



PHOENIX
INDUSTRIES

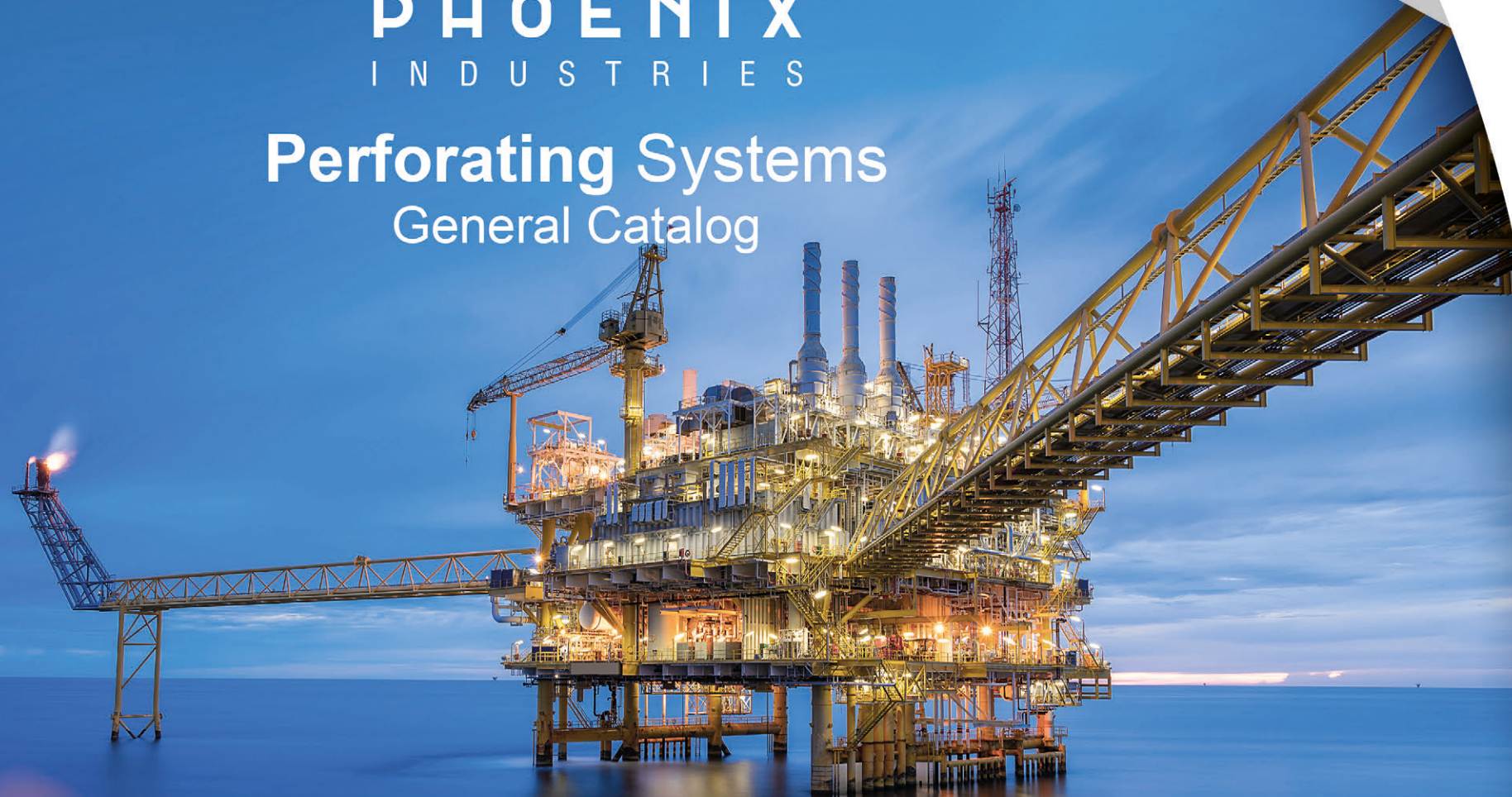
A circular inset image showing a laser cutting process. A bright laser beam is cutting through a metal surface, creating a shower of bright orange sparks. In the foreground, a pair of safety glasses with orange-tinted lenses is visible, partially obscuring the view of the cutting process. The background of the inset is dark, highlighting the bright sparks and the laser beam.

Perforating Systems
General Catalog



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Perforating Systems General Catalog



About us

Phoenix Industries

Phoenix Industries specializes in providing downhole solutions with the focus on increasing the productivity of oil & gas fields through taking the advantage of manufacturing perforation tools. Our technology-based and innovative products and solutions enhance the productivity and reduce the total operation costs.

Products

Our Middle Eastern roots as the world's largest source of hydrocarbon reservoirs has enabled us to tackle different challenges in the process of designing and manufacturing perforating equipment. This experience has equipped us to manage specific operating conditions and provide specialized products to our clients.

World class manufacturing is one of the fundamental principles of our company. For all of the completion programs based on the client requirements, you can rest assured that Phoenix Industries is ready to provide the highest level of accuracy, efficiency and effectiveness along with meeting the operational demands through performing multiple designs and accurate performance testing programs.

Quality Policy

Business growth requires meticulous attention to efficiency and performance, and our quality control system assists us to ensure we are monitoring both. It is our firm belief that well-designed processes lead to high-quality products and services. So, controlling after each production stage, reviewing the feedbacks and results drive us to improvements which means the highest proficiency coupled with the shortest time.

R&D Program

One of the most prevalent challenges of the oil & gas industry is the unpredictable conditions of hydrocarbon reservoirs, which requires a flexible, creative and accessible system.

Phoenix Industries has got you covered!

Our R&D department is made up of teams with diverse expertise to provide the flexibility needed for new ideas and changing the conventional products based on the completion situations along with the constant movement towards the latest technologies.

