DIAMOND CORE DRILLING REFERENCE

Dimensions, Weights and Volumes

U.S. MEASUREMENTS

BOART LONGYEAR™

www.boartlongyear.com

Genuine Q™ Coring Systems

RFGD_077_1-18

BIT SELECTION GUIDE

HARDNESS	SOFT	SOFT	SOFT	MEDIUM HARD
Mohs Scale	1-2.5	3-3.5	4-4.5	5-5.5
Characteristic Rocks	Soapstone, Coal, Rock Salt, Amber	Marble, Shale, Kimberlite, Dolomite	Slate, Sandstone	Pumice, Gabbro, Norite, Obsidian
Longyear™	Purple (P584)	Purple (P584), Blue (P577)	Purple (P584), Blue (P577)	Blue (P577), Green (P520)
Boart Longyear™ Alpha Bit™		02	02, 06ABR	06ABR, 07ABR
Atlas Copco		3AC	7AC	7AC, 11AC
Fordia		Hero 3	Hero 7	9-11, Hero 9
Hayden		2	4	9AA
Dimatec		D3	HR7	HR7

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

BIT SELECTION GUIDE

HARDNESS	MEDIUM HARD	HARD	HARD	ULTRA HARD
Mohs Scale	6-6.5	7-7.5	8	8.5
Characteristic Rocks	Dorite, Magnetite, Hematite, Granite, Rhyolite	Quartzite, Gneiss, Chert	Taconite	Jaspilite, Branded Iron Formation
Longyear™	Green (P520), Yellow (P575)	Green (P520), Yellow (P575)	Yellow (P575), Red (P566)	Yellow (P575), Red (P566)
Boart Longyear™ Alpha Bit™	07ABR, 08ABR	08ABR, 9COM	9COM, 10COM	09COM, 10COM
Atlas Copco	11AC	11AC, 13AC	13AC	15AC
Fordia	9-11, Hero 11	9-11, Hero 11	11-14	11-14
Hayden	9AA, KS5	KS5	H12-14	H14-15
Dimatec	HR10	HR10, HR12	HR12, HR13	HR13

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

DIAMOND CORING DRILL BIT GAUGES

SIZE	CORE OD (in)	BIT OD STD (in)	BIT OD RSG (in)	BIT OD OS (in)	HOLE VOL (gal/100 ft)
Q™ Wireline					
BQ	1.433	2.345	2.360	N/A	22.7
NQ	1.875	2.965	2.980	3.032	36.3
HQ	2.500	3.763	3.782	3.830, 3.895	58.3
PQ	3.345	4.805	4.827	4.950	95.1
Q™ Thin Kerf					
AQTK	1.202	1.875	1.890	N/A	14.6
BQTK	1.601	2.345	2.360	N/A	22.7
NQTK	1.995	2.965	2.980	3.032	36.3
Q™ Triple Tube					
NQ3, NQTT	1.775	2.965	2.980	3.032	36.3
HQ3, HQTT	2.406	3.763	3.782	3.830, 3.895	58.3
PQ3, PQTT	3.270	4.805	4.827	4.950	95.1

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

IMPREGNATED BIT DRILLING GUIDELINES

SIZE	SPEED (rpm)	INDICATIVE WOB Low (lbf)	INDICATIVE WOB High (lbf)	FLUID FLOW Low(gpm)	FLUID FLOW High(gpm)
Q™ Wireline					
BQ	1,200	2,000	5,500	6	6
NQ	950	3,000	8,500	10	13
HQ	750	5,400	12,500	14	20
PQ	600	7,000	19,000	20	30
Q™ Thin Kerf					
AQTK	1,500	1,200	3,000	3	5
BQTK	1,200	1,500	5,000	5	7
NQTK	950	2,500	8,000	9	12
Q™ Triple Tube					
NQ3, NQTT	950	3,000	8,000	10	13
HQ3, HQTT	750	5,000	12,000	15	20
PQ3, PQTT	600	7,000	18,000	22	28

1. **Rotation Speed:** in extremely broken, hard, ground, run at half RPM and weight on bit (WOB) sufficient to reach 1 - 2 ipm (3 - 5 cpm).
2. **WOB:** Constant WOB will require changing holdback pressure. Check off bottom weight as rods are added.
3. **Water Flow:** Flow rate is recommended based on amount of cuttings at 6 - 8 ipm (15 - 20 cpm). Higher penetration rates should have higher flow rates.

