

2-7/8" (73 mm) EXPENDABLE HIGH SHOT DENSITY GUN SYSTEM, 6 SPF, 60°

GUN SPECIFICATIONS

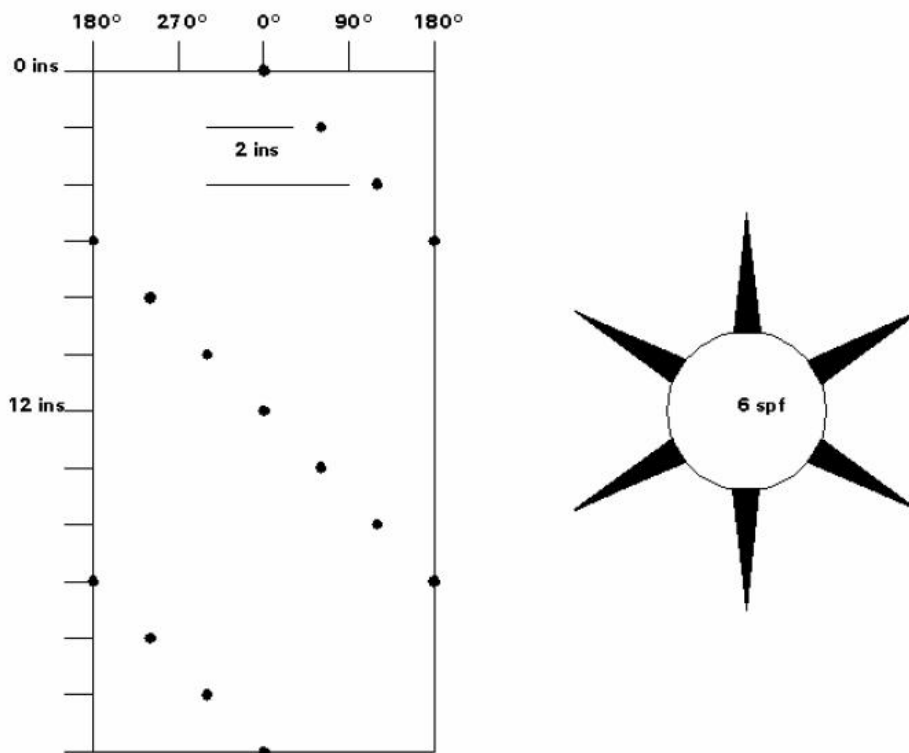
	(Imperial)	(Metric)
GUN SIZE	2.825 inches	72 mm
GUN PHASING	60 degrees	60 degrees
SHOT DENSITY	6 shots/ft	19.8 shots/metre
SHOT SPACING	2 inches	50.8 mm
GUN LENGTH	20, 10, 5 ft	6, 3, 1.5 metre
GUN WEIGHT	238, 130, 72 lbs	106, 58, 32 kgs
MAXIMUM PRESSURE	20,000 psi	1380 bar
MAXIMUM SAFE PULL	105,000 lbs	46,800 kgs
MINIMUM PRESSURE	0 psi in water	0 bar in water
MAXIMUM O.D.	2.98 inches	75.7 mm

1. The carrier assembly may be conveyed on Wireline, Tubing, Slick-Line or Coiled Tubing.
2. The weight includes the charges and one tandem connector.
3. The carrier can be shot without splitting at atmospheric pressure if immersed in water.
4. The carrier is available in upto 6 metre (20 ft) lengths; special lengths can easily be accommodated on request.
5. The system can be supplied in either in imperial or metric lengths.
6. The maximum O.D. corresponds to the maximum measured gun diameter including burrs and swell, on a gun fired at atmospheric pressure immersed in water.
7. The 2-7/8" (73 mm) system may be loaded with RDX, HMX or XHT charges. The same load tube assemblies can be used with either Deep Penetrating (D.P.), Super Deep Penetrating, Extra Deep Penetrating (XDP) or Big Hole (B.H.) charges.
8. The 2-7/8" (73 mm) system is normally used in 4-1/2" (114mm) or 5-0" (127 mm) casings.
9. The guns are supplied for standard service. For operations in an H2S environment, special equipment must be specified.

