

**BERMINGHAMMER**

FOUNDATION EQUIPMENT



**RC DRILLING**

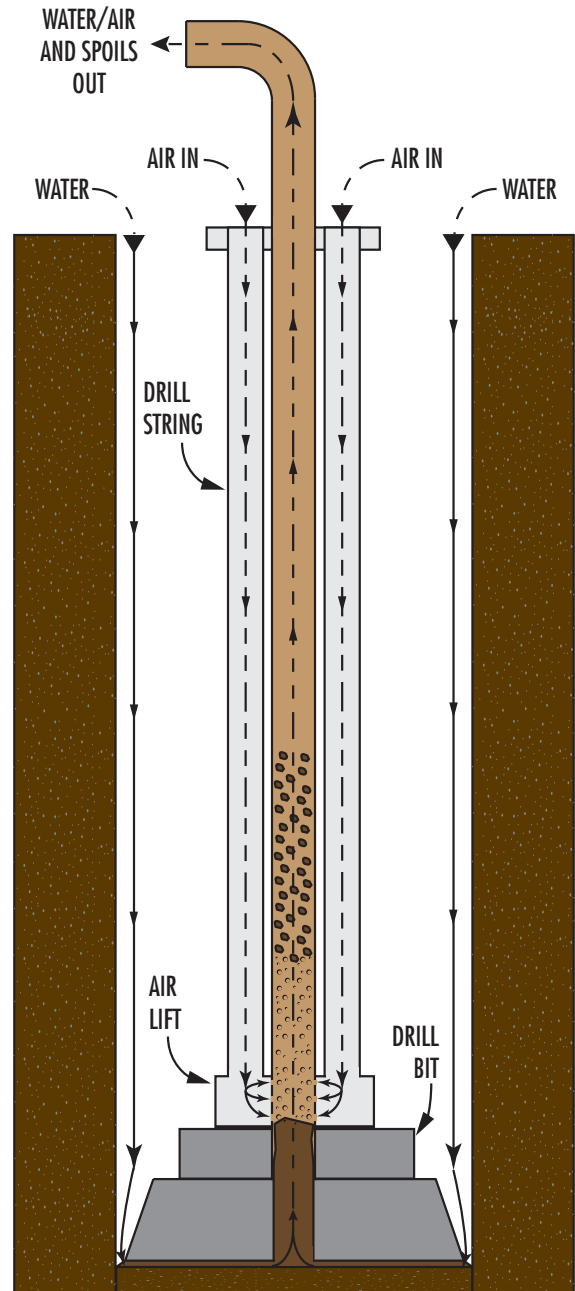
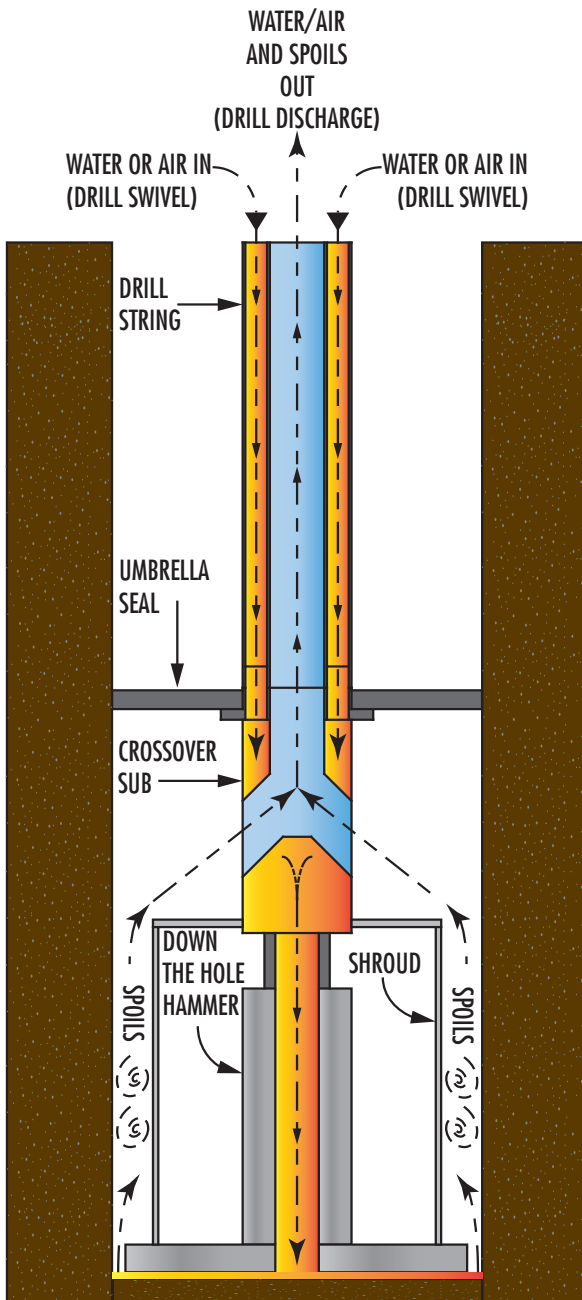
**SYSTEMS**



