



**DRILL FASTER
RUN HARDER
WORK SMARTER**



HDD LOW PROFILE PUSH-PULL REAMER

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ADVANCED DESIGN HDD LOW PROFILE PUSH-PULL REAMER

HDD LP PUSH-PULL REAMER

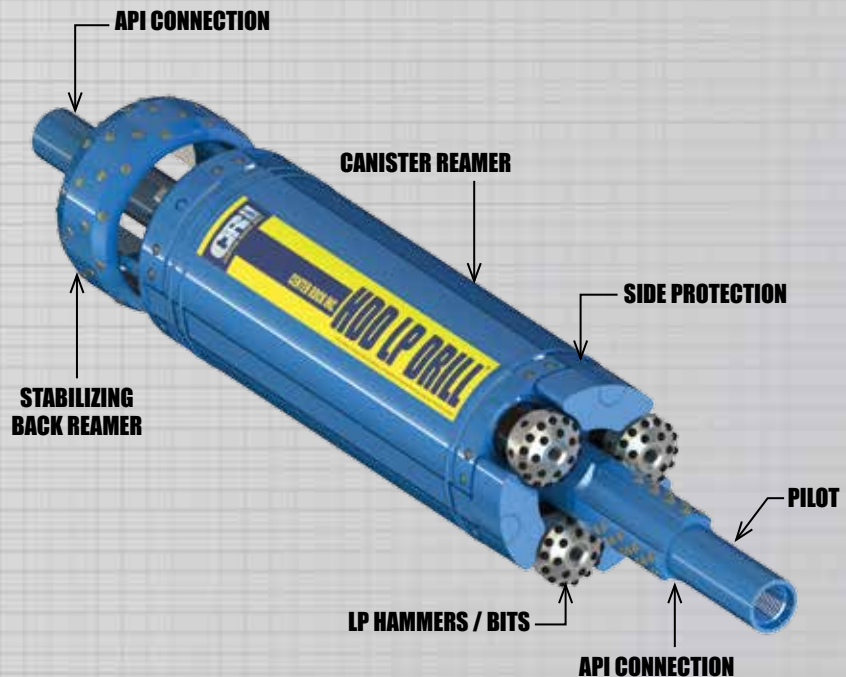
Advanced engineering of Center Rock's LP Drills® provide a cost effective solution for horizontal drilling from standard diameters measuring 12"-60" (304.8 mm - 1524 mm) and custom built sizes for any requirement. Some of the features and benefits include:

- Capable of pulling or pushing
- Canister has built in stabilization with the canister only 1" (25.4 mm) under-cutting diameter and rollers 0.25" (6.4 mm) under-cutting diameter
- Side protection carbide inserts for extended wear
- Capable of trailing casing with swivel
- Low vibration, no shock sub required
- Low torque and low air requirements

HOW IT WORKS

Center Rock's HDD-LP Push-Pull Reamer is a product that has evolved after many years of success with our LP product line drilling the hardest rock formations around the world. The drilling markets that have utilized this technology are Oil & Gas, Foundation, Mine Ventilation/ Dewatering and Mine Rescue.

The HDD-LP is powered by individual LP hammers packaged within the reamer canister. Each hammer is pneumatically powered by compressed air supplied through the drill pipe. Individual hammers impact their respective bit which pulverizes the rock into small chips/cuttings. These cuttings are then forced back through the annular area between the pilot hole and drill pipe by the supplied air.