Our Mission

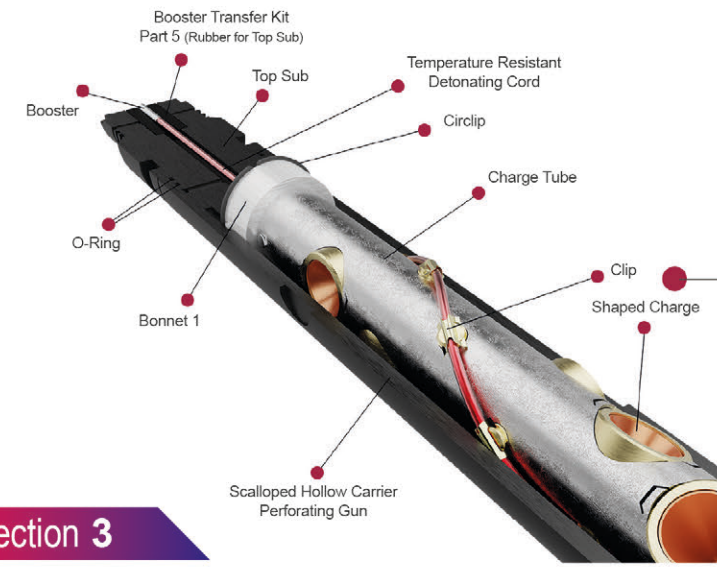
We drive an environment of opportunity and continually strive to make a positive, impactful difference in the lives of our employees, our customers and the community around us. Along with this purpose, any novel opinion and idea raised by our employees and clients is welcome to us and we are eager to hear.

Also, our customer-oriented strategy has assisted us to identify the customers' needs and provide them with high quality after-sales services.

TCP System Assembly

Tubing-Conveyed Perforating (TCP) techniques enable perforating very long intervals in one run. Perforation equipment are designed and manufactured for high pressure and high temperature operational conditions and minimum gun swell. All subs are capable to be used several times.

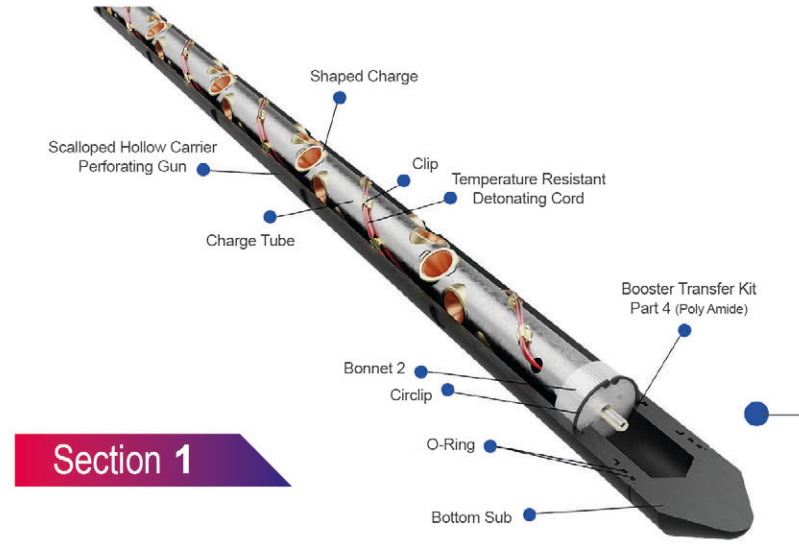
Item	Specification
1	Bottom Sub
2	O-Ring
3	Scalloped Hollow Carrier Perforating Gun
4	Charge Tube
5	Bonnet. 1
6	Bonnet. 2
7	Circlip
8	Tandem Sub
9	Booster Transfer Kit Part 1 (Washer)
10	Booster Transfer Kit Part 2 (Retaining Tube)
11	Booster Transfer Kit Part 3 (Rubber for Tandem Sub)
12	Booster Transfer Kit Part 4 (Poly Amide)
13	Booster Transfer Kit Part 5 (Rubber for Top Sub)
14	Top Sub
15	Shaped Charge
16	Clip
17	Temperature Resistant Detonating Cord
18	Booster