## REVERSE CIRCULATION DRILLING

'Reverse Circulation' drilling involves the supply of air down through the drill-string to decrease the 'effective density' of the water in the center of the drill-string. Operating much like an 'air-lift', the drilling spoils are carried out of the hole through this rising column lower-density air/water mixture (see Figure below). Reverse Circulation requires that the outer annular area of the casing be kept full of water in order to provide the hydraulic head required to effectively 'push' the central column of air/water/spoils up and out of the hole through the central pipe of the drill-string. Reverse Circulation is an effective drilling technique for a wide range of hole diameters including very large holes – up to 3-m diameter

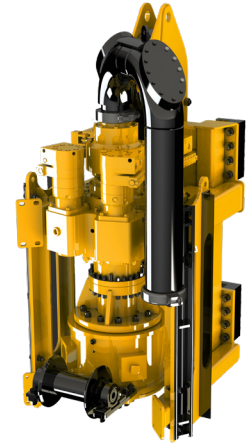
and larger. It is also effective for very deep holes, and holes drilled into hard-rock. Another advantage of Reverse Circulation is the ability to control/direct the drilling spoils by simply directing the discharge pipe to the desired site location or even to a dedicated barge (for environmentally sensitive, overwater applications). This cannot be accomplished with direct circulation which allows water and cuttings to spill out of the top of the pile. Reverse Circulation can be used in conjunction with rotary drilling bits as well as Down-the-Hole-Hammer applications. The Berminghammer Reverse Circulation Drills are particularly well suited to Down-the-Hole-Hammer applications due to their simple, rugged design and construction.



# BRC35



## Birmingham Reverse Circulation Drill



### Features

- Designed for Reverse Circulation Rock Drilling up to 24" Diameter
- High Capacity Air and Discharge Swivels
- 35,000 ft-lbs Torque
- 40,000 lbs of crowd & pullout
- Integrated Lead Slide
- Pairs with L18 L23 BL32 BL37 leads
- Pairs with DS18 HX9.4 String

### Specs

Max Drill Torque	35,000	ft lbs	48	kNm
Max Drill Speed	31	rpm	31	rpm
Pullout	40,000	lbs	18.2	tonne
Crowd	40,000	lbs	18.2	tonne
Center Passage	5.3	in	135	mm
Flow Required	90	gpm	340	l/min
Pressure Required	4,061	psi	280	bar
Weight with Typical Slide	5,500	lbs	2,500	Kg

# BRC75



## Birmingham Reverse Circulation Drill



### Features

- For Reverse Circulation Rock Drilling
- High Capacity Air / Water Swivel
- 73,750 ft-lbs Torque
- 20- RPM Rock Drilling
- 50- RPM High Speed
- Light Weight Design
- 8 inch Center Passage
- 65 tonne Tension / Compression Bearing Capacity
- Upgrade Option to BRC-150

