

EVAC™

Operator's Manual



ARGOS
TECHNOLOGIES *manufacturing solutions for science*

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Important Safety Information



Always use this product in accordance with these instructions. Where appropriate, please use safety goggles and protective clothing.

Operating Conditions

Operating Temperature	10 - 40° C (50 - 104° F)
Relative Humidity	10 - 90% (no condensation)
Altitude	0 - 2,500M (1.55 Miles)

Hazard Warnings Used



DANGER

Indicates possible danger of personal injury or death. Comply with the instructions.



DANGER Biological Risk

Indicates possible biological risk. Comply with the instructions.



CAUTION

Indicates possible damage to the instrument. Comply with the instructions.

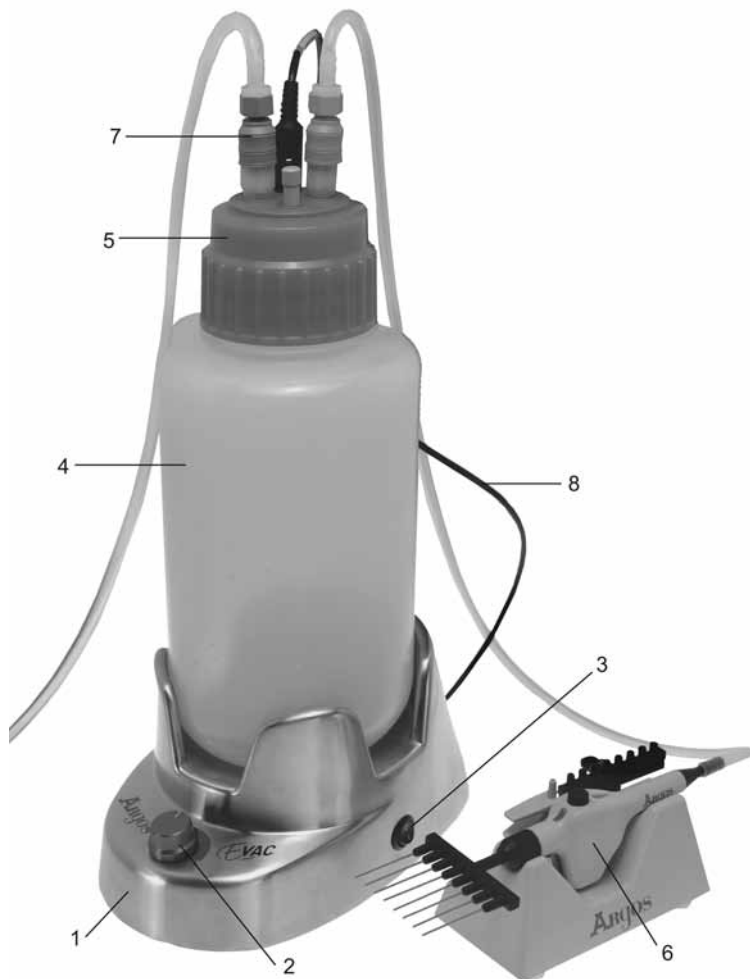


NOTE

Provides important notes on the correct operation of Argos Technologies EVac™ Vacuum System.

Product Overview

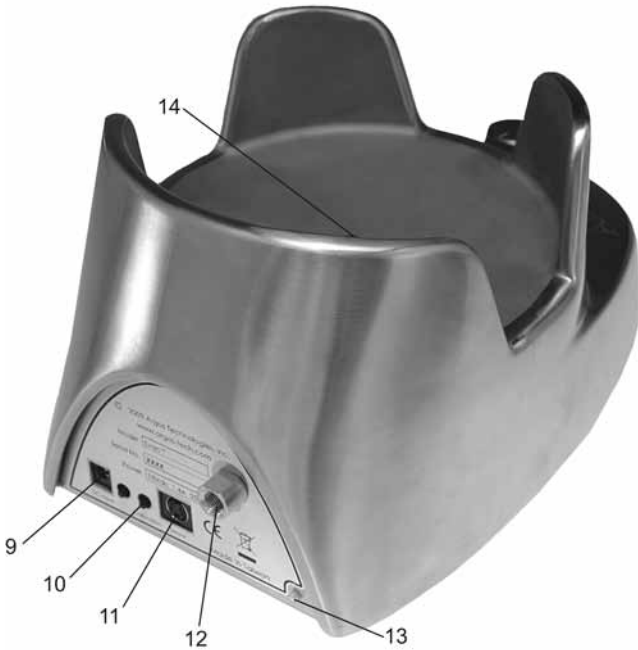
Front View



1. EVac™ Instrument.
2. Control for Setting Vacuum/Suction Power.
3. ON/OFF Switch.
4. Vacuum Bottle.
5. Bottle Lid.
6. HandEvac™ Handheld Aspirator.
7. Quick Couplings.
8. Level Detection Sensor Cable.

