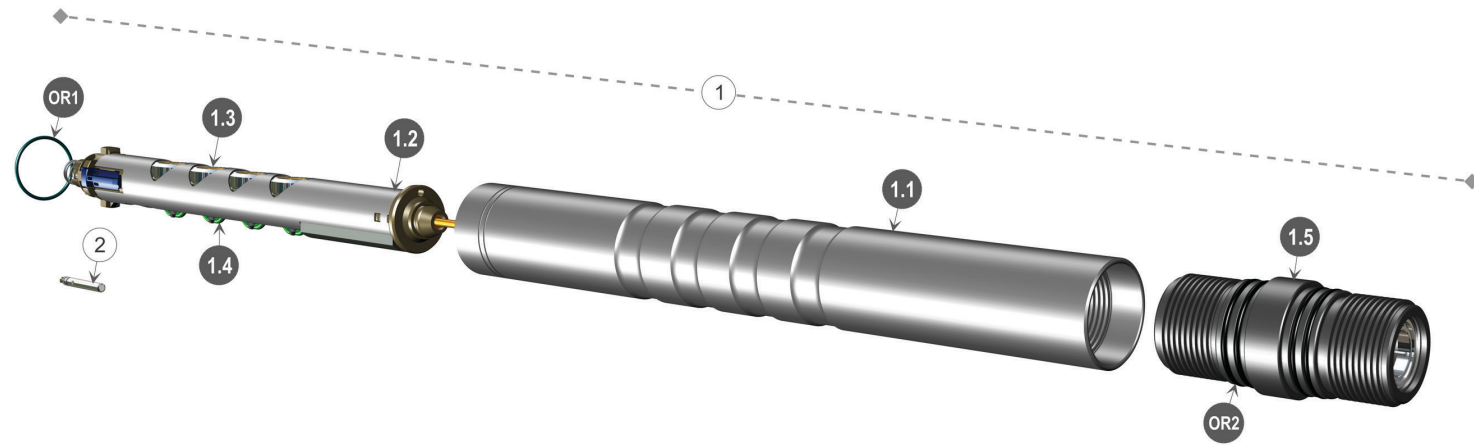


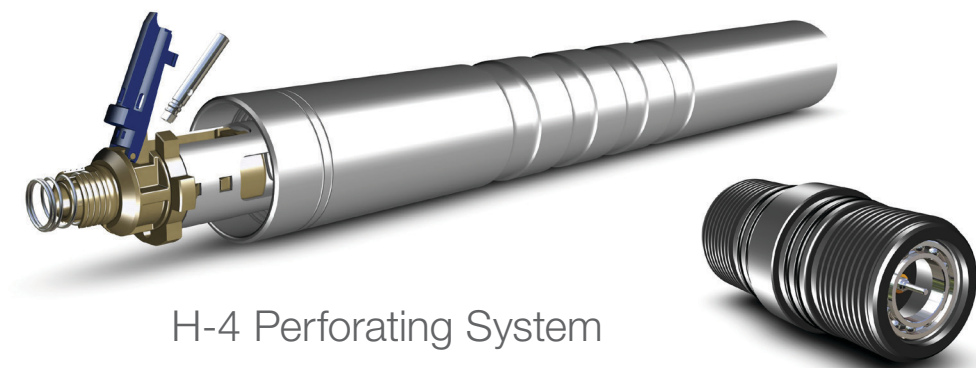
H-4 Perforating System - Gun Assembly Part List

The H-4 Perforating System is Hunting's self-orienting, plug and play perforating gun which integrates ControlFire® Recon switch technology directly into the charge tube assembly.



