APE EQUIPMENT CATALOG

DEEP FOUNDATION SOLUTIONS

AMERICAN PILEDRIVING EQUIPMENT

800-248-8498

WWW.APEVIBRO.COM

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APE: We're on the job

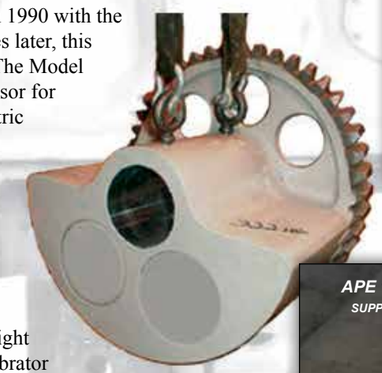
American Piledriving Equipment Inc. has a unique way of doing business in the deep foundation construction industry. We devise, manufacture, load, and ship our own products. We don't rely on distributors; we rent and sell directly to the contractor. We get our equipment to the job site and we set it up. We get our people in the field where they can help, teach and learn with the customers.

From design to production to installation, APE professionals are involved.

APE is committed to providing outstanding products and service, and being on the job site is crucial to upholding this commitment. We learn first hand what problems need to be addressed for a particular job before going to the engineering table to solve them. Since our machining and fabrication facilities are in-house, we have the flexibility to respond to job situations almost instantly. Transforming a good idea into a job site reality is our specialty. APE is the best in the industry when it comes to supporting our customers with innovative technology. This is the key to APE's successful research and development program, making us the industry leader in patents issued worldwide.

The APE Vibratory Driver Extractor Revolution

APE revolutionized the vibratory pile driver/extractor in 1990 with the introduction of the APE Model 150. Almost two decades later, this revolutionary device is still the industry gold standard. The Model 150's patented technology includes a multistage suppressor for greater line pull, one piece enhanced heavy metal eccentric weight and gear, and height/weight adaptability for extreme job conditions. The Model 150 Vibro, in technological sophistication and durability, is still light years ahead of the competition.



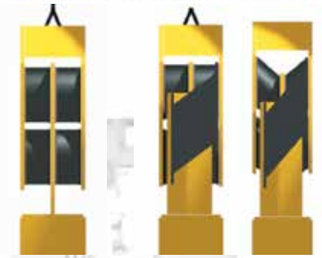
APE Vibrator Eccentric/Gear

The introduction of the one-piece gear and eccentric weight eliminated unwanted bolts and connections inside the vibrator gearbox. The unique eccentric/gear incorporates helical cut gears that are final cut using a patented procedure that provides perfect timing and balance between all eccentrics. APE gearboxes have 50% less parts than the nearest competitor, dramatically improving serviceability and life.

APE Heavy Metal Technology

Another result of APE's drive to create more simplified, serviceable, and efficient products is the development of the heavy metal enhanced eccentric. Each eccentric is filled with two solid lead or tungsten bars, giving them more mass. This extra mass allows one eccentric to do the work of two, thus eliminating bearings, shafts, and other components. APE's "T" vibrators (tungsten enhanced) are the most powerful machines money can buy.

How can you reach further AND pull harder with LESS vibration?



Old Technology ***APE Technology***

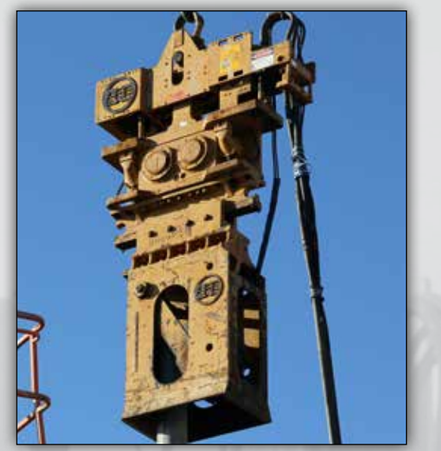
APE's revolutionary two-stage elastomeric suppressor system cuts unwanted vibration to the crane line, doubles line pull capacity, and reduces the overall suspended weight.

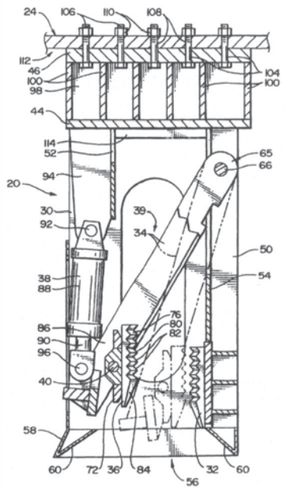
Model 600 vibro with the D180-42. finishing 1.8 m piles.

APE 150 fitted with low headroom suppressor for retrofit work in California.

Wood and Concrete Pile Clamps

APE single-arm wood and concrete clamps incorporate patented features not found on any other type of clamps. These features provide the contractor with an edge over his competition. APE developed the first wood and concrete pile clamps with a pivoting jaw and an open window that allows a pile crew to actually see the clamping jaws. APE clamps feature a topside anvil so piles can be driven without impacting the mounting bolts. The T-Bar mounting design eliminates the need to ever crawl inside the clamp jaws for attachment installation. The jaws are removable, making it easy to change from wood to concrete or pipe piles.





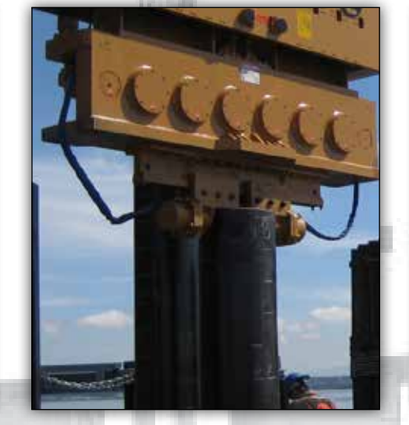
United States Patent
B1 5,609,380
Sep 12, 2000

Cage Clamp

The APE Cage Clamp System streamlines the handling and placement of full length CFA cages into the pre-drilled pile. The Cage Clamp System can be used with any diameter and cage design. Consult the factory for further details.

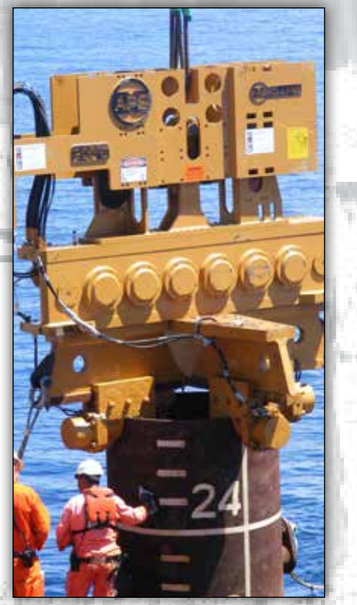
Caisson Beam With Two Clamps

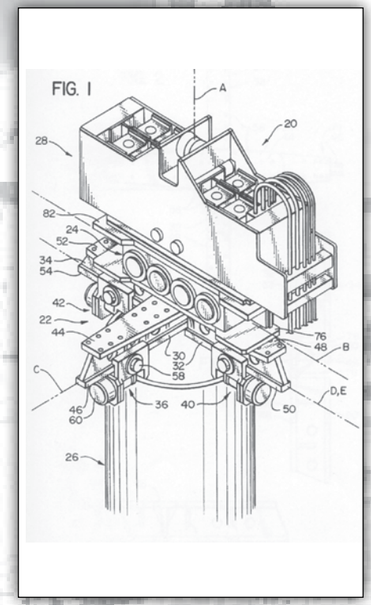
APE caisson beams are the highest quality available on the market. They feature a T-Bar configuration with a double row of mounting bolts. This design allows APE caisson beams to use short, stretch-resistant bolts without sacrificing beam strength. The centered, single row design favored by our competitors results in the clamps blocking access to the bolts. On the APE T-bar design, all bolts are easy to access and can handle piles from 16" (406 mm) to 20' (6.09 m) piles. Moreover, APE has engineered every clamp attachment to take the same exact length of bolt. One size and length fits all, making for easy maintenance and repair.



Quad Clamp System

Caissons and large diameter piles become impossible to drive due to a phenomenon called deflection which causes diaphraming. To solve this problem, APE engineers developed a four way beam and clamp system. The clamps grip the pile every 90 degrees for balanced energy transfer. Side-by-side tests show that using four clamps mounted 90 degrees greatly reduces deflection and increases net amplitude to the pile tip while allowing for cost saving on casing wall thickness. The APE quad clamp system is vastly superior to the old style X beam which can cause deflection. The quad beam can be divided into two single beam systems for maximum versatility.





United States Patent August 5, 1997

Round concrete pile follower.

Box lead fixed pile gate.

Floating pile gate on front riding leader.

Patented two piece box helmet.

Concrete box insert.

DB32 with 24" Square box insert.

Round concrete insert for concrete piles.

Forklift mounted 7.5 Hydraulic Impact Hammer.

Hydraulic Impact Hammer Technology

In response to the great demand for low headroom hammers, needed on both seismic retrofit jobs and overhead obstructions such as power lines and indoor foundations, APE developed its own line of low headroom hydraulic impact hammers. APE hydraulic impact hammers feature a patented (US-006557649) double walled lifting cylinder that raises the ram from the bottom.

This technology greatly reduces the overall height, making the APE hydraulic hammer the shortest impact hammer on the market today. The short design reduces pile splicing labor and allows the driving of longer piles within the limited overhead space. In addition, the large ram and slower energy transfer speed makes this hammer line ideal for sheet pile finishing in hard soil conditions. Less pile stress means less pile damage during driving.

The Big Hammer

APE manufactures the largest hydraulic impact hammer manufactured in the United States. These hammers are designed to operate on our larger standard driver/extractor power units. The hammers incorporate technologies that eliminate the need for bulky container-size power units and control rooms and still deliver consistent stroke and unmatched efficiency. Stroke protections include optional blow count and energy delivery monitoring and pile run shut off.

The APE Diesel Revolution

In May of 1997, APE introduced German authorized and designed diesel hammers manufactured in Shanghai, China. These time-proven, single-acting, impact atomized diesel hammers are the highest quality diesel hammers available in the world.

All APE diesel hammers feature fast-remove trip systems, bolt on catch rings, in-line fuel filters, optional direct-drive anvils, as well as optional bottom lift hydraulic trip assemblies and infinitely variable hydraulically controlled fuel pumps. They are equipped to operate with biodiesel fuel which helps them run cleaner and start faster than any other diesel hammer on the market. Each hammer comes with a warranty package that is more than twice as long as any other in the industry. In addition, APE is the only manufacturer to demand that every drive cap and insert be fully machined on top and bottom for perfect anvil alignment ensuring maximum energy transfer to the pile.

Constant developments by our engineering team continue to keep APE a step ahead of the competition. APE diesel hammers remain the best value on the market by any standard.

A Model 20 drill in a swinging leader.

A Model 20 drill and an Adcock down-the-hole percussion drill.

Model 20 drill mounted on the APE rack and pinion leader with 15,000 pounds of crowd capacity.

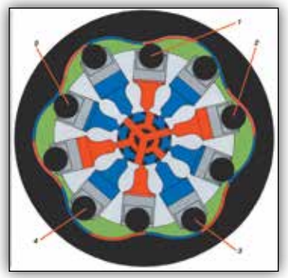
An APE 75 Drill in a pre-drill format on the side of a fixed leader with a King Kong in San Francisco, CA owned by Kiewit.

Direct Fluid To Torque Top Drive Augers

APE introduced cam-track technology to the augured-cast-in-place piling industry in 1993 when it converted a state-of-the-art Poclain hydraulic radial piston motor into a drilling tool. The compact motor, with its revolutionary cam-track roller pistons, needed only a hollow shaft and stronger bearings in order to revolutionize the top drive auger industry. No drill on the market today has the crowd force capacity of the APE drill. The cam-track technology converts hydraulic fluid directly to torque without the aid of gears or planetary drives. No bull gears can be found on the APE system, thereby avoiding the efficiency losses that plague gear reduction systems. The APE drill is rugged, self lubricating, and requires no maintenance. It can handle the abuse caused by down-the-hole hammers and it can even withstand the impact of telescoping kelly-bar applications.

APE Model 20 Drill

APE Model 50 Drill



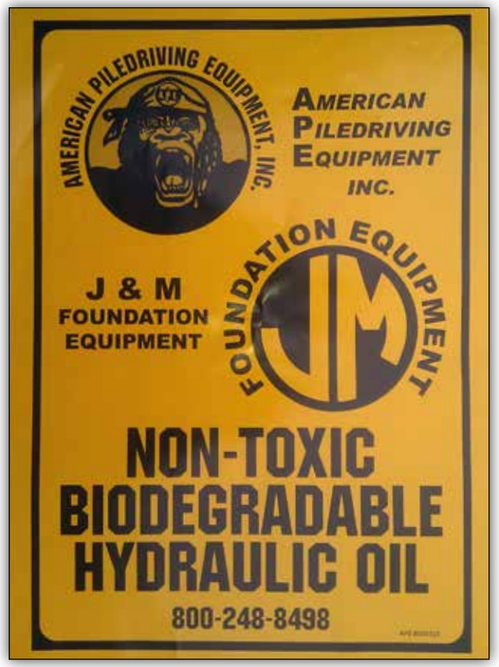
Cam Track Layout

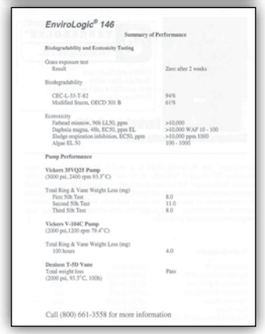
Excavator mounted

APE is the Largest User of Vegetable Hydraulic Oil

In 1990, APE was the first to introduce pile driving and deep foundation equipment equipped with vegetable hydraulic oil. We are now the largest user of vegetable hydraulic oil in the USA. Our power units are designed with built-in spare oil tanks to replenish the main tank should a spill occur. APE has determined that its vegetable hydraulic oil provides even better quality and performance than the most expensive petrochemical hydraulic oils. Our entire rental fleet operates on vegetable oil. Of course, APE equipment owners may use whatever oil they desire. They overwhelmingly choose 100% biodegradable oil because they know that spills of any other type of oil are extremely costly. We choose to use vegetable oil because it makes sense environmentally and economically.

Petrochemicals harm wildlife and pollute our water supply. APE and our equipment owners have taken a leading role by setting an example of how to protect our rivers and streams using 100% readily biodegradable vegetable hydraulic oil.





