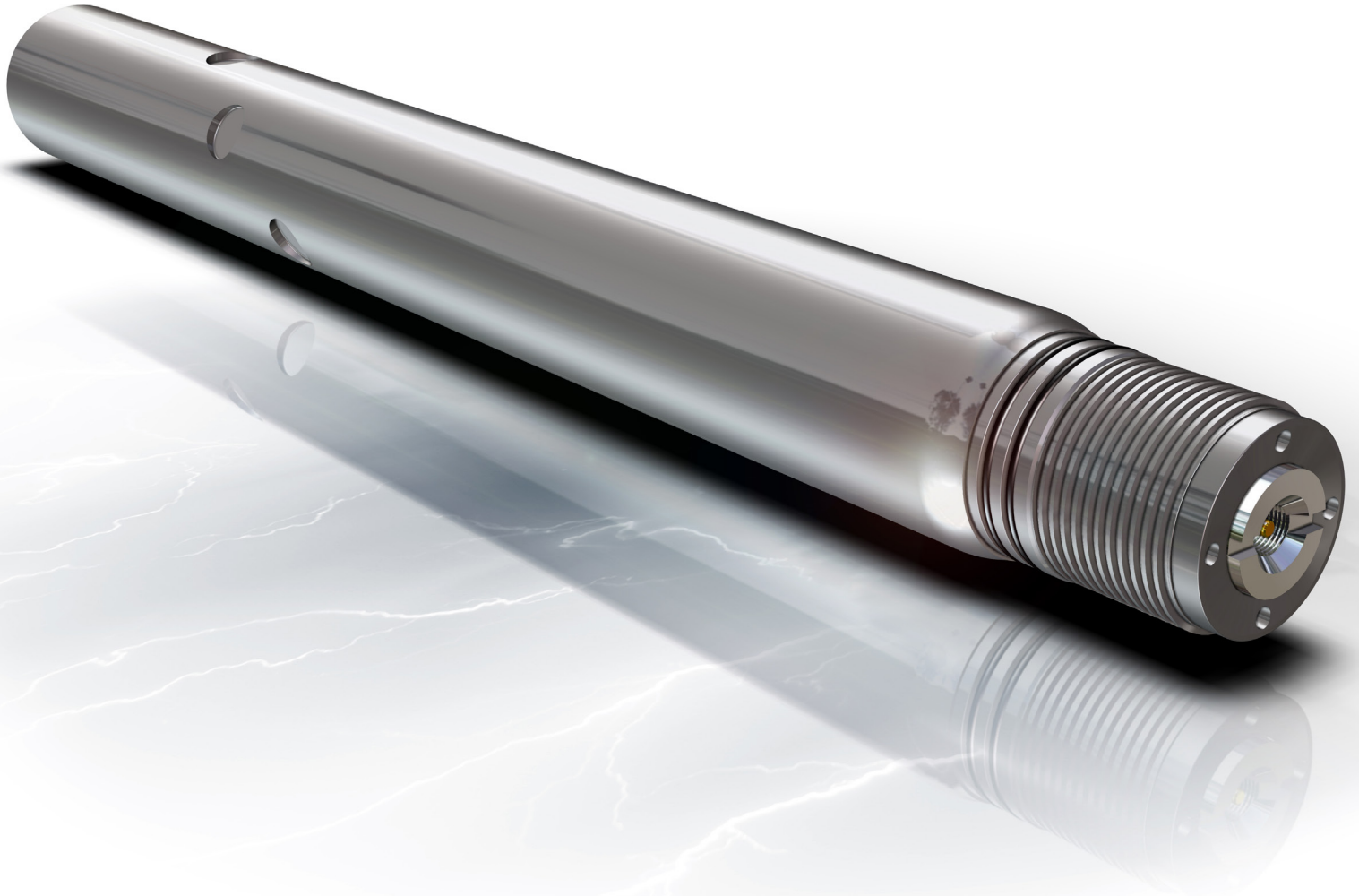
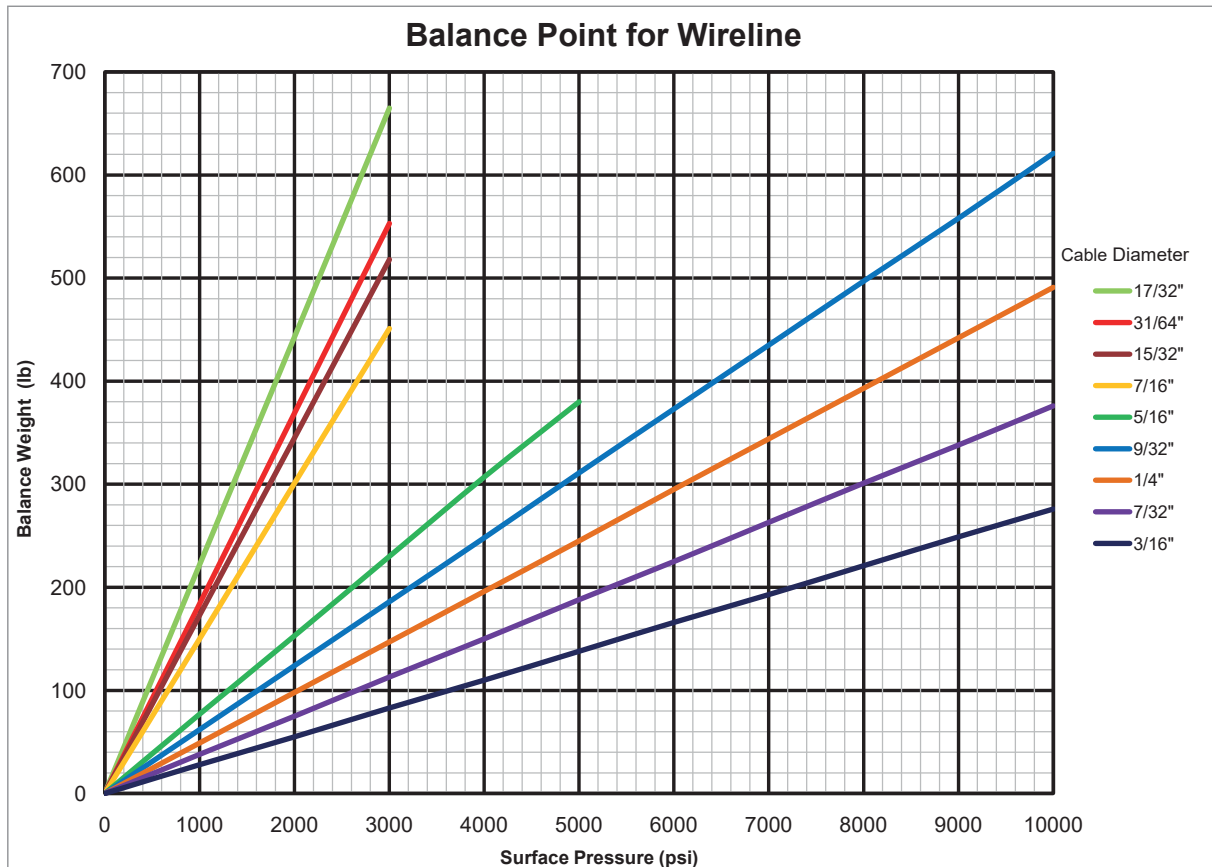
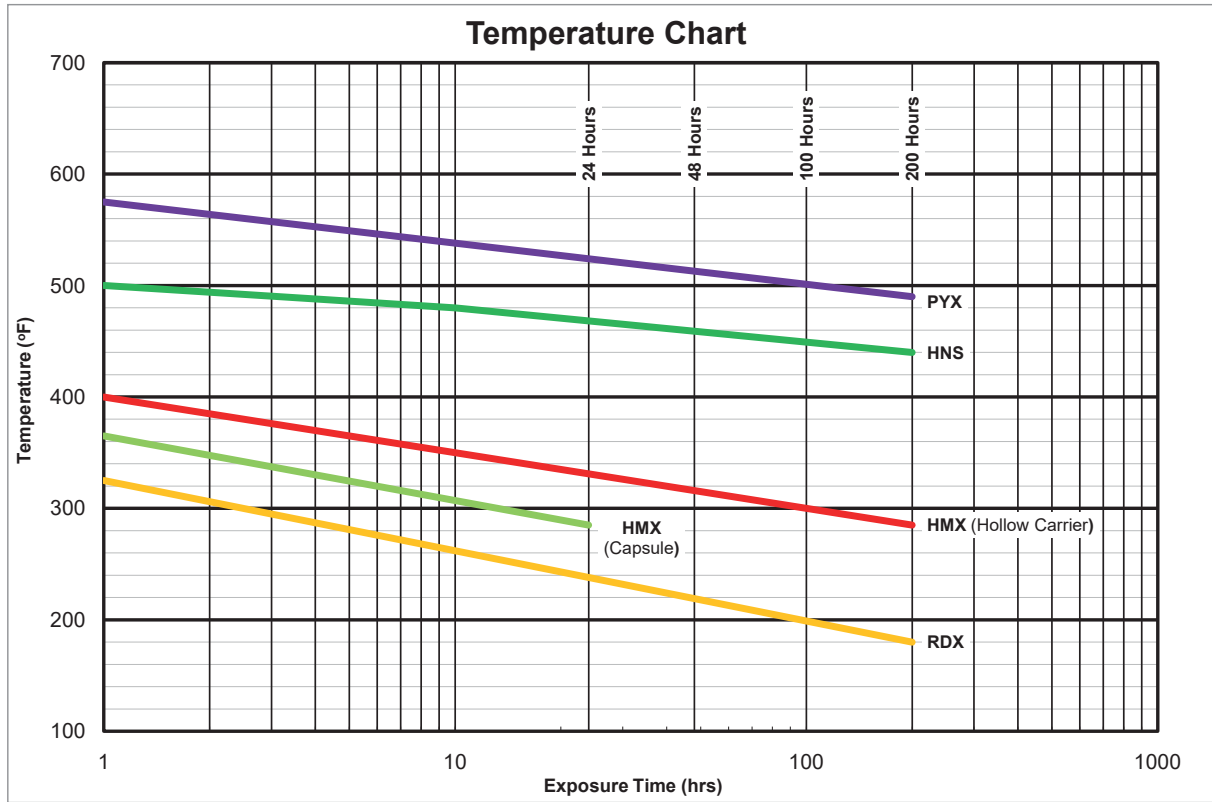




HUNTING



Perforating Systems & Accessories Catalog



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05) Gun Maps

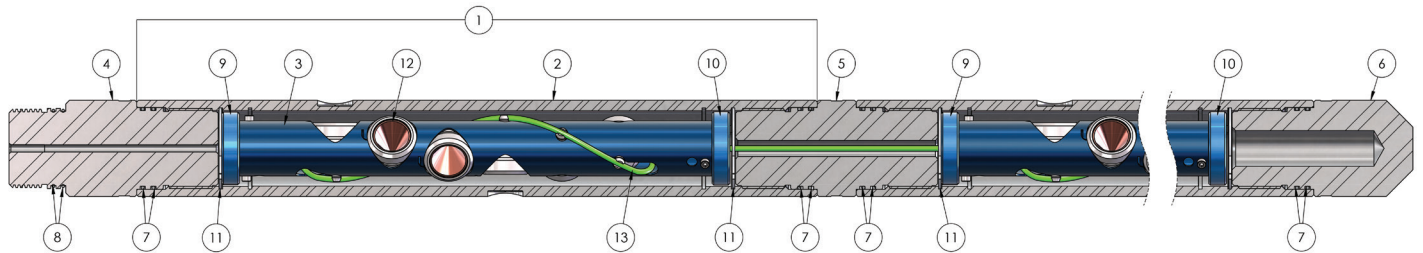
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06) Shaped Charge Summary

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4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components			
ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	0364-B**-041	2-7/8 in. (73 mm) Gun Assy.	0°
	0364-1**-041	2-7/8 in. (73 mm) Carrier Body	0°
	0364-1**-046	2-7/8 in. (73 mm) Carrier Body	60°
	0364-1**-044	2-7/8 in. (73 mm) Carrier Body	90°
	0364-1**-042	2-7/8 in. (73 mm) Carrier Body	180°
	0362-7**-041	Charge Tube	0°
	0362-7**-046	Charge Tube	60°
	0362-7**-044	Charge Tube	90°
	0362-7**-042	Charge Tube	180°
Common Parts	0362-000-101	Top Sub	
	0362-000-002	Tandem Sub	
	0362-000-389A	Alternate Tandem Sub w/Port	
	0362-000-489A	Alternate Window Tandem Sub	
	0362-000-003	Gun Bottom	
	0111-227-V95	O-Ring	
	0111-227-V95	O-Ring	
	0362-700-031	Chg. Tube End Fitting - Aligning	
	0362-700-031	Chg. Tube End Fitting	
	0462-200-037	Snap Ring	
		Shaped Charge	
		Detonating Cord	
	TCP Conversion Kits (Not Pictured)		
	0504-500-150	Top TCP Booster Kit	
	0504-500-160	Tandem TCP Booster Kit	
		Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-046)

Listed Shape Charges are compatible with the SPF (shot density per foot) listed above the diagram and in the Specifications table. Reference the Specifications table to determine maximum gram weight recommended for fluid/gas conditions by phasing. NOTE: The gram weight listed is the maximum recommended weight for fluid/gas conditions in each respective phasing. The listed Gun Swell reflects testing performed at listed gram weight in each phasing.

Compatible Shaped Charges (Shaped Charge Summary - Page 85 & Page 89)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F, G	HMX
<u>EXP-2716-421T</u>	SDP	16.0	F, G	HMX
<u>EXP-2818-421T</u>	SDP	18.0	F, G	HMX
RTG-2512-371T	EQF	12.0	F, G	RDX
<u>EXP-2716-371T</u>	EQF	16.0	F, G	RDX
EXP-2716-372T	EQF	16.0	F, G	RDX
<u>FLO-2511-310B</u>	BH	11.0	F, G	RDX
<u>FLO-2715-310B</u>	BH	15.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQU

Application: "F" and "G" indicate

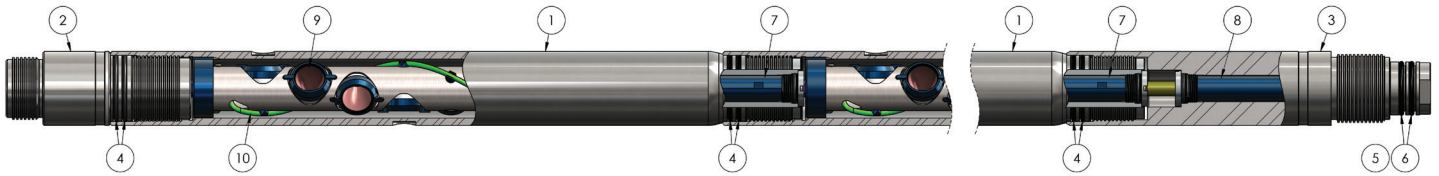
Phasing Compatibility

Shaped Charge performance data can be found in the Shaped Charge Summary section (Pages 83-89).

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.88 [73]			
Nominal Thickness (in) [mm]	0.36 [9.1]			
Gun Swell (in) [mm]: Ambient Fluid.	No Test	3.08 [78] ≤ 18.0g	No Test	
Gun Swell (in) [mm]: Ambient Gas.	No Test	3.14 [80] ≤ 18.0g	No Test	
Minimum Recommended Restriction (in) [mm]	3.25 [83]			
Maximum Pressure (psi) [MPa]	20,000 [138]			
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	12.0 [17.8]			
Max. Tension (lbf) [kN]	245,000 [1,090]			

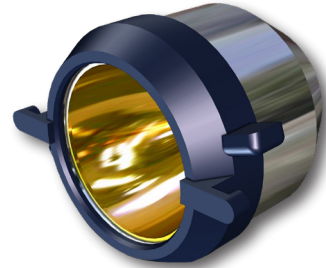
NR Not Recommended

H-1[®] Perforating System



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: ControlFire® selective firing system
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-275-SHA-B0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-275-SHA-B0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-275-SHA-B0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-275-TOP-020	Top Sub		
	3	HTS-275-PSA-010	Plug Shoot Assembly (PSA); T-Set #10 Style		
	4	0111-227-V95	O-ring (2 Req.)		
	5	HTS-PSA-012	Igniter Holder		
	6	0111-222-V95	O-ring (4 Req.)		
	7	DETO-CFC-A140F-T V1.8	ControlFire® Initiation Cartridge (CFC)		
	8	HTS-PSC-000	Plug Shoot Assembly Cartridge		
	9		H-Lok™ Shaped Charge		
	10		Detonating Cord		

Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
<u>RTG-2512-421T-H1</u>	SDP	12.0	HMX	F, G	F
<u>EXP-2716-421T-H1</u>	SDP	16.0	HMX	F, G	F
<u>EXP-2818-421T-H1</u>	SDP	18.0	HMX	F, G	F
<u>EXP-2716-371T-H1</u>	EQF	16.0	RDX	F, G	F
EXP-2716-372T-H1	EQF	16.0	RDX	F, G	F
<u>FLO-2715-310B-H1</u>	BH	15.0	RDX	F, G	F

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQUAfrac® consistent hole shaped charges

"F" indicates that system is able to be fired in fluid

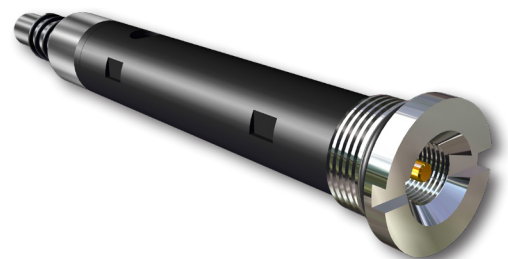
"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-275-SHA-B010-04060)

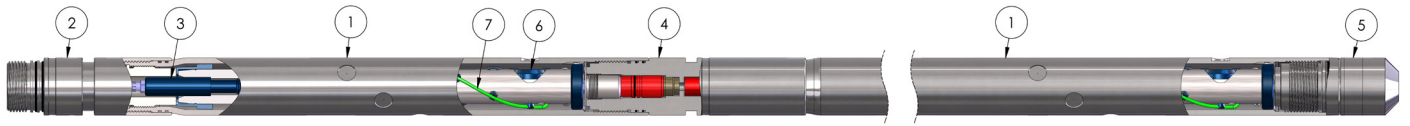
Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	2.75 [70]		2.75 [70]
Nominal Thickness (in)[mm]	0.31 [7.9]		0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid. 18.0g	2.98 [76] ≤ 18.0g		2.98 [76] ≤ 18.0g
Gun Swell (in) [mm]: Ambient Gas. 18.0g	2.99 [76] ≤ 18.0g		NR
Min. Recommended Restriction (in) [mm]	3.05 [77]		3.05 [77]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	11.5 [17.1]		11.5 [17.1]
Max. Tension (lbf)[kN]	145,000 [645]		145,000 [645]

NR Not Recommended



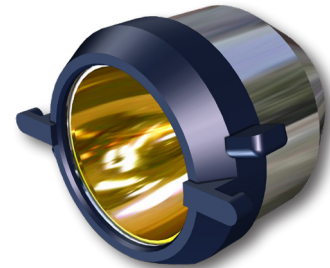
ControlFire® Initiation Cartridge (CFC)

2-3/4 in. (70 mm) H-1 TCP System



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Bottom Fire
 Tandem Connection: Booster-to-Booster (no splice)
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-275-TCP-B0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-275-TCP-B0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-275-TCP-B0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-TCP-275-004	TCP Top Adapter		
	3	HTS-TCP-312-005	Top Booster Transfer Insert		
	4	HTS-TCP-275-003	TCP Delay Housing		
	5	HTS-TCP-275-007	TCP Bull Plug		
	6		H-Lok™ Shaped Charge		
	10		Detonating Cord		

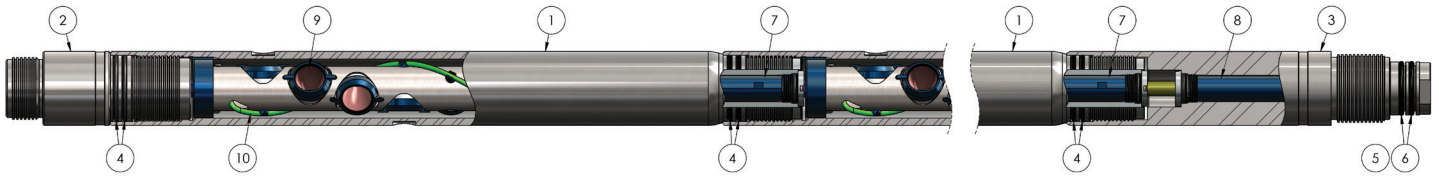
Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
<u>RTG-2512-421T-H1</u>	SDP	12.0	HMX	F, G	F
<u>EXP-2716-421T-H1</u>	SDP	16.0	HMX	F, G	F
<u>EXP-2818-421T-H1</u>	SDP	18.0	HMX	F, G	F
<u>EXP-2716-371T-H1</u>	EQF	16.0	RDX	F, G	F
<u>EXP-2716-372T-H1</u>	EQF	16.0	RDX	F, G	F
<u>FLO-2715-310B-H1</u>	BH	15.0	RDX	F, G	F

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-275-TCP-B010-04060)

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

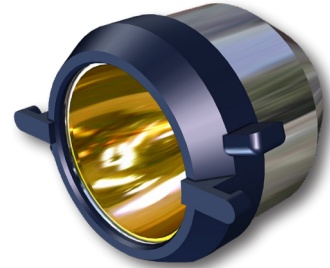
Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	2.75 [70]		2.75 [70]
Nominal Thickness (in)[mm]	0.31 [7.9]		0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid.	2.98 [76] ≤ 18.0g		2.98 [76] ≤ 18.0g
Gun Swell (in) [mm]: Ambient Gas.	2.99 [76] ≤ 18.0g		NR
Min. Recommended Restriction (in) [mm]	3.05 [77]		3.05 [77]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	11.5 [17.1]		11.5 [17.1]
Max. Tension (lbf)[kN]	145,000 [645]		145,000 [645]

NR Not Recommended



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: ControlFire® selective firing system
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

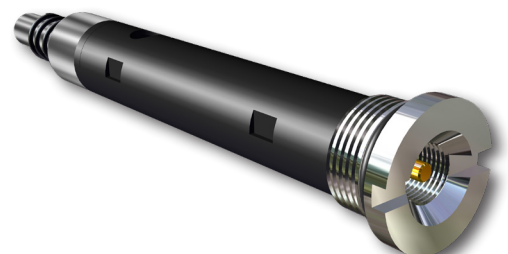
H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-312-SHA-B0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-312-SHA-B0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-312-SHA-B0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-312-TOP-020	Top Sub		
	3	HTS-312-PSA-010 or HTS-312-PSA-020	Plug Shoot Assembly (PSA); T-Set #10 Style Plug Shoot Assembly (PSA); T-Set #20 Style		
	4	0111-230-V95	O-ring (2 Req.)		
	5	HTS-PSA-012	Igniter Holder		
	6	0111-222-V95	O-ring (4 Req.)		
	7	DETO-CFC-A140F-T V1.8	ControlFire® Initiation Cartridge (CFC)		
	8	HTS-PSC-000	Plug Shoot Assembly Cartridge		
	9		H-Lok™ Shaped Charge		
	10		Detonating Cord		

Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
<u>EXP-3319-423T-H1</u>	SDP	19.0	HMX	F, G	F, G
<u>EXP-3321-421T-H1</u>	SDP	21.0	HMX	F	F
<u>EXP-3323-423T-H1</u>	SDP	22.7	HMX	F	F
<u>EXP-3323-471T-H1</u>	EQF	23.0	HMX	F	F
<i>EXP-3319-302-H1</i>	DP	19.0	RDX	F, G	F, G
<i>EXP-3323-461T-H1</i>	DP	22.7	HMX	F	F
<i>EXP-3323-302-H1</i>	DP	22.0	RDX	F	F
<u>EXP-3319-431-H1</u>	GH	19.0	HMX	F, G	F, G
<u>EXP-3321-431-H1</u>	GH	21.0	HMX	F	F
<u>EXP-3323-431-H1</u>	GH	22.7	HMX	F	F
<i>FLO-3323-310B-H1</i>	BH	22.0	RDX	F	F
<u>FLO-3323-311CF-H1</u>	BH	22.0	RDX	F	F

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-312-SHA-B010-04060)

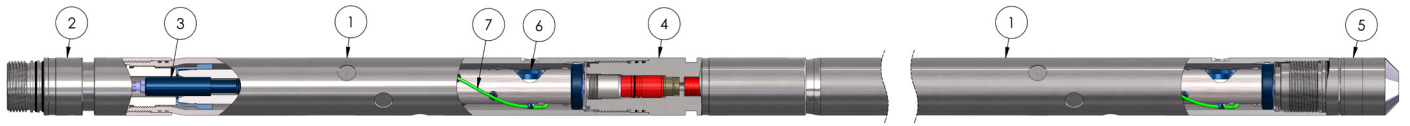
xxx-xxx-3xxx for RDX, xxx-xxx-4xxx for HMX, xxx-xxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	3.13 [79]		3.13 [79]
Nominal Thickness (in)[mm]	0.31 [7.9]		0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid.	3.37 [86] ≤ 22.7g		3.36 [85] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	3.40 [86] ≤ 19.0g		3.39 [86] ≤ 19.0g
Min. Recommended Restriction (in) [mm]	3.58 [91]		3.58 [91]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	14.0 [20.8]		14.0 [20.8]
Max. Tension (lbf)[kN]	190,000 [845]		190,000 [845]



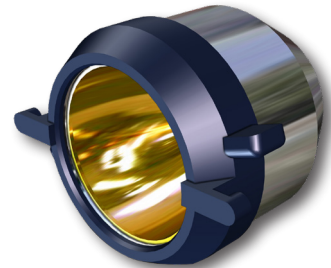
ControlFire® Initiation Cartridge (CFC)

3-1/8 in. (79 mm) H-1 TCP System



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Bottom Fire
 Tandem Connection: Booster-to-Booster (no splice)
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-312-TCP-B0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-312-TCP-B0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-312-TCP-B0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-TCP-312-004	TCP Top Adapter		
	3	HTS-TCP-312-005	Top Booster Transfer Insert		
	4	HTS-TCP-312-003	TCP Delay Housing		
	5	HTS-TCP-312-007	TCP Bull Plug		
	6		H-Lok™ Shaped Charge		
	10		Detonating Cord		

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-275-SHA-B010-04060)

Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
<u>EXP-3319-423T-H1</u>	SDP	19.0	HMX	F, G	F, G
<u>EXP-3321-421T-H1</u>	SDP	21.0	HMX	F	F
<u>EXP-3323-423T-H1</u>	SDP	22.7	HMX	F	F
<u>EXP-3323-471T-H1</u>	EQF	23.0	HMX	F	F
<i>EXP-3319-302-H1</i>	DP	19.0	RDX	F, G	F, G
<i>EXP-3323-461T-H1</i>	DP	22.7	HMX	F	F
<i>EXP-3323-302-H1</i>	DP	22.0	RDX	F	F
<u>EXP-3319-431-H1</u>	GH	19.0	HMX	F, G	F, G
<u>EXP-3321-431-H1</u>	GH	21.0	HMX	F	F
<u>EXP-3323-431-H1</u>	GH	22.7	HMX	F	F
<i>FLO-3323-310B-H1</i>	BH	22.0	RDX	F	F
<u>FLO-3323-311CF-H1</u>	BH	22.0	RDX	F	F

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

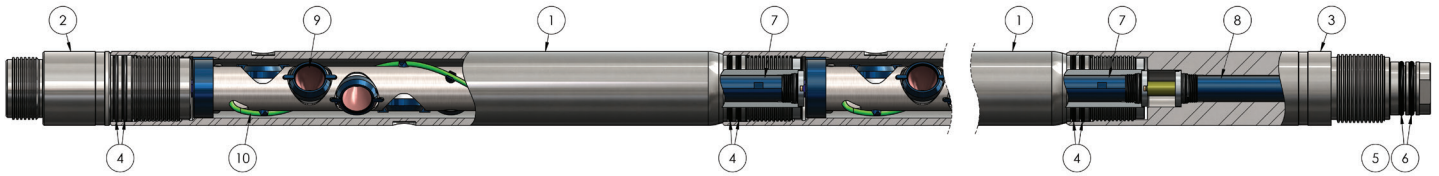
EQF indicates EQUAfrac® consistent hole shaped charges

"F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

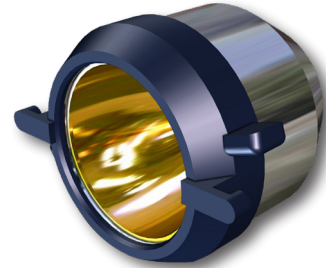
Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	3.13 [79]		3.13 [79]
Nominal Thickness (in)[mm]	0.31 [7.9]		0.31 [79]
Gun Swell (in) [mm]: Ambient Fluid.	3.37 [86] ≤ 22.7g		3.36 [85] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	3.40 [86] ≤ 19.0g		3.39 [86] ≤ 19.0g
Min. Recommended Restriction (in) [mm]	3.58 [91]		3.58 [91]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	14.0 [20.8]		14.0 [20.8]
Max. Tension (lbf)[kN]	190,000 [845]		190,000 [845]



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: ControlFire® selective firing system
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

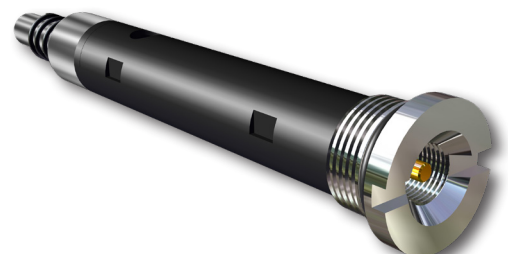
H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-337-SHA-B0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-337-SHA-B0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-337-SHA-B0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-337-TOP-020	Top Sub		
	3	HTS-337-PSA-020	Plug Shoot Assembly (PSA); T-Set #20 Style		
	4	0111-331-V95	O-ring (2 Req.)		
	5	HTS-PSA-012	Igniter Holder		
	6	0111-222-V95	O-ring (4 Req.)		
	7	DETO-CFC-A140F-T V1.8	ControlFire® Initiation Cartridge (CFC)		
	8	HTS-PSC-000	Plug Shoot Assembly Cartridge		
	9		H-Lok™ Shaped Charge		
	10		Detonating Cord		

Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
EXP-3319-423T-H1	SDP	19.0	HMX	F, G	F, G
EXP-3321-421T-H1	SDP	21.0	HMX	F, G	F, G
<u>EXP-3323-423T-H1</u>	SPD	22.7	HMX	F	F
<u>EXP-3326-421T-H1</u>	SDP	26.0	HMX	F	F
<u>EXP-3323-471T-H1</u>	EQF	23.0	HMX	F	F
<i>EXP-3319-302-H1</i>	DP	19.0	RDX	F, G	F, G
<i>EXP-3323-461T-H1</i>	DP	22.7	HMX	F	F
<i>EXP-3323-302-H1</i>	DP	22.0	RDX	F	F
EXP-3319-431-H1	GH	19.0	HMX	F, G	F, G
EXP-3321-431-H1	GH	21.0	HMX	F, G	F, G
<u>EXP-3323-431-H1</u>	GH	22.7	HMX	F	F
<i>EXP-3325-331-H1</i>	GH	25.0	RDX	F	F
<i>FLO-3323-310B-H1</i>	BH	22.0	RDX	F	F
<i>FLO-3323-311CF-H1</i>	BH	22.0	RDX	F	F

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-275-SHA-B010-04060)
 Use "A" series assembly for 19-23 gram shaped charges or a "C" series assembly for 25-26 gram shaped charges.

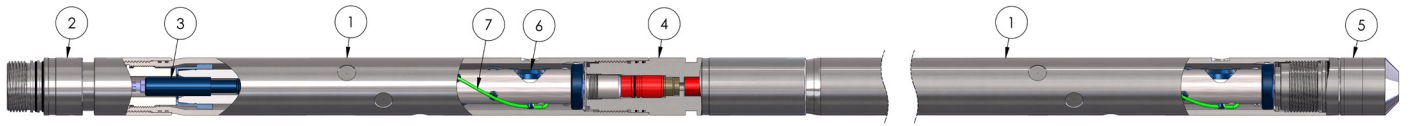
xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	3.38 [86]		3.38 [86]
Nominal Thickness (in)[mm]	0.37 [9.4]		0.37 [9.4]
Gun Swell (in) [mm]: Ambient Fluid.	3.61 [92] ≤ 26.0g		3.58 [91] ≤ 26.0g
Gun Swell (in) [mm]: Ambient Gas.	3.68 [93] ≤ 21.0g		3.62 [92] ≤ 21.0g
Min. Recommended Restriction (in) [mm]	3.80 [97]		3.80 [97]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	16 [24]		16 [24]
Max. Tension (lbf)[kN]	225,000 [1,000]		225,000 [1,000]



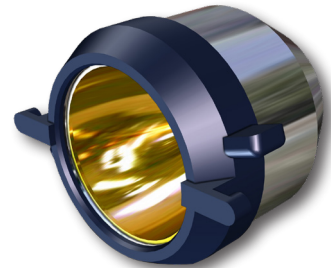
ControlFire® Initiation Cartridge (CFC)

3-3/8 in. (86 mm) H-1 TCP System



GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Bottom Fire
 Tandem Connection: Booster-to-Booster (no splice)
 Detonating Cord: 80 grains/foot



H-Lok® Shaped Charge

H-1 Perforating Gun Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF	Phase
Gun Assy.	1	HTS-337-TCP-A0**-04060	H-1 Gun Assy.; 4/60°	4	60°
		HTS-312-TCP-A0**-04090	H-1 Gun Assy.; 4/90°	4	90°
		HTS-312-TCP-A0**-06060	H-1 Gun Assy.; 6/60°	6	60°
Common Parts	2	HTS-TCP-337-004	TCP Top Adapter		
	3	HTS-TCP-337-005	Top Booster Transfer Insert		
	4	HTS-TCP-337-003	TCP Delay Housing		
	5	HTS-TCP-337-007	TCP Bull Plug		
	6		H-Lok™ Shaped Charge		
	10		Detonating Cord		

** Gun length. Example: Use "01" for gun with 1ft load. (HTS-337-SHA-A010-04060)
 Use "A" series assembly for 19-23 gram shaped charges or a "C" series assembly for 25-26 gram shaped charges.

