

# Velocity™ Aligned Gun System

## ECONOMIC, COMPACT, AND VERSATILE SYSTEM FOR ORIENTING PERFORATIONS IN HORIZONTAL WELLS

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### OVERVIEW

In an unconventional completion, it is important to utilize as many of the open perforations as possible to optimize fluid and proppant placement in a formation. Data suggests that orienting all perforations along the same azimuth in the casing helps to ensure that perforations are as uniform as possible, making the treatment more effective. For high-volume, high-efficiency applications, such as orienting perforations in non-fiber-optic wells, the Velocity™ Aligned gun system provides an economic option for orienting perforations in 2.5° increments around the casing circumference. This accurate and efficient system is fully adjustable at the wellsite.

By orienting the charge tube rather than the gun carrier, Velocity™ Aligned guns make it unnecessary to have additional hardware (such as lock rings) and to orient subs between guns. This design also reduces the variability in gun-to-gun orientation by reducing the number of contact points required for the bottomhole assembly (BHA). This orienting method is also more compact than alternate orienting mechanisms – thus keeping the resulting gun assembly lighter and shorter, decreasing the HSE exposures on location.

Velocity™ Aligned gun systems include all of the benefits of the Velocity™ modular system. The entire Velocity™ Aligned assembly is a plug-and-play system that is disposable after being run in hole. Velocity™ Aligned guns are fully addressable, radio frequency (RF) safe, and compatible with any industry-standard perforating charge. Multiple switch options are also available, and the guns are compatible with industry-standard accessories, such as orienting weight bars, release tools, downhole tension devices, and swivels.

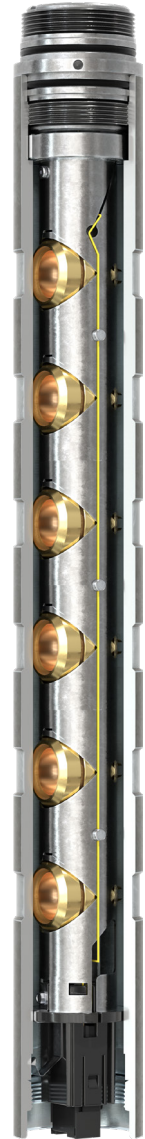
### FEATURES

- » Adjustable at the wellsite in 2.5° increments
- » Plug-and-play, and fully disposable platform
- » Minimal external orienting hardware required
- » Shorter length than competing systems
- » Broadest portfolio of charges in a fully modular oriented system

### BENEFITS

- » Requires minimal time to orient
- » Reduced variability on gun-to-gun orientation
- » Economic platform compared to other orienting options
- » Reduced HSE exposure relative to competing systems
- » Delivered loaded and ready to be run in hole

Velocity™ Aligned	Competing Systems	Benefits of Velocity™ Aligned Systems
Charge tube aligned, instead of gun carrier	Reliance on external lock rings and subs	<ul style="list-style-type: none"> <li>• More reliable orientation and shorter BHA than traditional methods</li> <li>• Less equipment and fewer touchpoints for personnel</li> </ul>
Modular platform	Requires loading, assembly, and/or wiring on location	<ul style="list-style-type: none"> <li>• More efficient surface operations</li> <li>• Elimination of human-caused failures</li> <li>• Fully disposable</li> <li>• Eliminates the need to clean and redress equipment</li> </ul>
Optimized length and weight	Needs longer guns and additional hardware	<ul style="list-style-type: none"> <li>• Ability to run more guns without the need for additional surface equipment.</li> <li>• More easily conveyed down hole</li> <li>• Reduced HSE exposure</li> </ul>
Multiple perforation charge specifications	Often limited to a single perforation charge specification	<ul style="list-style-type: none"> <li>• Completion design flexibility</li> <li>• More limited entry options</li> </ul>



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