



# LF™ 900 SURFACE CORING DRILL

Technical Overview

# LF™90D SURFACE CORING DRILL

## **Mobility**

Engineered for mobility, the LF™90D surface coring drill features a telescoping mast with dump capability. The telescoping features afford a compact size during transport while the dump capability lowers the working height of the machine to enable mounting on a crawler, truck or skid.

## **Reliability**

A simple hydraulic and structural design makes this drill easy to operate and maintain.

## **Safety**

Designed with safety in mind, the LF90D surface coring drill includes standard safety features such as an interlocked rotation barrier that slows rotation when barrier is opened and a side shifting head which reduces working height when handling inner tubes.



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



## 1 SELF-CONTAINED OPERATOR PANEL

The simple hydraulic system is easy to operate and maintain, and lift-to-shift levers provide additional operator safety.

## 2 SIMPLE HYDRAULIC DESIGN

Direct-coupled hydraulic pumps with a PTO driven auxiliary pump allow for easy maintenance.

## 3 NITRO CHUCK™

Patented nitrogen gas spring jaws with hydraulic open/spring close function ensuring fail-safe operation.

## 4 ROTATION BARRIER

Prevents accidental contact with rotation unit while in operation.

## 5 HYDRAULIC SIDE SHIFTING HEAD

Lowers working height when handling inner tube.

## 6 DUMP / TELESCOPING MAST

Dump feature enables mounting on different size platforms while telescoping mast makes drill compact for transportation.

# LF™ 90D TECHNICAL INFORMATION

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Drilling Depth Guidelines		
	Fluid Filled	
Drill Rod / Core Barrel	Hole Depth (meters)	Hole Depth (feet)
BRQ / BQ	1 385	4,543
NRQ / NQ	1 064	3,492
NRQ V-WALL™	1 193	3,915
HRQ / HQ	722	2,370
HRQ V-WALL™	898	2,947
PHD / PQ	476	1,562
PHD V-WALL™	637	2,089

The figures in these table are estimates which have been calculated using the applicable pullback capacity of the drill and on an effective rock tensile strengths of 5 MPa. Actual drilling results may vary and will depend on in-hole tools, subsurface and other environmental conditions, drilling techniques and equipment used. Always verify manufacturers' rod depth ratings prior to use.

Prime Mover		
	Metric	U.S.
Standard Unit	Cummins QSB 6.7 L, liquid cooled, turbo charged, after cooled, diesel engine	
Displacement	6.7 L	409 in <sup>3</sup>
Power (maximum) at 2200 RPM	153 kW	220 hp
Emissions Certification	Stage III	Tier 3

Torque and RPM Ratings			
(Hydraulic motor at maximum/minimum displacement, prime mover at 2,200 RPM)			
	Speed (no load)	Torque (stall)	
	RPM	Nm	lbft
1st Gear	122 - 199	5 322 - 3 254	3,925 - 2,400
2nd Gear	246 - 400	2 648 - 1 620	1,963 - 1,195
3rd Gear	439 - 714	1 486 - 908	1,096 - 670
4th Gear	769 - 1,250	849 - 519	626 - 383

NOTE: Head output speed and torque are infinitely variable in each gear range as indicated. Actual rotation speed is affected by RPM and hydraulic motor displacement setting.

Hydraulic System		
	Metric	U.S.
Primary Pump	Axial piston, variable displacement load sensing, pressure compensated with low pressure standby.	
Max Flow	165 L/m	43.5 gpm
Max Pressure (factory setting)	31 MPa	4,500 psi
Secondary Pump	Axial piston, variable displacement load sensing, pressure compensated with low pressure standby.	
Max Flow	64 L/m	17 gpm
Max Pressure (factory setting)	21 MPa	3,000 psi
Auxiliary Pump	Axial piston, variable displacement, pressure compensated	
Max Flow	42 L/m	11 gpm
Max Pressure (factory setting)	14 MPa	2,000 psi
Hydraulic Tank Capacity	231 L	61 Gal