Note: All technical specifications are subject to change without notice.

Patents Define Our Knowledge

Patent 5,263,544 - Shock absorbing apparatus

The two-stage rubber suppressor takes the vibration out during start and stop while increasing line pull ability. It also provides crane operator visual indicator that measures the line pull.

Patent 5,355,964 - Pile driving and/ or pile pulling vibratory assembly with counterweights

Eccentric cast in one piece with helical gear to eliminate bolts and pins that fail inside vibratory pile driver/extractors. Eccentric is filled with heavy metal lead or tungsten, thus providing more eccentric moment with less parts. Eliminates all fasteners inside the vibratory gearbox.

Patent 5,544,979 - Clamp assemblies for driving caissons

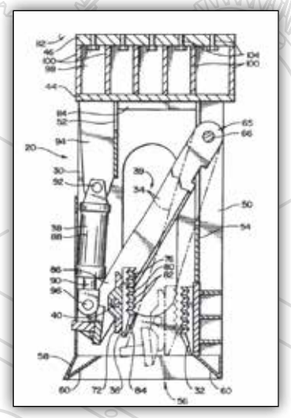
Two vibros mount side by side with an opening in the middle for the pile to pass through. Clamps grip outside diameter of pile allowing full length piles to be driven in low headroom areas like under bridges or inside buildings. This allows contractor to reduce number of pile splices.

Patent 5,609,380 - Clamp assemblies for driving piles into the earth

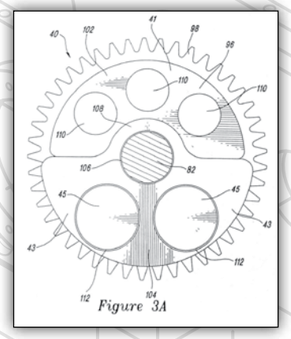
Clamp has ability to drive wood piles or concrete piles. Incorporates a pivoting jaw for proper grip of pile, plus a built-in anvil system to allow the pile to be driven without damage to the mounting bolts or to the vibratory machine. A view slot allows the crane operator and crew to see the pile. The housing completely captures the pile, which allows safe extraction or driving of battered pilings.

Patent 5,653,556 - Clamping apparatus and methods for driving caissons

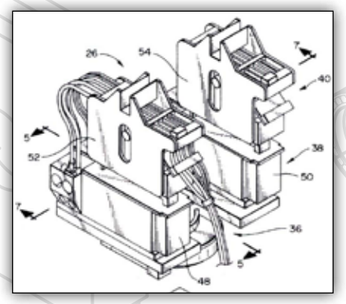
The APE quad clamp system attaches directly to the bottom of the vibratory pile driver/extractor without using heavy mounting plates. The system positions four clamps exactly 90 degrees for balanced gripping and to reduce or prevent deflection or diaphraming of the pile. System enables contractor to drive light weight casings and provides more vibratory amplitude to be transferred into the pile and soil.



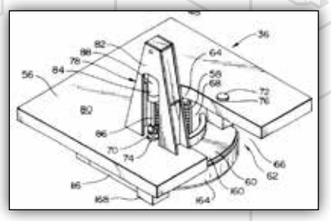
Concrete Driving and Extracting Attachment



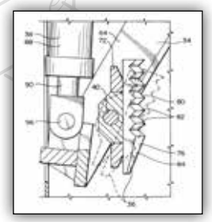
One Piece Eccentric/Gear



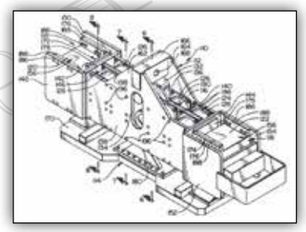
Tandem Vibro with Hole in Middle



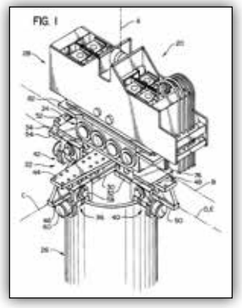
Clamp that Opens to Allow Loading of Pile from the Side



Articulating Jaw



Two Stage Suppressor



Quad Clamp

Patent 5,794,716 - Vibratory systems for driving elongated members into the earth in inaccessible areas

A template that is mounted to a hydraulic power unit that includes hydraulic leveling and pile positioning. System is commonly used in wet land areas where access is only possible via helicopter. Unit operates on vegetable hydraulic oil to prevent poisoning of wild life and vegetation should a hydraulic leak occur.

Patent 6,039,508 - Wick drain installation device

A system to drive wick drain mandrels into the soil using a combination of static force and dynamic force. Consists of a vibratory pile driver with a hole or passage way directly in the middle of the gearbox. The wick mandrel passes through the vibrator. A special sprocket drive is mounted on top or on the bottom of the vibrator to provide static force. The entire system mounts on the bottom of a set of leads. Invention puts most weight near the ground, provides ability to install super long wick drains, and reduces wear items while improving safety.

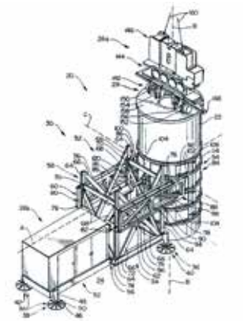
Patent 6,427,402 B1 - Pile systems and methods

Interlocking pipe piles that can be made of plastic or other types of material. The interlocks allow concrete or grout to flow into one another. The interlock passageways also allow steel reinforcing between piles. Piles can be driven on top or with a mandrel and a sacrificial tip. This solves many installation and engineering problems associated with plastic sheet piles. Can be spliced quickly, driven in extremely difficult soils, and provides easy ability to provide cantilever strength without use of tie backs.

Patent 6,447,036 B1 - Pile clamp and systems and methods

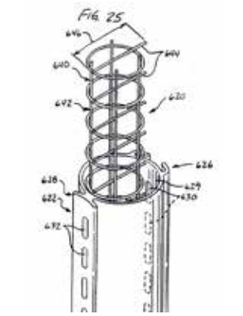
A clamping device that attaches to the bottom of a vibratory pile driver/extractor for the purpose of driving or extracting pipe piles, wood piles, and/or concrete piles of various sizes and diameters while maintaining perfect center alignment. Device has removable jaws to fit various sizes and shapes of piles. Timing gears keep both jaws perfectly centered on pile axis.

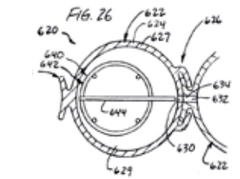
The APE product line is protected by, but not limited to the following patent numbers: 5088565A, 5117925A, 5263544A, 5529132A, 5544979A, 5609380A, 5653556A, 5794716A, 6039508A, 6386295B1, 6427402B1, 6431795B2, 6447036B1, 6543966B2, 6648556B1,6672805B1, 6732483B1, 6736218B1, 6896448B1, 6908262B1, 6942430B1, 6988564B2, 7168890B1, 7392855B1, 7694747B1, 7708499B1, 7824132B1, 7854871B1, 7913771B2, 7950876B2, 7950877B2, 8070391B2, 8181713B2, 8186452B1, 8434969B2, 8496072B2, 20090200055A1. For a more detailed information and a more comprehensive list of APE patents please visit the website at www.apevibro.com/ver2/APEPatents.asp.

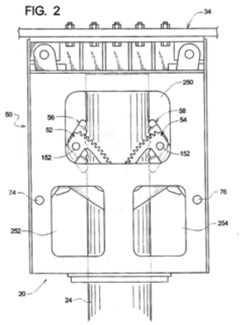


Helicopter Template

Bottom Drive Wick Machine







Pile Driving School

For the past 15 years APE, in conjunction with local unions throughout the United States and Canada, has been hosting a pile driving school free of charge for pile bucks around the country. The success of the school stems from the massive amount of knowledge that is presented by the APE staff through hands on experience at our locations or in the field. At APE's facilities, students see actual hammer manufacturing in process, including welding and machining of vibratory pile driver/extractors, drills, pile leads and other related equipment. Students participate with APE employees as they prepare pile hammers for shipment to actual job sites around the country.

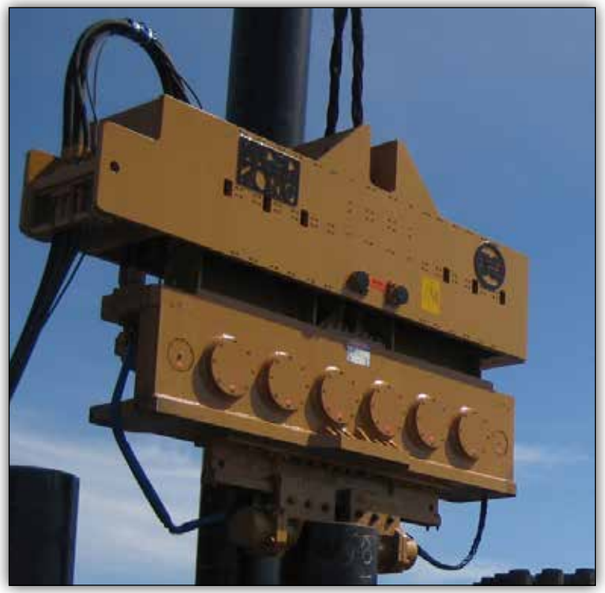
Contact APE at (800) 248-8498 regarding admission to the school and for the scheduling of future classes, or for more up to date information go to: **http://www.apevibro.com/ver2/pileschool.asp**

Note: All technical specifications are subject to change without notice.

Vibratory Driver/Extractors

APE Vibratory Driver/Extractors Features and Benefits:

- One-piece gear/eccentric eliminates fasteners inside the gearbox.
- Heavy-Metal technology raises energy for more amplitude.
- Multistage suppressor doubles the line pull at 1/3 of the hammer weight.
- Bolt-on suppressors adjust the height and weight to job site needs.
- Helical-cut gears add precision to the gear strength and eccentric speed.
- Spherical bearings allow the vibro to handle side loads on batter piles.
- Vibro can be used horizontally for stuck horizontal casing.
- Field-designed assembly makes maintaining APE products simple and easy.
- Gun-drilled top plate and manifolds eliminate unnecessary hydraulic hoses.
- O-ring sealed gearbox makes transition to underwater operations easy.
- Vegetable hydraulic oil reduces environmental impact and fines if a spill occurs.
- Long-term warranty protection provides security on the investment.



VIBRATORY DRIVER/EXTRACTOR SPECIFICATIONS

Model	3	6	15	20	50	100	150	150T	200	200T	200-6	200-6T	200-6T2	200-6T3	400	600	600B
Eccentric Moment	30 in-lb 0.35 kgm	60 in-lb 0.69 kgm	600 in-lb 6.9 kgm	900 in-lb 10.4 kgm	1,300 in-lb 15 kgm	2,200 in-lb 25 kgm	2,200 in-lb 25 kgm	2,600 in-lb 30 kgm	4,400 in-lb 50 kgm	5,200 in-lb 60 kgm	6,600 in-lb 76 kgm	7,000 in-lb 80.6 kgm	7,400 in-lb 85.3 kgm	7,800 in-lb 90 kgm	11,500 in-lb 132.5 kgm	17,200 in-lb 198.2 kgm	17,200 in-lb 198.2 kgm
Drive Force at Rated Frequency	2 tons 18 kN	4 tons 37 kN	25 tons 219 kN	37 tons 329 kN	53 tons 475 kN	90 tons 803 kN	90 tons 803 kN	107 tons 949 kN	181 tons 1,606 kN	213 tons 1,898 kN	271 tons 2,410 kN	287 tons 2,556 kN	304 tons 2,702 kN	320 tons 2,848 kN	320 tons 2,847 kN	479 tons 4,259 kN	479 tons 4,259 kN
Rated Frequency (vpm)	0 - 2,200	0 - 2,200	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,400	0 - 1,400	0 - 1,400
Max Line Pull	6 tons 53 kN	6 tons 53 kN	28 tons 249 kN	28 tons 249 kN	56 tons 498 kN	93 tons 827 kN	108 tons 961 kN	108 tons 961 kN	133 tons 1,183 kN	133 tons 1,183 kN	185 tons 1,646 kN	185 tons 1,646 kN	185 tons 1,646 kN	185 tons 1,646 kN	234 tons 2,082 kN	351 tons 3,123 kN	451 tons 4,012 kN
Max Bare Hammer Weight	450 lbs 204 kg	720 lbs 327 kg	1,580 lbs 717 kg	2,510 lbs 1,139 kg	4,550 lbs 2,064 kg	5,900 lbs 2,676 kg	8,330 lbs 3,778 kg	8,500 lbs 3,856 kg	12,760 lbs 5,788. kg	12,960 lbs 5,879 kg	18,900 lbs 8,573 kg	19,100 lbs 8,664 kg	19,300 lbs 8,754 kg	19,500 lbs 8,845 kg	31,570 lbs 14,319 kg	48,500 lbs 22,000 kg	54,500 lbs 24,721 kg
Throat Width	6 in 15.24 cm	6 in 15.24 cm	9 in 22.86 cm	12 in 30.48 cm	14.625 in 37.15 cm	14.5 in 36.83 cm	14.5 in 36.83 cm	14.5 in 36.2 cm	14.75 in 37.47 cm	14.75 in 37.47 cm	14.75 in 37.47 cm	14.75 in 37.47 cm	14.75 in 37.47 cm	14.75 in 37.47 cm	33 in 83.82 cm	37 in 93.98 cm	37 in 93.98 cm
Length	27.63 in 70.17 cm	36.25 in 92.08 cm	36.5 in 92.71 cm	36.5 in 92.71 cm	57.25 in 145.42 cm	61.875 in 157.16 cm	88.75 in 225.43 cm	88.75 in 225.43 cm	104 in 264.16 cm	104 in 264.16 cm	140 in 355.6 cm	140 in 355.6 cm	140 in 355.6 cm	140 in 355.6 cm	141 in 358.14 cm	180 in 457.2 cm	180 in 457.2 cm
Height w/o Clamp (Model 3 & 6 Include Clamp)	38 in 96.52 cm	38 in 96.52 cm	45 in 114.3 cm	45 in 114.3 cm	53.5 in 135.89 cm	54.125 in 137.48 cm	72.375 in 183.83 cm	72.375 in 183.83 cm	65.5 in 166.37 cm	65.5 in 166.37 cm	75 in 190.5 cm	75 in 190.5 cm	75 in 190.5 cm	75 in 190.5 cm	88.5 in 224.79 cm	104.5 in 265.43 cm	123.5 in 314 cm

VIBRATORY EQUATIONS

Amplitude	$\frac{em * 2}{vm}$
Drive Force In U.S. Tons	$\frac{em * f^2 * 0.0142}{1{,}000{,}000}$
Amplitude & Drive Force Variables	em = Eccentric Moment f = Frequency vm = Vibrating Mass (lb)
Pile Weight per Foot	(od - wt) * wt * 10.69
Pile Weight Variables	od = Pile Diameter (in) wt = Pile Wall Thickness (in)

Vibrating Mass equals the total of the vibratory gearbox, inner suppressor, pile and a minimum of 4% for soil bond to pile.