### Specs

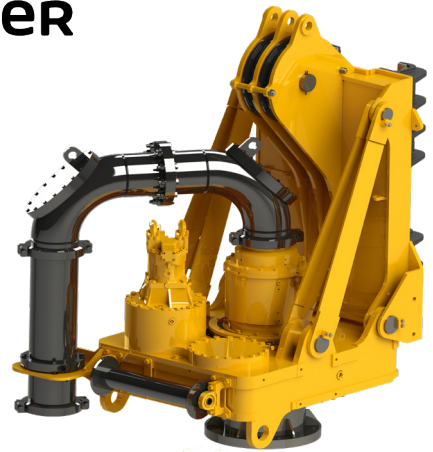
Max Drill Torque	73,750	ft lbs	100	kNm
Max Drill Speed	20	rpm	20	rpm
Pullout	143,000	lbs	65	tonne
Crowd	143,000	lbs	65	tonne
Center Passage	8	in	200	mm
Flow Required	106	gpm	400	l/min
Pressure Required	4,640	psi	320	bar
Power Requirement	287	HP	213	kW
Weight (Rotary Only)	4,050	lbs	1,840	Kg
Weight with Typical Slide	8,600	lbs	3,900	Kg

# BRC100 **BERMINGHAMMER**

FOUNDATION EQUIPMENT



## Berminghammer Reverse Circulation Drill



### Features

- Designed for Reverse Circulation Rock Drilling from 24" to 52" Diameter
- High Capacity Air and Discharge Swivels
- 100,000 ft-lbs Torque
- 140,000 lbs of crowd & pullout
- Integrated Lead Slide
- Pairs with H25 H28 L27 leads
- Pairs with DS18 DS20 DS22 RC String

### # Specs

Max Drill Torque	100,000	ft lbs	135	kNm
Drill Speed	2 to 17	rpm	2 to 17	rpm
Pullout	140,000	lbs	65	tonne
Crowd	140,000	lbs	65	tonne
Center Passage	9.75	in	248	mm
Flow Required	106	gpm	400	l/min
Pressure Required	4,600	psi	320	bar
Weight with Typical Slide	12,000	lbs	5,500	Kg

# BRC200 **BERMINGHAMMER**

FOUNDATION EQUIPMENT



## Berminghammer Reverse Circulation Drill



### Features

- Designed for Reverse Circulation Rock Drilling over 48" Diameter
- High Capacity Air and Discharge Swivels
- 200,000 ft-lbs Torque
- 200,000 lbs of crowd & pullout
- Integrated Lead Slide
- Pairs with H28 H36 leads
- Pairs with DS20 DS22 DS24 RC String

### # Specs

#### Low Speed

Max Drill Torque	200,000	ft lbs	270	kNm
Drill Speed	2 to 15	rpm	2 to 15	rpm
Pullout	200,000	lbs	90	tonne
Crowd	200,000	lbs	90	tonne
Center Passage	9.75	in	248	mm
Max Flow	210	gpm	800	l/min
Pressure Required	4,600	psi	320	bar
Weight with Typical Slide	14,000	lbs	6350	Kg

## Reverse Circulation Swivel



### ✦ Specs

#### RCS28

Max Torque	250,000	ft lbs	339	kNm
Drill Speed (From KDK)	50	rpm	50	rpm
Pullout	240,000	lbs	109	tonne
Crowd	240,000	lbs	109	tonne
Center Passage	7	in	178	mm
Max Air	5,000	cfm	141	m3/min
Weight with Typical Slide	10,000	lbs	4,536	Kg

Integrates with Berminghamammer DS20, DS22

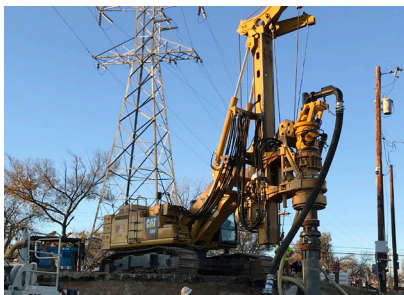
#### RCS36

Max Torque	300,000	ft lbs	406	kNm
Drill Speed (From KDK)	50	rpm	50	rpm
Pullout	400,000	lbs	181	tonne
Crowd	400,000	lbs	181	tonne
Center Passage	12	in	305	mm
Max Air	7,000	cfm	198	m3/min
Weight with Typical Slide	11,000	lbs	4,990	Kg

