

## **Patent Protection & Registration**

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[U.S. Patent No. 11,686,158](#) entitled “Fluid Control Valve for Rotary Steerable Tool” issued June 27, 2023 to REME, LLC of Conroe, Texas. Invented by Richard Hutton of Avon, United Kingdom. Abstract: A downhole tool control system for a drill string rotary steerable tool that includes a body having an inner chamber, a piston gallery extending between the inner chamber and a piston port, and an exhaust gallery extending between the inner chamber and an exhaust port. A spool in the inner chamber is movable into a plurality of positions to direct and control the timing and duration of the flow of drilling fluid to energize pistons of the rotary steerable tool, and to de-energize the pistons. The spool includes a first passage in fluid communication with a drilling fluid inlet port but not the exhaust port, and a second passage in fluid communication with the exhaust port but not the drilling fluid inlet port.