Compatible H-Lok Shaped Charges (Shaped Charge Summary - Page 85)					
Part Number	Charge Type	Explosive Weight (g)	Explosive Type	4 SPF	6 SPF
EXP-3319-423T-H1	SDP	19.0	HMX	F, G	F, G
EXP-3321-421T-H1	SDP	21.0	HMX	F, G	F, G
<u>EXP-3323-423T-H1</u>	SPD	22.7	HMX	F	F
<u>EXP-3326-421T-H1</u>	SDP	26.0	HMX	F	F
<u>EXP-3323-471T-H1</u>	EQF	23.0	HMX	F	F
<i>EXP-3319-302-H1</i>	DP	19.0	RDX	F, G	F, G
<i>EXP-3323-461T-H1</i>	DP	22.7	HMX	F	F
<i>EXP-3323-302-H1</i>	DP	22.0	RDX	F	F
EXP-3319-431-H1	GH	19.0	HMX	F, G	F, G
EXP-3321-431-H1	GH	21.0	HMX	F, G	F, G
<u>EXP-3323-431-H1</u>	GH	22.7	HMX	F	F
<i>EXP-3325-331-H1</i>	GH	25.0	RDX	F	F
<i>FLO-3323-310B-H1</i>	BH	22.0	RDX	F	F
<i>FLO-3323-311CF-H1</i>	BH	22.0	RDX	F	F

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQUAfrac® consistent hole shaped charges

"F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications	4 SPF (13 SPM)		6 SPF (20 SPM)
	60°	90°	60°
Nominal O.D. (in)[mm]	3.38 [86]		3.38 [86]
Nominal Thickness (in)[mm]	.37 [9.4]		.37 [9.4]
Gun Swell (in) [mm]: Ambient Fluid.	3.61 [92] ≤ 26.0g		3.58 [91] ≤ 26.0g
Gun Swell (in) [mm]: Ambient Gas.	3.68 [93] ≤ 21.0g		3.62 [92] ≤ 21.0g
Min. Recommended Restriction (in) [mm]	3.80 [97]		3.80 [97]
Max. Pressure (psi)[MPa]	20,000 [138]		20,000 [138]
Distance to First Scallop (in)[mm]	7.00 [178]		6.50 [165]
Approximate Weight - Loaded (lb/ft)[kg/m]	16 [24]		16 [24]
Max. Tension (lbf)[kN]	225,000 [1,000]		225,000 [1,000]

Hardware Description	Outside Diameter (in) [mm]		
	2-3/4 [70] Part Number	3-1/8 [79] Part Number	3-3/8 [86] Part Number
CCL Bottom Sub	0268-000-014	0257-200-014	
H-1 Quick-Change (QC) Assembly	3271-275-030	3271-312-030	
Contact Kit; H-1 Style Quick-Change Assembly	3271-275-032		
H-1 Top Sub Assembly	HTS-275-TOP-020	HTS-312-TOP-020	HTS-337-TOP-020
Contact Kit; H-1 Top Sub Assembly	HTS-TOP-022		
H-1 Bottom Sub (Bull Plug)	HTS-275-HW-003	HTS-312-HW-003	HTS-337-HW-003
T-Set® #10 Setting Tool	WST-BK10-001		-
T-Set® #10 Style Plug Shoot Assembly (PSA)	HTS-275-PSA-010	HTS-312-PSA-010	-
T-Set® #20 Setting Tool	-	WST-BK20-001	
T-Set® #20 Style Plug Shoot Assembly (PSA)	-	HTS-312-PSA-020	HTS-337-PSA-020
T-Set® 3-1/2" Shorty Setting Tool	WST-5321-501		-
Adapter; #10 Style PSA to T-Set® 3-1/2" Shorty	WST-5321-132		-
T-Set® 3-5/8" Compact Setting Tool	WST-3625-501		
Adapter; #10 Style PSA to T-Set® 3-5/8" Compact	WST-5303-117		-
Adapter; #20 Style PSA to T-Set® 3-5/8" Compact	-	WST-5303-120	
Adapter; H-1 QC to Standard QC Box	3271-275-130	3271-312-130	
Adapter; H-1 to Standard Gun Box	HTS-275-HW-362B	HTS-312-HW-363B	HTS-337-HW-365B



CCL Bottom Sub



H-1 Quick-Change Assembly



H-1 Top Sub Assembly



Plug Shoot Assembly (PSA) Cartridge



TCP Top Adapter



TCP Booster Transfer Insert



TCP Delay Housing

Expendable Items Description	Outside Diameter (in) [mm]		
	2-3/4 [70] Part Number	3-1/8 [79] Part Number	3-3/8 [86] Part Number
ControlFire® Initiation Cartridge (CFC)	DETO-CFC-A140F-T V1.8		
CFC Installation Tool	HTS-UCP-100		
Plug Shoot Assembly Cartridge	HTS-PSC-000		

ControlFire® Equipment Description	Outside Diameter (in) [mm]		
	2-3/4 [70] Part Number	3-1/8 [79] Part Number	3-3/8 [86] Part Number
ControlFire® Shooting Power Supply*	9002-013-810-1		
VeriFire® Panel	9002-013-210		

ControlFire surface panels are required to operate the H-1 Perforating System.
* Other ControlFire panel options are available

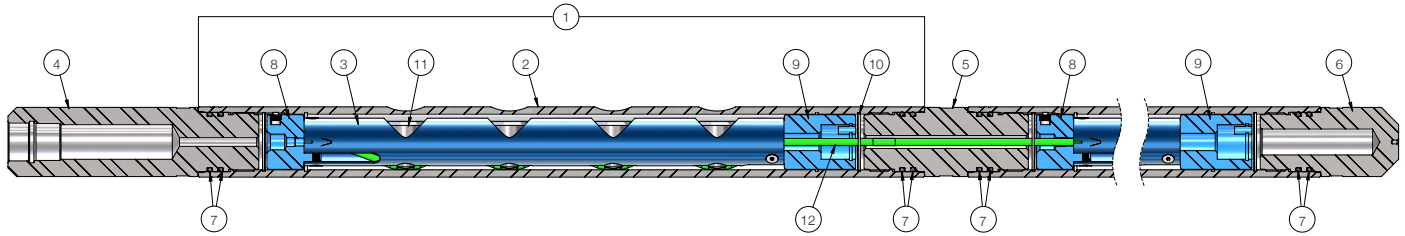
Hardware - TCP Description	Outside Diameter (in) [mm]		
	2-3/4 [70] Part Number	3-1/8 [79] Part Number	3-3/8 [86] Part Number
TCP Top Adapter	HTS-TCP-275-004	HTS-TCP-312-004	HTS-TCP-337-004
Top Booster Transfer Insert	HTS-TCP-312-005		
TCP Delay Housing	HTS-TCP-275-003	HTS-TCP-312-003	HTS-TCP-337-003
TCP Bottom Sub (Bull Plug)	HTS-TCP-275-007	HTS-TCP-312-007	HTS-TCP-337-007

Expendable Items - TCP Description	Outside Diameter (in) [mm]		
	2-3/4 [70] Part Number	3-1/8 [79] Part Number	3-3/8 [86] Part Number
Fuse Time Delay - 6 Minute	DETO-FUSE-088011-6.0		
Fuse Igniter	DETO-IGNT-072170-1		
Booster - HMX Bi-Directional	BOOSTER-HMX-600-T		
Percussion Initiator	DETO-INIT-072120-1		

Scalloped Hollow Carrier Guns

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	0227-A**-041	1-3/8 in. (35 mm) Gun Assy.	0°	
	0227-A**-046	1-3/8 in. (35 mm) Gun Assy.	60°	
	0227-A**-044	1-3/8 in. (35 mm) Gun Assy.	90°	
	0227-A**-043	1-3/8 in. (35 mm) Gun Assy.	120°	
	0227-A**-042	1-3/8 in. (35 mm) Gun Assy.	180°	
	2	0227-1**-041	1-3/8 in. (35 mm) Carrier Body	0°
		0227-1**-046	1-3/8 in. (35 mm) Carrier Body	60°
		0227-1**-044	1-3/8 in. (35 mm) Carrier Body	90°
		0227-1**-043	1-3/8 in. (35 mm) Carrier Body	120°
		0227-1**-042	1-3/8 in. (35 mm) Carrier Body	180°
		3	0327-5**-041	Charge Tube
	0327-5**-046		Charge Tube	60°
0327-5**-044	Charge Tube		90°	
0327-5**-043	Charge Tube		120°	
0327-5**-042	Charge Tube		180°	
Common Parts	4	0227-000-001	Top Sub	
	5	0227-000-002	Tandem Sub	
	6	0227-000-003	Gun Bottom	
	7	0111-120-V95	O-Ring	
	8	0227-500-121	Chg. Tube End Fitting - Aligning	
	9	0227-500-131	Chg. Tube End Fitting	
	10	0227-200-037	Snap Ring	
	11		Shaped Charge	
12		Detonating Cord		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-1302-400	DP	1.8	F, G	HMX
CIR-1302-4T251	KO	1.8	F, G	HMX
CIR-1302-4T381	KO	1.8	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
Italics indicate API RP-43 certification
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0227-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.38 [35]				
Nominal Thickness (in) [mm]	0.16 [4.1]				
Gun Swell (in) [mm]: Ambient Fluid.	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.46 [37] @ 1.8g	1.46 [37] @ 1.8g
Gun Swell (in) [mm]: Ambient Gas.	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g	1.47 [37] @ 1.8g	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g
Minimum Recommended Restriction (in) [mm]	1.59 [40]				
Maximum Pressure (psi) [MPa]	21,000 [145]		22,000 [152]		
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	3.00 [4.46]				
Max. Tension (lbf) [kN]	59,000 [262]				

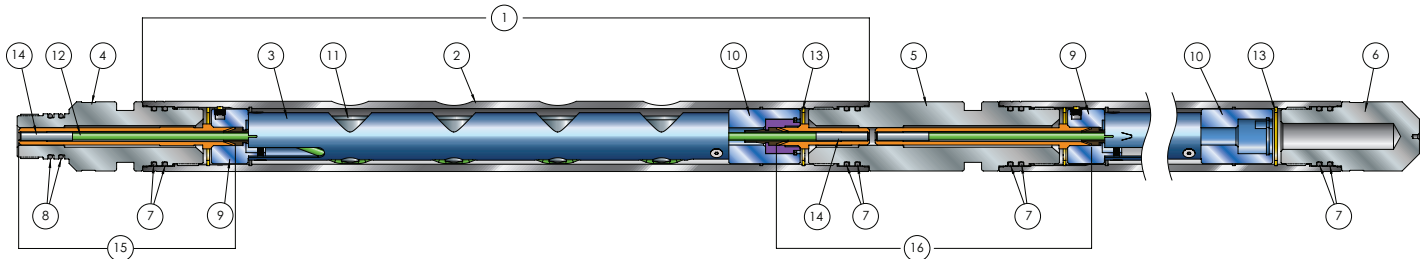
NR Not Recommended

1-3/8 in. (35 mm) Scalloped Hollow Carrier Gun - TCP



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Hydraulic, Ball Drop, Safety Impact or Direct Impact
 Initiation Point: Top or bottom fired options available for TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0527-A**-041	1-3/8 in. (35 mm) TCP Gun Assy.	0°
		0527-A**-042	1-3/8 in. (35 mm) TCP Gun Assy.	180°
	2	0227-1**-041	1-3/8 in. (35 mm) Carrier Body	0°
		0227-1**-042	1-3/8 in. (35 mm) Carrier Body	180°
	3	0327-5**-041	Charge Tube	0°
		0327-5**-042	Charge Tube	180°
Common Parts	4	0527-000-001	TCP Grooved Top Sub	
	5	0527-000-035	TCP Grooved Tandem Sub	
	6	0227-000-003	Gun Bottom	
	7	0111-120-090	O-Ring	
	8	0111-120-090	O-Ring	
	9	0527-500-121	Chg. Tube End Fitting - Aligning	
	10	0527-500-131	Chg. Tube End Fitting	
	11		Shaped Charge	
	12		Detonating Cord	
	13	0227-200-037	Snap Ring	
	14	BOOSTER-HMX-600-T	Bi-Directional Booster	
15	0527-500-150	Top TCP Booster Transfer Kit		
16	0527-500-160	Tandem TCP Booster Transfer Kit		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<i>RTG-1302-400</i>	DP	1.8	F, G	HMX
<i>CIR-1302-4T251</i>	KO	1.8	F, G	HMX
<i>CIR-1302-4T381</i>	KO	1.8	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
 Italics indicate API RP-43 certification
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

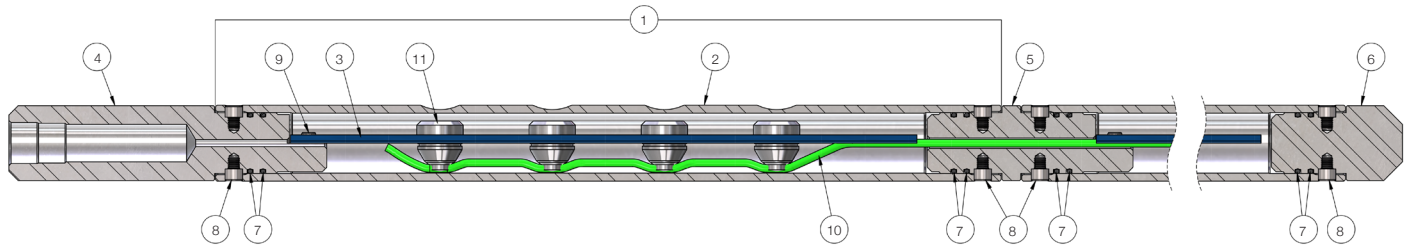
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0527-A02-041)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.38 [35]				
Nominal Thickness (in) [mm]	0.16 [4.1]				
Gun Swell (in) [mm]: Ambient Fluid.	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.46 [37] @ 1.8g	1.46 [37] @ 1.8g
Gun Swell (in) [mm]: Ambient Gas.	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g	1.47 [37] @ 1.8g	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g
Minimum Recommended Restriction (in) [mm]	1.59 [40]				
Maximum Pressure (psi) [MPa]	21,000 [145]	22,000 [152]			
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	3.00 [4.46]				
Max. Tension (lbf) [kN]	59,000 [262]				

N/R Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube or flat strip option (for 0° and 180°)
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0327-A**-041	1-3/8 in. (35 mm) Gun Assy.	0°
		0327-A**-046	1-3/8 in. (35 mm) Gun Assy.	60°
		0327-A**-044	1-3/8 in. (35 mm) Gun Assy.	90°
		0327-A**-043	1-3/8 in. (35 mm) Gun Assy.	120°
		0327-A**-042	1-3/8 in. (35 mm) Gun Assy.	180°
	2	0227-***-041	1-3/8 in. (35 mm) Carrier Body	0°
		0227-***-046	1-3/8 in. (35 mm) Carrier Body	60°
		0227-***-044	1-3/8 in. (35 mm) Carrier Body	90°
		0227-***-043	1-3/8 in. (35 mm) Carrier Body	120°
		0227-***-042	1-3/8 in. (35 mm) Carrier Body	180°
	3	0327-800-†††	Charge Strip	0°
0327-5**-046		Charge Tube	60°	
0327-5**-044		Charge Tube	90°	
0327-800-†††		Charge Strip	120°	
Common Parts	4	0327-000-001	Top Sub	
	5	0327-000-002	Tandem Sub	
	6	0327-000-004	Gun Bottom	
	7	0111-214-V95	O-Ring	
	8	0327-000-019	Cap Screw	
	9	0327-000-003	Cap Screw	
	11		Shaped Charge	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-1302-400	DP	1.8	F, G	HMX
CIR-1302-4T251	KO	1.8	F, G	HMX
CIR-1302-4T381	KO	1.8	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
Italics indicate API RP-43 certification
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun assembly length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0327-A02-046)
 *** Carrier body length. Example: Use "021" for a 21" in carrier
 ††† Number of shots on the charge strip. Example: Use "080" for 80 shots.

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.38 [35]				
Nominal Thickness (in) [mm]	0.16 [4.1]				
Gun Swell (in) [mm]: Ambient Fluid.	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.45 [37] @ 1.8g	1.46 [37] @ 1.8g	1.46 [37] @ 1.8g
Gun Swell (in) [mm]: Ambient Gas.	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g	1.47 [37] @ 1.8g	1.48 [38] @ 1.8g	1.47 [37] @ 1.8g
Minimum Recommended Restriction (in) [mm]	1.59 [40]				
Maximum Pressure (psi) [MPa]	21,000 [145]	22,000 [152]			
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	3.00 [4.46]				
Max. Tension (lbf) [kN]	24,000 [107]				

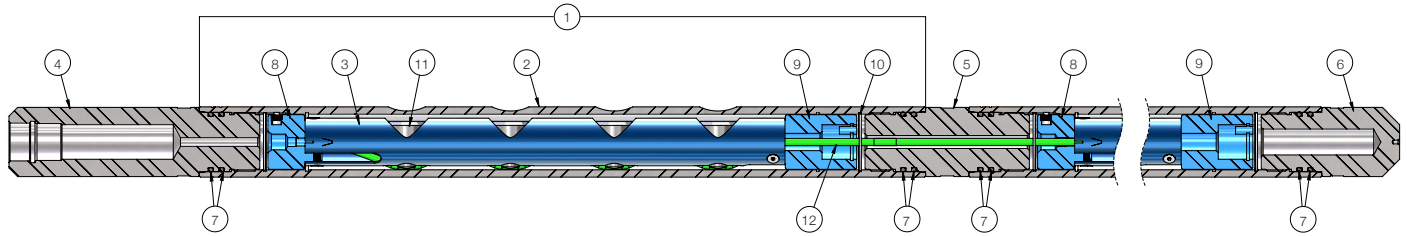
NR Not Recommended

1-9/16 in. (40 mm) Scalloped Hollow Carrier Gun - Threaded



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0220-A**-041	1-9/16 in. (40 mm) Gun Assy.	0°
		0220-A**-046	1-9/16 in. (40 mm) Gun Assy.	60°
		0220-A**-044	1-9/16 in. (40 mm) Gun Assy.	90°
		0220-A**-043	1-9/16 in. (40 mm) Gun Assy.	120°
		0220-A**-042	1-9/16 in. (40 mm) Gun Assy.	180°
	2	0220-1**-041	1-9/16 in. (40 mm) Carrier Body	0°
		0220-1**-046	1-9/16 in. (40 mm) Carrier Body	60°
		0220-1**-044	1-9/16 in. (40 mm) Carrier Body	90°
		0220-1**-043	1-9/16 in. (40 mm) Carrier Body	120°
		0220-1**-042	1-9/16 in. (40 mm) Carrier Body	180°
	3	0320-5**-041	Charge Tube	0°
		0320-5**-046	Charge Tube	60°
0320-5**-044		Charge Tube	90°	
0320-5**-043		Charge Tube	120°	
0320-5**-042		Charge Tube	180°	
Common Parts	4	0220-000-001	Top Sub	
	5	0220-000-002	Tandem Sub	
	6	0220-000-003	Gun Bottom	
	7	0111-214-V95	O-Ring	
	8	0220-500-121	Chg. Tube End Fitting - Aligning	
	9	0220-500-131	Chg. Tube End Fitting	
	10	0220-200-037	Snap Ring	
	11		Shaped Charge	
	12		Detonating Cord	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-1604-421T	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F, G	RDX
<i>FLO-1603-410</i>	BH	3.2	F, G	HMX
CIR-1603-4T251	KO	3.0	F, G	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F, G	HMX
CIR-1603-4C631	KO	3.5	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

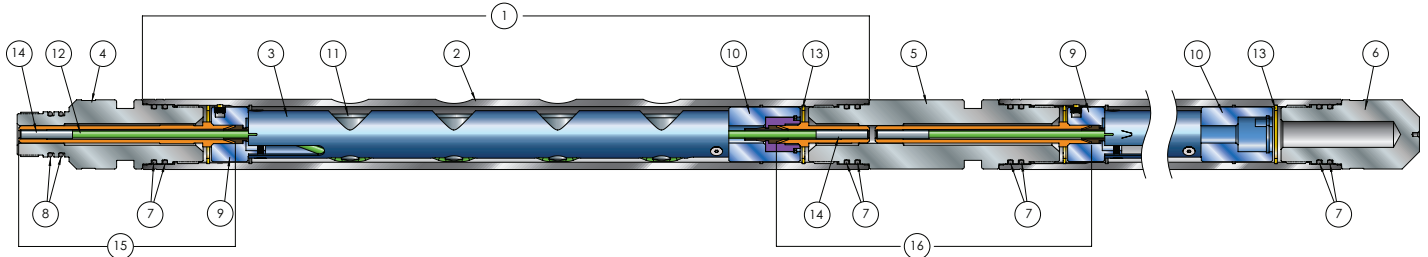
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0220-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.56 [40]				
Nominal Thickness (in) [mm]	0.17 [4.3]				
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.69 [43] ≤ 3.5g	1.69 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	1.70 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.72 [44] ≤ 3.2g
Minimum Recommended Restriction (in) [mm]	1.78 [45]				
Maximum Pressure (psi) [MPa]	19,000 [131]	20,000 [138]			
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]				
Max. Tension (lb) [kN]	80,000 [356]				

N/R Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Hydraulic, Ball Drop, Safety Impact or Direct Impact
 Initiation Point: Top or bottom fired options available for TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0520-A**-041	1-9/16 in. (40 mm) TCP Gun Assy.	0°
		0520-A**-046	1-9/16 in. (40 mm) TCP Gun Assy.	60°
		0520-A**-044	1-9/16 in. (40 mm) TCP Gun Assy.	90°
		0520-A**-043	1-9/16 in. (40 mm) TCP Gun Assy.	120°
		0520-A**-042	1-9/16 in. (40 mm) TCP Gun Assy.	180°
	2	0220-1**-041	1-9/16 in. (40 mm) Carrier Body	0°
		0220-1**-046	1-9/16 in. (40 mm) Carrier Body	60°
		0220-1**-044	1-9/16 in. (40 mm) Carrier Body	90°
		0220-1**-043	1-9/16 in. (40 mm) Carrier Body	120°
		0220-1**-042	1-9/16 in. (40 mm) Carrier Body	180°
	3	0320-5**-041	Charge Tube	0°
		0320-5**-046	Charge Tube	60°
0320-5**-044		Charge Tube	90°	
0320-5**-043		Charge Tube	120°	
0320-5**-042		Charge Tube	180°	
Common Parts	4	0520-000-021	TCP Grooved Top Sub	
	5	0520-000-032	TCP Grooved Tandem Sub	
	6	0220-000-003	Gun Bottom	
	7	0111-215-090	O-Ring	
	8	0111-215-090	O-Ring	
	9	0220-500-121	Chg. Tube End Fitting - Aligning	
	10	0220-500-131	Chg. Tube End Fitting	
	11		Shaped Charge	
	12		Detonating Cord	
	13	0220-200-037	Snap Ring	
	14	BOOSTER-HMX-600-T	Bi-Directional Booster	
15	0520-500-150	Top TCP Booster Transfer Kit		
16	0520-500-160	Tandem TCP Booster Transfer Kit		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0520-A02-046)

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-1604-421T</u>	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F, G	RDX
<i>FLO-1603-410</i>	BH	3.2	F, G	HMX
CIR-1603-4T251	KO	3.0	F, G	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F, G	HMX
CIR-1603-4C631	KO	3.5	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.56 [40]				
Nominal Thickness (in) [mm]	0.17 [4.3]				
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.69 [43] ≤ 3.5g	1.69 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	1.70 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.72 [44] ≤ 3.2g
Minimum Recommended Restriction (in) [mm]	1.78 [45]				
Maximum Pressure (psi) [MPa]	19,000 [131]	20,000 [138]			
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]				
Max. Tension (lb) [kN]	80,000 [356]				

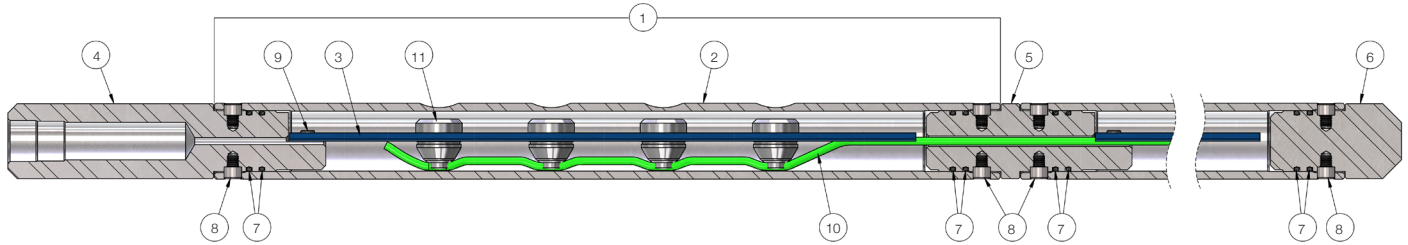
NR Not Recommended

1-9/16 in. (40 mm) Scalloped Hollow Carrier Gun - Bolted



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube or flat strip option (for 0° and 180°)
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0320-A**-041	1-9/16 in. (40 mm) Gun Assy.	0°
		0320-A**-046	1-9/16 in. (40 mm) Gun Assy.	60°
		0320-A**-044	1-9/16 in. (40 mm) Gun Assy.	90°
		0320-A**-043	1-9/16 in. (40 mm) Gun Assy.	120°
		0320-A**-042	1-9/16 in. (40 mm) Gun Assy.	180°
	2	0320-***-041	1-9/16 in. (40 mm) Carrier Body	0°
		0320-***-046	1-9/16 in. (40 mm) Carrier Body	60°
		0320-***-044	1-9/16 in. (40 mm) Carrier Body	90°
		0320-***-043	1-9/16 in. (40 mm) Carrier Body	120°
		0320-***-042	1-9/16 in. (40 mm) Carrier Body	180°
	3	0327-800-†††	Charge Strip	0°
		0320-5**-046	Charge Tube	60°
0320-5**-044		Charge Tube	90°	
0320-5**-043		Charge Strip	120°	
Common Parts	4	0320-000-001	Top Sub	
	5	0320-000-002	Tandem Sub	
	6	0320-000-004	Gun Bottom	
	7	0111-214-V95	O-Ring	
	8	0320-000-019	Cap Screw	
	9	0320-000-003	Cap Screw	
	11		Shaped Charge	

** Gun assembly length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0227-A02-046)
 *** Carrier body length. Example: Use "021" for a 21 in carrier
 ††† Number of shots on the charge strip. Example: Use "080" for 80 shots.

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-1604-421T	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F, G	RDX
<i>FLO-1603-410</i>	BH	3.2	F, G	HMX
CIR-1603-4T251	KO	3.0	F, G	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F, G	HMX
CIR-1603-4C631	KO	3.5	F	HMX

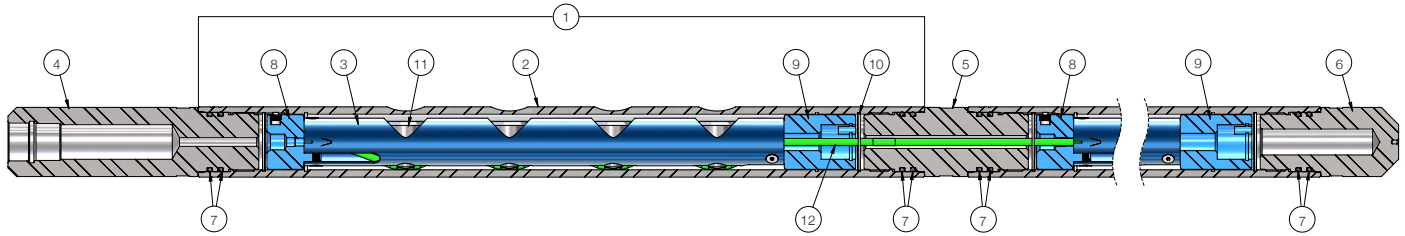
xxx-xxxx-8xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)				
	0°	60°	90°	120°	180°
Nominal O.D. (in) [mm]	1.56 [40]				
Nominal Thickness (in) [mm]	0.17 [4.3]				
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.69 [43] ≤ 3.5g	1.69 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	1.70 [43] ≤ 3.2g	1.70 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.71 [43] ≤ 3.2g	1.72 [44] ≤ 3.2g
Minimum Recommended Restriction (in) [mm]	1.78 [45]				
Maximum Pressure (psi) [MPa]	19,000 [131]	20,000 [138]			
Distance to First Scallop (in) [mm]	6.00 [152]				
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]				
Max. Tension (lb) [kN]	35,000 [156]				

N/R Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	0220-A**-061	1-9/16 in. (40 mm) Gun Assy.	0°	
	0220-A**-066	1-9/16 in. (40 mm) Gun Assy.	60°	
	0220-A**-062	1-9/16 in. (40 mm) Gun Assy.	180°	
	2	0220-1**-061	1-9/16 in. (40 mm) Carrier Body	0°
		0220-1**-066	1-9/16 in. (40 mm) Carrier Body	60°
		0220-1**-062	1-9/16 in. (40 mm) Carrier Body	180°
	3	0320-5**-061	Charge Tube	0°
		0320-5**-066	Charge Tube	60°
		0320-5**-062	Charge Tube	180°
Common Parts	4	0220-000-001	Top Sub	
	5	0220-000-002	Tandem Sub	
	6	0220-000-003	Gun Bottom	
	7	0111-214-V95	O-Ring	
	8	0220-500-121	Chg. Tube End Fitting - Aligning	
	9	0220-500-131	Chg. Tube End Fitting	
	10	0220-200-037	Snap Ring	
	11		Shaped Charge	
	12		Detonating Cord	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-1604-421T</u>	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F	RDX
<i>FLO-1603-410</i>	BH	3.2	F	HMX
CIR-1603-4T251	KO	3.0	F	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F	HMX
CIR-1603-4C631	KO	3.5	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
 Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0220-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	1.56 [40]		
Nominal Thickness (in) [mm]	0.17 [4.3]		
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	NR	NR	NR
Minimum Recommended Restriction (in) [mm]	1.78 [45]		
Maximum Pressure (psi) [MPa]	15,000 [1003]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]		
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]		
Max. Tension (lb) [kN]	80,000 [356]		

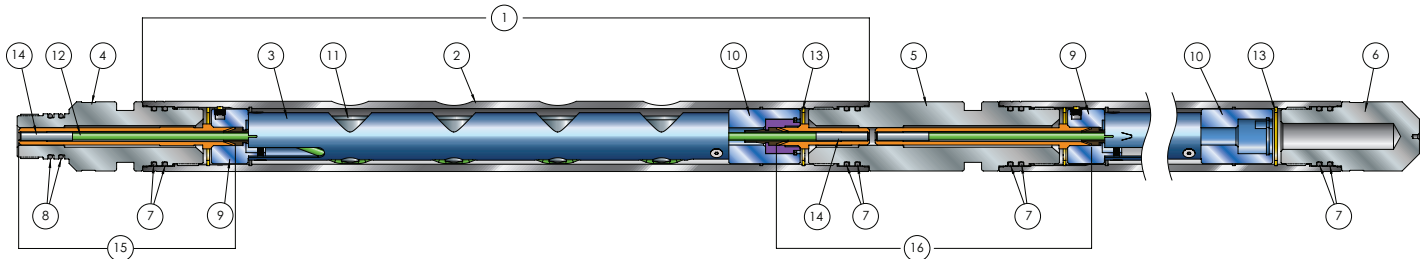
NR Not Recommended

1-9/16 in. (40 mm) Scalloped Hollow Carrier Gun - TCP



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Hydraulic, Ball Drop, Safety Impact or Direct Impact
 Initiation Point: Top or bottom fired options available for TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0520-A**-061	1-9/16 in. (40 mm) TCP Gun Assy.	0°
		0520-A**-066	1-9/16 in. (40 mm) TCP Gun Assy.	60°
		0520-A**-062	1-9/16 in. (40 mm) TCP Gun Assy.	180°
	2	0220-1**-061	1-9/16 in. (40 mm) Carrier Body	0°
		0220-1**-066	1-9/16 in. (40 mm) Carrier Body	60°
		0220-1**-062	1-9/16 in. (40 mm) Carrier Body	180°
	3	0320-5**-061	Charge Tube	0°
		0320-5**-066	Charge Tube	60°
		0320-5**-062	Charge Tube	180°
Common Parts	4	0520-000-021	TCP Grooved Top Sub	
	5	0520-000-032	TCP Grooved Tandem Sub	
	6	0220-000-003	Gun Bottom	
	7	0111-215-090	O-Ring	
	8	0111-215-090	O-Ring	
	9	0220-500-121	Chg. Tube End Fitting - Aligning	
	10	0220-500-131	Chg. Tube End Fitting	
	11		Shaped Charge	
	12		Detonating Cord	
	13	0220-200-037	Snap Ring	
	14	BOOSTER-HMX-600-T	Bi-Directional Booster	
	15	0520-500-150	Top TCP Booster Transfer Kit	
	16	0520-500-160	Tandem TCP Booster Transfer Kit	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-1604-421T</u>	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F	RDX
<i>FLO-1603-410</i>	BH	3.2	F	HMX
CIR-1603-4T251	KO	3.0	F	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F	HMX
CIR-1603-4C631	KO	3.5	F	HMX

xxx-xxxx-8xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

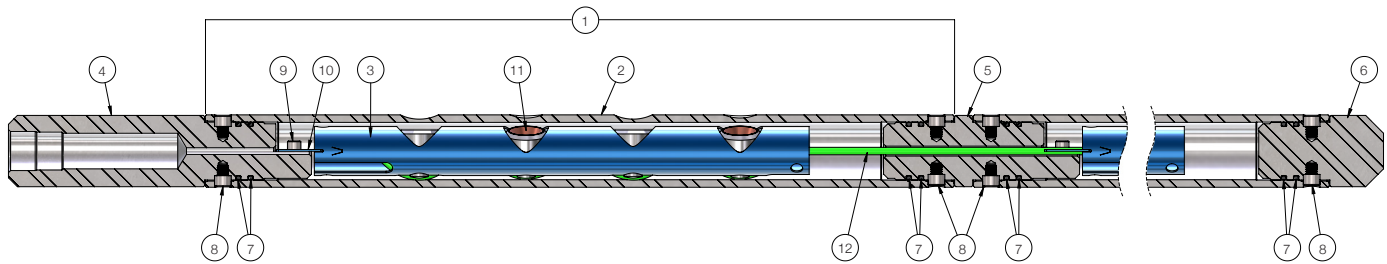
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0220-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	1.56 [40]		
Nominal Thickness (in) [mm]	0.17 [4.3]		
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	NR	NR	NR
Minimum Recommended Restriction (in) [mm]	1.78 [45]		
Maximum Pressure (psi) [MPa]	15,000 [1003]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]		
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]		
Max. Tension (lbf) [kN]	80,000 [356]		

NR Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	0320-A**-061	1-9/16 in. (40 mm) Gun Assy.	0°	
	0320-A**-066	1-9/16 in. (40 mm) Gun Assy.	60°	
	0320-A**-062	1-9/16 in. (40 mm) Gun Assy.	180°	
	2	0320-***-061	1-9/16 in. (40 mm) Carrier Body	0°
		0320-***-066	1-9/16 in. (40 mm) Carrier Body	60°
		0320-***-062	1-9/16 in. (40 mm) Carrier Body	180°
	3	0320-5**-061	Charge Tube	0°
		0320-5**-066	Charge Tube	60°
		0320-5**-062	Charge Tube	180°
Common Parts	4	0320-000-001	Top Sub	
	5	0320-000-002	Tandem Sub	
	6	0320-000-004	Gun Bottom	
	7	0111-214-V95	O-Ring	
	8	0320-000-019	Cap Screw	
	9	0320-000-003	Cap Screw	
	10	0320-500-031	Charge Tube Mounting Piece	
	11		Shaped Charge	
	12		Detonating Cord	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-1604-421T	SDP	3.5	F	HMX
<i>RTG-1603-300</i>	DP	3.2	F	RDX
<i>FLO-1603-410</i>	BH	3.2	F	HMX
CIR-1603-4T251	KO	3.0	F	HMX
CIR-1603-4T381	KO	3.5	F	HMX
CIR-1603-4C501	KO	3.2	F	HMX
CIR-1603-4C631	KO	3.5	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0320-A02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	1.56 [40]		
Nominal Thickness (in) [mm]	0.17 [4.3]		
Gun Swell (in) [mm]: Ambient Fluid.	1.68 [43] ≤ 3.2g	1.68 [43] ≤ 3.5g	1.70 [43] ≤ 3.2g
Gun Swell (in) [mm]: Ambient Gas.	NR	NR	NR
Minimum Recommended Restriction (in) [mm]	1.78 [45]		
Maximum Pressure (psi) [MPa]	15,000 [1003]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]		
Approximate Weight - Loaded (lb/ft) [kg/m]	4.00 [5.95]		
Max. Tension (lbf) [kN]	35,000 [156]		

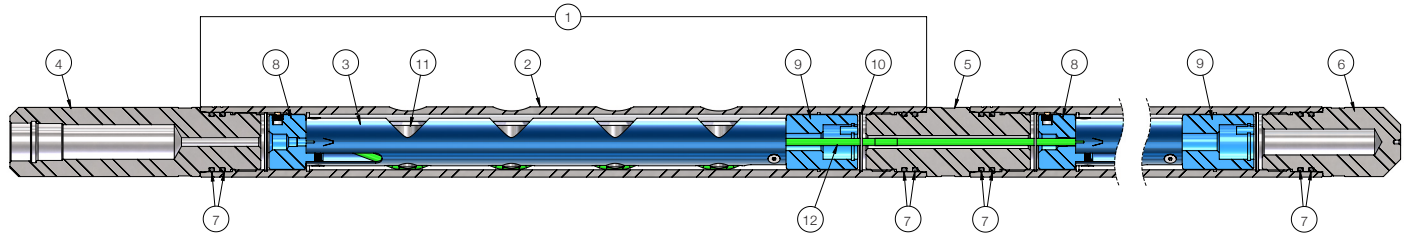
NR Not Recommended

2 in. (51 mm) Scalloped Hollow Carrier Gun - Threaded



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0222-A**-041	2 in. (51 mm) Gun Assy.	0°
		0222-A**-046	2 in. (51 mm) Gun Assy.	60°
		0222-A**-044	2 in. (51 mm) Gun Assy.	90°
		0222-A**-042	2 in. (51 mm) Gun Assy.	180°
	2	0222-1**-041	2 in. (51 mm) Carrier Body	0°
		0222-1**-046	2 in. (51 mm) Carrier Body	60°
		0222-1**-044	2 in. (51 mm) Carrier Body	90°
		0222-1**-042	2 in. (51 mm) Carrier Body	180°
	3	0321-5**-041	Charge Tube	0°
		0321-5**-046	Charge Tube	60°
		0321-5**-044	Charge Tube	90°
		0321-5**-042	Charge Tube	180°
Common Parts	4	0222-000-001	Top Sub	
	5	0222-000-002	Tandem Sub	
	6	0222-000-003	Gun Bottom	
	7	0111-221-V95	O-Ring	
	8	0222-500-121	Chg. Tube End Fitting - Aligning	
	9	0222-500-131	Chg. Tube End Fitting	
	10	0222-200-037	Snap Ring	
	11		Shaped Charge	
12		Detonating Cord		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F, G	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F, G	HMX
<i>RTG-2106-331</i>	GH	6.5	F, G	RDX
CIR-2107-4T251	KO	7.0	F, G	HMX
CIR-2107-4T381	KO	7.0	F, G	HMX
CIR-2107-4C501	KO	7.0	F, G	HMX
CIR-2107-4C631	KO	7.0	F, G	HMX

xxx-xxxx-8xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

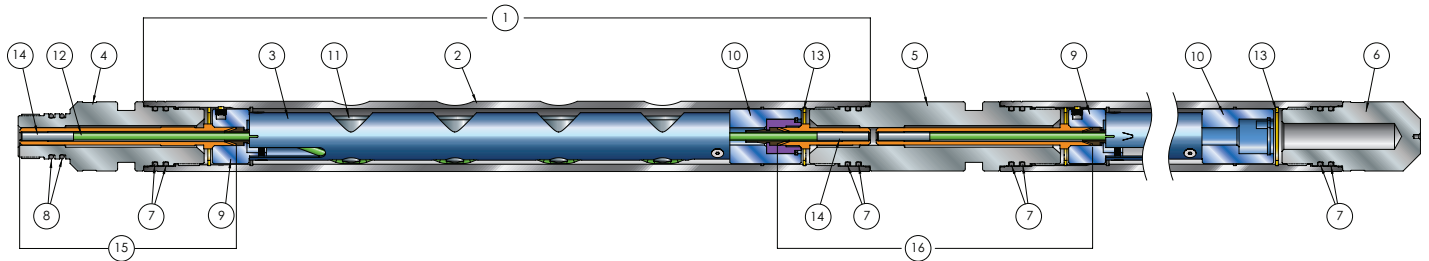
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0222-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.03 [52]			
Nominal Thickness (in) [mm]	0.21 [5.3]			
Gun Swell (in) [mm]: Ambient Fluid.	2.16 [55] ≤ 7.0g	2.18 [55] ≤ 7.0g	2.16 [55] ≤ 6.5g	2.17 [55] ≤ 6.5g
Gun Swell (in) [mm]: Ambient Gas.	2.21 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.21 [56] ≤ 7.0g
Minimum Recommended Restriction (in) [mm]	2.50 [64]			
Maximum Pressure (psi) [MPa]	17,000 [117]	20,000 [138]		
Distance to First Scallop (in) [mm]	6.00 [152]			
Approximate Weight - Loaded (lb/ft) [kg/m]	6.00 [8.93]			
Max. Tension (lbf) [kN]	135,000 [601]			