Integrates with Berminghamammer DS20,DS22,DS24

### Features

- Quickly Utilize Your Drill Rig to Drill Hard Rock
- Down-the-hole-hammer Drilling
- Cluster Drilling
- Drill Depths up to 200'
- Conventional Roller Bit Drilling
- Diameters up to 11'



# RC STRING

# BERMINGHAMMER

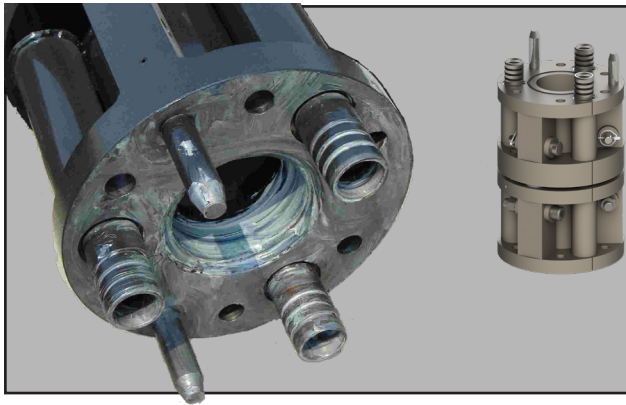
FOUNDATION EQUIPMENT



## Reverse Circulation Drill String

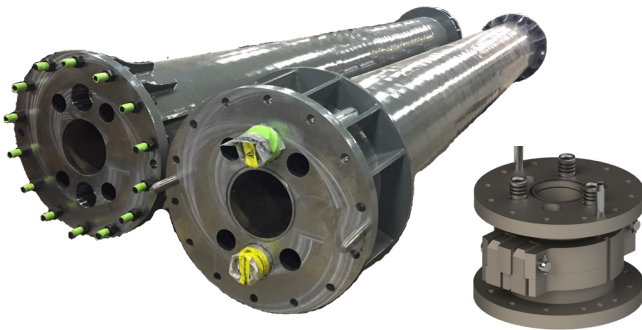
Used with both the BRC Drills and RC Swivel, Berminghammer's drill string is the most durable and multi-versatile drill string in the industry. Multiple inlets allow drillers to easily alter drilling methodologies from exclusively air drilling to mixing in water and drilling foams. Large center passages allow for greater cutting volumes to be evacuated. Utilizing an 11' (3.35m) cluster bit, Berminghammer DS24 drilled rock depths of 210' (64m) with an RCS36 Swivel.

### # Specs



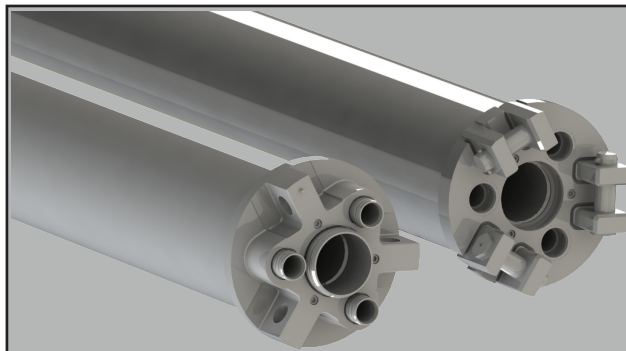
#### DS18 Flangeless

Average Weight	225	lb/ft	335	kg/m
Max Torque	80,000	ft lbs	110	kNm
Max Pullout	50	ton	500	kN
Center Passage ID	7	in	178	mm
Max Outer Diameter	18.5	in	470	mm
Quick Disconnect	18.5	in	470	mm
Max Air	4,000	CFM	113	m3/min



