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## 50L Jacketed Glass Reactor – JR-S50



Shanghai Shensheng Biotech Co., Ltd.  
Add: 937 Chenxiang, Road, Shanghai, China  
Tel: +86 21 - 62716917  
Fax: +86 21 - 62716705  
E-mail: [info@shsstech.com](mailto:info@shsstech.com)

# 50L Jacketed Glass Reactor – Model: JR-S50



## Overview

Pilot scale jacketed glass reactor for pilot scale reaction. Durable, excellent resistance to thermal shock and chemicals corrosion, vacuum tight, constant stirring speed and user friendly.

- Capacity: 50L;
- Mechanical sealing, resist to chemicals and durable, max vacuum <2 mbar;
- PTFE lid, durable and resist to chemicals;
- Gear motor with VFD controller, large torque, constant stirring speed;
- Stirring speed range: 20 - 600 rpm;
- Quality borosilicate glass 3.3 (BORO 3.3);
- Temperature range: -90°C - 250°C;
- PTFE flush drain valve, no dead space and no leakage, clean discharge;
- SUS304 stirring shaft covered with PTFE.

## Model


Capacity (L)

JR - S

50

# Technical Specification & Configuration

Parameter	
Model	JR-S50
Capacity (L)	50L
Diameter of Vessel (mm)	265 mm
Nozzle Size & No. on Lid	6 (NS24+NS29+NS34×2+DN60+DN50)
Bottom Valve Drift Diameter	25mm
Temp. Range (°C)	-90 - 250°C
Max Vacuum Level(mbar)	< 2 mbar
Stirring Power (W)	180 W
Rotary Speed (rpm)	20 – 600
Glass Material	Borosilicate Glass 3.3 (BORO 3.3)
Frame Material	SUS304
Stirring Shaft Material	SUS304 Covered with PTFE
Agitator	Turbine + Propeller, PTFE
Stirring Shaft Diameter	25mm
Dimension (cm)	85×70×195H
Power Supply	220V/50Hz

Configuration	
Model	JR-S50
Seal	Mechanical Sealing
Stirring Speed Controller	Variable Frequency Drive (VFD)
Reactor Lid	PTFE Lid with 6 Nozzles
Agitator Type	Turbine + Propeller
Drain Valve	PTFE Flush Valve
Digital Display	Stirring Speed, Temperature
Thermometer	PT100
Vacuum Meter	Scale
Reflux Condenser	0.60 sqm condensing area
Pressure Equalizing Funnel	2000ml
Solid Feeding Valve	DN60
Insulation Cape	Optional
Distillation Separation Receiving	Optional, 10L Receiving Flask
EX Proof 	Optional – EXdIIBT4Gb
PTFE Coated Frame	Optional

