Fractional Distillation Equipment

- > Essential Oil Distillation
- > Specialty Chemical Separation
- > Food/Flavor Isolation
- > Cosmetic Ingredient Refinement
- > High-Purity Electronics Manufacturing
- > Solvent Recycling & Recovery
- > API & Intermediate Purification







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Lab-Scale Fractional Distillation System

FDG-L Series

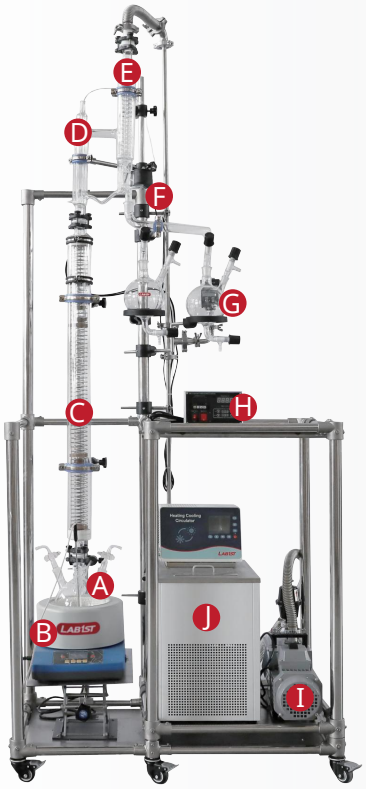
Capacity: 1–20L



- **Ideal For**
  > Lab-scale R&D, process exploration, and small-batch purification.
- **Electric Heating Mantle**
  > Provides efficient and adjustable heating up to 380°C
- **High Chemical Compatibility**
  > Constructed with borosilicate glass and PTFE, resistant to acids, alkalis, and organic solvents.
- **Visual Monitoring**
  > Transparent glass design allows real-time observation of gas/liquid flow and packing status.
- **Flexible Operation**
  > Supports both atmospheric and vacuum distillation (≤50Pa), suitable for heat-sensitive materials (e.g., vitamins, essential oils).
- **Modular Distillation Column**
  > Standard distillation column with electric heating insulation layer
  > Standard column diameters (Ø30/Ø35mm) and 1m height per section, customizable lengths available.
- **Diverse Packing Options**
  > Standard cpacking: ø6×18mm glass spring (10-15 plates/m)
  > Compatible with θ-rings, glass springs, Raschig rings, and structured packings for high-purity separation.
- **Easy Cleaning**
  > Smooth surfaces minimize residue and cross-contamination risks.
- **Precision Control**
  > Reduced-pressure distillation operations are enhanced by the optional vacuum control module providing automated regulation and stable pressure maintenance.

Model		FDG-1L	FDG-2L	FDG-3L	FDG-5L	FDG-10L	FDG-20L
Boiling Flask Capacity	[L]	1	2	3	5	10	20
Design Temperature Range	[°C]	RT+10 ~ +380	RT+10 ~ +380	RT+10 ~ +380	RT+10 ~ +380	RT+10 ~ +380	RT+10 ~ +380
Heating Power	[w]	650	650	730	1100	2100	3000
Stirring Speed	[rpm]	50-1800	50-1800	50-1800	50-1800	50-1800	0-2000
Distillation Column Diameter	[mm]	Ø30	Ø30	Ø30	Ø30	Ø30	Ø35
Distillation Column Height	[mm]	1000	1000	1000	1000	1000	1000
Condensing Area	[m^2]	0.25	0.25	0.25	0.35	0.45	0.7
Fraction Collector Quantity	[Qty]	2	2	2	2	2	2
Fraction Collector Capacity	[L]	1	1	1	2	2	5

Structure



【A】 Boiling Flask
【B】 Heating Mantle
【C】 Distillation Column
【D】 Reflux Head
【E】 Condenser
【F】 Electromagnetic Reflux Valve
【G】 Fraction Collector
【H】 Reflux Ratio Controller
【I】 Vacuum Pump (Optional)
【J】 Heating Cooling Circulator (Optional)

Optional Functional Modules


Heating cooling circulator


Various packing materials


Vacuum controller


Vacuum system options: rotary vane vacuum pump, corrosion-resistant vacuum pump or dry screw pump

