



ISO 9001:2008/CE/EX

LAB SOLUTION PROVIDER

Reactor series



TOPTION

TOPTION INSTRUMENT CO.,LTD

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TOPTION is professional lab solution provider, and all devoted to provide the best solutions & products for global customers, who are work in chemistry, biology, pharmaceutical, environment analysis, food, academic research, etc. Regardless of the field you work in, we keep striving for the same goal: to provide you with the most suitable solutions & products, to make your research more accurate & efficient.

TOPTION headquarters is located in Xi'an, China, where own hundreds of universities and research institutes, and famous as its thousands of years long history culture. Profound culture and strong scientific research strength, provide sustained and vigorous power for TOPTION development, so that make us could provide better products, solutions and service for you continuously.

Main products contains chemical synthesis reactor, rotary evaporator, thin-film evaporator, photochemical reactor, high pressure reactor, freeze dryer, spray dryer, etc. TOPTION brand instrument has own high reputation in more than 70 countries and regions, provide technical support for tens of

thousands organizations to solve problems within their research, special for university, research institutes, industries, inspection agencies, etc. Promoting technology progress and improving human life is TOPTION social mission.

We believe, only the most excellent quality, most leading technology, most complete solution and most professional service, could make TOPTION mission and vision come true. So we will keep in continual innovation and hard work, to provide you with the best solutions & products, and make you research more accurate and efficient.

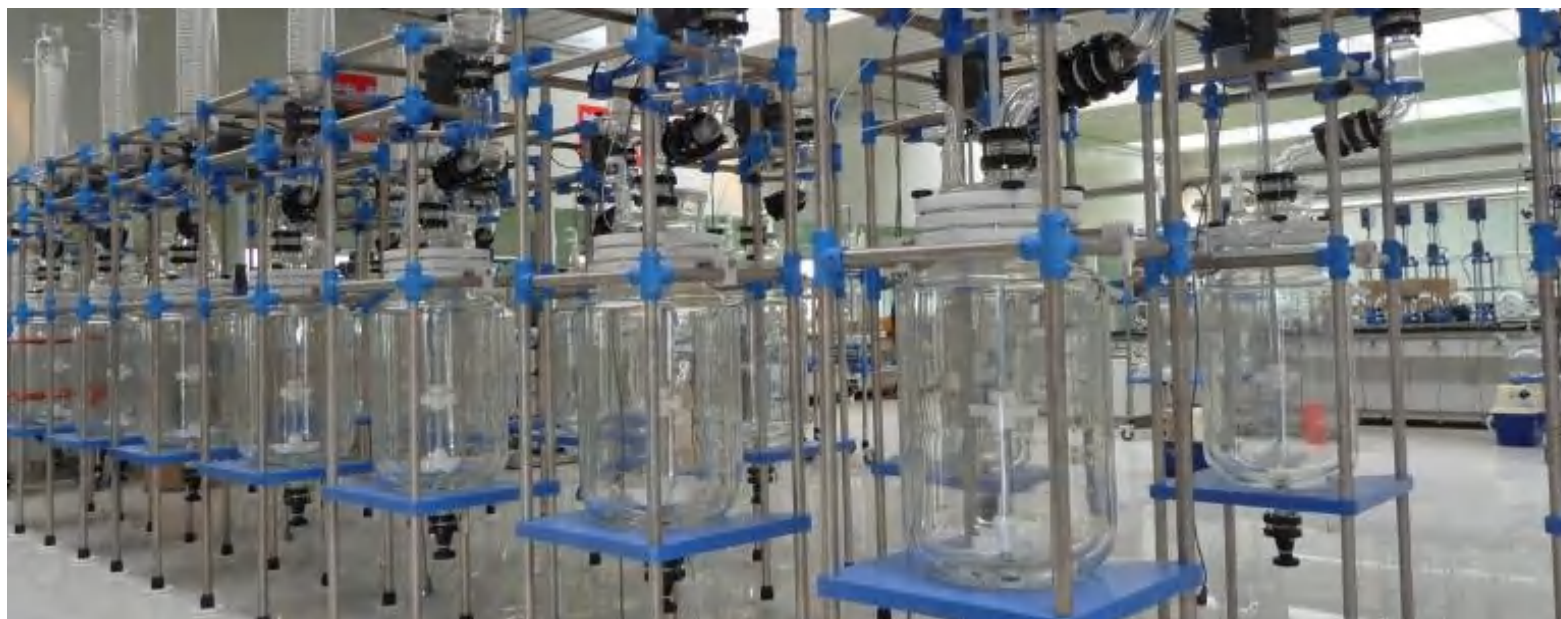
We are a young, professional and creative team;

We are a customer-centric and responsible team.

Our mission: make your research more accurate and efficient.

Our vision: Become the world's most competitive lab solution provider.

Our value: Sharing & win-win, customer success, be thankful, keep growing, innovation and responsible.



Handmade process



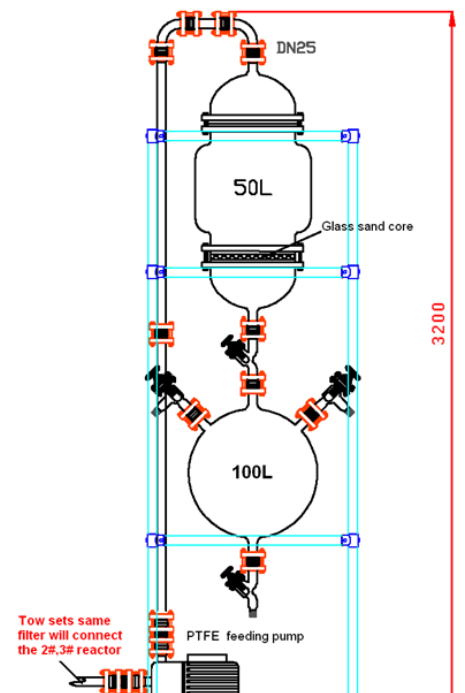
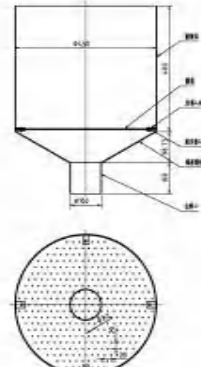
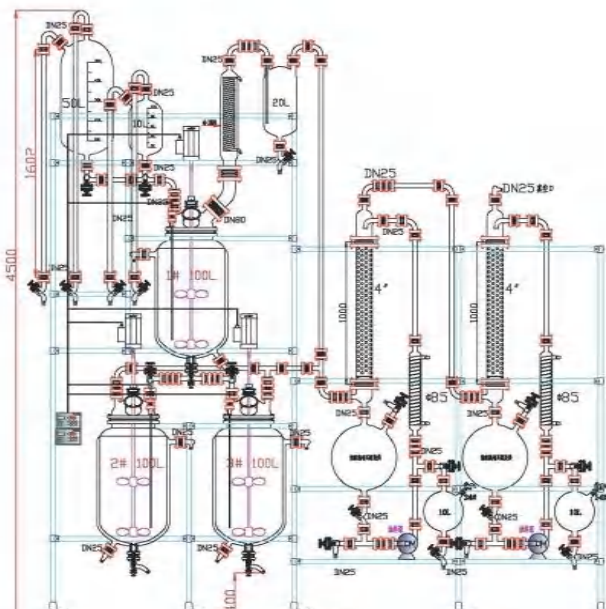
TOPTION brand advantages



1. TOPTION is a registered brand, which is well known in global lab instruments trade, ISO9001: 2008 and CE certificated lab solution provider.
2. Commits to become the world's most competitive lab solution provider.
3. Has been widely recognized and won reputation for excellent quality and professional customization among customers in 70 more countries.
4. Brand interpretation: SAFE - ACCURATE - EFFICIENT. Choose TOPTION, choose guarantee and relief.

Professional customization

Engineering team presided over by professors level chief engineer who has more than 20 years practical working experience. Products inherit characters of safe, accurate, efficient.



Design sketch



Glass reactor test



Rotary evaporator test



Mechanical sealing



Hand-made fire glass



Ex control box



ISO 9001:2008 certified manufacturer

1. TOPTION has passed ISO9001: 2008 QMS. All raw materials and accessory parts are selected and tested strictly, which ensures product's durability and safety from the beginning of production.
2. Key parts production is guaranteed by TOPTION production equipments and technique, which ensure production precision and interchangeability.



CE certificate

TOPTION instruments have got CE certification, and have been exported to European countries.



Strictly testing before shipping

Products pass various inspections before package, which include: test of electrical voltage durability, glass inner stress, temperature control wave accuracy, operation noise, sealing performance and safety protection, etc.

Service value: Sharing & win-win, customer success, be thankful, keep growing, innovation and responsible.



1. Professional consultation service on System Configuration

No showy, no waste, we propose more economical & practical solution to meet user's real needs.

2. We offer experimental site for buyers with special needs

Do experiment with customers so to ensure suitability of TOPTION apparatuses to buyer's needs.

3. Excelsior production & On-time delivery

Products are test by many indexes before shipping, Lead time will be strictly controlled.

4. Post-sales direction on product application

Offer free guidance on products operation, help user to improve research accuracy, efficiency and extend product service life by much.

5. Repair and maintenance support

Strong ability on remote trouble shot guidance. Oversea buyers are able to solve problem in short time.

6. Rich parts supply always

Rich parts available to TOPTION customers even for past instruments. Users are released from worry of maintenance cost.




P₆
Rotary Evaporator

- ◆ New design rotary evaporator
- ◆ Rotary evaporator 10-50L
- ◆ Rotary evaporator 0.1-5L
- ◆ Lab solution for rotary evaporator


P₁₈
Short Path (Molecular) Distillation System
P₂₀
Scraped Film Evaporator

P₂₂
Chemical Glass Reactor

- ◆ Single layer glass reactor
- ◆ Double layer glass reactor / Three layer customize
- ◆ Downward open jacketed reactor
- ◆ Glass reactor with lifting & rotating function
- ◆ Customization glass reactor


P₃₀
High Shear homogeneous emulsification reactor
P₃₃
Pilot Ultrasonic Emulsification Reactor


P₃₆

Vacuum Filter / Glass Liquid Separator

- ◆ Pour type vacuum filter
- ◆ Suck type vacuum filter
- ◆ SS304 type vacuum filter
- ◆ Ceramic type vacuum filter
- ◆ 10L - 50L Glass liquid separator


P₃₈

Photochemical Glass Reactor

- ◆ Liquid phase photochemical reactor
- ◆ Solid phase / Gas phase photochemical reactor
- ◆ TOPT-MINI photochemical reactor
- ◆ Falling film photochemical reactor
- ◆ High pressure photochemical reactor
- ◆ Ultra low temperature photochemical reactor
- ◆ Pilot photochemical reactor
- ◆ Long arc xenon lamp Source
- ◆ Long Arc UV lamp source
- ◆ Photocatalytic water splitting
- ◆ Short Arc Xenon Light Source
- ◆ Short Arc UV Lamp Supply


P₅₆

Hydrothermal Synthesis Reactor

- ◆ PTFE lined 200°C
- ◆ PPL lined 260°C
- ◆ 10ml - 2000ml customization


P₆₁

High Pressure Reactor

- ◆ THR type with magnetic stirrer
- ◆ MHR type with magnetic coupling mechanical agitation
 - ◆ THR (N) series with magnetic stirrer
 - ◆ KCFD type mini high pressure reactor
- ◆ TFCF type hand-lifted high pressure reactor
- ◆ Large high pressure reactor customization

New Design Rotary Evaporator 10L, 20L, 30L, 50L



1. Large LCD display temp. & rotating speed.



2. Built-in automatic check valve, for better vacuum degree and good continuously operation.



3. Gas guide flask unique PTFE combination valve, can control air flow and liquid flow based on your actual needs, material charging & discharging could be finished during rotary evaporator working, you don't need to stop rotavapor, make your research more efficient, and achieve more better organic corrosion resistance.



4. Bottom has wheel for more convenient movement.

5. Easy installation which could save more than a half of your work.

6. Automatic lifting, use foreign advanced drive system, reasonable structure design, be durable and more practical.

7. All sealing adopt PTFE, FFKM material, after special processing, enhance sealing performance, corrosion resistance and abrasive resistance.

8. Control system is integration, use imported advanced frequency converting control system, for more precise control, guarantee rotary evaporator's performance be accurate, easier operating.

9. Oil bath use stainless steel plate one time stamping molding, vertical automatic lifting.

10. Beautiful appearance, easy and convenient rotary evaporator cleaning.



Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

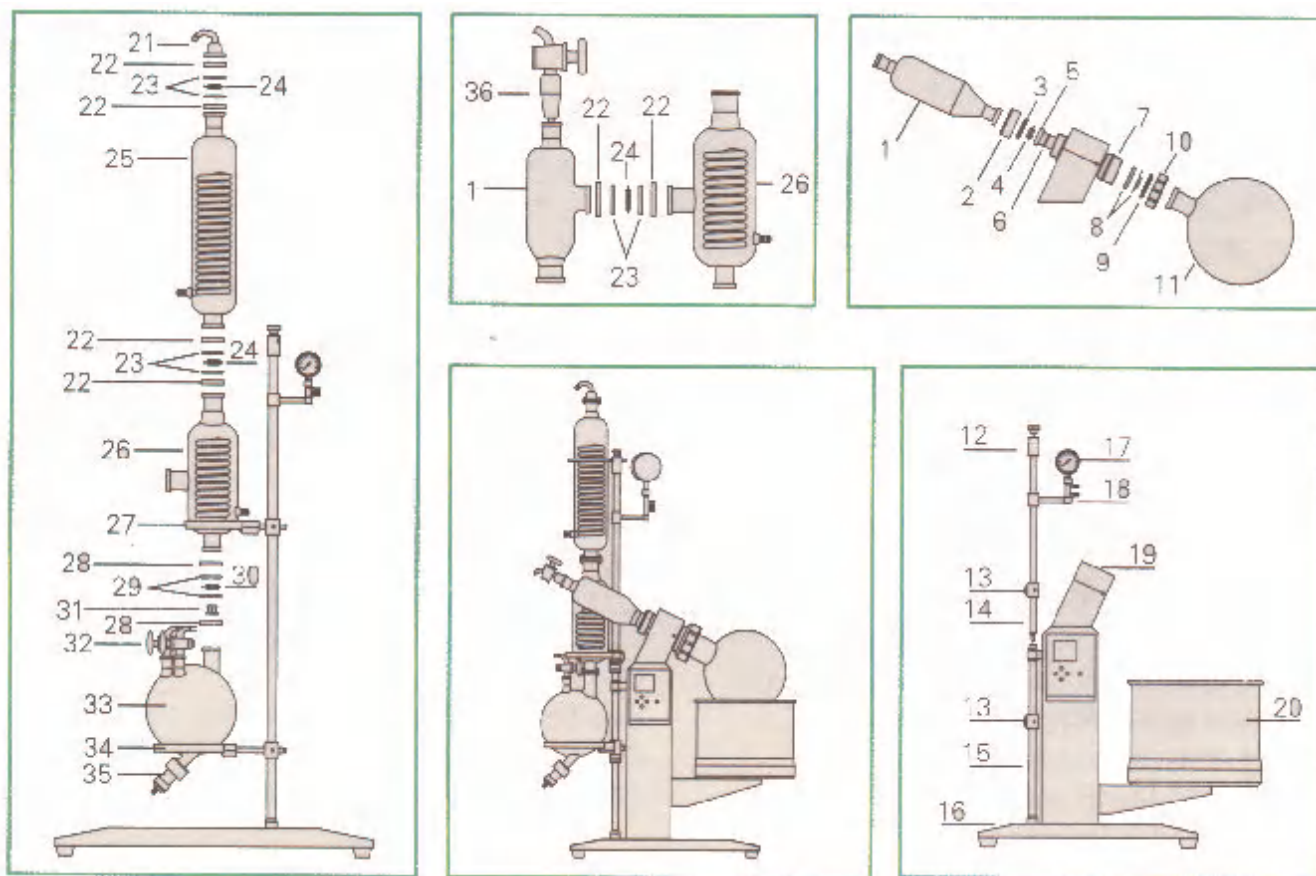
Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

Two types condenser support customization, please refer to the following:



1. Three-channel Bottle	2. Three-channel Bottle Hold-down Nut	3. Three-channel Bottle Hold-down Nut Retaining Ring	4. Flange Sealing Retaining Ring
5. Glass Rotation Axis	6. O-ring	7. Coupler	8. Teflon Sealing Ring
9. Rotating Bottle Hold-down Nut Retaining Ring	10. Rotating Bottle Clamp Nut	11. Glass Rotating Bottle	12. Condenser Pipe Clamp
13. Cross Clamp	14. Top Upright Tube	15. Down Upright Tube	16. Pedestal
17. Vacuum Meter	18. Vacuum Meter Stand	19. Motor Box	20. Water Bath
21. Air Exhaust Bend	22. 60# Connecting Flange	23. 60# Flange Retaining Ring	24. 60# Flange Seal Washer
25. Main Glass Condenser Pipe	26. Assistant Glass Condenser Pipe	27. Assistant Glass Condenser Pipe Bracket	28. 50# Connecting Flange
29. 50# Flange Retaining Ring	30. 50# Flange Seal Washer	31. Automatic Switch Valve	32. Air Outlet Valve
33. Recovery Bottle	34. Recovery Bottle Tray	35. Discharging Valve	36. Charging Valve

Rotary evaporator 10-50L

RE **52** **50** **A** **(D)** **(EX)**

Rotary
Evaporator

Evaporating
Flask (L)

170°C

Oil Bath,

Automatic

Automatic

Explosion

Design

Lifting, 99.9°C

Lifting, Temp

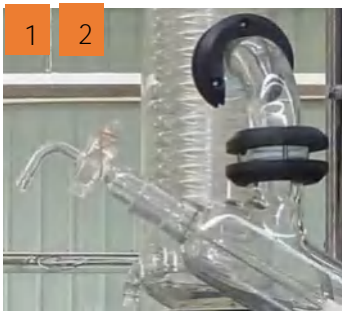
Protection

Serial No.

Water Bath,

Control.