#### DS20 External Flange

Average Weight	250	lb/ft	372	kg/m
Max Torque	250,000	ft lbs	340	kNm
Max Pullout	120	ton	1,200	kN
Center Passage ID	8	in	203	mm
Max Outer Diameter	26	in	660	mm
Quick Disconnect	27.5	in	699	mm
Max Air	5,000	CFM	141	m3/min



#### DS22 Integrated Quick Disconnect

Average Weight	225	lb/ft	335	kg/m
Max Torque	210,000	ft lbs	285	kNm
Max Pullout	150	ton	1,500	kN
Center Passage ID	7	in	178	mm
Max Outer Diameter	21.5	in	546	mm
Max Air	5,000	CFM	141	m3/min



#### DS24 External Flange

Average Weight	270	lb/ft	402	kg/m
Max Torque	300,000	ft lbs	405	kNm
Max Pullout	200	ton	1,992	kN
Center Passage ID	9.75	in	248	mm
Max Outer Diameter	32	in	813	mm
Quick Disconnect	32	in	813	mm
Max Air	7,000	CFM	198	m3/min

## VERSATILITY IN LEAD STYLE

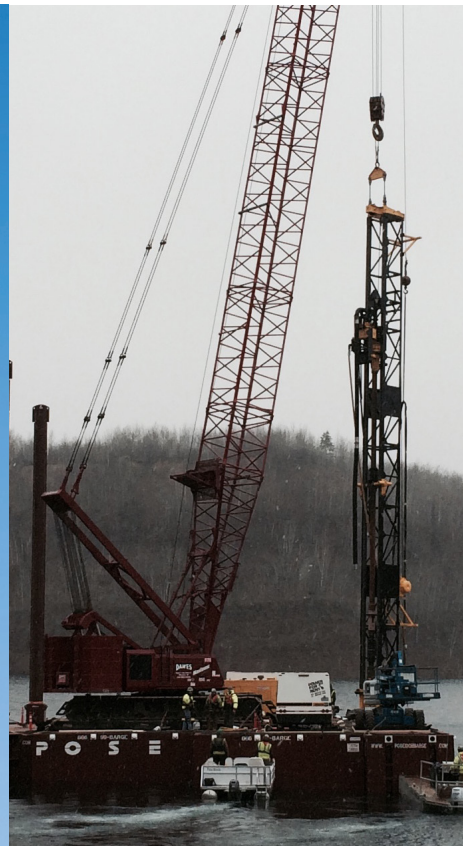
### Lead-Mounted Drill Rigs on Crawler Crane

For use on land or over-water, combining a Birmingham Drill with a Birmingham Vertical Travel Lead (VTL) offers the most versatility. Movement from hole-to-hole will occur more quickly with this leader system than with any other drilling system and can operate on vertical or battered piles. The versatility of the lead system can allow for multiple insertions from one crane/barge location. On one project, a Birmingham VTL System and drill out-performed a dedicated 'drilling-rig' by 5 to 1. Birmingham personnel specialize in the rig-up and rig-down of our VTL Systems and we have the ability to connect our systems to virtually any make of crane. A VTL System has the advantage of being able to 'activate' the weight of the lead and attachments as additional 'crowd' for the drilling.



### Flying Lead

In some overwater applications a flying lead and drill might be the best choice. If the supporting crane does not have adequate capacity to support a VTL System, or if the required drilling equipment is very heavy then an underhung system may be the most economical. Birmingham leads rigged as underhung leads come equipped with hydraulic clamp that can 'grab' the casing to maintain the underhung lead in a suitable position for drilling. Applying 'crowd' in this type of lead system requires a hydraulic-crowd attachment to be positioned above (or below) the drill, and uses a pin-connection to the leader to apply crowd. Birmingham have performed many projects where our hydraulic-crowd system has been used effectively.

