

# PERFORATING SERVICES

## OVERVIEW

At Titanium Wireline, our wide range of perforating services are designed for safe, efficient, and effective performance to meet all of our clients needs. Utilizing cutting edge technology and a team of skilled professionals, Titanium offers a wide range of customizable applications in the perforating industry.

## PRODUCTS AVAILABLE

- RF Safe Addressable Perforating
- Thru-Tubing perforating (RTG)
- Tubing Conveyed Perforating (Jointed tubing / Conventional Coil)
- Time Delay Perforating
- Hi-Temp Perforating (HMX & HNS)
- Pipe Recovery Solutions
- STIM Gun Technology (STIM Sleeve, KODIAK puck System)

## FEATURES

- Multiple temperature rated options available (RDX 177°C / HMX 204°C / HNS 260°C)
- Single or multi-gun select-fire utilizing RF Safe Addressable Detonators
- Oriented or non-oriented perforating
- Multiple conveyance options (Wireline / ECOIL / Jointed Tubing / Pump-down / Tractor)

## PERFORATING SERVICES

### WIRELINE CONVEY

#### DESCRIPTION:

Titanium Cased Hole Wireline and Perforating group offers our customers customized solutions to maximize production no matter where your field is in the well life cycle.

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#### SINGLE GUN WIRELINE PERFORATING OPERATIONS:

##### Features

- No electrical wiring
- Simple to use detonator
- Detonator is always shunted until properly armed
- Ideal for long gun strings with TCP transfer systems
- Arming procedures comply with API RP-67 electrical before ballistic arming (EBBA) recommendations

## TUBING CONVEY

### DESCRIPTION:

Titanium's Team uses the newest and most efficient technology available; we have industry known and highly experienced engineers that have worked with innovative TCP hardware solutions, that are cost effective and incredibly reliable. All assemblies are designed using a modular concept.

- Mechanical / Hydraulic Firing Head
- Pressure Release Sub (KOBÉ)
- Mechanical Gun Release
- Radioactive Marker Sub
- Fill/Flow Sub
- Hydraulic Tubing Drain
- E-Coil Convey
- Hz Perforating
- Select Firing System
- Oriented Perforating

### Drop Bar Hydrostatic Firing Heads

#### Applications

- TCP perforating
- Underbalanced and overbalanced perforating
- Straight wells with deviation less than 55°

#### Features

- Designed to API RP-67 (Oilfield Explosive Safety) guidelines
- Impression pad can confirm drop bar impact
- High pressure version available
- Simple, reliable and rugged design
- Redress kits
- Firing head extensions offered upon request Roller drop bars available for high deviation wells

### Direct Pressure Firing Heads

#### Applications

- TCP and coiled tubing perforating
- Underbalanced and overbalanced perforating
- Highly deviated and horizontal wells
- Extreme slim hole perforating (1.315" tubing)

#### Features

- Utilizes industry leading precision shear pins
- Can be run on top or bottom of Titan guns
- Simple, reliable and rugged design
- Redress kits
- Designed to API RP-67 (Oilfield Explosive Safety) guidelines

### Ball Drop Hydraulic Actuated Firing Heads

#### Applications

- Coiled tubing or TCP perforating
- Underbalanced and overbalanced perforating
- Highly deviated and horizontal wells
- Wells with existing perforations
- Well abandonments

#### Features

- Can circulate before and after perforating
- Designed to API RP-67 (Oilfield Explosive Safety) guidelines

### Dual Top Firing Heads

#### Applications

- TCP perforating
- Permanent Completions

#### Features

- Designed to API RP-67 (Oilfield Explosive Safety) guidelines
- Uses existing Drop Bar and Direct Pressure Firing Head Components

### Dual Top Annulus Differential Pressure Firing Heads

#### Applications

- TCP perforating operations
- DrillStem Testing (DST) operations
- Underbalance perforating
- Conducting TCP operations in wells with open perforations

#### Features

- Packer must be correctly set to achieve initiation
- Designed to API RP-67 (Oilfield Explosive Safety) guidelines
- Uses existing Drop Bar and Direct Pressure Firing Head Components
- Independent firing systems ideal for permanent completions jobs

## E-COIL CONVEY

### DESCRIPTION:

Titanium has been a leader in E coil perforating and has completed successfully over 1100 wells.

- Hz Perforating
- Select Firing System
- Oriented Perforating