High-Expansion Thru-Tubing Bridge Plug (TTBP) Solution

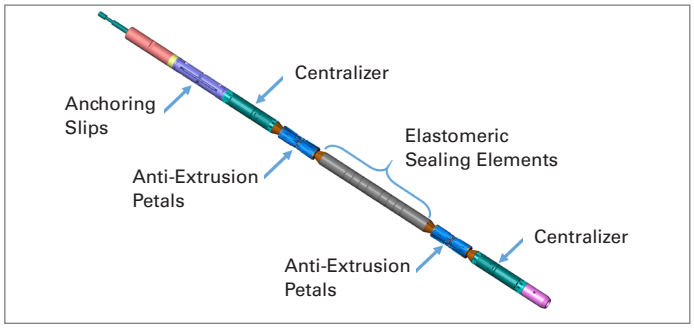
UNSURPASSED PERFORMANCE FOR CONFORMANCE AND PLUG-BACK RECOMPLETIONS

OVERVIEW

The Halliburton high-expansion thru-tubing bridge plug (TTBP) solution offers unsurpassed performance for conformance and plug-back recompletions.

This recompletion solution comprises the following components:

- High-expansion thru-tubing elastomeric seal
- Downhole power unit (DPU®) long-stroke nonexplosive electromechanical setting tool
- Non-explosive dump bailer
- Engineered cement mix and system
- 2⅛- and 1 11/16-inch run-in diameter systems
- Conveyance options on slickline, e-line, or RELAY™ digital slickline (DSL) systems



Run-in-hole tool

The slip assemblies located at the top of the plug support a bidirectional force of up to 60,000 lbf (267 kN) and provide the stable base for the required cement plug. The top anchor feature allows the TTBP to be drilled out if required.

The sealing elements are designed to provide an effective seal from ambient room temperatures up to temperatures as high as 350°F (177°C) and provide a stable platform for the required cement plug. The anchoring slips and integral centralizers support the tool in highly deviated well conditions.

The long-stroke DPU setting tool records, in real time, the stroke length, setting force, and load profile at which the DPU tool detaches from the plug. Recording of the setting event provides quality assurance of the setting operation. The DPU setting tool does not use explosive materials and can be used to set a full range of thru-tubing wellbore plugging devices.

The cement is formulated and mixed to have a high-shear bond, to ensure adequate sealing and adhesion properties of the cement plug in all pipe.

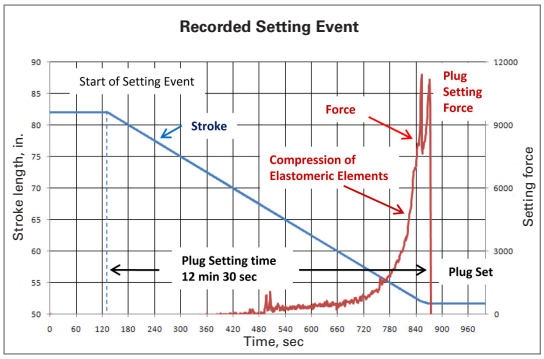
Cement is critical for successful isolation with the TTBP service and temperature is recorded during the gauge run to ensure a proper slurry mixture is designed. The cement slurry is deployed with a non-explosive dump bailer that minimizes contamination of borehole fluids.

FEATURES

- Self-centralizing slips and anchors provide large support force and differential pressure rating
- Modeling of line speed for running-in-hole (RIH) or running-out-of hole (ROH) operations to minimize swab or surge effects on the dumped cement prior to setting
- TTBP design allows for rapid scaling up or down for additional or custom casing sizes
- Prepackaged cement kits contain all the required additives for a wide variety of temperature applications

BENEFITS

- Provides total rigless recompletion solution
- Reduces HSE risks through utilization of non-explosive DPU setting tools and dump bailers
- Ensures successful plug setting via recordings of setting event and stroke length
- Ensures seal reliability by using swell material in the high-expansion plug until the cement is placed above
- Small 1 11/16-inch TTBP solution available