Temp Control



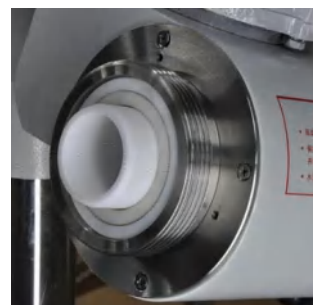
1. Glass charging valve -- New structure and glass material applied, is able to offer purely clean charging process and durable use experience.

2. Flange quick press ring -- One-piece quick clip design. Offer new experience on easy, reliable, and high sealing connection for flanges (no tools required).



3. PTFE vacuum discharging valve -- Cork is anti-corrosion, no vacuum degree, no pollution to solvent received.

4. Anti-corrosion & Wearable sealing system -- Specially designed and precisely manufactured. Enable system ultimate vacuum rate reaching 1000Pa (equipped with different type vacuum pump). 90% users don't need to replace rotary seal in one year.



RE-5250-A(Ex) 50L
Customization provide

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

Rotary evaporator 10-50L

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogeneous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

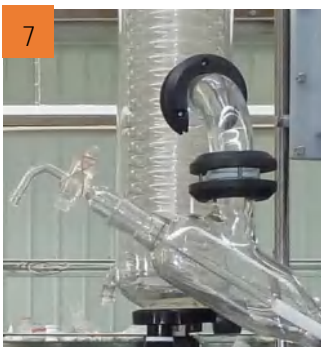
Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor



5.6. Ex-proof modification (optional) -- Offer EX proof upgrade on motor, control boxes of rotation and heating, wiring, and safety measures per user needs. Ex level reaches ExdIIBT4.



7. Bumping tube (optional) -- Preventing unexpected solution bumping into receiving flask.

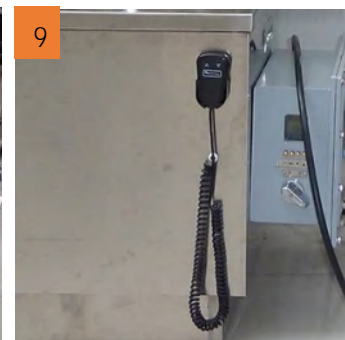
8. Numerical control constant temperature bath.

9. Automatic lifting, heating switch conveniently.

RE-5210A(Ex)
10L



RE-5220A(Ex)
20L



10. Cold trap / condenser protection (optional) -- Trapping escaped corrosive / harmful vapor so to protect vacuum pump and operator health. Avoid vacuum pump liquid flow back to system.

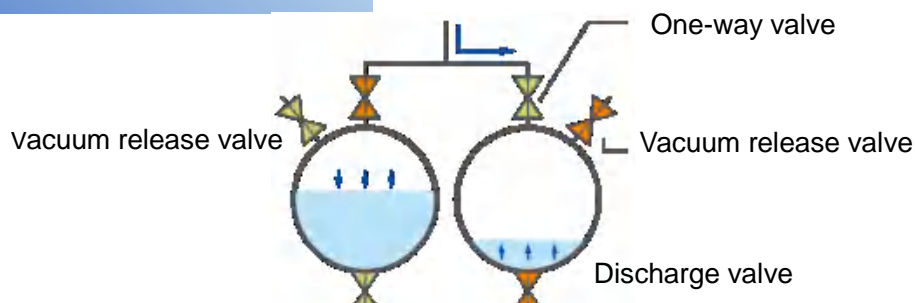
11. Flask unload handler (optional) -- Specially designed for handling and unloading big capacity evaporating flask, is one useful and popular optional tool.

In pilot production evaporation field

Continuous receiving technology, solvent discharge no longer need to stop evaporation process, to release and re-pump system vacuum. The technology allows real continuous work without vacuum wave, which obviously increases productivity simplifies system receiving structure and improves sealing performance.

Continuous receiving technology

1. Work principle



Rotary evaporator 10-50L

2. Evaporation performance

-- System vacuum does not drop during discharging shift. Sample received keeps consistent quality.

3. Structure rationality

-- Easier installation and maintenance in compact tandem type structure.

-- Leakage points reduced by 50%. Ultimate system vacuum is improved further in receiving structure.

Technical Parameters:

- A:99°C Automatic lifting
- AD:170°C Automatic lifting
- AEx:99°C Automatic lifting, Whole ex-proof system
- ADEx: 170°C Automatic lifting, Whole ex-proof system

Relevant Model	RE-5210A	RE-5220A	RE-5230A	RE-5250A
	RE-5210AD	RE-5220AD	RE-5230AD	RE-5250AD
	RE-5210AEx	RE-5220AEx	RE-5230AEx	RE-5250AEx
	RE-5210ADEx	RE-5220ADEx	RE-5230ADEx	RE-5250ADEx
Evaporating Flask(L)	10L/F95	20L/F125	30L/F125	50L/F125
Receiving Flask(L)	5L, bottom discharge	10L + 3L, bottom discharge	10L + 10L, bottom discharge	20L + 10L, bottom discharge
Condensing Surface(m ²)	0.57	1	1.3	1.5
Rotation Speed (rpm)	3-110	3-110	3-110	3-110
Max Evaporating Speed (Ethyl Alcohol)	3L/H	5L/H	6L/H	8L/H
Lifting Type	Automatic lifting			
Reachable Vacuum Rate	0.098Mpa (SHB-B95 Vacuum Pump)			
Bath Power (kw)	3	3	6	6
Staic Temp. Control Range & Wave (°C)	RT-99(170) ±0.2	RT-99(170) ±0.2	RT-99(170) ±0.2	RT-99(170) ±0.2
Bath Size. Capacity Material	∅ 35*25H, 22L, SUS304	∅ 45*27H, 40L, SUS304	∅ 45*27H, 40L, SUS304	∅ 55*32H, 70L, SUS304
Power	220V, 50/60Hz	220V, 50/60Hz	220V, 50/60Hz	220V,50/60Hz
Dimensions (mm)	950*500*1800H	1100*600*2100H	1300*800*1900H	1300*800*2300H
<p>* Note: Max evaporating speed is affected by operation setting and the performances and matching levels of supporting equipment.</p> <p>"A"-Automatic lifting, "AD"-Automatic Lifting 170°C Oil Bath, "AEX"-Automatic Lifting Explosion Protection.</p>				



Rotary Evaporator

Safety Features:

Relevant Model	RE-5210A RE-5210AD RE-5210AEx RE-5210AEx	RE-5220A RE-5220AD RE-5220AEx RE-5220AEx	RE-5230A RE-5230AD RE-5230AEx RE-5230AEx	RE-5250A RE-5250AD RE-5250AEx RE-5250AEx
Over-current Protection	Have			
No-spark Electronic Control	Have			
Ex-proof Upgrade	Ex-proof modification on motor, rotation & heating control, lower heating power density, equip dry heat and overheat cut-off protector			

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

Functional Configurations:

- A:99°C Automatic lifting
- AD:170°C Automatic lifting
- AEx:99°C Automatic lifting, Whole ex-proof system
- ADEx: 170°C Automatic lifting, Whole ex-proof system

High Shear Homogeneous Emulsification Reactor

Relevant Model	RE-5210A RE-5210AD RE-5210AEx RE-5210AEx	RE-5220A RE-5220AD RE-5220AEx RE-5220AEx	RE-5230A RE-5230AD RE-5230AEx RE-5230AEx	RE-5250A RE-5250AD RE-5250AEx RE-5250AEx
Charging Valve	Glass	Glass	Glass	Glass
PTFE Discharge Valve	PTFE	PTFE	PTFE	PTFE
PTFE Rotary Seal Assembly	Have			
Overall Flange Joints	Have			
Taper Joint PTFE Sleeve	Have			
Frequency Conversion Speed Control	Have			
Vacuum Meter	Have			
Throttle Valve For Vacuum	Have			
Thermometer Neck For Vapor	Optional			
Continuous Receiving	Have			
Digital Display	Bath temperature, Rotation speed			
Evaporating Flask Unload Handler	Optional			
Ex-proof Motor	Optional			
Cold Trap Protection System	Optional			
Bumping Tube	Have			
Optional Evaporating Flask (baffles available at request)	5L	5L, 10L	5L,10L,20L	10L,20L,30L

Pilot Ultrasonic Emulsification Reactor

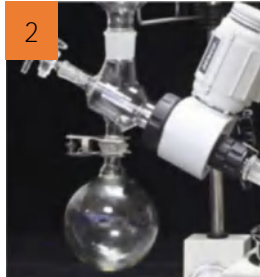
Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

Rotary Evaporator 0.1-5L



1. Three type condensers available for different operation needs.

- Standard condenser for normal use.

- Cold trap type for low boiling point solvent condensing.

- Integrated type for high requirement on vacuum sealing or high temperature operation.

2. PTFE sleeve - PTFE sleeve inside taper joint helps to prevent dead seizure, and increase sealing performance.

Digital display speed controller.

Vacuum meter - Vacuum meter equipped, offers convenience of quick vacuum reading.

**RE-5000
5L**



3. Taper joint lock and release device - Enable a reliable lock of evaporating flask and offer convenience to taper joint flask release.



4. Lift heating bath

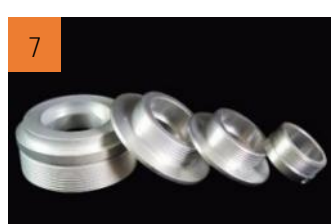
- Prevents movement of glassware which is safe and easy to operate. Bath equipped with intelligent temp. controller. Heating temperature up to 99°C for water bath and 150°C for oil bath, temp. wave within 2°C or 0.2°C.



5. Lid for water bath (optional) - Optional for water bath, can increase evaporation efficiency by 15% and save bath water by 60%. Safe and useful.



6. Precise transmission part.



7. High grade processing part.



Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogen-ous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

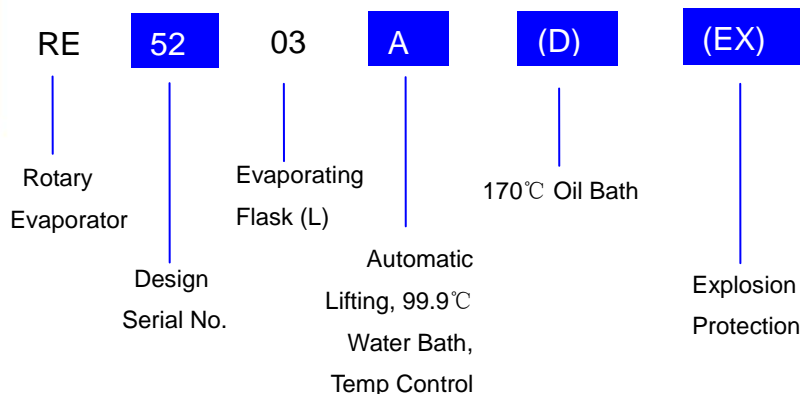
Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

Rotary Evaporator 0.1-5L



Technical Parameters:

A:99°C Automatic lifting

AD:170°C Automatic lifting

Relevant Model	RE-52A	RE-52AA	RE-2000A RE-2000AD	RE-3000A RE-3000AD	RE-5203	RE-5203A	RE-5205	RE-5000 RE-5000D
Rotating Flask(L)	0.5L	0.5L	2L + 1L	3L + 2L	3L	3L	5L	5L
Optional Rotating Flask(L)	0.1L, 0.25L, 1L or 2L	0.1L, 0.25L, 1L or 2L	0.1L, 0.25L, 0.5L	0.5L, 1L	2L, 1L	2L, 1L	3L, 2L, 1L	3L, 2L, 1L
Receiving Flask(L)	0.5L	0.5L	1L	2L, 1L	1L	1L	3L	3L
Lifting Type	Hand lifting	Automatic lifting	Automatic lifting	Automatic lifting	Hand lifting	Automatic lifting	Hand lifting	Automatic lifting
Condenser	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical	Vertical
Rotation Speed (rpm)	0-150	0-150	20-200	20-200	0-150	0-150	0-150	0-110
Reachable Vacuum Rate	0.098Mpa (SHB-III Vacuum Pump)							
Bath Power (kw)	1.1KW	1.1KW	1.5KW	1.5KW	1.5KW	1.5KW	2.2KW	2.2KW
Staic Temp. Control Range & Wave (°C)	RT-99±2	RT-99±2	RT-99 (170) ±2	RT-99 (170) ±0.2	RT-99±0.2	RT-99±0.2	RT-99±0.2	RT-99 (170) ±0.2
Power	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz	220V 50/60Hz

* Note: Max evaporating speed is affected by operation setting and the performances and matching levels of supporting equipment.

"A"-Automatic lifting, "D"-170°C Oil Bath, "AD"-Automatic Lifting 170°C Oil Bath.

Rotary Evaporator 0.1-5L Functional Configurations


RE-5203

RE-5203A

RE-5205

RE-5000

Technical Parameters:

A: 99°C Automatic lifting

AD: 170°C Automatic lifting

Relevant Model	RE-52A	RE-52AA	RE-2000A RE-2000AD	RE-3000A RE-3000AD	RE-5203	RE-5203A	RE-5205	RE-5000 RE-5000D
PTFE Seal Assembly	Have							
Continuous Charge	Have							
Digital Display	Bath Temp.	Bath Temp.	Bath Temp. Rotation Speed	Bath Temp. Rotation Speed	Bath Temp.	Bath Temp.	Bath Temp.	Bath Temp. Rotation Speed
Taper Joint PTFE Sleeve	Have							
Low Noise	Have							
Bath Lift	Have							
Thermometer Neck For Vapor	Optional							
Cold Trap	Have	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Water Bath Lid	Optional							
Joint Adaptor	Optional							
Optional Evaporating Flask	1L, 2L	1L, 2L	0.5L	0.5L, 1L	100ml, 250ml, 500ml, 1L	100ml, 250ml, 500ml, 1L	100ml, 500ml	250ml, 1L, 3L

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

 High Shear Homogen-
eous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Tel:0086-29-88763980

Email:info@toptionlab.com

info@toption-china.com

Web:www.toptionlab.com (for lab solution)

www.toption-china.com (for instrument)

TOPTION Lab Solution For Rotary Evaporator

Evaporation speed is slow?

Vaporized solvent cannot be well collected?

Sudden bumping destroys everything you collected?

Trouble again on vacuum pump!

Awful smell all around in lab?...

Check differences
after using TOPTION
evaporation set!



TOPTION'S "Rotary Evaporation Set" will save you from these troubles. We hope you are able to work **fast, safe, and always**.

Rotary Evaporator Model Selection Q & A

1. What's the most important performance of rotary evaporator?

Air impermeability is the first important performance of rotary evaporator, which directly affect rotary evaporator normal operating and service life. Air impermeability is good or not is decided by suppliers' design standard, manufacture standard and material choice, etc. "Actual vacuum degree" and "vacuum pressure maintaining time" are the measuring standard.

2. What's the difference of glass lifting and bath lifting?

Bath lifting is more safe, the glass parts matched with rotary evaporator are not easy to be damaged, don't need to lock after lifting finished. Glass lifting is mainly suitable for the rotating flask which has fixed size, lifting height is fixed, after finish lifting, need to lock.

3. #29 and #24 Evaporation bottle grinding mouth, choice which type is better?

ISO #29 and ISO #24 both are the standard mouth for laboratory. ISO #29 has high strength and convenient to clean, is more suitable for imported rotary evaporator, and also benefit you to choice flask move device.

4. Which type vacuum pump is most suitable for rotary evaporator?

Vacuum pump is the prerequisite device for rotary evaporator, TOPTION provide SHB-III vacuum pump for 1L ~ 10L laboratory rotary evaporator, SHB-B95 vacuum pump for industrial rotary evaporator, and 2XZ also supplied for rotary evaporator, etc. But using cold trap or other methods provide corrosion protection is more better.

5. In which situation, condensation effect is best?

Tap water temperature changes as different season, its temp. is higher in summer, so solvent recovery efficiency is low, and tap water will make condenser change color and scale formation.

You could choice the below two **lab solutions**:

- 1) The best solution: equip appropriate low temperature cooling circulating pump, when you choice, please pay attention to "refrigerating capacity", "lowest temperature", "circulating joint", "circulation capacity" and "circulating pressure", TOPTION supply low temperature equipment professional for rotary evaporator.
- 2) For laboratory rotary evaporator, cold trap could be cooling by ice.

6. How to improve rotary evaporator service life?

- 1) Please operating based on TOPTION rotary evaporator operation instruction.
- 2) After finish research, please clean rotary evaporator in time.
- 3) The surface of rotary evaporator should be keep clean.
- 4) Please contact TOPTION specialist for any problems during rotary evaporator operating.

Practical - Efficient - Economical TOPTION Rotary Evaporator Sets

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogeneous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

2L laboratory evaporation set


LX-0250
RE-52AA
VC100C
SHB-III

TOPTION also provide pilot 20L * Evaporation Set: LX-0400 + RE-5220A + VC100C+ SHB95.

20L evaporation set


LX-0400
RE-5220A
VC100C
SHB95
Cooling Circulator
Rotary Evaporator
Vacuum Controller
Water Circulation Vacuum Pump

- With big cooling power.
- Increase receiving rate.
- Save water resource.

- Strong in sealing and anti-corrosion performance.
- Has display on rotation speed, temperature, and pressure.

- Improve efficiency of evaporating and receiving.
- Decrease bumping risk.
- Reduce vapor escaping.
- Protect vacuum pump.

- Easy Maintenance.
- Resist Certain Corrosion.

Short Path (Molecular) Distillation System

Molecular Distillation / Short Path Distillation is a comparatively new separation technology. It can separate liquid-liquid mixture under temperature that is far lower than boiling point by the difference of mean free path of molecules under high vacuum condition. Such separation is difficult or unable to achieve on normal distillation equipments. Molecular Distillation is especially **suitable to separate substance of high boiling point, heat sensitive and easy to be oxidized.**

Main application field: Separation process in trades like Food, Pharmaceutical, Fine chemical, Electronic materials, Polymers (Polyols, fatty acids, Polyphenols compounds, polyurethane, epoxy resin, lactate, glycerol monostearate, flavors and fragrances, fuel oil and paraffin oil), etc.

Features and working principle of short path distillation:

1. Distilling temperature far lower than the material boiling temperature

- Has advantages on dealing with materials that is heat sensitive, of high boiling temperature, belongs to biological acids or lipids.