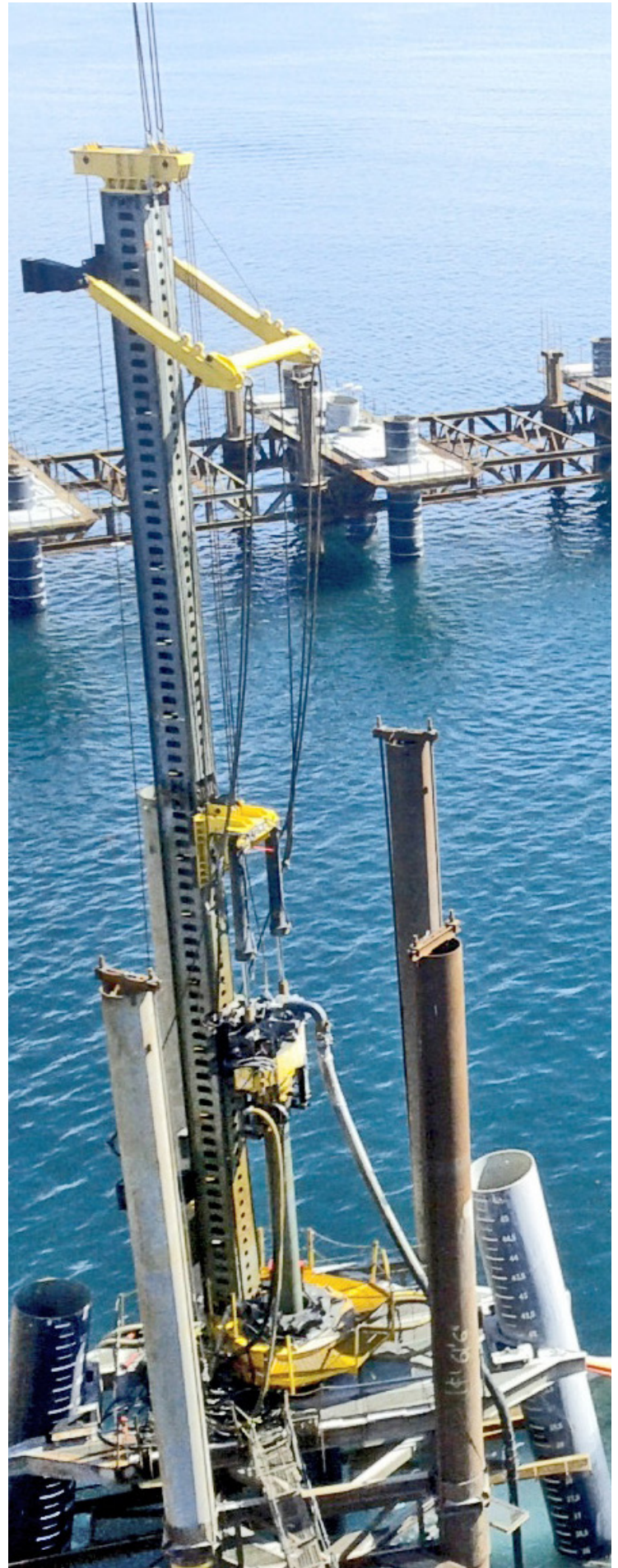
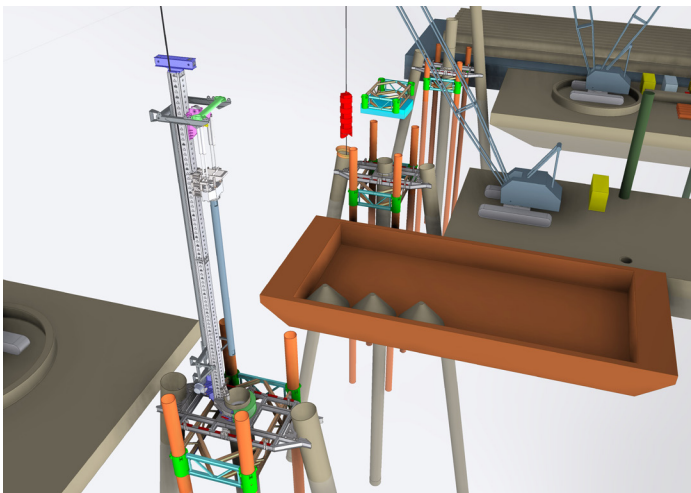


## PROJECT PLANNING AND VISUALIZATION

The synergy of foundation construction and equipment expertise together with talented design engineers places Birmingham in a unique position to assist other foundation contractors in planning and visualizing foundation construction projects. In recent years Birmingham has provided contractors with detailed computer models of their projects at the planning and bidding stages as well as throughout production. This allows Birmingham to recommend equipment and procedures, and provide site supervision – a service not offered by other equipment manufacturers.

