INSTRUCTION MANUAL

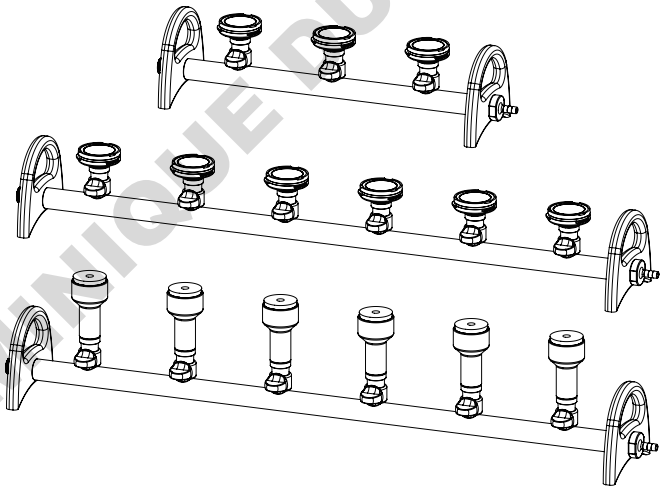
Multi-Branch Manifold and Filtration System

Model No.

MultiVac 310 / 610 - MS
MultiVac 300 / 600 - MS
MultiVac 300 / 301 / 600 / 601 - MB
MultiVac 310 / 610 - MS - T / A
MultiVac 301 / 601 - MB - T / A

Instruction Video

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ROCKER

Please read this instruction manual before using this product.

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 chemical, corrosive, flammable or toxic material.
4. Please use liquid pump with manifold and membrane to prevent clogging.
5. 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.
6. Do not use any lubricant, which may damage the pump.
7. In case of any damage, please contact the manufacturer or your service agent for service to avoid hazard.
8. Please discard packing material according to local related regulations.
9. Operating condition
   (a) Ambient temperature: 5~ 40 °C
   (b) Relative humidity: 80% RH Max.
   (c) Power supply of Alligator 200: 100-240V~, 50/60Hz, 44W
   Power supply of Rocker 400: 100-120V~, 50/60Hz or 200-240V~, 50/60Hz
   (d) Altitude: up to 2000 m
   (e) Pollution degree: II
   (f) Alligator 200: IP64, Rocker 400: IP30
   (g) Overvoltage category: I
   (h) Indoor use

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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.

I. Multi-Branch Manifold



MultiVac 300 / 310 - MS



MultiVac 600 / 610 - MS



MultiVac 300 - MB



MultiVac 600 - MB

	Standard Package Includes:		
	Branches / Material	SF Adaptor	Stopper Adaptor
MultiVac 310 - MS	3 Places Aluminum Manifold		**V**
MultiVac 610 - MS	6 Places Aluminum Manifold		**V**
MultiVac 300 - MS	3 Places Stainless Steel Manifold		**V**
MultiVac 600 - MS	6 Places Stainless Steel Manifold		**V**
MultiVac 300 - MB	3 Places Stainless Steel Manifold	**V**	
MultiVac 600 - MB	6 Places Stainless Steel Manifold	**V**	

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II. Multi-Branch Manifold with Funnels



MultiVac 301 - MB



MultiVac 601 - MB

Model	Standard Package Includes:		
	Branches / Material	SF Adaptor	Stainless Steel Funnel
MultiVac 301 - MB	3 Places Stainless Steel Manifold	**V**	**100 ml * 3**
MultiVac 601 - MB	6 Places Stainless Steel Manifold	**V**	**100 ml * 6**

III. Vacuum Filtration System

- **Manifold with <u>Alligator 200 Diaphragm Liquid Pump</u>**



MultiVac 301 / 601 - MB - A



MultiVac 310 / 610 - MS - A

Model	Standard Package Includes:	
MultiVac 301 - MB - A **MultiVac 601 - MB - A**	MultiVac 301 / 601 - MB, 3 / 6 Places Stainless Steel Manifold	x 1
	Alligator 200, Diaphragm Liquid Pump	x 1
	Dragon 100, Torch Burner	x 1
	Pall, MCE Membrane, 47 mm, 0.45 µm, 200/PK	x 1
	Silicone Tube	x 1
	Instruction Manual	x 1

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Model	Standard Package Includes:	
MultiVac 310 - MS - A **MultiVac 610 - MS - A**	MultiVac 310 / 610 - MS, 3 / 6 Places Aluminum Manifold	x 1
	MF 3, 300 ml Magnetic Filter Holder with Lid Kit	x 3 / 6
	Alligator 200, Diaphragm Liquid Pump	x 1
	Silicone Tube	x 1
	Instruction Manual	x 1

