

Drop Bar Firing System

INTRODUCTION

The drop bar activated hydrostatic fired initiates the Tubing Conveyed carriers. The bar either dropped from the surface or run on slick-line* down the tubing string strikes the firing head, a firing pin is driven down into a one piece initiator. The detonating initiator begins a chain reaction detonation from gun to gun.

The drop bar has a brass tell tale which indicates the unique pattern on top of the release sleeve when it has engaged the head with enough force. The drop bar activated hydrostatic fired firing head is run between the tubing string and the gun string. It creates a seal between the gun and the production tubing to retain the products of detonation within the carrier body. At least 30 feet is recommended between the firing head and the flow entry in the tubing.

NOTE: The well is not produced through the gun body. The ported sub or production valve should be

run at least 30 feet above the firing pin to both allow slick-line operations in a static area of tubing and to ensure the dropping bar has sufficient velocity after the flow sub to initiate shift the release sleeve.

OPERATION

The initiation of the drop bar activated hydrostatic fired is dependent on the amount of force delivered to the retaining sleeve by the drop bar. The retaining sleeve must be hit hard enough to overcome the shear pins, which hold the retaining sleeve in place, and allow hydrostatic pressure to drive the firing pin downward to detonate the detonator. When the drop bar strikes the retaining sleeve, the sleeve is driven downward allowing the firing pin to be hydraulically driven by rat-hole pressure, striking an anvil in the detonator. When the firing pin strikes the anvil, the percussion cap is detonated. The cap gives off a flame which in turn detonates the Lead Azide within it. The Lead Azide produces heat and a shock wave which detonates the bi-directional booster.

This booster is attached to the upper end of the detonating cord positioned just below the percussion cap. The high density, secondary high explosive material in the bi-directional booster initiates the detonating cord. The chain reaction is carried from gun to gun, detonating the shaped charges as it passes.

The head requires a minimum hydrostatic pressure of 600psi to drive the firing pin with sufficient force to initiate the percussion detonator providing a safety factor on surface. After firing gases and pressure are retained below the head by the percussion detonator and by the unique sealing mechanism of the firing pin.

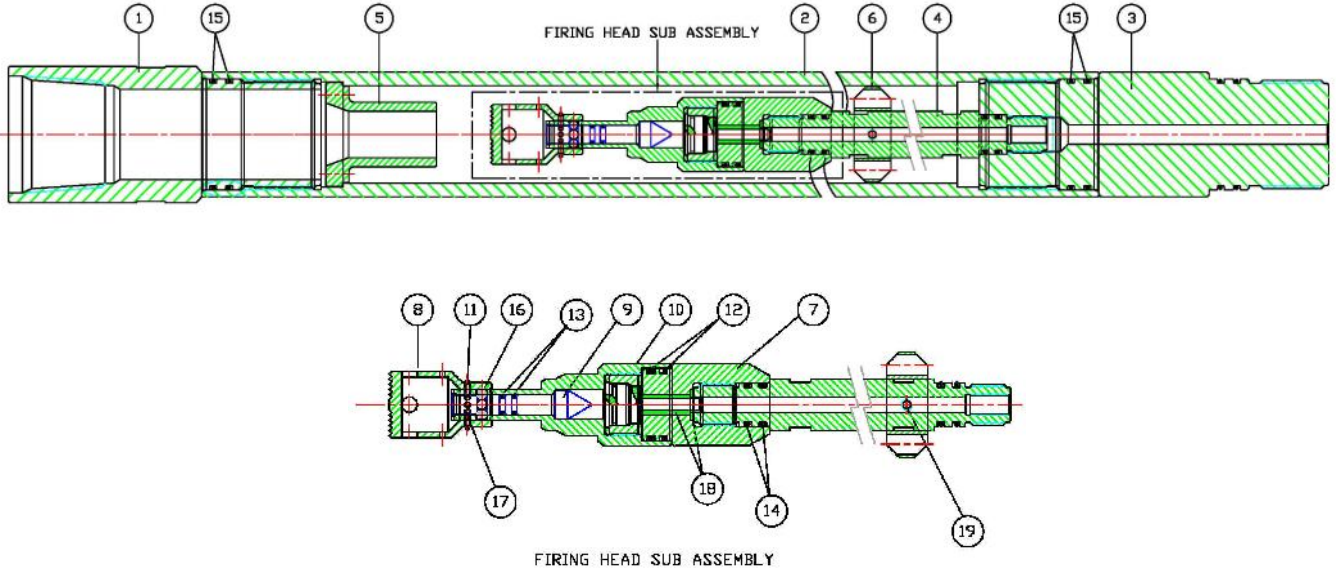
The head should be run above a safety joint and installed only after the TCP string has been completed.

* After firing the TCP string should not be moved until the drop bar has been retrieved. For this reason running the drop bar on slick-line is the preferred method.

**A dry hole kit is available on request and must be used only with caution.

*** The Drop Bar Activated Hydrostatic Head may be combined with the Direct Fire, Time Delay and other firing heads in situations where redundancy is required.

Drop Bar Firing Head Assembly



19	SET SCREW, $\phi 1/4 \times 0.5$ L		3	
18	BOOSTER SLEEVE w/ BRASS WASHER		1	
17	SPIRAL PIN, $\phi 1/8 \times 1/4$ (STD DUTY)		4	
16	STEEL BALL $\phi 0.25$	CHROME STEEL	4	
15	O-RING FOR DT38006	2-232 V709-90	6	
14	O-RING FOR DT38005	2-211 V709-90	4	
13	O-RING FOR DT38004	2-109 V709-90	2	
12	O-RING FOR DT38177	2-221 V709-90	2	
11	O-RING FOR DT38001	2-120 V709-90	1	
10	FIRING PIN HOUSING	AISI 4140	1	
9	STANDARD FIRING PIN	AISI 4140	1	
8	RELEASE SLEEVE	AISI 4140	1	
7	DETONATOR HOUSING	AISI 4140	1	
6	CENTRALISER	AISI 4140	1	
5	NO-GO SLEEVE	AISI 4140	1	
4	TRANSFER TUBE	AISI 4140	1	
3	BOTTOM SUB 3-3/8" PIN	AISI 4140	1	
2	3-3/8" FILL JOINT	AISI 4140	1	
1	3-3/8" TOP SUB	AISI 4140	1	
ITEM	DESCRIPTION	MATERIAL	QTY.	REMARKS