N/R Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Hydraulic, Ball Drop, Safety Impact or Direct Impact
 Initiation Point: Top or bottom fired options available for TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0522-A**-041	2 in. (51 mm) TCP Gun Assy.	0°
		0522-A**-046	2 in. (51 mm) TCP Gun Assy.	60°
		0522-A**-044	2 in. (51 mm) TCP Gun Assy.	90°
		0522-A**-042	2 in. (51 mm) TCP Gun Assy.	180°
	2	0222-1**-041	2 in. (51 mm) Carrier Body	0°
		0222-1**-046	2 in. (51 mm) Carrier Body	60°
		0222-1**-044	2 in. (51 mm) Carrier Body	90°
		0222-1**-042	2 in. (51 mm) Carrier Body	180°
	3	0321-5**-041	Charge Tube	0°
		0321-5**-046	Charge Tube	60°
		0321-5**-044	Charge Tube	90°
		0321-5**-042	Charge Tube	180°
Common Parts	4	0522-000-021	TCP Grooved Top Sub	
	5	0522-000-032	TCP Grooved Tandem Sub	
	6	0222-000-003	Gun Bottom	
	7	0111-221-090	O-Ring	
	8	0111-215-090	O-Ring	
	9	0522-500-121	Chg. Tube End Fitting - Aligning	
	10	0222-500-131	Chg. Tube End Fitting	
	11		Shaped Charge	
	12		Detonating Cord	
	13	0222-200-037	Snap Ring	
	14	BOOSTER-HMX-600-T	Bi-Directional Booster	
15	0520-500-150	Top TCP Booster Transfer Kit		
16	0520-500-160	Tandem TCP Booster Transfer Kit		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F, G	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F, G	HMX
RTG-2106-331	GH	6.5	F, G	RDX
CIR-2107-4T251	KO	7.0	F, G	HMX
CIR-2107-4T381	KO	7.0	F, G	HMX
CIR-2107-4C501	KO	7.0	F, G	HMX
CIR-2107-4C631	KO	7.0	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0522-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.03 [52]			
Nominal Thickness (in) [mm]	0.21 [5.3]			
Gun Swell (in) [mm]: Ambient Fluid.	2.16 [55] ≤ 7.0g	2.18 [55] ≤ 7.0g	2.16 [55] ≤ 6.5g	2.17 [55] ≤ 6.5g
Gun Swell (in) [mm]: Ambient Gas.	2.21 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.21 [56] ≤ 7.0g
Minimum Recommended Restriction (in) [mm]	2.50 [64]			
Maximum Pressure (psi) [MPa]	17,000 [117]	20,000 [138]		
Distance to First Scallop (in) [mm]	6.00 [152]			
Approximate Weight - Loaded (lb/ft) [kg/m]	6.00 [8.93]			
Max. Tension (lb) [kN]	135,000 [601]			

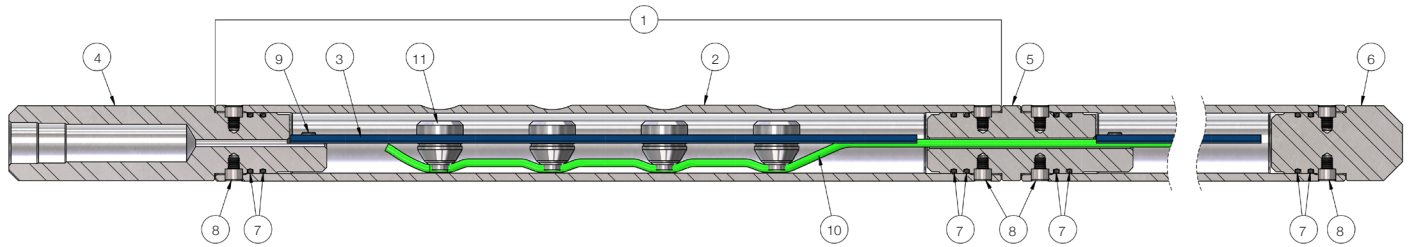
NR Not Recommended

2 in. (51 mm) Scalloped Hollow Carrier Gun - Bolted



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube or flat strip option (for 0° and 180°)
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0321-A**-041	2 in. (51 mm) Gun Assy.	0°
		0321-A**-046	2 in. (51 mm) Gun Assy.	60°
		0321-A**-044	2 in. (51 mm) Gun Assy.	90°
		0321-A**-042	2 in. (51 mm) Gun Assy.	180°
	2	0321-***-041	2 in. (51 mm) Carrier Body	0°
		0321-***-046	2 in. (51 mm) Carrier Body	60°
		0321-***-044	2 in. (51 mm) Carrier Body	90°
		0321-***-042	2 in. (51 mm) Carrier Body	180°
	3	0321-800-†††	Charge Strip	0°
		0321-5**-046	Charge Tube	60°
		0321-5**-044	Charge Tube	90°
		0321-800-†††	Charge Tube	180°
Common Parts	4	0321-000-001	Top Sub	
	5	0321-000-002	Tandem Sub	
	6	0321-000-004	Gun Bottom	
	7	0111-220-V95	O-Ring	
	8	0321-000-019	Cap Screw	
	9	0320-000-003	Cap Screw	
10		Detonating Cord		
11		Shaped Charge		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F, G	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F, G	HMX
<i>RTG-2106-331</i>	GH	6.5	F, G	RDX
CIR-2107-4T251	KO	7.0	F, G	HMX
CIR-2107-4T381	KO	7.0	F, G	HMX
CIR-2107-4C501	KO	7.0	F, G	HMX
CIR-2107-4C631	KO	7.0	F, G	HMX

xxx-xxxx-8xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

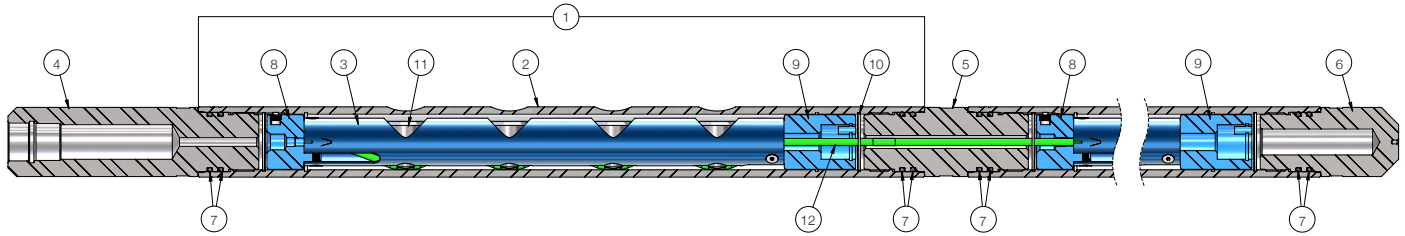
** Gun assembly length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0321-A02-046)
 *** Carrier body length. Example: Use "021" for a 21 in carrier
 ††† Number of shots on the charge strip. Example: Use "080" for 80 shots.

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.03 [52]			
Nominal Thickness (in) [mm]	0.21 [5.3]			
Gun Swell (in) [mm]: Ambient Fluid.	2.16 [55] ≤ 7.0g	2.18 [55] ≤ 7.0g	2.16 [55] ≤ 6.5g	2.17 [55] ≤ 6.5g
Gun Swell (in) [mm]: Ambient Gas.	2.21 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.20 [56] ≤ 7.0g	2.21 [56] ≤ 7.0g
Minimum Recommended Restriction (in) [mm]	2.50 [64]			
Maximum Pressure (psi) [MPa]	17,000 [117]	20,000 [138]		
Distance to First Scallop (in) [mm]	6.00 [152]			
Approximate Weight - Loaded (lb/ft) [kg/m]	6.00 [8.93]			
Max. Tension (lb) [kN]	55,000 [245]			

N/R Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0222-A**-061	2 in. (51 mm) Gun Assy.	0°
		0222-HPA**-061†	2 in. (51 mm) Gun Assy.	0°
		0222-A**-066	2 in. (51 mm) Gun Assy.	60°
		0222-A**-062	2 in. (51 mm) Gun Assy.	180°
	2	0222-1**-061	2 in. (51 mm) Carrier Body	0°
		0222-HP1**-061-2†	2 in. (51 mm) Carrier Body	0°
		0222-1**-066	2 in. (51 mm) Carrier Body	60°
	3	0321-5**-061	Charge Tube	0°
		0321-5**-066	Charge Tube	60°
0321-5**-062		Charge Tube	180°	
Common Parts	4	0222-000-001	Top Sub	
	5	0222-000-002	Tandem Sub	
	6	0222-000-003	Gun Bottom	
	7	0111-221-V95	O-Ring	
	8	0222-500-121	Chg. Tube End Fitting - Aligning	
	9	0222-500-131	Chg. Tube End Fitting	
	10	0222-200-037	Snap Ring	
11		Shaped Charge		
12		Detonating Cord		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F	HMX
<i>RTG-2106-331</i>	GH	6.5	F	RDX
CIR-2107-4T251	KO	7.0	F	HMX
CIR-2107-4T381	KO	7.0	F	HMX
CIR-2107-4C501	KO	7.0	F	HMX
CIR-2107-4C631	KO	7.0	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0222-A02-066)

† HP in the part number indicates a higher pressure rating

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)			
	HP 0° †	0°	60°	180°
Nominal O.D. (in) [mm]	2.03 [52]			
Nominal Thickness (in) [mm]	0.21 [5.3]			
Gun Swell (in) [mm]: Ambient Fluid.	2.19 [56] ≤ 7.0g		2.18 [55] ≤ 7.0g	No Test
Gun Swell (in) [mm]: Ambient Gas.	NR		2.22 [66.4] ≤ 7.0g	NR
Minimum Recommended Restriction (in) [mm]	2.50 [63]			
Maximum Pressure (psi) [MPa]	25,000 [172]	13,000 [90]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]			
Approximate Weight - Loaded (lb/ft) [kg/m]	7.0 [10.42]			
Max. Tension (lbf) [kN]	135,000 [601]			

NR Not Recommended

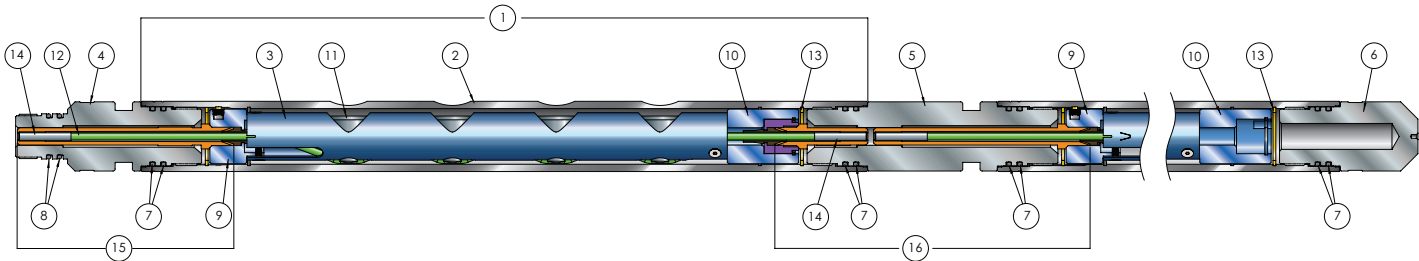
† HP High Pressure, guns containing HP in the part number

2 in. (51 mm) Scalloped Hollow Carrier Gun - TCP



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: TCP: Hydraulic, Ball Drop, Safety Impact or Direct Impact
 Initiation Point: Top or bottom fired options available for TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components			
ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	0522-A**-061	2 in. (51 mm) TCP Gun Assy.	0°
	0522-A**-066	2 in. (51 mm) TCP Gun Assy.	60°
	0522-A**-062	2 in. (51 mm) TCP Gun Assy.	180°
	0222-1**-061	2 in. (51 mm) Carrier Body	0°
	0222-1**-066	2 in. (51 mm) Carrier Body	60°
	0222-1**-062	2 in. (51 mm) Carrier Body	180°
	0321-5**-061	Charge Tube	0°
	0321-5**-066	Charge Tube	60°
	0321-5**-062	Charge Tube	180°
Common Parts	0522-000-021	TCP Grooved Top Sub	
	0522-000-032	TCP Grooved Tandem Sub	
	0222-000-003	Gun Bottom	
	0111-221-090	O-Ring	
	0111-215-090	O-Ring	
	0522-500-121	Chg. Tube End Fitting - Aligning	
	0222-500-131	Chg. Tube End Fitting	
		Shaped Charge	
		Detonating Cord	
	0222-200-037	Snap Ring	
BOOSTER-HMX-600-T	Bi-Directional Booster		
0520-500-150	Top TCP Booster Transfer Kit		
0520-500-160	Tandem TCP Booster Transfer Kit		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F	HMX
<i>RTG-2106-331</i>	GH	6.5	F	RDX
CIR-2107-4T251	KO	7.0	F	HMX
CIR-2107-4T381	KO	7.0	F	HMX
CIR-2107-4C501	KO	7.0	F	HMX
CIR-2107-4C631	KO	7.0	F	HMX

xxx-xxxx-8xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

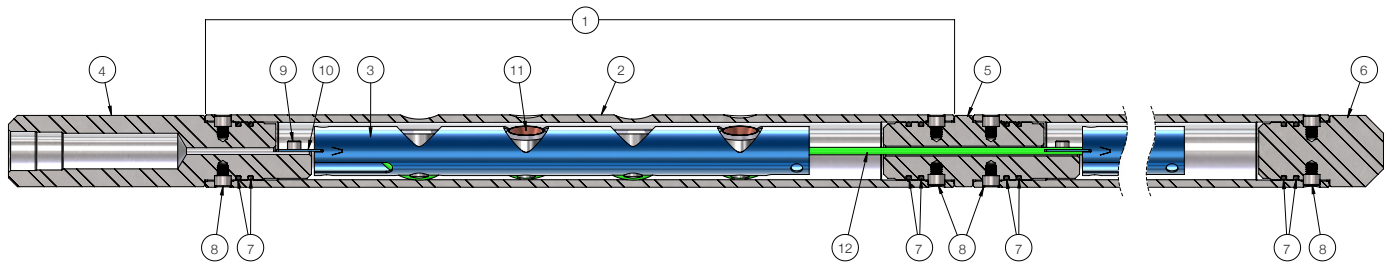
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0522-A02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	2.03 [52]		
Nominal Thickness (in) [mm]	0.21 [5.3]		
Gun Swell (in) [mm]: Ambient Fluid.	2.19 [56] ≤ 7.0g	2.18 [55] ≤ 7.0g	No Test
Gun Swell (in) [mm]: Ambient Gas.	NR	2.22 [66.4] ≤ 7.0g	NR
Minimum Recommended Restriction (in) [mm]	2.50 [63]		
Maximum Pressure (psi) [MPa]	13,000 [90]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]		
Approximate Weight - Loaded (lb/ft) [kg/m]	7.0 [10.42]		
Max. Tension (lb) [kN]	135,000 [601]		

NR Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components			
ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	0321-A**-061	2 in. (51 mm) Gun Assy.	0°
	0321-A**-066	2 in. (51 mm) Gun Assy.	60°
	0321-A**-062	2 in. (51 mm) Gun Assy.	180°
	0321-***-061	2 in. (51 mm) Carrier Body	0°
	0321-***-066	2 in. (51 mm) Carrier Body	60°
	0321-***-062	2 in. (51 mm) Carrier Body	180°
	0321-5**-061	Charge Tube	0°
	0321-5**-066	Charge Tube	60°
	0321-5**-062	Charge Tube	180°
Common Parts	0321-000-001	Top Sub	
	0321-000-002	Tandem Sub	
	0321-000-004	Gun Bottom	
	0111-220-V95	O-Ring	
	0321-000-019	Cap Screw	
	0320-000-003	Cap Screw	
	0321-500-031	Charge Tube Mounting Piece	
		Shaped Charge	
		Detonating Cord	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2104-421T	SDP	4.0	F	HMX
<u>RTG-2107-421T</u>	SDP	7.0	F	HMX
RTG-2106-331	GH	6.5	F	RDx
CIR-2107-4T251	KO	7.0	F	HMX
CIR-2107-4T381	KO	7.0	F	HMX
CIR-2107-4C501	KO	7.0	F	HMX
CIR-2107-4C631	KO	7.0	F	HMX

xxx-xxxx-3xxx for RDx, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 KO indicates KnockOut circulating shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0321-A02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	2.03 [52]		
Nominal Thickness (in) [mm]	0.21 [5.3]		
Gun Swell (in) [mm]: Ambient Fluid.	2.19 [56] ≤ 7.0g	2.18 [55] ≤ 7.0g	No Test
Gun Swell (in) [mm]: Ambient Gas.	NR	NR	NR
Minimum Recommended Restriction (in) [mm]	2.25 [57]		
Maximum Pressure (psi) [MPa]	13,000 [90]	20,000 [138]	18,000 [124]
Distance to First Scallop (in) [mm]	5.50 [140]		
Approximate Weight - Loaded (lb/ft) [kg/m]	7.0 [10.42]		
Max. Tension (lbf) [kN]	55,000 [245]		

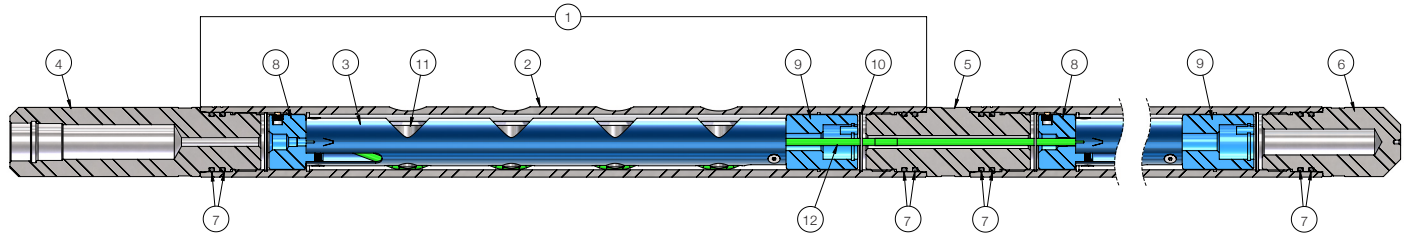
NR Not Recommended

2-1/2 in. (64 mm) Scalloped Hollow Carrier Gun - Threaded



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0228-A**-041	2-1/2 in. (64 mm) Gun Assy.	0°
		0228-A**-046	2-1/2 in. (64 mm) Gun Assy.	60°
		0228-A**-044	2-1/2 in. (64 mm) Gun Assy.	90°
		0228-A**-042	2-1/2 in. (64 mm) Gun Assy.	180°
	2	0228-1**-041	2-1/2 in. (64 mm) Carrier Body	0°
		0228-1**-046	2-1/2 in. (64 mm) Carrier Body	60°
		0228-1**-044	2-1/2 in. (64 mm) Carrier Body	90°
		0228-1**-042	2-1/2 in. (64 mm) Carrier Body	180°
	3	0328-5**-041	Charge Tube	0°
		0328-5**-046	Charge Tube	60°
		0328-5**-044	Charge Tube	90°
		0328-5**-042	Charge Tube	180°
Common Parts	4	0228-000-001	Top Sub	
	5	0228-000-002	Tandem Sub	
	6	0228-000-003	Gun Bottom	
	7	0111-225-V95	O-Ring	
	8	0228-500-131	Chg. Tube End Fitting - Aligning	
	9	0228-500-131	Chg. Tube End Fitting	
	10	0228-200-037	Snap Ring	
	11		Shaped Charge	
12		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
	0520-500-150	Top TCP Booster Kit		
	0520-500-160	Tandem TCP Booster Kit		
		Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2512-421T	SDP	12.0	F	HMX
RTG-2512-431	GH	12.0	F	HMX
<i>FLO-2511-310B</i>	BH	11.0	F, G	RDX

xxx-xxx-3xxx for RDX, xxx-xxx-4xxx for HMX, xxx-xxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

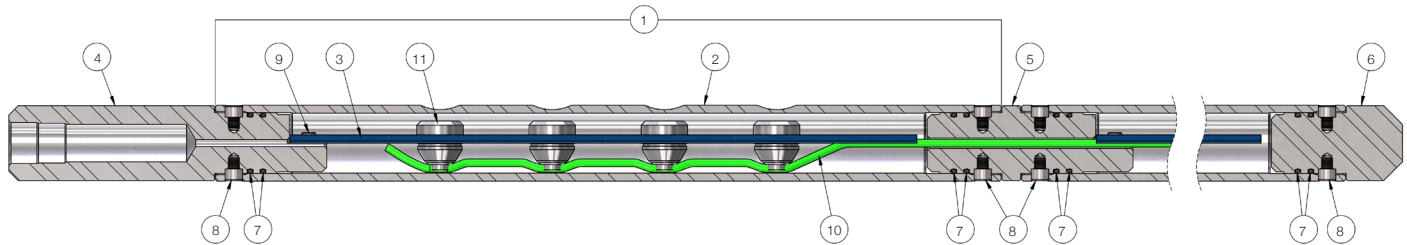
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0228-A02-046)

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.50 [64]			
Nominal Thickness (in) [mm]	0.25 [6.4]			
Gun Swell (in) [mm]: Ambient Fluid.	2.71 [69] ≤ 12.0g	2.69 [68] ≤ 12.0g	2.69 [68] ≤ 12.0g	2.69 [68] ≤ 12.0g
Gun Swell (in) [mm]: Ambient Gas.	N/R	No Test	No Test	2.66 [68] ≤ 11.0g
Minimum Recommended Restriction (in) [mm]	2.77 [70]			
Maximum Pressure (psi) [MPa]	13,000 [90]	20,000 [138]	18,000 [124]	
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	8.00 [11.91]			
Max. Tension (lbf) [kN]	80,000 [356]			

N/R Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube or flat strip option (for 0° and 180°)
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0328-A**-041	2-1/2 in. (64 mm) Gun Assy.	0°
		0328-A**-046	2-1/2 in. (64 mm) Gun Assy.	60°
		0328-A**-044	2-1/2 in. (64 mm) Gun Assy.	90°
		0328-A**-042	2-1/2 in. (64 mm) Gun Assy.	180°
	2	0328-***-041	2-1/2 in. (64 mm) Carrier Body	0°
		0328-***-046	2-1/2 in. (64 mm) Carrier Body	60°
		0328-***-044	2-1/2 in. (64 mm) Carrier Body	90°
		0328-***-042	2-1/2 in. (64 mm) Carrier Body	180°
	3	0328-800-†††	Charge Strip	0°
		0328-5**-046	Charge Tube	60°
		0328-5**-044	Charge Tube	90°
		0328-800-†††	Charge Tube	180°
Common Parts	4	0328-000-001	Top Sub	
	5	0328-000-002	Tandem Sub	
	6	0328-000-004	Gun Bottom	
	7	0111-224-V95	O-Ring	
	8	0328-000-019	Cap Screw	
	9	0320-000-003	Cap Screw	
	10		Detonating Cord	
11		Shaped Charge		

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F	HMX
<u>RTG-2512-431</u>	GH	12.0	F	HMX
<u>FLO-2511-310B</u>	BH	11.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun assembly length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0328-A02-046)
 *** Carrier body length. Example: Use "021" for a 21 in carrier
 ††† Number of shots on the charge strip. Example: Use "080" for 80 shots.

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.50 [64]			
Nominal Thickness (in) [mm]	0.25 [6.4]			
Gun Swell (in) [mm]: Ambient Fluid.	2.71 [69] ≤ 12.0g	2.69 [68] ≤ 12.0g	2.69 [68] ≤ 12.0g	2.69 [68] ≤ 12.0g
Gun Swell (in) [mm]: Ambient Gas.	NR	No Test	No Test	2.66 [68] ≤ 11.0g
Minimum Recommended Restriction (in) [mm]	2.77 [70]			
Maximum Pressure (psi) [MPa]	13,000 [90]	20,000 [138]	18,000 [124]	
Distance to First Scallop (in) [mm]	7.00 [178]			
Approximate Weight - Loaded (lb/ft) [kg/m]	8.00 [11.91]			
Max. Tension (lbf) [kN]	80,000 [356]			

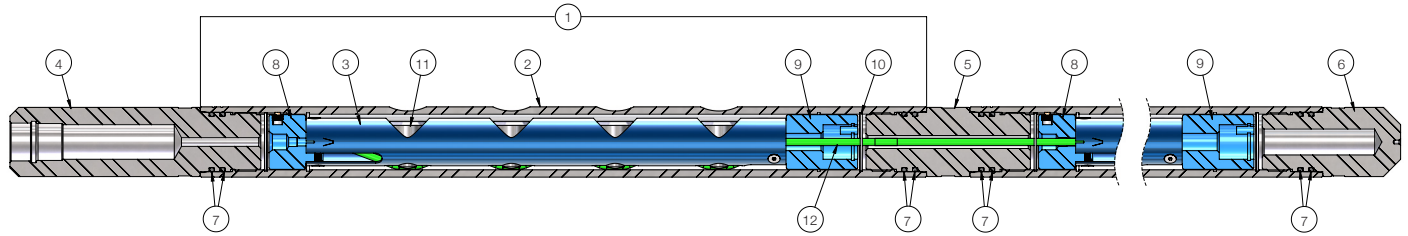
NR Not Recommended

2-1/2 in. (64 mm) Scalloped Hollow Carrier Gun - Threaded



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1	0228-A**-061	2-1/2 in. (64 mm) Gun Assy.	0°	
		0228-A**-066	2-1/2 in. (64 mm) Gun Assy.	60°	
	2	0228-1**-061	2-1/2 in. (64 mm) Carrier Body	0°	
		0228-1**-066	2-1/2 in. (64 mm) Carrier Body	60°	
	3	0328-5**-061	Charge Tube	0°	
		0328-5**-066	Charge Tube	60°	
Common Parts	4	0228-000-001	Top Sub		
	5	0228-000-002	Tandem Sub		
	6	0228-000-003	Gun Bottom		
	7	0111-225-V95	O-Ring		
	8	0228-500-131	Chg. Tube End Fitting - Aligning		
	9	0228-500-131	Chg. Tube End Fitting		
	10	0228-200-037	Snap Ring		
	11		Shaped Charge		
	12		Detonating Cord		
	TCP Conversion Kits (Not Pictured)				
			0520-500-150	Top TCP Booster Kit	
			0520-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2512-421T	SDP	12.0	F	HMX
RTG-2512-431	GH	12.0	F	HMX
<i>FLO-2511-310B</i>	BH	11.0	F	RDX

xxx-xxx-3xxx for RDX, xxx-xxx-4xxx for HMX, xxx-xxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

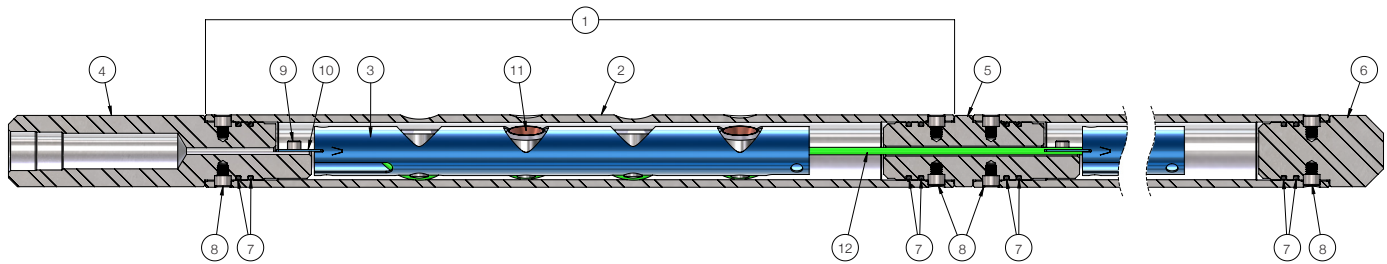
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0228-A02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)	
	0°	60°
Nominal O.D. (in) [mm]	2.50 [64]	
Nominal Thickness (in) [mm]	0.25 [6.4]	
Gun Swell (in) [mm]: Ambient Fluid.	2.71 [69] ≤ 11.0g	2.68 [68] ≤ 12.0g
Gun Swell (in) [mm]: Ambient Gas.	NR	NR
Minimum Recommended Restriction (in) [mm]	2.73 [69]	
Maximum Pressure (psi) [MPa]	8,000 [55]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]	
Approximate Weight - Loaded (lb/ft) [kg/m]	9.00 [13.39]	
Max. Tension (lbf) [kN]	80,000 [356]	

NR Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Bolted and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 40 grains/foot, FLAT RIBBON
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0328-A**-061	2-1/2 in. (64 mm) Gun Assy.	0°
		0328-A**-066	2-1/2 in. (64 mm) Gun Assy.	60°
	2	0328-***-061	2-1/2 in. (64 mm) Carrier Body	0°
		0328-***-066	2-1/2 in. (64 mm) Carrier Body	60°
	3	0328-5**-061	Charge Tube	0°
		0328-5**-066	Charge Tube	60°
Common Parts	4	0328-000-001	Top Sub	
	5	0328-000-002	Tandem Sub	
	6	0328-000-004	Gun Bottom	
	7	0111-224-V95	O-Ring	
	8	0328-000-019	Cap Screw	
	9	0320-000-003	Cap Screw	
	10	0325-500-031	Charge Tube Mounting Piece	
	11		Shaped Charge	
	12		Detonating Cord	

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F	HMX
<u>RTG-2512-431</u>	GH	12.0	F	HMX
<u>FLO-2511-310B</u>	BH	11.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.

Example: Use "02" for 2ft gun assembly; etc. (0328-A02-066)

*** Carrier body length. Example: Use "021" for a 21 in carrier

††† Number of shots on the charge strip. Example: Use "080" for 80 shots.

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)	
	0°	60°
Nominal O.D. (in) [mm]	2.50 [64]	
Nominal Thickness (in) [mm]	0.25 [6.4]	
Gun Swell (in) [mm]: Ambient Fluid.	2.71 [69] ≤ 11.0g	2.68 [68] ≤ 12.0g
Gun Swell (in) [mm]: Ambient Gas.	NR	NR
Minimum Recommended Restriction (in) [mm]	2.73 [69]	
Maximum Pressure (psi) [MPa]	8,000 [55]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]	
Approximate Weight - Loaded (lb/ft) [kg/m]	9.00 [13.39]	
Max. Tension (lbf) [kN]	80,000 [356]	

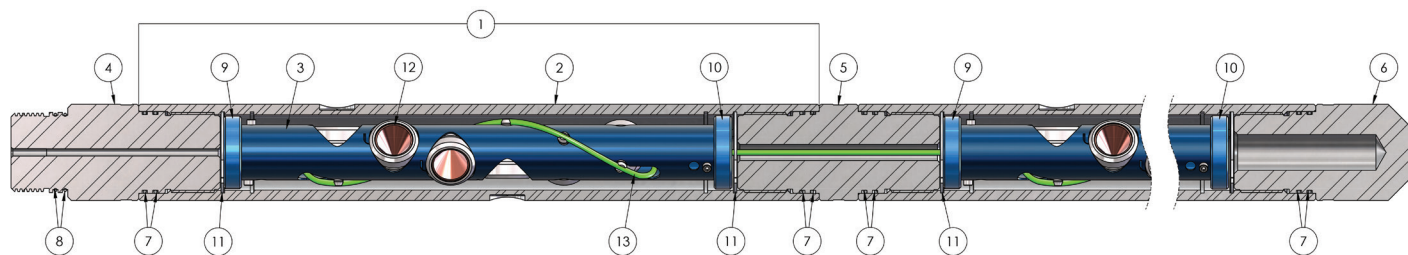
NR Not Recommended

2-3/4 in. (70 mm) EXP Scalloped Hollow Carrier Gun



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Phase	
Gun Assy.	1B	0362-B**-041†	2-3/4 in. (70 mm) Gun Assy.	0°
		0362-B**-046†	2-3/4 in. (70 mm) Gun Assy.	60°
		0362-B**-044†	2-3/4 in. (70 mm) Gun Assy.	90°
		0362-B**-043†	2-3/4 in. (70 mm) Gun Assy.	120°
		0362-B**-042†	2-3/4 in. (70 mm) Gun Assy.	180°
	1D	0362-D**-041‡	2-3/4 in. (70 mm) Gun Assy.	0°
		0362-D**-046‡	2-3/4 in. (70 mm) Gun Assy.	60°
		0362-D**-044‡	2-3/4 in. (70 mm) Gun Assy.	90°
		0362-D**-043‡	2-3/4 in. (70 mm) Gun Assy.	120°
	2	0362-D**-042‡	2-3/4 in. (70 mm) Gun Assy.	180°
		0362-1**-041	2-3/4 in. (70 mm) Carrier Body	0°
		0362-1**-046	2-3/4 in. (70 mm) Carrier Body	60°
		0362-1**-044	2-3/4 in. (70 mm) Carrier Body	90°
		0362-1**-043	2-3/4 in. (70 mm) Carrier Body	120°
	3	0362-1**-042	2-3/4 in. (70 mm) Carrier Body	180°
0362-7**-041		Charge Tube	0°	
0362-7**-046		Charge Tube	60°	
0362-7**-044		Charge Tube	90°	
0362-7**-043		Charge Tube	120°	
Common Parts	4	0362-000-101	Top Sub	
		0362-000-002	Tandem Sub	
		0362-000-389A	Alternate Tandem Sub w/Port	
		0362-000-489A	Alternate Window Tandem Sub	
		0362-000-003	Gun Bottom	
		0111-227-V95	O-Ring	
		0111-227-V95	O-Ring	
		0362-700-031	Chg. Tube End Fitting - Aligning	
		0362-700-031	Chg. Tube End Fitting	
		0462-200-037	Snap Ring	
			Shaped Charge	
			Detonating Cord	
		TCP Conversion Kits (Not Pictured)		
	0504-500-150	Top TCP Booster Kit		
	0504-500-160	Tandem TCP Booster Kit		
		Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F, G	HMX
<u>EXP-2716-421T</u>	SDP	16.0	F, G	HMX
<u>EXP-2818-421T</u>	SDP	18.0	F, G	HMX
RTG-2512-371T	EQF	12.0	F, G	RDx
<u>EXP-2716-371T</u>	EQF	16.0	F, G	RDx
EXP-2716-372T	EQF	16.0	F, G	RDx
FLO-2511-310B	BH	11.0	F, G	RDx
FLO-2715-310B	BH	15.0	F, G	RDx

xxx-xxxx-3xxx for RDx, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.75 [70]			
Nominal Thickness (in) [mm]	0.31 [7.9]			
Gun Swell (in) [mm]: Ambient Fluid.	No Test	2.97 [75] ≤ 18.0g	2.97 [75] ≤ 18.0g	No Test
Gun Swell (in) [mm]: Ambient Gas.	No Test	2.99 [76] ≤ 18.0g	2.99 [76] ≤ 18.0g	No Test
Minimum Recommended Restriction (in) [mm]	3.05 [77]			
Maximum Pressure (psi) [MPa]	20,000 [138]			
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	11.0 [16.3]			
Max. Tension (lbf) [kN]	210,000 [934]			

N/R Not Recommended

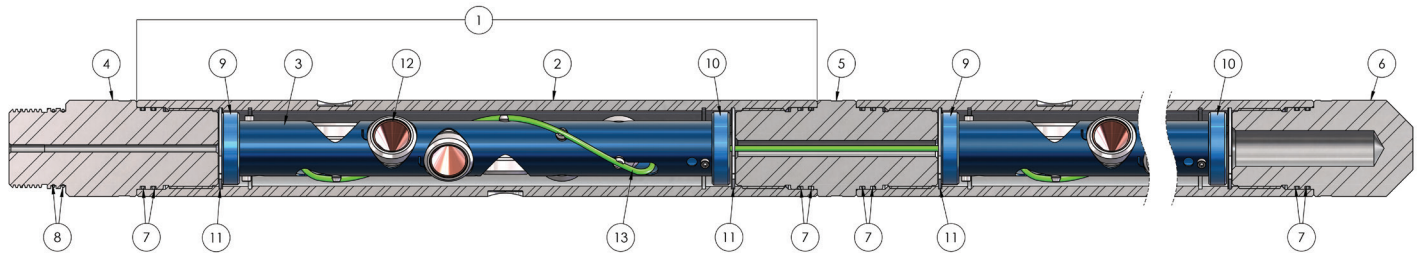
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-046)

† B • Light wall charge tube 1-5/8" diameter .049 wall • Detonating cord can be installed inside or outside of charge tube

‡ D • Heavy wall charge tube 1-3/4" diameter .065 wall • Detonating cord must be installed inside the charge tube

6 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1B	0362-B**-066†	2-3/4 in. (70 mm) Gun Assy.	60°
	1D	0362-D**-066‡	2-3/4 in. (70 mm) Gun Assy.	60°
	2	0362-1**-066	2-3/4 in. (70 mm) Carrier Body	60°
	3	0362-7**-066	Charge Tube	60°
Common Parts	4	0362-000-101	Top Sub	
	5	0362-000-002	Tandem Sub	
	5A	0362-000-389A	Alternate Tandem Sub w/Port	
	5B	0362-000-489A	Alternate Window Tandem Sub	
	6	0362-000-003	Gun Bottom	
	7	0111-227-V95	O-Ring	
	8	0111-227-V95	O-Ring	
	9	0362-700-031	Chg. Tube End Fitting - Aligning	
	10	0362-700-031	Chg. Tube End Fitting	
	11	0462-200-037	Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
	TCP Conversion Kits (Not Pictured)			
		0504-500-150	Top TCP Booster Kit	
		0504-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-046)

† B • Light wall charge tube 1-5/8" diameter .049 wall • Detonating cord can be installed inside or outside of charge tube

