

Jet Research Center offers a variety of reliable scalloped gun perforating systems. These systems are used for under-balanced, through-tubing, and hostile perforating applications. This section provides information concerning:

- Tubing Puncher Chart
- JRC Slip-On Gun Systems
- JRC Scalloped Gun Systems
- VannGun™ Systems

Applications

- Run as tubing conveyed system, the guns are well-suited for high under-balanced or extreme over-balanced completions.
- Run as a coil tubing conveyed system, tubing conveyed techniques are available.
- Run as a wireline conveyed system, the gun system is intended to offer safe and reliable perforating for standard completions.

Features

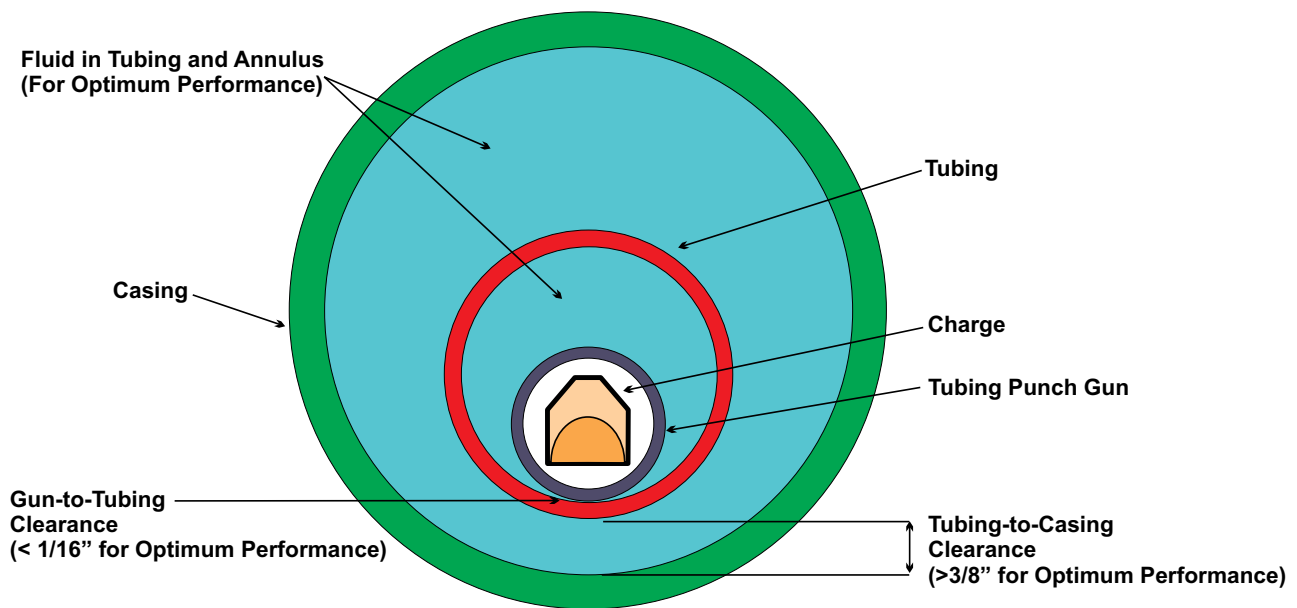
- Available in various gun lengths, phasings, and shot densities (depending on gun size).
- Available in single-tandem or VannGun connections
- Explosives transfer eliminates side detonation and cord problems.
- Most charge debris remains in the gun.
- All gun systems are collapse and survival tested.
- All guns are adaptable to any firing system.

Tubing Puncher Hole Size Information

Charge Description	Part Number	Steel Plate 80 KPSI Min Yield		Color Code
		Thickness	Hole Size	
1 9/16", HMX, alum, 2.5 gm	100005306	.250 thru .375	0.340	Red
1 9/16", HMX, P/M cu, 2.6 gm	100000139	.375 thru .500	0.210	Green
2", HMX, alum, 6.5 gm	100014486	.500 thru .625	0.420	White

Notes:

1. Charges shown above are now used in standard 1 9/16-in. and 2-in. JRC Scalloped Gun Perforating Systems.
2. Special Gun Sizes may be ordered upon request.
3. Varying downhole conditions may affect performance. Consult JRC for additional information.



General Setup

1 9/16-in. 4-spf 0° Slip-On Tubing Puncher

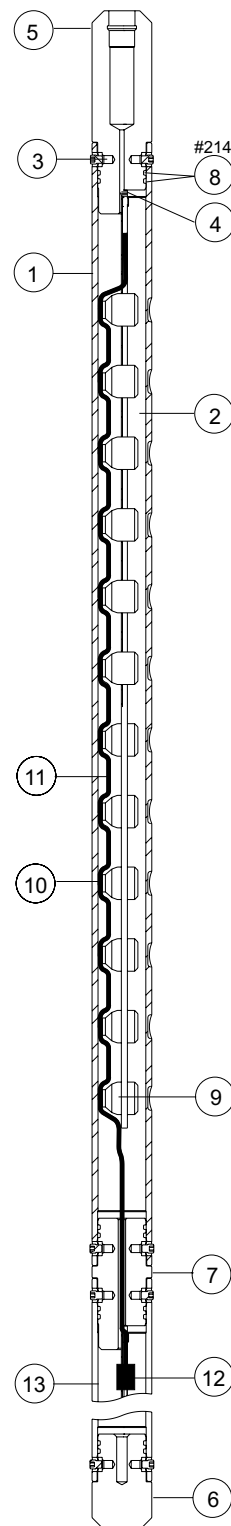
Item	Description	Part No.
	Shipping Assembly - 4 ft	101247682
	Shipping Assembly - 7 ft	101247683
	Shipping Assembly - 11 ft	101247684
	Shipping Assembly - 15 ft	101247685
	Shipping Assembly - 21 ft	101247686

*1	Gun, Scallop - 4 ft	101247275
	Gun, Scallop - 7 ft	101247298
	Gun, Scallop - 11 ft	101247299
	Gun, Scallop - 15 ft	101247301
	Gun, Scallop - 21 ft	101247302
*2	Strip, Charge Holder - 4 ft	101247427
	Strip, Charge Holder - 7 ft	101247428
	Strip, Charge Holder - 11 ft	101247429
	Strip, Charge Holder - 15 ft	101247430
	Strip, Charge Holder - 21 ft	101247431
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
9	Charge - 1 9/16-in. HMX Alum, 2.5 gm	100005306
	Charge - 1 9/16-in. HMX P/M cu, 2.6 gm	100000139
**10	Charge Clip	101275254
11	Detonating Cord (40 Flat Recommended)	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303

*Included in Shipping Assembly

**Charge clips must be ordered separately

N/S - Not shown



1 9/16-in. 4-spf 0°
Slip-On Tubing Puncher

1 9/16-in. 6-spf 0° Slip-On Tubing Puncher

1-9/16 in. 6-spf 0° Slip-On Tubing Puncher

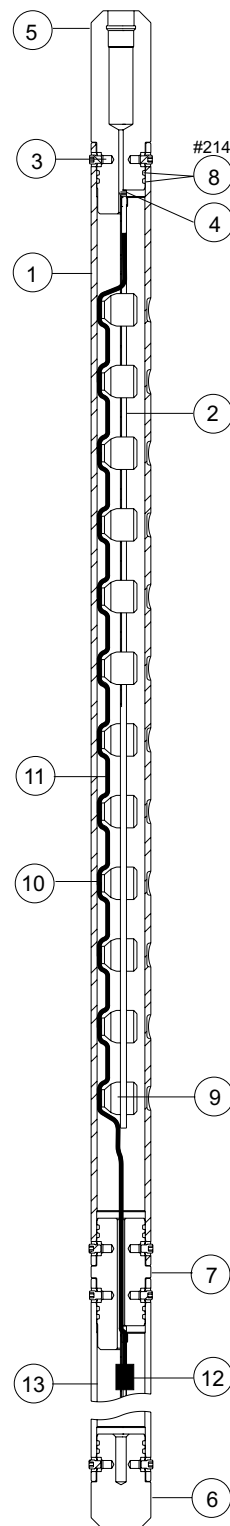
Item	Description	Part No.
	Shipping Assembly - 4 ft	101247576
	Shipping Assembly - 7 ft	101247588
	Shipping Assembly - 11 ft	101247603
	Shipping Assembly - 15 ft	101247605
	Shipping Assembly - 21 ft	101247607

*1	Gun, Scallop - 4 ft	101291489
	Gun, Scallop - 7 ft	101291491
	Gun, Scallop - 11 ft	101291492
	Gun, Scallop - 15 ft	101291498
	Gun, Scallop - 21 ft	101291500
*2	Strip, Charge Holder - 4 ft	101291521
	Strip, Charge Holder - 7 ft	102191529
	Strip, Charge Holder - 11 ft	101291530
	Strip, Charge Holder - 15 ft	101291531
	Strip, Charge Holder - 21 ft	101291532
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
9	Charge - 1 9/16-in. HMX Alum, 2.5 gm	100005306
	Charge - 1 9/16-in. HMX P/M cu, 2.6 gm	100000139
**10	Charge Clip	101275254
11	Detonating Cord (40 Flat Recommended)	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303

*Included in Shipping Assembly

**Charge clips must be ordered separately

N/S - Not shown



1 9/16-in. 6-spf 0° Slip-On
Tubing Puncher



2-in. 4-spf 0° Slip-On Tubing Puncher

2-in. 4-spf 0° Slip-On Tubing Puncher

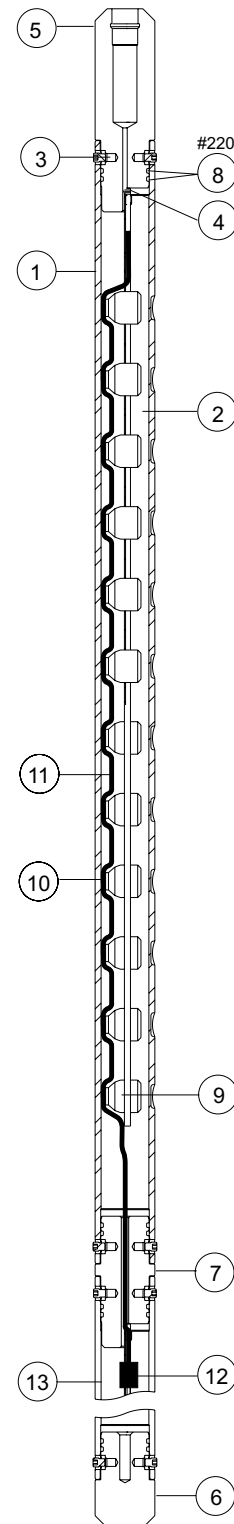
Item	Description	Part No.
	Shipping Assembly - 4 ft	101246430
	Shipping Assembly - 7 ft	101246451
	Shipping Assembly - 11 ft	101246452
	Shipping Assembly - 15 ft	101246453
	Shipping Assembly - 21 ft	101246454

*1	Gun, Scallop - 4 ft	101246235
	Gun, Scallop - 7 ft	101246238
	Gun, Scallop - 11 ft	101246241
	Gun, Scallop - 15 ft	101246242
	Gun, Scallop - 21 ft	101246243
*2	Strip, Charge Tube Holder - 4 ft	101246437
	Strip, Charge Tube Holder - 7 ft	101246445
	Strip, Charge Tube Holder - 11 ft	101246447
	Strip, Charge Tube Holder - 15 ft	101246448
	Strip, Charge Tube Holder - 21 ft	101246449
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Viton, 95 Duro	100064831
9	Charge - 2-in. HMX, Alum, 6.5 gm	100014486
**10	Charge Clip	101276127
11	Detonating Cord (40 Flat Recommended)	See Appendix A
12	Detonating Cord	See Det. Section
13	Blast Sleeve	101305310

*Included in Shipping Assembly

**Charge clips must be ordered separately

N/S - Not shown



2-in. 4-spf 0° Slip-On
Tubing Puncher

2-in. 6-spf 0° Slip-On Tubing Puncher

2-in. 6-spf 0° Slip-On Tubing Puncher

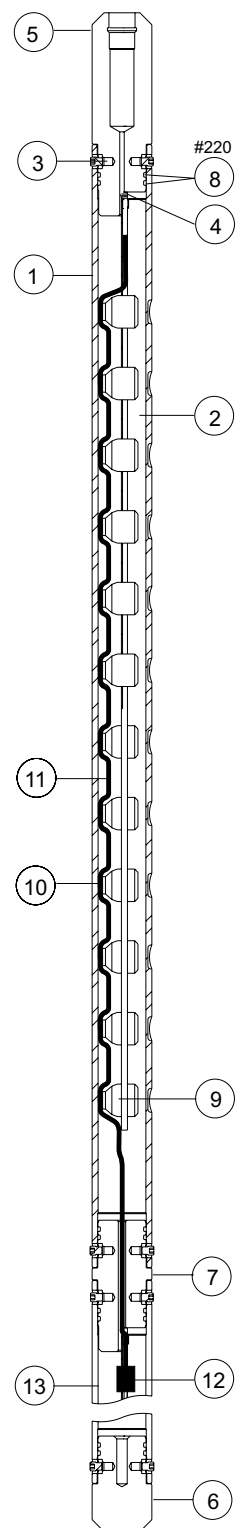
Item	Description	Part No.
	Shipping Assembly - 4 ft	101246474
	Shipping Assembly - 7 ft	101246476
	Shipping Assembly - 11ft	101246477
	Shipping Assembly - 15 ft	101246478
	Shipping Assembly - 21 ft	101246479

*1	Gun, Scallop - 4 ft	101291627
	Gun, Scallop - 7 ft	101291636
	Gun, Scallop - 11ft	101291637
	Gun, Scallop - 15 ft	101291638
	Gun, Scallop - 21 ft	101291639
*2	Strip, Charge Holder - 4 ft	101291628
	Strip, Charge Holder - 7 ft	101291629
	Strip, Charge Holder - 11 ft	101291631
	Strip, Charge Holder - 15 ft	101291632
	Strip, Charge Holder - 21 ft	101291634
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Vitron, 95 Duro	100064831
9	Charge - 2-in. HMX, Alum, 6.5 gm	100014486
**10	Charge Clip	101276127
11	Detonating Cord (40 Flat Recommended)	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310

*Included in Shipping Assembly

**Charge clips must be ordered separately

N/S - Not shown



2-in. 6-spf 0° Slip-On
Tubing Puncher



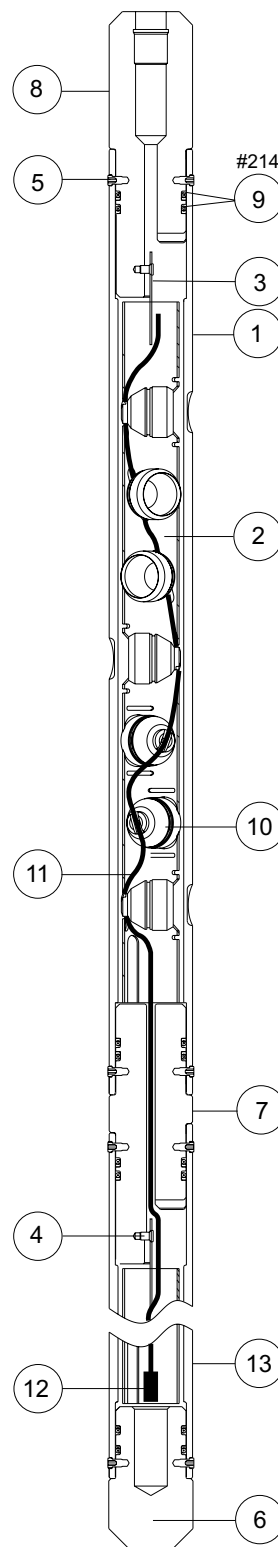
1 9/16-in. 4-spf 60° Slip-On Tube-Type

1 9/16 in. 4-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101294583
	Shipping Assembly - 7 ft	101294584
	Shipping Assembly - 11 ft	101294585
	Shipping Assembly - 15 ft	101294586
	Shipping Assembly - 21 ft	101294587
*1	Gun, Scallop - 4 ft	101294588
	Gun, Scallop - 7 ft	101294589
	Gun, Scallop - 11 ft	101294590
	Gun, Scallop - 15 ft	101294591
	Gun, Scallop - 21 ft	101294592
*2	Tube, Charge Holder - 4 ft	101279482
	Tube, Charge Holder - 7 ft	101279483
	Tube, Charge Holder - 11 ft	101279484
	Tube, Charge Holder - 15 ft	101279485
	Tube, Charge Holder - 21 ft	101279486
*3	Strip, Charge Tube Mounting	101247208
*4	Screw, Cap 0.25" D x 0.25" L	101265663
*5	Screw, Cap 0.25" D x 0.375" L	101265579
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	Firing Head Crossover - GO™ Style	101274746
9	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
10	Charge - 3.5 g MILLENNIUM™ HMX	100157028
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet For 40g Flat	100000327

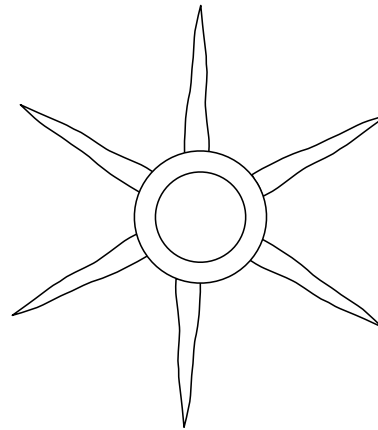
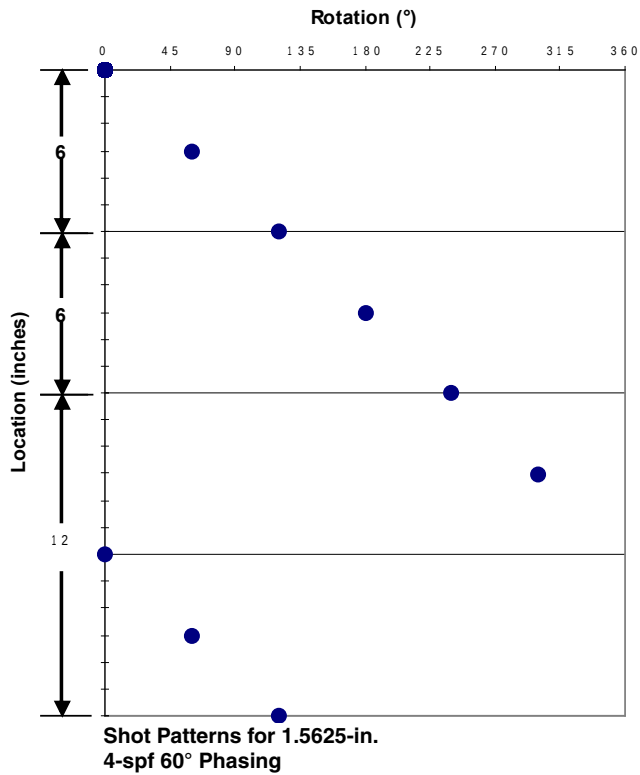
*Included in Shipping Assembly

N/S - Not shown



1 9/16-in. 4-spf 60°
Slip-On Tube-Type

1 ⁹/₁₆ -in. 4-spf 60° Slip-On Tube-Type



60° Phasing
6 Perforation Planes

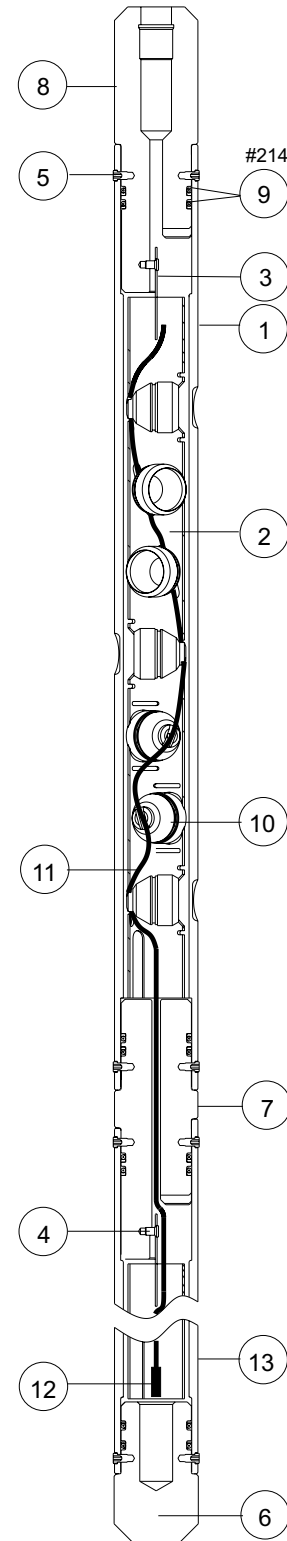
JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)

1 9/16-in. 6-spf 60° Slip-On Tube-Type

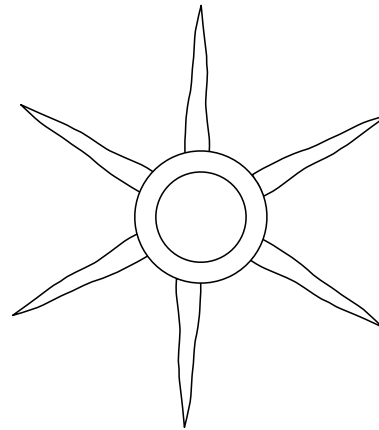
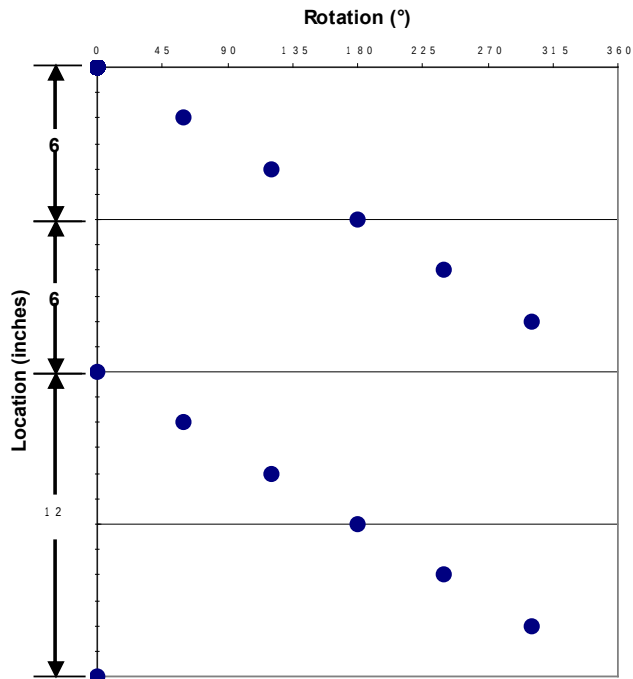
Item	Description	Part No.
	Shipping Assembly - 4 ft	101294593
	Shipping Assembly - 7 ft	101294594
	Shipping Assembly - 11 ft	101294595
	Shipping Assembly - 15 ft	101294596
	Shipping Assembly - 21 ft	101294597
*1	Gun, Scallop - 4 ft	101294598
	Gun, Scallop - 7 ft	101294599
	Gun, Scallop - 11 ft	101294600
	Gun, Scallop - 15 ft	101294601
	Gun, Scallop - 21 ft	101294602
*2	Tube, Charge Holder - 4 ft	101235900
	Tube, Charge Holder - 7 ft	101235901
	Tube, Charge Holder - 11 ft	101235902
	Tube, Charge Holder - 15 ft	101235903
	Tube, Charge Holder - 21 ft	101235904
*3	Strip, Charge Tube Mounting	101247208
*4	Screw, Cap 0.25" D x 0.25" L	101265663
*5	Screw, Cap 0.25" D x 0.375" L	101265579
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	Firing Head Crossover - GO™ Style	101274746
9	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
10	Charge - 3.5 g MILLENNIUM™ HMX	100157028
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly
N/S - Not shown



1 9/16-in. 6-spf 60°
Slip-On Tube-Type

1 ⁹/₁₆ -in. 6-spf 60° Slip-On Tube-Type



**60° Phasing
6 Perforation Planes**

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)

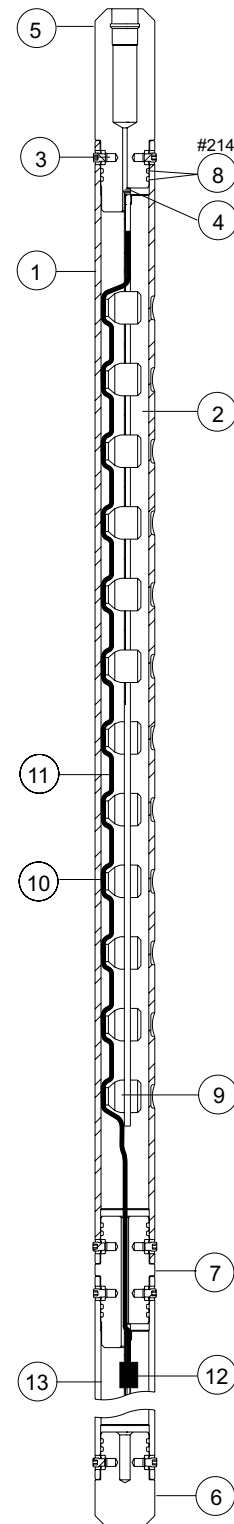
1 9/16-in. 4-spf 0° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101247682
	Shipping Assembly - 7 ft	101247683
	Shipping Assembly - 11 ft	101247684
	Shipping Assembly - 15 ft	101247685
	Shipping Assembly - 21 ft	101247686
*1	Gun, Scallop - 4 ft	101247275
	Gun, Scallop - 7 ft	101247298
	Gun, Scallop - 11 ft	101247299
	Gun, Scallop - 15 ft	101247301
	Gun, Scallop - 21 ft	101247302
*2	Strip, Charge Holder - 4 ft	101247427
	Strip, Charge Holder - 7 ft	101247428
	Strip, Charge Holder - 11 ft	101247429
	Strip, Charge Holder - 15 ft	101247430
	Strip, Charge Holder - 21 ft	101247431
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
9	Charge - 3.4 g MILLENNIUM™ HMX	100157028
**10	Charge Clip	101275254
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

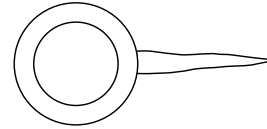
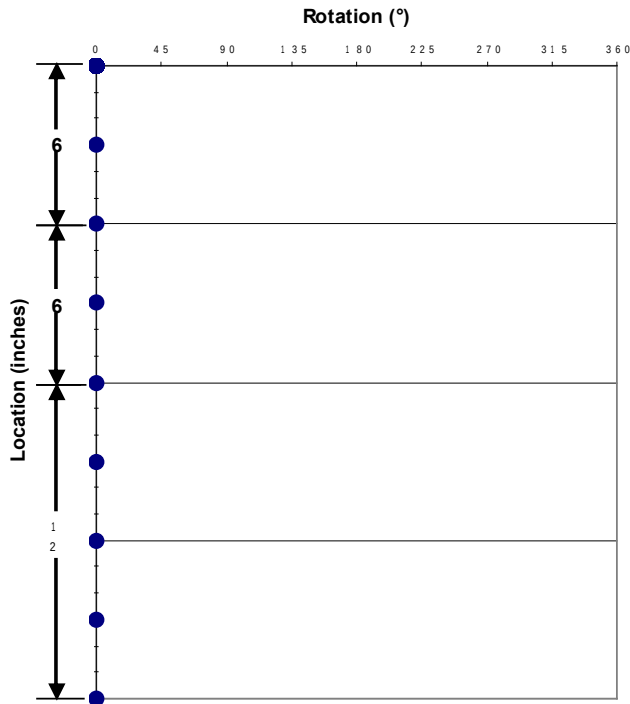
**Charge clips must be ordered separately

N/S - Not shown



1 9/16-in. 4-spf 0°
Slip-On Strip-Type

1 ⁹/₁₆-in. 4-spf 0° Slip-On Strip-Type



0° Phasing
1 Perforation Plane

Shot Patterns for 1.5625-in.
4-spf 0° Phasing

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	11 (5)	19 (9)	31 (14)	43 (19)	60 (27)
Spacer lb (kg)	9 (4)	17 (8)	26 (12)	36 (16)	51 (23)

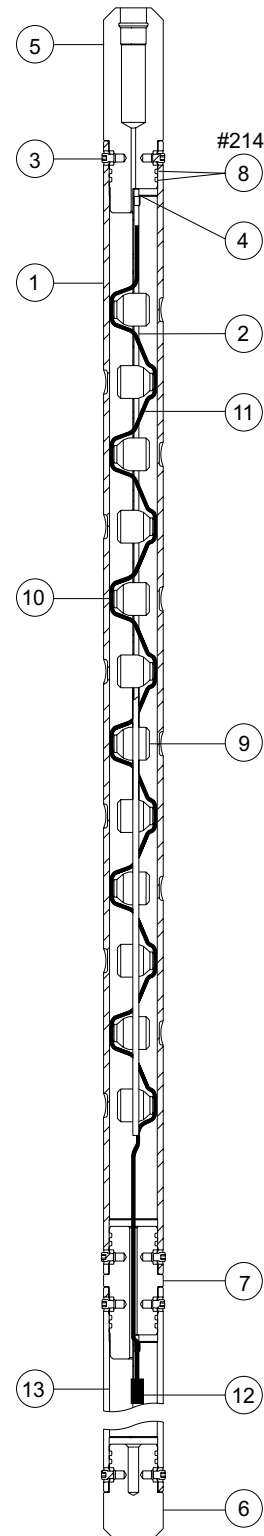
1 9/16-in. 4-spf 180° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101249707
	Shipping Assembly - 7 ft	101249716
	Shipping Assembly - 11 ft	101249717
	Shipping Assembly - 15 ft	101249718
	Shipping Assembly - 21 ft	101249719
*1	Gun, Scallop - 4 ft	101249652
	Gun, Scallop - 7 ft	101249653
	Gun, Scallop - 11 ft	101249654
	Gun, Scallop - 15 ft	101249655
	Gun, Scallop - 21 ft	101249656
*2	Strip, Charge Holder - 4 ft	101235936
	Strip, Charge Holder - 7 ft	101235937
	Strip, Charge Holder - 11 ft	101235938
	Strip, Charge Holder - 15 ft	101235939
	Strip, Charge Holder - 21 ft	101235940
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
9	Charge - 3.5 g MILLENNIUM™ HMX	100157028
**10	Charge Clip	101275254
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

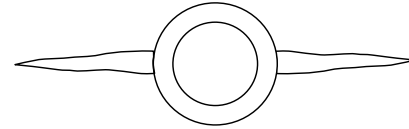
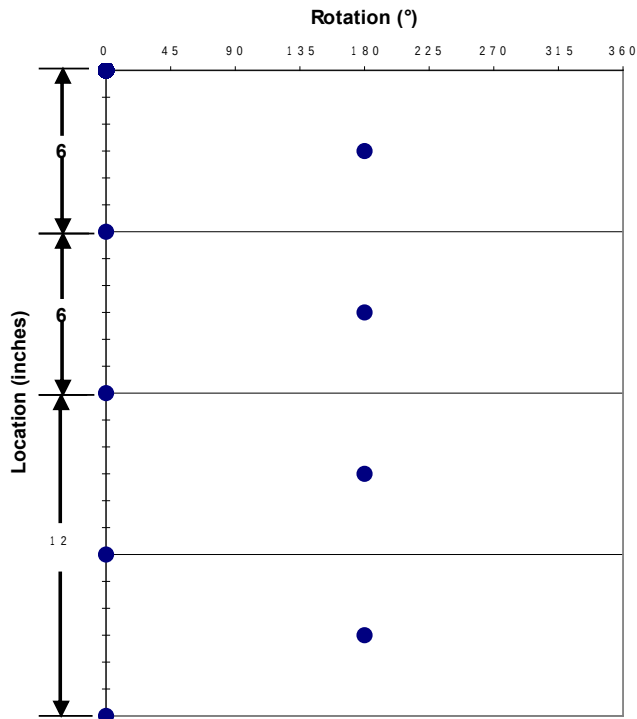
**Charge clips must be ordered separately

N/S - Not shown



1 9/16-in. 4-spf 180° Slip-On
Strip-Type

1 9/16-in. 4-spf 180° Slip-On Strip-Type



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	11 (5)	19 (9)	31 (14)	43 (19)	60 (27)
Spacer lb (kg)	9 (4)	17 (8)	26 (12)	36 (16)	51 (23)



1 ⁹/₁₆ -in. 6-spf 0° Slip-On Strip-Type

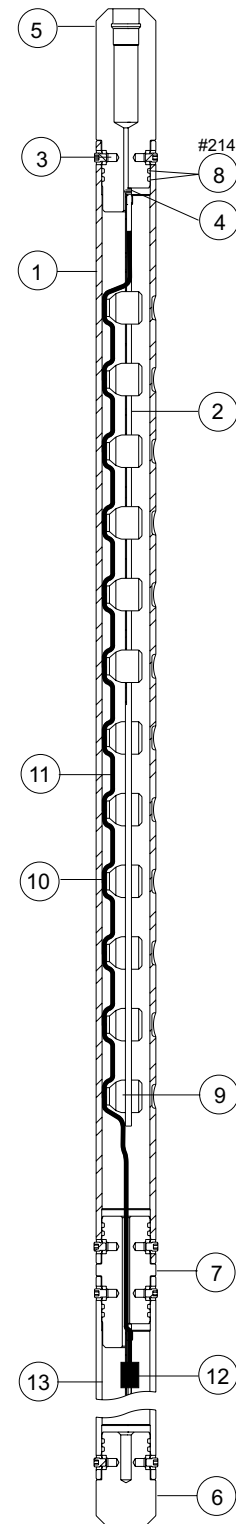
1-⁹/₁₆ in. 6-spf 0° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101247576
	Shipping Assembly - 7 ft	101247588
	Shipping Assembly - 11 ft	101247603
	Shipping Assembly - 15 ft	101247605
	Shipping Assembly - 21 ft	101247607
*1	Gun, Scallop - 4 ft	101291489
	Gun, Scallop - 7 ft	101291491
	Gun, Scallop - 11 ft	101291492
	Gun, Scallop - 15 ft	101291498
	Gun, Scallop - 21 ft	101291500
*2	Strip, Charge Holder - 4 ft	101291521
	Strip, Charge Holder - 7 ft	102191529
	Strip, Charge Holder - 11 ft	101291530
	Strip, Charge Holder - 15 ft	101291531
	Strip, Charge Holder - 21 ft	101291532
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem, Grooved	101247486
8	O-Ring, Buna 90 Duro #214	100001949
	O-Ring, Viton 95 Duro #214	100003922
9	Charge - 3.4 g MILLENNIUM™ HMX	100157028
**10	Charge Clip	101275254
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

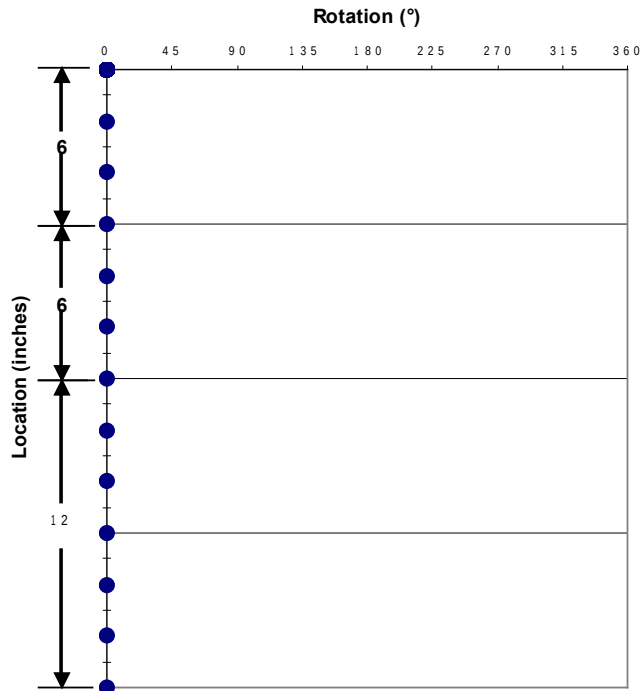
**Charge clips must be ordered separately

N/S - Not shown

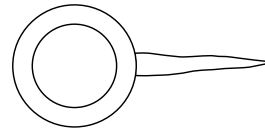


1 ⁹/₁₆ -in. 6-spf 0° Slip-On Strip-Type

1 ⁹/₁₆-in. 6-spf 0° Slip-On Strip-Type



Shot Pattern for 1.5625-in.
6-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)

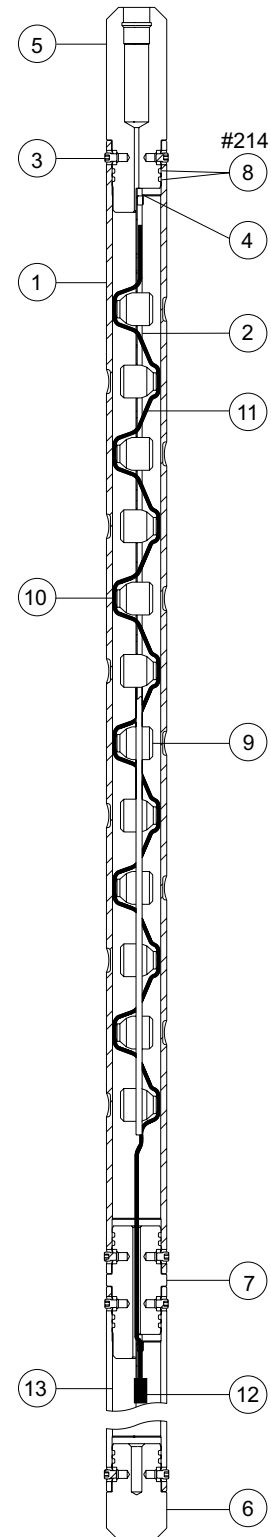
1 9/16-in. 6-spf 180° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101249678
	Shipping Assembly - 7 ft	101249684
	Shipping Assembly - 11 ft	101249685
	Shipping Assembly - 15 ft	101249687
	Shipping Assembly - 21 ft	101249688
*1	Gun, Scallop - 4 ft	101291606
	Gun, Scallop - 7 ft	101291607
	Gun, Scallop - 11 ft	101291609
	Gun, Scallop -15 ft	101291612
	Gun, Scallop - 21 ft	101291618
*2	Strip, Charge Holder - 4 ft	101291521
	Strip, Charge Holder - 7 ft	101291529
	Strip, Charge Holder - 11 ft	101291609
	Strip, Charge Holder - 15 ft	101291531
	Strip, Charge Holder -21 ft	101291532
*3	Screw, Cap 0.25" D x 0.25" L	101265663
*4	Screw, Cap 0.25" D x 0.375" L	101264479
5	Firing Head - GO™ Style	101274746
6	Bull Plug	101250245
7	Tandem	101247486
8	O-Ring - Buna 90 Duro #214	100001949
	O-Ring - Viton 95 Duro #214	100003922
9	Charge - 3.4 g MILLENNIUM™ HMX	100157028
**10	Charge Clip	101275254
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305303
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

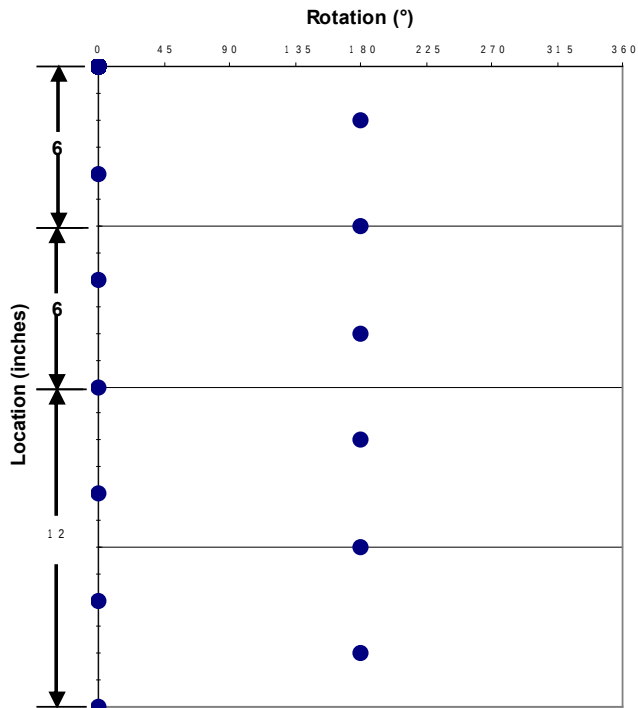
**Charge clips must be ordered separately

N/S - Not shown

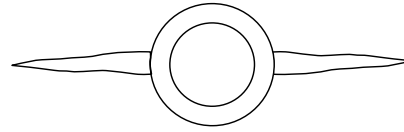


1 9/16-in. 6-spf 180° Slip-On Strip-Type

1 9/16-in. 6-spf 180° Slip-On Strip-Type



Shot Pattern for 1.5625-in.
6-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

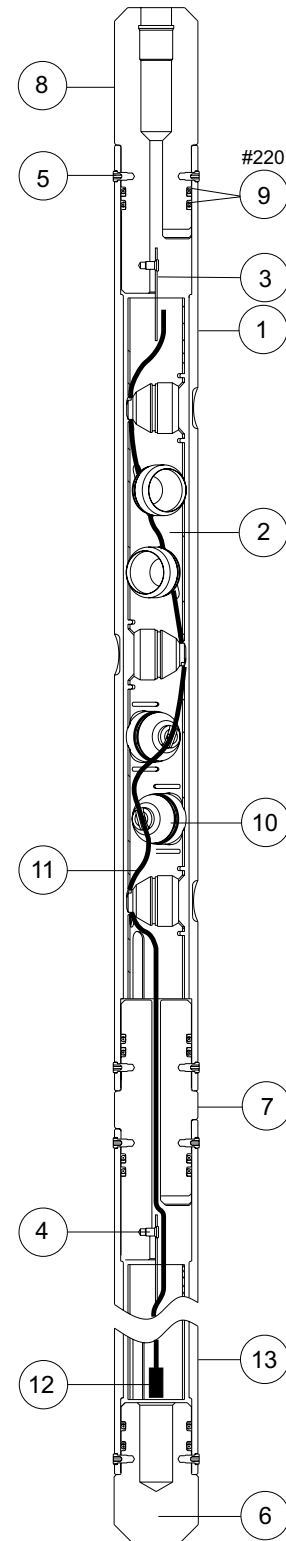
Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)

2-in. 4-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101294561
	Shipping Assembly - 7 ft	101294562
	Shipping Assembly - 11 ft	101294563
	Shipping Assembly - 15 ft	101294564
	Shipping Assembly - 21 ft	101294565
*1	Gun, Scallop - 4 ft	101294566
	Gun, Scallop - 7 ft	101294568
	Gun, Scallop - 11 ft	101294569
	Gun, Scallop - 15 ft	101294570
	Gun, Scallop - 21 ft	101294571
*2	Tube, Charge Holder - 4 ft	101279752
	Tube, Charge Holder - 7 ft	101279754
	Tube, Charge Holder - 11 ft	101279755
	Tube, Charge Holder - 15 ft	101279756
	Tube, Charge Holder - 21 ft	101279757
*3	Strip, Charge Tube Mounting	101246688
*4	Screw, Cap 0.313" D x 0.25" L	101265837
*5	Screw, Cap 0.25" D x 0.375" L	101265579
6	Bull Plug	101246531
7	Tandem, Grooved	101246532
8	Firing Head Crossover - GO™ Style	101274748
9	O-Ring, Buna 90 Duro #220	100007757
	O-Ring Viton 95 Duro #220	100064831
10	Charge - 6.8 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.8g HMX SDP	100008017
	Charge - 6.8g HMX BH	101206246
	Charge - 6.9g HNS DP	100157018
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

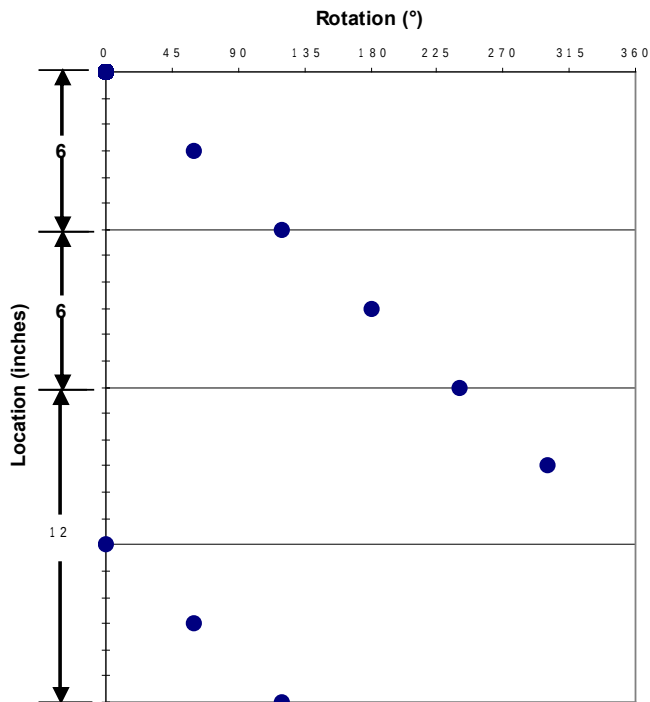
*Included in Shipping Assembly

N/S - Not shown

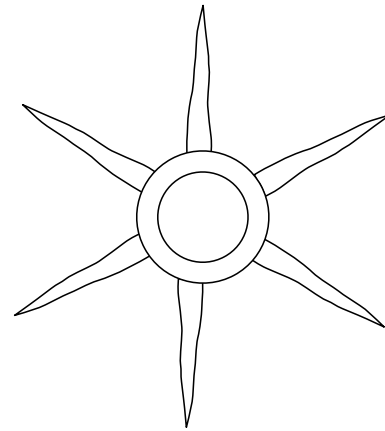


2-in. 4-spf 60° Slip-On
Tube-Type

2-in. 4-spf 60° Slip-On Tube-Type



Shot Pattern for 2-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

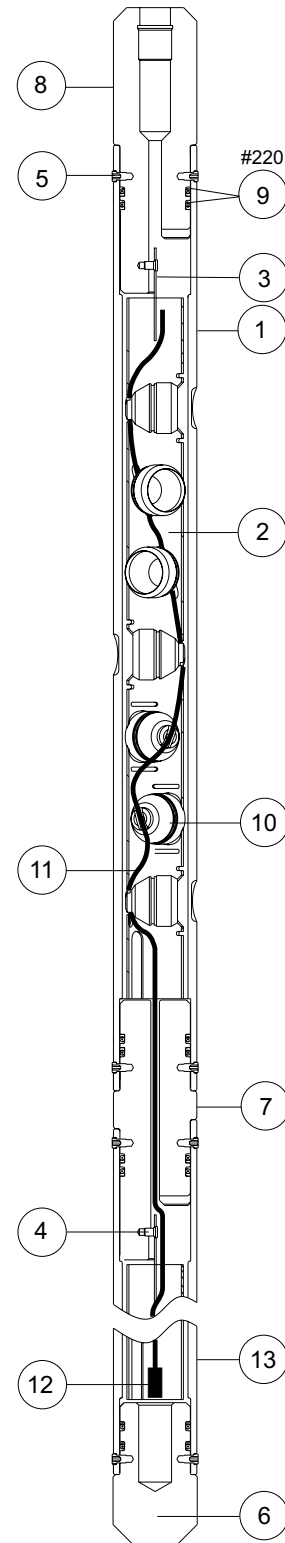
JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	21 (9)	38 (17)	59 (27)	80 (36)	112 (51)
Spacer lb (kg)	16 (7)	27 (12)	44 (20)	60 (27)	84 (38)

2-in. 6-spf 60° Slip-On Tube-Type

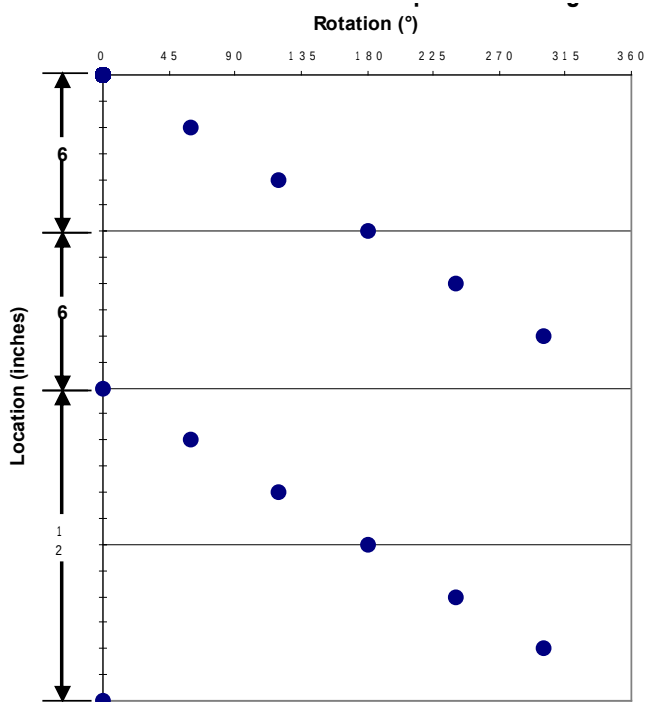
Item	Description	Part No.
	Shipping Assembly - 4 ft	101294548
	Shipping Assembly - 7 ft	101294550
	Shipping Assembly - 11 ft	101294551
	Shipping Assembly - 15 ft	101294552
	Shipping Assembly - 21 ft	101294553
*1	Gun, Scallop - 4 ft	101294555
	Gun, Scallop - 7 ft	101294556
	Gun, Scallop - 11 ft	101294557
	Gun, Scallop - 15 ft	101294558
	Gun, Scallop - 21 ft	101294560
*2	Tube, Charge Holder - 4 ft	101234197
	Tube, Charge Holder - 7 ft	101234201
	Tube, Charge Holder - 11 ft	101234202
	Tube, Charge Holder - 15 ft	101235714
	Tube, Charge Holder - 21 ft	101234205
*3	Strip, Charge Tube Mounting	101246688
*4	Screw, Cap 0.313" D x 0.25" L	101265837
*5	Screw, Cap 0.25" D x 0.375" L	101265579
6	Bull Plug	101246531
7	Tandem, Grooved	101246532
8	Firing Head Crossover - GO™ Style	101274748
9	O-Ring, Buna 90 Duro #220	100007757
	O-Ring Viton 95 Duro #220	100064831
10	Charge - 6.8 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.8 g HMX SDP	100008017
	Charge - 6.8 g HMX BH	101206246
	Charge - 6.9 g HNS DP	100157018
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly
N/S - Not shown

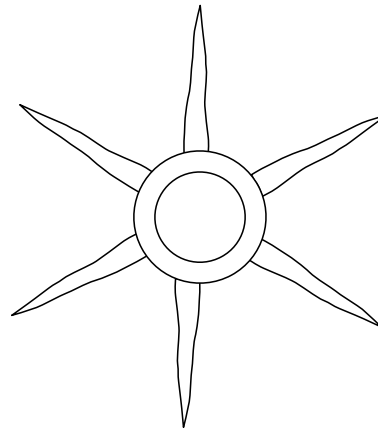


2-in. 6-spf 60° Slip-On
Tube-Type

2-in. 6-spf 60° Slip-On Tube-Type



Shot Pattern for 2-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	38 (17)	60 (27)	82 (37)	114 (52)
Spacer lb (kg)	15 (7)	26 (12)	42 (19)	57 (26)	79 (36)

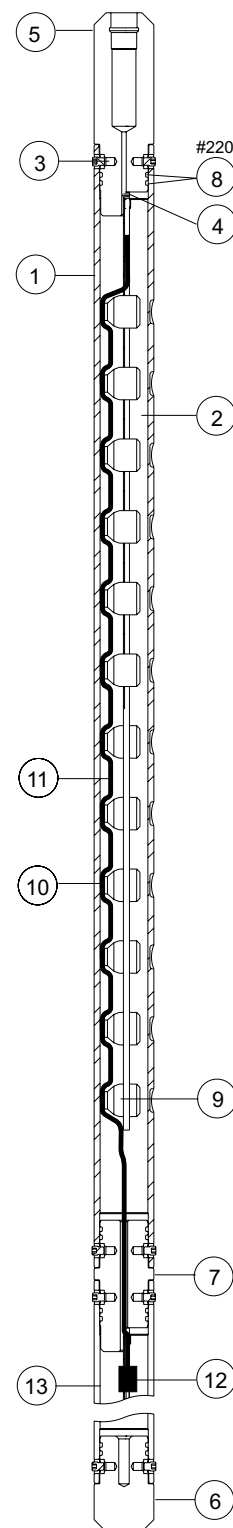
2-in. 4-spf 0° Slip-On Strip Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101246430
	Shipping Assembly - 7 ft	101246451
	Shipping Assembly - 11 ft	101246452
	Shipping Assembly - 15 ft	101246453
	Shipping Assembly - 21 ft	101246454
*1	Gun, Scallop - 4 ft	101246235
	Gun, Scallop - 7 ft	101246238
	Gun, Scallop - 11 ft	101246241
	Gun, Scallop - 15 ft	101246242
	Gun, Scallop - 21 ft	101246243
*2	Strip, Charge Holder - 4 ft	101246437
	Strip, Charge Holder - 7 ft	101246445
	Strip, Charge Holder - 11 ft	101246447
	Strip, Charge Holder - 15 ft	101246448
	Strip, Charge Holder - 21 ft	101246449
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Viton, 95 Duro	100064831
9	Charge - 6.8 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.8 g HMX SDP	100008017
	Charge - 6.8 g HMX BH	101206246
	Charge - 6.9 g HNS DP	100157018
**10	Charge Clip	101276127
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly.

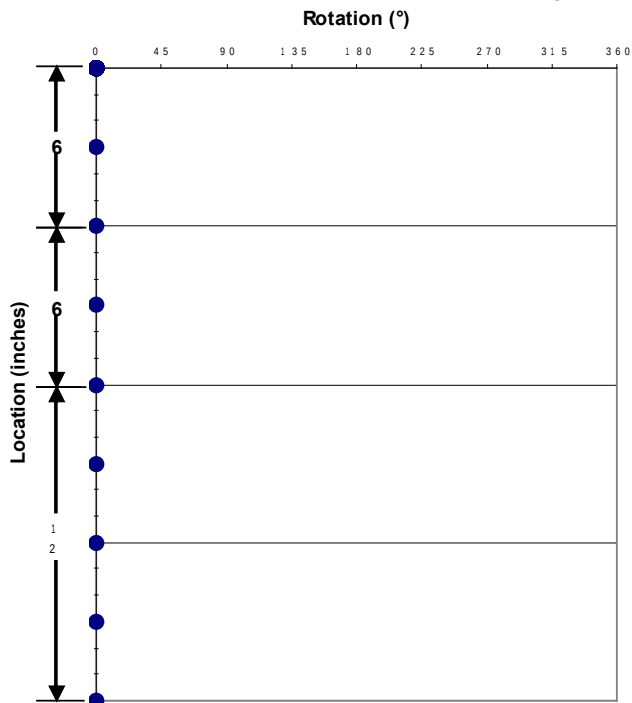
**Charge clips must be ordered separately

N/S - Not shown

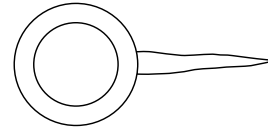


2-in. 4-spf 0° Slip-On
Strip-Type

2-in. 4-spf 0° Slip-On Strip-Type



Shot Pattern for 2-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	11 (5)	21 (9)	33 (15)	45 (21)	64 (29)
Spacer lb (kg)	9 (4)	17 (8)	26 (12)	36 (16)	51 (23)

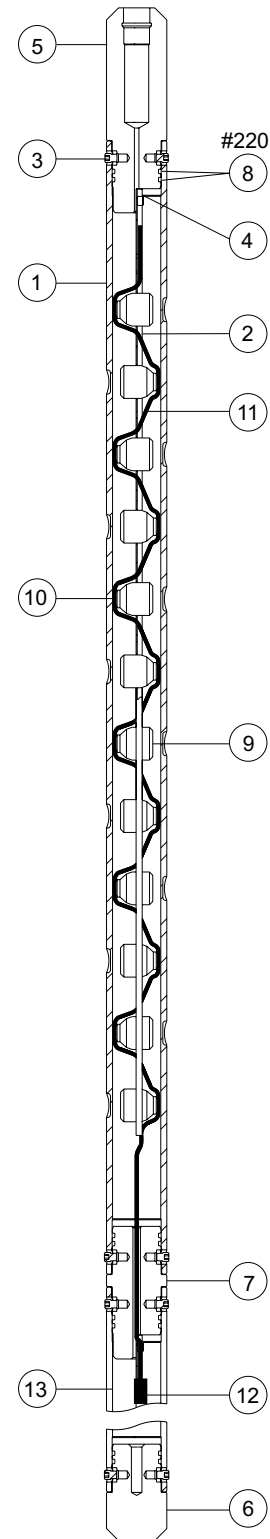
2-in. 4-spf 180° Slip-On Strip Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101246597
	Shipping Assembly - 7 ft	101246598
	Shipping Assembly - 11 ft	101246599
	Shipping Assembly - 15 ft	101246600
	Shipping Assembly - 21 ft	101246601
*1	Gun, Scallop - 4 ft	101246541
	Gun, Scallop - 7 ft	101246542
	Gun, Scallop - 11 ft	101246543
	Gun, Scallop - 15 ft	101246544
	Gun, Scallop - 21 ft	101246545
*2	Strip, Charge Holder - 4 ft	101246437
	Strip, Charge Holder - 7 ft	101246445
	Strip, Charge Holder - 11 ft	101246447
	Strip, Charge Holder - 15 ft	101246448
	Strip, Charge Holder - 21 ft	101246449
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - Go™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Viton, 95 Duro	100064831
9	Charge - 6.8 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.8 g HMX SDP	100008017
	Charge - 6.8 g HMX BH	101206246
	Charge - 6.9 g HNS DP	100157018
**10	Charge Clip	101276127
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

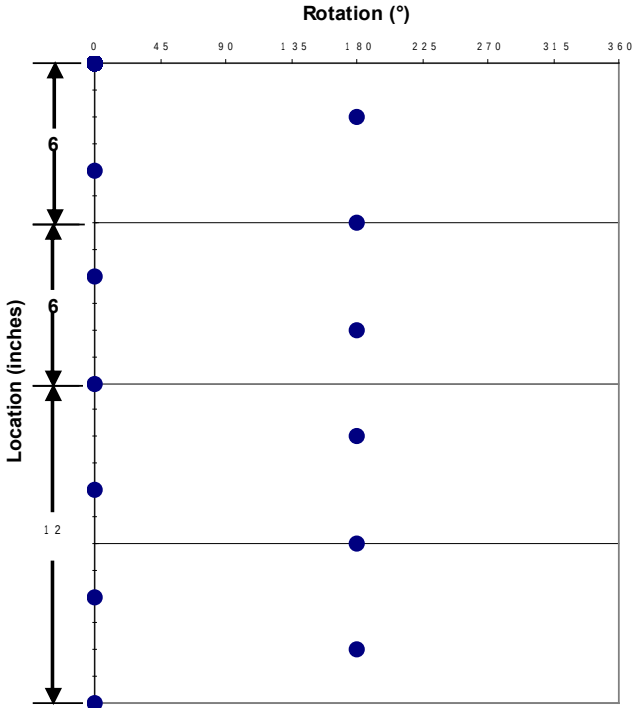
**Charge clips must be ordered separately

N/S - Not shown

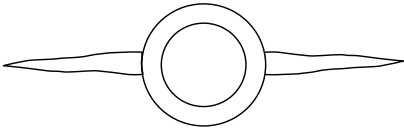


2-in. 4-spf 180° Slip-On Strip-Type

2-in. 4-spf 180° Slip-On Strip-Type



Shot Pattern for 2-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	11 (5)	21 (9)	33 (15)	45 (21)	64 (29)
Spacer lb (kg)	9 (4)	17 (8)	26 (12)	36 (16)	51 (23)

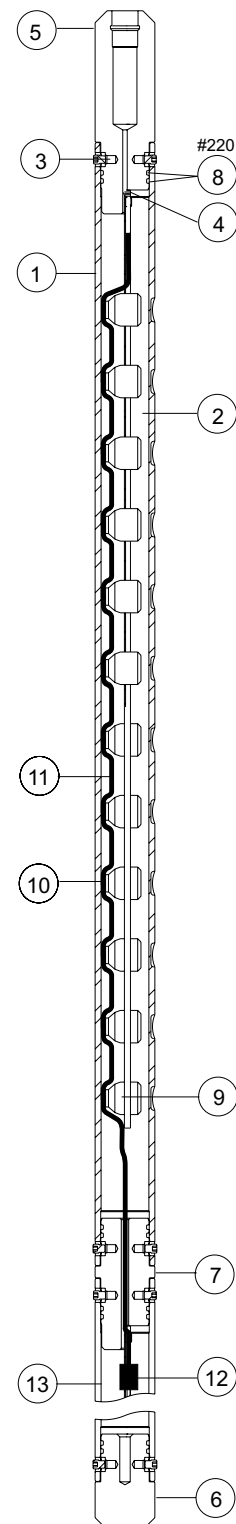
2-in. 6-spf 0° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101246474
	Shipping Assembly - 7 ft	101246476
	Shipping Assembly - 11ft	101246477
	Shipping Assembly - 15 ft	101246478
	Shipping Assembly - 21 ft	101246479
*1	Gun, Scallop - 4 ft	101291627
	Gun, Scallop - 7 ft	101291636
	Gun, Scallop - 11ft	101291637
	Gun, Scallop - 15 ft	101291638
	Gun, Scallop - 21 ft	101291639
*2	Strip, Charge Holder - 4 ft	101291628
	Strip, Charge Holder - 7 ft	101291629
	Strip, Charge Holder - 11 ft	101291631
	Strip, Charge Holder - 15 ft	101291632
	Strip, Charge Holder - 21 ft	101291634
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Vitron, 95 Duro	100064831
9	Charge - 6.80g HMX <i>Millennium</i> ™	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
**10	Charge Clip	101276127
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

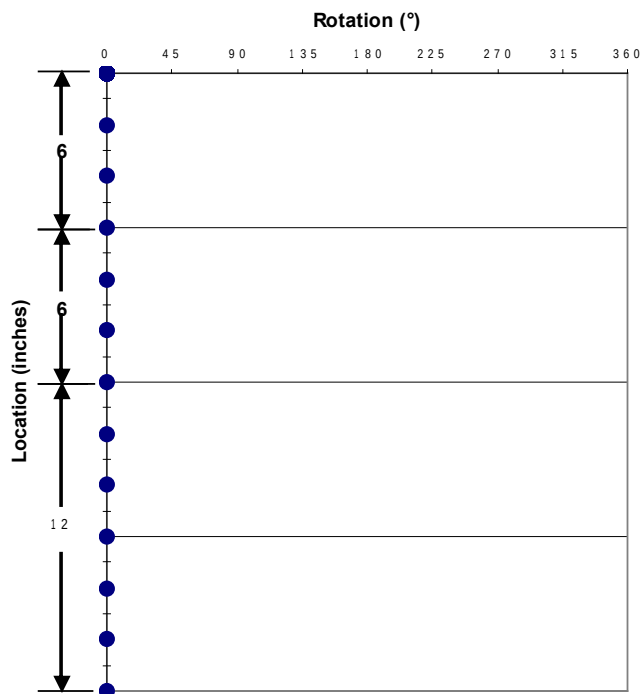
**Charge clips must be ordered separately

N/S - Not shown

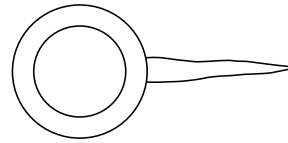


2-in. 6-spf 0° Slip-On Strip-Type

2-in. 6-spf 0° Slip-On Strip-Type



Shot Pattern for 2-in.
6-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	38 (17)	60 (27)	82 (37)	114 (52)
Spacer lb (kg)	15 (7)	26 (12)	42 (19)	57 (26)	79 (39)

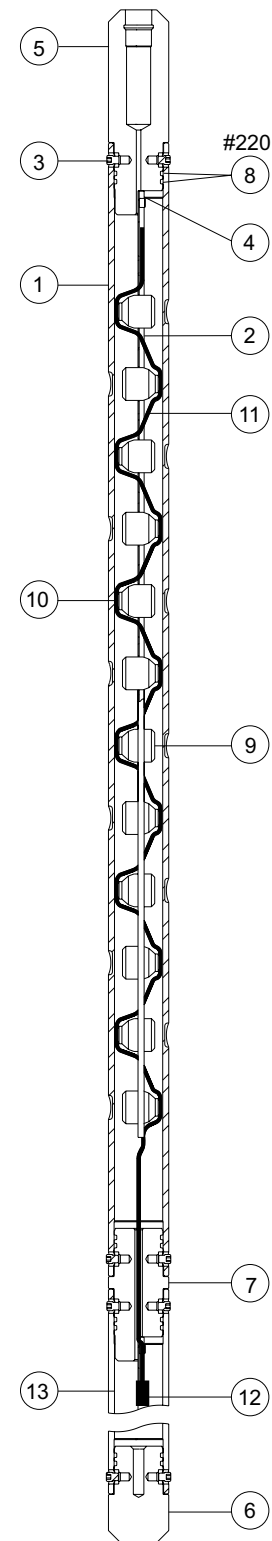
2-in. 6-spf 180° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101246590
	Shipping Assembly - 7 ft	101246593
	Shipping Assembly - 11 ft	101246594
	Shipping Assembly - 15 ft	101246595
	Shipping Assembly - 21 ft	101246596
*1	Gun, Scallop - 4 ft	101291670
	Gun, Scallop - 7 ft	101291673
	Gun, Scallop - 11 ft	101291674
	Gun, Scallop - 15 ft	101291676
	Gun, Scallop - 21 ft	101291677
*2	Strip, Charge Holder - 4 ft	101291628
	Strip, Charge Holder - 7 ft	101291629
	Strip, Charge Holder - 11 ft	101291631
	Strip, Charge Holder - 15 ft	101291632
	Strip, Charge Holder - 21 ft	101291634
*3	Screw, Cap 0.313" D x 0.25" L	101265837
*4	Screw, Cap 0.25" D x 0.375" L	101265579
5	Firing Head - GO™ Style	101274748
6	Bull Plug	101246531
7	Tandem	101246532
8	O-Ring, #220 Buna, 90 Duro	100007757
	O-Ring, #220 Vitron, 95 Duro	100064831
9	Charge - 6.8g HMX <i>Millennium</i> ™	101208224
	Charge - 6.8g HMX SDP	100008017
	Charge - 6.8g HMX BH	101206246
	Charge - 6.9g HNS DP	100157018
**10	Charge Clip	101276127
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101305310
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

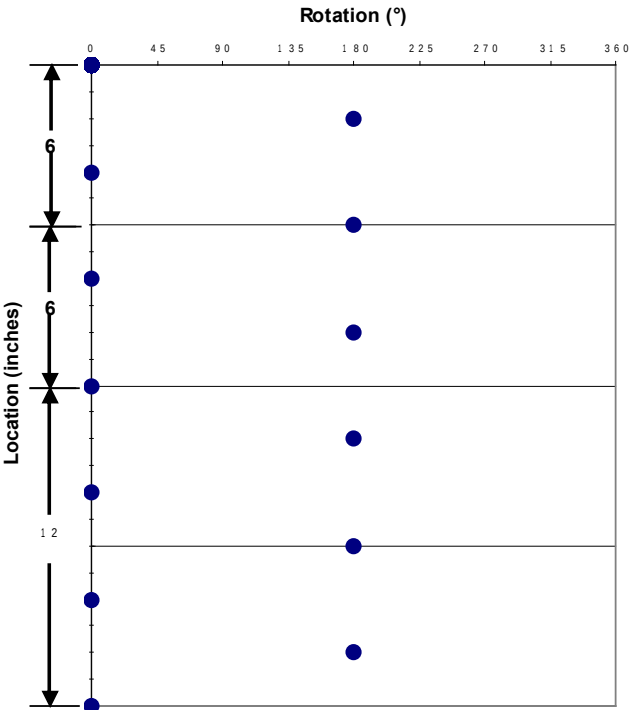
**Charge clips must be ordered separately

N/S - Not shown

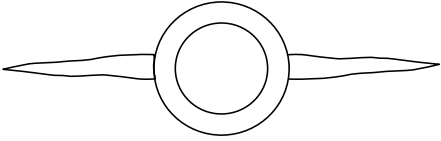


2-in. 6-spf 180°
Slip-On Strip-Type

2-in. 6-spf 180° Slip-On Strip-Type



Shot Pattern for 2-in.
6-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

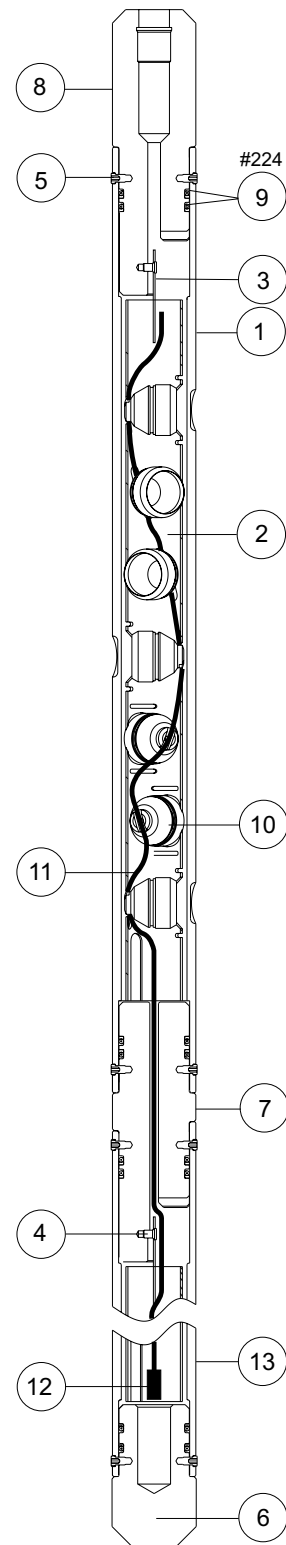
Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	38 (17)	60 (27)	82 (37)	114 (52)
Spacer lb (kg)	15 (7)	26 (12)	42 (19)	57 (26)	79 (39)

2 1/2-in. 4-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101294604
	Shipping Assembly - 7 ft	101294605
	Shipping Assembly - 11ft	101294606
	Shipping Assembly - 15 ft	101294607
	Shipping Assembly - 21 ft	101294608
1	Gun - Scallop - 4 ft	101294609
	Gun - Scallop - 7 ft	101294610
	Gun - Scallop - 11 ft	101294611
	Gun - Scallop - 15 ft	101294612
	Gun - Scallop - 21 ft	101294613
*2	Tube, Charge Holder - 4 ft	101280778
	Tube, Charge Holder - 7 ft	101280780
	Tube, Charge Holder - 11 ft	101280781
	Tube, Charge Holder - 15 ft	101280782
	Tube, Charge Holder - 21 ft	101280783
*3	Strip, Charge Tube Mounting	101250044
*4	Screw, Cap .25" D x .375" L	101265579
*5	Screw, Cap .375" D x .25" L	101265926
6	Bull Plug	101251099
7	Tandem, Grooved	101250189
8	Firing Head Crossover - GO™ Type	101274760
9	O-Ring, Buna 90 Duro #224	100001995
	O-Ring, Vitron 95 Duro #224	100007363
10	Charge - 11g RDX DP	100014493
	Charge - 11g HMX <i>Millennium</i> ™	101206251
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	100000257
N/S	Rubber Grommet for 40g Flat	100000327

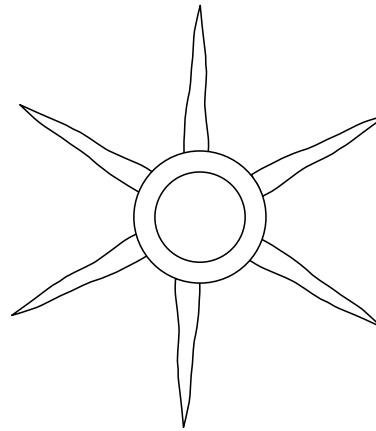
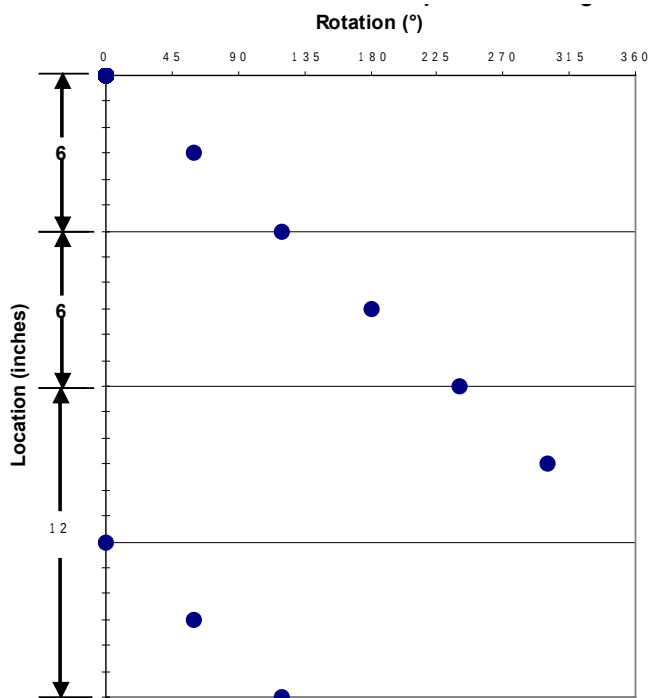
*Included in Shipping Assembly

N/S - Not shown



2 1/2-in. 4-spf 60° Slip-On
Tube-Type

2 1/2-in. 4-spf 60° Slip-On Tube-Type



60° Phasing
6 Perforation Planes

JRC Gun Weights

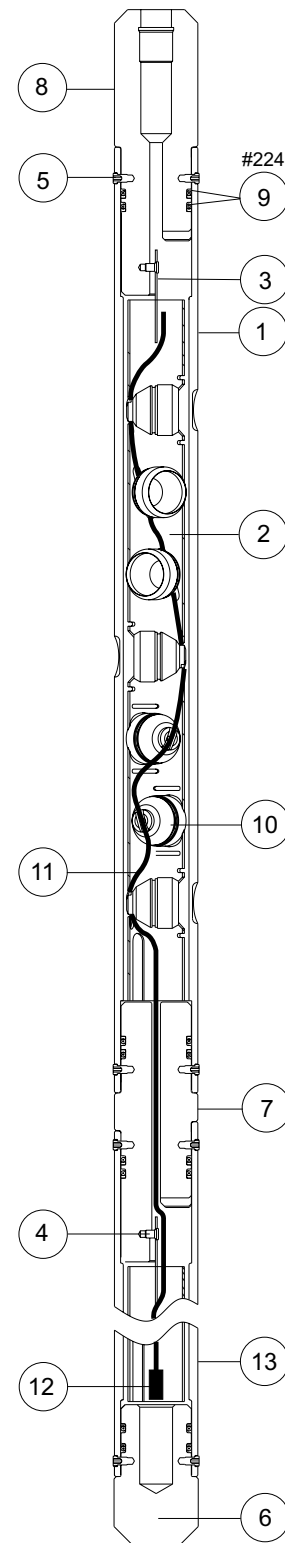
Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)

2 1/2-in. 6-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101294614
	Shipping Assembly - 7 ft	101294615
	Shipping Assembly - 11 ft	101294616
	Shipping Assembly - 15 ft	101294617
	Shipping Assembly - 21 ft	101294618
1	Gun - Scallop - 4 ft	101294619
	Gun - Scallop - 7 ft	101294620
	Gun - Scallop - 11 ft	101294621
	Gun - Scallop - 15 ft	101294622
	Gun - Scallop - 21 ft	101294623
*2	Tube, Charge Holder - 4 ft	101235733
	Tube, Charge Holder - 7 ft	101235734
	Tube, Charge Holder - 11ft	101235736
	Tube, Charge Holder - 15 ft	101235738
	Tube, Charge Holder - 21 ft	101235739
*3	Strip, Charge Tube Mounting	101250044
*4	Screw, Cap .25" D x .375" L	101265579
*5	Screw, Cap .375" D x .25" L	101265926
6	Bull Plug	101251099
7	Tandem, Grooved	101250189
8	Firing Head Crossover - GO™ Type	101274760
9	O-Ring, Buna 90 Duro #224	100001995
	O-Ring, Vitron 95 Duro #224	100007363
10	Charge - 11g RDX DP	100014493
	Charge - 11g HMX <i>Millennium</i> ™	101206251
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	100000257
N/S	Rubber Grommet for 40g Flat	100000327

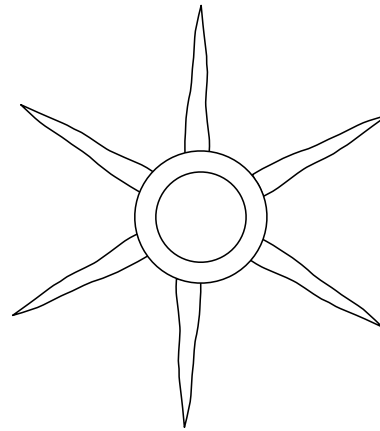
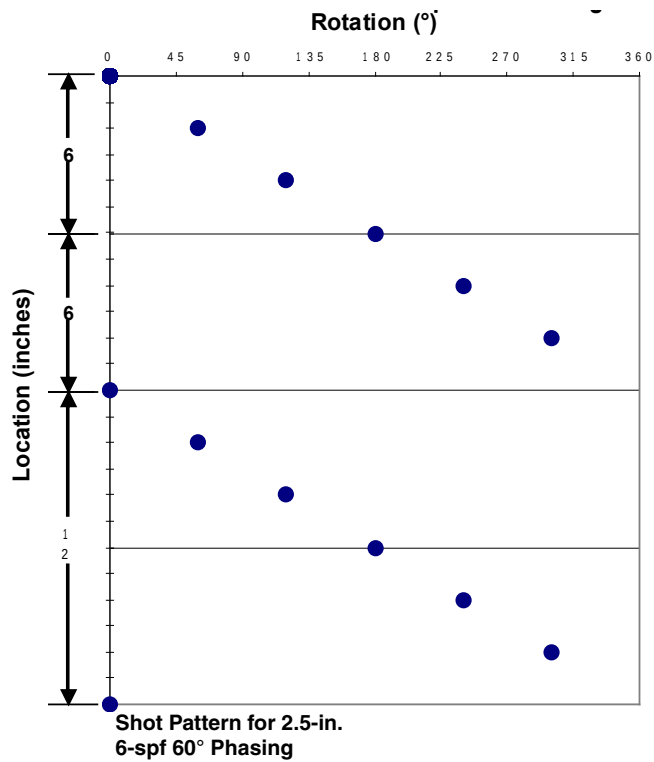
*Included in Shipping Assembly

N/S - Not shown



2 1/2-in. 6-spf 60° Slip-On
Tube-Type

2 1/2-in. 6-spf 60° Slip-On Tube-Type



60° Phasing
6 Perforation Planes

JRC Gun Weights

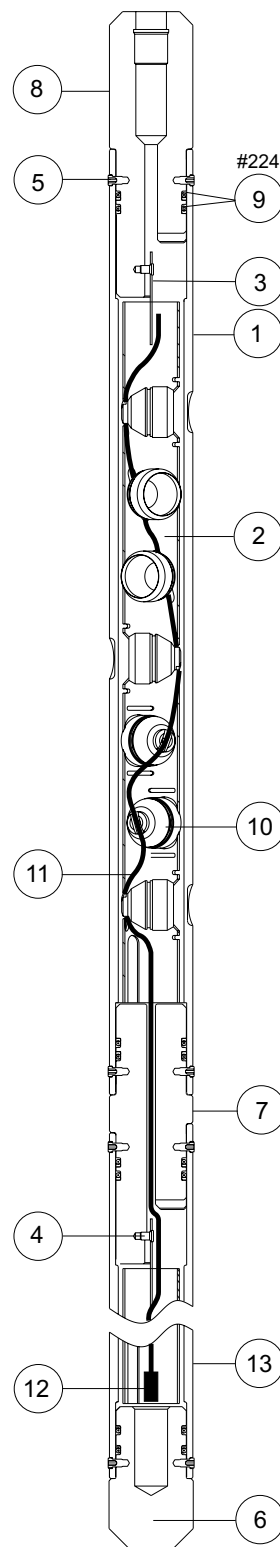
Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	34 (15)	59 (27)	93 (42)	122 (55)	178 (81)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (39)	122 (55)

2 3/8-in. 4-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4ft	101434489
	Shipping Assembly - 7ft	101434490
	Shipping Assembly - 11ft	101434491
	Shipping Assembly - 15ft	101434492
	Shipping Assembly - 21ft	101434493

