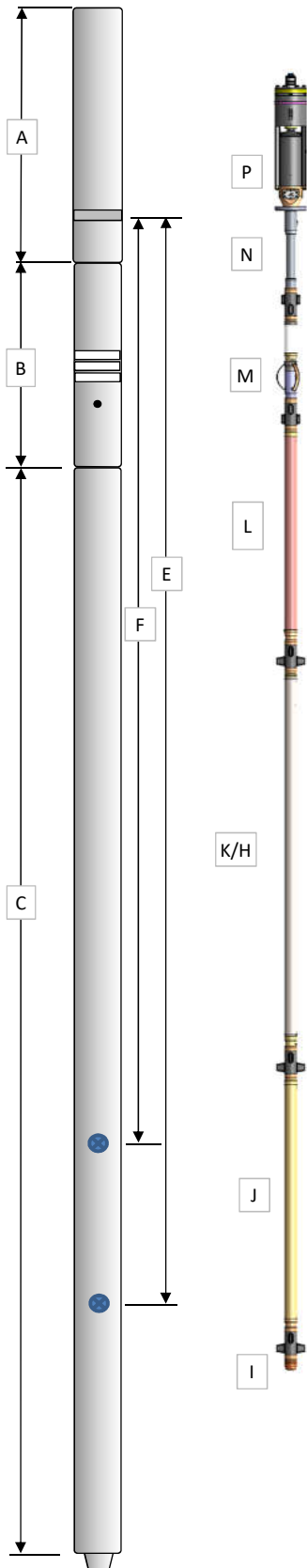


xBolt G2 - L Fishing Diagram and Specifications

Dual Telemetry



Description	Length	OD	ID	Connection		Connection Torque
				UH	DH	
4.75" Collar						
(A) Pulsar Sub	5.30'	4.80"	2.68"	NC 38 (3.5 IF)	NC 38 (3.5 IF)	9,400 ft.lbs
(B) Gap Sub	3.68'	4.75"				9,400 ft.lbs
(C) Rental Collar	30'	4.75"				See ITC # 3837799
6.75" Collar						
(A) Pulsar Sub	5.84'	7"	3.38"	5 1/2 FH	NC 50 (4.5 IF)	28,000 ft.lbs
(B) Gap Sub	3.68'	6.5"	3.25"	NC 50 (4.5 IF)		26,000 ft.lbs
(C) Rental Collar	30'	6.75"	2.813" / 3.25"			See ITC # 3837799
8" Collar						
(A) Pulsar Sub	5.83'	8.125"	3.5"	6 5/8 Reg	6 5/8 Reg	43,000 ft.lbs
(B) Gap Sub	3.68'	8.0"	3.5"			39,000 ft.lbs
(C) Rental Collar	30'	8.0"	3.25" / 3.5"			See ITC # 3837799

Specification	4.75"	6.75"	8"
Max Dogleg Rotating - Slick @ 302°F	15°/100'	10°/100'	8°/100'
Max Dogleg Rotating - Flex @ 302°F	25°/100' Ø4.00" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above and Below Gap Sub	15°/100' Ø5.625" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above and Below Gap Sub	13°/100' Ø6.00" Flex Section Min. 2/5 Total Length (12.4' of 31') Collars Above and Below Gap Sub
Max Compression	100,000 lbs	200,000 lbs	300,000 lbs
Max Tension @ 302°F	500,000 lbs	1,000,000 lbs	1,200,000 lbs
Max Torque @ Bit	9,400 ft.lbs	26,000 ft.lbs	39,000 ft.lbs
Max Temp	329 °F*	329 °F*	329 °F*
Max Pressure	20000 psi		
Max Flow Rate	375 gpm	500 gpm (2.813" ID) 750 gpm (3.25" ID)	750 gpm (3.25" ID) 900 gpm (3.5" ID)
Pressure Drop Coef <i>PSI = (PPG * GPM^2)/C</i>	2500	30000	30000

*329°F Rating is based on mechanical, electronics and battery ratings, Gap Sub DLS limits reduce above 302°F

