BERMINGHAMMER
FOUNDATION EQUIPMENT

LEAD SYSTEMS

Vertical Configuration

Aft Batter Below Grade

Side Batter

Forward Reach

Raised Leads Above Grade

Forward Batter

INTRODUCTION

Located in Hamilton, Ontario, Canada, Berminghammer Foundation Equipment is a manufacturer of advanced foundation equipment with over 50 years of experience. The company is represented in more than 40 countries world wide, maintains an extensive Research and Development team, and has earned a reputation for finding the most practical solutions to the most challenging projects.

The Vertical Travel Lead, referred to as "VTL" system, was first developed and patented by C.W. Berminghammer in the1960's. This lead system was developed in response to the fundamental limitations found in a fixed lead or swinging lead systems. The fixed lead system is well suited to level job sites with few obstructions and has the advantage of fast positioning of the lead. The hanging lead is very adaptable to different elevations and batter piles but takes much longer to position. Therefore the Vertical Travel Lead was developed to combine the advantages of fixed leads, fast and accurate positioning, with the ability to adjust the height of the lead base up or down. The VTL lead is connected to the boom by a sliding connection, which allows the lead to be elevated or lowered below grade. Many have recognized the advantages of the VTL system, and they have become the Industry standard in Canada, US Railway Construction, and many parts of the USA. The structural column of the VTL will resist bending in forward, aft, and side batter positions. The hydraulic spotter is very rugged and will transmit torque to the body of the crane rather than the boom.

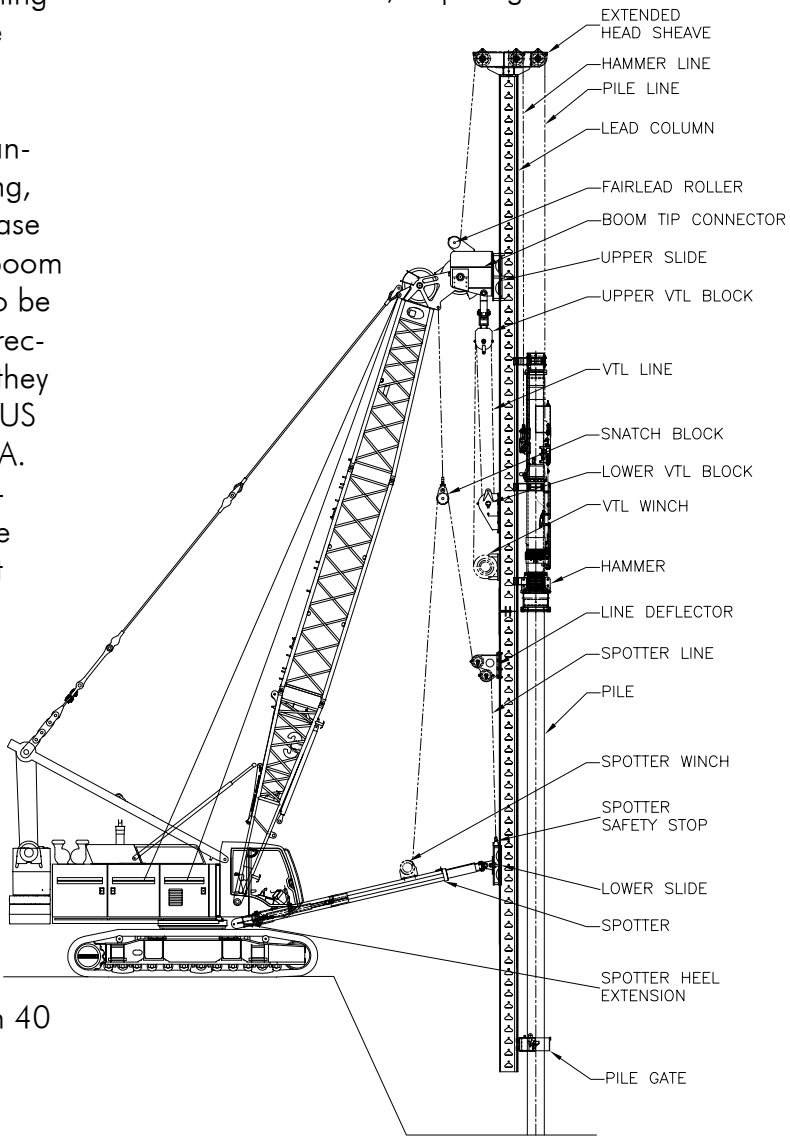
Berminghammer Foundation Equipment manufactures many different models of Vertical Travel Leads and many of the first sets are still in service today.