# 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.



## Durable Mechanical Sealing for Vacuum Tight

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SiC+PTFE mechanical sealing ensures max vacuum level of <2mbar. 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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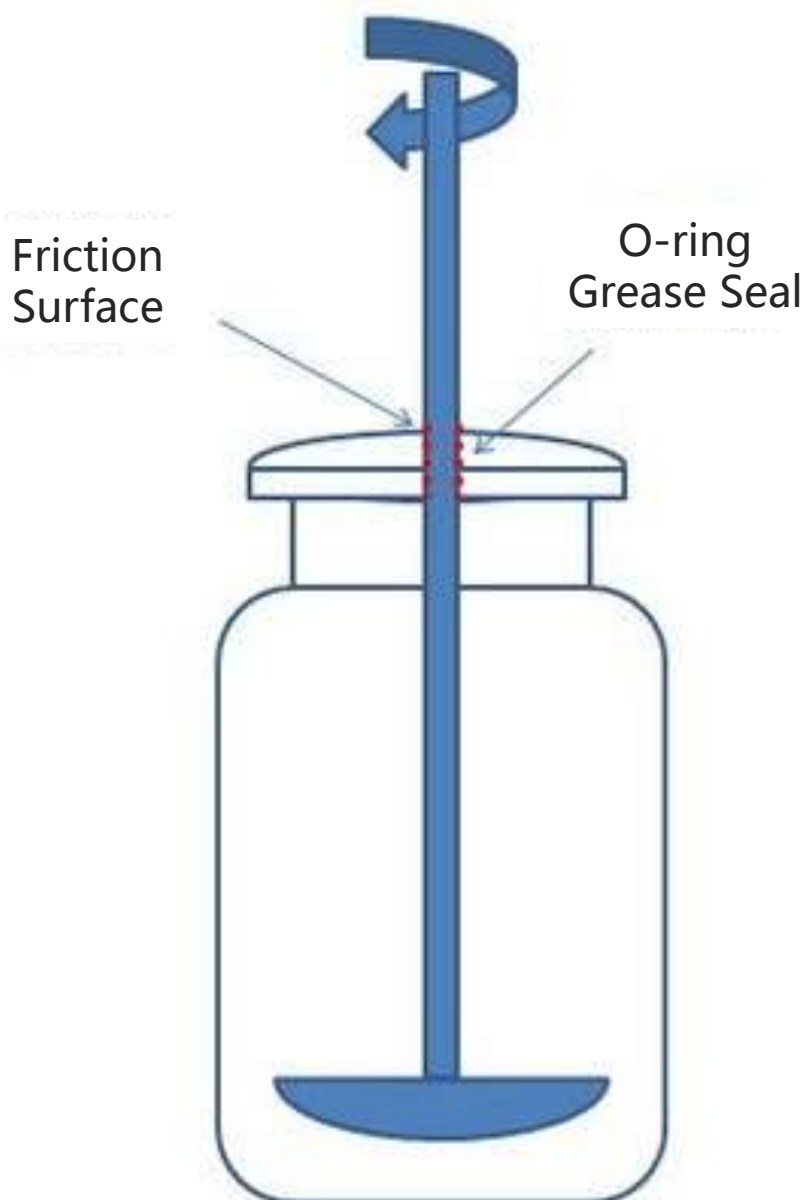
The quality of glassware is critical! The time and efforts you spent in the reaction is far more valuable than the jacketed glass reactor itself, let alone the cost of the solvents. The loss of glass broken is huge. So we provide Quality Borosilicate Glassware and give individual quality control to every 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.