Variable Moment Vibratory Driver/Extractors

APE Variable Moment Technology lets our driver/extractors shine in jobs with vibration sensitive requirements. APE Variable Moment Technology is teamed with all the special features available with the full line of APE Vibratory Driver/Extractors.

- Gun drilled top plate and manifolds eliminate unnecessary hydraulic hoses.
- O-ring sealed gearbox makes transition to underwater operations easy.
- Vegetable hydraulic oil reduces environmental impact and fines if a spill occurs.
- Long term warranty protection provides security on the investment.

VARIABLE MOMENT SPECIFICATIONS			
Model	**120VM**	**170VM**	**250VM**
Eccentric Moment	1,600 in-lb 18.4 kgm	2,250 in-lb 25.9 kgm	4,500 in lb 51.9 kgm
Drive Force	95 tons 849 kN	134 tons 1,195 kN	269 tons 2,389 kN
Frequency (vpm) Maximum	0 - 2,050	0 - 2,050	0 - 2,050
Max Line Pull	81 tons 721 kN	81 tons 721 kN	99 tons 881 kN
Max Bare Hammer Weight	7,500 lb 3,402 kg	8,900 lb 4,037 kg	15,400 lb 6,985 kg
Throat Width	14 in 35.5 cm	14 in 35.5 cm	14 in 35.5 cm
Length	69 in 175.3 cm	69 in 175.3 cm	69 in 175.3 cm
Height w/o Clamp	77 in 196 cm	77 in 196 cm	102 in 259 cm

Excavator Mounted Vibratory Driver/Extractors

The APE Excavator Mounted Vibratory Driver/Extractors offer advanced, profit generating features that are ahead of the competition.

- Designed for mounting and operation off backhoes for situations where crane use is not preferable.
- Center safety pin shows pile crew and crane operator how much line pull is on pile and crane.
- One piece helical gear/eccentric eliminates keyways, pins, splines, and bolts inside the gearbox.
- Heavy-metal enhanced eccentric design reduces internal parts by up to 75% while increasing dynamic force.
- Giant spherical bearings allow for batter operations without damage and reduce heat for extremely long life.
- Computer-designed gearbox is perfectly balanced with lowest center of gravity on the market.
- Power unit comes standard with tool kit and dual controls on pendant and control panel.
- Very simple open-loop hydraulic system with highest quality valves with lighted indicators.
- Variable flow in both directions for use on drills, winches, hydraulic hammers and other attachments.
- Oversized radiator and hydraulic oil cooler with proven performance in the heat of Saudi Arabia.
- Four eccentric moment sizes allow APE to fine tune your vibro to fit your excavator's engine power.
- By changing only the eccentric moment, one vibro can adjust to four different power ranges.
- All vibro eccentric sizes have the same clamp, bearings, suppressor housing and related parts.
- APE excavator mounted vibros enjoy parts compatibility with all other APE vibros - including jaws!

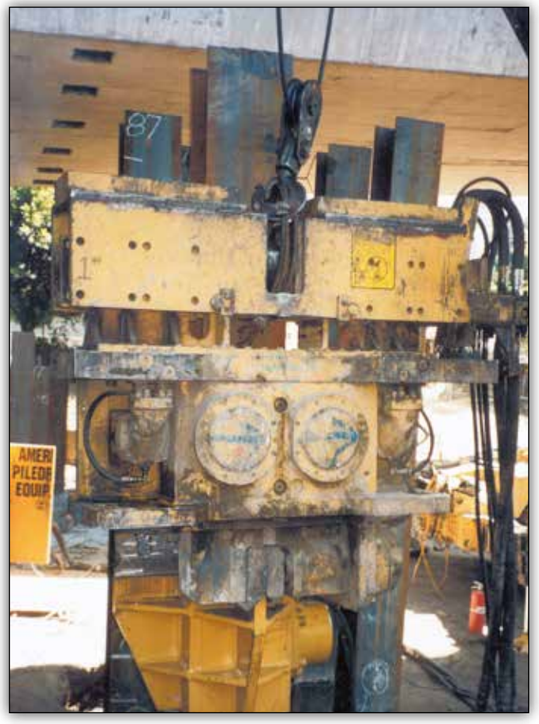
EXCAVATOR MOUNTED SPECIFICATIONS						
	E-SERIES				**X-SERIES**	
Model	**15E**	**20E**	**50E**	**100E**	**33X**	**64X**
Eccentric Moment	600 in-lb 6.9 kgm	900 in-lb 10.4 kgm	1,300 in-lb 15 kgm	2,200 in-lb 25.4 kgm	450 in-lb 5.2 kgm	781 in-lb 9 kgm
Drive Force	25 tons 219 kN	37 tons 329 kN	53 tons 475 kN	90 tons 803 kN	18 tons 164 kN	32 tons 285 kN
Max Frequency (vpm)	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700
Max Line Pull	9 tons 80 kN	18 tons 160 kN	18 tons 160 kN	44 tons 391 kN	10 tons 89 kN	32 tons 285 kN
Max Bare Hammer Weight	1,690 lbs 767 kg	2,540 lbs 1,152 kg	3,940 lbs 1,787 kg	4,840 lbs 2,195 kg	1,900 lbs 862 kg	4,650 lb 2,109 kg
Throat Width	9.625 in 24.45 cm	12.375 in 31.43 cm	14 in 35.56 cm	14.5 in 36.83 cm	12 in 30.5 cm	13.75 in 34.92 cm
Length	36.5 in 92.71 cm	36.5 in 92.71 cm	57.25 in 145.42 cm	57 in 144.78 cm	40 in 102 cm	70 in 177.8 cm
Height w/o Clamp	40.125 in 101.98 cm	47.875 in 121.6 cm	49.125 in 124.78 cm	56.5 in 143.51 cm	32 in 81 cm	42.5 in 107.95 cm

Low Headroom Vibratory Driver/Extractors

Low Headroom Driver/Extractors

APE Low headroom vibratory pile driver/extractors are designed to allow the contractor to drive full-length piles under bridges or inside buildings. This system was created to solve low headroom issues for seismic retrofit applications. Specifications for the dimensions and max line pull are custom for the job the vibratory hammer will be used on. The suppressor setup will be modified by APE to work with specified height restrictions on the job site. Please consult an APE representative to discuss your particular application by calling (800) 248-8498.

LOW HEADROOM SPECIFICATIONS			
Model	**150**	**200**	**200-6**
Eccentric Moment	2,200 in-lb 25.4 kgm	4,400 in-lb 50.7 kgm	6,600 in-lb 76 kgm
Drive Force	90 tons 803 kN	181 tons 1,606 kN	271 tons 2,410 kN
Max Frequency (vpm)	0 - 1,700	0 - 1,700	0 - 1,700
Max Line Pull	Consult Factory	Consult Factory	Consult Factory
Max Bare Hammer Weight	Consult Factory	Consult Factory	Consult Factory
Throat Width	Consult Factory	Consult Factory	Consult Factory
Length	Consult Factory	Consult Factory	Consult Factory
Height w/o Clamp	Consult Factory	Consult Factory	Consult Factory



Tandem Vibratory Driver/Extractors

Tandem Driver/Extractors

Tandem Vibratory driver/extractors allow for the installation of high mass casings. APE's constant innovation has developed a method for joining multiple hammers together to match the casing and soil conditions for any job. From the World's largest vibratory driver/extractor to the original low headroom setup, APE will always be your source for the solutions that work. Tandem vibrators can be mounted on a common steel plate with a passage in the center to allow the pile to pass through. This type of setup allows massive jaw pivots to open like a gate, allowing the pile crew to come in from the side to attach the machine to the pile.

TANDEM DRIVER/EXTRACTOR SPECIFICATIONS						
Model	**50 Tandem Low Headroom**	**100 Tandem Low Headroom**	**150 Tandem Low Headroom**	**200 Tandem Low Headroom**	**400 Tandem 11' Quad Clamp**	**600 Tandem 15' Quad Clamp**
Eccentric Moment	2,600 in-lbs 30 kgm	4,400 in-lbs 50.7 kgm	4,400 in-lbs 50.7 kgm	8,800 in-lbs 101.4kgm	23,000 in-lbs 264.99 kgm	34,400 in-lbs 396.3 kgm
Drive Force	107 tons 949 kN	181 tons 1,606 kN	181 tons 1,606 kN	361 tons 3,213 kN	640 tons 5,695 kN	957 tons 8,518 N
Max Frequency (vpm)	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,700	0 - 1,400	0 - 1,400
Pile Clamping Force	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory
Max Line Pull	112 tons 996 kN	186 tons 1,655 kN	216 tons 1,922 kN	266 tons 2,366 kN	468 tons 4,164 kN	702 tons 6,245 kN
Total Setup Weight	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory
Max Pressure	5,000 psi 345 bar	5,000 psi 345 bar	5,000 psi 345 bar	5,000 psi 345 bar	5,000 psi 345 bar	5,000 psi 345 bar
Length	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory
Width	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory
Height with Clamp	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory	Consult Factory

Wick Drain Machines

APE Wick Drain:

The APE wick installer allows the mandrel to pass directly through the center of the vibrator, while a sprocket drive provides static force. The sprocket drive delivers equal force on both sides of the mandrel for perfect axial loading with “On The Fly” vibration when needed with all the crowd right at the point of entry into the ground stabilizing mandrel flexion.

The APE wick installer was made for super-long wick drain installation. The lightweight machine mounts at the bottom of the leads rather than at the top. Leads can be longer because they only need to support the weight of the mandrel. The entire machine can be fitted to an excavator without any added power units or valves. Capable excavator models may vary for unassisted erection. Fixed and variable systems available. High speed/low torque and low torque/high speed and optional shift on the fly.

BOTTOMDRIVE™ WICK DRAIN SPECIFICATIONS		
Bottomdrive™ Model	2 (Two Motor)	4 (Four Motor)
Static (Crowd) Force (USt/kN)	15 133	30 266
Dynamic Force @ 1800 vpm (USt/kN)	40 356	40 356
Combined Dynamic Force (USt/kN)	55 489	70 623
Operating Frequency Max. (vpm)	0 -2,100	0 -2,100
Suspended Weight (lb/kg)	8,500 3,855	10,780 4,889
Maximum Pressure (psi/bar)	5,000 344	5,000 344
Maximum Flow (gpm/lpm)	120 45	230 943
Maximum Mandrel Speed	Up to 330 Up to 100	Up to 330 Up to 100
Length (in/cm)	74 188	74 188
Width (in/cm)	30 73.2	30 73.2
Height (in/cm)	96 243.8	96 243.8

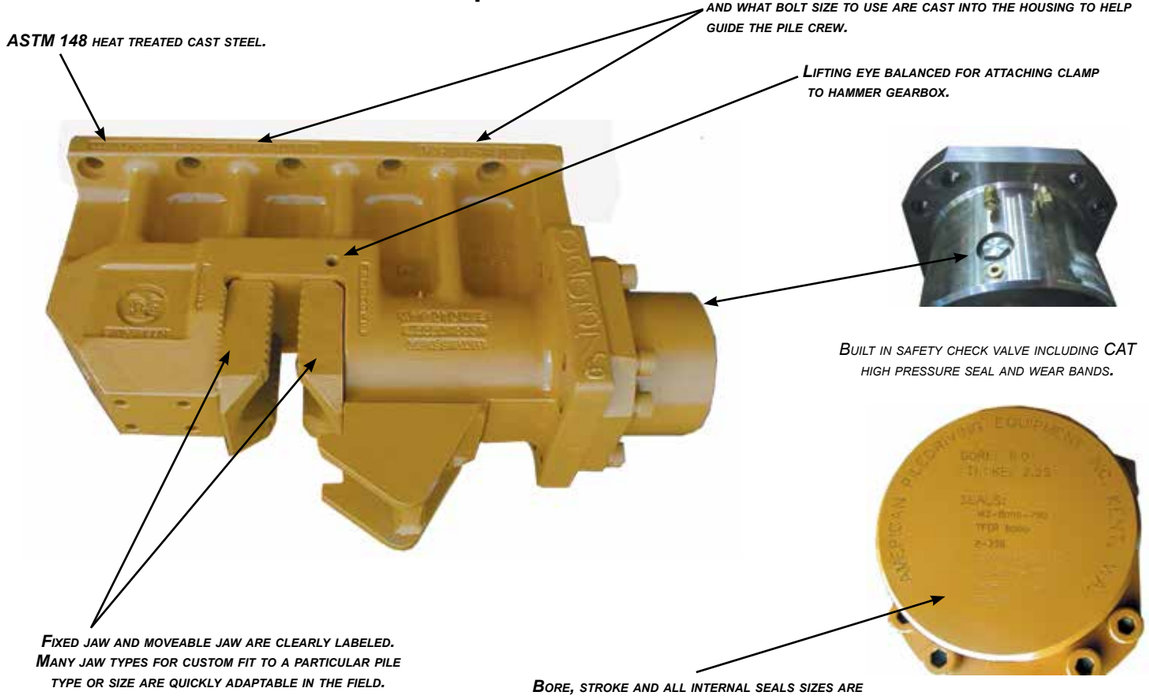
Note: All technical specifications are subject to change without notice.

Attachments Vibratory Drivers/Extractors

Attachments adapt a driver/extractor to fit a particular pile type, such as an H-beam, steel sheet pile, or pipe pile. Most vibratory pile driver/extractors come equipped with the APE standard universal clamp that has the ability to fit double sheet piles and H-beams. The universal clamp can be quickly adapted to fit flat plates or small diameter pipe piles including train rail. APE can also manufacture adapters to mount competitor attachments on APE hammers and APE attachments on competitor equipment.

