BioVac 240
BioVac 240 Plus
BioVac 240 - BioDolphin

Portable suction system

A. Unpacking

When unpacking, notice if the Bio-Suction System is in good situation. If not, please contact the distributor or contact us by e-mail: **export@rocker.com.tw** immediately for assistance.

Model	BioVac 240	BioVac 240 Plus	BioVac 240 - BioDolphin
Standard package includes	BioVac 240 suction unit x1 Suction bottle x1 Foot switch x1 Disc filter (PTFE) x1 Tube connecting adaptor x1 2m silicone tube x1 1-channel tip adaptor (150 mm) x1 Instruction manual x1	BioVac 240 suction unit x1 Suction bottle x1 Foot switch x1 Disc filter (PTFE) x1 Tube connecting adaptor x1 2m silicone tube x1 Handle x1 8 channel tip adaptor with ejector x1 1 channel tip adaptor with ejector x1 1-channel tip adaptor (150 mm) x1 Repair kit of handle x1 Instruction manual x1	BioVac 240 suction unit x1 Suction bottle x1 Foot switch x1 Disc filter (PTFE) x1 Tube connecting adaptor x1 2m silicone tube x1 1 channel tip adaptor x1 1 channel S.S. adaptor x1 BioDolphin suction kit x1 Instruction manual x1

B. Important Notice

- Before using the instrument, please ensure that the power supply voltage matches the voltage rating for the instrument.
- Please ensure that all connections are well-sealed.
- The disc filter needs to be replaced periodically or immediately once it is contaminated or saturated.
- The built-in thermal protector will shut down the instrument automatically when it gets too hot.
- Please check the fuse, if the instrument doesn't work and the switch light doesn't light up after powered on.
- Do not use the instrument with organic or corrosive gases as it is not a chemical resistant product.
- Install the instrument in a clean, dust-less and ventilated area under 40℃.
- Pour some water into the suction bottle before use for easy cleaning after use. Clean the suction bottle with only tap water instead of any chemical detergents to prevent corrosion.
- It is always recommended to pour out waste solution in the suction bottle upon reaching 2/3 of the full level to prevent overflowing into the pump.
- Avoid letting the instrument fall down to prevent the damage. If you have any problems in the instrument, please contact your local distributor for assistance immediately.

C. Combined Filtration System Diagram

<pic 1> BioVac 240

<pic 2> BioVac 240 Plus

<pic 3> BioVac 240 - BioDolphin

D. Assembly & Disassembly diagram

Item	Description
1	BioVac 240 suction unit
2	PTFE dice filter
3	Suction bottle
4	Tube connecting adaptor
5	2m silicone tube
6	1-channel tip adaptor (150 mm)
7	Foot switch

<pic 4> BioVac 240

Item	Description
1	BioVac 240 suction unit
2	PTFE dice filter
3	Suction bottle
4	Tube connecting adaptor
5	2m silicone tube
6	Handle
7	8 channel tip adaptor with ejector
8	1 channel tip adaptor with ejector
9	1-channel tip adaptor (150 mm)
10	Repair kit of handle
11	Foot switch

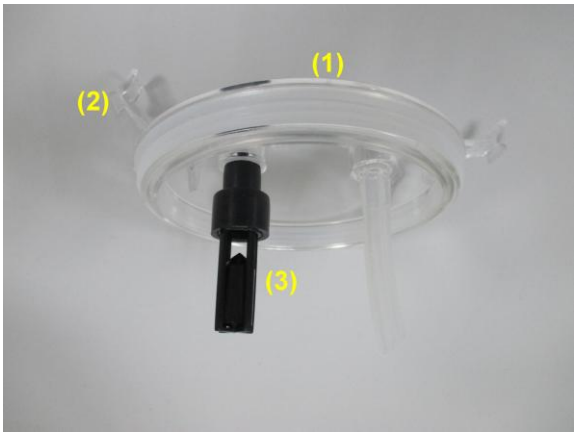
<pic 5> BioVac 240 plus

Item	Description
1	BioVac 240 suction unit
2	PTFE dice filter
3	Suction bottle
4	Tube connecting adaptor
5	2m silicone tube
6	BioDolphin suction kit
7	Repair kit of handle
8	Foot switch