Section 3



Section 2



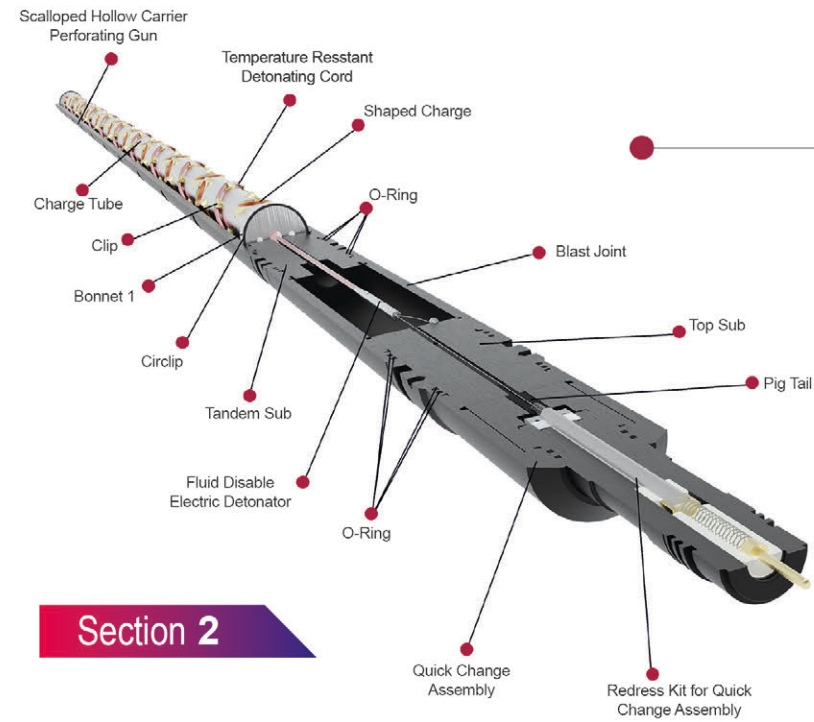
Section 1



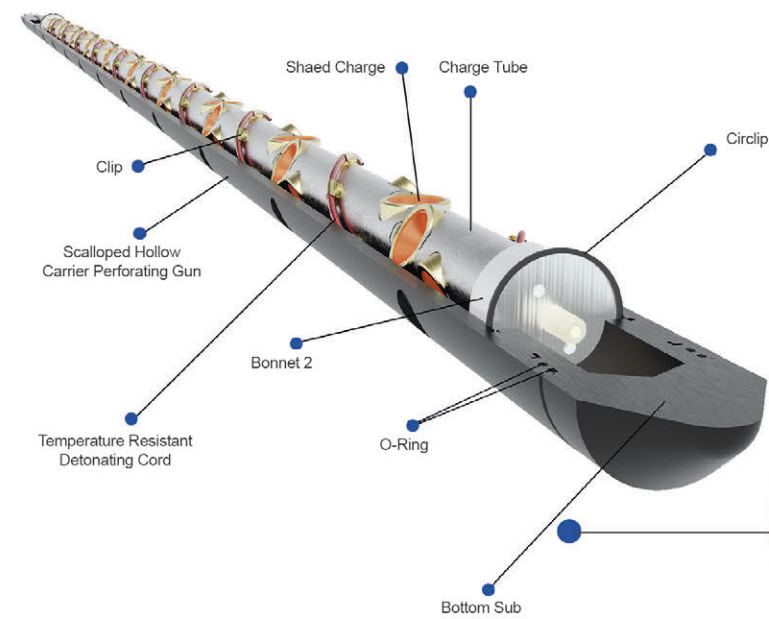
Wireline System Assembly (Hollow Carrier Gun)

Using wireline perforating system improves efficiency while reducing rig time and cost. Wireline system provides the advantages of real-time depth control. Regardless of the type of perforating gun (Exposed or Hollow Carrier) perforating systems are optimized based on fast, safe and precise loading and offloading procedures, operational conditions and wellbore geometry. All subs are capable to be used several times.

Item	Specification
1	Bottom Sub
2	O-Ring
3	Scalloped Hollow Carrier Perforating Gun
4	Charge Tube
5	Bonnet. 1
6	Bonnet. 2
7	Circlip
8	Tandem Sub
9	Blast Joint
10	Top Sub
11	Quick Change Assembly
12	Redress Kit for Quick Change Assembly
13	Pig Tail Assembly
14	Shaped Charge
15	Clip
16	Temperature Resistant Detonating Cord
17	Fluid Disable Electric Detonator