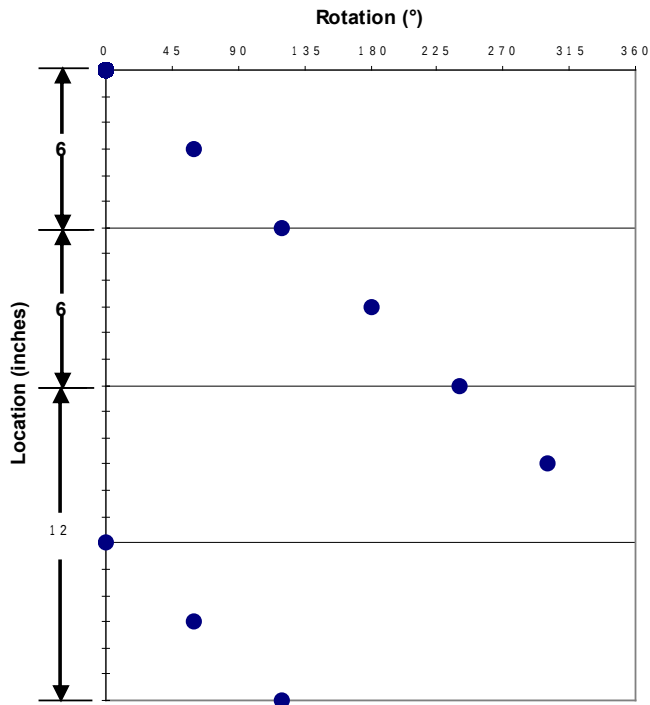
1	Gun-Scalloped - 4 ft	101434495
	Gun-Scalloped - 7 ft	101434496
	Gun-Scalloped - 11 ft	101434497
	Gun-Scalloped - 15 ft	101434498
	Gun-Scalloped - 21 ft	101434499
*2	Tube - Charge Holder - 4 ft	101280778
	Tube - Charge Holder - 7ft	101280780
	Tube - Charge Holder - 11 ft	101280781
	Tube - Charge Holder - 15 ft	101280782
	Tube - Charge Holder - 21 ft	101280783
*3	Strip, Charge Tube Mounting	101250044
*4	Screw, Cap .25"D x .375"L	101265579
*5	Screw, Cap .375"D x .25"L	101265926
6	Bull Plug	101432950
7	Tandem, Grooved	101432952
8	Firing Head Crossover - GO®	101432951
9	O-Ring, Buna 90 Duro #224	100001995
	O-Ring, Viton 95 Duro #224	100007363
10	Charge - 11g RDX DP	100014493
	Charge - 11g HMX Millennium™	101206251
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101432950

*Included in Shipping Assembly
N/S - Not shown

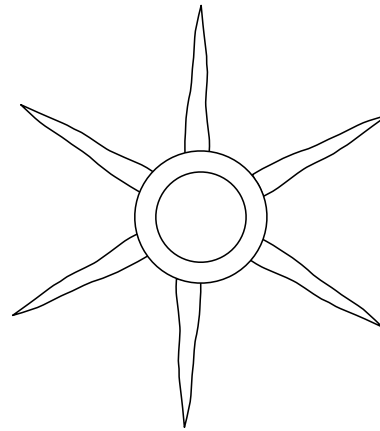


2 3/8-in. 4-spf 60° Slip-On
Tube-Type

2 3/8-in. 4-spf 60° Slip-On Tube-Type



Shot Pattern for 2.375-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	34 (15)	59 (27)	93 (42)	122 (55)	178 (81)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (39)	122 (55)



2 3/8-in. 6-spf 60° Slip-On Tube-Type

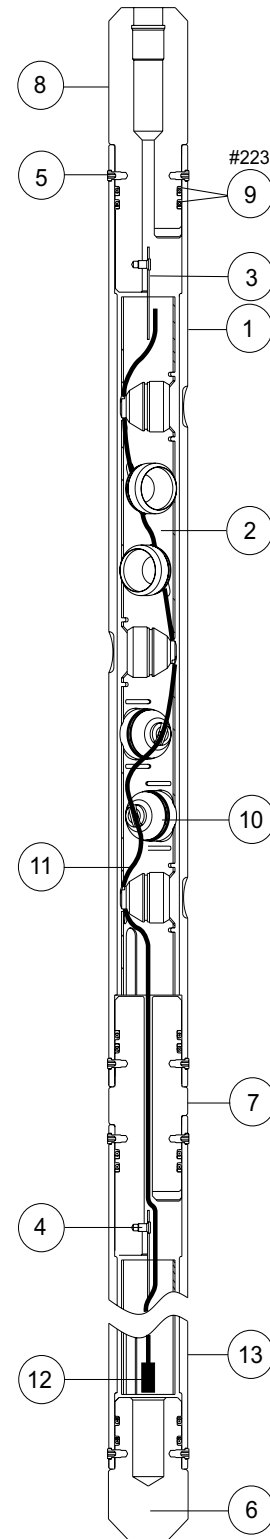
2 3/8-in. 6-spf 60° Slip-On Tube-Type

Item	Description	Part No.
	Shipping Assembly - 4ft	101431535
	Shipping Assembly - 7ft	101431536
	Shipping Assembly - 11ft	101431537
	Shipping Assembly - 15ft	101431538
	Shipping Assembly - 21ft	101431539

1	Gun-Scalloped - 4 ft	101432922
	Gun-Scalloped - 7 ft	101432923
	Gun-Scalloped - 11 ft	101432924
	Gun-Scalloped - 15 ft	101432925
	Gun-Scalloped - 21 ft	101432926
*2	Tube - Charge Holder - 4 ft	101235733
	Tube - Charge Holder - 7ft	101235734
	Tube - Charge Holder - 11 ft	101235736
	Tube - Charge Holder - 15 ft	101235738
	Tube - Charge Holder - 21 ft	101235739
*3	Strip, Charge Tube Mounting	101250044
*4	Screw, Cap .25"D x .375"L	101265579
*5	Screw, Cap .375"D x .25"L	101265926
6	Bull Plug	101432950
7	Tandem	101432952
8	Firing Head Crossover - GO®	101432951
9	O-Ring, Buna 90 Duro #223	100001994
	O-Ring, Viton 95 Duro #223	100012309
10	Charge - 10g HMX BH	101591373
	Charge - 10g HMX MAX FORCE™	101590845
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	101432960
N/S	Rubber Grommet for 40g Flat cord	100000327

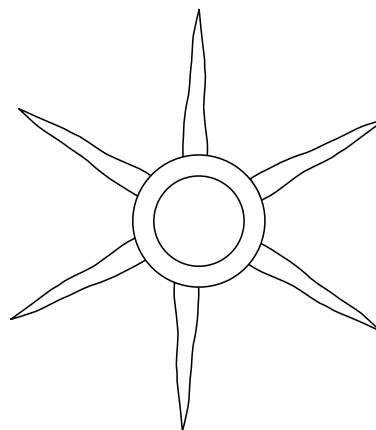
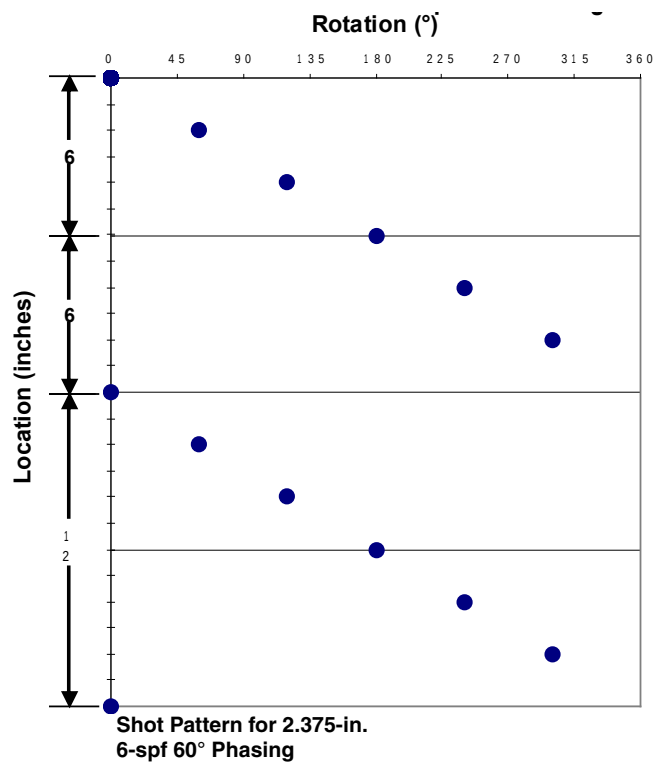
*Included in Shipping Assembly

N/S - Not shown



2 3/8-in. 6-spf 60° Slip-On
Tube-Type

2 3/8-in. 6-spf 60° Slip-On Tube-Type



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	34 (15)	59 (27)	93 (42)	122 (55)	178 (81)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (39)	122 (55)

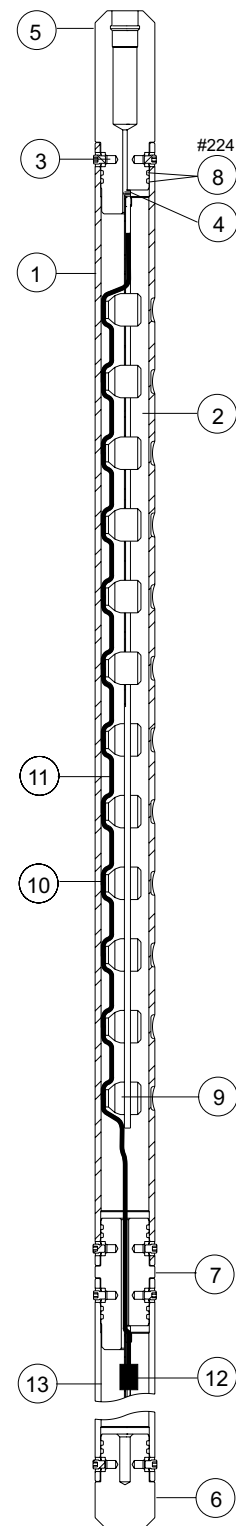
2 1/2-in. 4-spf 0° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101251405
	Shipping Assembly - 7 ft	101251408
	Shipping Assembly - 11 ft	101251409
	Shipping Assembly - 15 ft	101251410
	Shipping Assembly - 21 ft	101251411
*1	Gun, Scallop - 4 ft	101249951
	Gun, Scallop - 7 ft	101249952
	Gun, Scallop - 11 ft	101249953
	Gun, Scallop - 15 ft	101249954
	Gun, Scallop - 21 ft	101249955
*2	Strip, Charge Holder - 4 ft	101250030
	Strip, Charge Holder - 7 ft	101250032
	Strip, Charge Holder - 11 ft	101250033
	Strip, Charge Holder - 15 ft	101250034
	Strip, Charge Holder - 21 ft	101250035
*3	Screw, Cap .25" D x .375" L	101265579
*4	Screw, Cap .313" D x .25" L	101265837
5	Firing Head - GO™ Style	101274760
6	Bull Plug	101251099
7	Tandem	101250189
8	O-Ring, #224 Buna, 90 Duro	100001995
	O-Ring, #224 Vitron, 95 Duro	100007363
9	Charge - 11g HMX MILLENNIUM™	101206251
**10	Charge Clip	101276707
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	100000257
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

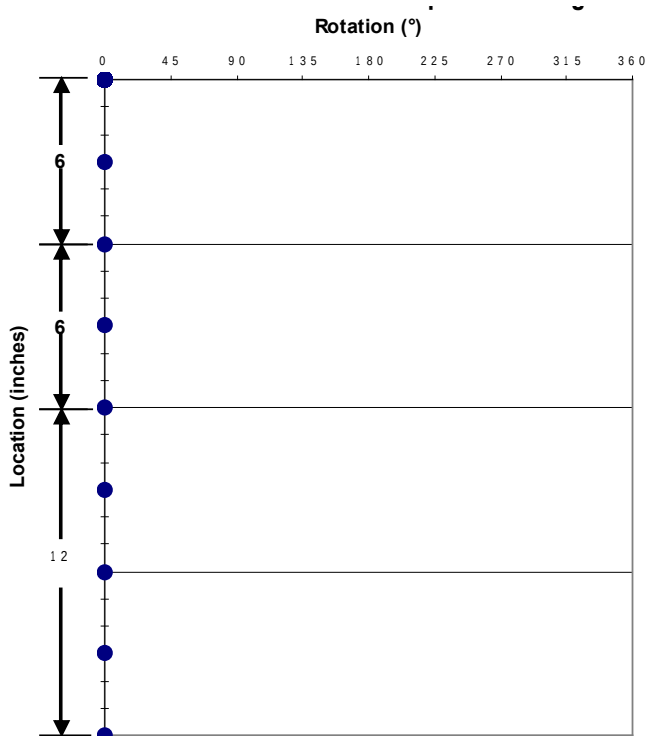
**Charge clips must be ordered separately

N/S - Not shown

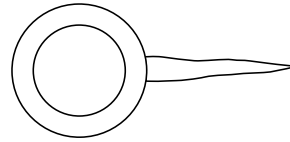


2 1/2-in. 4-spf 0° Slip-On
Strip-Type

2 1/2-in. 4-spf 0° Slip-On Strip-Type



Shot Pattern for 2.5-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	28 (13)	50 (23)	80 (36)	109 (50)	154 (70)
Spacer lb (kg)	23 (11)	40 (18)	64 (29)	87 (39)	122 (55)



2 1/2-in. 4-spf 180° Slip-On Strip-Type

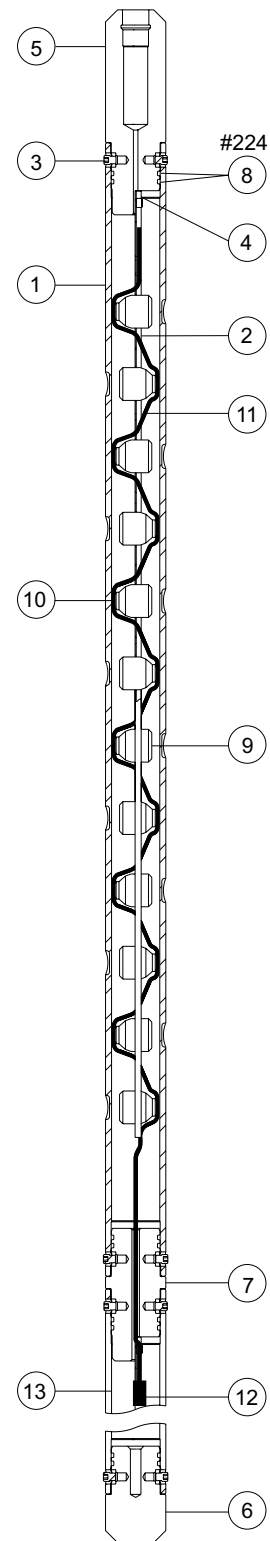
2 1/2-in. 4-spf 180° Slip-On Strip-Type

Item	Description	Part No.
	Shipping Assembly - 4 ft	101251495
	Shipping Assembly - 7 ft	101251496
	Shipping Assembly - 11 ft	101251497
	Shipping Assembly - 15 ft	101251498
	Shipping Assembly - 21 ft	101251500
*1	Gun, Scallop - 4 ft	101251451
	Gun, Scallop - 7 ft	101251452
	Gun, Scallop - 11 ft	101251453
	Gun, Scallop - 15 ft	101251454
	Gun, Scallop - 21 ft	101251455
*2	Strip, Charge Holder - 4 ft	101250030
	Strip, Charge Holder - 7 ft	101250032
	Strip, Charge Holder - 11 ft	101250033
	Strip, Charge Holder - 15 ft	101250034
	Strip, Charge Holder - 21 ft	101250035
*3	Screw, Cap .25" D x .375" L	101265579
*4	Screw, Cap .313" D x .25" L	101265837
5	Firing Head Crossover - GO™ Style	101274760
6	Bull Plug	101251099
7	Tandem, Grooved	101250189
8	O-Ring, #224 Buna, 90 Duro	100001995
	O-Ring, #224 Viton, 95 Duro	100007363
9	Charge - 11g MILLENNIUM™ HMX	101206251
**10	Charge Clip	101276707
11	Detonating Cord	See Appendix A
12	Detonator, Electric	See Det. Section
13	Blast Sleeve	100000257
N/S	Rubber Grommet for 40g Flat	100000327

*Included in Shipping Assembly

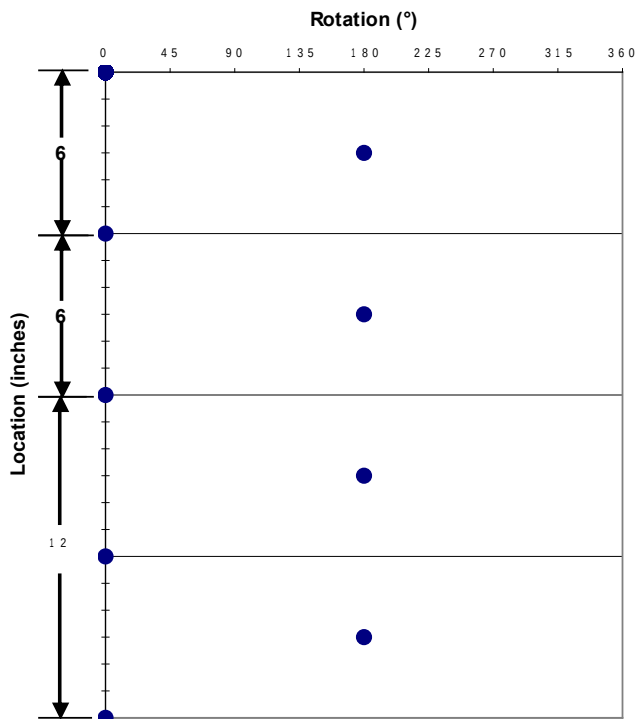
**Charge clips must be ordered separately

N/S - Not shown

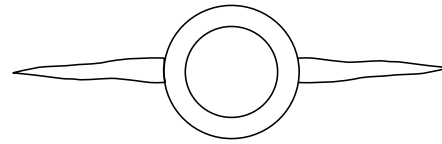


2 1/2-in. 4-spf 180° Slip-On
Strip-Type

2 1/2-in. 4-spf 180° Slip-On Strip-Type



Shot Pattern for 2.5-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	28 (13)	50 (23)	80 (36)	109 (50)	154 (70)
Spacer lb (kg)	23 (11)	40 (18)	64 (29)	87 (39)	122 (55)

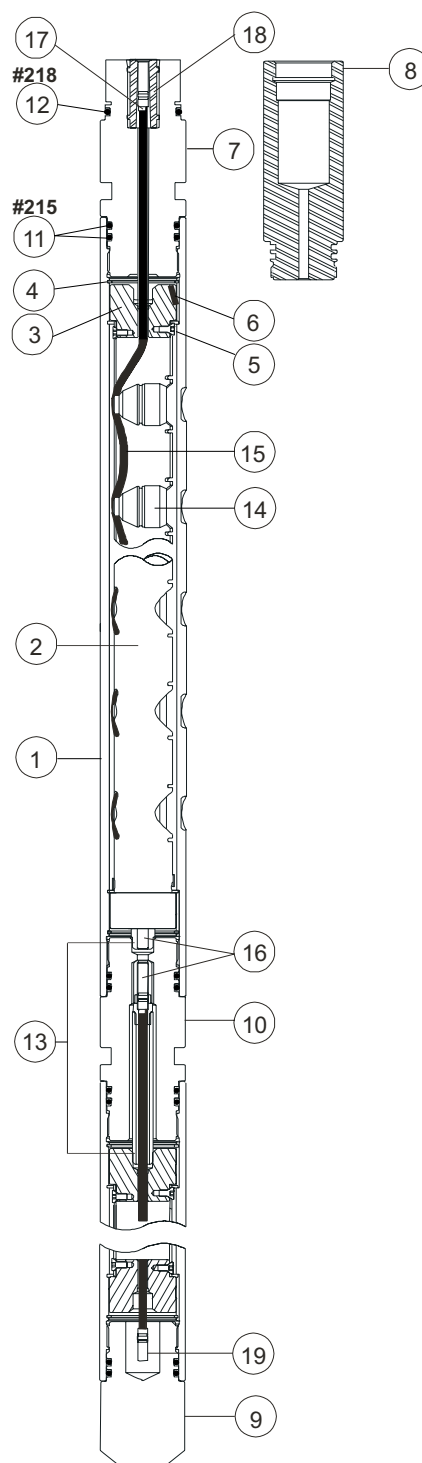


1 9/16-in. 4-spf 0° Scalloped System

1 9/16-in. 4-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4 ft	101235924
	Shipping Assembly - 7 ft	101235926
	Shipping Assembly - 11 ft	101235927
	Shipping Assembly - 15 ft	101235928
	Shipping Assembly - 21 ft	101235929

*1	Gun, Scallop - 4 ft	101235911
	Gun, Scallop - 7 ft	101235913
	Gun, Scallop - 11ft	101235914
	Gun, Scallop - 15 ft	101235915
	Gun, Scallop - 21 ft	101235916
*2	Tube, Charge Holder - 4 ft	101235917
	Tube, Charge Holder - 7 ft	101235920
	Tube, Charge Holder - 11ft	101235921
	Tube, Charge Holder - 15 ft	101235922
	Tube, Charge Holder - 21ft	101235923
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10-32 x 0.50" L	100028832
7	Firing Head Crossover - Vann™	100156707
8	Firing Head Crossover - GO® Style	101283107
9	Bull Plug	101235687
10	Tandem	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g MILLENNIUM™ HMX	100157028
15	Detonating Cord	See Appendix A
16	Bi-Directional Booster	See Appendix A
17	**Teflon Grommet	100157596
18	Miniature Alignment Insert	100005277
19	End Seal	100005251

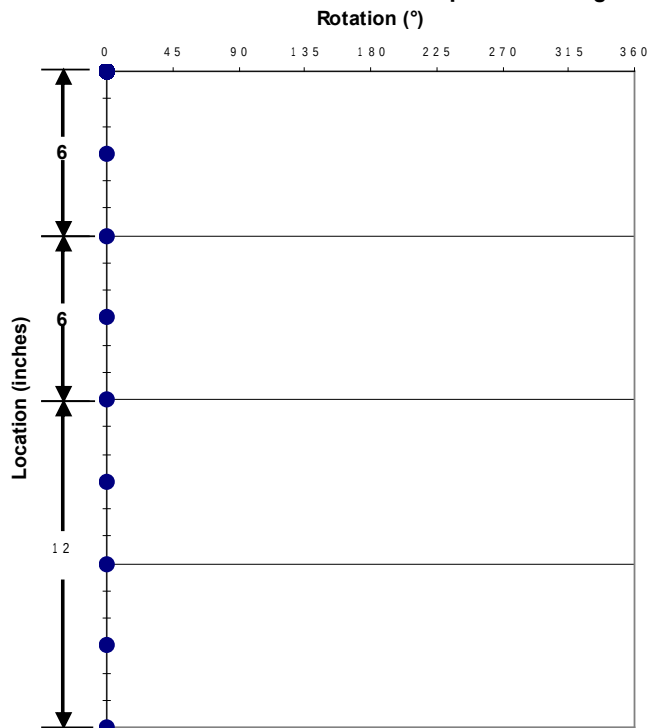


1 9/16-in. 4-spf 0°
Scalloped System

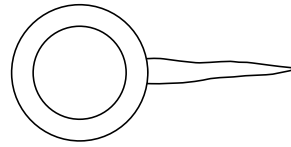
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.

1 9/16-in. 4-spf 0° Scalloped System



Shot pattern for 1.5625-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)



1 9/16-in. 4-spf 60° Scalloped System

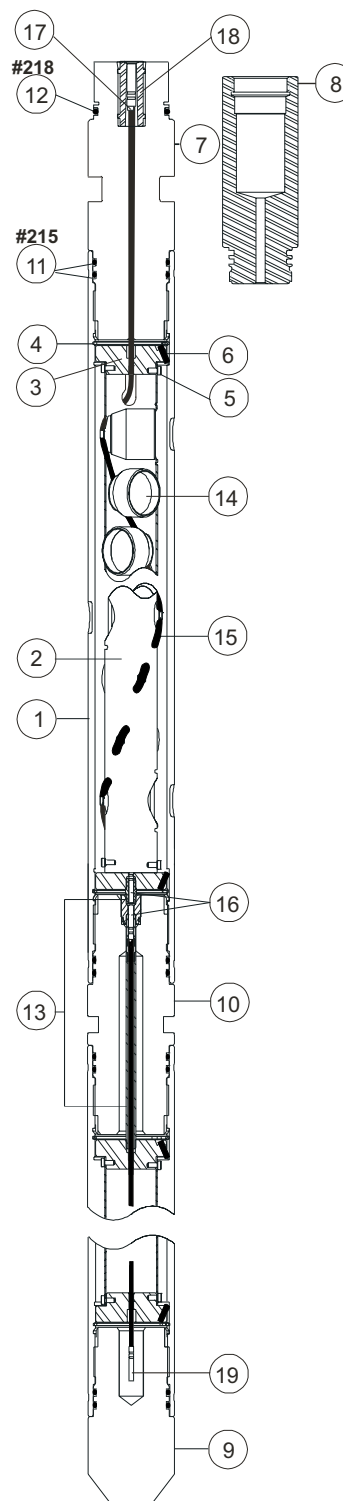
1 9/16-in. 4-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235906
	Shipping Assembly - 7ft	101235907
	Shipping Assembly - 11ft	101235908
	Shipping Assembly - 15ft	101235909
	Shipping Assembly - 21ft	101235910

*1	Gun, Scallop - 4ft	101235895
	Gun, Scallop - 7ft	101235896
	Gun, Scallop - 11ft	101235897
	Gun, Scallop - 15ft	101235898
	Gun, Scallop - 21ft	101235899
*2	Tube, Charge Holder - 4ft	101235900
	Tube, Charge Holder - 7ft	101235901
	Tube, Charge Holder - 11ft	101235902
	Tube, Charge Holder - 15ft	101235903
	Tube, Charge Holder - 21ft	101235904
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100156707
8	Firing Head Crossover - 'Go' Style	101283107
9	Bull Plug	101235687
10	Tandem, Grooved	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g HMX Millennium ®	100157028
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

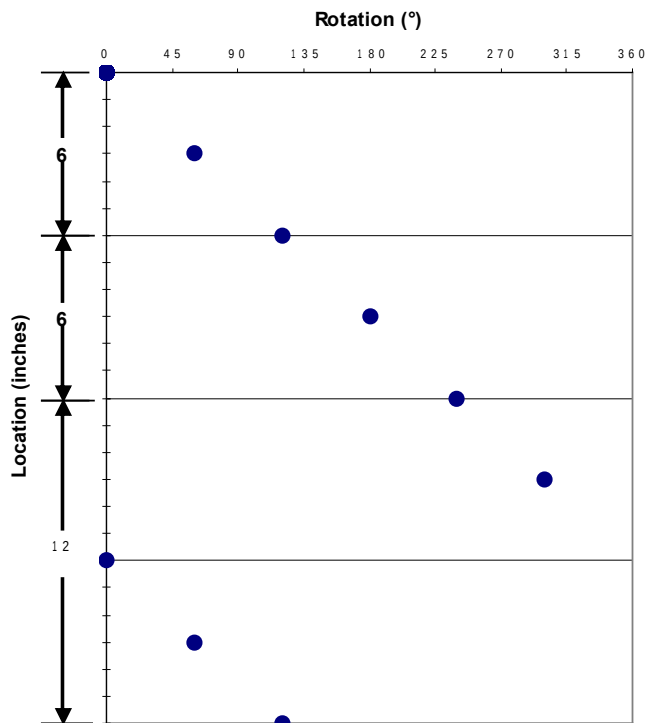
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.

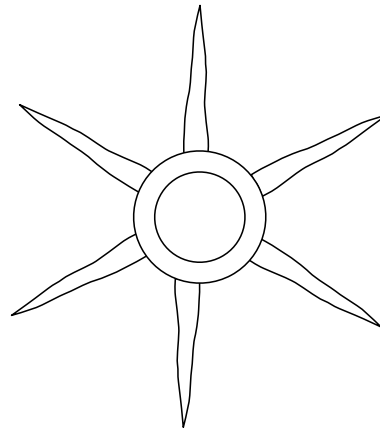


1 9/16-in. 4-spf 60°
Scalloped System

1 ⁹/₁₆-in. 4-spf 60° Scalloped System



Shot Pattern for 1.5625-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)



1 9/16-in. 4-spf 90° Scalloped System

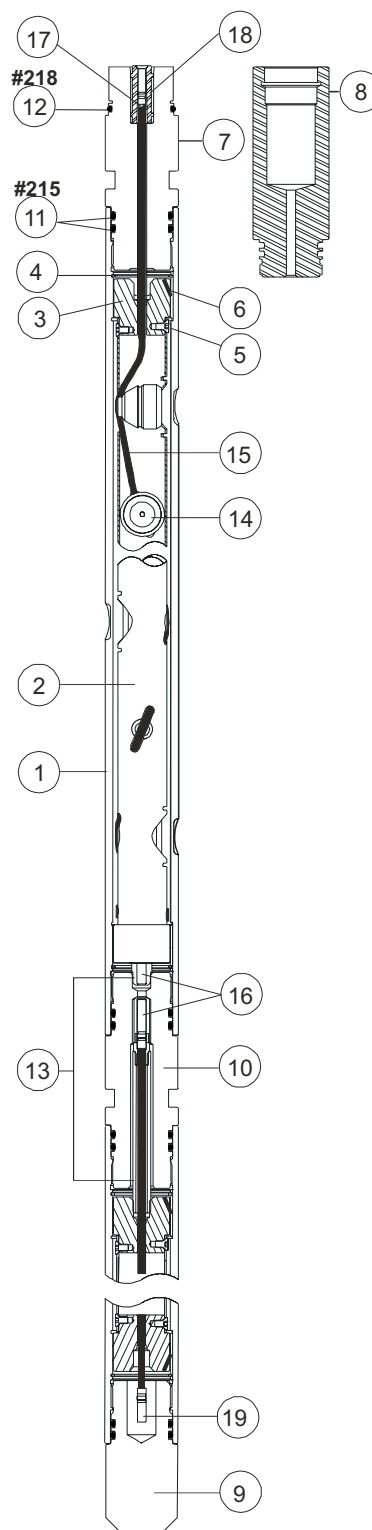
1 9/16-in. 4-spf 90° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101280061
	Shipping Assembly - 7ft	101280062
	Shipping Assembly - 11ft	101280063
	Shipping Assembly - 15ft	101280060
	Shipping Assembly - 21ft	101280058

*1	Gun, Scalloped - 4ft	101279419
	Gun, Scalloped - 7ft	101279424
	Gun, Scalloped - 11ft	101279425
	Gun, Scalloped - 15ft	101279426
	Gun, Scalloped - 21ft	101279428
*2	Tube, Charge Holder - 4ft	101279482
	Tube, Charge Holder - 7ft	101279483
	Tube, Charge Holder - 11ft	101279484
	Tube, Charge Holder - 15ft	101279485
	Tube, Charge Holder - 21ft	101279486
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10 -32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100156707
8	Firing Head Crossover - 'Go' Style	101283107
9	Bull Plug	101235687
10	Tandem, Grooved	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g MILLENNIUM ® HMX	100157028
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

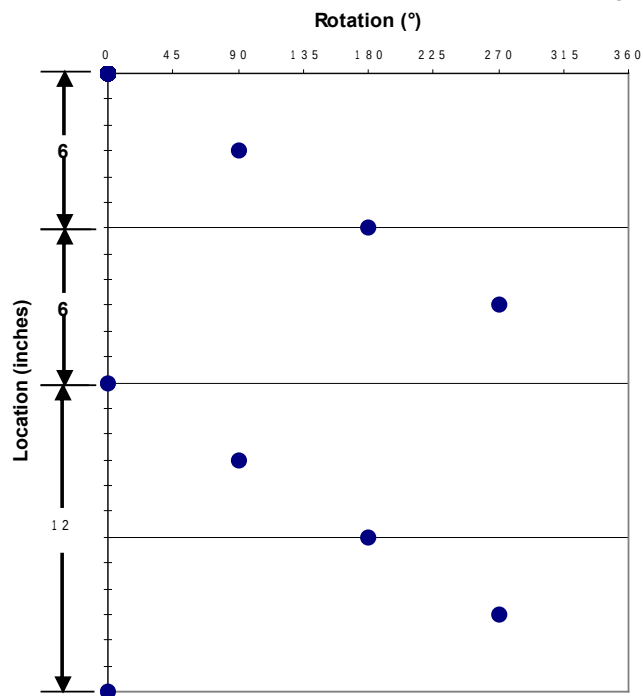
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

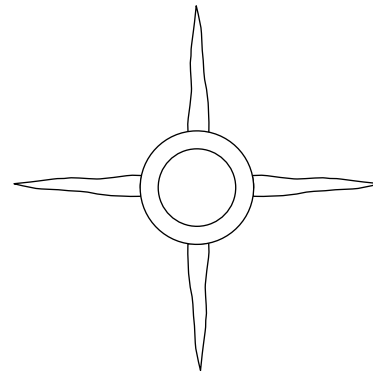


1 9/16-in. 4-spf 90°
Scalloped System

1 ⁹/₁₆-in. 4-spf 90° Scalloped System



Shot Pattern for 1.5625-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)



1 9/16-in. 4-spf 180° Scalloped System

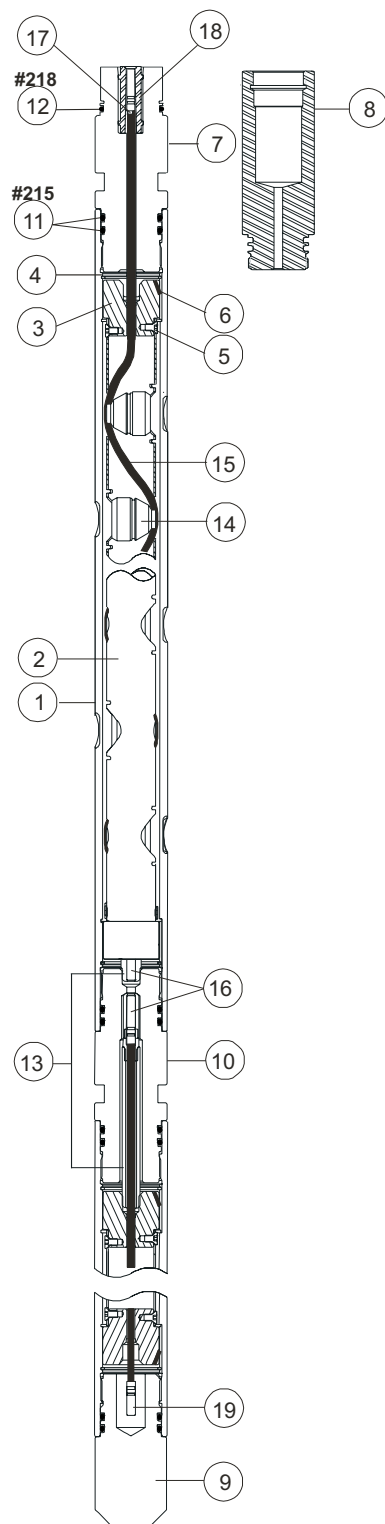
1 9/16-in. 4-spf 180° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235941
	Shipping Assembly - 7ft	101235942
	Shipping Assembly - 11ft	101235943
	Shipping Assembly - 15ft	101235944
	Shipping Assembly - 21ft	101235945

*1	Gun, Scallop - 4ft	101235931
	Gun, Scallop - 7ft	101235932
	Gun, Scallop - 11ft	101235933
	Gun, Scallop - 15ft	101235934
	Gun, Scallop - 21ft	101235935
*2	Tube, Charge Holder - 4ft	101235936
	Tube, Charge Holder - 7ft	101235937
	Tube, Charge holder - 11ft	101235938
	Tube, Charge Holder - 15ft	101235939
	Tube, Charge Holder - 21ft	101235940
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10-32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100156707
8	Firing Head Crossover - 'Go' Style	101283107
9	Bull Plug	101235687
10	Tandem, Grooved	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g MILLENNIUM ® HMX	100157028
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

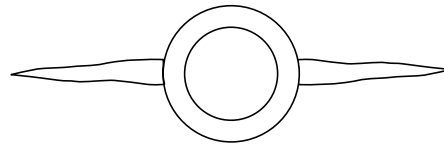
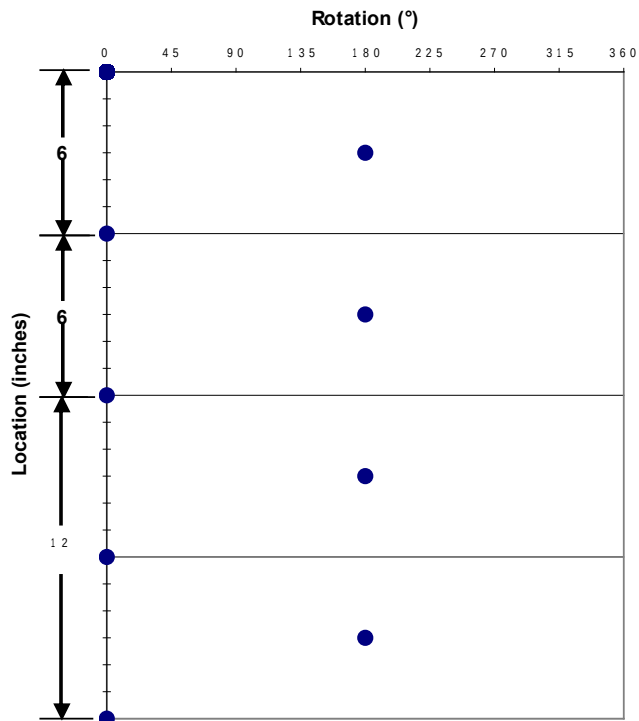
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.



1 9/16-in. 4-spf 180°
Scalloped System

1 ⁹/₁₆-in. 4-spf 180° Scalloped System



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)



1 9/16-in. 6-spf 0° Scalloped System

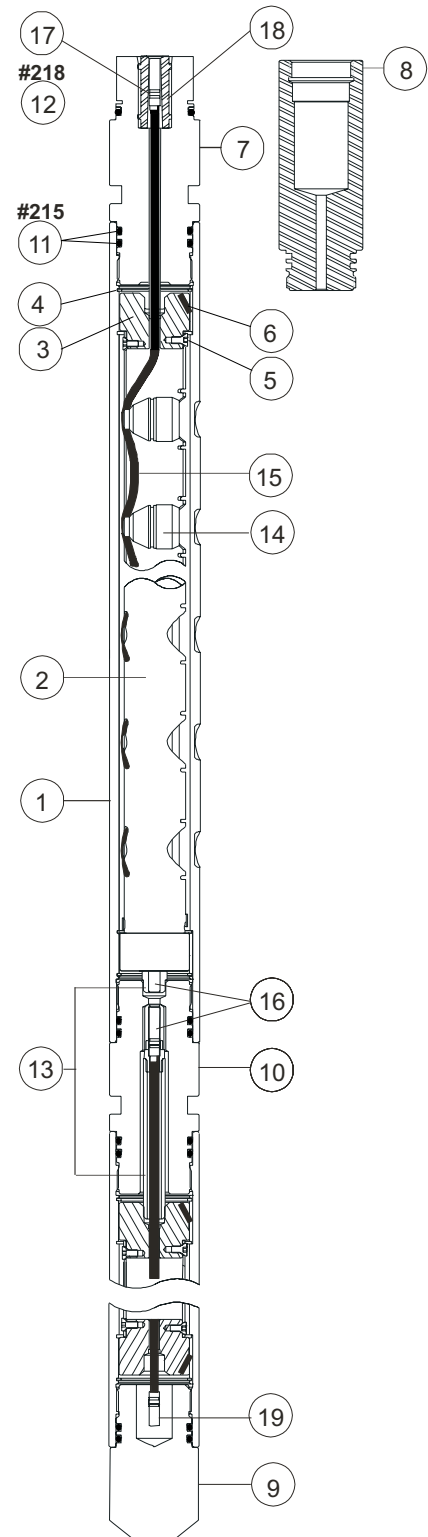
1 9/16-in. 6-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101294302
	Shipping Assembly - 7ft	101294303
	Shipping Assembly - 11ft	101294304
	Shipping Assembly - 15ft	101294305
	Shipping Assembly - 21ft	101294306

*1	Gun, Scallop - 4ft	101294307
	Gun, Scallop - 7ft	101294308
	Gun, Scallop - 11ft	101294309
	Gun, Scallop - 15ft	102194310
	Gun, Scallop - 21ft	101294311
*2	Tube, Charge Holder - 4ft	101294312
	Tube, Charge Holder - 7ft	101294314
	Tube, Charge Holder - 11ft	101294315
	Tube, Charge Holder - 15ft	101294316
	Tube, Charge Holder - 21ft	101294317
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10-32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100156707
8	Firing Head Crossover - 'Go' Style	101293107
9	Bull Plug	101235687
10	Tandem, Grooved	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g Millennium ® HMX	100157028
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

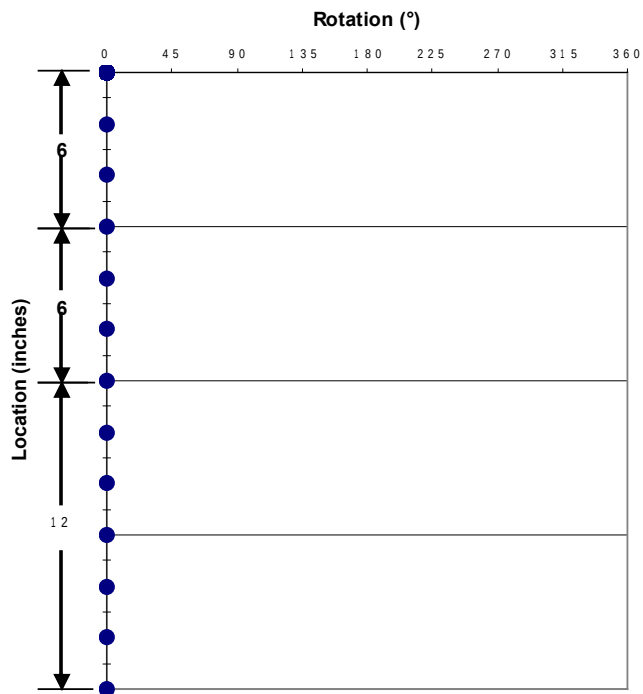
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

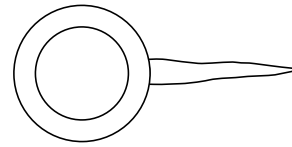


1 9/16-in. 6-spf 0°
Scalloped System

1 9/16-in. 6-spf 0° Scalloped System



Shot Pattern for 1.5625-in.
6-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)



1 9/16-in. 6-spf 60° Scalloped System

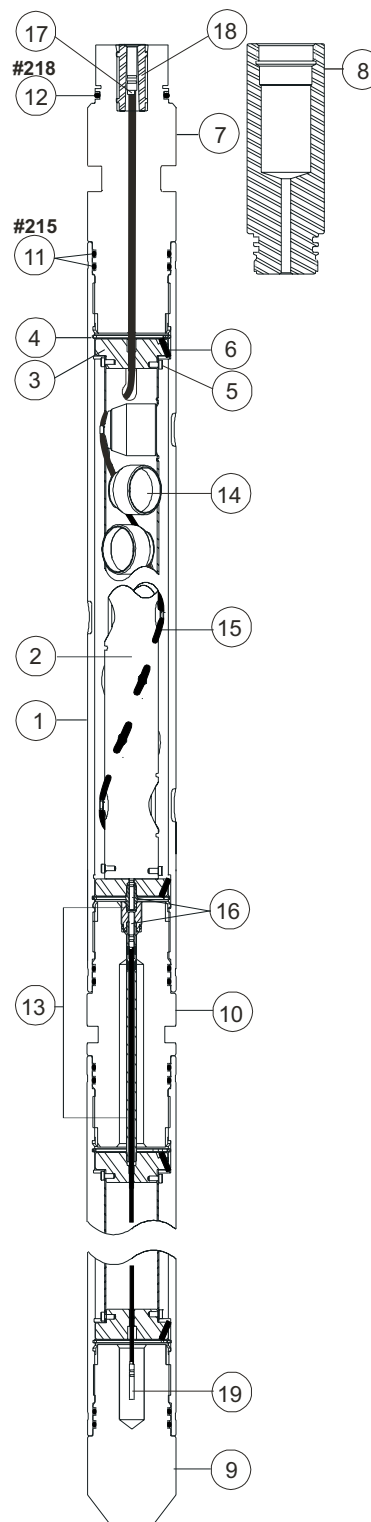
1 9/16-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235906
	Shipping Assembly - 7ft	101235907
	Shipping Assembly - 11ft	101235908
	Shipping Assembly - 15ft	101235909
	Shipping Assembly - 21ft	101235910

*1	Gun, Scallop - 4ft	101235895
	Gun, Scallop - 7ft	101235896
	Gun, Scallop - 11ft	101235897
	Gun, Scallop - 15ft	101235898
	Gun, Scallop - 21ft	101235899
*2	Tube, Charge Holder - 4ft	101235900
	Tube, Charge Holder - 7ft	101235901
	Tube, Charge Holder - 11ft	101235902
	Tube, Charge Holder - 15ft	101235903
	Tube, Charge Holder - 21ft	101235904
*3	Fixture, Alignment	101235706
*4	Snap Ring	101236795
*5	Screw, Flat Head #10-32 x 0.38" L	101263001
*6	Screw, Set #10 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100156707
8	Firing Head Crossover - 'Go' Style	101283107
9	Bull Plug	101235687
10	Tandem, Grooved	101235679
11	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Backup #215	101283230
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232634
14	Charge - 3.4g HMX <i>Millennium</i> ®	100157028
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

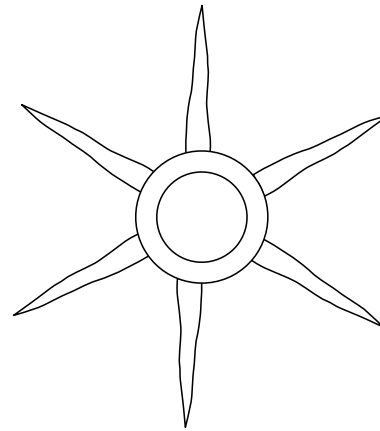
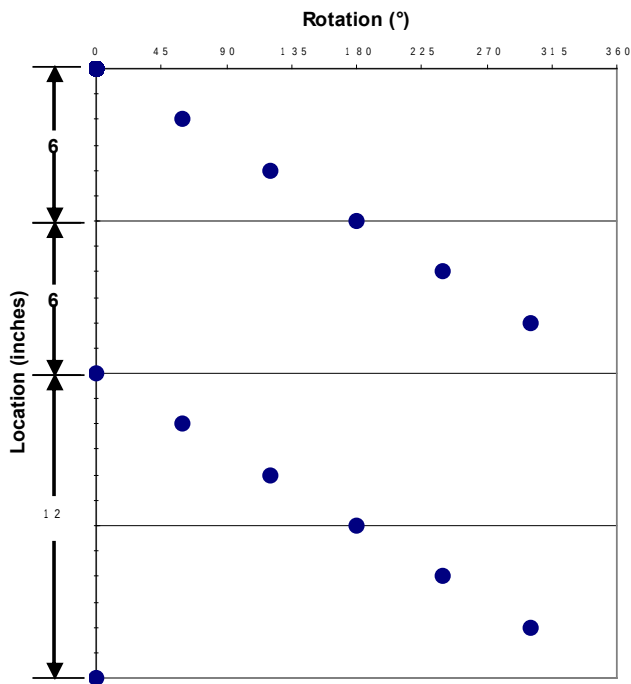
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.



1 9/16-in. 6-spf 60°
Scalloped System

1 9/16-in. 6-spf 60° Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)



2-in. 4-spf 0° Scalloped System

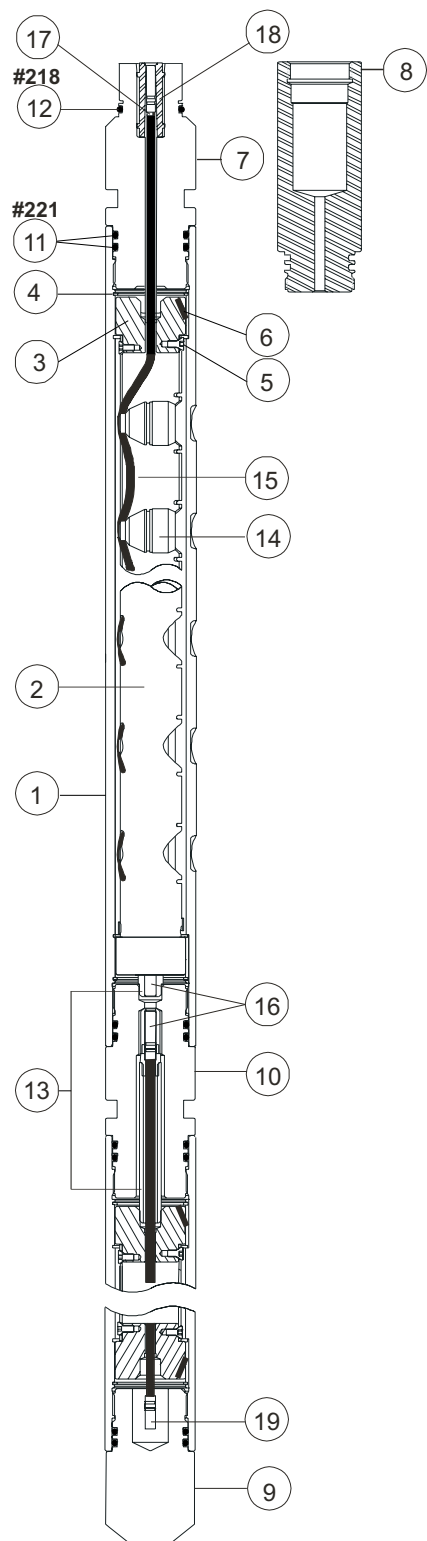
2-in. 4-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235772
	Shipping Assembly - 7ft	101235773
	Shipping Assembly - 11ft	101235774
	Shipping Assembly - 15ft	101235775
	Shipping Assembly - 21ft	101235776

*1	Gun, Scallop - 4ft	101235752
	Gun, Scallop - 7ft	101235753
	Gun, Scallop - 11ft	101235755
	Gun, Scallop - 15ft	101235756
	Gun, Scallop - 21ft	101235757
*2	Tube, Charge Holder - 4ft	101235758
	Tube, Charge Holder - 7ft	101235760
	Tube, Charge Holder - 11ft	101235761
	Tube, Charge Holder - 15ft	101235763
	Tube, Charge Holder - 21ft	101235765
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 x 0.38" L	101273974
*6	Screw, Set #10 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, #221 Buna, 90 Duro	100001953
	O-Ring, #221 Viton, 95 Duro	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX <i>Millennium</i> ®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Telfon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

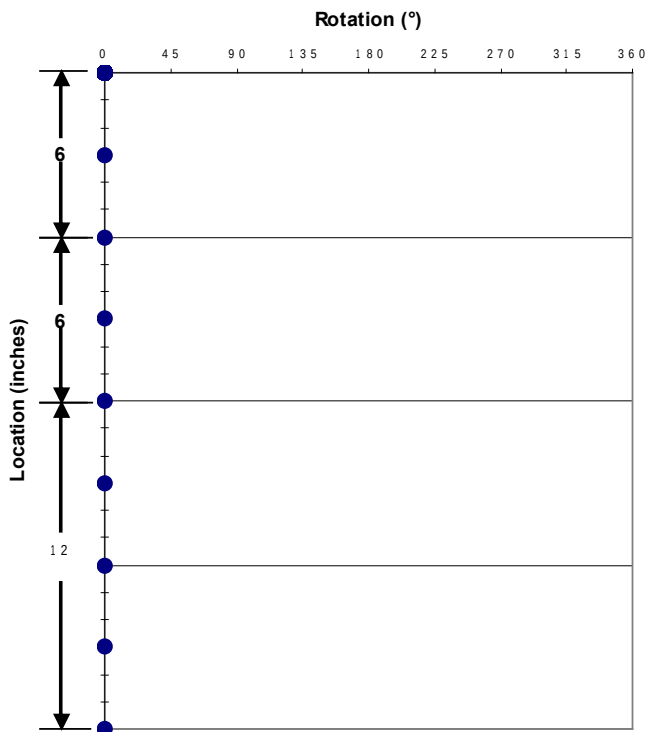
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

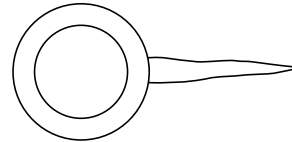


2-in. 4-spf 0°
Scalloped System

2-in. 4-spf 0° Scalloped System



Shot Pattern for 2-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	22 (10)	34 (16)	47 (21)	65 (30)
Spacer lb (kg)	10 (5)	17 (8)	28 (13)	38 (17)	52 (24)



2-in. 4-spf 60° Scalloped System

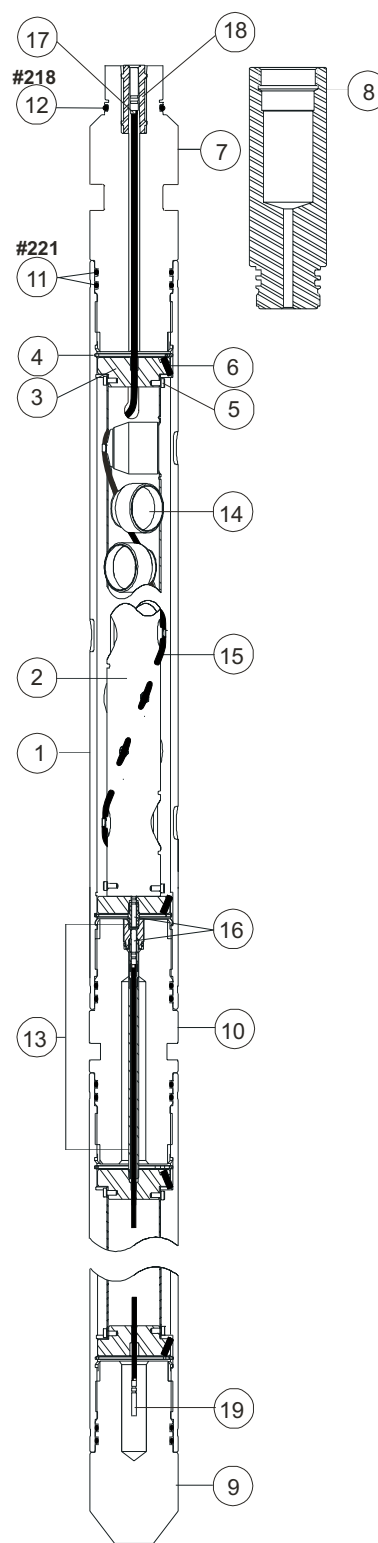
2-in. 4-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101280019
	Shipping Assembly - 7ft	101280020
	Shipping Assembly - 11ft	101280021
	Shipping Assembly - 15ft	101280022
	Shipping Assembly - 21ft	101280023

*1	Gun, Scalloped - 4ft	101279726
	Gun, Scalloped - 7ft	101279725
	Gun, Scalloped - 11ft	101279724
	Gun, Scalloped - 15ft	101279722
	Gun, Scalloped - 21ft	101279723
*2	Tube, Charge Holder - 4ft	101279752
	Tube, Charge Holder - 7ft	101279754
	Tube, Charge Holder - 11ft	101279755
	Tube, Charge Holder - 15ft	101279756
	Tube, Charge Holder - 21ft	101279757
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 - 32 x 0.38" L	101236974
*6	Screw, Set #10 - 32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton, 95 Duro #218	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX <i>Millennium</i> ®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Telfon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

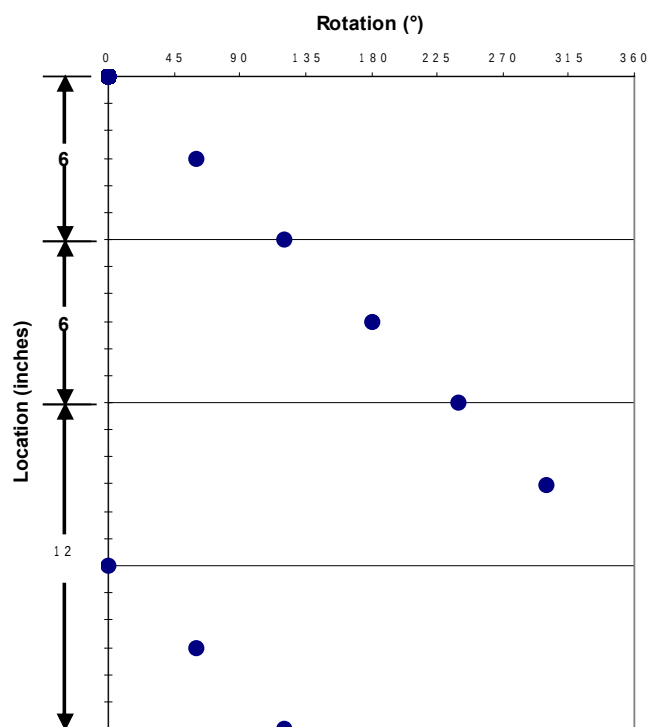
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

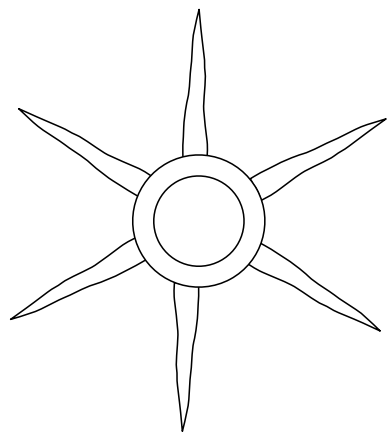


2-in. 4-spf 60°
Scalloped System

2-in. 4-spf 60° Scalloped System



Shot Pattern for 2-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	12 (6)	22 (10)	34 (16)	47 (21)	65 (30)
Spacer lb (kg)	10 (5)	17 (8)	28 (13)	38 (17)	52 (24)



2-in. 4-spf 90° Scalloped System

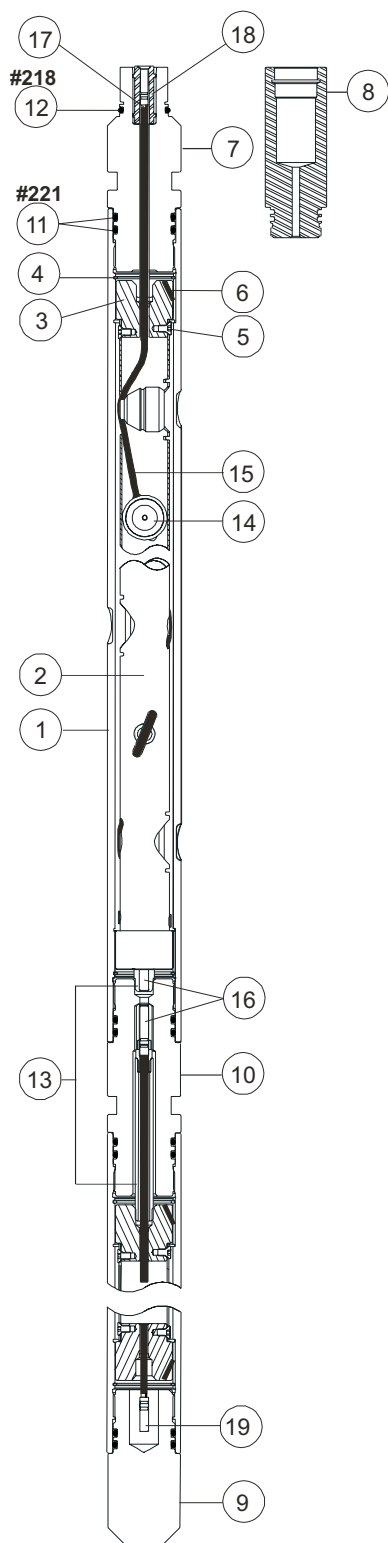
2-in. 4-spf 90° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235791
	Shipping Assembly - 7ft	101235792
	Shipping Assembly - 11ft	101235793
	Shipping Assembly - 15ft	101235794
	Shipping Assembly - 21ft	101235795

*1	Gun, Scallop - 4ft	101235780
	Gun, Scallop - 7ft	101235781
	Gun, Scallop - 11ft	101235782
	Gun, Scallop - 15ft	101235783
	Gun, Scallop - 21ft	101235784
*2	Tube, Charge Holder - 4ft	101235786
	Tube, Charge Holder - 7ft	101235787
	Tube, Charge Holder - 11ft	101235788
	Tube, Charge Holder - 15ft	101235789
	Tube, Charge Holder - 21ft	101235790
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 - 32 x 0.38" L	101236974
*6	Screw, Set #10 - 32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton, 95 Duro #218	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX Millennium®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Telfon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

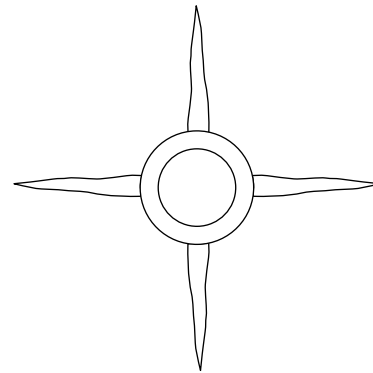
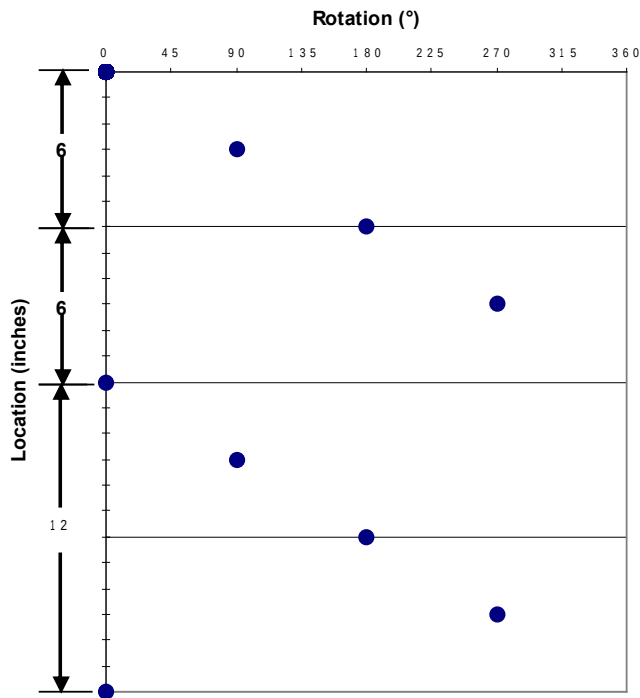
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.



2-in. 4-spf 90°
Scalloped System

2-in. 4-spf 90° Scalloped System



90° Phasing
4 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	12 (6)	22 (10)	34 (16)	47 (21)	65 (30)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)



2-in. 4-spf 180° Scalloped System

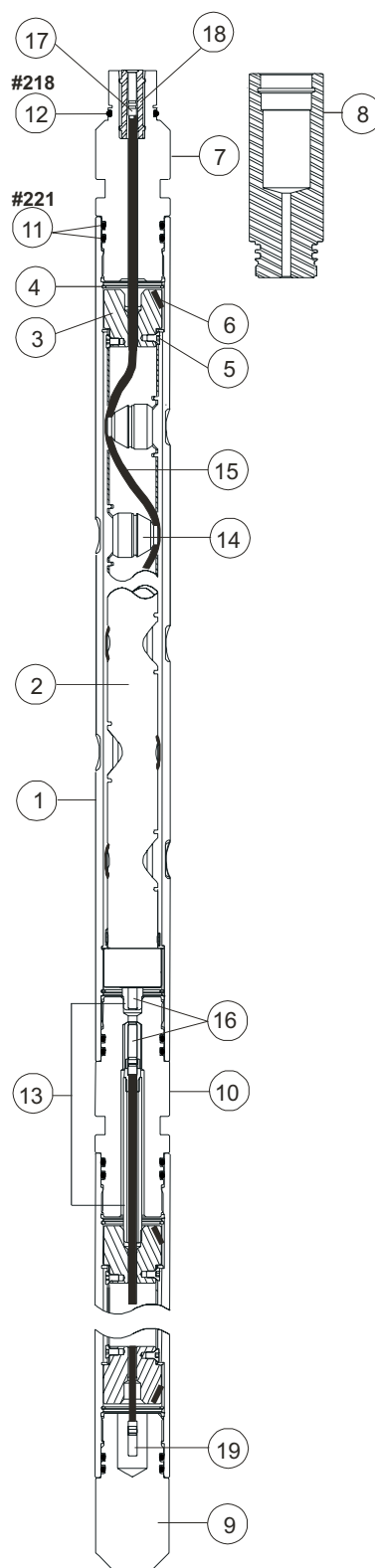
2-in. 4-spf 180° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235823
	Shipping Assembly - 7ft	101235824
	Shipping Assembly - 11ft	101235825
	Shipping Assembly - 15ft	101235826
	Shipping Assembly - 21ft	101235827

*1	Gun, Scalloped - 4ft	101235829
	Gun, Scalloped - 7ft	101235802
	Gun, Scalloped - 11ft	101235803
	Gun, Scalloped - 15ft	101235804
	Gun, Scalloped - 21ft	101235805
*2	Tube, Charge Holder - 4ft	101235807
	Tube, Charge Holder - 7ft	101235808
	Tube, Charge Holder - 11ft	101235809
	Tube, Charge Holder - 15ft	101235810
	Tube, Charge Holder - 21ft	101235811
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 - 32 x 0.38" L	101236974
*6	Screw, Set #10 - 32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton, 95 Duro #218	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX Millennium®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

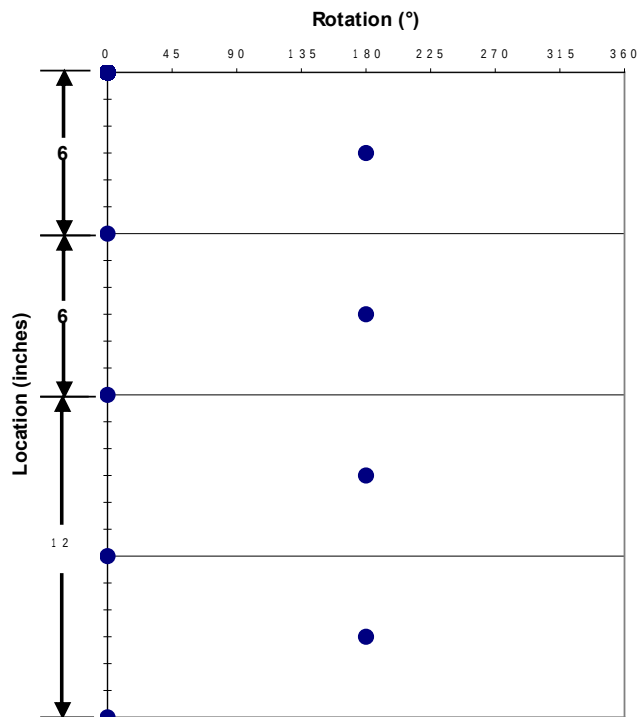
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

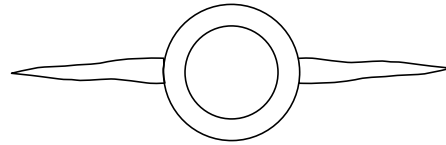


2-in. 4-spf 180°
Scalloped System

2-in. 4-spf 180° Scalloped System



Shot Pattern for 2-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	12 (6)	22 (10)	34 (16)	47 (21)	65 (30)
Spacer lb (kg)	10 (5)	17 (8)	28 (13)	38 (17)	52 (24)



2-in. 6-spf 0° Scalloped System

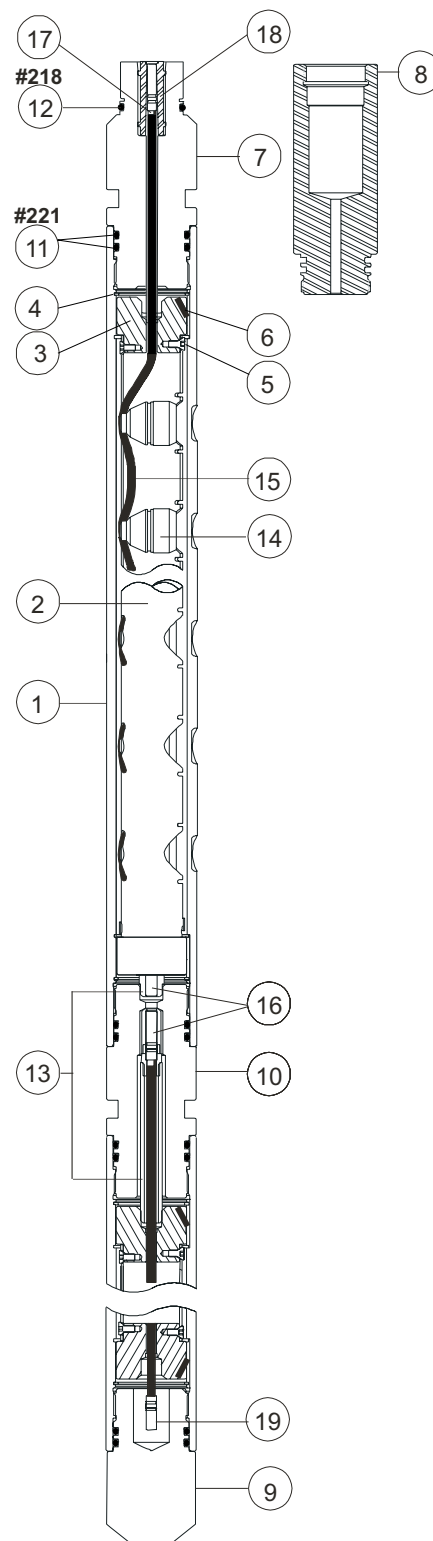
2-in. 6-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101294335
	Shipping Assembly - 7ft	101294336
	Shipping Assembly - 11ft	101294337
	Shipping Assembly - 15ft	101294338
	Shipping Assembly - 21ft	102194339

*1	Gun, Scallop - 4ft	101294343
	Gun, Scallop - 7ft	101294344
	Gun, Scallop - 11ft	101294345
	Gun, Scallop - 15ft	101294346
	Gun, Scallop - 21ft	101294348
*2	Tube, Charge Holder - 4ft	101294349
	Tube, Charge Holder - 7ft	101294352
	Tube, Charge Holder - 11ft	101294353
	Tube, Charge Holder - 15ft	101294354
	Tube, Charge Holder - 21ft	101294355
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 - 32 x 0.38" L	101273974
*6	Screw, Set #10 - 32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX Millennium ®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Telfon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

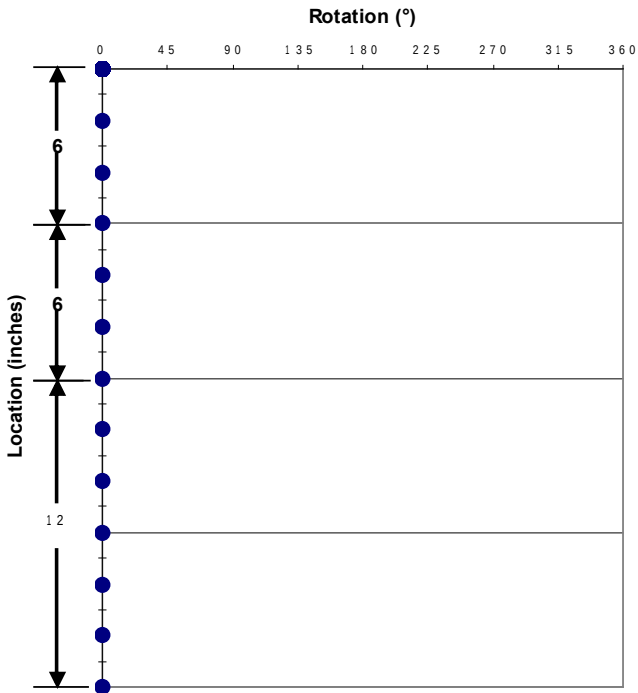
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.

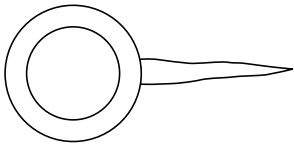


2-in. 6-spf 0°
Scalloped System

2-in. 6-spf 0° Scalloped System



Shot Pattern for 2-in.
6-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	39 (17)	61 (27)	84 (38)	118 (53)
Spacer lb (kg)	16 (7)	28 (13)	44 (20)	60 (27)	85 (38)



2-in. 6-spf 60° Scalloped System

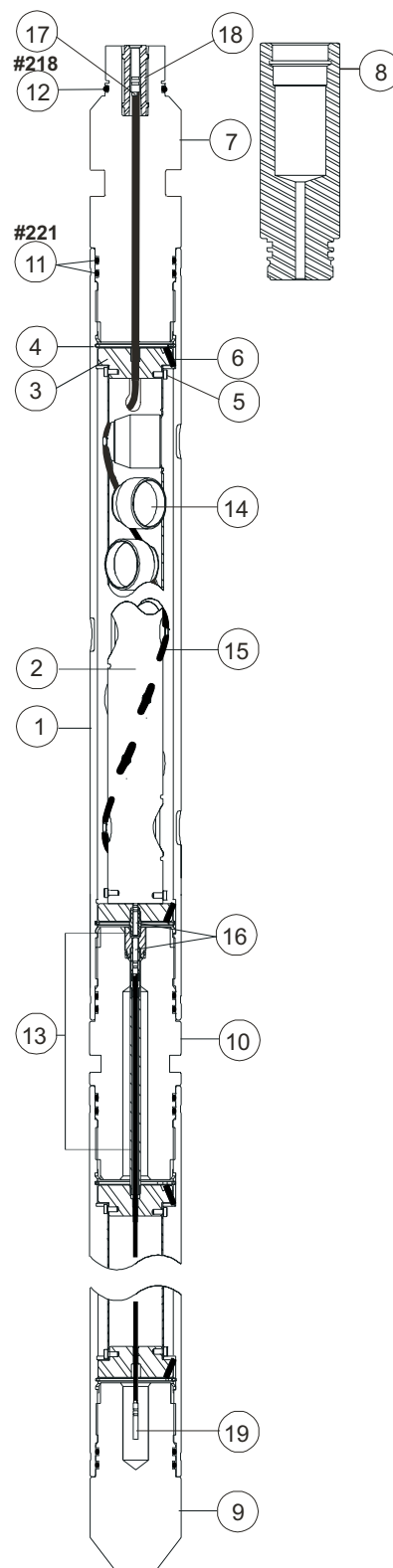
2-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101234455
	Shipping Assembly - 7ft	101234525
	Shipping Assembly - 11ft	101234526
	Shipping Assembly - 15ft	101235975
	Shipping Assembly - 21ft	101234529

*1	Gun, Scalloped - 4ft	101234143
	Gun, Scalloped - 7ft	101234144
	Gun, Scalloped - 11ft	101234145
	Gun, Scalloped - 15ft	101235715
	Gun, Scalloped - 21ft	101234147
*2	Tube, Charge Holder - 4ft	101234197
	Tube, Charge Holder - 7ft	101234201
	Tube, Charge Holder - 11ft	101234202
	Tube, Charge Holder - 15ft	101235714
	Tube, Charge Holder - 21ft	101234205
*3	Fixture, Alignment	101234456
*4	Snap Ring	101234459
*5	Screw, Socket #10 - 32 x 0.38" L	101273974
*6	Screw, Set #10 - 32 x 0.50" L	100028832
7	Firing Head Crossover - Vann	100008010
8	Firing Head Crossover - 'Go' Systems	101283114
9	Bull Plug	100008011
10	Tandem, Grooved	101235011
11	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Backup #221	101227517
12	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	O-Ring, Backup #218	101227694
*13	Kit, Booster Hardware	101232635
14	Charge - 6.80g HMX Millennium®	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Telfon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

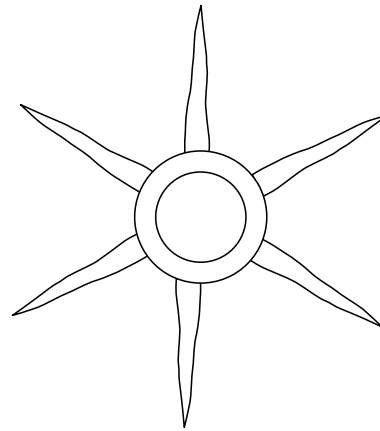
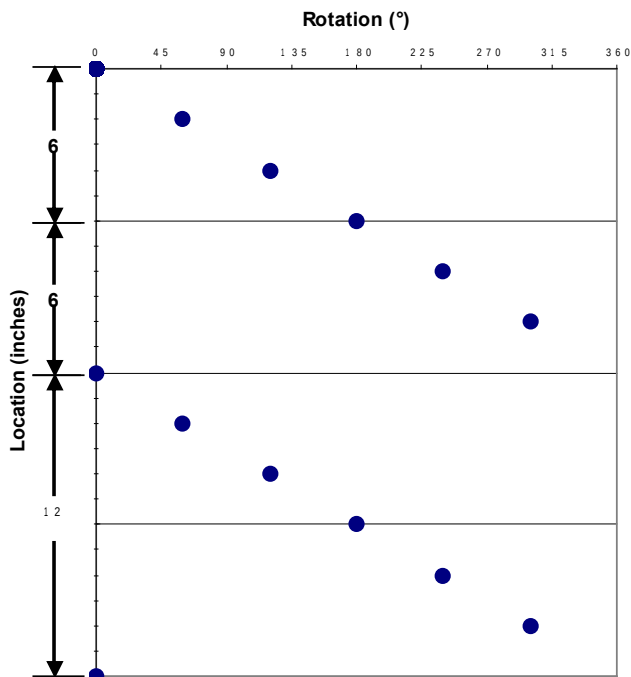
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.



2-in. 6-spf 60°
Scalloped System

2-in. 6-spf 60° Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	39 (17)	61 (27)	84 (38)	118 (53)
Spacer lb (kg)	16 (7)	28 (13)	44 (20)	60 (27)	85 (38)



2 1/2-in. 4-spf 0° Scalloped System

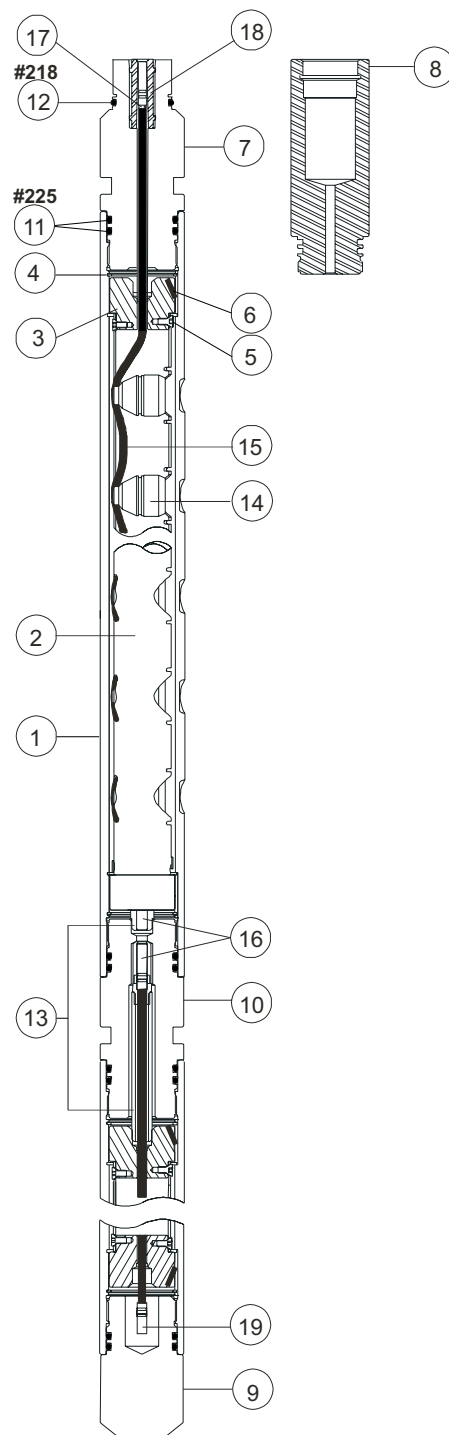
2 1/2-in. 4-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235840
	Shipping Assembly - 7ft	101235857
	Shipping Assembly - 11ft	101235858
	Shipping Assembly - 15ft	101235859
	Shipping Assembly - 21ft	101235860

*1	Gun, Scallop - 4ft	101235800
	Gun, Scallop - 7ft	101235830
	Gun, Scallop - 11ft	101235831
	Gun, Scallop - 15ft	101235832
	Gun, Scallop - 21ft	101235833
*2	Tube, Charge Holder - 4ft	101235834
	Tube, Charge Holder - 7ft	101235835
	Tube, Charge Holder - 11ft	101235836
	Tube, Charge Holder - 15ft	101235837
	Tube, Charge Holder - 21ft	101235838
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251

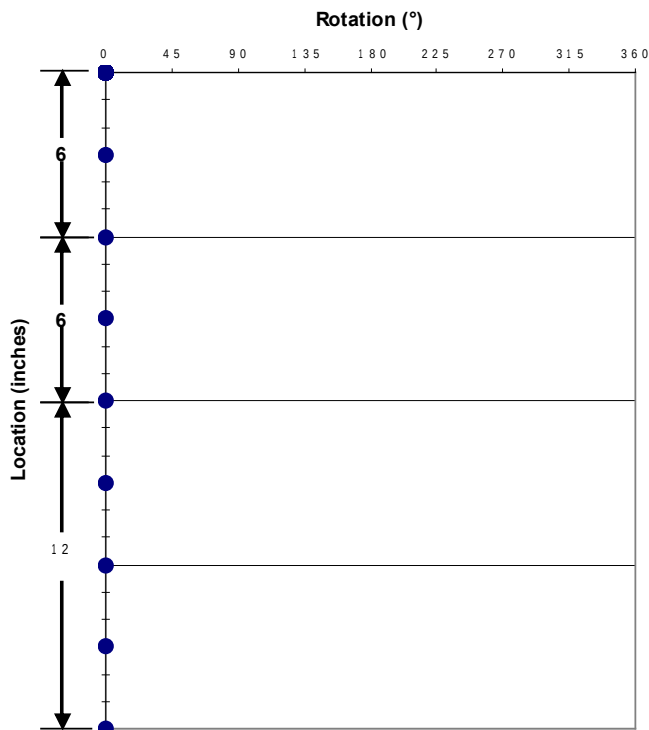
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.