Probe	Length	OD	Weight
(P) MOP	2.6'/3.1'	3.4"/5.0"	35 lbs/85 lbs
(N) Extension Probe	2.44'	1.96"	13 lbs
(M) Gap Assembly	2.43'	2"	18 lbs
(L) XDT	5.51'	2"	32 lbs
(K / H) Battery	8.97'	1.88"/1.96"	61 lbs
(J) XDAG	6.21'	2"	57 lbs
(I) End Terminator	0.21'	1.87"	5 lbs

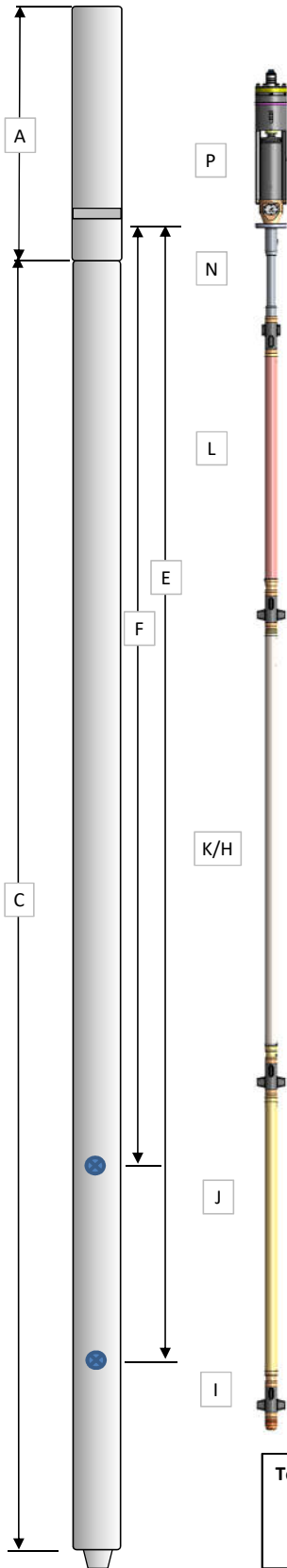
Sensor Measurement	Length	Comment
(E) Gamma sensor	23.35'	Sensor package to Pulsar Sub reference
(F) D&I sensor	19.71'	

Toolstring Order

- MOP, Gap Assembly, and XDT Probe must be assembled together. XDAG and XBAT assembled in any order.
- Use xBolt G2 offset calculator to determine sensor offsets
- Up to 3 batteries in the string

xBolt - L Fishing Diagram and Specifications

Mud Pulse



Description	Length	OD	ID	Connection		Connection Torque
				UH	DH	
4.75" Collar						
(A) Pulsar Sub	5.30'	4.80"	2.68"	NC 38 (3.5 IF)	NC 38 (3.5 IF)	9,400 ft.lbs
(C) Rental Collar	30'	4.75"				See ITC # 3837799
6.75" Collar						
(A) Pulsar Sub	5.84'	7"	3.38"	5 1/2 FH	NC 50 (4.5 IF)	28,000 ft.lbs
(C) Rental Collar	30'	6.75"	2.813" / 3.25"	NC 50 (4.5 IF)		See ITC # 3837799
8" Collar						
(A) Pulsar Sub	5.83'	8.125"	3.5"	6 5/8 Reg	6 5/8 Reg	43,000 ft.lbs
(C) Rental Collar	30'	8.0"	3.25" / 3.5" / 3.75"			See ITC # 3837799

Specification	4.75"	6.75"	8"
Max Dogleg Rotating	15°/100'	10°/100'	8°/100'
Max Dogleg Sliding	30°/100'	20°/100'	16°/100'
Max Tension	735,000 lbs	1,000,000 lbs	1,200,000 lbs
Max Torque @ Bit	9,400 ft.lbs	28,000 ft.lbs	43,000 ft.lbs
Max Temp	329 °F	329 °F	329 °F
Max Pressure	20000 psi		
Max Flow Rate	375 gpm	500 gpm (2.813" ID) 750 gpm (3.25" ID)	750 gpm (3.25" ID) 900 gpm (3.5" ID)
Pressure Drop Coef <i>PSI = (PPG * GPM²)/C</i>	2500	30000	30000