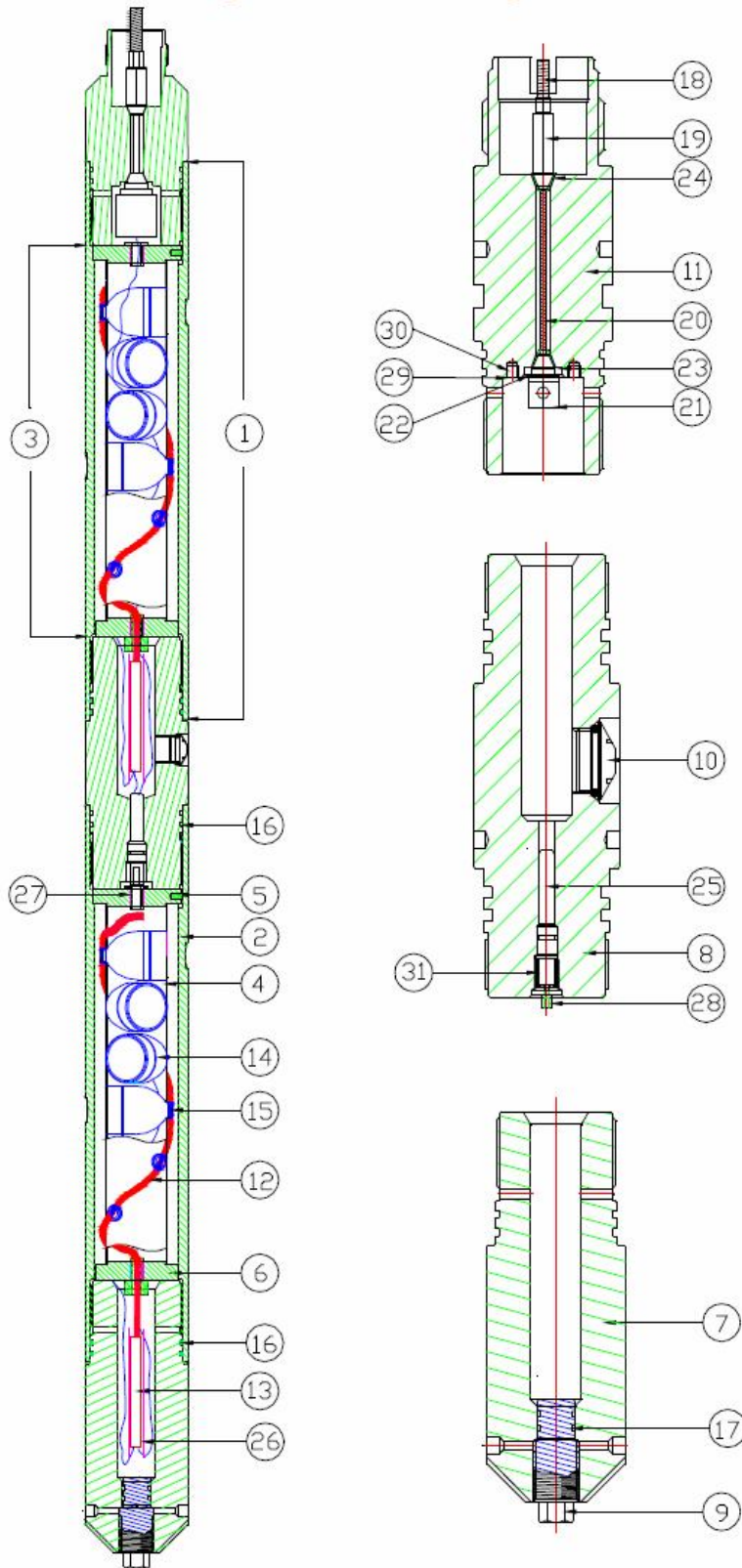
2-7/8" (72 mm) 6 SPF 60° PHASED, RH SPIRAL SHOT PATTERN

Below diagram shows the shot pattern made in 4-1/2" (114 mm) casing by a centred 2-7/8" (73 mm), 60 degree phased, R.H. Spiral, 6 s.p.f. gun.

