

# INSTRUCTION MANUAL

---

## Rotary Manifold and Filtration System

---

### Model No.

SolarVac 600 - MS

SolarVac 600 / 601 - MB

SolarVac 1200 / 1201 - MB

SolarVac 601 / 1201 - MB - A

SolarVac 610 / 1201 - MB - T

Tech support



# ROCKER

Please read this instruction manual before using this product.



# Table of Contents

<b>1. Important Notice</b>	1
<b>2. Unpacking</b>	2
(1) Rotary Manifold	2
(2) Vacuum Filtration System	3
<b>3. Main Part Diagram</b>	5
(1) Rotary Manifold	5
(2) Vacuum Pump	5
(3) Parts Material List	6
<b>4. Installation and Operation</b>	7
(1) Preparation and Installation of Manifold	7
(2) Vacuum Filtration System	9
2.1 System with <u>Alligator 200 Diaphragm Liquid Pump</u>	9
2.2 System with <u>Rocker 400 Vacuum Pump</u>	10
<b>5. Maintenance</b>	11
<b>6. Troubleshooting</b>	12

# 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. Keep the equipment away from flammable materials. Before operation, please check the chemical compatibility of the contact materials and medium.
4. Never use the attached pump with any chemical, corrosive, flammable or toxic material.
5. Please use Alligator 200 liquid pump with manifold and membrane to prevent clogging.
6. The protection device of Rocker 400 vacuum pump:
  - To ensure proper function of the Prote™ protection device, the pump must be installing on a flat level surface and should not be moved when operation. If the buoy closes during operation, it must be manually reset by uninstalling and reinstalling the filter cartridge.
  - The filter cartridge is used to absorb moisture and dust. Please replace the cartridge to maintain pumping efficiency when it becomes dirty or color-changing.
  - The pump has a thermal protection device that automatically shuts off when overheated.
7. Please connect the instrument with high-pressure hose or tubes.
8. Do not use any lubricant, which may damage the pump.
9. In case of any damage, please contact the manufacturer or your service agent for service to avoid hazards.
10. Please discard packaging materials in accordance with relevant local regulations.

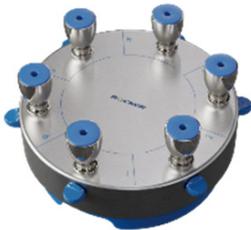
## 11. Operating condition

- (a) Ambient temperature: 5~40 °C
- (b) Relative humidity: 80% RH Max.
- (c) Power supply: (Alligator 200) 100-240V~, 50/60Hz  
(Rocker 400) 100-120V~, 50/60Hz or 200-240V~, 50/60Hz
- (d) Altitude: up to 2000 m
- (e) Pollution degree: II
- (f) Indoor use

# 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). Rotary Manifold



**SolarVac 600 - MS**



**SolarVac 600 - MB**



**SolarVac 1200 - MB**

Model	Standard Package Includes:		
	Branches	SF Adaptor	No.8 Stopper Adaptor
<b>SolarVac 600 - MS</b>	6 Places Rotary Manifold		<b>V</b>
<b>SolarVac 600 - MB</b>	6 Places Rotary Manifold	<b>V</b>	
<b>SolarVac 1200 - MB</b>	12 Places Rotary Manifold	<b>V</b>	

- An allen key is included with each manifold.



**SolarVac 601 - MB**



**SolarVac 1201 - MB**

Model	Standard Package Includes:		
	Branches / Material	SF Adaptor	Stainless Steel Funnel
<b>SolarVac 601 - MB</b>	6 Places Rotary Manifold	<b>V</b>	<b>100 mL x 6</b>
<b>SolarVac 1201 - MB</b>	12 Places Rotary Manifold	<b>V</b>	<b>100 mL x 12</b>

- An allen key is included with each manifold.

## (2). Vacuum Filtration System

- Manifold with Alligator 200 Diaphragm Liquid Pump



**SolarVac 601 - MB - A**



**SolarVac 1201 - MB - A**

Model	Standard Package Includes:	
<b>SolarVac 601 - MB - A</b>	SolarVac 601 / 1201 - MB, 6 / 12 Places Rotary Manifold	x 1
	Alligator 200, Diaphragm Liquid Pump	x 1
<b>SolarVac 1201 - MB - A</b>	Dragon 100, Torch Burner	x 1
	MCE Membrane, 47 mm, 0.45 µm	200 pcs
	Silicone Tube	x 2
	Instruction Manual	x 1

- An allen key is included with each manifold.