APE manufactures attachments for every type of pile, yet all APE attachments use the same mounting bolts, so contractors don't experience delays in the field due to improper bolt sizes. APE clamp cylinders are machined from solid blocks of steel for maximum strength and durability. Safety check valves keep the jaws closed even in the event of a hose failure and every seal in the clamp is listed on the cylinder.

The APE Standard Universal Clamp Attachment

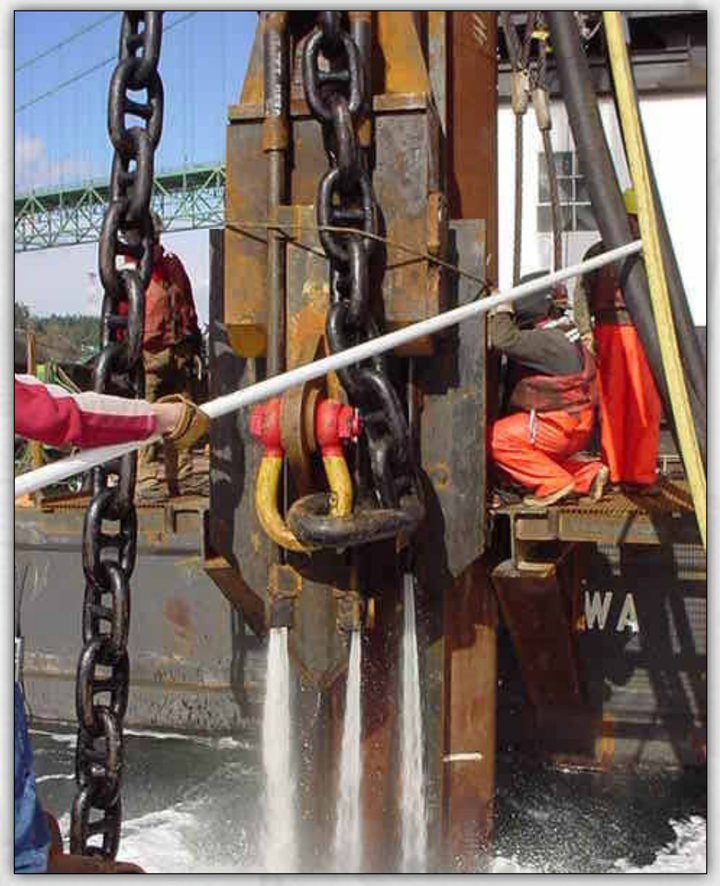


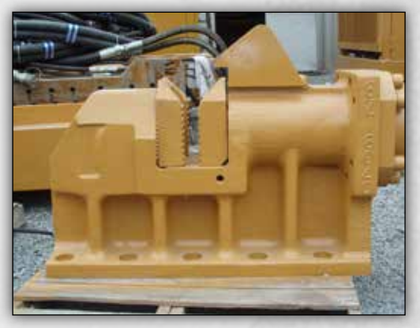
Model 50E with a standard 50 Clamp and single/double jaws

Model 20 Vibro with a Model 20 clamp.

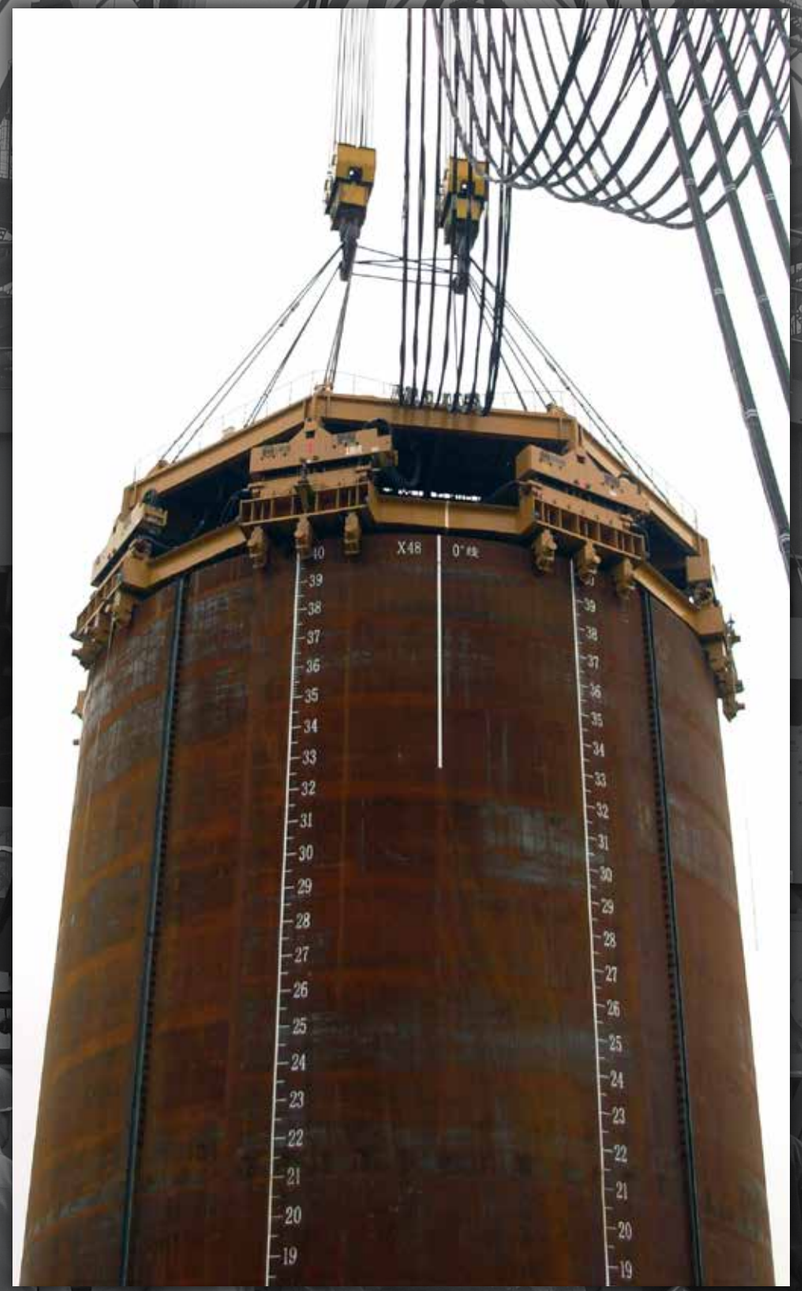
Model 150T Vibro with a Model 150 Clamp.

Model 200 vibro with a Model 200 sheet clamp equipped with double sheet jaws.





Driving Innovation



Estimated Project Cost: 10.7 Billion US Dollars
Estimated Project Completion Date: 2016
Bridge Length: 23.9 Miles
Pile Weight: 604 Metric Tons
Number of Piles to be Driven: 127
Wall Thickness of Pile: 1 inch or 25 mm
Diameter of Pile: 72 feet or 22 meters
Pile Length Average: 136 ft or 41.5 meters

The Hong Kong-Zhuhai-Macau Bridge Construction Project Will Be The Worlds Longest Bridge At Completion To Drive The Piles APE Introduces The OctaKong The World's Largest Vibratory Driver Extractor

Eccentric Moment: 8 x 20,000 in lbs or 230.42 kgm
Deepest Embedment: 72 feet or 22 meters
Total OctaKong Weight: 427.2 metric tons
Total HP: 8 x 1050 Horse Power
Vibros: 8 X 45,309 lbs or 20,552 kg
Wheel Beam: 8 x 6,671 lbs or 3,026 kg
Vibro Beam: 8 x 48,841 lbs or 22,154 kg
Lifting Structure: 135,233 lbs or 61,341 kg

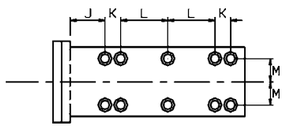
Model 20, 50, 150 and 200 Universal Clamps

Model	Weight	Piston Dia.	Piston Stroke	Cyl. Force	Clamp Force	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
20	790 lbs 358 kg	5 in 127 mm	2.25 in 57 mm	88 kips 391 kN	177 kips 787 kN	29.63 in 752 mm	10 in 254 mm	28.63 in 727 mm	11.75 in 298 mm	8.56 in 217 mm	4.62 in 117 mm	2.31 in 38 mm	6 in 152 mm	13.5 in 343 mm	4.62 in 117 mm	2.75 in 70 mm	8.25 in 209 mm	4 in 101 mm	7 in 178 mm	5 in 127 mm
50	1350 lbs 612 kg	8 in 203 mm	2.25 in 57 mm	226 kips 1005 kN	452 kips 2010 kN	44 in 1117 mm	12 in 304 mm	35 in 889 mm	12.25 in 311 mm	10.25 260 mm	7.19 in 182 mm	1.44 in 38 mm	14 in 356 mm	22.38 in 568 mm	5 in 127 mm	11in 279 mm	8.25 in 209 mm	4 in 101 mm	15.17 in 385 mm	5 in 127 mm
150	1540 lbs 698 kg	8 in 203 mm	2.25 in 57 mm	226 kips 1005 kN	452 kips 2010 kN	44 in 1117 mm	12 in 304 mm	35 in 889 mm	12.88 in 327 mm	10.25 260 mm	7 in 178 mm	1.44 in 41 mm	14 in 356 mm	27.75 in 705 mm	5 in 127 mm	11 in 279 mm	8.25 in 209 mm	4 in 101 mm	15 in 383 mm	5 in 127 mm

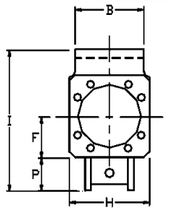
Model 20

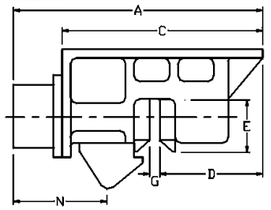
Model 50

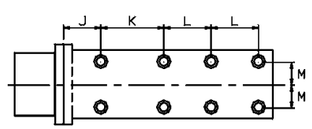
Model 150



20 Bolt Pattern

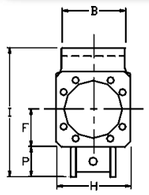


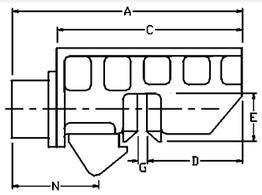


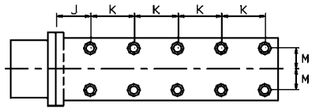


50/150 Bolt Pattern

Model	Weight	Piston Dia.	Piston Stroke	Cyl. Force	Clamp Force	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
200	2200 lbs 998 kg	8 in 203 mm	2.25 in 57 mm	226 kips 1005 kN	452 kips 2010 kN	50 in 270 mm	11.75 in 298 mm	41 in 1041 mm	18.25 in 463 mm	9 in 228 mm	7 in 178 mm	1.69 in 44 mm	15 in 381 mm	29.88 in 759 mm	5.75 in 146 mm	8.25 in 209 mm	-	4 in 102 mm	21 in 533 mm	5 in 127 mm



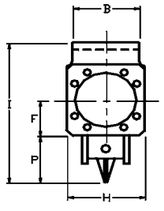


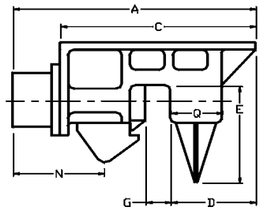


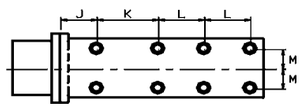
Model 200

Model 50 and 150 Dunce Clamps

Model	Weight	Piston Dia.	Piston Stroke	Cyl. Force	Clamp Force	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
50	1,350 lbs 612 kg	8 in 20.3 cm	2.25 in 5.7 cm	226 kips 1,005 kN	452 kips 2,010 kN	44 in 111.7 cm	12 in 30.4 cm	35 in 88.9 cm	12.25 in 31.1 cm	10.25 26.0 cm	7 in 17.8 cm	1.75 in 44.5 cm	14 in 356 cm	22.75 in 57.7 cm	5 in 12.7 cm	11 in 27.9 cm	8.25 in 20.9 cm	4 in 10.1 cm	15 in 38.3 cm	5 in 12.7 cm	11.5 in 29.2 cm
150	1,540 lbs 698 kg	8 in 20.3 cm	2.25 in 5.7 cm	226 kips 1,005 kN	452 kips 2,010 kN	44 in 111.7 cm	12 in 30.4 cm	35 in 88.9 cm	12.88 in 32.7 cm	10.25 26.0 cm	7 in 17.8 cm	1.75 in 44.5 cm	14 in 35.6 cm	27.75 in 70.5 cm	5 in 12.7 cm	11 in 27.9 cm	8.25 in 20.9 cm	4 in 10.1 cm	15 in 38.3 cm	5 in 12.7 cm	11.5 in 29.2 cm



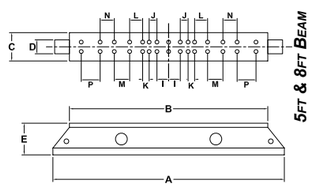




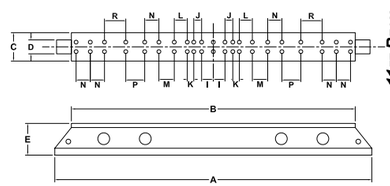
Model 150 Dunce

Standard Caisson Beams

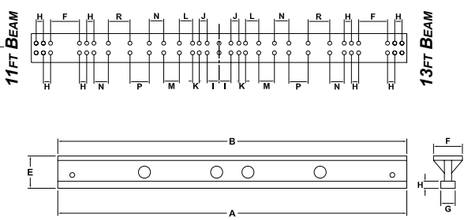
Model	Weight	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R
5 ft	1,000 lbs 454 kg	60 in 1.52 m	84 in 2.13 m	8 in 203 mm	5.9 in 150 mm	13.75 in 349 mm	12 in 305 mm	5.9 in 150 mm	3 in 76 mm	4.94 in 125 mm	3.31 in 84 mm	2.75 in 70 mm	5.5 in 140 mm	6.5 in 165 mm	6 in 152 mm	8 in 203 mm	-
8 ft	1,500 lbs 680 kg	98 in 2.48 m	84 in 2.13 m	8 in 203 mm	5.9 in 150 mm	13.75 in 349 mm	12 in 305 mm	5.9 in 150 mm	3 in 76 mm	4.94 in 125 mm	3.31 in 84 mm	2.75 in 70 mm	5.5 in 140 mm	6.5 in 165 mm	6 in 152 mm	8 in 203 mm	-
11 ft	3,030 lbs 1,374 kg	132.5 in 3.35 m	120 in 3.04 m	8 in 203 mm	5.9 in 150 mm	13.41 in 340 mm	12 in 305 mm	5.9 in 150 mm	3 in 76 mm	4.94 in 125 mm	3.31 in 84 mm	2.75 in 70 mm	5.5 in 140 mm	6.5 in 165 mm	6 in 152 mm	8 in 203 mm	9 in 229 mm
13 ft	3,593 lbs 1,630 kg	156 in 3.96 m	156 in 3.96 m	8 in 203 mm	5.9 in 150 mm	18 in 457 mm	13.5 in 343 mm	5.9 in 150 mm	3 in 76 mm	5 in 127 mm	3.31 in 84 mm	2.75 in 70 mm	5.5 in 140 mm	6.5 in 165 mm	6 in 152 mm	8 in 203 mm	9 in 229 mm



