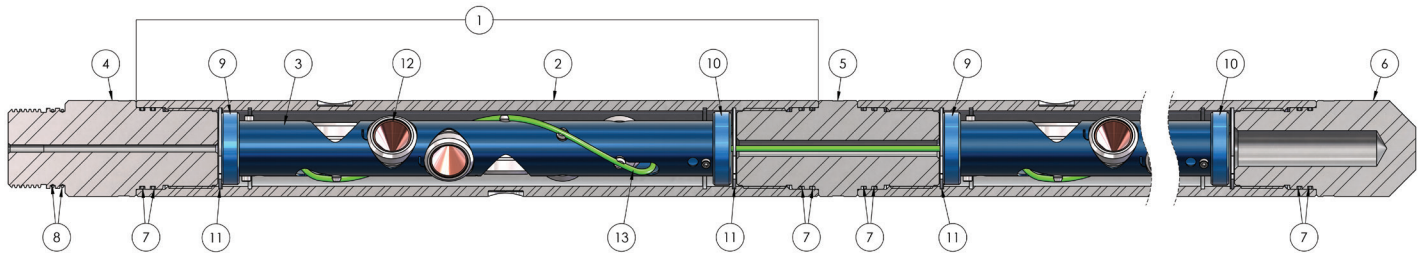


4 SPF (13 SPM) GUNFACTS®

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°
3		0445-3A**-044	Charge Tube	1	90°
		0400-5**-044	Charge Tube	2	90°
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)		

** 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]

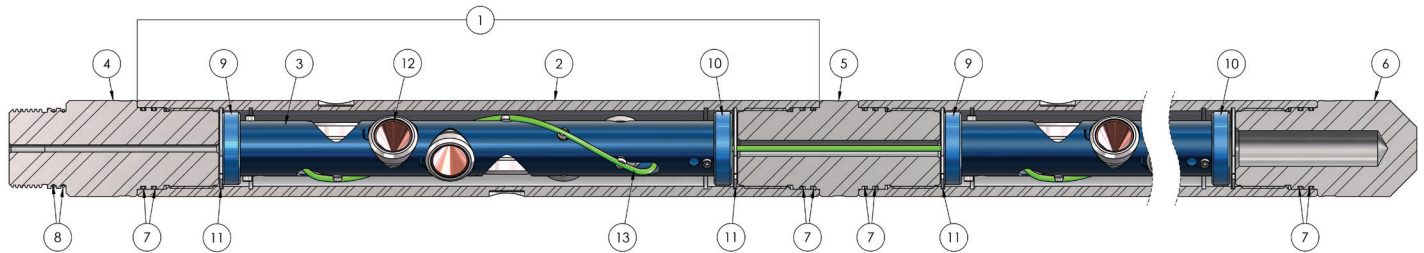
NR Not Recommended

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

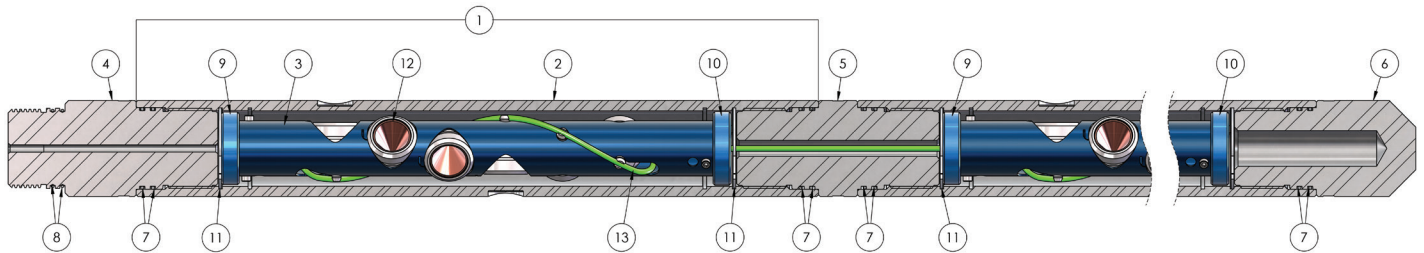
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-1A02-056)