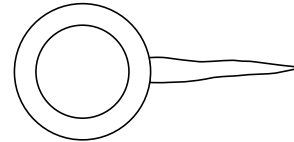


2 1/2-in. 4-spf 0°
Scalloped System

2 1/2-in. 4-spf 0° Scalloped System



Shot Pattern for 2.5-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	56 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	26 (12)	43 (20)	67 (30)	90 (40)	125 (57)



2 1/2-in. 4-spf 60° Scalloped System

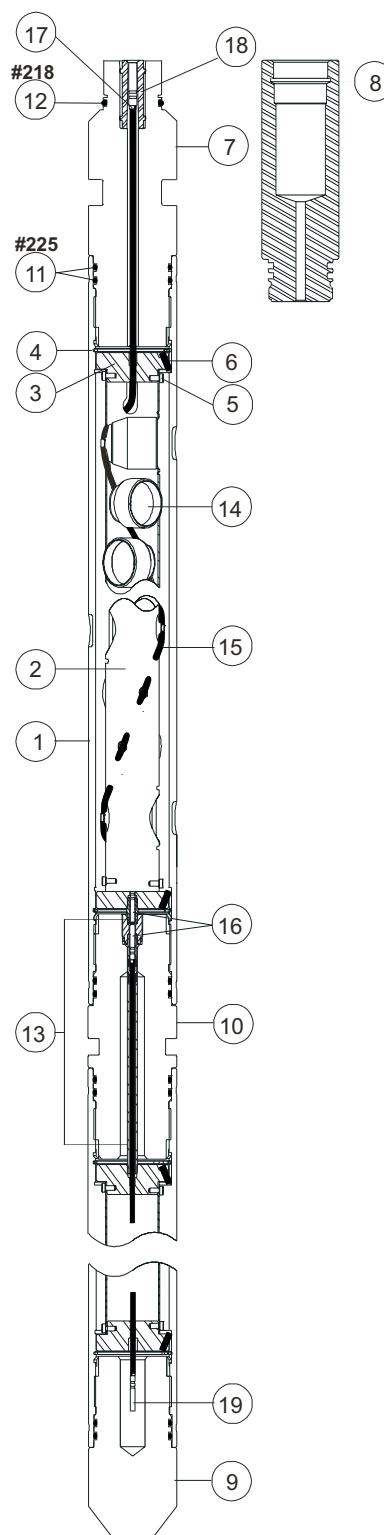
2 1/2-in. 4-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101280052
	Shipping Assembly - 7ft	101280053
	Shipping Assembly - 11ft	101280054
	Shipping Assembly - 15ft	101280055
	Shipping Assembly - 21ft	101280056

*1	Gun, Scallop - 4ft	101280043
	Gun, Scallop - 7ft	101280044
	Gun, Scallop - 11ft	101580045
	Gun, Scallop - 15ft	101280046
	Gun, Scallop - 21ft	101280042
*2	Tube, Charge Holder - 4ft	101280778
	Tube, Charge Holder - 7ft	101280780
	Tube, Charge Holder - 11ft	101280781
	Tube, Charge Holder - 15ft	101280782
	Tube, Charge Holder - 21ft	101280783
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

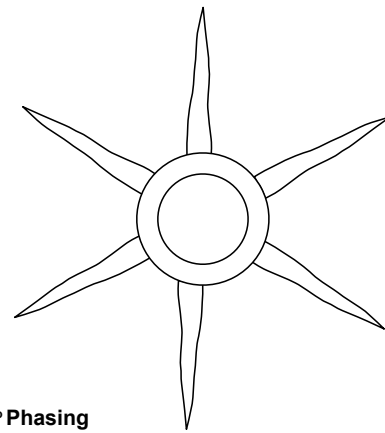
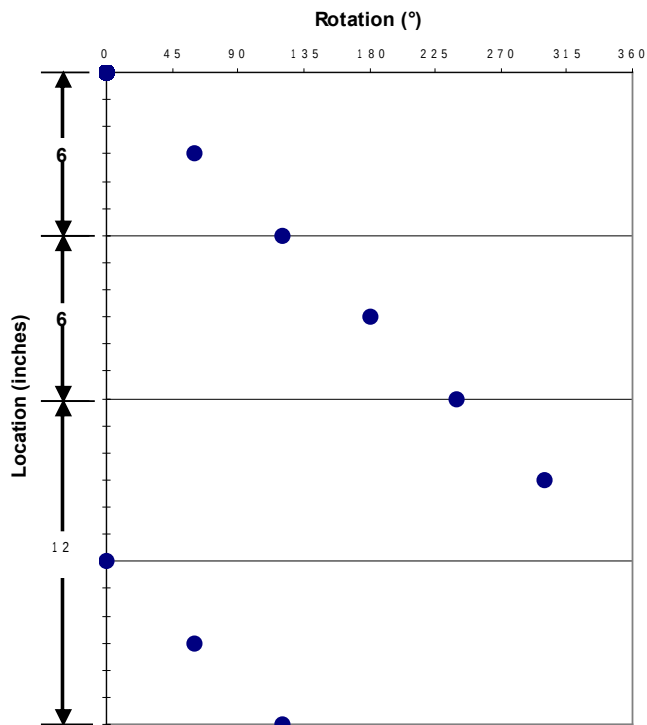
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.



2 1/2-in. 4-spf 60°
Scalloped System

2 1/2-in. 4-spf 60° Scalloped System



JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	56 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	26 (12)	43 (20)	67 (30)	90 (40)	125 (57)



2 1/2-in. 4-spf 90° Scalloped System

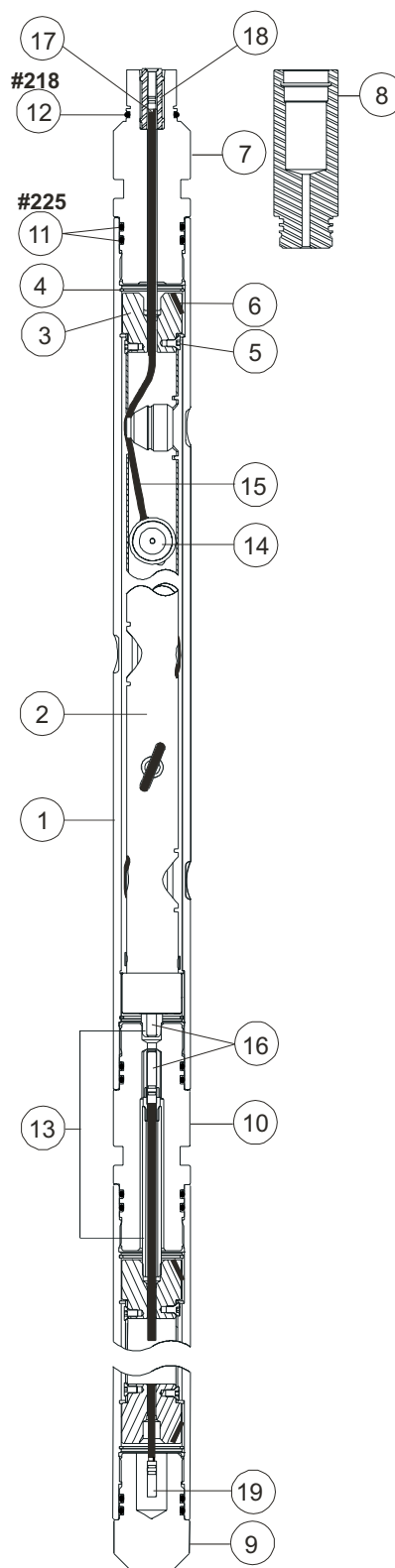
2 1/2-in. 4-spf 90° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101280065
	Shipping Assembly - 7ft	101280066
	Shipping Assembly - 11ft	101280067
	Shipping Assembly - 15ft	101280068
	Shipping Assembly - 21ft	101280069

*1	Gun, Scallop - 4ft	101281455
	Gun, Scallop - 7ft	101281456
	Gun, Scallop - 11ft	101281457
	Gun, Scallop - 15ft	101281458
	Gun, Scallop - 21ft	101281459
*2	Tube, Charge Holder - 4ft	101281502
	Tube, Charge Holder - 7ft	101281503
	Tube, Charge Holder - 11ft	101281504
	Tube, Charge Holder - 15ft	101281505
	Tube, Charge Holder - 21ft	101281506
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

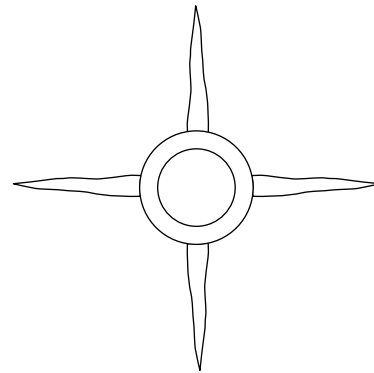
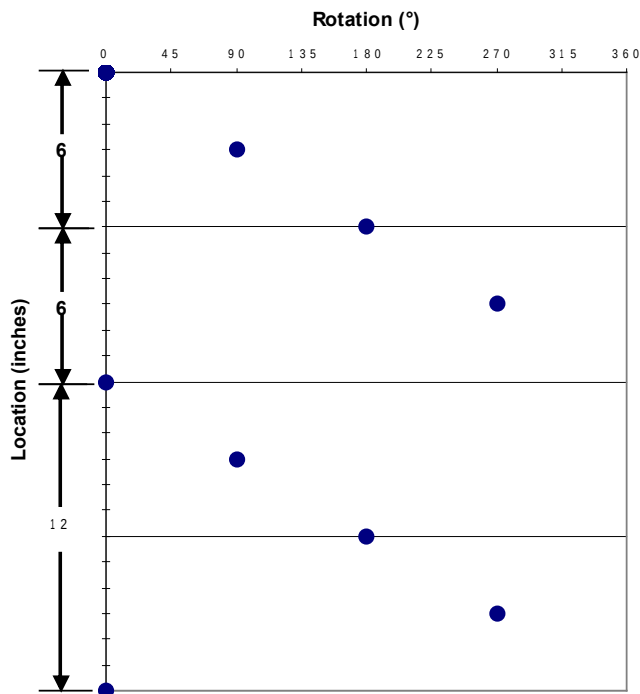
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.



2 1/2-in. 4-spf 90°
Scalloped System

2 1/2-in. 4-spf 90° Scalloped System



90° Phasing
4 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	56 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	26 (12)	43 (20)	67 (30)	90 (40)	125 (57)



2 1/2-in. 4-spf 180° Scalloped System

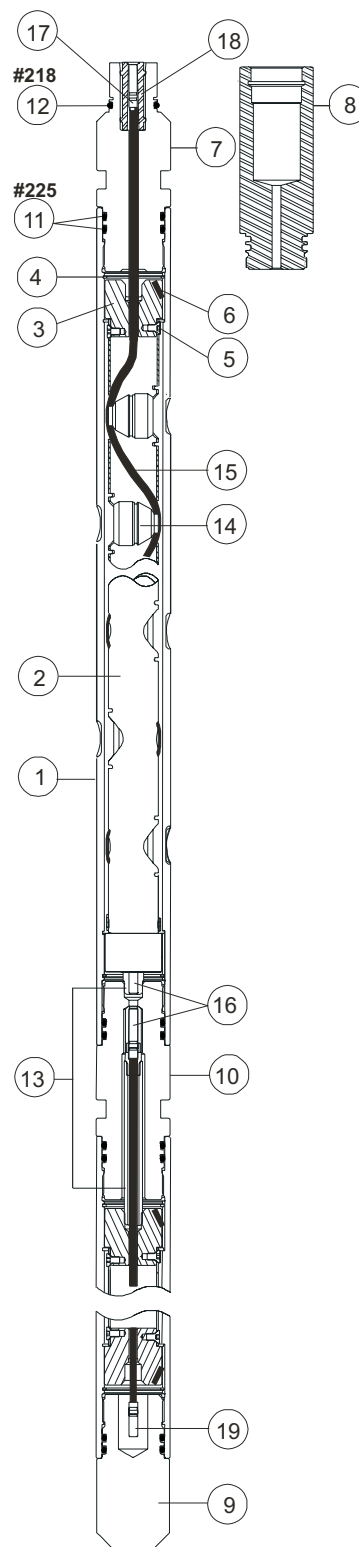
2 1/2 in. 4-spf 180° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101235878
	Shipping Assembly - 7ft	101235880
	Shipping Assembly - 11ft	101235881
	Shipping Assembly - 15ft	101235883
	Shipping Assembly - 21ft	101235884

*1	Gun, Scalloped - 4ft	101235863
	Gun, Scalloped - 7ft	101235865
	Gun, Scalloped - 11ft	101235866
	Gun, Scalloped - 15ft	101235867
	Gun, Scalloped - 21ft	101235868
*2	Tube, Charge Holder - 4ft	101235870
	Tube, Charge Holder - 7ft	101235872
	Tube, Charge Holder - 11ft	101235873
	Tube, Charge Holder - 15ft	101235875
	Tube, Charge Holder - 21ft	101235877
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

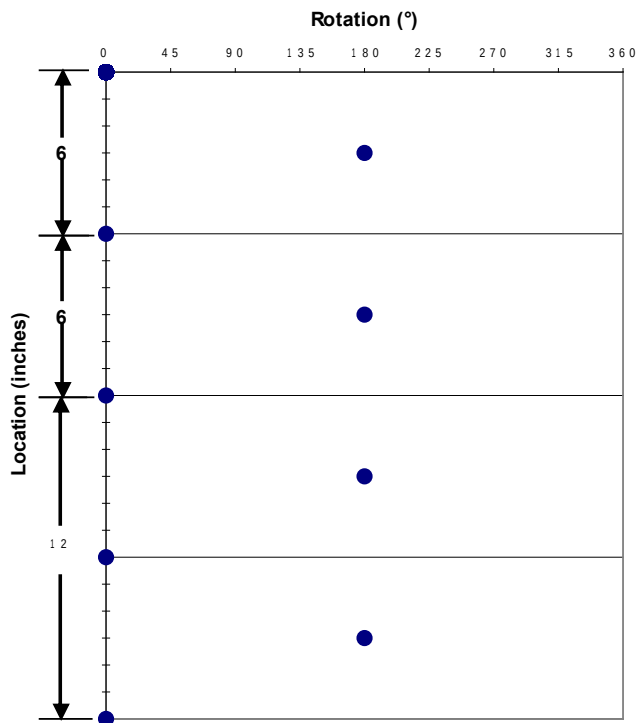
* Included in shipping assembly.

**Teflon is a trademark of E.I. DuPont De Nemours.

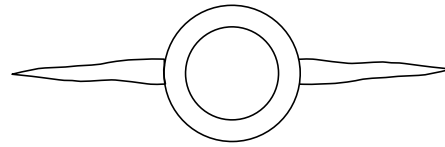


2 1/2-in. 4-spf 180°
Scalloped System

2 1/2-in. 4-spf 180° Scalloped System



Shot Pattern for 2.5-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	56 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	26 (12)	43 (20)	67 (30)	90 (40)	125 (57)



2 1/2-in. 6-spf 0° Scalloped System

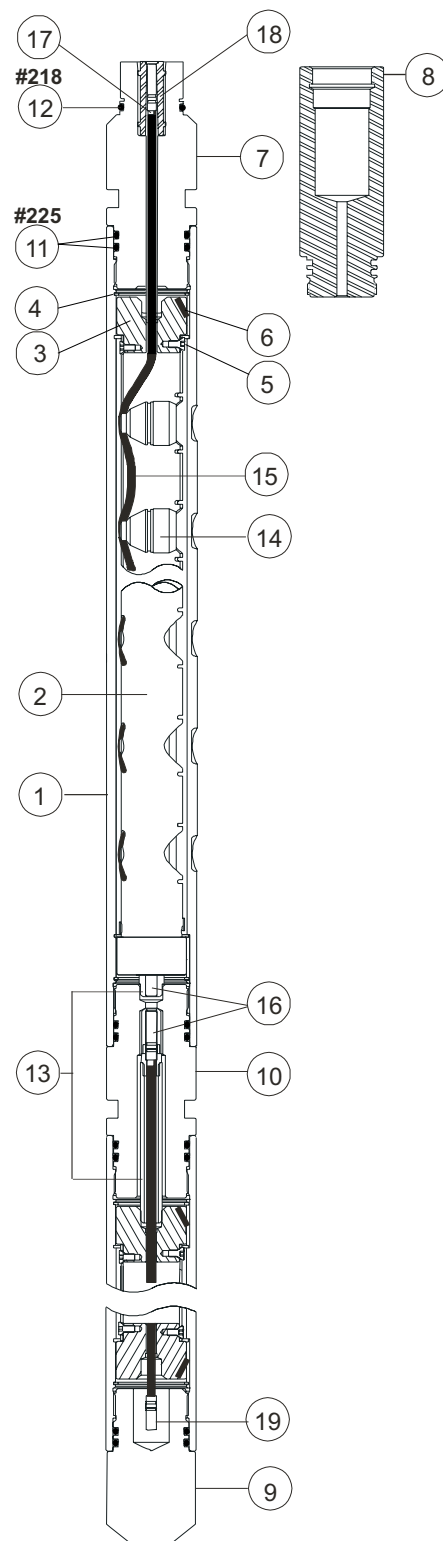
2 1/2-in. 6-spf 0° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101295514
	Shipping Assembly - 7ft	101295515
	Shipping Assembly - 11ft	101295516
	Shipping Assembly - 15ft	101295517
	Shipping Assembly - 21ft	101295518

*1	Gun, Scallop - 4ft	101295519
	Gun, Scallop - 7ft	101295520
	Gun, Scallop - 11ft	101295521
	Gun, Scallop - 15ft	101295522
	Gun, Scallop - 21ft	101295523
*2	Tube, Charge Holder - 4ft	101295524
	Tube, Charge Holder - 7ft	101295525
	Tube, Charge Holder - 11ft	101295526
	Tube, Charge Holder - 15ft	101295527
	Tube, Charge Holder - 21ft	101295528
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Alignment Insert	100005255

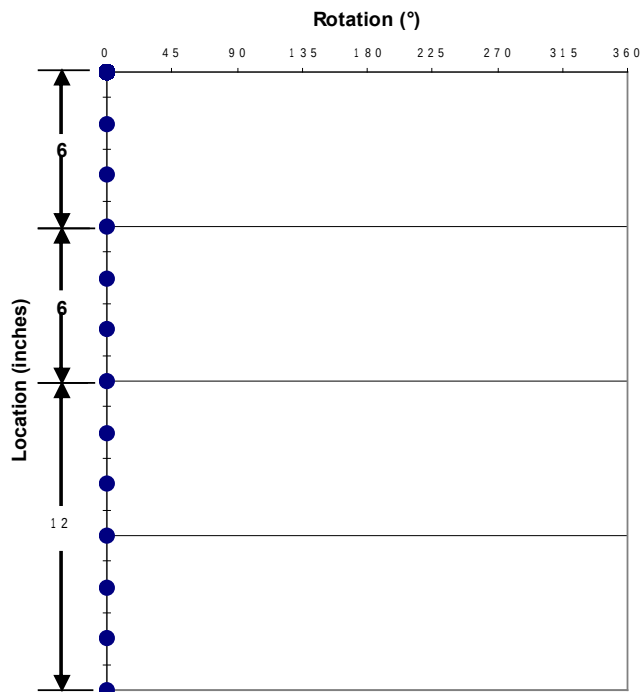
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

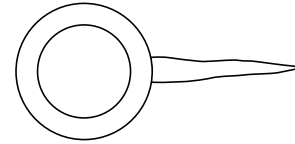


2 1/2-in. 6-spf 0°
Scalloped System

2 1/2-in. 6-spf 0° Scalloped System



Shot Pattern for 2.5-in.
6-spf 0° Phasing



0° Phasing
1 Perforation Plane

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	43 (19)	64 (29)	96 (44)	129 (59)	178 (81)
Spacer lb (kg)	32 (15)	47 (22)	74 (34)	97 (44)	134 (61)



2 1/2-in. 6-spf 60° Scalloped System

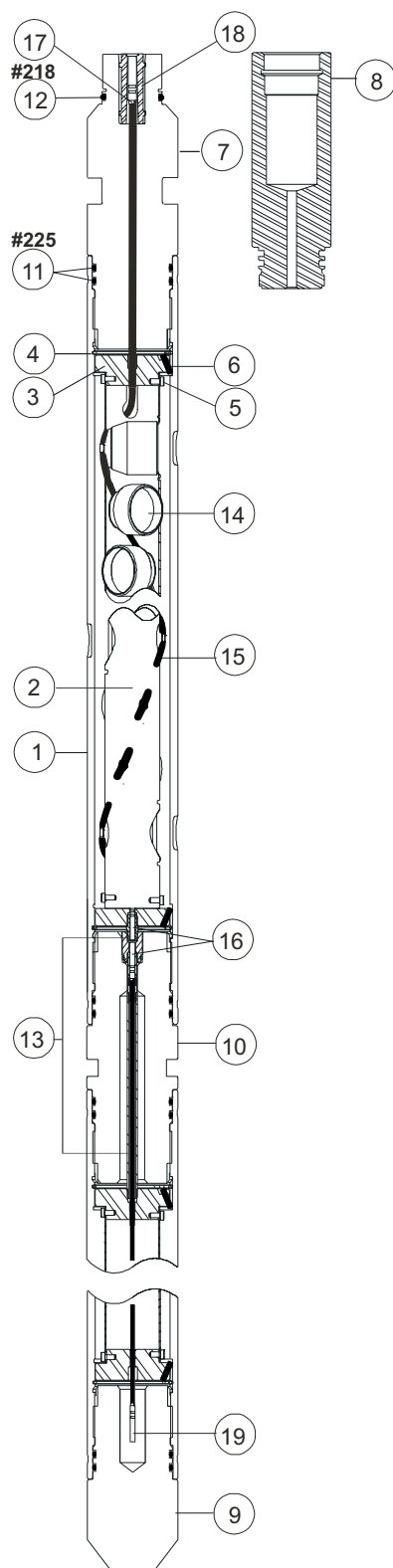
2 1/2-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101280052
	Shipping Assembly - 7ft	101280053
	Shipping Assembly - 11ft	101280054
	Shipping Assembly - 15ft	101280055
	Shipping Assembly - 21ft	101280056

*1	Gun, Scallop - 4ft	101280043
	Gun, Scallop - 7ft	101280044
	Gun, Scallop - 11ft	101580045
	Gun, Scallop - 15ft	101280046
	Gun, Scallop - 21ft	101280042
*2	Tube, Charge Holder - 4ft	101280778
	Tube, Charge Holder - 7ft	101280780
	Tube, Charge Holder - 11ft	101280781
	Tube, Charge Holder - 15ft	101280782
	Tube, Charge Holder - 21ft	101280783
*3	Fixture, Alignment	101236334
*4	Snap Ring	101236797
*5	Screw, Socket #10 x.38" L	101273974
*6	Screw, Set #10 x .50" L	100028832
7	Firing Head Crossover - Vann	101211269
8	Firing Head Crossover - 'Go' Style	101283122
9	Bull Plug	101227806
10	Tandem, Grooved	101236893
11	O-Ring, #225 Buna, 90 Duro	100001996
	O-Ring, #225 Viton, 95 Duro	100003925
	O-Ring, Backup #225	101283247
12	O-Ring, #218 Buna, 90 Duro	100001951
	O-Ring, #218 Viton, 95 Duro	100064830
	Backup, O-Ring, #218	101227694
*13	Kit, Booster Hardware	101232636
14	Charge - 11.0g MILLENNIUM ® HMX	101206251
	Charge - 11.0g RDX DP	100014493
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Teflon Grommet	100157596
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251

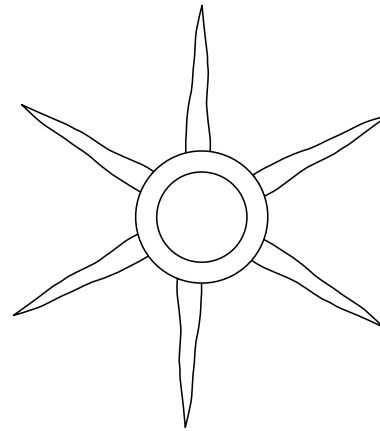
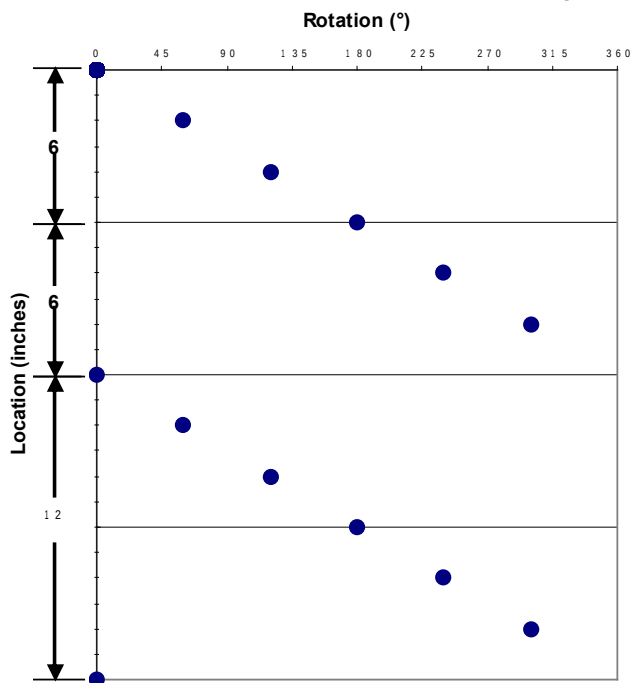
* Included in shipping assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.



2 1/2-in. 6-spf 60°
Scalloped System

2 1/2-in. 6-spf 60° Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	43 (19)	64 (29)	96 (44)	129 (59)	178 (81)
Spacer lb (kg)	32 (15)	47 (22)	74 (34)	97 (44)	134 (61)



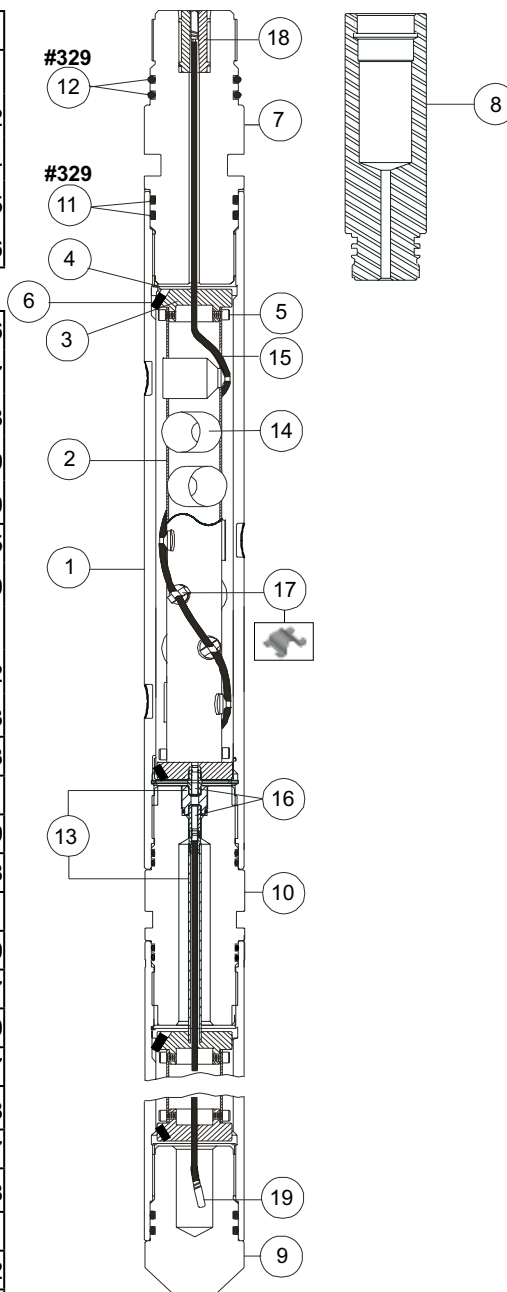
2 3/4-in. 6-spf 60° Scalloped System

2 3/4-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4 ft	101245391
	Shipping Assembly - 7ft	101245392
	Shipping Assembly - 11ft	101245394
	Shipping Assembly - 15ft	101245395
	Shipping Assembly - 21ft	101245396

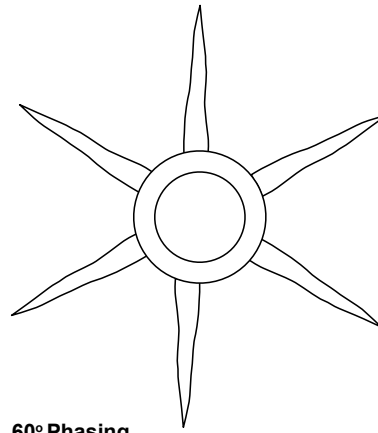
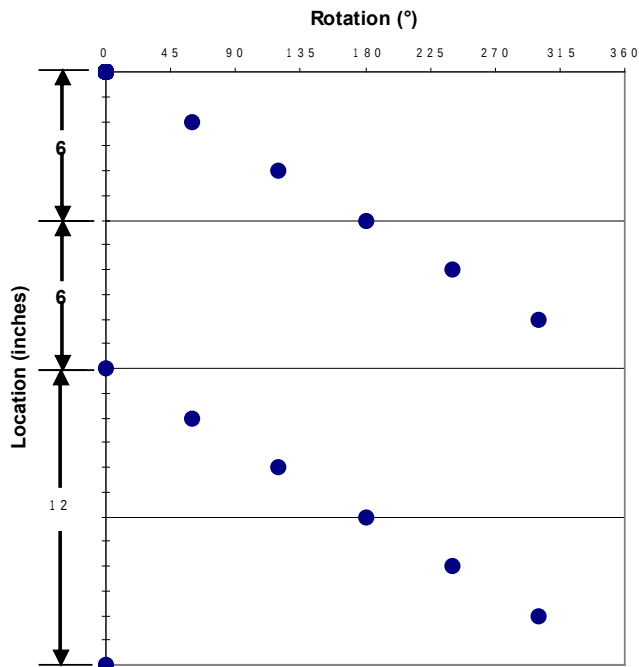
*1	Gun, Scalloped - 4ft	101245346
	Gun, Scalloped - 7ft	101245347
	Gun, Scalloped - 11ft	101245348
	Gun, Scalloped - 15ft	101245349
	Gun, Scalloped - 21ft	101245350
*2	Tube, Charge Holder - 4ft	101245335
	Tube, Charge Holder - 7ft	101245340
	Tube, Charge Holder - 11ft	101245341
	Tube, Charge Holder - 15ft	101245342
	Tube, Charge Holder - 21ft	101245343
*3	Fixture, Alignment	101245383
*4	Snap Ring	101245401
*5	Screw, Cap #10 x .38" L	101236979
*6	Screw, Set 0.25" D x 0.50" L	100028808
7	Firing Head Crossover - Vann	100005261
8	Firing Head Crossover - 'Go' Style	101283080
9	Bull Plug	100005267
10	Tandem, Grooved	101245370
11	O-Ring, #329 Buna, 90 Duro	100001957
	O-Ring, #329 Viton, 95 Duro	100009538
12	O-Ring, #329 Buna, 90 Duro	100001957
	O-Ring, #329 Viton, 95 Duro	100009538
13	Backup, O-Ring #329 (Hostile Environment)	100005401
*14	Kit, Booster Hardware	101232002
15	Charge - MILLENNIUM ® HMX	101233817
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251

* Included in shipping assembly.



2 3/4-in. 6-spf 60°
Scalloped System

2 3/4-in. 6-spf 60° Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	40 (18)	71 (32)	113 (51)	155 (70)	218 (90)
Spacer lb (kg)	31 (14)	54 (25)	95 (39)	116 (54)	162 (73)



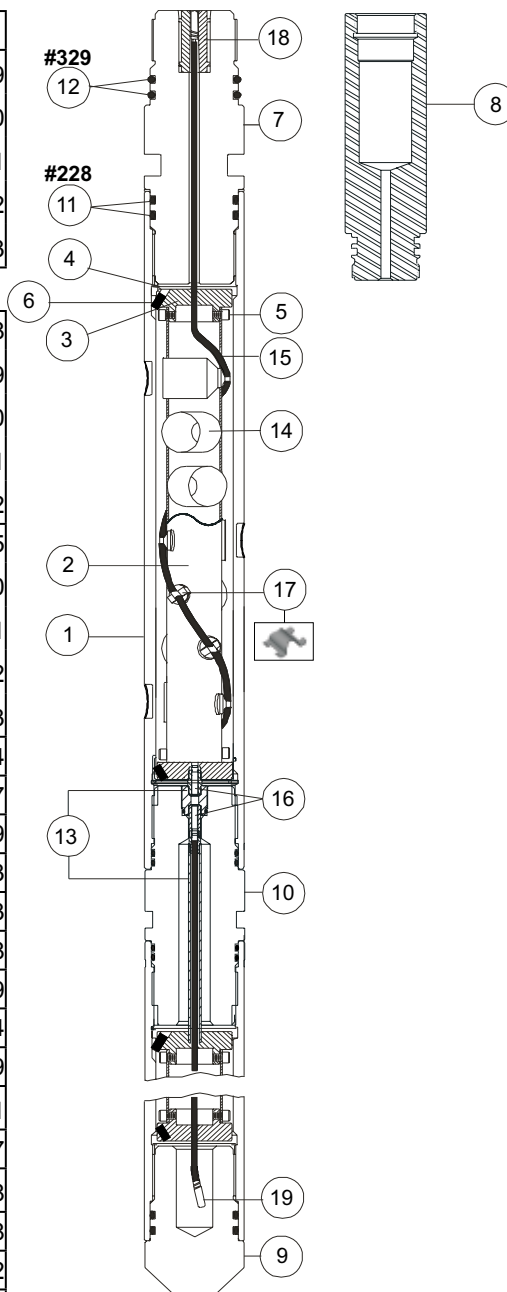
2 7/8-in. 6-spf 60° Scalloped System

2 7/8-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101244579
	Shipping Assembly - 7ft	101244580
	Shipping Assembly - 11ft	101244581
	Shipping Assembly - 15ft	101244582
	Shipping Assembly - 21ft	101244583

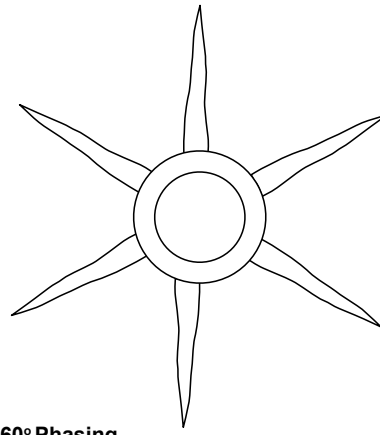
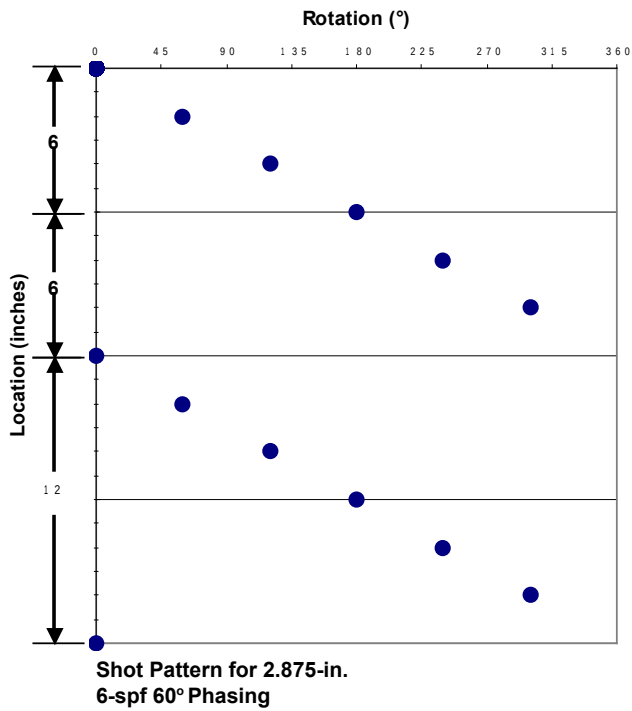
*1	Gun, Scalloped - 4ft	101244568
	Gun, Scalloped - 7ft	101244569
	Gun, Scalloped - 11ft	101244570
	Gun, Scalloped - 15ft	101244571
	Gun, Scalloped - 21ft	101244572
*2	Tube, Charge Holder - 4ft	101245335
	Tube, Charge Holder - 7ft	101245340
	Tube, Charge Holder - 11ft	101245341
	Tube, Charge Holder - 15ft	101245342
	Tube, Charge Holder - 21ft	101245343
*3	Fixture, Alignment	101244584
*4	Snap Ring	101246147
*5	Screw, Cap #10 x 0.38" L	101236979
*6	Screw, Set 0.25" D x 0.625" L	100007783
7	Firing Head Crossover - Vann	101245523
8	Firing Head Crossover - 'Go' Style	101283058
9	Bull Plug	101246199
10	Tandem, Grooved	101244714
11	O-Ring, #228 Buna, 90 Duro	100001999
	O-Ring, #228 Viton, 95 Duro	100012311
12	O-Ring, #329 Buna, 90 Duro	100001957
	O-Ring, #329 Viton, 95 Duro	100009538
13	Backup, O-Ring #228 (Hostile Environment)	101283258
*14	Kit, Booster Hardware	101232002
15	Charge - MILLENNIUM HMX	101233817
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100157947

* Included in shipping assembly.



2 7/8-in. 6-spf 60°
Scalloped System

2 7/8-in. 6-spf 60° Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	40 (18)	71 (32)	113 (51)	155 (70)	218 (90)
Spacer lb (kg)	31 (14)	54 (25)	95 (39)	116 (54)	162 (73)



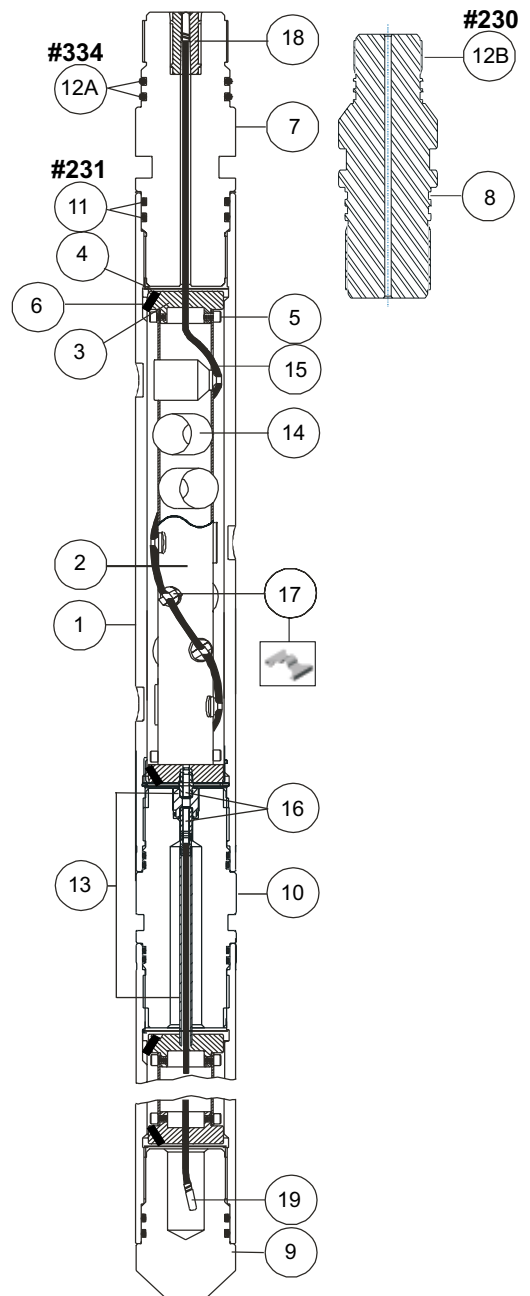
3 3/8-in. 6-spf 60° SDP Scalloped System

3 3/8-in. 6-spf 60° SDP Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101245703
	Shipping Assembly - 7ft	101245748
	Shipping Assembly - 11ft	101245749
	Shipping Assembly - 15ft	101245750
	Shipping Assembly - 21ft	101245751

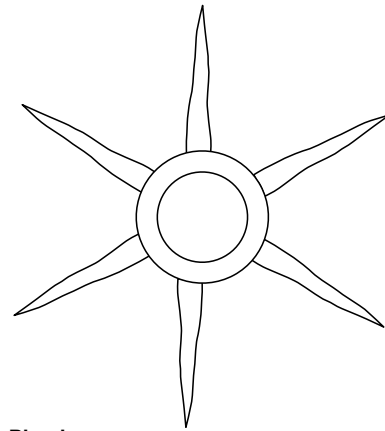
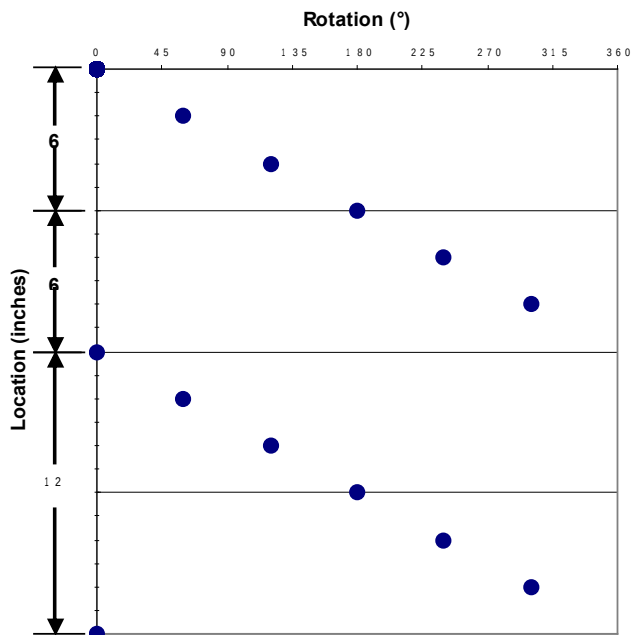
*1	Gun, Scallop - 4ft	101240047
	Gun, Scallop - 7ft	101240048
	Gun, Scallop - 11ft	101240049
	Gun, Scallop - 15ft	101240050
	Gun, Scallop - 21ft	101240052
*2	Tube, Charge Holder - 4ft	101245643
	Tube, Charge Holder - 7ft	101245645
	Tube, Charge Holder - 11ft	101245646
	Tube, Charge Holder - 15ft	101245647
	Tube, Charge Holder - 21ft	101245649
*3	Fixture, Alignment	101245525
*4	Snap Ring	101245403
*5	Screw, Cap #10 x .38" L	101236979
*6	Screw, Set .25" D x .625" L	100007783
7	Firing Head Crossover - Vann	101245889
8	Firing Head Crossover - 'Go' Style	101251161
9	Bull Plug	101245921
10	Tandem, Grooved	101245924
11	O-Ring, #333 Buna, 90 Duro	100001962
	O-Ring, #333 Viton, 95 Duro	100064839
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #333 (Hostile Environment)	101283261
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232637
15	Charge - MILLENNIUM HMX	101233819
	Charge - RDX SDP	100008014
	Charge - HMX SDP	100008249
	Charge - PYX SDP	100008015
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100005336

* Included in shipping assembly.



3 3/8-in. 6-spf 60° SDP Scalloped System

3 3/8-in. 6-spf 60° SDP Scalloped System



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	62 (28)	111 (51)	177 (80)	243 (110)	342 (155)
Spacer lb (kg)	47 (21)	81 (37)	127 (57)	172 (78)	241 (109)



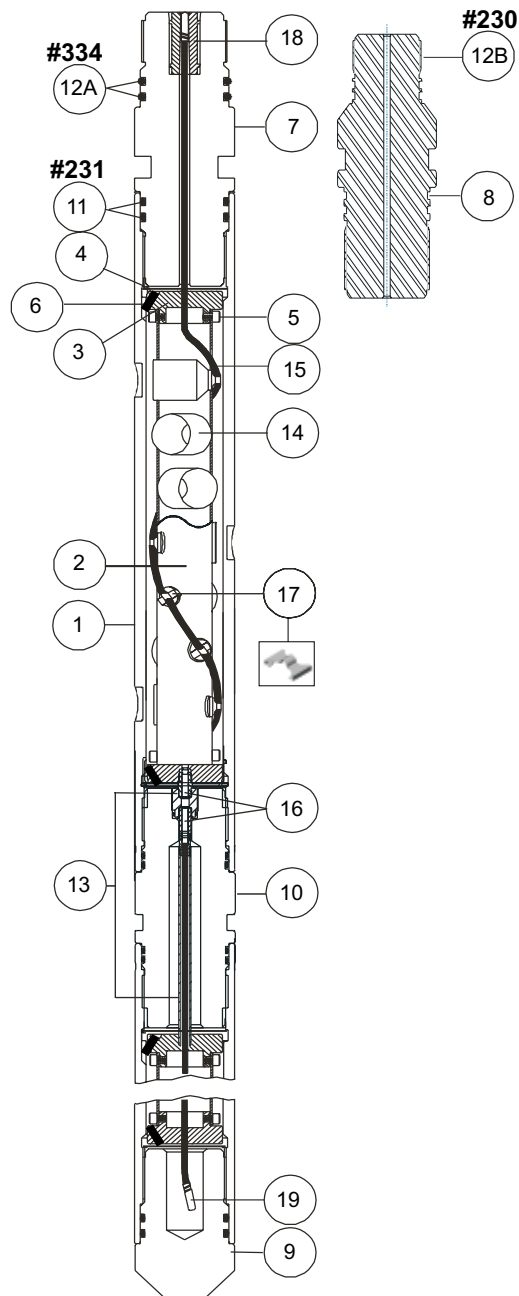
3 3/8-in. 6-spf 60° Scalloped System

3 3/8-in. 6-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101289051
	Shipping Assembly - 7ft	101289052
	Shipping Assembly - 11ft	101289053
	Shipping Assembly - 15ft	101289054
	Shipping Assembly - 21ft	101289055

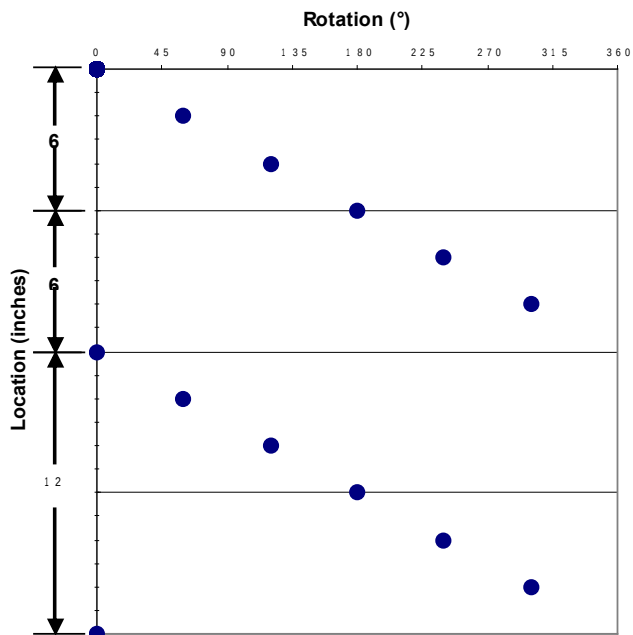
*1	Gun, Scallop - 4ft	101240047
	Gun, Scallop - 7ft	101240048
	Gun, Scallop - 11ft	101240049
	Gun, Scallop - 15ft	101240050
	Gun, Scallop - 21ft	101240052
*2	Tube, Charge Holder - 4ft	101289006
	Tube, Charge Holder - 7ft	101289009
	Tube, Charge Holder - 11ft	101289011
	Tube, Charge Holder - 15ft	101289012
	Tube, Charge Holder - 21ft	101289013
*3	Fixture, Alignment	101245525
*4	Snap Ring	101245403
*5	Screw, Cap #10 x .38" L	101236979
*6	Screw, Set .25" D x .625" L	100007783
7	Firing Head Crossover - Vann	101245889
8	Firing Head Crossover - 'Go' Style	101251161
9	Bull Plug	101245921
10	Tandem, Grooved	101245924
11	O-Ring, #333 Buna, 90 Duro	100001962
	O-Ring, #333 Viton, 95 Duro	100064839
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #333 (Hostile Environment)	101283261
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232637
15	Charge - RDX BH	100005321
	Charge - HMX BH	100157017
	Charge - RDX DP	100005333
	Charge - HMX DP	100005332
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100156506

* Included in shipping assembly.

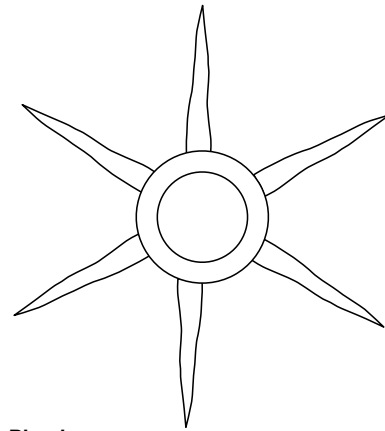


3 3/8-in. 6-spf 60°
Scalloped System

3 3/8-in. 6-spf 60° Scalloped System



Shot Pattern for 3.375-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	62 (28)	111 (51)	177 (80)	243 (110)	342 (155)
Spacer lb (kg)	47 (21)	81 (37)	127 (57)	172 (78)	241 (109)



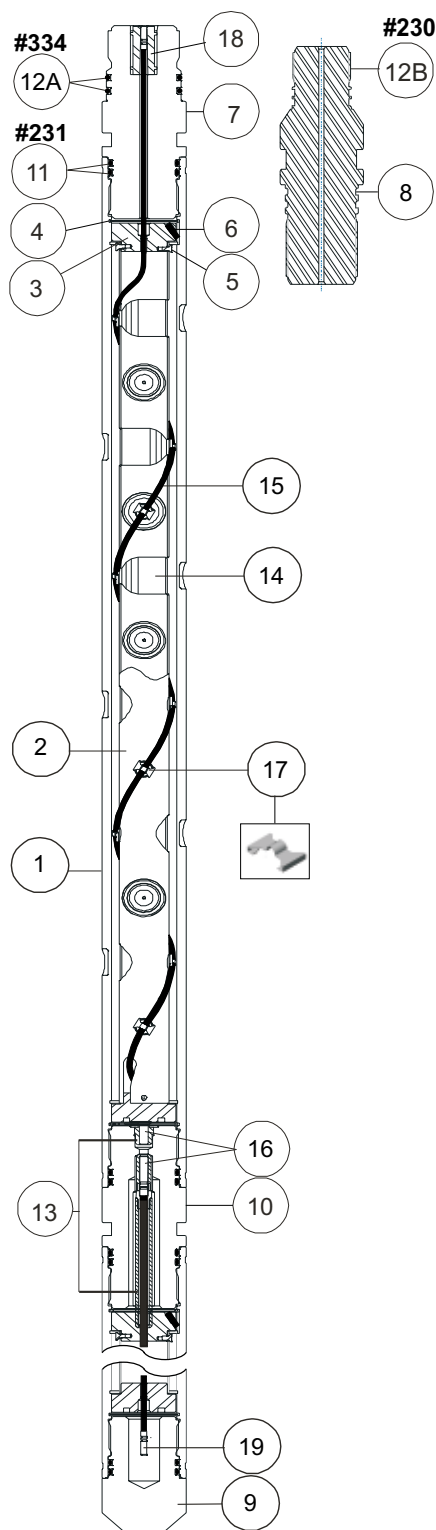
3 3/8-in. 4-spf 90° Scalloped System

3 3/8-in. 4-spf 90° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101290854
	Shipping Assembly - 7ft	101290857
	Shipping Assembly - 11ft	101290858
	Shipping Assembly - 15ft	101290859
	Shipping Assembly - 21ft	101290860

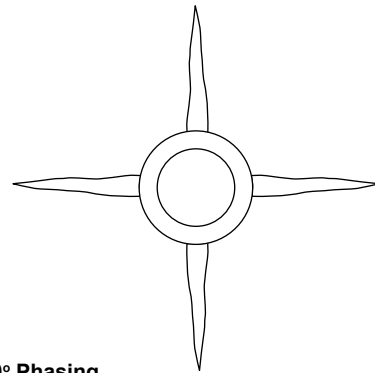
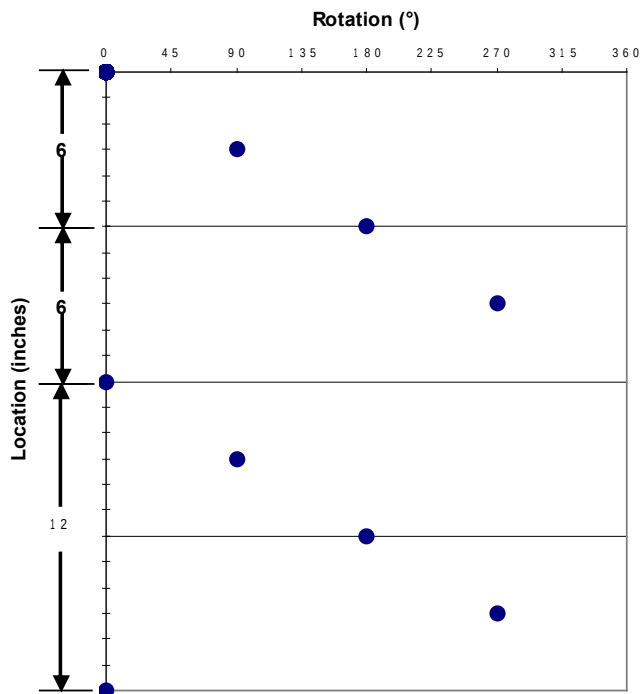
*1	Gun, Scallop - 4ft	101290861
	Gun, Scallop - 7ft	101290862
	Gun, Scallop - 11ft	101290864
	Gun, Scallop - 15ft	101290865
	Gun, Scallop - 21ft	101290866
*2	Tube, Charge Holder - 4ft	101290874
	Tube, Charge Holder - 7ft	101290880
	Tube, Charge Holder - 11ft	101290881
	Tube, Charge Holder - 15ft	101290882
	Tube, Charge Holder - 21ft	101290883
*3	Fixture, Alignment	101245525
*4	Snap Ring	101245403
*5	Screw, Cap #10 x .38" L	101236979
*6	Screw, Set .25" D x .625" L	100007783
7	Firing Head Crossover - Vann	101245889
8	Firing Head Crossover - 'Go' Style	101251161
9	Bull Plug	101245921
10	Tandem, Grooved	101245924
11	O-Ring, #333 Buna, 90 Duro	100001962
	O-Ring, #333 Viton, 95 Duro	100064839
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #333 (Hostile Environment)	101283261
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232637
15	Charge - MILLENNIUM HMX	101233819
	Charge - RDX SDP	100008014
	Charge - HMX SDP	100008249
	Charge - PYX SDP	100008015
	Charge - RDX SDP	100005322
	Charge - HMX SDP	100005327
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A

* Included in shipping assembly.



3 3/8-in. 4-spf 90°
Scalloped System

3 3/8-in. 4-spf 90° Scalloped System



90° Phasing
4 Perforation Planes

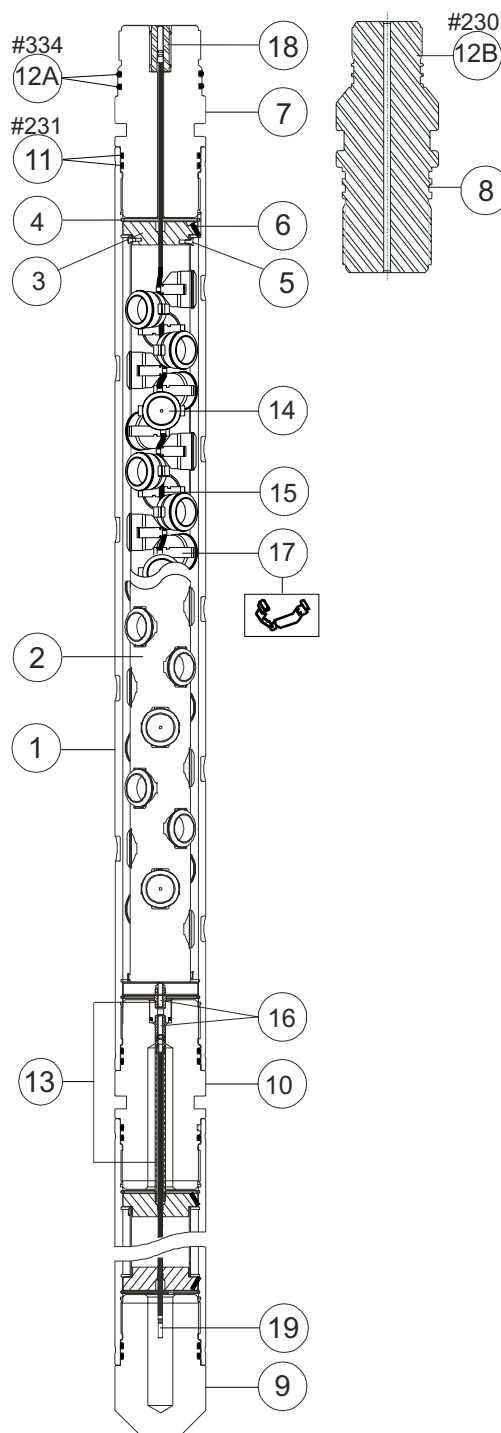
JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	62 (28)	111 (51)	177 (80)	243 (110)	342 (155)
Spacer lb (kg)	47 (21)	81 (37)	127 (57)	172 (78)	241 (109)

3 3/8-in. 12-spf Omni™ System

Item	Description	Part No.
	Shipping Assembly - 4ft	101244646
	Shipping Assembly - 7ft	101244647
	Shipping Assembly - 11ft	101244649
	Shipping Assembly - 15ft	101244651
	Shipping Assembly - 21ft	101244653

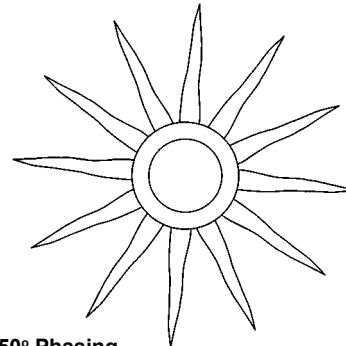
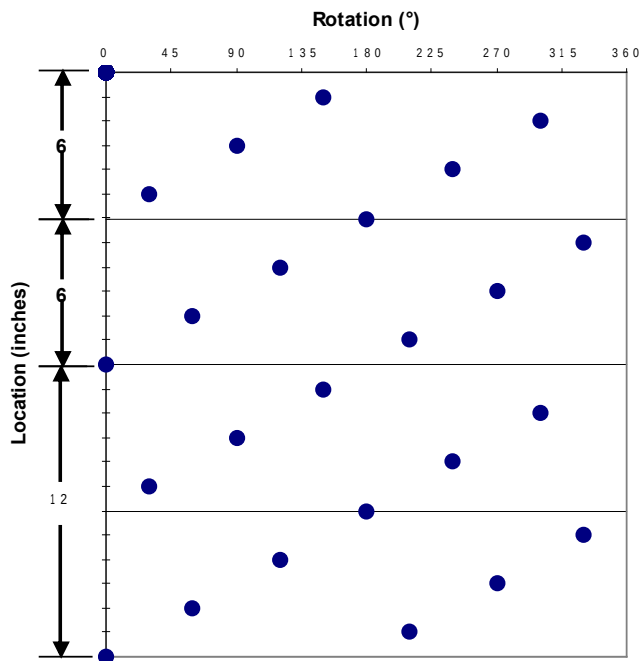
*1	Gun, Scallop - 4ft	101244654
	Gun, Scallop - 7ft	101244655
	Gun, Scallop - 11ft	101244656
	Gun, Scallop - 15ft	101244657
	Gun, Scallop - 21ft	101244658
*2	Tube, Charge Holder - 4ft	101244659
	Tube, Charge Holder - 7ft	101244660
	Tube, Charge Holder - 11ft	101244662
	Tube, Charge Holder - 15ft	101244663
	Tube, Charge Holder - 21ft	101244664
*3	Fixture, Alignment	101245525
*4	Snap Ring	101245403
*5	Screw, Socket, #10 - 32 x .38" L	101236979
*6	Screw, Set .25-20 x .625" L	100007783
7	Firing Head Crossover - Vann	101245889
8	Firing Head Crossover - 'Go' Style	101251161
9	Bull Plug	101245921
10	Tandem, Grooved	101245924
11	O-Ring, #333 Buna, 90 Duro	100001962
	O-Ring, #333 Viton, 95 Duro	100064839
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #333 (Hostile Environment)	101283261
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232637
15	Charge - Omni RDX BH	100008251
	Charge - Omni HMX BH	100005312
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251



3 3/8-in. 12-spf
Omni™ System

* Included in shipping assembly.

3 3/8-in. 12-spf 150° Omni™ System



150° Phasing
12 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	57 (26)	102 (46)	162 (74)	222 (101)	312 (142)
Spacer lb (kg)	46 (21)	79 (36)	124 (56)	168 (76)	235 (107)

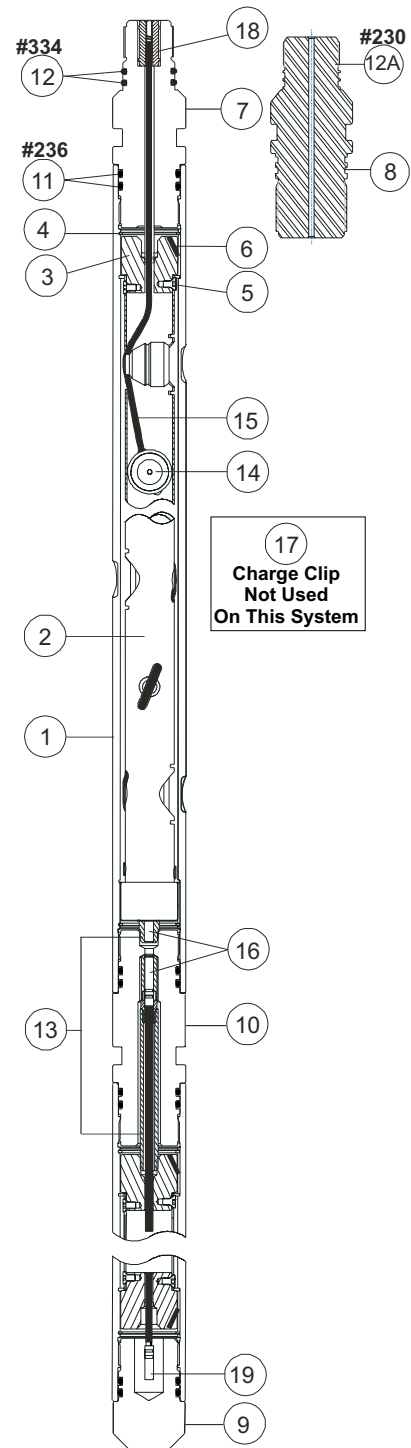


4-in. 4-spf 90° Scalloped System

4-in. 4-spf 90° Scalloped System

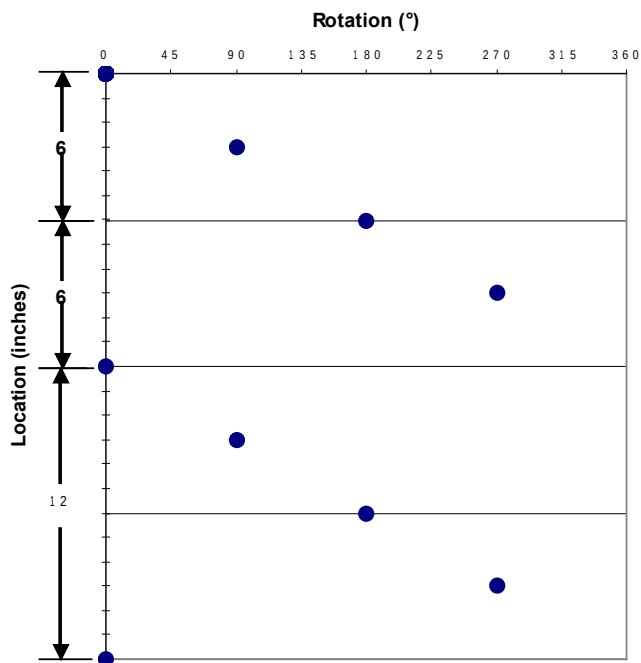
Item	Description	Part No.
	Shipping Assembly - 4ft	101231991
	Shipping Assembly - 7ft	101231992
	Shipping Assembly - 11ft	101231993
	Shipping Assembly - 15ft	101231994
	Shipping Assembly - 21ft	101231995
*1	Gun, Scalloped - 4ft	101231986
	Gun, Scalloped - 7ft	101231987
	Gun, Scalloped - 11ft	101231988
	Gun, Scalloped - 15ft	101231989
	Gun, Scalloped - 21ft	101231990
*2	Tube, Charge Holder - 4ft	101231996
	Tube, Charge Holder - 7ft	101231997
	Tube, Charge Holder - 11ft	101231998
	Tube, Charge Holder - 15ft	101231999
	Tube, Charge Holder - 21ft	101232000
*3	Fixture Alignment	101232003
*4	Snap Ring	101232007
*5	Screw, Socket #10 x .50" D	100028191
*6	Screw, Set .25" D x .75" L	100028806
7	Firing Head Crossover - Vann	101232004
8	Firing Head Crossover - 'Go' Style	101236324
9	Bull Plug	101232006
10	Tandem, Grooved	101232005
11	O-Ring, #236 Buna, 90 Duro	100002007
	O-Ring, #236 Viton, 95 Duro	100003927
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #236 (Hostile Environment)	101239616
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232002
15	Charge - MILLENNIUM HMX	101210636
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100157866

* Included in shipping assembly.

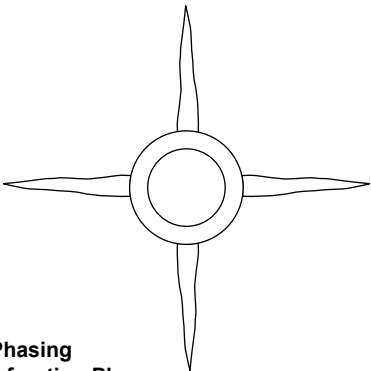


4-in. 4-spf 90°
Scalloped System

4-in. 4-spf 90° Scalloped System



Shot Pattern for 4-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	76 (34)	135 (61)	214 (92)	294 (133)	413 (187)
Spacer lb (kg)	58 (26)	100 (45)	156 (70)	216 (96)	295 (134)



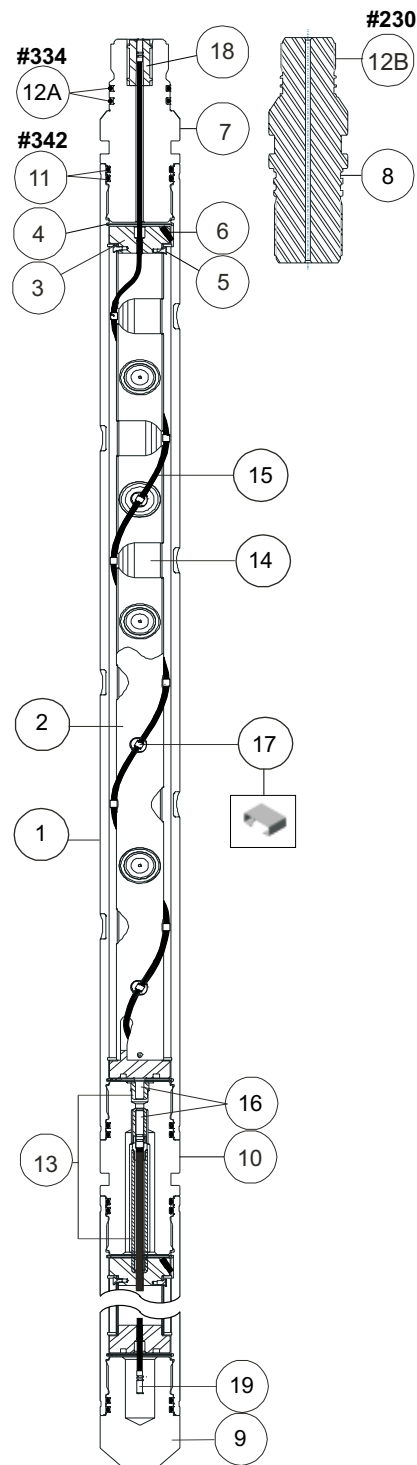
4 1/2-in. 4-spf 90° Scalloped System

4 1/2-in. 4-spf 90° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101273371
	Shipping Assembly - 7ft	101273372
	Shipping Assembly - 11ft	101273373
	Shipping Assembly - 15ft	101273374
	Shipping Assembly - 21ft	101273375

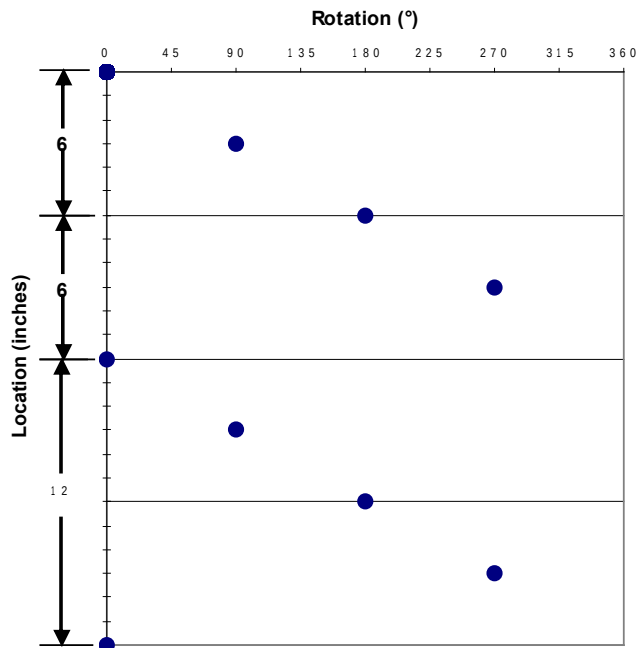
*1	Gun, Scalloped - 4ft	101273345
	Gun, Scalloped - 7ft	101273366
	Gun, Scalloped - 11ft	101273367
	Gun, Scalloped - 15ft	101273368
	Gun, Scalloped - 21ft	101273369
*2	Tube, Charge Holder - 4ft	101273376
	Tube, Charge Holder - 7ft	101273377
	Tube, Charge Holder - 11ft	101273378
	Tube, Charge Holder - 15ft	101273379
	Tube, Charge Holder - 21ft	101275930
*3	Fixture Alignment	101232025
*4	Snap Ring	101232029
*5	Screw, Socket #10 x .50" D	100028191
*6	Screw, Set .25" D x .75" L	100028806
7	Firing Head Crossover - Vann	101232026
8	Firing Head Crossover - 'Go' Systems	101237399
9	Bull Plug	101232028
10	Tandem, Grooved	101232027
11	O-Ring, #342 Buna, 90 Duro	100001938
	O-Ring, #342 Viton, 95 Duro	100064811
	Backup, O-Ring #342	101283276
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
	Backup, O-Ring #334	100005381
12B	O-Ring, #230 Buna, 90 Duro	100002001
*13	Kit, Booster Hardware	101232024
14	Charge - 39g MILLENNIUM®	101210636
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Alignment Insert	100005255
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251

* Included in shipping assembly.

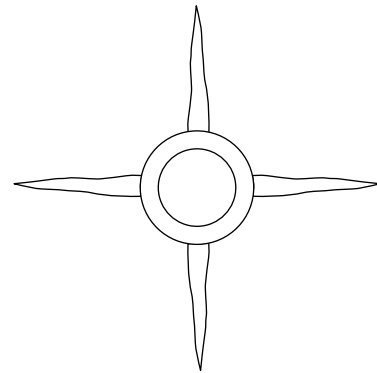


4 1/2-in. 4-spf 90°
Scalloped System

4 1/2-in. 4-spf 90° Scalloped System



Shot Pattern for 4-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	76 (34)	135 (61)	214 (92)	294 (133)	413 (187)
Spacer lb (kg)	58 (26)	100 (45)	156 (70)	216 (96)	295 (134)



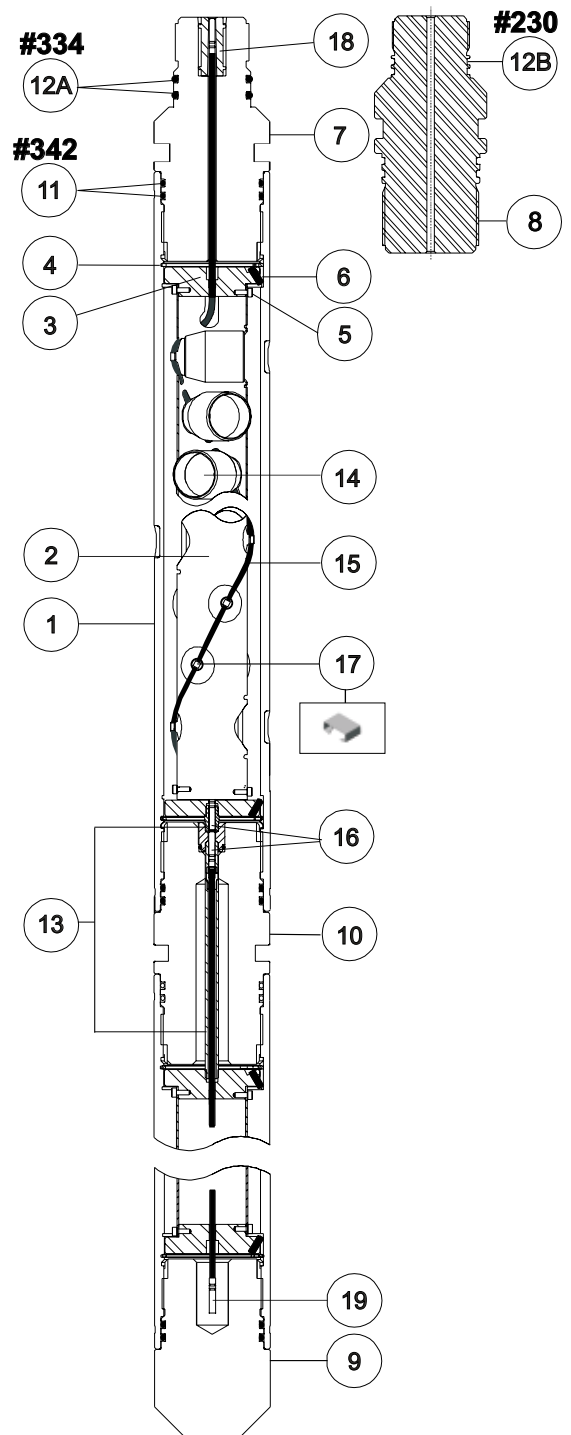
4 1/2-in. 5-spf 60° Scalloped System

4 1/2-in. 5-spf 60° Scalloped System

Item	Description	Part No.
	Shipping Assembly - 4ft	101232013
	Shipping Assembly - 7ft	101232014
	Shipping Assembly - 11ft	101232015
	Shipping Assembly - 15ft	101232016
	Shipping Assembly - 21ft	101232017

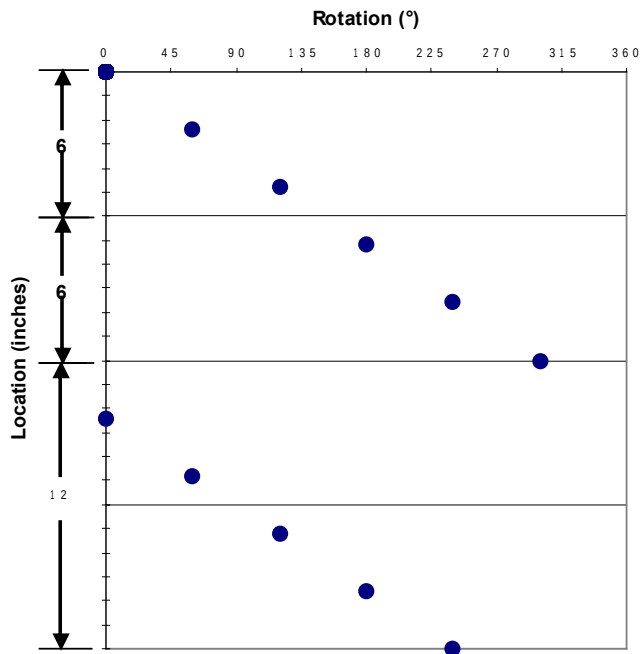
*1	Gun, Scalloped - 4ft	101232008
	Gun, Scalloped - 7ft	101232009
	Gun, Scalloped - 11ft	101232010
	Gun, Scalloped - 15ft	101232011
	Gun, Scalloped - 21ft	101232012
*2	Tube, Charge Holder - 4ft	101232018
	Tube, Charge Holder - 7ft	101232019
	Tube, Charge Holder - 11ft	101232020
	Tube, Charge Holder - 15ft	101232021
	Tube, Charge Holder - 21ft	101232022
*3	Fixture Alignment	101232025
*4	Snap Ring	101232029
*5	Screw, Socket #10 x .50" D	100028191
*6	Screw, Set .25" D x .75" L	100028806
7	Firing Head Crossover - Vann	101232026
8	Firing Head Crossover - 'Go' Systems	101237399
9	Bull Plug	101232028
10	Tandem, Grooved	101232027
11	O-Ring, #342 Buna, 90 Duro	100001938
	O-Ring, #342 Viton, 95 Duro	100064811
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #342 (Hostile Environment)	101283276
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101232024
15	Charge - MILLENNIUM	101210636
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251

* Included in shipping assembly.

