

INSTRUCTION MANUAL

Solid Phase Extraction Manifold

Model No.

MultiVac 100 / 300 / 600 - SPE

MultiVac 103 / 303 / 603 - SPE

MultiVac 103 / 303 / 603 - SPE - T

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 use 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 improper use or unauthorized modification of the instrument.

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 corrosive, flammable or toxic material.
5. The Rocker 400C vacuum pump has a thermal protection device that automatically shuts off when overheated.
6. Please connect the instrument with high-pressure hose or tubes.
7. Do not use any lubricant, which may damage the pump.
8. In case of any damage, please contact the manufacturer or your service agent for assistance to avoid potential hazards.
9. Please discard packaging materials in accordance with relevant local regulations.
10. 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 2,000 m
 - (e) Pollution degree: II
 - (f) Indoor use

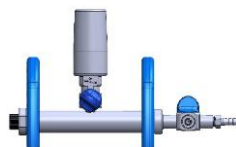
**** When handling hazardous chemical and biological solutions, take all appropriate protective measures.***

**** Before operation, verify the chemical compatibility of all wetted materials with the sample solution.***

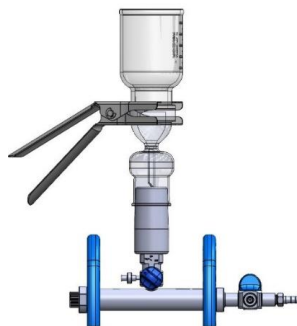
2. Unpacking

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

(1) MultiVac, SPE Manifold



MultiVac 100 - SPE



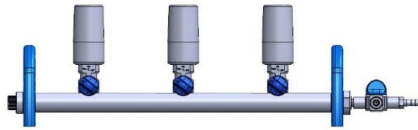
MultiVac 103 - SPE

Model	Standard Package Includes:			
	Branches	Glass Support Base	300 mL Glass Funnel	Clamp
MultiVac 100 - SPE	SPE Manifold	-	-	-
MultiVac 103 - SPE	SPE Manifold	x 1	x 1	x 1
MultiVac 300 - SPE	3 Places SPE Manifold	-	-	-
MultiVac 303 - SPE	3 Places SPE Manifold	x 3	x 3	x 3
MultiVac 600 - SPE	6 Places SPE Manifold	-	-	-
MultiVac 603 - SPE	6 Places SPE Manifold	x 6	x 6	x 6

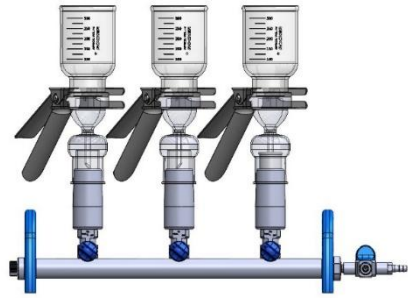
* The illustrations of MultiVac 300 / 600 - SPE, refer to the following page.

* An Allen key is included with each manifold.

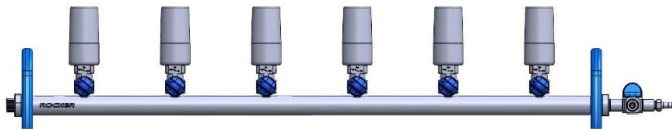
* When using SPE cartridges, purchase the MultiVac 100 / 300 / 600 - SPE and select the required quantity of SPE cartridge adaptor w/ tubulated cap separately.



