

# INSTRUCTION MANUAL

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## Vacuum Filtration System

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### Model No.

Rocker 300 - LF 30 / LF 31 / LF 30 - SS

Rocker 300 - MF 31 / SF 10 / SF 30

Rocker 300C - VF 12

Chemker 300 - VF 12

Tech support



# ROCKER

Please read this instruction manual before using this product.



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# 1. Important Notice

This instrument is designed for laboratory usage only. Please read this manual carefully before installing and operating. The instrument shall not be modified in any way. Any modification will void the warranty and may result in potential hazard. We are not responsible for any injury or damage caused by any non-intended purposes and modifying the instrument without authorization.

1. Check the voltage specified on the name plate and ensure it matches the line voltage in your location.
2. Install the instrument in a clean, dust-less and ventilated area under 40°C.
3. Never use the pump with any flammable or toxic material.
  - Do **NOT** use Rocker 300 with any chemicals and corrosives.
  - Rocker 300C, the PTFE coated diaphragm and chamber, offers good resistance to wide range of chemicals except strong acid and alkali.
4. The pump is not designed to start against applied vacuum. To prevent damage, verify that the inlet of pump is at atmospheric pressure before each start. If necessary, partially unscrew the vacuum regulator knob to vent to atmosphere.  
(For Chemker 300, please remove the tube or membrane to vent.)
5. The protection device of Rocker 300 Vacuum Pump:
  - To ensure proper function of the Prote™ device, the pump must be installed on a flat, level surface and should not be moved during operation. If the buoy closes during use, manually reset it by removing and reinstalling the filter cartridge.
  - The filter cartridge absorbs moisture and dust. Replace the cartridge to maintain pumping efficiency when it becomes dirty or color-changing.
6. The pump has a thermal protection device that automatically shuts-off when it becomes overheated.
7. The temperature of the pump surface is very high after use or during work, please don't touch it to avoid being burnt.
8. The pump must not be used to create vacuum and pressure simultaneously.

9. Do not use any lubricant, which may damage the pump.
10. Filtration accessories, including overflow protection, are compatible with most low-concentration acids, alkalis, and organic solutions but not all. Refer to the chemical compatibility chart before using.
11. For any issues with instrument, please contact the manufacturer or service agent for assistance. Do NOT disassemble it improperly.
12. Please discard packing materials according to local regulations.
13. Visit the official website and the latest product guide for detailed information.
14. Operating condition
  - (a) Ambient temperature: 5 ~ 40°C
  - (b) Relative humidity: 80% RH Max.
  - (c) Power supply: 100-120V~, 50/60Hz or 200-240V~, 50/60Hz
  - (d) Altitude: up to 2000 m
  - (e) Pollution degree: II
  - (f) Indoor use



Caution: Hot surface

*\* Before operation, check the compatibility of pump (including pump head, valve plates, piston seal, and diaphragm) and filtration apparatus materials with used medium.*

## 2. Unpacking

Please check if the package is complete without any damage before unpacking. When unpacking, please make sure you have all accessories that indicated on the list. If there is any problem, please keep the serial number along with packing case and contact your local distributor immediately for assistance.

(1) **Rocker 300 Series: Vacuum Filtration System**



Rocker 300 - LF 30



Rocker 300 - LF 30 - SS

Model	Standard Package Includes:
Rocker 300 - LF 30	Rocker 300, Oil Free Vacuum Pump (with Hoop holder)
	LF 30, Filtration Set
	Silicone Tube
	Instruction Manual
Rocker 300 - LF 30 - SS	Glass Fiber Membrane Filter, 47 mm, 1 $\mu$ m, 100/PK



Rocker 300 - LF 31



Rocker 300 - MF 31

Model	Standard Package Includes:
Rocker 300 - LF 31	Rocker 300, Oil Free Vacuum Pump
	LF 31, Filtration Set
	Silicone Tube
	Instruction Manual

Model	Standard Package Includes:
Rocker 300 - MF 31	Rocker 300, Oil Free Vacuum Pump
	MF 31, Filtration Set
	Silicone Tube
	Instruction Manual



Rocker 300 - SF 10



Rocker 300 - SF 30

Model	Standard Package Includes:
Rocker 300 - SF 10	Rocker 300, Oil Free Vacuum Pump (with Hoop holder)
	SF 10, Stainless Steel Filtration Set
	Dragon 100, Torch Burner
	MCE Membrane, 47 mm, 0.45 $\mu$ m, 200 pcs
	Silicone Tube
	Instruction Manual

Model	Standard Package Includes:
Rocker 300 - SF 30	Rocker 300, Oil Free Vacuum Pump (with Hoop holder)
	SF 30, Stainless Steel Filtration Set
	Silicone Tube
	Instruction Manual



(2) Rocker 300C / Chemker 300 Series: Vacuum Filtration System



Rocker 300C - VF 12



Chemker 300 - VF 12

Model	Standard Package Includes:
Rocker 300C - VF12	Rocker 300C, PTFE Coated Chemical Resistant Vacuum Pump (with Hoop holder)
	VF 12, Glass Filtration Set
	Silicone Tube
	Instruction Manual