- Manifold with Rocker 400 Vacuum Pump



**SolarVac 601 - MB - T**



**SolarVac 1201 - MB - T**

Model	Standard Package Includes:	
<b>SolarVac 601 - MB - T</b> <b>SolarVac 1201 - MB - T</b>	SolarVac 601 / 1201 - MB, 6 / 12 Places Rotary Manifold	x 1
	Rocker 400, Oil Free Vacuum Pump	x 1
	4000 mL PP Vacuum Bottle with drain	x 1
	Dragon 100, Torch Burner	x 1
	MCE Membrane, 47 mm, 0.45 $\mu$ m	200 pcs
	Silicone Tube	x 2
	Instruction Manual	x 1

- An allen key is included with each manifold.

# 3. Main Part Diagram

## (1). Rotary Manifold



Position	Designation	Position	Designation
1	Handle	4	Adjustable Vent Valve
2	Control Valve (Knob)	5	Hose Barb (Outlet)
3	Funnel Adaptor		

- To rotate the manifold, simply swipe on the knobs (2).

## (2). Vacuum Pump

### Rocker 400 Oil Free Vacuum Pump



### Alligator 200 Diaphragm Liquid Pump



Position	Designation	Position	Designation
1	Power Switch	6	Vacuum Gauge
2	Air Outlet	7	Moisture Trap
3	Air Inlet	8	Vacuum Regulator
4	Liquid Inlet (IN)	9	Prote™ Filter Cartridge
5	Liquid Outlet (OUT)	10	Power Adaptor

### (3). Parts Material List

- SolarVac, Rotary Manifold

Part	Material	Part	Material
Body (Cover)	SS304	Flow Path	SS316, Viton, Silicone
Vent Valve	SS316	Control Valve	SS316
Funnel Adaptor	SS316	O-ring	Viton, Silicone
Knob	Aluminum alloys		

- Alligator 200, Diaphragm Liquid Pump

Part	Material contacts with filtrates
Wetted parts	SS316, FKM, Silicone, PP, PPS

- Rocker 400, Oil Free Vacuum Pump

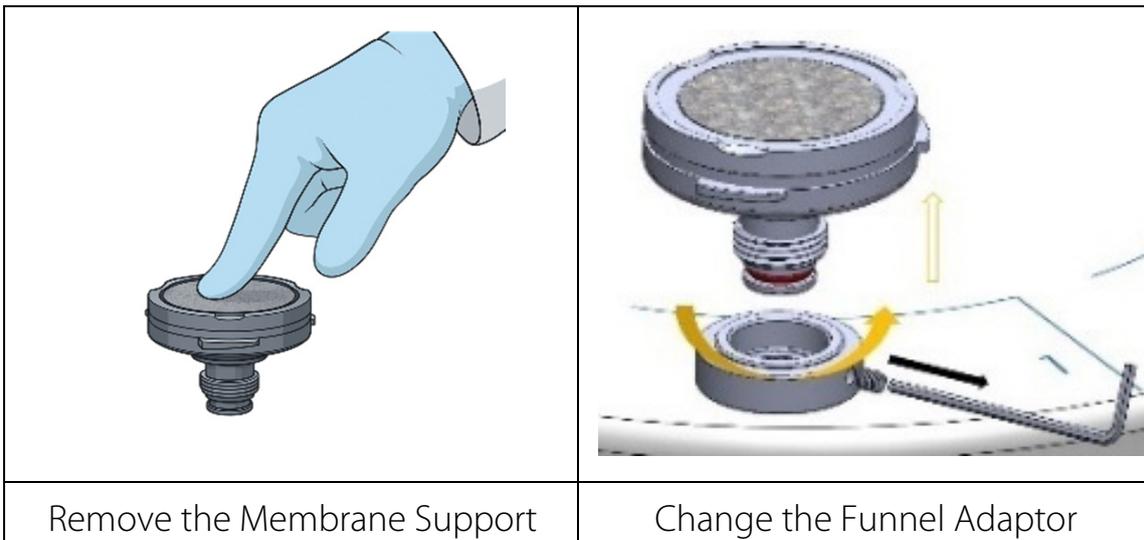
Part	Material	Part	Material
Pump Head	Aluminum alloys	Piston Seal	PTFE complex
Valve Plate(s)	FKM		