STANDARD SIZE HDD LP PUSH PULL REAMER SPECIFICATIONS

SIZE		NUMBER OF HAMMERS	HAMMER	BIT	MINIMUM AIR REQUIRED		RECOMMENDED AIR REQUIRED		WEIGHT WITH THE CALYX	
INCHES	MM				SCFM	M ³ /MIN	SCFM	M ³ /MIN	LBS	KG
12 x 4.75	305 x 120	3	RF35 LP	4.25	600	17	900	25	575	261
16 x 5.75	406 x 146	3	RF40 LP	6.00	750	21	1050	29	1395	633
18 x 6.75	457 x 171	3	RF40 LP	6.00	750	21	1050	29	1500	680
20 x 6.75	508 x 171	3	RF60 LP	7.875	1200	34	1500	42	2000	907
22 x 6.75	559 x 171	3	RF60 LP	7.875	1200	34	1500	42	2376	1078
24 x 8.75	610 x 222	3	RF60 LP	7.875	1200	34	1500	42	3400	1542
30 x 8.75	762 x 222	4	RF60 LP	7.875	1600	45	2000	56	4300	1950
33 x 10.00	838 x 254	5	RF60 LP	7.875	2000	56	2500	70	5147	2335
36 x 10.00	914 x 254	6	RF60 LP	7.875	2400	68	3000	85	5890	2672
48 x 12.00	1219 x 304	9	RF60 LP	7.875	3600	101	4500	127	9803	4447
60 x 12.00	1524 x 304	12	RF60 LP	7.875	4800	135	6000	170	13165	5972

HDD MONO-HAMMER WITH SLANT BIT

HDD MONO-HAMMER

- Slant face bit from 4.75" to 12" (120.5 mm - 305 mm).
- Bent sub and sonde housing available.
- Accepts all sondes, 15" & 19" (381-482.6 mm) and Ditch Witch® transmitters.
- Greater air flow through housing for optimal hammer performance.
- Excellent steering in all types of rock and clay.
- Wire-line adaptable.
- Easily adaptable to all HDD drill rigs.
- Smaller compressor requirements (job dependent).
- Reduced operating cost, no drilling fluid recycling needed.
- Typically only one GPM of drilling fluid for operation.
- Tested and proven to operate in sands and cobbles with proper drilling fluid.
- Rate of penetration (ROP) faster than conventional methods.



MODEL	RF35 HD		RF40 HD		RF55 HD		RF80 HD	
CPN	91003424		91003425		91003550		91003551	
GENERAL SPECIFICATIONS	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric
Connection	2-3/8 API reg pin		2-3/8 API reg pin		3-1/2 API reg pin		4-1/2 API reg pin	
Bit Shank	DHD 35 HD		CR40 HD		QL50		QL80	
Reversible casing	NO		NO		YES		YES	
Outside diameter (in/mm)	3.5	88.9	4.0	101.6	5.0	127	7.1	180.3
Length with bit extended (in/mm)	69.0	1752.6	76.9	1953.3	82.6	2098	62.9	1597.7
Length with bit retracted (in/mm)	67.1	1719.3	75.8	1976.1	81.4	2067.6	63.9	1623.1
Assembly Weight w/Bit (lbs/kgs)	154	70	167	76	353	160	567	257
Piston Weight	10.5	4.8	20.0	9.1	31.5	14.3	107.2	48.6
Slant Face Bit Diameter (in/mm)	4.75	120.6	5.75	146.0	6.75	171.45	8.75	222.25
Make-up Torque (ft-lb & N-m)	3000	4067.5	4000	5423.3	5000	6779.1	8000	10846.5
Minimum Air	400/200	11.2/13.8	400/200	11.3/13.8	675/250	19.1/17.2	1000/350	28.3/24.1
Recommended Air	700/350	19.8/24.1	900/350	25.5/24.1	1150/350	32.6/24.1	1350/350	38.2/24.1
AIR CONSUMPTION								
100 psi/6,9 bar (scfm/m ³ /min)	142	4.0	183	5.2	149	4.2	358	10.1
150 psi/10,3 bar (scfm/m ³ /min)	219	6.2	284	8.0	247	7.0	571	16.1
200 psi/ 13,8 bar (scfm/m ³ /min)	288	8.1	386	10.9	360	10.2	808	22.8
250 psi/ 17,2 bar (scfm/m ³ /min)	348	9.8	488	13.8	488	13.8	1067	30.2
300 psi/ 20,7 bar (scfm/m ³ /min)	400	11.3	590	16.7	632	17.8	1350	38.1
350 psi/ 24,1 bar (scfm/m ³ /min)	444	12.5	691	19.5	791	22.3	1656	46.8

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