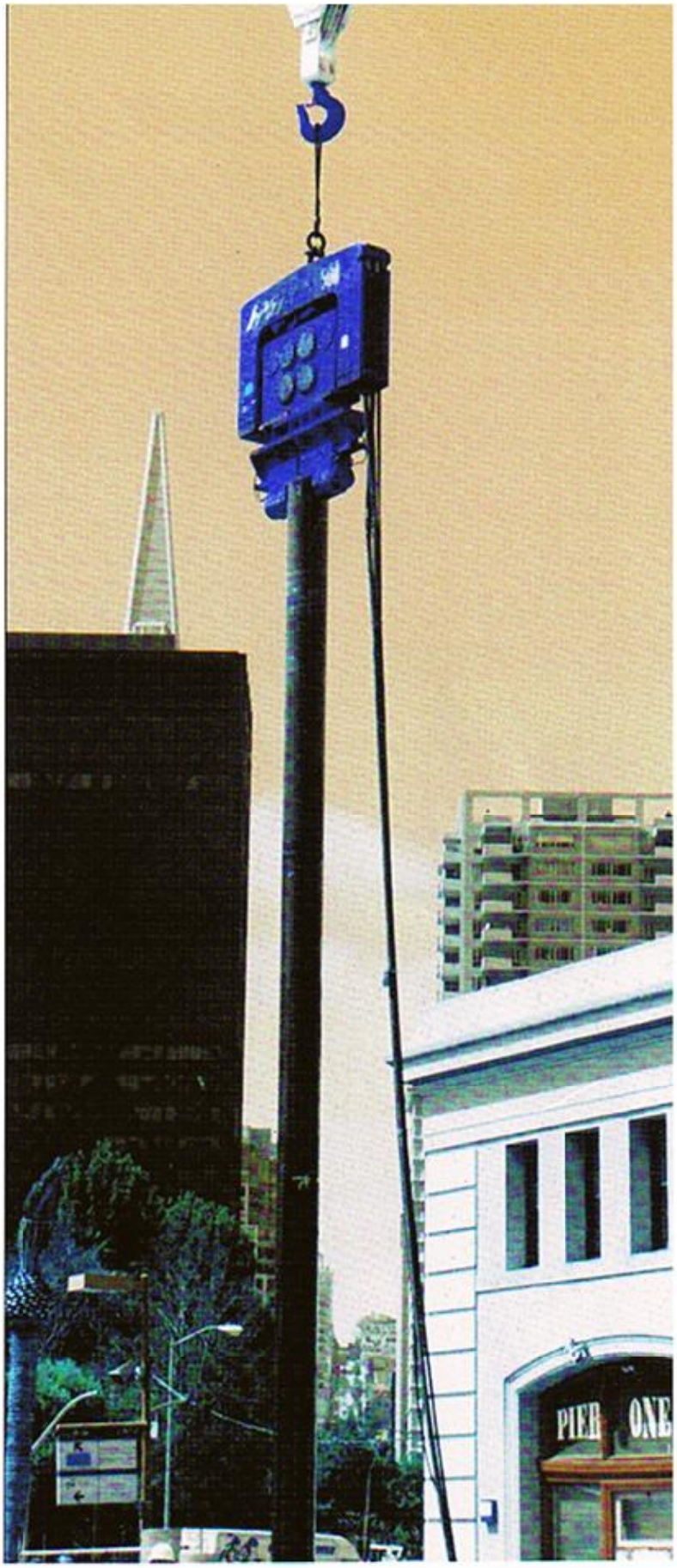
Vibratory Pile Driving Equipment



PACO Equipment | USA (WA/CA) - CANADA (Alberta / BC / Saskatchewan)
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Introduction

HPSI Vibratory Driver/Extractors have been designed to be as dependable and free of downtime as any product available in today's construction market. Some of the features to make these products the most reliable machines today are as follows:

Gear Box Fabrication

Supplied with quality steel free of laminated plate. All welds are full penetration welds and every gear box is stress relieved after fabrication.

Vibration Supressors

Furnished by one of the worlds leaders of rubber mounting and shear block products for years of dependable service.

Eccentric Gears

Produced from high quality alloy steel requiring no additional heat treating or hardening of the gear teeth.

Eccentric Bearings

Manufactured only by quality state-of-the-art bearing companies to our highest standards.

Hydraulic Motors

HPSI takes pride in using only the best hydraulic motors and pumps available in the industry.

Model 1600 driving 150' pipe on San Francisco wharf project

Clamp Housings
All steel castings from foundries with expertise in casting products of perfection.

Seals and Gaskets
From the die cut eccentric cover and gear case cover gaskets, to the quality 5,000 psi clamp seals, HPSI units are fully capable of underwater use and free from oil leaks.

Hose Bundles
Scuff-resistant hydraulic hose covers add longer hose bundle life to the hammers.

Power Pack Units
Powered by reliable diesel engines as indicated, or per our customers' preference.

Remote Controls
Air remote pendants of 35 feet are standard on most units with optional radio remotes available.

Sound Enclosures
Sheet metal enclosures are standard on most vibratory packages. Reduced sound enclosures are available as an option on any HPSI power unit.