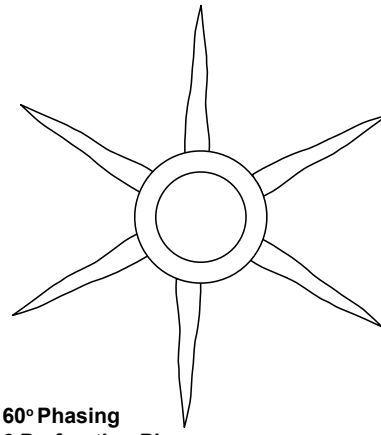


4 1/2-in. 5-spf 60°
Scalloped System

4 1/2-in. 5-spf 60° Scalloped System



Shot Pattern for 4-in.
4-spf 60° Phasing



JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	86 (39)	154 (69)	245 (111)	335 (152)	471 (213)
Spacer lb (kg)	65 (30)	113 (51)	176 (80)	239 (109)	334 (152)

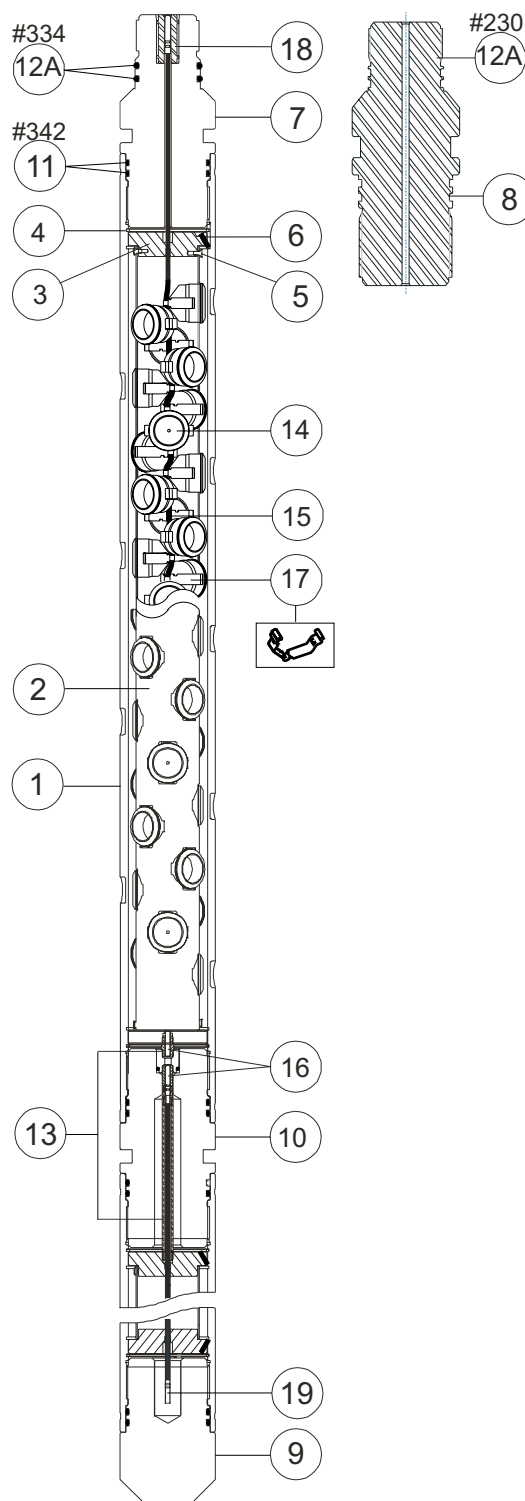


4 1/2-in. 12-spf 45°/135° Scalloped System

4 1/2-in. 12-spf 45°/135° Scalloped System

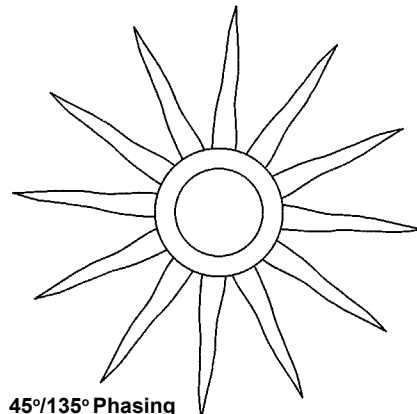
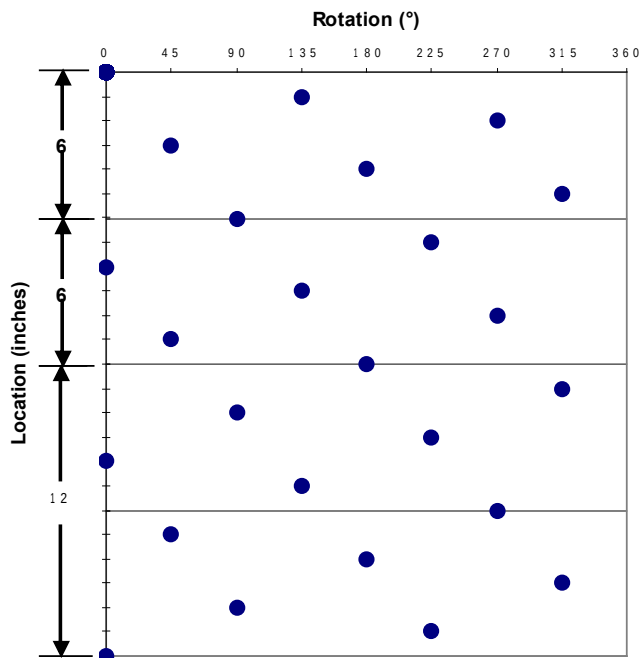
Item	Description	Part No.
	Shipping Assembly - 4ft	101243823
	Shipping Assembly - 7ft	101243825
	Shipping Assembly - 11ft	101243826
	Shipping Assembly - 15ft	101243827
	Shipping Assembly - 21ft	101243828
*1	Gun, Scalloped - 4ft	101240516
	Gun, Scalloped - 7ft	101240520
	Gun, Scalloped - 11ft	101240521
	Gun, Scalloped - 15ft	101240522
	Gun, Scalloped - 21ft	101240523
*2	Tube, Charge Holder - 4ft	101243782
	Tube, Charge Holder - 7ft	101243783
	Tube, Charge Holder - 11ft	101243784
	Tube, Charge Holder - 15ft	101243785
	Tube, Charge Holder - 21ft	101243786
*3	Fixture Alignment	101243709
*4	Snap Ring	101232029
*5	Screw, Socket #10 x .50" L	100028191
*6	Screw, Set 0.25" D x 0.75" L	100028806
7	Firing Head Crossover - Vann	101232026
8	Firing Head Crossover - 'Go' Systems	101237399
9	Bull Plug	101232028
10	Tandem, Grooved	101232027
11	O-Ring, #342 Buna, 90 Duro	100001938
	O-Ring, #342 Viton, 95 Duro	100064811
	Backup, O-Ring #342	101283276
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
	Backup, O-Ring #334	100005381
12B	O-Ring, #230 Buna, 90 Duro	100002001
*13	Kit, Booster Hardware	101232024
14	Charge - 22.7g MILLENNIUM ® HMX	101210674
	Charge - 22.7g Omni RDX DP	100005324
	Charge - 22.7g Omni RDX DP/LD	100005325
	Charge - 22.7g Omni HMX DP	100014352
	Charge - 22.7g Omni HMX DP/LD	100005340
	Charge - 25g Omni RDX BH	100005319
	Charge - 22.7g Omni RDX BH/LD	100005326
	Charge - 25g Omni HMX BH	100157006
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Alignment Insert	100005255
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Charge Clip	100157866

* Included in shipping assembly.



4 1/2-in. 12-spf 45°/135°
Scalloped System

4 1/2-in. 12-spf 45°/135° Scalloped System



45°/135° Phasing
12 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	86 (39)	154 (69)	245 (111)	335 (152)	471 (213)
Spacer lb (kg)	65 (30)	113 (51)	176 (80)	239 (109)	334 (152)

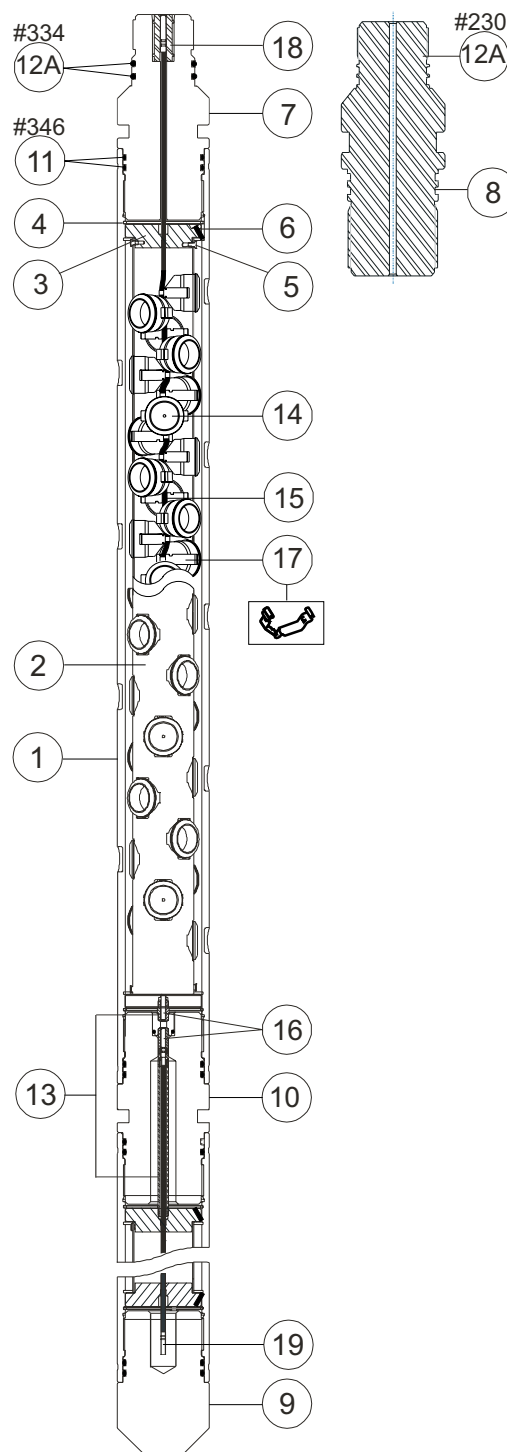


5 1/8-in. 12-spf 30°/150° Scalloped System

5 1/8-in. 12-spf 30°/150° Scalloped System

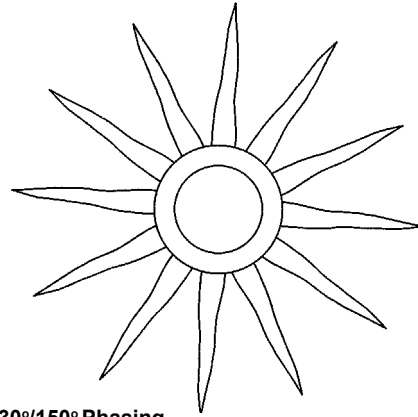
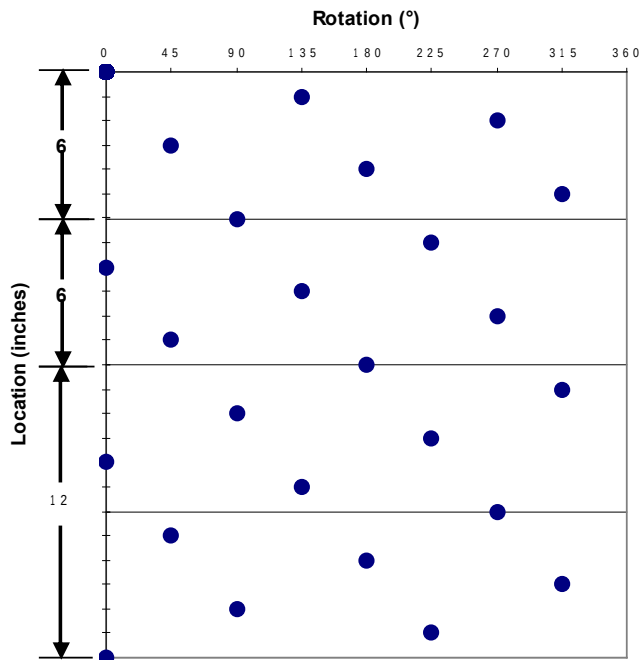
Item	Description	Part No.
	Shipping Assembly - 4ft	101252593
	Shipping Assembly - 7ft	101252657
	Shipping Assembly - 11ft	101252658
	Shipping Assembly - 15ft	101252659
	Shipping Assembly - 21ft	101252660
*1	Gun, Scalloped - 4ft	101251986
	Gun, Scalloped - 7ft	101251997
	Gun, Scalloped - 11ft	101251999
	Gun, Scalloped - 15ft	101252001
	Gun, Scalloped - 21ft	101252002
*2	Tube, Charge Holder - 4ft	101252183
	Tube, Charge Holder - 7ft	101252185
	Tube, Charge Holder - 11ft	101252186
	Tube, Charge Holder - 15ft	101252187
	Tube, Charge Holder - 21ft	101252188
*3	Fixture Alignment	101252435
*4	Snap Ring	101252604
*5	Screw, Socket #10 - 32 x .50" L	100028191
*6	Screw, Set 0.25-20 x 0.75" L	100007783
7	Firing Head Crossover - Vann	101268070
8	Firing Head Crossover - 'Go' Systems	101268073
9	Bull Plug	101253176
10	Tandem, Grooved	101252935
11	O-Ring, #346 Buna, 90 Duro	100001971
	O-Ring, #346 Viton, 95 Duro	100064845
	Backup, O-Ring #346	101283285
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
	Backup, O-Ring #334	100005381
12B	O-Ring, #230 Buna, 90 Duro	100002001
*13	Kit, Booster Hardware	101251534
14	Charge - 22.7g MILLENNIUM ® HMX	101210674
15	Detonating Cord	See Appendix A
16	Detonator, Electric	See Det. Section
17	Alignment Insert	100005255
18	Bi-Directional Booster	See Appendix A
19	End Seal	100005251
20	Charge Clip	100005250

* Included in shipping assembly.



5 1/8-in. 12-spf 30°/150°
Scalloped System

5 1/8-in. 12-spf 30°/150° Scalloped System



30°/150° Phasing
12 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	57 (26)	102 (46)	162 (74)	222 (101)	312 (142)
Spacer lb (kg)	46 (21)	79 (36)	124 (56)	168 (76)	235 (107)



7-in. 12-spf 45°/135° BH/SH System

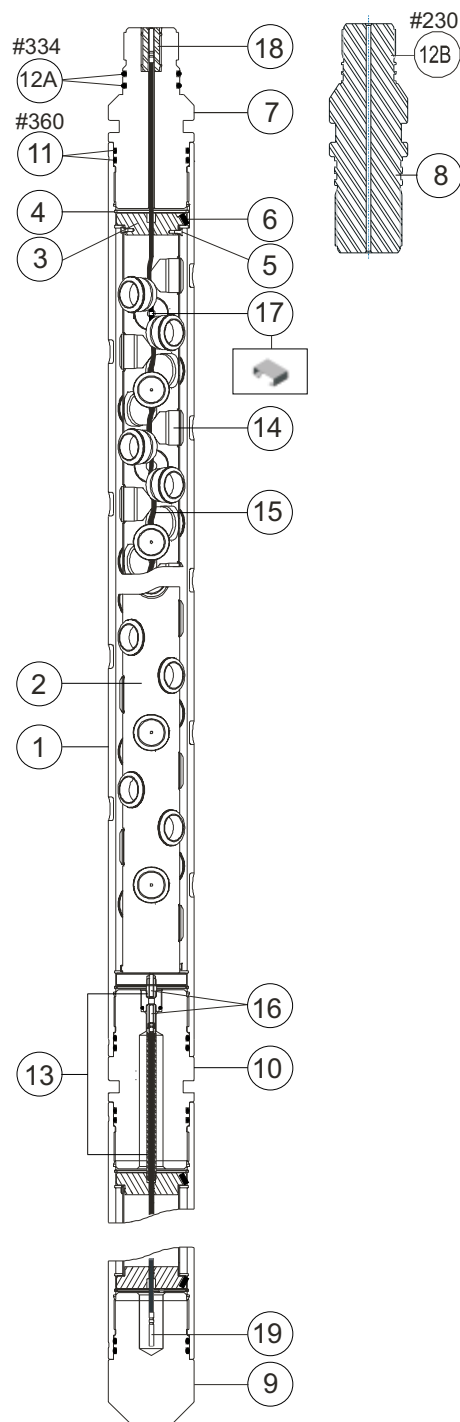
7-in. 12-spf 45°/135° BH/SH System

Item	Description	Part No.
	Shipping Assembly - 4ft	101251518
	Shipping Assembly - 7ft	101251538
	Shipping Assembly - 11ft	101251539
	Shipping Assembly - 15ft	101251541

*1	Gun, Scallop - 4ft	101251244
	Gun, Scallop - 7ft	101251299
	Gun, Scallop - 11ft	101251300
	Gun, Scallop - 15ft	101251301
*2	Tube, Charge Holder - 4ft	101246222
	Tube, Charge Holder - 7ft	101251326
	Tube, Charge Holder - 11ft	101251327
	Tube, Charge Holder - 15ft	101251328
*3	Fixture, Alignment	101251349
*4	Snap Ring	101245406
*5	Screw, Socket #10 x 0.50" L	100028191
*6	Screw, Set 0.25" D x 0.75" L	100028806
7	Firing Head Crossover - Vann	101282825
8	Firing Head Crossover - 'Go' Style	101251585
9	Bull Plug	101251490
10	Tandem, Grooved	101251461
11	O-Ring, #360 Buna, 90 Duro	100026720
	O-Ring, #360 Viton, 95 Duro	100064747
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #360 (Hostile Environment)	101283289
*14	Kit, Booster Hardware	101251534
15	Charge - RDX BH/LD	101228161
	Charge - HMX BH/LD	101284384
	Charge - RDX Super Hole	101213474
	Charge - RDX Super Hole/LD	101212693
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100157866

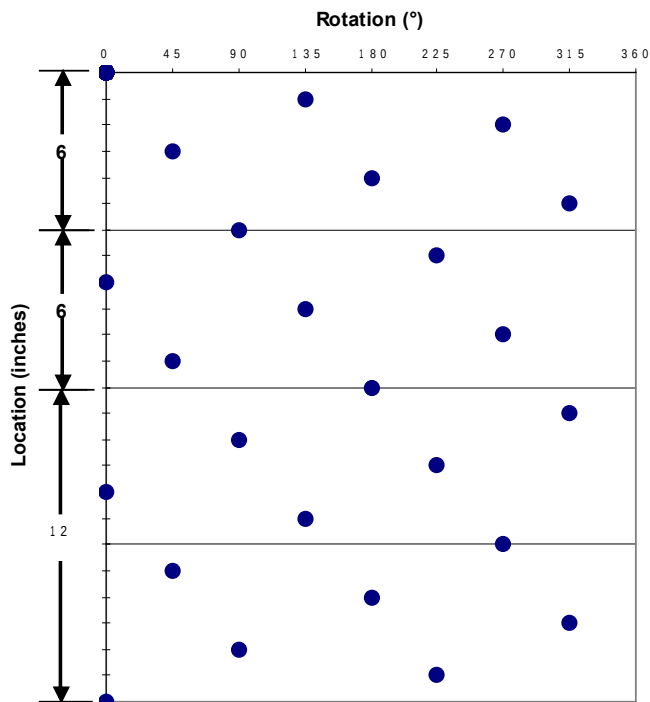
* Included in shipping assembly.

**Note: Charge Clip to be used on the first and last three charges.

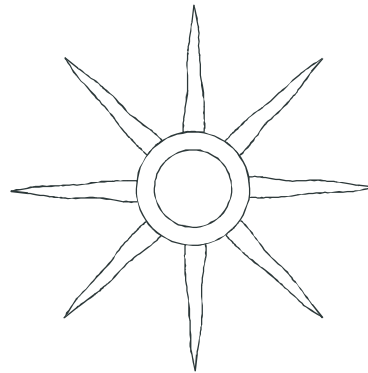


7-in. 12-spf 45°/135°
BH/SH System

7-in. 12-spf 45°/135° BH/SH System



Shot Pattern for 7-in
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)
Loaded lb (kg)	166 (75)	295 (134)	468 (212)	641 (291)
Spacer lb (kg)	132 (61)	230 (105)	360 (164)	491 (223)



7-in. 12-spf 45°/135° Millennium™ System

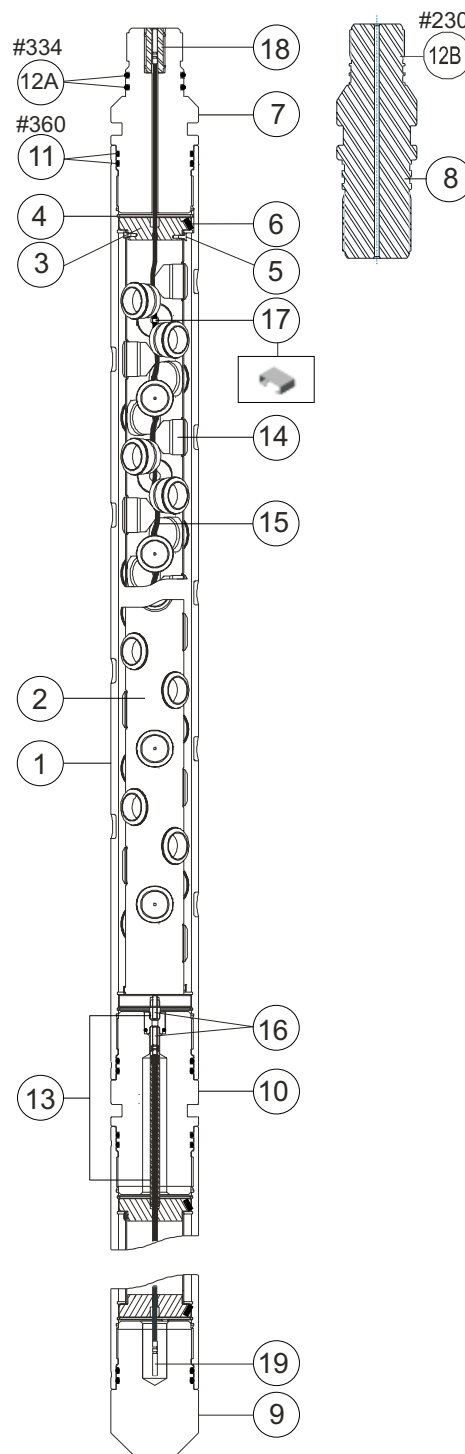
7-in. 12-spf 45°/135° Millennium™ System

Item	Description	Part No.
	Shipping Assembly - 4ft	101252341
	Shipping Assembly - 7ft	101252342
	Shipping Assembly - 11ft	101252343
	Shipping Assembly - 15ft	101252344

*1	Gun, Scallop - 4ft	101251244
	Gun, Scallop - 7ft	101251299
	Gun, Scallop - 11ft	101251300
	Gun, Scallop - 15ft	101251301
*2	Tube, Charge Holder - 4ft	101246222
	Tube, Charge Holder - 7ft	101251326
	Tube, Charge Holder - 11ft	101251327
	Tube, Charge Holder - 15ft	101251328
*3	Fixture, Alignment	101251349
*4	Snap Ring	101245406
*5	Screw, Socket #10 x 0.50" L	100028191
*6	Screw, Set 0.25" D x 0.75" L	100028806
7	Firing Head Crossover - Vann	101282825
8	Firing Head Crossover - 'Go' Style	101251585
9	Bull Plug	101251490
10	Tandem, Grooved	101251461
11	O-Ring, #360 Buna, 90 Duro	100026720
	O-Ring, #360 Viton, 95 Duro	100064747
12A	O-Ring, #334 Buna, 90 Duro	100001963
	O-Ring, #334 Viton, 95 Duro	100009382
12B	O-Ring, #230 Buna, 90 Duro	100002001
13	Backup, O-Ring #360 (Hostile Environment)	101283289
13A	Backup, O-Ring #334 (Hostile Environment)	100005381
*14	Kit, Booster Hardware	101251534
15	Charge - MILLENNIUM ® HMX	101207997
16	Detonating Cord	See Appendix A
17	Detonator, Electric	See Appendix D
18	Alignment Insert	100005255
19	Bi-Directional Booster	See Appendix A
20	End Seal	100005251
21	Charge Clip	100157866

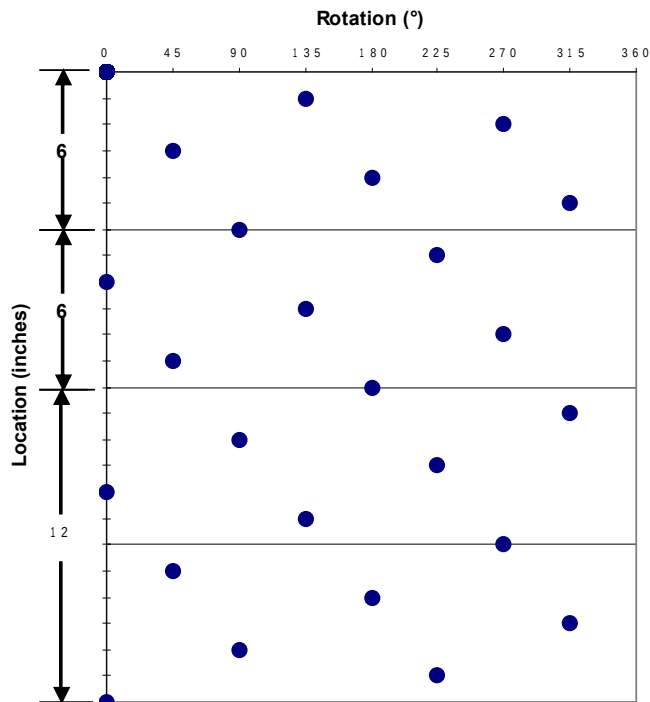
* Included in shipping assembly.

**Note: Charge Clip to be used on the first and last three charges.

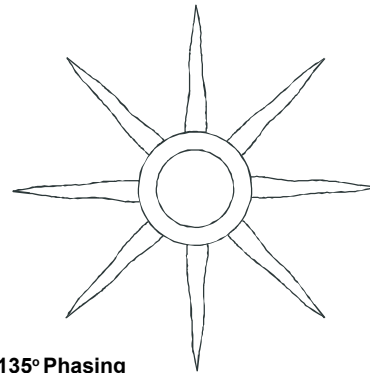


7-in. 12-spf 45°/135°
Millennium™ System

7-in. 12-spf 45°/135° Millennium™ System



**Shot Pattern for 7-in
12-spf 45°/135° Phasing**



**45°/135° Phasing
8 Perforation Planes**

JRC Gun Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)
Loaded lb (kg)	166 (75)	295 (134)	468 (212)	641 (291)
Spacer lb (kg)	132 (61)	230 (105)	360 (164)	491 (223)

1 9/16-in. 4-spf 0° VannGun™ System

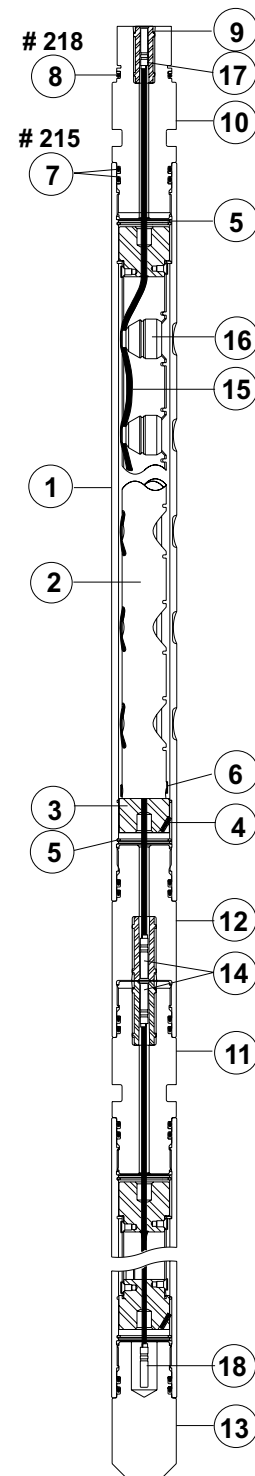
Item	Part No.	Description	Part No.
	Premium		Standard
	101235924	Shipping Assembly - 4 ft	N/A
	101235926	Shipping Assembly - 7 ft	
	101235927	Shipping Assembly - 11 ft	
	101235928	Shipping Assembly - 15 ft	
	101235929	Shipping Assembly - 21 ft	

*1	101235911	Gun, Scallop - 4 ft	N/A
	101235913	Gun, Scallop - 7 ft	
	101235914	Gun, Scallop - 11 ft	
	101235915	Gun, Scallop - 15 ft	
	101235916	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235917
	Tube, Charge Holder - 7 ft	101235920
	Tube, Charge Holder - 11 ft	101235921
	Tube, Charge Holder - 15 ft	101235922
	Tube, Charge Holder - 21 ft	101235923
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ™	100157028
17	**Teflon Grommet	100157596
18	End Seal	100005251

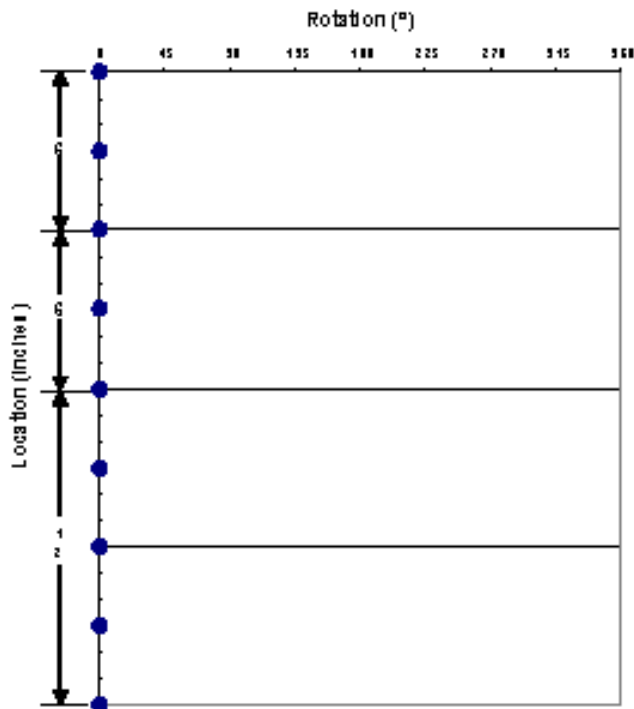
*Included in Shipping Assembly.

**Teflon is a trademark of E.I. Dupont De Nemours.

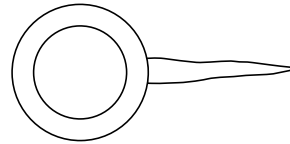


1 9/16-in. 4-spf 0°
VannGun™ System

1 9/16-in. 4-spf 0° VannGun™ System



Shot Pattern for 1.5625-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)

1 9/16-in. 4-spf 60° VannGun™ System

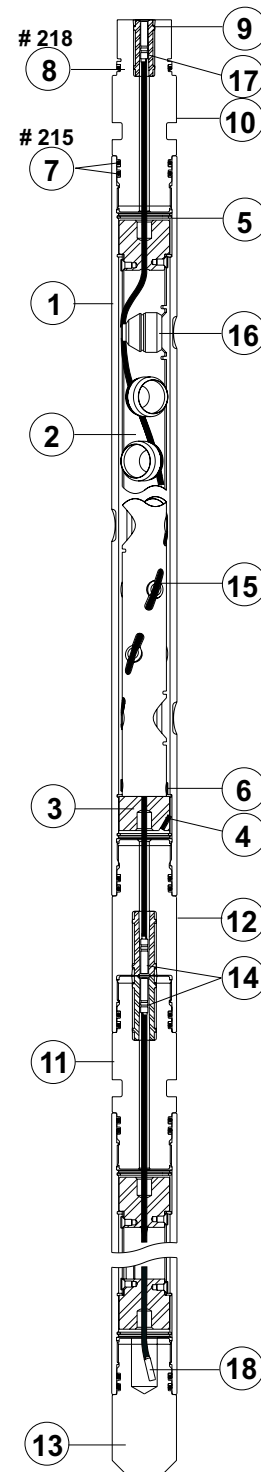
Item.	Part No.	Description	Part No.
	Premium		Standard
	101279652	Shipping Assembly - 4 ft	N/A
	101279651	Shipping Assembly - 7 ft	
	101279650	Shipping Assembly - 11 ft	
	101279649	Shipping Assembly - 15 ft	
	101279648	Shipping Assembly - 21 ft	

*1	101279419	Gun, Scallop - 4 ft	N/A
	101279424	Gun, Scallop - 7 ft	
	101279425	Gun, Scallop - 11 ft	
	101279426	Gun, Scallop - 15 ft	
	101279428	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101279482
	Tube, Charge Holder - 7 ft	101279483
	Tube, Charge Holder - 11 ft	101279484
	Tube, Charge Holder - 15 ft	101279485
	Tube, Charge Holder - 21 ft	101279486
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	102136795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ™	100157028
17	**Teflon Grommet	100157596
16	End Seal	100005251

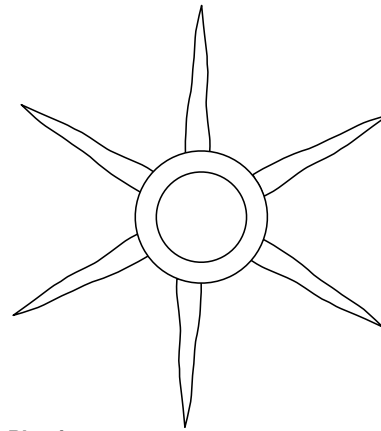
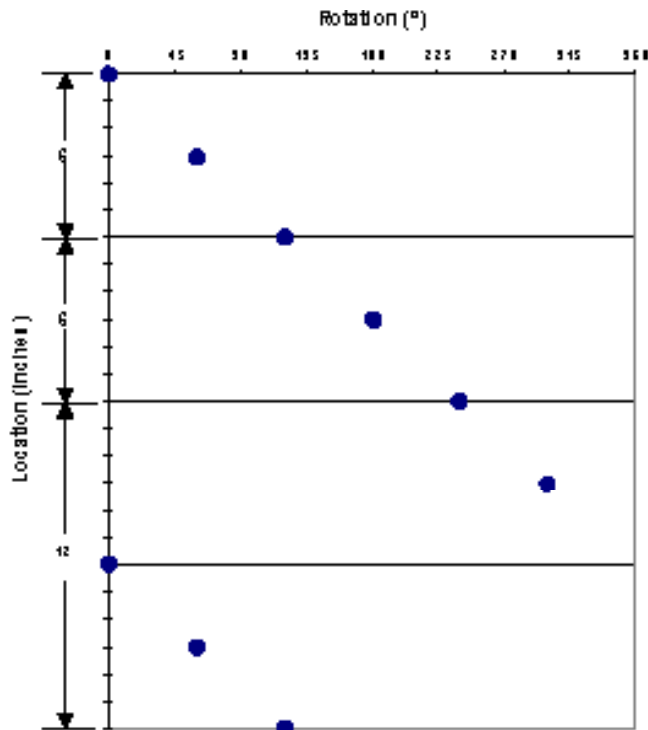
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.



1 9/16-in. 4-spf 60°
VannGun™ System

1 $\frac{9}{16}$ -in. 4-spf 60° VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)

1 9/16-in. 4-spf 90° VannGun™ System

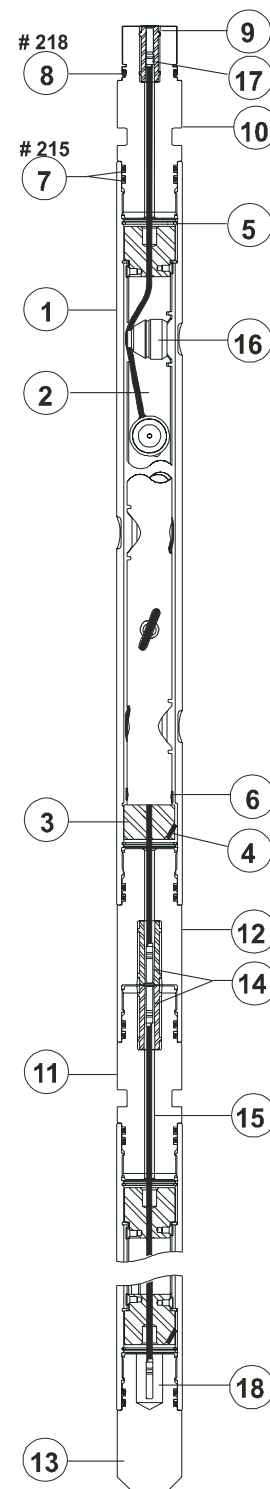
Item	Part No.	Description	Part No.
	Premium		Standard
	101280061	Shipping Assembly - 4 ft	N/A
	101280062	Shipping Assembly - 7 ft	
	101280063	Shipping Assembly - 11 ft	
	101280060	Shipping Assembly - 15 ft	
	101280058	Shipping Assembly - 21 ft	

*1	101280921	Gun, Scallop - 4 ft	N/A
	101280922	Gun, Scallop - 7 ft	
	101280923	Gun, Scallop - 11 ft	
	102180924	Gun, Scallop - 15 ft	
	101280925	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101280926
	Tube, Charge Holder - 7 ft	101280927
	Tube, Charge Holder - 11 ft	101280928
	Tube, Charge Holder - 15 ft	101280929
	Tube, Charge Holder - 21 ft	101280930
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	102136795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ™	100157028
17	**Teflon Grommet	100157596
18	End Seal	100005251

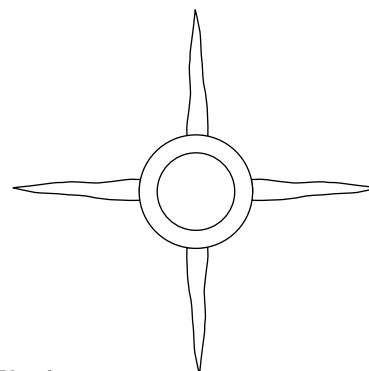
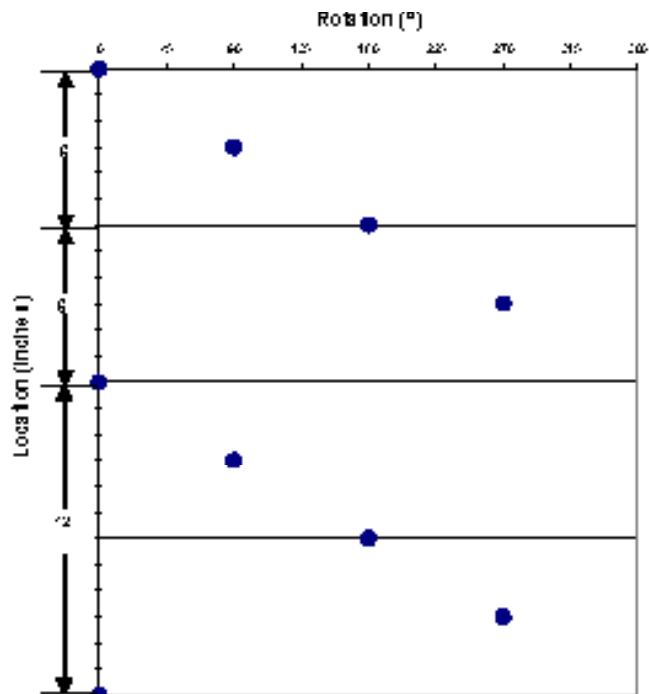
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.



1 9/16-in. 4-spf 90°
VannGun™ System

1 ⁹/₁₆-in. 4-spf 90° VannGun™ System



90° Phasing
4 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)



1 9/16-in. 4-spf 180° VannGun™ System

1 9/16-in. 4-spf 180° VannGun™ System

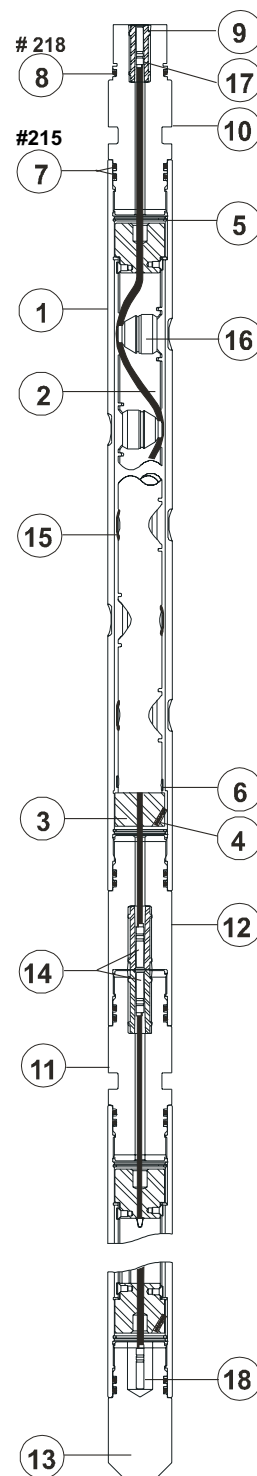
Item	Part No.	Description	Part No.
	Premium		Standard
	101235941	Shipping Assembly - 4 ft	N/A
	101235942	Shipping Assembly - 7 ft	
	101235943	Shipping Assembly - 11 ft	
	101235944	Shipping Assembly - 15 ft	
	101235945	Shipping Assembly - 21 ft	

*1	101235931	Gun, Scallop - 4 ft	N/A
	101235932	Gun, Scallop - 7 ft	
	101235933	Gun, Scallop - 11 ft	
	101235934	Gun, Scallop - 15 ft	
	101235935	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235936
	Tube, Charge Holder - 7 ft	101235937
	Tube, Charge Holder - 11 ft	101235938
	Tube, Charge Holder - 15 ft	101235939
	Tube, Charge Holder - 21 ft	101235940
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	102136795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ™	100157028
17	**Teflon Grommet	100157596
18	End Seal	100005251

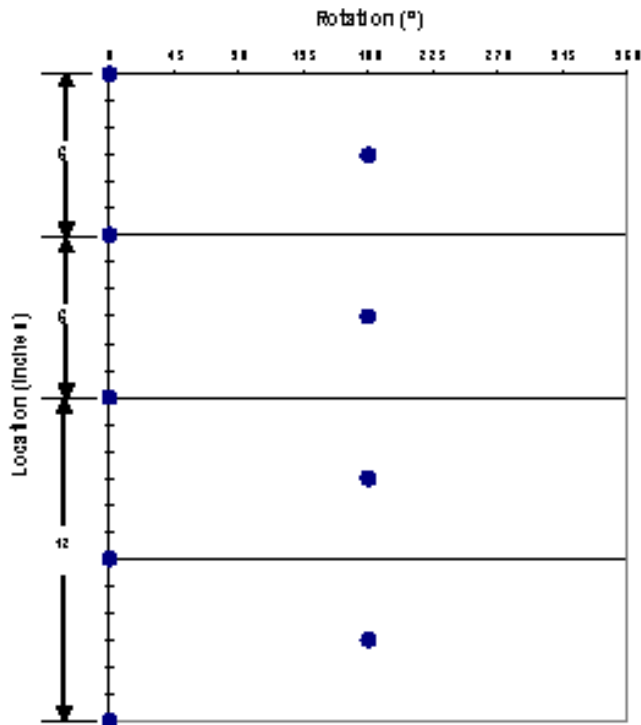
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.

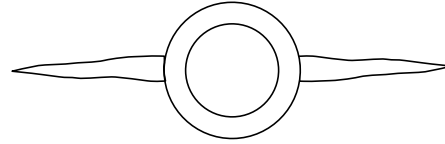


1 9/16-in. 4-spf 180°
VannGun™ System

1 ⁹/₁₆-in. 4-spf 180° VannGun™ System



Shot Pattern for 1.5625-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	13 (6)	23 (10)	36 (16)	49 (22)	68 (31)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (23)

1 9/16-in. 6-spf 60° VannGun™ System

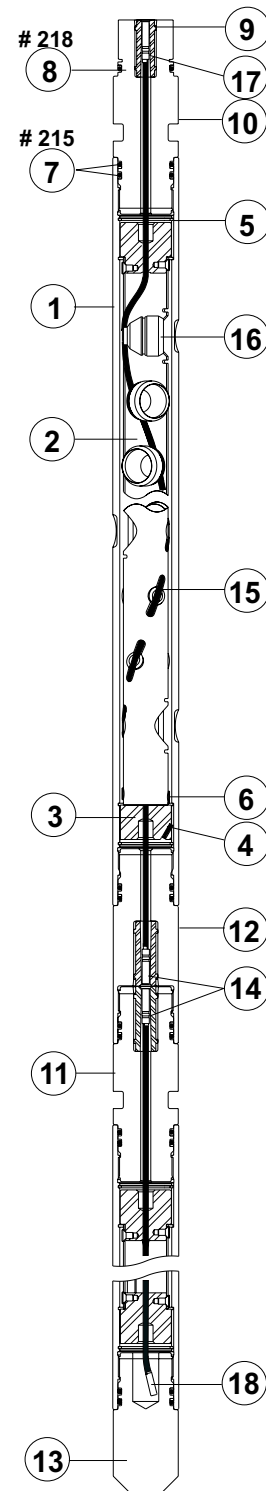
Item	Part No.	Description	Part No.
	Premium		Standard
	101235906	Shipping Assembly - 4 ft	N/A
	101325907	Shipping Assembly - 7 ft	
	101235908	Shipping Assembly - 11 ft	
	101235909	Shipping Assembly - 15 ft	
	101235910	Shipping Assembly - 21 ft	

*1	101235895	Gun, Scallop - 4 ft	N/A
	101235896	Gun, Scallop - 7 ft	
	101235897	Gun, Scallop - 11 ft	
	101235898	Gun, Scallop - 15 ft	
	101235899	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235900
	Tube, Charge Holder - 7 ft	101235901
	Tube, Charge Holder - 11 ft	101235902
	Tube, Charge Holder - 15 ft	101235903
	Tube, Charge Holder - 21 ft	101235904
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	102136795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ™	100157028
17	**Teflon Grommet	100157596
18	End Seal	100005251

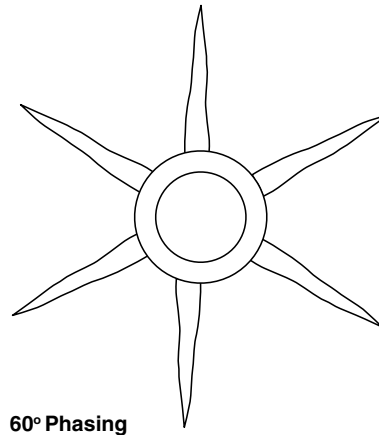
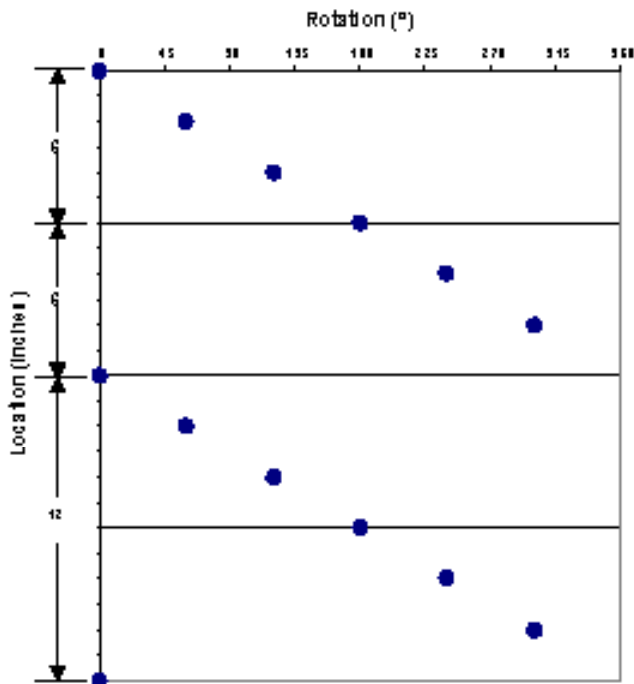
*Included in Shipping Assembly

**Teflon is a trademark of E.I. DuPont De Nemours.



1 9/16-in. 6-spf 60°
VannGun™ System

1 $\frac{9}{16}$ -in. 6-spf 60° VannGun™ System



VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	14 (6)	24 (11)	37 (17)	51 (23)	71 (32)
Spacer lb (kg)	10 (5)	17 (8)	27 (12)	37 (17)	52 (24)



2-in. 4-spf 0° VannGun™ System

2-in. 4-spf 0° VannGun™ System

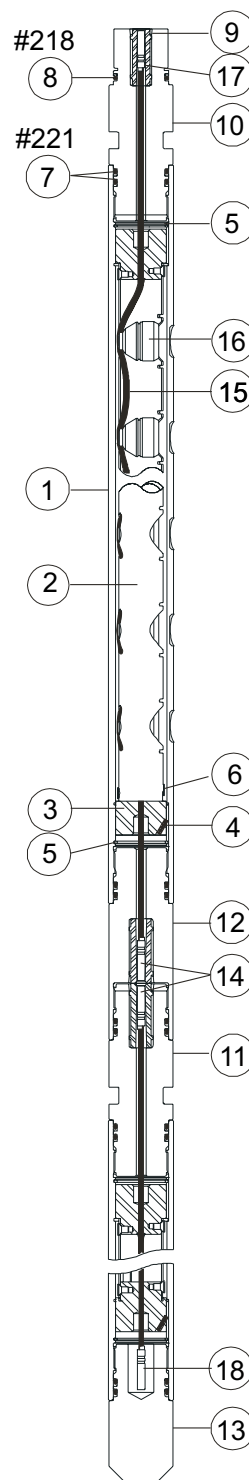
Item	Part No.	Description	Part No.
	Premium		Standard
	101235772	Shipping Assembly - 4 ft	N/A
	101235773	Shipping Assembly - 7 ft	
	101235774	Shipping Assembly - 11 ft	
	101235775	Shipping Assembly - 15 ft	
	101235776	Shipping Assembly - 21 ft	

*1	101235752	Gun, Scallop - 4 ft	N/A
	101235753	Gun, Scallop - 7 ft	
	101235755	Gun, Scallop - 11 ft	
	101235756	Gun, Scallop - 15 ft	
	101235757	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235758
	Tube, Charge Holder - 7 ft	101235760
	Tube, Charge Holder - 11 ft	101235761
	Tube, Charge Holder - 15 ft	101235763
	Tube, Charge Holder - 21 ft	101235765
*3	Fixture, Alignment	101234456
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101234459
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Aflas 90 Duro #221	101292869
	O-Ring, Backup #221	101227517
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100008010
11	Tandem, Grooved	100008008
12	Crossover, Box x Pin	100008009
13	Bull Plug	100008011
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 6.80g HMX <i>Millennium</i> ™	101208224
	Charge - 6.80g HMX SDP	100008017
	Charge - 6.80g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
17	**Teflon Grommet	100157596
18	End Seal	100005251

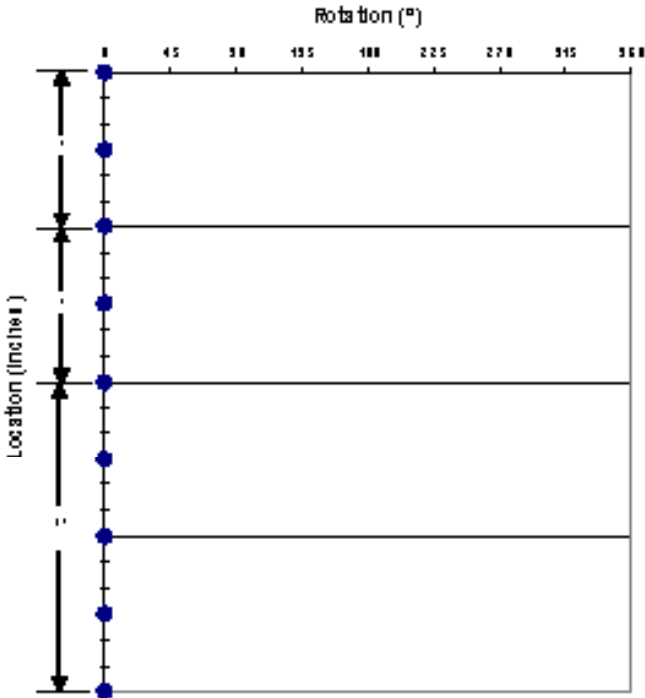
*Included in Shipping Assembly

**Teflon is a trademark of E.I. DuPont De Nemours.

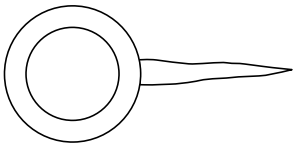


2-in. 4-spf 0°
VannGun™ System

2-in. 4-spf 0° VannGun™ System



Shot Pattern for 2-in.
4-spf 0° Phasing



0° Phasing
1 Perforation Plane

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	21 (9)	38 (17)	59 (27)	80 (36)	112 (51)
Spacer lb (kg)	16 (7)	27 (12)	44 (20)	60 (27)	84 (38)



2-in. 4-spf 60° VannGun™ System

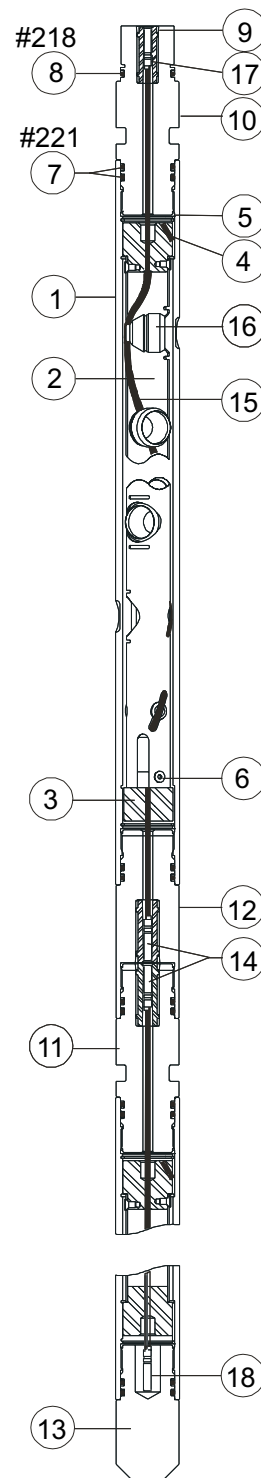
Item	Part No.	Description	Part No.
	Premium		Standard
	101280019	Shipping Assembly - 4 ft	N/A
	101280020	Shipping Assembly - 7 ft	
	101280021	Shipping Assembly - 11 ft	
	101280022	Shipping Assembly - 15 ft	
	101280023	Shipping Assembly - 21 ft	

*1	101279726	Gun, Scallop - 4 ft	N/A
	101279725	Gun, Scallop - 7 ft	
	101279724	Gun, Scallop - 11 ft	
	101279722	Gun, Scallop - 15 ft	
	101279723	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101279752
	Tube, Charge Holder - 7 ft	101279754
	Tube, Charge Holder - 11 ft	101279755
	Tube, Charge Holder - 15 ft	101279756
	Tube, Charge Holder - 21 ft	101279757
*3	Fixture, Alignment	101234456
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101234459
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Aflas 90 Duro #221	101292869
	O-Ring, Backup #221	101227517
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100008010
11	Tandem, Grooved	100008008
12	Crossover, Box x Pin	100008009
13	Bull Plug	100008011
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 6.80 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.80 g HMX SDP	100008017
	Charge - 6.80 g HMX BH	101206246
	Charge - 6.90 g HNS DP	100157018
17	**Teflon Grommet	100157596
18	End Seal	100005251

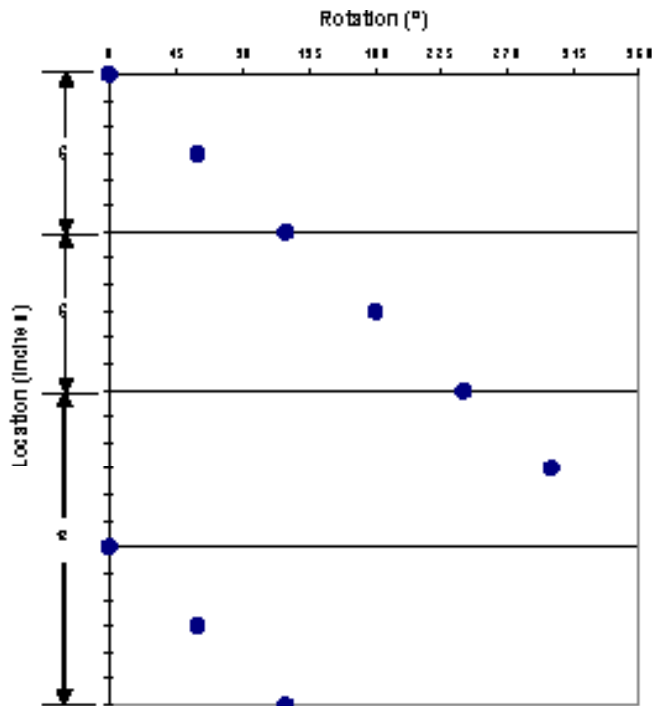
*Included in Shipping Assembly

**Teflon is a trademark of E.I. DuPont De Nemours.

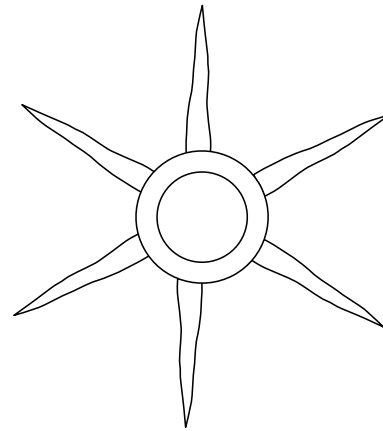


2-in. 4-spf 60°
VannGun™ System

2-in. 4-spf 60° VannGun™ System



Shot Pattern for 2-in
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	21 (9)	38 (17)	59 (27)	80 (36)	112 (51)
Spacer lb (kg)	16 (7)	27 (12)	44 (20)	60 (27)	84 (38)



2-in. 4-spf 90° VannGun™ System

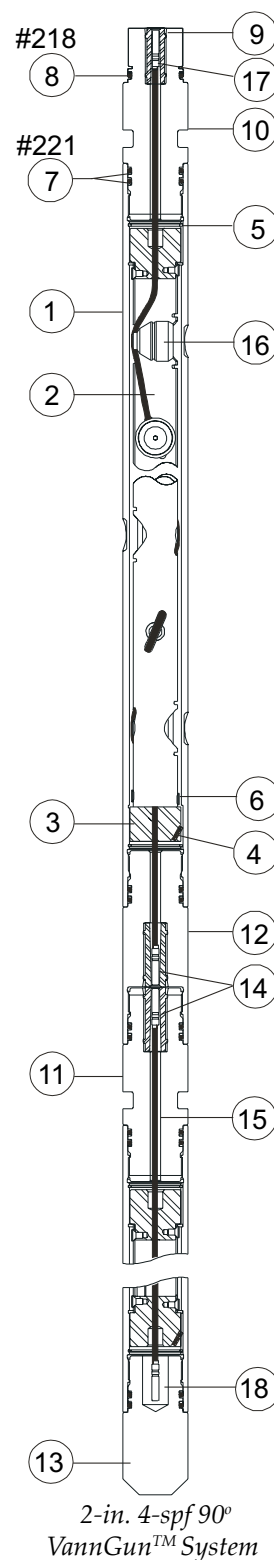
Item	Part No.	Description	Part No.
	Premium		Standard
	101235791	Shipping Assembly - 4 ft	N/A
	101235792	Shipping Assembly - 7 ft	
	101235793	Shipping Assembly - 11 ft	
	101235795	Shipping Assembly - 15 ft	
	101235796	Shipping Assembly - 21 ft	

*1	101235780	Gun, Scallop - 4 ft	N/A
	101235781	Gun, Scallop - 7 ft	
	101235782	Gun, Scallop - 11 ft	
	101235783	Gun, Scallop - 15 ft	
	101235784	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235786
	Tube, Charge Holder - 7 ft	102135787
	Tube, Charge Holder - 11 ft	101235788
	Tube, Charge Holder - 15 ft	101235789
	Tube, Charge Holder - 21 ft	101235790
*3	Fixture, Alignment	101234456
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101234459
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Aflas 90 Duro #221	101292869
	O-Ring, Backup #221	101227517
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100008010
11	Tandem, Grooved	100008008
12	Crossover, Box x Pin	100008009
13	Bull Plug	100008011
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 6.80 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.80 g HMX SDP	100008017
	Charge - 6.80 g HMX BH	101206246
	Charge - 6.90 g HNS DP	100157018
17	**Teflon Grommet	100157596
18	End Seal	100005251

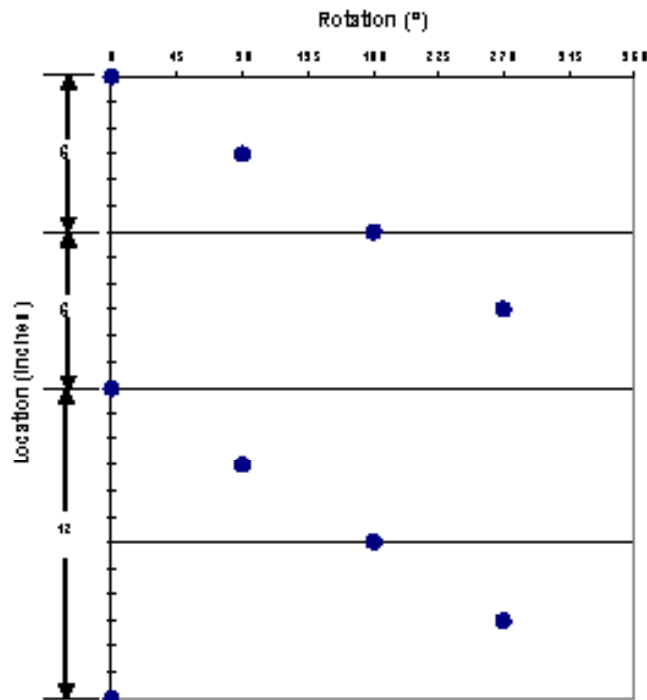
*Included in Shipping Assembly

**Teflon is a trademark of E.I. DuPont De Nemours.

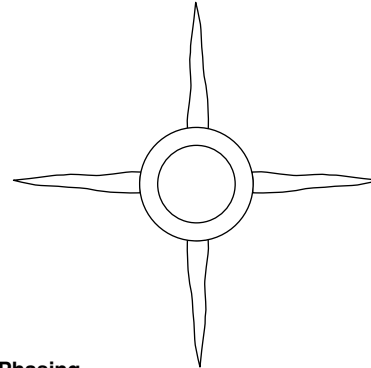


2-in. 4-spf 90°
VannGun™ System

2-in. 4-spf 90° VannGun™ System



Shot Pattern for 2-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	21 (9)	38 (17)	59 (27)	80 (36)	112 (51)
Spacer lb (kg)	16 (7)	27 (12)	44 (20)	60 (27)	84 (38)



2-in. 4-spf 180° VannGun™ System

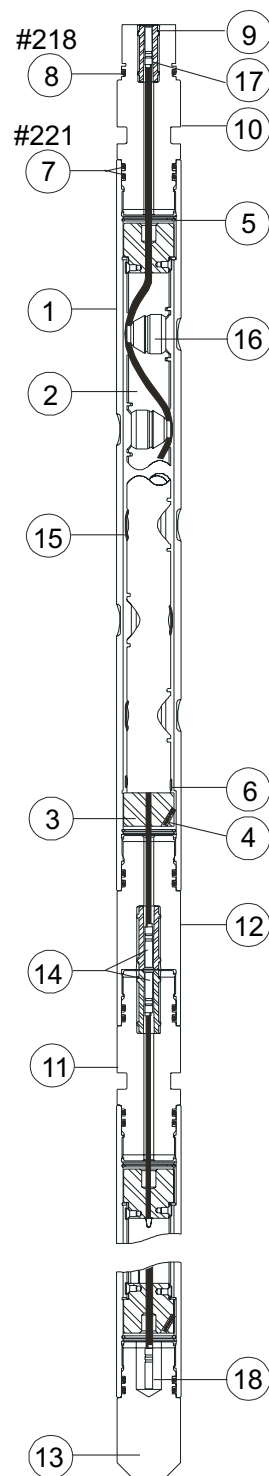
Item	Part No.	Description	Part No.
	Premium		Standard
	101235823	Shipping Assembly - 4 ft	N/A
	101235824	Shipping Assembly - 7 ft	
	101235825	Shipping Assembly - 11 ft	
	101235826	Shipping Assembly - 15 ft	
	101235827	Shipping Assembly - 21 ft	

*1	101235829	Gun, Scallop - 4 ft	N/A
	101235802	Gun, Scallop - 7 ft	
	101235803	Gun, Scallop - 11 ft	
	101235804	Gun, Scallop - 15 ft	
	101235805	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235807
	Tube, Charge Holder - 7 ft	101235808
	Tube, Charge Holder - 11 ft	101235809
	Tube, Charge Holder - 15 ft	101235810
	Tube, Charge Holder - 21 ft	101235811
*3	Fixture, Alignment	101234456
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101234459
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Aflas 90 Duro #221	101292869
	O-Ring, Backup #221	101227517
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100008010
11	Tandem, Grooved	100008008
12	Crossover, Box x Pin	100008009
13	Bull Plug	100008011
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 6.80 g HMX <i>Millennium</i> ™	101208224
	Charge - 6.80 g HMX SDP	100008017
	Charge - 6.80 g HMX BH	101206246
	Charge - 6.90 g HNS DP	100157018
17	**Teflon™ Grommet	100157596
18	End Seal	100005251

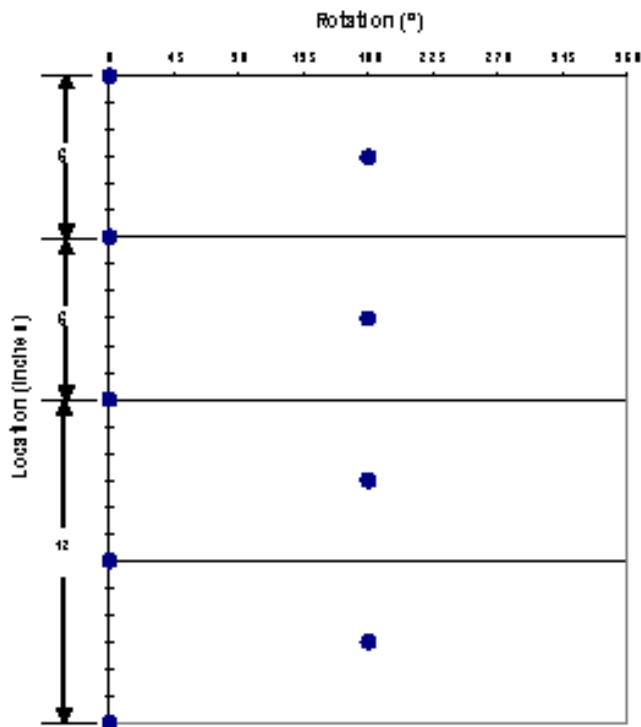
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.

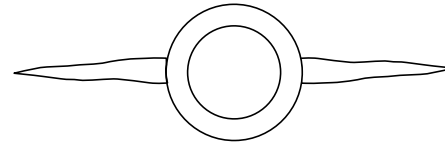


2-in. 4-spf 180°
VannGun™ System

2-in. 4-spf 180° VannGun™ System



Shot Pattern for 2-in.
4-spf 180° Phasing



180° Phasing
4 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	21 (9)	38 (17)	59 (27)	80 (36)	112 (51)
Spacer lb (kg)	16 (7)	27 (12)	44 (20)	60 (27)	84 (38)



2-in. 6-spf 60° VannGun™ System

2-in. 6-spf 60° VannGun™ System

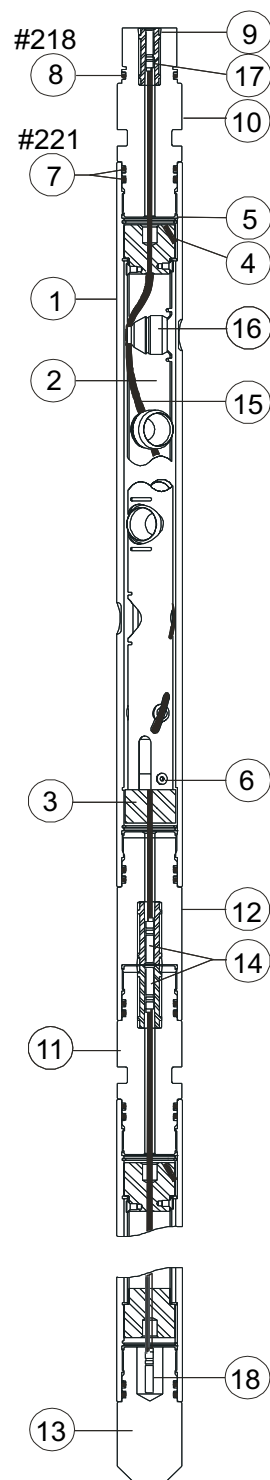
Item	Part No.	Description	Part No.
	Premium		Standard
	101234455	Shipping Assembly - 4 ft	N/A
	101234525	Shipping Assembly - 7 ft	
	101234526	Shipping Assembly - 11 ft	
	101235975	Shipping Assembly - 15 ft	

*1	101234529	Shipping Assembly - 21 ft	N/A
	101234143	Gun, Scallop - 4 ft	
	101234144	Gun, Scallop - 7 ft	
	101234145	Gun, Scallop - 11 ft	
	101235715	Gun, Scallop - 15 ft	
	101234147	Gun, Scallop - 21 ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101234197
	Tube, Charge Holder - 7ft	101234201
	Tube, Charge Holder - 11ft	101234202
	Tube, Charge Holder - 15ft	101235714
	Tube, Charge Holder - 21ft	101234205
*3	Fixture, Alignment	101234456
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101234459
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #221	100001953
	O-Ring, Viton 95 Duro #221	100064832
	O-Ring, Aflas 90 Duro #221	101292869
	O-Ring, Backup #221	101227517
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100008010
11	Tandem, Grooved	100008008
12	Crossover, Box x Pin	100008009
13	Bull Plug	100008011
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 6.8g HMX <i>Millennium</i>	101208224
	Charge - 6.75g HMX SDP	100008017
	Charge - 6.75g HMX BH	101206246
	Charge - 6.90g HNS DP	100157018
17	Teflon™ Grommet	100157596
18	End Seal	100005251

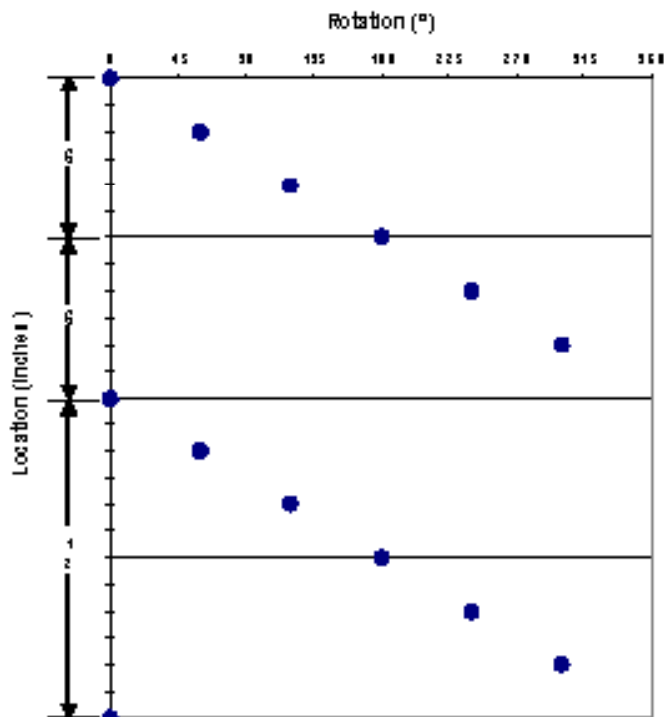
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.

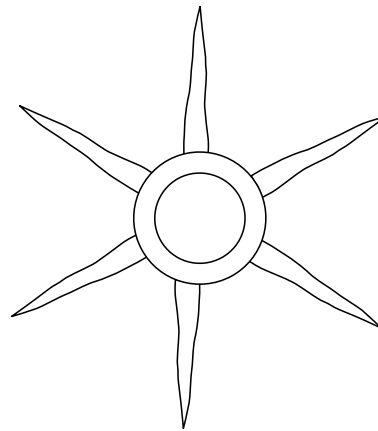


2-in. 6-spf 60°
VannGun™ System

2-in. 6-spf 60° VannGun™ System



Shot Pattern for 2-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	22 (10)	38 (17)	60 (27)	82 (37)	114 (52)
Spacer lb (kg)	15 (7)	26 (12)	42 (19)	57 (26)	79 (36)



2 1/2-in. 4-spf 0° VannGun™ System

2 1/2-in. 4-spf 0° VannGun™ System

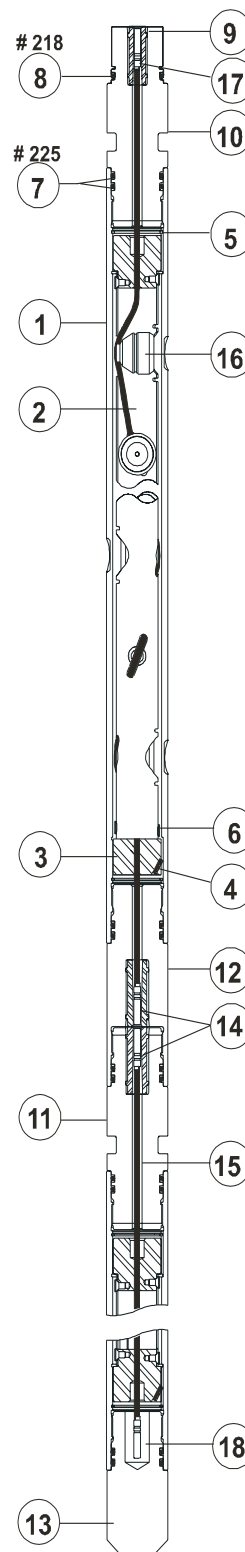
Item	Part No.	Description	Part No.
	Premium		Standard
	101235840	Shipping Assembly - 4ft	N/A
	101235857	Shipping Assembly - 7ft	
	101235858	Shipping Assembly - 11ft	
	101235859	Shipping Assembly - 15ft	
	101235860	Shipping Assembly - 21ft	

*1	101235800	Gun, Scallop - 4ft	N/A
	101235830	Gun, Scallop - 7ft	
	101235831	Gun, Scallop - 11ft	
	101235832	Gun, Scallop - 15ft	
	101235833	Gun, Scallop - 21ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235834
	Tube, Charge Holder - 7 ft	101235835
	Tube, Charge Holder - 11 ft	101235836
	Tube, Charge Holder - 15 ft	101325837
	Tube, Charge Holder - 21 ft	101235838
*3	Fixture, Alignment	101236334
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236797
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #225	100001996
	O-Ring, Viton 95 Duro #225	100003925
	O-Ring, Aflas 90 Duro #225	100005408
	O-Ring, Backup #225	101283247
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI-Top Sub)	100005277
	Insert, Alignment (Miniature AAI-Top Sub)	100005276
	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101212977
11	Tandem, Grooved	100014292
12	Crossover, Box x Pin	100014293
13	Bull Plug	101227806
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 11.0g RDX DP	100014493
	Charge - 11.0 g HMX Millennium™	101206251
17	**Teflon Grommet	100157596
18	End Seal	100005251

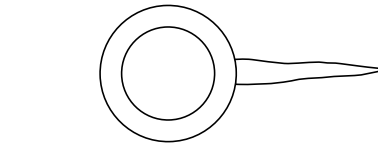
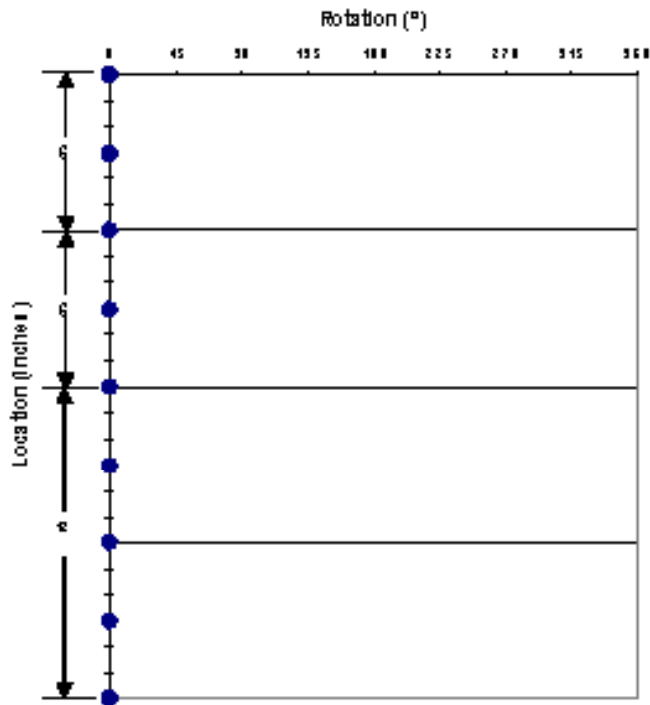
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.



2 1/2-in. 4-spf 0°
VannGun™ System

2 1/2-in. 4-spf 0° VannGun™ System



0° Phasing
1 Perforation Plane

4-spf 0° Phasing

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	55 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (40)	122 (55)



2 1/2-in. 4-spf 60° VannGun™ System

2 1/2-in. 4-spf 60° VannGun™ System

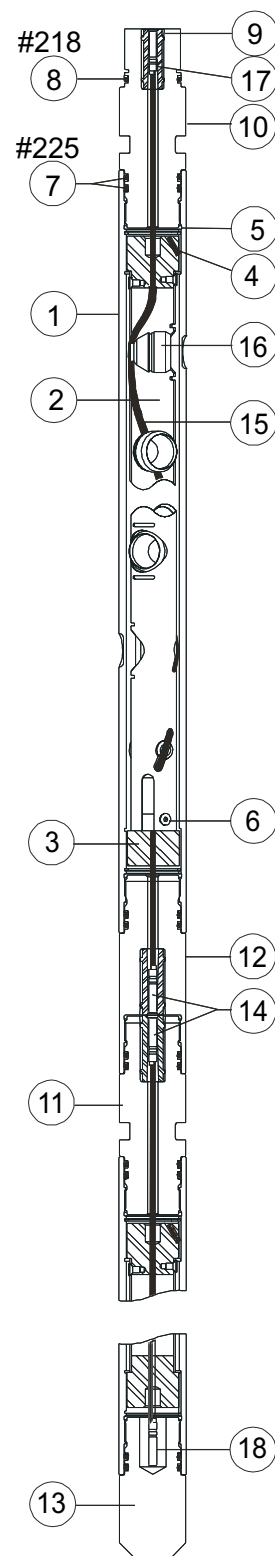
Item	Part No.	Description	Part No.
	Premium		Standard
	101280052	Shipping Assembly - 4ft	N/A
	101280053	Shipping Assembly - 7ft	
	101280054	Shipping Assembly - 11ft	
	101280055	Shipping Assembly - 15ft	
	101280056	Shipping Assembly - 21ft	

*1	101280043	Gun, Scallop - 4ft	N/A
	101280044	Gun, Scallop - 7ft	
	101280045	Gun, Scallop - 11ft	
	101280046	Gun, Scallop - 15ft	
	101280042	Gun, Scallop - 21ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101280778
	Tube, Charge Holder - 7 ft	101280780
	Tube, Charge Holder - 11 ft	101280781
	Tube, Charge Holder - 15 ft	101280782
	Tube, Charge Holder - 21 ft	101280783
*3	Fixture, Alignment	101236334
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236797
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #225	100001996
	O-Ring, Viton 95 Duro #225	100003925
	O-Ring, Aflas 90 Duro #225	100005408
	O-Ring, Backup #225	101283247
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI-Top Sub)	100005277
	Insert, Alignment (Miniature AAI-Top Sub)	100005276
	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101212977
11	Tandem, Grooved	100014292
12	Crossover, Box x Pin	100014293
13	Bull Plug	101227806
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 11.0 g RDX DP	100014493
	Charge - 11.0 g HMX Millennium™	101206251
17	**Teflon Grommet	100157596
18	End Seal	100005251

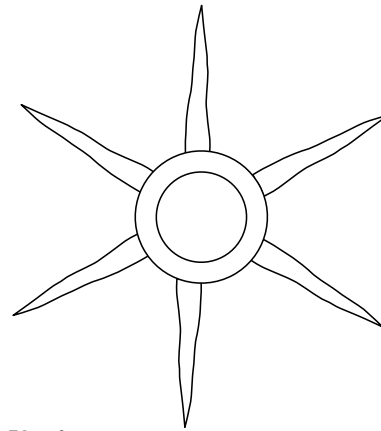
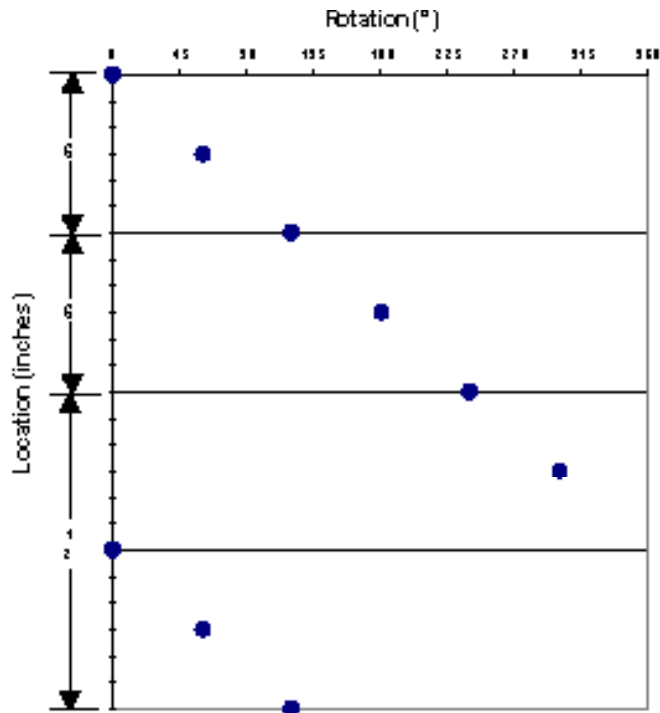
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.



2 1/2-in. 4-spf 60°
VannGun™ System

2 1/2-in. 4-spf 60° VannGun™ System



60° Phasing
6 Perforation Planes

4-spf 60° Phasing

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	55 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (40)	122 (55)



2 1/2 in. 4-spf 90° VannGun™ System

2 1/2-in. 4-spf 90° VannGun™ System

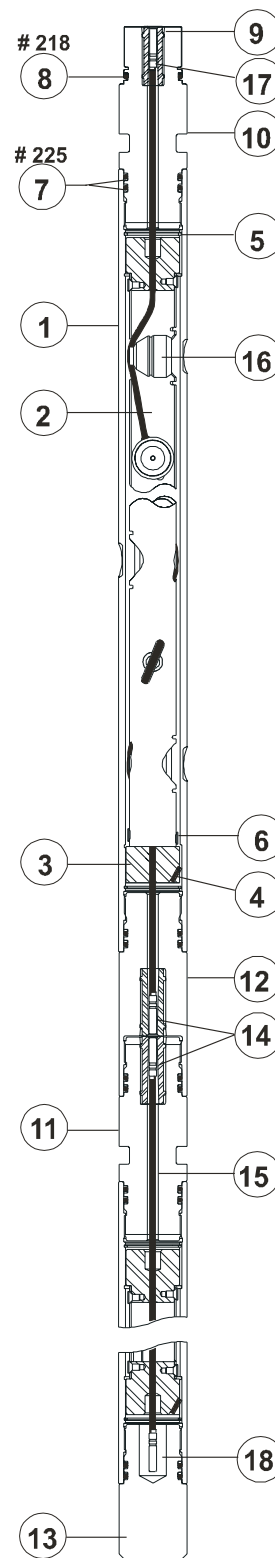
Item	Part No.	Description	Part No.
	Premium		Standard
	101280065	Shipping Assembly - 4ft	N/A
	101280066	Shipping Assembly - 7ft	
	101280067	Shipping Assembly - 11ft	
	101280068	Shipping Assembly - 15ft	
	101280069	Shipping Assembly - 21ft	

*1	101281455	Gun, Scallop - 4ft	N/A
	101281456	Gun, Scallop - 7ft	
	101281457	Gun, Scallop - 11ft	
	101251458	Gun, Scallop - 15ft	
	101281459	Gun, Scallop - 21ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101281502
	Tube, Charge Holder - 7 ft	101281503
	Tube, Charge Holder - 11 ft	101281504
	Tube, Charge Holder - 15 ft	101281505
	Tube, Charge Holder - 21 ft	101281506
*3	Fixture, Alignment	101236334
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236797
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #225	100001996
	O-Ring, Viton 95 Duro #225	100003925
	O-Ring, Aflas 90 Duro #225	100005408
	O-Ring, Backup #225	101283247
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI-Top Sub)	100005277
	Insert, Alignment (Miniature AAI-Top Sub)	100005276
	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101212977
11	Tandem, Grooved	100014292
12	Crossover, Box x Pin	100014293
13	Bull Plug	101227806
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 11.0g RDX DP	100014493
	Charge - 11.0g HMX Millennium™	101206251
17	**Teflon Grommet	100157596
18	End Seal	100005251

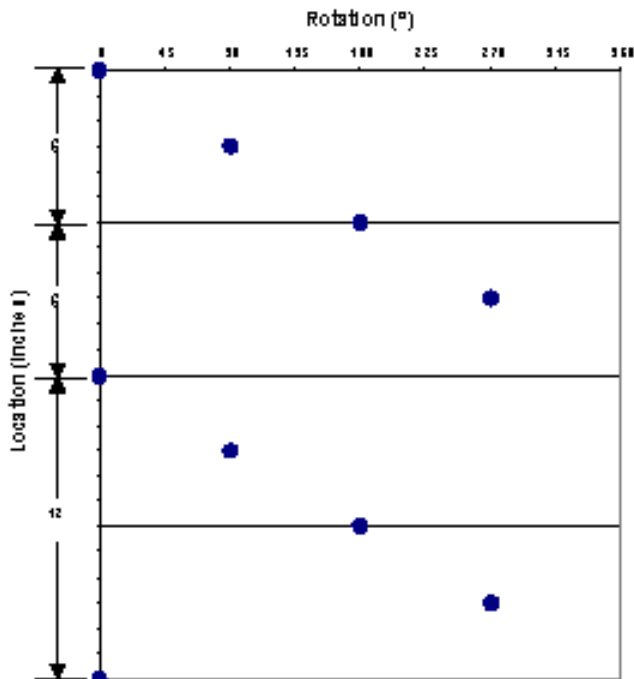
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**Teflon is a trademark of E.I. Dupont De Nemours.