Product Overview

Rear View



- 9. Socket for Cable Mains Adapter.
- 10. Push-Button for Level Detection Calibration.
- 11. Socket for Level Detection Sensor Cable.
- 12. Connection for Filter Missing if Needed.
- 13. Air Outlet.
- 14. Power/Illumination LED Indicator.



NOTE

If the level detection is not in use, items 10 and 11 have no function.

Product Description

Thank you for your recent purchase of the Argos Technologies EVac™ Vacuum System.

- The EVac™ is a vacuum system with an integral pump and adjustable, electronic vacuum controller for laboratory use.
 - The instrument should not be used for applications other than those specified.
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Package Contents

- EVac™ Vacuum System.
- Universal Power Supply with US, UK, EU and SAA adapters.
- Warranty Registration Card.
- Instruction Manual.
- Tubing Set with Filter.
- Level Detection Sensor Cable (EV300 & EV310).
- 4 Liter Polypropylene Bottle or Glass Bottle
- Lid for 4 Liter Polypropylene Bottle with Quick Couplings and Level Detection (EV310), Lid with Barbed Fittings (EV320) or Lid for Glass Bottle with Quick Couplings and Level Detection (EV418)
- HandEvac™ Hand Operator

Warranty Information

The Argos Technologies EVac™ Vacuum System is warranted to be free of defects in materials and workmanship for a period of 12 months from date of purchase, provided that:

- The unit has not been opened or attempted to be opened by the end user
- The user ensures that it has been carefully cleaned and decontaminated
- The unit has been operated according to the instructions and not in any improper way

In order to qualify for warranty repair, customer must return warranty card supplied with unit that includes all information required to validate proof of purchase. Should warranty service be required, repair or replacement will be provided by Argos Technologies without charge. Freight charges for shipping unit to Argos Technologies will be responsibility of purchaser. There are no other warranties of application or merchantability.

Repair Service

Should the EVac™ require service or repair, please contact Argos Technologies Customer Service. A Return Authorization Number will be issued and customer will be advised on proper packing and method of shipment.

Customer Service:

Within US: 800-886-8675

Outside US: 847-622-0456

customer-service@argos-tech.com

Please include RA Number on shipping label.

Please use the same contact numbers for Argos Technologies Technical Support.

Getting Started

Please ensure that all packaging materials have been removed before using the EVac™. Place the EVac™ unit on a dry, level, dust-free location.

Power supply connection

- Attach the mains adapter with the primary adapter appropriate to the power outlet.
- Plug the mains adapter into a standard electrical source and connect to the EVac™.

**DANGER**

The supply voltage must comply with requirements listed in the “Technical Data” section (see page 16).

Operating EVac™

Preparing without level sensing



Preparing Vacuum Bottle

- Fit lid with barbed tube fittings onto bottle. Ensure that lid is firmly attached.

Connecting Vacuum Bottle to Instrument

- Twist filter onto connection on EVac™. Writing on filter should point away from device. Twist filter until resistance is felt, then twist an additional half turn to ensure that an adequate seal is achieved.
- Connect filter with short tube to the barbed tube fitting marked “PUMP” on lid of the vacuum bottle.

Connecting Vacuum Bottle to HandEvac™ Handheld Aspirator

- Connect long tube from HandEvac™ or other suction tool to barbed tube fitting marked “HAND” on lid of vacuum bottle.

Operating EVac™ (continued)

Preparing with level sensing



Preparing Vacuum Bottle

- Fit lid with quick couplings onto bottle. Ensure that lid is firmly attached.

Connecting Vacuum Bottle to Instrument

- Twist filter onto connection on EVac™. Writing on filter should point away from device. Twist filter until resistance is felt, then twist an additional half turn to ensure that an adequate seal is achieved.
- Connect filter with short tube to “BLUE” coupling on lid of vacuum bottle.

Connecting Vacuum Bottle to HandEvac™ Handheld Aspirator

- Connect long tube from HandEvac™ or other suction tool to “ORANGE” quick coupling on lid of vacuum bottle.

