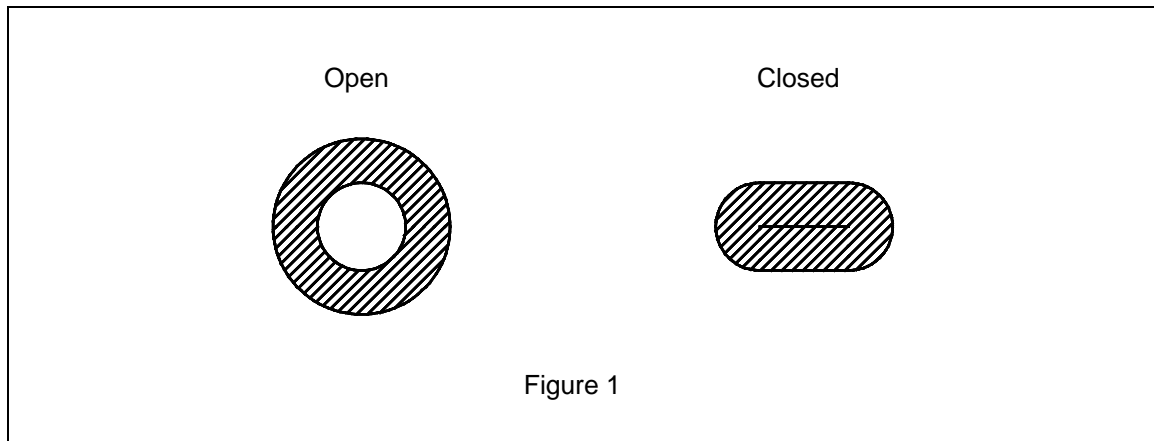


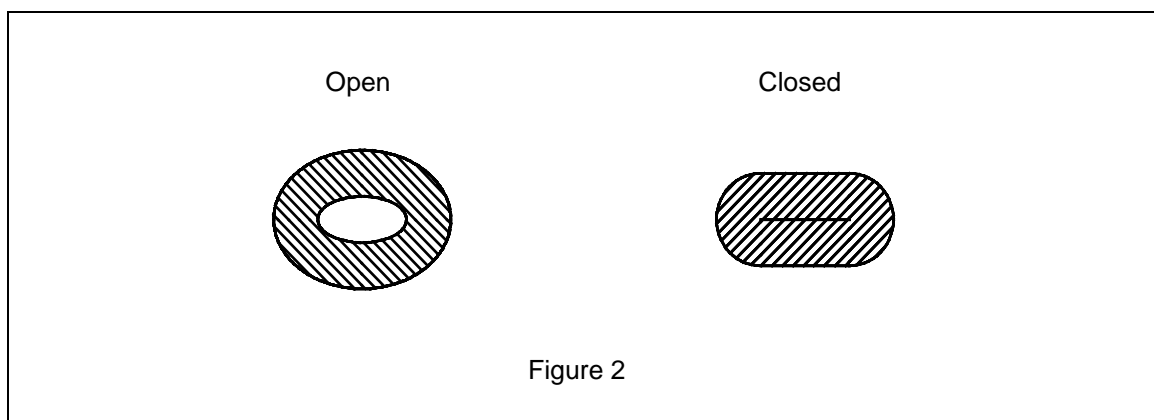
PINCH VALVE PRINCIPLES

The principle of the pinch valve is extremely simple and adaptable. It works on the same principle as when you pinch the garden hose between your fingers to stop the flow. A very simple diagram showing section through the tube is given below :



It is not possible to give a much simpler explanation than the above, however, there are a number of points about pinch valves in operation that must be understood to avoid potential problems.

First we have to look back at section 2.1, where on page 2 it is stated under disadvantages that the NR solenoids only have a short stroke. This is also a disadvantage with pinch valves, as it is necessary to have a stroke equivalent to at least the bore of the tube you are using for it to work from fully open to fully closed. If the required stroke is not available, it is necessary to save stroke on the open state. A diagram is given below to illustrate this point.



As you might well imagine this does restrict the flow, and because of that, the larger tubes do become somewhat restrictive to the media passing through. This should always be taken into consideration when sizing valves for a particular application.

ADVANTAGES

DISADVANTAGES

Small physical size
Hygienic
Easy to clean. (Replace tubes.)
Low power consumption.
Can handle whole blood.
Can handle particulate matter.
Adaptability.
Multi stream switching.