<pic 6> BioVac 240 - BioDolphin

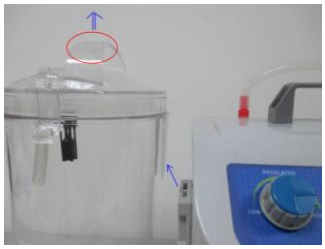
Item	Description	Item	Description	Item	Description
1	Power switch	2	Vacuum gauge	3	Vacuum regulator
4	Suction unit handle	5	Vacuum inlet	6	Suction bottle handle
7	Suction bottle outlet	8	Suction bottle inlet	9	Cover lock
10	Suction bottle connector	11	Power cord box	12	Power cord
13	Fuse	14	Foot switch plug		

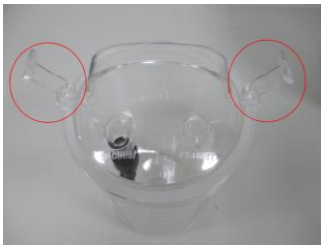
<pic 7> BioVac 240 Disassembly diagram



Item	Description
1	Suction bottle cover
2	Cover lock
3	Overflow protection

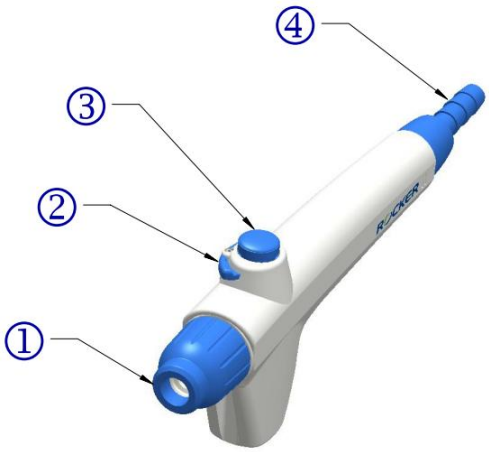
<pic 8> Overflow protection





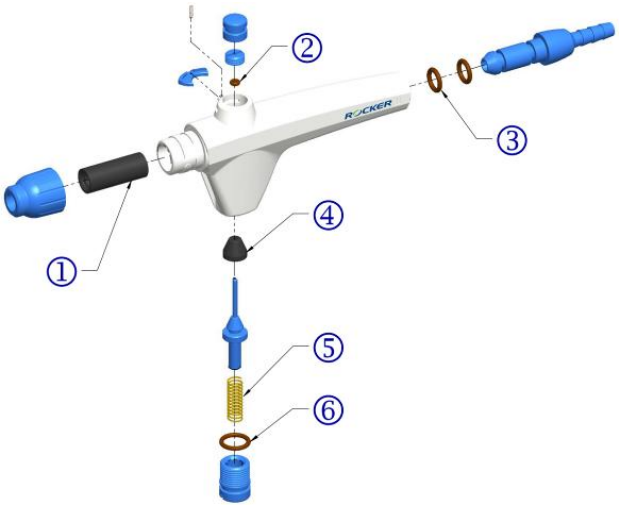
<9.a> pick up the plug **<9.b> pick up the cover** **< 9.c> open the cover lock>** **<9.d> pour away waste water**

<pic 9> pour away waste water



item	Description
1	Handle Head
2	Lock button
3	Suction button
4	Handle end

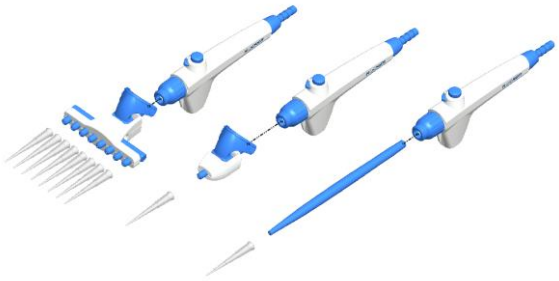
<pic 10> Handle part list



ITEM	DESCRIPTION
1	Rubber adaptor
2	O-ring AS004
3	O-ring P7
4	Rubber valve
5	S.S. spring
6	O-ring AS012

<pic 11> BioDolphin Handle Disassembly

<pic 12> Operating of 8 channel tip adaptor with ejector



<pic 13> Change different tip adaptor

E. Operating Procedure

1. BioVac 240 <pic 1>

a. Ensure that the overflow protection is installed properly then place the suction bottle on the holder. Please refer to <pic 8> when installing it.