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

WIRELINE ROD RATINGS

Standard Wall

SIZE	DEPTH RATING*	RATED PULL-BACK*	MIN. MAKE-UP**	RATED TORQUE**
BXQ	13,000 ft	75,000 lbf	300 ft lbf	1,750 ft lb
BRQ	9,800 ft	56,250 lbf	300 ft lbf	1,100 ft lb
BQ	4,900 ft	26,000 lbf	300 ft lbf	590 ft lb
NRQ	9,800 ft	75,000 lbf	450 ft lbf	1,750 ft lb
NQ	6,500 ft	33,000 lbf	450 ft lbf	900 ft lb
HRQ	8,200 ft	115,000 lbf	750 ft lbf	2,600 ft lb
HQ	4,900 ft	45,000 lbf	750 ft lbf	1,000 ft lb
PHD	4,900 ft	100,000 lbf	750 ft lbf	3,000 ft lb
Thin Kerf				
ARQTK	4,900 ft	29,250 lbf	250 ft lbf	590 ft lb
BRQTK	4,900 ft	45,000 lbf	300 ft lbf	660 ft lb
V-Wall™ and W-Wall™				
NXQ	13,100 ft	95,000 lbf	450 ft lbf	2,500 ft lb
NRQ	10,800 ft	75,000 lbf	450 ft lbf	1,750 ft lb
HXQ	13,100 ft	115,000 lbf	750 ft lbf	3,000 ft lb
HRQ	10,000 ft	115,000 lbf	750 ft lbf	2,600 ft lb
PHD	6,500 ft	100,000 lbf	750 ft lbf	3,000 ft lb

*	Depth capacity decreases with wear. For example, derate by at least 50% for box shoulder thickness worn to 50% of original.
**	Increase make-up torque to match operating torque as depth increases. Operating torque should not exceed make-up torque.

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

WIRELINE DRILL RODS

Standard Wall

SIZE	OD (in)	ID (in)	WEIGHT (lb/ 10 ft)	THREADS/INCH (in)	CONTENT (gal/100 ft)
BRQ, BQ	2.19	1.81	40.2	3.0	13.2
BXQ*	2.19	1.81	40.2	2.0	13.2
NRQ, NQ	2.75	2.38	52.4	3.0	23.0
HRQ, HQ	3.50	3.06	77.0	3.0	38.2
PHD	4.50	4.00	117.0	2.5	65.3

Thin Kerf					
ARQTK	1.76	1.47	24.0	4.0	8.9
BRQTK	2.20	1.91	32.0	3.5	14.8

V-Wall™ and W-Wall™

SIZE	OD (in)	ROD BODY ID (in)	JOINT ID (in)	WEIGHT (lb/10 ft)	THREADS/ INCH (in)	CONTENT (gal/100 ft)
NRQ	2.75	2.44	2.38	45.0	3.0	23.9
NXQ*	2.75	2.44	2.38	45.0	2.0	23.9
HRQ	3.50	3.19	3.06	60.0	3.0	40.7
HXQ*	3.50	3.19	3.06	60.0	2.0	40.7
PHD	4.50	4.19	4.00	82.5	2.5	71.0

* Patents: AU2012209354; AU2013315186; CA2884798; CA2825533; CN201280010513; RU2607560; US9810029; ZA2013/06418; Patents Pending.

W-Wall™ (XQ™) and V-Wall™ (RQ™, HD) drill rods are compatible with the standard wall rods and provide lighter weight, less stiffness, and faster inner tube tripping for deep or deviated holes. Usable under the following patents: AU2008222974; CA2679933; CN101675205; US8333255; US9359847; ZA2009/05921; Patents Pending. Q, RQ and XQ are trademarks of Boart Longyear.