Well-Proven

The Berminghammer Vertical Travel Lead system has been used for close to half a century, with installations on every type of crane ranging from 40 ton truck cranes to 300+ ton crawler cranes.

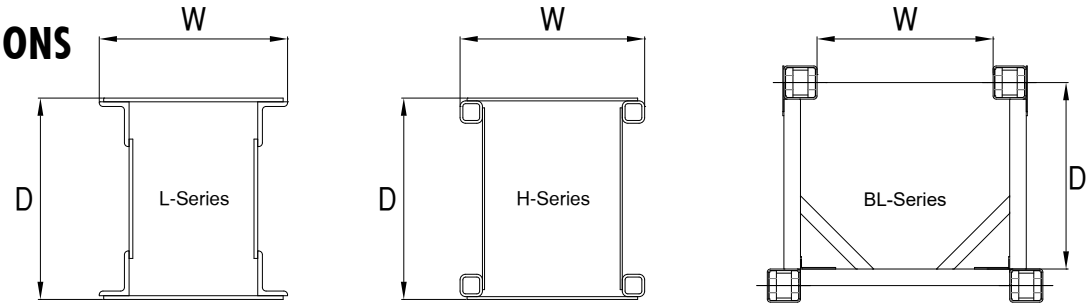
Rugged and Simple

The Berminghammer lead columns are ruggedly built to withstand the daily abuses of pile driving. Leads are available in a wide range of models for drilling and pile driving applications. The lightweight construction, combined with great strength, allow the leads to be used in any number of compound batters—up to 1:2 fore and aft and up to 1:3* side. The leads are simple to rig and un-rig—in some cases, piles are ready for driving in less than 3 hours from arrival onsite. When rigged, the lead can be used as a jib, allowing the crane to be used to set steel, unload trucks, etc., without un-rigging the crane or using a service crane. The slim design of the lead gives the crane operator a better view for faster driving and greater on-site safety. Berminghammer Vertical Travel Leads are made to last, requiring little maintenance.



*While Berminghammer lead systems are 'geometrically' capable of 'side-battering' it should only be performed when the lead and crane have been specifically designed to do so.

LEAD SPECIFICATIONS



	PILING		DRILLING			SPECIALITY	
	L-18	L-23	H25	H28	H36	BL-42	BL-57
Weight / Unit Length *	180 lb/ft (268 kg/m)	230 lb/ft (342 kg/m)	225 lb/ft (335 kg/m)	260 lb/ft (387 kg/m)	360 lb/ft (536 kg/m)	275 lb/ft (409 kg/m)	290 lb/ft (432 kg/m)
Width "W"	21.19" (538mm)	21.19" (538mm)	22.50" (572 mm)	25.00" (635 mm)	33.00" (838mm)	42.50" (1080 mm)	57.50" (1461 mm)
Depth "D"	18.75 (476mm)	23.00" (584mm)	25.00" (635 mm)	28.00" (711 mm)	36.00" (914mm)	45.00" (1143mm)	51.00" (1295 mm)
Torque Capability **	45,000 ft·lbs (61 kNm)	65,000 ft·lbs (88 kNm)	200,000 ft·lbs (271 kNm)	250,000 ft·lbs (339 kNm)	350,000 ft·lbs (475 kNm)	80,000 ft·lbs (108 kNm)	150,000 ft·lbs (203 kNm)

* Typical configuration assumed, weight varies based on number of connection points.