Model	Standard Package Includes:
Chemker 300 - VF12	Chemker 300, Chemical Resistant Vacuum Pump
	VF 12, Glass Filtration Set
	Silicone Tube
	Instruction Manual

# 3. Main Part Diagram

## (1) Vacuum Pump

Rocker 300



Item	Designation	Item	Designation
1	Power Switch	5	Moisture Trap
2	Air Outlet	6	Vacuum Regulator
3	Air Inlet	7	Prote™ Filter Cartridge
4	Vacuum Gauge		

- Rocker 300 vacuum pumps is equipped with copper muffler at the air outlet.

Rocker 300C



Chemker 300



## (2) Parts Material List

- Vacuum Pump

Model	Material			
	Pump head	Valve plates	Piston seal	Diaphragm
Rocker 300	Aluminum alloy	FKM	PTFE complex	-
Rocker 300C	PTFE coated	FKM	-	PTFE coated
Chemker 300	PTFE	FFKM	-	PTFE coated

- Filtration Apparatus

Model	Material contacts with filtrates	
	Filter Holder	Receiver Bottle
LF 30	PES, PC, PP	PC
LF 31	PES, PC, PP	Borosilicate Glass
MF 31	PES	Borosilicate Glass
SF 10	SS316	PC
SF 30	SS316	PC
VF 12	Borosilicate Glass	Borosilicate Glass

- Listed material exclude parts not in direct contact with the filtrate, such as funnel lid and silicone stopper.  
For material details of each part, please refer to the official website for the latest information.
- The drain hoses of LF 31 and MF 31 are made of rubber and are non-autoclavable.

# 4. Installation and Operation

## (1) Installation

Assemble the filtration apparatus as shown below.

Filtration Apparatus Installation		
LF 30	LF 31	MF 31
VF 12	SF 10 / SF 30	Overflow Protection
		<p>Included in Filtration Apparatus: LF 30, SF 10, SF 30</p>

## (2) Operation

- A. Turn on the pump, block the inlet (3), and regulate the desired vacuum by vacuum regulator (6).
- A trap bottle is recommended to connect before pump when handling moisture-rich samples.
  - An optional glass vapor trap / vacuum regulator (169311-06) is available for Chemker 300 pump.
- B. Connect the filtration apparatus to pump inlet (3) using a silicone tube.
- For models with Hoop holder: lift the Hoop, place the filtration apparatus into Hoop, and press down gently to secure it and save space.
  - If overflow is a concern, install a safety bottle (197000-60-500) between pump and filtration apparatus.
- C. Place the proper membrane in the filter holder, pour sample liquid and turn on the pump to start filtration.
- A GL45 filtration adaptor (197100-65) is available for direct filtration into a laboratory glass bottle.
  - A continuous filtration kit for 300 mL glass filter holder (167210-36) is available.
- D. After filtration, turn off the pump and retrieve the membrane.
- E. Check the liquid level in moisture trap (5) daily, and drain it when it reaches the neck of the bottle.

### *\* Warning:*

*Please ensure the liquid level in moisture trap and flask does not exceed safety limit. Failure to comply may cause serious damage to the pump and void the warranty. If this occurs, please contact your distributor immediately for service.*



Filtration System Assembly Diagram



Using a safety bottle  
to prevent from overflowing

## 5. Maintenance

1. The vacuum pump is not autoclavable. Please clean the surface by pure water or 75% ethanol.
2. After finishing the experiment, please remove the liquid in the moisture trap and keep pumping the air for at least 2 minutes to withdraw the residual steam.
3. Please remove the liquid in the moisture trap after every use. If the liquid in moisture trap is more than 70%, please stop the experiment immediately to empty the liquid.
4. Filtration apparatus and accessories are autoclavable (121°C, 1 bar, 20 min). Please make sure to rinse the apparatus with pure water and separate each part before autoclave.
  - The rubber hose of MF 31 and LF 31 is non-autoclavable, please remove it before autoclaving.
5. Do **NOT** autoclave the plastic parts, such as filter holder, with aluminum foil. It is always recommended to autoclave the funnels in autoclave bags.
6. Funnels, support base and membrane support of SF 10 and SF 30 are made of SS316 which can be fast sterilized by flame or autoclaved.
7. Valve plate(s), O-ring(s), silicone tube(s), muffler and diaphragm are consumables, it is recommended to replace it on a yearly basis or as needed to ensure good operation.

### • How to reset the Prote™ protection device (Rocker 300)

1. Remove the moisture trap (5) and filter cartridge (7) by rotating clockwise.
2. Disassemble the filter cartridge (7) to ensure the buoy is not closed.
3. Reinstall all components, filter cartridge and moisture trap back.

### • How to replace cartridge (Rocker 300)

1. Please replace the cartridge when it becomes dirty or color-changing.
2. Please remove the moisture trap (5) by rotating it clockwise.
3. Replace the cartridge by the same way.

