



Operating Manual

for

VWR INTERNATIONAL **LABmax**

“airless”

Dispenser

Read this manual thoroughly before
operating the VWR Brand Labmax
Bottle Top Dispenser.



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1 Safety- and User Precautions

1.1 General Safety Precautions

In order to ensure proper operation, it is imperative that you read this manual carefully before using this device.

Highest safety precautions should be used when dispensing corrosive, poisonous, radioactive or hazardous chemicals.

- Follow the general safety regulations available for the handling of chemicals (e.g. protective clothing, protective goggles).
- Use the VWR Brand "**Labmax-airless**" only for the purpose for which is intended.
- Always check the device for leaks and confirm a proper connection between the dispenser, bottle and tubings prior to operation.
- Never use force. Breakage of any part will lead to hazardous exposure for the user as well as others.
- Clean the device every day.
- The user is responsible for checking that the device is suitable for the application.
- The proper and secure function is only warranted in connection with the supplied ejection cannula (6). Do not use any other ejection cannula.
- Never use damaged or deformed tubing.
- The ejection cannula (6) should never face the user and a collection vessel should always be placed underneath.
- If the valve is faulty the cannula might drip.
- Check all screw fittings approximately one hour after disassembly or reassembly to ensure tightness. If loose tighten to prevent leakage.
- If unsure about dispensing a specific solution, please contact VWR International at 1-800-932-5000.

1.2 Prior to Initial Operation

- Check that the device has not been damaged in transit.
- Push cannula (tubing) on tightly.
- Do not carry the device by grasping just the outer housing (2).
- Push ejection cannula (tubing) (6) on tightly and slide the cannula holder (7) into the provided grooves.
- When screwing on the bottle do not grip the device at its outer housing (2) Hold the housing at the bottom screw cap (also applicable during unscrewing).
- Do not pump the dispenser until it has been assembled completely and a collecting vessel has been placed underneath.

1.3 Warranty

VWR International warrants the VWR Brand "Labmax-airless" you have received to be free of defects in material and workmanship for 24 months from the date of purchase. VWR's responsibility shall be limited to the repair or replacement of a dispenser only is used according to the instructions in the manual and for the purpose for which it is designed.

VWR International shall not be responsible for consequential damages resulting from the misuse of this equipment.

1.4 Operating Limitations

The VWR Brand "Labmax-airless" is suitable for dispensing most liquids. Extra care should be taken when dispensing dangerous or hazardous solutions. The VWR Brand "Labmax-airless" Dispenser should not be used for dispensing the following :

- solutions of hydrofluoric acids
- solutions which contain any form solids
- solutions of substances catalysed by platinum and iridium alloys

The VWR Brand Labmax should be rinsed daily if used with the following :

- solutions which form crystals
- inorganic oxidable solutions (i.e. biuret reagent)

The temperature of the VWR Brand "Labmax-airless" and reagent should not exceed 40°C (104°F).

2 General Product Description

Our new dispenser-generation VWR Brand "Labmax-airless" has an automatic air-purging system which warrants a completely stress-free handling of media.

Unlike conventional devices there is no feedback of the media in to the bottle during air-purging, therefore, air bubbles should not get into the media at the filling level.

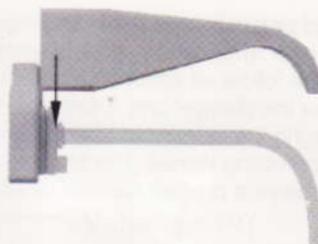
Through the newly designed canal system the downward moving plunger always displaces the air first prior to dispensing the liquid. This reduces the amount of substance used for air-purging.

The air-purging of the VWR Brand "Labmax-airless" takes place automatically at normal dispense setting so that no manual air-purging, such as opening and closing of the valve cap is necessary. Another prominent feature is the patented cannula reflux dispensing which prevents unnecessary loss of media and serves as an additional safety lock.

The dispensers are supplied with a variety of adapters to provide compatibility with most bottle sizes.

3 Preparation

First push the ejection cannula (curved tubing) into the front valve and then slide the cannula holder from above into the groove. Confirm a tight fit.

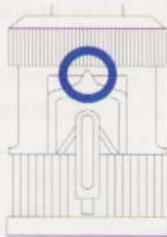


Push the small return tube (21) into the big socket and the long suction tube (20) into the small socket. Now you can screw the VWR Brand "Labmax-airless" onto the bottle.

Control the length of the suction tube by cutting it to the desired level with a knife or scissors.

4 Operation

4.1 Aerate



Dispensing position

Before starting to pump, it is essential to place a collecting vessel under the cannula. The valve axle has to be in the dispensing position (arrow up).