‡ D • Heavy wall charge tube 1-3/4" diameter .065 wall • Detonating cord must be installed inside the charge tube

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F	HMX
<u>EXP-2716-421T</u>	SDP	16.0	F	HMX
<u>EXP-2818-421T</u>	SDP	18.0	F	HMX
RTG-2512-371T	EQF	12.0	F	RDX
<u>EXP-2716-371T</u>	EQF	16.0	F	RDX
EXP-2716-372T	EQF	16.0	F	RDX
<i>FLO-2511-310B</i>	BH	11.0	F	RDX
<i>FLO-2715-310B</i>	BH	15.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	2.75 [70]
Nominal Thickness (in) [mm]	0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid.	2.97 [75] ≤ 18.0g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	3.05 [77]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	11.0 [16.3]
Max. Tension (lb/ft) [kN]	210,000 [934]

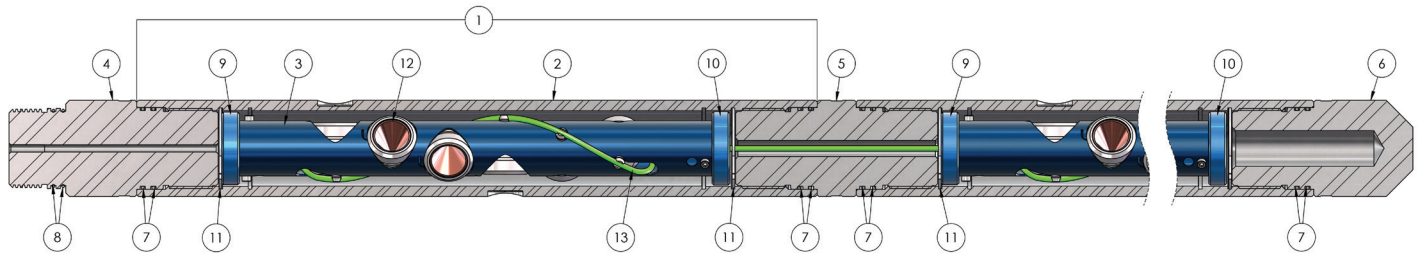
NR Not Recommended

2-7/8 in. (73 mm) EXP Scalloped Hollow Carrier Gun



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1B	0364-B**-041†	2-7/8 in. (73 mm) Gun Assy.	0°
		0364-B**-046†	2-7/8 in. (73 mm) Gun Assy.	60°
		0364-B**-044†	2-7/8 in. (73 mm) Gun Assy.	90°
		0364-B**-042†	2-7/8 in. (73 mm) Gun Assy.	180°
	1D	0364-D**-041†	2-7/8 in. (73 mm) Gun Assy.	0°
		0364-D**-046†	2-7/8 in. (73 mm) Gun Assy.	60°
		0364-D**-044†	2-7/8 in. (73 mm) Gun Assy.	90°
	2	0364-D**-042†	2-7/8 in. (73 mm) Gun Assy.	180°
		0364-1**-041	2-7/8 in. (73 mm) Carrier Body	0°
		0364-1**-046	2-7/8 in. (73 mm) Carrier Body	60°
	3	0364-1**-044	2-7/8 in. (73 mm) Carrier Body	90°
		0364-1**-042	2-7/8 in. (73 mm) Carrier Body	180°
		0362-7**-041	Charge Tube	0°
Common Parts	4	0362-000-101	Top Sub	
	5	0362-000-002	Tandem Sub	
	5A	0362-000-389A	Alternate Tandem Sub w/Port	
	5B	0362-000-489A	Alternate Window Tandem Sub	
	6	0362-000-003	Gun Bottom	
	7	0111-227-V95	O-Ring	
	8	0111-227-V95	O-Ring	
	9	0362-700-031	Chg. Tube End Fitting - Aligning	
	10	0362-700-031	Chg. Tube End Fitting	
	11	0462-200-037	Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
	TCP Conversion Kits (Not Pictured)			
		0504-500-150	Top TCP Booster Kit	
		0504-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-046)

† B • Light wall charge tube 1-5/8" diameter .049 wall • Detonating cord can be installed inside or outside of charge tube

‡ D • Heavy wall charge tube 1-3/4" diameter .065 wall • Detonating cord must be installed inside the charge tube

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F, G	HMX
<u>EXP-2716-421T</u>	SDP	16.0	F, G	HMX
<u>EXP-2818-421T</u>	SDP	18.0	F, G	HMX
RTG-2512-371T	EQF	12.0	F, G	RDx
<u>EXP-2716-371T</u>	EQF	16.0	F, G	RDx
EXP-2716-372T	EQF	16.0	F, G	RDx
FLO-2511-310B	BH	11.0	F, G	RDx
FLO-2715-310B	BH	15.0	F, G	RDx

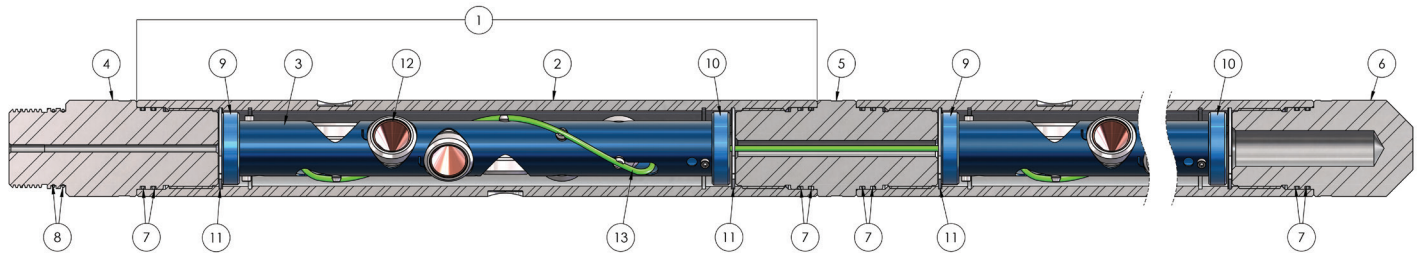
xxx-xxxx-3xxx for RDx, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	2.88 [73]			
Nominal Thickness (in) [mm]	0.36 [9.1]			
Gun Swell (in) [mm]: Ambient Fluid.	No Test	3.08 [78] ≤ 18.0g	No Test	
Gun Swell (in) [mm]: Ambient Gas.	No Test	3.14 [80] ≤ 18.0g	No Test	
Minimum Recommended Restriction (in) [mm]	3.25 [83]			
Maximum Pressure (psi) [MPa]	20,000 [138]			
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	12.0 [17.8]			
Max. Tension (lbf) [kN]	245,000 [1,090]			

N/R Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1B	0364-B**-066†	2-7/8 in. (73 mm) Gun Assy.	60°
	1D	0364-D**-066†	2-7/8 in. (73 mm) Gun Assy.	60°
	2	0364-1**-066	2-7/8 in. (73 mm) Carrier Body	60°
	3	0362-7**-066	Charge Tube	60°
Common Parts	4	0362-000-101	Top Sub	
	5	0362-000-002	Tandem Sub	
	5A	0362-000-389A	Alternate Tandem Sub w/Port	
	5B	0362-000-489A	Alternate Window Tandem Sub	
	6	0362-000-003	Gun Bottom	
	7	0111-227-V95	O-Ring	
	8	0111-227-V95	O-Ring	
	9	0362-700-031	Chg. Tube End Fitting - Aligning	
	10	0362-700-031	Chg. Tube End Fitting	
	11	0462-200-037	Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
	TCP Conversion Kits (Not Pictured)			
		0504-500-150	Top TCP Booster Kit	
		0504-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-06)

† B • Light wall charge tube 1-5/8" diameter .049 wall • Detonating cord can be installed inside or outside of charge tube

‡ D • Heavy wall charge tube 1-3/4" diameter .065 wall • Detonating cord must be installed inside the charge tube

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>RTG-2512-421T</u>	SDP	12.0	F, G	HMX
<u>EXP-2716-421T</u>	SDP	16.0	F, G	HMX
<u>EXP-2818-421T</u>	SDP	18.0	F	HMX
RTG-2512-371T	EQF	12.0	F, G	RDX
<u>EXP-2716-371T</u>	EQF	16.0	F, G	RDX
EXP-2716-372T	EQF	16.0	F, G	RDX
<i>FLO-2511-310B</i>	BH	11.0	F, G	RDX
<i>FLO-2715-310B</i>	BH	15.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQUAfrac® consistent hole shaped charges

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	2.75 [70]
Nominal Thickness (in) [mm]	0.31 [9.1]
Gun Swell (in) [mm]: Ambient Fluid.	3.08 [78] ≤ 18.0g
Gun Swell (in) [mm]: Ambient Gas.	3.14 [80] ≤ 16.0g
Minimum Recommended Restriction (in) [mm]	3.25 [83]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	13.0 [19.3]
Max. Tension (lbf) [kN]	245,000 [1,090]

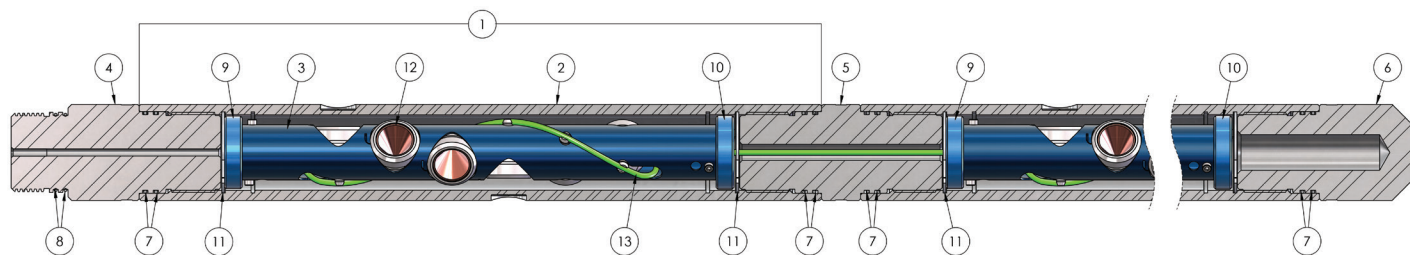
NR Not Recommended

3-1/8 in. (79 mm) EXP Scalloped Hollow Carrier Gun



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase	
Gun Assy.	1	0363-B**-041	3-1/8 in. (86 mm) Gun Assy.	1	0°
		0363-A**-041	3-1/8 in. (86 mm) Gun Assy.	2	0°
		0363-B**-046	3-1/8 in. (86 mm) Gun Assy.	1	60°
		0363-A**-046	3-1/8 in. (86 mm) Gun Assy.	2	60°
		0363-B**-044	3-1/8 in. (86 mm) Gun Assy.	1	90°
		0363-A**-044	3-1/8 in. (86 mm) Gun Assy.	2	90°
		0363-B**-042	3-1/8 in. (86 mm) Gun Assy.	1	180°
	0363-A**-042	3-1/8 in. (86 mm) Gun Assy.	2	180°	
	2	0363-1**-041	3-1/8 in. (86 mm) Carrier Body		0°
		0363-1**-046	3-1/8 in. (86 mm) Carrier Body		60°
		0363-1**-044	3-1/8 in. (86 mm) Carrier Body		90°
		0363-1**-042	3-1/8 in. (86 mm) Carrier Body		180°
	3	0363-17**-041	Charge Tube	1	0°
0363-5**-041		Charge Tube	2	0°	
0363-17**-046		Charge Tube	1	60°	
0363-5**-046		Charge Tube	2	60°	
0363-17**-044		Charge Tube	1	90°	
0363-5**-044		Charge Tube	2	90°	
		0363-17**-042	Charge Tube	1	180°
		0363-5**-042	Charge Tube	2	180°
Common Parts	4	0363-000-001	Top Sub		
	5	0363-000-002	Tandem Sub		
	5A	0363-000-389A	Alternate Tandem Sub w/Port		
	5B	0363-000-489A	Alternate Window Tandem Sub		
	6	0363-000-003	Gun Bottom		
	7	0111-230-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0363-1700-031	Chg. Tube End Fitting - Aligning	1	
		0363-1700-031	Chg. Tube End Fitting - Aligning	2	
	10	0363-1700-541	Chg. Tube End Fitting	1	
		0363-1700-031	Chg. Tube End Fitting	2	
	11		Snap Ring		
	12		Shaped Charge		
13		Detonating Cord			
TCP Conversion Kits (Not Pictured)					
	0503-500-150	Top TCP Booster Kit			
	0503-500-160	Tandem TCP Booster Kit			
		Associated Hardware (Page 72)			

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-046)

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-3321-421T</u>	1	SDP	21.0	F	HMX
<u>EXP-3323-423T</u>	1	SDP	22.7	F	HMX
EXP-4521-423T	2	SDP	21.0	F	HMX
<u>EXP-3323-471T</u>	1	EQF	23.0	F	HMX
<i>EXP-3319-302</i>	1	DP	19.0	F, G	RDX
<i>EXP-3323-302</i>	1	DP	22.7	F	RDX
<u>EXP-3319-431</u>	1	GH	19.0	F, G	HMX
<u>EXP-3321-431</u>	1	GH	21.0	F	HMX
<u>EXP-4521-431</u>	2	GH	21.0	F	HMX
<u>EXP-3323-431</u>	1	GH	22.7	F	HMX
<i>FLO-4521-310B</i>	2	BH	21.0	F	RDX
<i>FLO-3323-310B</i>	1	BH	22.7	F	RDX

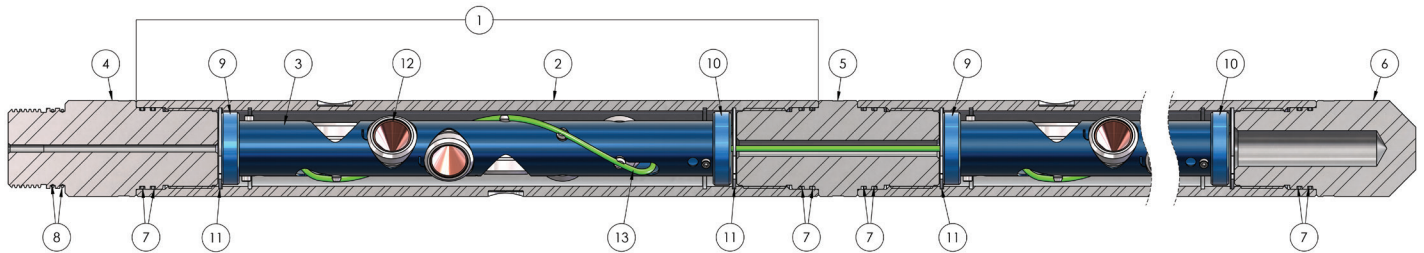
xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	3.13 [79]			
Nominal Thickness (in) [mm]	0.31 [7.9]			
Gun Swell (in) [mm]: Ambient Fluid.	3.46 [87] ≤ 21.0g	3.33 [85] ≤ 22.7g	3.37 [86] ≤ 22.7g	3.36 [85] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	NR	3.40 [86] ≤ 19.0g	3.35 [85] ≤ 19.0g	NR
Minimum Recommended Restriction (in) [mm]	3.58 [91]			
Maximum Pressure (psi) [MPa]	16,500 [114]	20,000 [138]	19,500 [135]	
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	13.0 [19.3]			
Max. Tension (lb) [kN]	220,000 [978]			

NR Not Recommended

5 SPF (16 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0363-B**-051	3-1/8 in. (86 mm) Gun Assy.	0°
		0363-B**-056	3-1/8 in. (86 mm) Gun Assy.	60°
		0363-B**-052	3-1/8 in. (86 mm) Gun Assy.	180°
	2	0363-1**-051	3-1/8 in. (86 mm) Carrier Body	0°
		0363-1**-056	3-1/8 in. (86 mm) Carrier Body	60°
	3	0363-1**-052	3-1/8 in. (86 mm) Carrier Body	180°
		0363-17**-051	Charge Tube	0°
		0363-17**-056	Charge Tube	60°
		0363-17**-052	Charge Tube	180°
Common Parts	4	0363-000-001	Top Sub	
	5	0363-000-002	Tandem Sub	
	5A	0363-000-389A	Alternate Tandem Sub w/Port	
	5B	0363-000-489A	Alternate Window Tandem Sub	
	6	0363-000-003	Gun Bottom	
	7	0111-230-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0363-1700-031	Chg. Tube End Fitting - Aligning	
	10	0363-1700-541	Chg. Tube End Fitting	
	11		Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
	TCP Conversion Kits (Not Pictured)			
		0503-500-150	Top TCP Booster Kit	
		0503-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-056)

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-3321-421T</u>	SDP	21.0	F	HMX
<i>EXP-3319-302</i>	DP	19.0	F	RDX
<u>EXP-3319-431</u>	GH	19.0	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQUAfrac® consistent hole shaped charges

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	5 SPF (16 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	3.13 [79]		
Nominal Thickness (in) [mm]	0.31 [7.9]		
Gun Swell (in) [mm]: Ambient Fluid.	3.38 [86] ≤ 21.0g	No Test	3.36 [85] ≤ 21.0g
Gun Swell (in) [mm]: Ambient Gas.	NR	No Test	NR
Minimum Recommended Restriction (in) [mm]	3.58 [91]		
Maximum Pressure (psi) [MPa]	13,500 [93]	20,000 [138]	19,000 [131]
Distance to First Scallop (in) [mm]	7.20 [183]		
Approximate Weight - Loaded (lb/ft) [kg/m]	14.0 [20.8]		
Max. Tension (lbf) [kN]	220,000 [978]		

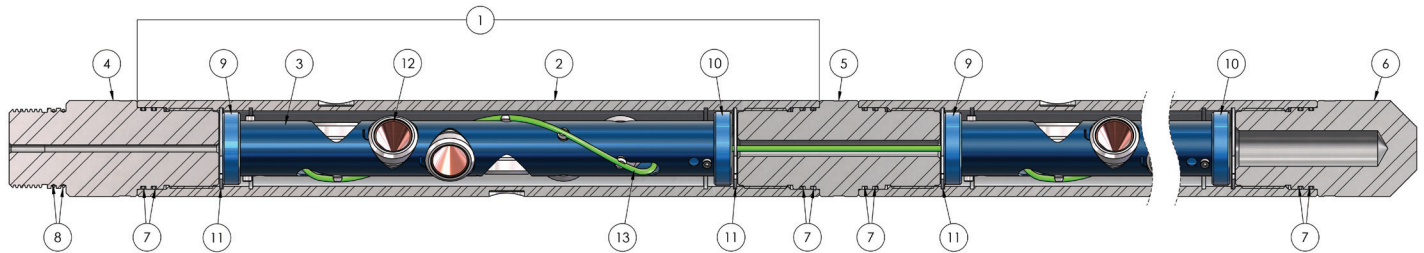
NR Not Recommended

3-1/8 in. (79 mm) EXP Scalloped Hollow Carrier Gun



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0363-B**-066	3-1/8 in. (86 mm) Gun Assy.	60°
	2	0363-1**-066	3-1/8 in. (86 mm) Carrier Body	60°
	3	0363-17**-066	Charge Tube	60°
Common Parts	4	0363-000-001	Top Sub	
	5	0363-000-002	Tandem Sub	
	5A	0363-000-389A	Alternate Tandem Sub w/Port	
	5B	0363-000-489A	Alternate Window Tandem Sub	
	6	0363-000-003	Gun Bottom	
	7	0111-230-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0363-1700-031	Chg. Tube End Fitting - Aligning	
	10	0363-1700-541	Chg. Tube End Fitting	
	11		Snap Ring	
12		Shaped Charge		
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0503-500-150	Top TCP Booster Kit	
		0503-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 86 & Page 90)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-3321-421T</u>	SDP	21.0	F	HMX
<u>EXP-3323-423T</u>	SDP	22.7	F	HMX
<u>EXP-3323-471T</u>	EQF	23.0	F	HMX
<u>EXP-3319-302</u>	DP	19.0	F, G	RDX
<u>EXP-3323-302</u>	DP	22.7	F	RDX
<u>EXP-3319-431</u>	GH	19.0	F, G	HMX
<u>EXP-3321-431</u>	GH	21.0	F	HMX
<u>EXP-3323-431</u>	GH	22.7	F	HMX
FLO-3323-310B	BH	22.7	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

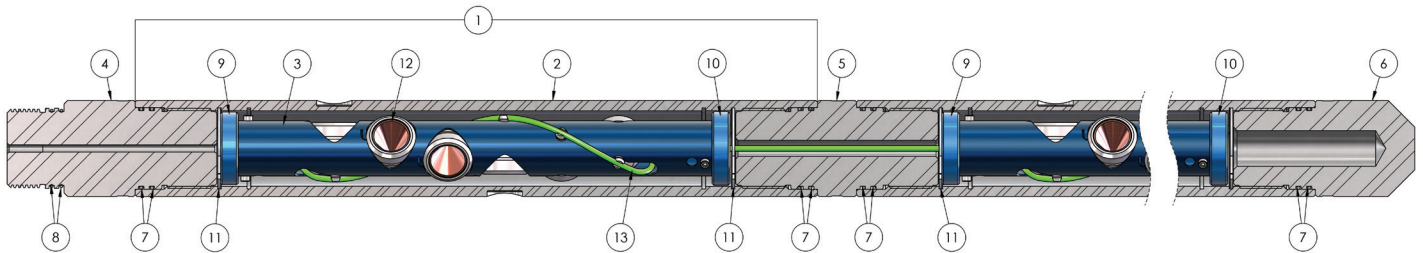
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	3.13 [79]
Nominal Thickness (in) [mm]	0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid. ≤ 22.7g	3.36 [85] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas. ≤ 19.0g	3.39 [86] ≤ 19.0g
Minimum Recommended Restriction (in) [mm]	3.58 [91]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	14.0 [20.8]
Max. Tension (lbf) [kN]	220,000 [978]

N/R Not Recommended

8 SPF (26 SPM) & 12 SPF (39 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF (SPM)	Phase
Gun Assy.	1	0363-G**-08D	3-1/8 in. (79 mm) Gun Assy.	8 (26)	135/45°
		0363-G**-12E	3-1/8 in. (79 mm) Gun Assy.	12 (39)	140/20°
	2	0363-1**-08D	3-1/8 in. (79 mm) Carrier Body	8 (26)	135/45°
		0363-1**-12E	3-1/8 in. (79 mm) Carrier Body	12 (39)	140/20°
	3	0363-4**-08D	Charge Tube	8 (26)	135/45°
		0363-4**-12E	Charge Tube	12 (39)	140/20°
Common Parts	4	0363-000-001	Top Sub		
	5	0363-000-002	Tandem Sub		
	5A	0363-000-389A	Alternate Tandem Sub w/Port		
	5B	0363-000-489A	Alternate Window Tandem Sub		
	6	0363-000-003	Gun Bottom		
	7	0111-230-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0363-500-031	Chg. Tube End Fitting - Aligning		
	10	0363-500-041	Chg. Tube End Fitting		
	11	0402-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
	TCP Conversion Kits (Not Pictured)				
		0503-500-150	Top TCP Booster Kit		
		0503-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0363-B02-12E)

Compatible Shaped Charges (Shaped Charge Summary - Page 86)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<i>EXP-3112-421T</i>	DP	12.0	F	HMX
<u>FLO-3112-411CF</u>	BH	12.0	F	RDX
<i>FLO-3112-410B</i>	BH	12.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
 Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	8 SPF (26 SPM)	12 SPF (39 SPM)
	135/45°	140/20°
Nominal O.D. (in) [mm]	3.13 [79]	
Nominal Thickness (in) [mm]	0.31 [7.9]	
Gun Swell (in) [mm]: Ambient Fluid.	Data Pending	Data Pending
Gun Swell (in) [mm]: Ambient Gas.	NR	NR
Minimum Recommended Restriction (in) [mm]	3.58 [91]	
Maximum Pressure (psi) [MPa]	20,000 [138]	
Distance to First Scallop (in) [mm]	6.75 [171]	6.50 [165]
Approximate Weight - Loaded (lb/ft) [kg/m]	13.0 [19.3]	
Max. Tension (lb) [kN]	220,000 [978]	

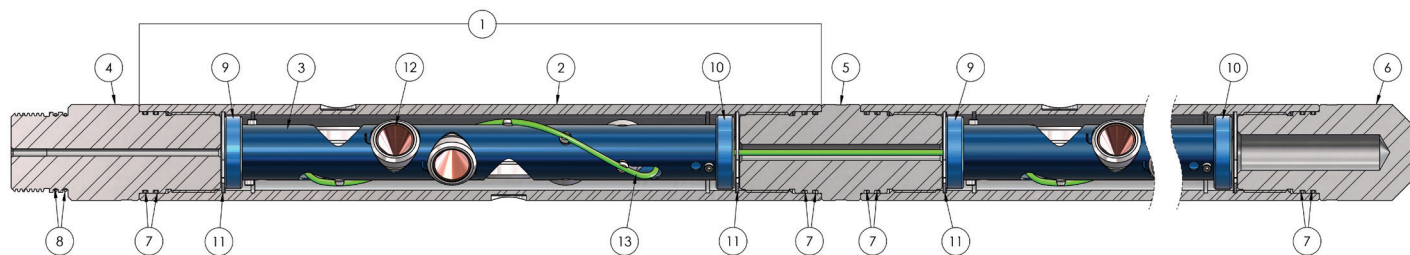
NR Not Recommended

3-3/8 in. (86 mm) EXP Scalloped Hollow Carrier Gun



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase	
Gun Assy.	1	0365-B**-041	3-3/8 in. (86 mm) Gun Assy.	1	0°
		0365-1A**-041	3-3/8 in. (86 mm) Gun Assy.	2	0°
		0365-B**-046	3-3/8 in. (86 mm) Gun Assy.	1	60°
		0365-1A**-046	3-3/8 in. (86 mm) Gun Assy.	2	60°
		0365-B**-044	3-3/8 in. (86 mm) Gun Assy.	1	90°
		0365-1A**-044	3-3/8 in. (86 mm) Gun Assy.	2	90°
		0365-B**-042	3-3/8 in. (86 mm) Gun Assy.	1	180°
	0365-1A**-042	3-3/8 in. (86 mm) Gun Assy.	2	180°	
	2	0365-1**-041	3-3/8 in. (86 mm) Carrier Body		0°
		0365-1**-046	3-3/8 in. (86 mm) Carrier Body		60°
		0365-1**-044	3-3/8 in. (86 mm) Carrier Body		90°
	3	0365-1**-042	3-3/8 in. (86 mm) Carrier Body		180°
		0363-17**-041	Charge Tube	1	0°
		0365-3A**-041	Charge Tube	2	0°
0363-17**-046		Charge Tube	1	60°	
0365-3A**-046		Charge Tube	2	60°	
0363-17**-044		Charge Tube	1	90°	
Common Parts	4	0365-000-001	Top Sub		
	5	0365-000-002	Tandem Sub		
	5A	0365-000-389A	Alternate Tandem Sub w/Port		
	5B	0365-000-489A	Alternate Window Tandem Sub		
	6	0365-000-003	Gun Bottom		
	7	0111-231-V95	O-Ring		
	8	0111-230-V95	O-Ring		
TCP Conversion Kits (Not Pictured)	9	0365-700-031	Chg. Tube End Fitting - Aligning	1	
	10	0365-800-031	Chg. Tube End Fitting - Aligning	2	
	11	0403-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		

Compatible Shaped Charges (Shaped Charge Summary - Page 87 & Page 90)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3319-423T	1	SDP	19.0	F, G	HMX
EXP-3321-421T	1	SDP	21.0	F, G	HMX
<u>EXP-3323-423T</u>	1	SDP	22.7	F, G	HMX
<u>EXP-3326-421T</u>	1	SDP	26.0	F, G	HMX
EXP-3323-471T	1	EQF	23.0	F, G	HMX
<u>EXP-3319-302</u>	1	DP	19.0	F, G	RDX
<u>EXP-3323-302</u>	1	DP	22.7	F, G	RDX
<u>EXP-3323-461T</u>	1	DP	22.7	F, G	HMX
<u>EXP-3325-331</u>	2	GH	25.0	F, G	RDX
EXP-3319-431	1	GH	19.0	F, G	HMX
<u>EXP-3323-431</u>	1	GH	22.7	F, G	HMX
FLO-3323-311CF	1	BH	22.7	F, G	RDX
FLO-3323-310B	1	BH	22.7	F, G	RDX

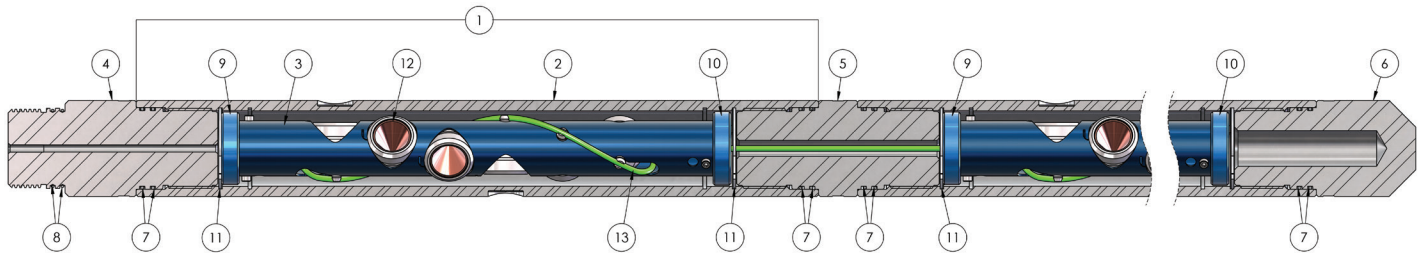
xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)			
	0°	60°	90°	180°
Nominal O.D. (in) [mm]	3.38 [86]			
Nominal Thickness (in) [mm]	0.37 [9.4]			
Gun Swell (in) [mm]: Ambient Fluid.	3.61 [92] ≤ 22.7g	3.58 [91] ≤ 26.0g	3.61 [92] ≤ 26.0g	3.56 [90] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	NR	3.68 [93] ≤ 26.0g	3.62 [92] ≤ 26.0g	NR
Minimum Recommended Restriction (in) [mm]	3.80 [97]			
Maximum Pressure (psi) [MPa]	18,000 [124]	20,000 [138]	18,000 [124]	
Distance to First Scallop (in) [mm]	7.50 [191]			
Approximate Weight - Loaded (lb/ft) [kg/m]	16.0 [23.8]			
Max. Tension (lb) [kN]	270,000 [1,200]			

NR Not Recommended

5 SPF (16 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0365-B**-051	3-3/8 in. (86 mm) Gun Assy.	0°
		0365-B**-056	3-3/8 in. (86 mm) Gun Assy.	60°
		0365-B**-052	3-3/8 in. (86 mm) Gun Assy.	180°
	2	0365-1**-051	3-3/8 in. (86 mm) Carrier Body	0°
		0365-1**-056	3-3/8 in. (86 mm) Carrier Body	60°
		0365-1**-052	3-3/8 in. (86 mm) Carrier Body	180°
	3	0363-17**-051	Charge Tube	0°
		0363-17**-056	Charge Tube	60°
		0363-17**-052	Charge Tube	180°
Common Parts	4	0365-000-001	Top Sub	
	5	0365-000-002	Tandem Sub	
	5A	0365-000-389A	Alternate Tandem Sub w/Port	
	5B	0365-000-489A	Alternate Window Tandem Sub	
	6	0365-000-003	Gun Bottom	
	7	0111-231-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0365-700-031	Chg. Tube End Fitting - Aligning	
	10	0365-700-041	Chg. Tube End Fitting	
	11	0403-200-037	Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
	TCP Conversion Kits (Not Pictured)			
		0503-500-150	Top TCP Booster Kit	
		0503-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0365-B02-056)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3319-423T	SDP	19.0	F	HMX
EXP-3321-421T	SDP	21.0	F	HMX
<u>EXP-3323-423T</u>	SDP	22.7	F	HMX
EXP-3319-302	DP	19.0	F	RDX
EXP-3323-302	DP	22.7	F	RDX
<u>EXP-3323-461T</u>	DP	22.7	F	HMX
EXP-3319-431	GH	19.0	F	HMX
<u>EXP-3323-431</u>	GH	22.7	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	5 SPF (16 SPM)		
	0°	60°	180°
Nominal O.D. (in) [mm]	3.38 [86]		
Nominal Thickness (in) [mm]	0.37 [9.4]		
Gun Swell (in) [mm]: Ambient Fluid. ≤ 22.7g	3.60 [91] ≤ 22.7g	No Test	3.56 [90] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	NR	No Test	NR
Minimum Recommended Restriction (in) [mm]	3.80 [97]		
Maximum Pressure (psi) [MPa]	15,800 [109]	20,000 [138]	19,500 [135]
Distance to First Scallop (in) [mm]	7.20 [183]		
Approximate Weight - Loaded (lb/ft) [kg/m]	16.0 [23.8]		
Max. Tension (lb/ft) [kN]	270,000 [1,200]		

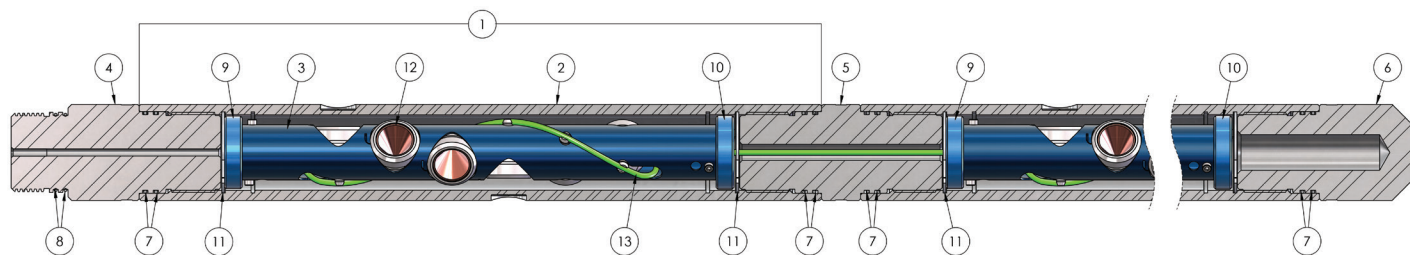
NR Not Recommended

3-3/8 in. (86 mm) EXP Scalloped Hollow Carrier Gun



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0365-B**-066	3-3/8 in. (86 mm) Gun Assy.	1	60°
		0365-1A**-066	3-3/8 in. (86 mm) Gun Assy.	2	60°
	2	0365-1**-066	3-3/8 in. (86 mm) Carrier Body		60°
	3	0363-17**-066	Charge Tube	1	60°
		0365-3A**-066	Charge Tube	2	60°
Common Parts	4	0365-000-001	Top Sub		
	5	0365-000-002	Tandem Sub		
	5A	0365-000-389A	Alternate Tandem Sub w/Port		
	5B	0365-000-489A	Alternate Window Tandem Sub		
	6	0365-000-003	Gun Bottom		
	7	0111-231-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0365-700-031	Chg. Tube End Fitting - Aligning	1	
		0365-800-031	Chg. Tube End Fitting - Aligning	2	
	10	0365-700-041	Chg. Tube End Fitting	1	
		0365-800-041	Chg. Tube End Fitting	2	
	11	0403-200-037	Snap Ring		
	12		Shaped Charge		
13		Detonating Cord			
TCP Conversion Kits (Not Pictured)					
		0503-500-150	Top TCP Booster Kit		
		0503-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 87 & Page 90)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3319-423T	2	SDP	19.0	F, G	HMX
EXP-3321-421T	1	SDP	21.0	F, G	HMX
<u>EXP-3323-423T</u>	1	SDP	22.7	F	HMX
<u>EXP-3326-421T</u>	2	SDP	26.0	F	HMX
EXP-3323-471T	1	EQF	23.0	F	HMX
<u>EXP-3319-302</u>	1	DP	19.0	F, G	RDX
<u>EXP-3323-302</u>	1	DP	22.7	F	RDX
<u>EXP-3323-461T</u>	1	DP	22.7	F	HMX
<u>EXP-3325-331</u>	2	GH	25.0	F	RDX
EXP-3319-431	1	GH	19.0	F, G	HMX
<u>EXP-3323-431</u>	1	GH	22.7	F	HMX
<u>FLO-3323-311CF</u>	1	BH	22.7	F	RDX
<u>FLO-3323-310B</u>	1	BH	22.7	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

EQF indicates EQUAfrac® consistent hole shaped charges

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.