2. Heating process of material is very quick

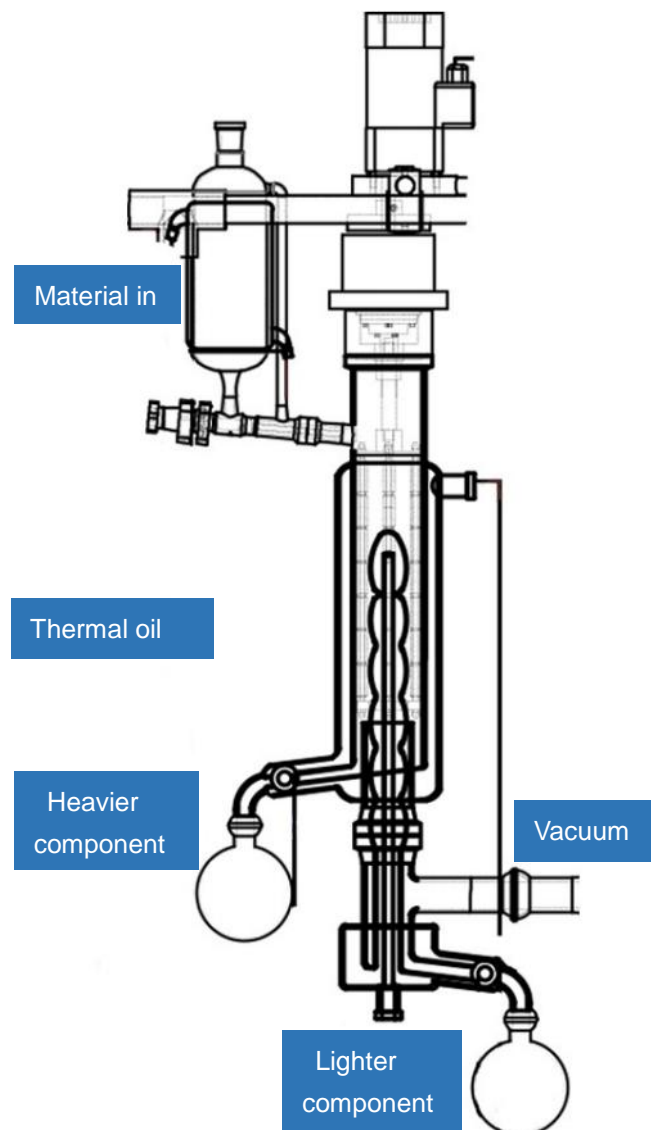
- It may take only few tens of seconds to finish a separation on short path distillatory when it takes hours on a normal evaporation apparatus.

3. It is a physical separation process

- A natural and gentle separation process that is widely applied on deodorization, decolorization, and purification on materials with high value.

Technical specification:

Model	Diameter (mm)	Surface (m ²)	Processing measures (kg/h)
TWF70-4	70	0.04	0.1-2
TWF125-12	125	0.12	0.4-5
TWF125-15	125	0.15	0.5-6
TWF200-45	200	0.45	0.7-8
TWF300-75	300	0.75	1.0-11



Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

 High Shear Homogen-
eous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification
Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Features Of TOPTION Molecular Distillation System

1. **Transprent** - Allow an easy observation in whole experiment process on materials (color, fluidity, film effect, start point of distilling, ect.) when changing of settings of pressure, temperature, feed and rotation speed. The convenience does help to get the optimum technological parameters and the experimental data.
2. **High Pressure tightness** - Magnetic coupling drive system plus TOPTION fine processing technics, both guarantee system vacuum down to 0.001mbar.
3. **Cleaness** - Material can only touch glass and PTFE during separation process.
4. **Easy Maintenance** - Quick disassemble structure and specially designed cleaning kits make maintenance job fast and simple.
5. **Cow Distillation Receiver** - Allow user to collect 3 samples during separation process which increases experiment efficiency and assists process analysis.



Scraped Film Evaporator

The **thin film evaporator** is a new highly effective evaporator blows the film installment through tube in vivo revolving to cause the material continuously evenly to force the membrane in the heating surface, carries on under the high vacuum condition falls. It has many advantages, such as low distillation temperature, high distillation vacuum degree, short heating time, high separation degree, and so on.

Application:

The thin film evaporator is used to **evaporate, condense, decolor, trip, react, degas, deodorant the materials with high heating-sensitive and easy to oxidate**. It is an excellent method for gently thermal treatment of heat sensitive, high boiling products. At present, there are hundreds of products used in thin film evaporator. The thin film evaporator is widely used in medical, pesticide, oil and fatty chemical industry, fine chemical industry, commodity chemical industry, biology chemical industry and so on.

Performance character:

1. Small pressure losing.
2. Big diathermanous coefficient, high evaporating efficiency.
3. Low evaporating temperature.
4. Short heating time.
5. Strong adaptability, easy to operate.

Technical specification:

Model	Diameter (mm)	Surface (m ²)	Processing measures (kg/h)
PWF70-7	70	0.07	0.2-3
PWF125-17	125	0.17	0.5-6
PWF200-45	200	0.45	0.7-8
PWF300-75	300	0.75	1.0-11



Unique customization is supported by TOPTION strong specialist team who have more than ten years technical experience.

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor



Scraped Film Evaporator Configuration:

Part Name	Unit	Quantity	Note
Jacketed type main reaction evaporator	set	1	Standard
Digital frequency conversion control stirring device	set	1	Standard
250ML quantitative feeding containers	set	1	Standard
Multiple glass condenser	set	1	Standard
Vacuum protect cold trap	pcs	1	optional
Scraped panel type scraped film system	set	1	Standard
Material discharge collection system	set	1	Standard
Stainless steel workbench	set	1	Standard
Tube luca pieces	set	1	Standard
Quantitate charge pump	set	1	Standard
Vacuum system	set	1	optional
High temperature heating circulator (room temp to 180 °C)	Set	1	Optional, jacketed reactor heating
Low temperature cooling circulator (room temp to -20°C)	Set	1	Optional, condenser cooling
Secondary circulation device	Set	1	Optional
Digital thermometer	set	1	Optional, tube temperature could be measured
Digital vacuum gauge	set	1	optional
Unique customization is supported by TOPTION strong specialist team who have more than ten years technical experience.			

Single layer glass reactor



1. Vertical type incline stir reaction
 - Incomparably perfect stereo-stir performance.
2. Adiabatic stand with intelligent heating system inbuilt, two kinds heating method: Oil bath & Heating mantle.
 - Max temperature up to 180°C, and digital display. Oil bath can equip cooling coil for reaction material chilling.
 - Equips Over-heat & Dry-heat protectors, ensure safe operation of heating bath.
3. Heating device material: SS304 stainless steel and spray material are optional.



4. Cooling & Liquid separation function.
5. Distilling & receiving.
6. Discharge valve.
7. Underlay base optional to enable one-time discharge.
8. Drip function.
9. Multi-function reaction flask.
 - Overall flange connection design, eliminate taper joint seizure which may damage reaction flask.
 - Standard configuration: stirring, feeding, reflux condensing, temperature measuring, multi-purpose wide opening and non-liquid accumulation bottom discharge function.
 - Extend more function: dripping, sample pickup, distilling, rectifying, liquid separation, etc.

Rotary Evaporator

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eous Emulsification
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 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Reactor with heating mantle - stainless steel material & spray plastics material:

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogeneous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

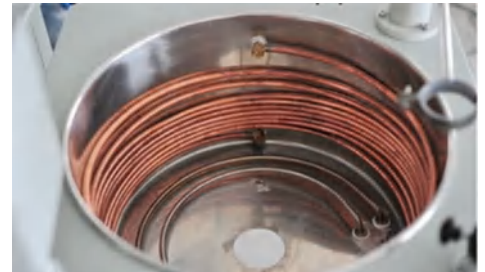
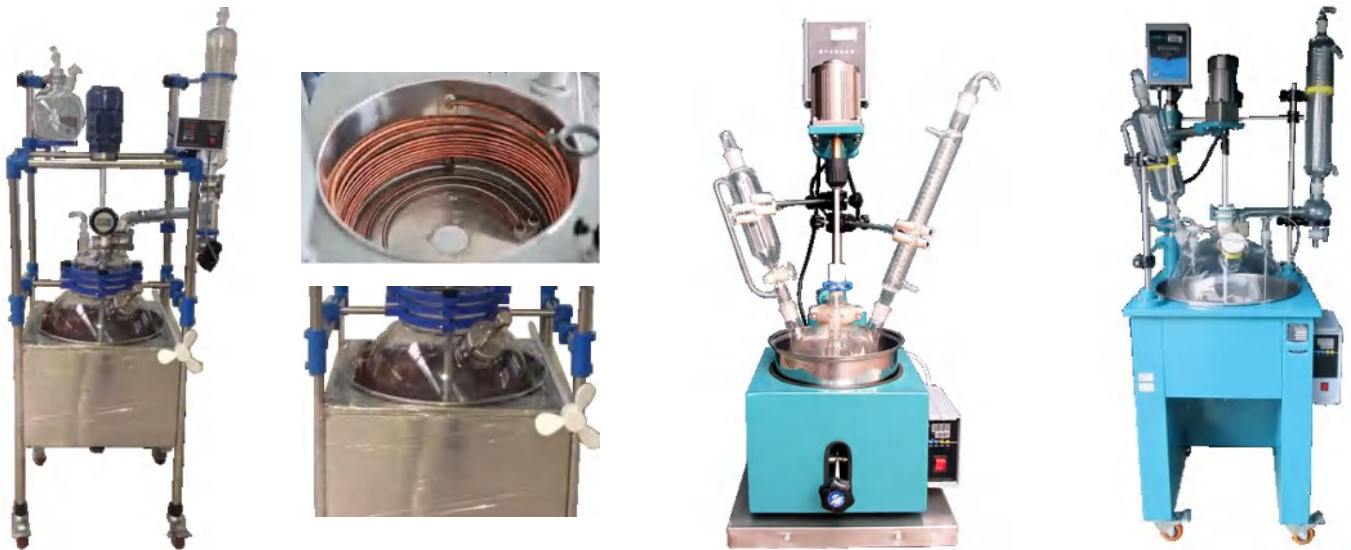
Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor



Reactor with oil bath - stainless steel material & spray plastics material:



Heating mantle

Max heating temperature up to 300°C, heating quickly. 180-300°, can be customized

3-port liquid separator facility (optional)

Is able to separate liquid received of different weight. Advanced 3-port liquid separator system also available.

Cooling coil (optional)

Can be installed in heating bath and perform chilling function by getting through cooling liquid.

0.5L ~ 200L Single layer glass reactor

S: SS304L; P: spray plastics; B: oil bath; M : Heating Mantle; EX: Ex-proof

Model	TST-2MS	TST-5MS	TST-10MS	TST-20MS	TST-30MS	TST-50MS	TST-80MS	TST-100MS	TST-150MS	TST-200MS	TST-250MS
	TST-2MP	TST-5MP	TST-10MP	TST-20MP	TST-30MP	TST-50MP	TST-80MP	TST-100MP	TST-150MP	TST-200MP	TST-250MP
	TST-2BS	TST-5BS	TST-10BS	TST-20BS	TST-30BS	TST-50BS	TST-80BS	TST-100BS	TST-150BS	TST-200BS	TST-250BS
	TST-2BP	TST-5BP	TST-10BP	TST-20BP	TST-30BP	TST-50BP	TST-80BP	TST-100BP	TST-150BP	TST-200BP	TST-250BP
Reaction flask(L)	2	5	10	20	30	50	80	100	150	200	250
The mouth number of the bottle	4	4	5	5	5	6	6	6	7	7	7
Stirring power(W)	90	120	180	180	250	250	250	250	370	450	550
Speed(rpm)	0-600	0-600	0-600	0-600	0-600	0-600	0-600	0-600	0-600	0-600	0-600
OD of Stirring bar(mm)	φ6	φ10	φ10	φ10	φ12	φ12	φ16	φ16	φ18	φ18	φ18
Heater	1.5kw 180°C	2kw 180°C	2.5kw 180°C	3kw 180°C	4.5kw 180°C	6kw 180°C	7kw 180°C	9kw 180°C	10kw 180°C	11kw 180°C	15kw 180°C
Power(V)	220	220	220	220	220	220 / 380	220 / 380	220 / 380	220 / 380	220 / 380	220 / 380
Material of heater	Stainless Steel / Spraying Plastics										
Heating Method	Oil Bath / Heating Mantle										
Frequency-converting	no	have	have	have	have	have	have	have	have	have	have
Vacuum sealing	have										
Discharge valve	optional		have								
PTEE stirring bar	have										
Charging cork	have										
Temperature display	Glass tube		PT100 sensor								
Reflux and distillation system	optional	optional	have								
Vacuum meter	optional		have								
Overhead stirring	have										
Mouth for multi-functions	no	no	no	have							
Cooling coils	optional										

- Capacity: 0.5L, 1L, 2L, 3L, 5L, 10L, 20L, 30L, 50L, 100L, 150L, 200L, 250L.
- Oil bath type & electric heating mantle type, stainless steel & spray plastics are optional.
- High temperature: RT-180°C(oil bath), RT-180°C(heating mantle). RT-300°C(heating mantle) can be customized.
- Vacuum pump & vacuum controller are available, you can control the vacuum degree accurately.

Double layer glass reactor 1L~200L

- Rotary Evaporator
- Scraped Film Evaporator / Short Path (Molecular) Distillation System
- Chemical Glass Reactor
- High Shear Homogeneous Emulsification Reactor
- Pilot Ultrasonic Emulsification Reactor
- Vacuum Filter / Glass Liquid Separator
- Photochemical Glass Reactor
- Hydrothermal Synthesis Reactor
- High Pressure Reactor



1.PTFE flush discharge valve

No-sample accumulation in valve during operation and discharge. Max drift diameters is 20~32mm.

2.Side discharge valve (standard or preload)

No dead angle, air isolated discharge. Max drift diameter 20~32mm. Preload discharge valve is able to decrease flask crack risk due to improper over-screw of discharge valve. Customization of TOPTION big capacity glass reactors.

3.Flask cap (≥10L)

- 1) Charging valve - pure charge process without gel pollution.
- 2) Thermometer-direct measurement.
- 3) Condenser - Ball joint connection, easy to assemble, with less vibration.
- 4) All taper joints upgrade to flanges, no seizure, no damage to glass necks.

4.Flange quick press ring

One-piece quick clip design. Offer new experience on easy, reliable, and high sealing connection for flanges.



5. Glass reactor lid.



6. PTFE Reactor stirring paddle.

Double layer glass reactor 1L~200L



Double layer glass reactor



Three layer glass reactor

Three layer glass reactor customization

1. Compared with jacketed glass reactor, it has outermost layer to keep vacuum airtight state.

2. More effective to protect temperature, so as to save reaction time and finally make your research more effective.

Type	Stir medium flange	Liquid material inflow	Condenser	Temp. measure	Multi function valve	Solid charging port	Stirring paddle	Reactor lid flange(mm)	Inner diameter of reactor body(mm)	External diameter (mm)	Reactor body height(mm)	Power (w)	Rotate speed (rpm)
TOPT-1L	35	24# 0.25L	24#	14#	----	----	∅ 7mm Anchor type	150	113	150	250	40	50-800
TOPT-2L	35	24# 0.25L	24#	14#	----	----	∅ 7mm Anchor type	150	135	180	280	40	50-800
TOPT-3L	35	24# 0.25L	24#	14#	----	----	∅ 7mm Anchor type	150	150	200	300	40	50-800
TOPT-5L	40	24# 1L	24#	19#	24#	----	∅ 10mm single layer two blade paddle type	180	180	230	400	60	50-600
TOPT-10L	50	34# 1L	34#	DN15	DN25	DN80	∅ 16mm single layer three blade paddle type	265	230	290	450	120	50-600
TOPT-20L	50	34# 1L	34#	DN15	DN25	DN80	∅ 16mm single layer three blade paddle type	265	290	330	550	120	50-600
TOPT-30L	50	34# 1L	34#	DN15	DN25	DN80	∅ 16mm single layer three blade paddle type	265	330	365	730	120	50-600
TOPT-50L	50	34# 1L	34#	DN15	DN25	DN80	∅ 16mm double layer three blade paddle type	265	365	410	850	140	50-600
TOPT-80L	50	5L 24#	DN40 ball mouth	DN15	DN25	DN80	∅ 16mm three layer three blade paddle type	340	410	460	950	250	50-600
TOPT-100L	60	5L 24#	DN40 ball mouth	DN15	DN25	DN80	∅ 16mm three layer three blade paddle type	340	460	500	950	250	50-600
TOPT-150L	60	5L 24#	DN40 ball mouth	DN15	DN25	DN80	∅ 16mm three layer three blade paddle type	340	550	600	980	400	50-600
TOPT-200L	60	10L DN25	DN50 ball mouth	DN25	DN25	DN100	∅ 16mm three layer three blade paddle type	340/440PP flange	550	650	1100	400	50-600

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogenization Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

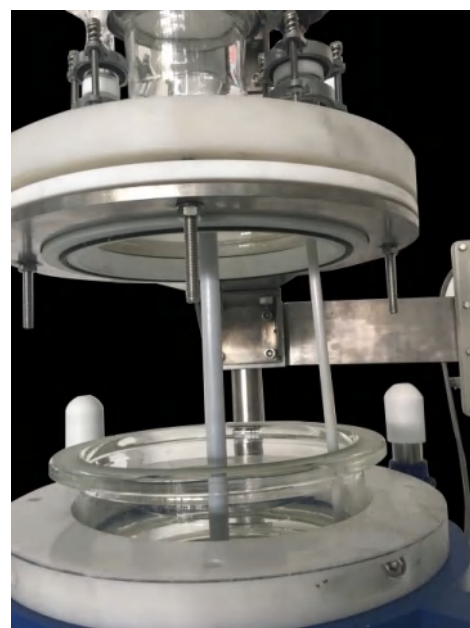
Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

Glass reactor with lifting & rotating function

1. Kettle body lift, rotate also 120 °C, easy to use and clean.
2. Glass interface flange seal avoids the use of vacuum grease seal appears the phenomenon is difficult to open;
3. 360° rotating function could customize.