Probe	Length	OD	Weight
(P) MOP	2.6'/3.1'	3.4"/5.0"	35 lbs/85 lbs
(N) Extension Probe	2.44'	1.96"	13 lbs
(L) XDT	5.51'	2"	32 lbs
(K / H) Battery	8.97"	1.88"/1.96"	61 lbs
(I) X DAG	6.21'	2"	57 lbs
(I) End Terminator	0.21'	1.87"	5 lbs

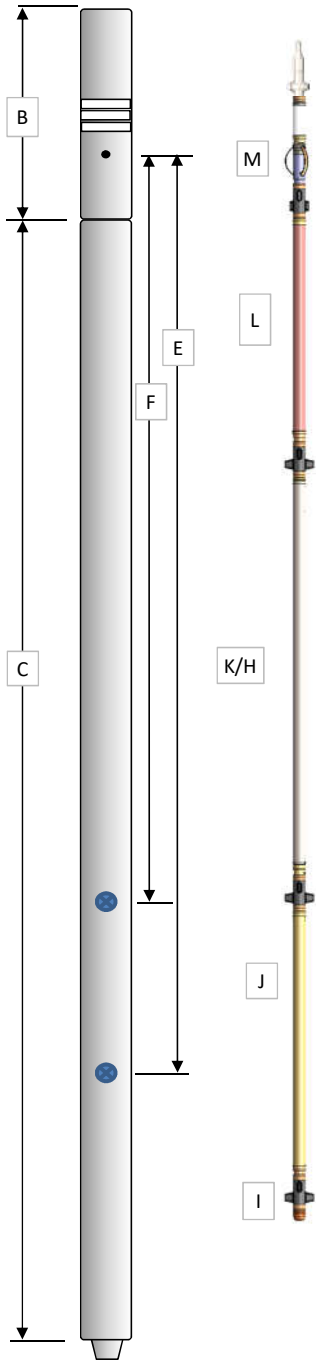
Sensor Measurement	Length	Comment
(E) Gamma sensor	20.92'	Sensor package to Pulsar Sub reference
(F) D&I sensor	17.28'	

Toolstring Order

- MOP, Gap Assembly, and XDT Probe must be assembled together. X DAG and XBAT assembled in any order.
- Use xBolt - L offset calculator to determine sensor offsets
- Up to 3 batteries in the string

xBolt - L Fishing Diagram and Specifications

EM Only



Description	Length	OD	ID	Connection		Connection Torque
				UH	DH	
4.75" Collar						
(B) Gap Sub	3.68'	4.75"	2.68"	NC 38 (3.5 IF)	NC 38 (3.5 IF)	9,400 ft.lbs
(C) Rental Collar	30'	4.75"				See ITC # 3837799
6.75" Collar						
(B) Gap Sub	3.68'	6.5"	3.25"	NC 50 (4.5 IF)	NC 50 (4.5 IF)	26,000 ft.lbs
(C) Rental Collar	30'	6.75"	2.813" / 3.25"			
8" Collar						
(B) Gap Sub	3.68'	8.0"	3.5"	6 5/8 Reg	6 5/8 Reg	39,000 ft.lbs
(C) Rental Collar	30'	8.0"	3.25" / 3.5"			

Specification	4.75"	6.75"	8"
Max Dogleg Rotating - Slick @ 302°F	15°/100'	13°/100'	8°/100'
Max Dogleg Rotating - Flex @ 302°F	25°/100' Ø4.00" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above and Below Gap Sub	18°/100' Ø5.625" Flex Section Min. 2/3 Total Length (20' of 31') Collars Above and Below Gap Sub	13°/100' Ø6.00" Flex Section Min. 2/5 Total Length (12.4' of 31') Collars Above and Below Gap Sub
Max Compression	100,000 lbs	200,000 lbs	300,000 lbs
Max Tension @ 302°F	500,000 lbs	1,000,000 lbs	1,200,000 lbs
Max Torque @ Bit	9,400 ft.lbs	26,000 ft.lbs	39,000 ft.lbs
Max Temp	329 °F*	329 °F*	329 °F*
Max Pressure	20000 psi		
Max Flow Rate	375 gpm	500 gpm (2.813" ID) 750 gpm (3.25" ID)	750 gpm (3.25" ID) 900 gpm (3.5" ID)