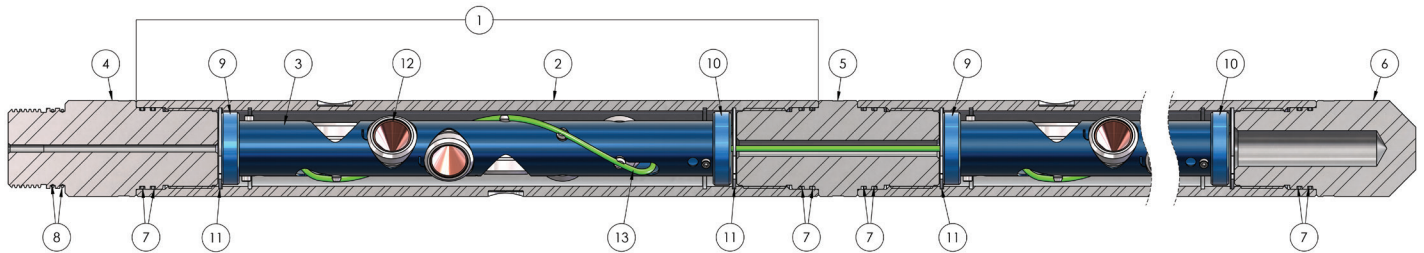
Example: Use "02" for 2ft gun assembly; etc. (0365-B02-066)

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	3.38 [86]
Nominal Thickness (in) [mm]	0.37 [9.4]
Gun Swell (in) [mm]: Ambient Fluid. ≤ 26.0g	3.58 [91] ≤ 26.0g
Gun Swell (in) [mm]: Ambient Gas. ≤ 21.0g	3.62 [92] ≤ 21.0g
Minimum Recommended Restriction (in) [mm]	3.80 [97]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	16.0 [23.8]
Max. Tension (lbf) [kN]	270,000 [1,200]

NR Not Recommended

8 SPF (26 SPM) & 12 SPF (39 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	SPF (SPM)	Phase
Gun Assy.	1	0365-G**-08D	3-3/8 in. (86 mm) Gun Assy.	8 (26)	135/45°
		0365-G**-12E	3-3/8 in. (86 mm) Gun Assy.	12 (39)	140/20°
	2	0365-1**-08D	3-3/8 in. (86 mm) Carrier Body	8 (26)	135/45°
		0365-1**-12E	3-3/8 in. (86 mm) Carrier Body	12 (39)	140/20°
	3	0365-4**-08D	Charge Tube	8 (26)	135/45°
		0365-4**-12E	Charge Tube	12 (39)	140/20°
Common Parts	4	0365-000-001	Top Sub		
	5	0365-000-002	Tandem Sub		
	5A	0365-000-389A	Alternate Tandem Sub w/Port		
	5B	0365-000-489A	Alternate Window Tandem Sub		
	6	0365-000-003	Gun Bottom		
	7	0111-231-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0365-700-031	Chg. Tube End Fitting - Aligning		
	10	0365-700-041	Chg. Tube End Fitting		
	11	0403-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
	TCP Conversion Kits (Not Pictured)				
		0503-500-150	Top TCP Booster Kit		
		0503-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0365-B02-12E)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<i>EXP-3112-421T</i>	DP	12.0	F	HMX
<u>FLO-3112-411CF</u>	BH	12.0	F	HMX
<i>FLO-3112-410B</i>	BH	12.0	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	8 SPF (26 SPM)	12 SPF (39 SPM)
	135/45°	140/20°
Nominal O.D. (in) [mm]	3.38 [86]	
Nominal Thickness (in) [mm]	0.37 [9.4]	
Gun Swell (in) [mm]: Ambient Fluid.	Data Pending	Data Pending
Gun Swell (in) [mm]: Ambient Gas.	NR	NR
Minimum Recommended Restriction (in) [mm]	3.80 [97]	
Maximum Pressure (psi) [MPa]	20,000 [138]	
Distance to First Scallop (in) [mm]	6.75 [171]	6.50 [165]
Approximate Weight - Loaded (lb/ft) [kg/m]	15.0 [22.3]	16.0 [23.8]
Max. Tension (lb) [kN]	270,000 [1,200]	

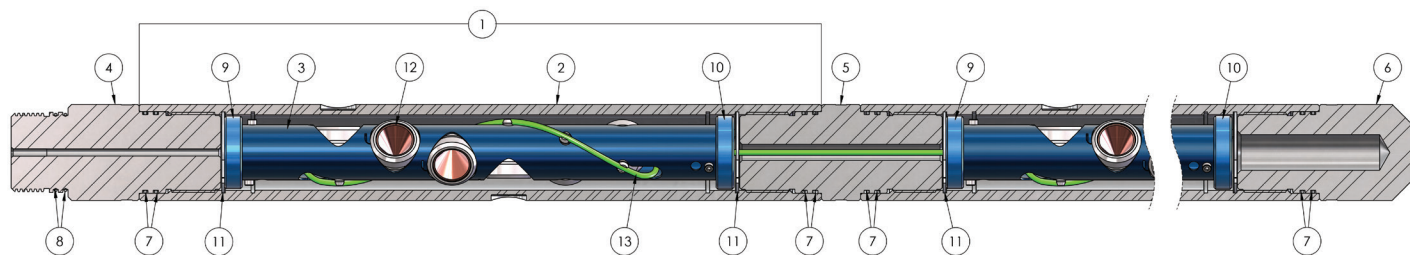
NR Not Recommended

4 in. (102 mm) EXP Scalloped Hollow Carrier Gun



4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0400-A**-044	4 in. (102 mm) Gun Assy.	1	90°
		0400-C**-044	4 in. (102 mm) Gun Assy.	2	90°
		0400-1A**-044	4 in. (102 mm) Gun Assy.	3	90°
	2	0400-1**-044	4 in. (102 mm) Carrier Body		90°
		0400-5**-044	Charge Tube	1	90°
		0400-7**-044	Charge Tube	2	90°
	0445-3A**-044	Charge Tube	3	90°	
Common Parts	4	0400-000-001	Top Sub		
	5	0400-000-002	Tandem Sub		
	5A	0400-000-389A	Alternate Window Tandem Sub		
	6	0400-000-003	Gun Bottom		
	7	0111-236-090	O-Ring		
	8	0111-230-090	O-Ring		
	9	0400-500-031	Chg. Tube End Fitting - Aligning	1	
		0400-700-031	Chg. Tube End Fitting - Aligning	2	
		0400-300-031	Chg. Tube End Fitting - Aligning	3	
	10	0400-500-041	Chg. Tube End Fitting	1	
		0400-700-041	Chg. Tube End Fitting	2	
		0400-300-047	Chg. Tube End Fitting	3	
	11	0404-200-037	Snap Ring		
12		Shaped Charge			
13		Detonating Cord			
TCP Conversion Kits (Not Pictured)					
		0504-500-150	Top TCP Booster Kit		
		0504-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0400-B02-044)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3321-421T	2	SDP	21.0	F, G	HMX
EXP-3323-423T	2	SDP	22.7	F, G	HMX
<u>EXP-3326-421T</u>	2	SDP	26.0	F, G	HMX
<u>EXP-4039-423T</u>	1	SDP	38.5	F, G	HMX
EXP-4539-425T	3	SDP	38.5	F, G	HMX
<u>EXP-3319-302</u>	2	DP	19.0	F, G	RDX
<u>EXP-3323-302</u>	2	DP	22.7	F, G	RDX
<u>EXP-3323-461T</u>	2	DP	22.7	F, G	HMX
EXP-3319-431	2	GH	19.0	F, G	HMX
EXP-3323-431	2	GH	22.7	F, G	HMX
<u>EXP-3325-331</u>	2	GH	25.0	F, G	RDX

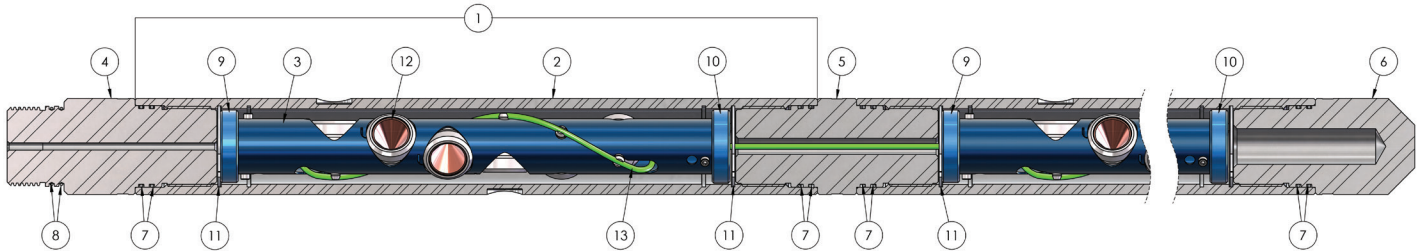
xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)
	90°
Nominal O.D. (in) [mm]	4.00 [102]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.28 [109] ≤ 38.5g
Gun Swell (in) [mm]: Ambient Gas.	4.41 [112] ≤ 38.5g
Minimum Recommended Restriction (in) [mm]	4.60 [117]
Maximum Pressure (psi) [MPa]	19,500 [134]
Distance to First Scallop (in) [mm]	7.50 [191]
Approximate Weight - Loaded (lb/ft) [kg/m]	21.0 [31.2]
Max. Tension (lbf) [kN]	410,000 [1,824]

NR Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0400-C**-066	4 in. (102 mm) Gun Assy.	60°
	2	0400-1**-066	4 in. (102 mm) Carrier Body	60°
	3	0400-7**-066	Charge Tube	60°
Common Parts	4	0400-000-001	Top Sub	
	5	0400-000-002	Tandem Sub	
	5A	0400-000-389A	Alternate Window Tandem Sub	
	6	0400-000-003	Gun Bottom	
	7	0111-236-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0400-700-031	Chg. Tube End Fitting - Aligning	
	10	0400-700-041	Chg. Tube End Fitting	
	11	0404-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0504-500-150	Top TCP Booster Kit	
		0504-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0400-B02-066)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3321-421T	SDP	21.0	F, G	HMX
EXP-3323-423T	SDP	22.7	F, G	HMX
EXP-3326-421T	SDP	26.0	F, G	HMX
<i>EXP-3319-302</i>	DP	19.0	F, G	RDX
<i>EXP-3323-302</i>	DP	22.7	F, G	RDX
<i>EXP-3323-461T</i>	DP	22.7	F, G	HMX
EXP-3319-431	GH	19.0	F, G	HMX
EXP-3323-431	GH	22.7	F, G	HMX
<i>EXP-3325-331</i>	GH	25.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	4.00 [102]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.27 [108] ≤ 25.0g
Gun Swell (in) [mm]: Ambient Gas.	4.41 [112] ≤ 25.0g
Minimum Recommended Restriction (in) [mm]	4.60 [117]
Maximum Pressure (psi) [MPa]	19,500 [134]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	19.0 [28.2]
Max. Tension (lbf) [kN]	410,000 [1,824]

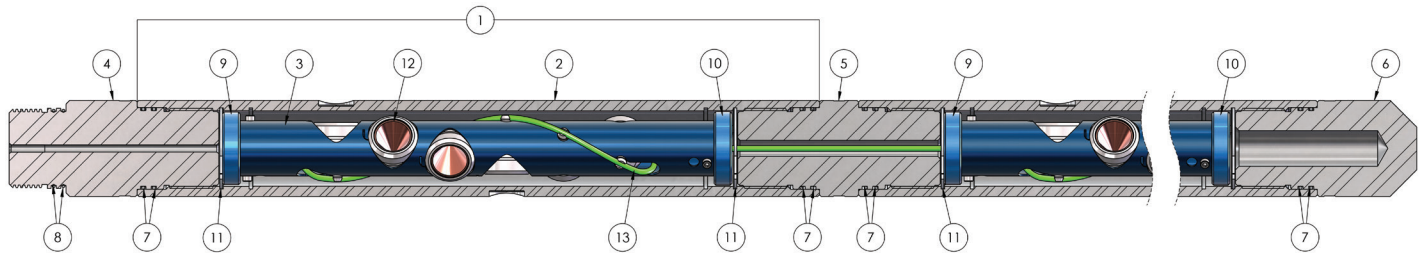
NR Not Recommended

4 in. (102 mm) EXP Scalloped Hollow Carrier Gun



8 SPF (26 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0400-1D**-08D	4 in. (102 mm) Gun Assy.	135/45°
	2	0400-1**-08D	4 in. (102 mm) Carrier Body	135/45°
	3	0400-18**-08D	Charge Tube	135/45°
Common Parts	4	0400-000-001	Top Sub	
	5	0400-000-002	Tandem Sub	
	5A	0400-000-389A	Alternate Window Tandem Sub	
	6	0400-000-003	Gun Bottom	
	7	0111-236-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0400-1800-031	Chg. Tube End Fitting - Aligning	
	10	0400-1800-031	Chg. Tube End Fitting	
	11	0404-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0504-500-150	Top TCP Booster Kit	
		0504-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4521-423T	SDP	21.0	F, G	HMX
EXP-4521-431	GH	21.0	F, G	HMX
FLO-4521-310B	BH	21.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

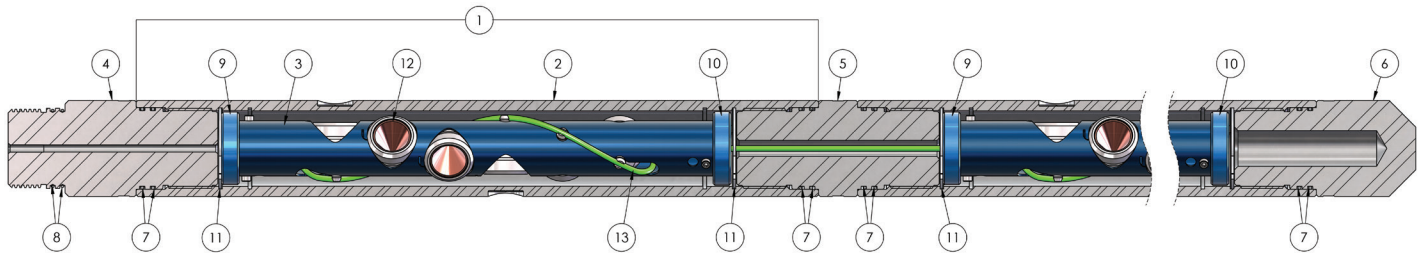
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0400-1D02-08D)

Specifications - EXP Scalloped Hollow Carrier Assy.	8 SPF (26 SPM)
	135/45°
Nominal O.D. (in) [mm]	4.00 [102]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.13 [105] ≤ 21.0g
Gun Swell (in) [mm]: Ambient Gas.	4.25 [108] ≤ 21.0g
Minimum Recommended Restriction (in) [mm]	4.60 [117]
Maximum Pressure (psi) [MPa]	19,500 [134]
Distance to First Scallop (in) [mm]	6.75 [171]
Approximate Weight - Loaded (lb/ft) [kg/m]	19.0 [28.2]
Max. Tension (lbf) [kN]	410,000 [1,824]

NR Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0445-1A**-044	4-1/2 in. (114 mm) Gun Assy.	1	90°
		0445-A**-044	4-1/2 in. (114 mm) Gun Assy.	2	90°
	2	0445-1**-04	4-1/2 in. (114 mm) Carrier Body		90°
Common Parts	3	0445-3A**-044	Charge Tube	1	90°
		0400-5**-044	Charge Tube	2	90°
	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-500-031	Chg. Tube End Fitting - Aligning	1	
		0445-600-031	Chg. Tube End Fitting - Aligning	2	
	0445-500-031	Chg. Tube End Fitting	1		
	0445-600-031	Chg. Tube End Fitting	2		
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-1A02-044)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4539-425T	1	SDP	38.5	F, G	HMX
FLO-4039-311CF	2	BH	38.5	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)
	90°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.71 [120] ≤ 38.5g
Gun Swell (in) [mm]: Ambient Gas.	4.73 [120] ≤ 38.5g
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	17,500 [121]
Distance to First Scallop (in) [mm]	7.50 [191]
Approximate Weight - Loaded (lb/ft) [kg/m]	22.0 [32.7]
Max. Tension (lbf) [kN]	453,000 [2,015]

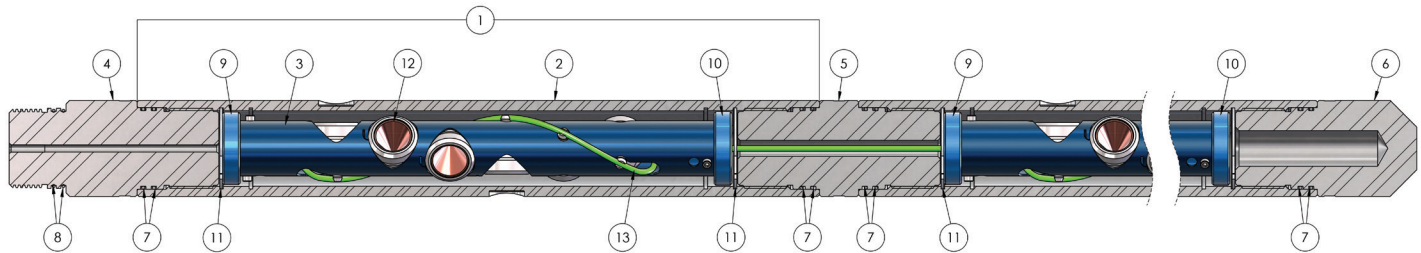
NR Not Recommended

4-1/2 in. (114 mm) EXP Scalloped Hollow Carrier Gun



5 SPF (16 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0445-1A**-056	4-1/2 in. (114 mm) Gun Assy.	1	60°
		0445-A**-056	4-1/2 in. (114 mm) Gun Assy.	2	60°
	2	0445-1**-056	4-1/2 in. (114 mm) Carrier Body		60°
	3	0445-3A**-056	Charge Tube	1	60°
		0400-5**-056	Charge Tube	2	60°
Common Parts	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-500-031	Chg. Tube End Fitting - Aligning	1	
		0445-600-031	Chg. Tube End Fitting - Aligning	2	
	10	0445-500-031	Chg. Tube End Fitting	1	
		0445-600-031	Chg. Tube End Fitting	2	
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 87)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-4539-425T</u>	1	SDP	38.5	F, G	HMX
FLO-4039-311CF	2	BH	38.5	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

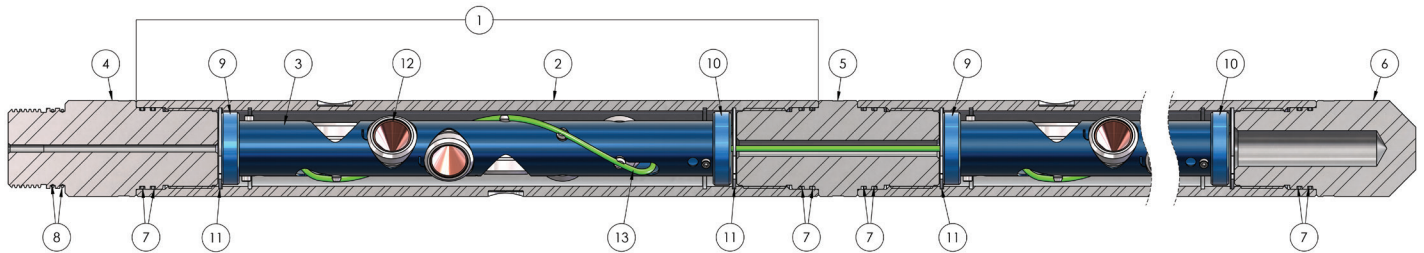
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-1A02-056)

Specifications - EXP Scalloped Hollow Carrier Assy.	5 SPF (16 SPM)
	60°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.73 [120] ≤ 38.5g
Gun Swell (in) [mm]: Ambient Gas.	4.86 [123] ≤ 38.5g
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	17,500 [121]
Distance to First Scallop (in) [mm]	7.20 [183]
Approximate Weight - Loaded (lb/ft) [kg/m]	23.0 [34.2]
Max. Tension (lbf) [kN]	453,000 [2,015]

N/R Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0445-B**-066	4-1/2 in. (114 mm) Gun Assy.	60°
	2	0445-1**-066	4-1/2 in. (114 mm) Carrier Body	60°
	3	0400-7**-066	Charge Tube	60°
Common Parts	4	0445-000-001	Top Sub	
	5	0445-000-002	Tandem Sub	
	5A	0445-000-389A	Alternate Window Tandem Sub	
	6	0445-000-003	Gun Bottom	
	7	0111-342-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0445-700-031	Chg. Tube End Fitting - Aligning	
	10	0445-700-031	Chg. Tube End Fitting	
	11	0414-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0514-500-150	Top TCP Booster Kit	
		0514-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-B02-066)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3326-421T	SDP	26.0	F, G	HMX
EXP-3325-331	GH	25.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.70 [119] ≤ 26.0g
Gun Swell (in) [mm]: Ambient Gas.	4.73 [120] ≤ 26.0g
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	17,500 [121]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	21.0 [31.2]
Max. Tension (lbf) [kN]	453,000 [2,015]

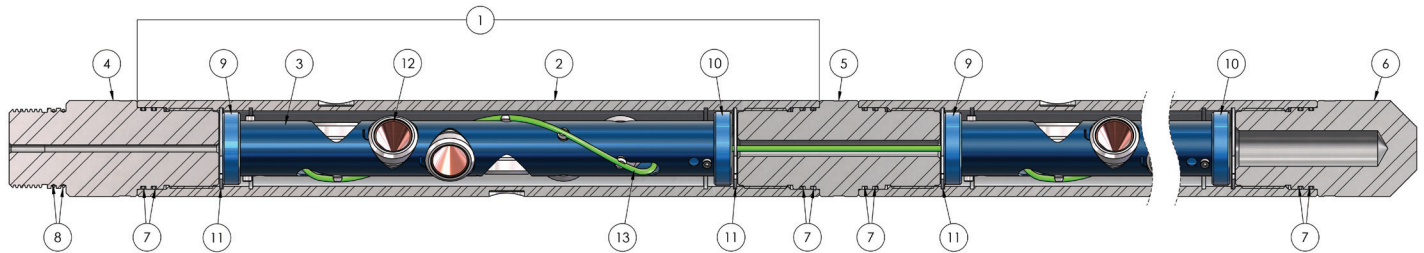
NR Not Recommended

4-1/2 in. (114 mm) EXP Scalloped Hollow Carrier Gun



8 SPF (26 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0445-1D**-08D	4-1/2 in. (114 mm) Gun Assy.	135/45°
	2	0445-1**-08D	4-1/2 in. (114 mm) Carrier Body	135/45°
	3	0400-18**-08D	Charge Tube	135/45°
Common Parts	4	0445-000-001	Top Sub	
	5	0445-000-002	Tandem Sub	
	5A	0445-000-389A	Alternate Window Tandem Sub	
	6	0445-000-003	Gun Bottom	
	7	0111-342-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0445-1800-031	Chg. Tube End Fitting - Aligning	
	10	0445-1800-031	Chg. Tube End Fitting	
	11	0414-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0514-500-150	Top TCP Booster Kit	
		0514-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 87)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4521-423T	SDP	21.0	F	HMX
<i>EXP-4521-431</i>	GH	21.0	F	HMX
<i>FLO-4521-310B</i>	BH	21.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

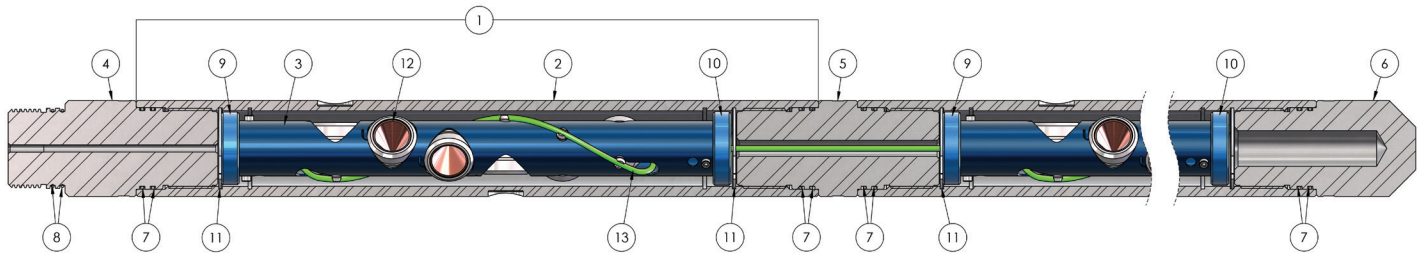
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-1D02-08D)

Specifications - EXP Scalloped Hollow Carrier Assy.	8 SPF (26 SPM)
	135/45°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.61 [117] ≤ 21.0g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	17,500 [121]
Distance to First Scallop (in) [mm]	6.75 [171]
Approximate Weight - Loaded (lb/ft) [kg/m]	21.0 [31.2]
Max. Tension (lbf) [kN]	453,000 [2,015]

NR Not Recommended

12 SPF (39 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0445-1K**-12D	4-1/2 in. (114 mm) Gun Assy.	1	135/45°
		0445-C**-12D	4-1/2 in. (114 mm) Gun Assy.	2	135/45°
	2	0445-1**-12D	4-1/2 in. (114 mm) Carrier Body		135/45°
Common Parts	3	0445-16**-12D	Charge Tube	1	135/45°
		0446-3**-12D	Charge Tube	2	135/45°
	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-500-031	Chg. Tube End Fitting - Aligning	1	
		0446-500-031	Chg. Tube End Fitting - Aligning	2	
	10	0445-500-031	Chg. Tube End Fitting	1	
		0446-500-041	Chg. Tube End Fitting	2	
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-1K02-12D)

Compatible Shaped Charges (Shaped Charge Summary - Page 87)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-4521-423T</u>	1	SDP	21.0	F	HMX
<u>EXP-4521-431</u>	1	GH	21.0	F	HMX
<u>FLO-4623-411CFZ</u>	2	BH CFLD	22.7	F	HMX
<u>FLO-4521-310B</u>	1	BH	21.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
 Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	12 SPF (39 SPM)
	135/45°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.62 [117] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	16,000 [110]
Distance to First Scallop (in) [mm]	6.50 [165]
Approximate Weight - Loaded (lb/ft) [kg/m]	24.0 [35.7]
Max. Tension (lbf) [kN]	453,000 [2,015]

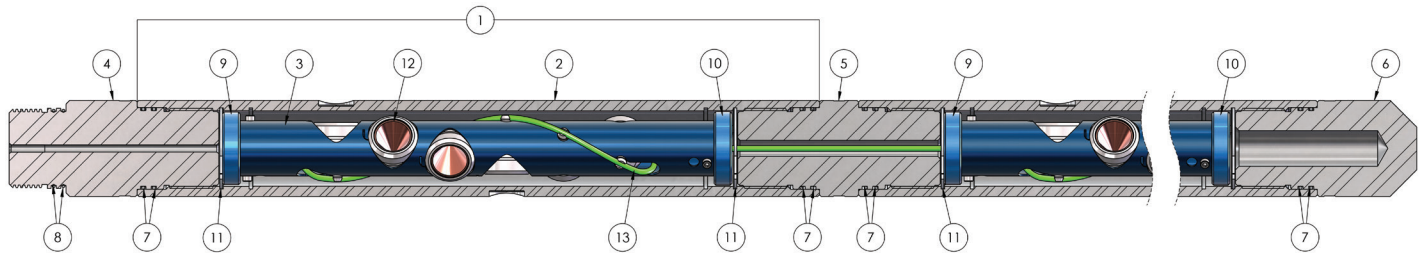
NR Not Recommended

4-1/2 in. (114 mm) EXP Scalloped Hollow Carrier Gun



16 SPF (52 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0445-C**-16G	4-1/2 in. (114 mm) Gun Assy.	140/20°
	2	0445-1**-16G	4-1/2 in. (114 mm) Carrier Body	140/20°
	3	0446-3**-16G	Charge Tube	140/20°
Common Parts	4	0445-000-001	Top Sub	
	5	0445-000-002	Tandem Sub	
	5A	0445-000-389A	Alternate Window Tandem Sub	
	6	0445-000-003	Gun Bottom	
	7	0111-342-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0446-500-031	Chg. Tube End Fitting - Aligning	
	10	0446-500-041	Chg. Tube End Fitting	
	11	0414-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0514-500-150	Top TCP Booster Kit	
		0514-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 87)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>FLO-4623-411CFZ</u>	1	BH CFLD	22.7	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

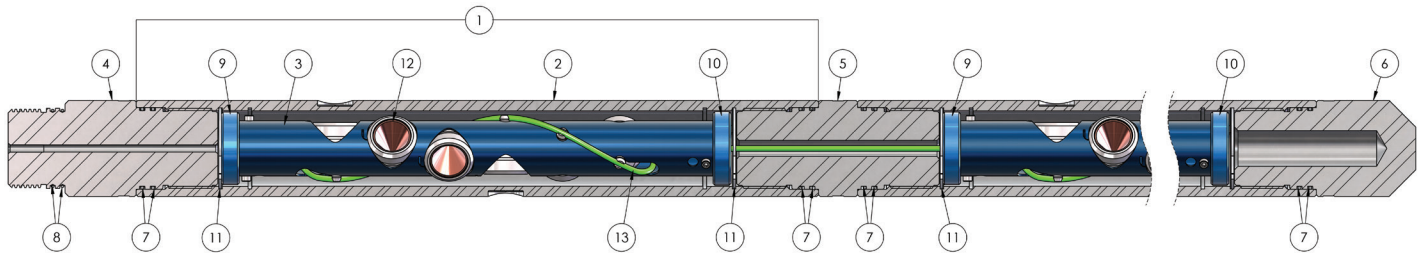
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-C02-16G)

Specifications - EXP Scalloped Hollow Carrier Assy.	16 SPF (52 SPM)
	140/20°
Nominal O.D. (in) [mm]	4.50 [114]
Nominal Thickness (in) [mm]	0.38 [9.7]
Gun Swell (in) [mm]: Ambient Fluid.	4.67 [119] ≤ 22.7g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	4.92 [125]
Maximum Pressure (psi) [MPa]	16,000 [110]
Distance to First Scallop (in) [mm]	6.38 [162]
Approximate Weight - Loaded (lb/ft) [kg/m]	21.0 [31.2]
Max. Tension (lbf) [kN]	453,000 [2,015]

NR Not Recommended

4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0446-1A**-044	4-5/8 in. (117 mm) Gun Assy.	1	90°
		0446-A**-044	4-5/8 in. (117 mm) Gun Assy.	2	90°
	2	0446-1**-044	4-5/8 in. (117 mm) Carrier Body		90°
Common Parts	3	0445-3A**-044	Charge Tube	1	90°
		0400-5**-044	Charge Tube	2	90°
	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-500-031	Chg. Tube End Fitting - Aligning	1	
		0400-600-031	Chg. Tube End Fitting - Aligning	2	
	0445-500-031	Chg. Tube End Fitting	1		
	0400-600-031	Chg. Tube End Fitting	2		
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0445-1A02-044)

Compatible Shaped Charges (Shaped Charge Summary - Page 88)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4539-425T	1	SDP	38.5	F, G	HMX
FLO-4039-311CF	2	BH	38.5	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	4 SPF (13 SPM)
	90°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	4.84 [123] ≤ 38.5g
Gun Swell (in) [mm]: Ambient Gas.	4.87 [124] ≤ 38.5g
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.50 [191]
Approximate Weight - Loaded (lb/ft) [kg/m]	25.0 [37.2]
Max. Tension (lbf) [kN]	570,000 [2,536]

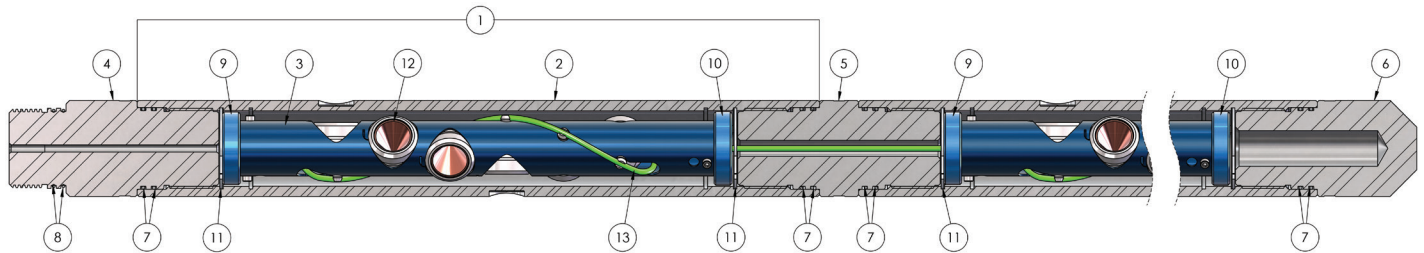
NR Not Recommended

4-5/8 in. (117 mm) EXP Scalloped Hollow Carrier Gun



5 SPF (16 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0446-1A**-056	4-5/8 in. (117 mm) Gun Assy.	1	60°
		0446-A**-056	4-5/8 in. (117 mm) Gun Assy.	2	60°
	2	0446-1**-056	4-5/8 in. (117 mm) Carrier Body		60°
	3	0445-3A**-056	Charge Tube	1	60°
		0400-5**-056	Charge Tube	2	60°
Common Parts	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-500-031	Chg. Tube End Fitting - Aligning	1	
		0400-600-031	Chg. Tube End Fitting - Aligning	2	
	10	0445-500-031	Chg. Tube End Fitting	1	
		0400-600-031	Chg. Tube End Fitting	2	
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 88)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-4539-425T</u>	1	SDP	38.5	F, G	HMX
FLO-4039-311CF	2	BH	38.5	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

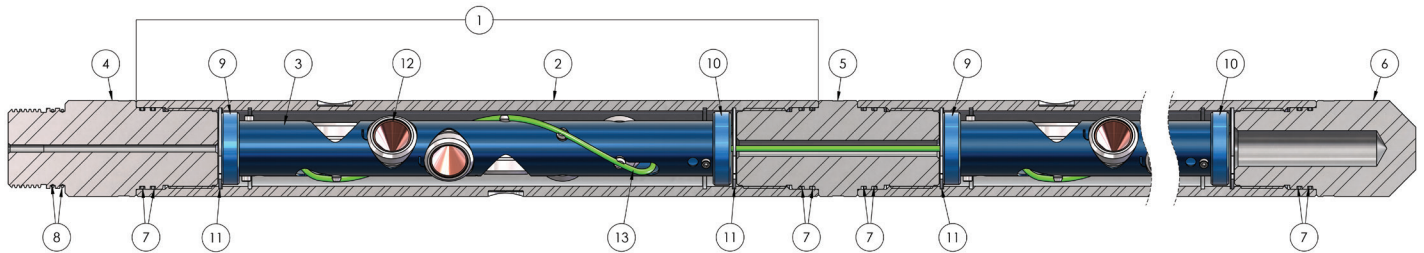
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-1A02-056)

Specifications - EXP Scalloped Hollow Carrier Assy.	5 SPF (16 SPM)
	60°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	4.84 [123] ≤ 38.5g
Gun Swell (in) [mm]: Ambient Gas.	4.87 [124] ≤ 38.5g
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.20 [183]
Approximate Weight - Loaded (lb/ft) [kg/m]	25.0 [37.2]
Max. Tension (lbf) [kN]	570,000 [2,536]

N/R Not Recommended

6 SPF (20 SPM) GUNFACTS®

Gun Body Material:	Heat treated, seamless steel tubing
Gun Body Configuration:	Threaded and scalloped
Charge Tube Type:	Round steel tube
Mode of Fire:	Simultaneous or selective firing systems such as EBFire® and ControlFire®
Initiation Point:	Top or bottom fired options available for wireline and TCP
Detonating Cord:	80 grains/foot
O-Ring Material:	Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0446-B**-066	4-5/8 in. (117 mm) Gun Assy.	60°
	2	0446-1**-066	4-5/8 in. (117 mm) Carrier Body	60°
	3	0400-7**-066	Charge Tube	60°
Common Parts	4	0445-000-001	Top Sub	
	5	0445-000-002	Tandem Sub	
	5A	0445-000-389A	Alternate Window Tandem Sub	
	6	0445-000-003	Gun Bottom	
	7	0111-342-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0445-700-031	Chg. Tube End Fitting - Aligning	
	10	0445-700-031	Chg. Tube End Fitting	
	11	0414-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0514-500-150	Top TCP Booster Kit	
		0514-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
Example: Use "02" for 2ft gun assembly; etc. (0446-B02-066)

Compatible Shaped Charges (Shaped Charge Summary - Page 88)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3326-421T	SDP	26.0	F, G	HMX
EXP-3325-331	GH	25.0	F, G	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	No Test
Gun Swell (in) [mm]: Ambient Gas.	No Test
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	24.0 [35.7]
Max. Tension (lb) [kN]	570,000 [2,536]

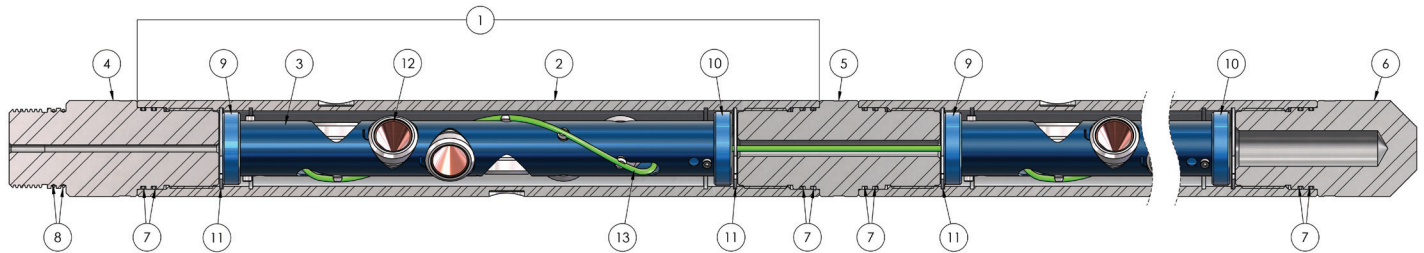
NR Not Recommended

4-5/8 in. (117 mm) EXP Scalloped Hollow Carrier Gun



8 SPF (26 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components					
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
Gun Assy.	1	0446-1D**-08D	4-5/8 in. (117 mm) Gun Assy.	1	135/45°
		0446-2D**-08D	4-5/8 in. (117 mm) Gun Assy.	2	135/45°
	2	0446-1**-08D	4-5/8 in. (117 mm) Carrier Body		135/45°
	3	0400-18**-08D	Charge Tube	1	135/45°
		0445-26**-08D	Charge Tube	2	135/45°
Common Parts	4	0445-000-001	Top Sub		
	5	0445-000-002	Tandem Sub		
	5A	0445-000-389A	Alternate Window Tandem Sub		
	6	0445-000-003	Gun Bottom		
	7	0111-342-V95	O-Ring		
	8	0111-230-V95	O-Ring		
	9	0445-1800-031	Chg. Tube End Fitting - Aligning	1	
		0445-600-031	Chg. Tube End Fitting - Aligning	2	
	10	0445-1800-031	Chg. Tube End Fitting	1	
		0445-600-031	Chg. Tube End Fitting	2	
	11	0414-200-037	Snap Ring		
	12		Shaped Charge		
	13		Detonating Cord		
TCP Conversion Kits (Not Pictured)					
		0514-500-150	Top TCP Booster Kit		
		0514-500-160	Tandem TCP Booster Kit		
			Associated Hardware (Page 72)		