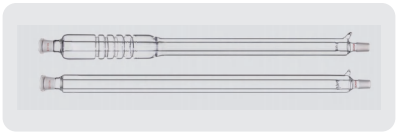

High-precision vacuum gauge


Dry ice cold trap

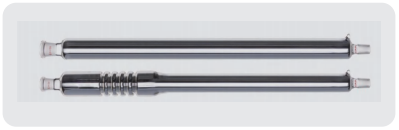

Dry ice cold trap with chiller

System Upgrades

> Vacuum-jacketed distillation column (with expansion bellows)



> Silver-plated vacuum-jacketed distillation column (with expansion bellows)



> Overhead stirrer + Magnetic coupling seal



> Customized system





Pilot-Scale Fractional Distillation System

FDG-J Series

Capacity: 1–200L

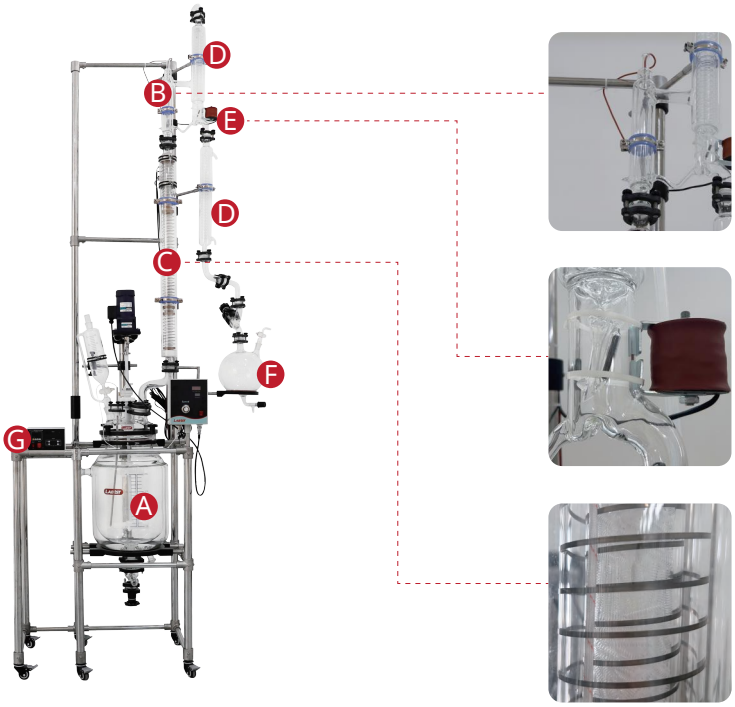


- **Ideal For**
  > Process scale-up, pilot trials, and small production batches.
- **Jacketed Heating System**
  > Features a fluid-circulating jacket for uniform heating, up to 250°C.
- **Efficient Mixing**
  > High-torque AC motor with PTFE stirrer blades to prevent bumping.
- **Easy Cleaning**
  > Discharge valve with no-dead-space design ensuresno residue.
- **Chemical Resistance**
  > Borosilicate 3.3 glass + PTFE components withstand acids/alka-lies/organic solvents
- **Visual Monitoring**
  > Full process visibility enables real-time observation of vapor/liquid flow and packing performance.
- **Vacuum/Atmospheric Operation**
  > Achieves ≤50Pa vacuum for gentle processing of heat-sensitive materials like essential oils.
- **Modular Distillation Columns**
  > Standard column with electric heating insulation layer
  > Column diameters (Ø30/Ø35/Ø40mm) and 1m height per section, customizable lengths available.
- **Packing Versatility**
  > Standard cpacking: ø6×18mm glass spring (10-15 plates/m)
  > Compatible with θ-rings, Raschig rings, structured packings, and other advanced fillings.
- **Stirring Precision**
  > High-torque AC motor with PTFE impellers and digital speed control prevents bumping.
- **Easy Cleaning**
  > Smooth non-stick surfaces and drain valves minimize cross-con tamination risks.
- **Precision Control**
  > Reduced-pressure distillation operations are enhanced by the optional vacuum control module providing automated regulation and stable pressure maintenance.