*329°F Rating is based on mechanical, electronics and battery ratings, Gap Sub DLS limits reduce above 302°F

Probe	Length	OD	Weight
(M) Fishing Head	0.83'	1.75"	10 lbs
(N) Extension Probe	2.44'	1.96"	13 lbs
(M) Gap Assembly	2.43'	2"	18 lbs
(L) XDT	5.51'	2"	32 lbs
(K / H) Battery	8.97'	1.88"/1.96"	61 lbs
(J) XDAG	6.21'	2"	57 lbs
(I) End Terminator	0.21'	1.87"	5 lbs

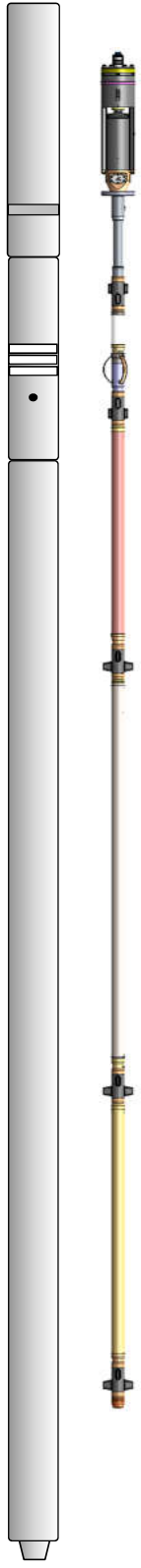
Sensor Measurement	Length	Comment
(E) Gamma sensor	19.95'	Sensor package to Ground Plug
(F) D&I sensor	16.31'	

Toolstring Order

- Gap Assembly and XDT Probe must be assembled together. XDAG and XBAT assembled in any order.
- Use xBolt - L offset calculator to determine sensor offsets
- Up to 3 batteries in the string

xBolt G2 - L Fishing Diagram and Specifications

Dual Telemetry



Shock And Vibration Specifications

Risk Level		Axial Peak Shock	Lateral Peak Shock	Shock Risk
	Dpoint:	SHK_AXL_MAX	SHK_LAT_MAX	SHKRSK
	Unit:	G	G	Unitless
Low		0-25	0-75	0
Medium		25-50	75-150	1
High		50-100	150-225	2
Severe*		>100	>225	3

SHKRSK Value	Shocks over 50G per second
0	0 - 2
1	2 - 30
2	30 - 100
3	100+

STKSLP Value	StickSlip Percent
0	0-40
1	40-80
2	80-100
3	100+

LCM/Solids Specifications	
LCM/Solids Type	Limit
Med/Fine Ground Walnut Shell	40 ppb
Plastic/Glass Beads	40 ppb
Baro Seal	30 ppb
Cotton Seed	30 ppb
Cedar Fiber	30 ppb
Sand	< 1%
Low Gravity Solids	< 8%
pH Range	9.5 < pH < 12

Flow Sleeve*

*It is recommended to use the below flow sleeves when LCM is present

LF MOP
Flow Sleeve - 779-19012
Flow Sleeve - 779-70113

Planned GPM
250 - 450
125 - 275

Mini-MOP
Flow Sleeve - 779-10117
Flow Sleeve - 779-19032

Planned GPM
125-275
200-375

Orifice Recommendations

Depth	Mud Weight - ppg			
	< 9	9 - 14	14 - 18	> 18
5 K	Std	Std	Std	Std
10 K	Std	Std	Std	Std
15 K	Std	Std	Std	HD
20 K	Std	Std	HD	HD
25 K	Std	HD	HD	HD

xBolt-L DT Bow Spring Chart

Bow Spring P/N	No-Go Gauge	Tool Size
103121534	Red	475
103121535	Yellow	675
103232578	Blue	800

Temperature

DT/EM Configurations	150°C
MP Configuration w/XDAG & XBT	165°C

Pulse Amplitude