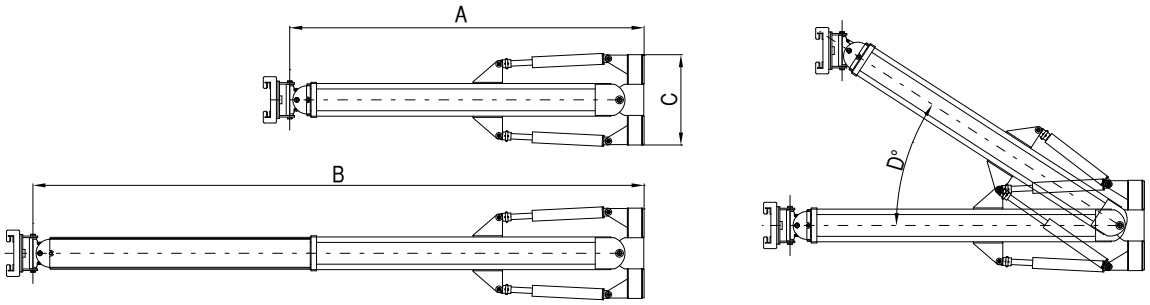
** System Torque Limits dependent on spotter attachments.

Note: Custom leads available upon request.

HYDRAULIC SPOTTERS

The spotter is an integral part of the Vertical Travel Leads. Berminghammer spotters are capable of up to 30 degrees side-to-side movement with equalization cylinders that automatically keep the front face of the lead parallel with the front face of the crane. This is very beneficial when driving a straight bent of piles.

Precise control of the hydraulic cylinders from within the crane cab gives precise placement of piles during driving. Both 2 and 3-stage spotters provide a wide range of sizes from 12 feet (3.66 m) retracted to 56 feet (17.07 m) extended. Custom spotters are also available to suit any job.



