LIQUID PUMPING CASSETTES AND ASSOCIATED PRESSURE DISTRIBUTION MANIFOLD AND RELATED METHODS

ABSTRACT

A fluid-handling cassette (80) comprises at least one of a fluidly actuated diaphragm valve (82) and a fluidly actuated diaphragm pump (84), the actuating fluid being supplied to the cassette (80) through actuation ports (96) located along a thin or narrow edge of the cassette (80). Actuation channels (110) within the cassette lead from the actuation ports (96) to actuation chambers of the valves and pumps in a space between plates (86,90,88) that comprise the cassette (80). The individual plates (86,90,88) have a nominal thickness that is sufficient to provide a rigid ceiling for the actuation channels (110), but sufficiently thin to minimize the overall thickness of the cassette. A plurality of such cassettes (80) can be stacked together or spaced apart from each other to form a cassette assembly, providing for a convenient way to install and remove the cassette assembly from its actuation receptacle. The arrangement allows for an improved way of connecting a complex cassette assembly to its associated pressure distribution manifold without the use of a plurality of flexible connecting tubes between the two.

Figs. 6 and 9