Parts List | H-4 Perforating System

ID	DESCRIPTION	PART NUMBER
1	H-4 GUN ASSEMBLY 5/0°	H4-312-SHA-C004-05000
1.1	CARRIER	-
1.2	CHARGE TUBE ASSEMBLY	-
1.3	SHAPED CHARGE	MULTIPLE OPTIONS
1.4	DETONATING CORD	CORD-80RDX-T (OPTIONS)
1.5	H4 TANDEM SUB	H4-312-180
OR1	O-RING	0111-332-070
OR2	O-RING; VITON	0111-230-V95
2	MODULAR DETONATOR	DETO-HT7201-HK (OPTIONS)



H-4 Perforating System

Products and Services

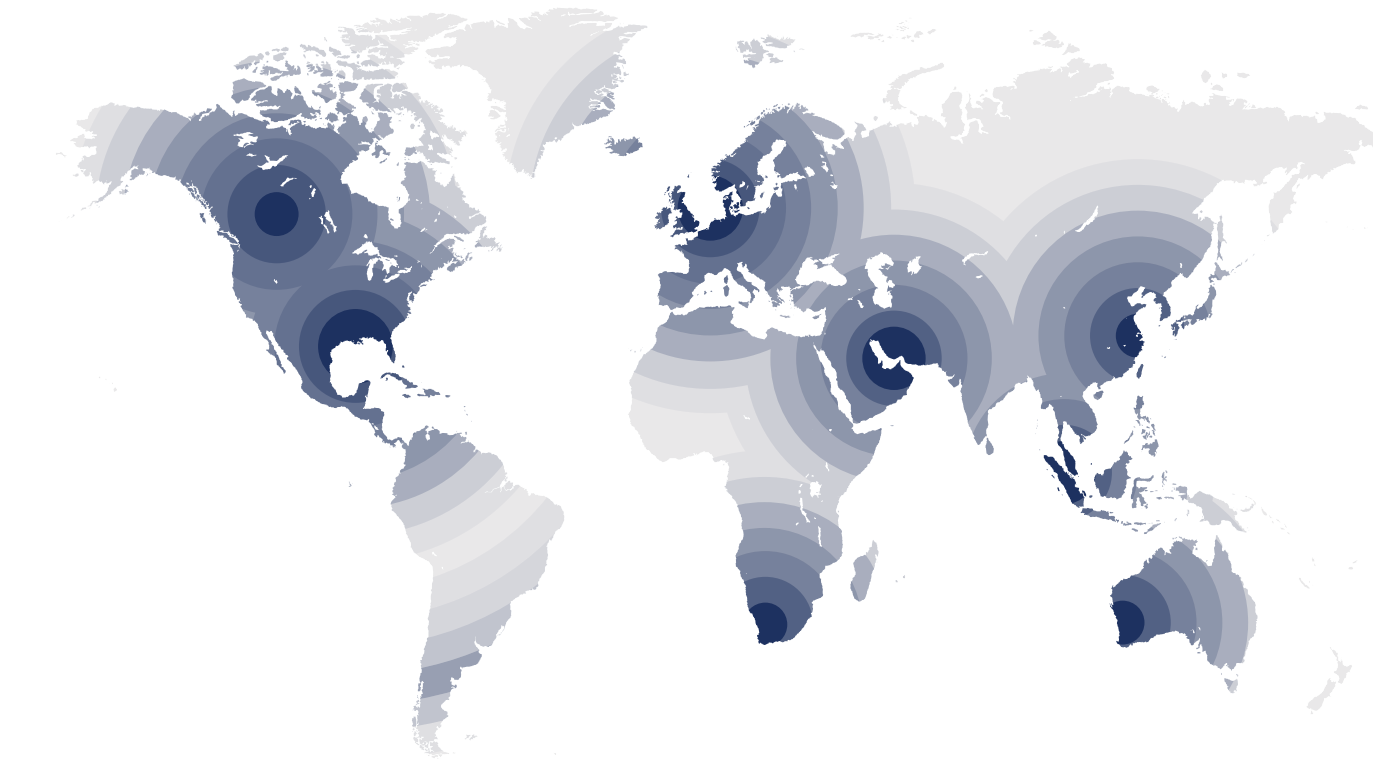
- ▶ Hunting's mission is to innovate and manufacture quality oil/gas extraction equipment and distribute it across our global supply chain.
- ▶ Hunting's energetics division produces the greatest number of shaped charges in the world.
- ▶ Hunting's instrument division produces the most widely used addressable switch in the world.

Proprietary Technology

Hunting owns and develops proprietary patented products with a full range of applications below the wellhead including mud motors, premium connections, well perforating, logging and intervention tools.