Section 2



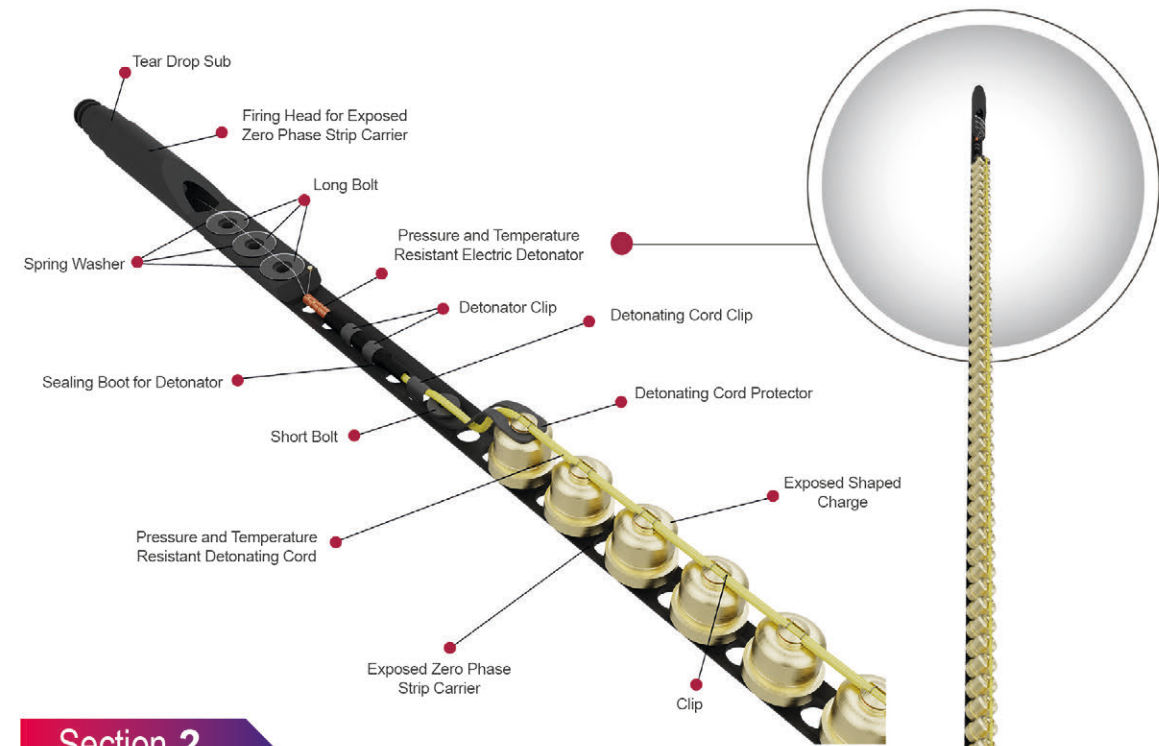
Section 1



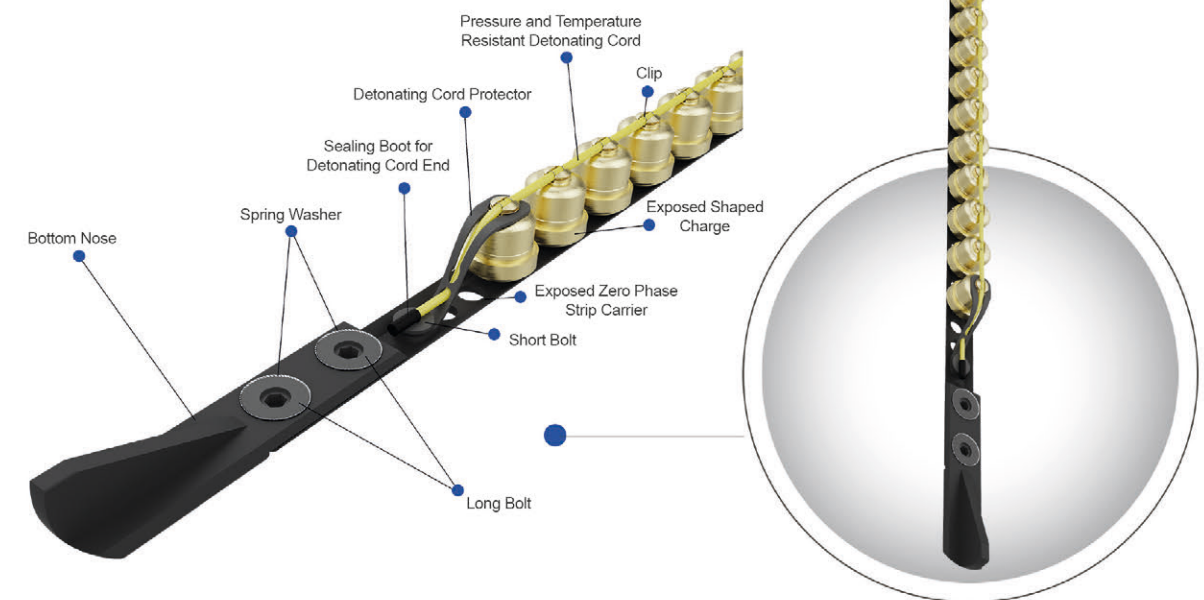
Wireline System Assembly (Exposed Strip Carrier)

Using wireline perforating system improves efficiency while reducing rig time and cost. Wireline system provides the advantages of real-time depth control. Regardless of the type of perforating gun (Exposed or Hollow Carrier) perforating systems are optimized based on fast, safe and precise loading and offloading procedures, operational conditions and wellbore geometry. All subs are capable to be used several times.

Item	Specification
1	Bottom Nose
2	Spring Washer
3	Long Bolt
4	Exposed Zero Phase Strip Carrier
5	Detonating Cord Protector
6	Short Bolt
7	Detonating Cord Clip
8	Detonator Clip
9	Firing Head for Exposed Zero Phase Strip Carrier
10	Tear Drop Sub
11	Sealing Boot for Detonating Cord End
12	Sealing Boot for Detonator
13	Pressure and Temperature Resistant Detonating Cord
14	Exposed Shaped Charge
15	Clip
16	Pressure and Temperature Resistant Electric Detonator



Section 2

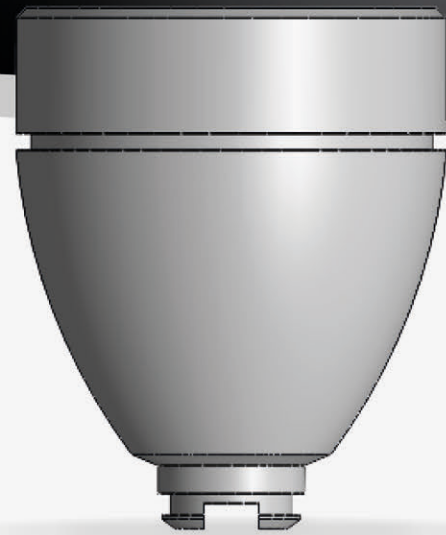


Section 1

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Perforation Equipment

Shaped Charge



Shaped Charge has temperature resistance and deep penetration for use in Hollow Carrier Gun System Assembly. Other types of Shaped Charges consist of Big Hole Shaped Charge and Super Deep Penetrating Shaped Charge are also available.

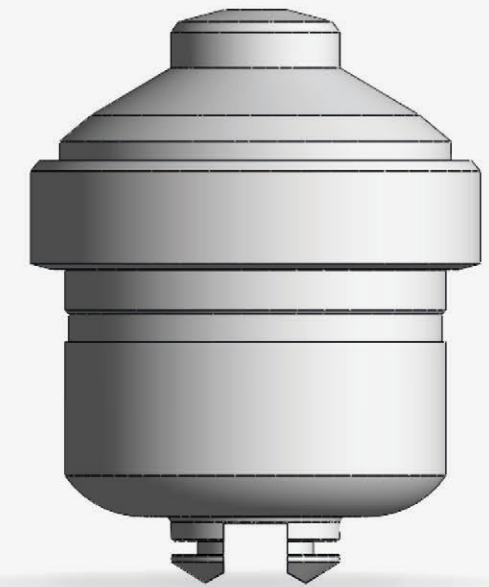
Specification				
Shaped Charge Size	2" Shaped Charge	2 7/8" Shaped Charge	3 3/8" Shaped Charge	4 1/2" Shaped Charge
Part Number	ESC2000041	ESC2870041	ESC3380041	ESC4500041
Explosive Type	HMX	HMX	HMX	HMX
Temperature Rating	400 °F(204°C) 1 Hour	400 °F(204°C) 1 Hour	400 °F(204°C) 1 Hour	400 °F(204°C) 1 Hour
Explosive Weight	6.5 gr	15 gr	22.5 gr	38 gr

Additional information is available in data sheets.

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Perforation Equipment

Exposed Shaped Charge



Exposed Shaped Charge has temperature and pressure resistance and deep penetration for use in Strip Gun System Assembly. Super Deep Penetration Exposed Shaped Charge is also available. This type of Shaped Charge individually is sealed to protect against wellbore fluid.

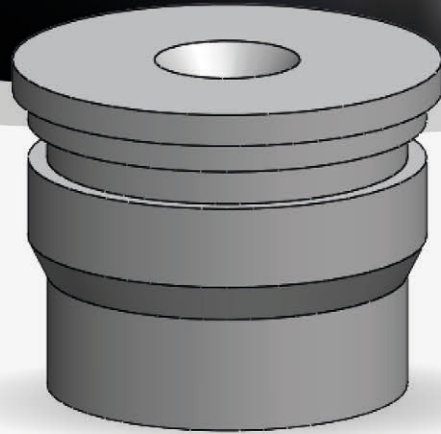
Specification				
Shaped Charge Size	1 11/16" Exposed Shaped Charge	1 11/16" Exposed Shaped Charge	2 1/8" Exposed Shaped Charge	2 1/8" Exposed Shaped Charge
Part Number	ESC1691431	ESC1691441	ESC2121431	ESC2121441
Explosive Type	RDX	HMX	RDX	HMX
Temperature Rating	330°F(166°C) 1 Hour	365 °F(185°C) 1 Hour	330°F(166°C) 1 Hour	365 °F(185°C) 1 Hour
Pressure Rating	14000 psi	14000 psi	14000 psi	14000 psi
Explosive Weight	8 gr	8 gr	13.8 gr	13.8 gr

Additional information is available in data sheets.

