

WELL COMMANDER

Specialized Tools: Circulating Tools



The WELL COMMANDER* tool is a ball activated circulating valve that can be placed above sensitive bottomhole equipment such as MWD and LWD tools, core barrels and mud motors. It provides an alternate circulation path for performing numerous critical functions and mitigating drilling hazards. The WELL COMMANDER tool mitigates the problems encountered with a restrictive BHA that limits the flow rate and annular velocity. These BHA restrictions also limit the size and concentration of the loss circulation or wellbore strengthening material needed for lost-circulation zones. The WELL COMMANDER tool provides a large, flow-area bypass on demand through as many as nine open-and-close cycles in one trip.

Applications

The innovative WELL COMMANDER tool is used in the I-BOSS* wellbore strengthening technology to provide an alternate path for placing the WSM in troublesome zones. The tool allows placement without having to pass the material through size- and concentration-restricted BHAs.

Placing the WELL COMMANDER tool above an under-reamer or similar ball-drop tool can be highly advantageous. The WELL COMMANDER tool permits increasing annular velocities during drilling operations by bypassing BHA components. In addition it can be used to enhance annular velocities during displacements. Typically, this capability prevents or removes cuttings-bed buildup, enhances fluid displacement and simplifies reverse circulation.

The tool can be used as a fill or drain valve while tripping the drill string to control surge and swab pressures.

The WELL COMMANDER valve can also be used to place kill weight fluid in underbalanced or managed pressure drilling operations.



Features

- The tool has a generous flow through area via multiple ports
- The BYPASS BALL CATCHER* unit has an 18 ball capacity which allows up to 9 complete open/close cycles
- The same size ball opens and closes the ports
- The tool is available in 5 in., 7 in., 8¼ in. and 9½ in. OD, for all drillstring configurations
- There are no internal tool connections
- The tool activation mechanism locks into the open or closed position and is isolated from the circulating fluids
- The WELL COMMANDER tool and BYPASS BALL CATCHER tool permits smaller ball and/or limited wireline access below the WELL COMMANDER unit even after it has been activated
- The WELL COMMANDER tool saves valuable rig time by reducing trips/circulating time

Advantages

- Due to the large flow area, pump rates can be boosted significantly increasing annular velocities to aid in cuttings-beds removal
- Coarse lost-circulation or wellbore-strengthening materials can bypass sensitive downhole drilling tools and be easily placed in the loss zone
- Kill-weight fluid can be pumped in underbalanced or managed-pressure drilling applications before initiating a trip
- The tool is excellent for hole cleaning enhancement during underreaming, hole-opening, or coring operations
- The tool can condition fluid at high flow rates in any drilling or displacement workstring
- The WELL COMMANDER tool helps fill or drain the drillstring during trips to control surge and swab pressures and to enhance tripping operations by minimizing fluid discharge
- When the tool is in the locked open position a small percentage of fluid will still flow through the bit, keeping it lubricated. If the optional shut-off ball is utilized, 100% of the flow is through the ports



The WELL COMMANDER tool uses the same size operating ball to open and close the ports



Open circulating ports provide generous flow area

How it works

The WELL COMMANDER tool is run in or pulled out of the hole with the ports locked open or closed. The WELL COMMANDER valve remains in the same position until activated by dropping a ball and pressuring up to shift the tool open or closed. The activation ball is then captured in the side pocket of the ball catcher. The tool uses the same size activation ball to open and close the ports, with the capacity of the ball catcher (18 balls/9 cycles) the only limit. With the tool in the open position a smaller optional BHA

shut-off ball can be dropped which will seat on the lower ball seat and direct 100% flow out of the ports. This ball is then expelled with the subsequent activation ball, which also cycles the tool to the closed position. Both balls are then captured by the ball catcher.

The bypass ball catcher captures the balls to one side of the inside diameter to facilitate positioning other ball-drop tools below it, as smaller activation balls can pass through the WELL COMMANDER tool and ball catcher.





1. Ball landing

Drop ball on connection and pump down to tool. Ball lands on seat. Pressure is applied



2. Valve activation

When pressure exceeds activation pressure, ports open and ball proceeds to ball catcher below tool



3. Open circulation

Majority of flow passes through the ports with lower pressure to allow increased pump rates, while some flow is maintained through the bit for lubrication



4. BHA shut off

Optional shut-off ball can be landed on lower ball seat to prevent LCM or WSM from entering the BHA while treating the formation



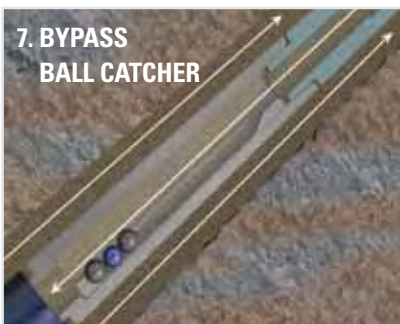
5. Valve closing

The BHA shut-off ball is removed when subsequent activation ball closes the ports



6. BHA shut off removal

After pressuring up on the activation ball, the BHA shut-off and activation balls move to the ball catcher



7. BYPASS BALL CATCHER

BYPASS BALL CATCHER tool captures activation and BHA shut-off balls to the side permitting high flow rate with minimal pressure loss and allowing smaller balls to pass through it



8. Other activation balls

Other ball activation tools that use smaller diameter balls can be positioned below the WELL COMMANDER tool as the ball will not activate it



9. Ball bypassing

The activation balls for these other tools will pass through the BYPASS BALL CATCHER unit