Geographic Footprint

Manufacturing and distribution locations are strategically located in the key energy producing regions of the world.



Further Information

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Global Headquarters

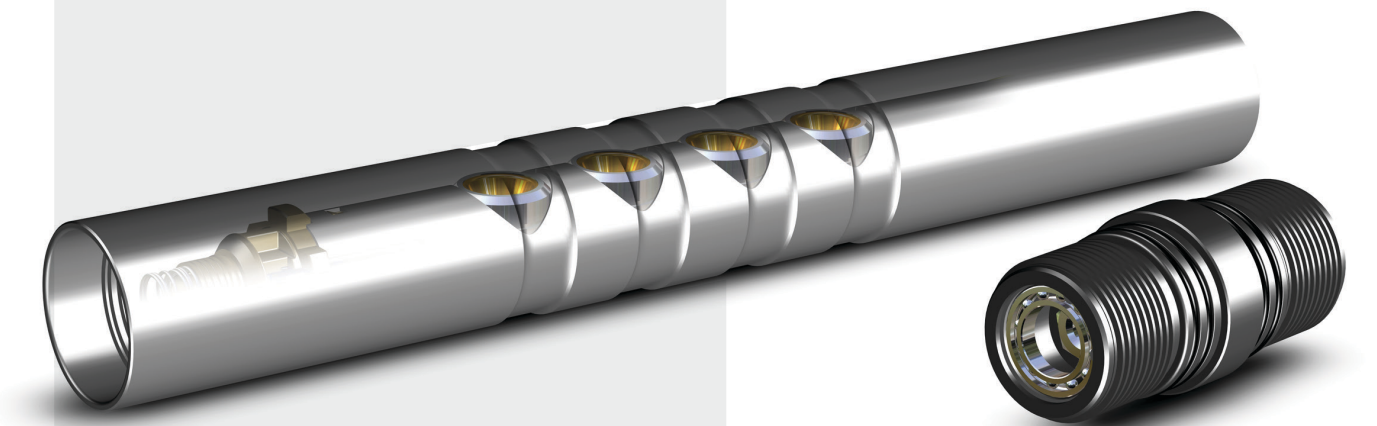
Hunting Energy Services Inc.
 16825 Northchase Drive, Suite 600
 Houston, Texas 77060-3236
 USA
 T. +1 281 442 7382



'Excellence in Energy Services for over 100 years'

HT_H-4 Perforating System-Trifold_2024.04.010405240432

H-4 Perforating System



Fully Modular Guns

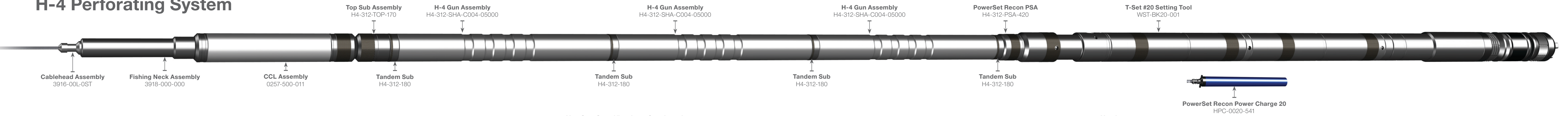
Integrated ControlFire

Modular Detonator

Titan Division | Perforating Systems

H-4 Perforating System

H-4 Perforating System



The H-4 Perforating System is Hunting's plug-and-play self-orienting perforating gun which integrates ControlFire® Recon switch technology directly into the charge tube assembly.

H-4 eliminates costly eccentric weight bars and lock collars needed for conventional gravity-driven orientation. The patented H-4 tandem subs allow automatic rotation of the charge tube assembly for industry leading perforating accuracy. ControlFire Recon switches allow for the detonator of the perforating gun to be checked downhole with ControlFire Software or at surface with the VeriFire®, assuring all components are in place and in working order when running in hole. In addition to advanced switch technology, the H-4 Perforating System utilizes Hunting's patented modular detonator to eliminate all wiring in the field. The RF Safe system is fully assembled at Hunting's manufacturing center to ensure the highest quality and reliability.

