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LM™ 90 UNDERGROUND CORING DRILL

Technical Overview

LM™90 UNDERGROUND CORING DRILL

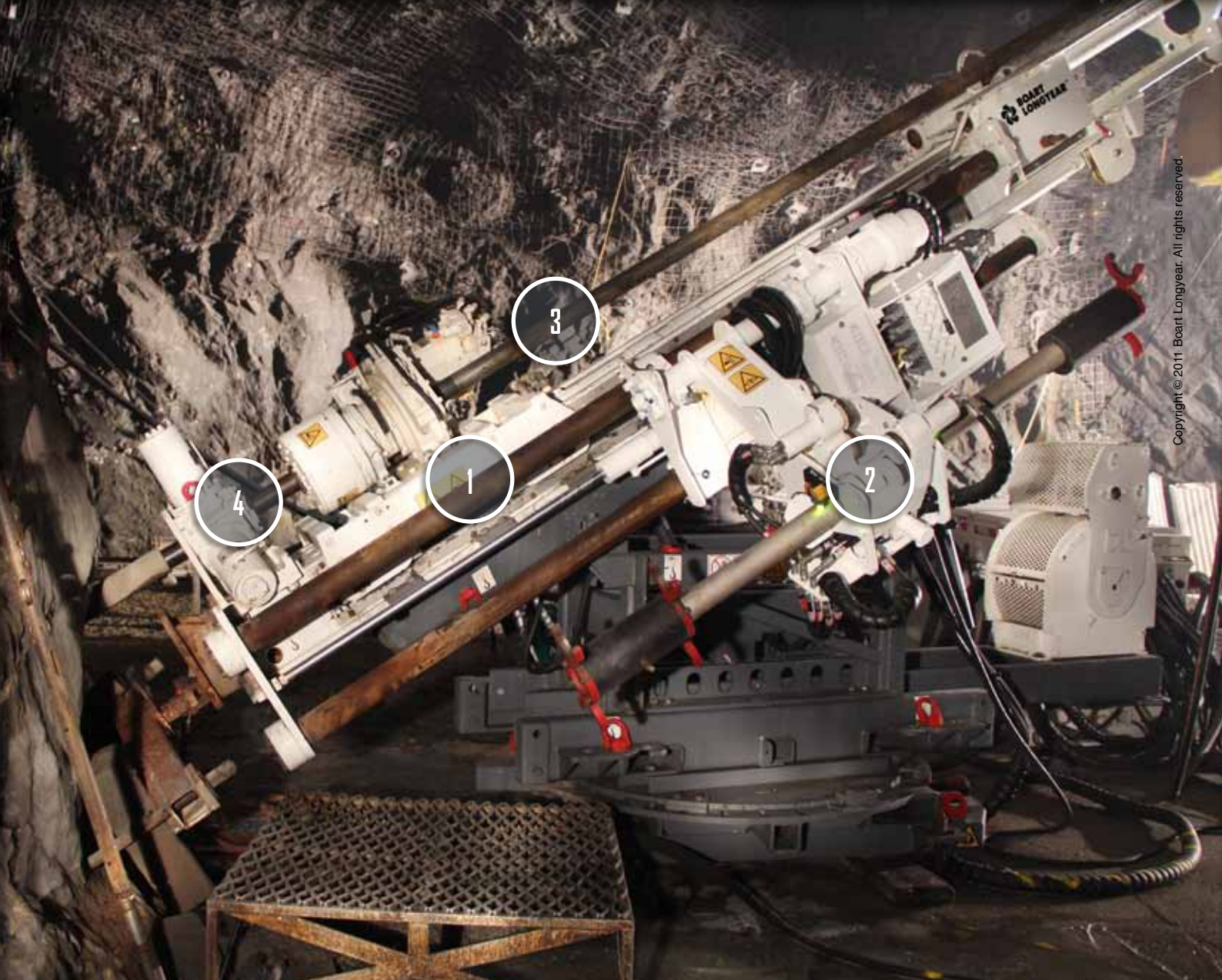
The LM™90 is the largest of Boart Longyear's underground diamond coring rigs and is suited for drilling deep holes.

Equipped with a 130kN feed frame, this drill provides high pullback force as well as a relatively quick rod-handling rate. The feed cylinder is reversible for increased up-hole drilling capacity.

The rig is modular in design with a number of options which make it easier to tailor to specific needs and to upgrade when requirements change. With the assistance of a positioner and a turntable the drill is capable of drilling holes in all angles from vertically up to vertically down. The drill uses an electric motor to power the hydraulics on the machine. The drill can be paired with an optional rod handler which reduces operator fatigue and can improve safety and productivity



For more information on the LM™90 scan with a QR code reader on your smart phone.