Now perform short pumping movements until there are no more air bubbles. Perform regular and smooth movements and make sure that the outer housing (2) is always pushed all the way down.

4.2 Volume Adjustment

The quick-volume-adjustment is performed with the volume rocker switch. This assures a maximum of exact reproduction of liquid quantities. To set the required dispensing quantity, turn the calibration screw counter clockwise until the volume rocker switch can be moved easily. Tighten the calibration screw clockwise after the indicator has been set to the required value.

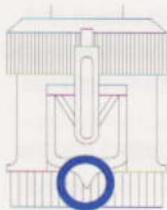
4.3 Dispensing

Avoid personal injury from chemicals. To protect yourself wear eye protection and offer appropriate safety equipment and clothing.

Please follow all safety instructions and observe operating procedures.

Raise the plunger until it stops at the point set by the volume rocker switch. By lowering the plunger to the lowest point the set quantity will be dispensed into the collecting vessel. The plunger movements should be smooth and constant to achieve a precise ejection volume.

4.4 Draining the Ejection Cannula

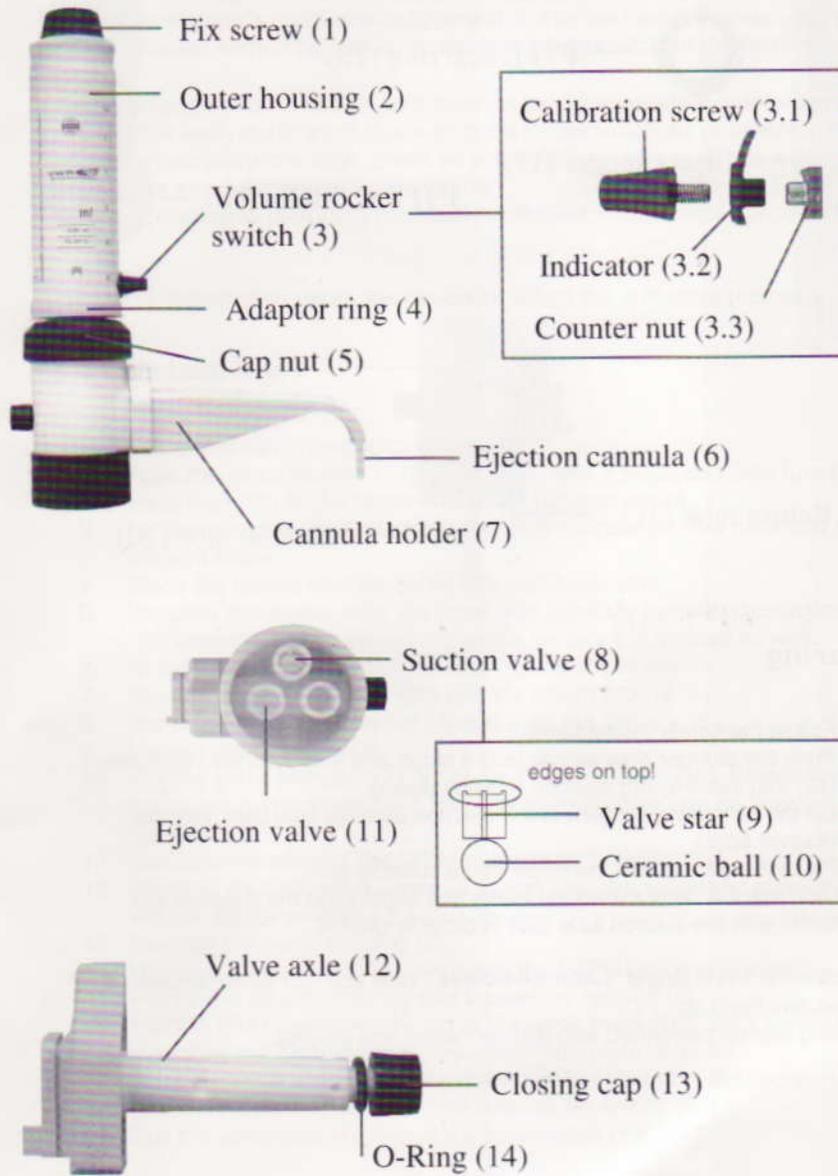


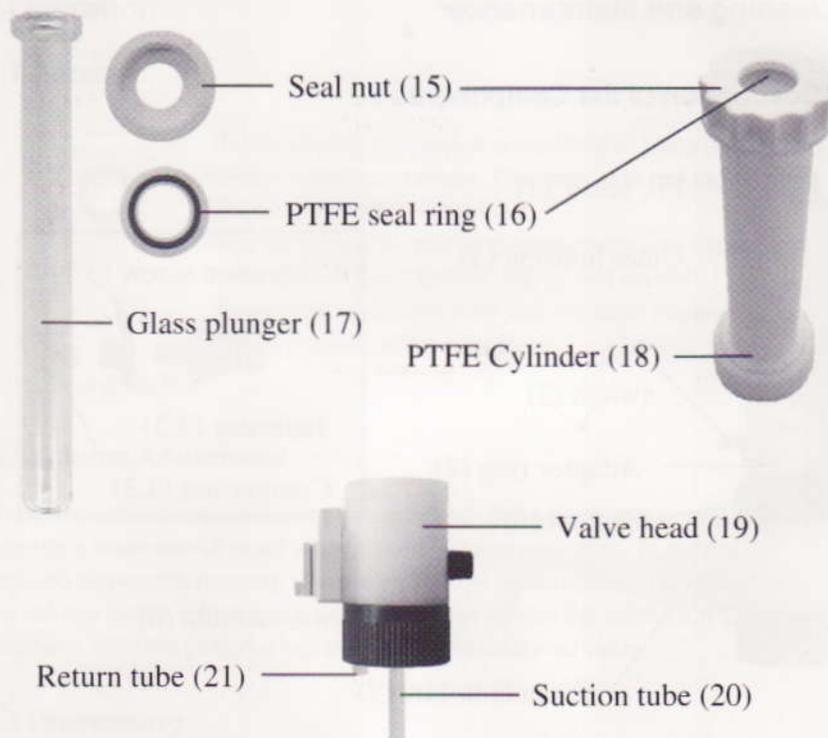
Draining position

The ejection cannula of the VWR Brand "Labmax-airless" can be drained safely and easily. Turn the valve axle for 180° (upside down) to the left until it stops (arrow downward). This way it is possible to achieve a dispensing blockage which prevents any further drop out. A closure cap is no longer needed. If slightly tilted backwards the ejection cannula will allow the liquid to drain back into the bottle.

