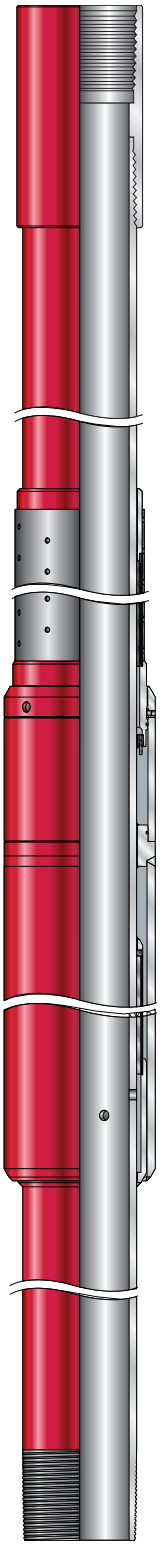
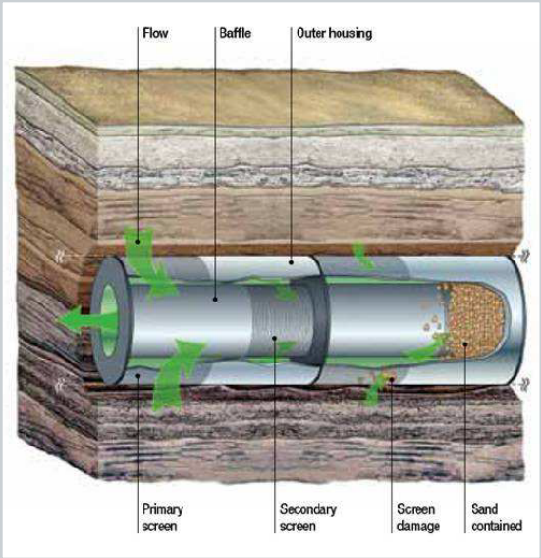
MazeFlo™ Self-Mitigating Screen Technology With Maxflo® Primary Screen and FloReg™ ICD



The Weatherford *MazeFlo* self-mitigating screen technology is patented by Exxon Mobil and jointly developed with Weatherford. *MazeFlo* technology increases reliability in sand-control completions by incorporating a maze design to constrain local sand ingress caused by screen damage without interrupting well production.



The screen contains a series of compartments along a selectively perforated base pipe. As shown in the illustration, each compartment contains a primary screen, flow baffles, outer housing, and a secondary screen. Produced fluids flow from the wellbore into the primary screen, between the primary screen and the nonperforated base pipe section, and then are redistributed by the flow baffles. The fluid, which now flows more uniformly, travels through the housing and into the secondary screen, then through the perforated base pipe, where it commingles with produced fluid from other compartments.

If the primary *MazeFlo* screen erodes, the sand flows into the housing compartment and accumulates on the secondary screen, resulting in increased flow resistance in the problematic compartment. The produced fluid is then diverted to the adjacent undamaged screen compartments. This screen self-chokes production only at sand breakthrough locations, which occurs automatically without the need for surveillance or a control system.

The Weatherford *FloReg* inflow control device (ICD) is designed to help evenly distribute inflow throughout a horizontal wellbore. This device reduces the tendency of early water or gas production, allowing the reservoir to drain more efficiently while maximizing production and recovery. The *FloReg* ICD enables uniform production and flow contribution along a sand-face completion in horizontal wells.

The Weatherford *Maxflo* primary screen is a metal-mesh screen product designed for openhole completions. Soft sintering of the Dutch twill-woven wire mesh locks the wires together for a robust construction. The result is an array of fixed pore sizes that provide optimal strength and sand retention needed in oil and gas applications. A simple, strong, and efficient weld seam is used to form the woven media into tubes. *Maxflo* screens provide long-lasting and reliable sand control.

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Applications

- Openhole standalone completions
- Horizontal and extended-reach wells
- Short-radius sidetrack and multilateral completions

Features, Advantages and Benefits

- Patented self-mitigating sand-control screen compartments constrain local sand ingress, requiring no intervention to initiate sand-control mitigation.
- The *Maxflo* primary screen provides a sand control method for less-uniform sands and higher fines content, improving operational efficiency.
- The *Maxflo* primary screen minimizes pressure build-up rates, reducing fluid influx through the screen.
- Sintered mesh media provide an array of fixed port sizes, enhancing strength and optimizing sand retention.
- The metal-mesh design is seam-welded and soft-sintered, providing screen reliability.
- Heavy-duty surface wire for the secondary screen provides greater erosion resistance, increasing mechanical strength and extending life in the most demanding environments.
- Pressure drop in each *FloReg* port is viscosity independent, but density dependent, inhibiting water breakthrough to increase ultimate recovery of oil while decreasing produced water.
- *FloReg* ports are made of tungsten carbide, mitigating flow-induced erosion.
- The number of open *FloReg* ports can be adjusted to the prescribed setting, based on the latest data, at the surface, saving valuable rig time and associated costs.

Specifications

Base Pipe			Screen					
Size (in./*mm*)	**Weight (lb/ft, *kg/m*)**	**ID (in./*mm*)**	**OD (in./*mm*)**	**Weight (lb/ft, *kg/m*)**	**Tensile Strength[1] (lb/*kg*)**	**Maximum Bend Angle[2] (°/100 ft/30 m)**	**Burst Resistance (psi/*MPa*)**	**Collapse Resistance (psi/*MPa*)**
4.000 *101.60*	9.50 *14.14*	3.548 *90.12*	5.800 *147.32*	15.2 *22.70*	173,616 *78 752*	20 *20*	TBD	TBD
4.500 *114.30*	11.6 *17.29*	4.000 *101.60*	6.300 *160.02*	19.60 *29.07*	236,965 *107 711*	20 *20*	TBD	TBD

1. Screen tensile strength based on standard perforated base pipe.
2. Maximum bend angle for screen may exceed allowable bend angle for some threads. See manufacturer's specifications.

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