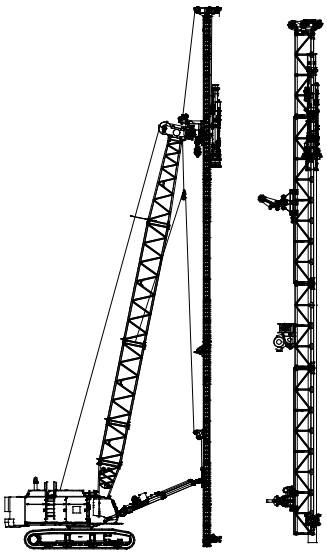
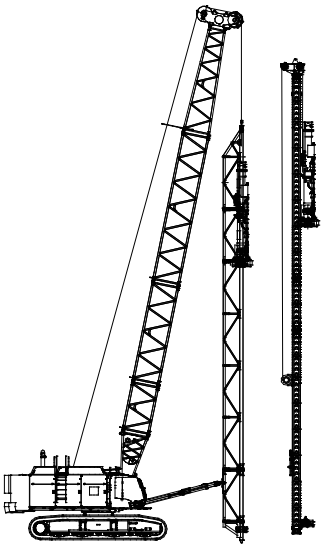
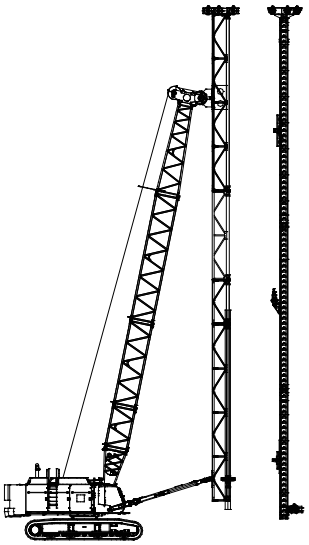
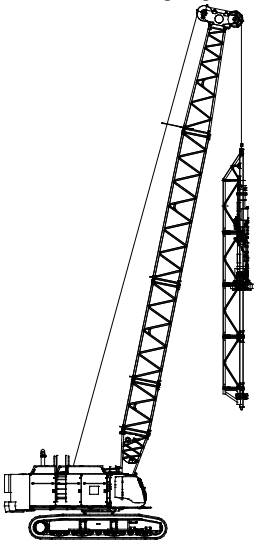
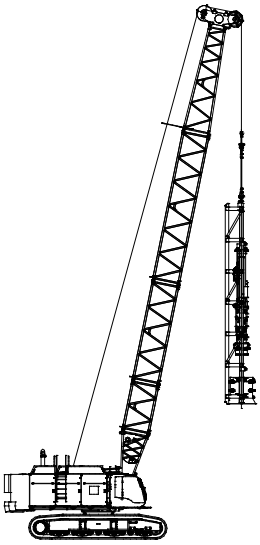
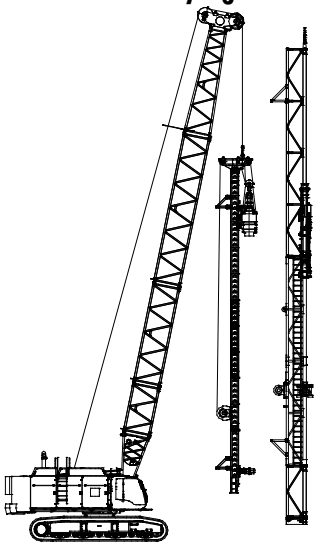
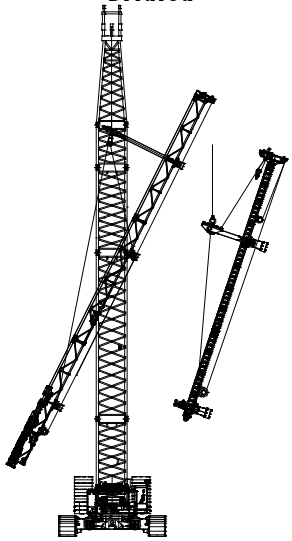
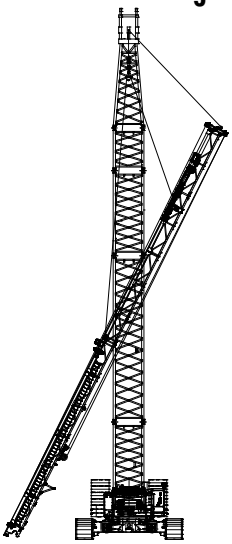
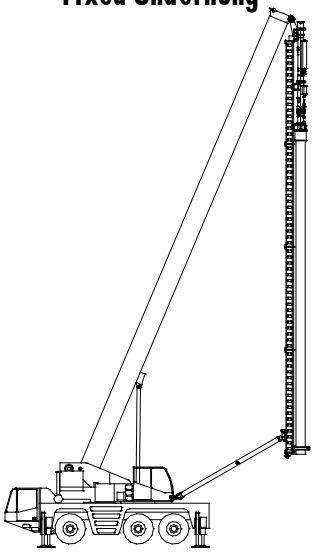
	2-STAGE				2-STAGE HIGH TORQUE			3-STAGE		3-STAGE HEAVY DUTY	
	HHH-12	HHH-14	HHH-16	HHH-18	BK2-1218HT	BK2-1524HT	BK2-2031HT	BK3-1428	BK3-1840	BK3-1941HD	BK3-2456HD
Retracted Length "A"	14' 11" (4.55m)	16' 11" (5.16m)	18' 11" (5.77m)	20' 10" (6.35m)	12' 0" (3.66m)	15' 0" (4.57m)	20' 1" (6.12m)	13' 5" (4.09m)	17' 5" (5.31m)	18' 5" (5.61m)	23' 5" (7.14m)
Extended Length "B"	24' 8" (7.52m)	28' 8" (8.74m)	32' 7" (9.93m)	36' 7" (11.15m)	18' 0" (5.49m)	24' 0" (7.32m)	31' 6" (9.60m)	28' 2" (8.59m)	40' 2" (12.24m)	41' 2" (12.55m)	56' 2" (17.12m)
Heel Width "C"	58" (1.47m)	58" (1.47m)	58" (1.47m)	93" (2.36m)	58" (1.47m)	90" (2.29m)	97" (2.46m)	58" (1.47m)	58" (1.47m)	90" (2.29m)	90" (2.29m)
Max. Slewing Angle "D"	30°	30°	30°	30°	20° *	20° *	20° *	10°	10°	20° *	20° *
Max. Torque **	80,000 ft-lbs (108.5 kNm)	80,000 ft-lbs (108.5 kNm)	80,000 ft-lbs (108.5 kNm)	80,000 ft-lbs (108.5 kNm)	250,000 ft-lbs (339 kNm)	250,000 ft-lbs (339 kNm)	350,000 ft-lbs (474.5 kNm)	40,000 ft-lbs (54.2 kNm)	40,000 ft-lbs (54.2 kNm)	80,000 ft-lbs (108.5 kNm)	80,000 ft-lbs (108.5 kNm)
Weight	5250lb (2380kg)	5650lb (2560kg)	6100lb (2770kg)	7050lb (3200kg)	6050lb (2750kg)	7050lb (3200kg)	10500lb (4760kg)	6000lb (2720kg)	7100lb (3220kg)	10700lb (4850kg)	12950lb (5870kg)
Notes	Standard Spotter Light-to-Medium Drilling				High Torque Drilling			Larger Range of In/Out Systems with a Large Range of In/Out Batters		Large Range of In/Out Heavy Duty Frames for Drilling or On Barges with Side Loading	

Note: Custom spotters available upon request.