1 REVERSIBLE FEED CYLINDER

The feed cylinder is reversible which increases up-hole drilling capacity

2 SEMI-AUTOMATED ROD HANDLING (OPTIONAL)

Semi-automated rod handler (optional) makes handling of rods safer and easier

3 HIGH TORQUE BREAKOUT

Automated high torque break out device breaks most rod joints automatically

4 FAIL SAFE ROD CLAMP

Hydraulic open and spring close rod clamp results in fail safe operation

LOAD SENSING HYDRAULICS

Load sensing hydraulics maximize efficiency and reduce heat

PROPORTIONAL CONTROLS

Proportional controls and lock levers provide optimum control of rpm and feed

DIRECT COUPLED FEED FRAME

Direct coupled feed frame results in lower maintenance and smoother feed transmission

LM™ 90 TECHNICAL INFORMATION

Drill Depth Guidelines						
	Hole Depth			Hole Depth		
Drill Rod/Core Barrel	Metric			U.S.		
	Up	Horizontal	Down	Up	Horizontal	Down
ARQTK*	1000	2000	3200	3281	6562	10499
BQ	605	1200	1850	1985	3937	6070
NQ	400	930	1400	1312	3051	4593
HQ	230	550	800	755	1804	2625
Note	Depth capacity includes allowance for force required to break core using 10 MPa rock strength					
**	ARQ™TK capacity shown for comparison purposes only. It is not recommended drilling practice to drill over 1500 m ARQ™TK depth					

Drill Depth Guidelines with Cylinder Reversed		
	Hole Depth	Hole Depth
Drill Rod/Core Barrel	Metric	U.S.
	Up	Up
AQ™	2400	7874
BQ™	1480	4856
NQ™	1000	3281
HQ™	640	3000
Note	Depth capacity includes allowance for force required to break core using 10 MPa rock strength	

Drill Specification:		
Feed Frame (1300 Series)	Metric	U.S.
Feed Stroke	1830 mm	72 in
Max. rated pushing force	70.3 kN @ 31 MPa	15700 lbf @ 4500 psi
Max. rated pulling force	141.3 kN @ 31 MPa	31600 lbf @ 4500 psi
Rated carriage speed	0.70 m/s per complete cycle	3 ft/s per complete cycle
Normal rod handling speed	Approximately 15 n/min.*	Approximately 50 ft/minute*
Note	The feed frame is reversible	
**	Actual rod handling speed may vary with working conditions	

Chuck and Rod Holder		
	HQ™ Chuck	PQ™ Rod Holder
Maximum opening	97.0 mm (3.82 in) Diameter corresponding to the ID of the HQ™ guide bush	125 mm (4.875 in) Diameter corresponding to the ID of the PQ™ guide bush
Type	Closed hydraulically Opened mechanically Automatic synchronization with rod holder	Closed mechanically Opened hydraulically Automatic synchronization with chuck Manual overdrive
Jaws	3 (same as used with chuck)	3 (same as used with chuck)
Max. rated axial holding capacity	85.0 kN* (19110 lbf*)	130 kN* (33750 lbf*)
Max. rated static torsional holding capacity	Forward and reverse rotation 3900 N-m (2870 lbf*)	Forward and reverse rotation 5800 N-m (4255 lbf*)
"**"	At 7 MPa (1015 psi) with new jaws and rods	
HQ™ Drill Head, HI torque		
Forward Rotation		
Chuck Speed	1330 RPM, continuously variable. Speeds will vary with oil type and temperature and are approximate	
Chuck torque output	371 N-m @ 1250 RPM	272 lb-ft @ 1250 RPM
	1030 N-m @ 500 RPM	757 lb-ft @ 500 RPM
Reverse Rotation		
Chuck Speed	100 RPM, fixed to help prevent rod thread damage	
Chuck Torque output	3770 Nm with break-out device @ 28.5 MPa	2780 lb-ft with break-out device @ 28.5 MPa

LM™90 TECHNICAL INFORMATION

Hydrostatic Pumps		
Main Pump	Metric	U.S.
Type	Variable displacement, axial piston w/pressure compensated load sensing control	
Manufacturer	Rexroth (Hydromatik Gmbh)	
Operating conditions as used on LM90™ drill: Maximum pressure	31 MPa, forward rotation, reverse rotation, rod handling	4500 PSI, forward rotation, reverse rotation, rod handling
Recirculation pump	Oil cooling and charge pump	
Type	Gear, fixed displacement	
Manufacturer	Rexroth (Hydromatik Gmbh)	
Maximum pressure operating conditions as used on LM90™ drill	1-1.5 Bar	14.5-21.8 psi
Normal speed	1490 RPM @ 50 Hz 1790 RPM @ 60 Hz	
Hydraulic tank volume	60 L	15.8 Gal