# 4. Installation and Operation

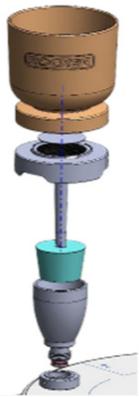
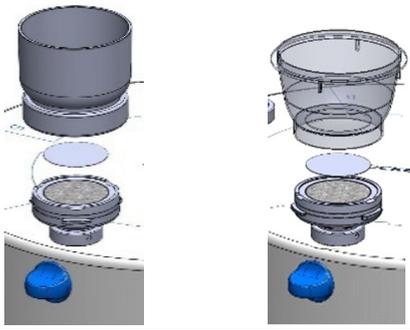
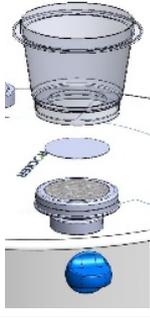
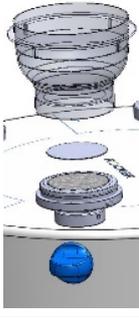
## (1). Preparation and Installation of Manifold

- A. Make sure all control valves are off  before use, rotate the control valves counterclockwise to vertical position  for filtration.
- B. Change the funnel adaptor to fit the desired funnel or filter holder if necessary.

- **How to remove the membrane support and change the funnel adaptor(s)**



1. Press the membrane support with finger and push it outward to slide it out.
2. Loosen the set screw on the lower side of adaptor by allen key (2 mm).
3. Unscrew the funnel adaptor counterclockwise.
4. Replace it with the desired funnel adaptor and lock it back in a clockwise direction.
5. Tighten the set screw to prevent the funnel adaptor from loosening during operation.

Installation of Various Filter Holder and Funnel			
1	2	3	4
			
<p><b>1. No. 8 Stopper Funnel Adaptor</b></p> <p>- Compatible with various kinds of filter holders with No. 8 silicone stopper, such as plastic and stainless steel filter holder and most disposable filter funnels.</p> <p><b>2. Rocker SF Funnel Adaptor</b></p> <p>- Fitting to (left) ROCKER SF 100 / 300 / 500 ml funnel* and (right) Pall, Sentino® 4870 (100 mL), 4871 (250 mL) disposable plastic funnel.</p> <p><b>3. SS316 Adaptor for Millipore Disposable Funnel</b></p> <p>- Fitting to Millipore, Microfil® disposable plastic funnel 100 / 250 mL.</p> <p><b>4. SS316 Adaptor for Sartorius Disposable Funnel</b></p> <p>- Fitting to Sartorius, Microsart® disposable plastic funnel 16A07.</p>			

\* ROCKER SF 300 / 500 mL stainless steel funnel is not applicable to SolarVac 1200 - MB.

- C. Connect the installed SolarVac manifold to either liquid pump or vacuum pump for filtration.
- When using a vacuum pump, please ensure to install a vacuum bottle between the manifold and pump to capture the waste liquid and prevent liquid from being sucked into the pump.
- D. SolarVac is equipped with an adjustable vent valve. Rotate the vent valve counterclockwise to help draining residual liquid in tube after filtration.
- Properly open the vent valve during filtration can help avoid water hammer phenomenon.



## (2). Vacuum Filtration System Operation

### 2.1 Vacuum Filtration System (With Alligator 200, Diaphragm Liquid Pump)



Filtration System Assembly Diagram (Alligator 200)

- A. Connect the outlet of installed manifold to inlet (IN) of Alligator 200 liquid pump together with silicone tube as shown above.
  - The tube length between manifold and liquid pump should be as short as possible.
  - The length of silicone tube can be cut as needed.
- B. Connect a long tube to outlet (OUT) of Alligator 200 and put the other side of tube into sink or a container to drain and collect the waste liquid.
- C. Install the appropriate membrane in filter holder or funnel as shown on p.8.
  - To rotate the manifold, simply swipe on the knobs.
- D. Activate the pump and pour the sample liquid into the funnel and open the control valve to “vertical” position  to start filtration.
- E. After finishing filtration, close the control valve  and retrieve the membrane.
- F. ROCKER SF stainless steel funnel can be fast flame-sterilized by Dragon 100 torch burner or autoclaved before proceeding next filtration.