* No equalizing

** To achieve maximum torque values, additional components are required.

LEAD STYLES

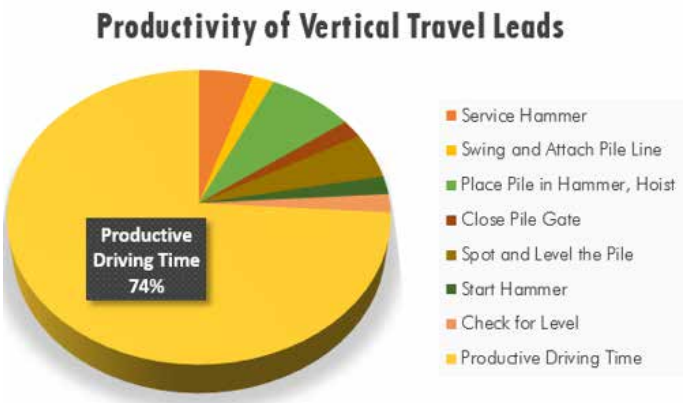
Vertical Travel 	**Semi-Fixed** 	**Fixed** 
Hanging 	**Offshore** 	**Flying** 
Bridled 	**Free Floating** 	**Fixed Underhung** 

BENEFITS

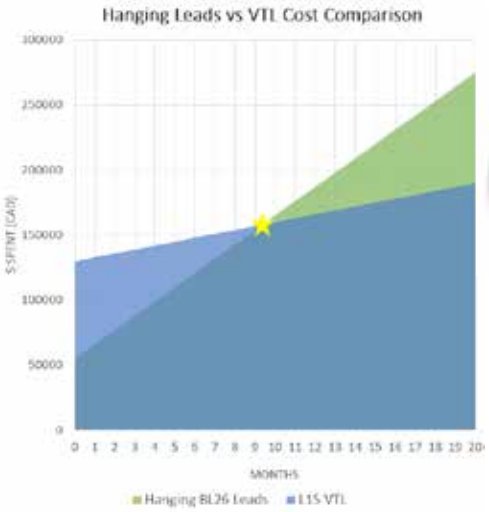
VTL VS HANGING LEADS

Berminghammer Leads have been designed to increase the productivity of the pile driving operation. This is accomplished by minimizing the movement of the crane, and by decreasing the time spent placing the pile under the hammer and spotting of the pile.

On a typical project, the actual productive driving time may be increased from an average of 50% of the work day to 75% or more.



The daily cost of the Vertical Travel Leads is less than the daily cost of a four-man crew and swinging/ hanging lead.
The VTL contractor will begin to save after nine months. An additional cost benefit will resulit from the increased production and reduction in false-work and templates that are no longer required.



SINGLE STROKE PILING & ONE-PASS DRILLING

Installing foundation elements in segments can be time consuming and expensive. Berminghammer Leads are often used in situations where traditional Piling and Drilling rigs cannot achieve the required pile length or drill depth without splicing. Splicing is a tedious task that is a production killer. It ties up the piling rig while it is used to support the pile and weld on another section.
If you can eliminate driving or drilling in two sections, you significantly reduce the entire installation process. Larger diameter piles can take days to splice together, when there are thousands of piles driving without a splice can save months on schedules.
Another type of single stroke is one-pass drilling. For years piles have been installed to bedrock using vibratory hammers, then they would be cleaned using hammer grabs and then a rock drilling tool would be used to drill out the socket. With one-pass drilling all of the different tools (vibro/hammer grab) are eliminated in favour of a one entry system.
This advanced pile installation technique involves locking a pile onto the drill bit and evacuating spoils while inserting. When rock is reached, the drill bit is disengaged from the pile and proceeds to drill through the rock without having to ever re-enter the pile.