Note: please always put the overflow protection into the waste bottle cover gently to avoid the deformation of its plastic tube that could cause a malfunction.

b. Connect disc filter with tubes according to <pic 4>.

c. Connect the tube connecting adaptor to both thin, thick silicone tube and suction bottle as <pic 4> then select a desired fitting part to be connected with the thin silicone tube.

d. Plug the power cord into a proper power supply then press power switch to turn on the machine. After blocking the fitting part with a hand, adjust vacuum level to a desired value by turning the vacuum regulator then proceed with suction operation.

Note: you can use a foot switch to control the power on/off conveniently.

e. The 1-channel tip adaptor (150mm) is recommended to be plugged into the handle then have it connect with 200 µl disposable tip (the other side can connect with 1µl disposable tip) with which to prevent cross contamination in common microplate and culture dish.

f. According to your experiment, connect the1 channel S.S. adaptor (40mm) or connect the 1 channel tip adaptor with tubes.

***Note: t*he complete set of BioDolphin suction kit (199100-00) can cater for various kinds of waste liquid container and suction.**

g. Proceed with cleaning and maintenance after every use.

Note: Check the liquid level of the waste bottle before each use and then empty it as per the applicable regulations.

2. BioVac 240 Plus <pic 2>

a. Ensure that the overflow protection is installed properly then place the suction bottle on the holder. Please refer to <pic 8> when installing it.

Note: please always put the overflow protection into the waste bottle cover gently to avoid the deformation of its plastic tube that could cause a malfunction.

b. Connect disc filter with tubes according to <pic 5>.

c. Connect the tube connecting adaptor to both thin, thick silicone tube and suction bottle as <pic 5 > then select a desired fitting part to be connected with the thin silicone tube.

d. Plug the power cord into a proper power supply then press power switch to turn on the machine. After blocking the fitting part with a hand, adjust vacuum level to a desired value by turning the vacuum regulator then proceed with suction operation.

Note: you can use a foot switch to control the power on/off conveniently.

e. The 1-channel S.S. adaptor (40 mm) can be plugged into handle directly for waste suction of microplate or culture dish by pressing the suction button or pressing lock button to keep a continuous operation.

f. The 1-channel tip adaptor is recommended to be plugged into the handle then have it connect with 200 µl disposable tip (the other side can connect with 1µl disposable tip) with which to prevent

cross contamination in common microplate and culture dish.

g. For 96-well microplate ELISA test, the 8-channel tip connector is recommended to be plugged into the handle and have it insert the tip box to take in 8 tips at one time; remove the used tips by pressing ejection button and throw them into collection bin after suction; connect with new tips to repeat suction operation; press lock button to keep a long-time operation if needed.

h. Proceed with cleaning and maintenance after every use.

Note: Check the liquid level of the waste bottle before each use and then empty it as per the applicable regulations.

3. BioVac 240 - BioDolphin <pic 3>

a. Ensure that the overflow protection is installed properly then place the suction bottle on the holder. Please refer to <pic 8> when installing it.

Note: please always put the overflow protection into the waste bottle cover gently to avoid the deformation of its plastic tube that could cause a malfunction.

b. Install the complete system of all parts according to <pic 6>

c. Plug the power cord into a proper power supply then press power switch to turn on the machine. After blocking the handle with a hand, adjust vacuum level to a desired value by turning the vacuum regulator then proceed with suction operation.

d. Ensure that air comes into the front port once pressing the suction button of the handle before proceeding with suction operation.

e. The 1-channel S.S. adaptor (40 mm) can be plugged into handle directly for waste suction of microplate or culture dish by pressing the suction button or pressing lock button to keep a continuous operation.

f. The 1-channel tip adaptor is recommended to be plugged into the handle then have it connect with 200 µl disposable tip with which to prevent cross contamination in common microplate and culture dish.

g. For 96-well microplate ELISA test, the 8-channel S.S. adaptor (40 mm) is recommended to be plugged into the handle and press suction button to draw waste in 8 wells at one time; press lock button to keep continuous operation if needed.

h. The 8-channel tip connector is recommended to be plugged into the handle and have it insert the tip box to take in 8 tips at one time; remove the used tips by pressing ejection button and throw them into collection bin after suction; connect with new tips to repeat suction operation; press lock button to keep a continuous operation if needed.

i. For deeper containers, the 1-channel S.S. adaptor (80 mm) is recommended to be plugged into the handle and put in into the container then press suction button to draw waste; press lock button to keep a continuous operation if needed.

j. If the 1-channel S.S. adaptor (80 mm) is not long enough then replace it with glass or plastic pipette.

k. After the process is finished then turn off the machine; Proceed with cleaning and maintenance after every use according to <F. Maintenance>

Note: Check the liquid level of the waste bottle before each use and then empty it as per the applicable regulations.