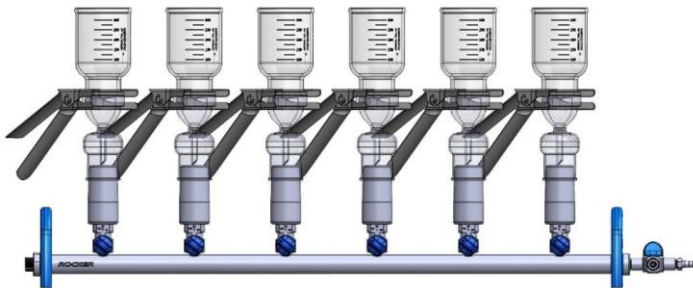
MultiVac 300 - SPE



MultiVac 303 - SPE



MultiVac 600 - SPE



MultiVac 603 - SPE

(2) MultiVac, SPE Vacuum System



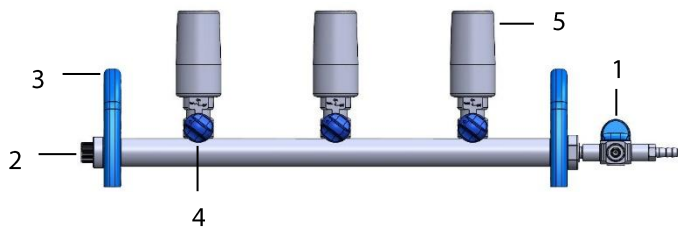
MultiVac 303 - SPE - T

Model	Standard Package Includes:	
MultiVac 103 - SPE - T MultiVac 303 - SPE - T MultiVac 603 - SPE - T	MultiVac 103 / 303 / 603 - SPE, SPE Manifold	x 1
	Rocker 400C, PTFE Coated Chemical Resistant Vacuum Pump	x 1
	4L PP Vacuum Bottle	x 1
	10L PP Vacuum Bottle	x 1
	Nitrogen Concentrator Tube, Tapered Bottom	x 1 / 3 / 6
	3-Way Connector	x 1
	Silicone Tube	x 4
	Instruction Manual (Soft Copy)	x 1

* An Allen key is included with each manifold.

3. Main Part Diagram

(1) MultiVac, SPE Manifold



Position	Designation	Position	Designation
1	Outlet (3-way Valve)	4	Individual Control Valve (Knob)
2	Adjustable Vent Valve	5	Funnel Adaptor
3	Handle		

(2) Rocker 400C, PTFE Coated Chemical Resistant Vacuum Pump



Position	Designation	Position	Designation
1	Power Switch	4	Air Inlet
2	Air Outlet	5	Vacuum Regulator
3	Vacuum Gauge	6	Moisture Trap

(3) Parts Material List

- MultiVac, SPE Manifold

Model	Material contacts with filtrates
MultiVac 100 / 300 / 600 - SPE	SS316, FKM

- Rocker 400C, PTFE Coated Chemical Resistant Vacuum Pump

Part	Material	Part	Material
Pump Head	PTFE Coated	Diaphragm	PTFE Coated
Valve Plate(s)	FKM		

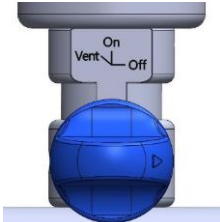
4. Installation and Operation

(1) Preparation and Installation of Manifold

- A. Before use, set all control valves to the Closed (Off) position. During filtration, turn the required control valve to the Open (On) position. To release the vacuum at a specific position after filtration, turn the control valve to the Vent position.

● Individual Control Valve Operation

Each individual control valve has 3 positions: Closed (Off), Open (On) and Vent.

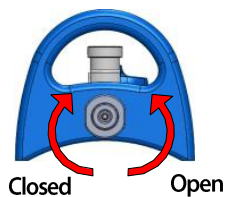
Position	Closed (Off)	Open (On)	Vent
			
Recommended Use	When the current step is completed.	Filtration operations, such as conditioning, loading, washing, and elution.	Removing the support base or inserting / removing collection tubes.

B. The SPE manifold is compatible with SPE disks and SPE cartridges. Select the appropriate adaptor according to the application.

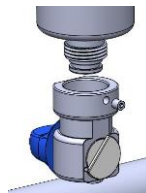
Installation of SPE Disk and SPE Cartridge		
1	2	
	Biotage Atlantic® ReadyDisk	UCT Enviro-Clean® Cartridges
		
1. SPE Disk a. Install the glass support base with tubulated cap on top of the SS316 funnel adaptor. b. Place the appropriate 47 mm SPE disk on top of the glass support base. c. Place the 300 mL glass funnel on the support base and secure it with the clamp. 2. SPE Cartridge a. Install the optional "SPE cartridge adaptor w/ tubulated cap" onto the SS316 funnel adaptor. b. Install the silicone parts compatible with the cartridge as shown in the above figure. - Biotage Atlantic® ReadyDisk: Place the silicone pad on top of the glass adaptor, then insert the cartridge. - UCT Enviro-Clean® Universal Cartridges: Fit the silicone parts around the outside of the glass adaptor, then insert the cartridge. c. Insert the cartridge and ensure a proper seal between the cartridge and glass adaptor.		

- C. For applications requiring direct bottle loading, place the optional Bottle Holder on top of the filter funnel or cartridge, then quickly invert the sample bottle onto the holder.
- D. Connect the assembled SPE manifold to the Rocker 400C vacuum pump for filtration.
- Always install a vacuum bottle between the pump and the manifold to collect waste liquid and prevent liquid from entering the vacuum pump.

- E. The SPE manifold is equipped with an adjustable vent valve. Close the vent valve before operation. After filtration, slowly open the vent valve counterclockwise to help remove residual liquid.
- F. For cleaning or maintenance, use the Allen key to loosen the screw behind the control valve and remove the SS316 funnel adaptor.