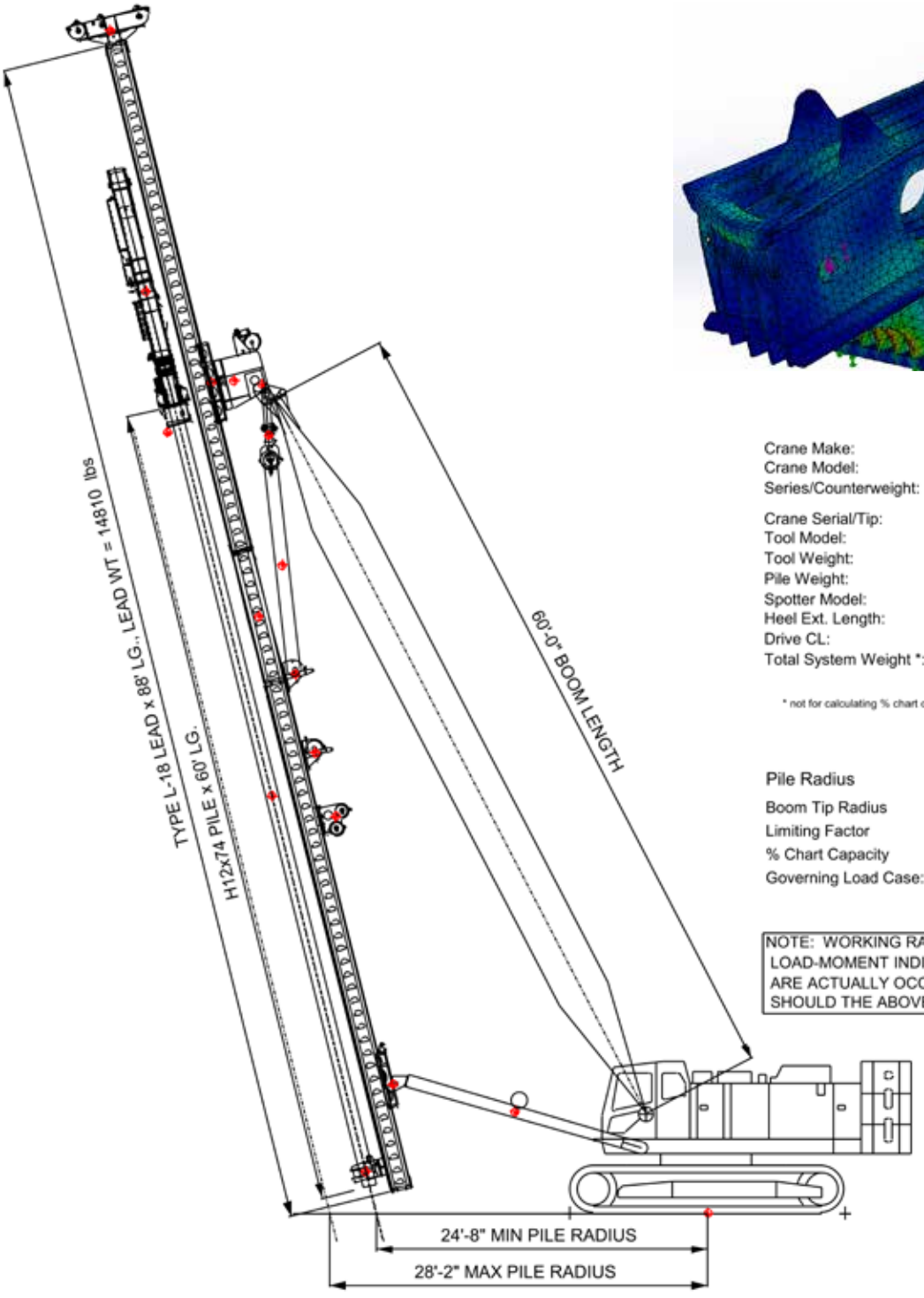
ENGINEERING

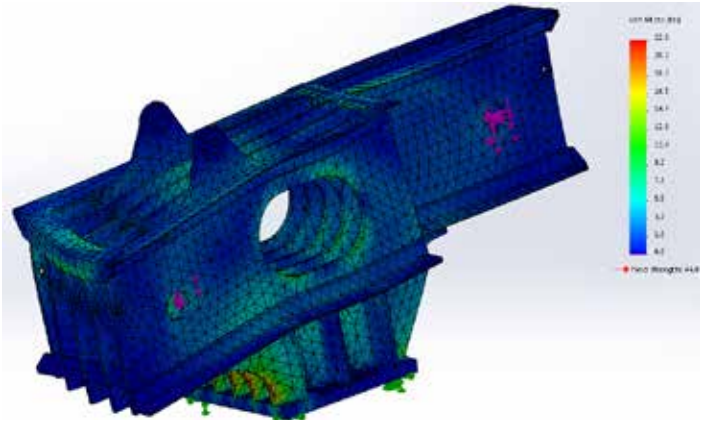
Berminghammer employs a staff of licensed civil, geotechnical, and mechanical engineers as well as draftsmen, designers and technicians. These professionals provide the highest level of technical expertise in the design and engineering of Berminghammer lead systems.

To supplement our years of experience the Berminghammer engineering staff use state-of-the-art design tools such as the latest versions of CAD software including 3-D modeling and finite-element analysis.

Berminghammer engineers also make use of field instrumentation and laboratory experiments to refine and optimize the design of our equipment. Measurements of strain, pressure, temperature, and load are made on a regular basis using in-house expertise and equipment. For larger instrumentation and research projects, Berminghammer frequently partners with other companies and universities.

In the field of foundation equipment, Berminghammer's engineering expertise is second-to-none.





Crane Make:	Link Belt
Crane Model:	LS-218HSL
Series/Counterweight:	GENERIC
Crane Serial/Tip:	GENERIC
Tool Model:	B-21
Tool Weight:	13574 lbs
Pile Weight:	4440 lbs
Spotter Model:	HHH-14
Heel Ext. Length:	17.25"
Drive CL:	18"
Total System Weight *:	51666 lbs

* not for calculating % chart capacity

	Min	Max
Pile Radius	24'-8"	28'-2"
Boom Tip Radius	32'-3"	35'-3"
Limiting Factor	Spotter Min	Stability
