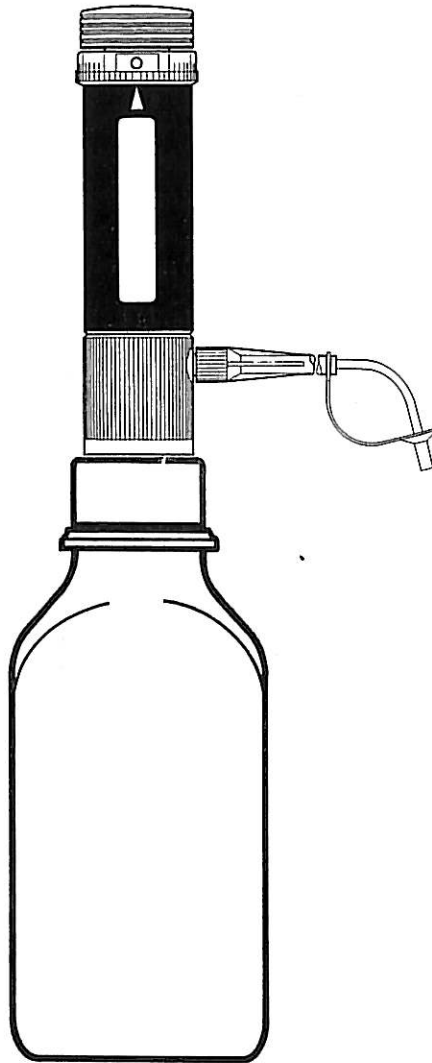
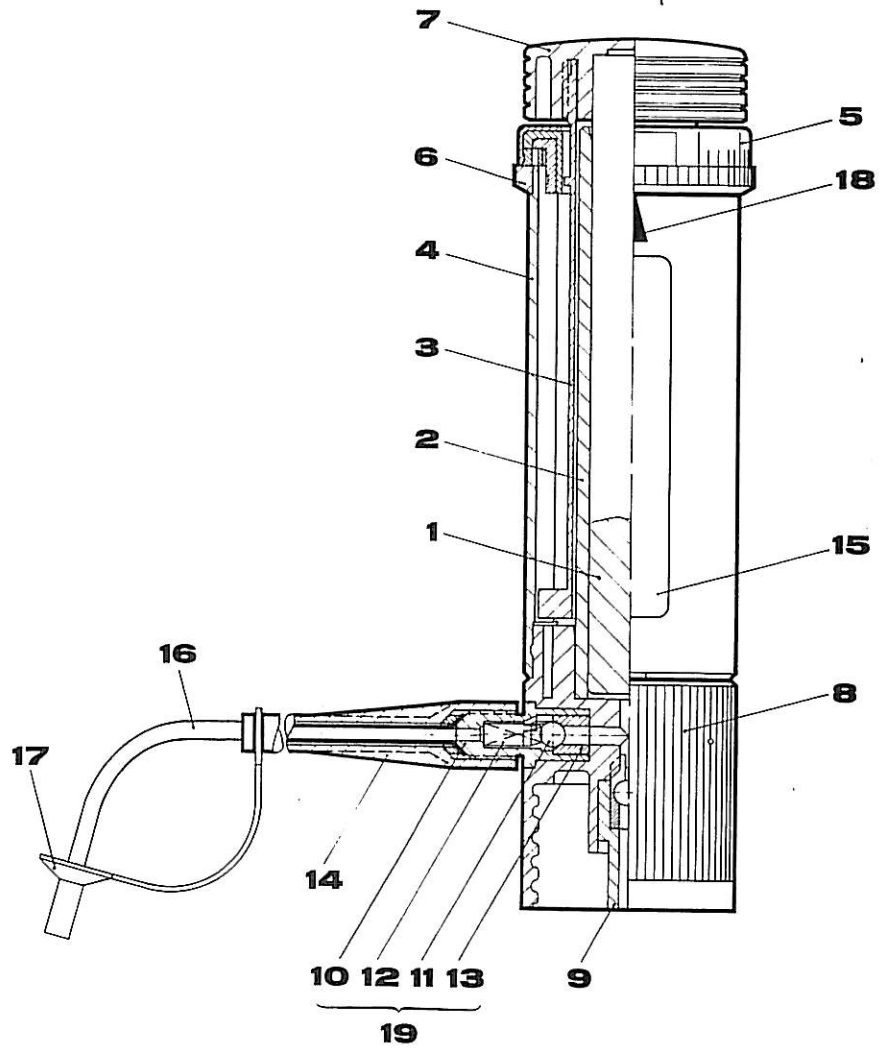