F. Maintenance

1. After each use, please rinse suction bottle with clean water rather than any chemical detergents which may cause cracks or damage to the structure of the suction bottle.
2. Rinse the internal part of silicone tube、tube connecting adaptor、handle and all fitting adaptors by sucking 30cc water then sterilize with an autoclave and wipe with a dry cloth after each use.
3. This bottle is made of PC material and available for autoclave at 121°C for 30 min.
4. The rack and liquid collection tray are not available for autoclave; please clean with water and sterilize with 75% alcohol.
5. It is strongly recommended to replace internal rubber adaptor、O-ring and SS spring of the handle with new parts every year at least to keep good air tightness. Please replace with new parts by referring to <pic 11>.

   Note: O-ring kit (199100-53) available for order
6. After each use, please clean the suction unit and keep it dry.
7. Disc filter and silicone tubes are consumables, please replace at least every half year to ensure sufficient air flow.

G. Troubleshooting

Symptoms	**Possible causes and Solution**
Device fails to start	1. Check the power supply conform to power specified on main unit 2. Blown fuse→ replace fuse if it is burnt out 3. Check if the power switch is in the ON position 4. Vacuum still exists in system→ release vacuum and restart 5. Defective switch→ contact your distributor for repair
Vacuum fails to adjust	1. Faulty gauge→ contact your distributor for repair 2. Loose regulator→ tighten the regulator by yourself or contact your distributor for repair 3. Faulty regulator → contact your distributor for repair
Low filtration speed	1. Regulator improperly set→ set regulator vacuum level following instruction manual 2. Air leak→ Check the tubing and connected accessories for possible leaks. (Attach, tighten or replace) 3. Check if the suction bottle is overflowing 4. Check if the PTFE Disc filter is good part
Weak aspiration	1. Adjust vacuum to proper level or change vacuum source 2. Air leakage from tubing → change silicone tube 3. Air leakage form handle → change rubber adaptor or O-ring 4. Handle or adaptor is broken → contact your distributor for repair

H. Ordering information

- 167240-11 BioVac 240 portable suction system , AC110V / 60Hz
- 167240-22 BioVac 240 portable suction system , AC220V / 50Hz
- 167241-11 BioVac 240-BioDolphin portable suction system , AC110V / 60Hz
- 167241-22 BioVac 240-BioDolphin portable suction system , AC220V / 50Hz
- 167242-11 BioVac 240 Plus portable suction system , AC110V / 60Hz
- 167242-22 BioVac 240 Plus portable suction system , AC220V / 50Hz
- 167240-33 3000ml PC suction bottle
- 167200-40 Foot switch (for BioVac 240)
- 199100-00 BioDolphin Suction kit - LB (light blue)
- 199110-00 BioDolphin Suction kit - DB (deep blue)
- 199120-00 BioDolphin Suction kit - P (pink)
- 199130-00 BioDolphin Suction kit– G (green)
- 199100-30 Handle
- 199100-46 1 channel tip adaptor
- 199100-47 1 channel S.S. adaptor (40 mm)
- 199100-48 1 channel S.S. adaptor (80 mm)
- 199100-49 8 channel S.S. adaptor (40 mm)
- 199100-50 8 channel tip adaptor with ejector
- 199100-75 1 channel tip adaptor with ejector
- 199100-76 1-channel tip adaptor (150 mm)
- 199100-61 Rack
- 199100-51 Repair kit of handle (include L bar, rubber adaptor, S.S. spring)
- 199100-69 φ6-φ8 tube adaptor
- 199100-53 O-ring kit (include O-ring P7, O-ring AS004, O-ring AS012, rubber adaptor, rubber valve)
- 199100-68 Silicone tube (Φ4.2 mm x Φ8 mm) · 200 cm