5ft & 8ft Beam



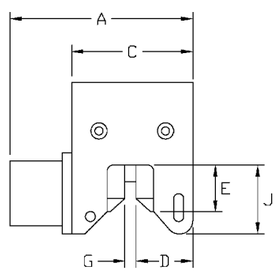
11ft Beam

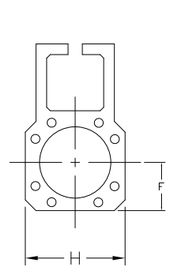


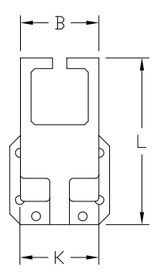
13ft Beam

Model 100 and 200 Caisson Clamps

Model	Weight	Piston Dia.	Piston Stroke	Cyl. Force	Clamp Force	A	B	C	D	E	F	G	H	J	K	L
100	1,100 lbs 498 kg	8 in 203 mm	2.25 in 57 mm	226 kips 1,005 kN	452 kips 2,010 kN	25.63 in 651 mm	11 in 279 mm	18.63 in 473 mm	6 in 152 mm	6.63 in 168 mm	6.25 in 159 mm	1.5 in 38 mm	14 in 355 mm	10.63 in 270 mm	11 in 279 mm	23.38 in 594 mm
200	1,775 lbs 804 kg	8 in 203 mm	2.25 in 57 mm	226 kips 1,005 kN	452 kips 2,010 kN	28.56 in 725 kN	11 in 279 mm	22.56 in 573 mm	10.81 in 274 mm	6.63 in 168 mm	7.25 in 184 mm	1.5 in 38 mm	14 in 355 mm	11 in 270 mm	11 279 mm	23.25 in 590 mm

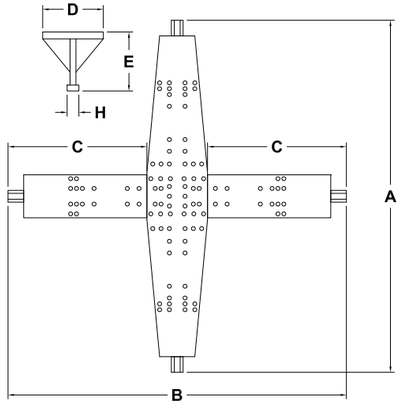






Quad Beam

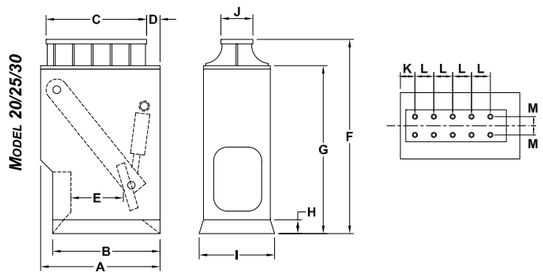
Model	Weight	A	B	C	D	E	F	H
11 ft	9,500 lbs 4,309 kg	134 in 340 cm	136 in 345 cm	53 in 134.6 cm	31 in 78.7 cm	21 in 53.3 cm	30 in 76.2 cm	6 in 152 mm
15 ft	13,000 lbs 5896 kg	180 in 457.2 cm	184 in 467.3 cm	75 in 190.5 mm	31 in 78.7 cm	30 in 76.2 cm	41 in 104 cm	6 in 152 mm
17 ft	15,000 lbs 6803 kg	206 in 523.2 cm	208 in 528.3 cm	89 in 226 cm	31 in 78.7 cm	40 in 101.6 cm	41 104 cm	6 in 152 mm



CLAMP EQUATIONS	
Clamp Cylinder Force	$dm^2 * 0.7854 * p$ / 2,000
Clamp Gripping Force	Clamp Cylinder Force * 2
Clamp and Gripping Force Variables	dm = Diameter p = Pressure

Wood/Concrete Clamps

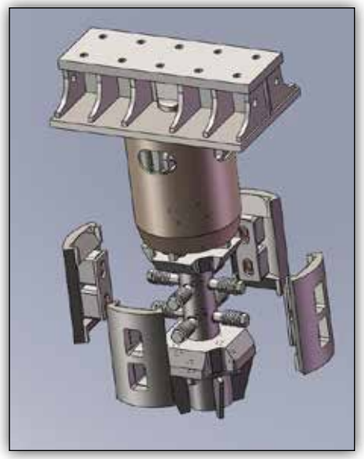
Model	Weight	Piston Dia.	Cyl. Force	Clamp Force	A	B	C	D	E	F	G	H	I	J	K	L	M
20	4,500 lbs 2,041 kg	7 in 178 mm	135 kips 600 kN	270 kips 1200 kN	44 in 117 cm	42 in 106.7 cm	44 in 117.8 cm	-	20.5 in 52 cm	72 in 182.9 cm	58 in 147.3 cm	6.0 in 15.2 cm	31.91 in 81.05 cm	14 in 35.6 cm	4 in 10.2 cm	8.25 in 21 cm	4 in 10.2 cm
25	6,200 lbs 2,811 kg	7 in 178 mm	135 kips 600 kN	270 kips 1200 kN	52.25 in 13.2 cm	47 in 119.4 cm	44 in 117.8 cm	6 in 12.7 cm	25.5 in 64.8 cm	77 in 195.6	68 in 172.7 cm	6.0 in 15.2 cm	34.94 in 88.75 cm	14 in 35.6 cm	10 in 25.4 cm	8.25 in 21 cm	4 in 10.2 cm
30	7,000 lbs 3,175 kg	7 in 178 mm	135 kips 600 kN	270 kips 1200 kN	60 in 15.2 cm	52 in 132 cm	44 in 117.8 cm	10 in 25.4 cm	30.5 in 76.2 mm	83 in 21.1 cm	68 in 172.7 cm	6.0 in 15.2 cm	44.38 in 112.73 cm	14 in 35.6 cm	14 in 35.6 cm	8.25 in 21 cm	4 in 10.2 cm

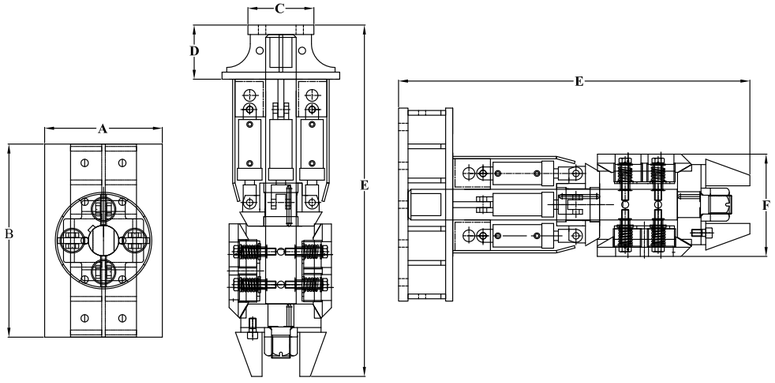


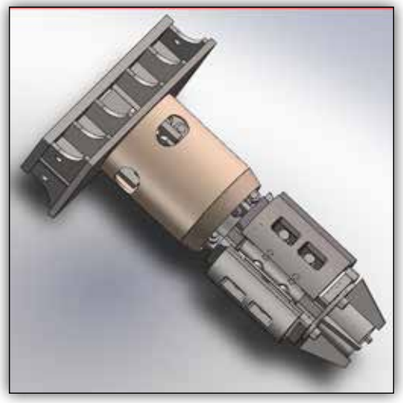
Internal Pipe Clamp

Weight	A	B	C	D	E	F
3,360 lbs 1524 kg	25 in 63.5 cm	41 in 104.14 cm	14 in 35.56 cm	11.5 in 29.21 cm	74.6 in 189.48 cm	21.7 in 55.12 cm

The Internal Pipe Clamp can be custom built for any pile diameter.







Attachment Accessories

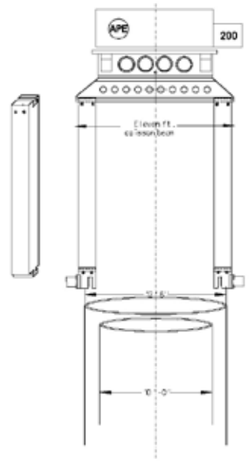
DRIVER/EXTRACTOR ACCESSORIES

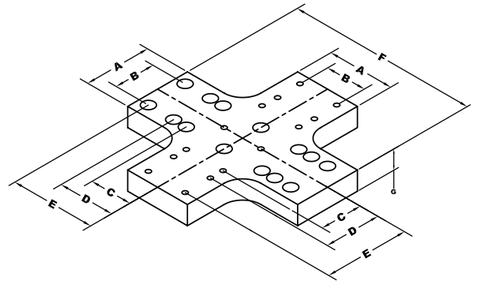
Specification	Weight	A	B	C	D	E	F	G	H
90 Degree Turn Plate	600 lb 272 kg	12 in 30.48 cm	8 in 20.3 cm	8.25 in 21 cm	11 in 28 cm	16.5 in 42 cm	37 in 94 cm	12 in 30.4 cm	16 in 40.6 cm
4' extension	2,500 lb 1134 kg	37 in 94 cm	11 in 28 cm	8.25 in 21 cm	5 in 12.7 cm	48 in 122 cm	12 in 30.5 cm	8 in 20.3 cm	
8' extension	4,000 lb 1,814 kg	37 in 94 cm	11 in 28 cm	8.25 in 21 cm	37 in 94 cm	96 in 243.8 cm	12 in 30.5 cm	8 in 20.3 cm	
Caisson Beam to Attachment Adapter	1,200 lb 680 kg	11 in 28 cm	8.25 in 21 cm	5 in 12.7 cm	37 in 94 cm	8 in 20.3 cm	4 in 10.1 cm	11.5 in 29.21 cm	

Caisson to sheet adapter with a 90 degree turn plate.

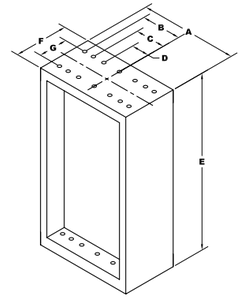
Hybrid extension called the California Stinger for tight working dimensions.

Attachment adapters used to allow the extraction of a casining with an extended rebar cage.

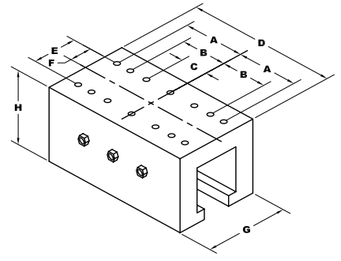




90 Degree Turn Plate.



4'&8' Extension.



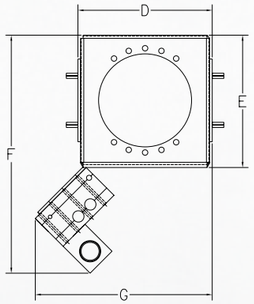
Caisson beam to attachment adapter.

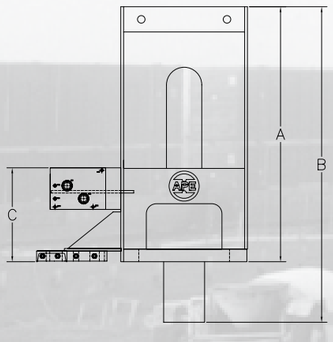
Top Drive Augers

APE manufactures an improved version of the Poclain cam track hydraulic motor. We've added stronger bearings and a hollow shaft to create a powerful light weight drill motor. A 200 ton dynamic force lock nut retains the shaft between the upper and lower bearings, a 5 inch 300 pound flange easily accepts any type of connection. This APE motor withstands more dynamic axial loading than any other top drive drill on the market. The two-speed, direct fluid-to-torque motor needs no gearbox or troublesome planetary gear reductions. It is self-lubricating, light, compact.

APE and King Oil tools joined forces to develop a grout swivel that can handle 2,500 psi and last up to 3000 holes without service. The APE/King Oil swivel is the only one on the market designed to carry high-pressure grout. The swivel incorporates a removable inner wear tube and replacement seals for fast and inexpensive repair. The initial cost of the APE swivel is more, but with high reliability and less down time the contractor is going to be more cost effective going APE!

Cam track motor has highest volumetric and mechanical efficiencies with its outside rotary cam design. Oversized shaft bearings and locknut retention offers the highest vertical and radial loads in the industry.





