

SPEX Bridge Plugs & Setting Tools

SPEX Offshore (UK) Ltd. Bridge Plugs prevent the movement of fluid or gas in either direction inside the borehole. This allows operators to isolate zones, establish bridges and pressure seals, and setting prior to abandonment and / or workover. The plugs can be set with either an electric wireline setting tool, a pressure-activated firing head or slickline trigger .

When a plug is required for life-of-well applications, or when perforation of the zone next to the plug is planned, its durability and strength can be increased by dumping 10-20 ft of cement on top of the set plug.

Before running a job it is essential to consider the size and proper selection of the bridge plug. The following factors should be considered:

- Borehole temperature
- Maximum differential pressure the plug will be subjected to
- Borehole restrictions which the plug and setting tool will have to pass through
- Actual casing or tubing size where the bridge plug will have to seal

Principle of Operation

SPEX provides a wide range of setting tools in conjunction with the Premium and Magna Range Bridge Plugs. These include the 'MSST' and 'Compact' pressure setting tools. The principle of operation for all tool sizes is to provide a dynamic force which is used to set the bridge plug.

The bridge plug is attached to the bottom of the setting tool using the correct setting sleeve and adapter rod. The assembly is then run into the wellbore on conventional electric wireline, or alternatively, coiled tubing or slickline.

When the plug is at the correct depth, the setting tool is initiated. A Radio-Safe igniter in the firing head produces a flash burn which initiates the power charge. Gas is generated as the power charge is consumed. The burning process takes approximately 30 seconds to complete. The pressurised gas is vented down the centre of the top piston and out into the annular cavity between the top piston and the top / bottom cylinder. The build-up of pressure at this location drives the outside of the tool (consisting of a number of cylinders) downwards while the pistons remain stationary. This action sets the plug, and finally parts the shear stud (or ring) allowing the setting

tool to be removed from the well. An oil damper system is built into the tool to control the speed at which the tool strokes. As the outer components move downward during stroking, oil in the reservoir above the top piston ram is contained by the top sub and forced through a controlled annular orifice formed by the OD of the top piston and the ID of the top sub.

Equipment Specification

SPEX Bridge Plugs are available in two general specifications, namely "Premium" and "Magna Range". Both plug specifications are designed to set in any hardness of casing up to P110 and are rated to 10,000 psi differential at 350 °F. The Premium range plug can be drilled or milled out, whereas the Magna Range plug can only be milled out. To assist with Bridge Plug application and selection, comprehensive tables are included in this section giving plug size, setting range, part numbers and setting tool cross reference information.

Setting Tool Specification Table

Setting Tool Size and Type	Part Number	Stroke
1-11/16" Multi Stage Setting Tool	SET-1687-100	10.45"
2-1/8" Multi Stage Setting Tool	SET-2125-100	10.36"
3-5/8" Compact Setting Tool	SET-3625-000	10"

Magna Range Bridge Plugs



			Setting Range		Release Stud Strength	Setting Equipment		Wireline Setting Tool	
SPEX Part No.	Mat'l	OD	Min	Max	lb	Setting Sleeve	Adaptor Rod	Setting Nut	Setting Tool
PLG-1500-006	V	1.500	1.610	1.995	8,000	SET-5302-015	N/A	N/A	1-1/2" SHORTY
PLG-1750-006	V	1.750	1.905	2.441	13,000	SET-5304-011			1-11/16" MULTISTAGE SETTING TOOL
PLG-1900-006	V	1.906	2.156	2.765	13,000				
PLG-2180-006	V	2.187	2.375	3.000	13,000	SET-5304-018			1-11/16" MULTISTAGE SETTING TOOL
PLG-2280-006	V	2.281	2.441	3.343	13,000	(1-11/16" MSST) SET-5306-014 (2-1/8" MSST)			2-1/8" MULTISTAGE SETTING TOOL
PLG-2500-106	V	2.500	2.875	3.500	25,000	SET-2125-030			2-1/8" MULTISTAGE SETTING TOOL
PLG-2750-106	V	2.750	3.187	3.920	25,000				
PLG-3000-106	V	3.000	3.437	4.154	25,000				
PLG-3250-106	V	3.250	3.920	4.276	27,000	SET-2125-035	SET-2125-036		
PLG-4060-106	V	4.062	4.154	5.044	30,000	SET-5307-090	SET-5303-093	SET-5307-079	3-5/8" COMPACT SETTING TOOL

Premium Range Bridge Plugs

			Setting Range		Release Stud Strength	Setting Equipment		Wireline Setting Tool	
SPEX Part No.	Mat'l	OD	Min	Max	lb	Setting Sleeve	Adaptor Rod	Setting Nut	Setting Tool
PLG-1710-001	N	1.71	1.867	2.107	13,000	SET-5304-011	N/A	N/A	1-11/16" MULTISTAGE SETTING TOOL
PLG-2100-001	N	2.10	2.280	2.441	13,000	SET-5304-018			
PLG-2160-001	N	2.16	2.280	2.563	13,000	SET-5304-018 (1-11/16" MSST) SET-5306-014 (2-1/8" MSST)			1-11/16" MULTISTAGE SETTING TOOL 2-1/8" MULTISTAGE SETTING TOOL
PLG-2500-001	N	2.50	2.750	2.992	13,000	SET-1687-035 (1-11/16" MSST) SET-2125-027 (2-1/8" MSST)			
PLG-2750-001	N	2.75	2.867	3.258	13,000	SET-1687-030 (1-11/16" MSST) SET-2125-028 (2-1/8" MSST)			
PLG-3120-001	N	3.12	3.340	3.732	20,000	SET-2125-028			2-1/8" MULTISTAGE SETTING TOOL
PLG-3500-001	N	3.50	3.826	4.090	30,000	SET-5303-010	SET-5307-078		3-5/8" COMPACT SETTING TOOL
PLG-3710-001	N	3.71	3.920	4.560	30,000				
PLG-4240-001	N	4.24	4.580	5.047	30,000	SET-5307-081	SET-5303-093	SET-5307-079	
PLG-4750-001	N	4.75	5.140	5.595	35,000			SET-5307-088	
PLG-5340-001	N	5.34	5.595	6.366	55,000	SET-5307-082		SET-5307-080	
PLG-5610-001	N	5.61	5.989	6.655	55,000	SET-5307-082	SET-5303-093	SET-5307-080	3-5/8" COMPACT SETTING TOOL
PLG-6090-001	N	6.09	6.625	7.263	55,000				
PLG-6960-001	N	6.96	7.511	8.248	55,000	SET-5307-084			
PLG-7710-001	N	7.71	8.435	9.063	55,000				

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