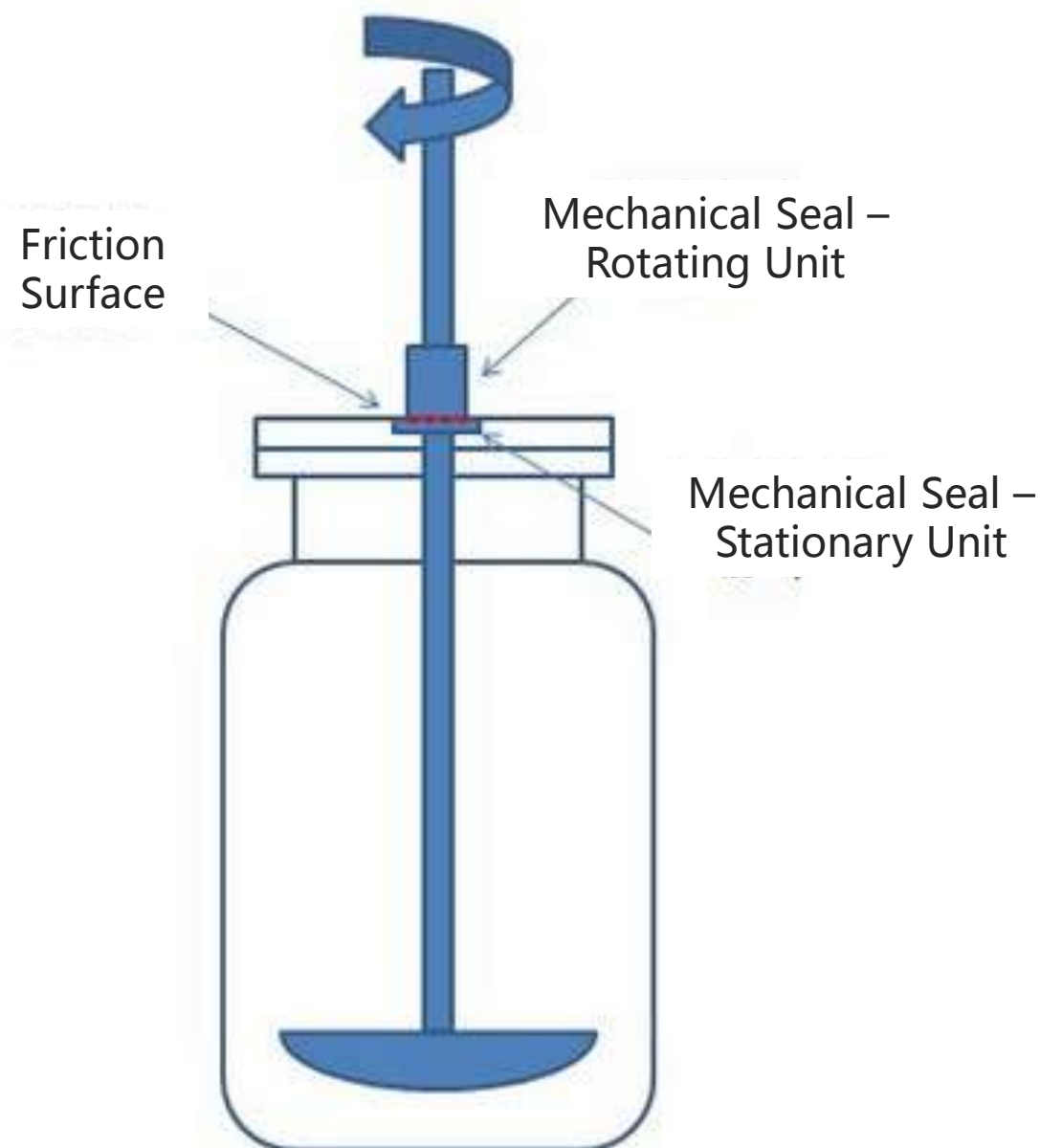
Dual PTFE Agitators, two independent agitators (Propeller + Turbine) for efficient mixing. The position of upper agitator is adjustable. Agitator can be modified per user needs.

# 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 <2mbar vacuum level.


## 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 CONDENSING



**Condenser + Distillation Piece**  
To switch between reflux and distillation by easy operation of valve.

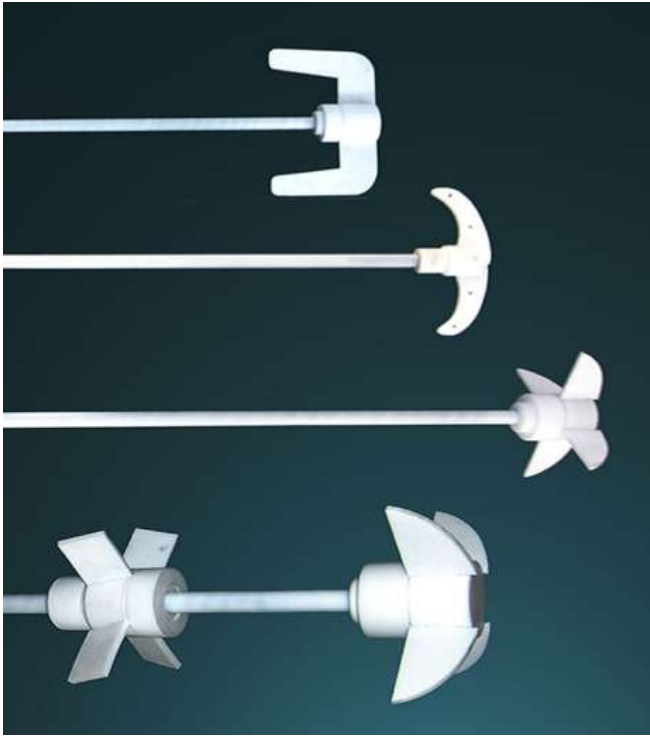


**Distillation Separation Receiving**  
For both separation and distillation receiving. No need to stop reaction or release vacuum when discharging condensate. Easy valve control can help on continuous receiving.