Connecting the Level Detection Sensor Cable

- Connect sensor cable to socket marked “SENSOR” on bottle lid.
- Calibrate level detection according to section titled “Calibrating Level Detection” (see page 13).

Powering Up

Please read the following notes before attempting to operate the EVac™.

NOTE



Always attach lid on tightly, ensuring that screw threads are properly aligned. The seal in the lid will only function correctly when adequately compressed.

To build up vacuum, lid venting screw must be sealed. Ensure that sealing plug/venting screw is tightly in place (see below).

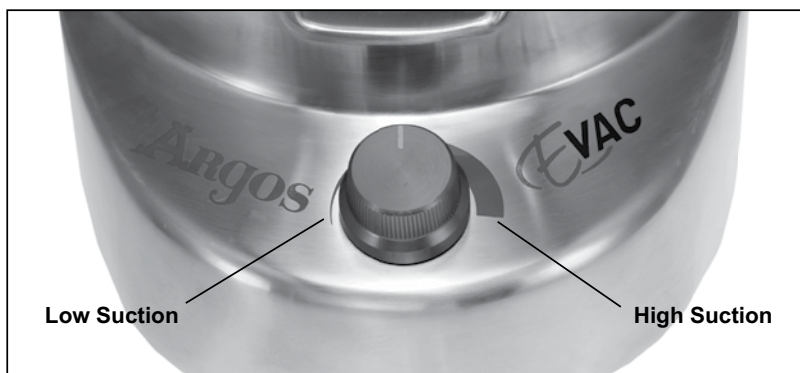


Switching On

- Turn the power switch to “ON” (I).
- When the instrument is powered on, LED indicator on top of unit will light up.

Operation

Control knob allows smooth regulation of vacuum pressure. Suction power is indicated by graduated marker on dial (see below).



Before starting suction, check that there is sufficient free volume in bottle for the amount of liquid being aspirated.

CAUTION



Do not overfill bottle.

The EVac™ includes a safety filter which will stop fluid from reaching internal mechanisms. If fluid or foam gets into filter, the filter must be changed immediately or unit may no longer retain liquids. Note that hydrophobic filter holds back aqueous solutions, whereas retention of apolar liquid is limited.



When working with dangerous substances, please maintain compliance with all applicable safety instructions, national regulations (GLP, GMP, etc.), trade associations, public health departments and factory inspectors.

When working with hazardous volatile substances or biohazardous agents, always place the EVac™ within a laminar flow cabinet.



NOTE

If equipment does not operate correctly, please refer to the “Troubleshooting (FAQ)” section on page 15.

Level Detection

The level detection connected to the EVac™ prevents foam and/or liquid from entering the filter or reaching the internal mechanisms during aspiration. As soon as foam or liquid is detected, the pump will switch off and an audible alarm will sound. The LED indicator under the bottle blinks synchronously with alarm.

NOTE



Sensor cable and bottle lid must have matching calibration.

Daily calibration of the EVac™ is strongly recommended.

When using multiple lids, it may be necessary to recalibrate after changing lids.

Level sensing automatically activates when cable is plugged in. The EVac™ will beep four times and LED indicator will flash to confirm this. It is possible to activate/deactivate the level sensing during use by connecting/disconnecting sensor cable. Both actions are confirmed with an audible beep and flash of the LED indicator.

Calibrating Level Detection

- Connect sensor cable to socket on bottle lid.
- Switch on the EVac™.
- The EVac™ will beep four times and LED indicator will flash to confirm that level detection cable is attached correctly.
- Press “CALIBRATION” button at rear of unit until a short beep sounds.
- If calibration fails, the EVac™ will beep four times synchronously with flashing of LED indicator. Check that cable is correctly connected to device and that lid is properly tightened and fitted.
- Check that lid, sensor pins, and space between sensor pins are clean and dry. Repeat as required.

Maintenance, Care and Safety Precautions

Maintenance

The EVac™ does not require any special servicing or maintenance. If a reduction in suction power occurs, it may be caused by blockages in the tube and/or filter on the pump side. This may be remedied by exchanging the affected tube and/or filter. When replacing filter, remember that writing on filter should point away from device.

Care

The EVac™ may be cleaned with most common laboratory disinfectants, including isopropanol.



NOTE

When using level detection, always ensure that the contact pins on bottle lid are kept clean and dry.



DANGER

Always unplug the EVac™ from power supply before cleaning. Never use caustic solutions (such as nitro thinners) to clean the EVac™.

Autoclaving

The EVac™ bottle, lids and tubes may be autoclaved to a maximum temperature of 121° C (249.8° F).



