

Medical suction apparatus

The three essential parts of a suction apparatus are:

1. The source of vacuum.
2. The reservoir.
3. The delivery tubing (which may include a nozzle or a catheter).

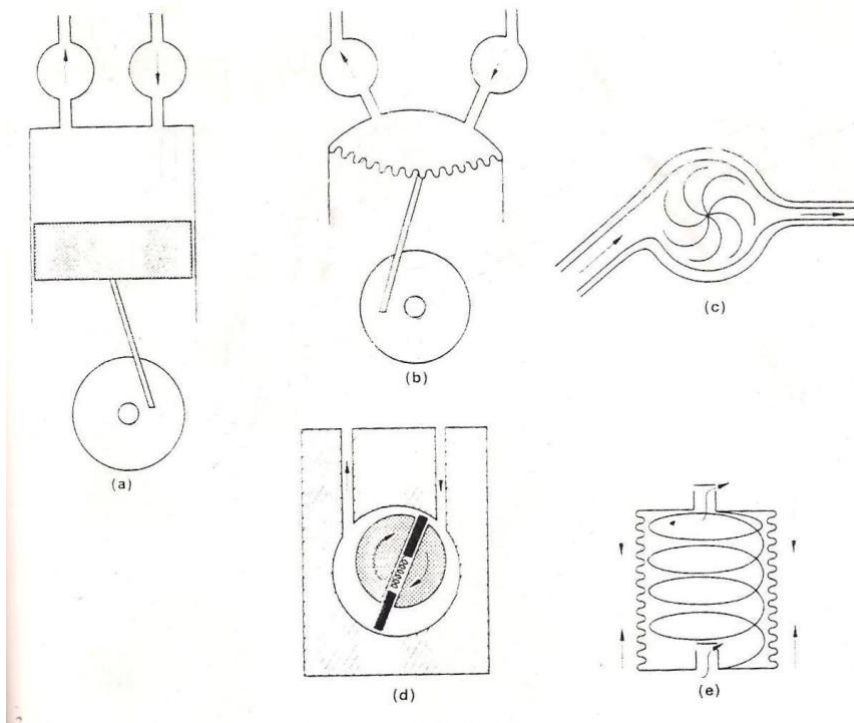


The efficiency of a suction apparatus depends upon:

1. The displacement, i.e. the volume of air measured at atmospheric pressure, usually expressed in litres/ minute, which the pump is able to move.
2. The degree of negative (sub-atmospheric) pressure which can be produced by the pump with particular regard to the time taken to achieve it.
3. The length and diameter of the delivery tube.

Types of source of vacuum

- a. Piston pump.
- b. Diaphragm pump.
- c. Rotary pump.
- d. Vacuum cleaner (vane-type).
- e. Bellows.



Refinements

The following refinements may be added to a suction apparatus:

- a. **Cut-off valve:** this is fitted inside the reservoir, and usually consists of a float which, being lifted by the rising level of liquid operates a valve to shut off the connection with the suction source. Its purpose is to prevent liquid from a full reservoir entering the pump and causing failure.

- b. **Bacterial filter:** this may (in fact should) be fitted to prevent air which has been contaminated during its passage through the apparatus from infecting the atmosphere when it is blown out of the pump. The filter is best placed between the reservoir and the pump so as to protect the latter. A container packed with cotton wool makes a fairly efficient filter provided that it is dry. If the filter becomes wet it is ineffective, and may also obstruct the air flow. Filters should be changed at regular intervals, depending on their size or they simply become a reservoir of infection.
- c. **Vacuum control valve:** a vacuum control valve may be fitted between the pump and the reservoir. This is a bleed valve which when opened admits air to the pump thereby reducing the degree of vacuum.



- d. **Vacuum gauge:** these gauges which are normally calibrated in mmHg from 0 to 760 are fitted to the tubing between the vacuum control valve and the reservoir, or on the top of the reservoir itself.



- e. **Foam prevention:** foam may sometimes be a problem since it causes closure of the cut-off valve when the reservoir is far from full, or it may be pass to the filter and even the pump causing failure. Foam may be suppressed by the addition of methylated spirit to the reservoir (remember explosion risk) or more effectively by silicone based emulsions such as 'Foamtrol'.
- f. **Stop valve:** this valve may be used to occlude the delivery tubing close to the nozzle. This allows the buildup of vacuum during a standby period and is particularly useful when the pump gives a low displacement.



