

## Multi-Cycle Circulating Valve



### Description

The Multi Cycle Circulating Valve is an unlimited multiple cycle, differential pressure activated, circulation valve with five closed positions, one reverse position, and one circulating position. The tool can cycle through this sequence as many times as is required during well operations.

### Applications

Reverse out tubing contents to remove hydrocarbons and debris from the work string while the formation is isolated by the closed tester valve.  
Spot lighter weight fluid to create or increase an underbalance to allow flow in a drillstem test.

Infinite repeatability of cycling sequence

Four 1/2" diameter flow ports allows high circulation rates

Low differential pressure operation (300 PSI required to cycle the MCCV)

Improve accuracy of spotting viscous pills to cure fluid loss to formation.

### Operation

The MCCV cycles using tubing / annulus differential pressure to move the indexing mandrel up (annulus > tubing) and down (tubing > annulus). This up and down motion causes an indexing mandrel to rotate along a guide sleeve. At a predetermined number of these up/down cycles (closed positions), the guide sleeve will allow the indexing mandrel to shift all the way down, exposing the reverse circulation port. Fluid flow from the annulus to the tubing may now commence. The next increase in tubing pressure will shift the indexing mandrel, exposing ports for tubing to annulus circulation. When circulation is finished, release of tubing pressure or pressure applied to the annulus will move the mandrel into the '1st closed' position. The MCCV is again ready to repeat it's cycling sequence.

### Specifications

O.D.	5"
I.D.	2.25"
Length	2.37 m (7.77')
Max Pump Rate	4.5 bbl/min
Pressure Rating	15,000 psi
Temperature Rating	-15°F to 350°F [-26°F to 177°F]
Tensile	350,000 lbs
Connections	3 ½ IF
Service	H2S + CO2