TOP DRIVE AUGER SPECIFICATIONS

	Type	20	50	50BB	75	75BB
Low Speed High Torque	Torque (ft-lbs/ kgm)	3,041 per 1,000 psi 420 per 69 bar	6,929 per 1,000 psi 958 per 69 bar	8,719 per 1,000 psi 1,205 per 69 bar	10,668 per 1,000 psi 1,475 per 69 bar	11,253 per 1,000 psi 1,556 per 69 bar
	Max Pressure (psi/bar)	4,500 310	4,500 310	5,350 369	4,640 320	5,800 400
	Rotation Speed (rpm)	50	38	44	30	36
	Max Flow (gpm/ lpm)	55 per 1.11 gal / rev 208 per 4.20 lit / rev	100 per 2.64 gal / rev 379 per 9.99 lit / rev	147 per 3.33 gal / rev 556 per 12.6 lit / rev	120 per 3.96 gal / rev 454 per 14.99 lit / rev	150 per 4.17 gal / rev 568 per 15.8 lit / rev
	Max Horse Power (hp/kW)	144 107	263 196	459 342	325 242	508 379
High Speed Low Torque	Torque (ft-lbs psi/kgm bar)	1,546 per 1,000 psi 214 per 69 bar	3,363 per 1,000 psi 465 per 69 bar	4,232 per 1,000 psi 585 per 69 bar	5,940 per 1,000psi 821 per 69 bar	5,498 per 1,000 psi 760 per 69 bar
	Max Pressure (psi/bar)	3,000 207	4,000 276	2,700 186	3,000 207	2,700 186
	Rotation Speed (rpm)	99	58	88	61	72
	Max Flow (gpm/ lpm)	55 per 0.55 gal / rev 208 per 2.61 lit / rev	77 per 1.32 gal / rev 291 per 5 lit / rev	147 per 1.66 gal / rev 556 per 6.28 lit / rev	120 per 1.98 gal / rev 454 per 7.5 lit / rev	150 per 2.09 gal / rev 568 per 7.91 lit / rev
	Max Horse Power (hp/kW)	96 72	180 134	232 173	210 157	236 176
Crowd Force (lbs/kg)		77,000 34,927	150,000 68,039		150,000 68,039	
Suspendid Weight (lbs/ kg)		2,810 1,275	2,970 1,347	3,030 1,374	3,130 1,420	3,130 1,420
Length (in/cm)		25 635	25 635	25 635	25 635	25 635
Width of Lead Section (in/cm)		26 660.4	26 660.4	26 660.4	26 660.4	26 660.4
Shipping Width Overall (in/cm)		48 1,219.2	48 1,219.2	48 1,219.2	48 1,219.2	48 1,219.2
Height (in/cm)		61.5 1,562.1	61.5 1,562.1	61.5 1,562.1	61.5 1,562.1	61.5 1,562.1

Hydraulic Impact Hammers (HIH)

The APE 7.5A with a direct drive boot.

APE designed and built the first real low headroom hydraulic impact hammer in response to California's 1989 earthquake. The proceeding seismic retrofit repairs meant that thousands of piles, some over 100 feet long, had to be driven underneath existing bridges, demanding equipment that could drive the piles and minimize splicing. The job called for very short hammers. APE designed an impact hammer that features a Patented, US-006557649, hydraulic cylinder that connects through the center of the ram above the impact point. This technique greatly reduces the overall height of any comparable hammer by more than half. APE's low headroom technology has revolutionized pile driving, as contractors have discovered they can drive longer piles without splicing and welding. Since then, the APE hydraulic impact hammers have evolved into a full line of tools including the largest hydraulic impact hammer made in North America.

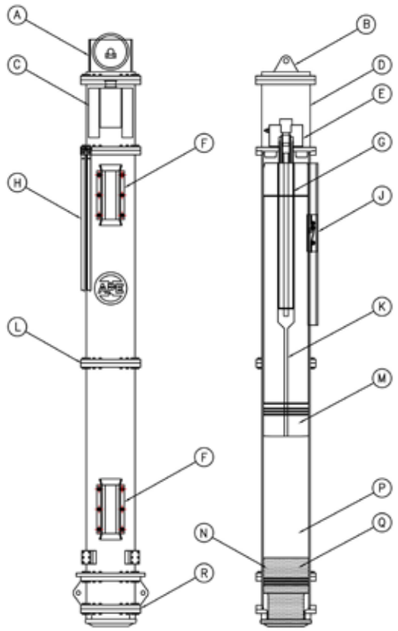
HYDRAULIC IMPACT HAMMER (HIH) SPECIFICATIONS

Type	Low Headroom					Standard					
Model	4-2	5-2	6-2	7-3	8-3	6-4	8-4	10-4	15-4	30-4	60-4
Ram Weight (lb/kg)	8,000 3,629	10,000 4,536	12,000 5,443	14,000 6,350	16,000 7,257	12,000 5,443	16,000 7,257	20,000 9,071	30,000 13,607	60,000 27,215	120,000 54,431
Rated Energy (ft-lb/kNm)	15,200 20.6	20,000 27.1	24,000 32.5	44,240 60.0	50,560 68.6	48,000 65.1	64,000 86.8	80,000 108.5	120,000 162.7	240,000 325.4	480,000 650.8
Stroke at Rated Energy (in/cm)	24 61	24 64	24 61	38 97	38 97	48 122	48 122	48 122	48 122	48 122	48 122
Blows Per Minute (Min-Max)	45-75	45-75	45-75	30-65	30-65	30-65	30-80	30-65	30-65	30-65	30-65
Weight w/o Insert (lb/kg)	13,700 6,214	15,200 6,894	17,200 7,802	20,500 9,298	22,500 10,206	19,500 8,845	23,800 10,796	27,800 12,610	42,000 19,050	varies	varies
Height (in/cm)	105 267	105 267	105 267	126 320	126 320	144 366	144 366	160 406	175 444	390 990	472 1,199
Standard U Lead Size	8"x26"	8"x26"	8"x26"	8"x26"	8"x26"	8"x26"	8"x26"	8"x32"	8"x32"	Offshore	Offshore

Note: All technical specifications are subject to change without notice.

X-Series Hydraulic Impact Hammers

A. Optional top sheave for two-parting crane line.
B. Single eye pick point.
C. Vertically mounted, proven parker accumulators.
D. Protective enclosure for accumulators.
E. Proven J&M hydraulic control head.
F. Guiding for standard 26” leads.
G. Patented APE Low-Headroom hydraulic cylinder.
H. Rugged 5000 psi hydraulic hoses.
J. Visible sled system for stroke control.
K. Cable extension for longer ram.
L. Bolted modular steel cages.
M. SEMW (delmag) style proven alloy ram with rings.
N. Compression chamber for pre-load. High compression zone.
P. High Compression Zone.
Q. SEMW (Delmag) style proven alloy anvil with rings.
R. Proven D62 bottom end ring & bearings.
S. Powered by APE 275 Power Unit.
T. Optional PDI energy reporting system.



The X-Series Hydraulic Impact Hammers offer many advantages over APE’s standard Hydraulic Hammers. The lower end pre-compression for pile pre-load, while also having pre-load in excess of diesel hammers. Proven diesel hammer bottom end technology teamed with proven ape low-headroom cylinder technology. Reliable APE sled & trip valve system with industry-leading J&M all-hydraulic control head. X-Series Hammers also offer no electrical control wires at all.

X-SERIES HIH SPECIFICATIONS

Model	X8	X10	X13	X16	X18	X20	X22
Ram Weight (lb/kg)	8,000 3,628	10,000 4,535	13,000 5,896	16,000 7,257	18,000 8,164	20,000 9,071	22,000 9,979
Max Rated Energy (ft-lb/ kNm)	32,000 43.4	40,000 54.2	52,000 70.5	64,000 86.8	72,000 97.6	80,000 108.5	88,000 119.3
Stroke at Rated Energy (in/cm)	48 121	48 121	48 121	48 121	48 121	48 121	48 121
Max Obtainable Energy Restrike Only (ft-lb/kNm)	40,000 54.2	50,000 67.8	65,000 88.1	80,000 108.5	90,000 122.0	100,000 135.6	110,000 149.1
Max Stroke for Re-strike Only (in/cm)	60 152	60 152	60 152	60 152	60 152	60 152	60 152
Blows Per Minute (max Stroke-min Stroke)	38-75	38-75	38-75	38-75	38-75	38-75	38-75
Operating Weight with Large Pipe Insert (lb/kg)	23,000 10,400	25,600 11,600	30,000 13,600	33,300 15,100	36,300 16,500	38,900 17,600	41,600 18,900
Height with Large Pipe Insert (in/cm)	296 752	317 317	327 830	371 942	402 1021	423 1074	445 1130
Standard U Lead Size	26”	26”	26”	26”	26”	26”	26”

Power Units

APE power units provide the contractor with the most advanced, tier 3 rated electronic engines with the highest possible horsepower. The hydraulic systems are simple and the valves are easy to access and understand. The hydraulic tanks are filled with vegetable hydraulic oil and each power unit comes with a built-in spare tank so that if a spill occurs, the crew can keep the job going by turning a 1/4 turn ball valve filling the main tank to a safe operating level.

APE power units have built in ladders to allow the pile crew to rig the unit safely. The muffler system is "hospital rated" for quiet operation. The control panel is made from stainless steel to prevent corrosion. All functions are located on the remote control pendant as well as on the main control panel for emergency back up with optional radio remote systems available.

All units come with "forward" and "reverse" flow capability, allowing the contractor to use his machine to operate vibratory pile driver/extractors, auger drills, hydraulic impact hammers, winches, spotters, and other related foundation equipment including oscillators and dredging equipment.

POWER UNIT SPECIFICATIONS

Model	10	127	275	375	475	595	765	1200
Engine Type	Yanmar	Caterpillar C4.4 Tier IV	Caterpillar C7 Tier III	Caterpillar C9 Tier III	Caterpillar C13 Tier III	Caterpillar C15 Tier III	Caterpillar C18 Tier II	Caterpillar C32 Tier II
Rated Horse Power	10 HP 7 kW	127 HP 95 kW	275 HP 205 kW	375 HP 276 kW	475 HP 354 kW	595 HP 444 kW	765 HP 570 kW	1,200 HP 895 kW
Rated Drive Pressure	3,500 psi 238 bar	2,500 psi 172 bar	4,800 psi 331 bar	4,800 psi 331 bar	4,800 psi 331 bar	4,800 psi 331 bar	4,800 psi 331 bar	4,800 psi 331 bar
Drive Flow	5.8 gpm 22 lpm	60 gpm 227 lpm	85 gpm 322 lpm	120 gpm 454 lpm	147 gpm 556 lpm	188 gpm 712 lpm	220 gpm 833 lpm	294 gpm 1,113 lpm
Weight	275 lbs 125 Kg	4,750 lbs 2,155 kg	11,000 lbs 4,990 kg	12,600 lbs 5,715 kg	13,800 lbs 6,260 kg	19,000 lbs 8,618 kg	19,000 lbs 8,618 kg	23,000 lbs 10,206 kg
Length	24 in 61 cm	99 in 251 cm	116.5 in 296 cm	126.5 in 321 cm	127.5 in 324 cm	151.75 in 385 cm	151.75 in 385 cm	169 in 428 cm
Width	31.5 in 80 cm	45 in 114 cm	58.75 in 149 cm	68.5 in 174 cm	73.5 in 187 cm	82 in 208 cm	82 in 208 cm	87 in 221 cm
Height	42 in 107 cm	66 in 168 cm	83.5 in 212 cm	82 in 208 cm	92.25 in 234 cm	94 in 239 cm	94 in 239 cm	103 in 262 cm

Kidney loop filtration and hydraulic cooling

Custom ball valves for service

Complete tool set mounted in door panel

Aircraft quality wiring with sealed quick disconnects

Tank transfer valve for replenishing hydraulic fluid

Remote control pendant unit sealed for protection against weather

Weather sealed stainless steel hydraulic gauges and control panel

Tier 3 CAT engines

Solid welded tubular frame

Swivel lifting eye rated for 15,000 lbs for Models 275 to 475 and 24,000 for Models 575 to 1050

Reserve hydraulic fluid tank for replenishing main tank on demand

Lift off hinges for easy door removal in the field

An APE D160 drives 30" square concrete pile in Ocean City, NJ.

D46 driving dolphin piles at the Bainbridge Island ferry terminal.

A D19-42 drives H-beam in North Carolina.

APE D80-42 Working for the Army in Washington.

A D62 drives test piles at Terminal 18 in Seattle, WA.

The D180-42, largest APE diesel hammer in North America drives 42" pipe pile in Coquitlam, BC.

Note: All technical specifications are subject to change without notice.

Diesel Hammers

APE maintains the largest fleet of single acting diesel hammers in the United States. We stock spare parts for all our Models from the D1 all the way to the D300. In addition, we stock replacement parts for Delmag diesel hammers for nearly every series. All our hammers and parts come with the longest warranty in the business.

SINGLE ACTING DIESEL HAMMER SPECIFICATIONS

	Maximum Energy		Minimum Energy		Ram Weight		Hammer Weight	
	ft-lbs	kNm	ft-lbs	kNm	lbs	tonnes	lbs	kg
D8-52	19,845	26.79	9,724	13.13	1,764	0.8	4,540	2,059
D12-52	29,768	40.19	14,884	20.09	2,646	1.2	6,890	3,125
D16-52	39,690	53.58	19,845	26.79	3,528	1.6	8,000	3,629
D19-52	47,132	63.63	23,566	31.81	4,190	1.9	8,400	3,810
D25-52	62,016	83.72	31,008	41.86	5,513	2.5	12,569	5,701
D30-52	74,419	100.47	37,209	50.23	6,615	3	13,571	6,156
D36-26/52	89,303	120.56	43,758	59.07	7,938	3.6	14,894	10,421
D36-52	89,303	120.56	44,651	60.28	7,938	3.6	22,975	6,756
D46-52	114,109	154.05	55,913	75.48	10,143	4.6	25,000	11,340
D50-52	124,031	167.44	60,775	82.05	11,025	5	25,882	11,740
D62-52	153,799	207.63	76,899	103.81	13,671	6.2	29,100	13,200
D70-52	173,644	234.42	86,822	117.21	15,435	7	30,864	14,000
D80-42	198,450	267.91	127,008	171.46	17,640	8	38,434	17,433
D100-42	248,063	334.88	158,760	214.33	22,050	10	47,000	21,319
D125-42	310,078	418.61	198,450	267.91	27,563	12.5	62,000	28,123
D128-42	317,520	428.65	203,213	274.34	28,224	12.8	68,000	30,844
D138-42	342,326	462.14	219,089	295.77	30,429	13.8	70,295	31,885
D160-42	396,900	535.82	242,109	326.85	35,280	16	85,000	38,555
D180-42	446,513	602.79	272,373	367.70	39,690	18	92,000	41,730
D220-42	545,738	736.75	332,900	449.41	48,510	22	102,820	46,638
D225-42	558,141	753.49	340,466	459.63	49,613	22.5	112,820	51,174
D250-42	620,156	837.21	378,295	510.70	55,125	25	113,340	51,410
D260-42	644,963	870.70	393,427	531.13	57,330	26	118,830	53,900

Drive Bases, Inserts and Helmets

APE Drive Caps, Inserts, Helmets, Followers and Pile Gates for Impact Hammers.

APE manufactures a full line of drive caps and inserts for any type of piling. APE drive caps and inserts are fully machined on all striking surfaces. This provides superior energy transfer to the pile and prevents premature wear of the hammer and decreases possible damage to the pile. APE drive caps accept inserts from all major manufacturers. However, for precision alignment we recommend using only APE made components. APE also offers machining services to upgrade your existing drive caps, inserts helmets and followers.

