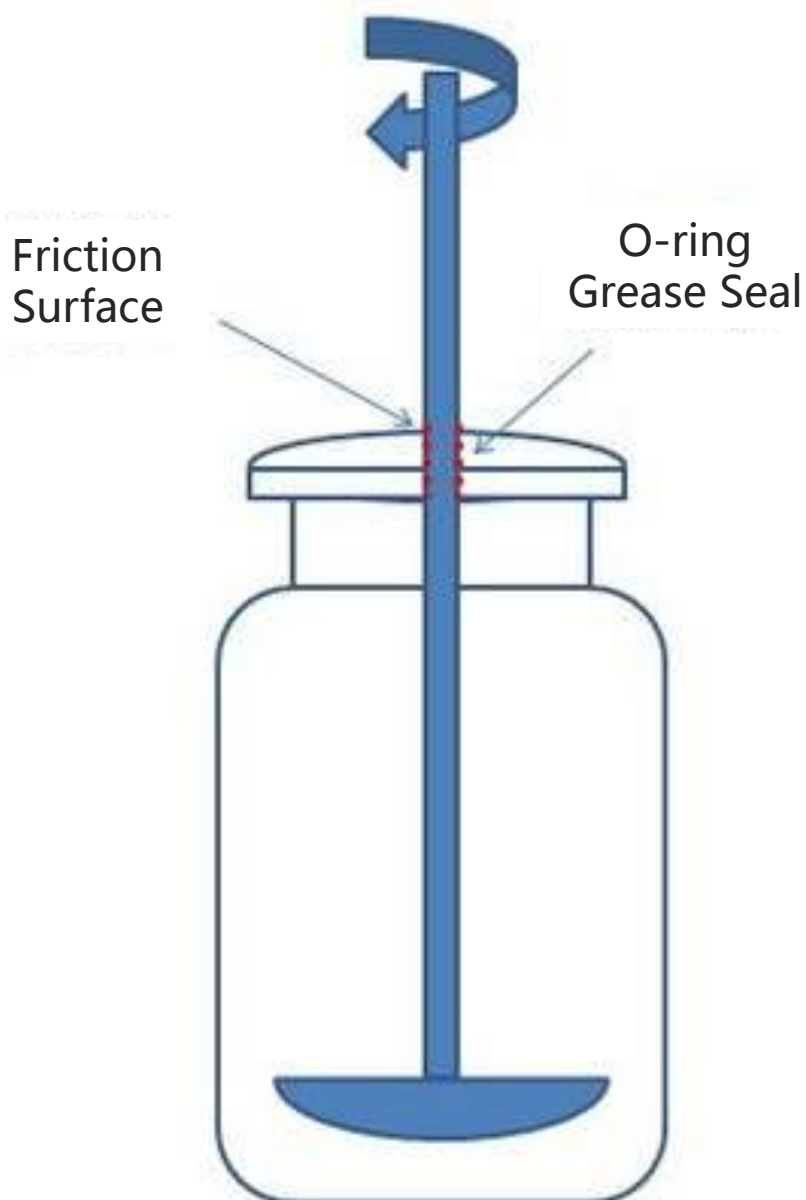
The quality of glassware is critical! The time and efforts you spent in the reaction is far more valuable than the jacketed glass reactor itself, let alone the cost of the solvents. The loss of glass broken is huge. So we provide Quality Borosilicate Glassware and give individual quality control to every unit.

Quality borosilicate glass 3.3 (BORO 3.3), with low coefficients of thermal expansion ( $3 \times 10^{-6}$  at  $20^{\circ}\text{C}$ ), is well resistant to thermal shock and less subject to thermal stress. Complying with ISO3585, the glassware have excellent performance against chemicals and water.

SUS304 stirring shaft covered with PTFE ensures strong stirring and resistant to chemicals.