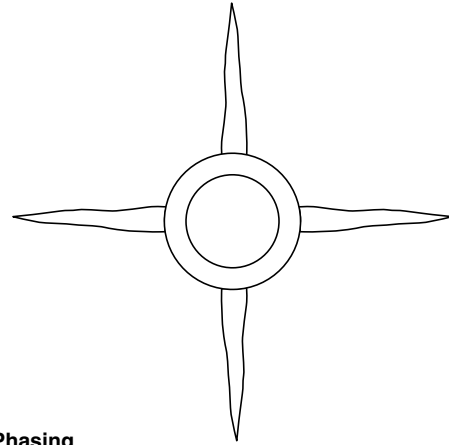


2 1/2-in. 6-spf 60° VannGun™ System

2 1/2 in. 4-spf 90° VannGun™ System



Shot Pattern for 2.5-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

Vanngun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	55 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (40)	122 (55)



2 1/2 in. 4-spf 180° VannGun™ System

2 1/2 in. 4-spf 180° VannGun™ System

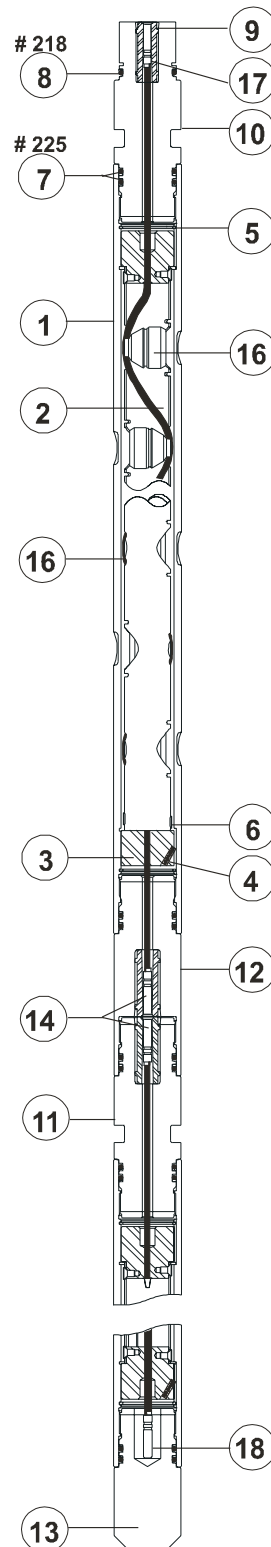
Item	Part No.	Description	Part No.
	Premium		Standard
	101235878	Shipping Assembly - 4ft	N/A
	101235880	Shipping Assembly - 7ft	
	101235881	Shipping Assembly - 11ft	
	101235883	Shipping Assembly - 15ft	
	101235884	Shipping Assembly - 21ft	

*1	101235863	Gun, Scallop - 4ft	N/A
	101235865	Gun, Scallop - 7ft	
	101235866	Gun, Scallop - 11ft	
	101235867	Gun, Scallop - 15ft	
	101235868	Gun, Scallop - 21ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101235870
	Tube, Charge Holder - 7 ft	101235872
	Tube, Charge Holder - 11 ft	101235873
	Tube, Charge Holder - 15 ft	101235875
	Tube, Charge Holder - 21 ft	101235877
*3	Fixture, Alignment	101236334
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236797
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #225	100001996
	O-Ring, Viton 95 Duro #225	100003925
	O-Ring, Aflas 90 Duro #225	100005408
	O-Ring, Backup #225	101283247
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI-Top Sub)	100005277
	Insert, Alignment (Miniature AAI-Top Sub)	100005276
	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101212977
11	Tandem, Grooved	100014292
12	Crossover, Box x Pin	100014293
13	Bull Plug	101227806
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 11.0 g RDX DP	100014493
	Charge - 11.0 g HMX Millennium™	101206251
17	**Teflon Grommet	100157596
18	End Seal	100005251

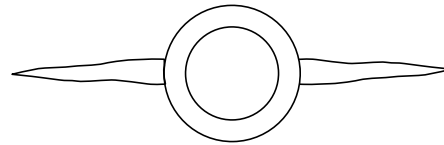
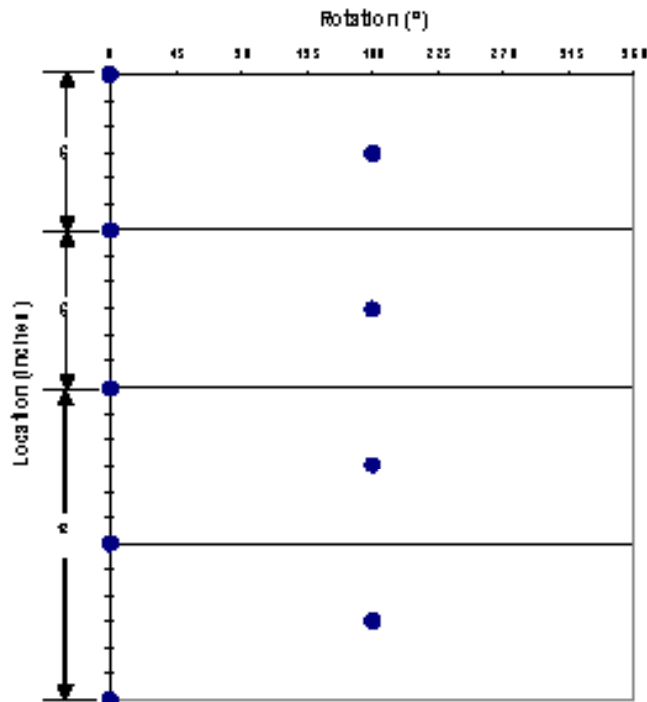
*Included in Shipping Assembly

**Teflon is a trademark of E.I. DuPont De Nemours.



2 1/2 in. 4-spf 180° VannGun™ System

2 1/2 in. 4-spf 180° VannGun™ System



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	32 (15)	55 (25)	87 (40)	118 (54)	165 (75)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (40)	122 (55)

2 1/2 in. 6-spf 60° VannGun™ System

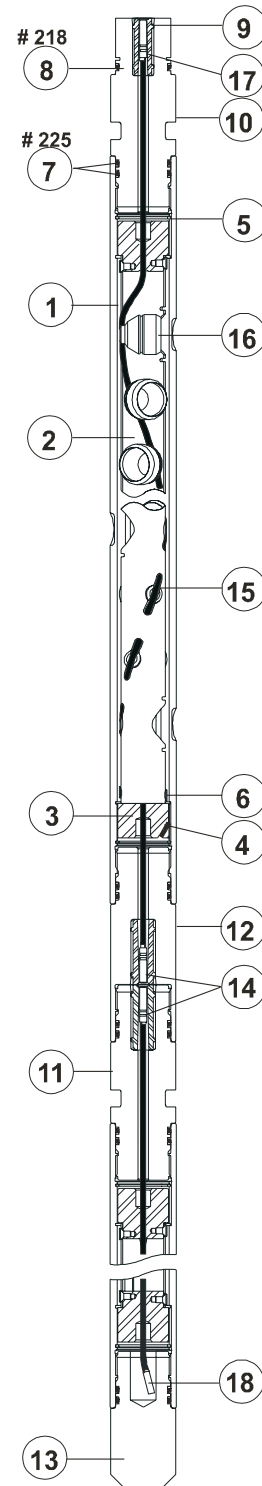
Item	Part No.	Description	Part No.
	Premium		Standard
	101235740	Shipping Assembly - 4ft	N/A
	101235743	Shipping Assembly - 7ft	
	101235744	Shipping Assembly - 11ft	
	101235745	Shipping Assembly - 15ft	
	101235747	Shipping Assembly - 21ft	

*1	101235728	Gun, Scallop - 4ft	N/A
	101235729	Gun, Scallop - 7ft	
	101235730	Gun, Scallop - 11ft	
	101235731	Gun, Scallop - 15ft	
	101235732	Gun, Scallop - 21ft	

Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101235733
	Tube, Charge Holder - 7ft	101235734
	Tube, Charge Holder - 11ft	101235736
	Tube, Charge Holder - 15ft	101235738
	Tube, Charge Holder - 21ft	101235739
*3	Fixture, Alignment	101236334
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236797
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #225	100001996
	O-Ring, Viton 95 Duro #225	100003925
	O-Ring, Aflas 90 Duro #225	100005408
	O-Ring, Backup #225	101283247
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI-Top Sub)	100005277
	Intert, Alignment (Miniature AAI-Top Sub)	100005276
	Insert, Alignment (PAI)	100005255
	Intert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101212977
11	Tandem, Grooved	100014292
12	Crossover, Box x Pin	100014293
13	Bull Plug	101227806
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 11.0g RDX DP	100014493
	Charge - 11.0g HMX <i>Millennium</i> ®	101206251
17	Teflon Grommet	100157596
18	End Seal	100005251

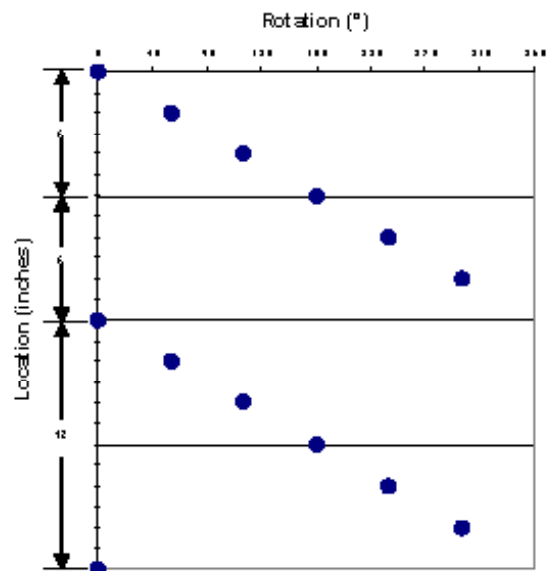
*Included in Shipping Assembly

**Teflon is a trademark of E.I. Dupont De Nemours.

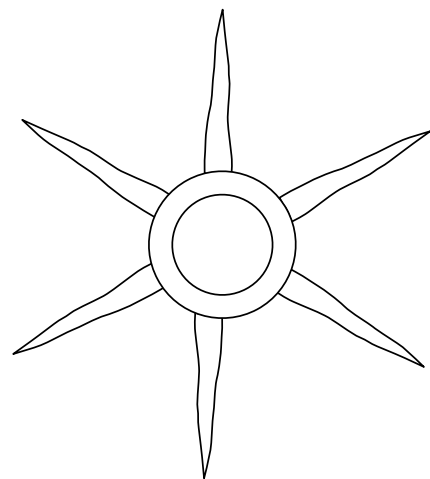


2 1/2 in. 6-spf 60°
VannGun™ System

2 1/2 in. 6-spf 60° VannGun™ System



Shot Pattern for 2.5-in.
5-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4 (1.22)	7 (2.13)	11 (3.35)	15 (4.57)	21 (6.4)
Loaded lb (kg)	34 (15)	59 (27)	93 (42)	122 (55)	178 (81)
Spacer lb (kg)	23 (11)	41 (18)	64 (29)	87 (40)	122 (55)



2 3/4-in. 4-spf 180° VannGun™ System

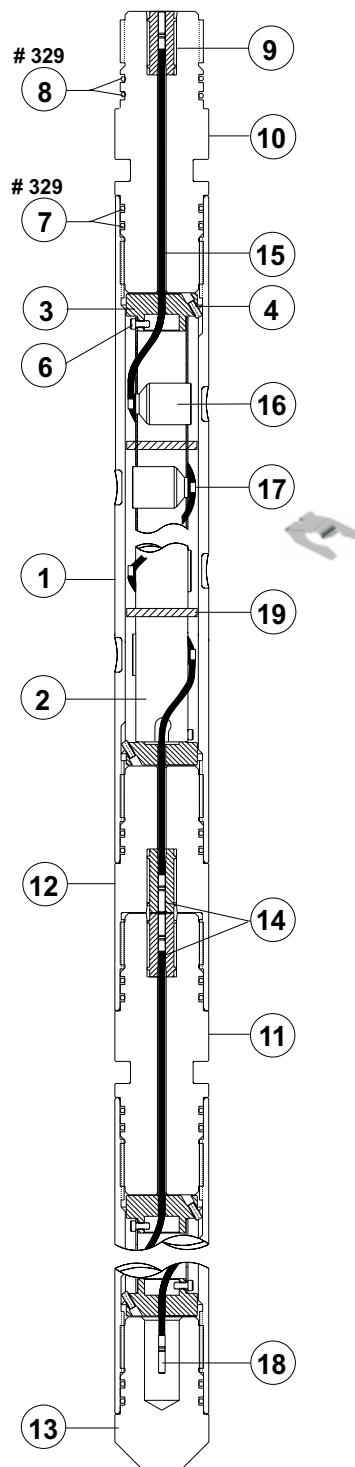
2 3/4 in. 4-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101217010	Shipping Assembly - 4 ft	N/A
	101217011	Shipping Assembly - 8 ft	
	101217012	Shipping Assembly - 11 ft	
	101217013	Shipping Assembly - 16 ft	
	101217014	Shipping Assembly - 22 ft	

*1	101217000	Gun, Scallop - 4 ft	N/A
	101217001	Gun, Scallop - 8 ft	
	101217002	Gun, Scallop - 11 ft	
	101217003	Gun, Scallop - 16 ft	
	101217004	Gun, Scallop - 22 ft	

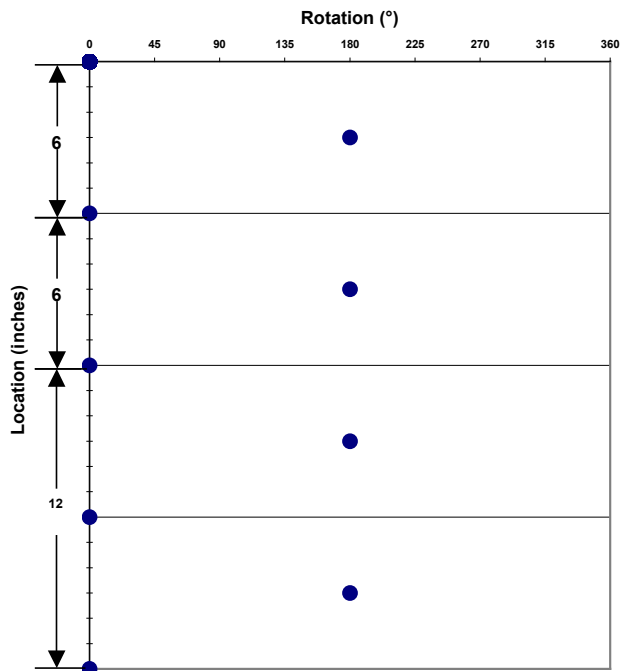
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101217005
	Tube, Charge Holder - 8ft	101217006
	Tube, Charge Holder - 11ft	101217007
	Tube, Charge Holder - 16ft	101217008
	Tube, Charge Holder - 22ft	101217009
*3	Fixture, Alignment	100158122
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Snap Ring	N/A
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 12.5g RDX DP	100005328
	Charge - 13.0g RDX DP/LD	100158220
	Charge - 12.5g HMX DP	100005329
	Charge - 13.0g HMX DP/LD	100157013
	Charge - 12.5g PYX/BRX DP	100005330
17	Charge Clip	100005477
18	End Seal	100005251
19	Charge Tube Centralizer	100158123

*Included in shipping assembly.

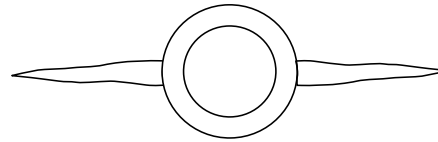


2 3/4 in. 4-spf 180°
VannGun™ System

2 3/4-in. 4-spf 180° VannGun™ System



Shot Pattern for 2.75-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.13)	11 ft (3.35)	16 ft (4.57)	22 ft (6.4)
Loaded lb (kg)	38 (17)	77 (35)	106 (48)	155 (70)	213 (97)
Spacer lb (kg)	31 (14)	62 (28)	85 (39)	124 (56)	171 (77)



2 3/4 in. 5-spf 180° VannGun™ System

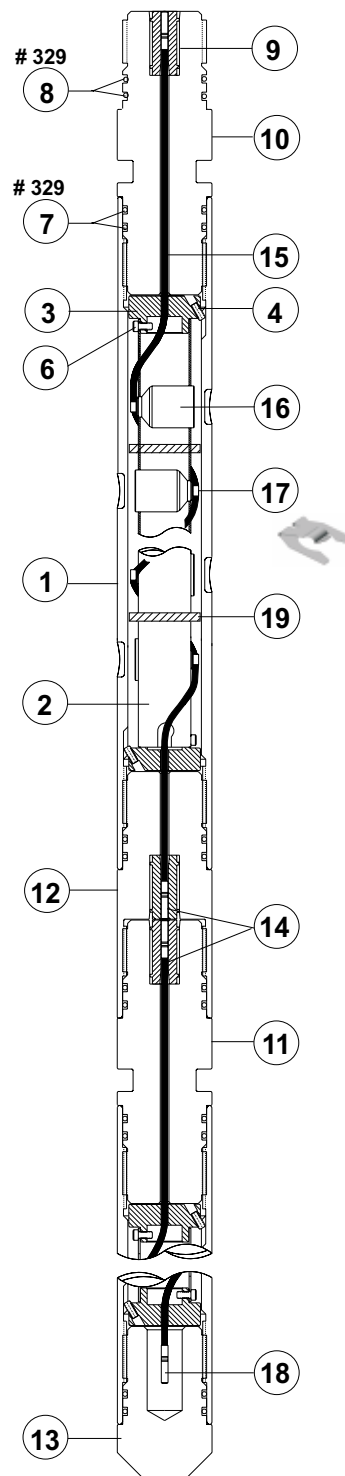
2 3/4 in. 5-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101216978	Shipping Assembly - 4 ft	N/A
	101216980	Shipping Assembly - 8 ft	
	101216981	Shipping Assembly - 11 ft	
	101216982	Shipping Assembly - 16 ft	
	101216984	Shipping Assembly - 22 ft	

*1	101216950	Gun, Scallop - 4 ft	N/A
	101216951	Gun, Scallop - 8 ft	
	101216952	Gun, Scallop - 11 ft	
	101216953	Gun, Scallop - 16 ft	
	101216954	Gun, Scallop - 22 ft	

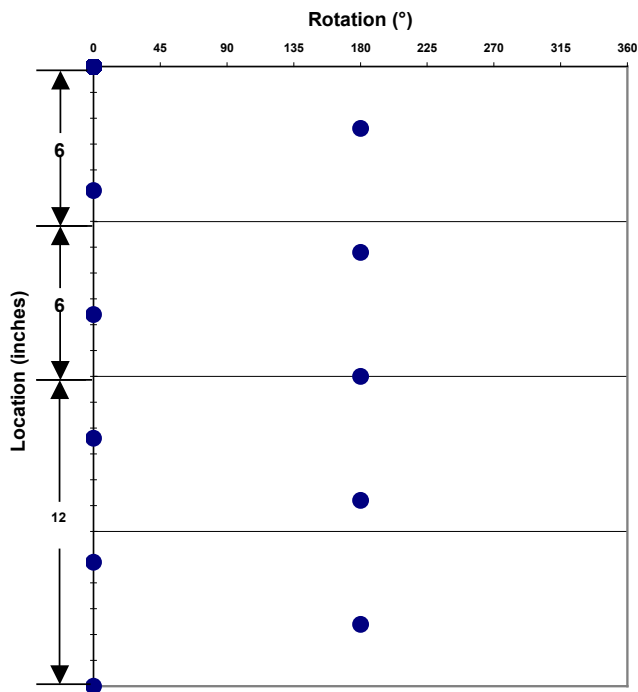
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101216955
	Tube, Charge Holder - 8 ft	101216956
	Tube, Charge Holder - 11 ft	101216957
	Tube, Charge Holder - 16 ft	101216958
	Tube, Charge Holder - 22 ft	101216959
*3	Fixture, Alignment	100158122
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Snap Ring	N/A
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 12.5 g RDX DP	100005328
	Charge - 13.0 g RDX DP/LD	100158220
	Charge - 12.5 g HMX DP	100005329
	Charge - 13.0 g HMX DP/LD	100157013
	Charge - 12.5 g PYX/BRX DP	100005330
17	Charge Clip	100005477
18	End Seal	100005251
19	Charge Tube Centralizer	100158123

*Included in shipping assembly.

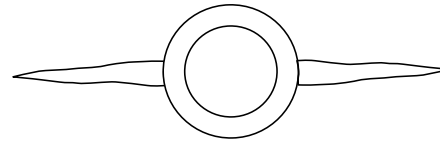


2 3/4-in. 5-spf 180°
VannGun™ System

2 3/4-in. 5-spf 180° VannGun™ System



Shot Pattern for 2.75-in.
5-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.13)	11 ft (3.35)	16 ft (4.57)	22 ft (6.4)
Loaded lb (kg)	39 (17)	80 (36)	110 (50)	161 (73)	222 (101)
Spacer lb (kg)	31 (14)	63 (29)	86 (39)	126 (57)	173 (78)

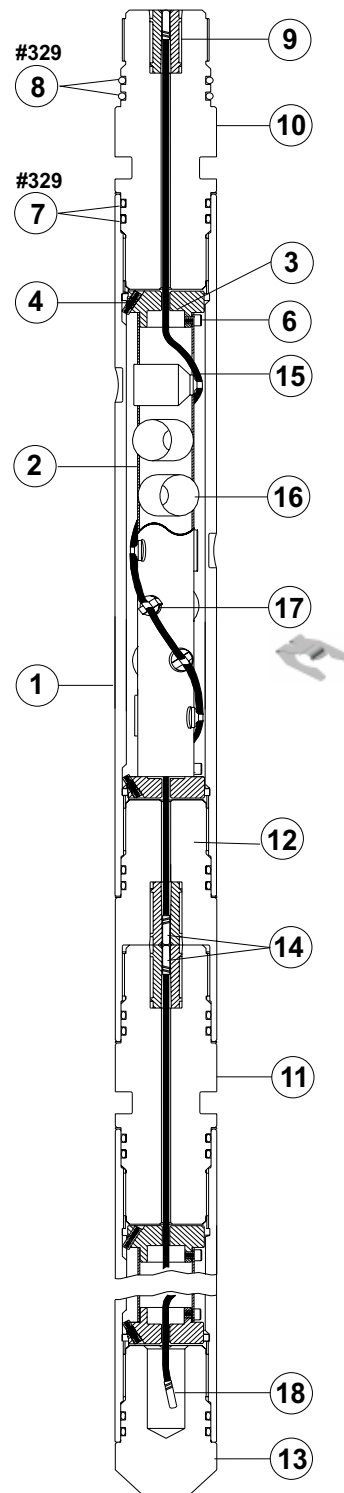
2 3/4 in. 6-spf 60° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100014186	Shipping Assembly - 4 ft	N/A
	100007986	Shipping Assembly - 7 ft	
	100005207	Shipping Assembly - 11 ft	
	100007987	Shipping Assembly - 21 ft	

*1	100014252	Gun, Scallop - 4 ft	N/A
	100156294	Gun, Scallop - 7 ft	
	100156295	Gun, Scallop - 11 ft	
	100156299	Gun, Scallop - 21 ft	

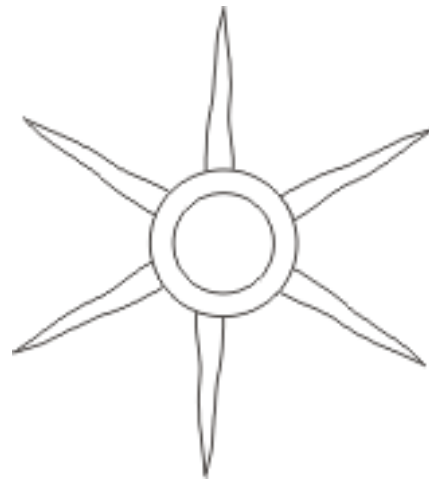
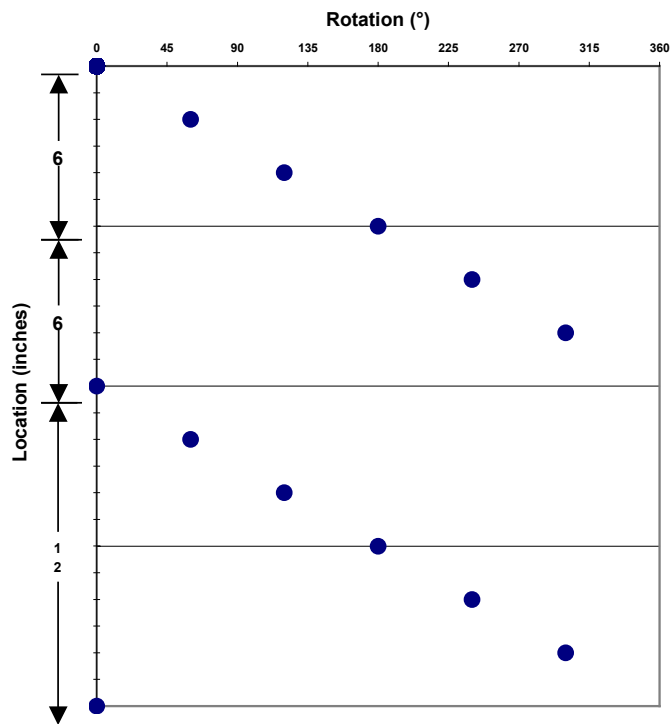
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100158118
	Tube, Charge Holder - 7 ft	100158119
	Tube, Charge Holder - 11 ft	100158120
	Tube, Charge Holder - 21 ft	100158121
*3	Fixture, Alignment	100158122
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Snap Ring	N/A
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100009538
	O-Ring, Backup #329	100157504
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 12.5g RDX DP	100005328
	Charge - 13.0g RDX DP/LD	100158220
	Charge - 12.5g HMX DP	100005329
	Charge - 13.0g HMX DP/LD	100157013
	Charge - 12.5g PYX/BRX DP	100005330
17	Charge Clip	100005477
18	End Seal	100005251

*Included in shipping assembly.



2 3/4-in. 6-spf 60°
VannGun™ System

2 3/4-in. 6-spf 60° VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	7 ft (2.13)	11 ft (3.35)	21 ft (6.4)
Loaded lb (kg)	40 (18)	71 (32)	113 (52)	220 (100)
Spacer lb (kg)	31 (14)	55 (25)	87 (39)	166 (75)



2 3/4-in. 6-spf 60° Lowside VannGun™ System

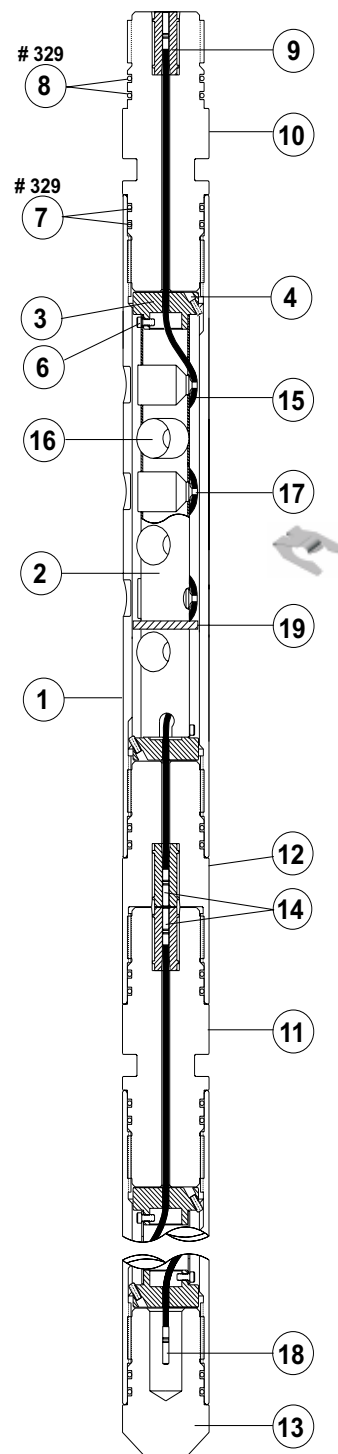
2 3/4-in. 6-spf 60° Lowside VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101271110	Shipping Assembly - 4 ft	N/A
	100005204	Shipping Assembly - 7 ft	
	100005205	Shipping Assembly - 11 ft	
	100005206	Shipping Assembly - 21 ft	

*1	101271107	Gun, Scallop - 4 ft	N/A
	100156301	Gun, Scallop - 7 ft	
	100156302	Gun, Scallop - 11 ft	
	100156303	Gun, Scallop - 21 ft	

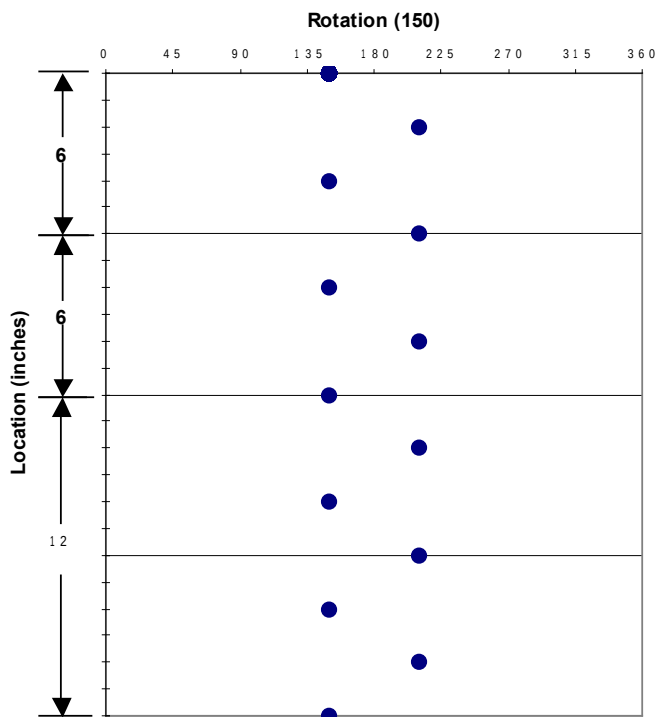
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101271109
	Tube, Charge Holder - 7 ft	100158124
	Tube, Charge Holder - 11 ft	100158125
	Tube, Charge Holder - 21 ft	100158126
*3	Fixture, Alignment	100158122
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Snap Ring	N/A
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 12.5g RDX DP	100005328
	Charge - 13.0g RDX DP/LD	100158220
	Charge - 12.5g HMX DP	100005329
	Charge - 13.0g HMX DP/LD	100157013
	Charge - 12.5g PYX/BRX DP	100005330
17	Charge Clip	100005477
18	End Seal	100005251
19	Charge Tube Centralizer	100158123

*Included in shipping assembly.

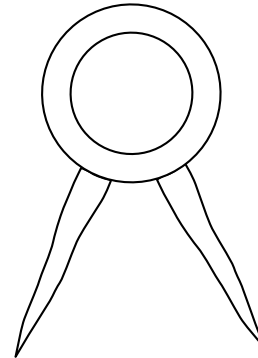


2 3/4-in. 6-spf 60° Lowside VannGun™ System

2 3/4-in. 6-spf 60° Lowside VannGun™ System



Shot Pattern for 2.75-in.
6-spf 60° Phasing



60° Phasing
2 Perforation Planes Lowside

VannGun™ Weights

Length ft (m)	4ft (1.22)	7 ft (2.13)	11 ft (3.35)	21 ft (6.4)
Loaded lb (kg)	40 (18)	71 (32)	113 (52)	220 (100)
Spacer lb (kg)	31 (14)	55 (25)	87 (39)	166 (75)



2 3/4-in. 6-spf 60° Lowside Millennium™ VannGun™ System

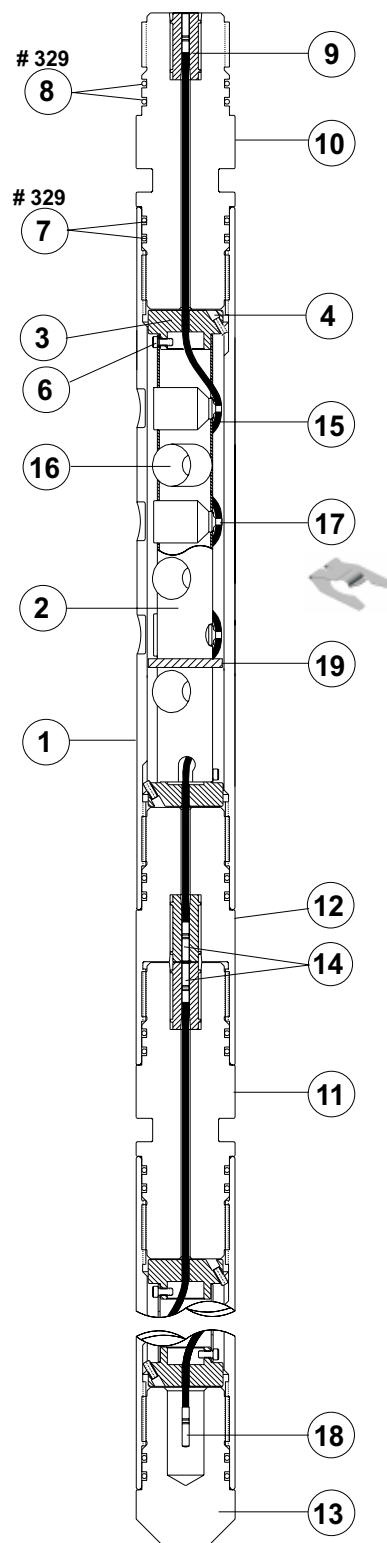
2 3/4-in. 6-spf 60° Lowside Millennium™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101284945	Shipping Assembly - 4 ft	N/A
	101284947	Shipping Assembly - 8 ft	
	101284948	Shipping Assembly - 11 ft	
	101284949	Shipping Assembly - 16 ft	
	101284950	Shipping Assembly - 22 ft	

*1	101284960	Gun, Scallop - 4 ft	N/A
	101284962	Gun, Scallop - 8 ft	
	101284963	Gun, Scallop - 11ft	
	101284964	Gun, Scallop - 16 ft	
	101284965	Gun, Scallop - 22 ft	

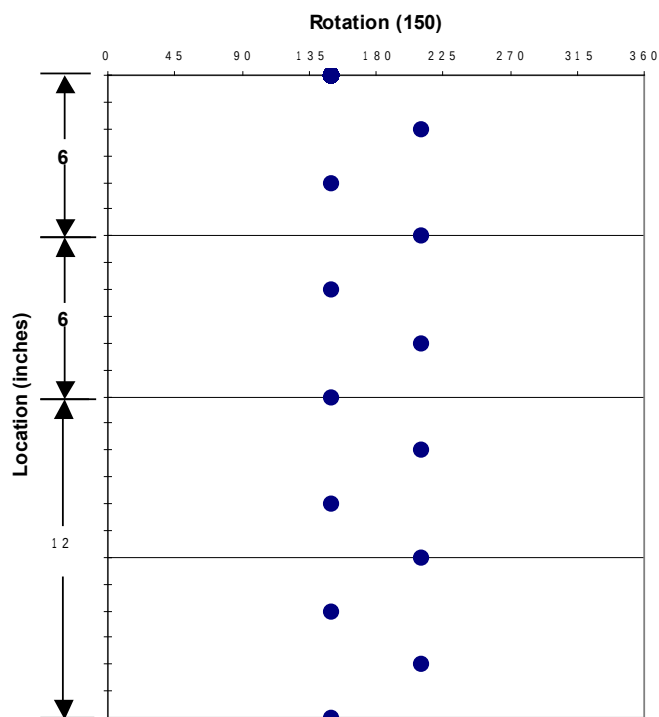
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101216015
	Tube, Charge Holder - 8 ft	101216016
	Tube, Charge Holder - 11ft	101216017
	Tube, Charge Holder - 16 ft	101216018
	Tube, Charge Holder - 22 ft	101216019
*3	Fixture, Alignment	101234416
*4	Screw, Set 0.25"-20 D x 0.50" L	100028808
*5	Snap Ring	N/A
*6	Screw, Button Head 0.25"-20 D x 0.38" L	100110942
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 15.0g HMX <i>Millennium</i>	101233817
17	Charge Clip	100157947
18	End Seal	100005251

*Included in shipping assembly.

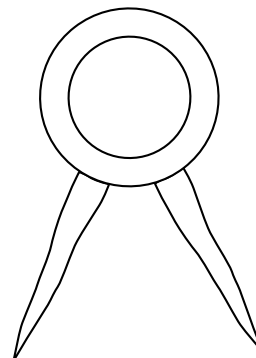


2 3/4-in. 6-spf 60° Lowside Millennium™ VannGun™ System

2 3/4-in. 6-spf 60° Lowside *Millennium*™ VannGun™ System



Shot Pattern for 2.75-in.
6-spf 60 Phasing



60° Phasing
2 Perforation Planes Lowside

VannGun™ Weights

Length ft (m)	4ft (1.22)	7 ft (2.13)	11 ft (3.35)	21 ft (6.4)
Loaded lb (kg)	40 (18)	71 (32)	113 (52)	220 (100)
Spacer lb (kg)	31 (14)	55 (25)	87 (39)	166 (75)



2 3/4-in. 6-spf 60° SDP VannGun™ System

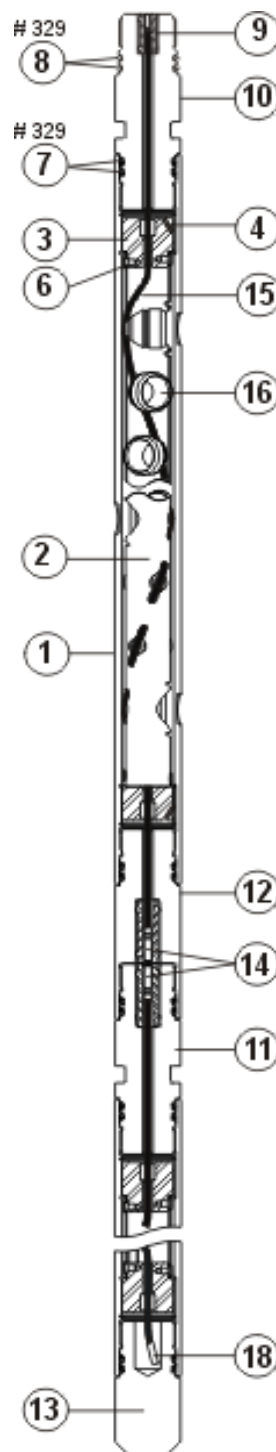
2 3/4-in. 6-spf 60° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155853	Shipping Assembly - 4 ft	N/A
	101005816	Shipping Assembly - 8 ft	
	100010400	Shipping Assembly - 11 ft	
	101005819	Shipping Assembly - 16 ft	
	100155854	Shipping Assembly - 22 ft	

*1	100156320	Gun, Scallop - 4 ft	N/A
	101005817	Gun, Scallop - 8 ft	
	100156321	Gun, Scallop - 11 ft	
	101005820	Gun, Scallop - 16 ft	
	100156322	Gun, Scallop - 22 ft	

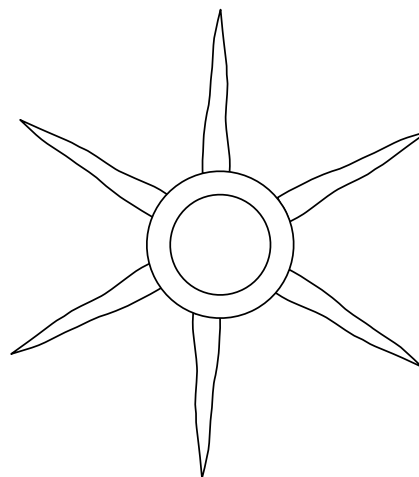
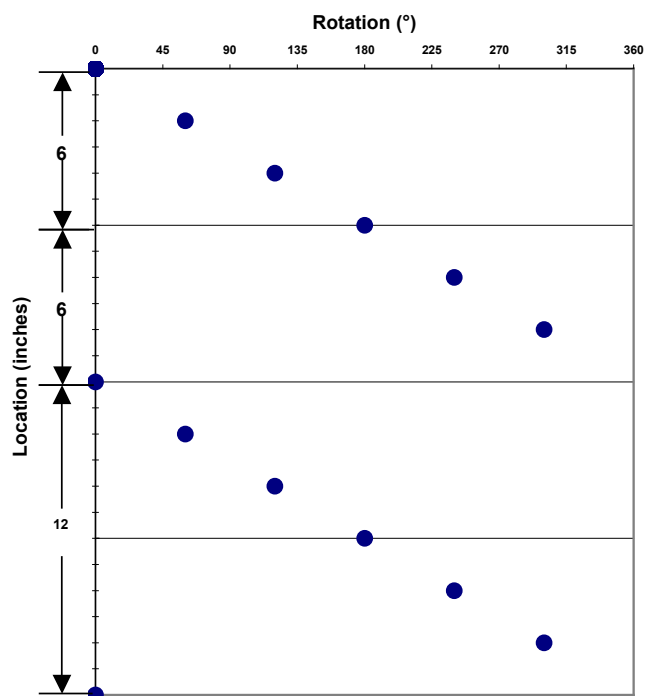
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156523
	Tube, Charge Holder - 8 ft	101005818
	Tube, Charge Holder - 11 ft	100156524
	Tube, Charge Holder - 16 ft	101005821
	Tube, Charge Holder - 22 ft	100156525
*3	Fixture, Alignment SDP	100156526
*4	Screw, Set 0.25"-20 D x 0.50" L	100028808
*5	Snap Ring	N/A
*6	Screw, Button Head 0.25"-20 D x 0.38" L	100110942
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 14.7g RDX SDP	100157026
	Charge - 14.7g RDX BH	101206793
	Charge - 14.7g HMX SDP	100010399
	Charge - 15.0 g HNS SDP	101251723
	Charge - 16.0g PYX/BRX SDP	101201843
17	Charge Clip	N/A
18	End Seal	100005251

*Included in shipping assembly.



2 3/4-in. 6-spf 60° SDP
VannGun™ System

2 3/4-in. 6-spf 60° SDP VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	41 (19)	84 (38)	116 (53)	169 (77)	235 (108)
Spacer lb (kg)	32 (14)	64 (29)	87 (40)	127 (58)	175 (79)

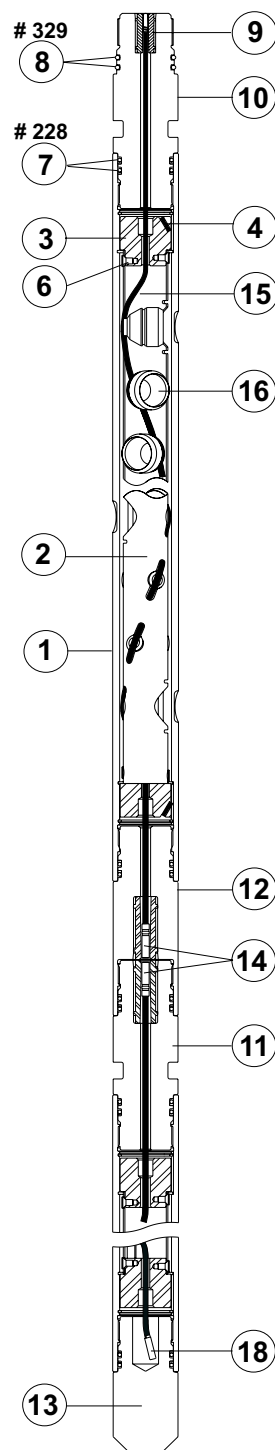


2 7/8-in. 4-spf 60° Vann Gun™ System

2 7/8-in. 4-spf 60° VannGun™ System

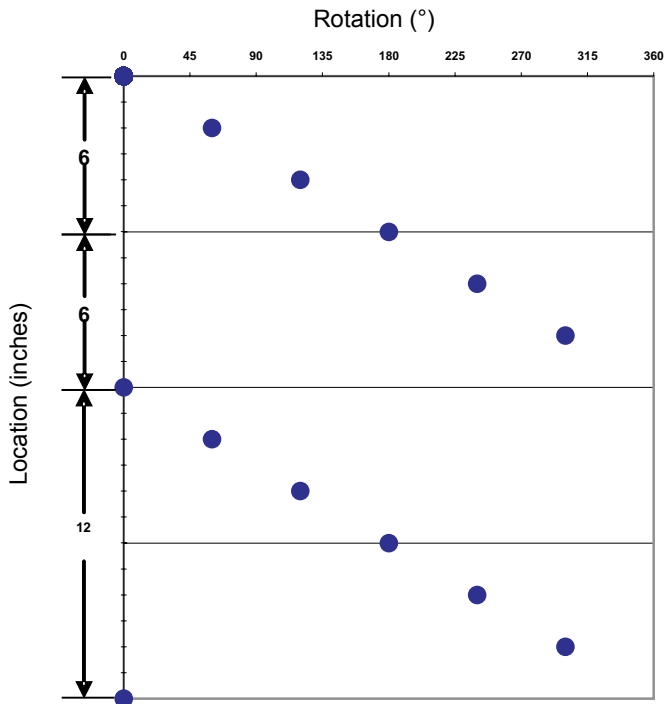
Item	Description	Part No.
	Shipping Assembly - 4 ft	101434792
	Shipping Assembly - 7 ft	101434796
	Shipping Assembly - 11 ft	101434801
	Shipping Assembly - 15 ft	101434814
	Shipping Assembly - 21 ft	101434833
*1	Gun, Scallop - 4 ft	101434793
	Gun, Scallop - 7 ft	101434798
	Gun, Scallop - 11 ft	101434802
	Gun, Scallop - 15 ft	101434831
	Gun, Scallop - 21 ft	101434834
*2	Tube, Charge Holder - 4 ft	101434794
	Tube, Charge Holder - 7 ft	101434799
	Tube, Charge Holder - 11 ft	101434803
	Tube, Charge Holder - 15 ft	101434832
	Tube, Charge Holder - 21 ft	101434835
*3	Fixture, Alignment	101244584
*4	Snap Ring	101246147
*5	Screw, Cap #10 x 0.38" L	101236979
*6	Screw, Set 0.25" D x 0.625" L	100007783
7	Firing Head Crossover - Vann™	101245523
8	Firing Head Crossover - GO® Style	101283058
9	Bull Plug	101246199
10	Tandem, Grooved	101244714
11	O-Ring, #228 Buna, 90 Duro	100001999
	O-Ring, #228 Viton, 95 Duro	100012311
	Backup, O-Ring #228	101283258
12	O-Ring, #329 Buna, 90 Duro	100001957
	O-Ring, #329 Viton, 95 Duro	100009538
	Backup, O-Ring #329	100005401
*13	Kit, Booster Hardware	101232002
14	Charge - 15 g MILLENNIUM™ HMX	101233817
15	Detonating Cord	See Appendix A
16	Bi-Directional Booster	See Appendix A
17	Charge Clip	100157947
18	Alignment Insert	100005255
19	End Seal	100005251

*Included in shipping assembly.

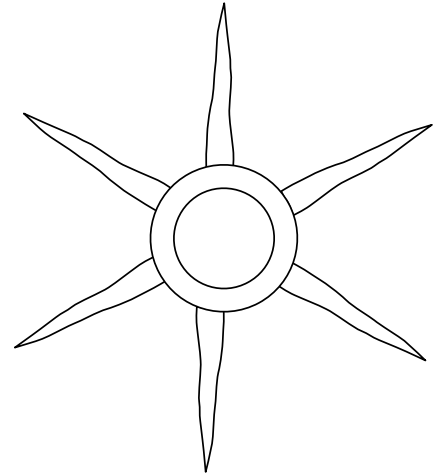


2 7/8-in. 4-spf 60°
VannGun™ System

2 7/8-in. 4-spf 60° VannGun™ System



Shot Pattern for 2.875-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights-lb (kg)

Length	4ft	8 ft	11 ft	16 ft	22 ft
Loaded	39	80	110	161	222
	(17)	(36)	(50)	(73)	(101)
Spacer	31	63	86	126	173
	(14)	(29)	(39)	(57)	(78)



2 7/8-in. 6-spf 60° Millennium Vann Gun™ System

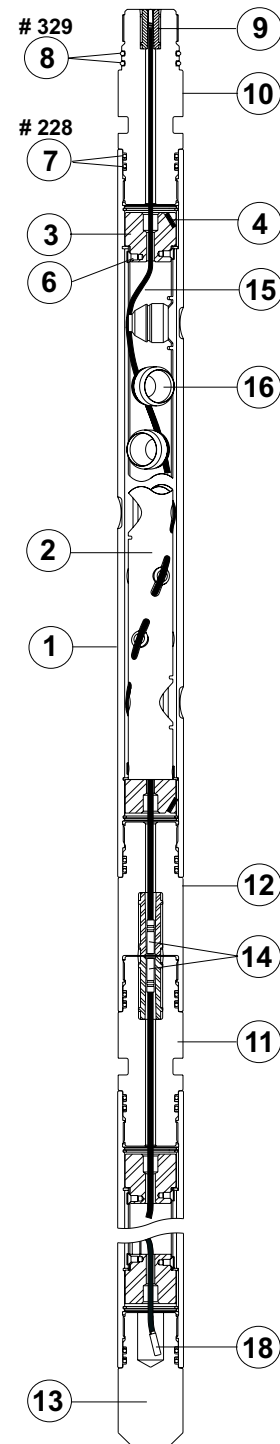
2 7/8-in. 6-spf 60° Millenium VannGun™ System

Item	Part No. Premium	Description	Part No.
	101367065	Shipping Assembly - 4ft	N/A
	101367068	Shipping Assembly - 8ft	
	101367069	Shipping Assembly - 11ft	
	101367070	Shipping Assembly - 16ft	
	101367071	Shipping Assembly - 22ft	

*1	101268179	Gun, Scallop - 4ft	N/A
	101268181	Gun, Scallop - 8ft	
	101268183	Gun, Scallop - 11ft	
	101268185	Gun, Scallop - 16ft	
	101268186	Gun, Scallop - 22ft	

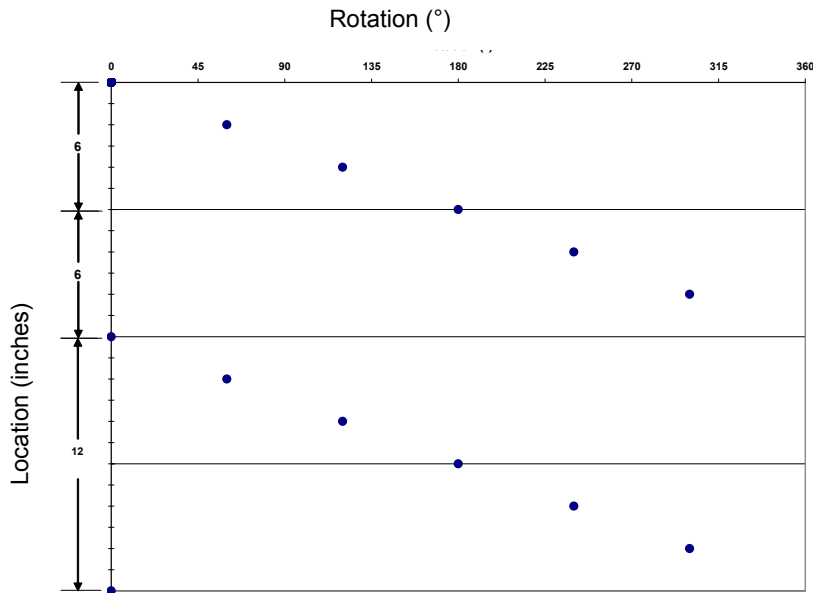
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101367073
	Tube, Charge Holder - 8ft	101367076
	Tube, Charge Holder - 11ft	101367078
	Tube, Charge Holder - 16ft	101367081
	Tube, Charge Holder - 22ft	101367083
*3	Fixture, Alignment SDP	101371892
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Snap Ring	N/A
*6	Screw, Cap 0.25"-20 D x .50" L	101258556
7	O-Ring, Buna 90 Duro #228	100001999
	O-Ring, Viton 95 Duro #228	100012311
	O-Ring, Aflas 90 Duro #228	101294803
	O-Ring, Backup #228	101383258
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Instert, Alignment (AAI)	100005222
10	Tandem, Grooved	101245523
11	Tandem, Grooved	101268301
12	Crossover, Box x Pin	101281945
13	Bull Plug	101268304
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 18.5g HNS Millennium	101388407
17	Charge Clip	N/A
18	End Seal	100005251

*Included in shipping assembly.

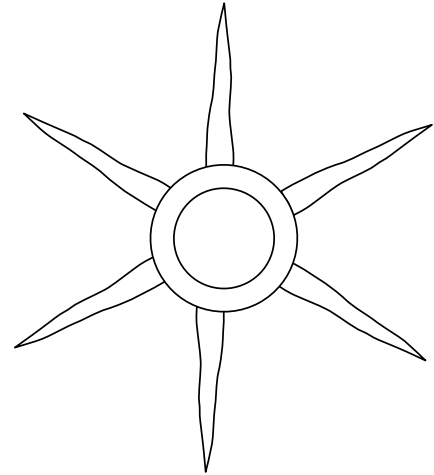


2 7/8-in. 6-spf 60° Millennium VannGun™ System

2 7/8-in. 6-spf 60° Millennium VannGun™ System



Shot Pattern for 2.875-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights-lb (kg)

Length	4ft	8 ft	11 ft	16 ft	22 ft
Loaded	39	80	110	161	222
	(17)	(36)	(50)	(73)	(101)
Spacer	31	63	86	126	173
	(14)	(29)	(39)	(57)	(78)



2 3/4-in. 6-spf 60° Millennium™ VannGun™ System

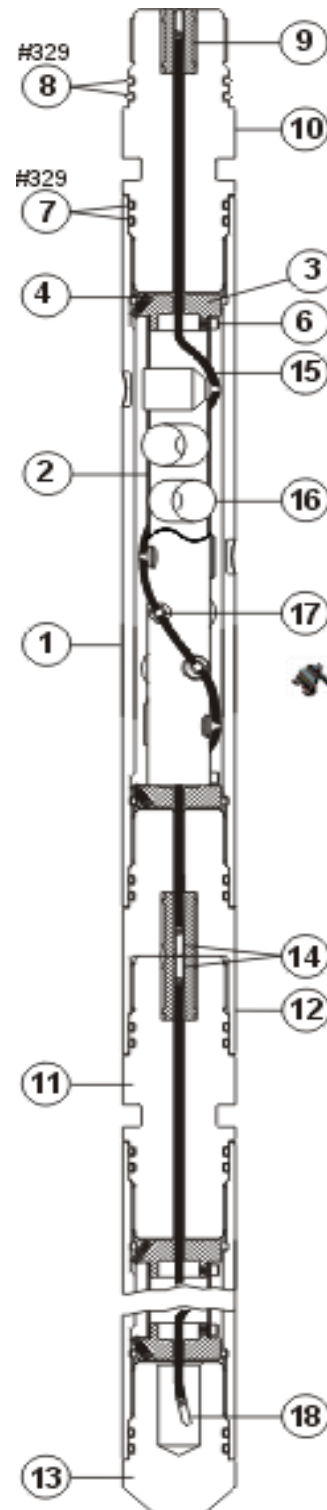
2 3/4-in. 6-spf 60° Millennium™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101234432	Shipping Assembly - 4 ft	N/A
	101234433	Shipping Assembly - 8 ft	
	101234435	Shipping Assembly - 11 ft	
	101234437	Shipping Assembly - 16 ft	
	101234438	Shipping Assembly - 22 ft	

*1	100156320	Gun, Scallop - 4 ft	N/A
	101005817	Gun, Scallop - 8 ft	
	100156321	Gun, Scallop - 11 ft	
	101005820	Gun, Scallop - 16 ft	
	100156322	Gun, Scallop - 22 ft	

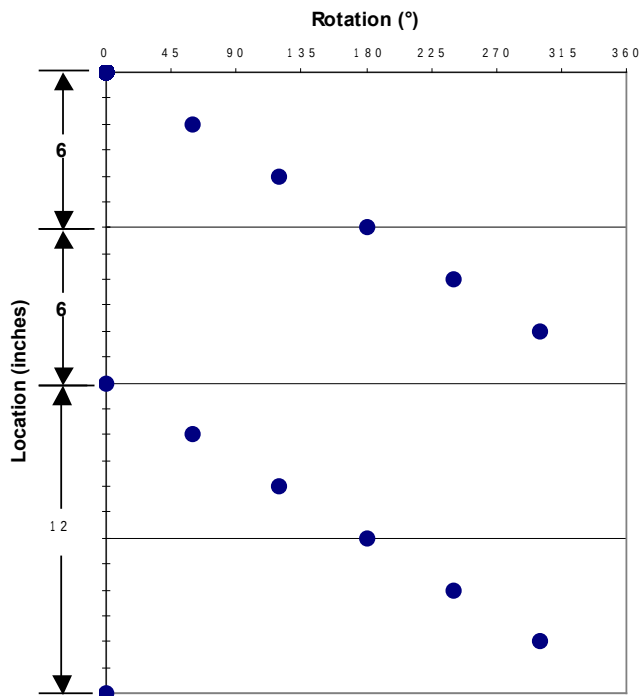
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101234404
	Tube, Charge Holder - 8 ft	101234406
	Tube, Charge Holder - 11 ft	101234407
	Tube, Charge Holder - 16 ft	101234408
	Tube, Charge Holder - 22 ft	101234409
*3	Fixture, Alignment	101234416
*4	Screw, Set 0.25"-20 D x 0.50" L	100028808
*5	Snap Ring	N/A
*6	Screw, Button Head 0.25"-20 D x 0.38" L	100110942
7	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005261
11	Tandem, Grooved	100005261
12	Crossover, Box x Pin	100005262
13	Bull Plug	100005267
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 15.0g HMX Millennium™	101233817
17	Charge Clip	100157947
18	End Seal	100005251

*Included in shipping assembly.

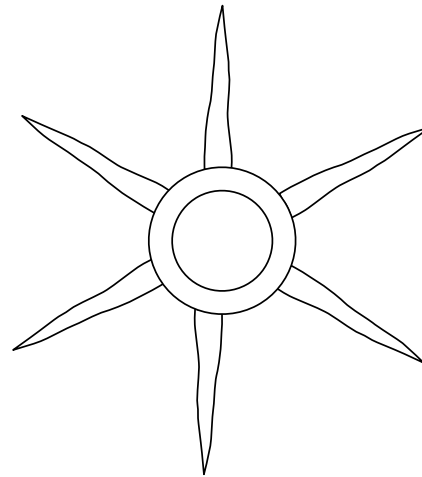


2 3/4-in. 6-spf 60° Millennium™ VannGun™ System

2 3/4-in. 6-spf 60° Millennium™ VannGun™ System



Shot Pattern for 2.75-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer lb (kg)	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)



2 7/8-in. 6-spf 60° Millennium™ VannGun™ System

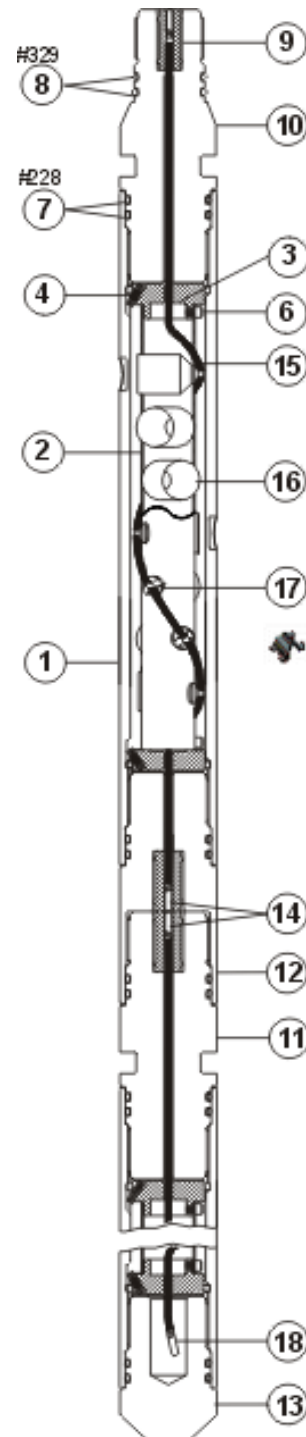
2 7/8-in. 6-spf 60° Millennium™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101268193	Shipping Assembly - 4ft	N/A
	101268194	Shipping Assembly - 8ft	
	101268195	Shipping Assembly - 11ft	
	101268196	Shipping Assembly - 16ft	
	101268197	Shipping Assembly - 22ft	

*1	101268179	Gun, Scallop - 4ft	N/A
	101268181	Gun, Scallop - 8ft	
	101268183	Gun, Scallop - 11ft	
	101268185	Gun, Scallop - 16ft	
	101268186	Gun, Scallop - 22ft	

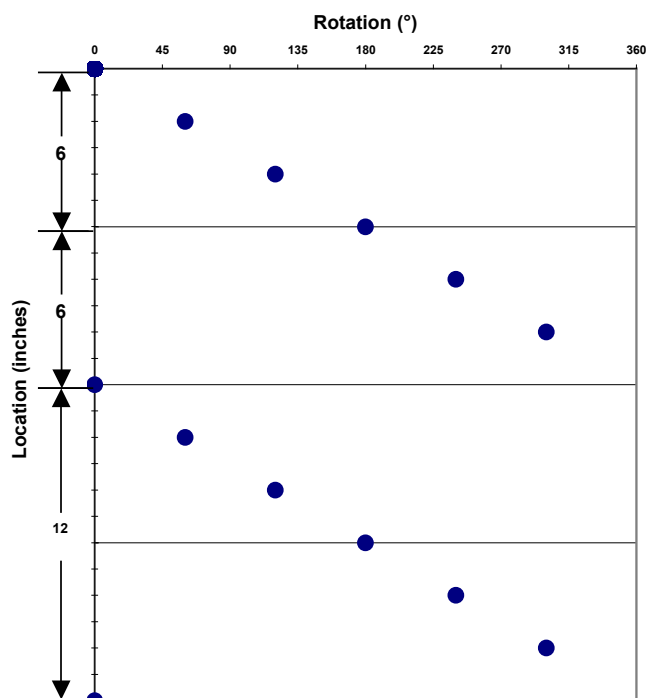
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101234404
	Tube, Charge Holder - 8ft	101234406
	Tube, Charge Holder - 11ft	101234407
	Tube, Charge Holder - 16ft	101234408
	Tube, Charge Holder - 22ft	101234409
*3	Fixture, Alignment	101268280
*4	Screw, Set 0.25"-20 D x 0.50" L	100028808
*5	Snap Ring	N/A
*6	Screw, Button Head 0.25"-20 D x 0.38" L	100110942
7	O-Ring, Buna 90 Duro #228	100001999
	O-Ring, Viton 95 Duro #228	100012311
	O-Ring, Aflas 90 Duro #228	N/A
	O-Ring, Backup #228	101283258
8	O-Ring, Buna 90 Duro #329	100001957
	O-Ring, Viton 95 Duro #329	100009538
	O-Ring, Aflas 90 Duro #329	100157504
	O-Ring, Backup #329	100005401
9	Insert, Alignment (PAI)	100005255
	Instert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101245523
11	Tandem, Grooved	101268301
12	Crossover, Box x Pin	101281945
13	Bull Plug	101268304
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 15.0g HMX Millennium®	101233817
17	Charge Clip	100157947
18	End Seal	100005251

*Included in shipping assembly.

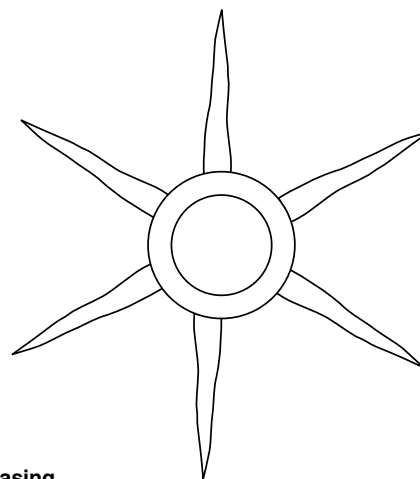


2 7/8-in. 6-spf 60°
Millennium™ VannGun™ System

2 7/8-in. 6-spf 60° Millennium™ VannGun™ System



Shot Pattern for 2.875-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights-lb (kg)

Length	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)



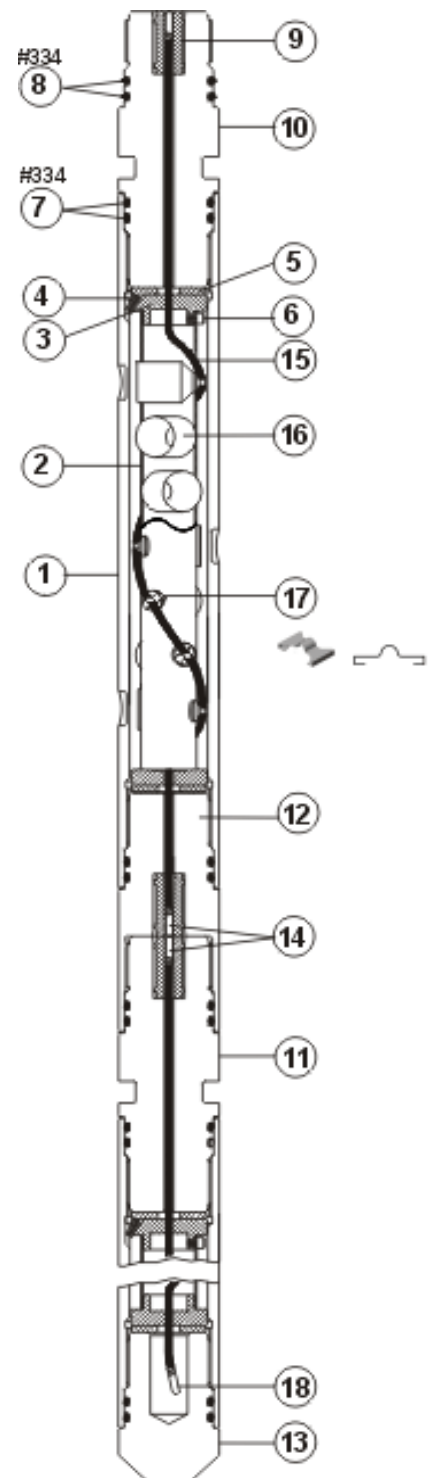
3 3/8-in. 4-spf 60° SDP VannGun™ System

3 3/8-in. 4-spf 60° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237952	Shipping Assembly - 4ft	101202250
	101237955	Shipping Assembly - 8ft	101202318
	101237957	Shipping Assembly - 11ft	101202319
	100014197	Shipping Assembly - 16ft	101202323
	101237959	Shipping Assembly - 22ft	101202325
*1	101237951	Gun, Scallop - 4ft	101201076
	101237954	Gun, Scallop - 8ft	101201077
	101237956	Gun, Scallop - 11ft	101201078
	100156354	Gun, Scallop - 16ft	101201079
	101237958	Gun, Scallop - 22ft	101201080

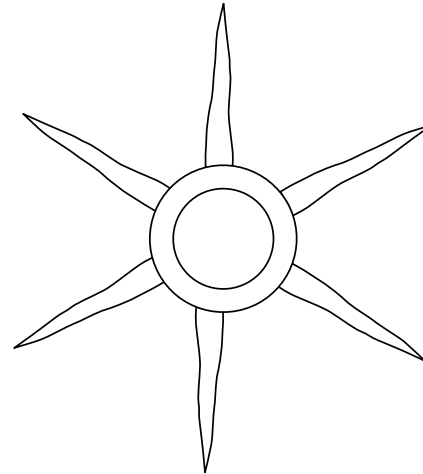
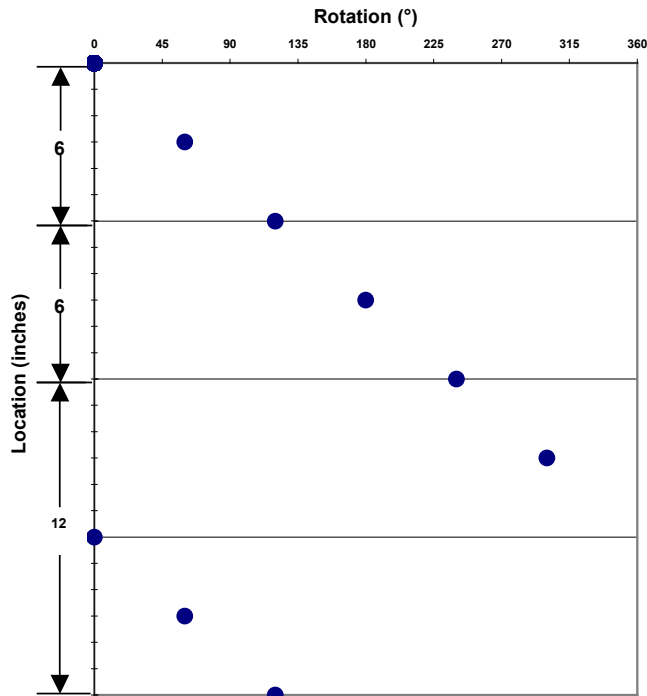
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101204258
	Tube, Charge Holder - 8ft	101204264
	Tube, Charge Holder - 11ft	101204265
	Tube, Charge Holder - 16ft	100156542
	Tube, Charge Holder - 22ft	101204273
*3	Fixture, Alignment	100156475
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 32.0g RDX DP	100005322
	Charge - 25.0g HMX SDP	100008249
	Charge - 25.0g HMX Millennium®	101233819
	Charge - 32.0g HMX DP	100005327
	Charge - 24.2g PYX SDP	100008015
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251

*Included in shipping assembly.



3 3/8-in. 4-spf 60°
SDP VannGun™ System

3 3/8-in. 4-spf 60° SDP VannGun™ System



**60° Phasing
6 Perforation Planes**

**Shot Pattern for 3.37-in.
4-spf 60° Phasing**

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer lb (kg)	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)



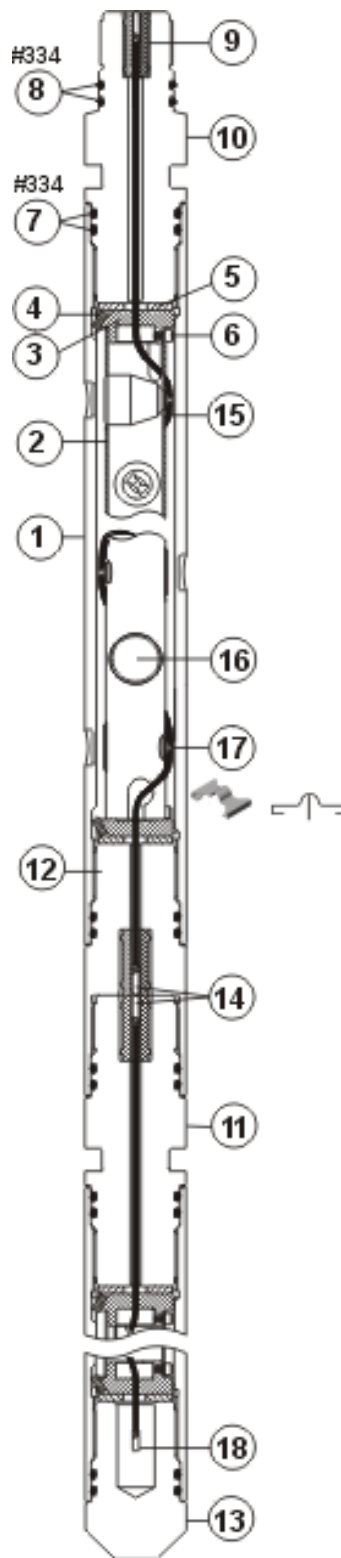
3 3/8-in. 4-spf 90° SDP VannGun™ System

3 3/8-in. 4-spf 90° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100005215	Shipping Assembly - 4ft	101201678
	100007989	Shipping Assembly - 8ft	101201684
	100005214	Shipping Assembly - 11ft	101202183
	100007990	Shipping Assembly - 16ft	101202203
	100005216	Shipping Assembly - 22ft	101202205
*1	100156290	Gun, Scallop - 4ft	101201071
	100156288	Gun, Scallop - 8ft	101201072
	100005244	Gun, Scallop - 11ft	101201073
	100156289	Gun, Scallop - 16ft	101201074
	100014251	Gun, Scallop - 22ft	101201075

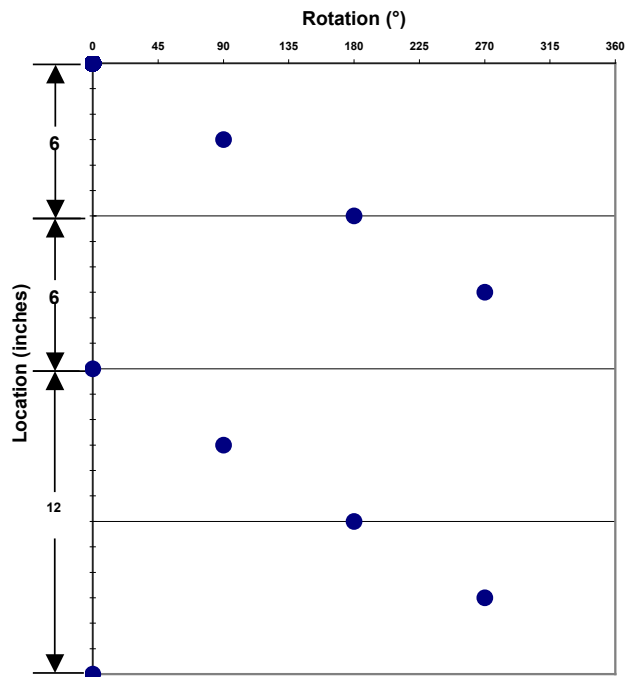
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101235917
	Tube, Charge Holder - 7ft	101235920
	Tube, Charge Holder - 11ft	101235921
	Tube, Charge Holder - 15ft	101235922
	Tube, Charge Holder - 21ft	101235923
*3	Fixture, Alignment	101235706
*4	Screw, Set #10-32 x 0.50" L	100028832
*5	Snap Ring	101236795
*6	Screw, Socket Head #10-32 X 0.38" L	101236979
7	O-Ring, Buna 90 Duro #215	100001937
	O-Ring, Viton 95 Duro #215	100064810
	O-Ring, Aflas 90 Duro #215	101292868
	O-Ring, Backup #215	101283230
8	O-Ring, Buna 90 Duro #218	100001951
	O-Ring, Viton 95 Duro #218	100064830
	O-Ring, Aflas 90 Duro #218	101233079
	O-Ring, Backup #218	101227694
9	Insert, Alignment (Miniature PAI)	100005277
	Insert, Alignment (Miniature AAI)	100005276
10	Crossover, Firing Head	100156707
11	Tandem, Grooved	100156709
12	Crossover, Box x Pin	100156708
13	Bull Plug	120005293
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 3.4g HMX <i>Millennium</i> ®	100157028
17	Teflon Grommet	100157596
18	End Seal	100005251

*Included in shipping assembly.

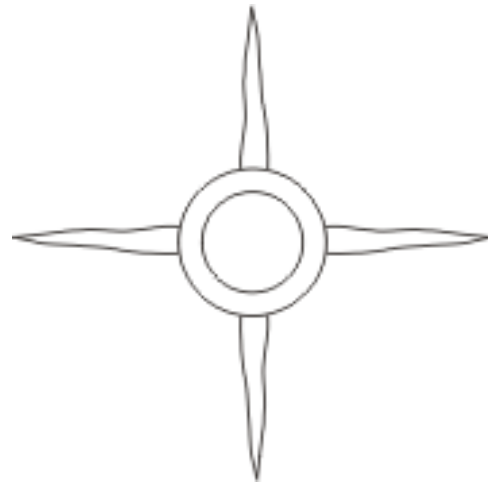


3 3/8-in. 4-spf 90°
SDP VannGun™ System

3 3/8-in. 4-spf 90° SDP VannGun™ System



**Shot Pattern for 3.375-in.
4-spf 90° Phasing**



**90° Phasing
4 Perforation Planes**

VannGun™ Weights

Length	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)



3 3/8-in. 4-spf 180° VannGun™ System

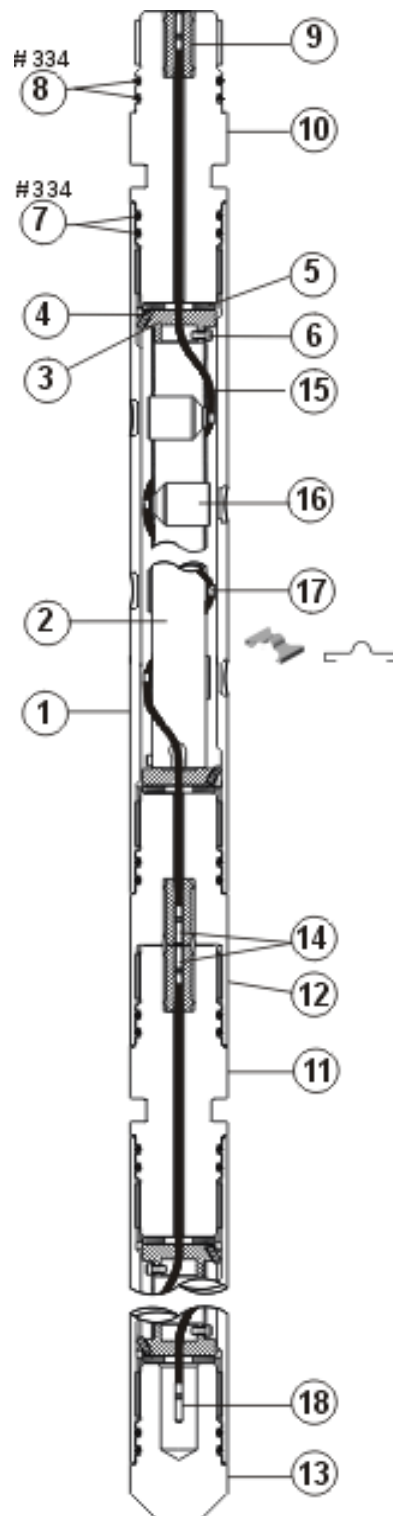
3 3/8-in. 4-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237973	Shipping Assembly - 4ft	101234115
	101228578	Shipping Assembly - 8ft	101234116
	101228579	Shipping Assembly - 11ft	101234117
	27317	Shipping Assembly - 16ft	101234118
	100155885	Shipping Assembly - 22ft	101234119

*1	101237939	Gun, Scallop - 4ft	101233754
	101228580	Gun, Scallop - 8ft	101233752
	100156325	Gun, Scallop - 11ft	101233746
	101204543	Gun, Scallop - 16ft	101233737
	100156324	Gun, Scallop - 22ft	101233733

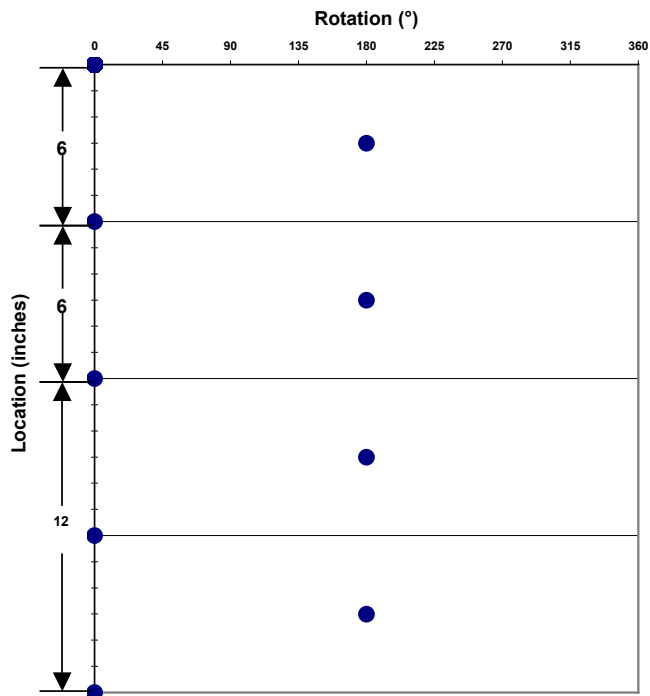
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101234090
	Tube, Charge Holder - 8 ft	101228581
	Tube, Charge Holder - 11 ft	101228582
	Tube, Charge Holder - 16 ft	101204561
	Tube, Charge Holder - 22 ft	100156434
*3	Fixture, Alignment	100005248
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX BH	100005321
	Charge - 24.0g HMX BH	100157017
	Charge - 22.0g RDX DP	100005333
	Charge - 26.0g HMX DP	100005332
	Charge - 26.0g PYX/BRX DP	100005331
17	Charge Clip	100156506
18	End Seal	100005251

*Included in shipping assembly.