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

CONVENTIONAL DRILL RODS

SIZE	OD (in)	ROD BODY ID (in)	JOINT ID (in)	WEIGHT (lb/10 ft)	THREADS/ INCH (in)	CONTENT (gal/100 ft)
AWJ	1.75	1.38	0.63	32.0	5.0	7.2
AWJ LW	1.75	1.50	0.63	22.7	5.0	8.8
BWJ	2.13	1.75	0.75	40.4	5.0	11.8
BWJ LW	2.13	1.91	0.75	36.0	5.0	14.2
NWJ	2.63	2.25	1.13	52.0	4.0	19.6
AW	1.75	1.22	.63	44	3	6.0
BW	2.13	1.75	.75	42	3	12.5
NW	2.68	2.30	1.38	54	3	20.7
HW	3.50	3.06	2.38	77	3	38.2

FLUSH JOINT CASING

SIZE	OD (in)	ID (in)	WEIGHT (lb/10 ft)	THREADS/INCH (in)	CONTENT (gal/100 ft)
AW	2.25	1.91	38.0	4.0	14.8
BW	2.88	2.38	70.0	4.0	23.0
NW	3.50	3.00	86.0	4.0	36.7
HWT*	4.50	4.00	117.0	2.5	65.5
PWT	5.50	5.00	144.0	2.5	102.0

* Compatible with PHD drill rod

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Boart Longyear™ Alpha Bit™		02	02, 06ABR	06ABR, 07ABR
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Fordia		Hero 3	Hero 7	9-11, Hero 9
Hayden		2	4	9AA
Dimatec		D3	HR7	HR7

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Longyear™	Green (P520), Yellow (P575)	Green (P520), Yellow (P575)	Yellow (P575), Red (P566)	Yellow (P575), Red (P566)
Boart Longyear™ Alpha Bit™	07ABR, 08ABR	08ABR, 9COM	9COM, 10COM	09COM, 10COM
Atlas Copco	11AC	11AC, 13AC	13AC	15AC
Fordia	9-11, Hero 11	9-11, Hero 11	11-14	11-14
Hayden	9AA, KS5	KS5	H12-14	H14-15
Dimatec	HR10	HR10, HR12	HR12, HR13	HR13

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

DIAMOND CORING DRILL BIT GAUGES

SIZE	CORE OD (mm)	BIT OD STD (mm)	BIT OD RSG (mm)	BIT OD OS (mm)	HOLE VOL. (L/100 m)
Q™ Wireline					
BQ	36.4	59.6	59.9	NA	282
NQ	47.6	75.3	75.7	77.0	451
HQ	63.5	95.6	96.1	97.3, 98.9	724
PQ	85.0	122.0	122.6	125.7	1 180
Q™ Thin Kerf					
AQTK	30.5	47.6	48.0	N/A	181
BQTK	40.7	59.6	59.9	N/A	282
NQTK	50.7	75.3	75.7	77.0	451
Q™ Triple Tube					
NQ3, NQTT	45.1	75.3	75.7	77.0	451
HQ3, HQTT	61.1	95.6	96.1	97.3, 98.9	724
PQ3, PQTT	83.1	122.0	122.6	125.7	1 180

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

IMPREGNATED BIT DRILLING GUIDELINES

SIZE	SPEED (rpm)	INDICATIVE WOB Low (kN)	INDICATIVE WOB High (kN)	FLUID FLOW Low (lpm)	FLUID FLOW High (lpm)
Q™ Wireline					
BQ	1 200	9	24	20	30
NQ	950	13	37	35	50
HQ	750	20	56	50	70
PQ	600	31	84	80	100
Q™ Thin Kerf					
AQTK	1 500	5	13	12	20
BQTK	1 200	8	20	20	26
NQTK	950	12	34	32	44
Q™ Triple Tube					
NQ3, NQTT	950	14	36	35	50
HQ3, HQTT	750	20	54	55	75
PQ3, PQTT	600	32	80	80	105

1. **Rotation Speed:** in extremely broken, hard, ground, run at half RPM and weight on bit (WOB) sufficient to reach 1 - 2 ipm (3 - 5 cpm).
2. **WOB:** Constant WOB will require changing holdback pressure. Check off bottom weight as rods are added.
3. **Water Flow:** Flow rate is recommended based on amount of cuttings at 6 - 8 ipm (15 - 20 cpm). Higher penetration rates should have higher flow rates.