- **Manifold with <u>Rocker 400 Vacuum Pump</u>**



MultiVac 301 / 601 - MB - T



MultiVac 310 / 610 - MS - T

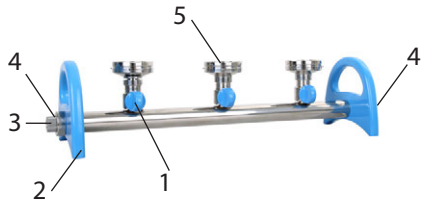
Model	Standard Package Includes:	
MultiVac 301 - MB - T **MultiVac 601 - MB - T**	MultiVac 301 / 601 - MB, 3 / 6 Places Stainless Steel Manifold	x 1
	Rocker 400, Oil Free Vacuum Pump	x 1
	4000 ml PP Vacuum Bottle with drain	x 1
	Dragon 100, Torch Burner	x 1
	Pall, MCE Membrane, 47 mm, 0.45 µm, 200/PK	x 1
	Silicone Tube	x 2
	Instruction Manual	x 1

Model	Standard Package Includes:	
MultiVac 310 - MS - T **MultiVac 610 - MS - T**	MultiVac 310 / 610 - MS, 3 / 6 Places Aluminum Manifold	x 1
	MF 3, 300 ml Magnetic Filter Holder with Lid Kit	x 3 / 6
	Rocker 400, Oil Free Vacuum Pump	x 1
	4000 ml PP Vacuum Bottle with drain	x 1
	Silicone Tube	x 2
	Instruction Manual	x 1

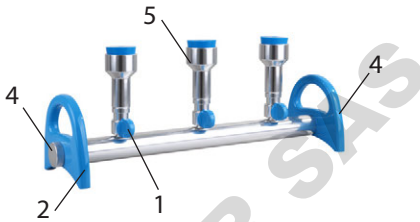
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Main Part Diagram

Stainless Steel Multi-Branch Manifold



Aluminum Multi-Branch Manifold



Position	Designation	Position	Designation
1	Control Valve	4	Quick-Fit Hose Barb
2	Handle	5	Funnel Adaptor
3	Adjustable Vent Valve		

• Adjustable vent valve exits only on stainless steel manifold.

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

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Installation and Operation

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.

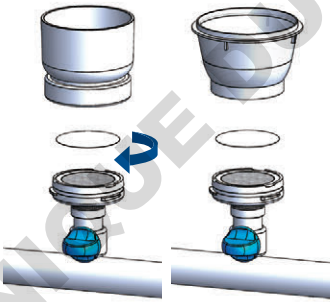
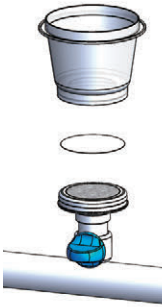
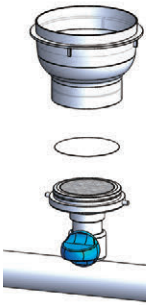
B. Change the funnel adaptor to fit the desired funnel or filter holder if necessary.

- Various kind of funnel adaptors are only compatible for **Stainless Steel Manifold.**

- **How to change the funnel adaptor(s)**

1. Loosen the fixing screw on the rear of control valve by L-Type hex key (2 mm).
2. Unscrew the funnel adaptor and change to the desired one.
3. Tighten the fixing screw to prevent new funnel adaptor from rotation.

Installation of Various Filter Holder and Funnel

1	2	3	4
			

1. No. 8 Stopper Funnel Adaptor

- Compatible with various kinds of filter holders with No. 8 silicone stopper.

2. Rocker SF Funnel Adaptor (Stainless Steel Manifold only)

- Fitting to (left) Rocker SF 100 / 300 / 500 ml funnel and (right) Pall, Sentino® 4870 (100 ml), 4871 (250 ml) plastic funnel.

3. SS316 Adaptor for Millipore Disposable Funnel (Stainless Steel Manifold only)

- Fitting to Millipore, Microfil® disposable plastic funnel 100 / 250 ml.

4. SS316 Adaptor for Sartorius Disposable Funnel (Stainless Steel Manifold only)

- Fitting to Sartorius, Microsart® disposable plastic funnel 16A07.

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Preparation and Installation of Manifold (continued)

C. Connect installed MultiVac manifold to either vacuum pump or liquid pump for filtration.
   - Please ensure to install a vacuum bottle between the manifold and vacuum pump to capture the waste liquid and prevent liquid from being sucked into the vacuum pump.
   - The inlet and outlet direction of MultiVac manifold is interchangeable. Please disassembled inlet and outlet by hands or tool and change to desired direction.

D. The adjustable vent valve can help drain residual liquid in tube and avoid "Water Hammer".
   - Turn the vent valve counterclockwise to drain the remaining liquid out if necessary.

Vacuum Filtration System Operation

I. With *Alligator 200 Diaphragm Liquid Pump*

A. Connect the outlet of installed manifold to inlet (IN) of Alligator 200 liquid pump together with silicone tube as shown below.
   - The tube length between manifold and liquid pump should be as short as possible.
   - The length of silicone tube can be cut as your 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. After sample preparation, install the appropriate membrane in filter holder or funnel.

