



# *FlowMax™ Perforator*

Weatherford's *FlowMax* perforator is designed to perform multiple functions in a single trip while perforating with abrasives. Under normal operating conditions, fluid flows through the perforator, enabling hydraulic devices located below the perforator to function. The perforator controls fluid flow by an internal valve, diverting fluid to the tubing annulus based on the flow rate. The valve can be preset to function at a specified flow rate by adjusting the compression setting of an internal spring. When the flow rate is increased to the spring setting, the valve closes and diverts fluid flow out through carbide jet nozzles to the annulus. Upon reaching the jetting pressure, abrasives can be introduced to the fluid stream to cut through the well casing and cement, to extend a cavity into the formation. Once perforating is complete, the tool is flushed with a clean fluid, the flow rate is decreased to reset the valve, and the flow is redirected through the tool to permit further functioning of the hydraulic devices below.

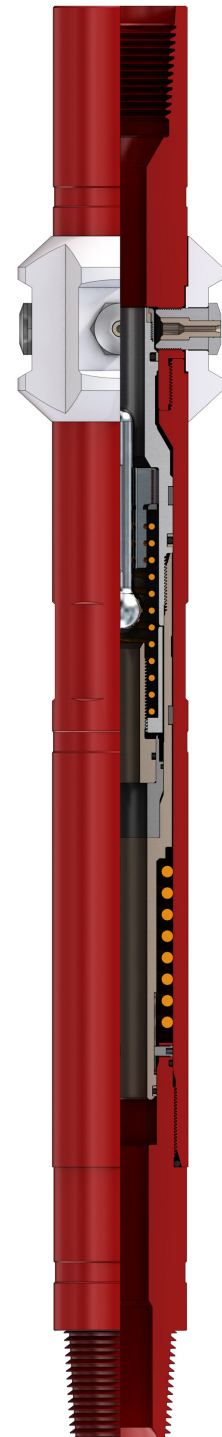
Abrasive perforating does not require explosives and is ideal for perforating operations where explosives transportation is difficult or well conditions prohibit the use of electric line-conveyed guns. The tool can be run with jointed pipe or coiled tubing and used on new oil and gas wells, or in existing zones that require reperforation caused by formation damage or buildup of sediment that has decreased production.

## *Applications*

- Nonexplosive perforating operations
- Perforation and reperforation of horizontal and vertical wells
- Use with a hydraulic setting tool for single-trip plugging and perforating operations
- Use with a motor for single-trip milling and perforating operations
- Use with a wash nozzle for single-trip well cleanout and perforating operations
- Chemical treatment of zones with plugs and thru-tubing packers

## *Features, Advantages and Benefits*

- Valve function not requiring a ball drop and multisequenced operation enables the valve to open and close as many times as necessary downhole, saving valuable time and operations cost required for multiple trips into the wellbore.
- Functionality is not affected by pressure drop, eliminating the need to adjust the valve to changing wellbore pressures.





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### *Features, Advantages and Benefits (continued)*

- Abrasive perforating increases vertical permeability in horizontal applications, providing additional production capability and enhancing operational efficiency.
- Abrasive perforating produces burr-free perforations with less formation damage, facilitating more effective treatments and reduced breakdown pressures for fracture initiation.

### *Specifications*

Casing Size (in./mm)	Max OD (in./mm)	Tool Body OD (in./mm)	Jet Quantity and Phasing	Switch Flow (gal/min, L/min)	Jet Nozzle Orifice Size (in./mm)	
4.500 114.3	3.695 88.9	2.875 73.0	3 jets at 120°	32 to 185 120 to 700	1/4 6.35	3/16 4.76
			4 jets at 90°			
5.500 139.7	4.400 108.0	2.875 73.0	3 jets at 120°			
			4 jets at 90°			