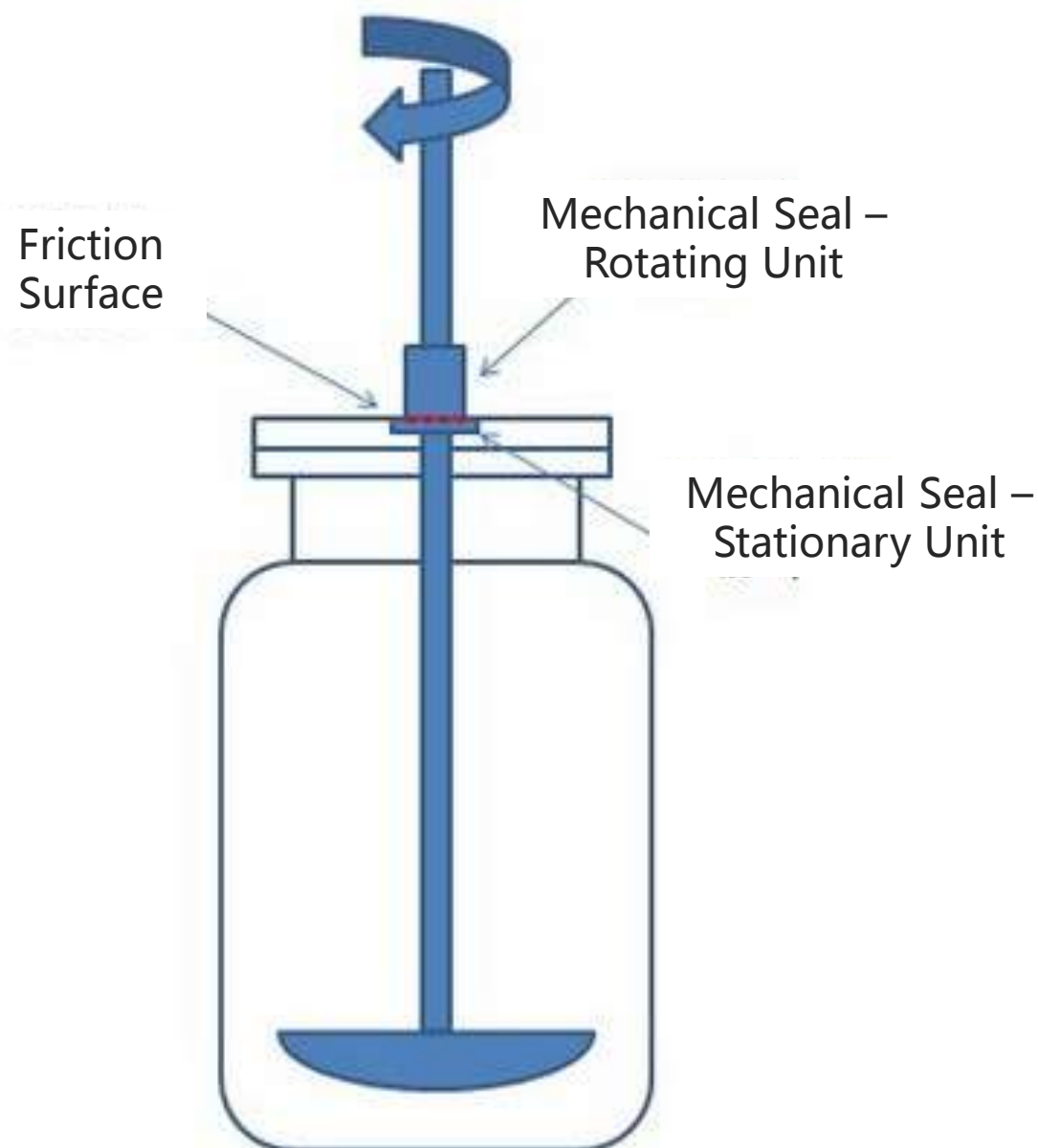
PTFE propeller agitator. Dual agitators is optional, Propeller + Turbine for efficient mixing. The position of upper agitator is adjustable. Agitator can be modified per user needs.

# Mechanical Seal VS Traditional Seal



## Traditional Seal – Seal on Axis

O-ring or Grease Seal is known as seal on axis to be used between stirring shaft and vessel lid, but is heavily prone to be worn out by friction, especially under corrosion of solvent and high temperature, which requires regular operation stop, disassemble and O-ring change.



## Mechanical Seal - Seal on Surface

Mechanical Seal is the seal on surface between its rotating part and stationary part. It is made of SiC and reinforced PTFE, which is vacuum tight, durable, long lasting and great for 24/7 operation.

With PTFE vessel lid, stirring can be very stable so that mechanical seal can ensure <20mbar vacuum level.

## Optional Configuration: Agitators for Option

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To ensure stirring effect, blade shape of agitator, anchor, turbine, propeller... can be chosen or customized according to solution nature, viscosity, capacity, stirring speed, vessel shape, etc.

## Built-in Hand Lift Mechanism

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Facilitate the change and install of filter.

Facilitate the removal of filter cake.


Strong structure. Safe and reliable.

Remark: Optional configuration for 2L – 5L.