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Perforation Equipment

Percussion / Booster



Percussion

Temperature and pressure resistant Percussion initiator is used in Mechanical or Hydraulic Firing Head.

Booster

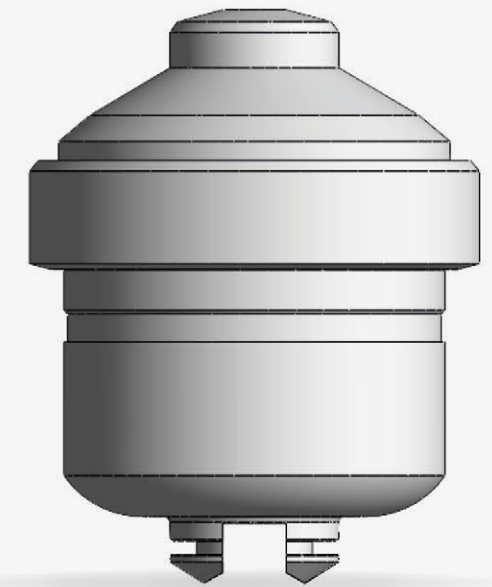
Temperature resistant Bi-directional Booster is used to transmit detonation in Hollow Carrier Gun System Assembly.



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Perforation Equipment

Puncher Shaped Charge



Puncher Shaped Charge has temperature and pressure resistance. It is used for making holes for pressure equalization, circulation, etc. Puncher Charge has special design in order to punch tubing and casing without any damage to outer casing.

Specification			
Percussion		Booster	
Part Number	EDE204801	Part Number	EBO004001
Temperature Rating	250°C(480°F) / 1 Hour	Temperature Rating	400 °F(204°C) / 1 Hour
Pressure Rating	20000 psi / 1 Hour	Pressure Rating	—
Explosive Type and Weight	85 mg pbN6 450 mg HNS	Explosive Type and Weight	0.6 gr HMX

Additional information is available in data sheets.

Specification		
Puncher Size	1 11/16" Puncher Shaped Charge	2 1/8" Puncher Shaped Charge
Part Number	ESC1691531	EPC2121531
Explosive Type	RDX	RDX
Temperature Rating	330°F(165°C) / 1 Hour	330°F(165°C) / 1 Hour
Pressure Rating	15000 psi	15000 psi
Explosive Weight	2.5 gr	5 gr

Additional information is available in data sheets.

Detonating Cord

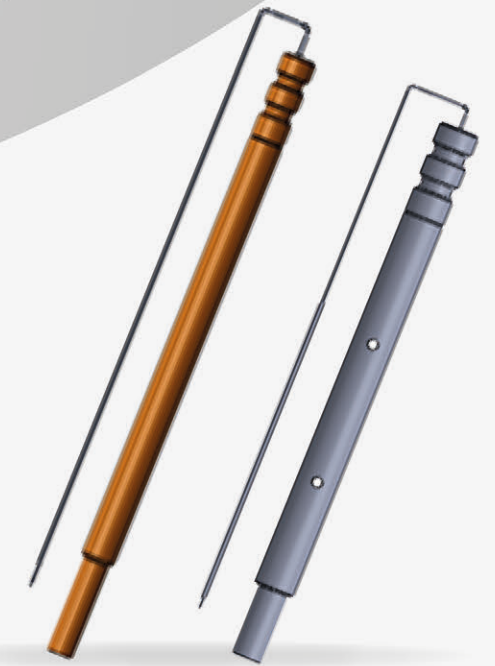


The Detonating Cord in close contact with the primer region of the Shaped Charge detonates the primer, which initiates the main explosive charge.

Specification		
Detonating Cord Type	Pressure & Temperature Resistant Detonating Cord	Temperature Resistant Detonating Cord
Part Number	EDC143301	EDC003741
Temperature Rating	330°F (165°C) / 1 Hour	374°F(190°C) / 1 Hour
Pressure Rating	14400 psi (1000bar) / 1 Hour	—
Explosive Type	HMX	HMX
Explosive Core Load	75-84 grains/ft. (16-18 g/m)	75-84 grains/ft. (16-18 g/m)
Detonation Velocity	25,920 ± 656 ft/s / (7,900 ± 200 m/s)	25,920 ± 656 ft/s / (7,900 ± 200 m/s)
Outside Diameter	0.205 ± 0.008 in (5.2 ± 0.2 mm)	0.205 ± 0.008 in (5.2 ± 0.2 mm)
Max. Shrinkage	2%	2%
Lap Joint Sensitivity	Yes	Yes

Additional information is available in data sheets.

Electric Detonator



The Electric Detonator is used to initiate detonation in wireline conveyance system, it consists of two types for exposed and non-exposed conditions.

Specification		
Electric Detonator	Fluid Disable Electric Detonator	Pressure & Temperature Resistant Electric Detonator
Part Number	EDE003021	EDE143021
Temperature Rating	150°C (302°F) / 1 Hour	150°C (302°F) / 1 Hour
Pressure Rating	—	14400 psi / 1 Hour
Explosive Type and Weight	80 mg pbN6 / 670 mg RDX	250mg pbN6 / 1000mg RDX
Fluid disablement	After 2 minutes in water	—
Resistance	50±2Ω	50±2Ω
Current	No Fire: 0.2 A	No Fire: 0.2 A
	ALL Fire: 0.8 A	ALL Fire: 0.8 A

Additional information is available in data sheets.

