



## MULTIPLE DART CATCHER

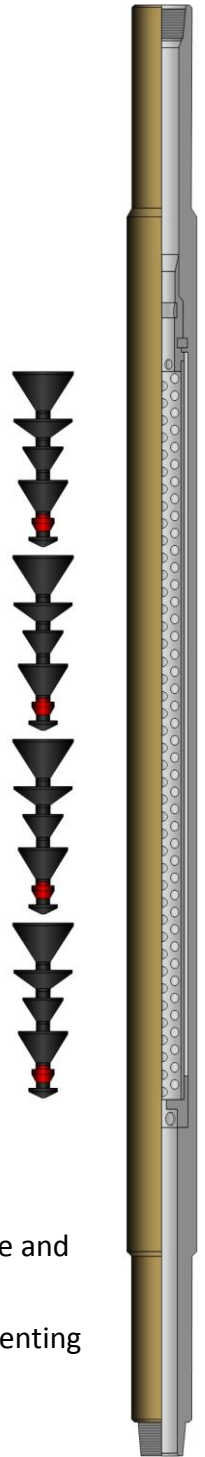
Blackhawk's Multiple Dart Catcher provides indication of the exact location of downhole fluids during inner-string cement jobs, cementing squeezes, and balanced cement plugs for temporary/permanent well abandonment or sidetrack operations. The proprietary dart design thoroughly wipes the ID of the cementing string and maintains separation of wellbore fluids as they are pumped down hole.

### FEATURES

- Proprietary ball seat design provides a pressure spike at the surface when each dart lands in the tool, providing exact depth and displacement location
- Two models available to catch 4 or 8 darts
- Receptacle and cage below ball seat retain darts, which are retrieved with the tool on surface
- 4.7 in<sup>2</sup> flow area before and after fully loaded with darts
- Allows both forward and reverse flow through the tool with or without darts captured
- Proprietary darts can be configured to wipe many combinations of strings, depending on drill pipe tube and tool joint ID
- Indication pressure can be changed by utilizing different OD dart noses
- Can also catch "Nerf" type wiping balls
- Secondary bypass to ensure full cement/mud displacement

### VALUE

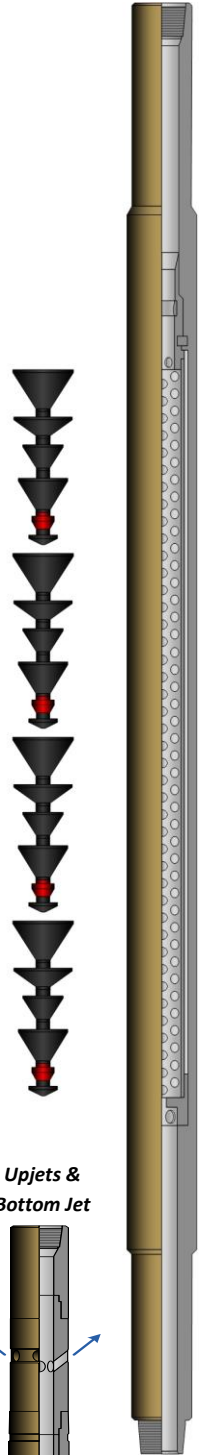
- Efficient inner-string cementing of large diameter casing strings saves valuable rig time and eliminates risks associated with SSR plug sets
- Fluid separation and dart indication improves accuracy in primary and secondary cementing operations, saving time and money.
- Improved quality in setting balanced cement plugs for temporary or permanent well abandonment mitigates the need for costly and hazardous remedial efforts
- Improved precision in setting balanced plugs for sidetracking





**SPECIFICATIONS**

<b>Multiple Dart Catcher</b>	
<i>Maximum Tensile Yield</i>	<b>1,167,000 lbs* (SF 1.1)</b>
<i>Maximum Working Pressure</i>	<b>10,000 psi</b>
<i>Maximum Torque Through Tool</i>	<b>30,700 ft-lb*</b>
<i>Overall Length</i>	<b>160 in (4 Darts), 235 in (8 Darts)</b>
<i>Maximum Tool OD</i>	<b>7.00 in (NC-50)</b>
<i>Indication Pressure</i>	<b>500 psi (Blue Nose), 1,500 psi (Gold Nose), 2,500 psi (Red Nose)</b>
<i>Secondary Release Pressure</i>	<b>5,000 psi</b>
<i>Minimum Flow Area</i>	<b>4.7 in<sup>2</sup></b>
<i>Dart Maximum Rigid OD</i>	<b>2.50 in</b>
<i>Optional Dart Fin Sizes</i>	<b>6.25 in</b>
	<b>5.50 in</b>
	<b>5.25 in</b>
	<b>4.75 in</b>
	<b>4.25 in</b>
	<b>3.50 in</b>
<i>Connections</i>	<b>4-1/2" IF (NC-50) Box x Pin, 6.625" OD, 3.25" ID, 120 ksi yield, 25,600-30,700 ft-lbs Make-up Torque</b>
<i>Max Flow Rate with/without Darts Loaded</i>	<b>20 BPM for 24 hrs</b>



\*Max Tensile Yield and Torque through tool do not include end connection ratings

**UNIVERSAL CEMENT SUB**

Blackhawk's Universal Cement Sub can be run in conjunction with the Multiple Dart Catcher. The sub allows for 4 different jetting configurations to accommodate multiple wellbore conditions, allowing for the most efficient placement of cement.