Halliburton 2⅛-inch Thru-Tubing Elastomeric Bridge Plugs†

P/N	Casing OD in.	Casing lb/ft	Casing ID in.	RIH OD	Stroke to Set	Set Length*	Differential Pressure**
101999722	5	15–20	4.408–4.184	2.13 in. (54.1 mm)	30.3 in. (76.96 cm)	27.8 in. (70.61 cm)	2,000 psi (137.9 bar)
101999723	5	18–23	4.276–4.044	2.13 in. (54.1 mm)	30.3 in. (76.96 cm)	27.8 in. (70.61 cm)	2,000 psi (137.9 bar)
101999724	5½	17–23	4.892–4.670	2.13 in. (54.1 mm)	39.1 in. (99.31 cm)	28.6 in. (72.64 cm)	2,000 psi (137.9 bar)
101999726	5½	23–26	4.670–4.548	2.13 in. (54.1 mm)	39.1 in. (99.31 cm)	28.6 in. (72.64 cm)	2,000 psi (137.9 bar)
101915854	6⅝	24–32	5.921–5.675	2.13 in. (54.1 mm)	59.8 in. (151.89 cm)	29.4 in. (74.67 cm)	2,000 psi (137.9 bar)
101911386 102745321 (Sour Service)	7	20–35	6.011–6.453	2.13 in. (54.1 mm)	77.2 in. (196.08 cm)	29.4 in. (74.67 cm)	1,800 psi (124.1 bar)
101915854	7	38–42	5.750–5.920	2.13 in. (54.1 mm)	59.8 in. (151.89 cm)	29.4 in. (74.67 cm)	2,000 psi (137.9 bar)
101829448	7⅝	26–39	6.960–6.625	2.13 in. (54.1 mm)	77.2 in. (196.08 cm)	29.4 in. (74.67 cm)	1,500 psi (103.4 bar)

† All Halliburton 2⅛-inch TTBPs have a maximum temperature rating of 350°F (177°C)
* The seal material length is 6 inches long when the plug is fully set.
** Pressure differential hold force of slips without cement. It is required for cement to be placed on the plug for the TTBP operation.

Set plug

DPU® 2LS-i Tool

P/N	Tool OD	Pressure Rating	Temp. Rating	MaxForce® Output	Stroke Length	Stroke Rate	Tool Length
101690616	2⅛ in. (54 mm)	20,000 psi (1379 bar)	350°F (177°C)	15,000 lbf (66.7 kN)	85.0 in. (216 cm)	2.0–2.4 in./min (5–6 cm/min)	365 in. (927 cm)

Halliburton 1 11/16-inch Thru-Tubing Elastomeric Bridge Plugs+

P/N	Casing OD in.	Casing lb/ft	Casing ID in.	RIH OD	Stroke to Set	Set Length*	Differential Pressure**
102781186	7	23–26	6.366–6.276	1.70 in. (43.2 mm)	37.5 in. (95.25 cm)	24.75 in. (62.87 cm)	1,500 psi (103.4 bar)
102856120	7	29–32	6.184–6.094	1.70 in. (43.2 mm)	37.5 in. (95.25 cm)	24.75 in. (62.87 cm)	1,500 psi (103.4 bar)

\+ All Halliburton 1 11/16-inch TTBPs have a maximum temperature rating of 150–280°F (66–138°C).
* The seal material length is approximately 1-inch long when the plug is fully set.
** Pressure differential hold force of slips without cement. It is required to have cement placed on the plug for the desired differential.

1 11/16-in. Elite Downhole Power Unit (EDPU) (Run with RELAY™ DSL only)

P/N	Tool OD	Pressure Rating	Temp. Rating	MaxForce® Output	Stroke Length	Stroke Rate	Tool Length
102826453	1 11/16 in. (43 mm)	15,000 psi (1034 bar)	300°F (149°C)	15,000 lbf (66.7 kN)	39.5 in. (100.3 cm)	0.5 in./min (1.3 cm/min)	133 in. (338 cm)

1 11/16-inch Slickline DPU Tool*

P/N	Tool OD	Pressure Rating	Temp. Rating	MaxForce® Output	Stroke Length	Stroke Rate	Tool Length
102814423	1 11/16 in. (43 mm)	15,000 psi (1034 bar)	300°F (149°C)	15,000 lbf (66.7 kN)	39.5 in. (100.3 cm)	0.5 in./min (1.3 cm/min)	141 in. (358 cm)

* If run on e-line, there is an e-line activation kit (102653526) available.

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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