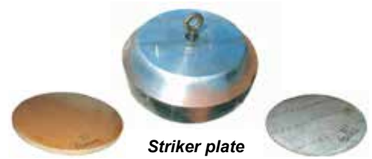
APE manufactures specialty items such as precision followers and pile gates design and engineered for specific driving needs. Anything that can be driven, APE can design an adapter to drive it. Precision alignment is one of the keys to a piles drivability and productivity. With our in house engineering, machining and fabrication capabilities you can get the production edge you need for your next job in less time.

Drive bases and inserts

Inserts

Striker Plates

APE striker plates are made twice as thick as our competition to prevent bending or cracks promoting consistent energy transfer. Each striker plate is fully machined on all surfaces and comes complete with drilled and tapped holes on both sides for easy loading and shipment.



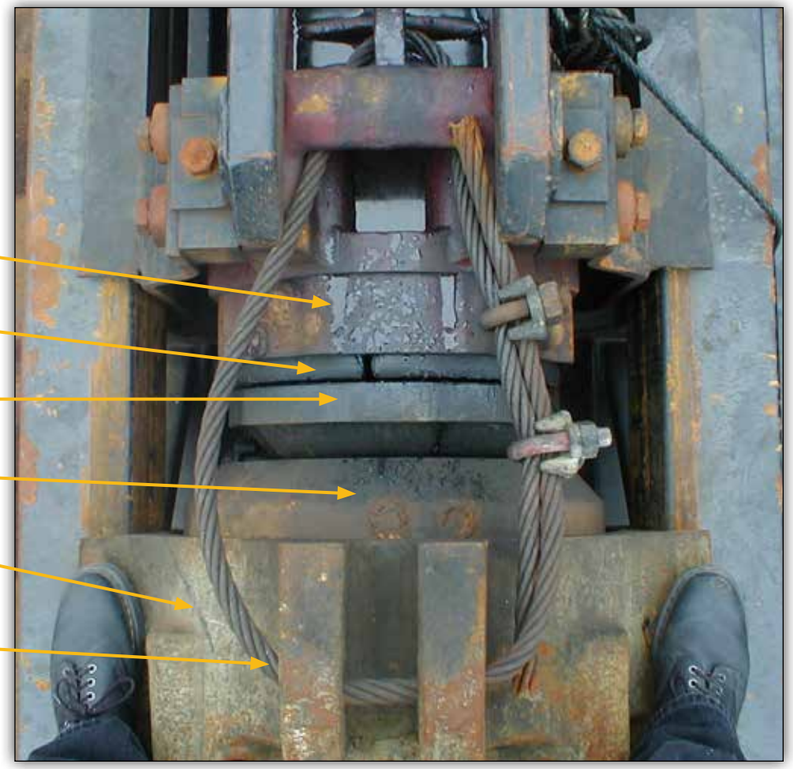
Conbest *Striker plate* *Aluminum*

Cushion Material

APE offers industry standard cushion material such as conbest, aluminum, and high density nylon cushion material. Pile cushion specifications available upon request.

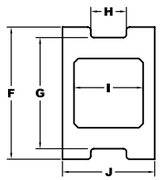
MC 904

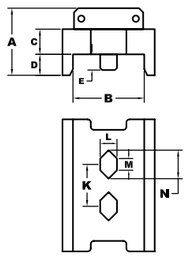
Drive Cap Layout (Diesel Hammer)



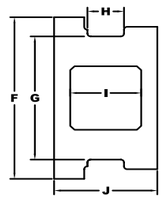
SHEET PILE INSERTS

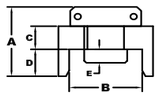
lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DCS-1	1,700 771	16 406	17 432	6 152	5 127	3.75 95	31.5 800	25.5 648	8.5 219	16.5 419	22 559	10 254	4 102	2.9 76	6.8 172		
DCS-5	3,080 1,397	18 457	19.75 502	6 203	5 127	3.5 89	42 1,067	32 813	8.5 216	16.7 425	25.5 648	12.25 312				7.75 197	37.5 952
DCS-7	4,050 1,837	18 457	20.25 514	8 203	5 127	3.5 89	48 1220	32 813	8.5 216	16.7 425	33.5 850	12.35 314					37.5 952

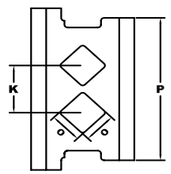




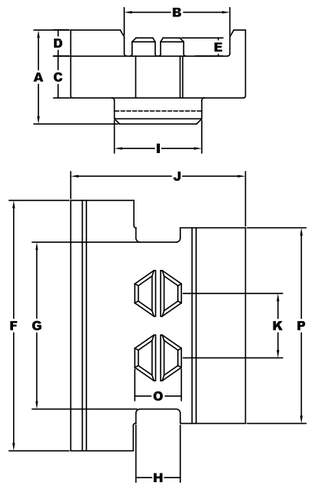
SHEET PILE INSERT DCS-1







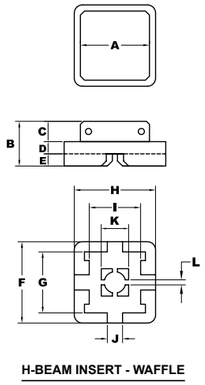
SHEET PILE INSERT DCS-5



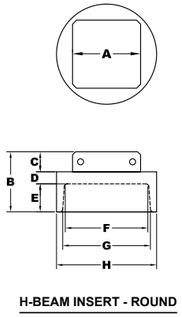
SHEET PILE INSERT DCS-7

H-BEAM INSERTS

lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H	I	J	K	L
12" (305 mm) Round	1,060 481	17 432	20 508	5 127	3 76	12 305	17 432	17.7 449	26.5 675				
14" (356 mm) Round	1,220 553	25 635	20 508	5 127	3 76	12 305	21 533	21.65 550	26.6 676				
12" & 14" (305 & 356 mm) Waffle	850 386	17 432	11 279	5 127	3 76	3 76	20 508	15 381	20 508	12.65 321	3.75 95	6.75 171	1.25 32
16" & 18" (406 & 457 mm) Waffle	2,140 971	17 432	17 432	5 127	6 152	6 152	26 660	19 482	26 660	19 482	2.5 64	13 330	2.5 64



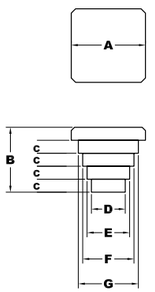
H-BEAM INSERT - WAFFLE



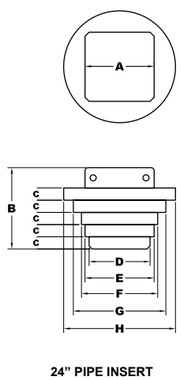
H-BEAM INSERT - ROUND

PIPE INSERTS

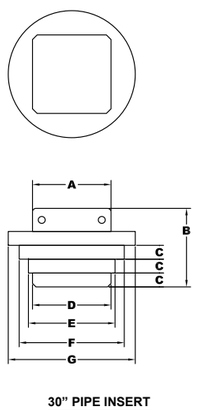
lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H
16" (406 mm)	730 331	17 432	17.1 434	3 16	7.87 200	9.85 250	11.9 302	13.85 352	
24" (610 mm)	1,770 802	17 431	20 507	3 16	15 381	17 431	18.75 476	22.5 577	26 660
30" (762 mm)	2,340 1,061	17 431	18.5 470	2.5 64	11 279	18 457	25 635	31.9 813	



16" PIPE INSERT



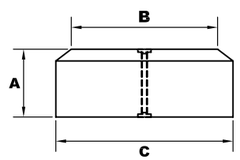
24" PIPE INSERT



30" PIPE INSERT

STRIKER PLATES

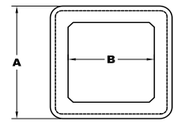
lbs / kg & in / mm	Wt#	A	B	C
17.75" (450 mm)	440 199	6 152	14 356	17.75 451
22.5" (572 mm)	650 295	6 152	18 457	22.5 572
25" (635 mm)	1,036 470	8 203	19 485	25.0 635
30" (762 mm)	1,400 635	12 305	29 737	30 762

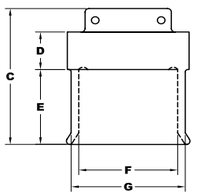


STRIKER PLATE

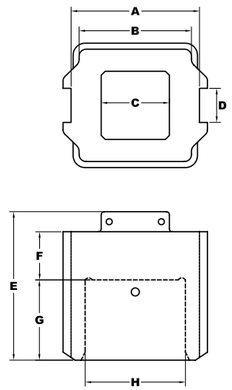
BOX INSERTS

lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H
10" (254 mm)	1,480 671	20 508	17 432	27 685	6 152	16 406	11.5 293	14.5 369	
12" (305 mm)	1,610 730	20 508	17 432	27 685	6 152	16 406	13.5 343	16.5 419	
14" (356 mm)	1,560 708	20 508	17 432	27 686	6 152	16 406	15 381	20 508	
16" (406 mm)	1,810 821	22 359	17 43 2	27 686	6 152	16 406	17 432	20 508	
18" (457 mm)	2,360 1,070	24 610	17 432	29 736	8 203	16 406	19 482	22 559	
20" (508 mm)	2,840 1,288	26 660	24 610	17 432	8.5 216	29 736	8 203	16 406	21.5 546

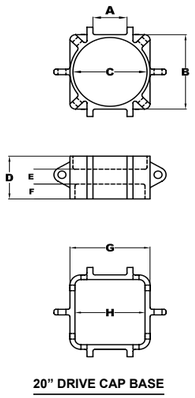




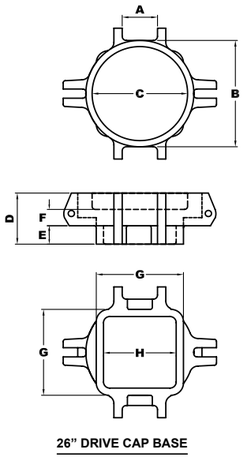
10"- 18" BOX INSERT



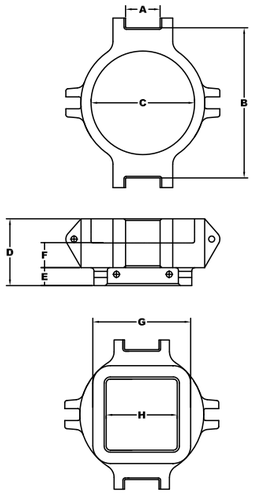
20" BOX INSERT



20" DRIVE CAP BASE



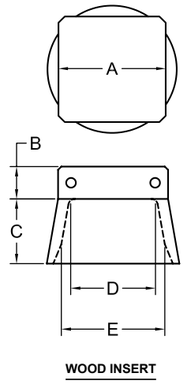
26" DRIVE CAP BASE



32" 37" & 43" DRIVE CAP BASE

DRIVE CAP BASES

lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H
20" - 4"	750	8.5	20	18.25	11.5	4	4	20	17.5
(508 - 102 mm)	340	216	508	464	292	102	102	508	445
26" - 6"	1,270	8.5	26	23	14.5	4.5	4	21	17.5
(660 - 152 mm)	576	216	660	584	367	114	101	533	445
26" - 9"	1,350	8.5	26	23	17.5	4.5	4	21	17.5
(660 - 229 mm)	612	216	660	584	443	114	101	533	445
32" - 6"	2,270	8.5	32	25.5	16.5	4.5	6	24	17.5
(813 - 152 mm)	1,030	216	813	648	419	114	153	612	445
32" - 9"	2,420	8.5	32	25.5	19.5	4.5	6	24	17.5
(813 - 229 mm)	1,097	216	813	648	495	114	153	612	445
37" - 6"	3,020	8.5	37	25.5	18.5	4.5	8	24	17.5
(940 - 152 mm)	1,370	216	940	648	470	114	203	612	445
37" - 9"	2,790	8.5	37	25.5	19.5	4.5	6	24	17.5
(940 - 229 mm)	1,266	216	940	648	495	114	153	612	445
43" - 6"	3,400	8.5	43	25.5	18.5	4.5	8	24	17.5
(1,092 - 152 mm)	1,542	216	1092	648	470	114	203	612	445
43" - 9"	4,070	8.5	43	30.5	21.5	4.5	8	24	17.5
(1,092 - 229 mm)	1,846	216	1092	775	545	114	203	612	445



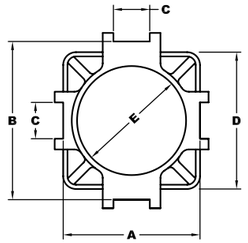
WOOD INSERT

WOOD INSERTS

lbs / kg & in / mm	Wt#	A	B	C	D	E
17"	893	20	5	11.25	15.5	17
(432 mm)	446	508	127	286	394	432
19"	1,175	19	5	18	16	19
(483 mm)	533	484	127	457	406	482

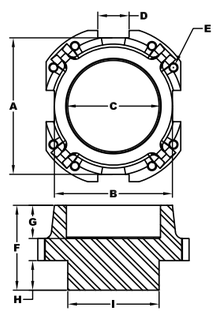
TWO PIECE BOX HELMETS

lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H	I	J	K	L	M
24"	6,350	37	32	25.5	8.5	2	23	9	8	24.75	32	37	25.5	24
(610 mm)	2,880	940	813	648	216	51	584	229	203	629	813	940	648	610
30"	8,380	43	42.5	30.5	8.5	2	23	9	8	30.75	37	43	31.5	24
(762 mm)	3,801	1092	1080	775	216	51	584	229	203	781	940	1092	800	610
36"	12,329	54	43	30.5	8.5	2	23	9	8	36.75	43	54	37.5	24
(914 mm)	5,592	1372	1092	775	216	51	584	229	203	933	1092	1372	953	610

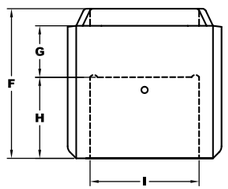


ONE PIECE BOX HELMETS

lbs / kg & in / mm	Wt#	A	B	C	D	E	F	G	H	I
24"	5,818	32	37	8.5	32	25.5	35	12	19	25.5
(610 mm)	2,639	813	940	216	813	648	889	305	483	645
30"	6,195	37	43	8.5	36	25.5	42	12	24	31.5
(762 mm)	2,810	940	1092	216	914	648	1,067	305	610	800