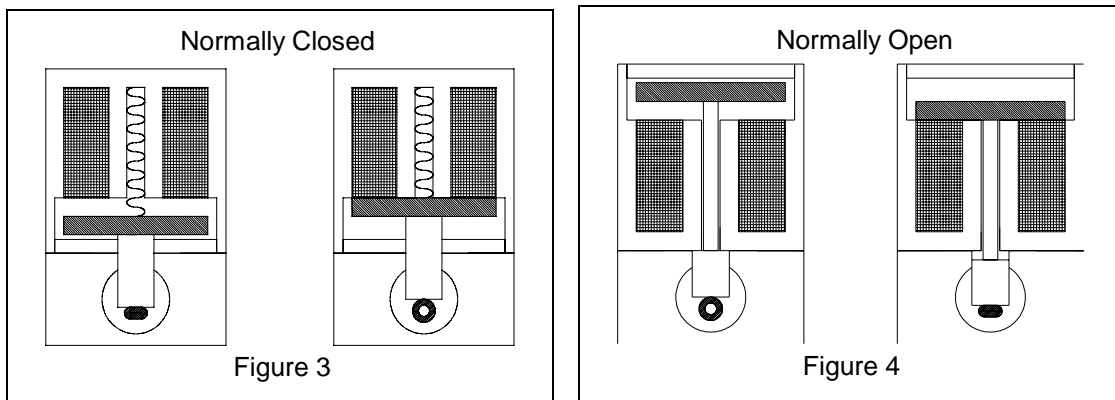
Low flows on some models
Life of tube is unpredictable
Response time is unpredictable.
Media compatibility restricted by tube.
Limited on fluid pressure.
Expensive.

Even with the number of disadvantages there are, the pinch valve is unsurpassed for handling hygienic and particulate media.

THE PINCH VALVE RANGE

The NR range of pinch valves is comprehensive, with anything from single tube to eight tube valves.

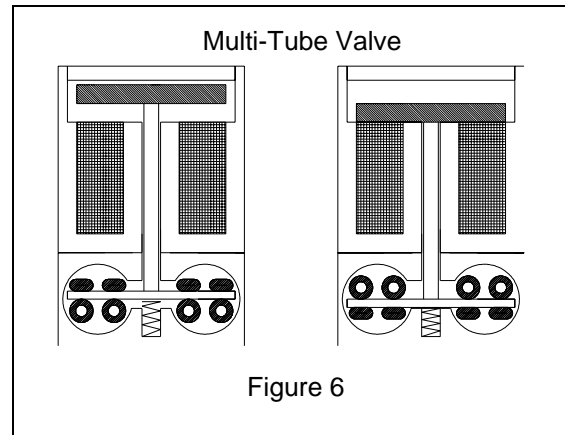
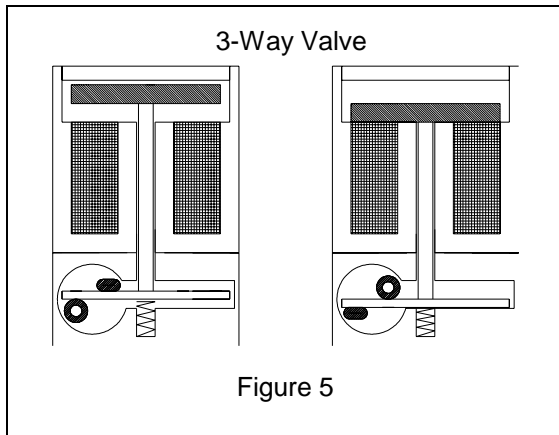
The next diagrams, figures 3 and 4 will highlight the method of operation and types available.



As can be seen from the above diagrams, the normally closed and the normally open work using different solenoid configurations in the same way as the PTFE valves do in section 2.2.

The same simple principles are used when producing a 3-way valve and the multi-tube valves which make the NR range of pinch valves so flexible.

The following diagrams, figures 5 and 6 on page 2.3.3 show how the range is extended.



As can be seen in figures 5 and 6, there is a spring to keep the tubes closed above the pinch bar mechanism. When the solenoid is energised this clamps the tubes below, and at the same time releases the normally closed tubes.

Various combinations of the pinch configuration can be derived from the above. An extract from section 3.2 is given below and in figure 7.

01	1 tube normally closed	Form	PA
02	1 tube normally open	Form	PB
03	2 tube normally closed	Form	PC
04	2 tube normally open	Form	PD
05	4 tube normally closed	Form	PE
06	4 tube normally open	Form	PF
07	2 tube N.C. - 2 tube N.O.	Form	PG
08	4 tube N.C. - 4 tube N.O.	Form	PH
09	1 tube N.C. - 1 tube N.O.	Form	PI