Drill Head		
Rotation Motor	Rexroth hydraulic motor - variable/reversible	
Mechanical Transmission	Funk 4 speed	
Ratios	1st	6.27:1
	2nd	3.12:1
	3rd	1.75:1
	4th	1.00:1
Final Drive	Straight cut gears	
Ratio	2:1	
Head Opener	Side shift style - hydraulically actuated	
Hydraulic PQ Chuck	Patented Nitro Chuck™	
	Hydraulically opened, nitrogen gas spring closed	
	Axial holding capacity of 222 400 N (50,000 lbf)	
Drill Head	Force fed bearings, oil bath for gears	
Drill Head Lubricating Oil Filtration	25 micron suction oil filter - independent constant flow	

Drill Mast and Feed System		
	Metric	U.S.
Feed Stroke	3.35 m	11 ft
Max Pull Capacity	167.7 kN	37,700 lbf
Max Thrust Capacity	88.4 kN	19,880 lbf
Rod Pull	3 or 6 m	10 or 20 ft
Drilling Angle	45° off horizontal to 90° vertical down	
Mast Dump (Crowd)	2.34 m	7.7 ft
Mast Telescope	3.35 m	11 ft

## LF™ 90D TECHNICAL INFORMATION

Draw Works		
	Metric	U.S.
Main Line Hoist	Single speed motor	
Hook Load (single part line)		
Bare Drum	71.2 kN	16,000 lbf
Hoisting Speed (single part line)		
Bare Drum	.35 m/min	1.15 ft/s
Main Hoist Cable	15 mm	0.59 in
Minimum Breaking Strength	226.0 kN	50,800 lb
Note: Do not use multiple part lines with the main line hoist, use single part line ONLY.		
Foot Clamp Capacity	HWT	
Wireline Hoist		
Level Wind	N/A	
Level Pull		
Bare Drum	12 kN	2,700 lb
Full Drum	2.2 kN	502 lb
Line Speed		
Bare Drum	123 m/min	405 ft/min
Full Drum	321 m/min	1054 ft/min
Drum Capacity (4.8 mm/316° swaged)	1 890 m	6,200 ft
Minimum Breaking Strength	2 268 kg	5,000 lb
Note: Wireline cable length to be specified at time of order		

Additional Information		
	Metric	U.S.
Fuel Tank Capacity	243 L	64 Gal

\* Dimensions and weights may vary depending on options and should be checked before crating or lifting.

# LF™ 90D DIMENSIONS AND WEIGHTS

<b>Weight = 8,392 KG</b>
<b>Consisting of:</b>
Power Unit Group Cummins QSB 6.7 L, Tier 3, 6 cylinder
Hydraulic Module
Draw Works Grp. c/w 16,000 lb Main Line Hoist with Cable, Wireline Hoist less Cable
Hydraulic Mast Raising
Hydraulic Mast Dump
Telescopic Mast Assembly
Rotation Unit Grp. c/w PQ Nitro Chuck™/Head Guard
Base Frame
Fuel Tank (265 L/70 US gal)
Battery - 12V
Hydraulic Foot Clamp HWT Capacity

Options	
Truck	<p>NOTE: The LF90D requires an additional sub frame for mounting onto a truck.</p> <p>WARNING: Do not operate this drill with rods racked in wind velocities in excess of 85 km/h.</p>
Catwalk, Railing and Access Stairs	
Rod Rack Platform	
Hydraulic Leveling Jacks/Outriggers	
Truck Mounting Sub-frame	
Hot Weather Hydraulic Cooling Group	
CE Certification	
Decals available in multiple languages	
Fluid circulation pumps	
Mud Mixer	

**Drill Transport and Position -Basic Drills**

Wet weight = 18600 lbs (8437 kg)  
 Ground pressure: 0.6 kg/cm<sup>2</sup>  
 Max speed: 2.4 kph

