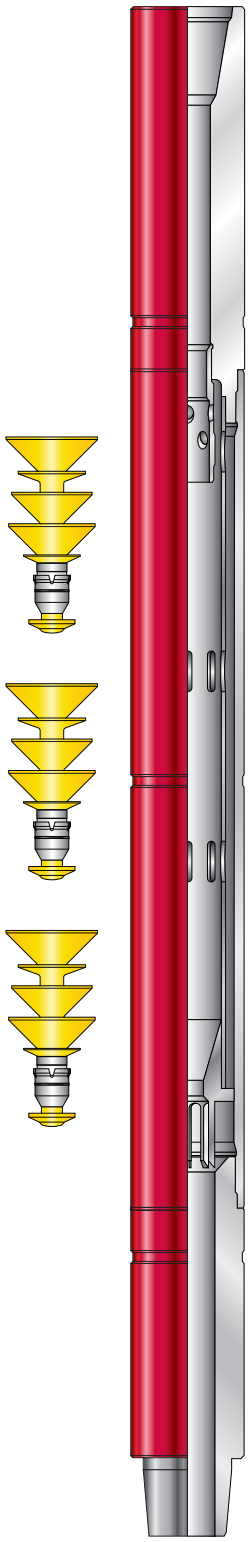
Dart-Catcher Tool



Weatherford's dart-catcher tool is used in cementing operations to provide a surface indication of the precise location of a cement plug or cement displacement.

Released from Weatherford's cementing head and pumped behind the cement slurry, an indicating dart passes through a restriction inside the tool and creates a pressure increase detected at the surface. After the pressure indication, pumping can be reduced or terminated immediately, avoiding cement overdisplacement.

Multiple cement plugs may be set in a single trip downhole without tripping the pipe out of the hole. A ported receptacle in the tool traps and contains up to three indicating darts after they pass the internal restriction. The receptacle also enables forward and reverse flow through the tool after indication of the cement placement.

Both the darts and the dart-catcher tool are compatible with water- and oil-based drilling fluids and cement. After the cementing job is complete, the tool is retrieved.

Applications

- Inner-string cementing
- Cementing subsea casing strings with tailpipe
- Setting cement plugs when a wellbore is to be sidetracked
- Setting cement plugs when a well is to be abandoned

Features, Advantages and Benefits

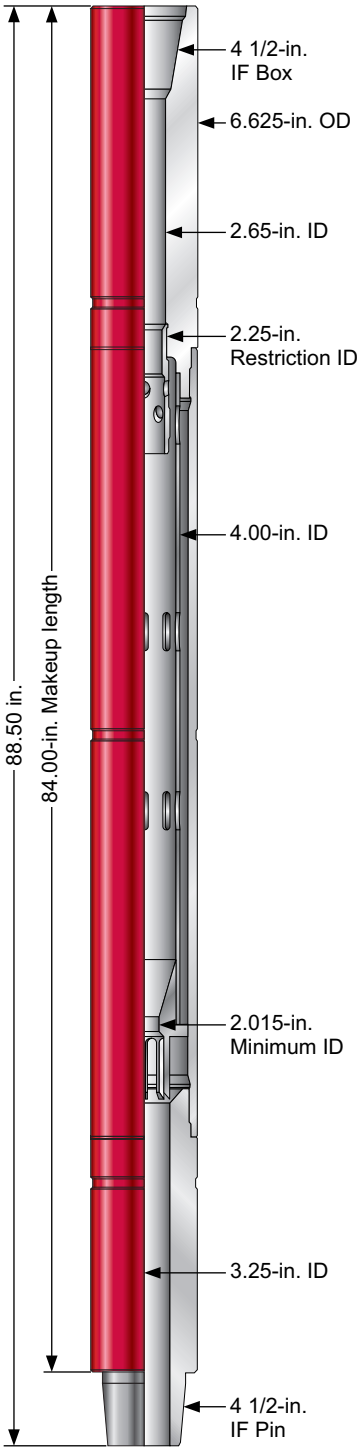
- The tool uses special darts to provide a positive indication of accurate cement placement during the setting of cement plugs.
- The darts wipe cement from the drillpipe ID after cement displacement, reducing pipe-cleaning costs and preventing equipment failure from drilling fluids contaminated by cement.

