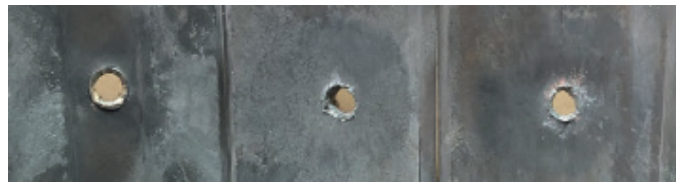


# ZipFire ReFrac Gun System

Refracturing vertical and horizontal producing wells is a cost-effective method to boost production and recovery in unconventional and conventional reservoirs. To enhance refracturing operations in wells with dual casing, the GR Energy Services ZipFire™ ReFrac gun system delivers high efficiency and ultra-reliable perforating. The 2-, 2.5- and 2.75-in. OD guns feature the patented plug-n-play ZipFire technology and StrykeZone\* charges. The shorter gun lengths used in this system are delivered to the wellsite prewired and ready to deploy with the proprietary ZipFire detonator—one of the safest perforating devices in the industry.

## Shaped Charges Designed for Refrac Operations

The GR proprietary StrykeZone ReFrac shaped charges are designed and qualified to deliver an ideal perforation for hydraulic fracture stimulation in dual casing refracturing completions. The latest advances in liner materials and shaped-charge geometries have been optimized to create equal exit holes in the outer casing. Rigorous modeling and extensive testing demonstrate superior perforating performance across a wide range of completions.



Highly consistent entrance holes in P110 4.5-in., 13.5-lbm outer casing from 2.5-in. ZipFire ReFrac gun system with StrykeZone 2515 RC1 charges.



## ZipFire ReFrac Benefits

Reduced operational risk, lower operating time

Higher refrac performance from equal distribution of treatment fluids, maximum injectivity and optimal proppant placement

## ZipFire ReFrac Gun Features

Slim design, short length for dual casing wells

Ultra-reliable, RF-safe switch-detonator technology

Standard charges or high-performance StrykeZone refrac shaped charges

Customized shot phasing and density

Factory preassembled to minimize human error

Consistent equal hole diameters

## ZipFire ReFrac Outer Casing Exit Hole Sizes

Gun OD	Inner casing	Outer casing				
		4.5 in. 13.5 lbm/ft	5 in. 18 lbm/ft	5.5 in. 20 lbm/ft	5.5 in. 23 lbm/ft	6 in. 24.5 lbm/ft
2 in.	3.25 in.	0.30 in.	—	—	—	—
2½ in.	3.5 in.	0.34 in.	0.32 in.	0.30 in.	0.27 in.	—
2¾ in.	4.0 in.	—	0.36 in.	0.34 in.	0.31 in.	0.29 in.
2¾ in.	4.5 in.	—	—	0.37 in.	0.36 in.	0.31 in.

\*Mark of GR Energy Services