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WIRELINE ROD RATINGS

Standard Wall

SIZE	DEPTH RATING*	RATED PULL-BACK*	MIN. MAKE-UP**	RATED TORQUE**
BXQ	4 000 m	330 kN	400 Nm	2 400 Nm
BRQ	3 000 m	250 kN	400 Nm	1 500 Nm
BQ	1 500 m	115 kN	400 Nm	800 Nm
NRQ	3 000 m	330 kN	600 Nm	2 400 Nm
NQ	2 000 m	147 kN	600 Nm	1 200 Nm
HRQ	2 500 m	510 kN	1 000 Nm	3 500 Nm
HQ	1 500 m	200 kN	1 000 Nm	1 356 Nm
PHD	1 500 m	450 kN	1 000 Nm	4 000 Nm

Thin Kerf				
ARQTK	1 500 m	130 kN	339 Nm	800 Nm
BRQTK	1 500 m	200 kN	400 Nm	895 Nm

V-Wall™ and W-Wall™				
NXQ	4 000 m	425 kN	600 Nm	3 400 Nm
NRQ	3 300 m	330 kN	600 Nm	2 400 Nm
HXQ	4 000 m	510 kN	1 000 Nm	4 000 Nm
HRQ	3 050 m	510 kN	1 000 Nm	3 500 Nm
PHD	2 000 m	450 kN	1 000 Nm	4 000 Nm

*	Depth capacity decreases with wear. For example, derate by at least 50% for box shoulder thickness worn to 50% of original.
**	Increase make-up torque to match operating torque as depth increases. Operating torque should not exceed make-up torque.

ALL DIMENSIONS, WEIGHTS AND VOLUMES SHOWN ARE NOMINAL

WIRELINE DRILL RODS

Standard Wall

SIZE	OD (mm)	ID (mm)	WEIGHT (kg/3 m)	THREAD PITCH (mm)	CONTENT (L/100 m)
BRQ,BQ	55.9	46.1	18.0	8.5	167
BXQ*	55.9	46.1	18.0	12.7	167
NRQ, NQ	69.9	60.3	23.4	8.5	286
HRQ, HQ	88.9	77.8	34.5	8.5	475
PHD	114.3	101.6	52.2	102	811

Thin Kerf					
ARQTK	44.7	37.5	10.7	6.4	110
BRQTK	55.8	48.4	14.3	7.3	184

V-Wall™ and W-Wall™						
SIZE	OD (mm)	ROD BODY ID (mm)	JOINT ID (mm)	WEIGHT (kg/3 m)	THREAD PITCH (mm)	CONTENT (L/100 m)
NRQ	69.9	62.0	60.3	20.7	8.5	297
NXQ*	69.9	62.0	60.2	20.7	12.7	297
HRQ	88.9	81.0	77.8	27.3	8.5	506
HXQ*	88.9	81.0	77.9	27.3	12.7	506
PHD	114.3	106.4	101.6	39.0	10.2	889

* Patents: AU2012209354; AU2013315186; CA2884798; CA2825533; CN201280010513; RU2607560; US9810029; ZA2013/06418; Patents Pending.

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CONVENTIONAL DRILL RODS

SIZE	OD (mm)	ROD BODY ID (mm)	JOINT ID (mm)	WEIGHT (kg/3 m)	THREAD PITCH (mm)	CONTENT (L/100 m)
AWJ	44.5	34.9	15.9	14.5	5.1	90
AWJ LW	44.5	38.1	15.9	10.4	5.1	94
BWJ	54.0	44.5	19.0	18.0	5.1	146
BWJ LW	54.0	48.4	19.0	16.4	5.1	177
NWJ	66.7	57.2	28.6	23.5	6.4	244
AW	44.5	30.9	15.9	19.7	8.5	75
BW	54.0	44.5	19.0	18.8	8.5	155
NW	66.7	57.2	34.9	24.2	8.5	257
HW	88.9	77.8	60.3	35	8.5	475

FLUSH JOINT CASING

SIZE	OD (mm)	ID (mm)	WEIGHT (kg/3 m)	THREADS/INCH (mm)	CONTENT (L/100 m)
AW	57.1	48.4	17.0	6.4	184
BW	73.0	60.3	31.3	6.4	286
NWT	88.9	76.2	38.4	10.2	456
HWT*	114.3	101.6	52.2	10.2	811
PWT	139.7	127.0	64.3	10.2	1 267

* Compatible with PHD drill rod

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