



1.69" Hydraulic (Ball) Actuated Firing Head

GEODynamics' Hydraulic (Ball) Actuated Firing Heads (FHHA) are primarily designed for perforating in wells with existing perforations and are compatible with coiled tubing and workover operations. The firing head provides maximum safety to personnel and equipment at surface during make-up and retrieval. While running in the well, the firing head is pressure-balanced, allowing circulation or displacement of completion fluids prior to perforating.

The device is actuated by circulating the appropriate diameter stainless steel ball onto a polished seat and simultaneously increasing the tubing/coiled tubing pressure to achieve the required differential pressure across the ball seat/actuating piston. When the pins shear, the piston is driven into a GEODynamics Safety Mechanical Firing Head and the ballistics are detonated. After shearing/perforating, the device opens a port in the outer housing and the well can once again be circulated.

FEATURES/BENEFITS

- Requires a minimum hydrostatic pressure at the firing head to operate
- Requires differential pressure after ball is seated in actuating piston
- Ideal for vertical, deviated, and horizontal wells
- Not affected by electrical sources or radio frequencies

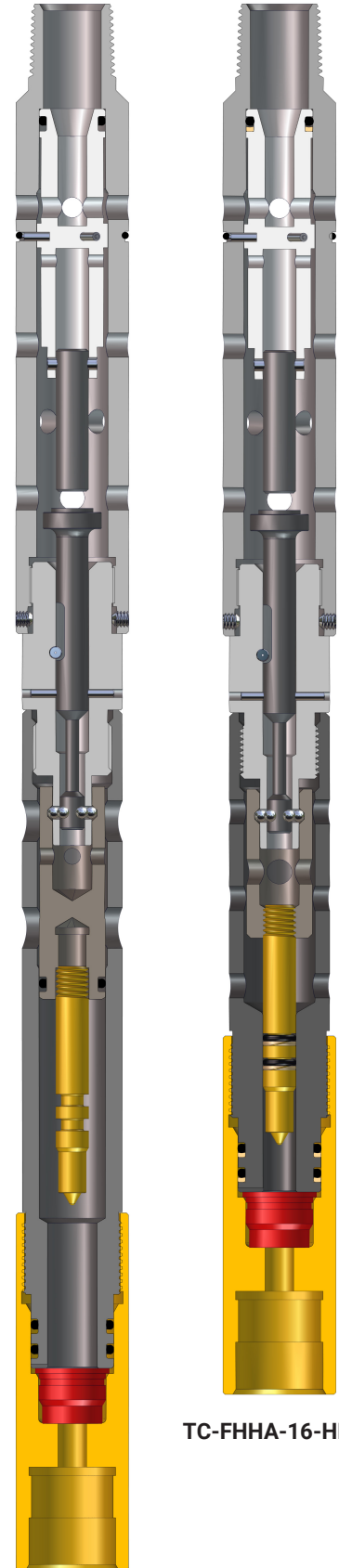


1.69" Hydraulic (Ball) Actuated Firing Head

SPECIFICATIONS

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| Assembly P/N | TC-FHHA-16-LP00 | TC-FHHA-16-HP00 |
| Application | Standard Pressure | High Pressure |
| Firing Head Type | Hydraulic (Ball) Actuated | |
| Outside Diameter | 1.69 in / 42.8 mm | |
| Tubing Thread Connection | 1.315" NU 10 RD Pin Up | |
| Min. Operating Pressure of Aux Firing Device | 500 psi / 3.45 MPa | 2,000 psi / 13.79 MPa |
| Max. Operating Pressure of Aux Firing Device | 7,500 psi / 51.71 MPa | 20,000 psi / 137.90 MPa |
| Collapse Pressure | 20,000 psi / 137.90 MPa | |
| Tensile Strength | 40,000 lbs / 177.9 kN | |
| Temperature Rating | Determined by explosive package used | |
| Seal Ratings | 10,000 psi STD without Back-up Rings 20,000 psi HI-TEMP with PEEK Back-up Rings | |
| Shear Pin Value | ‡ 1,050 psi per pin @ 70°F (0.130" dia. GEODynamics shear pin only) | |

‡ Differential Pressure – Three (3) shear pins require approximately 3,150 psi differential to shear at 70°F.



TC-FHHA-16-HP00

TC-FHHA-16-LP00