#### **\* Warning:**

**(1) Do NOT use cable tie or any similar items to secure the pump's outlet and silicone tube together to prevent any bursting and potential damage to the pump.**

**(2) Do NOT bend silicone tube or squeeze it to avoid poor drainage and potential damage.**

**(3) Do NOT pump dirty or impure solution without filtration to avoid clogging or damaging.**

## 2.2 Vacuum Filtration System (with *Rocker 400 Vacuum Pump*)



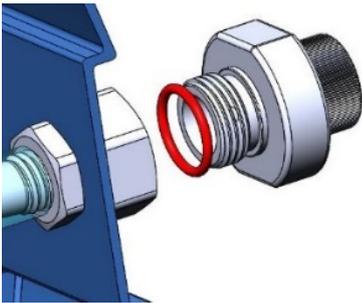
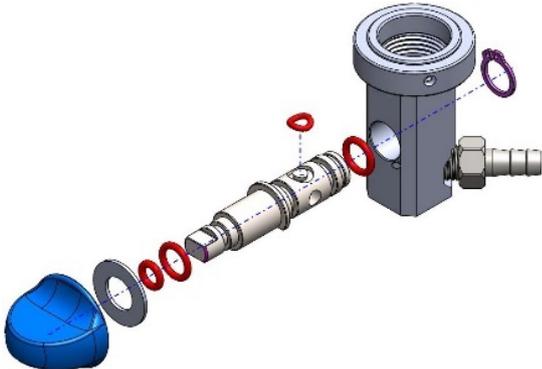
Filtration System Assembly Diagram (Rocker 400)

- A. Connect the installed manifold, vacuum bottle and Rocker 400 vacuum pump with 2 silicone tubes as shown above.
- B. Install the appropriate membrane in filter holder or funnel as shown on p.8.
  - To rotate the manifold, simply swipe on the knobs.
- C. Switch on the pump and pour the sample liquid into the funnel and open the control valve to “vertical” position  to start filtration.
  - Please monitor the liquid level in waste bottle to prevent liquid from entering the pump.
- D. After finishing filtration, close the control valve  and retrieve the membrane.
- E. ROCKER SF stainless steel funnel can be fast flame-sterilized by Dragon 100 torch burner or autoclaved before proceeding next filtration.

**\* Warning: Please ensure the liquid level of moisture trap and vacuum bottle do not exceed safety level. Failure to comply could result in serious damage to the pump and void the warranty. If it occurs, please contact the distributor immediately for service.**

## 5. Maintenance

1. The pump is not autoclavable. Please clean the surface by pure water or 75% ethanol.
2. While doing filtration with Alligator 200 liquid pump, please pump the pure water to clean the tubing after every use to prevent any dirt is left over. Keep pumping the air for at least 2 minutes to eliminate the liquid.
3. While doing filtration with Rocker 400 vacuum pump, please remove the liquid in the moisture trap and keep pumping the air for at least 2 minutes to withdraw the residual steam.
  - Please refer to manual of Rocker Oil free Vacuum Pump to see how to reset the Prote™ protection device and replace cartridge.
4. Manifold, filter holder and vacuum bottle are autoclavable (121°C, 1 bar, 20 min). Please make sure to rinse manifold with pure water and keep all control valves and vent valve at “OPEN” position to make a complete sterilization. You can also clean the surface of manifold with pure water or 75% ethanol.
5. ROCKER SF stainless steel funnel, membrane support and funnel adaptor are made of SS316 which can be sterilized by direct flame and autoclave.
  - If need to remove the membrane support, please refer to p.7 to loosen the set screw, then remove the funnel adaptor and membrane support.
6. Valve plate(s), O-ring(s), silicone tube(s), muffler and diaphragm are consumable, it is recommended to replace it on a yearly basis or as needed to ensure good operation.
  - SolarVac Rotary Manifold : O-ring(s), silicone tube(s)
  - Pump : Valve plate(s), muffler, and diaphragm.