Pressmatic 2000 dispenser





Instrument parts

- | | | |
|---------------------|----------------------|---------------------------|
| ① piston | ⑨ valve support | ⑰ closure cap |
| ② cylinder | ⑩ valve casing | ⑱ adjustment mark |
| ③ step gauge | ⑪ valve ball | ⑲ drain valve unit |
| ④ protective sleeve | ⑫ valve spring | 1-10 ml: adapter |
| ⑤ scale ring | ⑬ valve seat | A 25, 28, 45; suction |
| ⑥ adjusting ring | ⑭ extended screw cap | hose 225+335 mm |
| ⑦ knob | ⑮ observation window | 30+60 ml: adapter |
| ⑧ valve block | ⑯ spout tube | A 28, S 40, A 45; suction |
| | | hose 225+335 mm |

Functional principle

The dispenser is a digitally adjustable bottle dispenser for reproducible metering of reagents. The screw thread A 32 in the basic apparatus and the adapters, supplied as standard, fit the predominant part of commercial reagent bottles. Further adapters are available as accessories. When the lifting piston ① is pulled up, the ball of the suction valve lifts. Fluid is drawn from a supply bottle through suction tubing into the glass cylinder ②. After the end of the suction step, the suction valve closes. When the lifting piston is depressed, the spout valve ⑱ opens and releases the volume set on the scale ring. The desired volumetric quantity is set by simply turning the scale ring ⑤ like a click-stop device to the value indicated on the setting mark ⑲.

Operation

1. Before assembling the apparatus, check for externally visible damage.
2. Push the suction tubing over the valve support ⑨ and, if necessary, cut it off obliquely at the lower end.
3. Screw the spout tubing with the extended cap nut ⑭ firmly to the valve casing ⑩.
4. Screw the apparatus to the supply bottle, if necessary with an adapter.
5. Volume setting:
Turn the scale ring to the desired volume.
6. Check whether the closure cap ⑰ has been taken off.
7. Force air bubbles out of the apparatus by rapidly repeated suction and ejection. Very small air bubbles on the end face of the piston have only a negligible effect on the volume tolerances.
8. Metering takes place by uniform uninterrupted pulling up and depressing of the piston unit.
9. After the end of metering for a larger time, lock the apparatus by turning the scale ring into the "0" zone and slip the closure cap onto the spout tubing ⑯.

Safety instructions

When working with hazardous and harmful liquids, always observe the appropriate general safety regulations and wear protective clothing if necessary.

Never carry out metering towards yourself. When strictly adhering to the safety regulations and operating instructions, there is no risk in working with the dispenser.

However, the apparatus must be used only within the range in which its materials are resistant. The "0" locking prevents inadvertent ejection of liquid.

It can be locked only if the piston is depressed. The piston and glass cylinder are protected against fracture by the protective sleeve (4).

Maintenance and repairs

Due to the use of high-grade materials and sophisticated engineering design, the apparatus requires little maintenance. Nevertheless, the measures described below should be taken for troublefree use.

- Prevention of sticking valves during prolonged intervals:
With the metering unit screwed on, ensure that the valves are surrounded by liquid.
With the metering unit unscrewed, maintain easy running of the valve system by rinsing with distilled water and/or a laboratory cleaner. This precaution is assisted by finally drawing alcohol through.
- In the case of a change of reagent, and crystallising media, rinse with distilled water before and after.
- To ensure that the apparatus meets its accuracy data, checks should be carried out from time to time with twice distilled water on semi-micro balances, allowing

for the temperature dependence (1 ml of water at 20°C = 0.998 g).

- To check the tightness of the valve system and of the connected tubing, fill the unscrewed apparatus by drawing in liquid. When doing this, it is not permissible for the liquid level to retract at the spout tubing or even for air bubbles to move to the valve block (8).
- Immediately replace any leaking parts of tubing by original spare parts.
- Any repairs to the apparatus must exclusively be carried out by authorized service stations or direct by the manufacturer. Return the apparatus in the cleaned state, stating the liquid which has been metered.
- The apparatus can be steam sterilised at max. 121°C/2 bar except the closure cap (17).
Previously removal of the sterilisable units knob/piston (7)/(1) and spout line/screw cap (16)/(14) is necessary.

Technical Data

Code	Volume ml	Subdivision ml	R* %	CV* %
PD 1	0,2- 1	0,05	≅ 0,7	≅ 0,2
PD 2	0,4- 2	0,05	≅ 0,7	≅ 0,1
PD 5	1 - 5	0,10	≅ 0,7	≅ 0,1
PD 10	2 -10	0,25	≅ 0,7	≅ 0,1
PD 30	5 -30	0,5	≅ 0,7	≅ 0,1
PD 60	10 -60	1	≅ 0,7	≅ 0,1

*All the tolerance values relate to the maximum volume

Operating temperature range:
+ 4 to + 70 °C

Materials:

Piston (1):

Cylinder (2):

Valve block (8):

Valve casing (10):

Valve support (9):

Valve ball (11):

highly pure ceramic of Al₂O₃ borosilicate

Halar**

Halar**

Halar**

Glass

Valve seat (13):

Valve spring (12):

Suction and

spout (16) tubing:

Closing cap (17):

Glass

equivalent to platinum/iridium

PTFE

PTFE/FEP

PE

**or equivalent

Safety Instructions

For use by qualified laboratory personnel only.