D. Switch on 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 retrieval the membrane.

F. SF stainless steel funnel can be fast flame-sterilized by Dragon 100 torch burner or autoclaved before proceeding next filtration.

**** Warning:***

(1) Do not bend silicone tube or squeeze it with heavy objects to avoid poor drainage.

(2) Do not pump dirty or impure solution before filtration to avoid clogging or damaging.



Filtration System Assembly Diagram (Left: Alligator 200; Right: Rocker 400)

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II. With *Rocker 400 Vacuum Pump*

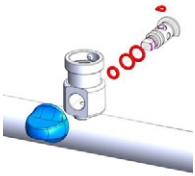
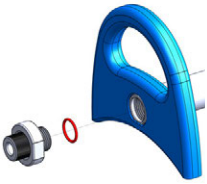
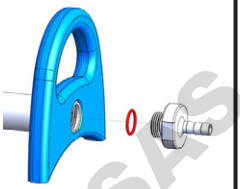
A. Connect the installed manifold, vacuum bottle and Rocker 400 vacuum pump with 2 silicone tubes as shown above.
B. After sample preparation, install the appropriate membrane in filter holder or funnel.
C. Switch on the pump and pour the sample liquid into the funnel and open the control valve to "vertical" position to start filtration.
D. After finishing filtration, close the control valve and retrieval the membrane.
E. 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.***

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 dirty is left over. Keep pumping the air for at least 2 minutes to eliminate the liquid.
3. While doing filtration with Rocker 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 Series Vacuum Pump to see how to reset the Prote™ protection device and replace cartridge.
4. MultiVac 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. Funnels, support base and membrane support of stainless steel manifold are made of SS316 which can be fast sterilized by flame or autoclaved.
6. 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.

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O-ring of Funnel Adaptor	O-ring of Control Valve	O-ring of Plug	O-ring of Outlet
			

Troubleshooting

Problem	Reason and Solution
Failed to start	• Loose plug → Reconnect plug to socket firmly. • Wrong voltage → Reconnect to power specified on name plate. • Vacuum exists → Release vacuum and restart the pump. • Switch is broken → Contact distributor for assistance.
Poor vacuum	• Funnel adaptor O-ring is broken → Replace the O-ring. • Outlet is blocked → Clean or stretch the outlet tube. • Improperly vacuum setting → Adjust the vacuum regulator. • Clogged muffler → Replace a new muffler. • Air leakage → Replace or tighten the tubing and accessories that possible leaks. • Internal wiring loose → Contact distributor for assistance.
Low filtration speed	• Funnel adaptor O-ring is broken → Replace the O-ring • Air leakage → Replace or tighten the tubing and accessories that possible leaks. • Unsuitable membrane → Change an appropriate membrane. • Membrane is blocked → Replace a new membrane. • Improperly vacuum setting → Adjust the vacuum regulator. • Silicone tube is bent too much → Replace or stretch silicone tube. • Internal wiring loose → Contact distributor for assistance.

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Ordering Information

180301-02	MultiVac 301-MB, 3 Places SS Manifold with Rocker SF funnel adaptor, 100 ml SF funnel x 3
180601-02	MultiVac 601-MB, 6 Places SS Manifold with Rocker SF funnel adaptor, 100 ml SF funnel x 6
180300-01	MultiVac 300-MS, 3 Places SS Manifold with No.8 stopper funnel adaptor
180600-01	MultiVac 600-MS, 6 Places SS Manifold with No.8 stopper funnel adaptor
180310-01	MultiVac 310-MS, 3 Places Aluminum Manifold with No.8 stopper funnel adaptor
180610-01	MultiVac 610-MS, 6 Places Aluminum Manifold with No.8 stopper funnel adaptor
180100-01/03/05	SF Stainless Steel Funnel 100 ml / 300 ml / 500 ml
180100-31	Stainless Steel Support Screen
181200-01(02)	Alligator 200, Diaphragm Liquid Pump, AC100-240V, 50/60Hz, US plug (EU plug)
181200-62	60W Diaphragm Liquid Pump Repair Kit
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
167300-42	Muffler (Air Outlet) for Rocker 300 / 400 / 410
167200-48	4000 ml Heavy Duty PP Vacuum Bottle with drain
200300-01	MF 3, Magnetic Filter Holder (300 ml)
200300-01-P	MF 3 Pro, Magnetic Filter Holder (300 ml)
200500-01	MF 5, Magnetic Filter Holder (500 ml)
200500-01-P	MF 5 Pro, Magnetic Filter Holder (500 ml)
167120-31	300 ml Glass Filter Holder for VF 6 / VF 12
180300-68	Silicone Tube, Ø 8 x 14 mm, 2 m
167200-38	Silicone Tube, Ø 6 x 12 mm, 1 m
177100-00	Dragon 100, Torch Burner
167100-20	PALL, Type A/ E Glass Fiber Discs, 1 um, 100/PK
167100-52	Pall, GN-6 Metricel® Membrane Disc Filter, grid, 0.45 um, 200/PK

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