Features

- Self-orienting, plug and play perforating system
- V3.0 ControlFire Recon Switch embedded in charge tube
- Fully disposable, pre-wired, and pre-assembled guns
- Compatible with industry standard shaped charges
- Armed with Hunting's patent pending modular detonator
- Available in a pre-loaded and delivered offering

Benefits

- Eliminates costly eccentric weights and lock collars
- Industry Leading orientation accuracy
- Allows detonator resistance check downhole using ControlFire Software or at surface using VeriFire
- Eliminates wiring during gun assembly and arming
- Pairs with PowerSet Recon - the first and only addressable power charge for complete tool string integration

H-4 Gun Specifications

MECHANICAL	
Nominal O.D. (in)[mm]	3-1/8 [79]
Nominal Thickness (in)[mm]	0.31 [7.9]
Typical Gun Swell (in)[mm]	3.28 [83]
Ambient Liquid Conditions	
Min. I.D. Running Restriction (in)[mm]	3.58 [91]
Drift Gauge O.D. for Gun Body I.D. (in)[mm] using Gauge Length 12in [305]	2.47 [63]
Min. Washover Pipe Clearance:	
Casing Drift I.D. to Nominal Washover O.D. Washover	0.38 [10]
Drift I.D. to Nominal Gun O.D.	0.31 [8]
Min. Detonating Cord Velocity (ft/s)[m/s]	22,000 [6,700]
Upper & Lower Head Connection	2-3/4"-6 Acme
Max. Tension (lbf) [kN]	100,000 [445]

ENVIRONMENTAL

Temperature Rating (°F)[°C]	350 [177] 1 Hr.
Pressure Rating (psi)[MPa]	20,000 [138]

ELECTRICAL

Firing Capability	ControlFire®
Maximum Voltage Rating	Forward 550V / 15 sec Reverse 550V / 30 sec
Maximum Firing Current	Forward (Nominal) 1A / 12 sec Forward (Maximum) 1.5A - 5 sec

H-4 Perforating System - Specifications and Part Numbers

H-4 Gun Specifications Continued

Shot Density	Phase	Shots	Part Number	Make-up Length (in)[mm]	Shot Length (in)[mm]	Weight Unloaded (lb)[kg]
4 SPF	0°	2	H4-312-SHA-C002-04000	22.00 [559]	3.00 [76]	25.6 [12]
		4	H4-312-SHA-C010-04000	28.00 [711]	9.00 [229]	32.6 [15]
	0°/180°	2	H4-312-SHA-C002-04180	22.00 [559]	3.00 [76]	25.6 [12]
		4	H4-312-SHA-C010-04180	28.00 [711]	9.00 [229]	32.6 [15]
	90°/270°	2	H4-312-SHA-C020-04270	22.00 [559]	3.00 [76]	25.6 [12]
		4	H4-312-SHA-C010-04270	28.00 [711]	9.00 [229]	32.6 [15]
	V 90°	2	H4-312-SHA-C002-04V90	22.00 [559]	3.00 [76]	25.6 [12]
		4	H4-312-SHA-C010-04V90	28.00 [711]	9.00 [229]	32.6 [15]
5 SPF	0°	1	H4-312-SHA-C001-05000	19.00 [483]	N/A	25.6 [12]
		2	H4-312-SHA-C002-05000	21.25 [540]	2.4 [61]	27.3 [12]
		4	H4-312-SHA-C004-05000	26.00 [660]	7.2 [183]	30.5 [14]

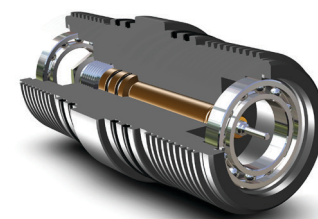
Expendable

DESCRIPTION	PART NUMBER	
	RDX	HMX 375°F 1 Hr.
Modular Detonator	DETO-HT7201-HK	DETO-HT7101-HK
Detonator Removal Tool	RCN-DETO-500	
Detonating Cord 80 g.	CORD-80RDX-T	CORD-80HMXLS-T
	CORD-80RDX-LS-T	

Warning HMX explosives can undergo a phase transition at temperature exposure above 300°F [150°C]. Refer to RP67 for guidelines on special treatment for HMX explosives.