Closed / Open of Control Valve



Removing the SS316 Funnel Adaptor

(2) SPE Vacuum System Operation



SPE System Assembly Diagram

- A. Connect the manifold outlet (1) to the 2 vacuum bottles using silicone tube. Connect each vacuum bottle to the supplied 3-way connector, then connect the 3-way connector to the Rocker 400C vacuum pump as shown above.
- The SPE manifold has 2 outlet connectors. Connect the vacuum bottles according to the corresponding color markings:
 - Green: Connect to the 4L PP Vacuum Bottle for solvent collection.
 - Blue: Connect to the 10L PP Vacuum Bottle equipped with an overflow protection device for aqueous-phase liquid collection.
- B. Install the SPE disk or cartridge according to the instructions in [Section 4. \(1\) B](#) and verify that all tubing connections are secure and correctly connected.
- C. Start the vacuum pump and add the appropriate solvent or aqueous solution. Use the 3-way valve at the outlet (1) to direct waste liquid to the appropriate vacuum bottle.
- Start with a low vacuum and adjust the vacuum level according to the actual flow rate.
 - For extraction conditions specific to different cartridges, SPE disks, or other consumables, follow the manufacturer's instructions.
- D. Turn the individual control valve (4) to the Open (On) position and perform the following SPE steps as required: Conditioning, Loading, Washing.
- The flow rate may vary depending on the sample. Use the individual control valve (4) to fine-tune the flow rate at each branch.
 - Adjust the direction of the outlet (1) according to the solvent used in each step, such as aqueous or organic phases, to direct waste to the appropriate vacuum bottle.

- Continuously monitor the liquid level in the vacuum bottle to prevent liquid from entering the vacuum pump.
- E. When processing multiple samples simultaneously, each branch can be controlled independently. Once a position is complete, turn its control valve (4) to the Closed (Off) position to isolate that branch without affecting the other samples.
- F. After filtration is complete, turn the control valve (4) to the Vent position. Release the vacuum before removing the glass support base. Place the nitrogen concentrator tube or an appropriate collection tube into the stainless steel funnel adaptor (5), then reinstall the glass support base.
- Suitable collection tubes include: K-D tube, nitrogen concentrator tube, EPA water analysis vial, 40 mL sample vial, tube up to Ø30 mm x 100 mm.
- G. Turn the control valve (4) to the Open (On) position and perform the Elution step to transfer the target analytes from the cartridge or SPE disk into the collection tube.
- Adjust the vacuum level according to the method. Avoid excessive vacuum, which may cause splashing, excessive bubbling, or reduced collection efficiency.
 - After adding the elution solvent, it is recommended to initially apply a low vacuum to allow the solvent to fully contact the SPE disk or sorbent. If a soaking step is required, allow the appropriate soaking time before collection.
- H. After elution is complete, turn the control valve (4) to the Vent position. Confirm the vacuum has been released before removing the collection tube.
- After each use, rinse the manifold and wetted parts with pure water.

*** WARNING**

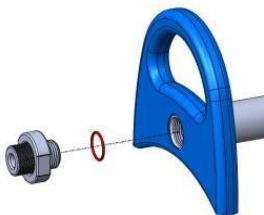
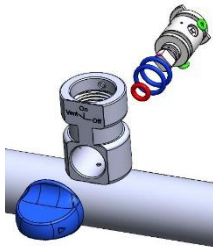
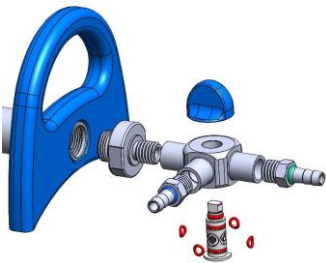
A. Do not bypass the vacuum bottle and connect the system directly to the vacuum pump.

B. Continuously monitor the liquid level in the waste bottle during operation. Stop operation and empty the bottle before the liquid reaches its maximum capacity to prevent liquid from entering the vacuum pump.