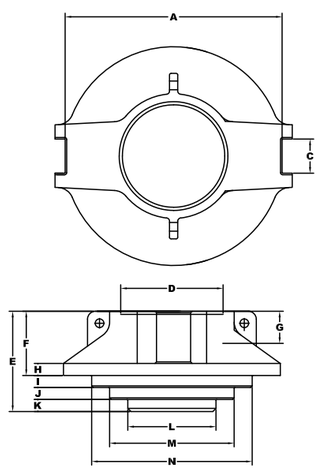
TWO PIECE BOX HELMET



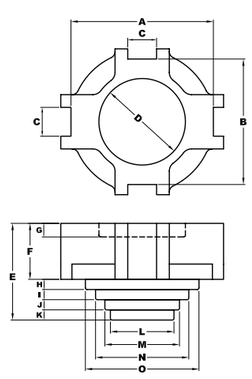
ONE PIECE BOX HELMET

PIPE HELMETS

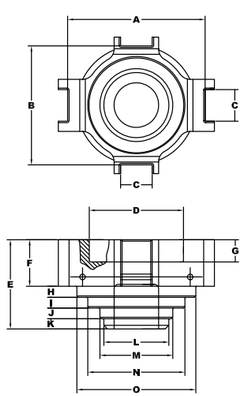
PIPE HELMETS	Wt#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
32/37" - 25.5"	3,400	17	37	8.5	25.5	24	12.5	6	3	2.9	2.9	2.75	17.5	19.6	26.1	32
(813/940 - 648 mm)	1,542	432	940	216	648	610	318	152	16	73	73	70	445	499	663	813
37/43" - 25.5"	6,660	43	37	8.5	25.5	28.5	16.5	6	3	3	3	3	18.75	22	27.5	33.5
(940/1092 - 648 mm)	3,021	1,092	940	216	648	723	419	152	16	16	16	16	476	559	699	851
37/43" - 30.5"	6,560	43	37	8.5	30.5	28.5	16.5	6	3	3	3	3	18.75	22	27.5	33.5
(940/1092 - 775 mm)	2,976	1,092	940	216	775	724	419	152	16	16	16	16	476	559	699	851
54" - 25.5"	8,910	54		8.5	25.5	25	16	8		3	3	3	22	31	40	
(1,372 - 648 mm)	4,041	1,372		216	648	635	406	203		76	76	76	558	788	1,016	
54" - 30.5"	8,810	54		8.5	30.5	25	16	8		3	3	3	22	31	40	
(1,372 - 775 mm)	3,996	1,371		216	775	635	406	203		76	76	76	558	788	1,016	



54" PIPE HELMET



37" TO 43" PIPE HELMET



32" TO 37"PIPE HELMET

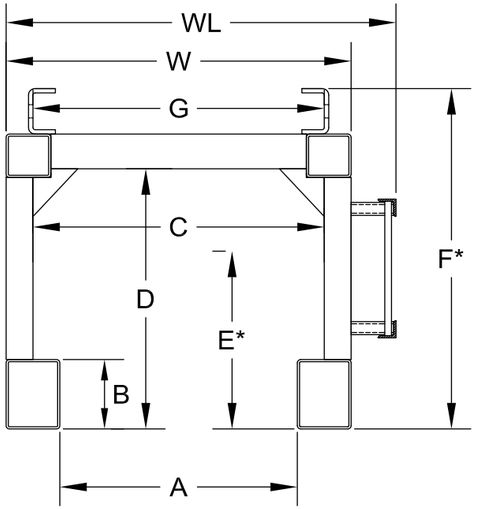
Leads Setups

APE manufactures U-type (Box) and Front-Riding (European) style leads. APE leads are pin connected, eliminating the need for nuts and bolts that can come loose or require changing after each set up. All fixed lead systems are analyzed for stresses by APE engineers. Many applications are available including fixed extended, telescoping, fixed under hung and swinging applications.

BOX LEAD DIMENSIONS

Key	8 x 21	8 x 26	8 x 32	8 x 37	8 x 43	10 x 54
A	21.50 in	26.50 in	32.50 in	37.50 in	43.50 in	54.50 in
B	8.00 in	8.00 in	8.00 in	8.00 in	8.00 in	10.00 in
C	27.50 in	32.50 in	38.50 in	43.50 in	49.50 in	62.50 in
D	30.00 in	30.00 in	34.00 in	42.00 in	46.00 in	48.00 in
E	15.29 in	15.29 in	16.94 in	20.22 in	21.87 in	28.00 in
E*	22.10 in	22.10 in	24.50 in	29.29 in	31.69 in	N/A
F	34.00 in	34.00 in	38.00 in	46.00 in	50.00 in	54.00 in
F*	39.25 in	39.25 in	43.25 in	51.25 in	55.25 in	N/A
G	27.50 in	32.50 in	38.50 in	43.50 in	49.50 in	N/A
W	33.50 in	38.50 in	44.50 in	49.50 in	55.50 in	74.50 in
WL	38.50 in	43.50 in	49.50 in	54.50 in	60.50 in	79.50 in
Weight	130 lb/ft	135 lb/ft	141 lb/ft	146 lb/tf	152 lb/ft	280 lb/ft

*Dimension with pin-up rail

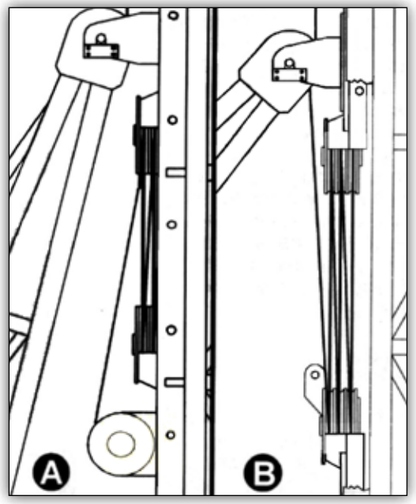


M - Average weight per foot for 100' package

Headblock

APE Boom Point Connector Sled

Boom Point Connector



Telescoping Lead System

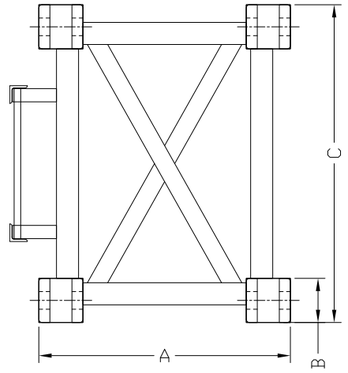
FRONT RIDING LEAD SPECIFICATIONS

DIMENSIONS	ST-70	ST-75	ST-100	ST-150	ST-190
A in/cm	28.5 in 72.4 cm	28.5 in 72.4 cm	28.5 in 72.4 cm	28.5 in 72.4 cm	37 in 91.4 cm
B in/cm	3 in 7.62 cm	3 in 7.62 cm	3 in 7.62 cm	5 in 12.7 cm	5 in 12.7 cm
C in/cm	36 in 91.44 cm	36 in 91.44 cm	36 in 91.44 cm	36 in 91.44 cm	45 in 114.4 cm
Average Weight lb/kg	70 lb 34.75 kg	75 lb 34.01 kg	100 lbs 45.35 kg	150 lb 68.02 kg	190 lb 86.16 kg

Headblock 2 or 3 line

Stabber

Foot Yoke



OFFSHORE LEADS

Lead Size	Min pile size	Max pile size	Overall length	Overall width
43"	16 in 40.6 cm	38 in 96.5 cm	39 ft 11.8 m	61 in 155 cm
54"	18 in 45.7 cm	48 in 122 cm	39 ft 11.8 m	72 in 183 cm
78"	32 in 81.3 cm	94 in 240 cm	39 ft 11.8 m	90 in 228.6 cm
Offshore leaders for up to 12 ft (3.65 m) piles are available				

APE offshore leaders are designed to give the operator the best available control during the driving of both vertical and batter (raked) piles. Pin-on offshore bells allow the greatest versatility for a standard lead section, Drive helmets and pin on drive bells are available for both pipe and concrete piles.

Spotter Setups

SPOTTERS					
Specifications		**100**	**150**	**368**	**Parallelogram**
Hydraulic Extension	m/ft	3.04/10	4.87/16	9.14/30	3.04/10
Manual Extension	m/ft	3.35/11	0	0	0
Extend Force	kg/lb	8,163/18,800	8,163/18,800	27,210/60,000	8,163/18,800
Retract Force	kg/lb	5,215/11,500	5,215/11,500	28,118/62,000	5,215/11,500
Collapsed Length*	m/ft	5.18/17	5.48/18	7.92/26	5.48/18
L/R Travel Extended	m/ft	1.82/6	9.75/32	15.84/52	9.75/32
L/R Force Extended	kg/lb	3,265/7,200	2,358/5,200	12,698/28,000	2,358/5,200
L/R Travel Retracted	m/ft	1.82/6	4.87/16	7/23	4.87/16
L/R Force Retracted	kg/lb	3,265/7,200	5,578/12,300	29,025/64,000	5,578/12,300
Maximum Width	m/ft	8	8	10	8
Weight	kg/lb	1,687/3,700	2,947/6,500	14,059/31,100	2,947/6,500
Power Lead Rotation	~	Optional	Optional	Optional	Optional
*** Distance from rear pivot to back of leads**					

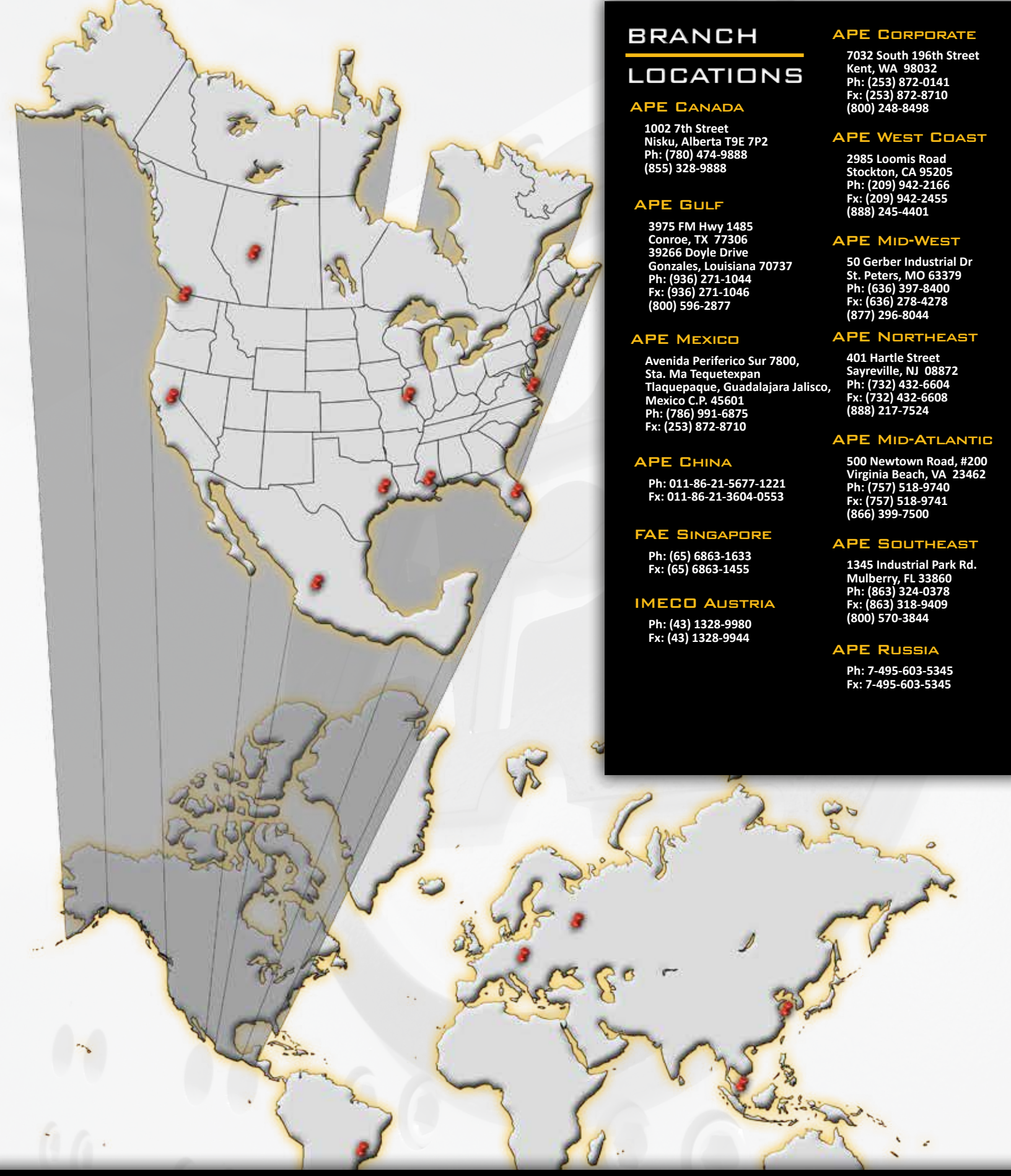
APE hydraulic spotters link the base of the leader to the house of a crane stabilizing the driving system for more accurate pile placement increasing productivity. Standard two axis, custom three axis spotters and stiff legs are available. Parallelogram spotters for composite batter control. Fixed and live spotter connections including chain driven systems With APE's design and engineering staff, APE can provide the best solution for your leader system needs.

Bottom Drives

APE Bottom Drives and pin-on offshore bells are designed reduce the overall weight of a driving helmet by utilizing a mid or top section of standard lead. Bottom drive bells can be made for multiple pile diameters greatly increasing its versatility.

BOTTOM DRIVE SYSTEMS/PIN ON OFFSHORE BELLS			
Standard leader size	**Minimum pile size**	**Maximum pile size**	**Overall length**
8 x 32 in 20.3 x 81.3 cm	16 in 40.6 cm	42 in 106.7 cm	6 ft 1.8 m
8 x 37 in 20.3 x 94 cm	60 in 152.4 cm	122 in 310 cm	8 ft 2.44 m
8 x 43 in 20.3 x 109.2 cm	32 in 81.3 cm	72 in 182.8 cm	8 ft 11.8 m
10 x 54 in 20.3 x 137.2 cm	36 in 81.3 cm	122 in 310 cm	12 ft 3.66 m
Bottom Drives for up to 12' (3.65 m) piles available including extended boots for batter/ raked piles.			

Typical Mid Lead Section



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