Compatible Shaped Charges (Shaped Charge Summary - Page 88)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-4521-423T</u>	1	SDP	21.0	F	HMX
<u>EXP-4521-431</u>	1	GH	21.0	F	HMX
<u>FLO-4521-310B</u>	1	BH	21.0	F	RDX
<u>FLO-5028-310B</u>	2	BH	28.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

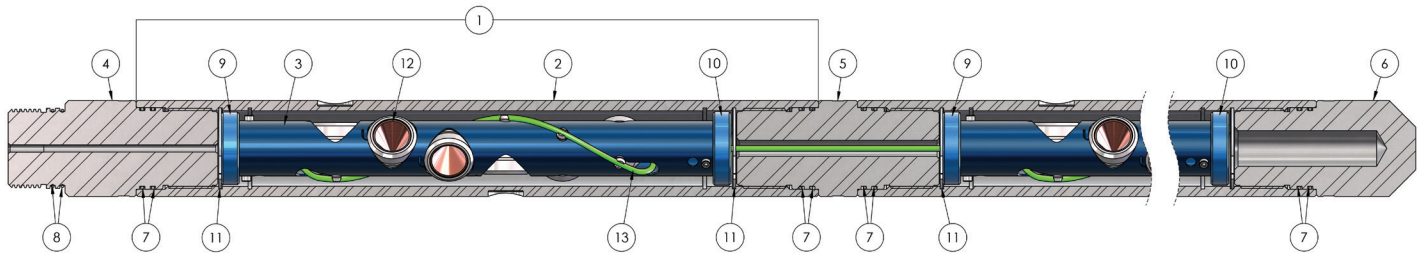
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-1D02-08D)

Specifications - EXP Scalloped Hollow Carrier Assy.	8 SPF (26 SPM)
	135/45°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	No Test
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	6.75 [171]
Approximate Weight - Loaded (lb/ft) [kg/m]	24.0 [35.7]
Max. Tension (lb) [kN]	570,000 [2,536]

NR Not Recommended

12 SPF (39 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components						
	ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase	
Gun Assy.	1	0446-1K**-12D	4-5/8 in. (117 mm) Gun Assy.	1	135/45°	
		0446-2K**-12D	4-5/8 in. (117 mm) Gun Assy.	2	135/45°	
		0446-C**-12D	4-5/8 in. (117 mm) Gun Assy.	3	135/45°	
	2	0446-1**-12D	4-5/8 in. (117 mm) Carrier Body		135/45°	
	3	0445-16**-12D	Charge Tube		1	135/45°
		0445-26**-12D	Charge Tube		2	135/45°
0446-3**-12D		Charge Tube		3	135/45°	
Common Parts	4	0445-000-001	Top Sub			
	5	0445-000-002	Tandem Sub			
	5A	0445-000-389A	Alternate Window Tandem Sub			
	6	0445-000-003	Gun Bottom			
	7	0111-342-V95	O-Ring			
	8	0111-230-V95	O-Ring			
	9	0445-500-031	Chg. Tube End Fitting - Aligning		1	
		0445-500-031	Chg. Tube End Fitting - Aligning		2	
		0446-500-031	Chg. Tube End Fitting - Aligning		3	
	10	0445-500-031	Chg. Tube End Fitting		1	
		0445-500-031	Chg. Tube End Fitting		2	
		0446-500-031	Chg. Tube End Fitting		3	
	11	0414-200-037	Snap Ring			
12		Shaped Charge				
13		Detonating Cord				
TCP Conversion Kits (Not Pictured)						
		0514-500-150	Top TCP Booster Kit			
		0514-500-160	Tandem TCP Booster Kit			
			Associated Hardware (Page 72)			

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-1K02-12D)

Compatible Shaped Charges (Shaped Charge Summary - Page 88)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4521-423T	1	SDP	21.0	F	HMX
EXP-4521-431	1	GH	21.0	F	HMX
<i>FLO-4521-310B</i>	1	BH	21.0	F	RDX
<i>FLO-5028-310B</i>	2	BH	28.0	F	RDX
<u>FLO-4623-411CFZ</u>	3	BH CFLD	22.7	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS

Bold indicates API-19B certification

Italics indicate API RP-43 certification

Underlined Part Number indicates link to API Data Sheet available

Application: "F" indicates that system is able to be fired in fluid

"G" indicates that system is able to be fired in gas

Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - EXP Scalloped Hollow Carrier Assy.	12 SPF (39 SPM)
	135/45°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	4.70 [119] ≤ 21.0g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	6.50 [165]
Approximate Weight - Loaded (lb/ft) [kg/m]	27.0 [40.1]
Max. Tension (lb/ft) [kN]	570,000 [2,536]

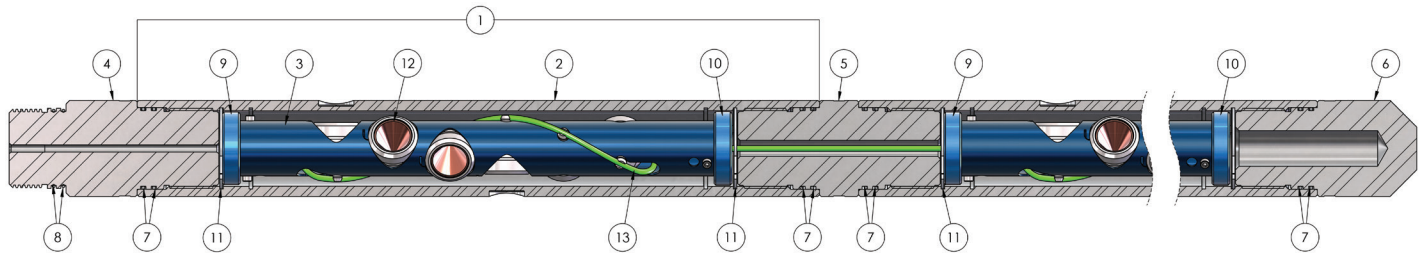
NR Not Recommended

4-5/8 in. (117 mm) EXP Scalloped Hollow Carrier Gun



16 SPF (52 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



02 Scalloped Guns

Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0446-C**-16G	4-1/2 in. (114 mm) Gun Assy.	140/20°
	2	0446-1**-16G	4-1/2 in. (114 mm) Carrier Body	140/20°
	3	0446-3**-16G	Charge Tube	140/20°
Common Parts	4	0445-000-001	Top Sub	
	5	0445-000-002	Tandem Sub	
	5A	0445-000-389A	Alternate Window Tandem Sub	
	6	0445-000-003	Gun Bottom	
	7	0111-342-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0446-500-031	Chg. Tube End Fitting - Aligning	
	10	0446-500-031	Chg. Tube End Fitting	
	11	0414-200-037	Snap Ring	
	12		Shaped Charge	
13		Detonating Cord		
TCP Conversion Kits (Not Pictured)				
		0514-500-150	Top TCP Booster Kit	
		0514-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 88)					
Part Number	Gun Assy. #	Type	Explosive Weight (g)	Application	Explosive Type
<u>FLO-4623-411CFZ</u>	1	BH CFLD	22.7	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

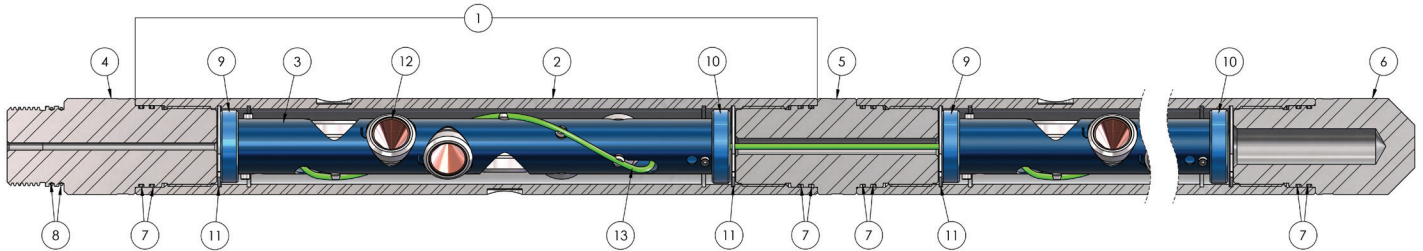
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-C02-16G)

Specifications - EXP Scalloped Hollow Carrier Assy.	16 SPF (52 SPM)
	140/20°
Nominal O.D. (in) [mm]	4.63 [117]
Nominal Thickness (in) [mm]	0.44 [11.2]
Gun Swell (in) [mm]: Ambient Fluid.	No Test
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	5.00 [127]
Maximum Pressure (psi) [MPa]	20,000 [138]
Distance to First Scallop (in) [mm]	6.38 [162]
Approximate Weight - Loaded (lb/ft) [kg/m]	24.0 [35.7]
Max. Tension (lb) [kN]	570,000 [2,536]

NR Not Recommended

12 SPF (39 SPM) GUNFACTS®

Gun Body Material: Heat treated, seamless steel tubing
 Gun Body Configuration: Threaded and scalloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline and TCP
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



Expendable (EXP) Scalloped Hollow Carrier Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
Gun Assy.	1	0338-1D**-12D	4-5/8 in. (117 mm) Gun Assy.	135/45°
	2	0338-1**-12D	4-5/8 in. (117 mm) Carrier Body	135/45°
	3	0338-8**-12D	Charge Tube	135/45°
Common Parts	4	0338-000-001	Top Sub	
	5	0338-000-002	Tandem Sub	
	6	0338-000-003	Gun Bottom	
	7	0111-360-V95	O-Ring	
	8	0111-230-V95	O-Ring	
	9	0338-800-031	Chg. Tube End Fitting - Aligning	
	10	0338-800-031	Chg. Tube End Fitting	
	11	0407-200-037	Snap Ring	
	12		Shaped Charge	
	13		Detonating Cord	
TCP Conversion Kits (Not Pictured)				
		0506-500-150	Top TCP Booster Kit	
		0506-500-160	Tandem TCP Booster Kit	
			Associated Hardware (Page 72)	

Compatible Shaped Charges (Shaped Charge Summary - Page 88)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-4039-423T	SDP	38.5	F	HMX
<i>EXP-7039-331</i>	GH	38.5	F	RDX
<u>FLO-7039-312CF</u>	BH	38.8	F	RDX
<u>FLO-7045-312CF</u>	BH	45.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0338-1D02-12D)

Specifications - EXP Scalloped Hollow Carrier Assy.	12 SPF (39 SPM)
	135/45°
Nominal O.D. (in) [mm]	7.00 [178]
Nominal Thickness (in) [mm]	0.50 [12.7]
Gun Swell (in) [mm]: Ambient Fluid.	7.07 [180] ≤ 32.0g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	7.50 [191]
Maximum Pressure (psi) [MPa]	13,000 [90]
Distance to First Scallop (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	49.0 [72.8]
Max. Tension (lbft) [kN]	952,000 [4,233]

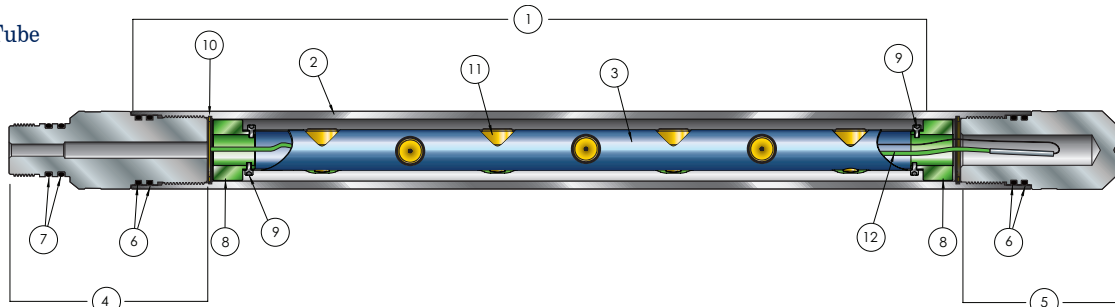
NR Not Recommended

Economical (EEG) Unscalped Casing Guns

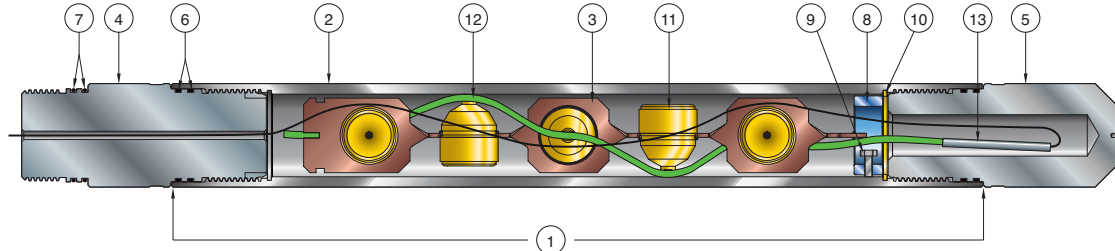
4 SPF (13 SPM) GUNFACTS®

Gun Body Material: Steel tubing
 Gun Body Configuration: Threaded and unscaloped
 Charge Tube Type: Round steel tube or twisted strip
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])

W/ Round Steel Tube



W/ Twisted Strip



Economical (EEG) Casing Gun Assembly and Components				
ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase
1	0631-A**-046	3-1/8 in. (79 mm) EEG Assy.	1	60°
	0631-A4**-046	3-1/8 in. (79 mm) EEG Twisted Assy.	2	60°
	0631-A**-044	3-1/8 in. (79 mm) EEG Assy.	1	90°
	0631-A4**-044	3-1/8 in. (79 mm) EEG Twisted Assy.	2	90°
2	0631-1**-000	3-1/8 in. (79 mm) EEG Carrier Body		
3	0363-17**-046	Charge Tube	1	60°
	0631-4**-046	Twisted Strip	2	60°
	0363-17**-044	Charge Tube	1	90°
	0631-4**-044	Twisted Strip	2	90°
Common Parts	4	0363-000-001	Top Sub	
	5	0363-000-003	Gun Bottom	
	6	0111-230-090	O-Ring	
	7	0111-230-090	O-Ring	
	8	0363-1700-131	Chg. Tube End Fitting (2 req)	1
		0631-400-031	Twisted Strip Lock Ring (1 req)	2
	9	0327-000-003	End Fitting Screw (2 req)	1
		0336-000-024	Hex Head Cap Screw; 1/4-20 x 5/8	2
	10	0402-200-037	Snap Ring (2 req)	
	11		Shaped Charge	
12		Detonating Cord		
13		Blasting Cap	2	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0631-A02-046)

Compatible Shaped Charges (Shaped Charge Summary - Page 89)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
<u>EXP-3321-421T</u>	SDP	21.0	F	HMX
<i>EXP-3319-302</i>	DP	19.0	F	RDX
<i>EXP-3319-431</i>	GH	19.0	F	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Bold indicates API-19B certification
 Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - Economical (EEG) Casing Gun Assy.	4 SPF (13 SPM); 60°		4 SPF (13 SPM); 90°	
	Charge Tube	Twisted Strip	Charge Tube	Twisted Strip
Nominal O.D. (in) [mm]	3.13 [79]			
Nominal Thickness (in) [mm]	0.30 [7.6]			
Gun Swell (in) [mm]: Ambient Fluid.	3.48 [88] ≤ 21.0g		3.48 [88] ≤ 21.0g	
Gun Swell (in) [mm]: Ambient Gas.	NR		NR	
Minimum Recommended Restriction (in) [mm]	3.58 [91]			
Maximum Pressure (psi) [MPa]	7,500 [52]			
Distance to Top Shot (in) [mm]	7.50 [191]	6.00 [152]	7.50 [191]	6.00 [152]
Approximate Weight - Loaded (lb/ft) [kg/m]	13.0 [19.3]			
Max. Tension (lb) [kN]	82,000 [365]			

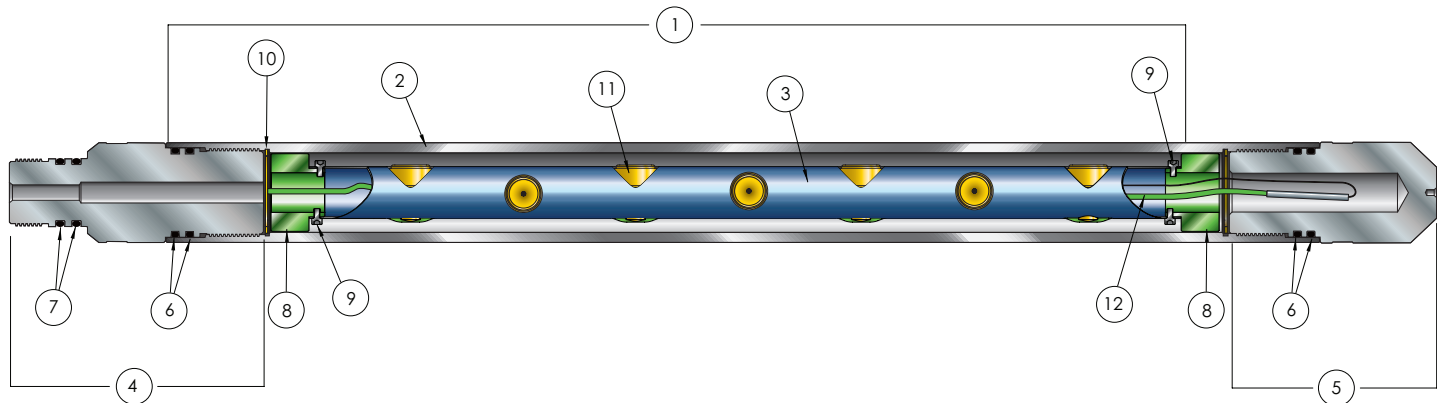
NR Not Recommended

3-1/8 in. (79 mm) Economical Casing Gun



6 SPF (20 SPM) GUNFACTS®

Gun Body Material:	Steel tubing
Gun Body Configuration:	Threaded and unscaloped
Charge Tube Type:	Round steel tube
Mode of Fire:	Simultaneous or selective firing systems such as EBFire® and ControlFire®
Initiation Point:	Top or bottom fired options available for wireline
Detonating Cord:	80 grains/foot
O-Ring Material:	Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



03 Economical Guns

Economical (EEG) Casing Gun Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
	1	0631-B**-066	3-1/8 in. (79 mm) EEG Assy.	60°
	2	0631-1**-000	3-1/8 in. (79 mm) EEG Carrier Body	
	3	0362-7**-066	Charge Tube	60°
Common Parts	4	0363-000-001	Top Sub	
	5	0363-000-003	Gun Bottom	
	6	0111-230-090	O-Ring	
	7	0111-230-090	O-Ring	
	8	0363-1700-131	Chg. Tube End Fitting (2 req)	
	9	0327-000-003	End Fitting Screw (2 req)	
	10	0402-200-037	Snap Ring (2 req)	
	11		Shaped Charge	
	12		Detonating Cord	

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
Example: Use "02" for 2ft gun; etc. (0631-B02-066)

Compatible Shaped Charges (Shaped Charge Summary - Page 89)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
RTG-2512-421T	SDP	12.0	F	HMX
RTG-2512-431	GH	12.0	F	HMX
<i>FLO-2511-310B</i>	BH	11.0	F	RDX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Underlined Part Number indicates link to API Data Sheet available
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

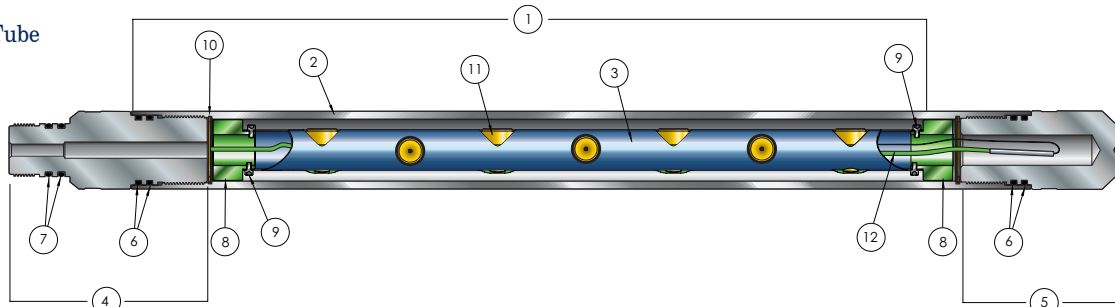
Specifications - Economical (EEG) Casing Gun Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	3.13 [79]
Nominal Thickness (in) [mm]	0.30 [7.6]
Gun Swell (in) [mm]: Ambient Fluid.	3.45 [88] ≤ 12.0g
Gun Swell (in) [mm]: Ambient Gas.	NR
Minimum Recommended Restriction (in) [mm]	3.58 [91]
Maximum Pressure (psi) [MPa]	7,500 [52]
Distance to Top Shot (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	13.0 [19.3]
Max. Tension (lbf) [kN]	82,000 [356]

NR Not Recommended

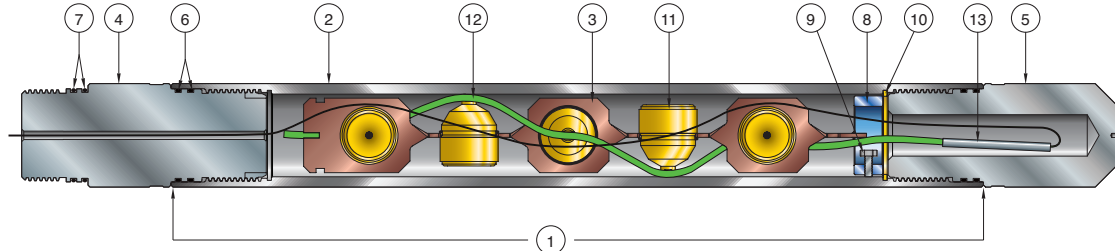
4 SPF (13 SPM) GUNFACTS®

Gun Body Material:	Steel tubing
Gun Body Configuration:	Threaded and unscaloped
Charge Tube Type:	Round steel tube or twisted strip
Mode of Fire:	Simultaneous or selective firing systems such as EBFire® and ControlFire®
Initiation Point:	Top or bottom fired options available for wireline
Detonating Cord:	80 grains/foot
O-Ring Material:	Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])

W/ Round Steel Tube



W/ Twisted Strip



Economical (EEG) Casing Gun Assembly and Components					
ITEM	PART NO.	DESCRIPTION	Gun Assy. #	Phase	
1	0640-B**-046	3-1/8 in. (79 mm) EEG Assy.	1	60°	
	0640-A4**-046	3-1/8 in. (79 mm) EEG Twisted Assy.	2	60°	
	0640-B**-044	3-1/8 in. (79 mm) EEG Assy.	1	90°	
	0640-A4**-044	3-1/8 in. (79 mm) EEG Twisted Assy.	2	90°	
2	0640-1**-000	3-1/8 in. (79 mm) EEG Carrier Body			
3	0365-7**-046	Charge Tube	1	60°	
	0631-4**-046	Twisted Strip	2	60°	
	0365-7**-044	Charge Tube	1	90°	
	0631-4**-044	Twisted Strip	2	90°	
Common Parts	4	0640-000-001	Top Sub		
	5	0640-000-003	Gun Bottom		
	6	0111-236-090	O-Ring		
	7	0111-230-090	O-Ring		
	8	0640-700-131	Chg. Tube End Fitting (2 req)	1	
		0631-400-031	Twisted Strip Lock Ring (1 req)	2	
	9	0327-000-003	End Fitting Screw (2 req)	1	
		0336-000-024	Hex Head Cap Screw; 1/4-20 x 5/8	2	
	10	0404-200-037	Snap Ring (2 req)		
	11		Shaped Charge		
12		Detonating Cord			
13		Blasting Cap	2		

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
Example: Use "02" for 2ft gun; etc. (0640-B02-046)

Compatible Shaped Charges (Shaped Charge Summary - Page 89)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3321-421T	SDP	21.0	F, G	HMX
EXP-3323-423T	SDP	22.7	F, G	HMX
EXP-3319-302	DP	19.0	F, G	RDX
EXP-3325-331	GH	25.0	F	RDX
EXP-3319-431	GH	19.0	F, G	HMX
EXP-3323-431	GH	22.7	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

Specifications - Economical (EEG) Casing Gun Assy.	4 SPF (13 SPM); 60°		4 SPF (13 SPM); 90°	
	Charge Tube	Twisted Strip	Charge Tube	Twisted Strip
Nominal O.D. (in) [mm]	4.00 [102]			
Nominal Thickness (in) [mm]	0.31 [7.9]			
Gun Swell (in) [mm]: Ambient Fluid.	4.50 [114] ≤ 25.0g		4.50 [114] ≤ 25.0g	
Gun Swell (in) [mm]: Ambient Gas.	4.49 [114] ≤ 22.7g		4.50 [114] ≤ 22.7g	
Minimum Recommended Restriction (in) [mm]	4.77 [121]			
Maximum Pressure (psi) [MPa]	7,500 [52]			
Distance to Top Shot (in) [mm]	7.50 [191]	6.00 [152]	7.50 [191]	6.00 [152]
Approximate Weight - Loaded (lb/ft) [kg/m]	16.0 [23.8]			
Max. Tension (lb) [kN]	120,000 [534]			

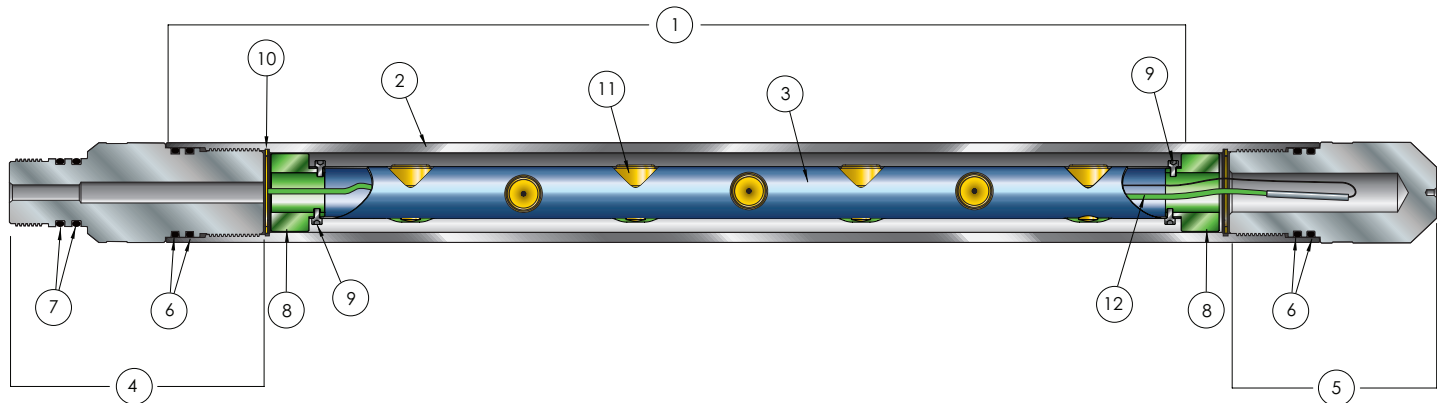
N/R Not Recommended

4 in. (102 mm) Economical Casing Gun



6 SPF (20 SPM) GUNFACTS®

Gun Body Material: Steel tubing
 Gun Body Configuration: Threaded and unscaloped
 Charge Tube Type: Round steel tube
 Mode of Fire: Simultaneous or selective firing systems such as EBFire® and ControlFire®
 Initiation Point: Top or bottom fired options available for wireline
 Detonating Cord: 80 grains/foot
 O-Ring Material: Nitrile - 90 Durometer (Viton - 95 Durometer for temperatures >325°F [163°C])



03 Economical Guns

Economical (EEG) Casing Gun Assembly and Components				
	ITEM	PART NO.	DESCRIPTION	Phase
	1	0640-B**-066	4 in. (102 mm) EEG Assy.	60°
	2	0640-1**-000	4 in. (102 mm) EEG Carrier Body	
	3	0365-7**-066	Charge Tube	60°
Common Parts	4	0640-000-001	Top Sub	
	5	0640-000-003	Gun Bottom	
	6	0111-236-090	O-Ring	
	7	0111-230-090	O-Ring	
	8	0640-700-131	Chg. Tube End Fitting (2 req)	
	9	0327-000-003	End Fitting Screw (2 req)	
	10	0404-200-037	Snap Ring (2 req)	
	11		Shaped Charge	
	12		Detonating Cord	
	13		Blasting Cap	

Compatible Shaped Charges (Shaped Charge Summary - Page 89)				
Part Number	Type	Explosive Weight (g)	Application	Explosive Type
EXP-3321-421T	SDP	21.0	F, G	HMX
EXP-3323-423T	SDP	22.7	F, G	HMX
<i>EXP-3319-302</i>	DP	19.0	F, G	RDX
<i>EXP-3325-331</i>	GH	25.0	F	RDX
EXP-3319-431	GH	19.0	F, G	HMX
EXP-3323-431	GH	22.7	F, G	HMX

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Bold indicates API-19B certification
Italics indicate API RP-43 certification
 Application: "F" indicates that system is able to be fired in fluid
 "G" indicates that system is able to be fired in gas
 Phasing Compatibility: Refer to listed phasing(s) in Specifications table below

** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun; etc. (0640-B02-066)

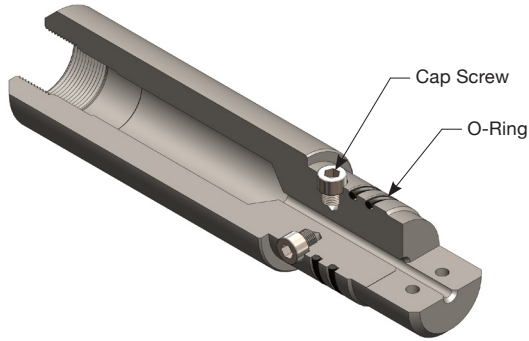
Specifications - Economical (EEG) Casing Gun Assy.	6 SPF (20 SPM)
	60°
Nominal O.D. (in) [mm]	4.00 [102]
Nominal Thickness (in) [mm]	0.31 [7.9]
Gun Swell (in) [mm]: Ambient Fluid.	4.31 [109] ≤ 25.0g
Gun Swell (in) [mm]: Ambient Gas.	4.50 [114] ≤ 22.7g
Minimum Recommended Restriction (in) [mm]	4.77 [121]
Maximum Pressure (psi) [MPa]	7,500 [52]
Distance to Top Shot (in) [mm]	7.00 [178]
Approximate Weight - Loaded (lb/ft) [kg/m]	18.0 [26.8]
Max. Tension (lbf) [kN]	120,000 [534]

NR Not Recommended

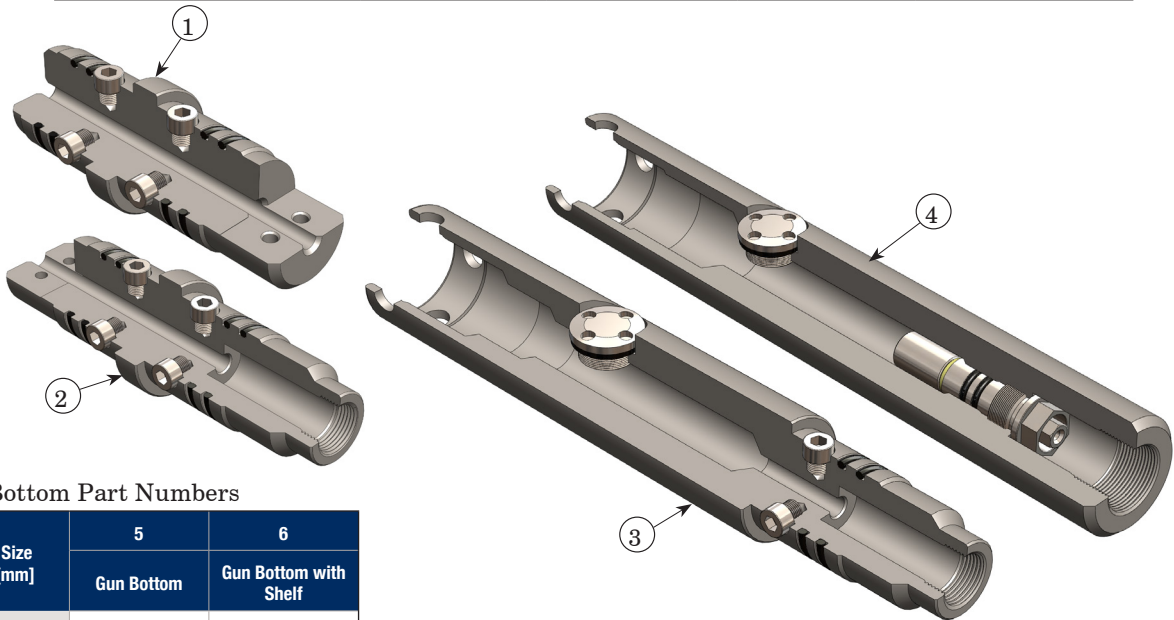
Accessories

Top Sub Part Numbers

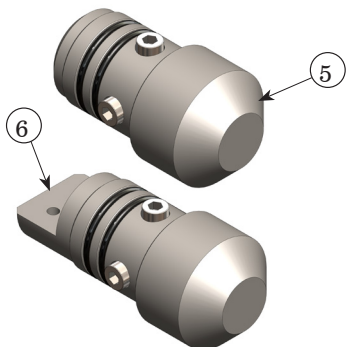
Gun Size (in) [mm]	Top Sub	Upper Head Connection
1-3/8 [35]	0327-000-001	1-3/16" - 12 Go Box
1-9/16 [40]	0320-000-001	1-3/16" - 12 Go Box
2 [51]	0321-000-001	1-3/16" - 12 Go Box
2-1/2 [64]	0328-000-001	1-3/16" - 12 Go Box


Tandem Adapter Part Numbers

Gun Size (in) [mm]	1	2	3	4	
	Tandem Adapter	EB Switch Tandem No Port	EB Switch Tandem with Port	Plug-Shoot Assembly	Plug Shoot Lower Head Connection
1-3/8 [35]	0327-000-002	-	-	-	-
1-9/16 [40]	0320-000-002	0323-000-063	0323-000-065	0320-000-235A	1-3/16" - 12 Go Box
2 [51]	0321-000-002	0324-000-063	0324-000-169	0321-000-235A	1-3/16" - 12 Go Box
2-1/2 [64]	0328-000-002	0325-000-063	0325-000-168	0328-000-235A	1-3/16" - 12 Go Box


Gun Bottom Part Numbers

Gun Size (in) [mm]	5	6
	Gun Bottom	Gun Bottom with Shelf
1-3/8 [35]	0327-000-002	-
1-9/16 [40]	0320-000-002	0323-000-063
2 [51]	0321-000-002	0324-000-063
2-1/2 [64]	0328-000-002	0325-000-063


Miscellaneous Accessories

Gun Size (in) [mm]	Gun Bottom	O-Ring†	Port Plug	Port Plug Gasket	Gun Bottom with Shelf
1-3/8 [35]	0327-000-019	0111-211-090	-	-	-
1-9/16 [40]	0320-000-019	0111-214-090	0323-000-066	0111-114-090†	0320-000-238
2 [51]	0321-000-019	0111-220-090	0331-90S-081	0330-900-073	0320-000-238
2-1/2 [64]	0328-000-019	0111-224-090	0331-224-090	0330-900-073	0320-000-238

† Viton O-rings need to be used above 325°F (163°C)

APPLICATIONS

- Single gun wireline perforating operations

FEATURES

- No electrical wiring
- No detonator to detonating cord crimping required
- Simple to use detonator
- Detonator is always shunted until properly armed
- Ideal for long gun strings with TCP transfer systems
- Arming procedures comply with API RP-67 electrical before ballistic arming (EBBA) recommendations

BENEFITS

- Eliminates electrical wiring and detonator crimping problems
- More efficient perforating gun arming without compromising safety

Hunting has developed a simple to use Top Fire Detonator System that consists of a Quick Change Assembly[†] and a specialized, easy to use, detonator. This eliminates the use of any electrical wiring associated with bottom-fire gun systems or ported firing head adapters, which will improve the efficiency of single gun perforating operations.

Safe arming procedures comply with API RP-67 EBBA recommendations and are incorporated into the design of the Top Fire Detonator System:

- Attach the stem protector (shunt)
- Insert the specialized detonator
- Screw in the safety blast shield
- Remove the shunt and connect to the logging head (electrical arming)
- Remove the safety blast shield and connect to the perforating gun (ballistic arming)

Rigorous testing has been performed on this system to ensure that mechanical integrity is maintained due to the unlikely event of an unintentional surface detonation during the arming procedure. Contact your local Hunting representative for more information.



04 Accessories

Hardware Specifications

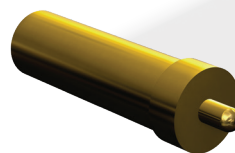
Part Number	TFA-156-000	TFA-275-000	TFA-312-000
Gun Size	1-9/16 - 2-1/2 in. (40-64 mm)	2-3/4 in. (40 - 64 mm) †	3-1/8 - 7 in. (79 - 178 mm) †
O.D. (in.)/[mm]	1.56 [40]	2.75 [70]	3.13 [79]
Max. Temperature (°F)/[°C]	475 [246]	475 [246]	475 [246]
Max. Pressure (9psi) [MPa]	20,000 [138]	20,000 [138]	20,000 [138]
Max. Voltage (VDC)	600	600	600
Max. Current (mA)	2,000	2,000	2,000
Max. Tension (lbf)/[kN]	72,000 [320]	126,000 [560]	126,000 [560]

† Quick Change Assembly style

Detonator Specifications

Part Number	DETO-3050-008
1 hr Temp Rating (°F) [°C]	475 [246]
No Fire Current (mA)	200
All Fire Current (mA)	800
Resistance (Ω)	51
Static Sensitivity	MIL-SPEC-322B
UN Number	UN0456
Hazard Class	1.4S
US DOT	EX-2011021343

Detonator DETO-3050-008



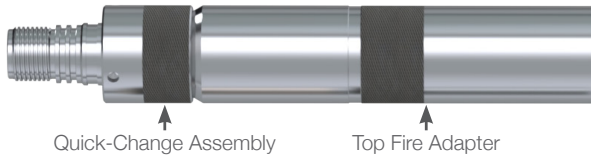
Screw-in safety blast shield.
Tested to withstand unintentional detonations.