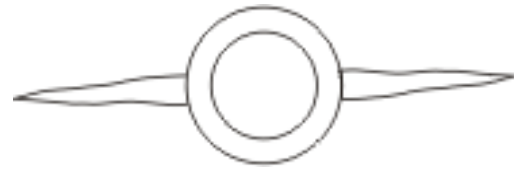


3 3/8-in. 4-spf 180°
VannGun™ System

3 3/8-in. 4-spf 180° VannGun™ System



Shot Pattern for 3.375-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer lb (kg)	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)

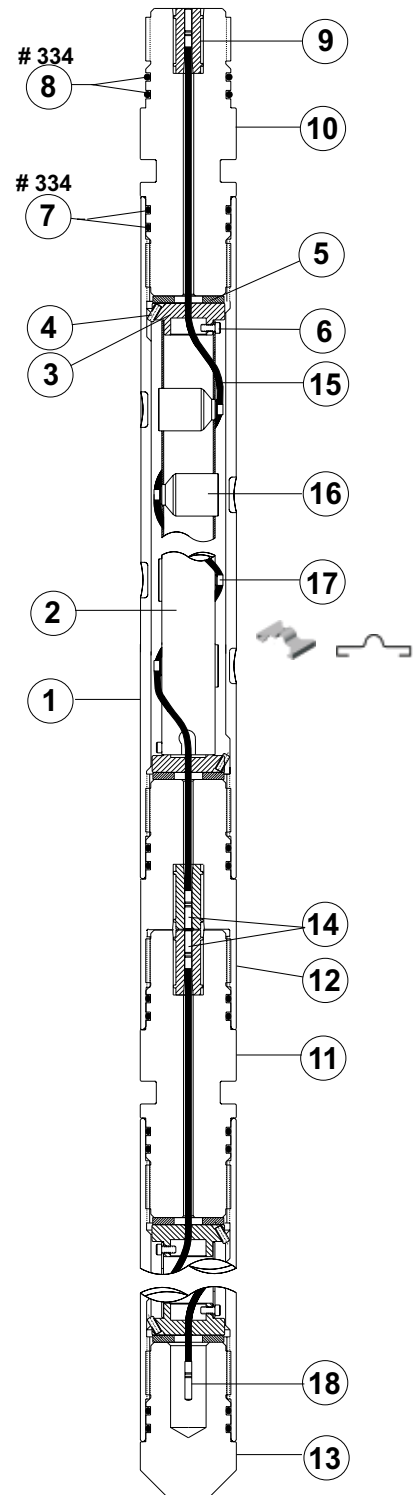
3 3/8-in. 4-spf 180° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237973	Shipping Assembly - 4ft	101234115
	101228578	Shipping Assembly - 8ft	101234116
	101228579	Shipping Assembly - 11ft	101234117
	27317	Shipping Assembly - 16ft	101234118
	100155885	Shipping Assembly - 22ft	101234119

*1	101237939	Gun, Scallop - 4ft	101233754
	101228580	Gun, Scallop - 8ft	101233752
	100156325	Gun, Scallop - 11ft	101233746
	101204543	Gun, Scallop - 16ft	101233737
	100156324	Gun, Scallop - 22ft	101233733

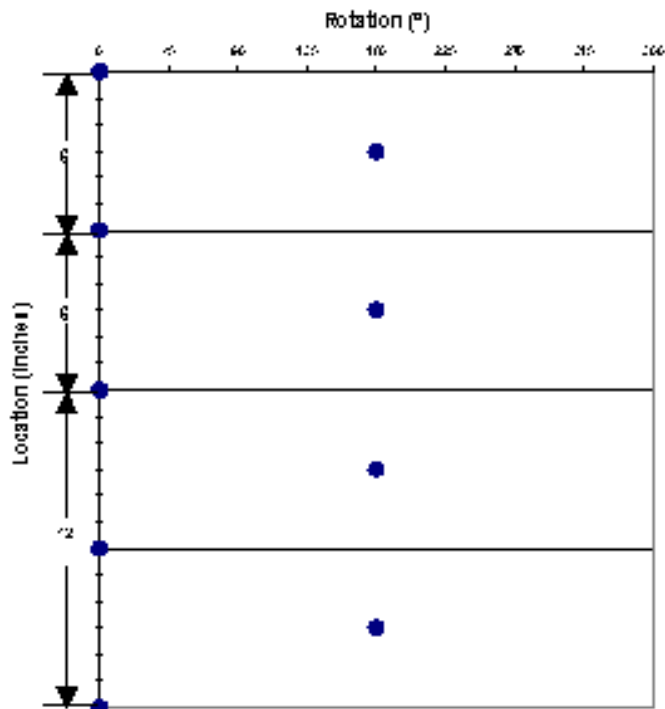
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101234090
	Tube, Charge Holder - 8ft	101228581
	Tube, Charge Holder - 11ft	101228582
	Tube, Charge Holder - 16ft	101204561
	Tube, Charge Holder - 22ft	100156434
*3	Fixture, Alignment	100005248
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX BH	100005321
	Charge - 24.0g HMX BH	100157017
	Charge - 22.0g RDX DP	100005333
	Charge - 26.0g HMX DP	100005332
	Charge - 26.0g PYX/BRX DP	100005331
17	Charge Clip	100156506
18	End Seal	100005251

*Included in Shipping Assembly.

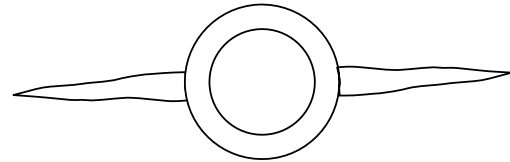


3 3/8-in. 4-spf 180°
SDP VannGun™ System

3 3/8-in. 4-spf 180° SDP VannGun™ System



Shot Pattern for 3.375-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

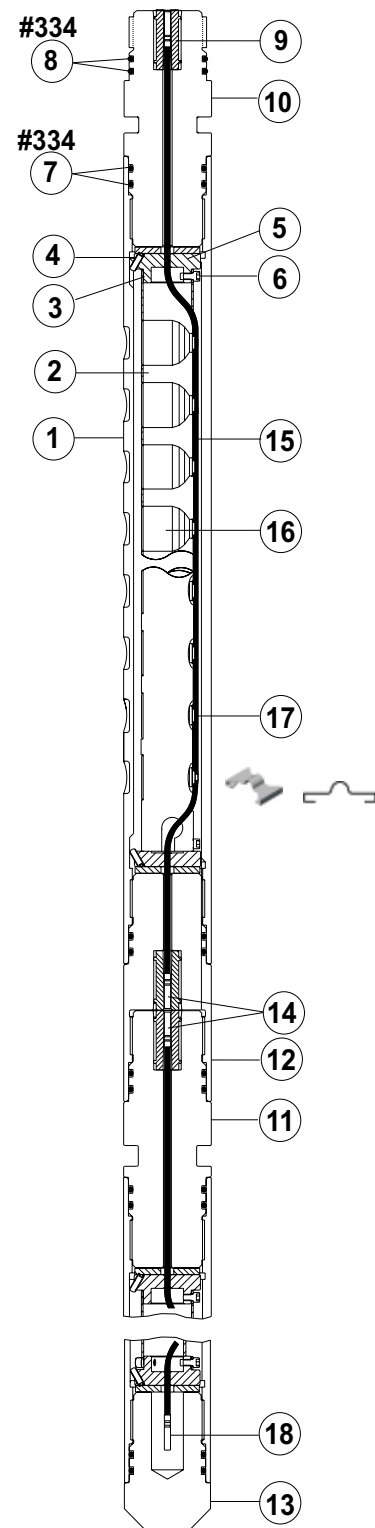
Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	56 (25)	113 (51)	156 (71)	227 (103)	131 (142)
Spacer lb (kg)	47 (21)	94 (42)	130 (59)	189 (86)	259 (118)

3 3/8-in. 5-spf 0° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
N/A		Shipping Assembly - 4 ft	101272509
		Shipping Assembly - 8 ft	101272511
		Shipping Assembly - 11 ft	101272515
		Shipping Assembly - 16 ft	101272517
		Shipping Assembly - 22 ft	101272518
*1	N/A	Gun, Scallop - 4 ft	101226687
		Gun, Scallop - 8 ft	101226688
		Gun, Scallop - 11 ft	101226689
		Gun, Scallop - 16 ft	101226691
		Gun, Scallop - 22 ft	101226693

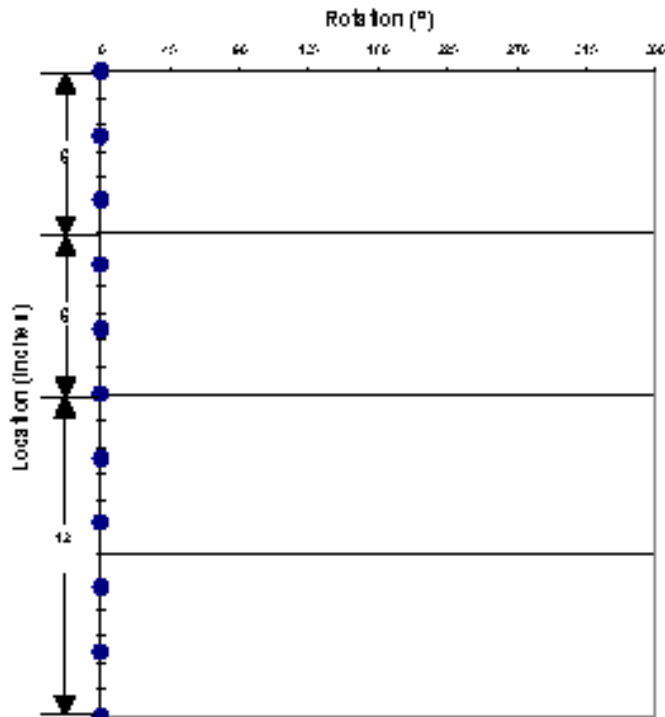
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101272519
	Tube, Charge Holder - 8 ft	101272520
	Tube, Charge Holder - 11 ft	101272521
	Tube, Charge Holder - 16 ft	101272522
	Tube, Charge Holder - 22 ft	101272523
*3	Fixture, Alignment	100005248
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX BH	100005321
	Charge - 24.0g HMX BH	100157017
	Charge - 22.0g RDX DP	100005333
	Charge - 26.0g HMX DP	100005332
	Charge - 26.0g PYX/BRX DP	100005331
17	Charge Clip	100156506
18	End Seal	100005251

*Included in Shipping Assembly.

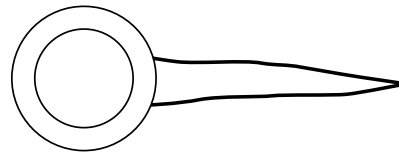


3 3/8-in. 5-spf 0°
VannGun™ System

3 3/8-in. 5-spf 0° VannGun™ System



Shot Pattern for 3.375-in.
5-spf 0° Phasing



0° Phasing
1 Perforation Plane

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	55 (25)	112 (51)	155 (70)	226 (103)	312 (141)
Spacer lb (kg)	47 (21)	94 (43)	130 (59)	188 (85)	259 (118)

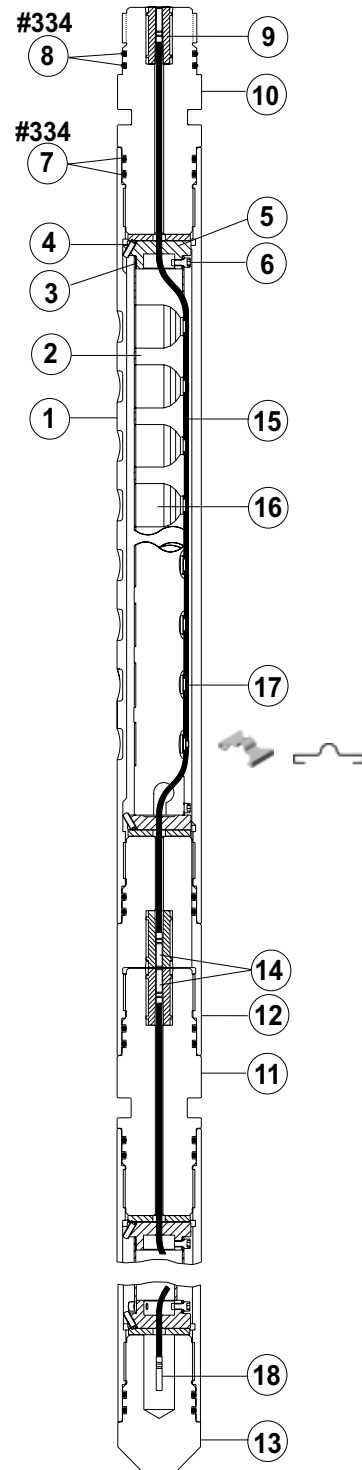
3 3/8-in. 5-spf 0° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101208169	Shipping Assembly - 4 ft	101226698
	101208170	Shipping Assembly - 8 ft	101226700
	101208171	Shipping Assembly - 11 ft	101226701
	101208172	Shipping Assembly - 16 ft	101226703
	101208173	Shipping Assembly - 22 ft	101226704

*1	101208118	Gun, Scallop - 4 ft	101226687
	101208121	Gun, Scallop - 8 ft	101226688
	101208122	Gun, Scallop - 11 ft	101226689
	101208123	Gun, Scallop - 16 ft	101226691
	101208124	Gun, Scallop - 22 ft	101226693

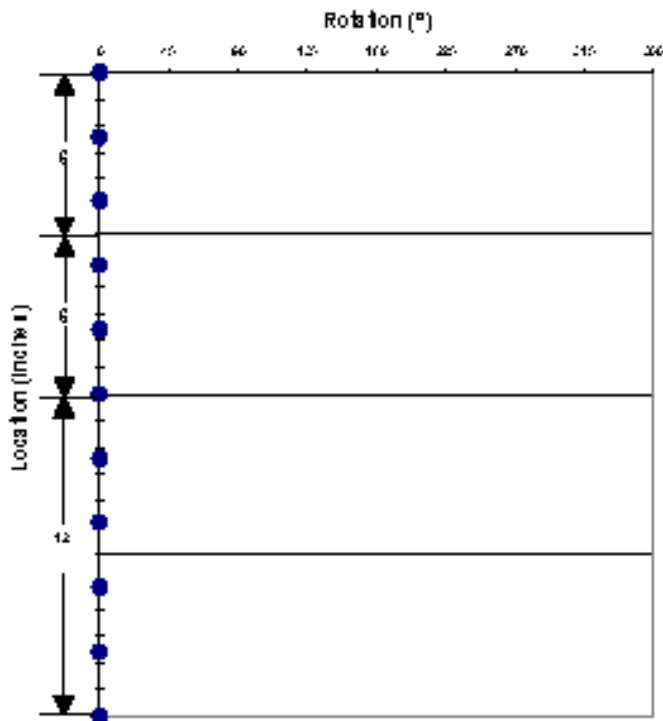
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101208126
	Tube, Charge Holder - 8 ft	101208127
	Tube, Charge Holder - 11 ft	101208128
	Tube, Charge Holder - 16 ft	101208130
	Tube, Charge Holder - 22 ft	101208131
*3	Fixture, Alignment SDP	100007999
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 25.0g HMX SDP	100008249
	Charge - 25.0g HMX <i>Millennium™</i>	101233819
	Charge - 24.2g PYX SDP	100008015
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.

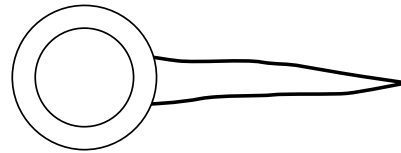


3 3/8-in. 5-spf 0°
SDP VannGun™ System

3 3/8-in. 5-spf 0° SDP VannGun™ System



Shot Pattern for 3.375-in.
5-spf 0° Phasing



0° Phasing
1 Perforation Plane

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	55 (25)	112 (51)	155 (70)	226 (103)	312 (141)
Spacer lb (kg)	47 (21)	94 (43)	130 (59)	188 (85)	259 (118)

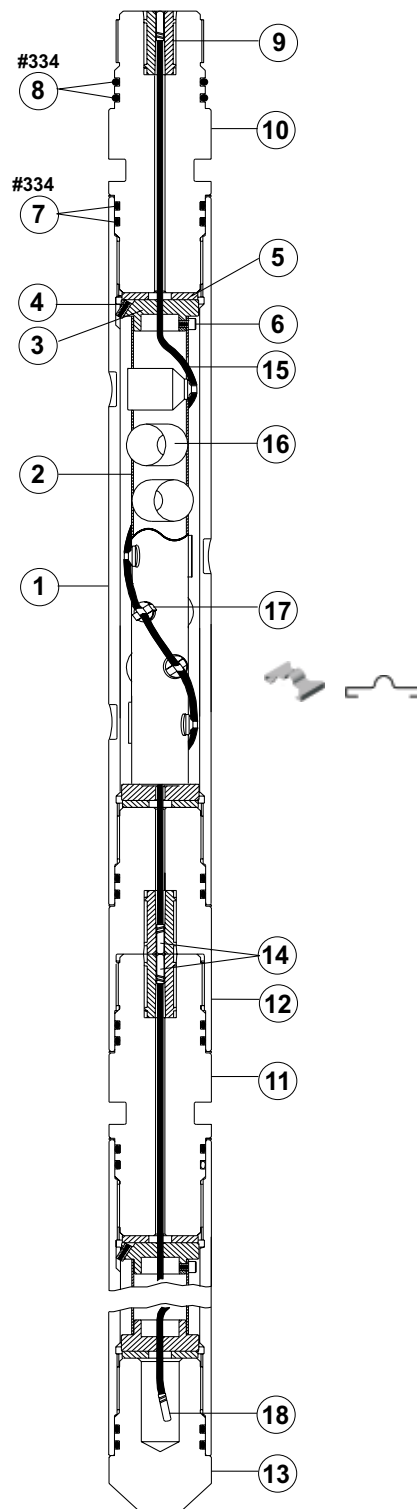
3 3/8-in. 6-spf 60° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100005400	Shipping Assembly - 4 ft	100155829
	100007988	Shipping Assembly - 8 ft	100155830
	100005398	Shipping Assembly - 11 ft	100155831
	100005210	Shipping Assembly - 16 ft	100155832
	100007981	Shipping Assembly - 22 ft	100155833

*1	100014928	Gun, Scallop - 4 ft	100156379
	100005245	Gun, Scallop - 8 ft	100156387
	100014253	Gun, Scallop - 11 ft	100156380
	100005246	Gun, Scallop - 16 ft	100156388
	100007993	Gun, Scallop - 22 ft	100156381

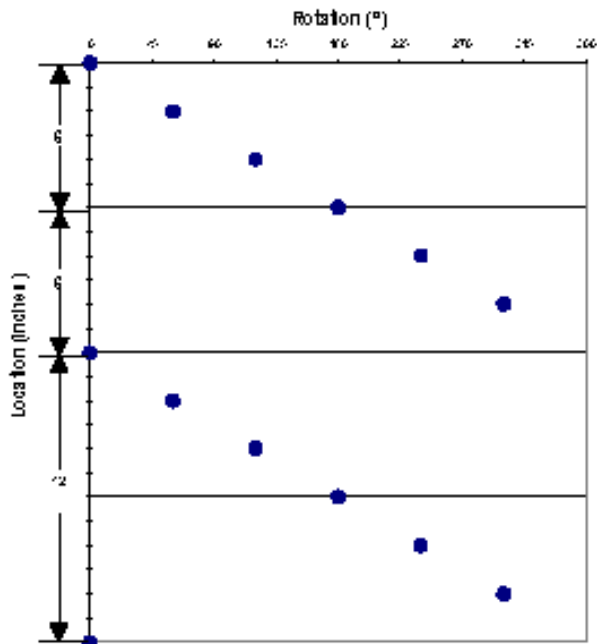
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156463
	Tube, Charge Holder - 8 ft	100156465
	Tube, Charge Holder - 11 ft	100156461
	Tube, Charge Holder - 16 ft	100005249
	Tube, Charge Holder - 22 ft	100156445
*3	Fixture, Alignment	100005248
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX BH	100005321
	Charge - 24.0g HMX BH	100157017
	Charge - 22.0g RDX DP	100005333
	Charge - 26.0g HMX DP	100005332
	Charge - 26.0g PYX/BRX DP	100005331
17	Charge Clip	100156506
18	End Seal	100005251

*Included in Shipping Assembly.

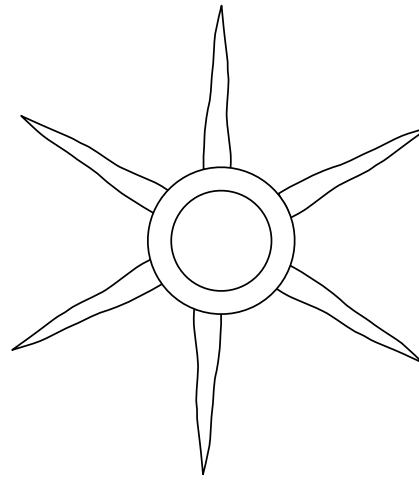


3 3/8-in. 6-spf 60°
VannGun™ System

3 3/8-in. 6-spf 60° VannGun™ System



Shot Pattern for 3.375-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	62 (28)	127 (58)	176 (80)	258 (117)	355 (161)
Spacer lb (kg)	47 (21)	94 (43)	219 (59)	188 (85)	258 (117)

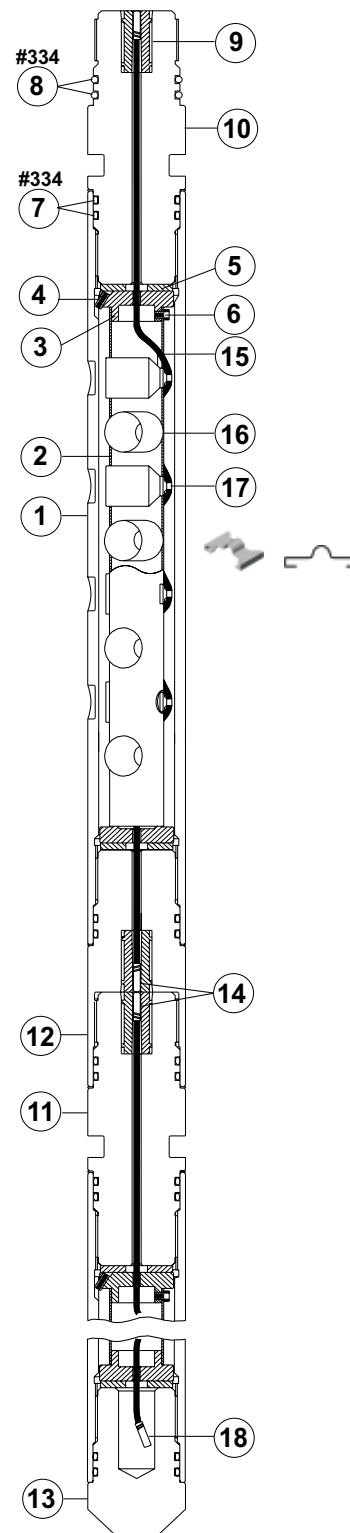
3 3/8-in. 6-spf 60° Lowside VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100009424	Shipping Assembly - 4 ft	101238326
	100155824	Shipping Assembly - 8 ft	101238330
	100155815	Shipping Assembly - 11 ft	101244863
	100007984	Shipping Assembly - 16 ft	101244694
	100005203	Shipping Assembly - 22 ft	101244865

*1	100156314	Gun, Scallop - 4 ft	101238324
	100156315	Gun, Scallop - 8 ft	120017833
	100156316	Gun, Scallop - 11 ft	120017899
	100156317	Gun, Scallop - 16 ft	120017890
	100156318	Gun, Scallop - 22 ft	101244864

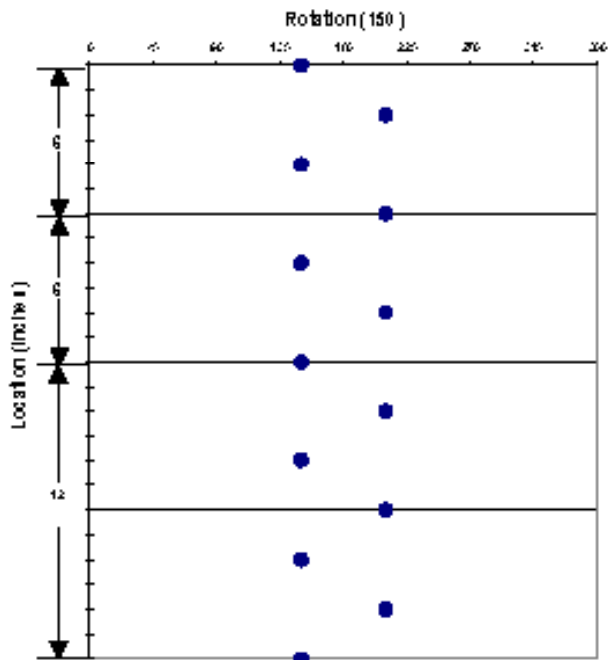
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101238325
	Tube, Charge Holder - 8 ft	100156532
	Tube, Charge Holder - 11 ft	100156533
	Tube, Charge Holder - 16 ft	100156534
	Tube, Charge Holder - 22 ft	100156535
*3	Fixture, Alignment	100005248
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX BH	100005321
	Charge - 24.0g HMX BH	100157017
	Charge - 22.0g RDX DP	100005333
	Charge - 26.0g HMX DP	100005332
	Charge - 26.0g PYX/BRX DP	100005331
17	Charge Clip	100156506
18	End Seal	100005251
19	Charge Tube Centralizer	100156265

*Included in Shipping Assembly.

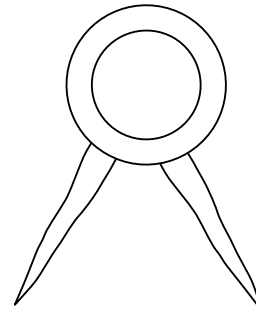


3 3/8-in. 6-spf 60°
Lowside VannGun™ System

3 3/8-in. 6-spf 60° Lowside VannGun™ System



Shot Pattern for 3.375-in.
6-spf 60° Phasing



60° Phasing
2 Perforation Planes Lowside

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	62 (28)	127 (58)	176 (80)	258 (117)	355 (161)
Spacer lb (kg)	47 (21)	94 (43)	219 (59)	188 (85)	258 (117)

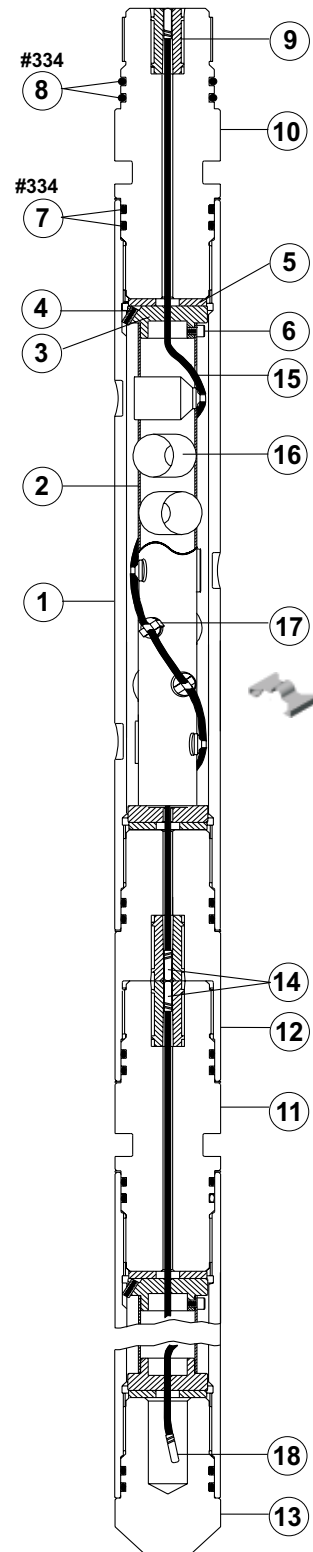
3 3/8-in. 6-spf 60° SDP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100014192	Shipping Assembly - 4 ft	101244286
	100009803	Shipping Assembly - 8 ft	100155848
	100014194	Shipping Assembly - 11 ft	100155849
	100007991	Shipping Assembly - 16 ft	100155850
	100009447	Shipping Assembly - 22 ft	100155851

*1	100014928	Gun, Scallop - 4 ft	100156379
	100005245	Gun, Scallop - 8 ft	100156387
	100014253	Gun, Scallop - 11 ft	100156380
	100005246	Gun, Scallop - 16 ft	100156388
	100007993	Gun, Scallop - 22 ft	100156381

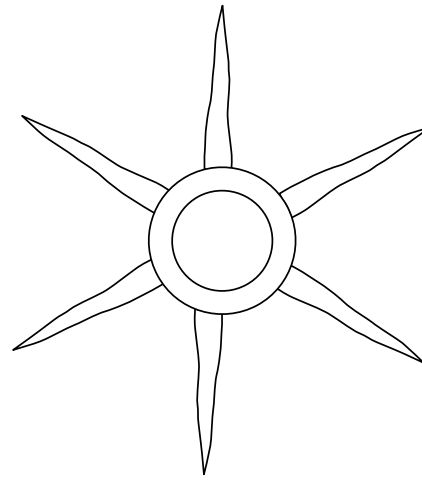
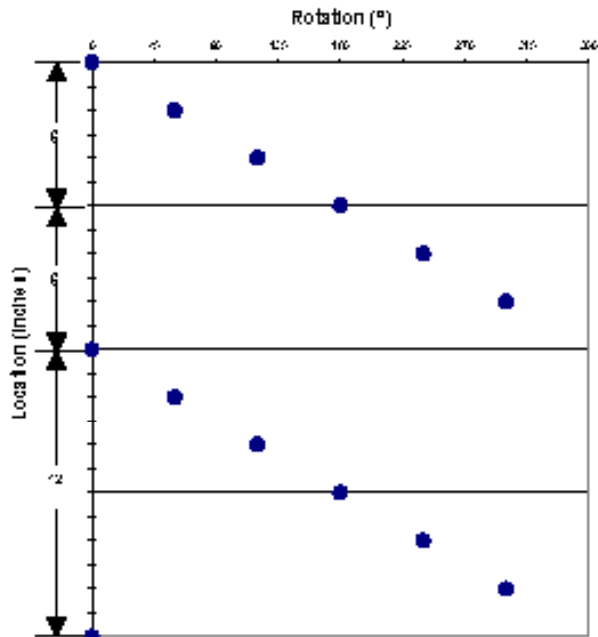
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156496
	Tube, Charge Holder - 8 ft	100156498
	Tube, Charge Holder - 11 ft	100014270
	Tube, Charge Holder - 16 ft	100156499
	Tube, Charge Holder - 22 ft	100008000
*3	Fixture, Alignment SDP	100007999
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 25.0g HMX DP	100008249
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 25.0g HNS <i>Millennium</i> ™	101365876
	Charge - 24.2g PYX SDP	100008015
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.



3 3/8-in. 6-spf 60°
SDP VannGun™ System

3 3/8-in. 6-spf 60° SDP VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	62 (28)	127 (58)	176 (80)	258 (117)	355 (161)
Spacer lb (kg)	47 (21)	94 (43)	219 (59)	188 (85)	258 (117)

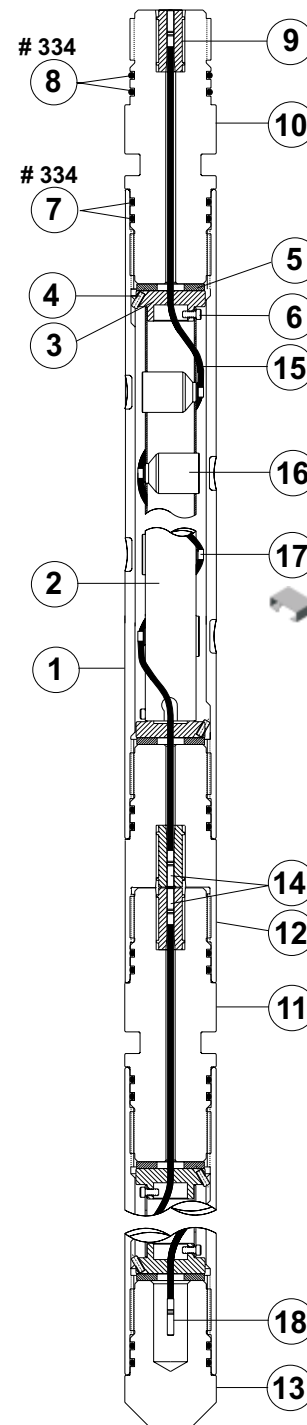
3 3/8-in. 8-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237928	Shipping Assembly - 4 ft	101234085
	101237935	Shipping Assembly - 8 ft	101234086
	100155846	Shipping Assembly - 11 ft	101234087
	101237938	Shipping Assembly - 16 ft	101234088
	100155847	Shipping Assembly - 22 ft	101234352

*1	101237927	Gun, Scallop - 4 ft	101234071
	101237934	Gun, Scallop - 8 ft	101234074
	100156365	Gun, Scallop - 11 ft	101234075
	101237936	Gun, Scallop - 16 ft	101234080
	100156366	Gun, Scallop - 22 ft	101234081

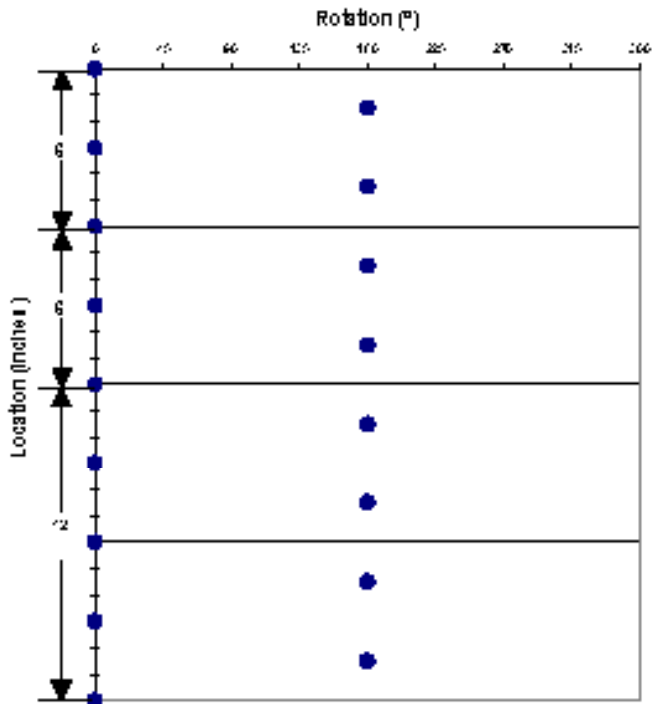
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101236419
	Tube, Charge Holder - 8 ft	101236405
	Tube, Charge Holder - 11 ft	100156508
	Tube, Charge Holder - 16 ft	101236424
	Tube, Charge Holder - 22 ft	100156509
*3	Fixture, Alignment SH	100007999
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 14.0g RDX BH	100008251
	Charge - 14.0g HMX BH	100005312
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

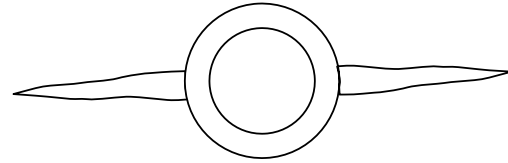


3 3/8-in. 8-spf 180°
VannGun™ System

3 3/8-in. 8-spf 180° VannGun™ System



Shot Pattern for 3.375-in.
8-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

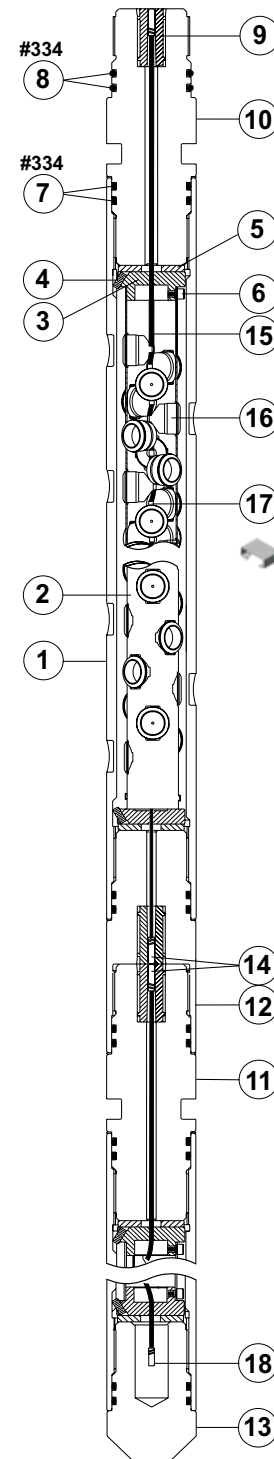
Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	56 (25)	113 (51)	155 (71)	226 (103)	312 (142)
Spacer lb (kg)	47 (21)	94 (43)	129 (59)	188 (85)	159 (117)

3 3/8-in. 12-spf OMNI™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100009425	Shipping Assembly - 4 ft	101232368
	100014189	Shipping Assembly - 8 ft	101232369
	100005212	Shipping Assembly - 11 ft	101232370
	100155839	Shipping Assembly - 16 ft	101232372
	100155838	Shipping Assembly - 22 ft	101232373
*1	100156307	Gun, Scallop - 4 ft	101232394
	100156312	Gun, Scallop - 8 ft	101232396
	100156309	Gun, Scallop - 11 ft	101232398
	100156313	Gun, Scallop - 16 ft	101232399
	100156311	Gun, Scallop - 22 ft	101232400

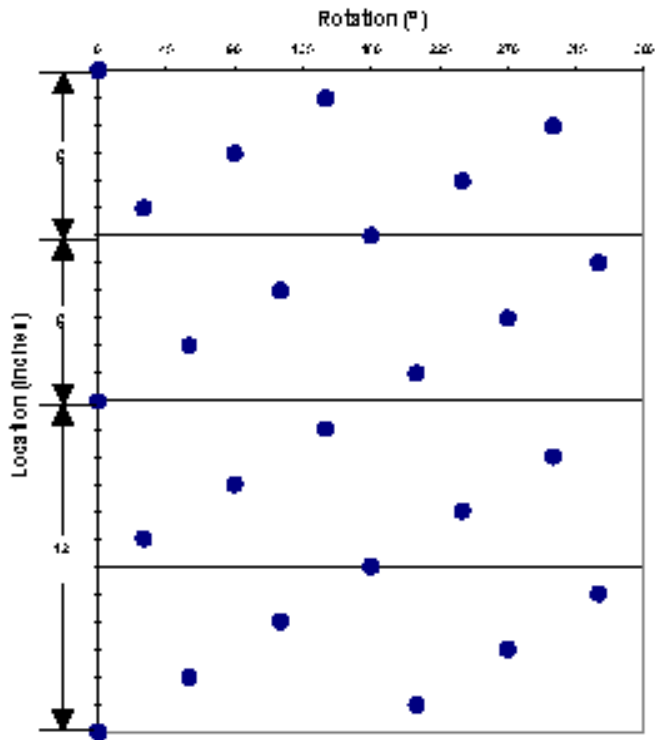
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156485
	Tube, Charge Holder - 8 ft	100156490
	Tube, Charge Holder - 11 ft	100156487
	Tube, Charge Holder - 16 ft	100156491
	Tube, Charge Holder - 22 ft	100156489
*3	Fixture, Alignment SH	100007999
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100007998
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Tandem, Grooved	100005252
11	Tandem, Grooved	100005252
12	Crossover, Box x Pin	100005256
13	Bull Plug	100005258
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 14.0g RDX BH	100008251
	Charge - 14.0g HMX BH	100005312
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

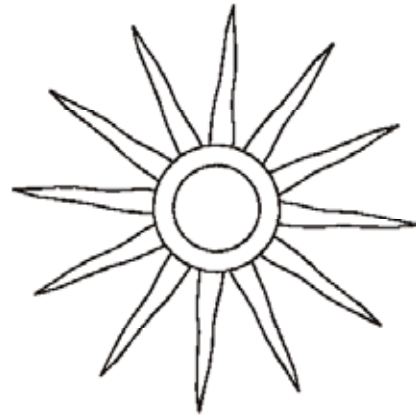


3 3/8-in. 12-spf
OMNI™ VannGun™ System

3 3/8-in. 12-spf OMNI™ VannGun™ System



Shot Pattern for 3.375-in.
12-spf 30/150 Phasing



30°/150° Phasing
12 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	58 (26)	119 (54)	164 (74)	240 (109)	330 (150)
Spacer lb (kg)	47 (21)	94 (43)	129 (59)	188 (85)	259 (117)



4-in. 4-spf 60° VannGun™ System

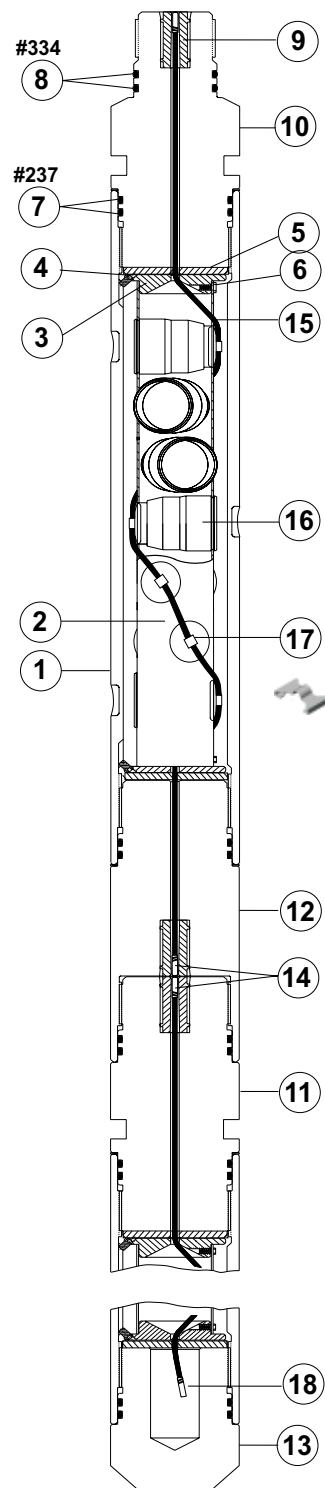
4-in. 4-spf 60° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101236870	Shipping Assembly - 4 ft	N/A
	101237961	Shipping Assembly - 8 ft	
	101237963	Shipping Assembly - 11 ft	
	101237965	Shipping Assembly - 16 ft	
	101237972	Shipping Assembly - 22 ft	

*1	101236869	Gun, Scallop - 4 ft	N/A
	101237960	Gun, Scallop - 8 ft	
	101237962	Gun, Scallop - 11 ft	
	101237964	Gun, Scallop - 16 ft	
	101237971	Gun, Scallop - 22 ft	

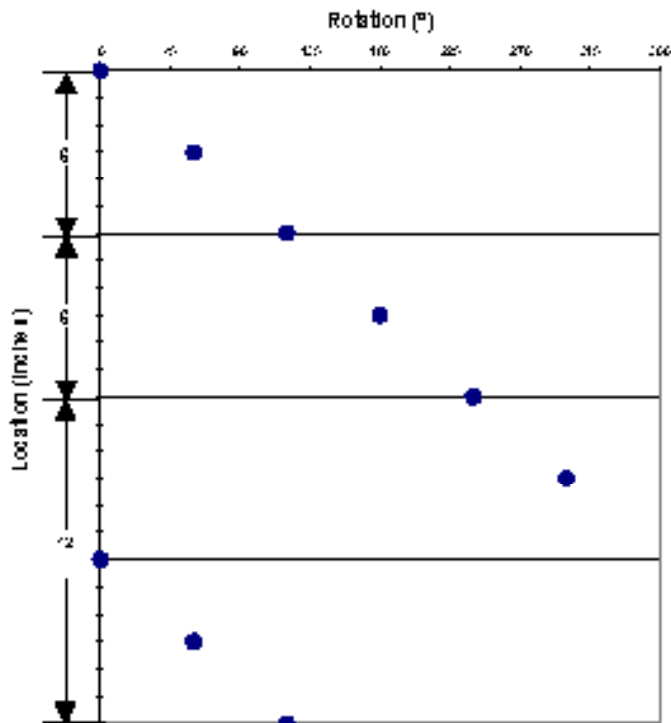
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101204258
	Tube, Charge Holder - 8 ft	101204264
	Tube, Charge Holder - 11 ft	101204265
	Tube, Charge Holder - 16 ft	100156542
	Tube, Charge Holder - 22 ft	101204273
*3	Fixture, Alignment	100156398
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156399
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #237	100002008
	O-Ring, Viton 95 Duro #237	100064882
	O-Ring, Aflas 90 Duro #237	101282585
	O-Ring, Backup #237	101282854
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100008007
11	Tandem, Grooved	100005274
12	Crossover, Box x Pin	100005275
13	Bull Plug	100008006
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 32.0g RDX DP	100005322
	Charge - 32.2g PYX/BRX DP	100005323
	Charge - 32.0g HMX DP	100005327
	Charge - 24.2g PYX SDP	100008015
	Charge - 24.0g RDX SDP	100008014
	Charge - 25.0g HMX SDP	100008249
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.

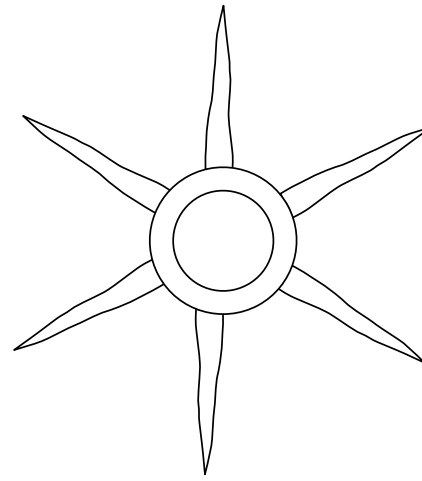


4-in. 4-spf 60°
VannGun™ System

4-in. 4-spf 60° VannGun™ System



Shot Pattern for 4-in.
4-spf 60° Phasing



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	67 (30)	136 (62)	187 (85)	274 (124)	377 (171)
Spacer lb (kg)	56 (25)	112 (51)	154 (70)	224 (102)	308 (146)



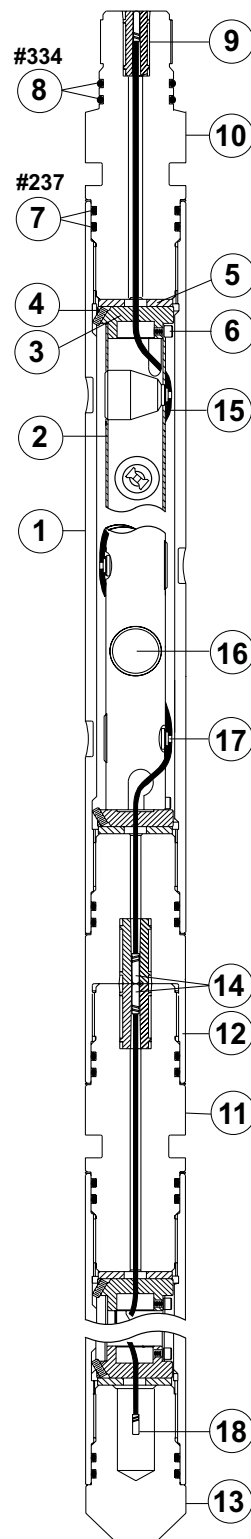
4-in. 4-spf 90° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100014198	Shipping Assembly - 4 ft	N/A
	100014199	Shipping Assembly - 8 ft	
	100014200	Shipping Assembly - 11 ft	
	100014201	Shipping Assembly - 16 ft	
	100014202	Shipping Assembly - 22 ft	

*1	100156355	Gun, Scallop - 4 ft	N/A
	100156356	Gun, Scallop - 8 ft	
	100156357	Gun, Scallop - 11 ft	
	100156358	Gun, Scallop - 16 ft	
	100156359	Gun, Scallop - 22 ft	

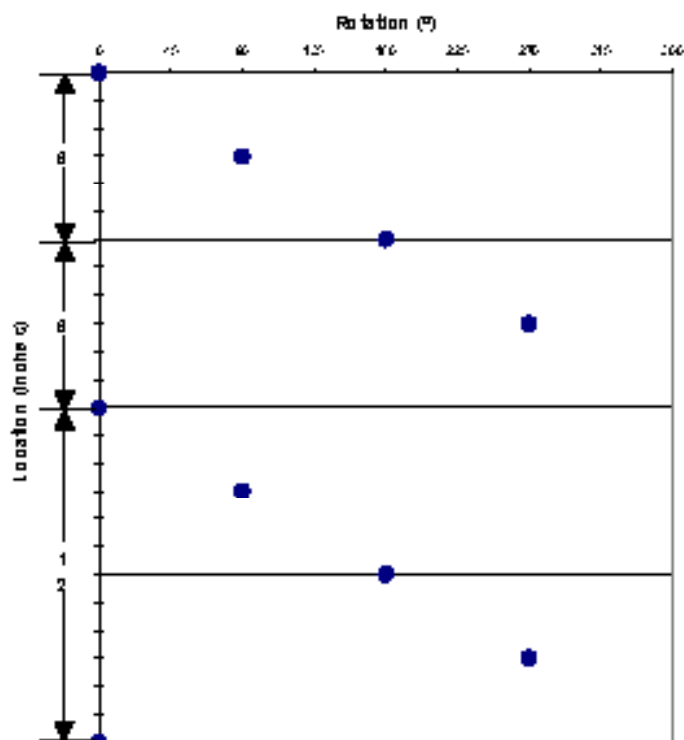
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	100156449
	Tube, Charge Holder - 8ft	100156477
	Tube, Charge Holder - 11ft	100156450
	Tube, Charge Holder - 16ft	100156478
	Tube, Charge Holder - 22ft	100156451
*3	Fixture, Alignment	100156398
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156399
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #237	100002008
	O-Ring, Viton 95 Duro #237	100064882
	O-Ring, Aflas 90 Duro #237	101282585
	O-Ring, Backup #237	101282854
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100008007
11	Tandem, Grooved	100005274
12	Crossover, Box x Pin	100005275
13	Bull Plug	100008006
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 32.0g RDX DP	100005322
	Charge - 32.0g HMX DP	100005327
	Charge - 32.2g PYX/BRX DP	100005323
	Charge - 24.0g RDX SDP	100008014
	Charge - 25.0g HMX SDP	100008249
	Charge - 24.2g PYX SDP	100008015
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.

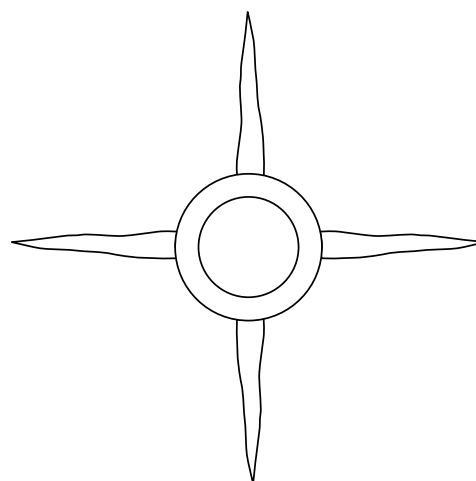


4-in. 4-spf 90°
VannGun™ System

4-in. 4-spf 90° VannGun™ System



Shot Pattern for 4-in.
4-spf 90° Phasing



90° Phasing
4 Perforation Planes

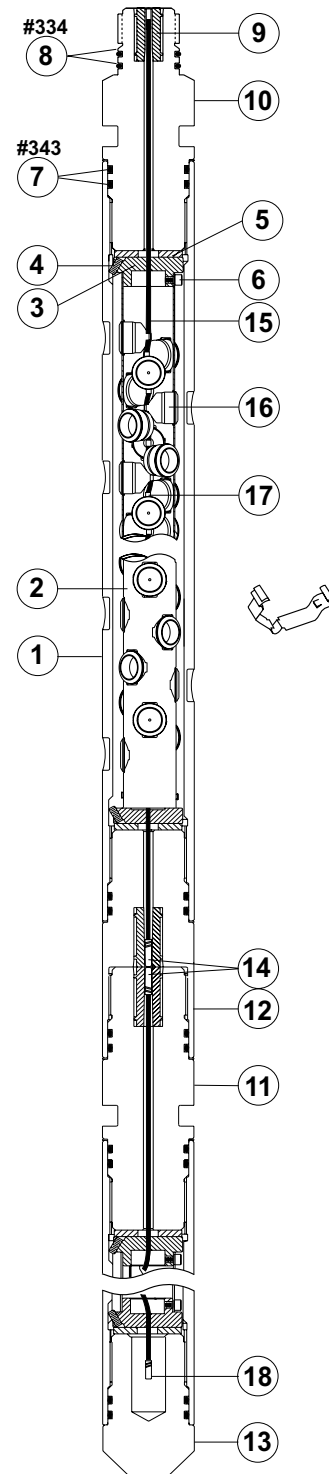
VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	67 (30)	136 (62)	187 (85)	274 (124)	377 (171)
Spacer lb (kg)	56 (25)	112 (51)	154 (70)	224 (102)	308 (146)

4 5/8-in. 12-spf OMNI™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100005403	Shipping Assembly - 4 ft	100155825
	100005404	Shipping Assembly - 8 ft	100155826
	100005195	Shipping Assembly - 11 ft	100155834
	100005405	Shipping Assembly - 16 ft	100155827
	100005196	Shipping Assembly - 22 ft	100155828
*1	100156338	Gun, Scallop - 4 ft	100156376
	100156339	Gun, Scallop - 8 ft	100156382
	100014254	Gun, Scallop - 11 ft	100156378
	100014255	Gun, Scallop - 16 ft	100156377
	100156355	Gun, Scallop - 22 ft	100156375

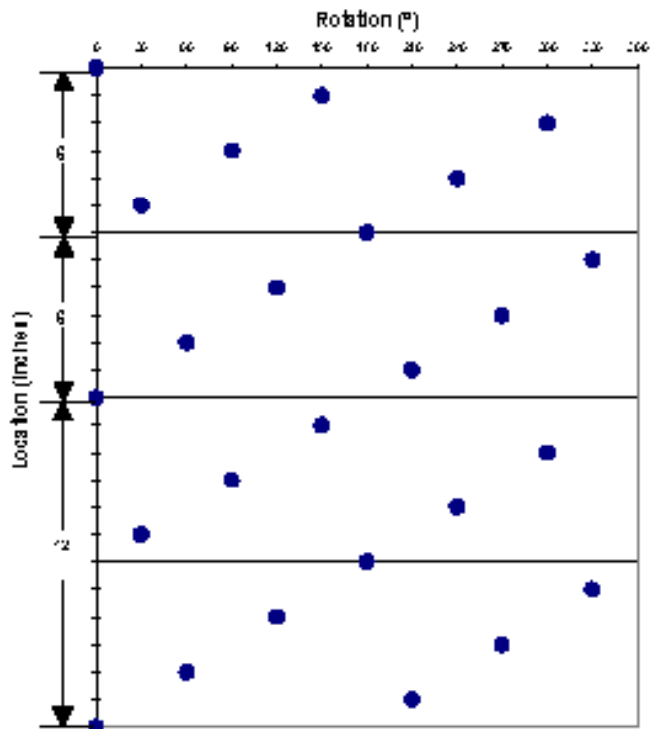
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156511
	Tube, Charge Holder - 8 ft	100156512
	Tube, Charge Holder - 11 ft	100156558
	Tube, Charge Holder - 16 ft	100156513
	Tube, Charge Holder - 22 ft	100156559
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g RDX DP	100005324
	Charge - 22.7g RDX DP/LD	100005325
	Charge - 25.0g RDX BH	100005319
	Charge - 22.7g RDX BH/LD	100005326
	Charge - 22.7g HMX <i>Millennium</i> ™	101210674
	Charge - 22.7g HMX DP	100014352
	Charge - 22.7g HMX DP/LD	100005340
	Charge - 25g HMX BH	100157006
	Charge - 22.7g HMX BH/LD	AR
	Charge - 26.0 PYX DP	AR
17	Charge Clip	100005250
18	End Seal	100005251



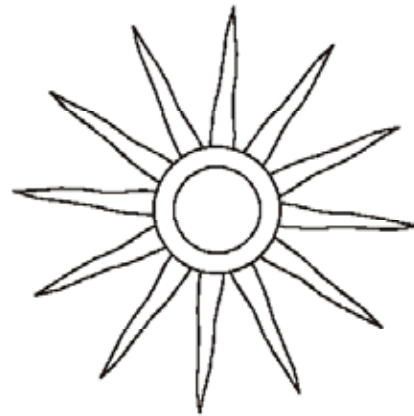
4 5/8-in. 12-spf
OMNI™ VannGun™ System

* Included in Shipping Assembly.
AR Available Upon Request.

4 5/8-in. 12-spf OMNI™ VannGun™ System



Shot Pattern for 4.625-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (38)	169 (77)	234 (106)	341 (155)	470 (213)
Spacer lb (kg)	71 (32)	142 (64)	195 (88)	283 (128)	389 (177)



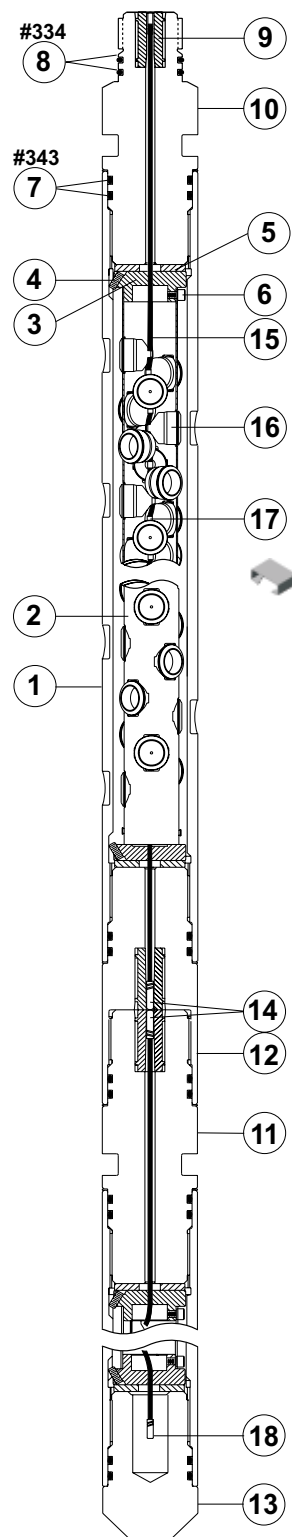
4 5/8-in. 12-spf OMNI™ SH VannGun™ System

4 5/8-in. 12-spf OMNI™ SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155836	Shipping Assembly - 4 ft	101272845
	100005209	Shipping Assembly - 8 ft	101272846
	100163695	Shipping Assembly - 11 ft	100155867
	100155837	Shipping Assembly - 16 ft	100155868
	100010359	Shipping Assembly - 22 ft	100155869
*1	100156338	Gun, Scallop - 4 ft	100156376
	100156339	Gun, Scallop - 8 ft	100156382
	100014254	Gun, Scallop - 11 ft	100156378
	100014255	Gun, Scallop - 16 ft	100156377
	100156335	Gun, Scallop - 22 ft	100156375

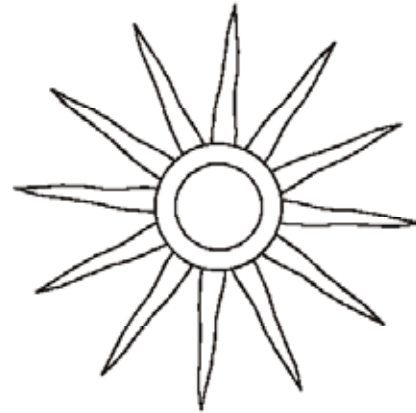
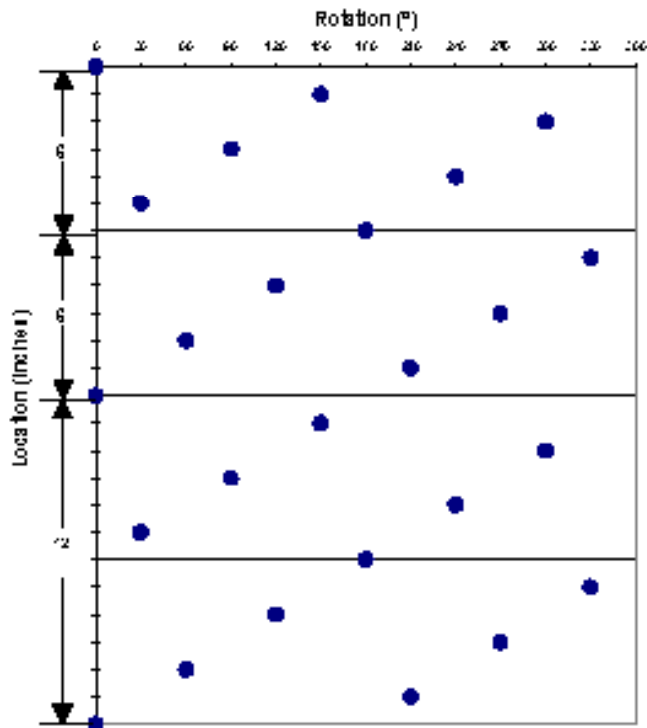
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156514
	Tube, Charge Holder - 8 ft	100156515
	Tube, Charge Holder - 11 ft	100156518
	Tube, Charge Holder - 16 ft	100156516
	Tube, Charge Holder - 22 ft	100156517
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

* Included in Shipping Assembly.



4 5/8-in. 12-spf
OMNI™ SH VannGun™ System

4 5/8-in. 12-spf OMNI™ SH VannGun™ System



30°/150° Phasing
12 Perforation Planes

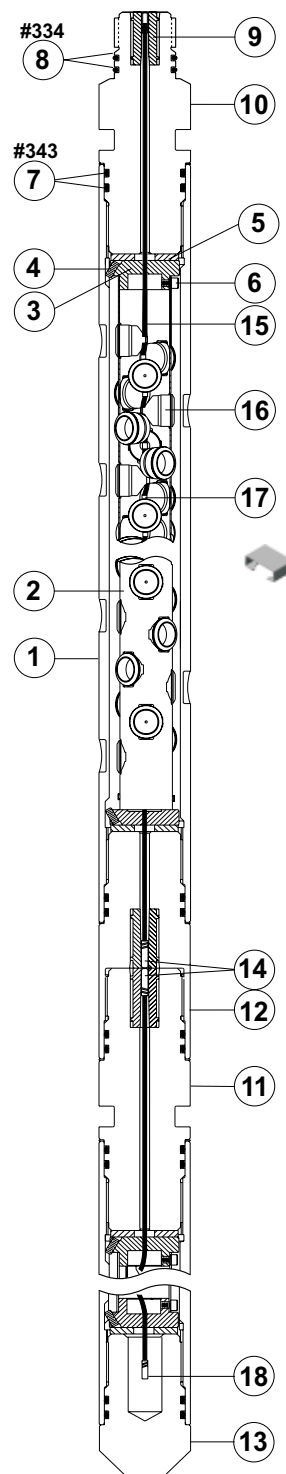
VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (38)	169 (77)	234 (106)	341 (155)	470 (213)
Spacer lb (kg)	71 (32)	142 (64)	195 (88)	283 (128)	389 (177)

4 5/8-in. 14-spf 25.7°/128.5° SH VannGun™ System

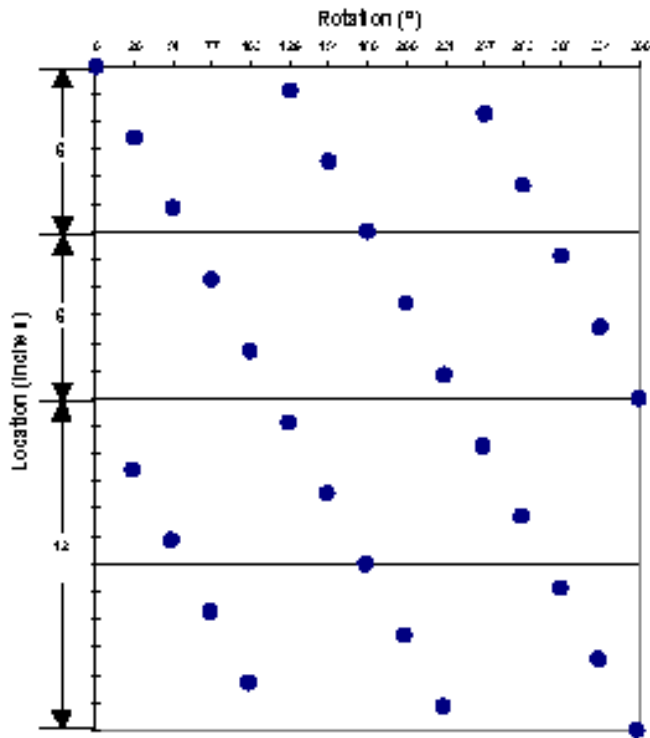
Item	Part No.	Description	Part No.
	Premium		Standard
	101201455	Shipping Assembly - 4 ft	N/A
	101201461	Shipping Assembly - 8 ft	
	101201472	Shipping Assembly - 11 ft	
	101201478	Shipping Assembly - 16 ft	
	101201479	Shipping Assembly - 22 ft	
*1	101201456	Gun, Scallop - 4 ft	N/A
	101201462	Gun, Scallop - 8 ft	
	101201473	Gun, Scallop - 11 ft	
	101201476	Gun, Scallop - 16 ft	
	101201485	Gun, Scallop - 22 ft	
Item	Description		Part No.
*2	Tube, Charge Holder - 4 ft		101201457
	Tube, Charge Holder - 8 ft		101201464
	Tube, Charge Holder - 11 ft		101201474
	Tube, Charge Holder - 16 ft		101201477
	Tube, Charge Holder - 22 ft		101201486
*3	Fixture, Alignment		100156519
*4	Screw, Set 0.25"-20 D x 0.75" L		100028806
*5	Charge Tube Cushion		100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L		100028226
7	O-Ring, Buna 90 Duro #343		100001972
	O-Ring, Viton 95 Duro #343		100009383
	O-Ring, Aflas 90 Duro #343		100157505
	O-Ring, Backup #343		100014417
8	O-Ring, Buna 90 Duro #334		100001963
	O-Ring, Viton 95 Duro #334		100009382
	O-Ring, Aflas 90 Duro #334		13416
	O-Ring, Backup #334		100005381
9	Insert, Alignment (PAI)		100005255
	Insert, Alignment (AAI)		100005222
10	Crossover, Firing Head		100005264
11	Tandem, Grooved		100005263
12	Crossover, Box x Pin		100005265
13	Bull Plug		100005266
14	Bi-Directional Booster		See Appendix A
15	Detonating Cord		See Appendix A
16	Charge - 28.0g RDX SH		100005311
	Charge - 28.0g HMX SH		100156995
17	Charge Clip		100157866
18	End Seal		100005251

* Included in Shipping Assembly.

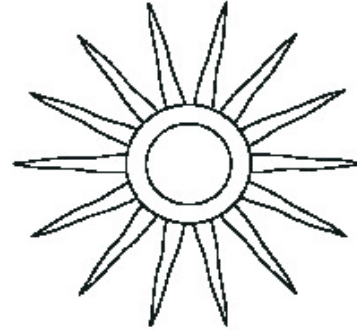


4 5/8-in. 14-spf 25.7°/128.5° SH VannGun™ System

4 5/8-in. 14-spf 25.7°/128.5° SH VannGun™ System



Shot Pattern for 4.625-in.
14-spf 25.7°/128.5° Phasing



25.7°/128.5° Phasing
14 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (37)	168 (76)	232 (105)	339 (154)	467 (212)
Spacer lb (kg)	69 (31)	137 (62)	189 (86)	275 (125)	378 (171)

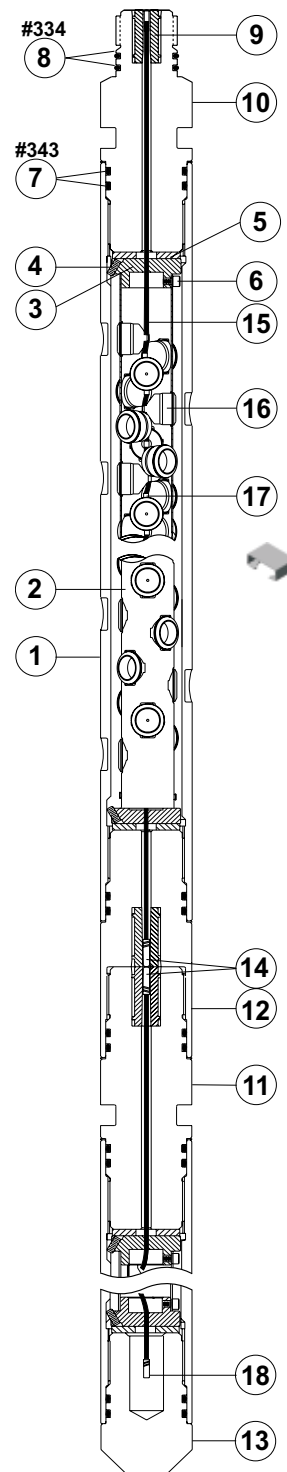
4 5/8-in. 18-spf 45°/135° BH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155819	Shipping Assembly - 4 ft	101230699
	100155820	Shipping Assembly - 8 ft	101230707
	100155821	Shipping Assembly - 11 ft	101230709
	100155822	Shipping Assembly - 16 ft	101230711
	100155823	Shipping Assembly - 22 ft	101230712

*1	100156340	Gun, Scallop - 4 ft	101236988
	100156541	Gun, Scallop - 8 ft	101236989
	100156342	Gun, Scallop - 11 ft	101236992
	100156343	Gun, Scallop - 16 ft	101236994
	100156344	Gun, Scallop - 22 ft	101236993

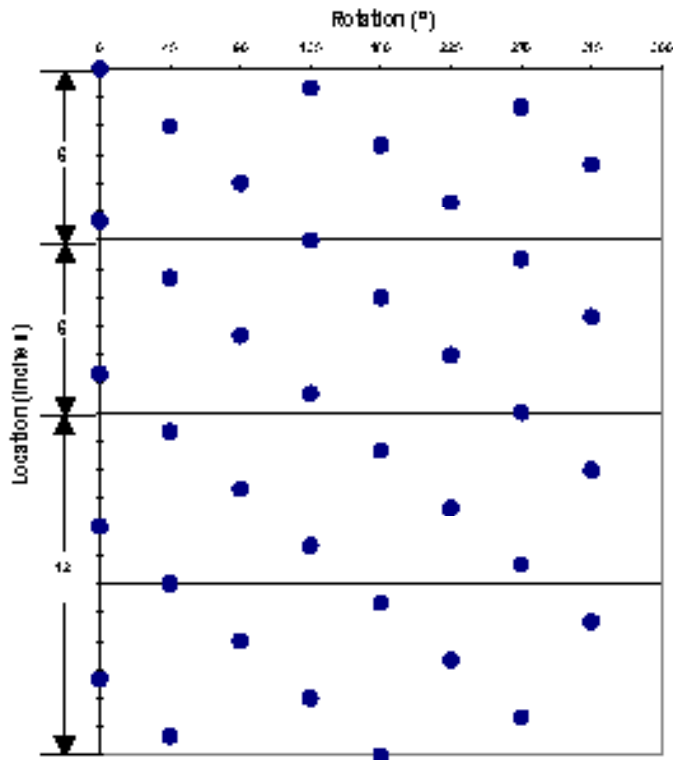
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	100156527
	Tube, Charge Holder - 8ft	100156528
	Tube, Charge Holder - 11ft	100156529
	Tube, Charge Holder - 16ft	100156530
	Tube, Charge Holder - 22ft	100156531
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment	See Appendix B
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 20.0g RDX BH	100156990
	Charge - 20.0g HMX BH	AR
17	Charge Clip	100157866
18	End Seal	100005251

* Included in Shipping Assembly.
AR Available Upon Request.

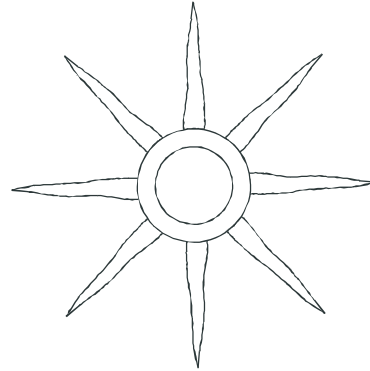


4 5/8-in. 18-spf 45°/135°
BH VannGun™ System

4 5/8-in. 18-spf 45°/135° BH VannGun™ System



Shot Pattern for 4.625-in.
18-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	85 (39)	174 (79)	241 (109)	353 (160)	486 (221)
Spacer lb (kg)	69 (31)	137 (62)	189 (86)	275 (125)	378 (171)

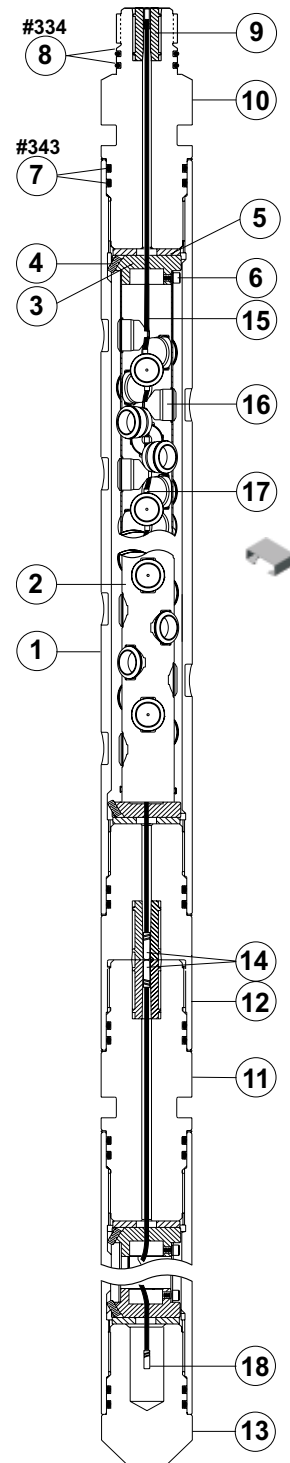
4 5/8-in. 18-spf 45°/135° DP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237948	Shipping Assembly - 4 ft	101236981
	101237950	Shipping Assembly - 8 ft	101236982
	100155870	Shipping Assembly - 11 ft	101236984
	120125479	Shipping Assembly - 16 ft	101236985
	120125480	Shipping Assembly - 22 ft	101236987

*1	100156340	Gun, Scallop - 4 ft	101236988
	100156541	Gun, Scallop - 8 ft	101236989
	100156342	Gun, Scallop - 11 ft	101236992
	100156343	Gun, Scallop - 16 ft	101236994
	100156344	Gun, Scallop - 22 ft	101236993

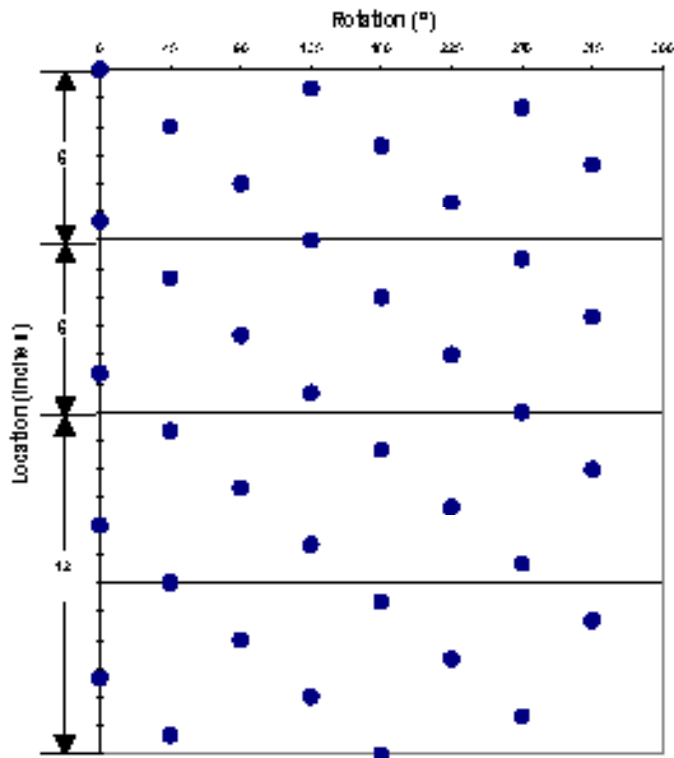
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156435
	Tube, Charge Holder - 8 ft	101237949
	Tube, Charge Holder - 11ft	100156436
	Tube, Charge Holder - 16 ft	100156437
	Tube, Charge Holder - 22 ft	100156438
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 15.0g RDX DP	AR
	Charge - 15.0g HMX DP	100157005
17	Charge Clip	100157866
18	End Seal	100005251

* Included in Shipping Assembly.
AR Available Upon Request.

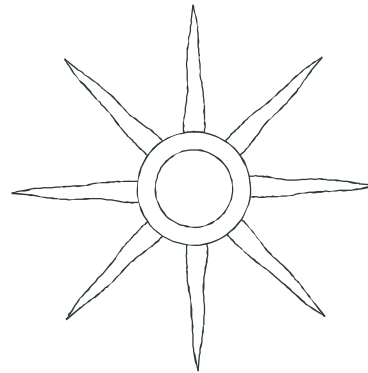


4 5/8-in. 18-spf 45°/135°
DP VannGun™ System

4 5/8-in. 18-spf 45°/135° DP VannGun™ System



Shot Pattern for 4.625-in.
18-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	85 (39)	174 (79)	241 (109)	353 (160)	486 (221)
Spacer lb (kg)	69 (31)	137 (62)	189 (86)	275 (125)	378 (171)

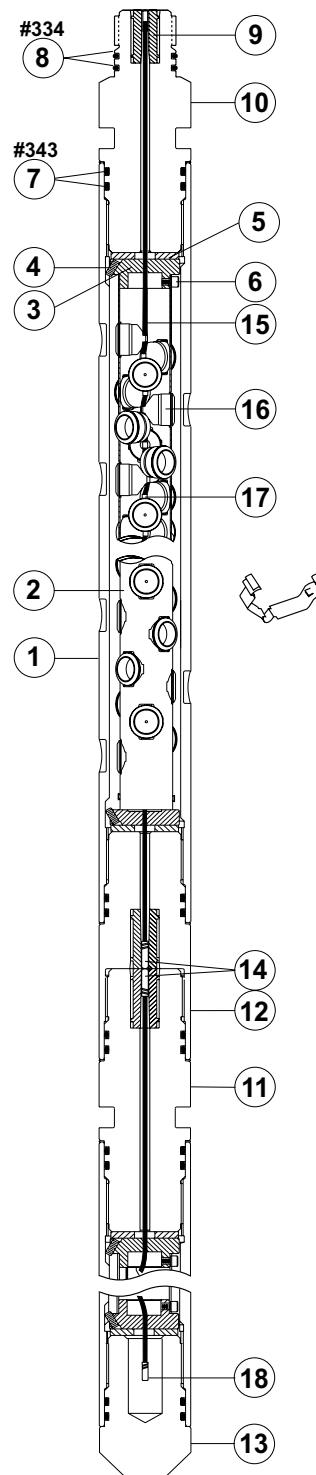


4 3/4-in. 12-spf OMNI™ VannGun™ System

4 3/4-in. 12-spf OMNI™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101216238	Shipping Assembly - 4 ft	N/A
	101216239	Shipping Assembly - 8 ft	
	101216240	Shipping Assembly - 11 ft	
	101216241	Shipping Assembly - 16 ft	
	101216242	Shipping Assembly - 22 ft	
*1	101216248	Gun, Scallop - 4 ft	N/A
	101216249	Gun, Scallop - 8 ft	
	101216250	Gun, Scallop - 11 ft	
	101216251	Gun, Scallop - 16 ft	
	101216252	Gun, Scallop - 22 ft	

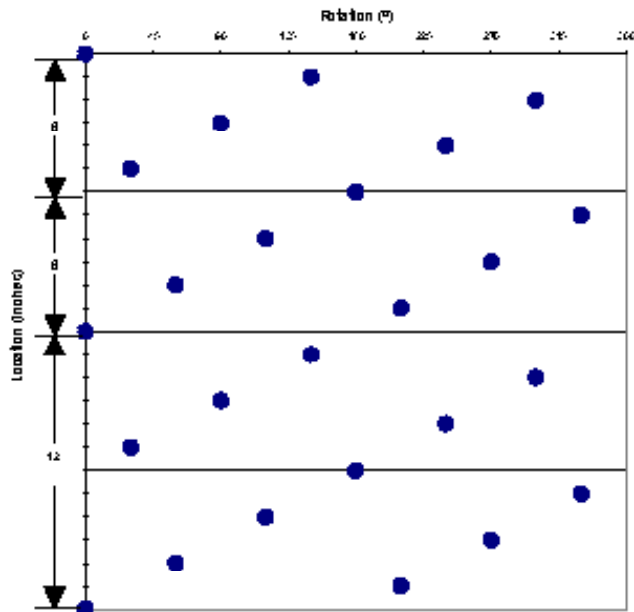
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156511
	Tube, Charge Holder - 8 ft	100156512
	Tube, Charge Holder - 11 ft	100156558
	Tube, Charge Holder - 16 ft	100156513
	Tube, Charge Holder - 22 ft	100156559
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g RDX DP	100005324
	Charge - 22.7g RDX DP/LD	100005325
	Charge - 25.0g RDX BH	100005319
	Charge - 22.7g RDX BH/LD	100005326
	Charge - 22.7g HMX Millennium™	101210674
	Charge - 22.7g HMX DP	100014352
	Charge - 22.7g HMX DP/LD	100005340
	Charge - 25.0g HMX BH	100157006
	Charge - 22.7g HMX BH/LD	AR
	Charge - 26.0 PYX DP	AR
17	Charge Clip	100005250
18	End Seal	100005251



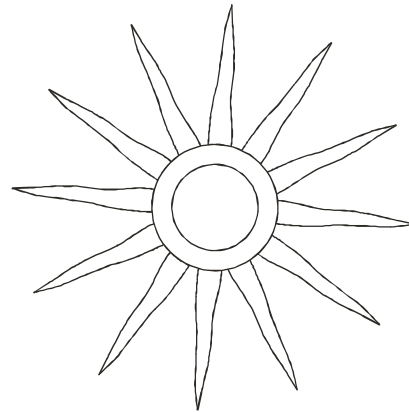
4 3/4-in. 12-spf
OMNI™ VannGun™ System

* Included in Shipping Assembly.
AR Available Upon Request.