Structure



【A】 Jacketed Boiling Vessel
【B】 Reflux Head
【C】 Distillation Column
【D】 Condenser
【E】 Electromagnetic Reflux Valve
【F】 Fraction Collector



【G】 Reflux Ratio Controller



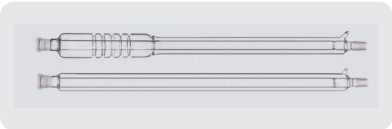
Pilot-Scale Fractional Distillation System

Model		FDG-1L-J	FDG-2L-J	FDG-5L-J	FDG-10L-J	FDG-20L-J
Boiling Vessel Size	[L]	1	2	5	10	20
Design Temperature Range	[°C]	RT ~ +250	RT ~ +250	RT ~ +250	RT ~ +250	RT ~ +250
Stirring Speed	[rpm]	50-600	50-600	50-600	50-600	50-600
Distillation Column Diameter	[mm]	Ø30	Ø30	Ø30	Ø30	Ø35
Distillation Column Height	[mm]	1000	1000	1000	1000	1000
Primary Condensing Area	[m^2]	0.1	0.1	0.1	0.1	0.1
Secondary Condensing Area	[m^2]	0.18	0.18	0.18	0.18	0.18
Fraction Collector Quantity	[pcs]	2	2	2	2	2
Fraction Collector Capacity	[L]	1	1	1	2	5

Model		FDG-50L-J	FDG-100L-J	FDG-150L-J	FDG-200L-J
Boiling Vessel Size	[L]	50	100	150	200
Design Temperature Range	[°C]	RT ~ +250	RT ~ +250	RT ~ +250	RT ~ +250
Stirring Speed	[rpm]	50-600	50-600	50-600	50-600
Distillation Column Diameter	[mm]	Ø40	Ø40	Ø40	Ø40
Distillation Column Height	[mm]	1000	1000	1000	1000
Primary Condensing Area	[m^2]	0.1	0.1	0.25	0.25
Secondary Condensing Area	[m^2]	0.18	0.18	0.18	0.18
Fraction Collector Quantity	[pcs]	2	2	2	2
Fraction Collector Capacity	[L]	5	5	30	50

System Upgrades

> Vacuum-jacketed distillation column (with expansion bellows)

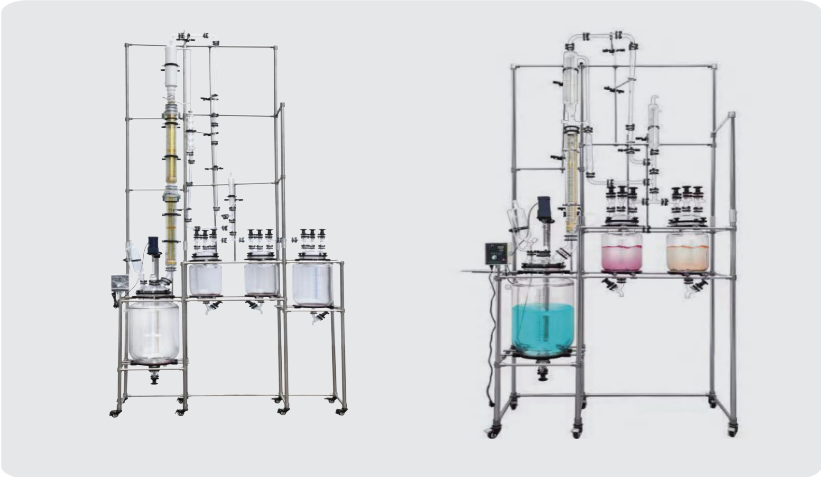


> Silver-plated vacuum-jacketed distillation column (with expansion bellows)



> PLC control system

> Customized system



Optional Functional Modules



Heating cooling circulator



High-precision vacuum gauge



Various packing materials



Vacuum controller



Vacuum system options: rotary vane vacuum pump, corrosion-resistant vacuum pump or dry screw pump