Dart-Catcher Tool

Specifications

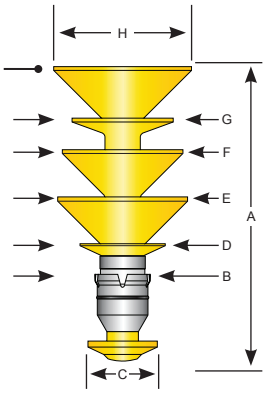
Tool Size[1] **(in./*mm*)**	**3-1/2** ***88.9***			**6-5/8** ***168.3***
Box-and-pin connection[1] (in.)	GPXT-31 3-1/2	NC-38 3-1/2	NC-31 2-7/8	NC-50 IF 4-1/2
Maximum tool OD (in./*mm*)	4.500 *114.30*	4.875 *123.83*	4.500 *114.30*	6.625 *168.28*
Minimum ID through bore (in./*mm*)	1.525 *38.74*			2.015 *51.18*
Restriction ID (in./*mm*)	1.650 *41.91*			2.250 *57.15*
Minimum flow area (in.^{2}/ *mm*^{2})	1.708 *1,101.93*	2.138 *1,379.35*	1.708 *1,101.93*	3.980 *2,567.74*
Minimum ID restriction darts can pass (in./*mm*)	1.90 *48.3*			2.56 *65.0*
Tensile rating (lb/*kg*)	325,000 *147,418*			750,000 *340,194*
Torque rating (ft-lbf/*N·m*)	10,700 *14,507*		6,400 *8,677*	21,700 *29,421*
Drillpipe nominal OD wiped (in./*mm*)	3-1/2 *88.9*		2-7/8 and 3-1/2 *73.0 and 88.9*	4-1/2, 5, 5-1/2, 5-7/8, and 6-5/8 *114.3, 127.0, 139.7, 149.2, and 168.3*
Drift (in./*mm*)	1.874 *47.6*			2.480 *63.0*
Temperature rating (°F/°C)	350 *177*			
Working pressure rating (psi/*kPa*)	10,000 *68,948*			
Test pressure (psi/*kPa*)	12,000 *82,737*			

[1]Other tool sizes and connections may be available.

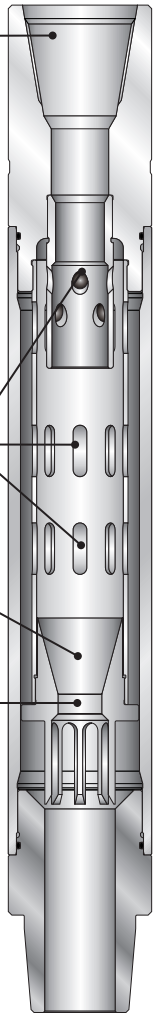


6 5/8-in. tool

Dart-Catcher Tool



Drillpipe wiper dart has a modifiable fin configuration to wipe different IDs and a deformable nose to indicate passage through the restriction sleeve.



Restriction sleeve provides a pressure increase when an indicating dart passes through the ID.

Ports enable fluids to pass through the tool in the forward and reverse directions.

Receptacle receives and contains up to three indicating darts.

Receptacle cap traps indicating darts inside the receptacle.

Dart Specifications

Pump-Through Pressures	
Pump-through pressure in mud* *(psi/MPa)*	1,300 to 2,000 *8.96 to 13.79*
Pump-through pressure in cement* *(psi/MPa)*	2,000 to 2,700 *13.79 to 18.62*
Temperature (°F/°C)	257 *125*

*Other tool sizes and connections may be available.