1. Before using the Dispenser, read the Instruction Manual and, particularly, the Safety Instructions carefully. It is important that every member of your laboratory staff is familiar with these safety guidelines before using the Dispenser.
2. Observe general laboratory safety practices, such as the use of protective clothing, safety glasses and gloves when handling hazardous chemicals.
3. Before using the Dispenser, always check that all connections are tight and that the outlet nozzle is firmly in position. A loose outlet nozzle can cause spillage when the plunger is depressed.
When the Dispenser is not in use, the closure cap should be pressed into place on the end of the outlet nozzle. When removing the closure cap, always hold the outlet nozzle firmly to prevent splashing. For small bottles, always use a holding device.
4. Always work in such a way that neither yourself nor other persons are endangered. Dispense always away from yourself, avoid splashing and use suitable collection vessels. It is recommended to dispense onto the inner wall of the collection vessel rather than onto the contents or directly onto the base of an empty vessel. Respect all safety precautions relevant to the reagent being dispensed.
5. After sterilisation, do not use the dispenser until it has cooled to room temperature.
6. Only use the Dispenser for the purpose for which intended and within the resistance limits of the materials of construction. Only use spare parts and accessories supplied by the manufacturer. Repairs to the instrument should only be carried out by authorised service technicians.
7. The Dispenser is designed to be robust, but never exert undue force. Breakage of components endangers users and others. If the plunger becomes stiff, do not attempt to continue dispensing; follow the cleaning instructions.
Do not leave the dispenser with the plunger in the up-position except for cleaning or drying.

Maintenance

1. To obtain the optimum life from the Dispenser, it is advisable to clean the unit at regular intervals as described in the „Maintenance and Repairs“ section. This is particularly important when the Dispenser is used with crystallising liquids.
2. Before cleaning the Dispenser, it is advisable to remove the plunger from the cylinder and unscrew and remove the outlet nozzle. This will facilitate thorough cleaning.
When changing liquids, rinse the Dispenser repeatedly with a cleaning solution and then rinse out with distilled water.
The Dispenser is autoclavable; however, always remove the closure cap on the outlet nozzle prior to autoclaving. (121° C at 2 bar)

User Hints

Although the Dispenser is manufactured from the highest quality materials, its use is subject to certain limitations. Various parts of the Dispenser are manufactured from different materials, each with varying resistance to a specific range of chemicals. It is essential that the physical and chemical characteristics of the liquids being dispensed are fully understood. Failure to recognise and comply with the limitations can lead to damage or malfunction of the Dispenser and potential danger to users.

Some hints for use with some general laboratory reagents (without liability for completeness).

Reagent	Hints
Hydrofluoric acid (HF) and related compounds	May not be dispensed as it would attack glass cylinder.
Crystallising solutions, suspensions oxidizing solutions concentrated saline	Crystals, solid particles and metal oxides might block valves and plunger. As a preventive measure, ensure that the closure cap is closed when not dispensing. Similarly, in instances where the Dispenser is not in continual use, users should dispense at daily intervals to avoid drying out. If the Dispenser has become blocked, soak it in a detergent bath overnight.
Acetone Hydrochloric Acid	There is a very small gap between the piston and the cylinder of the Dispenser. As a result, there is always a thin film of liquid between the piston and cylinder that can leak, evaporate or react with the atmosphere. This must be borne in mind during use, and, if evaporation is a potential problem, always use a fume hood when dispensing.
Viscous liquids	Viscosity can affect the volume of liquid dispensed.

Trouble Shooting

Problem	Possible Cause	Suggested Solution
Piston stiff	Crystallisation of solution	Stop dispensing and clean the Dispenser. If the stiffness still persists, soak the dispenser in a detergent solution.
After a period of storage, the Dispenser no longer operates	Valves stuck	Shake the Dispenser gently or tap the valve block carefully against the palm of the hand or release the ball of the valve by gently pushing a thin blunt object through the valve opening. Soak the Dispenser in detergent.
Air is sucked in	Leaking suction tube	Push the suction tube more firmly into position. If this does not work, it may be necessary to trim the upper portion of the suction tube or fit a new one.
Inaccurate volume dispensed	Valve Dirty	Soak the Dispenser in detergent to dissolve deposits. Note: Temperature changes of the liquid will affect weight and the viscosity of liquids affects the volume dispensed.

If the possible solutions outlined above do not solve the problem, contact your supplier, and return the Dispenser for service. Before returning the unit, it is essential that the Dispenser be cleaned and decontaminated. Please provide detailed information about your problem and the solution dispensed, particularly if infectious, radioactive or corrosive liquids have been used.