C. Make sure the silicone tubing remains unobstructed during filtration. Avoid bending or squeezing the tubing.

5. Maintenance

1. Please operate the instrument in a well-ventilated area and keep it clean.
2. The pump is not autoclavable. Please clean the surface by pure water or 75% ethanol.
3. After each use of Rocker 400C pump, please remove the liquid in the moisture trap and keep pumping the air for at least 2 minutes to withdraw the residual moisture.
4. After each use, rinse the manifold and wetted parts with pure water. When processing acidic, high-salt, or easy-to-deposition samples, clean the system immediately after use to reduce the risk of corrosion, clogging, or valve failure.
5. Manifold, filter holder and vacuum bottle are autoclavable (121°C, 1 bar, 20 min). Before autoclaving, ensure to rinse manifold with pure water and open all control valves and vent valve to ensure proper sterilization. The manifold surface may also be cleaned with pure water or 75% alcohol.
6. Valve plate(s), O-ring(s), silicone tube(s) and diaphragm are consumable, it is recommended to replace it on a yearly basis or as needed to ensure good operation.
7. If the equipment is not used for an extended period, clean and completely dry all components. Leave all control valves and the vent valve in a non-sealed position and store the components properly to prevent damage.

O-ring(s)		
Vent Valve	Control Valve	Outlet Connector
		

6. Troubleshooting

Issue	Cause and Solution
Failed to start the pump	- Loose plug → Reconnect plug to socket firmly. - Wrong voltage → Connect to power specified on name plate. - Vacuum exists → Release vacuum and restart the pump. - Switch is broken → Contact distributor for assistance.
Poor vacuum	- O-ring of funnel adaptor or vent valve is broken → Replace the O-ring. - Open vent valve → Close the vent valve. - Improper vacuum setting → Adjust the vacuum regulator. - Air leakage → Replace or tighten leaking tubing and accessories.
Low filtration speed	- O-ring of funnel adaptor or vent valve is broken → Replace the O-ring. - Open vent valve → Close the vent valve. - Air leakage → Replace or tighten leaking tubing and accessories. - Unsuitable filter → Replace an appropriate filter. - Filter is blocked → Replace the filter. - Improper vacuum setting → Adjust the vacuum regulator. - Silicone tube is excessively bent → Replace or reposition the tube.
Eluent splashes or excessive bubbling	- High vacuum during elution → Reduce vacuum level and control the flow rate according to the method. - Contact distributor for assistance.
Others	Contact distributor for assistance.

Ordering information

180103-SPE-11/22-T	MultiVac 103 - SPE - T, SPE Vacuum System, AC110V, 60Hz (AC220V, 50Hz)
180303-SPE-11/22-T	MultiVac 303 - SPE - T, SPE Vacuum System, AC110V, 60Hz (AC220V, 50Hz)
180603-SPE-11/22-T	MultiVac 603 - SPE - T, SPE Vacuum System, AC110V, 60Hz (AC220V, 50Hz)
180103-SPE	MultiVac 103 - SPE, SPE Manifold, 300 mL glass filter holder x 1
180303-SPE	MultiVac 303 - SPE, 3 Places SPE Manifold, 300 mL glass filter holder x 3
180603-SPE	MultiVac 603 - SPE, 6 Places SPE Manifold, 300 mL glass filter holder x 6
180100/300/600-SPE	MultiVac 100 / 300 / 600 - SPE, SPE Manifold
180100-SPE-03	SPE cartridge adaptor w/ tubulated cap
180100-SPE-04	Bottle holder
180100-SPE-05	Nitrogen concentrator tube, tapered bottom
180100-SPE-10-47	PP Heavy-Duty Vacuum Bottle, 10L
180100-SPE-20-47	PP Heavy-Duty Vacuum Bottle, 20L
180100-SPE-62	MultiVac 100 - SPE repair kit
180300-SPE-62	MultiVac 300 - SPE repair kit
180600-SPE-62	MultiVac 600 - SPE repair kit
189400-11(22)	Rocker 400C, PTFE Coated Chemical Resistant Vacuum Pump, AC110V, 60Hz (AC220V, 50Hz)
167200-38	Silicone tube, Ø 6 x 12 mm, 100 cm
EMP-2215-20	Empore SPE Disk, C-18 HD, 47 mm, 20/PK
EMP-2215-60	Empore SPE Disk, C-18 HD, 47 mm, 60/PK
EMP-2240-20	Empore SPE Disk, SDB-XC, 47 mm, 20/PK
EMP-2240-60	Empore SPE Disk, SDB-XC, 47 mm, 60/PK
EMP-2241-20	Empore SPE Disk, SDB-RP, 47 mm, 20/PK
EMP-2241-60	Empore SPE Disk, SDB-RP, 47 mm, 60/PK
EMP-2270-20	Empore SPE Disk, OIL & GREASE, 47 mm, 20/PK
EMP-2270-60	Empore SPE Disk, OIL & GREASE, 47 mm, 60/PK

Rocker Scientific Co., Ltd.

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

E-mail: export@rocker.com.tw <https://www.rocker.com.tw>