

# Symphoni addressable perforating system

## Maximize reservoir potential

The Symphoni™ addressable perforating system is the next generation conventional and unconventional perforating platform—driving cost reduction and lowering the complexity of work for field crews at the wellsite.

Fully flexible and customizable, the plug-and-play gun system simplifies assembly at wellsite using addressable/selectable guns without the use of ported subs—a common source of nonproductive time. The system is equipped with a surface checkout system to ensure operational integrity before running in hole.

Conventional perforating techniques can be costly in terms of both production and efficiency. Port plugs and additional connections can lead to misfires, creating NPT.

The Symphoni addressable perforating system is designed to eliminate wire connections and port plugs which, in the past, have been prone to failures. The customizable multigun system maximizes production by increasing clusters per run with confidence.

### Enhanced HSE features

The Symphoni perforating system design eliminates the effect of static electricity, uncontrolled stray voltage and current, and radio frequency saturation on the wellsite. This is achieved by using API RP67 compliant safeguards and integrated circuitry with a failsafe mechanism to prevent surface detonation. When combined with the addressable release tool from Baker Hughes, the system also prevents uncontrolled surface separation.

### Fully compatible systems

The Symphoni perforating system delivers superior performance in various shot phasings, densities, penetration depth, and gun diameters. All Baker Hughes shaped charges are fully compatible with the Symphoni perforating system, including the TrueJet™ uniform-hole perforating charges, which expand our portfolio of shaped charges to address the unconventional market.

### Applications

- Conventional and Unconventional reservoirs
- Producer and injector wells
- Top-fire, select fire, plug-and-perf stage completions
- Natural, stimulated, and sand control completions

### Benefits

- Reduces onsite operating time for perforating operations
- Reduces NPT by eliminating port plugs and wiring on wellsite
- Reduces potential for human error with simplified arming
- Maximizes production by increasing clusters per run with confidence
- Provides easy initiation and re-verification using graphical interface
- Allows complete system verification with surface system while running in hole

In addition, the Symphoni perforating system can use DeepConnect™ charges, which work with high-temperature explosives required in ultradeep frontiers.

Contact your Baker Hughes representative to learn how the Symphoni addressable perforating system can improve connection to—and production from—your reservoir.

### Symphoni modular cluster features and technical specifications

- Integrated modular plug-and-play design
- Compatible with Baker Hughes standard charges and industry commercial charges
- Up to 30 clusters per run

### Symphoni cartridge features and technical specifications

- Highest safety standard against radio frequencies, stray voltages, and static electricity
- Real-time monitoring to check guns
- Gun skipping capability

### Modular cluster specifications

<b>Gun size (in.)</b>	<b>2, 2.5, 2.875, 3.125, 3.375, 4.5, and 7</b>
<b>Temperature rating</b>	Dependent on complete gun string configuration and gun carrier design
<b>Shot density (spf)/ phasing (0)</b>	0 to 6 spf / 0, 60, 90, 120, 180 (size specific)
<b>Shaped charge compatibility</b>	Deep penetrating, big hole, TrueJet™
<b>Maximum number of selectable devices</b>	30

### Cartridge specifications

<b>Gun size (in.)</b>	<b>2, 2.5, 2.875, 3.125, 3.375, 4.5, and 7</b>
<b>Electronics temperature rating*</b>	350°F (177°C), maximum temperature depends on explosive material used
<b>Tandem sub bulk-head pressure rating**</b>	20,000 PSI (137.8 MPa)
<b>Insulation resistance</b>	500 mega ohms
<b>DC voltage resistance</b>	500 VDC for up to 10 seconds API RP67 tested and approved
<b>AC voltage resistance</b>	API RP67 tested and compliant
<b>Radio frequency</b>	

\* Maximum temperature rating dependent on complete gun string configuration.

\*\*Maximum pressure rating dependent on complete gun string configuration.