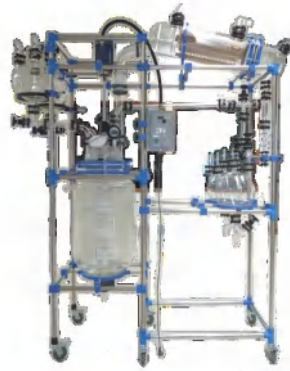


Type	Stir medium flange	Liquid material inflow	Condenser	Temp measure	Multi function valve	Solid charging port	Stirring paddle	Reactor lid flange (mm)	Inner diameter of reactor body(mm)	External diameter (mm)	Reactor body height (mm)	Power	Rotate speed (mm)
TOPR-1L	35	24# 0.25L	24#	14#	-----	-----	∅ 7mm Anchor type	150	113	150	250	40	50-800
TOPR-2L	35	24# 0.25L	24#	14#	-----	-----	∅ 7mm Anchor type	150	135	180	280	40	50-800
TOPR-3L	35	24# 0.25L	24#	14#	-----	-----	∅ 7mm Anchor type	150	150	200	300	40	50-800
TOPR-5L	40	24# 1L	24#	19#	24#	-----	∅ 10mm single layer two blade paddle type	180	180	230	400	60	50-600
TOPR-10L	50	34# 1L	34#	DN15	DN25	-----	∅ 16mm single layer three blade paddle type	265	230	290	450	120	50-600
TOPR-20L	50	34# 1L	34#	DN15	DN25	-----	∅ 16mm single layer three blade paddle type	265	290	330	550	120	50-600
TOPR-30L	50	34# 1L	34#	DN15	DN25	-----	∅ 16mm single layer three blade paddle type	265	330	365	730	120	50-600
TOPR-50L	50	34# 1L	34#	DN15	DN25	DN80	∅ 16mm double layer three blade paddle type	265	365	410	850	140	50-600

Professional customization of glass reactor



Reactor with pipe bundle condenser



Reactor with horizontal condenser



Reactor with sample condenser



Reactor with rectification column system



Reactor with tail gas treatment system



Falling film evaporator



Reactor with IR heater(400°C)



Reactor with PLC automatic system

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

Professional customization of glass reactor

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Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor



Ultrasonic continuous reactor



Ultrasonic reactor



Multi-function reactor with filter system

Tel:0086-29-88763980 Email:info@toptionlab.com info@toption-china.com
 Web:www.toptionlab.com (for lab solution) www.toption-china.com (for instrument)

High shear Homogeneous Reactor system



Automatic lifting type

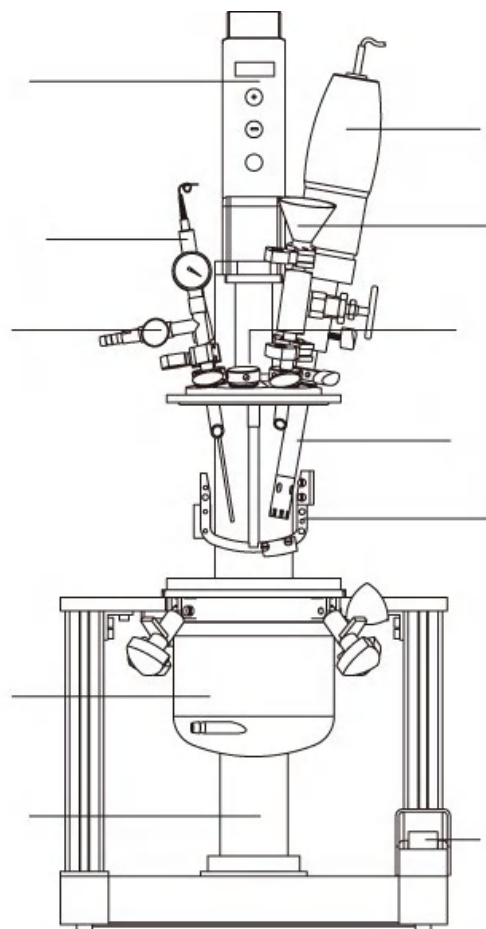


Manual lifting type

Laboratory Homogeneous Emulsification System Reactor is an instrument developed by our engineers with latest German technologies, designed in modular structure, applies to blending, mixing, emulsifying, dispersing and homogenizing mobile liquids. This homogenizer can be widely applied in cosmetic cream, oil-water emulsion, polyreaction and nanophase material dispersion as well as special occasions requiring vacuum or pressure test.

TOPTION homogenizer has simple structure, small bulk, low noise, stable operation and long service life, and it's easy to operate, clean, dismantle and maintain.

- Stirring motor
- Temperature sensor
- Vacuum port/ gas inlet port
- Reactor
- Lifting pillar

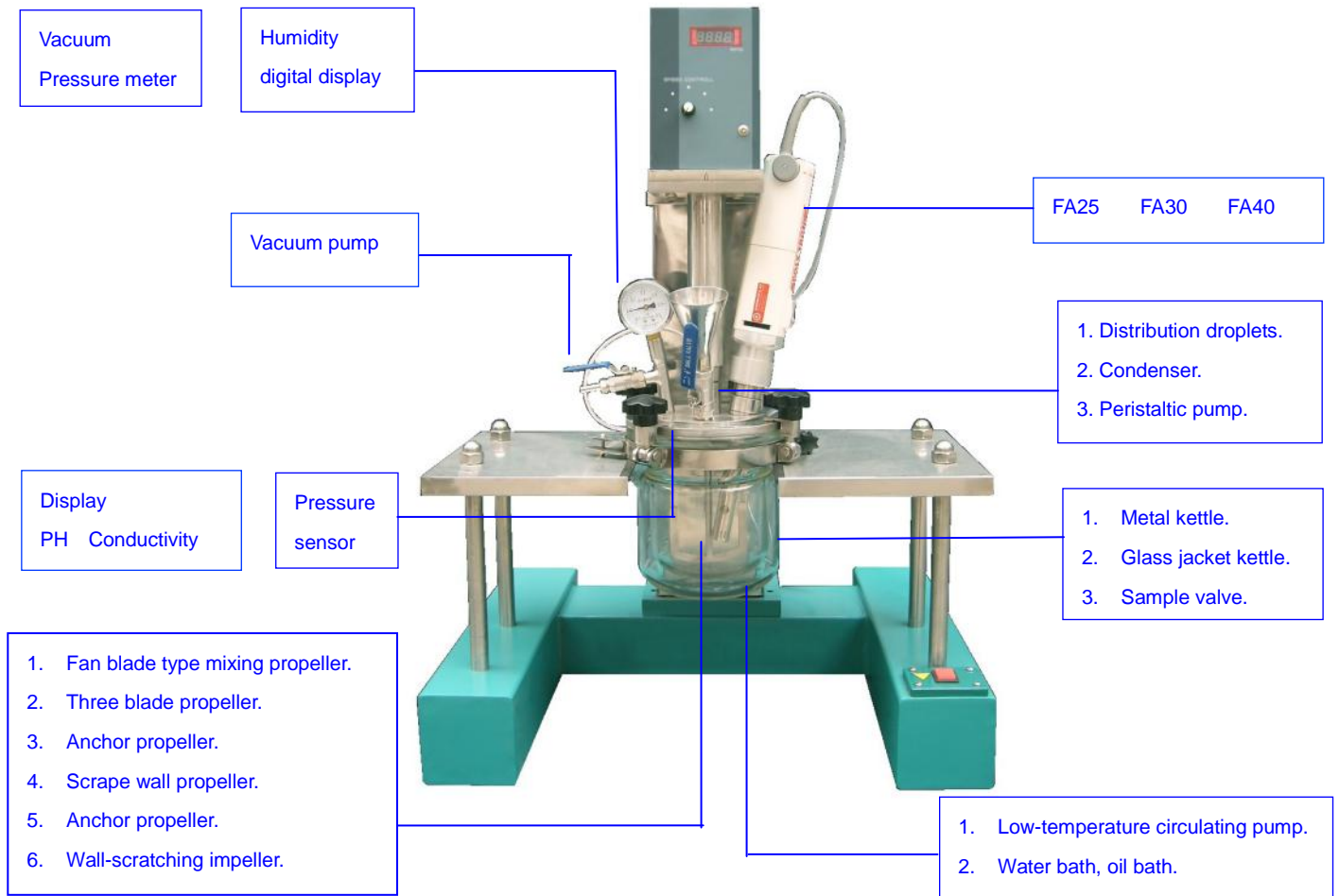


- Homogeneous motor
- Charging port
- Reserved openings (1pcs)
- High shear dispersing tool
- Stirring paddle
- Lifting button

- Rotary Evaporator
- Scraped Film Evaporator / Short Path (Molecular) Distillation System
- Chemical Glass Reactor
- High Shear Homogeneous Emulsification Reactor
- Pilot Ultrasonic Emulsification Reactor
- Vacuum Filter / Glass Liquid Separator
- Photochemical Glass Reactor
- Hydrothermal Synthesis Reactor
- High Pressure Reactor

Structure of High shear Homogeneous Reactor

This homogenizer can be widely applied in cosmetic cream, oil-water emulsion, polyreaction and nanophase material dispersion as well as special occasions requiring vacuum or pressure test.



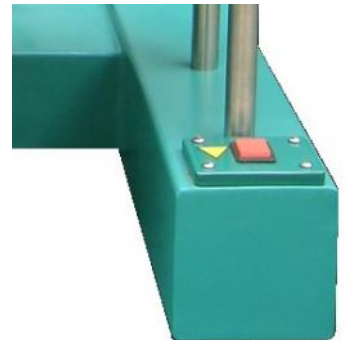
Detail of Structure of High Homogeneous Reactor



Reactor lid



Reaction vessel & stirring paddle



Stainless steel shelf and on/off

Technical specification:
A: Automatic lifting type **M:** Manual lifting type

Model	THER-1A THER-1M	THER-2A THER-2M	THER-3A THER-3M	THER-5A THER-5M
Emulsifying capacity	1L	2L	3L	5L
Glass structure	Double-layer	Double-layer	Double-layer	Double-layer
Glass material	G3.3	G3.3	G3.3	G3.3
Homogenizer rotation speed	7 Grade adjustable, adjusting range: 10000-28000rpm.			
Lifting height	170 mm	190 mm	190 mm	225 mm
Max.working temperature	Standard 120℃, support 180℃ customization.			
Max.handling viscosity	100,000CP	100,000CP	100,000CP	100,000CP
Homogenizer motor power	500W	500W	500W	500W
Main medium-contact materials	SS316L, borosilicate glass, PTFE	SS316L, borosilicate glass, PTFE	SS316L, borosilicate glass, PTFE	SS316L, borosilicate glass, PTFE
Agitator motor power	40W	90W	90W	90W
Agitator rotation speed(rpm)	0-1300rpm	0-1300rpm	0-1300rpm	0-1300rpm
Overall dimension (mm)	400*300*850	450*350*950	450*350*950	450*350*950



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Rotary Evaporator

 Scraped Film Evaporator /
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 Reactor

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 Reactor

 Pilot Ultrasonic
 Emulsification Reactor

 Vacuum Filter / Glass
 Liquid Separator

 Photochemical
 Glass Reactor

 Hydrothermal
 Synthesis Reactor

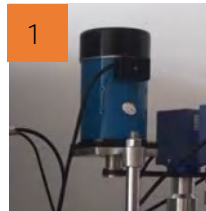
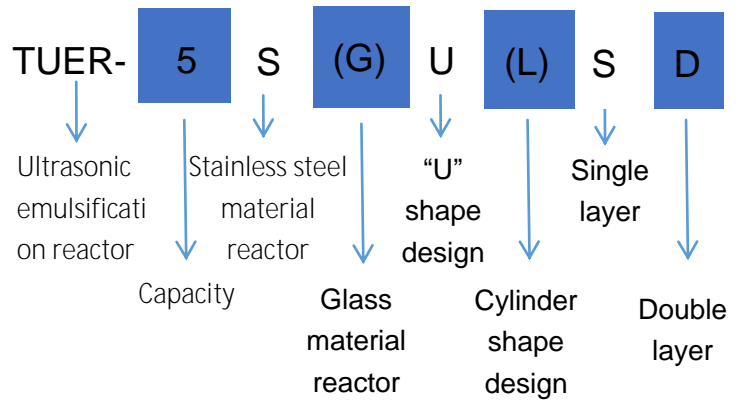
 High Pressure
 Reactor

Ultrasonic Homogeneous Reactor System

- Rotary Evaporator
- Scraped Film Evaporator / Short Path (Molecular) Distillation System
- Chemical Glass Reactor
- High Shear Homogeneous Emulsification Reactor
- Pilot Ultrasonic Emulsification Reactor
- Vacuum Filter / Glass Liquid Separator
- Photochemical Glass Reactor
- Hydrothermal Synthesis Reactor
- High Pressure Reactor



SS304L Cylinder Reactor



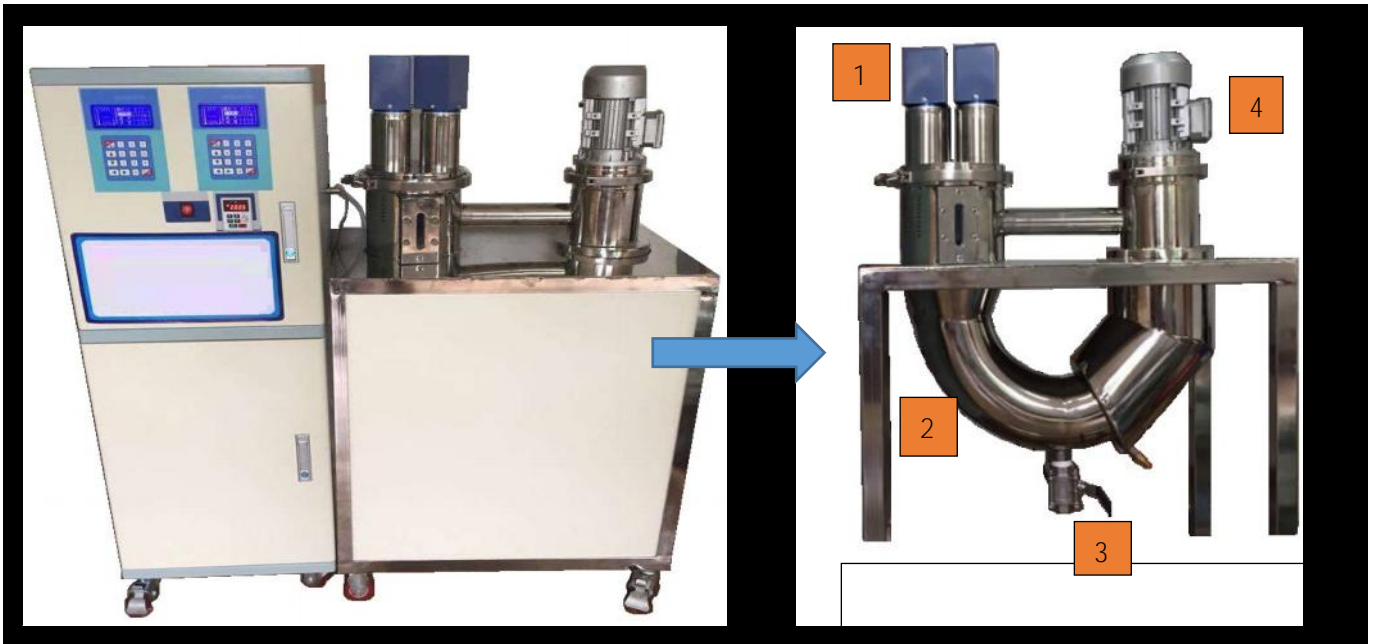
1. Mechanical drive stirring motor, makes material mixing more uniform.



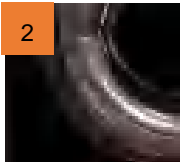
2. Multi ultrasonic working head combined together, large power, much better emulsification result.

Glass material ultrasonic reactor

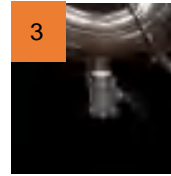




1. Multi ultrasonic working head combined together for much better sample emulsification result.



2. In-built circulating system makes sample get more uniform mixing, no dead angle.



3. Downward discharging valve, more convenient for material discharging.



4. Vertical electric stirring makes material mixing more uniform.

Description of Pilot ultrasonic emulsification reactor:

The core content of ultrasonic nanotechnology is how to solve the problem agglomeration of nanoparticles, as nano particles themselves is easy to reunite, so want to get single dispersive nano particles is very difficult. How to make the nano particles evenly dispersed in the matrix is the key technology of nanotechnology.

TOPTION ultrasonic series instruments use the cavitation of ultrasonic to disperse the coacervate particle. It put the required processing of particulate suspension (liquid phase) in the super sound field, use appropriate ultrasonic amplitude and duration to process. Due to the inherent characteristics of powder particles coacervate, so for some powder which could not be dispersed well in medium, you could add the right amount of dispersant to keep the dispersed steady state, general could reach dozens of nanometers, even more small. This type ultrasonic emulsification reactor is most suitable to disperse nano materials (graphene, silicon dioxide, etc).

Ultrasonic Emulsification Reactor through its "cavitation effect" to realize the emulsification of oil blended with water, emulsification of water mixed with oil, the mixture and homogenization of dispersed phase and continuous phase, it's modern chemical technology to instead of propeller, colloid mill and other traditional emulsification technology.