1 514 mm (5') Jacking Extended

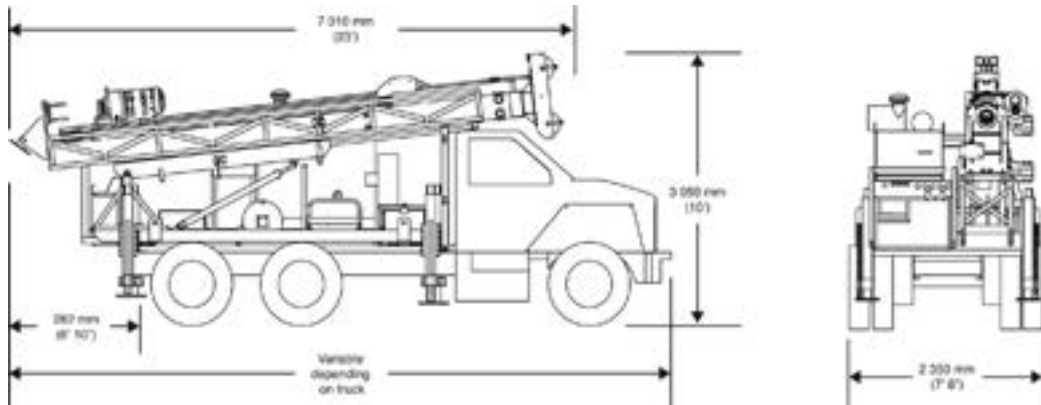
7 010 mm (23')

600 mm (2') Jacking Retracted

2 490 mm (8' 2")

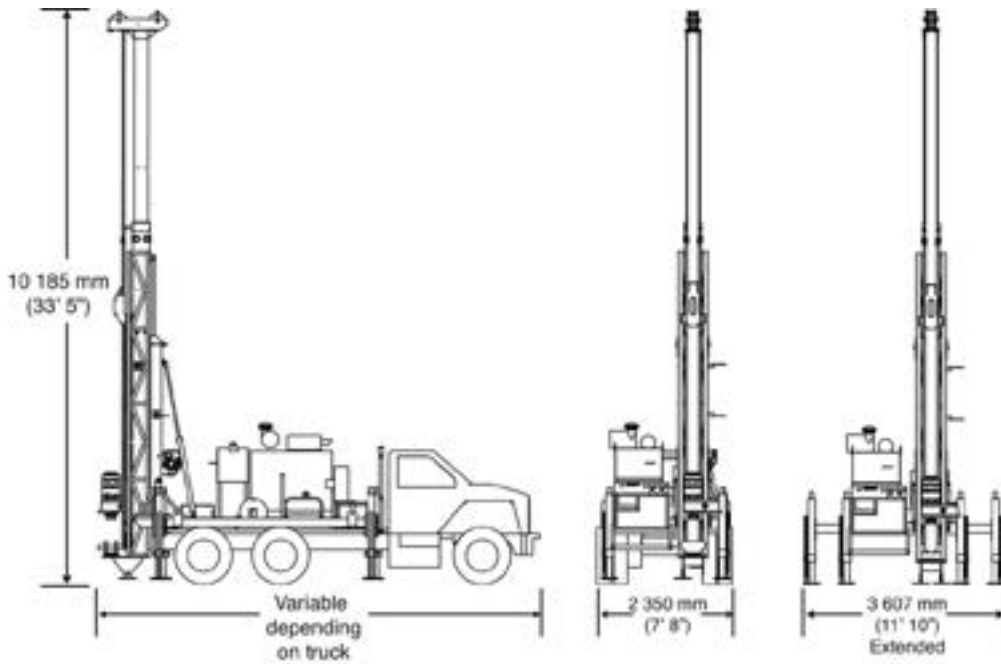
**Drill Transport Positions C/W Optional Truck**

(shown with optional truck)