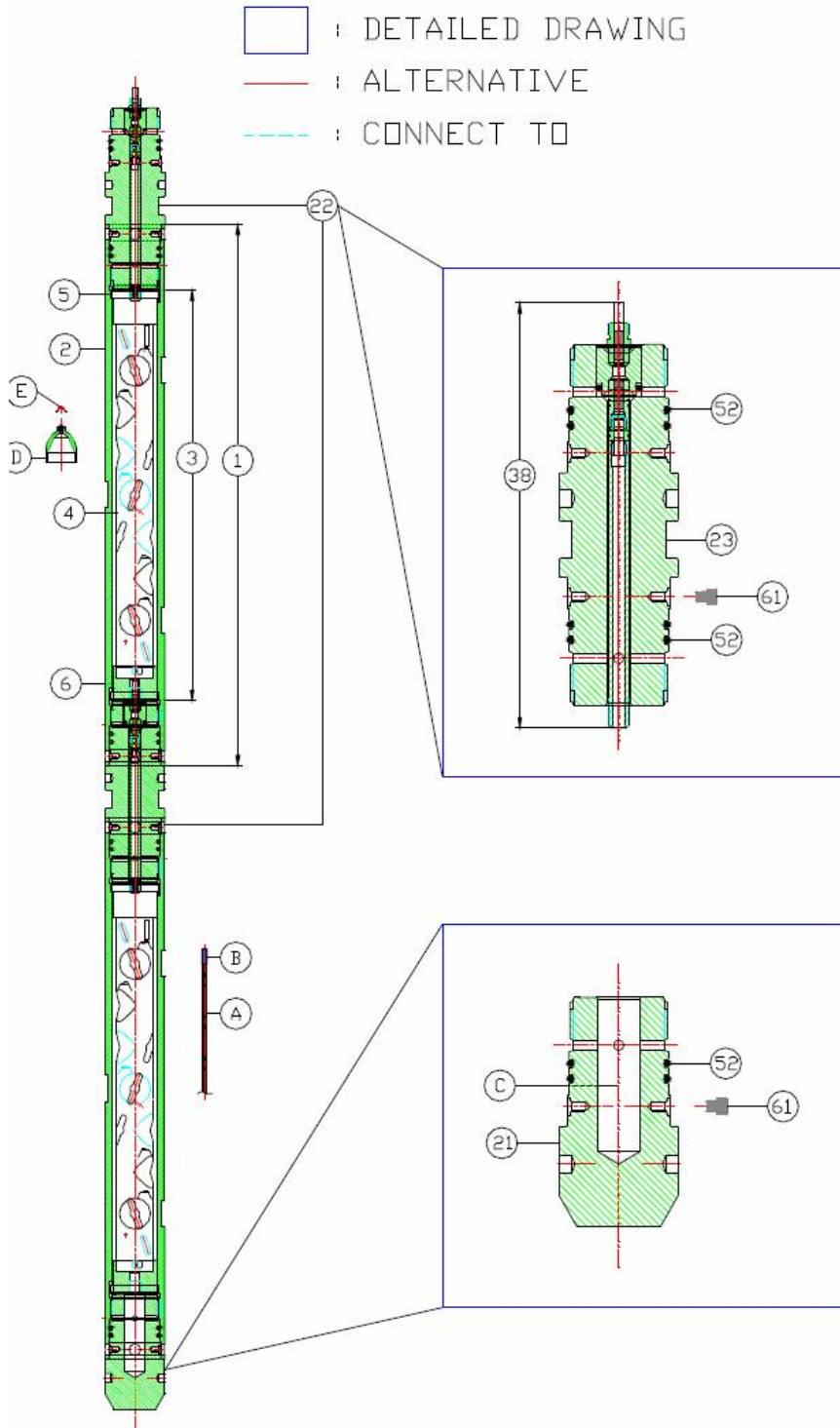
Each mark on the grid represents an individual shot, separated from the next by 60 degrees radially and 2 inches (50.8 mm) vertically.