## 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.

## 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.

## Optional Configuration: Insulation Cape

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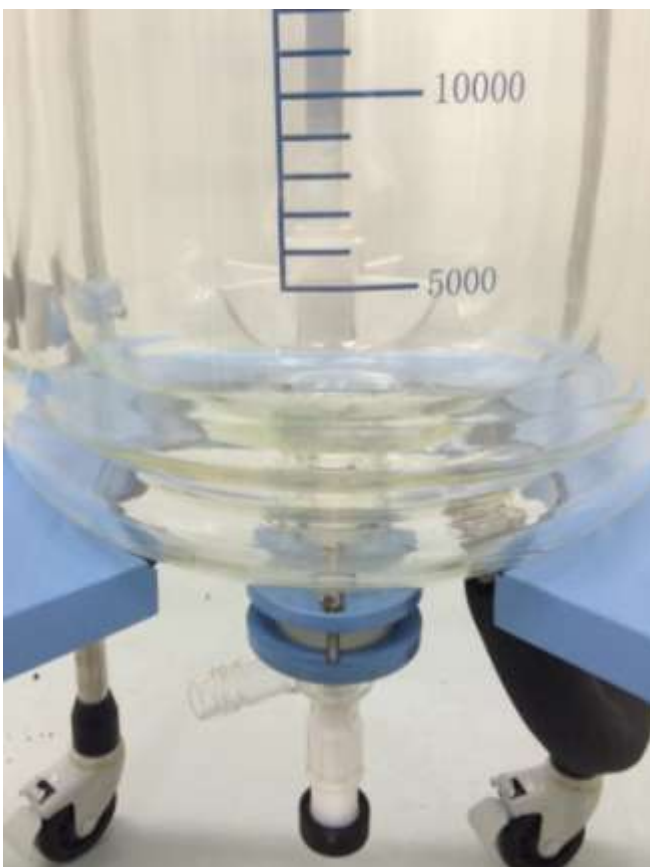
The heat exchange between reactor and atmosphere is huge during heating or cooling, which causes big energy waste.

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: Double Jacketed Glass

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Besides thermal layer, vacuum layer is added to reduce heat exchange with atmosphere.

## Optional Configuration: Bottom Filter

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Filter is installed at the bottom of the reactor. Filtration can be done without taking the material out .

User-friendly design of the filter structure facilitates the collection of filter cake and also makes the change of filter membrane quite easy. It takes only 10 minutes to finish the job of changing filter membrane.

## 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: Distillation Receiving for Large Flow Distillation

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Distillation Receiving Set includes,

1- Large condenser with condensing area up to 1.15 sqm, significantly enhances condensing efficiency;

2- Branching piece with PTFE valve, vacuum tight and excellent resistance to chemicals, can discharge without stop operation or release vacuum;