Tandem

Fully Disposable | Included w/ H-4 Gun



Hardware

DESCRIPTION	PART NUMBER
CCL	0257-500-011
H-4 Top Sub	H4-312-TOP-170
Top Sub Contact Kit	H3S-TOP-172
H-4 Tandem; Disposable	H4-312-180

H-4 Perforating System - Associated Hardware and Shaped Charges

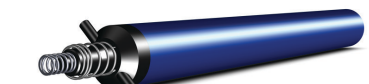
Hardware

APPLICATIONS	PART NUMBER			
	PLUG SHOOT ASSEMBLY PowerSet® Recon PSA	POWER CHARGE PowerSet® Recon	SETTING TOOL T-Set®	
T-Set®	#10	H4-312-PSA-410	HPC-0010-441	WST-BK10-001
	Compact	H4-312-PSA-410 & WST-3625-532A	HPC-3625-441	WST-3625-501
	#20	H4-312-PSA-420	HPC-0020-541	WST-BK20-001
	Shorty	H4-312-PSA-350-1A	HPC-3500-741	WST-5321-501

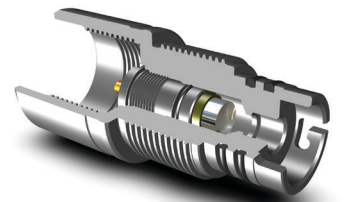
Shaped Charges



PowerSet® Recon Power Charge



PowerSet® Recon PSA



EQUAfrac® Consistent Hole Charges

Gun O.D. (in)[mm]	Charge Part Number	EQUAfrac Line	Target Type	Weight (g)	Avg. Entry Hole (in)[mm]	Decentralized EHD Variation	Penetration (in)[cm]
3-1/8 [79]	SCH-312-18-381	EQUAfrac OP	5-1/2 inch OD, 20#, P110	18	0.34 [8.63]	3.5%	7.5 [19.05]
	SCH-312-21-381	EQUAfrac OP	5-1/2 inch OD, 20#, P110	21	0.42 [10.67]	3.8%	7.5 [19.05]
	SCH-312-23-381	EQUAfrac OP	5-1/2 inch OD, 20#, P110	23	0.43 [10.92]	3.3%	7.5 [19.05]
	SCH-337-23-381	EQUAfrac OP	5-1/2 inch OD, 20#, P110	23	0.54 [13.71]	3%	7.5
	SCH-312-23-382	EQUAfrac OP	5-1/2 inch OD, 20#, P110	23	0.49 [12.45]	3.3%	7.5 [19.05]
	EXP-312-21-372T	EQUAfrac	5-1/2 inch . OD, 20#, P-110	21	0.32 [8.13]	3%	34.3 [87.12]
	EXP-312-23-373T	EQUAfrac	5-1/2 inch OD, 20#, P-110	23	0.41 [10.2]	8%	26.1 [66.29]
	SCH-312-18-373	EQUAfrac Limited	5-1/2 inch OD, 20#, P110	8	0.32 [8.13]	4%	5.5 [13.97]
	SCH-312-18-372	EQUAfrac Limited	5-1/2 inch OD, 23#, P110	18	0.35 [8.89]	2%	7.5 [19.05]
	SCH-312-18-371	EQUAfrac Limited	5-1/2 inch OD, 20#, P110	18	0.38 [9.65]	5%	7.5 [19.05]
	SCH-312-21-371	EQUAfrac Limited	5-1/2 inch OD, 20#, P110	21	0.42 [10.66]	4%	7.5 [19.05]
	SCH-312-23-372	EQUAfrac Limited	5-1/2 inch OD, 20#, P110	23	0.48 [12.19]	3%	7.5 [19.05]
	SCH-312-23-371	EQUAfrac Limited	5-1/2 inch OD, 20#, P110	23	0.53 [13.46]	8%	8.0 [20.32]

Additional Chart Information: Exp. Type = RDX, Shot Density = 0°, Test Type = Gun/QC Spec