

## Multi-cycle Circulating Valve (MCV)

**Expro's MCV is a differential pressure operated re-closable circulating valve which has five closed positions, one reverse position and one circulating position.**

It has a high rate reverse circulating capability and can be used where extreme hydrostatic pressures are encountered. The tool can cycle through this sequence as many times as is required by the well program. The MCV is used in conjunction with Expro's multi-cycle tester valve (MTV).

The MCV cycles by using tubing-annulus differential pressure to move the ported mandrel up (annulus > tubing) and down (tubing > annulus). This up and down motion causes the index sleeve to rotate around the mandrel on the index pins. After the specified number of limited movements (closed positions), the mandrel is allowed to move into a long slot that allows the ports in the mandrel to line up with reversing ports. Fluid flow from the annulus to the tubing may now commence. When the operator is finished with the reverse position, pressure is applied down the tubing, the mandrel travels up into a second long slot, and the ported mandrel is aligned with the circulating ports. When the operator is finished circulating, annulus pressure is applied to move the mandrel into the first closed position.

As long as the tool has a positive differential (300 psi) in the direction of flow, the tool will remain open. To move the tool to the next position, differential pressure is applied from the opposite direction.



### Features and benefits

- High rate circulating capability.
- Multi-cycle, re-closable.
- Unlimited tool cycles.
- Can be used to spot cushions and pills
- Can be used to spot nitrogen; thus avoiding the need for coiled tubing.
- Can be used to reverse our hydrocarbons during well kill operations.

### Applications

- 'Shoot & Pull' perforating including extreme high pressure wells.
- Drill stem testing including HPHT.
- Injection testing.
- Well stimulation.

# Drill Stem Testing (DST)



Extreme Pressure Series

## Technical specifications

Max. OD	5.00 in / 127 mm	
Min. ID	2.25 in / 57 mm	
Max. internal pressure	30,000 psi / 207 MPa	
Max. external pressure	30,000 psi / 207 MPa	
Max. differential pressure	15,000 psi / 103 MPa	
Temperature	350°F / 177°C (Std.)	400°F / 204°C (Prem.)
Max. reverse circulating rate	10 bbl/ min (1.59 m <sup>3</sup> / min)	
Number of cycles	Unlimited	
Approximate length	8 ft / 2.4 m	
Tensile rating	340,000 lbf / 151,240 daN	
Torque strength	10,000 ft-lbs / 13,550 N m	
Connections (box x pin)	3-1/2" IF or 3-1/2" PH6 available	
Rupture disk accuracy	+/- 2.5%	
Service	H <sub>2</sub> S (NACE MR-01-75), CO <sub>2</sub> , acid	