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(54) Title: ZERO DEAD-LEG ORIFICE BYPASS

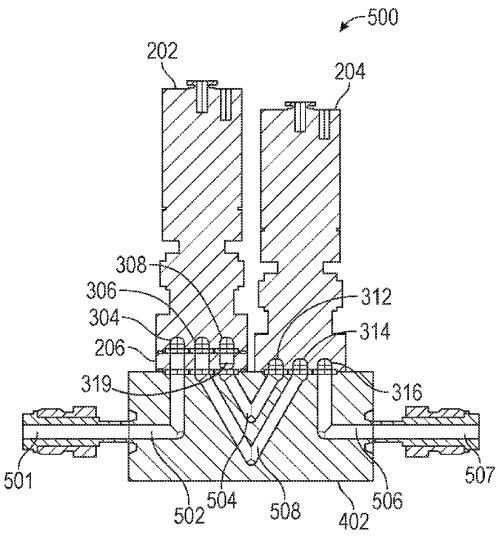


FIG. 5

(57) Abstract: A zero dead-leg orifice bypass apparatus includes a first multi-port valve, a second multi-port valve, and. a flow restrictor. The first multi-port valve includes a first plurality of valve legs with an inlet port. The second multi-port valve includes a second plurality of valve legs with an outlet port. The first plurality of valve legs and the second plurality of valve legs form at least one unrestricted path between the inlet port and the outlet port. The flow restrictor is pneumatically coupled to the first multi-port valve and the second multi-port, valve. The first plurality of valve legs and the second plurality of valve legs form at least one restricted path between the inlet port and the outlet port, with the at least one restricted path passing through a restricted port of the flow restrictor.

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