The Top Fire Adapter (TFA) harnesses the technology behind the H-1[®] Perforating Gun System to provide a wire-free and RF-Safe solution for conventional systems.

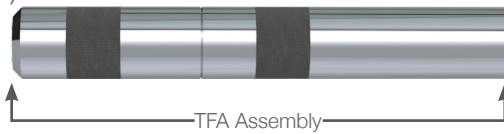


Top Fire Adapter Available for Each Style of Quick-Change Assembly

H-1 Style



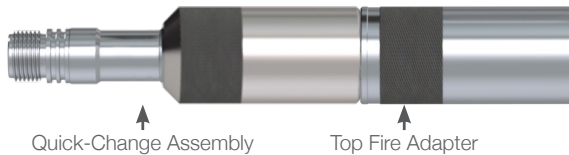
GO Style (2" & 2-1/2")



GO Style (2-3/4" - 7")



SIE Style



Hardware Specifications

Part Number	0222-TFA-100	0362-TFA-100	0362-TFA-110	0362-TFA-120	0363-TFA-100	0363-TFA-110	0363-TFA-120
Style	GO Style	GO Style	SIE Style	H-1 [®] Style	GO Style	SIE Style	H-1 [®] Style
Quick-Change Part Number	-	0271-100-040	0260-100-040	3271-275-030	0256-100-040	0260-100-000	3271-312-030
Gun Size	2 - 2-1/2 in. (51-64 mm)	2-3/4 in. - 2-7/8 in. (40 - 73 mm) †			3-1/8 - 7 in. (79 - 178 mm)		
O.D. (in.) [mm]	2.00 [51]	2.75 [70]			3.13 [79]		
Weight (lb) [kg]	8.00 [3.63]	12.93 [5.86]	10.58 [4.80]	16.36 [7.42]	18.38 [8.34]	12.81 [5.81]	21.59 [9.79]
Max. Temperature (°F) [°C]	350 [177]	350 [177]			350 [177]		
Max. Pressure (psi) [MPa]	20,000 [138]	20,000 [138]			20,000 [138]		
Max. Tension (lbf) [kN]	102,000 [454]	160,000 [712]			183,000 [814]		

Threaded Gun Accessories



Top Sub Part Numbers

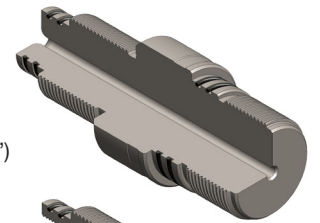
2-3/4" (70mm) top subs and larger have upper head connections that are compatible with GO and SIE style Quick Change Assemblies. Each style provides two options – teardrop connections, being the preferred method, and pig tail connections.

For GO Quick Change Assemblies, firing head seal block assembly with teardrop connection 0271-000-020 (2-3/4") or 0256-000-020 (3-1/8") is connected directly into the quick change. If using pigtail assembly 0256-000-010, then detonator block 0271-000-013 (2-3/4") and 0256-000-013 (3-1/8") is connected into the quick change.

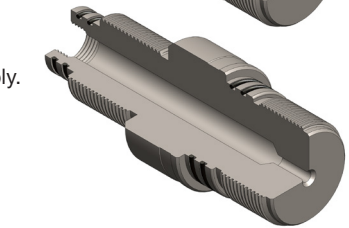
For SIE Quick Change Assemblies, contact block assembly 0260-000-040 is coupled with blast plug (teardrop connector style 0330-000-190. Third party rubber blast plugs can be used when opting to use a pig tail assembly.

Gun Size (in)[mm]	Top Sub	Upper O-Ring†	Lower O-Ring†	Upper Head Connection‡
1-3/8 [35]	0227-000-001	-	0111-120-090	1-3/16" - 12 GO Box
1-9/16 [40]	0220-000-001	-	0111-215-090	1-3/16" - 12 GO Box
2 [51]	0222-000-001	-	0111-221-090	1-3/16" - 12 GO Box
2-1/2 [64]	0228-000-001	-	0111-225-090	1-3/16" - 12 GO Box
2-3/4 [70] 2-7/8 [73]	0362-000-001	-	0111-227-090	1-3/16" - 12 GO Box
	0362-000-###	0111-227-090	0111-227-090	2-3/4" O.D. GO Quick-Change Assembly
	0362-000-^^^	0111-222-090	0111-227-090	2-3/4" O.D. SIE Quick-Change Assembly
3-1/8 [79]	0363-000-0**	0111-230-090 GO style	0111-230-090	3-1/8" O.D. GO Quick-Change and 3-1/8" O.D. SIE Quick-Change
3-3/8 [86]	0365-000-0**		0111-231-090	
4 [102] Scalloped 4 [102] Economical	0400-000-0** 0640-000-0**	0111-222-090 SIE style	0111-236-090	
4-1/2 [114] 4-5/8 [117]	0445-000-0**		0111-342-090	
7 [178]	0338-000-0**		0111-360-090	

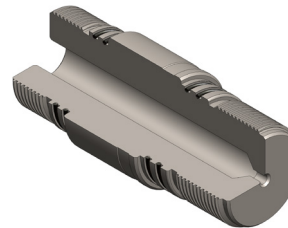
† Viton O-rings need to be used above 325°F (163°C) ‡ Refer to GunFacts for lower head connection thread
 ### Use "101" for GO style pig tail connection; "107" for GO style teardrop connection
 ^^ Use "104" for SIE style pig tail connection; "184" for SIE style blast plug connection
 ** Use "01" for GO style pig tail connection; "07" for GO style teardrop connection
 *04" for SIE style pig tail connection; "84" for SIE blast plug connection



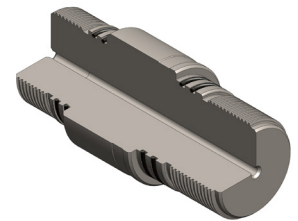
SIE Quick Change top subs



GO Box top sub



GO Quick Change top subs

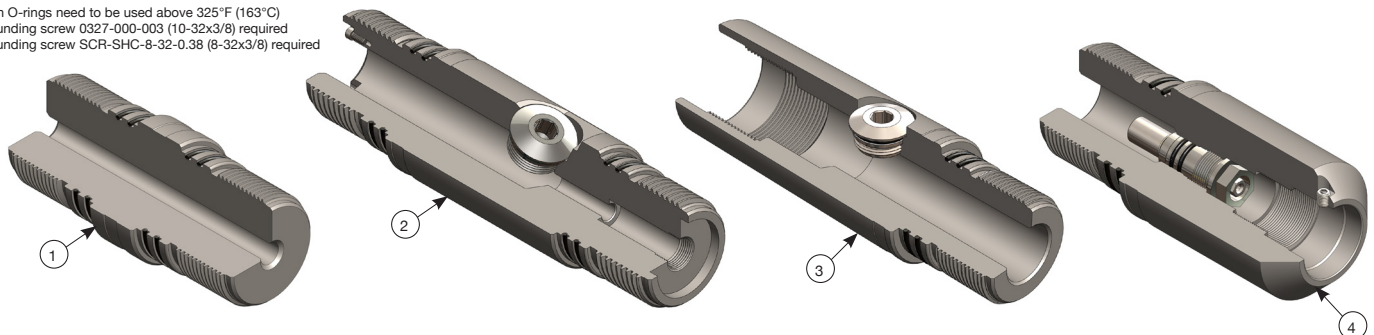


04 Accessories

Tandem, Arming and Plug Shoot Adapter Part Numbers

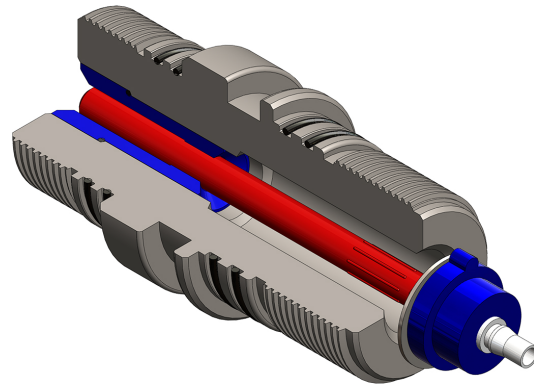
Gun Size (in)[mm]	1	2	3	4	O-Ring†	Port Plug	Port Plug O-Ring†	Plug Shoot Contact Kit
	Tandem Adapter	EB Switch Tandem Adapter Assembly w/ Port	Arming Sub Adapter Assembly w/ Port	Plug Shoot Adapter Assembly				
1-3/8 [35]	0227-000-002‡	-	-	-	0111-120-090	-	-	-
1-9/16 [40]	0220-000-002‡	0220-000-269A	0220-012-001A	0220-000-245A	0111-215-090	0323-000-066	0111-114-090	0320-000-238
2 [51]	0222-000-002‡	0222-000-268A	0222-012-001A	0222-000-245A	0111-221-090	0331-90S-181	0330-900-073	0320-000-238
2-1/2 [64]	0228-000-002‡	0228-000-268A	0228-012-001A	0228-000-245A	0111-225-090	0331-90S-181	0330-900-073	0320-000-238
2-3/4 [70] 2-7/8 [73]	0362-000-002	0362-000-489A§	0362-000-366A	0362-000-245A	0111-227-090	0363-000-361	0111-217-090	0330-000-238
3-1/8 [79]	0363-000-002	0363-000-489A§	0363-000-366A	0363-000-245A	0111-230-090	0363-000-361	0111-217-090	0330-000-238
3-3/8 [86]	0365-000-002	0365-000-489A§	0365-000-366A	0365-000-245A	0111-231-090	0363-000-361	0111-217-090	0330-000-238
4 [102] Scalloped 4 [102] Economical	0400-000-002	0400-000-389A§ 0640-000-389A§	0400-000-366A 0640-000-366A	0400-000-245A 0640-000-245A	0111-236-090	0363-000-361	0111-217-090	0330-000-238
4-1/2 [114] 4-5/8 [117]	0445-000-002	0445-000-389A§	0445-000-366A	0445-000-245A	0111-342-090	0363-000-361	0111-217-090	0330-000-238
7 [178]	0338-000-002	-	-	-	0111-360-090	-	-	-

† Viton O-rings need to be used above 325°F (163°C)
 ‡ Grounding screw 0327-000-003 (10-32x3/8) required
 § Grounding screw SCR-SHC-8-32-0.38 (8-32x3/8) required



BOOSTER-TO-BOOSTER TOP SUB PART NUMBERS

Booster-to-booster connections are typically associated with TCP operations. However, they can also be utilized for wireline perforating when using Hunting's Wireline Top Fire Detonator Systems. This system is not compatible with 4in (114mm) Economical Casing Guns.



Gun Size (in)[mm]	Top Sub	Booster Transfer Kit	Upper O-Ring†	Lower O-Ring†	Upper Head Connection‡
1-3/8 [35]	0527-000-001	0520-500-150 (Blue)	0111-120-090	0111-120-090	1-1/8" - 12 Stub Acme Pin
1-9/16 [40]	0520-000-021	0520-500-150 (Blue)	0111-215-090	0111-215-090	1-9/32" - 12 Stub Acme Pin
2 [51]	0522-000-021	0520-500-150 (Blue)	0111-215-090	0111-221-090	1-9/32" - 12 Stub Acme Pin
2-1/2 [64]	0528-000-021	0520-500-150 (Blue)	0111-215-090	0111-225-090	1-9/32" - 12 Stub Acme Pin
2-3/4 [70] 2-7/8 [73]	0562-000-01	0504-500-150 (White)	0111-225-090 (TCP) 0111-227-090 (WL)	0111-227-090	2-1/8" - 8 Acme Pin (TCP) 2-3/4" O.D. GO Quick-Change (WL)
3-1/8 [79]	0502-000-001	0503-500-150 (Red)	0111-230-090	0111-230-090	3-1/8" O.D. GO Quick-Change
3-3/8 [86]	0503-000-001	0503-500-150 (Red)	0111-230-090	0111-231-090	3-1/8" O.D. GO Quick-Change
4 [102] Scalloped	0504-000-001	0504-500-150 (White)	0111-230-090	0111-236-090	3-1/8" O.D. GO Quick-Change
4-1/2 [114] 4-5/8 [117]	0514-000-001	0514-500-150 (Black)	0111-230-090	0111-342-090	3-1/8" O.D. GO Quick-Change
7 [178]	0507-000-001	0506-500-150 (Tan)	0111-230-090	0111-360-090	3-1/8" O.D. GO Quick-Change

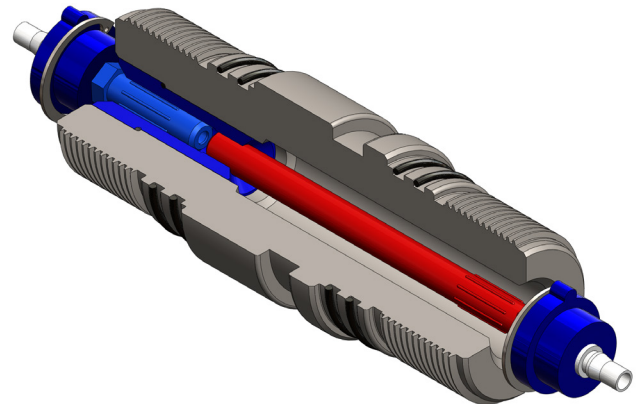
† Viton O-rings need to be used above 325°F (163°C) ‡ Refer to GunFacts for lower head connection thread
 * Use "0" for TCP firing system; "1" for wireline top fire system

Booster-to-Booster Tandem Sub Part Numbers

Booster-to-booster connections are typically associated with TCP operations. However, they can also be utilized for wireline perforating when using Hunting's Wireline Top Fire Detonator Systems. This system is not compatible with 4in (114mm) Economical Casing Guns.

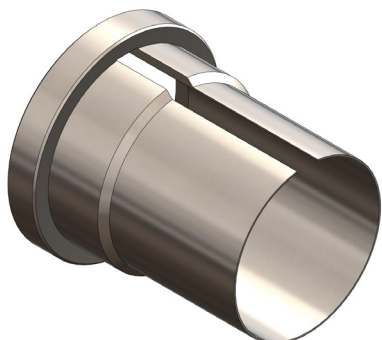
Gun Size (in)[mm]	Tandem Sub	Booster Transfer Kit	O-Ring†
1-3/8 [35]	0527-000-032	0520-500-160 (Blue)	0111-120-090
1-9/16 [40]	0520-000-032	0520-500-160 (Blue)	0111-215-090
2 [51]	0522-000-032	0520-500-160 (Blue)	0111-221-090
2-1/2 [64]	0528-000-032	0520-500-160 (Blue)	0111-225-090
2-3/4 [70] 2-7/8 [73]	0562-000-032	0504-500-160 (White)	0111-227-090
3-1/8 [79]	0502-000-032	0503-500-160 (Red)	0111-230-090
3-3/8 [86]	0503-000-032	0503-500-160 (Red)	0111-231-090
4 [102] Scalloped	0504-000-032	0504-500-160 (White)	0111-236-090
4-1/2 [114] 4-5/8 [117]	0514-000-032	0514-500-160 (Black)	0111-342-090
7 [178]	0507-000-032	0506-500-160 (Tan)	0111-360-090

† Viton O-rings need to be used above 325°F (163°C)



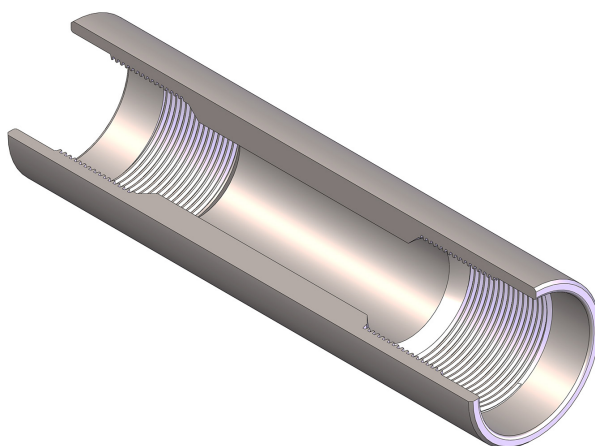
Miscellaneous Accessories

Hunting offers a gun loading tool to help prevent the accidental dislodging of charge retainer clips while inserting a loaded charge tube into the carrier.

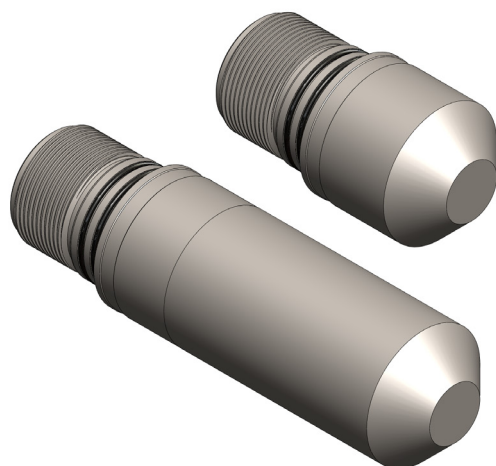


Gun Size (in)[mm]	"Clip Saver" Part Number
2-3/4 [70] 2-7/8 [73]	0362-100-195
3-1/8 [79]	0363-100-195
3-3/8 [86]	0365-100-195
4 [102] Scalloped	0400-100-195
4-1/2 [114] 4-5/8 [117]	0445-100-195

Blast sleeves can be utilized in situations where extra space is required for detonators or gun switch systems.



Gun Size (in)[mm]	Blast Sleeve Part Number	
	Non-Ported	Ported
1-3/8 [35]	0227-012-000	-
1-9/16 [40]	0220-012-000	0220-012-001A
2 [51]	0222-012-000	0222-012-001A
2-1/2 [64]	0228-012-000	0228-012-001A
2-3/4 [70] 2-7/8 [73]	0362-012-000	0362-012-001A
3-1/8 [79]	0363-012-000	0363-012-001A
3-3/8 [86]	0365-012-000	0365-012-001A
4 [102] Scalloped 4 [102] Economical	0400-012-000 0640-012-000	0400-012-001A 0640-012-001A
4-1/2 [114] 4-5/8 [117]	0445-012-000	0445-012-001A
7 [178]	0338-012-000	-



GUN BOTTOM PART NUMBERS

Gun Size (in)[mm]	Gun Bottom	Gun Bottom Extra Long	O-Ring†
1-3/8 [35]	0227-000-003	0227-000-013	0111-120-090
1-9/16 [40]	0220-000-003	0220-000-013	0111-215-090
2 [51]	0222-000-003	0222-000-013	0111-221-090
2-1/2 [64]	0228-000-003	0228-000-013	0111-225-090
2-3/4 [70] 2-7/8 [73]	0362-000-003	0362-000-013	0111-227-090
3-1/8 [79]	0363-000-003	0363-000-013	0111-230-090
3-3/8 [86]	0365-000-003	0365-000-013	0111-231-090
4 [102] Scalloped 4 [102] Economical	0400-000-003 0640-000-003	0400-000-013 -	0111-236-090
4-1/2 [114] 4-5/8 [117]	0445-000-003	0445-000-013	0111-342-090
7 [178]	0338-000-003	0338-000-013	0111-360-090

† Viton O-rings need to be used above 325°F (163°C)

TCP Gun Lift Subs are used when perforating guns need to be connected together vertically on the drill floor. It consists of a standard 2ft (0.61m) N-80 pup joint. An elevator disc is screwed into the top of the pup joint and welded for security. This is where the rig elevators latch on and supports the entire gun weight. The lift sub connector at the bottom is removable allowing multi-functional use with different gun sizes.

ASSEMBLY PART NUMBERS

The part numbers in the following table include the respective lift sub connector.

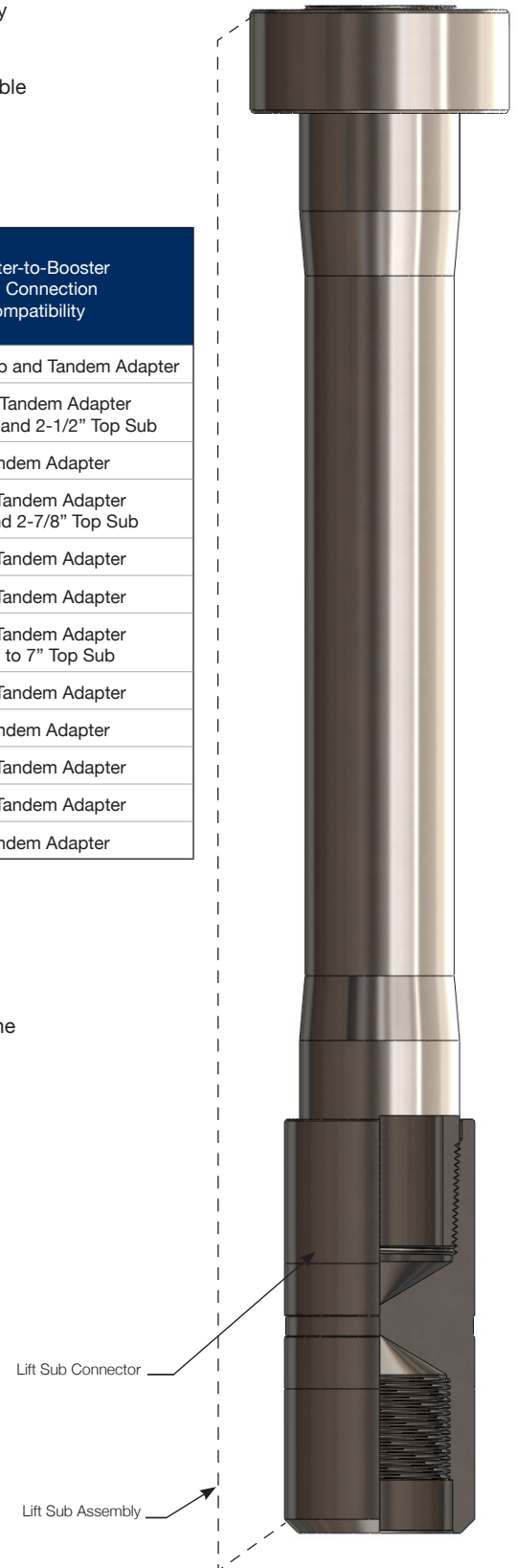
Gun Size (in)[mm]	2-3/8" (60mm) EUE		2-7/8" (73mm) EUE		Booster-to-Booster Gun Connection Compatibility
	Assembly Part Number	Max. Gun Weight (lb)[kg]	Assembly Part Number	Max. Gun Weight (lb)[kg]	
1-3/8 [35]	0227-010-23B	59,000 [26,800]†	-	-	1-3/8" Top Sub and Tandem Adapter
1-9/16 [40]	0220-010-23B	80,000 [36,300]†	-	-	1-9/16" Tandem Adapter 1-9/16", 2" and 2-1/2" Top Sub
2 [51]	0222-010-23B	104,000 [47,200]	-	-	2" Tandem Adapter
2-1/2 [64]	0228-010-23B	80,000 [36,300]†	-	-	2-1/2" Tandem Adapter 2-3/4" and 2-7/8" Top Sub
2-3/4 [70]	0462-010-23B	104,000 [47,200]	-	-	2-3/4" Tandem Adapter
2-7/8 [73]	0464-010-23B	104,000 [47,200]	-	-	2-7/8" Tandem Adapter
3-1/8 [79]	0402-010-23B	104,000 [47,200]	0402-010-28B	145,000 [65,800]	3-1/8" Tandem Adapter 3-1/8" to 7" Top Sub
3-3/8 [86]	0403-010-23B	104,000 [47,200]	0403-010-28B	145,000 [65,800]	3-3/8" Tandem Adapter
4 [102]	0404-010-23B	104,000 [47,200]	0404-010-28B	145,000 [65,800]	4" Tandem Adapter
4-1/2 [114]	0414-010-23B	104,000 [47,200]	0414-010-28B	145,000 [65,800]	4-1/2" Tandem Adapter
4-5/8 [117]	0416-010-23B	104,000 [47,200]	0416-010-28B	145,000 [65,800]	4-5/8" Tandem Adapter
7 [178]	0407-010-23B	104,000 [47,200]	0407-010-28B	145,000 [65,800]	7" Tandem Adapter

† Gun carrier is the limiting factor

LIFT SUB CONNECTOR PART NUMBERS

Lift sub connectors can be purchased separately such that easy changes can be made at the wellsite when rigging up tandem and top guns with differing thread profiles.

Gun Size (in)[mm]	2-3/8" (60mm) Lift Sub Connector	2-7/8" (73mm) Lift Sub Connector
1-3/8 [35]	0227-001-23B	-
1-9/16 [40]	0220-001-23B	-
2 [51]	0222-001-23B	-
2-1/2 [64]	0228-001-23B	-
2-3/4 [70]	0462-001-23B	-
2-7/8 [73]	0464-001-23B	-
3-1/8 [79]	0402-001-23B	0402-001-28B
3-3/8 [86]	0403-001-23B	0403-001-28B
4 [102] Scalloped	0404-001-23B	0404-001-28B
4-1/2 [114]	0414-001-23B	0414-001-28B
4-5/8 [117]	0416-001-23B	0416-001-28B
7 [178]	0407-001-23B	0407-001-28B

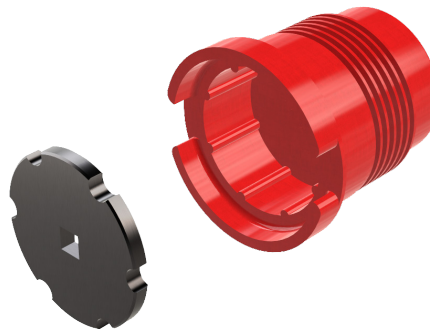


Thread Protectors and Support Plates



These plastic box thread protectors are suitable for storing and transporting loaded or unloaded gun carriers. They provide an O-Ring seal keeping moisture out and protect the gun carrier threads from becoming damaged during normal every day handling. Thread protector wrenches are available for 2-3/4" - 2-7/8", 3-1/8" and 3-3/8" gun carries to enable quick removal. Each wrench is compatible with a 3/8" drive.

Gun Size (in)[mm]	Gun Box Protector	O-Ring†	Wrench
1-3/8 [35]	0227-000-220P	0111-120-090	-
1-9/16 [40]	0220-000-220P	0111-215-090	-
2 [51]	0222-000-220P	0111-221-090	-
2-1/2 [64]	0228-000-220P	0111-225-090	-
2-3/4 [70] 2-7/8 [73]	0362-000-320	0111-227-090	0362-000-425
3-1/8 [79]	0363-000-320	0111-230-090	0363-000-425
3-3/8 [86]	0365-000-320	0111-231-090	0365-000-425
4 [102] Scalloped 4 [102] Economical	0400-000-320 0640-000-320	0111-236-090	-
4-1/2 [114] 4-5/8 [117]	0414-000-320	0111-342-090	-
7 [178]	0338-000-320	0111-360-090	-



† Lower grade O-Rings can be used

Steel protectors with handles provide an easier way of handling loaded guns especially when booster-to-booster transfers and tandems are already installed on each end of the carrier. O-Rings provide a moisture seal while a melt plug provides pressure relief should a loaded gun be involved in a blaze. They are not rated for rigging up/down operations. TCP Lift Subs need to be utilized for this purpose.

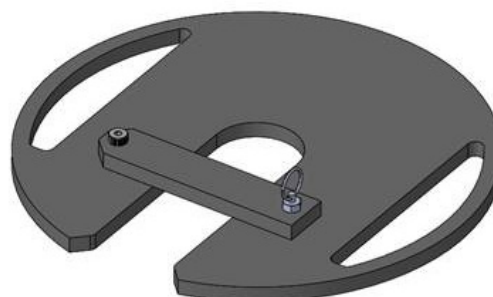
Gun Size (in)[mm]	Gun Box Protector	Gun Pin Protector	Melt Plug	O-Ring†	Booster-to-Booster Gun Connection Compatibility
1-3/8 [35]	0227-000-220	0227-000-230	8801-00P-28	0111-120-090	1-3/8" Top Sub and Tandem Adapter
1-9/16 [40]	0220-000-220	0220-000-230	8801-00P-28	0111-215-090	1-9/16" Tandem Adapter 1-9/16", 2" and 2-1/2" Top Sub
2 [51]	0222-000-220	0222-000-230	8801-00P-28	0111-221-090	2" Tandem Adapter
2-1/2 [64]	0228-000-220	0228-000-230	8801-00P-28	0111-225-090	2-1/2" Tandem Adapter 2-3/4" and 2-7/8" Top Sub
2-3/4 [70] 2-7/8 [73]	0462-000-220	0462-000-230	8801-00P-68V	0111-227-090	2-3/4" and 2-7/8" Tandem Adapter
3-1/8 [79]	0402-000-220	0402-000-230	8801-00P-68V	0111-230-090	3-1/8" Tandem Adapter 3-1/8" to 7" Top Sub
3-3/8 [86]	0403-000-220	0403-000-230	8801-00P-68V	0111-231-090	3-3/8" Tandem Adapter
4 [102] Scalloped 4 [102] Economical	0404-000-220 0640-000-120	0404-000-230 0640-000-230	8801-00P-68V	0111-236-090	4" Tandem Adapter
4-1/2 [114] 4-5/8 [117]	0414-000-220	0414-000-230	8801-00P-68V	0111-342-090	4-1/2" Tandem Adapter 4-5/8" Tandem Adapter
7 [178]	0407-000-220	0407-000-230	8801-00P-68V	0111-360-090	7" Tandem Adapter



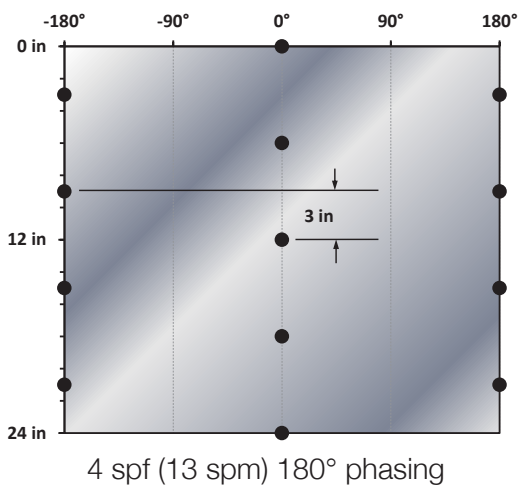
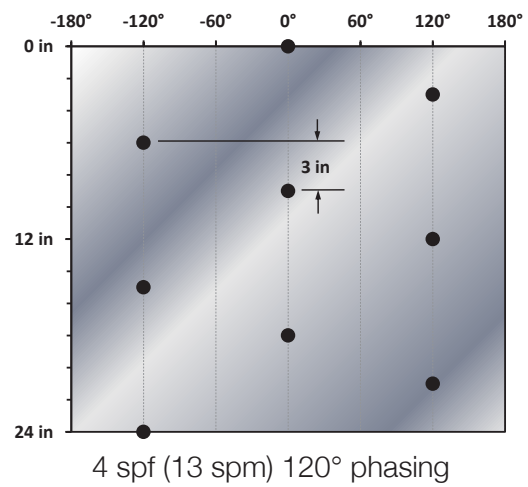
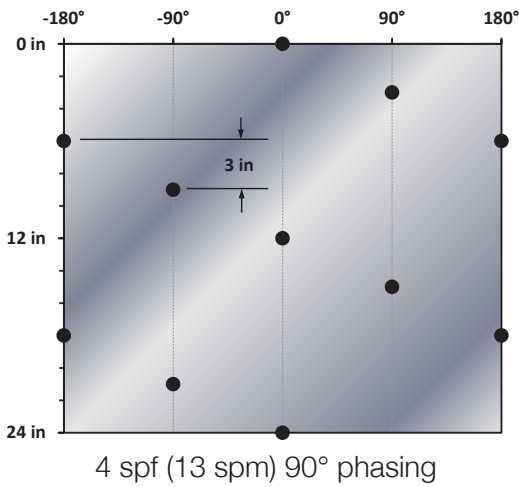
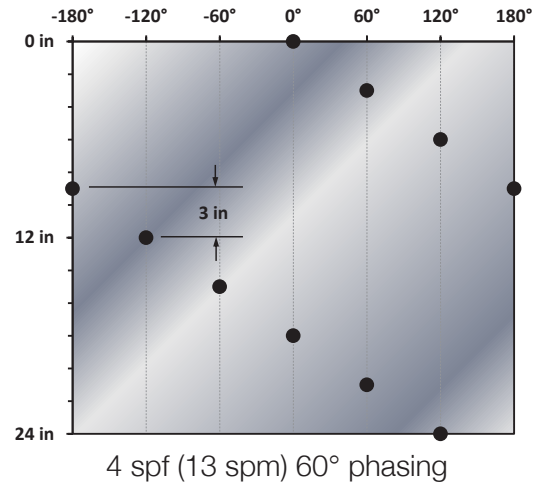
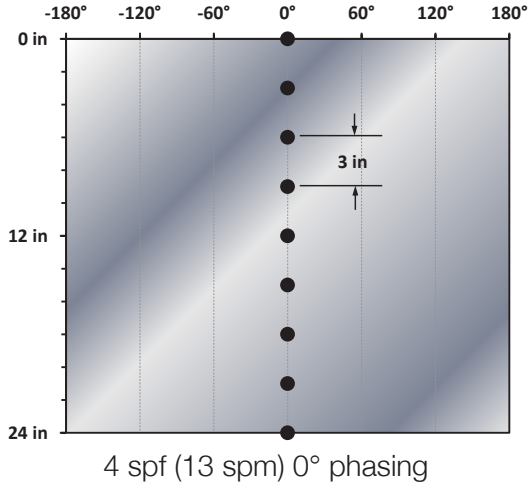
† Lower grade O-Rings can be used

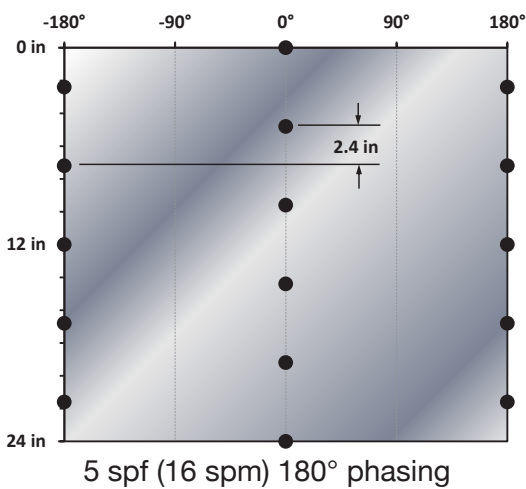
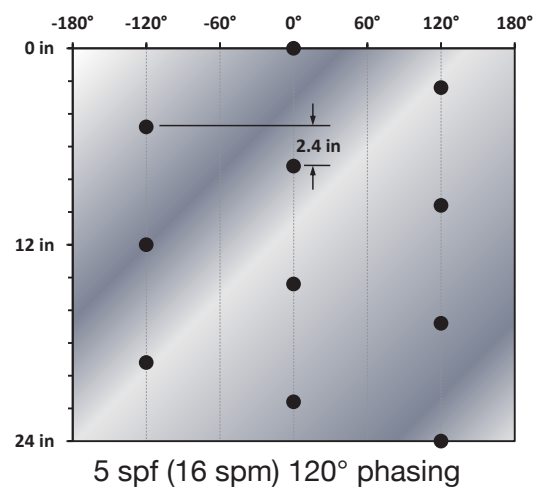
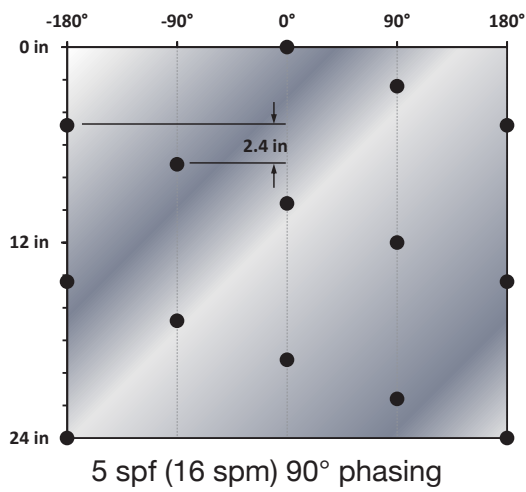
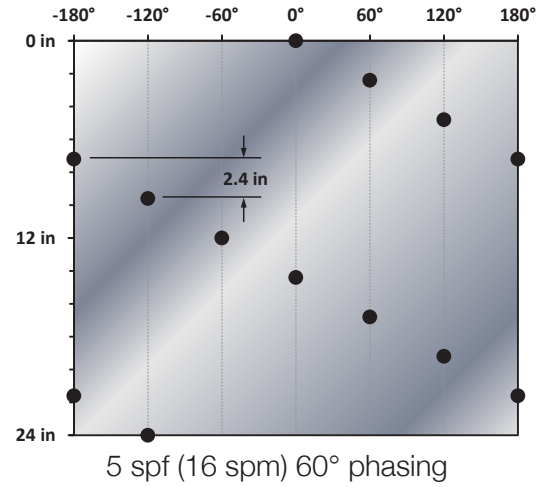
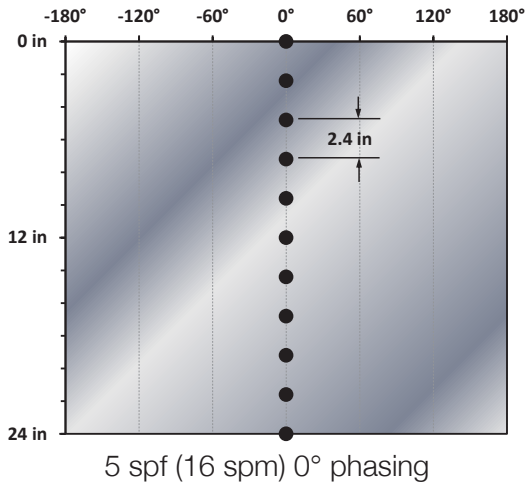
Support plates are used in conjunction with Rotary Table Slips and function as a secondary safety device in the event of slip failure. They are rated to hold a specified gun weight as listed in the following table.

