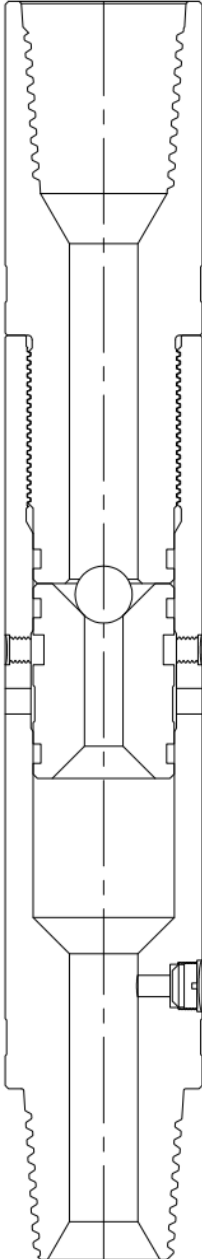




Dual Circulation Sub



The Dual Circulation Sub is used to achieve circulation above a tool, such as a mud motor, while shutting off flow through the tool. This can help prevent damage to the tool, by stopping its function after its job is completed, and circulation of the well is performed prior to pulling the work string out of the well bore. Also a higher flow rate can be achieved through the tool, due to eliminating the back pressure below the tool, so that for example cuttings may be circulated to the surface sooner after a drilling job is completed.

The Dual Circulation Sub is also used as a safety device to achieve circulation, when a tool below it becomes plugged and stops circulation of the work string. If for example, a tool below the Dual Circulation Sub, like a mud motor becomes plugged and stops the circulation of the work string. The work string may be pressured up until the tool's rupture disc bursts, where a steel ball may then be circulated to the piston in the Dual Circulation Sub to shift it allowing a higher circulation rate through the circulation ports than can be achieved through the rupture disc port.