## 6. Troubleshooting

Problem	Reason and Solution
Failed to start	<ul style="list-style-type: none"> <li>• Loose plug → Reconnect plug to power supply.</li> <li>• Wrong voltage → Reconnect to power specified on name plate.</li> <li>• Vacuum or pressure exists → Release vacuum / pressure and restart.</li> <li>• Switch is broken → Contact distributor for assistance.</li> </ul>
Failed to adjust vacuum	<ul style="list-style-type: none"> <li>• Loose regulator → Tighten regulator by yourself or contact distributor for assistance.</li> <li>• Faulty vacuum regulator → Contact distributor for assistance.</li> <li>• Faulty vacuum gauge → Contact distributor for assistance.</li> </ul>
Poor vacuum	<ul style="list-style-type: none"> <li>• Improperly vacuum setting → Adjust the vacuum regulator.</li> <li>• Clogged muffler → Replace a new muffler.</li> <li>• Air leakage → Replace or tighten the tubing and accessories that possible leaks.</li> </ul>
Low filtration speed	<ul style="list-style-type: none"> <li>• Improperly vacuum setting → Adjust the vacuum regulator.</li> <li>• Air leakage → Replace or tighten the tubing and accessories that possible leaks.</li> <li>• Full vacuum bottle → Empty the vacuum bottle.</li> <li>• Unsuitable membrane → Change an appropriate membrane.</li> <li>• Membrane is blocked → Replace a new membrane.</li> </ul>
Others	<ul style="list-style-type: none"> <li>• Contact distributor for assistance.</li> </ul>

# Ordering information

197010-30/31	LF 30 / LF 31, Filtration Set
200320-31	MF 31, Filtration Set
197010-32/33	SF 10 / SF 30, Stainless Steel Filtration Set
167200-12	VF 12, Glass Filtration Set
197000-01	LF 3, Spin-Lock Filter Holder (300 mL)
197000-06	LF 5, Spin-Lock Filter Holder (500 mL)
200300-01(-P)	MF 3 (Pro), Magnetic Filter Holder (300 mL)
200500-01(-P)	MF 5 (Pro), Magnetic Filter Holder (500 mL)
180100-10/30/50	SF 1 / SF 3 / SF 5, Stainless Steel Filter Holder (100 mL / 300 mL / 500 mL)
180100-01/03/05	SF Stainless steel funnel 100 mL / 300 mL / 500 mL
180100-31	Stainless steel support screen for SF Filter Holder
180100-11	Stainless steel funnel lid for SF 100 mL funnel
180100-13	Stainless steel funnel lid for SF 300 mL / 500 mL funnel
167120-31	Glass Filter Holder (300 mL)
167210-36	Continuous Filtration Kit for 300 mL Filter Holder
197100-65	GL45 filtration adaptor
197000-11-PC	PC Vacuum bottle, 1200 mL
167250-03	Receiver flask, 1000 mL
167300-08	Receiver flask with drain, 1000 mL
167200-45	Silicone fixing sucker for receiver flask, 1000 mL
167200-47	4000 mL Heavy Duty PP Vacuum Bottle
180300-68	Silicone tube, Ø 8 x 14 mm, 200 cm
167200-38	Silicone tube, Ø 6 x 12 mm, 100 cm
167100-20	PALL A/E glass fiber membrane filter, 47 mm, 1 µm, 100/PK
167100-52-1	Whatman ME 25 (MCE) membrane, 47 mm, 0.45 µm, 100/PK



• Vacuum Pump

167300-11(22)	Rocker 300 Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
167400-11(22)	Rocker 400 Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
167410-11(22)	Rocker 410 Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
189300-11(22)	Rocker 300C, PTFE Coated Chemical Resistant Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
189400-11(22)	Rocker 400C, PTFE Coated Chemical Resistant Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
169300-11(22)	Chemker 300 Vacuum pump, AC110V,60Hz (AC 220V,50Hz)
167301-06	Moisture trap / Vacuum regulator for Rocker 300 / 400 / 410 / 430
167301-07	Prote™ filter cartridge for Rocker 300 / 400 / 410 / 430
167300-42	Muffler (Air outlet) for Rocker 300 / 400 / 410
189300-06	Glass moisture trap / vacuum regulator for Rocker 300C / 400C / 410C
169411-06	Glass moisture trap / vacuum regulator for Chemker 300 / 400 / 410 / 411
189300-37	Hoop holder for Rocker 300C - VF 12 / VFC 47
167300-37	Hoop Holder for Rocker 300 - LF 30 / LF 30 - SS / SF 10 / SF 30

• Pump Repair Kit

167300-62-2	Rocker 300 repair kit	189300-62-1	Rocker 300C repair kit
167400-62-2	Rocker 400 repair kit	189400-62	Rocker 400C / 410C repair kit
167410-62-2	Rocker 410 repair kit	169300-62-1	Chemker 300 repair kit





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