Insulation Jacket



Heater for jacketed vessel



Dry ice cold trap



Dry ice cold trap with chiller

Pilot-Scale Fractional Distillation System

FDS-L Series

Capacity: 5–1000L or larger



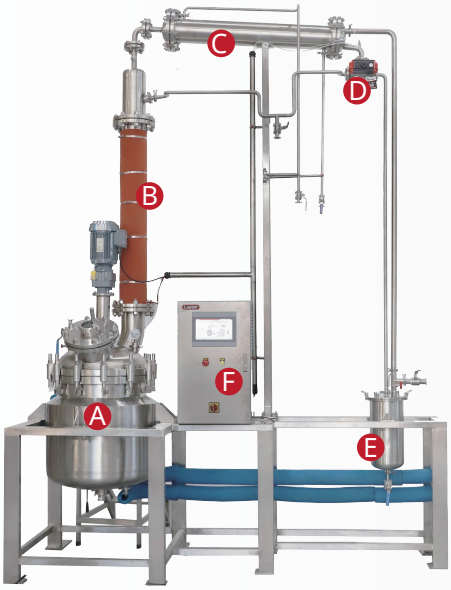
- **Ideal For**
  > Industrial production, reaction-distillation integration, and high-purity manufacturing.
- **Industrial-Grade Materials**
  > SUS316 and PTFE wetted parts for broad chemical compatibility.
- **Diameter Sizes Available**
  > Diameter sizes available: 50mm [2"], 75mm [3"], 100mm [4"], 150mm [6"], 200mm [8"], 250mm [10"], 300mm [12"]
- **Sections**
  > Standardized to 0.9m [3'], 1.2m [4'] length, providing approximately 15 theoretical plates per section. Alternate lengths are also available.
- **Weld Seam Finishing Treatment**
  > Welds are fine ground as standard. Mechanical and electropolishing available for high purity or pharmaceutical applications.
- **Advanced Process Control**
  > Siemens PLC with touchscreen HMI enables full automation of critical parameters
- **Optimized Thermal Design**
  > Boiling vessel includes insulation layer while columns feature electrically heated insulation jacket.

Model		FDS-5L	FDS-10L	FDS-20L	FDS-50L	FDS-100L
Boiling Vessel Size	[L]	5	10	20	50	100
Temperature Range	[°C]	RT ~ +220	RT ~ +220	RT ~ +220	RT ~ +220	RT ~ +220
Stirring Speed	[rpm]	50-600	50-600	50-600	50-600	50-600
Distillation Column Diameter	[mm]	50 [2"]	50 [2"]	50 [2"]	75 [3"]	100 [4"]
Distillation Column Height	[m]	0.9 [3']	0.9 [3']	0.9 [3']	1.2 [4']	1.2 [4']
Primary Condensing Area	[m^2]	1	1	1	1	1.5
Secondary Condensing Area	[m^2]	0.3	0.3	0.3	0.3	0.6
Fraction Collector Quantity	[qty]	2	2	2	2	2
Fraction Collector Capacity	[L]	5	5	5	10	20

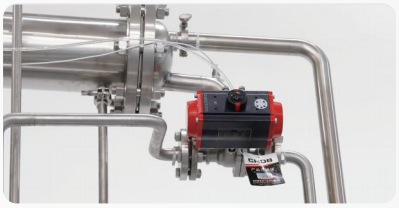
Model		FDS-150L	FDS-300L	FDS-500L	FDS-1000L
Boiling Vessel Size	[L]	150	300	500	1000
Temperature Range	[°C]	RT ~ +220	RT ~ +220	RT ~ +220	RT ~ +220
Stirring Speed	[rpm]	50-600	50-350	50-350	50-350
Distillation Column Diameter	[mm]	150 [6"]	200 [8"]	255 [10"]	300 [12"]
Distillation Column Height	[m]	1.2 [4']	1.2 [4']	1.2 [4']	1.2 [4']
Primary Condensing Area	[m^2]	2	3	5	5
Secondary Condensing Area	[m^2]	0.6	1	1.5	2
Fraction Collector Quantity	[qty]	2	2	2	2
Fraction Collector Capacity	[L]	50	50	100	250



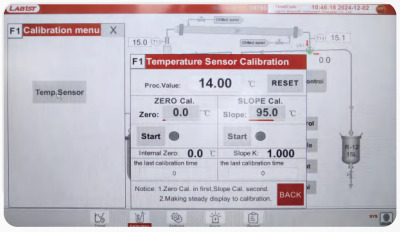
Structure



【A】 Jacketed Boiling Vessel
【B】 Distillation Column
【C】 Condenser
【D】 Electromagnetic Reflux Valve



【E】 Fraction Collector
【F】 PLC Contoller



System Upgrades

> Electric heating with vacuum/silver-coated insulation for columns.

> Customization System

> Automatic control of vacuum and pressure

Optional Functional Modules



Heater for jacketed vessel



Industrial water chiller for condenser



Vacuum system options: Water-jet vacuum pump, rotary vane vacuum pump, industrial water-jet vacuum pump system or dry screw pump



Various packing materials