5 Cleaning and Maintenance

5.1 Description of the Components





5.2 Cleaning

1. Follow the safety instructions.
2. Push the plunger downwards until it stops and then turn the valve axle (12) into the draining position (Upside down).
3. Let the remaining reagent in the ejection tube (6) flow back into the reagent bottle.
4. Place the device with the bottle into a suitable sink.
5. Unscrew the device from the bottle and slightly tap the inside of the bottle with the suction tube (20) in order to drain it.

Disassemble the VWR Brand "Labmax-airless" until you can securely clean it from all reagent build up.
The cleaning can be performed with distilled water and alcohol.

5.3 Sterilization

After removal of the return tube (21) and the suction tube (20) the VWR Brand "Labmax-airless" can be steam-sterilized (121 °C, 2 bar).

Place the device on a cloth and avoid any contacts with hot metal surfaces. In order to prevent a calibration adjustment due to the heat expansion, **the volume rocker switch (3) has to be set to minimum 2/10 of its maximum volume.**

After sterilization let the device cool down to room temperature before you use it again. After each sterilization check all parts for deformations or other changes. After approximately one hour, check all screw fittings once again for a tight fit. Do not use any deformed or leaking parts.

It is also possible to perform a chemical sterilization with alcohol, formaldehyde etc.

In case of deformation return the device including the autoclave protocols.