Wireline Hoist (optional)		
	Metric	U.S.
Type	All hydraulic, with proportional spooling control power up, power down, hydraulically locked in neutral free wheel override, chain driven spooling device	
Line Pull		
Bare Drum	11.77 kN	2649 lb
Full Drum	4.51 kN	1015 lb
Line Speed		
Bare Drum	0 - 100 m/min	328 ft/min
Full Drum	0 - 254 m/min	833 ft/min
Drum Capacity		
5 mm	1400 m	4600 ft
6 mm	1000 m	3280 ft
1/4"	895 m	2930 ft

DIMENSIONS AND WEIGHTS

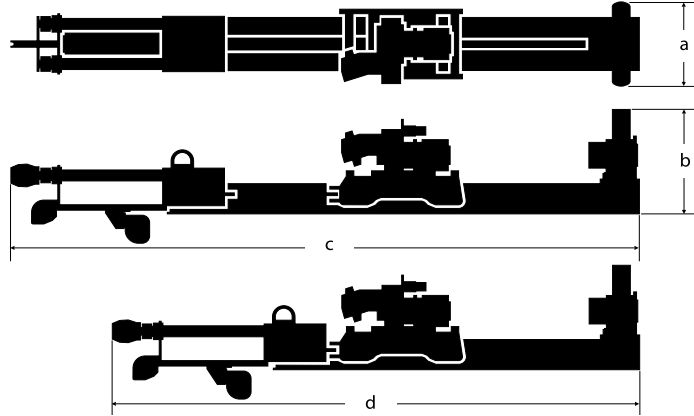
Feed Frame (1300 Series)

Feed Frame
Weight: 1520 kg (3344 lbs)

Rotation Unit w/chuck
Weight: 235 kg (517 lbs)

PQ™ Rod Clamp Assembly
Weight: 170 kg (374 lbs)

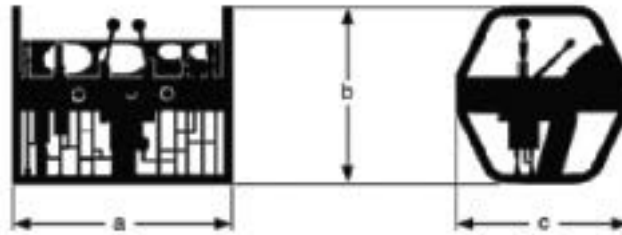
a = 698 mm (27.50 in)
b = 851 mm (33.50 in)
c = 4894 mm (193 in)
Working length
6410 mm (252.50 in)
Working length fully extended
d = 4108 mm (162.75 in)



Control Panel

Weight: 46 kg (101 lbs) w/o hoses
Add 42 kg (92 lbs) for hoses

a = 575 mm (23 in)
b = 521 mm (20.50 in)
c = 480 mm (19 in)



Power Pack

Weight: 1520 kg (3344 lbs)
Includes electric motor and starter,
but without towing group

a = 1318 mm (52 in)
b = 730 mm (29 in)
c = 1526 mm (60 in)
d = 1033 mm (41 in)
e = 3893 mm (153.25 in)
f = 2230 mm (87.75 in)





Global Headquarters

Boart Longyear
10808 South River Front Parkway
Suite 600
South Jordan, Utah 84095
United States of America
info@boartlongyear.com

Tel: +1 801 972 6430
Fax: +1 801 977 3374

Canada

Boart Longyear
2442 South Sheridan Way
Mississauga, Ontario
Canada L5J 2M7
info@boartlongyear.com

Tel: +1 905 822-7922
Fax: +1 905 822-7232

Asia Pacific

Boart Longyear
26 Butler Boulevard
Adelaide, 5950
Australia
infoAP@boartlongyear.com

Tel: +61 8 8375 8375
Fax: +61 8 8375 8497

Latin America

Boart Longyear
Portal Riesco
Av. El Salto 4001, Huechuraba
Santiago, Chile 858 0641
infochile@boartlongyear.com

Tel: +56 2 595 3300
Fax: +51 242 671

Europe

Boart Longyear
12 Avenue des Morgines
CH1213 Petit-Lancy,
Geneva, Switzerland
infoEU@boartlongyear.com

Tel: +41 22 709 0800
Fax: +41 22 709 0801

Sub-Saharan Africa

Boart Longyear
Cycad House, Constantia Office Park
Cnr 14th Avenue and Hendrik Potgieter
Weltevreden Park, 1709
Gauteng, South Africa
infosasa@boartlongyear.com

Tel: +27 11 767 9300
Fax: +27 11 767 9301

MINING AND EXPLORATION DRILLING PRODUCTS



Coring Bits



Coring Rods



Surface Coring Rigs