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogenous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor

Pilot ultrasonic emulsification reactor technical specification:

Model	TUER-5SUS / TUER-5SUD TUER-5SLS / TUER-5SLD TUER-5GLS / TUER-5GLD	TUER-10SUS / TUER-10SUD TUER-10SLS / TUER-10SLD TUER-10GLS / TUER-10GLD	TUER-20SUS / TUER-20SUD TUER-20SLS / TUER-20SLD TUER-20GLS / TUER-20GLD
Ultrasound Method	Energy-gathered circulation multiple-step type		
Capacity (L)	5	10	20
Stir Motor Power (W)	100	150	200
Ultrasonic Frequency	20KHz	20KHz	20KHz
Standard Ultrasonic Probe	∅ 20*1	∅ 35*1	∅ 35*1
Ultrasonic Power(w)	50~1200 Adjustable	100~2500 Adjustable	100~2500 Adjustable
Circulation Stirring Rate (rpm)	0~1000 Integrated Digital Display	0~1000 Integrated Digital Display	0~1000 Integrated Digital Display
Controlled Temperature °C (Optional)	-40--80	-40--80	-40--80
Reactor Material	SS304/Glass	SS304/Glass	SS304/Glass
Application	Laboratory & Pilot	Laboratory & Pilot	Pilot
Note:1. Professional Customization is provided, high temp. device, low temp. device, constant temp. device are available (-40°C ~ 80°C). 2. The max volume can be 500L.			

An important characteristics of ultrasonic emulsification is that, there's no need or less need emulsifier to get very stable emulsion. The obvious advantages of ultrasonic emulsification has prompted it in food, chemical, pharmaceutical, textile, paper making, paint, fuel thermal power, fuel central air conditioning, petroleum, metallurgy and many other industrial process has been applied more and more, including down fuel combustion is an important project to rise.

Vacuum filter

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

 High Shear Homogen-
-ous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

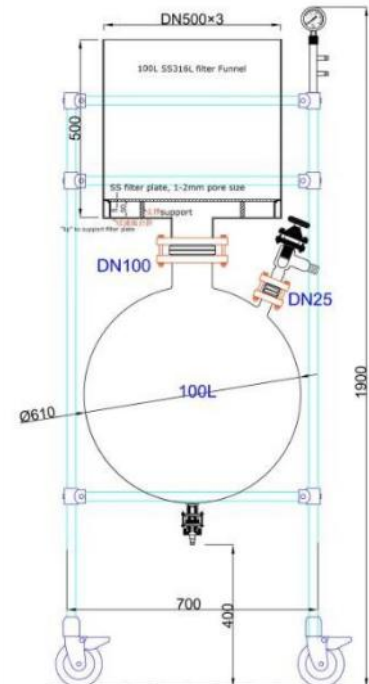
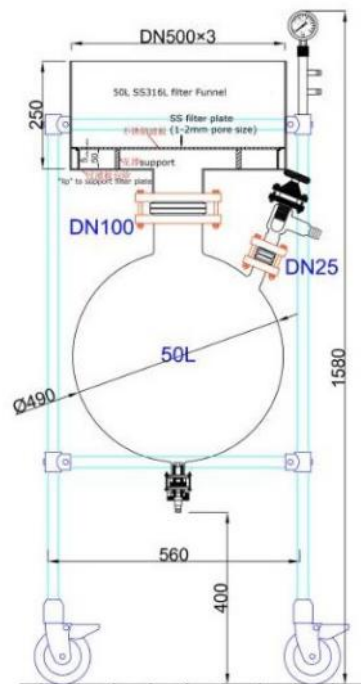
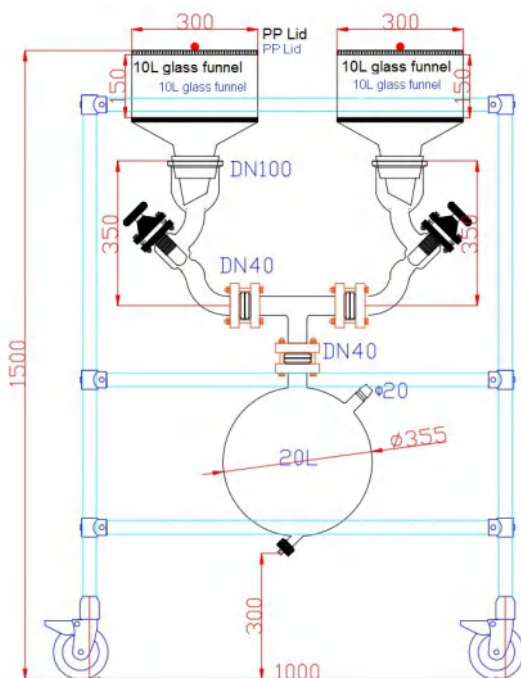
SS304 type

Ceramic type

Glass type

List name/ Model	TP-CL10L(G) TP-CL10L(S) TP-CL10L(C)	TP-CL20L(G) TP-CL20L(S) TP-CL20L(C)	TP-CL30L(G) TP-CL30L(S)	TP-CL50L(G) TP-CL50L(S)
Funnel volume	10L	20L	30L	50L
Funnel material	G: Glass ; S: SS304L C: Ceramic		G: Glass ; S: SS304L	
Collecting flask	10L	20L	30L	50L
Other models can be customized.				

Vacuum filter design:



Tel:0086-29-88763980

Email:info@toptionlab.com

info@toption-china.com

Web:www.toptionlab.com (for lab solution)

www.toption-china.com (for instrument)

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

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Reactor

 Pilot Ultrasonic
Emulsification Reactor

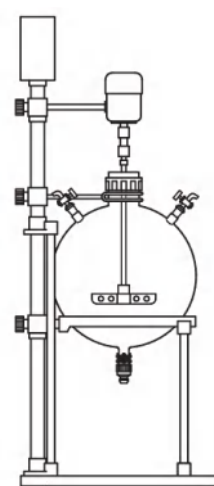
 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor


Glass liquid separator



	Model	TOPTF-10L	TOPTF-20L	TOPTF-30L	TOPTF-50L
Basic information	Reaction bottle(L)	10	20	30	50
	openings	3	3	3	3
	Stirring power(W)	120	120	250	250
	Speed(rpm)	40-720	40-720	40-720	40-720
	Stirring rod dia(mm)	φ10	φ10	φ12	φ12
	Voltage(V)	220	220	220	220
	Function and Configuration	frequency control	Have	Have	Have
Vacuum sealing		Have	Have	Have	Have
Bottom discharging valve		Have	Have	Have	Have
PTFE stirring rod		Have	Have	Have	Have
Size (mm)		450x550x1200	450x550x1200	550x650x1500	550x650x1700

Tel:0086-29-88763980

Email:info@toptionlab.com

info@toption-china.com

Web:www.toptionlab.com (for lab solution)

www.toption-china.com (for instrument)

Photochemical reactor

TOPTION factory have got technical supports from many professors of SJTU and NTU in developing period. TOPT series is mainly applied to research gas / liquid phases, fixed / simulated visible light, could reaction vessel load TiO_2 , Photochemical reaction under conditions of photocatalyst and so on. This series can provides samples of analytical reacting product and free radical, and to measure reacting kinetic constant, quantum yield; it is widely used in fields of Chemosynthesis, environment protection, and life science, etc.



Liquid phase photochemical reactor

1. TOPT-II used as liquid photochemical reactor, have several volume to choose:250ml,500ml,1000ml,2000ml,3000ml,5000ml. there are three opening port: gas inlet, temperature measure,sample inlet. Any other specifications can be customized.
2. TOPT-V are most suitable for university teaching and academic research, with small capacity: 30ml ,50ml ,100ml ,150ml, equip with silicone stopper. Temperature measure &control, gas inlet,gas outlet, sampling valve customization are available.



TOPT-II



TOPT-V



Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

Liquid phase photochemical reactor configuration



32 quartz test reactors



Chiller

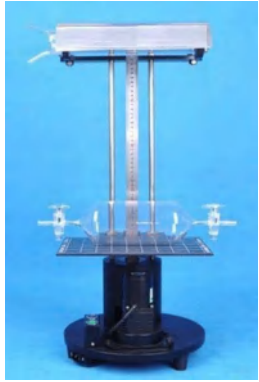


UV (cut off) filter

No.	Equipment list	TOPT-II	TOPT-V
1	Protecting box(which can prevent ultraviolet ray, but have observation window)	1	1
2	UV Lamp control system (Xenon lamp,Metal halide lamp control system are optional)	1	1
3	UV Lamp (xenon lamp, Metal halide lamp are optional)	1	1
4	Cold pit of quartz(which is used to reduce the heating of lamp)	1	1
5	Water shortage alarm(it will alarm when the water stop flowing, then you can shutoff the power)	1	1
6	Stainless steel working platform, bottom with wheels.	1	1
7	250ml glass reactor(there are 500ml,1000ml,2000ml,3000ml,5000ml are optional.)	1	0
8	30ml quartz test reactor(there are 10ml,50ml,100ml,150ml are optional)	0	8
9	Magnetic stirrer with one field	1	0
10	Magnetic stirrer with eight magnetic fields (which can do eight samples experiment at the same time)	0	1
Optional			
A	Chiller for cooling	Yes	yes
B	Filter(there are UV cut 400nm type and UV through type)	No	yes
C	32 quartz test reactors and magnetic stirrer with 32 magnetic fields(can do 32 samples experiments at the same time)	No	yes

Solid phase / Gas phase photochemical reactor

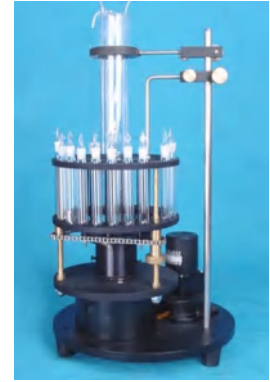
1. TOPT-7S used as pure solid phase photochemical reactor, we can customized various sizes depending on your needs.
2. TOPT-9G used as pure gas phase photochemical reactor, can be quartz gas reactor, also can be SS316 high-pressure reactor(TPR-HP series).



TOPT-7S / TOPT-9G solid outside illuminated type



Outside illuminated type



Configuration :

No.	Equipment list	TOPT-7S	TOPT-9G
1	Protecting box(which can prevent ultraviolet ray, but have observation window)	1	1
2	UV Lamp control system (Xenon lamp, Metal halide lamp control system are optional)	1	1
3	UV Lamp (xenon lamp, Metal halide lamp are optional)	1	1
4	Cold pit of quartz(which is used to reduce the heating of lamp)	1	1
5	Water shortage alarm(it will alarm when the water stop flowing, then you can shutoff the power)	1	1
6	Stainless steel working platform, bottom with wheels.	1	1
7	Strong and effective response cover, reflect light onto the sample	1	1
8	Lifting platform	1	1
9	Sample tray	1	0
10	Quartz gas reactor	0	1
Optional			
A	Chiller for cooling	Yes	yes
B	Filter(there are UV cut 400nm type and UV through type)	yes	yes
C	SS316 high-pressure reactor TPR-HP series	no	yes

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
-eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

TOPT- MINI photochemical reactor

1. Mercury lamp power supply controller can be made of 5W, 10W, 20W and other specifications,(optional 185NM, 254NM, 310NM, 360NM and other specifications).
2. Glass reaction vessel can be used 5ML,15ML,30ML,50ML,100ML,150ML and other specifications.
3. The quartz glass protection cold trap.
4. With the bottom aeration filter interface.
5. The reactor is provided with fixing device.
6. A portable box.



10ml mini type

Falling film photochemical reactor

Model	TOPT-200FR	TOPT-500FR	TOPT-700FR	TOPT-1500FR
Light source power	200W	500W	700W	1500W
Light source life	1000H	1000H	1000H	1000H
The effective long	57MM	77MM	97MM	128MM
The list layer type emulsifying capacity	500ML、1000ML、3000ML、5000ML			
The Double layer type emulsifying capacity	500ML、1000ML、3000ML、5000ML			
Glass structure	A type or B type			
Construction of the Falling speed	2000RPM			
Connect Material	PTFE			
Operate Material	316L			

Advantages of falling film photochemical reactor

1. An effective circulation of the liquid to be radiated inside the reactor.
2. Due to the falling film principle, an intensive radiation is reached.
3. Only a small liquid volume is necessary.
4. Operations in low temperature range ensure more application facilities.
5. Used materials Borosilicate glass 3.3, quartz glass and plastic parts of PTFE.

High pressure photochemical reactor vessel

1. Main components: stainless steel reaction vessel, PTFE sets, pressure quartz glass, filter etc.
2. Customization: -120°C~300°C High and Low Temperature Circulator, Overpressure release gas protection device, Taylor standard sieve.
3. This type high pressure photochemical reactor vessel need to use together with TOP-X series light source.

TPR-S series



TPR-HP series



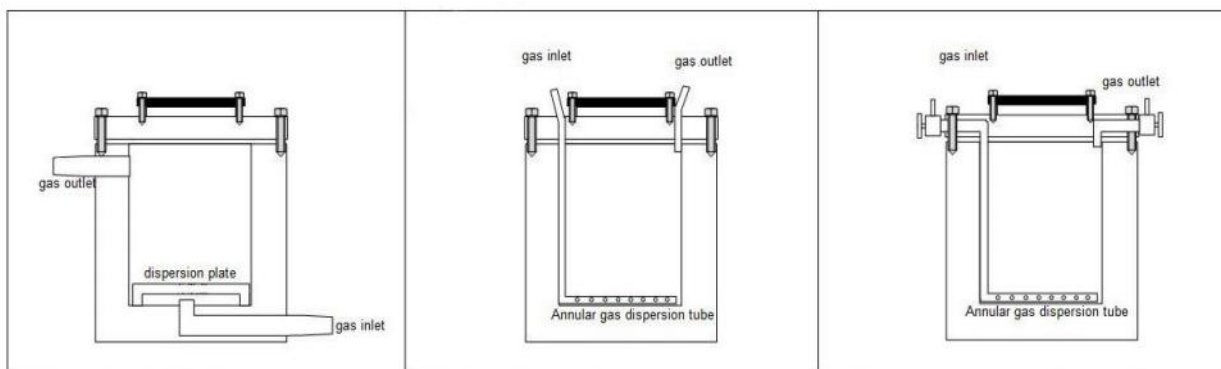
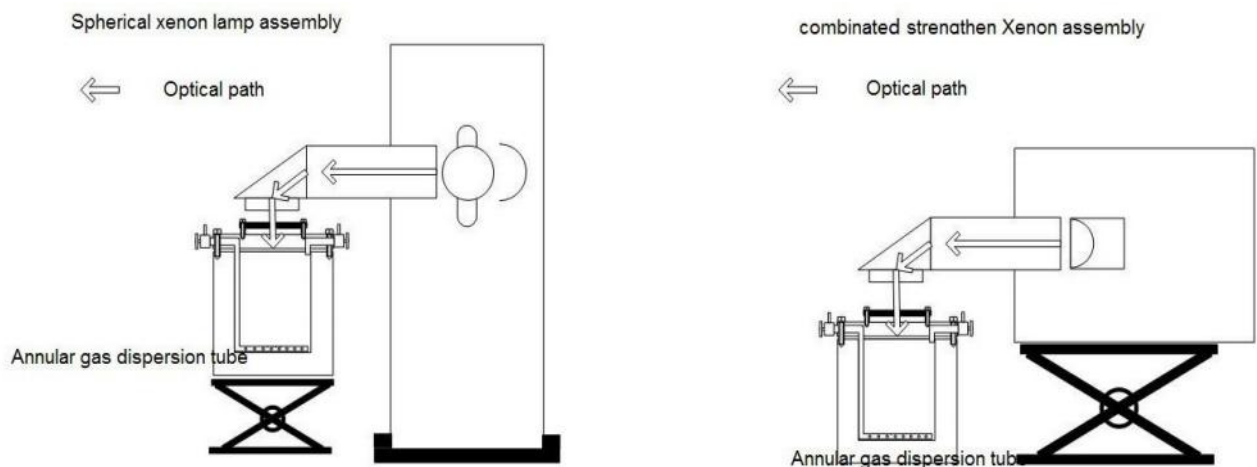
Technical specification:

Model	TPR-S150	TPR-S300	TPR-S500	TPR-S1000
Irradiation diameter	80MM	80MM	80MM	100MM
Pressure light window	have	have	have	have
Main material of the reaction vessel	Stainless steel 304 / (pure titanium / Hastelloy alloy material) optional			
Single corrosion PTFE inner capacity	150ML	300ML	500ML	1000ML
Jacket type corrosion resistant PTFE inner capacity (optional)	150ML	300ML	500ML	1000ML
Design pressure (optional)	2KG/5KG/10KG			

TPR-HP series

Model	TPR-HP150	TPR-HP300	TPR-HP500	TPR-HP1000
Light source type	Xenon/UV lamp			
Light source power	500W	500W	1000W	1500W
Light source life span	1000H	1000H	1000H	1000H
Radiation characteristics	Point source	Point source	Point source	Point source
Irradiation diameter	80MM	80MM	80MM	100MM
Cooling system	3 strong radiator			
Pressure light window	have			
Magnetic stirring apparatus	have			
Lifting platform	have			
The main material of the reaction vessel	Stainless steel 304 / (pure titanium / Hastelloy alloy material) optional			
Single corrosion PTFE inner capacity	150ML	300ML	500ML	1000ML
Jacket type corrosion resistant PTFE inner capacity (optional)	150ML	300ML	500ML	1000ML
Design pressure (optional)	2KG/5KG/10KG/20KG			

Customization provide, please refer to the below drawing :



1. A.SS316L inner, PTFE protection jacket can be attached. Strong acid and alkali resistance, excellent physical and chemical properties.
2. Actual bear max temperature of 900°C.
3. Actual bear positive pressure will base on your requests.
4. Bottom dispersion plate gas inlet.
5. Top visual and gripping filter.
6. Detachable lid and body.

1. B.SS316L inner,PTFE protection jacket can be attached.
2. Strong acid and alkali resistance, excellent physical and chemical properties.
3. Actual bear max temperature of 900°C
4. Actual bear positive pressure will base on your requests.
5. Bottom annular gas dispersion tube for gas inlet.
6. Top visual and gripping filter.
7. Detachable lid and body.

1. C. Full SS316L inner.
2. Strong acid & alkali resistance, excellent physical & chemical properties
3. Actual bear max temperature of 900°C .
4. Actual bear positive pressure will base on your requests Bottom annular gas dispersion tube for gas inlet.
5. Top visual and gripping filter.
6. Detachable lid and body.
7. Needle valve which can bear pressure to control gas inside.

Ultra low temperature photochemical reactor

1. TPRC ultra low temperature photochemical reactor is inner groove type, standard temperature is -20°C , is similar as magnetic stirrer bath.
2. temperature could be controlled under 0°C , and -40°C , -60°C , -80°C , -100°C , -120°C could be customized, capacity $\leq 1\text{L}$.