2-7/8" HSD, Wireline System Assembly



2-7/8" HSD, TCP System Assembly

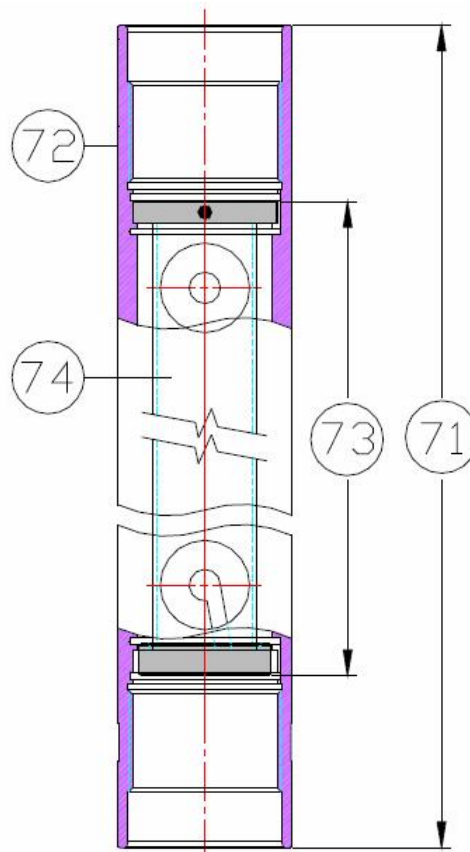


2-7/8" HSD, Wireline Assembly Parts

Item	Description
2-7/8" 6SPF 60deg Carrier System	
1	2-7/8" Carrier Assy 6ft 6spf 60° phase
	2-7/8" Carrier Assy 11ft 6spf 60° phase
	2-7/8" Carrier Assy 16ft 6spf 60° phase
	2-7/8" Carrier Assy 18ft 6spf 60° phase
	2-7/8" Carrier Assy 21ft 6spf 60° phase
2	2-7/8" Carrier 6ft 6spf 60° phase
	2-7/8" Carrier 11ft 6spf 60° phase
	2-7/8" Carrier 16ft 6spf 60° phase
	2-7/8" Carrier 18ft 6spf 60° phase
	2-7/8" Carrier 21ft 6spf 60° phase
3	2-7/8" Load Tube Assy 6ft 6spf 60° phase
	2-7/8" Load Tube Assy 11ft 6spf 60° phase
	2-7/8" Load Tube Assy 16ft 6spf 60° phase
	2-7/8" Load Tube Assy 18ft 6spf 60° phase
	2-7/8" Load Tube Assy 21ft 6spf 60° phase
4	2-7/8" Load Tube 6ft 6spf 60° phase
	2-7/8" Load Tube 11ft 6spf 60° phase
	2-7/8" Load Tube 16ft 6spf 60° phase
	2-7/8" Load Tube 18ft 6spf 60° phase
	2-7/8" Load Tube 21ft 6spf 60° phase
5	2-7/8" Top Alignment Plate
6	2-7/8" Bottom Alignment Plate
Wireline System	
7	2-7/8" WL Bottom Nose – Assy
8	2-7/8" WL Bottom Nose – Body
9	2-7/8" WL Bottom Nose – Plug
10	2-7/8" WL Intercarrier Selective – Assy
11	2-7/8" WL Intercarrier Selective – Body
12	2-7/8" WL Intercarrier Selective – Plug
13	2-7/8" WL Adaptor Firing Head for 1-11/16" CCL SLB Style – Assy
14	2-7/8" WL Adaptor Firing Head for 1-11/16" CCL SLB Style – Body
15	2-7/8" WL Adaptor Firing Head (Long) for 1-11/16" CCL SLB Style – Assy
16	2-7/8" WL Adaptor Firing Head (Long) for 1-11/16" CCL SLB Style – Body
17	2" Port Plug for 2-7/8" Arming Sub and WL Adaptor Firing Head (Long)
18	2-7/8" WL Grooved Tandem Sub
19	2-7/8" Pressure Relief and Arming Sub – Assy
20	2-7/8" Pressure Relief and Arming Sub – Body

2-7/8" HSD, TCP Assembly Parts

Item	Description
TCP System	
21	2-7/8" TCP Bottom Nose
22	2-7/8" TCP Grooved Tandem Sub – Assy
23	2-7/8" TCP Grooved Tandem Sub – Body
Accessories	
31	Contact Nut 1.75" (Hex) with Insulation
32	Contact Insulator
33	Head Contact Rod
34	Cone Insulator
35	Rubber Seal
36	Contact Cone Washer
37	Contact Cone (Hex)
38	Booster Transfer Kit
O-Rings	
51	O-Ring 2-214 V90D
52	O-Ring 2-227 V90D
53	O-Ring 2-116 V90D
54	O-Ring 2-225 V90D
55	O-Ring 2-118 V90D
Screws	
61	Hex Socket Head Cap Screw 0.25" - 20UNC
62	Ground Screw 6 - 32UNC - 3/8"L
63	Round Head Screw 0.25" - 20UNC - 3/8"L
64	Bleed Off Screw
Explosives	
A	Detcord, Circular, 80 grain, RDX or HMX
B	Detcord End Seal (Aluminium)
C	Detonator, 56 Ohm, Fluid Desensitized, 170C or 200C
D	Charge, RDX, HMX, HNS (16g) Clip Retention
E	Charge Clip