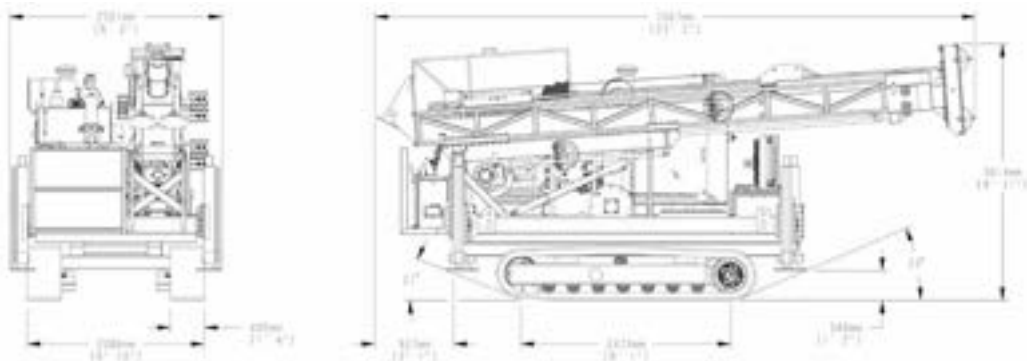
**Drill Mast at 90° C/W Optional Truck**

**NOTE:** Dimensions are with optional truck and hydraulic leveling jacks extended to ground level. Leveling jack full stroke is 914 mm (3').



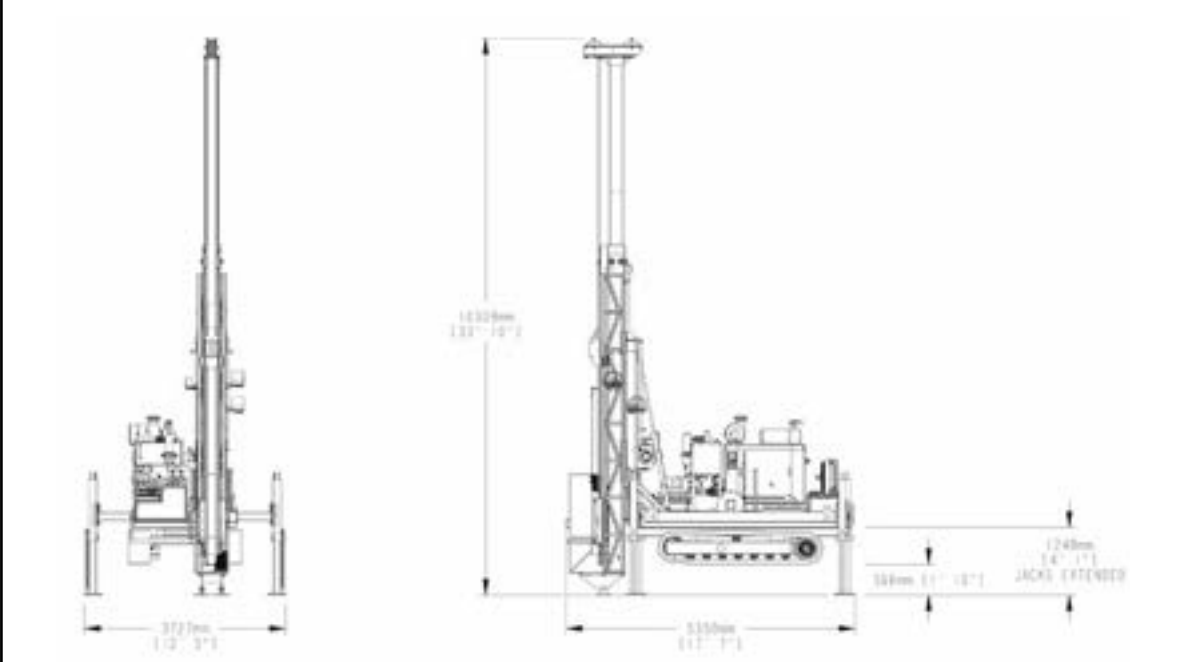
**Drill Transport Positions C/W Optional Crawler**

Wet weight = 25950 lbs (11771 kg)  
 Ground pressure: 0.6 kg/cm<sup>2</sup>  
 Max speed: 2.4 kph