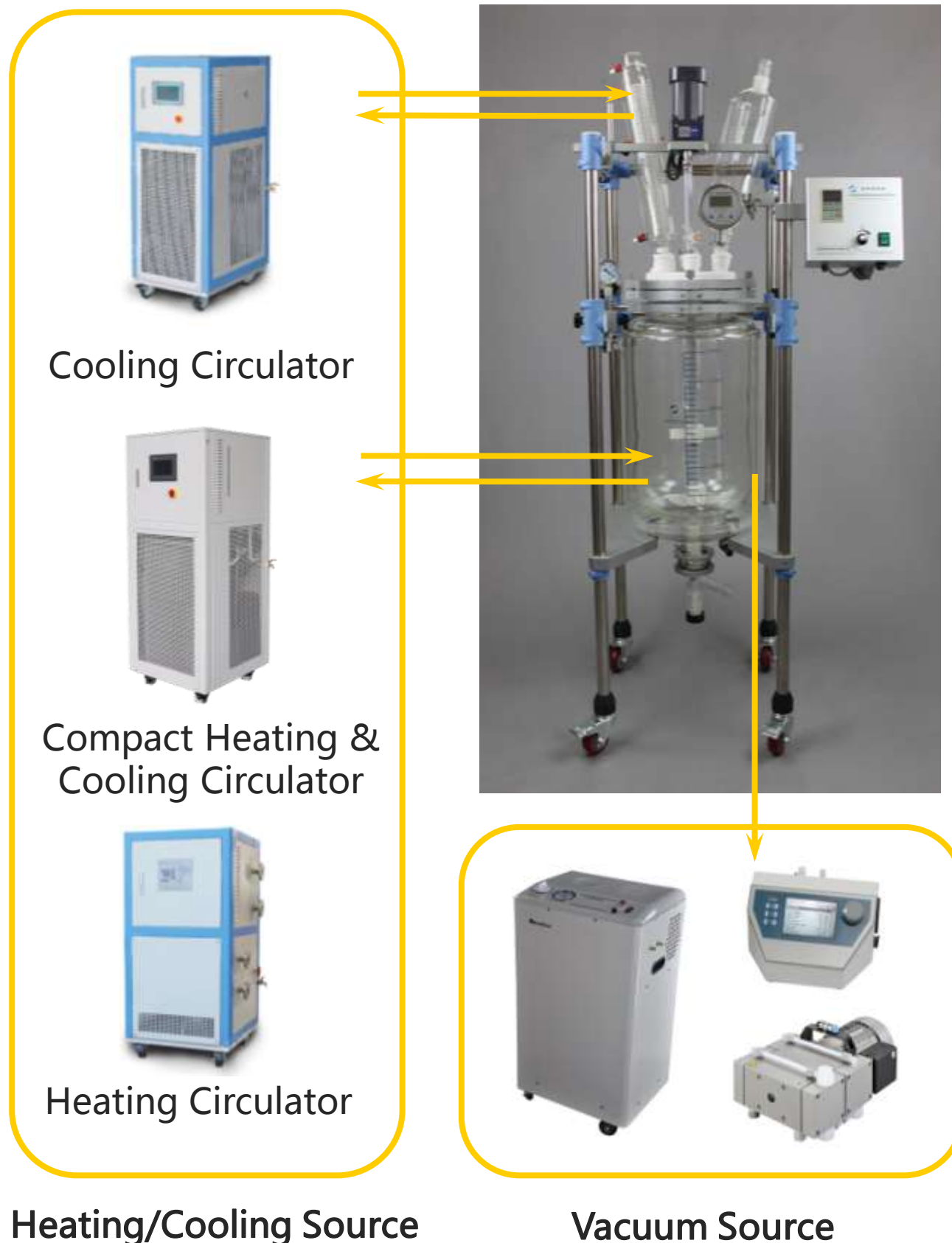
3- Receiving flask (Two Receiving Flasks Structure is optional) with PTFE discharge valve, no vacuum grease needed, clean discharge;

4- Glass and PTFE connection.



# Jacketed Glass Reactor Set

Along with Jacketed Glass Reactor, 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.



# Heating & Cooling Circulator



Provide both heating and cooling sources for Jacketed Glass Reactor.

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-50
Temp. Control Range (°C)			-25 - 200°C
Temp. Control Accuracy (°C)			1°C
Flow Rate (L/min, bar)			35 L/min 2.0 bar
Heating Power (kW)			5
Cooling Power (kW)	200°C		5
	100°C		5
	0°C		4.5
	-20°C		3
Compressor			Emerson Copeland
Coolant			R-404A
Temperature Display			Digital
Close Circulation			●
Dimension (cm)			50×68×145
Power Supply			380V/50Hz

# Water Circulation Vacuum Pump



Safe and reliable water circulation vacuum pump.

Equipped with five independent suction nozzles for vacuum supply.

Easy operation and maintenance.

Can be water supply for condenser.

Oil free and water saving.

## Parameters

Model	SHZ – 95B
Type	Water Circulation
Max Vacuum Level (mbar)	20 mbar
Extraction Rate (L/min)	10L/min×5
Power (W)	550 W
Dimensions (cm)	45×35×82
Power Supply	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



**Shanghai Shensheng Biotech Co., Ltd.**  
 Add: 937 Chenxiang, Road, Shanghai, China  
 Tel: +86 21 - 62716917  
 Fax: +86 21 - 62716705  
 E-mail: [info@shsstech.com](mailto:info@shsstech.com)