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Perforation Equipment

Colliding Tool



Pipe recovery is a specific wireline operation. Colliding Tools are designed with high technology to solve recovery operations by cutting off thick pipes in a variety of environments. Other sizes are available based on request.

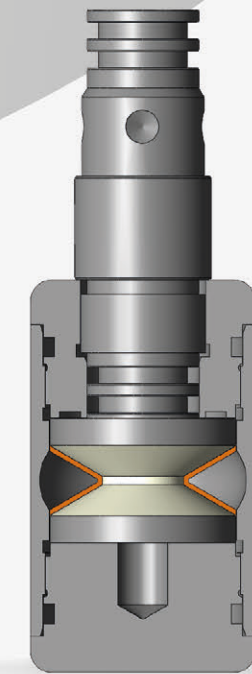
Specification		
Colliding Tool Type	Ø57mm Colliding Tool	Ø35mm Colliding Tool
Part Number	EST2241541	EST1381541
Temperature Rating	400 °F(204°C) / 1 Hour	400 °F(204°C) / 1 Hour
Pressure Rating	15000 psi	15000 psi
Explosive Type	HMX	HMX
Explosive Weight	1.22 Kg	0.36 Kg
Operation Recommendations		
Minimum Passage	2 3/8"	1 1/2"
DC/HWDP Size & Recommendation	6 1/2" - 8 1/2" / Shoot in Tool Joint 5" - 6 1/4" / Shoot in Body	4 1/2" - 5" / Shoot in Tool Joint 4 1/4" and below / Shoot in Body

Additional information is available in data sheets.

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Perforation Equipment

Explosive Cutting Tool



Explosive Cutter is designed with high technology to cut casing and tubing. It contains a high precision factory-pressed charge to cut specific target with minimum amount of explosive. Other sizes are available based on request.

Specification	
Cutter Tool Type	Ø54 mm Cutter
Part Number	ECU2121541
Temperature Rating	400 °F(204°C) / 1 Hour
Pressure Rating	15000 psi
Explosive Type	HMX
Explosive Weight	28 gr

Additional information is available in data sheets.

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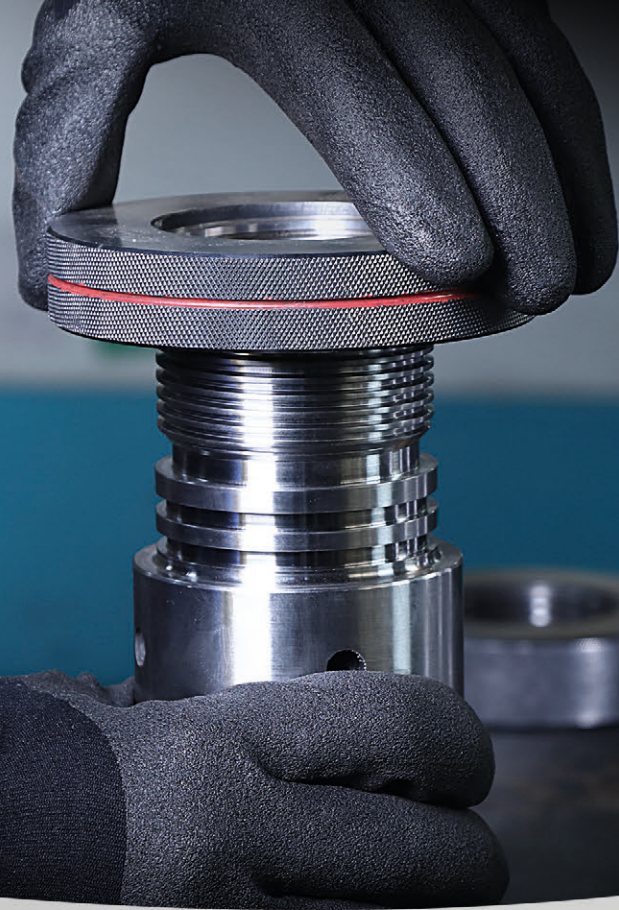
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Perforation Equipment

HSD Gun



HSD Hollow Carrier Perforating Gun is used in oil and gas wells in preparation for production, containing several Shaped Charges to perforate. It can be conveyed using wireline, tubing or coiled tubing. Perforating guns are available in variety range of sizes and configurations. Other phasing, Length and shot densities can be made based on customer request. Design is based on fast, safe and precise loading and offloading procedures.

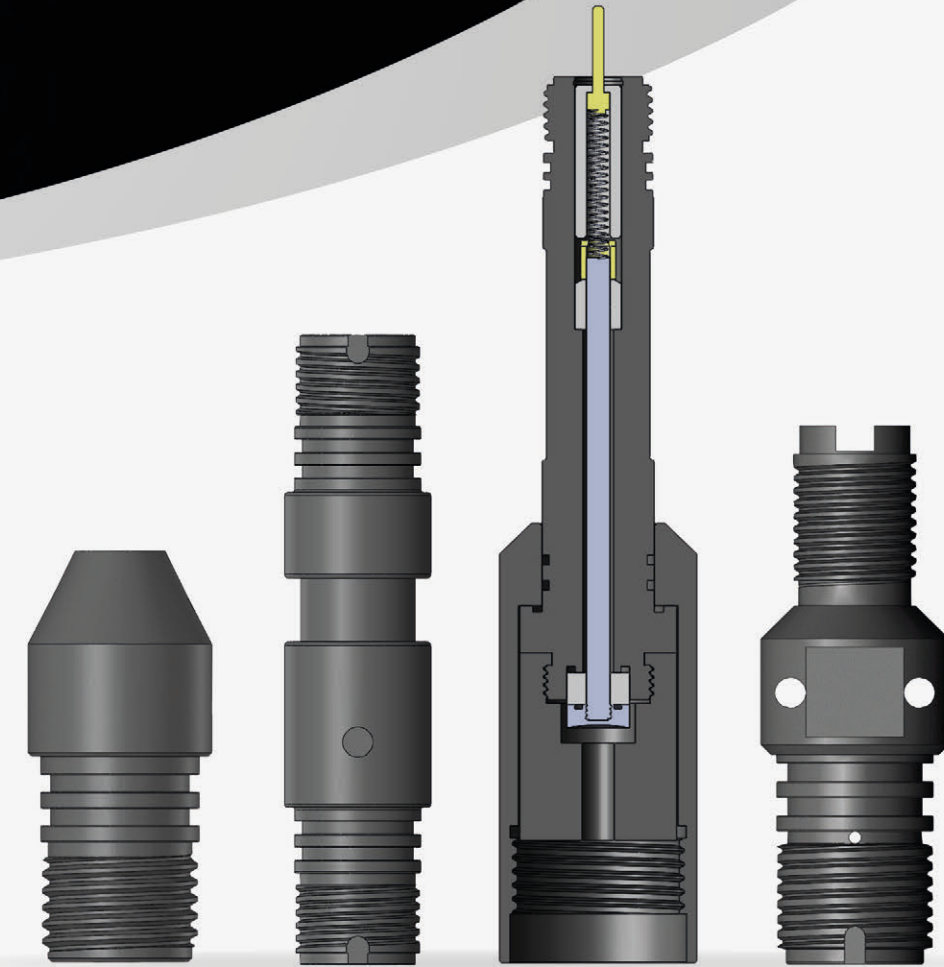
		Specification			
Size		2"	2 7/8"	3 3/8"	4 1/2"
Part Number		Depend on Specification			
Length		Up to 21 Ft			
Pressure Rating		20,000 psi	20,000 psi	20,000 psi	15,000 psi
Shot Per Foot		5	6	6	5
Phasing		60,72	60	60	60,72
Max. Magnitude Of Burr and Swell	Ambient Liquid	2.2 mm*	3.5 mm	7.23 mm	6.09 mm*
	Ambient Air	4.1mm*	4.8 mm	8.25 mm	—