**Drill Mast at 90\_ C/W Optional Crawler**

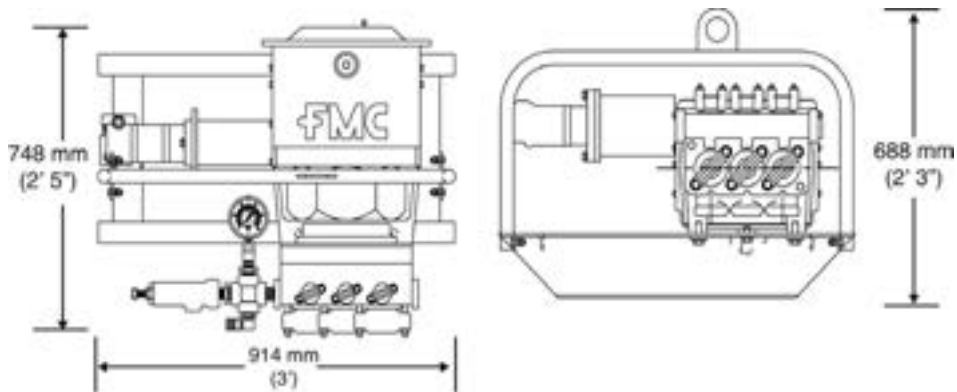


**(W11) Fluid Circulation Pump Group (Optional)**

Wet Weight = 254 kg (560 lb)

The max. output of W11 pump:  
= 35 GPM @ 1000 psi (70 bar)

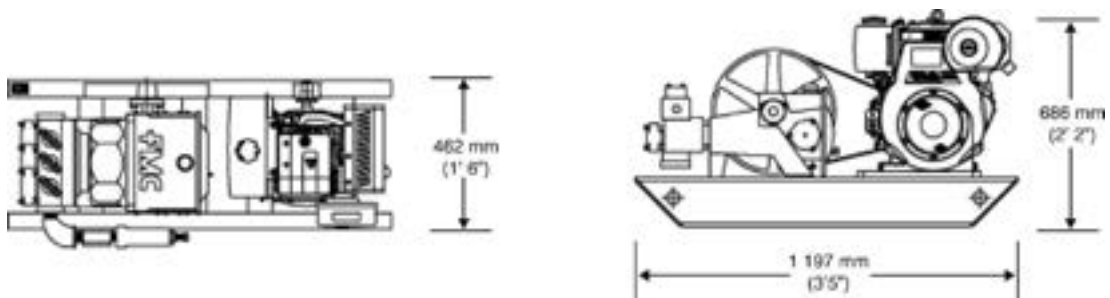
An optional liner kit is available to improve pump operation at lower flow rates. Max output with kit installed is limited to 20 GPM @ 1000 psi (70 bar)



**(L09) Fluid Supply Pump Group - Diesel (Optional)**

Output: 76 L/m @ 34 bar (20 GPM @ 500 psi)

Weight: 240 kg (530 lbs)

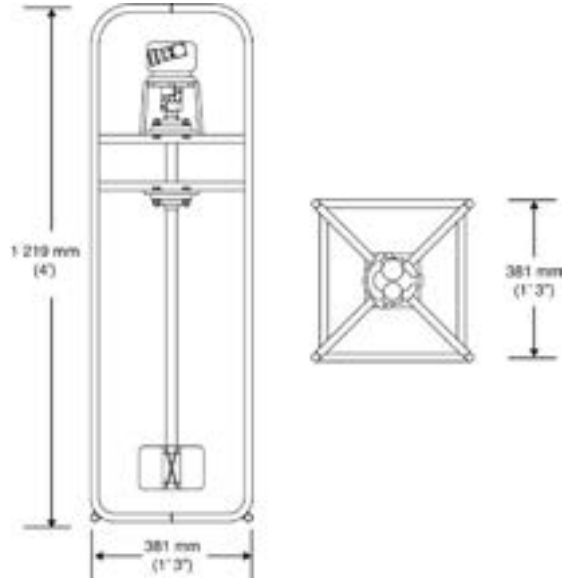


# DIMENSIONS AND WEIGHTS

## Mud Mixer Assembly (Optional)

Wet Weight 31 kg (68 lb)

Note: Maximum speed of the mud mixer shaft at full flow is 2300 rpm.





BOART  
LONGYEAR

LF 900



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