TPRC series ultra low temperature photochemical reactor

Technical specification:

Model	TPRC-250ML	TPRC-500ML	TPRC-1000ML	TPRC-5000ML	TPRC-50L	TPRC-100L
Mercury lamp	500W	500W	1000W	1000W	6000W	10000W
xenon lamp	500W	500W	1000W	1000W	6000W	10000W
Mercury xenon lamp	○	○	○	○	○	○
Mercury lamp power supply	500W	500W	1000W	1000W	6000W	10000W
Xenon lamp power supply	500W	500W	1000W	1000W	6000W	10000W
Mercury xenon lamp power	○	○	○	○	○	○
Lamp Protect Material	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz
Prevent from liquefaction device	●	●	●	●	●	●
Emulsifying capacity	250ML	500ML	1000ML	5000ML	50L	100L
Vacuum sealing Material	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Discharge	●	●	●	●	●	●
Reflux condensing	●	●	●	●	●	●
Stirring rod	●	●	●	●	●	●
Frequency converting	●	●	●	●	●	●
Protect box	●	●	●	●	●	●
Observe window	●	●	●	●	●	●
Low temp.supply pump	$-20^{\circ}\text{C} \sim$ Rt(optional)	$-20^{\circ}\text{C} \sim$ Rt(optional)	$-20^{\circ}\text{C} \sim$ Rt(optional)	$-20^{\circ}\text{C} \sim$ Rt(optional)	$-20^{\circ}\text{C} \sim$ Rt(optional)	$-20^{\circ}\text{C} \sim$ Rt(optional)
Power	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ

Note: ○— Increase choice ●—Change choice

Pilot photochemical reactor

1. Capacity: 5L, 10L, 20L, 30L, 50L, 100L.
2. Chiller is available.



TPR-M pilot type



100L type

Model	TPR-M5	TPR-M10	TPR-M20	TPR-M30	TPR-M50	TPR-M100
Mercury lamp	1000W	2000W	3000W	4000W	6000W	10000W
Xenon lamp	1000W	2000W	3000W	4000W	6000W	10000W
Mercury xenon lamp	○	○	○	○	○	○
Mercury lamp power supply	1000W	2000W	3000W	4000W	6000W	10000W
Xenon lamp power supply	1000W	2000W	3000W	4000W	6000W	10000W
Mercury xenon lamp power supply	○	○	○	○	○	○
Lamp Protect Material	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz
Prevent from liquefaction device	●	●	●	●	●	●
Emulsifying capacity	5L	10L	20L	30L	50L	100L
Vacuum sealing Material	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Discharge	●	●	●	●	●	●
Reflux condensing	●	●	●	●	●	●
Stirring rod	●	●	●	●	●	●
Frequency converting	●	●	●	●	●	●
Protect box	●	●	●	●	●	●
Observe window	●	●	●	●	●	●
Low temperature .supply pump	-30℃~Room temp	-30℃~Room temp	-30℃~Room temp	-30℃~Room temp	-30℃~Room temp	-30℃~Room temp
Power	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ	220V/50HZ

Note: ○ - Increase choice ● - Change choice

Long arc xenon lamp Source

Long arc xenon lamp and a controller for the laboratory and industrial test of the common light source, exclusive of ultrastable kernel, stable performance, rich achievements in scientific research, accept customization of products!

Main application:

Long arc xenon lamp were used to visible light of photochemistry, photocatalysis, light degradation of pollutants and photochemical synthesis research field on the stage of exploration. The light source is flexible and can be used for a long time.

Note: This type long arc xenon lamp source could be used together with TOPT-II, TOPT-V, TOPT-7S, TOPT-9G, TOPT-MINI, TOPT-FR, TPRC and TPR-M series photochemical reactor.

Technical specification:

Long arc xenon lamp source	
Model	TOPL-X100/ TOPL-X300 / TOPL-X500 /TOPL-X1500W/TOPL-X2000
Power	100W、 300W、 500W、 1000W、 1500W、 2000W
Simulative light source	Visible light / sunlight
Unique Features	Most super stable kernel, operating interface is simple and easy
Main peak wavelength range	400NM-780NM、 full-wave band etc.
Application	Inside-illuminated photochemical reactor / match with reflector could do outside-illuminated reaction
Suitable capacity	200ML、 250ML、 500ML、 1000ML、 2000ML、 5000ML (Optional)
Lamp tube down-lead	Single-ended / double-ended
Special request	Could equipped with light filtering liquid 、 optical filter
Power source	220V
Note: TOPTION provide LCD touch screen software control operating function!	

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation SystemChemical Glass
ReactorHigh Shear Homogen
-eous Emulsification
ReactorPilot Ultrasonic
Emulsification ReactorVacuum Filter / Glass
Liquid SeparatorPhotochemical
Glass ReactorHydrothermal
Synthesis ReactorHigh Pressure
Reactor

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

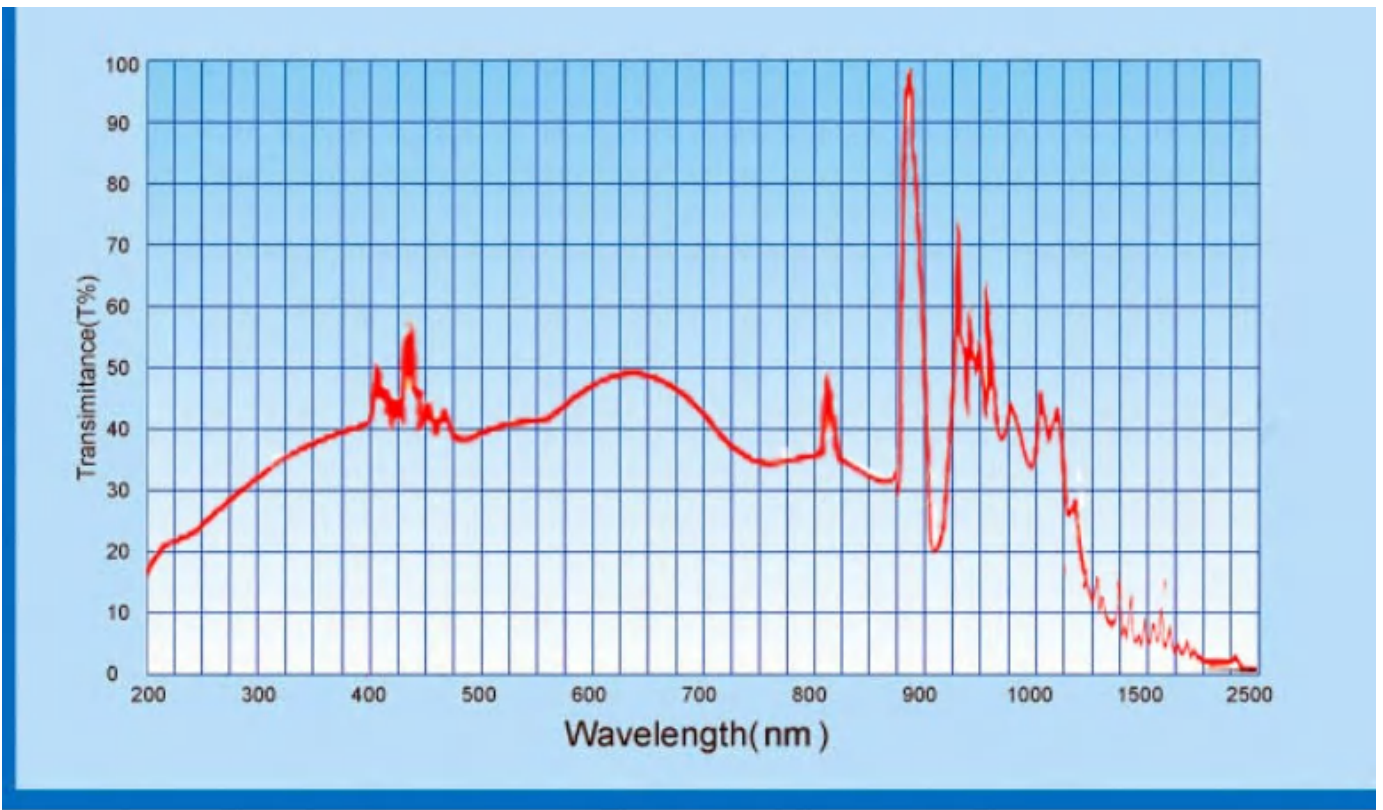
 High Shear Homogen-
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Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor


Long Arc UV lamp source

Long arc UV lamp and a controller for the laboratory and industrial test of the common light source, exclusive of ultrastable kernel, stable performance, rich achievements in scientific research, accept customization of products!

Main application:

Long arc UV lamp were used to visible light of photochemistry, photocatalysis, light degradation of pollutants and photochemical synthesis research field on the stage of exploration. The light source is flexible and can be used for a long time.

Note: This type Long Arc UV Lamp Source could be matched with TOPT-II, TOPT-V, TOPT-7S, TOPT-9G, TOPT-MINI, TOPT-FR, TPRC and TPR-M series photochemical reactor.

Long Arc UV Lamp Source & Controller (standard type)	
Model	TOPL-UV70/ TOPL-UV100/TOPL-UV150/TOPL-UV250 TOPL-UV300/TOPL-UV500/TOPL-UV1000/TOPL-UV1500/TOPL-UV2000
Power	70W、100W、150W、250W、300W、500W、1000W、1500W、2000W
Simulative light source	UV-light
Unique Features	Super stable kernel, operating interface is simple and easy
Starting voltage	High voltage / low tension (optional)
Main peak wavelength range	185NM、254NM、280NM、313NM、334NM、365NM、full-wave band etc
Application	Inside-illuminated photochemical reactor / match with reflector could do outside-illuminated reaction
Suitable capacity	200ML、250ML、500ML、1000ML、2000ML、5000ML (Optional)
Lamp tube down-lead	Single-ended / double-ended
Special request	Could equipped with light filtering liquid 、 optical filter
Power source	220V
Note: TOPTION provide LCD touch screen software control operating function!	

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

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-ous Emulsification
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Emulsification Reactor

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Liquid Separator

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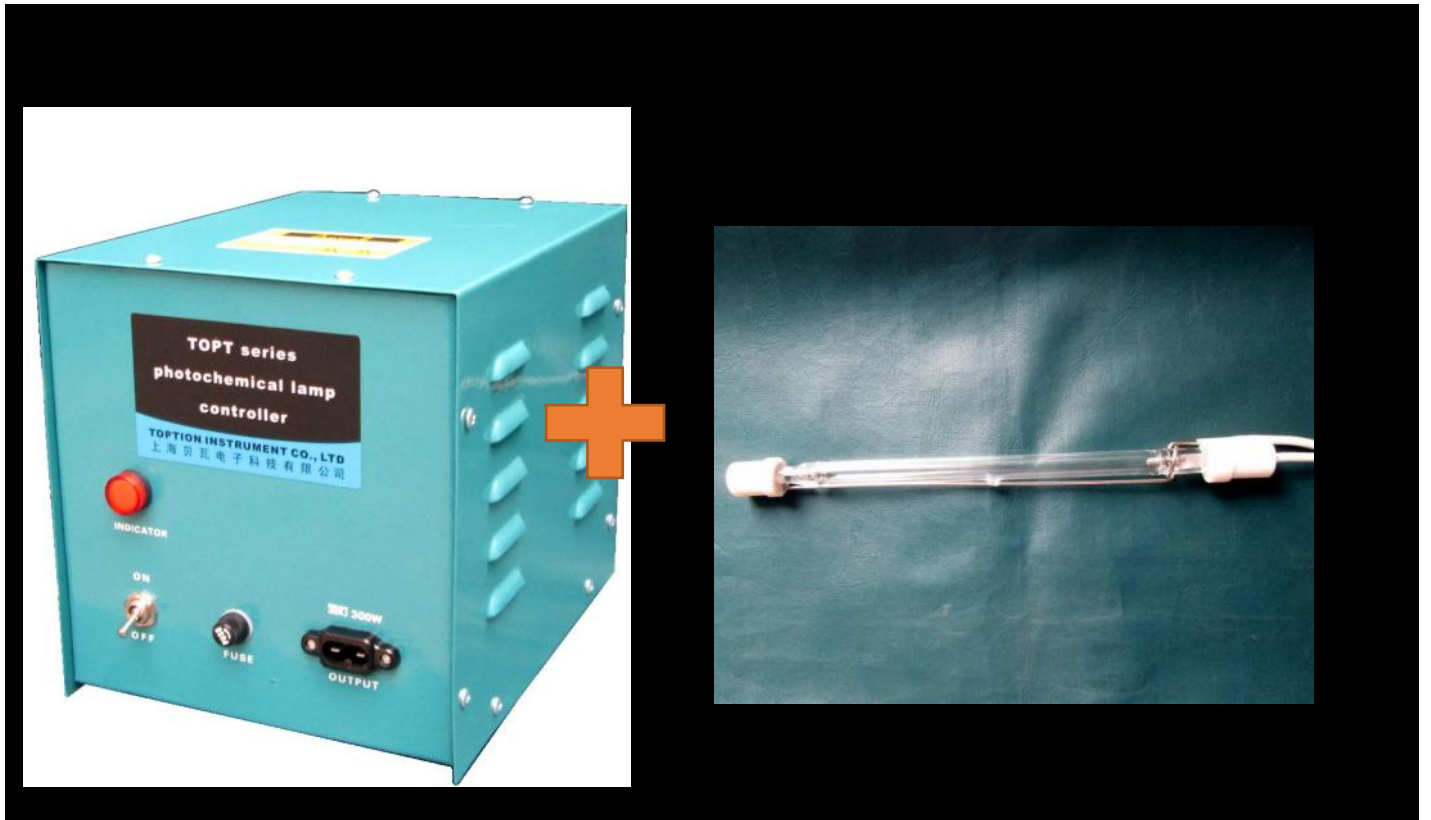
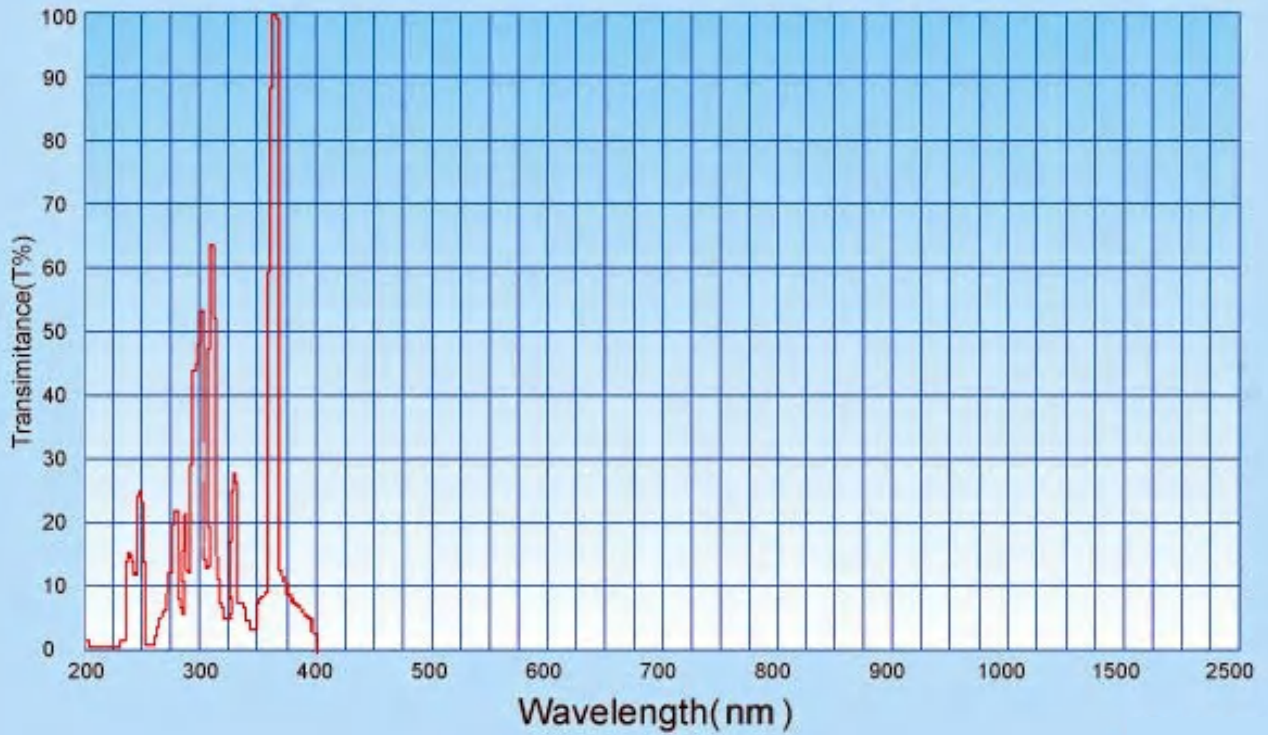
 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

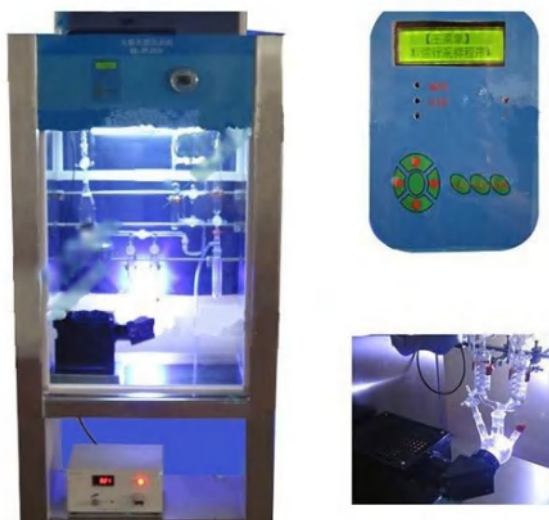
 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Spectral region as below:



Photocatalytic water splitting



Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation SystemChemical Glass
ReactorHigh Shear Homogen-
eous Emulsification
ReactorPilot Ultrasonic
Emulsification ReactorVacuum Filter / Glass
Liquid SeparatorPhotochemical
Glass ReactorHydrothermal
Synthesis ReactorHigh Pressure
Reactor