Item	Description
Optional	
71	2-7/8" Spacer w/ Dummy Tube 6ft
	2-7/8" Spacer w/ Dummy Tube 11ft
	2-7/8" Spacer w/ Dummy Tube 16ft
	2-7/8" Spacer w/ Dummy Tube 21ft
72	2-7/8" Spacer (Heavy Blast Sleeve) 2ft
	2-7/8" Spacer 6ft
	2-7/8" Spacer 11ft
	2-7/8" Spacer 16ft
	2-7/8" Spacer 21ft
73	2-7/8" Dummy Tube Assy 6ft
	2-7/8" Dummy Tube Assy 11ft
	2-7/8" Dummy Tube Assy 16ft
	2-7/8" Dummy Tube Assy 21ft
74	2-7/8" Dummy Tube 6ft
	2-7/8" Dummy Tube 11ft
	2-7/8" Dummy Tube 16ft
	2-7/8" Dummy Tube 21ft

Time Temperature Curve

Oiltech manufactures charges with the highest quality RDX and HMX explosives. HNS and PYX charges are also available on request. The downhole temperature will determine the type of shaped charge and detonating cord to be used. See Chart 1 on temperature vs. time curve. These two factors determine the appropriate O-ring seal material appropriate in the assembly. Refer to Chart 2. Oiltech recommends Viton 90D o-rings for Tubing Conveyed Perforating (TCP) systems and Nitrile 75D for wireline application.

Chart 1: Temperature vs. Time for Common Explosive Materials

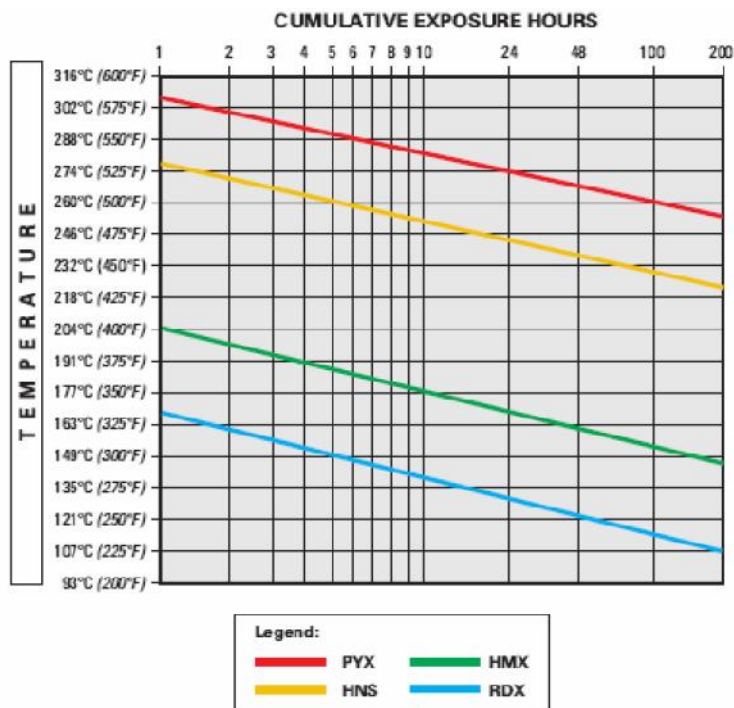


Chart 2: O-ring Seals Selection

		Crude Oil	Water Based Drilling Mud	Oil Based Drilling Mud	CaCl Brines	H2S 7%	H2S 15%	Bromides
Nitrile 75 D	275°F / 135°C	OK	OK	OK	OK	NO*	NO	NO
Viton 90 D	450°F / 232°C	OK	OK	OK	OK	OK	Up to 300°F	OK
Kalrez	550°F / 288°C	OK	OK	OK	OK	OK	OK	OK

*Not recommended for prolonged exposure to H2S environment, but can be used for short term exposure.