4 3/4-in. 12-spf OMNI™ VannGun™ System



Shot Pattern for 4.75-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	88 (40)	179 (81)	248 (113)	363 (165)	500 (227)
Spacer lb (kg)	71 (32)	142 (64)	195 (89)	284 (129)	391 (177)



4 3/4 in. 12-spf OMNI™ SH VannGun™ System

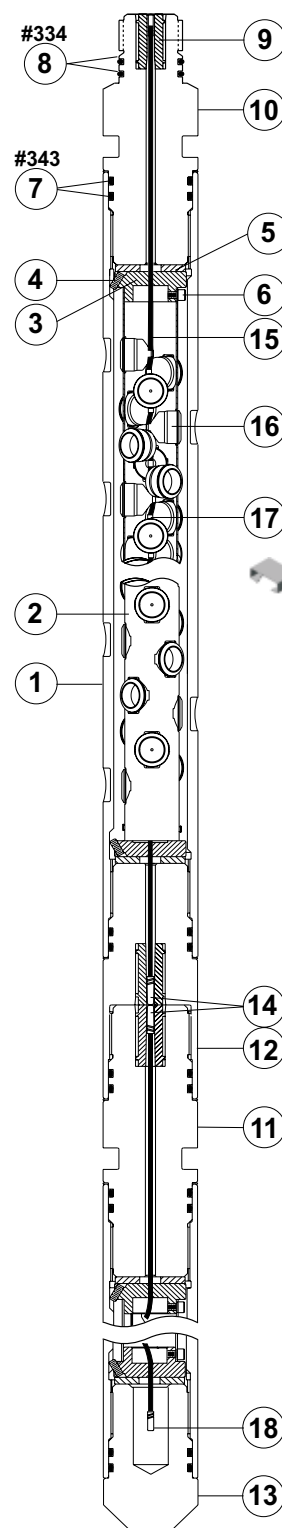
4 3/4-in. 12-spf OMNI™ SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101234613	Shipping Assembly - 4 ft	N/A
	101234615	Shipping Assembly - 8 ft	
	101234618	Shipping Assembly - 11 ft	
	101234616	Shipping Assembly - 16 ft	
	101234617	Shipping Assembly - 22 ft	

*1	101216248	Gun, Scallop - 4 ft	N/A
	101216249	Gun, Scallop - 8 ft	
	101216250	Gun, Scallop - 11 ft	
	101216251	Gun, Scallop - 16 ft	
	101216252	Gun, Scallop - 22 ft	

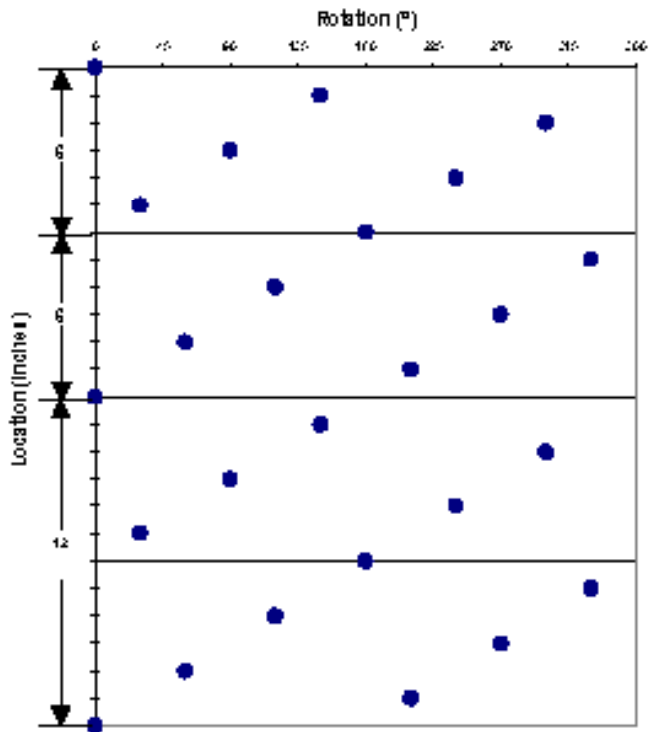
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156514
	Tube, Charge Holder - 8 ft	100156515
	Tube, Charge Holder - 11 ft	100156518
	Tube, Charge Holder - 16 ft	100156516
	Tube, Charge Holder - 22 ft	100156517
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

* Included in Shipping Assembly.

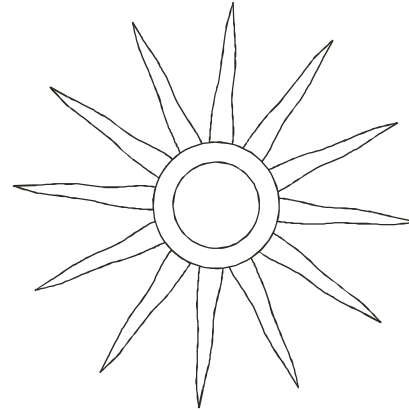


4 3/4-in. 12-spf
OMNI™ SH VannGun™ System

4 3/4-in. 12-spf OMNI™ SH VannGun™ System



Shot Pattern for 4.75-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation Planes

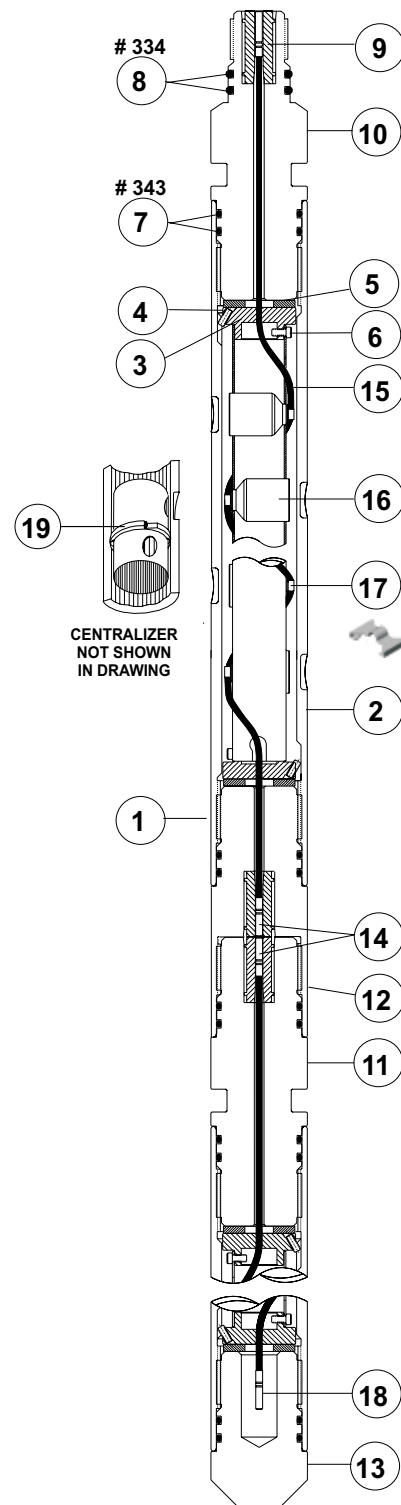
VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	88 (40)	179 (81)	248 (113)	363 (165)	500 (227)
Spacer lb (kg)	71 (32)	142 (64)	195 (89)	284 (129)	391 (177)

4 5/8-in. 4-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101222302	Shipping Assembly - 4 ft	101229295
	101222303	Shipping Assembly - 8 ft	101229296
	101222304	Shipping Assembly - 11 ft	101229297
	101222305	Shipping Assembly - 16 ft	101229301
	101222306	Shipping Assembly - 22 ft	101229302
*1	101222287	Gun, Scallop - 4 ft	101229309
	101222288	Gun, Scallop - 8 ft	101229313
	101222289	Gun, Scallop - 11 ft	101229314
	101222290	Gun, Scallop - 16 ft	101229315
	101222291	Gun, Scallop - 22 ft	101229316

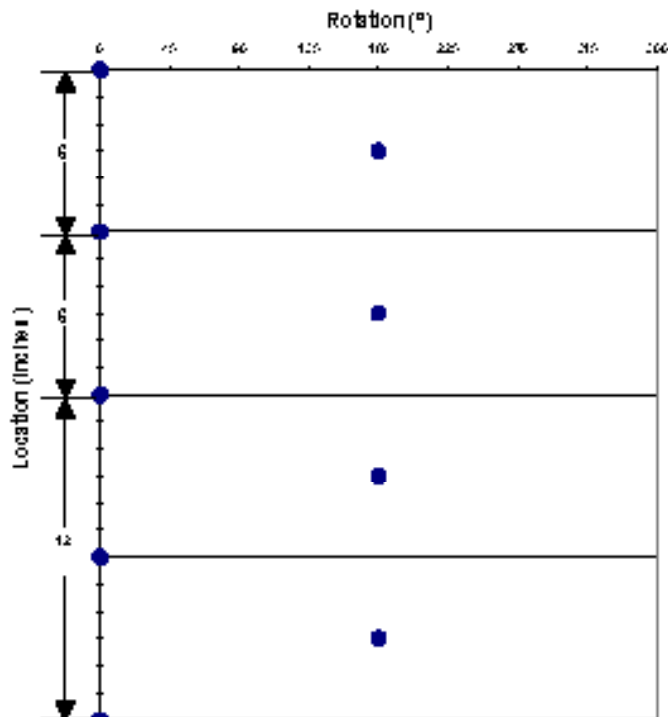
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101222317
	Tube, Charge Holder - 8 ft	101222318
	Tube, Charge Holder - 11 ft	101222319
	Tube, Charge Holder - 16 ft	101222320
	Tube, Charge Holder - 22 ft	101222321
*3	Fixture, Alignment	100014268
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 32.0g RDX DP	100005322
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 32.0g HMX DP	100005327
	Charge - 25.0g HMX SDP	100008249
	Charge - 24.2g PYX SDP	100008015
	Charge - 32.0g PYX/BRX DP	100005323
	Charge - 32.6g HNS SDP	101282511
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251
19	Charge Tube Centralizer	100014269



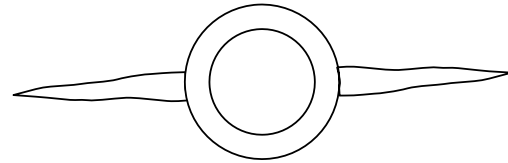
4 5/8-in. 4-spf 180°
VannGun™ System

* Included in Shipping Assembly.

4 5/8-in. 4-spf 180° VannGun™ System



Shot Pattern for 4.625-in.
4-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Length ft (m)	81 (37)	163 (74)	225 (102)	327 (148)	450 (204)
Length ft (m)	74 (34)	148 (67)	204 (93)	297 (135)	408 (185)

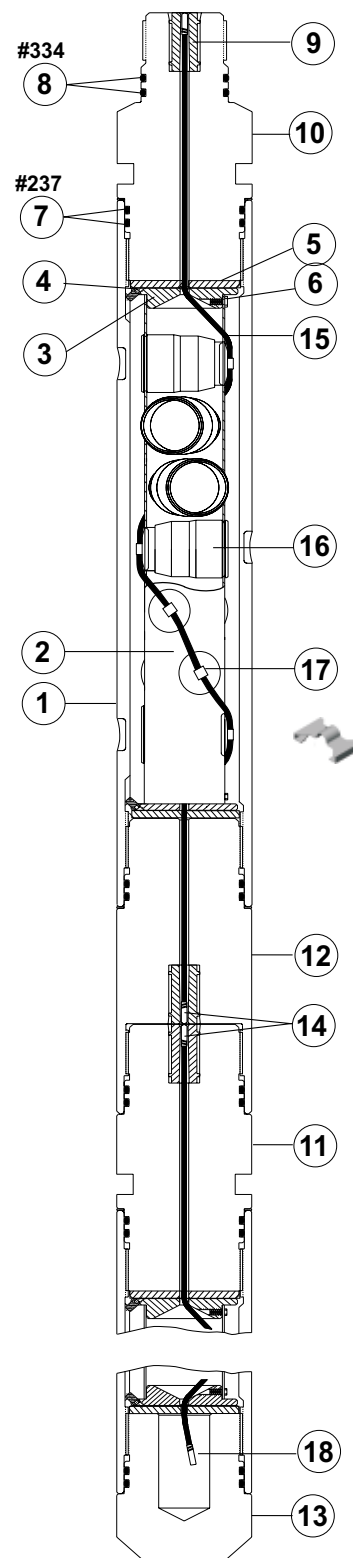
4-in. 6-spf 60° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100014181	Shipping Assembly - 4 ft	N/A
	100008244	Shipping Assembly - 8 ft	
	100008245	Shipping Assembly - 11 ft	
	100005193	Shipping Assembly - 16 ft	
	100005194	Shipping Assembly - 22 ft	

*1	100156283	Gun, Scallop - 4 ft	N/A
	100156284	Gun, Scallop - 8 ft	
	100156285	Gun, Scallop - 11 ft	
	100156286	Gun, Scallop - 16 ft	

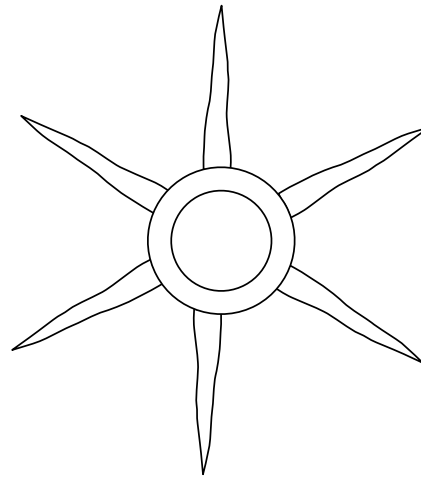
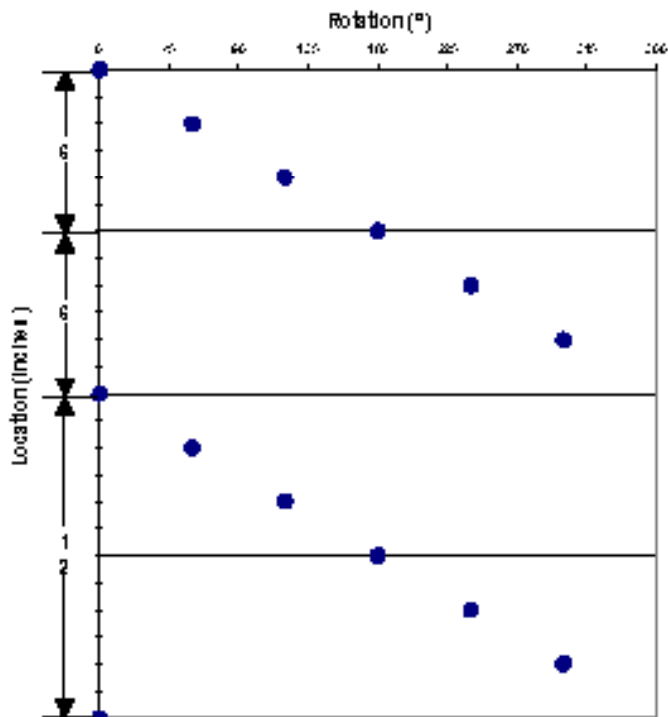
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156492
	Tube, Charge Holder - 8 ft	100156493
	Tube, Charge Holder - 11 ft	100156495
	Tube, Charge Holder - 16 ft	100014267
	Tube, Charge Holder - 22 ft	100156560
*3	Fixture, Alignment	100156398
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156399
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #237	100002008
	O-Ring, Viton 95 Duro #237	100064882
	O-Ring, Aflas 90 Duro #237	101282585
	O-Ring, Backup #237	101282854
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100008007
11	Tandem, Grooved	100005274
12	Crossover, Box x Pin	100005275
13	Bull Plug	100008006
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
	Charge - 32.0g RDX DP	100005322
	Charge - 32.2g PYX/BRX DP	100005323
	Charge - 24.0g RDX SDP	100008014
	Charge - 25.0g HMX SDP	100008249
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 24.2g PYX SDP	100008015
	Charge - 24.0g RDX SDP/LD	101293450
	Charge - 32.0g HMX DP	100005327
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.



4-in. 6-spf 60°
VannGun™ System

4-in. 6-spf 60° VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	71 (32)	146 (66)	201 (91)	294 (133)	406 (184)
Spacer lb (kg)	56 (25)	112 (51)	154 (70)	224 (102)	308 (140)



4 5/8-in. 4-spf 180° Millennium™ VannGun™ System

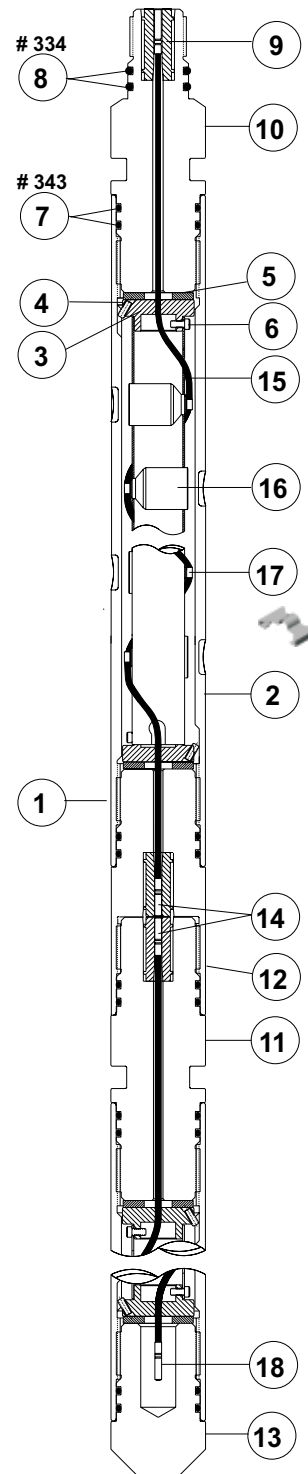
4 5/8-in. 4-spf 180° Millennium™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
N/A		Shipping Assembly - 4 ft	101287404
		Shipping Assembly - 8 ft	101287405
		Shipping Assembly - 11 ft	101287406
		Shipping Assembly - 16 ft	101287407
		Shipping Assembly - 22 ft	101287408

*1	N/A	Gun, Scallop - 4 ft	101229309
		Gun, Scallop - 8 ft	101229313
		Gun, Scallop - 11 ft	101229314
		Gun, Scallop - 16 ft	101229315
		Gun, Scallop - 22 ft	101229316

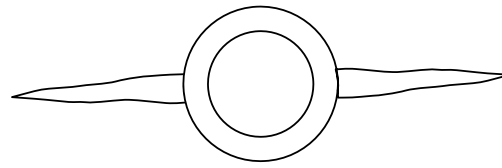
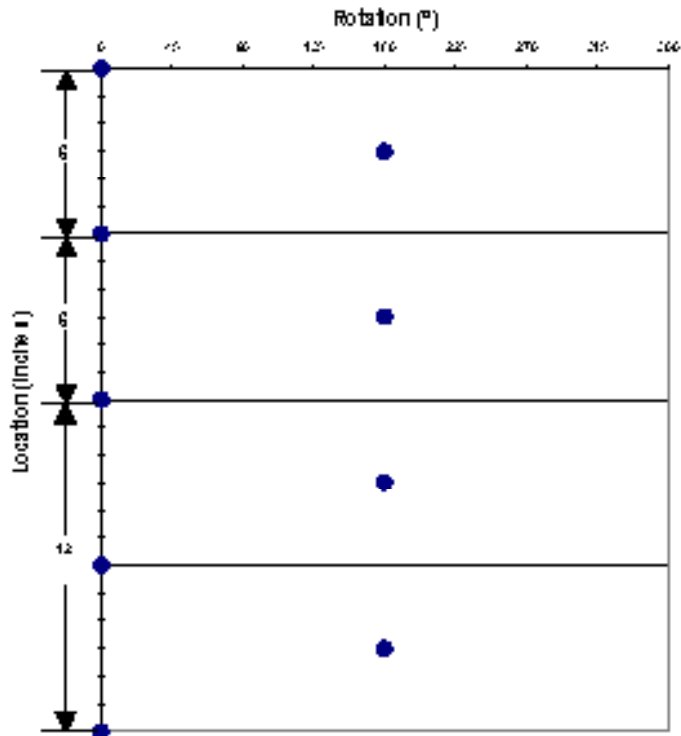
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101287411
	Tube, Charge Holder - 8 ft	101287417
	Tube, Charge Holder - 11 ft	101287418
	Tube, Charge Holder - 16 ft	101287419
	Tube, Charge Holder - 22 ft	101287421
*3	Fixture, Alignment	100156507
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g HNS SDP	101287306
	Charge - 39.0g HMX Millennium™	101210636
17	Charge Clip	100005336
18	End Seal	100005251

*Included in Shipping Assembly.



4 5/8-in. 4-spf 180°
Millennium™ VannGun™ System

4 5/8-in. 4-spf 180° Millennium™ VannGun™ System



180° Phasing
2 Perforation Planes

Shot Pattern for 4.625-in.
4-spf 180° Phasing

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	81 (37)	163 (74)	225 (102)	327 (148)	450 (204)
Spacer lb (kg)	74 (34)	148 (67)	204 (93)	297 (135)	408 (185)



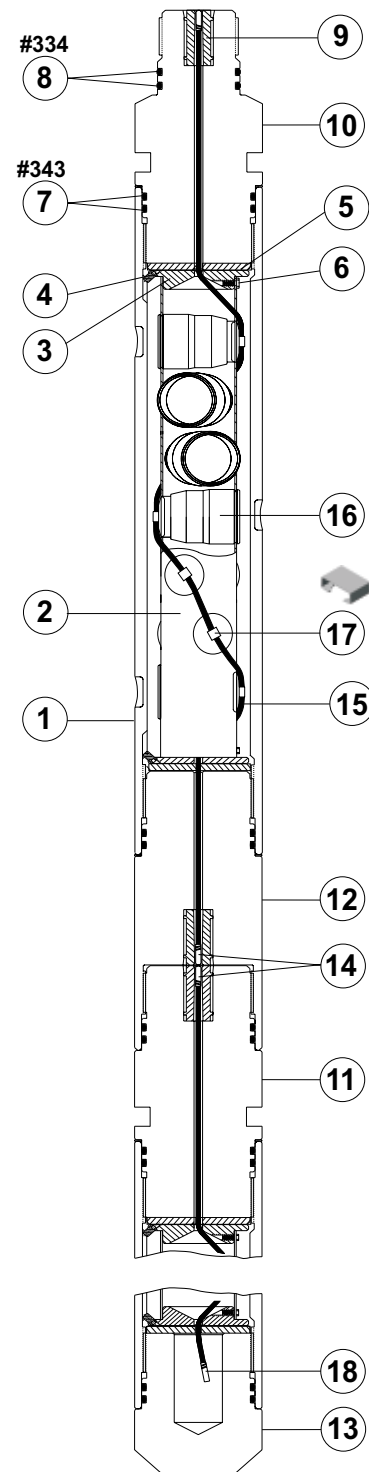
4 5/8-in. 5-spf 72° MaxForce™ VannGun™ System

4 5/8-in. 5-spf 72° MaxForce™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101706642	Shipping Assembly - 4 ft	
	101706892	Shipping Assembly - 8 ft	
	101706893	Shipping Assembly - 11 ft	
	101706894	Shipping Assembly - 16 ft	
	101706895	Shipping Assembly - 22 ft	

*1	100156326	Gun, Scallop - 4 ft	
	100156327	Gun, Scallop - 8 ft	
	100156328	Gun, Scallop - 11 ft	
	100156329	Gun, Scallop - 16 ft	
	100156330	Gun, Scallop - 22 ft	

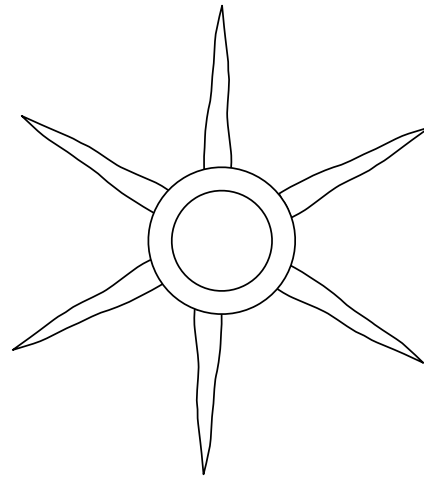
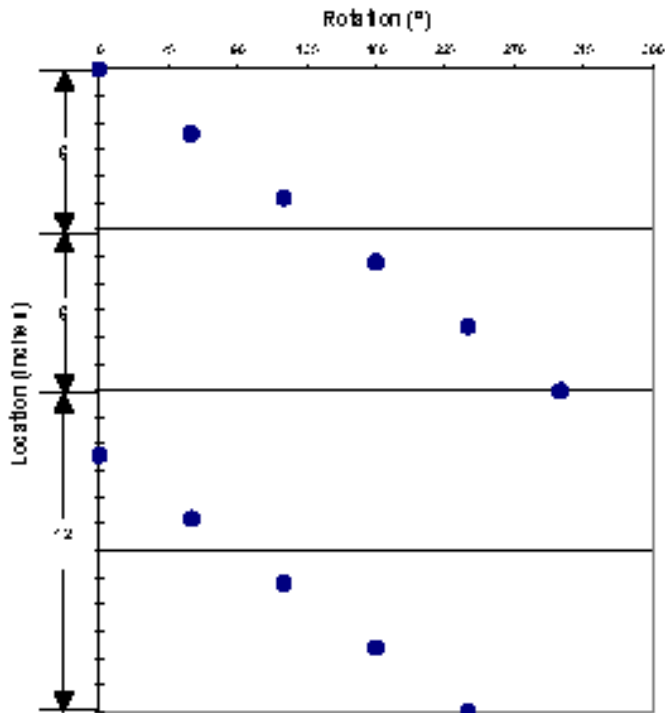
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101705733
	Tube, Charge Holder - 8 ft	101705749
	Tube, Charge Holder - 11 ft	101705750
	Tube, Charge Holder - 16 ft	101705751
	Tube, Charge Holder - 22 ft	101705752
*3	Fixture, Alignment	100156507
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g HMX MaxForce™	101702911
*17	Charge Clip	100157866
18	End Seal	100005251
19	Centralizer Tandem (not shown)	100083048
20	Centralizer Ring (not shown)	100156225



4 5/8-in. 5-spf 72°
MaxForce™ VannGun™ System

*Included in Shipping Assembly.
MaxForce™ is Proprietary to Halliburton

4 5/8-in. 5-spf 72° MaxForce™ VannGun™ System



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	81 (37)	164 (74)	226 (102)	329 (149)	453 (206)
Spacer lb (kg)	74 (33)	148 (67)	203 (92)	295 (134)	406 (184)

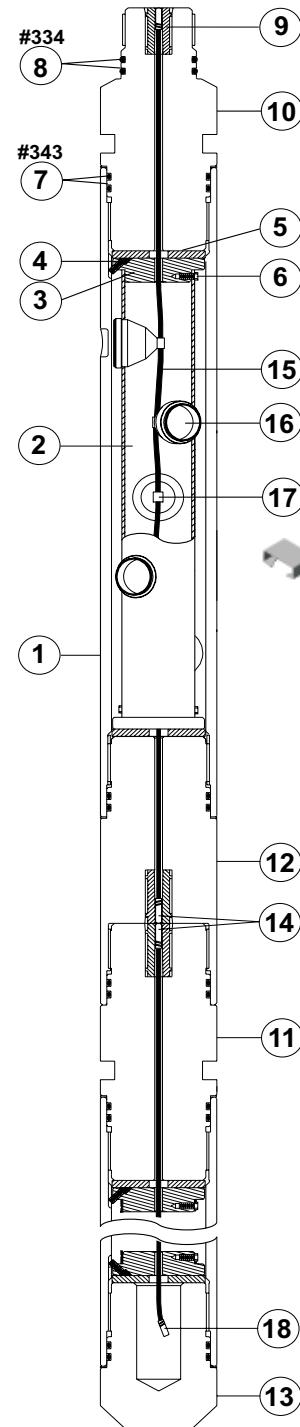
4 5/8-in. 5-spf 135° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
N/A		Shipping Assembly - 4 ft	101268920
		Shipping Assembly - 8 ft	101268921
		Shipping Assembly - 11 ft	101268922
		Shipping Assembly - 16 ft	101268923
		Shipping Assembly - 22 ft	101268924

*1	N/A	Gun, Scallop - 4 ft	101268925
		Gun, Scallop - 8 ft	101268926
		Gun, Scallop - 11 ft	101268928
		Gun, Scallop - 16 ft	101268929
		Gun, Scallop - 22 ft	101268930

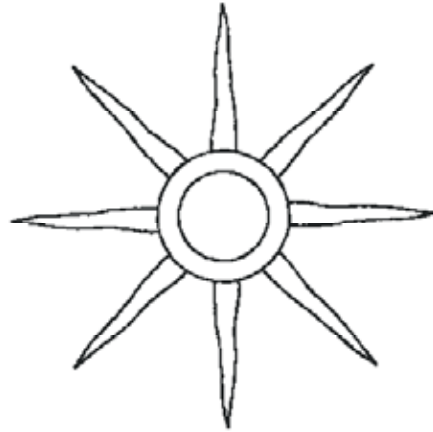
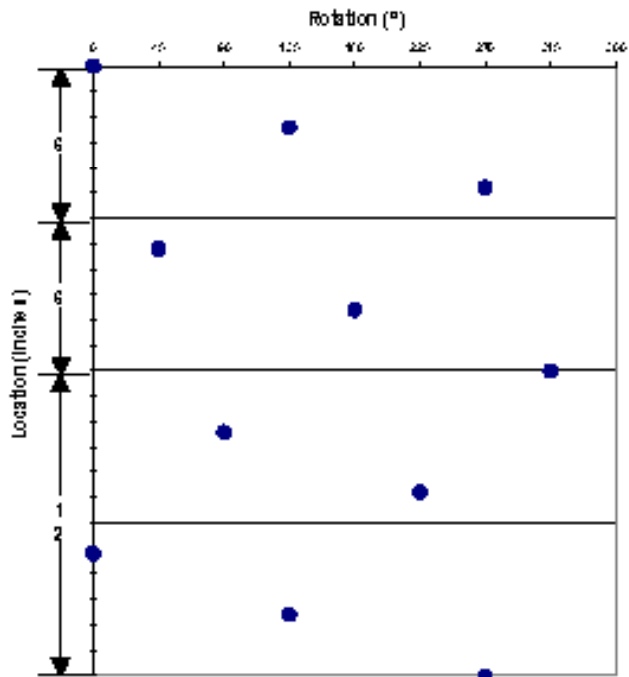
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101268932
	Tube, Charge Holder - 8 ft	101268933
	Tube, Charge Holder - 11 ft	101268934
	Tube, Charge Holder - 16 ft	101268935
	Tube, Charge Holder - 22 ft	101268936
*3	Fixture, Alignment	100156507
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 56.5g RDX SH	101240223
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.



4 5/8-in. 5-spf 135°
SH VannGun™ System

4 5/8-in. 5-spf 135° SH VannGun™ System



135° Phasing
8 Perforation Planes

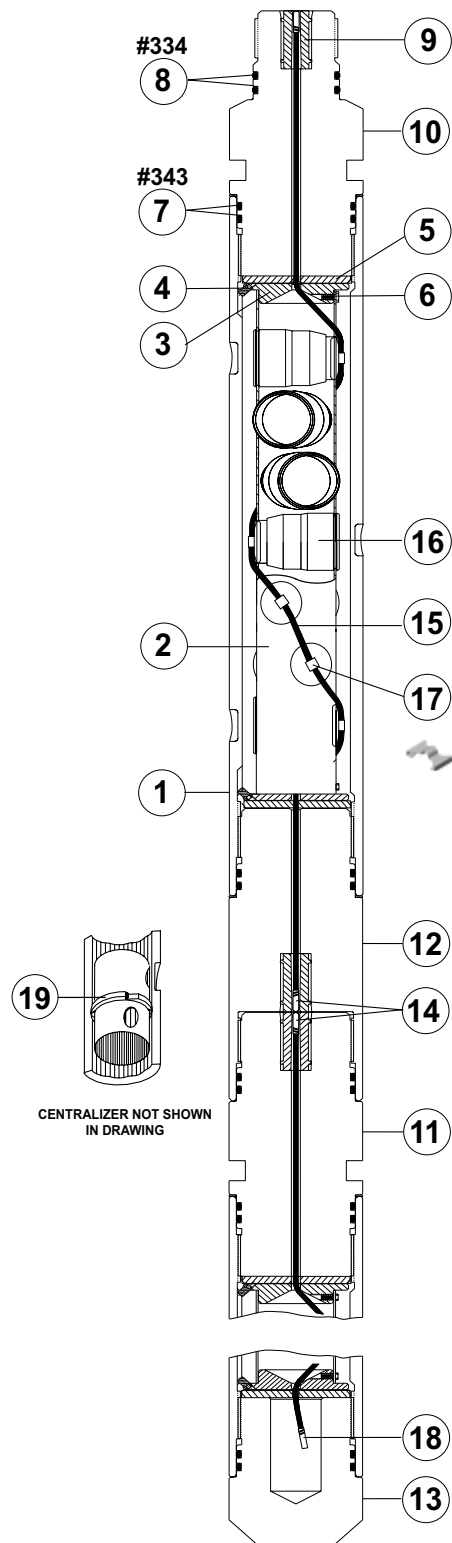
VannGun™ Weights-lb (kg)

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	81 (47)	164 (74)	226 (102)	329 (149)	453 (206)
Spacer lb (kg)	74 (33)	148 (67)	203 (92)	295 (134)	406 (184)

4 5/8-in. 6-spf 60° (6-spf Carrier) VannGun™ System

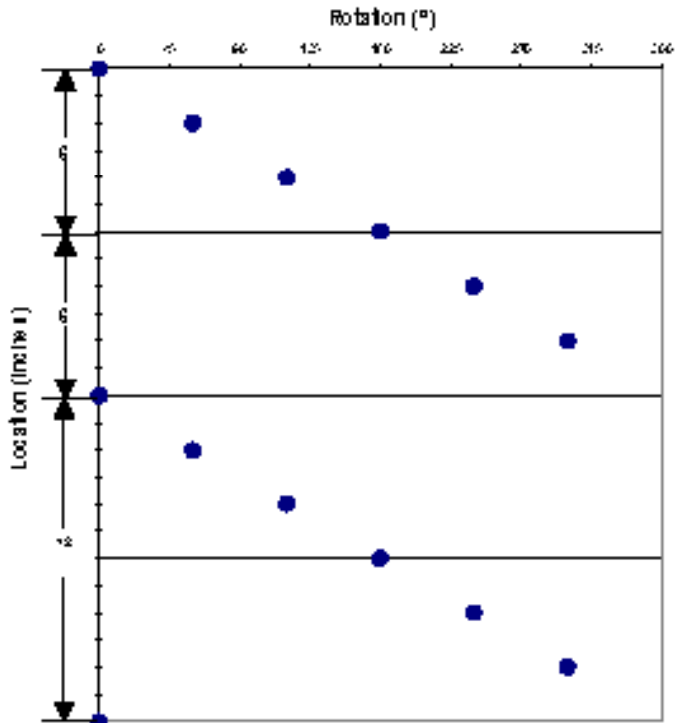
Item	Part No.	Description	Part No.
	Premium		Standard
N/A		Shipping Assembly - 4 ft	101277681
		Shipping Assembly - 8 ft	101277678
		Shipping Assembly - 11 ft	101277679
		Shipping Assembly - 16 ft	101277677
		Shipping Assembly - 22 ft	101277676
*1		Gun, Scallop - 4 ft	101277703
		Gun, Scallop - 8 ft	101277707
		Gun, Scallop - 11 ft	101277708
		Gun, Scallop - 16 ft	101277709
		Gun, Scallop - 22 ft	101277713

Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156492
	Tube, Charge Holder - 8 ft	100156493
	Tube, Charge Holder - 11 ft	100156495
	Tube, Charge Holder - 16 ft	100014267
	Tube, Charge Holder - 22 ft	100156560
*3	Fixture, Alignment	100014268
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 32.0g RDX DP	100005322
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 25.0g HMX SDP	100008249
	Charge - 32.0g HMX DP	100005327
	Charge - 24.2g PYX SDP	100008015
	Charge - 32.0g PYX/BRX DP	100005323
	Charge - 32.6g HNS SDP	101282511
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251
19	Charge Tube Centralizer	100014269

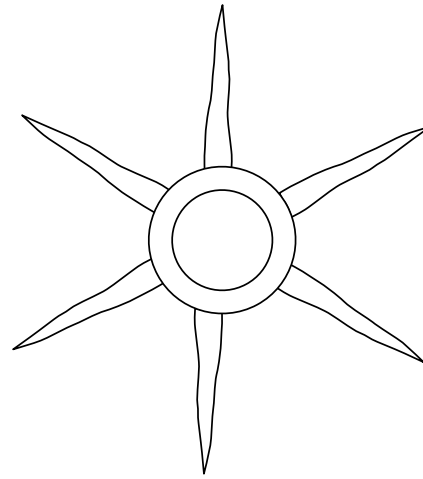


*Included in Shipping Assembly.

4 5/8-in. 6-spf 60° (6-spf Carrier) VannGun™ System



Shot Pattern for 4.625-in.
6-spf 60° Phasing



60° Phasing
6 Perforation Planes

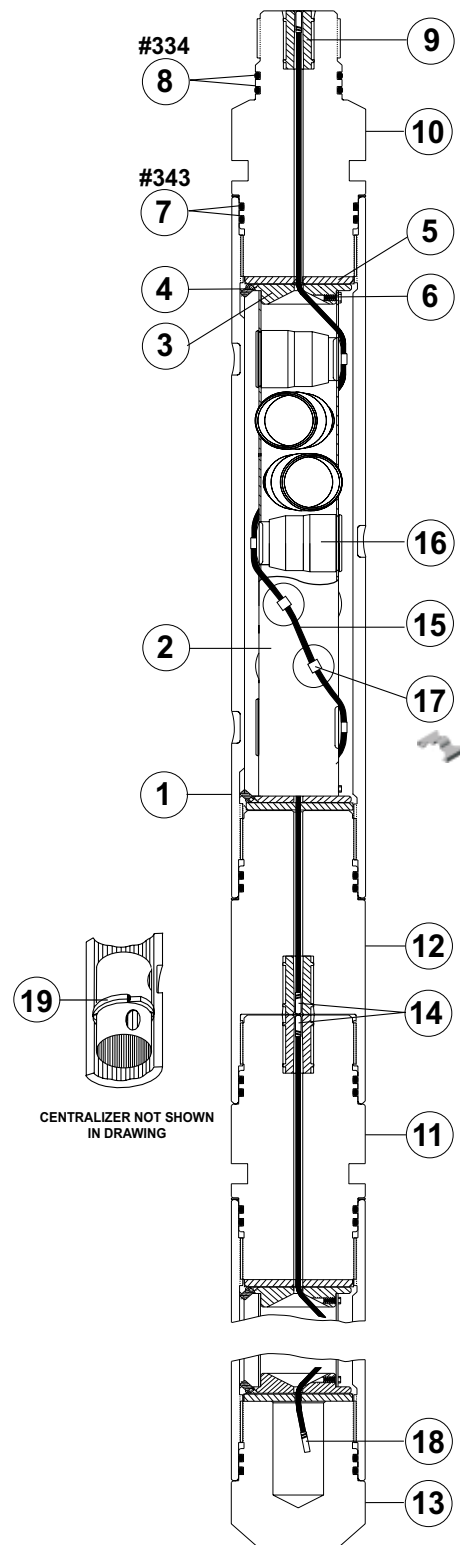
VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	82 (37)	165 (85)	227 (103)	331 (150)	455 (207)
Spacer lb (kg)	73 (33)	147 (67)	202 (91)	293 (133)	403 (183)

4 5/8-in. 6-spf 60° (12-spf Carrier) VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100005200	Shipping Assembly - 4 ft	101205515
	100007982	Shipping Assembly - 8 ft	100155806
	100007985	Shipping Assembly - 11 ft	101205514
	100007983	Shipping Assembly - 16 ft	100155805
	100014182	Shipping Assembly - 22 ft	100155804
*1	100156338	Gun, Scallop - 4 ft	100156376
	100156339	Gun, Scallop - 8 ft	100156382
	100014254	Gun, Scallop - 11 ft	100156378
	100014255	Gun, Scallop - 16 ft	100156377
	100156335	Gun, Scallop - 22 ft	100156375

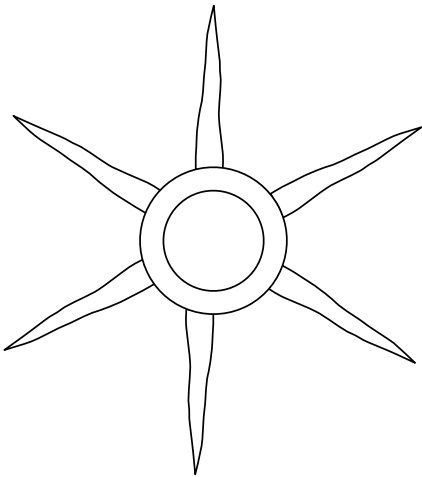
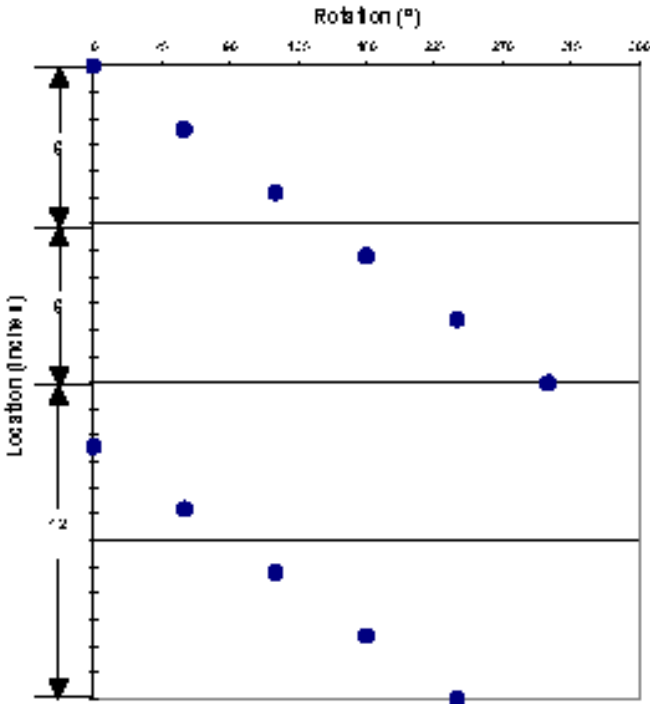
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156492
	Tube, Charge Holder - 8 ft	100156493
	Tube, Charge Holder - 11 ft	100156495
	Tube, Charge Holder - 16 ft	100014267
	Tube, Charge Holder - 22 ft	100156560
*3	Fixture, Alignment	100014268
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.50" L	100028225
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 24.0g RDX SDP	100008014
	Charge - 32.0g RDX DP	100005322
	Charge - 25.0g HMX <i>Millennium</i> ™	101233819
	Charge - 25.0g HMX SDP	100008249
	Charge - 32.0g HMX DP	100005327
	Charge - 24.2g PYX SDP	100008015
	Charge - 32.0g PYX/BRX DP	100005323
	Charge - 32.6g HNS SDP	101282511
	Charge - 24.0g RDX SDP/LD	101293450
17	Charge Clip	100005336
18	End Seal	100005251
19	Charge Tube Centralizer	100014269



4 5/8-in. 6-spf 60°
(12-spf Carrier) VannGun™ System

*Included in Shipping Assembly.

4 5/8-in. 6-spf 60° (12-spf Carrier) VannGun™



60° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	82 (37)	165 (85)	227 (103)	331 (150)	455 (207)
Spacer lb (kg)	73 (33)	147 (67)	202 (91)	293 (133)	403 (183)



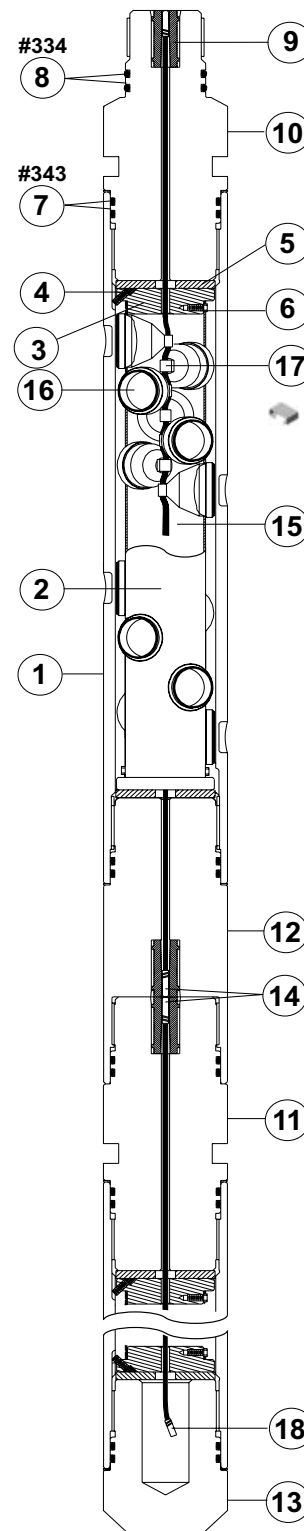
4 5/8-in. 8-spf 45°/135° SH VannGun™ System

4 5/8-in. 8-spf 45°/135° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101237924	Shipping Assembly - 4 ft	101228960
	101237926	Shipping Assembly - 8 ft	101228963
	N/A	Shipping Assembly - 11 ft	101228964
	100155840	Shipping Assembly - 16 ft	101228965
	100155841	Shipping Assembly - 22 ft	101228966
*1	101237924	Gun, Scallop - 4 ft	101228972
	101237926	Gun, Scallop - 8 ft	101228973
	N/A	Gun, Scallop - 11 ft	101228974
	100156336	Gun, Scallop - 16 ft	101228975
	100156337	Gun, Scallop - 22 ft	101228976

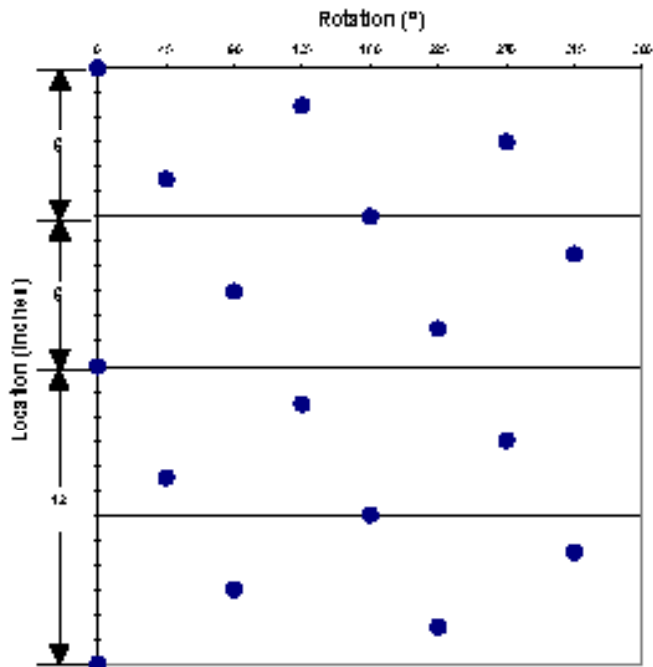
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156415
	Tube, Charge Holder - 8 ft	100156416
	Tube, Charge Holder - 11 ft	101229264
	Tube, Charge Holder - 16 ft	100156417
	Tube, Charge Holder - 22 ft	100156418
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

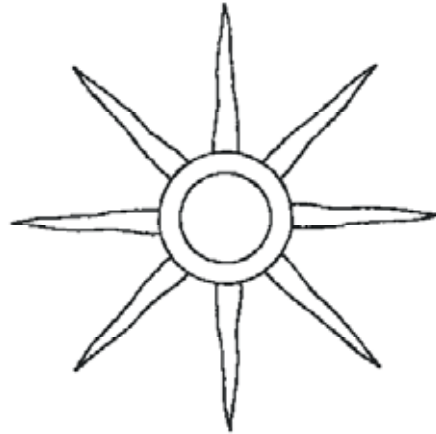


4 5/8-in. 8-spf 45°/135°
SH VannGun™ System

4 5/8-in. 8-spf 45°/135° SH VannGun™ System



Shot Pattern for 4.625-in.
8-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (38)	167 (76)	231 (105)	336 (153)	463 (210)
Spacer lb (kg)	73 (33)	146 (66)	201 (91)	292 (132)	401 (182)

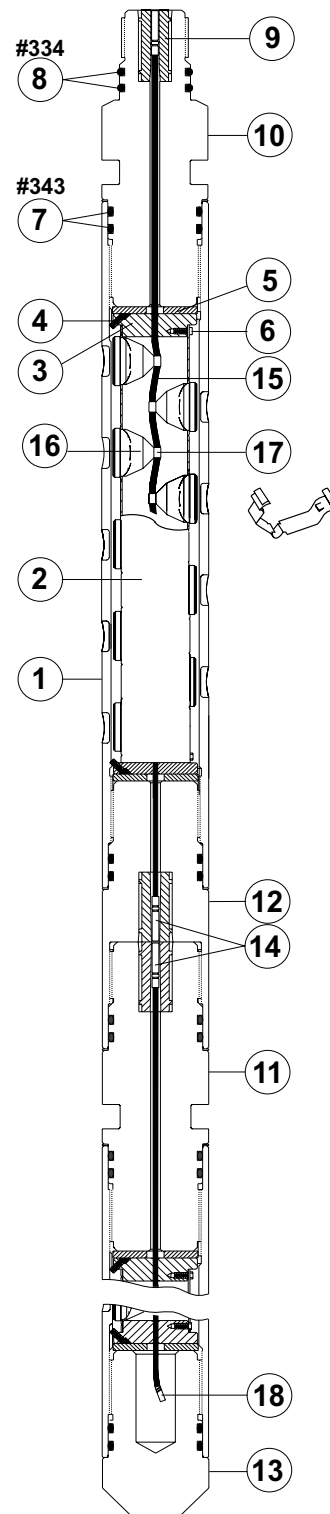


4 5/8-in. 8-spf 180° VannGun™ System

4 5/8-in. 8-spf 180° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101214389	Shipping Assembly - 4 ft	101214451
	101214396	Shipping Assembly - 8 ft	101214461
	101214398	Shipping Assembly - 11 ft	101214462
	121214402	Shipping Assembly - 16 ft	101214463
	101214403	Shipping Assembly - 22 ft	101214464
*1	100156350	Gun, Scallop - 4 ft	101214453
	100156351	Gun, Scallop - 8 ft	101214457
	100156352	Gun, Scallop - 11 ft	101214458
	100156353	Gun, Scallop - 16 ft	101214459
	101207606	Gun, Scallop - 22 ft	101214460

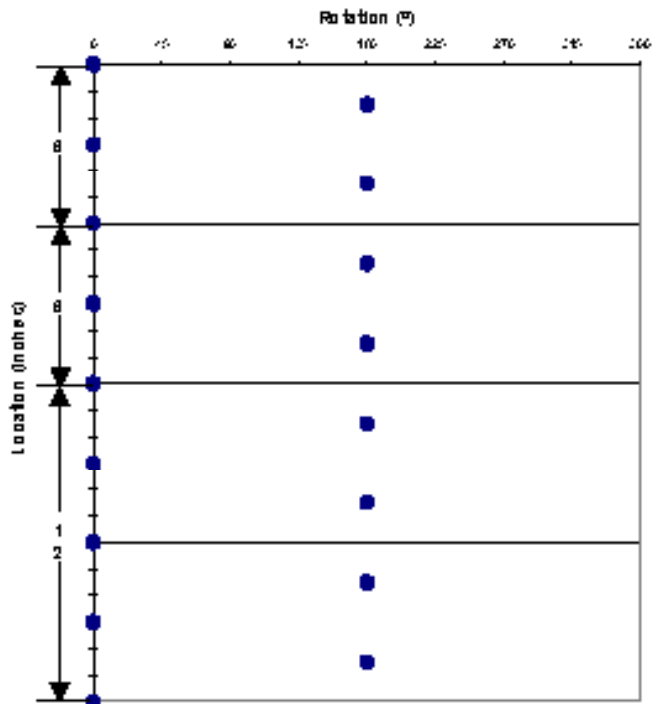
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101214363
	Tube, Charge Holder - 8 ft	101214364
	Tube, Charge Holder - 11 ft	101214365
	Tube, Charge Holder - 16 ft	101214366
	Tube, Charge Holder - 22 ft	101214367
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g RDX DP	100005324
	Charge - 22.7g RDX DP/LD	100005325
	Charge - 25.0g RDX BH	100005319
	Charge - 22.7g RDX BH/LD	100005326
	Charge - 22.7g HMX <i>Millennium</i> ™	101210674
	Charge - 22.7g HMX DP	100014352
	Charge - 22.7g HMX DP/LD	100005340
	Charge - 25.0g HMX BH	100157006
	Charge - 22.7g HMX BH/LD	AR
	Charge - 26.0 PYX DP	AR
17	Charge Clip	100005250
18	End Seal	100005251



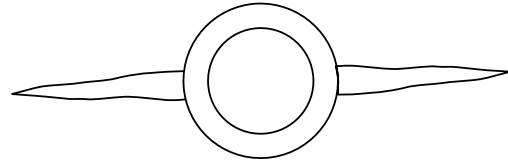
4 5/8-in. 8-spf 180°
VannGun™ System

*Included in Shipping Assembly.
AR Available Upon Request.

4 5/8-in. 8-spf 180° VannGun™ System



Shot Pattern for 4.625-in.
8-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (38)	167 (76)	231 (105)	336 (153)	463 (210)
Spacer lb (kg)	73 (33)	146 (66)	201 (91)	292 (132)	401 (182)



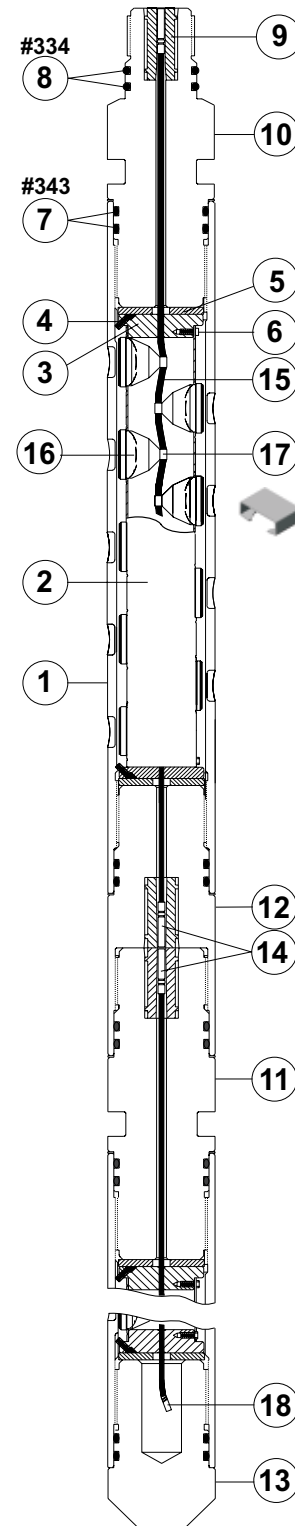
4 5/8-in. 8-spf 180° SH VannGun™ System

4 5/8-in. 8-spf 180° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155871	Shipping Assembly - 4 ft	101230387
	100155872	Shipping Assembly - 8 ft	101230388
	100155873	Shipping Assembly - 11 ft	101230389
	100155874	Shipping Assembly - 16 ft	101230390
	101207605	Shipping Assembly - 22 ft	101230392
*1	100156350	Gun, Scallop - 4 ft	101214453
	100156351	Gun, Scallop - 8 ft	101214457
	100156352	Gun, Scallop - 11 ft	101214458
	100156353	Gun, Scallop - 16 ft	101214459
	101207606	Gun, Scallop - 22 ft	101214460

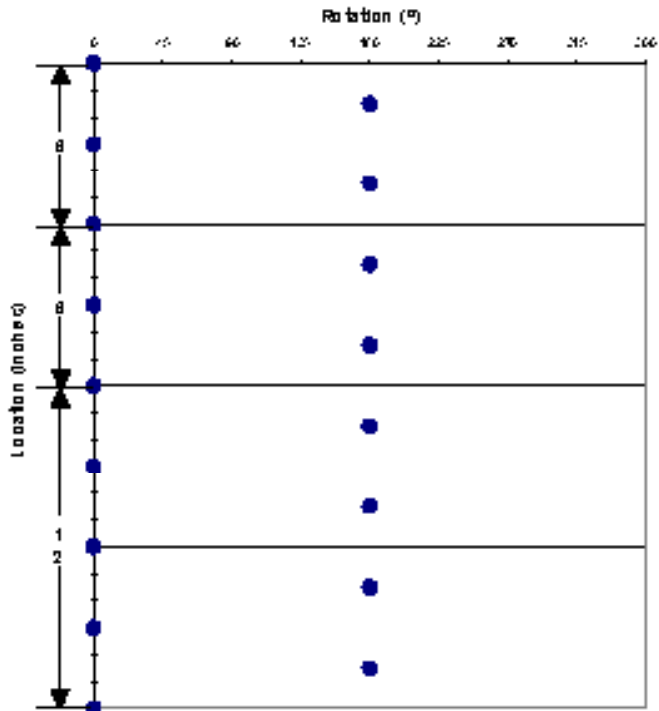
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156538
	Tube, Charge Holder - 8 ft	100156539
	Tube, Charge Holder - 11 ft	100156540
	Tube, Charge Holder - 16 ft	100156541
	Tube, Charge Holder - 22 ft	101207607
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

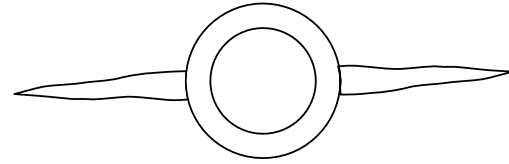


4 5/8-in. 8-spf 180°
SH VannGun™ System

4 5/8-in. 8-spf 180° SH VannGun™ System



Shot Pattern for 4.625-in.
8-spf 180° Phasing



180° Phasing
2 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (38)	167 (76)	231 (105)	336 (153)	463 (210)
Spacer lb (kg)	73 (33)	146 (66)	201 (91)	292 (132)	401 (182)

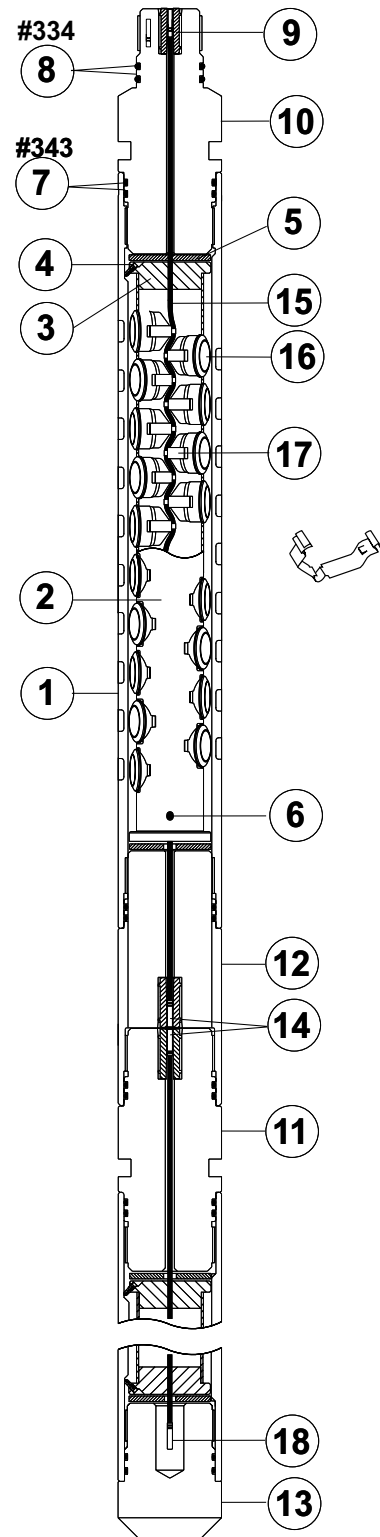


4 5/8-in. 11-spf 140°/160° Lowside VannGun™ System

4 5/8-in. 11-spf 140°/160° Lowside VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101007654	Shipping Assembly - 4 ft	101215806
	101007655	Shipping Assembly - 8 ft	101215885
	N/A	Shipping Assembly - 11 ft	101215886
	100157484	Shipping Assembly - 16 ft	101215887
	101237887	Shipping Assembly - 22 ft	101215888
*1	101202154	Gun, Scallop - 4 ft	101215807
	101202155	Gun, Scallop - 8 ft	101215808
	N/A	Gun, Scallop - 11 ft	101215809
	100156349	Gun, Scallop - 16 ft	101215810
	101237885	Gun, Scallop - 22 ft	101215811

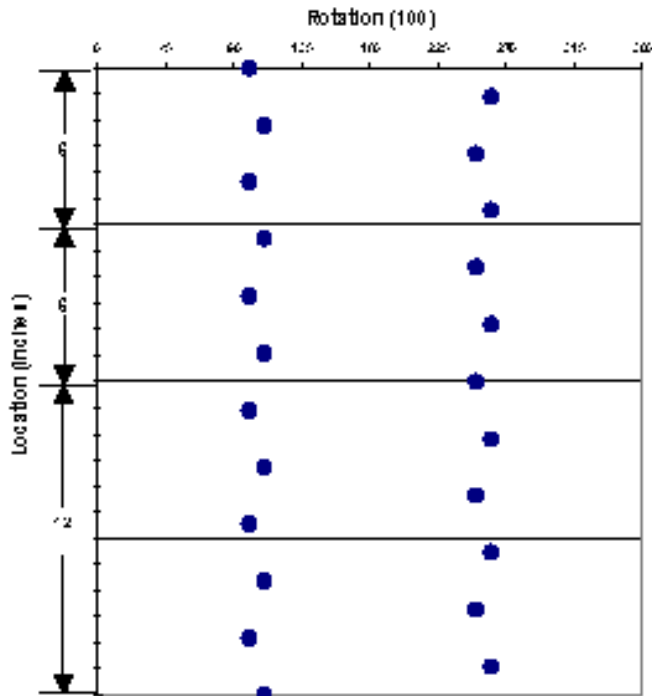
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101215859
	Tube, Charge Holder - 8 ft	101215861
	Tube, Charge Holder - 11 ft	101215862
	Tube, Charge Holder - 16 ft	101215863
	Tube, Charge Holder - 22 ft	101215866
*3	Fixture, Alignment	100156519
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156401
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #343	100001972
	O-Ring, Viton 95 Duro #343	100009383
	O-Ring, Aflas 90 Duro #343	100157505
	O-Ring, Backup #343	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005264
11	Tandem, Grooved	100005263
12	Crossover, Box x Pin	100005265
13	Bull Plug	100005266
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g RDX DP	100005324
	Charge - 25.0g RDX BH	100005319
	Charge - 22.7g RDX BH/LD	100005326
	Charge - 22.7g HMX <i>Millennium</i> ™	101210674
	Charge - 22.7g HMX DP	100014352
	Charge - 25.0g HMX BH	100157006
	Charge - 22.7g HMX BH/LD	AR
	Charge - 26.0 PYX DP	AR
17	Charge Clip	100005250
18	End Seal	100005251



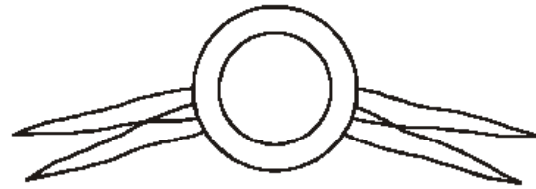
4 5/8-in. 11-spf 140°/160°
Lowside VannGun™ System

*Included in Shipping Assembly.
AR Available Upon Request.

4 5/8-in. 11-spf 140°/160° Lowside VannGun™ System



Shot Pattern for 4.625-in.
11-spf 140°/160° Phasing



140°/160° Phasing
4 Perforation Planes
Lowside

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	83 (37)	168 (76)	232 (105)	339 (154)	407 (212)
Spacer lb (kg)	71 (32)	142 (65)	196 (89)	285 (129)	391 (178)



5-in. 12-spf OMNI™ SH VannGun™ System

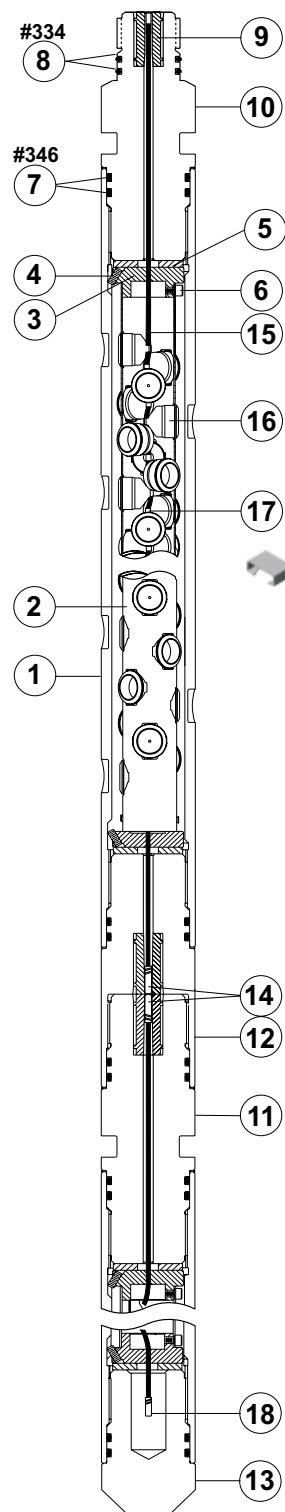
5-in. 12-spf OMNI™ SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101245307	Shipping Assembly - 4 ft	N/A
	101245308	Shipping Assembly - 8 ft	
	101245309	Shipping Assembly - 11 ft	
	101245310	Shipping Assembly - 16 ft	
	101245311	Shipping Assembly - 22 ft	

*1	101245276	Gun, Scallop - 4 ft	N/A
	101245277	Gun, Scallop - 8 ft	
	101245278	Gun, Scallop - 11 ft	
	101245279	Gun, Scallop - 16 ft	
	101245280	Gun, Scallop - 22 ft	

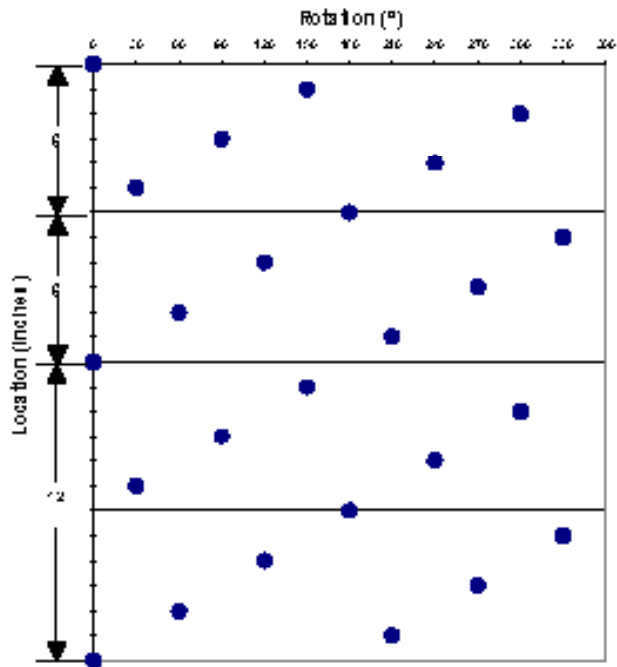
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101271162
	Tube, Charge Holder - 8 ft	101271164
	Tube, Charge Holder - 11 ft	101271165
	Tube, Charge Holder - 16 ft	101271166
	Tube, Charge Holder - 22 ft	101271167
*3	Fixture, Alignment	101245739
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101245302
11	Tandem, Grooved	101245299
12	Crossover, Box x Pin	101245301
13	Bull Plug	101245300
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

* Included in Shipping Assembly.

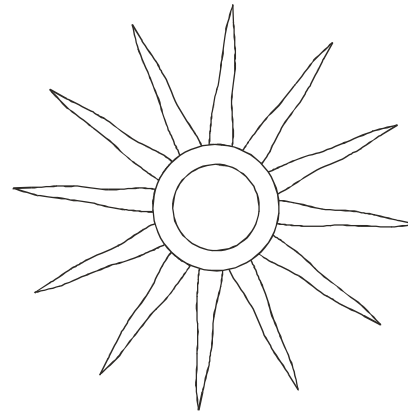


5 -in. 12-spf
OMNI™ SH VannGun™ System

5-in. 12-spf OMNI™ SH VannGun™ System



Shot Pattern for 5-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	101 (46)	206 (93)	285 (129)	416 (189)	575 (260)
Spacer lb (kg)	78 (35)	156 (71)	214 (97)	311 (141)	428 (194)



5-in. 12-spf 25.7°/128.5° SH VannGun™ System

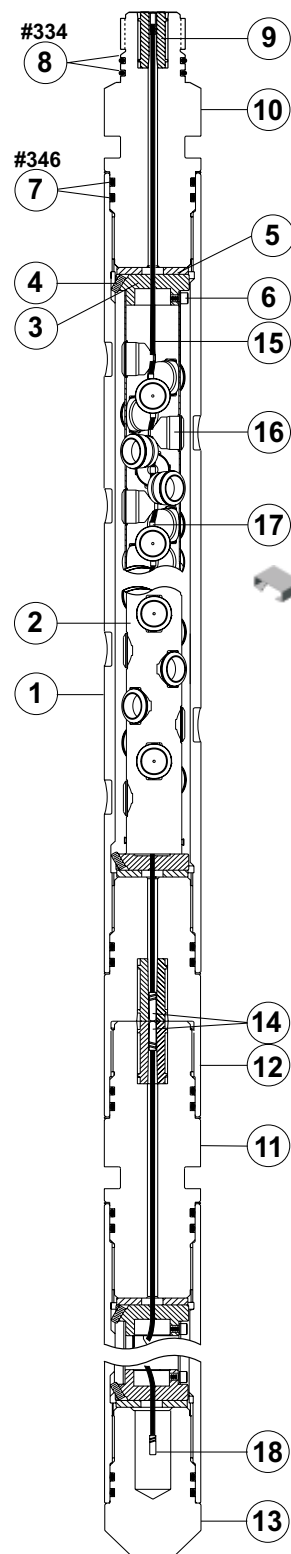
5-in. 12-spf 25.7°/128.5° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101245742	Shipping Assembly - 4 ft	N/A
	101245744	Shipping Assembly - 8 ft	
	101245745	Shipping Assembly - 11 ft	
	101245746	Shipping Assembly - 16 ft	
	101245747	Shipping Assembly - 22 ft	

*1	101245692	Gun, Scallop - 4 ft	N/A
	101245693	Gun, Scallop - 8 ft	
	101245694	Gun, Scallop - 11 ft	
	101245695	Gun, Scallop - 16 ft	
	101245696	Gun, Scallop - 22 ft	

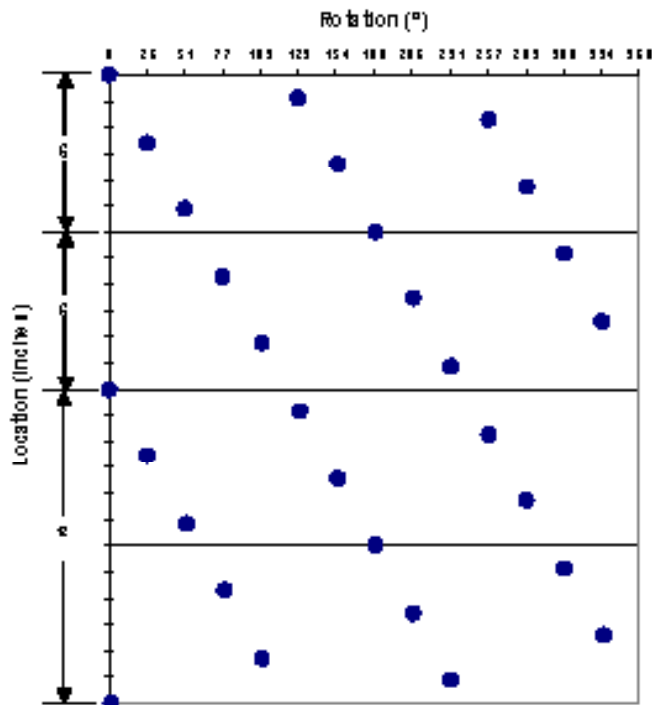
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101271777
	Tube, Charge Holder - 8 ft	101271785
	Tube, Charge Holder - 11 ft	101271786
	Tube, Charge Holder - 16 ft	101271787
	Tube, Charge Holder - 22 ft	101271788
*3	Fixture, Alignment	101245739
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101245302
11	Tandem, Grooved	101245299
12	Crossover, Box x Pin	101245301
13	Bull Plug	101245300
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0 g RDX SH	100005311
	Charge - 28.0 g RDX SH/LD	101228756
	Charge - 28.0 g HMX SH	100156995
	Charge - 28.0 g HMX SH/LD	101233690
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

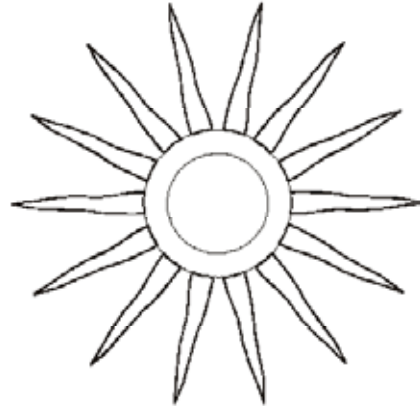


5-in. 12-spf 25.7°/128.5° SH
VannGun™ System

5-in. 12-spf 25.7°/128.5° SH VannGun™ System



Shot Pattern for 5-in.
14-spf 25.7°/128.5° Phasing



25.7°/128.5° Phasing
14 Perforation Planes

VannGun® Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	103 (47)	212 (96)	293 (133)	430 (195)	593 (269)
Spacer lb (kg)	78 (35)	156 (71)	214 (97)	312 (141)	429 (194)



5-in. 12-spf 45°/135° MIRAGE™ SH VannGun® System

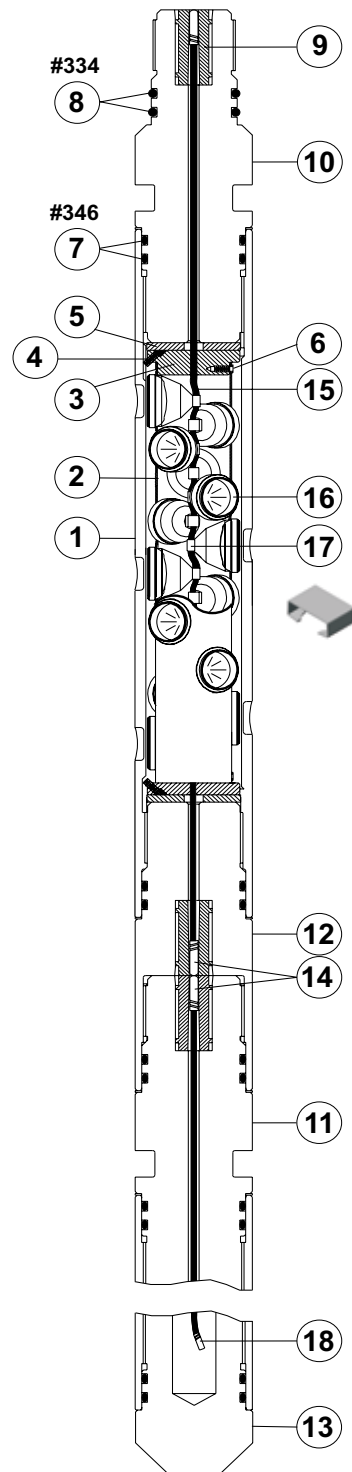
5-in. 12-spf 45°/135° MIRAGE™ SH VannGun® System

Item	Part No.	Description	Part No.
	Premium		Standard
	101299819	Shipping Assembly - 4 ft	N/A
	101299821	Shipping Assembly - 8 ft	
	101299822	Shipping Assembly - 11 ft	
	101299823	Shipping Assembly - 16 ft	
	101299824	Shipping Assembly - 22 ft	

*1	101299809	Carrier - 4 ft	N/A
	101299810	Carrier - 8 ft	
	101299811	Carrier - 11 ft	
	101299812	Carrier - 16 ft	
	101299813	Carrier - 22 ft	

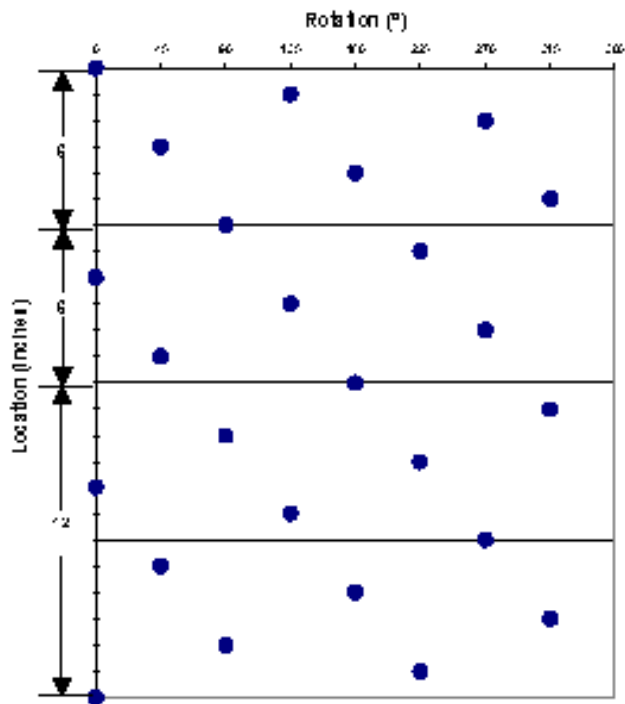
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101299837
	Tube, Charge Holder - 8ft	101299838
	Tube, Charge Holder - 11ft	101299839
	Tube, Charge Holder - 16ft	101299840
	Tube, Charge Holder - 22ft	101299841
*3	Fixture, Alignment	101324177
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100008027
9	PAI - Polymer Alignment Insert	100005255
	AAI-Aluminum Alignment Insert	100005222
10	3.375 Pin grooved FH Crossover	101245302
11	Tandem, Grooved	101245299
12	Crossover, Box x Pin	101245301
13	Bull Plug	101245300
14	Bi-Directional Booster	160251
15	Detonating Cord	100157035
16	22 gram RDX MIRAGE™ SH Charge	101307494
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

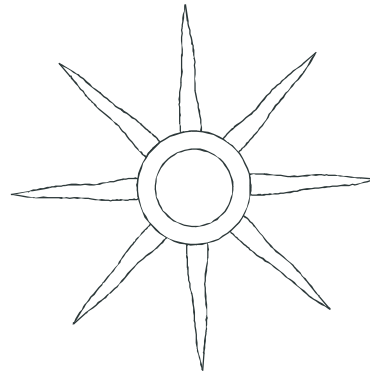


5-in. 12-spf 45°/135° MIRAGE™ SH VannGun® System

5-in. 12-spf 45°/135° *MIRAGE™* SH VannGun™ System



Shot Pattern for 5-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun® Weights

Length ft (m)	4ft	8 ft	16 ft
Loaded lb (kg)	147	303	613
Spacer lb (kg)	114	228	456

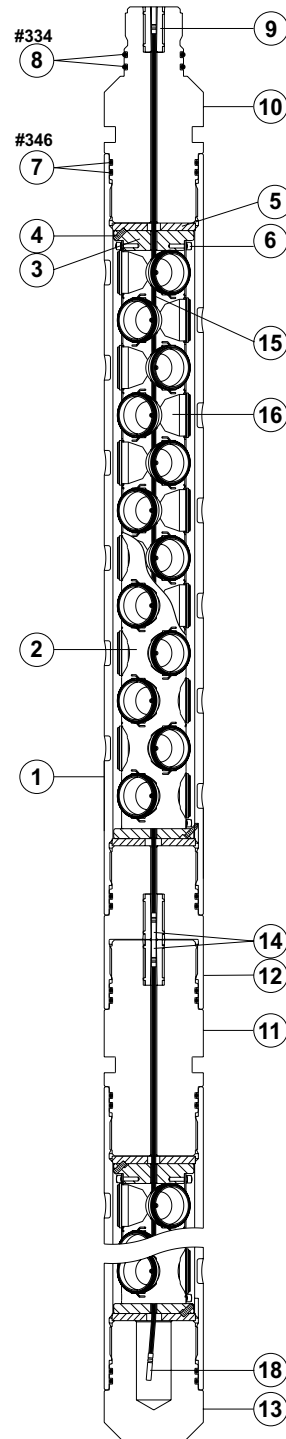
5-in.15-spf 3/Plane SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101269775	Shipping Assembly - 4 ft	N/A
	101269776	Shipping Assembly - 8 ft	
	101269777	Shipping Assembly - 11 ft	
	101269778	Shipping Assembly - 16 ft	
	101269779	Shipping Assembly - 22 ft	

*1	101269762	Gun, Scallop - 4 ft	N/A
	101269765	Gun, Scallop - 8 ft	
	101269766	Gun, Scallop - 11 ft	
	101269767	Gun, Scallop - 16 ft	
	101269768	Gun, Scallop - 22 ft	

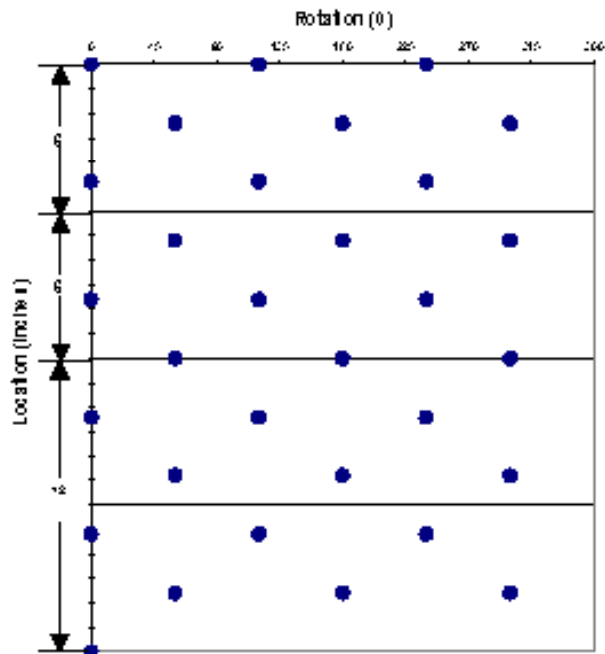
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101269770
	Tube, Charge Holder - 8 ft	101269771
	Tube, Charge Holder - 11 ft	101269772
	Tube, Charge Holder - 16 ft	101269773
	Tube, Charge Holder - 22 ft	101269774
*3	Fixture, Alignment	101245296
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101245302
11	Tandem, Grooved	101245299
12	Crossover, Box x Pin	101245301
13	Bull Plug	101245300
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	101269719
17	Charge Clip	N/A
18	End Seal	100005251

*Included in Shipping Assembly.