Major Components	
Photodegradation System	TPR-Solar system
Clean Bench	Clean Bench one set
General Frame	Stainless steel
Glass Piping System	<ol style="list-style-type: none"> Includes Transmission Light Reactor, Quartz Glass System. Use Six Flux Valve to Control Hydrogen Circulation. Stainless Steel Connection Support Frame Consists of 7 suits of (A-G) <ol style="list-style-type: none"> With Emptying Valve; Connect with Vacuum Meter and Vacuum; Connect with Electromagnetic Air pump; Condenser Pipe; Vacuum Pipe; Connect with Vacuum Pump and Cold Trap; Ground Glass Tube for Cold Trap Use; Glass and Metal Connection
Reactor	150ml or 250ml Silica Glass Split-type Reactor
Vacuum System	Pump Model: 2XZ-2, Produced by TOPTION company; Vacuum tubes, vacuum grease. Optional German Vacuum Pump(Price need to be Inquiry)
Fully automatic Sampling System	<ol style="list-style-type: none"> Consists of Precise Sampling Tube, Application Valve Body, and Control Panel, etc. Two Special joints for 3mm and 6 mm Gas Chromatography Glass Piping. Ten Meters of 3mm Chromatography Glass Piping. Two Joints for 3mm Chromatography Glass Piping and Chromatographic Instrument (GC system is optional)

Photocatalytic water splitting

UV Energy Meter	<ol style="list-style-type: none"> Wavelength Range (Either-or) <ol style="list-style-type: none"> No.1 Probe λ:400~1000nm; No.2 Probe λ:725~1050nm; Irradiance measurement range: 0.1~1.999\times105μW/cm² Degree of Accuracy:\pm5% (Related to NIM Standards) Repeatability: \pm1% Cosine Characteristics:$f_2 \leq 4\%$ Response Time: 1 Second Service Environment: Temperature 20\pm20$^{\circ}$C, Humidity <85% Size and Weight: 180\times80\times36mm, 0.2kg Power: 1 Piece of 9V Packed Cell
Vacuum Meter	<ol style="list-style-type: none"> Model DZA1 resistance vacuum gauge Testing Range: 100000(Atmosphere)~0.05Pa The output control: 220V/3A two-way relay(With Coded lock) Display units: Torr, Pa, mbar data output: RS485(with communication CD) (Option):0-5V,1-5V,4-20mA AO(analog output) Equipped Pipe: ZJ-52 or ZJ-52K Panel Size: 96W\times96H\times180D Opening Size: 92W\times92H
Filter	<p>Two Pieces</p> <ol style="list-style-type: none"> Transmission Optical filter with diameter of 50mm UV reflecting part, Transmission visible and Infrared parts,70mm*70mm square piece. These type is optional : 365nm , 380nm, 400nm, 420nm ,435nm,450nm,475nm, 500nm,520nm,550nm,UVRFE,UVCUT
Light Source	PE300BF(Imported from USA), 2000 hours life. Or you can choose China light source,1000 hours lift
TOP-X300	Power: 300W, External or projection type, Parallel light output.(TOPTION)
TOP-X300UV	Power:300W,Includes Integrated type 300W UV Reinforced Xenon LampExternal or projection type (TOPTION)
Light source Controller	Ballast, trigger, start-up system,300W Power supply for export
Light path switcher	Light path switching system
Metal Cooling unit	aluminum Cooling system
Lift Table	Stainless steel lift table 250*250mm used to adjust light illumination energy

Short Arc Xenon Lamp Source



Short Arc Xenon Light Source

1. Spectral range from UV to VIS(200-2500nm).

2. Optical axis height is 157-193mm.

3. Output beam diameter is 46mm.

4. Supports wide range of accessories.

5. Fan cooled housing.

Description:

Xe arc lamp light sources are the preferred artificial sources to simulate sunlight. The high color temperature(6000K) of the Xenon lamps is a close match to the solar temperature. This results in very similar solar spectra in the UV and VIS although the source has some Xe emissions lines in the near IR.

Application:

Application for fluorescence, Luminescence and Phosphorescence, Absorbance and Reflectance, Photochemistry, Photolithography, Detection of optical Schlieren, Solar simulation.

More light:

A spherical reflector collects the output from the rear of the lamp and focuses it on or near the arc, for collection by the condenser. The output is increased by as much as 60 %.

Lamp adjustment:

The housing has precise external lamp adjusters. They let you place the arc where you want it. This is important for simplifying fiber and slit illumination. In many applications, this eliminates the need for adjust any optics located beam path outside the housing.

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

Chemical Glass
Reactor

High Shear Homogen-
-eous Emulsification
Reactor

Pilot Ultrasonic
Emulsification Reactor

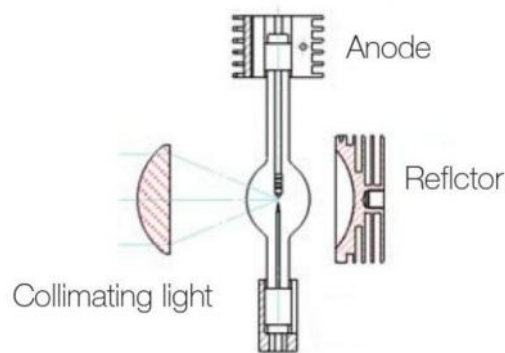
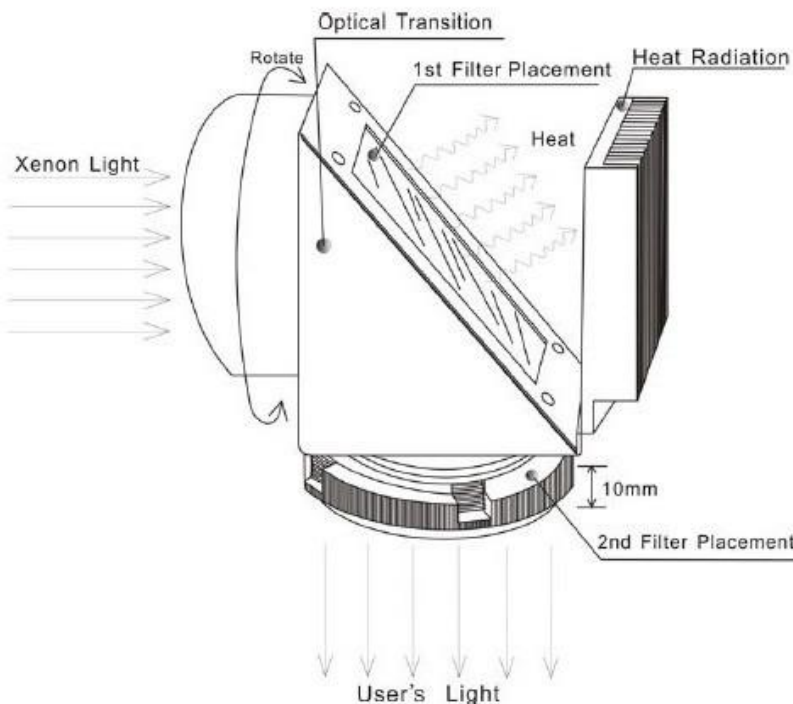
Vacuum Filter / Glass
Liquid Separator

Photochemical
Glass Reactor

Hydrothermal
Synthesis Reactor

High Pressure
Reactor

Lamp Adjustment



Reflector



Output beam

Short Arc Xenon Lamp Power Supply

Current and light ripple

Direct current generated by rectification always has a current ripple (superimposed on the direct current). Current ripple is the main factor of cathode fissioning and therefore greatly influences lamp luminous flux or radiant power and lamp life.

But for the most (scientific) applications the light ripple is most important. This not only depends on the current ripple, but on the operation conditions typical light ripple of our arc light sources is 0.5%.

Current or power adjust

During operation the tungsten from the electrodes evaporates slowly and deposits on the inside of the lamp envelope. This reduces the radiated output by up to 30% during lamp life. If application requires constant light output, the lamp current must be adjustable within a certain range.

Arc Lamp Power Supply



Short Arc Lamp Power Supply

Ordering Information:

To build a complete light source you will need: Lamp housing, condensing optics, lamp with appropriate adapter, electrical interface, cable and power supply. As an option we suggest the rear reflector for more output.

Model	Description	Details
TOP-X75	75W Xenon Light Source	75W Xenon Light Source includes housing (TSH-X75), power supply (TSP-X75) and Lamp (TSL-X75), the filter are optional, pls refer the following sheet.
TOP-X100	100W Xenon Light Source	100W Xenon Light Source includes housing (TSH-X100), power supply (TSP-X100) and Lamp (TSL-X100), the filter are optional.
TOP-X150	150W Xenon Light Source	150W Xenon Light Source includes housing (TSH-X150), power supply (TSP-X150) and Lamp (TSL-X150), the filter are optional.
TOP-X180	180W Xenon Light Source	180W Xenon Light Source includes housing (TSH-X180), power supply (TSP-X180) and Lamp (TSL-X180), the filter are optional.
TOP-X250	250W Xenon Light Source	250W Xenon Light Source includes housing (TSH-X250), power supply (TSP-X250) and Lamp (TSL-X250), the filter are optional.
TOP-X300	300W Xenon Light Source	300W Xenon Light Source includes housing (TSH-X300), power supply (TSP-X300) and Lamp (TSL-X300), the filter are optional.
TOP-X450	450W Xenon Light Source	450W Xenon Light Source includes housing (TSH-X450), power supply (TSP-X450) and Lamp (TSL-X450), the filter are optional.
TOP-X500	500W Xenon Light Source	500W Xenon Light Source includes housing (TSH-X500), power supply (TSP-X500) and Lamp (TSL-X500), the filter are optional.
TOP-X550	550W Xenon Light Source	550W Xenon Light Source includes housing (TSH-X550), power supply (TSP-X550) and Lamp (TSL-X550), the filter are optional.
TOP-X700	700W Xenon Light Source	700W Xenon Light Source includes housing (TSH-X700), power supply (TSP-X700) and Lamp (TSL-X700), the filter are optional.
TOP-X900	900W Xenon Light Source	900W Xenon Light Source includes housing (TSH-X900), power supply (TSP-X900) and Lamp (TSL-X900), the filter are optional.
TOP-X1000	1000W Xenon Light Source	1000W Xenon Light Source includes housing (TSH-X1000), power supply (TSP-X1000) and Lamp (TSL-X1000), the filter are optional.
TOP-X1600	1600W Xenon Light Source	1600W Xenon Light Source includes housing (TSH-X1600), power supply (TSP-X1600) and Lamp (TSL-X1600), the filter are optional.
TOP-X2000	2000W Xenon Light Source	2000W Xenon Light Source includes housing (TSH-X2000), power supply (TSP-X2000) and Lamp (TSL-X2000), the filter are optional.

Rotary Evaporator

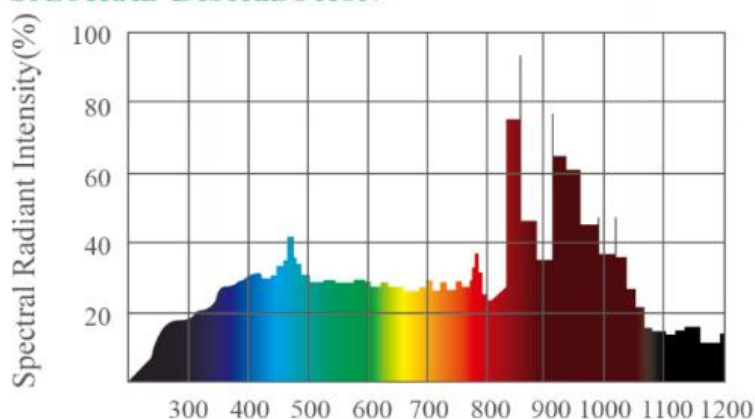
Scraped Film Evaporator /
Short Path (Molecular)
Distillation SystemChemical Glass
ReactorHigh Shear Homogen-
eous Emulsification
ReactorPilot Ultrasonic
Emulsification ReactorVacuum Filter / Glass
Liquid SeparatorPhotochemical
Glass ReactorHydrothermal
Synthesis ReactorHigh Pressure
Reactor

Optical filter

TOPTION optical filter has three types:

1. Catalyst evaluation type optical filter.
2. Sunshine ultraviolet accelerated analog optical filter.
3. UV-CUT optical filter.

SPECTRAL DISTRIBUTION



Catalyst evaluation type optical filter

Peak wavelength	254nm	350nm	365nm	380nm	400nm	420nm	435nm	450nm	475nm	500nm	520nm	550nm
Half-wave bandwidth	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm
Substrate material	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz
Dimension (mm)	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm

Model	Sunshine ultraviolet accelerated analog optical filter	UV-CUT optical filter	
	UVREF	UV-CUT400nm	UV-CUT420nm
Filter method	45° transmission-reflect type ultraviolet region	Transmission-reflect type ultraviolet region cut-off ability: 99.9%.	
Dimension (mm)	70*70mm	∅ 52mm	
Plating process	Hafnia epidural. Visible reflect, infrared transmission. 70*70*2mm	Hafnia epidural	
Substrate material	Quartz	Quartz	
Average reflectance	> 85%	\	
Reflecting region (nm)	250nm-400nm	\	
Visible-IR transmissivity	> 90%	\	

Short Arc UV Lamp Source

Ordering Information:

To build a complete light source you will need: Lamp housing, condensing optics, lamp with appropriate adapter, electrical interface, cable and power supply. As an option we suggest the rear reflector for more output.

Model	Description	Details
TOP-UV75	75W UV Light Source	75W UV Light Source includes housing ,power supply and Lamp, the filter are optional, pls refer the following sheet.
TOP-UV100	100W UV Light Source	100W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV150	150W UV Light Source	150W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV180	180W UV Light Source	180W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV250	250W UV Light Source	250W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV300	300W UV Light Source	300W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV450	450W UV Light Source	450W UV Light Source includes housing ,power supply and Lamp, the filter are optional.
TOP-UV500	500W UV Light Source	500W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV550	550W UV Light Source	550W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV700	700W UV Light Source	700W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV900	900W UV Light Source	900W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV1000	1000W UV Light Source	1000W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV1600	1600W UV Light Source	1600W UV Light Source includes housing ,power supply and Lamp , the filter are optional.
TOP-UV2000	2000W UV Light Source	2000W UV Light Source includes housing ,power supply and Lamp , the filter are optional.

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation SystemChemical Glass
ReactorHigh Shear Homogen-
eous Emulsification
ReactorPilot Ultrasonic
Emulsification ReactorVacuum Filter / Glass
Liquid SeparatorPhotochemical
Glass ReactorHydrothermal
Synthesis ReactorHigh Pressure
Reactor



Rotary Evaporator

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Short Path (Molecular)
Distillation System

 Chemical Glass
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-eous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

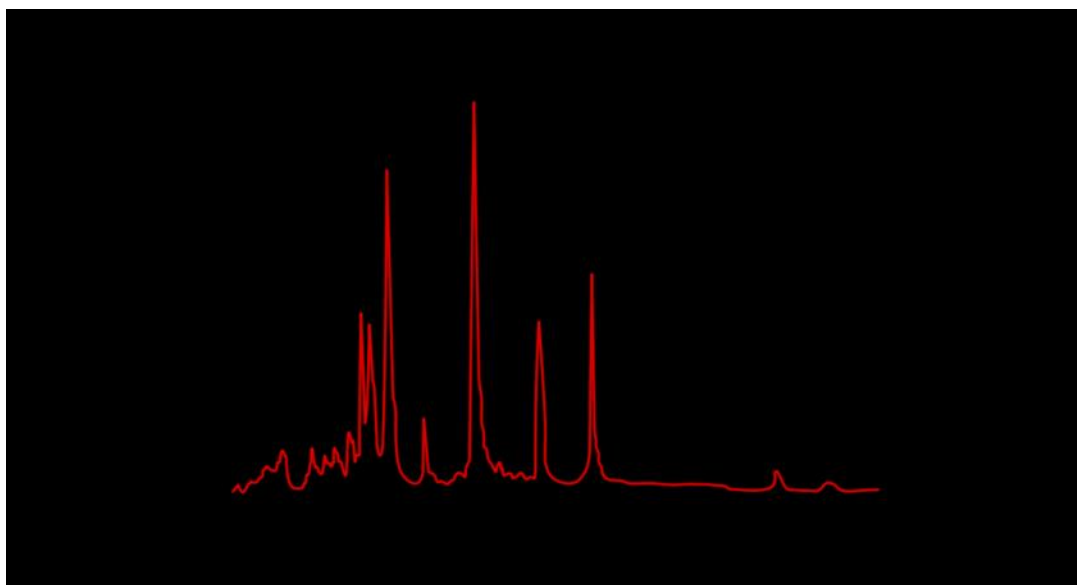
 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Optical filter

TOPTION optical filter has three types:Catalyst evaluation type optical filter.