Refer to the autoclave manufacturer's guide for correct sterilization of liquids and volumes.



To prevent damage, always disconnect quick connectors prior to autoclaving.

Loosely screw lid onto bottle during autoclave process to prevent heat from deforming bottle lid.

The EVac™ Instrument, Mains Adapter, and Sensor Cable are not autoclavable.



To prevent generation and/or aspiration of corrosive vapors, use only non-caustic chlorine-free agents for chemical sterilization.

Troubleshooting (FAQ)

Problem	Possible Cause	Remedy
Equipment not running; no vacuum	No power line voltage	Insert mains adapter plug into suitable power outlet.
	No DC supply	Connect mains adapter to instrument.
	Pump switched off	Turn power switch to "ON" (I). Ensure that LED indicator under bottle is lit.
Suction power inadequate or pump runs constantly	Suction power selected too low	Turn control knob clockwise.
	Leak in vacuum system	Check tubes and filters. Check lid and tighten if necessary. Check if sealing plug/venting screw on bottle lid is leaking. Ensure that filter is fully tightened onto unit. Ensure that leak flow of hand tool is not excessively high.
	Bottle full; liquid sucked into filter	Remove wet filter and replace with new, dry filter. Empty excess liquid from existing bottle or replace with new, empty bottle.
	Tubes Blocked	Clean or replace tubes.
	Filter blocked	Replace filter.
Alarm level detection	Sensor cable incorrectly connected	Check that cable is correctly connected to device and lid.
	Medium or foam in bottle has reached maximum level	Empty excess liquid from bottle. Use an anti-foam agent.
	Level detection not calibrated	Calibrate level detection (see page 13).
	Incorrect calibration (Four beeps will sound)	Check sensor pins, sensor cable and connector. Retry calibration (see page 13).
	The lid interior between sensor pins is soiled	Clean and dry interior of lid between sensor pins.

Technical Data

Equipment Type	Laboratory unit with adjustable vacuum for controlled, contamination-free suction removal of liquids
Dimensions (L x W x H)	Instrument: 240 x 173 x 145mm (9.45 x 6.73 x 5.71 in.) With 4L bottle, tubing, and filter: 350 x 173 x 550mm (13.78 x 6.73 x 21.65 in.)
Weight	3.9Kg (8.6 lb)
Vacuum	-275 to -625 mbar relative, smoothly adjustable
Pump Output	Approx. 8 L/min air under atmospheric conditions
Control	Microprocessor controlled, adjustable vacuum control
Indicator	Blue LED indicator lit when unit powered "ON"
Power supply	Mains adapter Input Voltage: 100 – 240V~; 50/60Hz; 0.6A 4 primary connectors for EU, UK, US/JP, SAA Instrument 18V; 1.4A
Certifications	CE Protective Class II Degree of Protection IP41
Noise Level	Typ. 50dB +/- 5dB at a distance of 1m
Bottle	4L polypropylene bottle or glass bottle
Level Detection	Capacitive measuring principle
Instrument Material	Casing and Base: Stainless steel Control Dial: Anodized aluminum Filter Connection: Brass
Quick Coupling Material	Body: Polyvinylidene Fluoride (PVDF) Spring: Stainless steel Seal: Fluorine Rubber (Viton®)
Ambient Conditions	Operation: 5 - 40° C (41 – 104° F), max 80% RH Storage: -10 - 50° C (14 – 122° F), max 95% RH
Filter	Hydrophobic membrane filter, non-sterile, diameter 60mm, 0.45µm

Accessories and Spare Parts

Part Number	Description
EV514	HandEvac™ Handheld Aspirator with Single Channel Adapter
EV431	4L Polypropylene Bottle with Quick Release Coupling
EV432	4L Polypropylene Bottle with Barbed Fitting
EV370	4L Polypropylene Bottle
EV420	3L Glass Bottle
EV371	Lid for PP Bottle (with Quick Couplings and Level Detection)
EV372	Lid for PP Bottle (with Barbed Tube Fittings)
EV418	Lid Glass Bottle (with Quick Couplings and Level Detection)
EV332	1800mm Tubing (Bottle Lid – Handheld Aspirator)
EV331	700mm Tubing (Instrument – Bottle Lid)
EV342	Tubing Set with Filter
EV015	Hydrophobic Membrane Filter, Non-sterilized Diameter: 60mm, 0.45µm (1/Ea.)
EV403	Level Detection Sensor Cable
EV355	Mains Adapter

