APE Pile Driving Course: Understanding Pile Driving Leads
Pile Driving Leads

- Box lead dimensions
- Box lead swinging
- Box lead – clip on type
- Box lead, fixed, extended
- Box lead, semi-fixed travel
- Flying hammer with boot
- Fork Lift

- Excavator mounted
- European FEC leads
- Berminghammer type leads
Swinging leads
Swinging Box
Lead 8 by 32”
Understanding Box Leads Dimensions
Typical Box Lead with Hammer

Hammer
Lead Guides
Lead
Diesel Hammer

Leads, Box
8 by 32”

Trip guide tubes
Standard Box Lead Sizes

8 by 21”
Small hammers such as D8, D16 or D19 max.

8 by 26”
Most common size leads in the industry. Hammers up to about 70,000 ft-lbs or D-30.

8 by 32”
Becoming most popular lead size. D36, D46, D62 size hammers.

8 by 37”
Used when contractor needs to drive larger pile sizes.
Non-Standard Box Lead Sizes

43”  56”  72 or 78”
Typical Lead Lengths

20 foot taper top

10 footer

40 footer

Bottom Stabber Section
Connecting Box Leads
Example of Bolt Type Connection

This is a standard LB Foster or ICE bolt together type lead connection.
Diesel Hammer with lead guides for 8 by 26 inch leads
Swinging Box Leads 8 by 32”
Rigging to top of swinging leads

Note: Shackles pins must be wired off!
Two part sheave block with swivel. Long cable is treads through the trip sheave and back to the hook. This keeps the block away from the diesel hammer piston.

Note how a long cable is used to rig tripping device.
Fixed, Extended leads and Swinging Box Leads with Taper Top 8 by 32”
Swinging Leads
With Roller At Top
Fixed, Extended Leads

- Headblock
- Rooster Sheaves
- Leads
- Spotter
- Gate

Requires more components than simple swinging lead set up.
Fixed, Extended Lead

Lead, extended above crane boom
Diesel hammer
24 inch pipe piles
Pile Gate (Combination Rabbit)

Note: Spotter pushing lead into a batter position called “left side batter”
Fixed, Extended Leads

Note: Boom tip connector can be moved.
Boom Tip Connector
With Sled
Massive boom tip connector
Example of fixed boom point
Two cranes help assist piling crane in picking fixed lead system
Connection to crane boom

Ears welded to crane boom.

Not a good practice.
Boom tip connector is fixed because it is connected to a spot on the leads that cannot be moved up or down.

Note: This design is a job site modification to the crane and is not recommended.
One type of Boom tip connector with bolt on mounting plate.
Fixed boom point connector

This is part of the lead.
Sliding boom point with easy install pin.
Simple drawing of Boom Point

- Diameter: 8 7/8''
- Radius: 4 3/4''
- Length: 24''
- Width: 34''
- Height: 2''
- Tolerance: 4.753'' ± 0.002/ -0.000''
Example of contactor fabricated sliding boom tip connector
Sliding boom tip that is fixed.

*Sliding Boom Tip Connector that has been pinned off to a fixed position.*
Headblock
APE HEADBLOCK
WITH AUGER SHEAVE
Headblock with side sheave for using an auger.
Typical Spotter

17ft. RETRACTED 37ft. EXTENDED
Spotter to Lead Connections

Ladder Safety Device
Fixed Leads
with Vibro in Front

Note: Swinging leads can be fit to front of fixed leads to allow for larger hammer to fit smaller leads.
Top View of Vibro in Leads
Vibros in Leads
Forklift Mounted Leads
Power Unit Leaders
Power Unit Support Leaders
Power Unit
Supported Leads
Vibros In Leads
Vibros
In Leads

Driving thousands of H-Beams with vibros in Leads
Hammer in front of leads
Lead Adapter
Spotters
Spotters
Fixed, Extended Travel Leads
Fixed, Extended, Vertical Travel
Vertical Travel Leads
Pogo Stick in a Vertical Travel Leader Type System

Note: Leads Can Be Moved Up Or Down Using Crane Main Block
Inside Pogo Stick Lead

Boom tip sides up and down on back of leader.

Stops are welded to top of leader to allow crane operator to boom up and pick leads.

Note: Hammer faces crane operator.
Do not read crane charts based on crane boom and lift from this point.

Crane load charts calculate from here.

Dangers of extending Leads

Crane lifting capacity is based on many factors including the length of the boom.

Extending the boom reduces lifting capacity.

When extending the leads above the boom, please have all lifting calculations reviewed by a qualified engineer and the crane manufacturer.

Distance from crane center changes when adding fixed leads and spotting back.
Boot Leads
Boot Leads
(John Lucas)
Boot Leads
Boot Leads

IHC Hydraulic Impact
and
Woodrow Wilson Bridge
Boot Leads

Boot or pile guide is mounted to bottom of IHC hammer to be used as a leader system.
Boot Leads

APE Model 400 with 400,000 ft pounds and 80,000 lb ram.

Hydraulic and Underwater
Flying Leads On Batter
Flying Leads
Flying Leads On Oil Rig
Off Shore Leads

Flying Leads
Barge Mounted

D100 diesel hammer
New technology
Bottom drive leads for large pipes.
APE D80 Drives 84" Piles

This photo shows the new APE 37 inch box type leads with a new development pile driving system for super large diameter pipe piles.

This new system is called the "Bottomdrive". It has a much lighter hanging weight and a much lower center of gravity.

The system was first used in California by Lucas Marine. It is now commonly used on many large diameter pile projects.

Another added feature is the ability to drive the pile closer to the ground which is impossible with a conventional offshore type leader system.

If you need to drive large diameter pipe or caissons then this is the only way to go. It is fast, simple, and your crane operator will love it.

Contact Joe Wright at APE Houston for additional information.

This design was jointly manufactured by APE and Bomac Contractors of Houston, Texas.

APE D100 driving ten foot diameter caissons in California with FlatIron
Bottom Drive
Excavator Leads
Excavator Leads
Excavator Leads
Excavator Leads
Excavator Leads
Excavator Leads

APE Diesel Mounted In Leads
Excavator Leads

Model APE 8A driving pipe piles under a bridge in California
Excavator Mounted Leads
Excavator Leads
Excavator Leads
Special Leads

For driving pipe piles right next to each other.
APE rack and pinion drive leader system
Excavator Leads
Excavator Leads
Excavator Leads
Vibros in Leads

This photo shows an MKT V-20 mounted in leads for the West Seattle Bridge Project in the early 1980’s.

It was the first time a vibro was mounted in leads on the West Coast of the USA.
Vibros in Leads

APE Model 400 mounted in front of leads to drive pipe piles.

San Francisco, California

Kiewit Construction
Vibros on Forklift Leads
Leads for Wick Drains
Vibros in Leads
Leads with Pull down