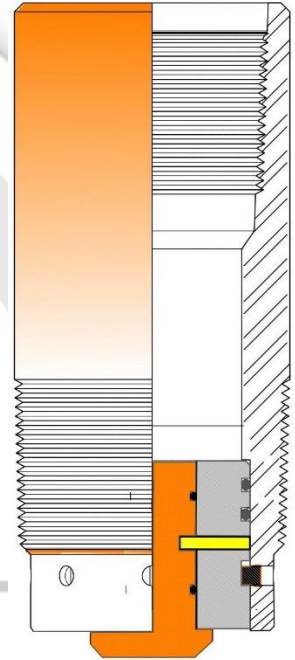


BULLSEYE Pump-out Plug

The **PATENT PENDING SES BULLSEYE Dissolving Pump-out Plug** utilizes a **TWO-PART** system to form a temporary barrier in the tubing string in order to perform a variety of downhole operations including but not limited to hydraulic packer and ESP/PCP installations. Once the intended operation is complete, the inner plug is expended into the wellbore fluids where it dissolves. The outer shroud remains in the housing and dissolves in place leaving a full I.D.



APPLICATION

- Ideal For applications with a smaller restriction below the housing
- Two-part temporary dissolving barrier in the tubing string

BENEFITS

- Low cost
- Wide choice of shear-out pressures
- Provides a tubing plug without a well intervention
- Eliminates interfering debris left in wellbore

FEATURES

- Adjustable shear value
- Shouldered parts eliminate stress on sheer screws
- Available in standard and premium threads and materials
- Plugs coated to reduce premature dissolution

DESCRIPTION AND OPERATION

The Bullseye Dissolving Pump-out Plug sub is equipped with double O-rings and a proprietary coating to reduce premature degradation. It utilizes a plug consisting of two dissolvable pieces: an expendable, dissolvable pump-out plug inside of an outer shroud secured in place with stainless steel set screws and is intended to dissolve in place. The shear settings are easily adjusted in the field. During installation, the sub is attached to the completion assembly and run-in hole. The equipment's required setting pressure is applied and held for the time required. The tubing pressure is increased to shear the pins retaining the inner plug. Once sheared, the plug simply falls to the bottom of the well and dissolves in the well fluid. Then the outer shroud is left in place to dissolve.

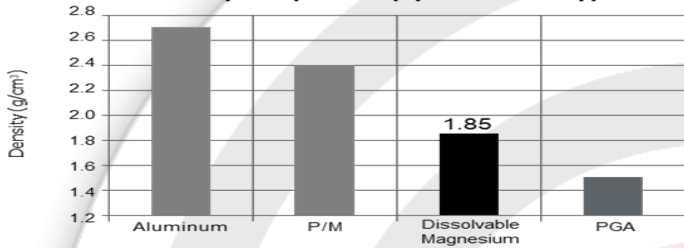
Tubing	Housing and Plug Data				
	Sub MAX OD (in. [mm])	MAX OD of Inner Plug (in. [mm])	MIN ID of Tool After Shear (in. [mm])	Total Number of Shear Screws	Shear Pressure (PSI/Screw +/-15%)
2.375 [60.3]	3.068 [77.93]	1.900 [48.26]	1.800[45.72]	6	737
2.875 [73.0]	3.668 [93.2]	2.000 [50.8]	2.200 [55.88]	10	382
3.500 [88.9]	4.500 [114.3]	2.500 [63.5]	3.460 [87.88]	12	403
4.500 [114.3]	5.500 [139.7]	3.500[88.9]	3.725 [94.64]	10	562

Magnesium Alloy Dissolution

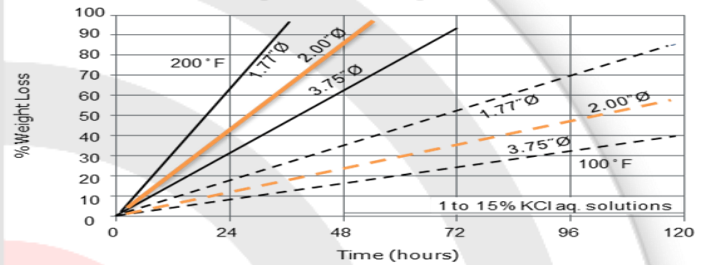
The magnesium alloy has a corrosion rate of 1100 MCD (milligrams/sq cm/day) in 3% KCl solutions at 200F. This high strength magnesium alloy has good ductility. The magnesium alloy needs at least 10,000 ppm chloride ion to corrode actively. To protect the magnesium alloy plug from beginning the dissolution process or corrosion during installation, a specialized coating is applied to the plug.

Magnesium Alloy

Materials density comparison (Specific Gravity)



Dissolvable Magnesium weight loss



Corrosion Rate (MCD) @ 100, 150, and 200F