*Based on 5 SPF, Phasing 60
Additional information is available in data sheets.

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Perforation Equipment

Connection



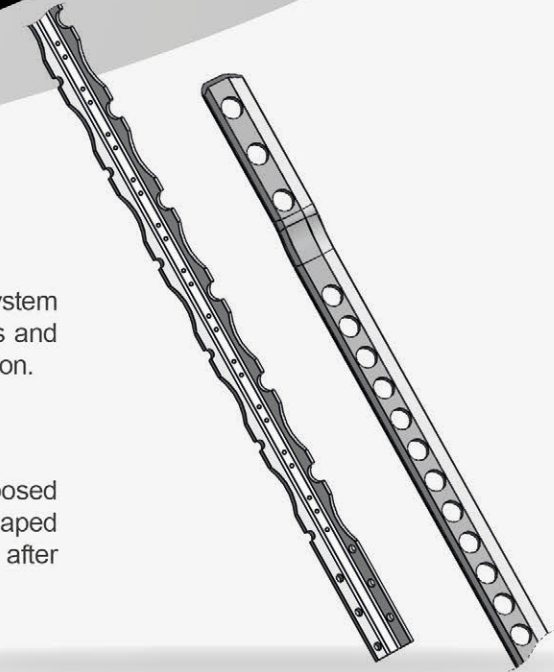
Connections are used as mechanical and electrical connections in perforation strings. Each type of connection is used in specific perforating system such as tubing, wireline and coiled tubing conveyance system. Connections consist of Bottom Sub, Tandem Sub, Top Sub, CIS Top Sub, ... are available in various system sizes from 1 11/16" to 4 1/2". These connections are designed and manufactured based on high pressure and high temperature operational conditions & are capable to be used several times.

Connection



These connections are used in exposed system assemblies. The conveyance method for these components is wireline method. Connections consist of Bottom Nose, Firing Head and Tear Drop Sub are available in various system sizes. These connections are designed and manufactured based on high pressure and high temperature operational conditions & these are capable to be used several times.

Zero Strip Carrier Phased Strip Carrier



Zero Strip Carrier

Zero Strip Carrier is used in exposed system assembly for holding Shaped Charges and retrieving their front caps after detonation.

Phased Strip Carrier

Phased Strip Carrier is used in exposed system assembly for holding Shaped Charges and the Carrier is retrieved after detonation.

Specification			
Zero Strip Carrier		Phased Strip Carrier	
Part Number	EPS1691004001	Part Number	EPS1691006451
Length	10 Ft	Length	10 Ft
Shot Per Foot	4 SPF, 6 SPF	Shot Per Foot	6 SPF
Shot Spacing	3 in, Related to 4 SPF 2 in, Related to 6 SPF	Shot Spacing	2 in
Phase	0	Phase	± 45

**Other length are available based on request.
Additional information is available in data sheets.*

Circulating Vented Hydraulic Firing Head

Vented Hydraulic Firing Head

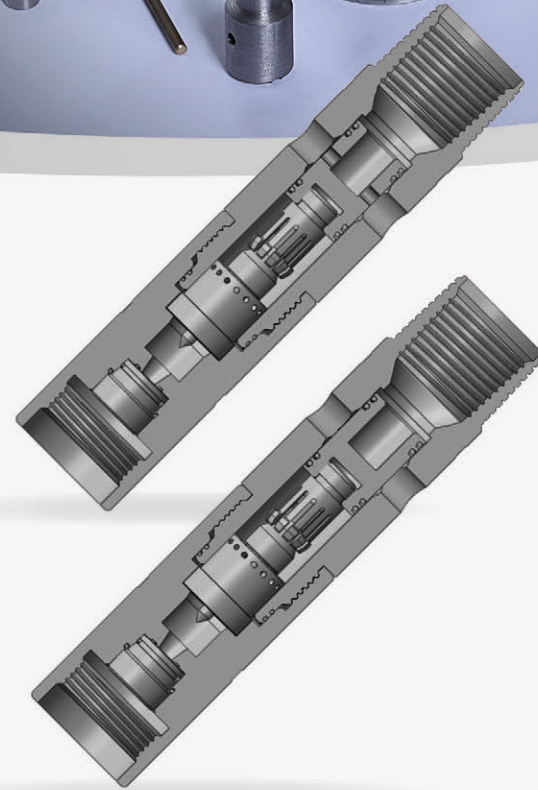


Circulating Vented Hydraulic Firing Head

The Hydraulic Firing Head is designed for initiating perforating system by applying intended pressure. In this type of Firing Head, a circulating ball is pumped down and seal the piston to prevent circulation which cause tubing to be pressured up to supply predetermined energy to shear the shear pins. By shearing of pins, firing pin is released and cause the initiator to detonate. After firing, tubing pressure is vented to wellbore annulus.