## PRODUCTION DRILLING

Productive drilling occurs when the majority of the time spent on-site is devoted to actually drilling. Many competitor drill rigs involve time draining activities such as: long rig-up times, difficult and time consuming pile placement, adding more and splicing piles. Birmingham drilling systems are intelligently designed to minimize these deficiencies and maximize production rates through hard rock. Birmingham's leads are most often designed to allow for one stroke, meaning that there is no slow installation of additional drill string and no pile splicing necessary. Birminghamer drilling systems are the most maneuverable on the market thanks to the patented combination with the Vertical Travel Lead. This maneuverability greatly decreases setup time so that the majority of time is spent drilling. The Birminghamer lead systems in conjunction with our hydraulic drills, drill string, impact hammer and custom rotary bits allow for execution of drilling, driving and rock socketing efficiently and seamlessly.





## ACCESSORIES AND INNOVATIONS

### Power Pack Brackets

Allows a power pack to be mounted to the rear of the crane



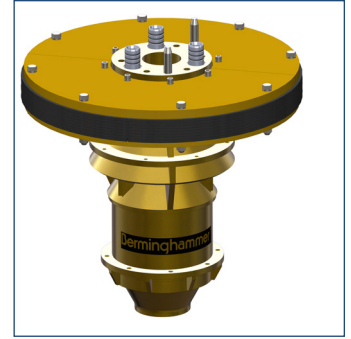
### Crane Hydraulic Retrofit

Utilizes existing crane hydraulics to run Birmingham Drills & more



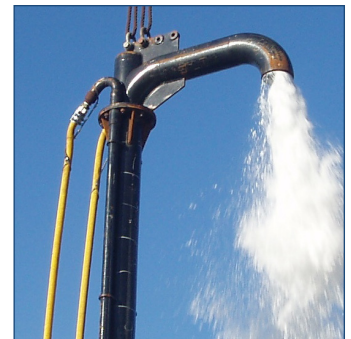
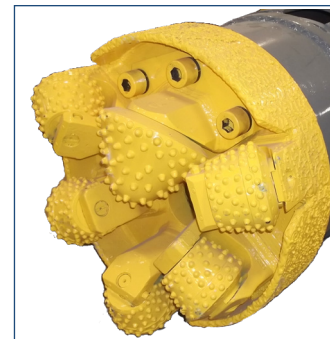
### Stand Alone Valves (SAV)

Allows a customer to utilize an existing Vibro powerpack to run Birmingham drills & more



### Custom Rotary Slides

Put any Rotary on Birmingham Leads

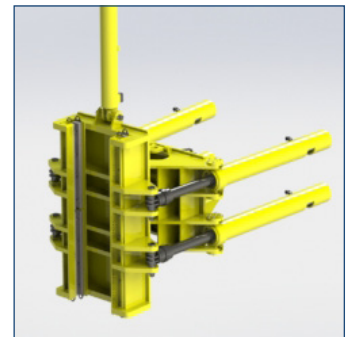


### 360 Degree Crossover

Collects cuttings from all angles, evacuating these cuttings much faster than a traditional crossover

### RC Drill Bits

Used for hard rock drilling



### Airlifts

For cleaning out debris from the interior of piles

### Custom Casing Gates for European Drill Rigs

Helps assure proper placement and aids in maintaining verticality

### Torque Resistant Swivels

Allows for higher torque: Models to resist 250,000 ft-lbs / 350,000ft-lbs)

## HOW TO CONTACT US



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