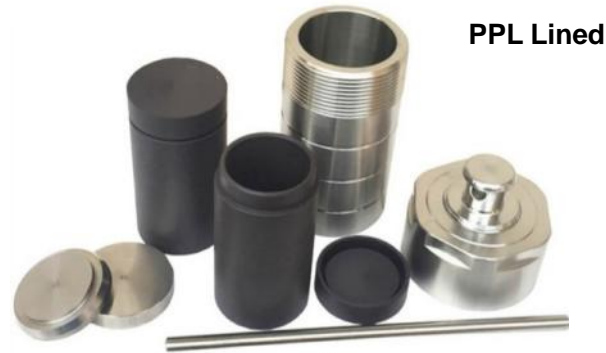


Catalyst evaluation type optical filter												
Peak wavelength	254nm	350nm	365nm	380nm	400nm	420nm	435nm	450nm	475nm	500nm	520nm	550nm
Half-wave bandwidth	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm	15nm
Substrate material	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz	Quartz
Dimension (mm)	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm	∅ 52mm

Hydrothermal synthesis reactor



PTFE Lined



PPL Lined

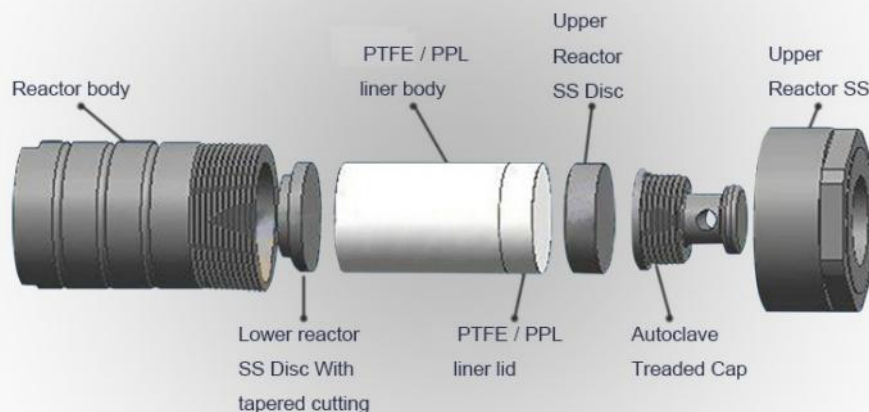
PTFE Liner (200°C)

Model	Material	Capacity	Remark
TOPT-HT10	1. Shell made of quality stainless steel.304L 2. Liner materials is special PTFE.	10ml	1. Safe temperature is 200°C.
TOPT-HT25		25ml	
TOPT-HT30		30ml	
TOPT-HT50		50ml	2. Working pressure ≤3 Mpa (surface pressure).
TOPT-HT100		100ml	
TOPT-HT150		150ml	3. Tempe heating and cooling speed: ≤ 5°C / min.
TOPT-HT200		200ml	
TOPT-HT250		250ml	
TOPT-HT300		300ml	4. Break down the refractory material quickly.
TOPT-HT400		400ml	
TOPT-HT500		500ml	
TOPT-HT1000		1000ml	
TOPT-HT1500		1500ml	
TOPT-HT2000	2000ml		

PPL Liner (260°C)

Model	Material	Capacity	Remark
TOPT-HP10	1. Shell made of quality stainless steel.304L 2. Liner materials is special PPL.	10ml	1. Safe temperature is 260°C.
TOPT-HP25		25ml	
TOPT-HP30		30ml	
TOPT-HP50		50ml	2. Working pressure ≤3 Mpa (surface pressure).
TOPT-HP100		100ml	
TOPT-HP150		150ml	3. Tempe heating and cooling speed: ≤ 5°C / min.
TOPT-HP200		200ml	
TOPT-HP250		250ml	
TOPT-HP300		300ml	4. Break down the refractory material quickly.
TOPT-HP400		400ml	
TOPT-HP500		500ml	

Please note: Shell can be made of SS316L or copper



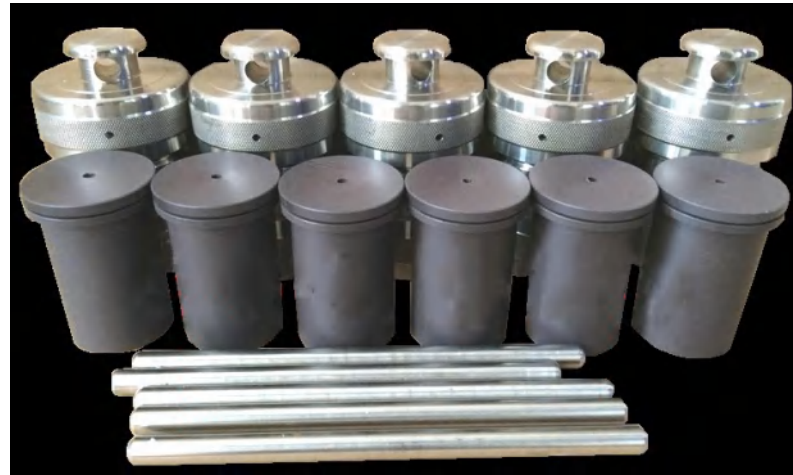
Rotary Evaporator
Scraped Film Evaporator / Short Path (Molecular) Distillation System
Chemical Glass Reactor
High Shear Homogeneous Emulsification Reactor
Pilot Ultrasonic Emulsification Reactor
Vacuum Filter / Glass Liquid Separator
Photochemical Glass Reactor
Hydrothermal Synthesis Reactor
High Pressure Reactor

Customization of hydrothermal synthesis autoclave reactor

1. Copper material hydrothermal synthesis reactor.



2. Pressure released vent type hydrothermal synthesis autoclave reactor.



3. High pressure vessel - with pressure gauge and gas needle valve

- Temperature $\leq 220^{\circ}\text{C}$.
- Pressure $\leq 3\text{MPa}$.
- Lined material: PTFE.
- Basic configuration: pressure gage, vent valve, gas outlet valve (support customize special request).
- Capacity range: 5ml, 10ml, 15ml, 25ml, 50ml, 100ml, 150ml, 200ml, 250ml, 300ml, 500ml, 1000ml.



4. Flange type hydrothermal synthesis autoclave reactor:



Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

 High Shear Homogen-
eous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

THR type high pressure reactor with magnetic stirrer

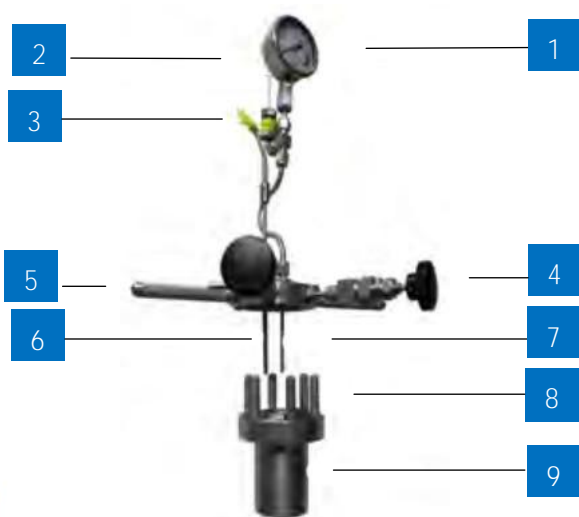
1.Application: Chemistry, Pharmaceutical, Macromolecule, Metallurgy, Environmental Protection,etc, chemical process areas. For instance: high pressure reaction, hydrogenation reaction, catalytic reaction, synthetic process, pharmaceutical synthesis, high pressure polymerization, nano synthesis, conditions screening, crystallization screening, combinatorial chemistry, biomass conversion, supercritical reaction, hydrothermal reaction, polymer synthesis, electrochemical corrosion testing, infrared detection,etc.

2.The maximum operating temperature of THR High Pressure Reactor is 250℃, use corrosive medium to do reaction, PTFE inner is optional, but its high temperature resistance is 180℃, so if the corrosive medium temperature is over 180℃, please choose other material reactors.

3.THR Series High Pressure Reactor adopt module heating method, which is quick heating and precise temperature control. THR series all are internal magnetic stirring, when magnetism arrive 250℃, degaussing phenomenon will happen, so if operating in over 250℃ condition, please choose TOPTION MHR Series High Pressure Reactor.



Detail description



- 1.Pressure Gage - monitor working pressure in reactor.
- 2.Explosion Valve - Protect reator overpressure working.
- 3.Temperature Sensor Plug - monitor the temperature in reactor, connect with thermocouple.
- 4.Needle valve - air inflow, exhaust or sampling.
- 5.Handlebar - to teardown reactor lid.
- 6.Temperature measure jacket tube - used to insert temperature sensor.
- 7.Accused of bottom tube - used to sample during reaction.
- 8.Reactor lid lock screw - uniform distribution 6pcs in total, clockwise is tight, anticlockwise is loose.
- 9.Reactor body - coefficient of material charging is 80% of reactor whole volume, not suitable for all kinds of medium.

THR type high pressure reactor with magnetic stirrer

1. Temperature display - display real time temp. when working.
2. Rotating speed display - display real time rotating speed during working.
3. Indicator lamp display - function indicator when working.
4. Temp & time set key [T-Set] - used to set temperature, timing, and parameters which is related with temperature & time.
5. UpKey - add key.
6. Down key and self set key - reduce key and self set key.
7. Lift key and check key - shift key and check working time & timing.
8. Speed set key - used to set speed and related parameters.
9. Working and stop key - start or stop working.



Technical specification

The stirring reactor laboratory miniature high-pressure reaction kettle

Model	THR50	THR100	THR250	THR500
Material capacity(L)	50ml	100ml	250ml	500ml
The working interface	LCD Display	LCD Display	LCD Display	LCD Display
The maximum operating temperature	250℃	250℃	250℃	250℃
The maximum operating temperature with PTFE Liner	180℃	180℃	180℃	180℃
Heating mode	Module heating	Module heating	Module heating	Module heating
The heating power	1.2KW	1.2KW	1.5KW	2.0KW
Stirring speed	0-1200rpm	0-1200rpm	0-1300rpm	0-1300rpm
Stirring method	The internal magnetic stirring	The internal magnetic stirring	The internal magnetic stirring	The internal magnetic stirring
The stirring power	40W	40W	40W	80W
The maximum working pressure	10Mpa	10Mpa	10Mpa	10Mpa
Materials of construction	SS304 (standard); (SS316L Alloy TA2, ALLOY C-276, Nickel ALIloy, Zirconium materials are optional)			
PTFE liner	Optional			
Note:				
1. Max volume 2000ml could be customized.				
2. Suitable for the material which temp <250℃ and is nonmagnetic.				
3. Temperature timing set, temp. set when working, this function is optional.				

MHR type high pressure reactor with magnetic coupling mechanical agitation

Configuration and description

1. Rotating speed and temperature control panel (LCD display and Nixie tube display are optional).
2. Internal heat collection heater.
- 3.4. Stainless steel reactor.
5. Air inlet valve (sampling valve).
6. Air exhaust valve.
7. Principal axis cooling jacket.
8. The coupling magnetic steel.
9. Sensor insert mouth.
10. Pressure meter.
11. Transmission flexible shaft.
12. Flexible shaft support frame.
13. Dynamical system.
14. MHR high pressure reactor is suitable for small capacity sample reaction, high temp, big viscosity or magnetism medium.
15. Safety explosion protection valve is 12.5MPa, digital display pressure meter is optional.
16. Max working temp:300°C, module electric heating, heating quickly and control temp precise.



Top entry type soft driving magnetic coupling mechanical agitation

Customization - temperature / rotating speed / Indicator lamp display, etc.

Model	MHR50	MHR100	MHR250	MHR500
Material capacity(L)	50ml	100ml	250ml	500ml
The working interface	LCD Display			
The maximum operating temperature	300°C	300°C	300°C	300°C
The maximum operating temperature with PTFE Liner	180°C	180°C	180°C	180°C
PPL liner	250°C	250°C	250°C	250°C
Heating mode	Module heating	Module heating	Module heating	Module heating
The heating power	1.2KW	1.2KW	1.5KW	2.0KW
Stirring speed	0-1200rpm	0-1200rpm	0-1300rpm	0-1300rpm
Stirring method	Rare earth permanent magnetic coupling drive			
The stirring power	40W	40W	40W	80W
The maximum working pressure	10Mpa	10Mpa	10Mpa	10Mpa
Materials of construction	SS316L (standard); (Alloy TA2, ALLOY C-276, are optional)			
PTFE liner/PPL liner	Optional			

- Note: 1. Max volume 2000ml could be customized.
 2. Suitable for the material which temp > 250°C and has magnetism, viscosity is a little big.
 3. Temperature timing set, temp. set when working, this function is optional.

THR (N) series high pressure reactor with magnetic stirrer

Rotary Evaporator

 Scraped Film Evaporator /
Short Path (Molecular)
Distillation System

 Chemical Glass
Reactor

 High Shear Homogen-
eous Emulsification
Reactor

 Pilot Ultrasonic
Emulsification Reactor

 Vacuum Filter / Glass
Liquid Separator

 Photochemical
Glass Reactor

 Hydrothermal
Synthesis Reactor

 High Pressure
Reactor

Parallel micro high pressure reactor do research with more than one THR series high pressure reactor at the same time, each THR high pressure reactor is equipped with independent heating, stirring and pressure component, to ensure every high pressure reactor could do research independent under different temperature, pressure and stirring speed conditions, so as to screen experimental conditions more quickly and optimize it.



The reaction kettle bit and volume could be flexible combination, for ordinary, has 2, 4, 6, 8 parallel high pressure reactor, you could customize based on your actual experimental requirements.



Standard configuration of Parallel micro high pressure reactor

- | | | |
|--------------------------------|------------------------------------|----------------------------------|
| 1. Pressure meter. | 2. Safety valve. | 3. Temperature sensor. |
| 4. Inlet valve. | 5. Sampling valve. | 6. Vent valve. |
| 7. Heating switch. | 8. Stirring switch. | 9. Rotating speed display meter. |
| 10. Temperature display meter. | 11. Rotating speed control button. | 12. Temperature control button. |
| 13. The first via inlet valve. | 14. The second via inlet valve. | |

THR (N) series high pressure reactor with magnetic stirrer



Technical specification

Model	THR50 (N)	THR100 (N)	THR250 (N)	THR500 (N)
The reaction kettle bit	N=2, 4, 6, 8			
Material capacity(L)	50ml	100ml	250ml	500ml
The working interface	Touch control liquid crystal display			
The maximum operating temperature	250℃	250℃	250℃	250℃
The maximum operating temperature with PTFE Liner	180℃	180℃	180℃	180℃
Heating mode	Module heating			
The heating power	1.2KW	1.2KW	1.5KW	2.0KW
Stirring speed	0-1200rpm	0-1200rpm	0-1300rpm	0-1300rpm
Stirring method	The internal magnetic stirring			
The stirring power	40W	40W	40W	80W
The maximum working pressure	10Mpa	10Mpa	10Mpa	10Mpa
Materials of construction	SS316L (standard); (Alloy TA2, ALLOY C-276, are optional)			
PTFE liner	Optional			

KCFD type mini high pressure reactor

Description

1. Make cumbersome experimental simple, it can be realized in one operation with different environments or with different environment temperature/ pressure diversified series of different experiments.
2. Through the RS232 communication interface a computer connected to print and show the historical value and the actual curve according to user's needs, the whole system can be monitored real time by software.
3. Catalysis, high temperature and pressure synthesis, dynamics testing, Fischer- tropsch, and hydrogenation reaction. Mainly used in the fields of biochemical, chemical material, environmental protection new material reaction, etc.



Small- high-pressure reactor (the Lid can rise ,the reactor can turn,without bottom discharge)	TOPT-KCFD025-10	1. Volume:0.25L 2. Design pressure: <10MPa 3. Temp:RT--300°C 4. Materials:SS304 5. Agitation type:with Mechanical agitation
	TOPT-KCFD03-10	1. Volume:0.3L 2. Design pressure: <10MPa 3.Temp: RT--300°C 4.Materials:SS304 5.Agitation type:with Mechanical agitation
	TOPT-KCFD05-10	1. Volume:0.5L 2. Design pressure: <10MPa 3. Temp:RT--300°C 4. Materials:SS304 5. Agitation type:with Mechanical agitation
	TOPT-KCFD1-10	1. Volume: 1L 2. Design pressure: <10MPa 3. Temp:RT--300°C 4. Materials:SS304 5. Agitation type:with Mechanical agitation
	TOPT-KCFD2-10	1. Volume: 2L 2. Design pressure: <10MPa 3. Temp:RT--300°C 4. Materials:SS304; 5. Agitation type:with Mechanical agitation
	TOPT-KCFD5-10	1. Volume: 5L 2. Design pressure: <10MPa 3. Temp:RT--300°C 4. Materials:SS304; 5. Agitation type:with Mechanical agitation

Rotary Evaporator

Scraped Film Evaporator /
Short Path (Molecular)
Distillation SystemChemical Glass
ReactorHigh Shear Homogen-
eous Emulsification
ReactorPilot Ultrasonic
Emulsification ReactorVacuum Filter / Glass
Liquid SeparatorPhotochemical
Glass ReactorHydrothermal
Synthesis ReactorHigh Pressure
Reactor

TFCF type hand-lifted high pressure reactor



Customization support

Technical specification

High-pressure reactor (the Lid can rise ,the reactor can not turn,with bottom discharge)	TOPT-TFCF1-10	<ol style="list-style-type: none"> 1. Volume: 1L 2. Design pressure: <10MPa 3. RT--300°C; 4. Material: SS304; 5. Type agitation:with Mechanical agitation
	TOPT-TFCF2-10	<ol style="list-style-type: none"> 1.Volume: 2L 2.Design pressure: <10MPa 3.RT--300°C; 4.Material: SS304; 5.Type agitation:with Mechanical agitation
	TOPT-TFCF5-10	<ol style="list-style-type: none"> 1.Volume: 5L 2.Design pressure: <10MPa 3.RT--300°C; 4.Material: SS304; 5.Type agitation:with Mechanical agitation
	TOPT-TFCF10-10	<ol style="list-style-type: none"> 1.Volume: 10L 2.Design pressure: <10MPa 3.RT--300°C; 4.Material: SS304; 5.Type agitation:with Mechanical agitation
	TOPT-TFCF20-10	<ol style="list-style-type: none"> 1.Volume: 20L 2.Design pressure: <10MPa 3.RT--300°C; 4.Material: SS304; 5.Type agitation:with Mechanical agitation

High pressure reactor customization



2L type



2L-4 parallel type



3L type



5L type



5L hand-lifting type



Reactor stirring part



10L type



50L type

More high pressure reactor, welcome contact with our specialist:
 0086-29-88763980
info@toptionlab.com
info@toption-china.com

Rotary Evaporator

Scraped Film Evaporator / Short Path (Molecular) Distillation System

Chemical Glass Reactor

High Shear Homogeneous Emulsification Reactor

Pilot Ultrasonic Emulsification Reactor

Vacuum Filter / Glass Liquid Separator

Photochemical Glass Reactor

Hydrothermal Synthesis Reactor

High Pressure Reactor



Make your research more accurate and efficient.



TOPTION INSTRUMENT CO.,LTD

Add:HeCheng, TaiBai Road, YanTa District, XI 'AN CHINA

Tel:0086-29-88763980

Fax:0086-29-88990306-8006

Email:info@toptionlab.com

info@toption-china.com

Web:www.toptionlab.com (for lab solution)

www.toption-china.com (for instrument)