## Large Torque + Precise Control for Efficient Stirring - (Optional) EX-proof



Motor with Gearbox and VFD stirring speed controller (Variable Frequency Drive), provides precise control, large torque with constant speed & maximum 600 rpm. (EX-proof upgrade for option )

EX Proof is compulsory when jacketed glass reactor is stationed and operated in EX Proof Zone in which there are explosive gas or dust.

We offer highest level of optional EX proof upgrade on Motor, Rotary Speed Controller, and Wiring per user needs.

EX-proof rate: EXdIIBT4Gb   
Protection Rate: IP55  
Anticorrosion Rate: WF1



## Optional Configuration: Insulation Cape

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The heat exchange between reactor and atmosphere is huge during heating or cooling, which causes big energy waste.

Besides, during cooling reaction, the surface of the reactor will be wet and icy because of heat exchange, affecting reaction process.

Insulation cape is effective solution to this. With observation window, the whole reaction process can be watched.

## Optional Configuration: PTFE Baffles

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During stirring, especially at high speed, mixing is not full and whirlpool forms at the center of the material.

Baffle in the vessel is good solution.

PTFE baffles resist to chemicals and are easy to install or disassemble.

## Optional Configuration: 5L Dripping System

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5L Liquid dripping with controllable feeding speed and volume.

Capacity can be 5L or more.

Shape of dripping system can be spherical or cylinder.

## Optional Configuration: High Viscosity Agitator

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The blade of standard agitator is made of PTFE. It is prone to be out of shape under conditions of high temperature and high viscosity.

We give option of High Viscosity Agitator. It is made of SUS304, including the blades, and coated with PTFE, which ensures its hardness against high viscosity and resist to chemicals as well.

# Jacketed Glass Filter Set

Along with Jacketed Glass Filter, Shanghai Shensheng provides Heating & Cooling Circulator and Vacuum Pump which are designed for optimal use with Jacketed Glass Reactor. We do a good job to ensure you are well equipped to have more time to focus on research.



Cooling Circulator



Compact Heating & Cooling Circulator



Heating Circulator

Heating/Cooling Source



Vacuum Source



# Heating & Cooling Circulator



Provide both heating and cooling sources for Jacketed Glass Filter.

Wide temperature range from -25 °C to 200 °C.

Close circulation of thermal oil to prevent oil mist and oxidization during heating and imbibitions from air during cooling, which ensures the purity of thermal oil to increase its lifespan.

Safety features including self-diagnosis, high pressure protection, overload relay, compressor over-temp protect.

Parameter				
Model		HR-25	HR-35	HR-50
Applicable Capacity (L)		2L- 5L	10L – 20L	50L
Temp. Control Range		-25 - 200°C	-25 - 200°C	-25 - 200°C
Temp. Control Accuracy		1°C	1°C	1°C
Flow Rate (L/min, bar)		25 L/min 2.0 bar	35 L/min 2.0 bar	35 L/min 2.0 bar
Heating Power (kW)		2.5	3.5	5.5
Cooling Power (kW)	200°C	2.5	3.5	5.5
	100°C	2.5	3.5	5.5
	0°C	2	3	4.5
	-20°C	1	1.8	2.8
Compressor		Emerson Copeland	Emerson Copeland	Emerson Copeland
Coolant		R-404A	R-404A	R-404A
Temperature Display		Digital	Digital	Digital
Close Circulation		●	●	●
Dimension (cm)		50×60×115	50×68×145	50×68×145
Power Supply		220V/50Hz	380V/50Hz	380V/50Hz

# Water Circulation Vacuum Pump



Safe and reliable water circulation vacuum pump.

Equipped with two or five independent suction nozzles for vacuum supply.

Easy operation and maintenance.

Can be water supply for condenser.

Oil free and water saving.

## Parameters

Model	SHB – 3A	SHZ – 95B
Type	Water Circulation	Water Circulation
Applicable Capacity (L)	2L – 5L	10L – 50L
Max Vacuum (mbar)	20 mbar	20 mbar
Extraction Rate (L/min)	10L/min×2	10L/min×5
Power (W)	180 W	550 W
Dimensions (cm)	39×28×42	45×35×82
Power Supply	220V/50Hz	220V/50Hz



# Factory Show - Shanghai Shensheng Biotech Co., Ltd.



Manufacture Plant in Shanghai



Quality Mechanical Parts



Glassware Fabrication





Fine Processing



Individual quality control for every unit



Pilot Scale Jacketed Glass Reactor



Pilot Scale Rotary Evaporator



# Our Customer



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