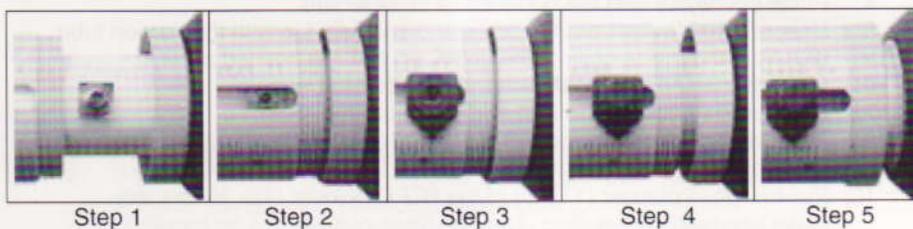
5.4 Disassembly

1. Follow the safety instructions.
2. Push the glass plunger (17) downwards until it stops and then turn the valve axle (12) to the draining position (Upside down).
3. Let the remaining reagent in the ejection cannula (6) flow back into the reagent bottle.
4. Place the device with the bottle into a suitable sink.
5. Unscrew the device from the bottle and carefully tap with the suction tube (20) from the inside against the bottle, so that it is drained as well.
6. Rinse the Brand "Labmax-airless" with distilled water.
7. Remove the suction tube (20) and the return tube (21).
8. Remove the cannula holder (7) and then the cannula (6).
9. Loosen the fix screw (1).
10. Pull the glass plunger (17) out of the PTFE cylinder (18). Before this make one pump movement, then the glass plunger can be handled easier.
11. Unscrew the adaptor ring (1) from the outer housing (2).
12. Remove the calibration screw (3.1) and then the remaining parts of the volume rocker switch (3.2 and 3.3).
13. Remove the outer housing (2).
14. Unscrew the seal nut (15) and place the PTFE seal ring (16) aside.
15. Pull off the adaptor ring (4) and loosen the cap nut (5).
16. Pull the PTFE cylinder (18) out of the valve head (19), keep in mind that the valve star (9) and the ceramic ball (10) might drop out.
17. Take the valve star (9) and the ceramic ball (10) out of the suction valve.
18. Loosen the closing cap (13) and remove the O-ring (14).
19. Pull the valve axle (12) out of the valve head (19).

5.5 Assembly

For a problem-free functionality please observe the tight fit between valve head (19) and cap nut (5). If necessary please tighten.

1. Push the valve axle (12) into the valve head (19).
2. Assemble the O-ring (14) and the closing cap (13).
3. Place the ceramic ball (10) and the valve star (9) into the suction valve. Check that the spikes of the valve star (9) point upwards.
4. Assemble the PTFE cylinder (18) on the valve head (19). Check that the notches of the PTFE cylinder (18) are placed exactly over the domes of the valve head (19).
5. Tighten the PTFE cylinder (18) with the cap nut. Check that all parts fit tightly.
6. Position the adaptor ring (4) with the thread upwards over the cap nut (5).
7. Position the PTFE seal ring (16) with the groove upwards on the PTFE cylinder (18) and screw the seal nut (15) tightly on the thread.
8. Place the device horizontally and perform the following steps consecutively. Prior to that slide the outer housing (2) onto the PTFE cylinder (18).



9. Erect the device and push the glass plunger (17) into the PTFE cylinder (18) until it stops.
10. Screw the fix screw (1) into the outer housing (2).
11. Push the ejection cannula (6) into the valve axle (12) and fix it with the cannula holder (7).
12. Push the return tube (21) and the suction tube (20) into the valve head (19).
13. Screw the device onto the reagent bottle.

5.6 Maintaining Clear Pathways

When the VWR Brand "Labmax-airless" is screwed open, make sure that the valves are surrounded by liquid.

You can keep the dispenser smooth-running by rinsing it with distilled water or alcohol.

In order to ensure that the device meets its accuracy, from time to time check-ups can be done with (2x)-distilled water on semi-micro-scales. Allow temperature dependence (1 ml water at 20 °C \approx 0,998g).

6 Common Spare Parts

Suction Tube (14)	2 - 10 ml	D5375-000
Suction Tube (14)	10- 50 ml	D5375-001
Ejection Cannula	2 - 10 ml	D5375-003
Ejection Cannula	10 - 50 ml	D5375-004

For other parts, please contact your local VWR International Office at 1-800-932-5000.

7 Optional Accessories

The following optional accessories are available for the VWR Brand "Labmax-airless"

- Borosilicate Glass Check Valve.
This special, plastic-safety coated check valve is to be inserted into the valve axle (10) on the side opposite to the cannula and prevents volatile reagents from escaping through the ventilation canal. The Glass Check Valve is recommended when using your dispenser for bromine.
- Borosilicate Glass Calcium Chloride Tube.
This safety coated tube can be filled with calcium chloride and will protect siccatives (drying agents) from external humidity.
- Disposable Filters are available to protect against dust and bacteria. The filters fit into the valve axle socket.

Threaded Bottle adapters

<u>Catalog number</u>	<u>Description</u>	<u>Thread size</u>
D5377-025	Threaded Bottle Adapter (pack of 3)	25 mm
D5377-028	Threaded Bottle Adapter (pack of 3)	28 mm
D5377-032	Threaded Bottle Adapter (pack of 3)	32 mm
D5377-038	Threaded Bottle Adapter (pack of 3)	38 mm
D5377-040	Threaded Bottle Adapter (pack of 3)	40 mm
D5377-045	Threaded Bottle Adapter (pack of 3)	45 mm
D5377-COMB-VWR	Combination pack (1 each of 25mm, 28mm, 32mm and 45mm)	

To order contact VWR International at 1(800) 932-5000