Dart Fin OD (in./*mm*)	Wiping Range	
	Minimum ID (in./*mm*)	Maximum ID (in./*mm*)
2.17 55.0	*1.83 46.5*	*2.04 51.8*
3.07 78.0	*2.14 54.4*	*2.87 72.9*
3.25 *82.6*	2.25 *57.2*	3.00 76.2
3.77 *95.8*	2.77 *70.4*	3.52 *89.4*
4.00 *101.6*	3.00 *76.2*	3.75 *95.3*
4.25 *108.0*	3.25 *82.6*	4.00 *101.6*
4.48 *113.8*	3.48 *88.4*	4.22 *107.2*
4.72 *119.9*	3.72 *94.5*	4.47 *113.5*
5.34 *135.6*	4.34 *110.2*	5.09 *129.3*
5.75 *146.1*	4.75 *120.7*	5.50 *139.7*
6.10 *154.9*	5.10 *129.5*	5.85 *148.6*

High-Pressure Dart

Pump-Through Pressures	
Pump-through pressure in mud* *(psi/MPa)*	3,000 to 3,500 *20.684 to 24.131*
Pump-through pressure in cement* *(psi/MPa)*	3,500 to 4,000 *24.131 to 27.579*
Temperature (°F/°C)	257 *125*

*Pump through pressure will vary depending on well temperature, type of fluid and fluid viscocity. HP darts can be distinguished by the front fin colored red.

Dart Nose OD of 1.830 in. for 1.650-in. Restriction Sleeve

Drillpipe Size (in./*mm*)	JDE Part Number	A (in./*mm*)	B (in./*mm*)	C (in./*mm*)	D (in./*mm*)	E (in./*mm*)	F (in./*mm*)	G (in./*mm*)	H (in./*mm*)
2.875 to 5.000 *73.0 to 127.0*	2106882	12.96 *329.2*	1.83 *46.6*	2.17 *55.0*	2.17 *55.0*	3.25 *82.6*	4.25 *108.0*	3.25 *82.6*	4.72 *119.9*
5.000 to 5.875 *127.0 to 149.2*	2106886	13.22 *336.0*					4.72 *119.9*	3.77 *95.8*	5.34 *135.6*

Dart Nose OD of 2.440 in. for 2.255-in. Restriction Sleeve

Drillpipe Size (in./*mm*)	JDE Part Number	A (in./*mm*)	B (in./*mm*)	C (in./*mm*)	D (in./*mm*)	E (in./*mm*)	F (in./*mm*)	G (in./*mm*)	H (in./*mm*)
3.500 to 5.000 *88.9 to 127.0*	2092141	12.44 *316.0*	2.44 *62.0*	3.07 *78.0*	3.77 *95.8*	4.72 *119.9*	4.00 *101.6*	3.25 *82.6*	4.72 *119.9*
5.000 to 5.875 *127.0 to 149.2*	2092145	12.72 *323.0*				5.34 *135.6*	4.72 *119.9*	4.25 *108.0*	5.34 *135.6*
5.875 to 6.625 *149.2 to 168.3*	2018473	13.03 *331.0*				5.75 *146.1*	5.34 *135.6*	4.48 *113.8*	6.10 *154.9*

Dart Nose OD of 2.810 in. for 2.630-in. Restriction Sleeve

Drillpipe Size (in./*mm*)	JDE Part Number	A (in./*mm*)	B (in./*mm*)	C (in./*mm*)	D (in./*mm*)	E (in./*mm*)	F (in./*mm*)	G (in./*mm*)	H (in./*mm*)
3.500 to 5.000 *88.9 to 127.0*	2106884	12.35 *313.7*	2.81 *71.5*	3.07 *78.0*	3.77 *95.8*	4.72 *119.9*	4.00 *101.6*	3.25 *82.6*	4.72 *119.9*
5.000 to 5.875 *127.0 to 149.2*	2106888	12.61 *320.3*				5.34 *135.6*	4.72 *119.9*	4.25 *108.0*	5.34 *135.6*
5.875 to 6.625 *149.2 to 168.3*	2106892	12.92 *328.0*				5.75 *146.1*	5.34 *135.6*	4.48 *113.8*	6.10 *154.9*