Vented Hydraulic Firing Head

The Hydraulic Firing Head is designed for initiating perforating system by applying intended pressure. The tubing is pressured up to supply predetermined energy to shear the shear pins. By shearing of pins, firing pin is released and cause the initiator to detonate. After firing, tubing pressure is vented to wellbore annulus.



Specification		
Type	Circulating Vented	Vented
Part Number	HF338-CV287	HF338-OV287
Diameter	3.375 in (86 mm)	
Pressure Rating	20,000 psi	
Max Firing Pressure	10544 psi (72.7 Mpa)	

Additional information is available in data sheets.

Non-Vented Hydraulic Firing Head

Mechanical Firing Head



Non-Vented Hydraulic Firing Head

The Hydraulic Firing Head is designed for initiating perforating system by applying intended pressure. The tubing is pressured up to supply predetermined energy to shear the shear pins. By shearing of pins, firing pin is released and cause the initiator to detonate.

Mechanical Firing Head

Mechanical Firing Head is used to initiate the detonation of TCP System assembly by impact of a drop bar. The strike force shears the shear pin, impact the firing pin to detonate the initiator.

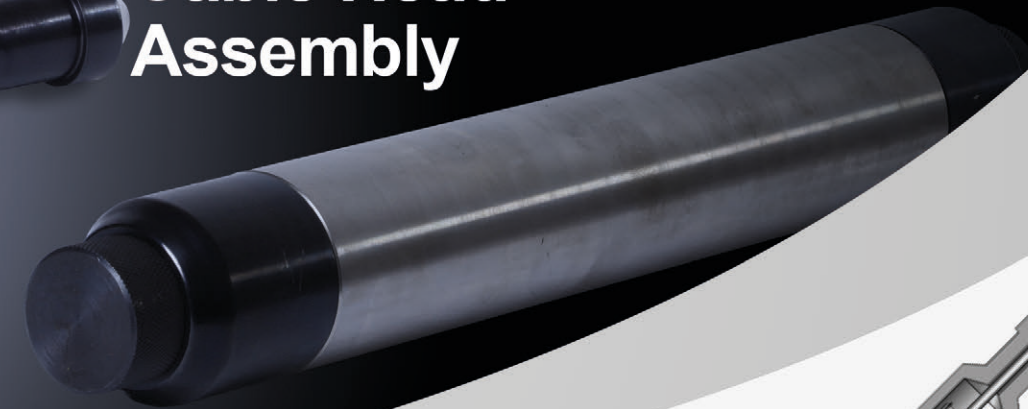
Specification		
Type	Non Vented Hydraulic Firing Head	Mechanical Firing Head
Part Number	HF338-NV287	MF350-287
Diameter	3.375 in (86 mm)	3.5 in (89 mm)
Pressure Rating	20,000 psi	20,000 psi
Max Firing Pressure	10544 psi (72.7 Mpa)	—

Additional information is available in data sheets.

Shooting CCL Magnetic Decentralizer



Cable Head Assembly

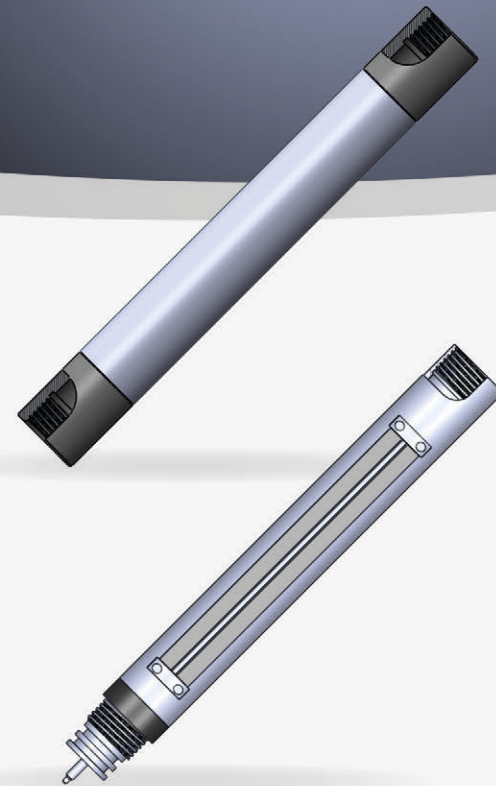


Shooting CCL

Shooting Casing Collar Locator is used for locating casing collars to measure depth.

Magnetic Decentralizer

Magnetic Decentralizer is used to decentralize exposed gun systems by using special magnets. This tool is used in cased hole wellbore.



Cable Heads are used in all logging and perforating operations as they provide mechanical and electrical connection between the cable and tool string. Variety hole sizes of fishing neck are available for different Cable diameters. This component is capable to be used several times.



Specification					
Shooting CCL			Magnetic Decentralizer		
Size	1 11/16"	2 1/8"	Size	1 11/16"	2 1/8"
Part Number	CCO169-11W1	CCO212-11W1	Part Number	ECO169-16W1	ECO212-16W1
Diameter	43 mm	54 mm	Diameter	43 mm	54 mm
Pressure Rating	20,000 psi		Pressure Rating	20,000 psi	
Temperature Rating	400 °F(204°C)		Temperature Rating	400 °F(204°C)	

Additional information is available in data sheets.

Specification		
Cable Head Type	1 7/16" Cable Head	CIS* Cable Head
Part Number	Depend on Cable Specification	HCO236-15W1
Diameter	1.43"(36.5mm)	2.36"(60mm)
Pressure Rating	20,000 psi	20,000 psi

*CIS Cable Head must be used with CIS Top Sub.
- Other type and sizes are available based on request.
- Additional information is available in data sheets.



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