O-ring(s)		
Vent Valve	Control Valve	Funnel Adaptor
		

## 6. Troubleshooting

Problem	Reason and Solution
<p><b>Failed to start the pump</b></p>	<ul style="list-style-type: none"> <li>• Loose plug → Reconnect plug to socket firmly.</li> <li>• Wrong voltage → Reconnect to power specified on name plate.</li> <li>• Vacuum exists → Release vacuum and restart the pump.</li> <li>• Switch is broken → Contact distributor for assistance.</li> </ul>
<p><b>Poor vacuum</b></p>	<ul style="list-style-type: none"> <li>• O-ring of funnel adaptor or vent valve is broken → Replace the O-ring.</li> <li>• Open vent valve → Close the vent valve.</li> <li>• Outlet is blocked → Clean or stretch the outlet tube.</li> <li>• Improperly vacuum setting → Adjust the vacuum regulator.</li> <li>• Clogged muffler of Rocker 400 pump → Replace a new muffler.</li> <li>• Air leakage → Replace or tighten the tubing and accessories that possible leaks.</li> <li>• Internal tubing loose of pump → Contact distributor for assistance.</li> <li>• Internal tubing loose of manifold → Contact distributor for assistance.</li> </ul>
<p><b>Low filtration speed</b></p>	<ul style="list-style-type: none"> <li>• O-ring of funnel adaptor or vent valve is broken → Replace the O-ring.</li> <li>• Open vent valve → Close the vent valve.</li> <li>• Air leakage → Replace or tighten the tubing and accessories that possible leaks.</li> <li>• Unsuitable membrane → Change an appropriate membrane.</li> <li>• Membrane is blocked → Replace a new membrane.</li> <li>• Improperly vacuum setting → Adjust the vacuum regulator.</li> <li>• Silicone tube is bent too much → Replace or stretch silicone tube.</li> <li>• Internal tubing loose of pump → Contact distributor for assistance.</li> <li>• Internal tubing loose of manifold → Contact distributor for assistance.</li> </ul>

# Ordering Information

186600-01	SolarVac 600 - MS, 6 Places Rotary Manifold with No.8 stopper funnel adaptor
186600-02	SolarVac 600 - MB, 6 Places Rotary Manifold with ROCKER SF funnel adaptor
1861200-02	SolarVac 1200 - MB, 12 Places Rotary Manifold with ROCKER SF funnel adaptor
186601-02	SolarVac 601 - MB, 6 Places Rotary Manifold with ROCKER SF funnel adaptor, 100 mL SF funnel x 6
1861201-02	SolarVac 1201 - MB, 12 Places Rotary Manifold with ROCKER SF funnel adaptor, 100 mL SF funnel x 12
186601-11/22-T	SolarVac 601 - MB - T, Vacuum Filtration System, AC110V, 60Hz (AC220V, 50Hz)
1861201-11/22-T	SolarVac 1201 - MB - T, Vacuum Filtration System, AC110V, 60Hz (AC220V, 50Hz)
186601-01/02-A	SolarVac 601 - MB - A, Vacuum Filtration System, AC100-240V, US Plug (EU plug)
1861201-01/02-A	SolarVac 1201 - MB - A, Vacuum Filtration System, AC100-240V, US Plug (EU plug)
186600-62	SolarVac 600 repair kit
1861200-62	SolarVac 1200 repair kit
190200-10	Silicone stopper funnel adaptor (middle)
190100-71	Silicone stopper funnel adaptor (long) for glass filter holder
190200-20-1	SS316 Adaptor for ROCKER SF funnel and Pall 4870 / 4871 plastic funnel
190100-73-1	SS316 Adaptor for Millipore MIHAWG100 / MIHAWG250 plastic funnel
190100-74-1	SS316 Adaptor for Sartorius 16A07 plastic funnel
180100-31-1	Stainless steel support screen for ROCKER SF funnel adaptor (#180300-30-1)
180100-01/03/05	ROCKER SF Stainless steel funnel 100 mL / 300 mL / 500 mL
180100-11	ROCKER SF Stainless steel funnel lid for SF funnel 100 mL
180100-13	ROCKER SF Stainless steel funnel lid for SF funnel 300 mL / 500 mL
181200-01(02)	Alligator 200, Diaphragm Liquid Pump, AC100-240V, 50/60Hz, US Plug (EU plug)
181200-62	60W Diaphragm liquid pump repair kit for Alligator 200
167400-11(22)	Rocker 400, Vacuum Pump, AC110V,60Hz (AC 220V,50Hz)
167301-06	Moisture Trap / vacuum regulator for Rocker 300 / 400 / 410
167301-07	Prote™ filter cartridge for Rocker 300 / 400 / 410 / 430
167300-42	Muffler (Air outlet) for Rocker 300 / 400 / 410
197200-48	4000 mL Heavy Duty PP Vacuum Bottle with drain

200300-01(-P)	MF 3 (Pro), Magnetic Filter Holder (300 mL)
200500-01(-P)	MF 5 (Pro), Magnetic Filter Holder (500 mL)
180300-68	Silicone tube, Ø 8 x 14 mm, 200 cm
167200-38	Silicone tube, Ø 6 x 12 mm, 100 cm
177100-00	Dragon 100, Torch Burner
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, black grid, sterile, 100/PK





**Rocker Scientific Co., Ltd.**

Tel: +886-2-26033311 Fax: +886-2-26036622

E-mail: [export@rocker.com.tw](mailto:export@rocker.com.tw) <https://www.rocker.com.tw>