% Chart Capacity	83.5	95.0

Governing Load Case: Tool at Start of Driving Position

NOTE: WORKING RADIUS ABOVE GOVERNS. CRANE'S LOAD-MOMENT INDICATOR MAY READ LOWER LEVELS THAN ARE ACTUALLY OCCURRING. UNDER NO CIRCUMSTANCES SHOULD THE ABOVE WORKING RADII BE EXCEEDED.

VTL for Piling

VTL for CFA

L-27HT VTL for Soil Mixing

L-27 VTL for Piling 36″

L-18 VTL for Railroad Piling

C-12M Fixed for Piling

L-23 VTL for Wick Drains

H-36 VTL for CFA 48″

L-27 VTL for Rock Socket Drilling

ACCESSORIES AND INNOVATIONS

Power Pack Brackets
Allows a power pack to be mounted to the rear of the crane

Crane Hydraulic Retrofit for VTL
Utilizes existing crane hydraulics to run Berminghammer VTL functions

Stand Alone Valves (SAV)
Allows a customer to utilize an existing Vibro powerpack to run Berminghammer VTL functions

Vibro Slides
Allows for guided precise utilization of a vibratory hammer.

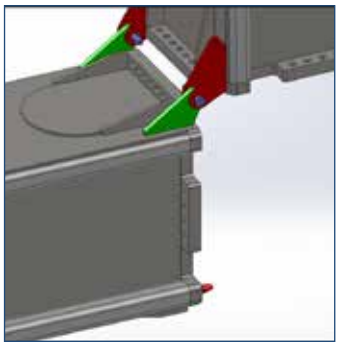
Wick Drain Dispensors
controlled / tensioned release of the wick drain

Custom Gibs / Guides for Any Tool
Put any tool on Berminghammer Leads

Side Mounted Augers
For pre-drilling before driving concrete piles

Lead Rig-up Hinge
For very long lead set-ups the, the rig-up hinge design removes the need for a support

c



HOW TO CONTACT US

BERMINGHAMMER
FOUNDATION EQUIPMENT

Phone: 905-528-7924
Toll Free (US & Canada): 1-800-668-9432
Email: bfssales@berminghammer.com
Website: www.berminghammer.com