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]

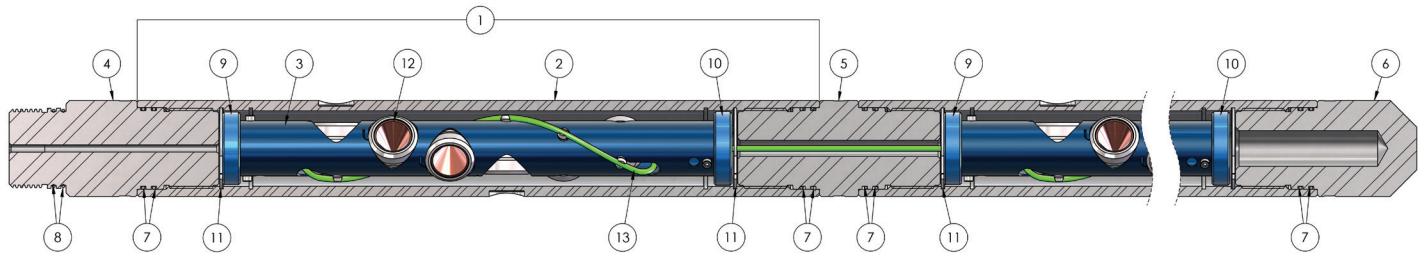
NR Not Recommended

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

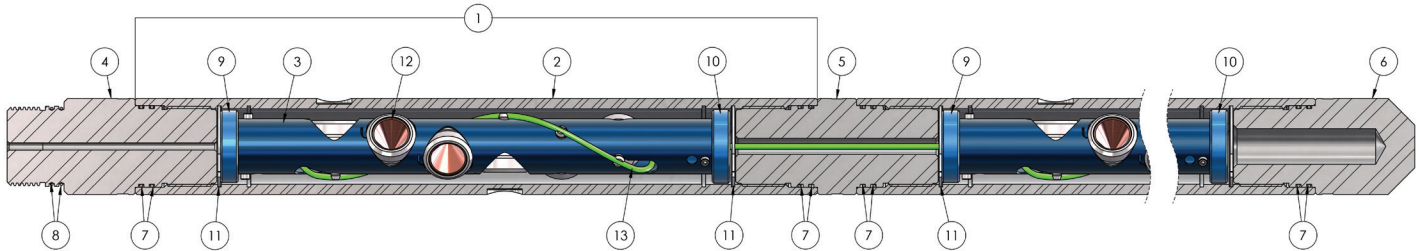
** Gun length. Common Lengths are 2, 3, 4, 5, 7, 11, 15, & 21 foot.
 Example: Use "02" for 2ft gun assembly; etc. (0446-1D02-08D)

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]

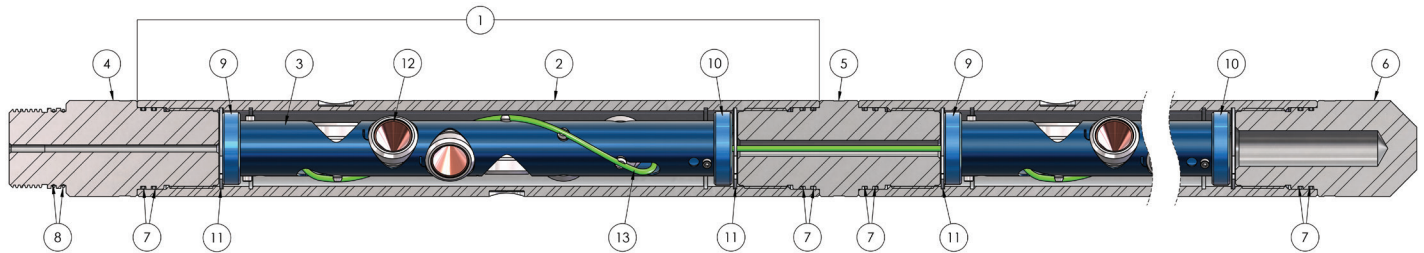
NR Not Recommended

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