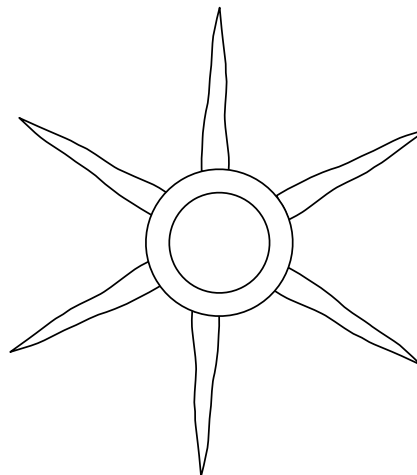


5-in. 15-spf
3/Plane SH VannGun™ System

5-in. 15-spf 3/Plane SH VannGun™ System



Shot Pattern for 5-in.
15-spf 60°/120° Phasing



60°/120° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	105 (51)	216 (98)	299 (136)	437 (198)	602 (273)
Spacer lb (kg)	78 (35)	156 (71)	214 (97)	312 (141)	429 (194)



5-in. 18-spf 3/Plane SH VannGun™ System

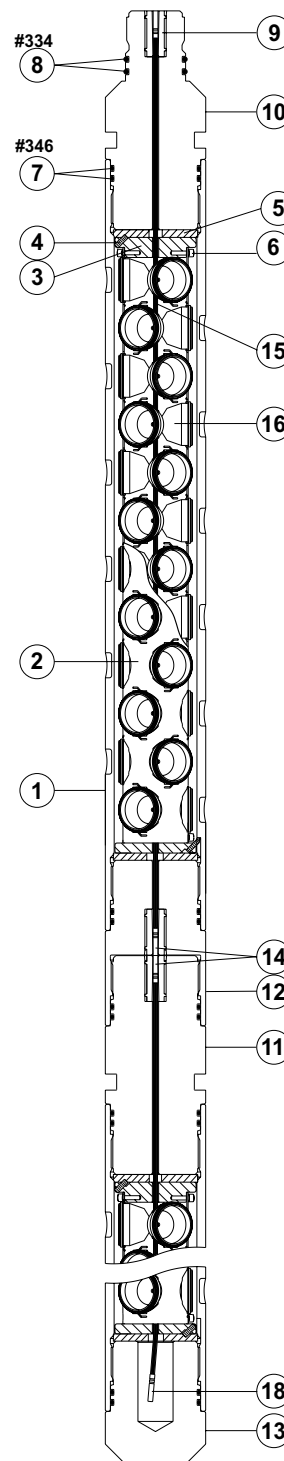
5-in. 18-spf 3/Plane SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101269695	Shipping Assembly - 4 ft	N/A
	101269707	Shipping Assembly - 8 ft	
	101269708	Shipping Assembly - 11 ft	
	101269710	Shipping Assembly - 16 ft	
	101269714	Shipping Assembly - 22 ft	

*1	101245755	Gun, Scallop - 4 ft	N/A
	101245758	Gun, Scallop - 8 ft	
	101245760	Gun, Scallop - 11 ft	
	101245762	Gun, Scallop - 16 ft	
	101245763	Gun, Scallop - 22 ft	

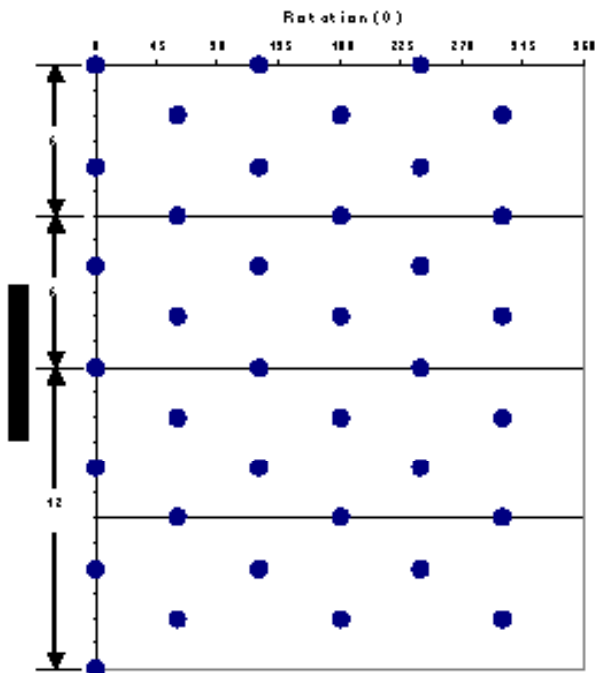
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101245774
	Tube, Charge Holder - 8 ft	101245775
	Tube, Charge Holder - 11 ft	101245776
	Tube, Charge Holder - 16 ft	101245777
	Tube, Charge Holder - 22 ft	101245778
*3	Fixture, Alignment	101245296
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101245302
11	Tandem, Grooved	101245299
12	Crossover, Box x Pin	101245301
13	Bull Plug	101245300
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	101268719
	Charge - 28.0g HMX SH	AR
17	Charge Clip	N/A
18	End Seal	100005251

*Included in Shipping Assembly.
AR Available Upon Request.

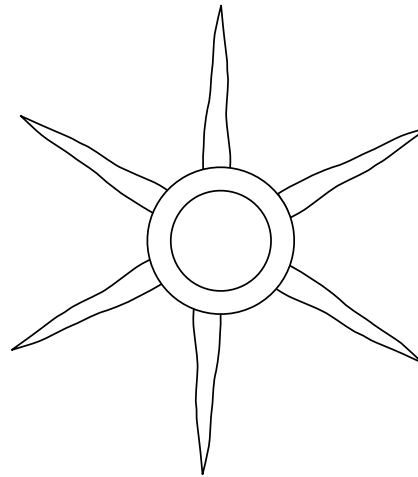


5-in. 18-spf
3/Plane SH VannGun™ System

5-in. 18-spf 3/Plane SH VannGun™ System



Shot Pattern for 5-in.
18-spf 60°/120° Phasing



60°/120° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	106 (48)	222 (101)	309 (140)	453 (206)	626 (284)
Spacer lb (kg)	78 (35)	156 (71)	214 (97)	312 (141)	429 (194)



5 1/8-in. 6-spf 135° SH VannGun™ System

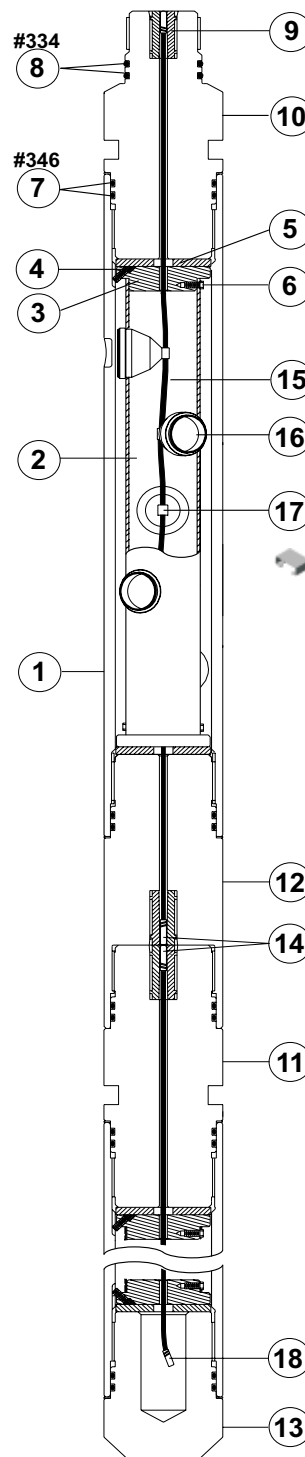
5 1/8-in. 6-spf 135° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101238092	Shipping Assembly - 4 ft	N/A
	101238093	Shipping Assembly - 8 ft	
	101238094	Shipping Assembly - 11 ft	
	101238095	Shipping Assembly - 16 ft	
	101238096	Shipping Assembly - 22 ft	

*1	101238055	Gun, Scallop - 4 ft	N/A
	101238056	Gun, Scallop - 8 ft	
	101238058	Gun, Scallop - 11 ft	
	101238059	Gun, Scallop - 16 ft	
	101238061	Gun, Scallop - 22 ft	

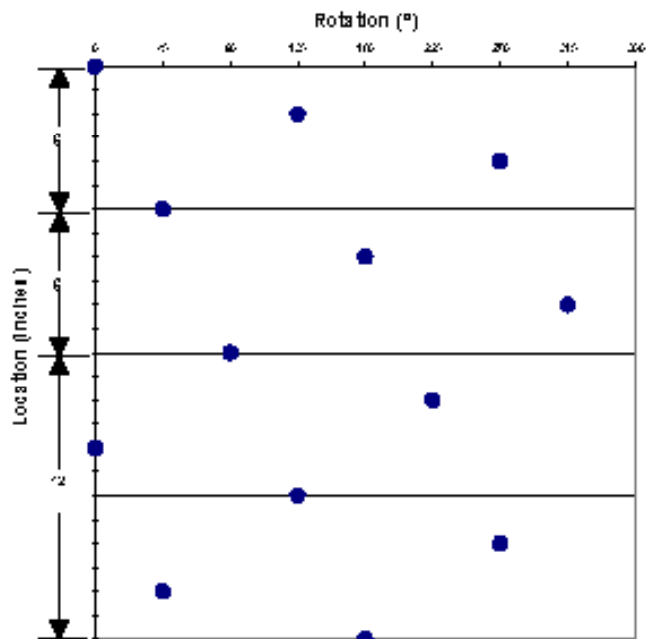
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101238067
	Tube, Charge Holder - 8 ft	101238085
	Tube, Charge Holder - 11 ft	101238086
	Tube, Charge Holder - 16 ft	101238087
	Tube, Charge Holder - 22 ft	101238088
*3	Fixture, Alignment	101238090
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156632
11	Tandem, Grooved	100156629
12	Crossover, Box x Pin	100156630
13	Bull Plug	100156631
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 56.5g RDX SH	101240223
	Charge - 56.5g HMX SH	AR
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.
AR Available Upon Request.

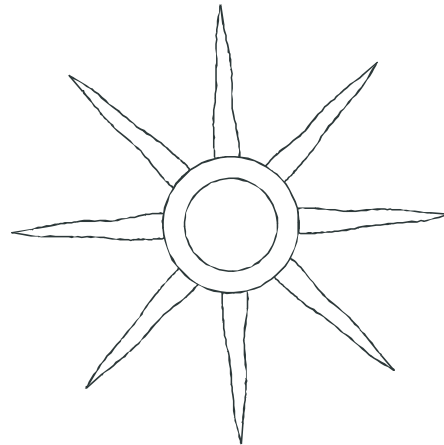


5 1/8-in. 6-spf 135°
SH VannGun™ System

5 1/8-in. 6-spf 135° SH VannGun™ System



Shot Pattern for 5.125-in.
6-spf 135° Phasing



135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	111 (50)	229 (104)	317 (144)	465 (211)	641 (291)
Spacer lb (kg)	84 (38)	168 (76)	231 (105)	336 (152)	462 (209)



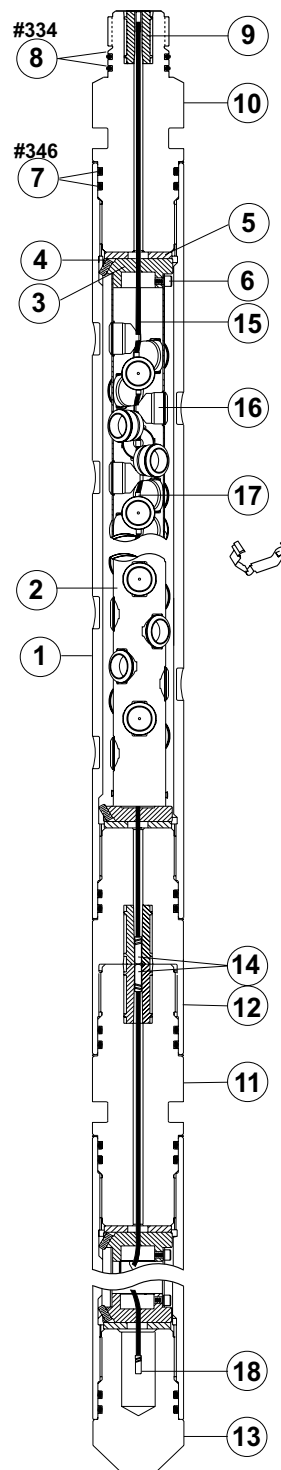
5 1/8-in. 12-spf OMNI™ VannGun™ System

5 1/8-in. 12-spf OMNI™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155880	Shipping Assembly - 4 ft	N/A
	100155881	Shipping Assembly - 8 ft	
	100155882	Shipping Assembly - 11 ft	
	100122883	Shipping Assembly - 16 ft	
	100155884	Shipping Assembly - 22 ft	

*1	100156367	Gun, Scallop - 4 ft	N/A
	100156368	Gun, Scallop - 8 ft	
	100156369	Gun, Scallop - 11 ft	
	100156370	Gun, Scallop - 16 ft	
	100156371	Gun, Scallop - 22 ft	

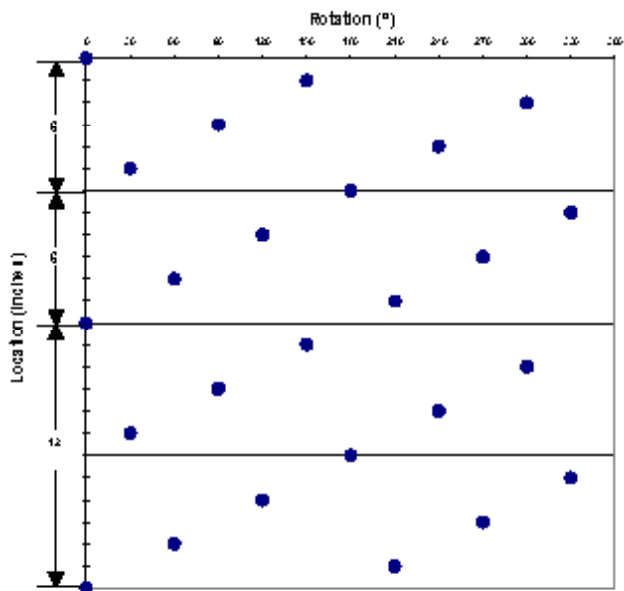
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156440
	Tube, Charge Holder - 8 ft	100156441
	Tube, Charge Holder - 11 ft	100156442
	Tube, Charge Holder - 16 ft	100156443
	Tube, Charge Holder - 22 ft	100156444
*3	Fixture, Alignment	100156520
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156632
11	Tandem, Grooved	100156629
12	Crossover, Box x Pin	100156630
13	Bull Plug	100156631
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g RDX DP	100005324
	Charge - 22.7g RDX DP/LD	100005325
	Charge - 25.0g RDX BH	100005319
	Charge - 22.7g RDX BH/LD	100005326
	Charge - 22.7g HMX <i>Millennium</i> ™	101210674
	Charge - 22.7g HMX DP	100014352
	Charge - 22.7g HMX DP/LD	100005340
	Charge - 25.0g HMX BH	100157006
	Charge - 22.7g HMX BH/LD	120038060
	Charge - 26.0g PYX DP	100157060
17	Charge Clip	100005250
18	End Seal	100005251



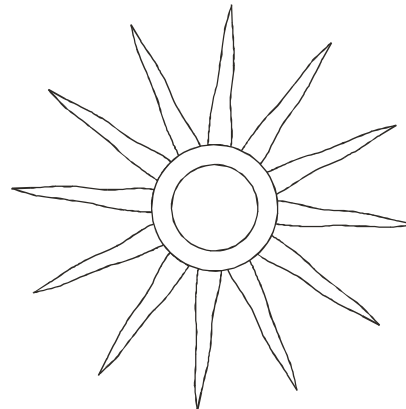
5 1/8-in. 12-spf
OMNI™ VannGun™ System

*Included in Shipping Assembly.
AR Available Upon Request.

5 1/8-in. 12-spf OMNI™ VannGun™ System



Shot Pattern for 5.125-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	118 (54)	245 (111)	340 (154)	498 (226)	688 (312)
Spacer lb (kg)	84 (38)	168 (76)	231 (105)	336 (152)	461 (209)



5 1/8-in. 12-spf OMNI™ SH VannGun™ System

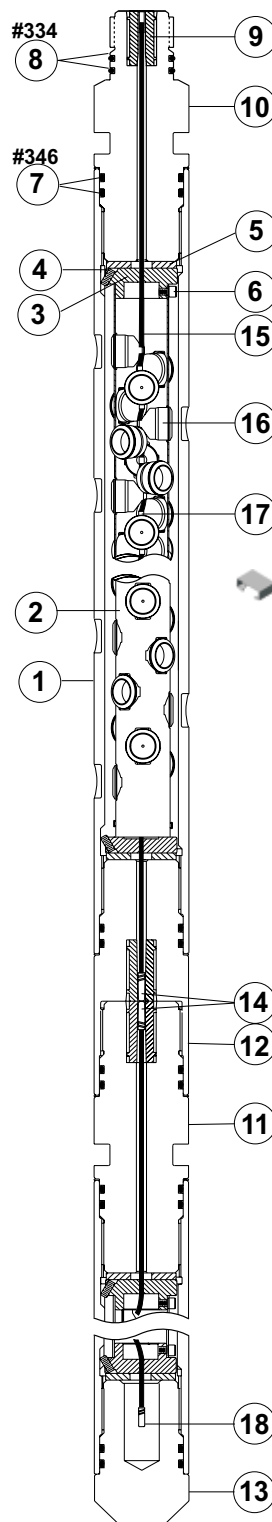
5 1/8-in. 12-spf OMNI™ VannGun™ SH System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155857	Shipping Assembly - 4 ft	101215900
	100155858	Shipping Assembly - 8 ft	101215901
	100155859	Shipping Assembly - 11 ft	101215902
	100155860	Shipping Assembly - 16 ft	101215903
	100155861	Shipping Assembly - 22 ft	101215904

*1	100156367	Gun, Scallop - 4 ft	101215906
	100156368	Gun, Scallop - 8 ft	101215907
	100156369	Gun, Scallop - 11 ft	101215908
	100156370	Gun, Scallop - 16 ft	101215909
	100156371	Gun, Scallop - 22 ft	101215910

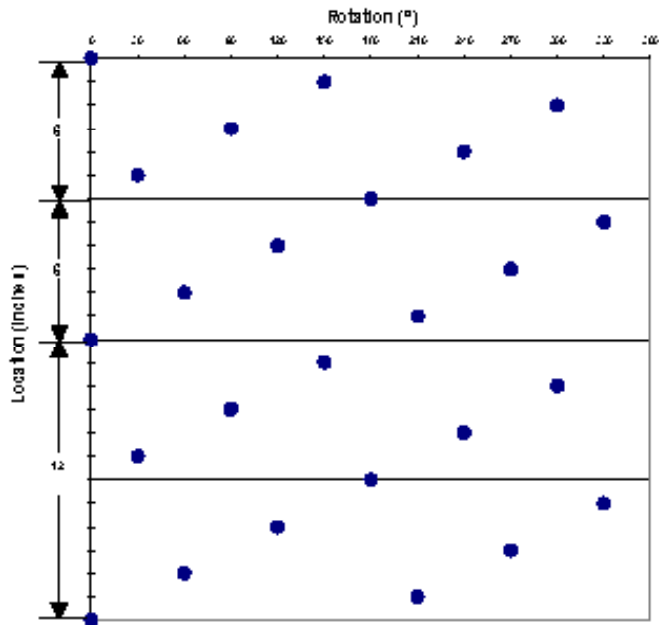
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156430
	Tube, Charge Holder - 8 ft	100156431
	Tube, Charge Holder - 11 ft	100156439
	Tube, Charge Holder - 16 ft	100156432
	Tube, Charge Holder - 22 ft	100156433
*3	Fixture, Alignment	100156520
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156632
11	Tandem, Grooved	100156629
12	Crossover, Box x Pin	100156630
13	Bull Plug	100156631
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 28.0g RDX SH	100005311
	Charge - 28.0g RDX SH/LD	101228756
	Charge - 28.0g HMX SH	100156995
	Charge - 28.0g HMX SH/LD	101233690
17	Charge Clip	100157866

*Included in Shipping Assembly.

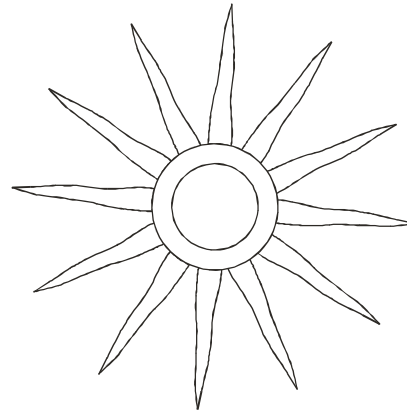


5 1/8-in. 12-spf
OMNI™ VannGun™ SH System

5 1/8-in. 12-spf OMNI™ SH VannGun™ System



Shot Pattern for 5.125-in.
12-spf 30°/150° Phasing



30°/150° Phasing
12 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	118 (54)	245 (111)	340 (154)	498 (226)	688 (312)
Spacer lb (kg)	84 (38)	168 (76)	231 (105)	336 (152)	461 (209)

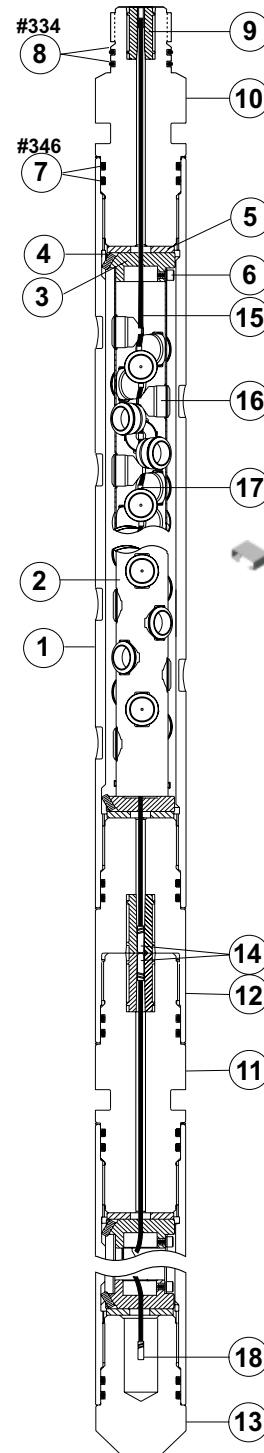
5 1/8 in. 14-spf 25.7°/128.5° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100155808	Shipping Assembly - 4 ft	101215936
	100155809	Shipping Assembly - 8 ft	101215938
	100155810	Shipping Assembly - 11 ft	101215939
	100155811	Shipping Assembly - 16 ft	101215940
	100155812	Shipping Assembly - 22 ft	101215941

*1	100156360	Gun, Scallop - 4 ft	101215942
	100156361	Gun, Scallop - 8 ft	101215943
	100156362	Gun, Scallop - 11 ft	101215944
	100156363	Gun, Scallop - 16 ft	101215945
	100156364	Gun, Scallop - 22 ft	101215946

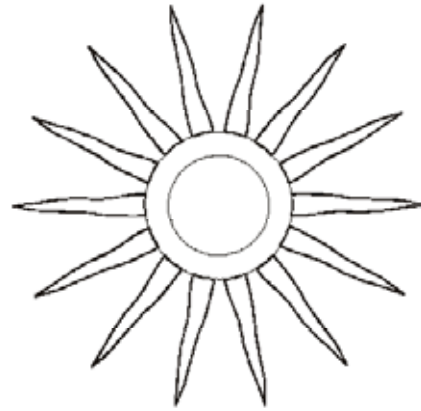
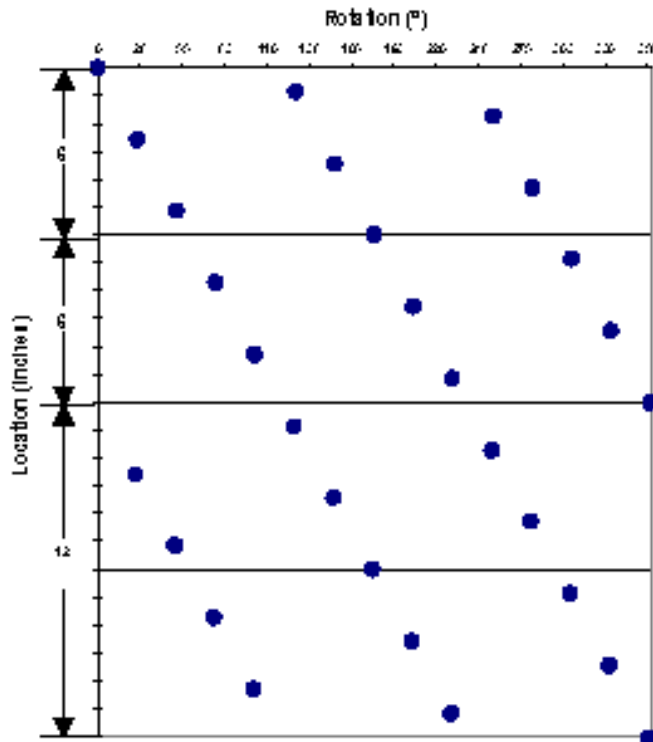
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	100156500
	Tube, Charge Holder - 8 ft	100156501
	Tube, Charge Holder - 11 ft	100156502
	Tube, Charge Holder - 16 ft	100156503
	Tube, Charge Holder - 22 ft	100156504
*3	Fixture, Alignment	100156505
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100157468
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156632
11	Tandem, Grooved	100156629
12	Crossover, Box x Pin	100156630
13	Bull Plug	100156631
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 32.0g RDX SH	100157007
	Charge - 32.0g HMX SH	100157011
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.



5 1/8 in. 14-spf
25.7°/128.5° SH VannGun™ System

5 1/8 in. 14-spf 25.7°/128.5° SH VannGun™ System



25.7°/128.5° Phasing
14 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	121 (55)	250 (113)	347 (157)	509 (231)	703 (319)
Spacer lb (kg)	84 (38)	168 (76)	231 (105)	335 (152)	461 (209)



5 1/8-in. 21-spf 3/Plane VannGun™ System

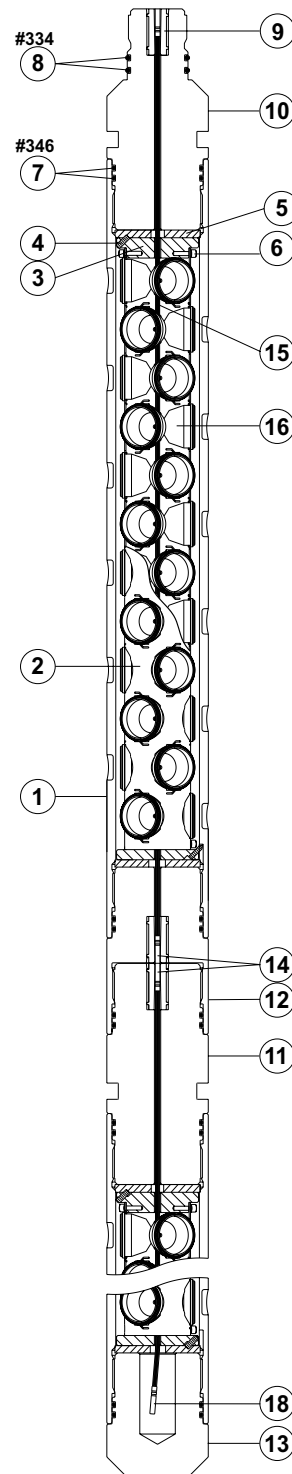
5 1/8-in. 21-spf 3/Plane VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101205784	Shipping Assembly - 4 ft	101215564
	101205785	Shipping Assembly - 8 ft	101215593
	101205786	Shipping Assembly - 11 ft	101215607
	101205787	Shipping Assembly - 16 ft	101215610
	101205788	Shipping Assembly - 22 ft	101215612

*1	101205869	Gun, Scallop - 4 ft	101215563
	101205870	Gun, Scallop - 8 ft	101215592
	101205871	Gun, Scallop - 11 ft	101215594
	101205872	Gun, Scallop - 16 ft	101215609
	101205873	Gun, Scallop - 22 ft	101215611

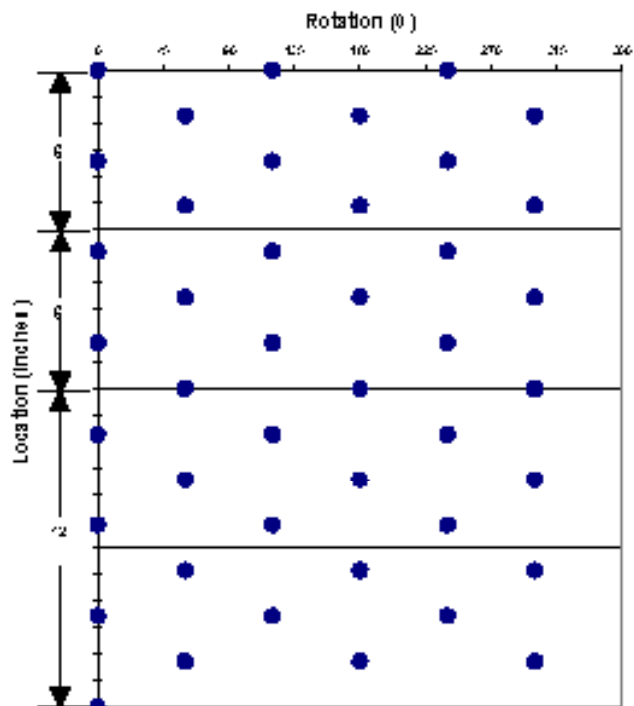
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101205862
	Tube, Charge Holder - 8 ft	101205864
	Tube, Charge Holder - 11 ft	101205865
	Tube, Charge Holder - 16 ft	101205867
	Tube, Charge Holder - 22 ft	101205868
*3	Fixture, Alignment	101205874
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156397
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #346	100001971
	O-Ring, Viton 95 Duro #346	100064845
	O-Ring, Aflas 90 Duro #346	101284368
	O-Ring, Backup #346	100014417
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156632
11	Tandem, Grooved	100156629
12	Crossover, Box x Pin	100156630
13	Bull Plug	100156631
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.0g RDX BH	101292616
	Charge - 22.0g HMX BH	AR
17	Charge Clip	N/A
18	End Seal	100005251

*Included in Shipping Assembly.
AR Available Upon Request.

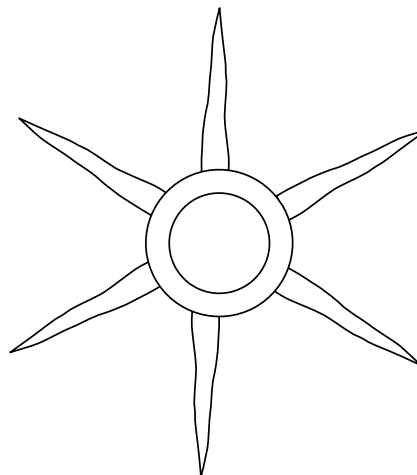


5 1/8-in. 21-spf
3/Plane VannGun™ System

5 1/8-in. 21-spf 3/Plane VannGun™ System



Shot Pattern for 5.125-in.
21-spf 60°/120° Phasing



60°/120° Phasing
6 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	124 (56)	258 (117)	358 (162)	525 (238)	725 (329)
Spacer lb (kg)	84 (38)	167 (76)	230 (104)	334 (152)	459 (208)

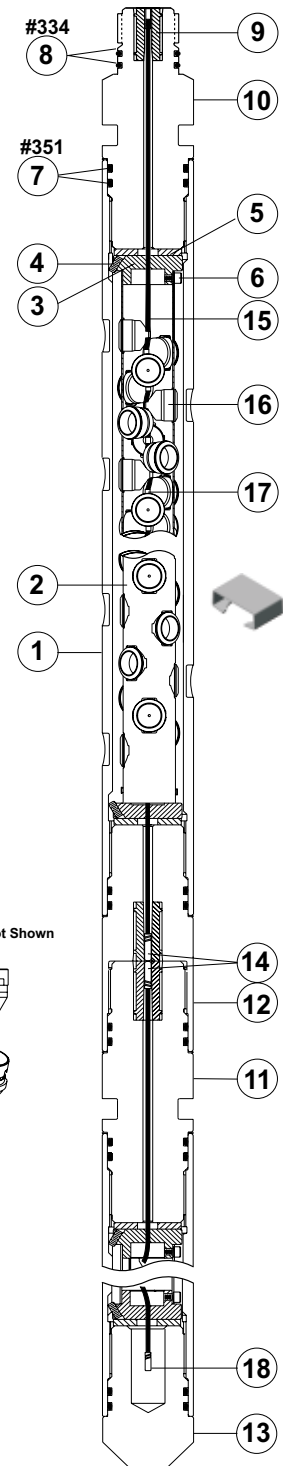
5 3/4-in. 14-spf 25.7°/128.5° SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101272746	Shipping Assembly - 4 ft	N/A
	101272765	Shipping Assembly - 8 ft	
	101272766	Shipping Assembly - 11 ft	
	101272767	Shipping Assembly - 16 ft	
	101272769	Shipping Assembly - 22 ft	

*1	101201371	Gun, Scallop - 4 ft	N/A
	100156372	Gun, Scallop - 8 ft	
	100156373	Gun, Scallop - 11 ft	
	101201372	Gun, Scallop - 16 ft	
	100156374	Gun, Scallop - 22 ft	

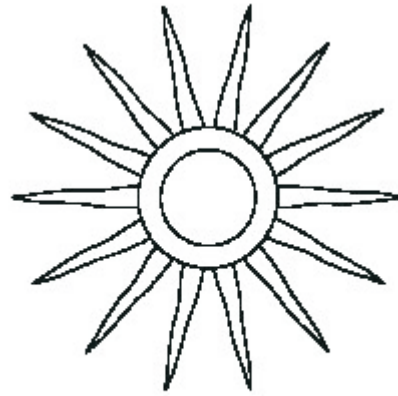
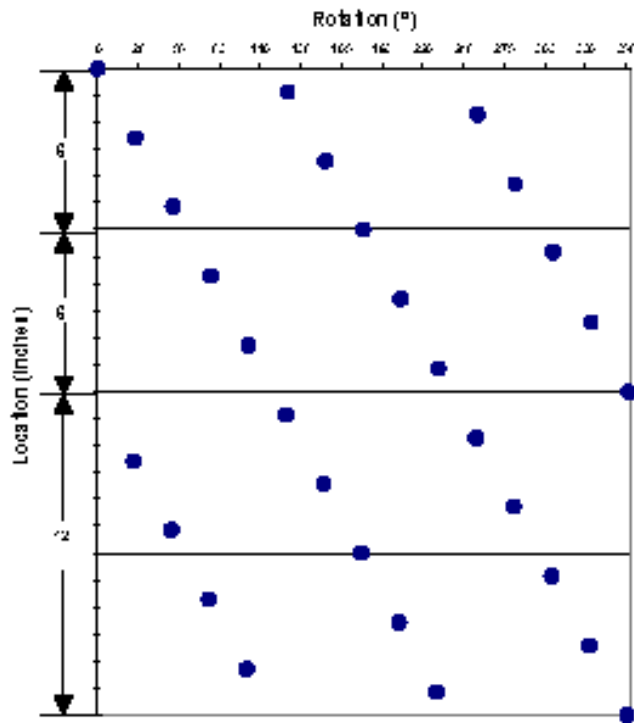
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101272457
	Tube, Charge Holder - 8 ft	101272698
	Tube, Charge Holder - 11 ft	101272700
	Tube, Charge Holder - 16 ft	101272701
	Tube, Charge Holder - 22 ft	101272702
*3	Fixture, Alignment	101272730
*4	Screw, Set 0.25"-20 D x 0.63" L	100007783
*5	Charge Tube Cushion	100156565
*6	Screw, Hex Socket 0.25"-20 D x 0.63" L	100028226
7	O-Ring, Buna 90 Duro #351	100026787
	O-Ring, Viton 95 Duro #351	100064781
	O-Ring, Aflas 90 Duro #351	101204777
	O-Ring, Backup #351	100157480
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Vented Crossover, Firing Head	101278969
11	Vented Tandem, Grooved	101278951
12	Vented Crossover, Box x Pin	101279018
13	Bull Plug	101278946
14	Bi-Directional Booster	See Appendix B
15	Detonating Cord	See Appendix B
16	Charge - 34.0g RDX SH/LD	101278515
17	Charge Clip	100157866
18	End Seal	100005251
19	Charge Tube Centralizer	101278485

*Included in Shipping Assembly.



5 3/4-in. 14-spf
25.7°/128.5° SH VannGun™ System

5 3/4-in. 14-spf 25.7°/128.5° SH VannGun™ System



25.7°/128.5° Phasing
14 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	11 ft (3.35)	16 ft (4.88)	22 ft (6.71)
Loaded lb (kg)	130 (59)	269 (122)	374 (170)	607 (275)	838 (380)
Spacer lb (kg)	94 (42)	187 (85)	257 (117)	374 (170)	515 (234)



6-in. 12-spf 51.4°/154.2° VannGun™ System

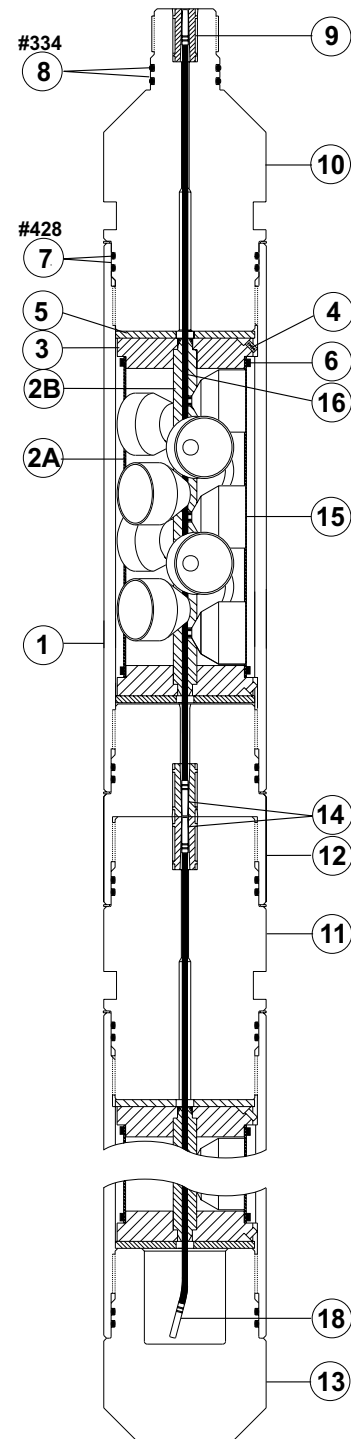
6-in. 12-spf 51.4°/154.2° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	100005393	Shipping Assembly - 4 ft	N/A
	100005394	Shipping Assembly - 8 ft	
	100157373	Shipping Assembly - 15 ft	

*1	100156291	Gun, Scallop - 4 ft	N/A
	100156292	Gun, Scallop - 8 ft	
	100156293	Gun, Scallop - 15 ft	

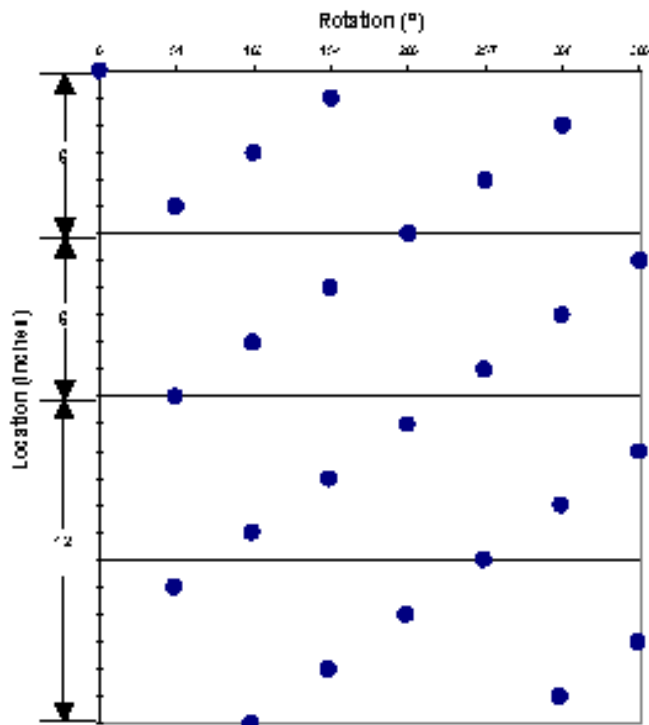
Item	Description	Part No.
*2A	Tube, Charge Holder (Inner) - 4 ft	100156400
	Tube, Charge Holder (Inner) - 8 ft	100156402
	Tube, Charge Holder (Inner) - 15 ft	100156403
*2B	Tube, Charge Holder (Outer) - 37.73 in	100156404
	Tube, Charge Holder (Outer) - 86.73 in	100156405
	Tube, Charge Holder (Outer) - 170.73 in	100156406
*3	Fixture, Alignment	100156407
*4	Screw, Set 0.25"-20 D x 0.75" L	100037548
*5	Charge Tube Cushion	100156408
*6	Screw, Flat Head Cap 0.25"-20 D x 2" L	100138101
7	O-Ring, Buna 90 Duro #428	100001979
	O-Ring, Viton 95 Duro #428	100064852
	O-Ring, Aflas 90 Duro #428	N/A
	O-Ring, Backup #428	N/A
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100156602
11	Tandem, Grooved	100156593
12	Crossover, Box x Pin	100156594
13	Bull Plug	100156597
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 32.5g RDX DP	100156993
	Charge - 32.0g HMX DP	100156994
	Charge - 32.0g HMX BH	100156992
	Charge - 32.0g RDX BH	100156991
17	Charge Clip	N/A
18	End Seal	100005251

*Included in Shipping Assembly.

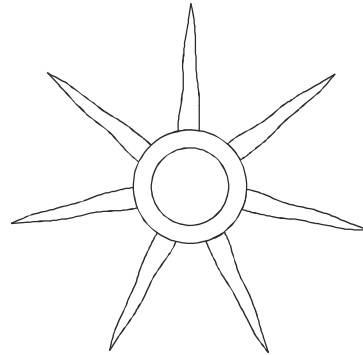


6-in. 12-spf 51.4°/154.2°
VannGun™ System

6-in. 12-spf 51.4°/154.2° VannGun™ System



Shot Pattern for 6-in.
12-spf 51.4°/154.2° Phasing



51.4°/154.2° Phasing
7 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	136 (62)	282 (128)	536 (243)
Spacer lb (kg)	102 (46)	204 (93)	383 (174)

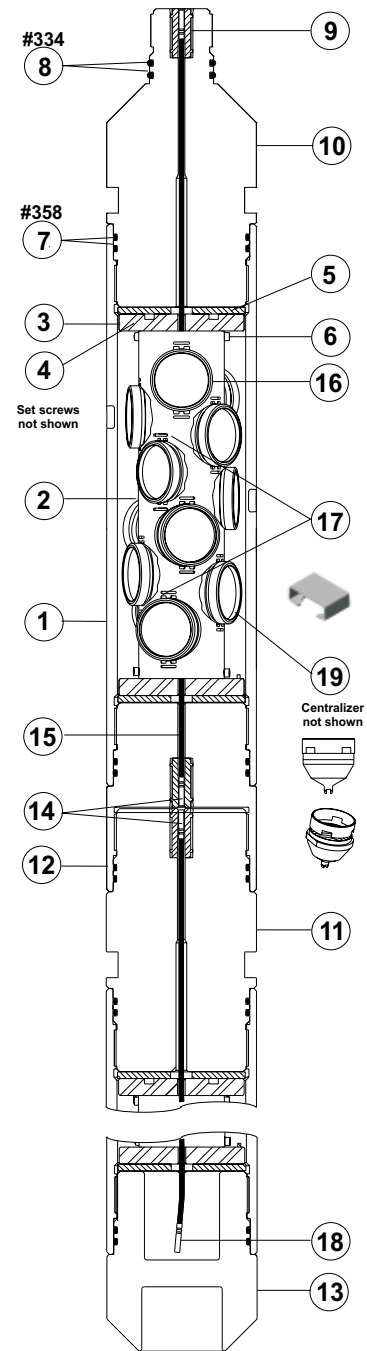
6 1/2-in. 12-spf 45°/135° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101208443	Shipping Assembly - 4 ft	N/A
	101208445	Shipping Assembly - 8 ft	
	101208444	Shipping Assembly - 16 ft	

*1	101208440	Gun, Scallop - 4 ft	N/A
	101208441	Gun, Scallop - 8 ft	
	101208442	Gun, Scallop - 16 ft	

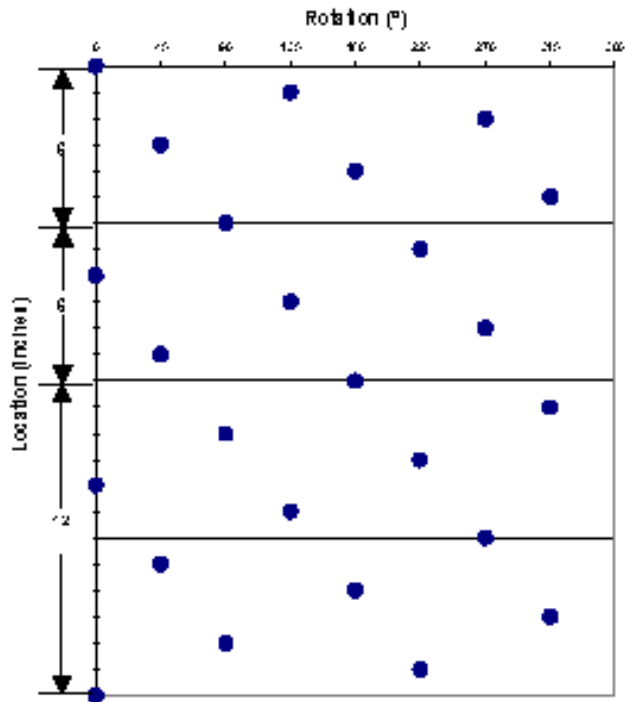
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101213867
	Tube, Charge Holder - 8 ft	101213868
	Tube, Charge Holder - 16 ft	101213869
*3	Fixture, Alignment	101208436
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	101208483
*6	Screw, Hex Socket 0.25"-20 D x .50" L	100028225
7	O-Ring, Buna 90 Duro #358	100026772
	O-Ring, Viton 95 Duro #358	100064776
	O-Ring, Aflas 90 Duro #358	N/A
	O-Ring, Backup #358	101216688
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005318
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101231250
11	Tandem, Grooved	101208437
12	Crossover, Box x Pin	101208439
13	Bull Plug	101208438
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g RDX Mirage™ BH	101228161
	Charge - 39.0g RDX Mirage™ SH	101228037
	Charge - 56.5g RDX SH	101213474
	Charge - 56.5g RDX SH/LD	101212693
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

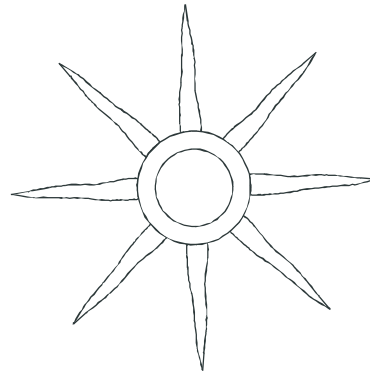


6 1/2-in. 12-spf
45°/135° VannGun™ System

6 1/2-in. 12-spf 45°/135° VannGun™ System



Shot Pattern for 6.5-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	147 (67)	303 (137)	613 (278)
Spacer lb (kg)	114 (52)	228 (103)	456 (207)

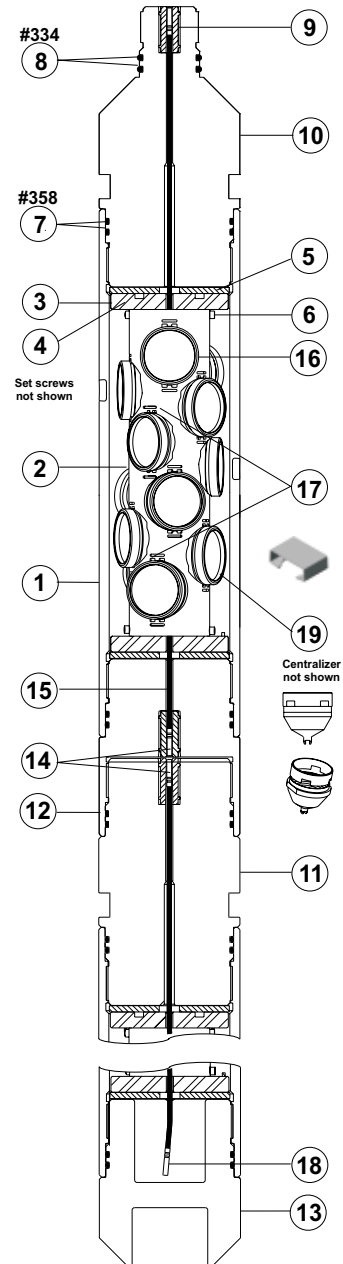
6 1/2-in. 14-spf 138° VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101213823	Shipping Assembly - 4 ft	N/A
	101213825	Shipping Assembly - 8 ft	
	101213828	Shipping Assembly - 16 ft	

*1	101213773	Gun, Scallop - 4 ft	N/A
	101213775	Gun, Scallop - 8 ft	
	101213776	Gun, Scallop - 16 ft	

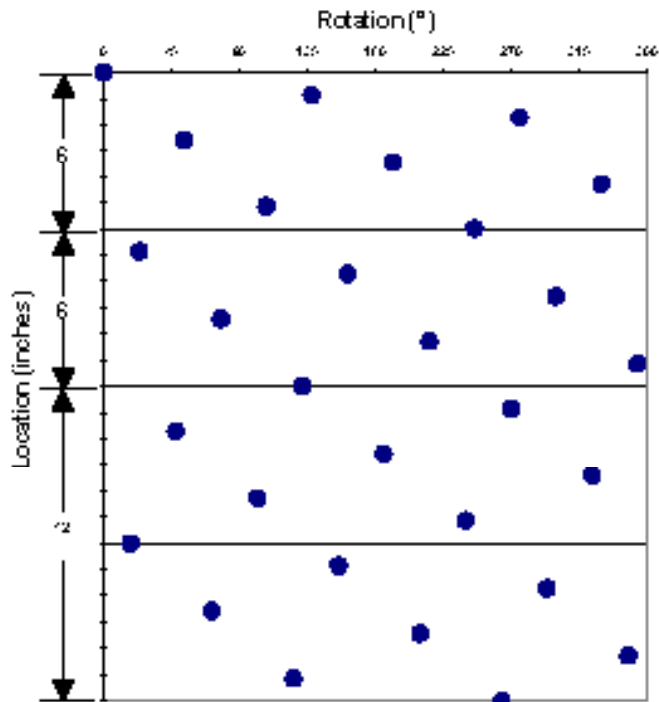
Item	Description	Part No.
*2	Tube, Charge Holder - 4ft	101208474
	Tube, Charge Holder - 8ft	101208475
	Tube, Charge Holder - 16ft	101208476
*3	Fixture, Alignment	101294529
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	101208483
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #358	100026772
	O-Ring, Viton 95 Duro #358	100064776
	O-Ring, Aflas 90 Duro #358	N/A
	O-Ring, Backup #358	101216688
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	101231250
11	Tandem, Grooved	101208437
12	Crossover, Box x Pin	101208439
13	Bull Plug	101208438
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g RDX Mirage™ BH	101228161
	Charge - 39.0g RDX Mirage™ SH	101228037
17	Charge Clip (not shown)	100157866
18	End Seal (not shown)	100005251

*Included in Shipping Assembly.

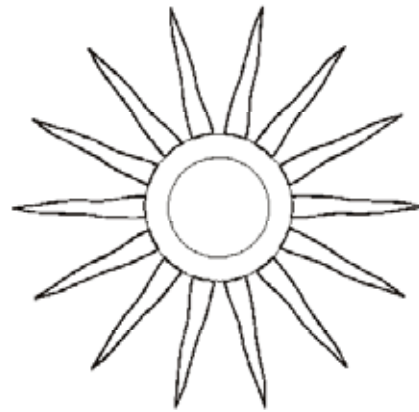


6 1/2-in. 14-spf
138° VannGun™ System

6 1/2-in. 14-spf 138° VannGun™ System



Shot Pattern for 6.5-in.
14-spf 138° Phasing



138° Phasing
14 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	150 (68)	310 (141)	629 (285)
Spacer lb (kg)	114 (52)	228 (103)	456 (207)



7-in. 12-spf 45°/135° DP VannGun™ System

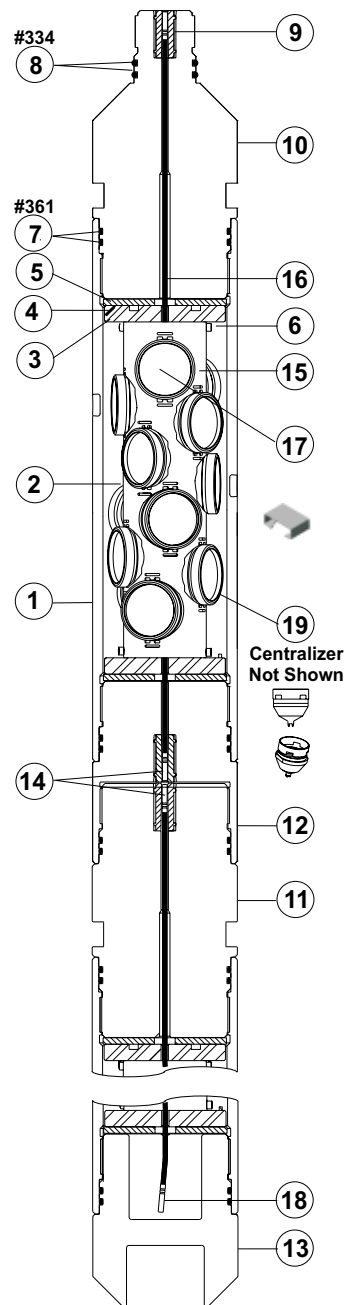
7-in. 12-spf 45°/135° DP VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101269014	Shipping Assembly - 4 ft	N/A
	101269017	Shipping Assembly - 8 ft	
	101269018	Shipping Assembly - 16 ft	

*1	101213936	Gun, Scallop - 4 ft	N/A
	101213937	Gun, Scallop - 8 ft	
	101213938	Gun, Scallop - 16 ft	

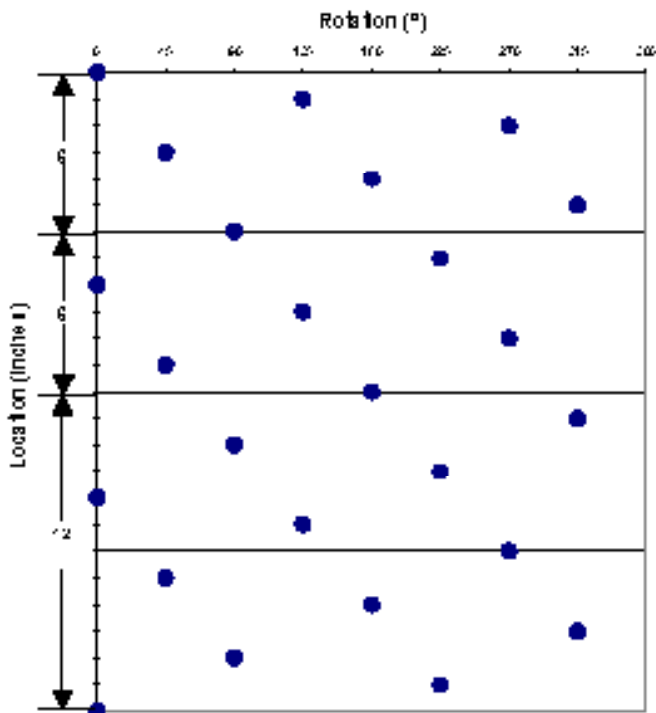
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101269023
	Tube, Charge Holder - 8 ft	101269027
	Tube, Charge Holder - 16 ft	101269028
*3	Fixture, Alignment	101269021
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156412
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #361	100002560
	O-Ring, Viton 95 Duro #361	100064917
	O-Ring, Aflas 90 Duro #361	100157506
	O-Ring, Backup #361	100157472
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005269
11	Tandem, Grooved	100010326
12	Crossover, Box x Pin	100010327
13	Bull Plug	100005270
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 22.7g DP/LD RDX	100005325
	Charge - 22.7g DP/LD HMX	100005340
	Charge - 22.7g SDP HMX <i>Millennium™</i>	101210674
17	Charge Clip	100005250
18	End Seal	100005251

*Included in Shipping Assembly.

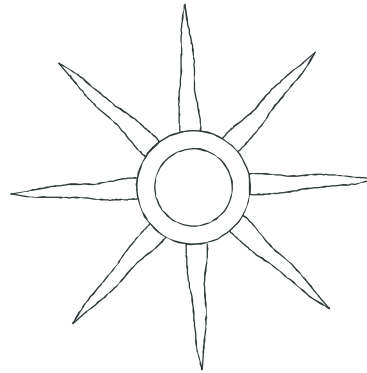


7-in. 12-spf
45°/135° DP VannGun™ System

7-in. 12-spf 45°/135° DP VannGun™ System



Shot Pattern for 7-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	165 (75)	336 (152)	678 (307)
Spacer lb (kg)	129 (59)	258 (117)	516 (234)

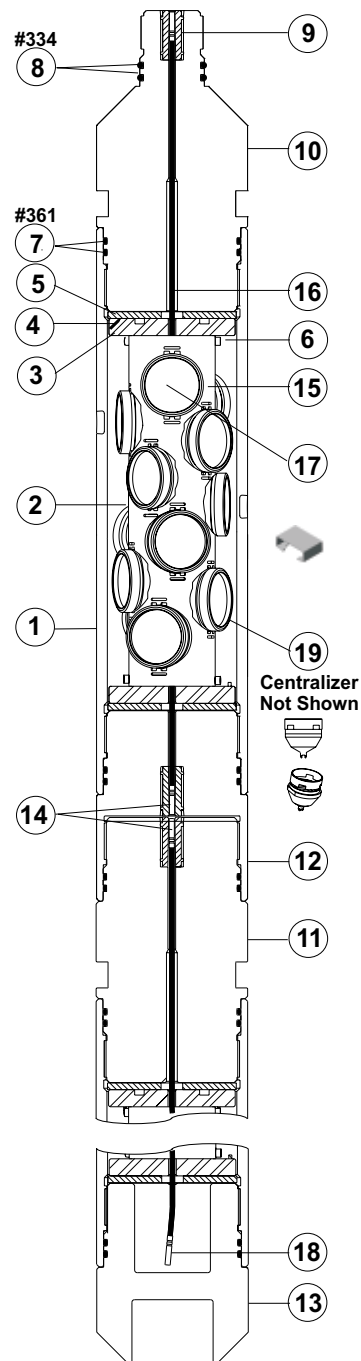
7-in. 12-spf 45°/135° BH/SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101213876	Shipping Assembly - 4 ft	N/A
	101213877	Shipping Assembly - 8 ft	
	101213878	Shipping Assembly - 16 ft	

*1	101213936	Gun, Scallop - 4 ft	N/A
	101213937	Gun, Scallop - 8 ft	
	101213938	Gun, Scallop - 16 ft	

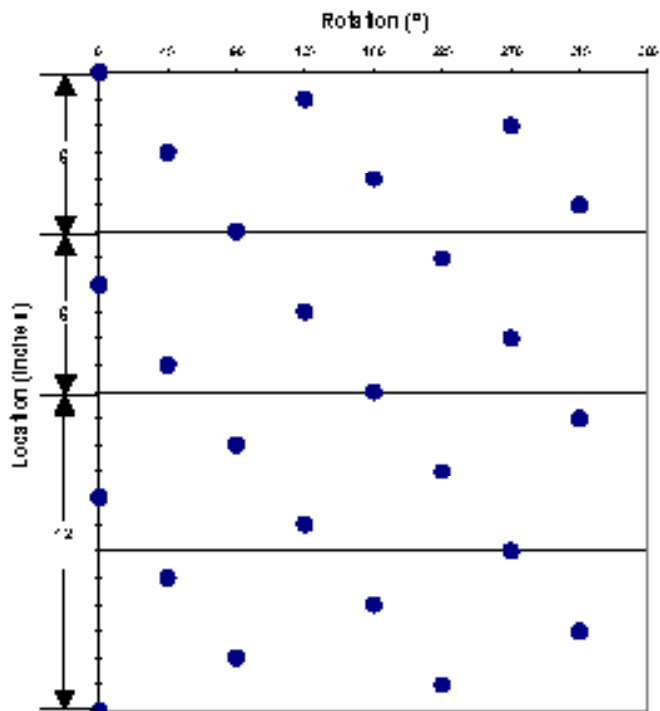
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101213867
	Tube, Charge Holder - 8 ft	101213868
	Tube, Charge Holder - 16 ft	101213869
*3	Fixture, Alignment	101210059
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156412
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #361	100002560
	O-Ring, Viton 95 Duro #361	100064917
	O-Ring, Aflas 90 Duro #361	100157506
	O-Ring, Backup #361	100157472
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005269
11	Tandem, Grooved	100010326
12	Crossover, Box x Pin	100010327
13	Bull Plug	100005270
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g RDX Mirage™ BH	101228161
	Charge - 39.0g RDX Mirage™ SH	101228037
	Charge - 56.5g RDX SH	101213474
	Charge - 56.5g RDX SH/LD	101212693
17	Charge Clip	100157866
18	End Seal	100005251
19	Charge Tube Centralizer	101247136

*Included in Shipping Assembly.

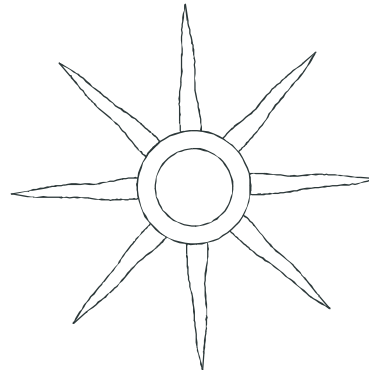


7-in. 12-spf
45°/135° BH/SH VannGun™ System

7-in. 12-spf 45°/135° BH/SH VannGun™ System



Shot Pattern for 7-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	165 (75)	336 (152)	678 (307)
Spacer lb (kg)	129 (59)	258 (117)	516 (234)



7-in. 12-spf 45°/135° Millennium™ VannGun™ System

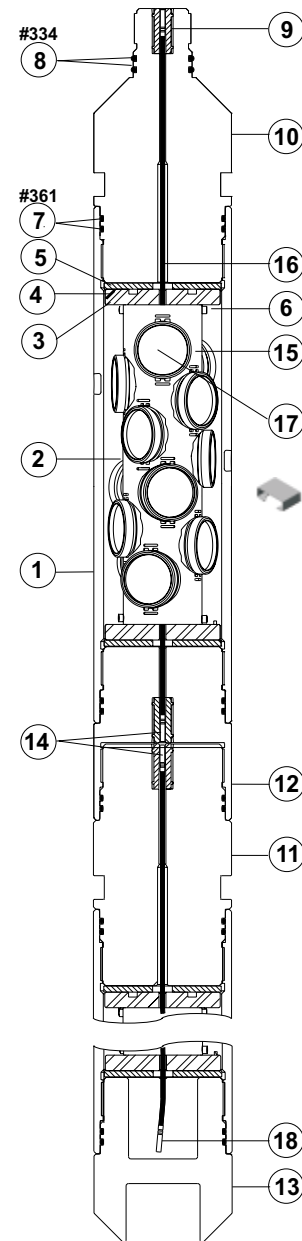
7-in. 12-spf 45°/135° Millennium™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101274451	Shipping Assembly - 4 ft	N/A
	101274462	Shipping Assembly - 8 ft	
	101274463	Shipping Assembly - 16 ft	

*1	101213936	Gun, Scallop - 4 ft	N/A
	101213937	Gun, Scallop - 8 ft	
	101213938	Gun, Scallop - 16 ft	

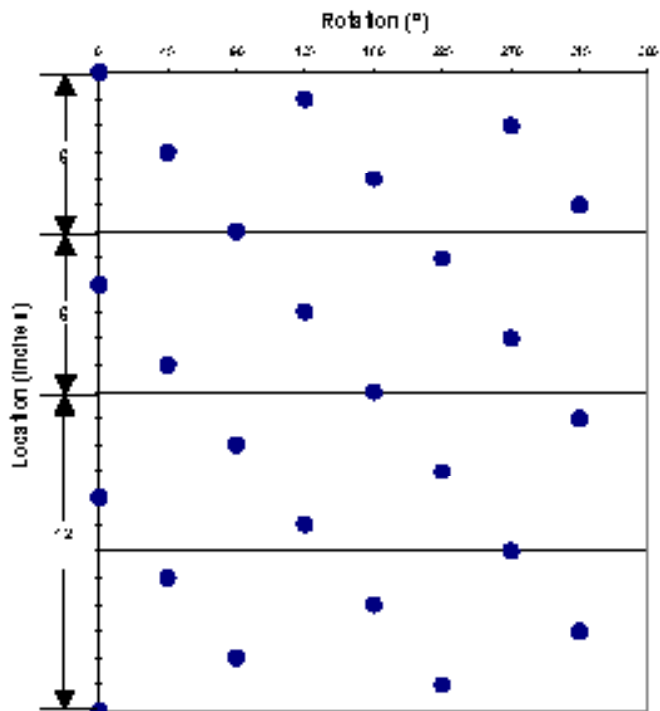
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101274465
	Tube, Charge Holder - 8 ft	101274466
	Tube, Charge Holder - 16 ft	101274467
*3	Fixture, Alignment	101274483
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156412
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #361	100002560
	O-Ring, Viton 95 Duro #361	100064917
	O-Ring, Aflas 90 Duro #361	100157506
	O-Ring, Backup #361	100157472
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005269
11	Tandem, Grooved	100010326
12	Crossover, Box x Pin	100010327
13	Bull Plug	100005270
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g HMX Millennium™	101207997
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

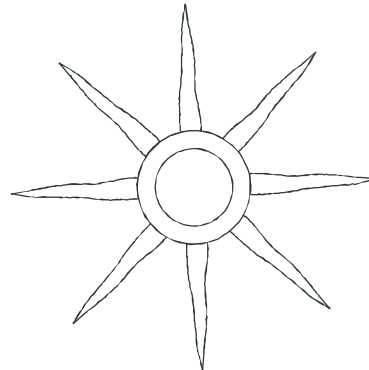


7-in. 12-spf
45°/135° Millennium™ VannGun™ System

7-in. 12-spf 45°/135° Millennium™ VannGun™ System



Shot Pattern for 7-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	165 (75)	336 (152)	678 (307)
Spacer lb (kg)	129 (59)	258 (117)	516 (234)



7-in. 12-spf 45°/135° MaxForce™ VannGun™ System

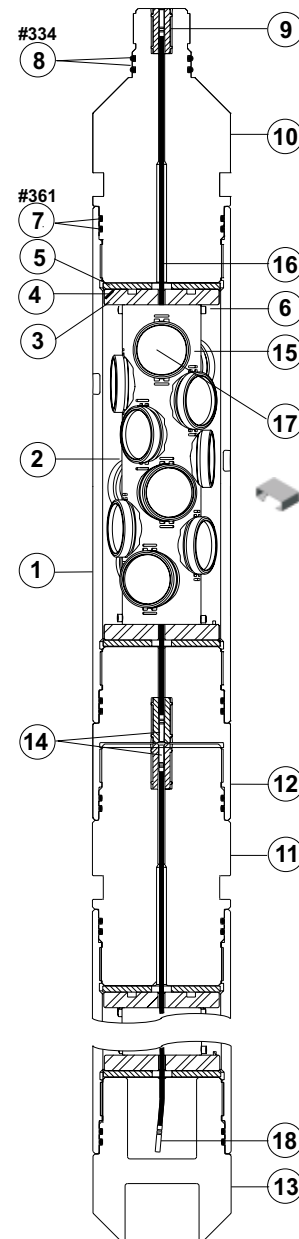
7-in. 12-spf 45°/135° MaxForce™ VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101707389	Shipping Assembly - 4 ft	N/A
	101707390	Shipping Assembly - 8 ft	
	101707392	Shipping Assembly - 16 ft	

*1	101213936	Gun, Scallop - 4 ft	N/A
	101213937	Gun, Scallop - 8 ft	
	101213938	Gun, Scallop - 16 ft	

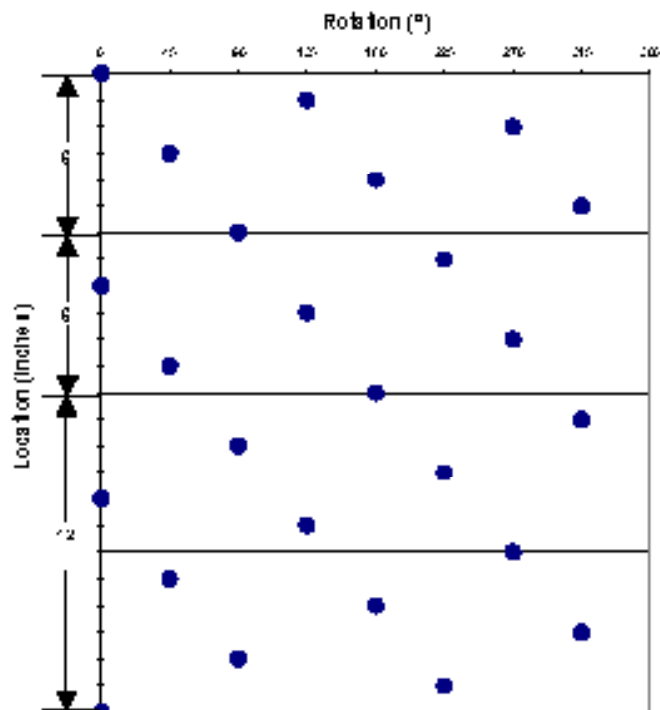
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101707938
	Tube, Charge Holder - 8 ft	101707939
	Tube, Charge Holder - 16 ft	101707941
*3	Fixture, Alignment	101707690
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156412
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #361	100002560
	O-Ring, Viton 95 Duro #361	100064917
	O-Ring, Aflas 90 Duro #361	100157506
	O-Ring, Backup #361	100157472
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005269
11	Tandem, Grooved	100010326
12	Crossover, Box x Pin	100010327
13	Bull Plug	100005270
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g HMX MaxForce™	101702911
17	Charge Clip	100157866
18	End Seal	100005251
19	Centralizer Tandem (not shown)	101238387
20	Centralizer Ring (not shown)	101216946

*Included in Shipping Assembly.
MaxForce™ is Proprietary to Halliburton

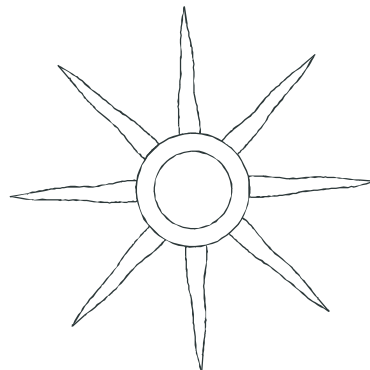


7-in. 12-spf
45°/135° MaxForce™ VannGun™ System

7-in. 12-spf 45°/135° MaxForces™ VannGun™ System



Shot Pattern for 7-in.
12-spf 45°/135° Phasing



45°/135° Phasing
8 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	165 (75)	336 (152)	678 (307)
Spacer lb (kg)	129 (59)	258 (117)	516 (234)



7-in. 14-spf 138° BH/SH VannGun™ System

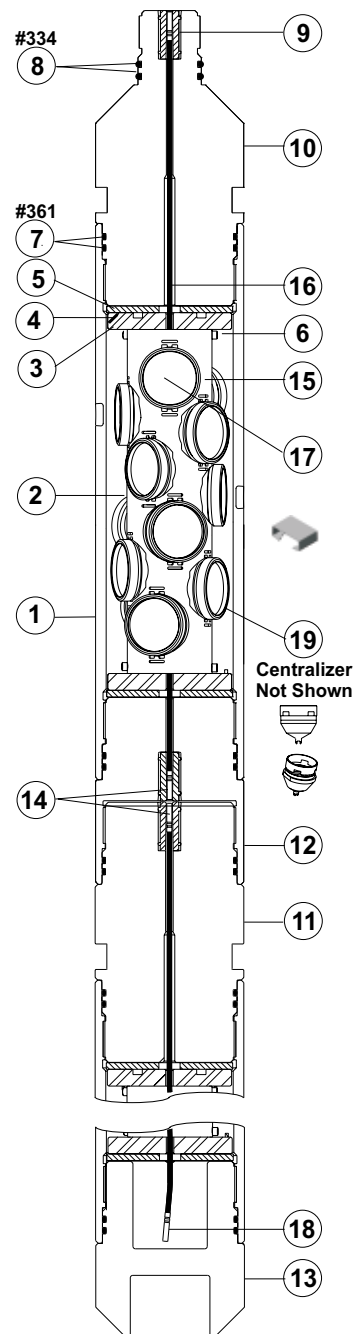
7-in. 14-spf 138° BH/SH VannGun™ System

Item	Part No.	Description	Part No.
	Premium		Standard
	101210061	Shipping Assembly - 4 ft	N/A
	101210062	Shipping Assembly - 8 ft	
	101210063	Shipping Assembly - 16 ft	

*1	101210055	Gun, Scallop - 4 ft	N/A
	101210056	Gun, Scallop - 8 ft	
	101210057	Gun, Scallop - 16 ft	

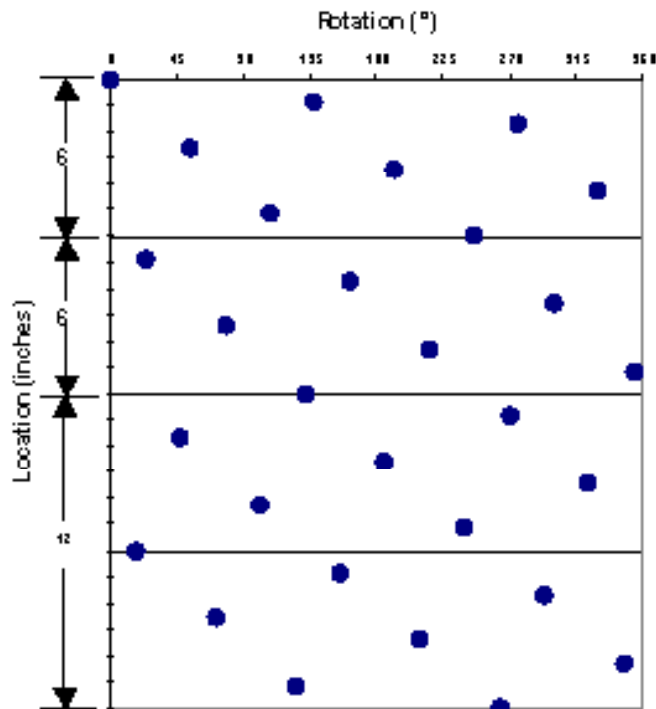
Item	Description	Part No.
*2	Tube, Charge Holder - 4 ft	101208474
	Tube, Charge Holder - 8 ft	101208475
	Tube, Charge Holder - 16 ft	101208476
*3	Fixture, Alignment	101210059
*4	Screw, Set 0.25"-20 D x 0.75" L	100028806
*5	Charge Tube Cushion	100156412
*6	Screw, Hex Socket 0.25"-20 D x .63" L	100028226
7	O-Ring, Buna 90 Duro #361	100002560
	O-Ring, Viton 95 Duro #361	100064917
	O-Ring, Aflas 90 Duro #361	100157506
	O-Ring, Backup #361	100157472
8	O-Ring, Buna 90 Duro #334	100001963
	O-Ring, Viton 95 Duro #334	100009382
	O-Ring, Aflas 90 Duro #334	13416
	O-Ring, Backup #334	100005381
9	Insert, Alignment (PAI)	100005255
	Insert, Alignment (AAI)	100005222
10	Crossover, Firing Head	100005269
11	Tandem, Grooved	100010326
12	Crossover, Box x Pin	100010327
13	Bull Plug	100005270
14	Bi-Directional Booster	See Appendix A
15	Detonating Cord	See Appendix A
16	Charge - 39.0g RDX Mirage™ BH	101228161
	Charge - 39.0g RDX 12/14 SPF Mirage™ BH	101376793
	Charge - 39.0g HMX Mirage™ SH	101228037
	Charge - 56.5g RDX SH	101213474
	Charge - 47.0g HMX Mirage™ BH	101329124
17	Charge Clip	100157866
18	End Seal	100005251

*Included in Shipping Assembly.

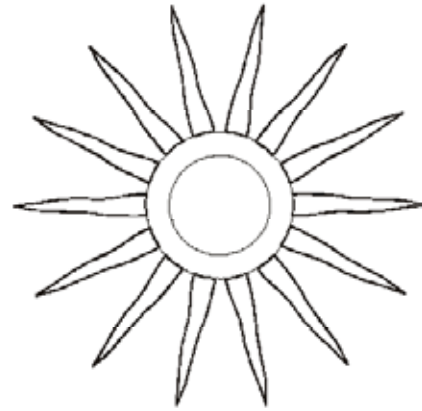


7-in. 14-spf
138° BH/SH VannGun™ System

7-in. 14-spf 138° BH/SH VannGun™ System



Shot Pattern for 7-in.
14-spf 138° Phasing



138° Phasing
14 Perforation Planes

VannGun™ Weights

Length ft (m)	4ft (1.22)	8 ft (2.44)	16 ft (4.88)
Loaded lb (kg)	164 (75)	336 (152)	678 (308)
Spacer lb (kg)	128 (58)	257 (117)	514 (233)