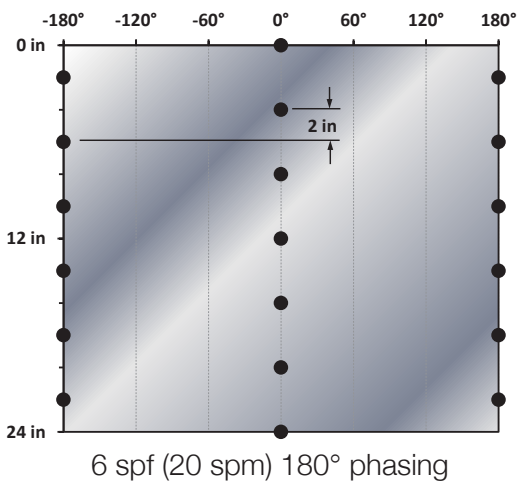
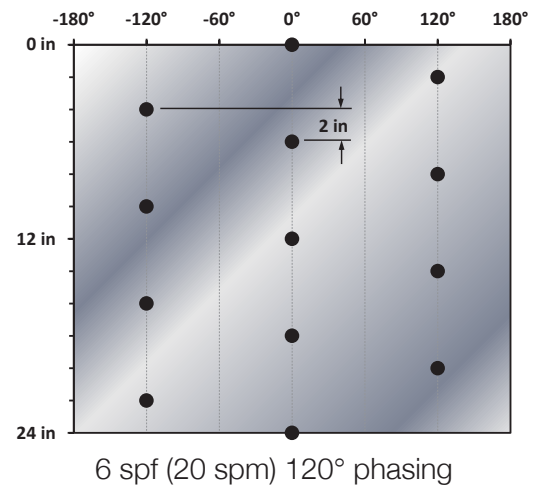
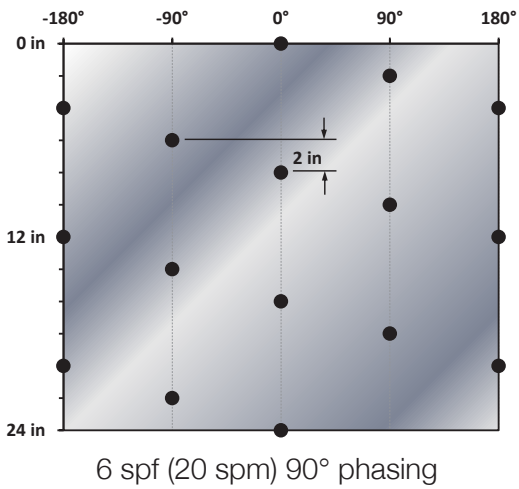
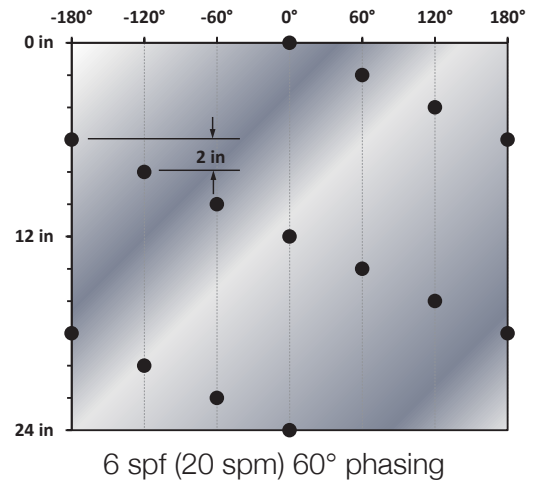
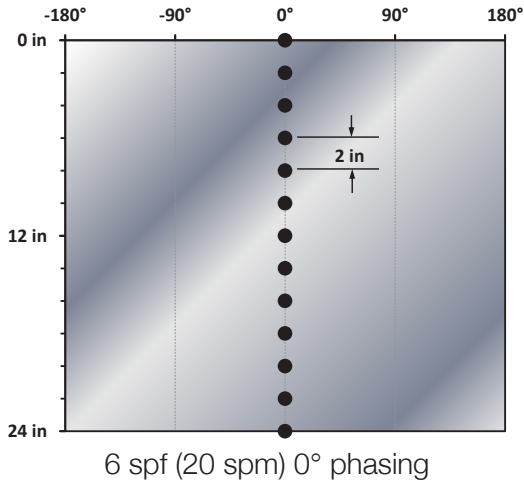
Gun Size (in)[mm]	Support Plate Part Number	Max. Gun Weight (lb)[kg]
1-9/16 [40]	0520-000-090	31,000 [14,061]
2 [51]	0522-000-090	33,200 [15,059]
2-1/2 [64]	0528-000-090	37,200 [16,874]
2-3/4 [70] 2-7/8 [73]	0562-000-090	42,000 [19,051]
3-1/8 [79] 3-3/8 [86]	0503-000-090	62,600 [28,395]
4 [102]	0504-000-090	68,000 [30,844]
4-1/2 [114] 4-5/8 [117]	0514-000-090	71,200 [32,296]
5 [127]	0505-000-090	93,000 [42,184]
7 [178]	0507-000-090	139,000 [63,049]

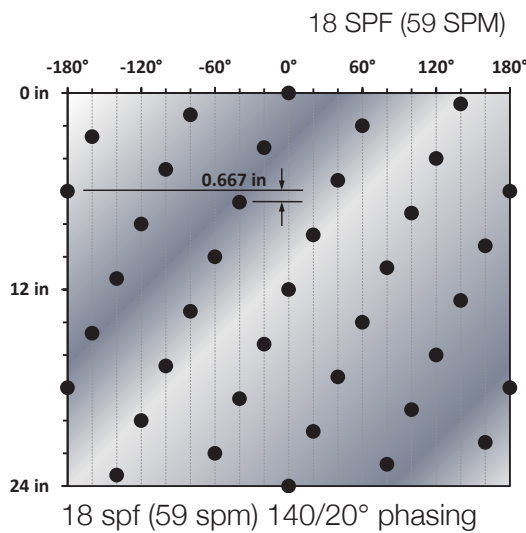
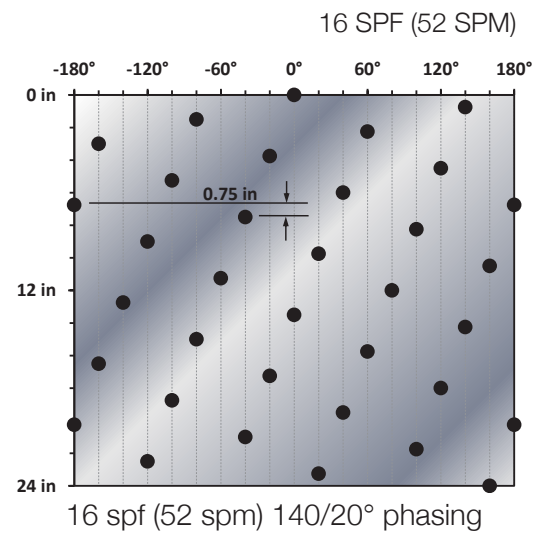
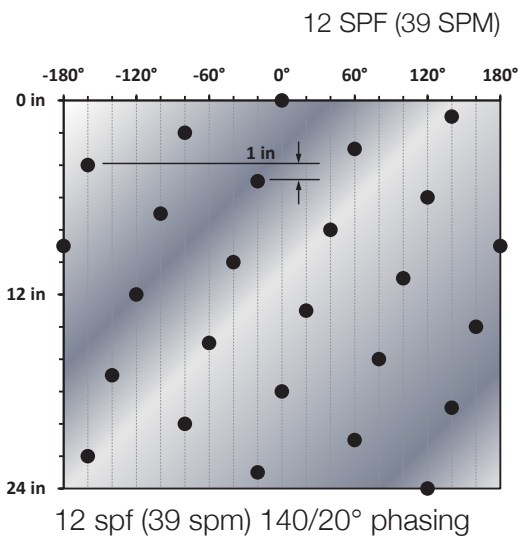
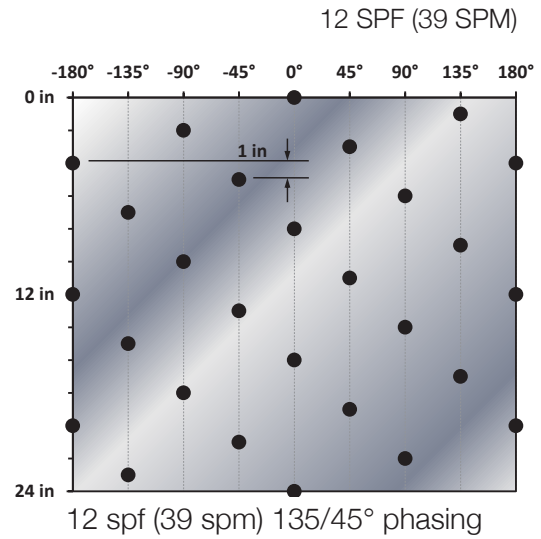
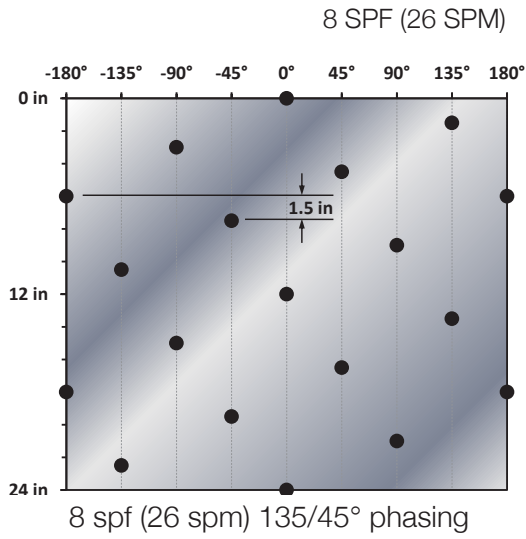


Gun Maps

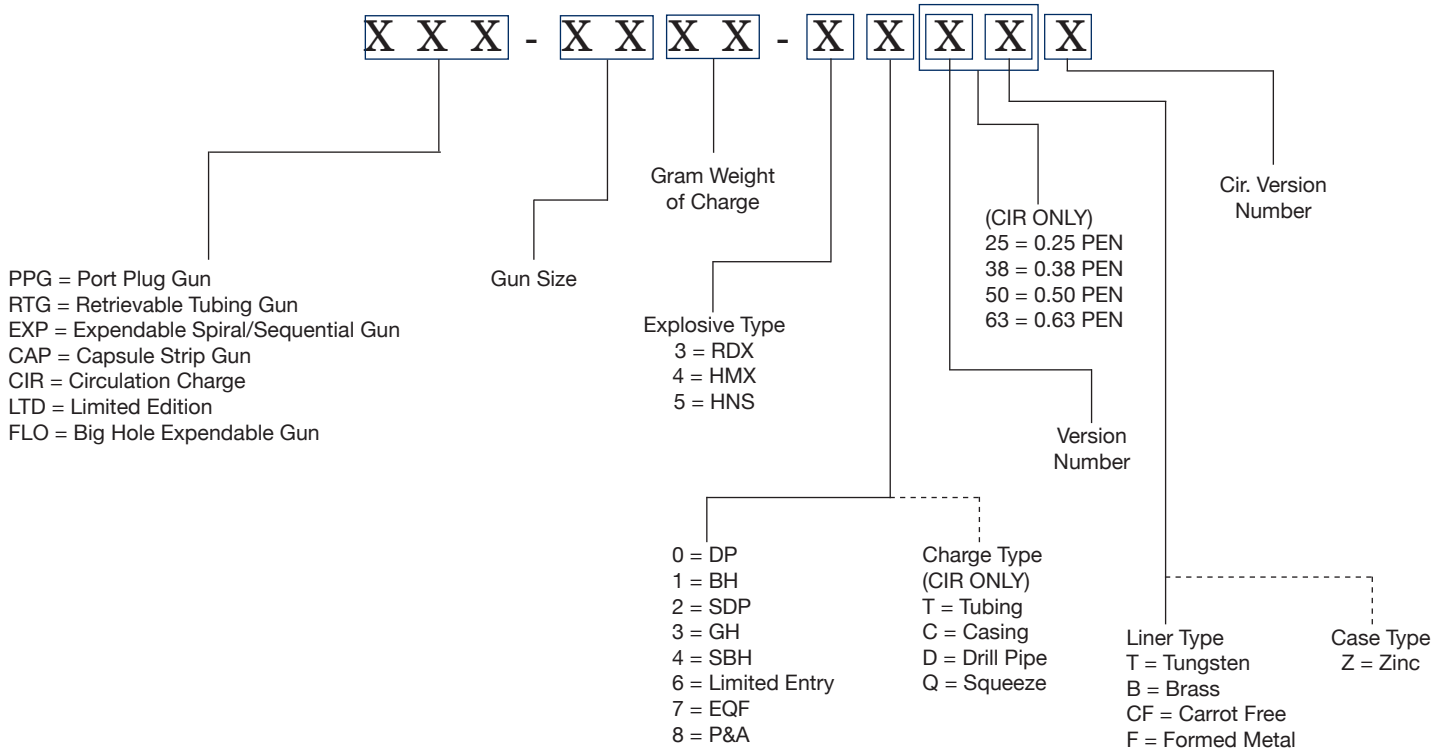








Shaped Charge Summary



ABBREVIATION KEY:

- DP = Deep Penetrating Charge
- SDP = Super Deep Penetrating Charge
- GH = "Good Hole" Charge
- BH = Big Hole Charge
- SBH = Super Big Hole Charge
- EQF = EQUAfrac Consistent Hole Charge
- CJ = Cluster Jet
- LD = Low Debris
- CF = "Carrot Free" Low Debris Liner with Steel Charge Casing
- CFZ = "Carrot Free" Low Debris Liner with Low Debris Zinc
- Z = Zinc Charge Case

Note: Part numbers with '-H1' at the end are compatible with the H-1® Perforating Gun System. **Ex. EXP-3321-421T-H1**

VERSION NUMBER NOTE:

- Note Applies to PPG Version Numbers Only
- 0 = Shipped with Alignment Sleeve
- 1 = Shipped without Alignment Sleeve

Shaped Charge Information					API Performance of Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Type	Explosive Weight (g)	Explosive Type	Tested Gun OD (in) [mm]	Shot Density (spf) [spm] Phasing	Casing OD (in) [mm]	Entry Hole (in) [mm]	Penetration (in) [cm]	Data Type
H-Lok® Shaped Charges for the H-1® Perforating System (Section 01)										
2-3/4 [70]	RTG-2512-421T-H1	SDP	12.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	31.90 [81.03]	API RP 19B
	EXP-2716-421T-H1	SDP	16.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.38 [9.65]	35.94 [91.29]	API RP 19B
	EXP-2818-421T-H1	SDP	18.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	36.22 [92.00]	API RP 19B
	EXP-2716-371T-H1	EQF	16.0	RDX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.32 [8.13]	25.79 [65.51]	API RP 19B
	FLO-2715-310B-H1	BH	15.0	RDX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.72 [18.29]	4.67 [11.86]	API RP-43
3-1/8 [79]	EXP-3319-423T-H1	SDP	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.38 [9.65]	45.89 [116.56]	API RP 19B
	EXP-3321-421T-H1	SDP	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.42 [10.67]	44.19 [112.24]	API RP 19B
	EXP-3323-423T-H1	SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.46 [11.68]	41.17 [104.57]	API RP 19B
	EXP-3323-471T-H1	EQF	23.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.40 [10.16]	24.75 [62.87]	API RP 19B
	EXP-3319-302-H1	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3323-461T-H1	DP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	35.63 [90.50]	API RP-43
	EXP-3323-302-H1	DP	22.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.44 [11.18]	21.25 [53.98]	API RP-43
	EXP-3319-431-H1	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	EXP-3321-431-H1	GH	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.56 [14.22]	29.23 [74.24]	API RP 19B
	EXP-3323-431-H1	GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B
	FLO-3323-310B-H1	BH	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.70 [17.78]	6.18 [15.70]	API RP-43
	FLO-3323-311CF-H1	BH	22.0	RDX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.68 [17]	7.10 [18.03]	API RP 19B
	3-3/8 [86]	EXP-3319-423T-H1	SDP	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.38 [9.65]	45.89 [116.56]
EXP-3321-421T-H1		SDP	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.42 [10.67]	44.19 [112.24]	API RP 19B
EXP-3323-423T-H1		SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.45 [11.43]	42.21 [107.21]	API RP 19B
EXP-3326-421T-H1		SDP	26.0	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	50.05 [127.13]	API RP 19B
EXP-3323-471T-H1		EQF	23.0	HMX	3-3/8 [86]	6 [20] 60°	5-1/2 [140]	0.38 [9.65]	31.59 [80.25]	API RP 19B
EXP-3319-302-H1		DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
EXP-3323-461T-H1		DP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	35.63 [90.50]	API RP-43
EXP-3323-302-H1		DP	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.44 [11.18]	21.25 [53.98]	API RP-43
EXP-3319-431-H1		GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
EXP-3321-431-H1		GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.56 [14.22]	29.23 [74.24]	API RP 19B
EXP-3323-431-H1		GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B
EXP-3325-331-H1		GH	25.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.57 [14.48]	29.81 [75.72]	API RP-43
FLO-3323-310B-H1		BH	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.70 [17.78]	6.18 [15.70]	API RP-43
FLO-3323-311CF-H1		BH	22.7	RDX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.68 [17]	7.10 [18.03]	API RP 19B

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges (See EQUAfrac chart for complete specs)
API results listed above are based on tests of conventional shaped charges

Shaped Charge Summary - Scalloped Hollow Carrier Guns



Shaped Charge Information					API Performance of Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Type	Explosive Weight (g)	Explosive Type	Tested Gun OD (in) [mm]	Shot Density (spf) [spm] Phasing	Casing OD (in) [mm]	Entry Hole (in) [mm]	Penetration (in) [cm]	Data Type
Shaped Charges for Scalloped Hollow Carrier Guns (Section 02)										
1-3/8 [35]	RTG-1302-400	DP	1.8	HMX	1-3/8 [35]	4 [13] 0°	4-1/2 [114]	0.17 [4.32]	4.70 [11.94]	API RP-43
1-9/16 [40]	RTG-1604-421T	SDP	3.5	HMX	1-9/16 [40]	6 [20] 0°, 60°	2-3/8 [60]	0.20 [5.08]	12.68 [32.21]	API RP 19B
	RTG-1603-300	DP	3.2	RDX	1-9/16 [40]	4 [13] 180°	2-3/8 [60]	0.23 [5.84]	6.62 [16.81]	API RP-43
	FLO-1603-410	BH	3.2	HMX	1-9/16 [40]	6 [20] 0°	4-1/2 [114]	0.41 [10.41]	3.23 [8.20]	API RP-43
2 [51]	RTG-2104-421T	SDP	4.0	HMX	2 [51]	6 [20] 60°	2-7/8 [73]	0.21 [5.33]	19.05 [48.39]	API RP 19B
	RTG-2107-421T	SDP	7.0	HMX	2 [51]	6 [20] 60°	2-7/8 [73]	0.29 [7.37]	26.07 [66.22]	API RP 19B
	RTG-2106-331	GH	6.5	RDX	2 [51]	4 [13] 60°	2-7/8 [73]	0.36 [9.14]	11.82 [30.02]	API RP-43
2-1/2 [64]	RTG-2512-421T	SDP	12.0	HMX	2-1/2 [64]	6 [20] 60°	3-1/2 [89]	0.33 [8.38]	31.26 [79.40]	API RP 19B
	RTG-2512-431	GH	12.0	HMX	2-1/2 [64]	6 [20] 60°	3-1/2 [89]	0.45 [11.43]	20.31 [51.99]	API RP 19B
	FLO-2511-310B	BH	11.0	RDX	2-1/2 [64]	4 [13] 0°	4-1/2 [114]	0.59 [14.99]	4.85 [12.32]	API RP-43
2-3/4 [70] & 2-7/8 [73]	RTG-2512-421T	SDP	12.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	31.90 [81.03]	API RP 19B
	EXP-2716-421T	SDP	16.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.38 [9.65]	35.94 [91.29]	API RP 19B
	EXP-2818-421T	SDP	18.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	36.22 [92.00]	API RP 19B
	EXP-2818-421T	SDP	18.0	HMX	2-7/8 [73]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	36.22 [92.00]	API RP 19B
	RTG-2512-371T	EQF	12.0	RDX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.30 [7.62]	24.00 [60.96]	API RP 19B
	EXP-2716-371T	EQF	16.0	RDX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.32 [8.13]	25.79 [65.51]	API RP 19B
	FLO-2511-310B	BH	11.0	RDX	2-1/2 [64]	4 [13] 0°	4-1/2 [114]	0.59 [14.99]	4.85 [12.32]	API RP-43
	FLO-2715-310B	BH	15.0	RDX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.72 [18.29]	4.67 [11.86]	API RP-43
3-1/8 [79]	EXP-3321-421T	SDP	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.42 [10.67]	44.19 [112.24]	API RP 19B
	EXP-3323-423T	SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.46 [11.68]	41.17 [104.57]	API RP 19B
	EXP-4521-423T	SDP	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.37 [9.40]	35.97 [91.36]	API RP 19B
	EXP-3323-471T	EQF	23.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.40 [10.16]	24.75 [62.87]	API RP 19B
	EXP-3112-421T	DP	12.0	HMX	3-1/8 [79]	12 [39] 135/45°	5 [127]	0.31 [7.87]	19.82 [50.34]	API RP-43
	EXP-3319-302	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3323-302	DP	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.44 [11.18]	21.25 [53.98]	API RP-43
	EXP-3319-431	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	EXP-3321-431	GH	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.56 [14.22]	29.23 [74.24]	API RP 19B
	EXP-4521-431	GH	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.46 [11.68]	22.02 [55.93]	API RP 19B
	EXP-3323-431	GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B
	FLO-3112-411CF	BH	12.0	RDX	3-3/8 [86]	12 [39] 140/20°	5 [127]	0.55 [13.97]	4.68 [11.89]	API RP 19B
	FLO-3112-410B	BH	12.0	HMX	3-1/8 [79]	12 [39] 140/20°	5 [127]	0.60 [15.24]	5.73 [14.55]	API RP-43
	FLO-4521-310B	BH	21.0	RDX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.67 [17.02]	5.49 [13.94]	API RP-43
	FLO-3323-310B	BH	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.70 [17.78]	6.18 [15.70]	API RP-43

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges (See EQUAfrac chart for complete specs)

Hunting's shaped charges and perforating guns are engineered to exact specifications and achieve **Optimum** performance when used as part of **Hunting's Complete Perforating System**. Shaped charges shown have met API test parameters (API RP 19B or RP-43).

06 Shaped Charges

Shaped Charge Information					API Performance of Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Type	Explosive Weight (g)	Explosive Type	Tested Gun OD (in) [mm]	Shot Density (spf) [spm] Phasing	Casing OD (in) [mm]	Entry Hole (in) [mm]	Penetration (in) [cm]	Data Type
Shaped Charges for Scalloped Hollow Carrier Guns (Section 02)										
3-3/8 [86]	EXP-3319-423T	SDP	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.38 [9.65]	45.89 [116.56]	API RP 19B
	EXP-3321-421T	SDP	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.42 [10.67]	44.19 [112.24]	API RP 19B
	EXP-3323-423T	SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.45 [11.43]	42.21 [107.21]	API RP 19B
	EXP-3326-421T	SDP	26.0	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	50.05 [127.13]	API RP 19B
	EXP-3323-471T	EQF	23.0	HMX	3-3/8 [86]	6 [20] 60°	5-1/2 [140]	0.38 [9.65]	31.59 [80.25]	API RP 19B
	EXP-3112-421T	DP	12.0	HMX	3-1/8 [79]	12 [39] 135/45°	5 [127]	0.31 [7.87]	19.82 [50.34]	API RP-43
	EXP-3319-302	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3323-302	DP	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.44 [11.18]	21.25 [53.98]	API RP-43
	EXP-3323-461T	DP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	35.63 [90.50]	API RP-43
	EXP-3325-331	GH	25.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.57 [14.48]	29.81 [75.72]	API RP-43
	EXP-3319-431	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	EXP-3323-431	GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B
	FLO-3112-411CF	BH	12.0	HMX	3-3/8 [86]	12 [39] 140/20°	5 [127]	0.55 [13.97]	4.68 [11.89]	API RP 19B
	FLO-3112-410B	BH	12.0	HMX	3-3/8 [86]	12 [39] 135/45°	5-1/2 [140]	0.61 [15.49]	5.89 [14.96]	API RP-43
	FLO-3323-311CF	BH	22.7	RDX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.68 [17.27]	7.10 [18.03]	API RP 19B
	FLO-3323-310B	BH	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.70 [17.78]	6.18 [15.70]	API RP-43
4 [102]	EXP-3321-421T	SDP	21.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.42 [10.67]	44.19 [112.24]	API RP 19B
	EXP-3323-423T	SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.45 [11.43]	42.21 [107.21]	API RP 19B
	EXP-3326-421T	SDP	26.0	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	50.05 [127.13]	API RP 19B
	EXP-4039-423T	SDP	38.5	HMX	4 [102]	4 [13] 90°	5-1/2 [140]	0.44 [11.18]	62.81 [159.54]	API RP 19B
	EXP-4521-423T	SDP	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.37 [9.40]	35.97 [91.36]	API RP 19B
	EXP-4539-425T	SDP	38.5	HMX	4-1/2 [114]	5 [16] 60°	7 [178]	0.46 [11.68]	55.70 [141.48]	API RP 19B
	EXP-3319-302	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3323-302	DP	22.7	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.44 [11.18]	21.25 [53.98]	API RP-43
	EXP-3323-461T	DP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	35.63 [90.50]	API RP-43
	EXP-3319-431	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	EXP-3323-431	GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B
	EXP-3325-331	GH	25.0	RDX	3-3/8 [86]	6 [20] 60°	5-1/2 [140]	0.56 [14.22]	35.61 [90.45]	API RP-43
	EXP-4521-431	GH	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.46 [11.68]	22.02 [55.93]	API RP 19B
	FLO-4521-310B	BH	21.0	RDX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.67 [17.02]	5.49 [13.94]	API RP-43
4-1/2 [114]	EXP-3326-421T	SDP	26.0	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	50.05 [127.13]	API RP 19B
	EXP-4521-423T	SDP	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.37 [9.40]	35.97 [91.36]	API RP 19B
	EXP-4539-425T	SDP	38.5	HMX	4-1/2 [114]	5 [16] 60°	7 [178]	0.46 [11.68]	55.70 [141.48]	API RP 19B
	EXP-3325-331	GH	25.0	RDX	4 [102]	6 [20] 60°	5-1/2 [140]	0.56 [14.22]	35.61 [90.45]	API RP-43
	EXP-4521-431	GH	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.46 [11.68]	22.02 [55.93]	API RP 19B
	FLO-4521-310B	BH	21.0	RDX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.67 [17.02]	5.49 [13.94]	API RP-43
	FLO-4623-411CFZ	BH	22.7	HMX	4-5/8 [117]	16 [52] 140/20°	7 [178]	0.79 [20.07]	7.06 [17.93]	API RP 19B

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges (See EQUAfrac chart for complete specs)

Hunting's shaped charges and perforating guns are engineered to exact specifications and achieve **Optimum** performance when used as part of **Hunting's Complete Perforating System**. Shaped charges shown have met API test parameters (API RP 19B or RP-43).

Shaped Charge Summary - Scalloped Hollow Carrier Guns



Shaped Charge Information					API Performance of Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Type	Explosive Weight (g)	Explosive Type	Tested Gun OD (in) [mm]	Shot Density (spf) [spm] Phasing	Casing OD (in) [mm]	Entry Hole (in) [mm]	Penetration (in) [cm]	Data Type
Shaped Charges for Scalloped Hollow Carrier Guns (Section 02)										
4-5/8 [117]	EXP-3326-421T	SDP	26.0	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	50.05 [127.13]	API RP 19B
	EXP-4521-423T	SDP	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.37 [9.40]	35.97 [91.36]	API RP 19B
	EXP-4539-425T	SDP	38.5	HMX	4-1/2 [114]	5 [16] 60°	7 [178]	0.46 [11.68]	55.70 [141.48]	API RP 19B
	EXP-3325-331	GH	25.0	RDX	4 [102]	6 [20] 60°	5-1/2 [140]	0.56 [14.22]	35.61 [90.45]	API RP-43
	EXP-4521-431	GH	21.0	HMX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.46 [11.68]	22.02 [55.93]	API RP 19B
	FLO-4521-310B	BH	21.0	RDX	4-1/2 [114]	12 [39] 135/45°	7 [178]	0.67 [17.02]	5.49 [13.94]	API RP-43
	FLO-4623-411CFZ	BH	22.7	HMX	4-5/8 [117]	16 [52] 140/20°	7 [178]	0.75 [19.05]	6.11 [15.52]	API RP 19B
	FLO-5028-310B	BH	28.0	BH	5 [127]	12 [39] 150/30°	7 [178]	0.80 [20.32]	8.22 [20.88]	API RP-43
7 [178]	EXP-4039-423T	SDP	38.5	HMX	7 [178]	12 [39] 135/45°	9-5/8 [245]	0.40 [10.16]	49.60 [125.98]	API RP 19B
	EXP-7039-331	GH	38.5	RDX	7 [178]	12 [39] 135/45°	9-5/8 [245]	0.75 [19.06]	28.54 [72.49]	API RP-43
	FLO-7039-312CF	BH	38.8	RDX	7 [178]	12 [39] 135/45°	9-5/8 [245]	1.10 [27.94]	10.37 [26.34]	API RP 19B
	FLO-7045-312CF	BH	45.0	RDX	7 [178]	18 [55] 140/20°	9-5/8 [245]	1.20 [30.48]	8.75 [22.23]	API RP 19B

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges (See EQUAfrac chart for complete specs)

Shaped Charge Information					API Performance of Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Type	Explosive Weight (g)	Explosive Type	Tested Gun OD (in) [mm]	Shot Density (spf) [spm] Phasing	Casing OD (in) [mm]	Entry Hole (in) [mm]	Penetration (in) [cm]	Data Type
Shaped Charges for Economical Casing Guns (Section 03)										
3-1/8 [79]	EXP-3321-421T	SDP	21.0	HMX	3-1/8 [79]	4 [13] 60°	4-1/2 [114]	0.43 [10.92]	42.13 [107.01]	API RP 19B
	RTG-2512-421T	SDP	12.0	HMX	2-3/4 [70]	6 [20] 60°	4-1/2 [114]	0.36 [9.14]	31.90 [81.03]	API RP 19B
	EXP-3319-302	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3319-431	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	RTG-2512-431	GH	12.0	HMX	2-1/2 [64]	6 [20] 60°	3-1/2 [89]	0.45 [11.43]	20.31 [51.59]	API RP 19B
	FLO-2511-310B	BH	11.0	RDX	2-1/2 [64]	4 [13] 0°	4-1/2 [114]	0.59 [14.99]	4.85 [12.32]	API RP-43
4 [102]	EXP-3321-421T	SDP	21.0	HMX	3-1/8 [79]	4 [13] 60°	4-1/2 [114]	0.43 [10.92]	42.13 [107.01]	API RP 19B
	EXP-3323-423T	SDP	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.45 [11.18]	42.21 [107.21]	API RP 19B
	EXP-3319-302	DP	19.0	RDX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.41 [10.41]	22.04 [55.98]	API RP-43
	EXP-3325-331	GH	25.0	RDX	4 [102]	6 [20] 60°	5-1/2 [140]	0.56 [14.22]	35.61 [90.45]	API RP-43
	EXP-3319-431	GH	19.0	HMX	3-1/8 [79]	6 [20] 60°	4-1/2 [114]	0.55 [13.97]	29.18 [74.12]	API RP 19B
	EXP-3323-431	GH	22.7	HMX	3-3/8 [86]	6 [20] 60°	4-1/2 [114]	0.59 [14.99]	29.42 [74.73]	API RP 19B

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
 Underlined Part Number indicates link to API Data Sheet available
 EQF indicates EQUAfrac® consistent hole shaped charges (See EQUAfrac chart for complete specs)

Shaped Charge Summary - Specialty Shaped Charges



EQUAfrac® Consistent Hole Shaped Charges

Shaped Charge Information				Performance of EQUAfrac® Shaped Charges					
Gun OD (in) [mm]	Shaped Charge Part Number	Explosive Weight (g)	Explosive Type	Shot Density (spf) [spm] Phasing	Target Type	Entry Hole (in) [mm]	Penetration (in) [cm]	EHD Variation Decentralized	Data Type
EQUAfrac® Shaped Charges									
2-1/2 [64]	RTG-2512-371T	12.0	RDX	6 [20] 60°	4-1/2 [114], 13.5#, P-110	0.30 [7.62]	24.00 [60.96]	6.7%	API RP 19B
2-3/4 [70]	RTG-2512-371T	12.0	RDX	6 [20] 60°	4-1/2 [114], 13.5#, P-110	0.30 [7.62]	24.00 [60.96]	6.7%	API RP 19B
	EXP-2716-371T	16.0	RDX	6 [20] 60°	4-1/2 [114], 13.5#, P-110	0.32 [8.13]	25.79 [65.51]	6.8%	API RP 19B
	EXP-2716-372T	16.0	RDX	6 [20] 60°	4-1/2 [114], 11.6#, L-80	0.34 [8.64]	26.80 [68.07]	3.0%	Gun/QC Spec
	EXP-2716-372T	16.0	RDX	6 [20] 60°	5-1/2 [140], 23.0#, P-110	0.30 [7.62]	26.80 [68.07]	7.3%	Gun/QC Spec
3-1/8 [79]	EXP-3323-471T	23.0	HMX	6 [20] 60°	4-1/2 [114], 13.5#, P-110	0.40 [10.16]	24.75 [62.87]	3.5%	API RP 19B
3-3/8 [86]	EXP-3323-471T	23.0	HMX	6 [20] 60°	4-1/2 [114], 11.6#, L-80	0.39 [9.91]	33.90 [86.11]	2.9%	Gun/QC Spec
	EXP-3323-471T	23.0	HMX	6 [20] 60°	5-1/2 [140], 23.0#, P-110	0.38 [9.65]	31.59 [80.25]	4.9%	API RP 19B
	EXP-3326-471T	26.0	HMX	6 [20] 60°	4-1/2 [114], 11.6#, L-80	0.47 [11.94]	30.70 [77.98]	3.8%	Gun/QC Spec
	EXP-3326-371T	26.0	RDX	6 [20] 60°	5-1/2 [140], 23.0#, P-110	0.44 [11.18]	30.70 [77.98]	4.2%	Gun/QC Spec

xxx-xxxx-3xxx for RDX, xxx-xxxx-4xxx for HMX, xxx-xxxx-5xxx for HNS
Underlined Part Number indicates link to API Data Sheet available

KnockOut® Well Circulation and P&A Shaped Charges

Shaped Charge Information				Performance of KnockOut® Shaped Charges				
Gun OD (in) [mm]	Shaped Charge Part Number	Explosive Weight (g)	Explosive Type	Shot Density (spf) [spm]	Phasing	Exit Hole (in) [mm]	L-80 Wall Thickness (in) [mm]	Impact to Secondary String with 1/4" Water Clearance (in) [mm]
KnockOut® Shaped Charges								
1-3/8 [35]	CIR-1302-4T251	1.8	HMX	4 [13]	0°	0.30 [7.62]	0.25 [6.35]	0.01 [0.25]
	CIR-1302-4T381	1.8	HMX	4 [13]	0°	0.25 [6.35]	0.38 [9.53]	0.01 [0.25]
1-9/16 [40]	CIR-1603-4T251	3.0	HMX	4 [13], 6 [20]	0°	0.43 [10.92]	0.25 [6.35]	0.02 [0.51]
	CIR-1603-4T381	3.5	HMX	4 [13], 6 [20]	0°	0.37 [9.40]	0.38 [9.53]	0.02 [0.51]
	CIR-1603-4C501	3.2	HMX	4 [13], 6 [20]	0°	0.33 [8.38]	0.50 [12.70]	0.04 [1.01]
	CIR-1603-4C631	3.5	HMX	4 [13], 6 [20]	0°	0.22 [5.59]	0.63 [15.88]	0.03 [0.76]
2 [51]	CIR-2107-4T251	7.0	HMX	4 [13], 6 [20]	0°	0.62 [15.75]	0.25 [6.35]	0.07 [1.78]
	CIR-2107-4T381	7.0	HMX	4 [13], 6 [20]	0°	0.61 [15.49]	0.38 [9.53]	0.04 [1.01]
	CIR-2107-4C501	7.0	HMX	4 [13], 6 [20]	0°	0.45 [11.43]	0.50 [12.70]	0.02 [0.51]
	CIR-2107-4C631	7.0	HMX	4 [13], 6 [20]	0°	0.35 [8.89]	0.63 [15.88]	0.05 [1.27]
7 [178]	FLO-7045-312CF	45.0	RDX	18 [55]	140/20°	1.20 [30.48]	0.47 [11.94]	N/A

xxx-xxxx-3xxxx for RDX, xxx-xxxx-4xxxx for HMX, xxx-xxxx-5xxxx for HNS
Underlined Part Number indicates link to API Data Sheet available
Note: FLO-7045-312CF was designed for the P&A market in the North Sea

06 Shaped Charges

Hunting's shaped charges and perforating guns are engineered to exact specifications and achieve **Optimum** performance when used as part of **Hunting's Complete Perforating System**. Shaped charges shown have met API test parameters (API RP 19B or RP-43).

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Hunting's Titan Division has a dedicated sales and distribution network in many of the major oil and gas fields in the United States and internationally.

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