Model 250 driving sheets in St. Louis.

Model 150 w/50 ton caisson clamp assembly.

Special Applications

- Underwater
- 90° Turning Plate
- Stingers
- Lead Adapters
- Low Headroom Clamp
- Excavator Mounted
- Biodegradable Hydraulic Oils

Vibratory Hammer Specifications

Exciter	Model 100		Model 150L		Model 150		Model 200		Model 250		Model 260	
	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
Eccentric Moment (in lbs, kgm)	1,000	11.5	1,500	17.3	1,500	17.3	2,000	23.0	2,500	28.7	2,600	30.0
Dynamic Force (tons, tonnes)	36	32	55	50	55	50	73	66	91	82	95	86
Frequency (VPM)	1,600	1600	1,600	1600	1,600	1600	1,600	1600	1,600	1600	1,600	1600
Amplitude (in, mm)	1.0	25.4	1.0	25.4	.875	22.22	.875	22.22	1.0	25.4	.80	20.32
Pile Clamp Force (tons, KN)	50	445	50	445	50	445	150	1335	150	1335	150	1335
Maximum Crane Pull (tons, KN)	25	222	30	267	30	267	45	400	45	400	60	534
Suspended Weight (lbs, kg)	4,210	1913	4,250	1931	7,050	3204	8,600	3910	8,600	3910	10,750	4886
Length (in, mm)	60	1524	83	2108	87	2210	95	2413	95	2413	95	2413
Width @ Throat (in, mm)	12	304	14	356	14	356	14	356	14	356	14	356
Height (in, mm)	64	1626	63	1600	78	1981	85	2159	85	2159	96	2438

Power Unit	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
Engine	Cummins		3116 Cat		3116 Cat		3306 Cat		3406 Cat		3406 Cat	
Power (HP, KW)	110	82	210	157	210	157	300	224	335	250	335	250
Speed (RPM)	2,500	2500	2,400	2400	2,400	2400	2,100	2100	2,100	2100	2,100	2100
Operating Pressure (PSI, BAR)	2,500	170	2,500	170	2,500	170	5,000	345	5,000	345	5,000	345
Flow (GPM, LPM)	60	227	120	454	120	454	70	265	96	363	96	363
Weight (lbs, kg)	5,250	2386	7,800	3538	7,800	3538	11,000	4990	11,500	5216	11,500	5216
Length (in, mm)	98	2489	108	2743	108	2743	144	3658	144	3658	144	3658
Width (in, mm))	42	1066	48	1219	48	1219	60	1524	60	1524	60	1524
Height (in, mm)	75	1905	78	1981	78	1981	95	2413	95	2413	95	2413

Model 300		Model 400		Model 450		Model 500		Model 1200		Model 1600		Model 2000	
(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
3,000	35.0	4,000	46.0	4500	52.0	5,000	58.0	12,000	138	16,000	184	20,000	230
109	99	145	132	164	149	182	165	334	304	445	405	480	436
1,600	1600	1,600	1600	1600	1600	1,600	1600	1,400	1400	1,400	1400	1,300	1300
.875	22.22	1.12	28.5	1.0	25.4	1.12	28.5	.75	19.0	1.0	25.4	1.0	25.4
200	1780	200	1780	200	1780	200	1780	600	5340	600	5340	600	5340
60	534	75	667	75	667	75	667	150	1335	150	1335	150	1335
10,750	4886	13,600	6182	17000	7730	17,000	7730	44,340	20155	52,500	23860	54,000	24545
95	2413	102	2590	102	2590	102	2590	132	3353	132	3353	144	3658
14	356	14	356	14	356	14	356	36	914	40	1016	40	1016
96	2438	102	2590	102	2590	102	2590	103	2616	103	2616	128	3251

(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)	(US)	(METRIC)
3406 Cat		3408 Cat		3412 Cat		3412 Cat		Cummins		Cummins		Cummins	
400	300	505	378	600	448	700	522	1200	897	1,600	1196	1,600	1196
2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100	2,100	2100
5,000	345	5,000	345	5,000	345	5,000	345	5,000	345	5,000	345	5,000	345
115	435	140	530	192	727	202	764	280	1060	400	1514	400	1514
11,500	5216	15,000	6804	16,500	7484	16,500	7484	37,120	16838	48,000	21818	48,000	21818
144	3658	164	4166	184	4674	184	4674	276	7010	276	7010	276	7010
60	1524	66	1676	66	1676	66	1676	96	2438	96	2438	96	2438
95	2413	102	2590	103	2616	103	2616	120	3048	120	3048	120	3048

Accessories

Universal Sheeting Clamp

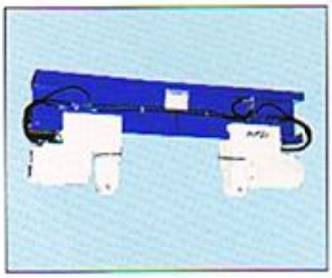
Sheeting clamps with 200 tons of clamping force are standard on HPSI 200 and larger hammers. They allow driving of most commonly driven sections of sheeting.

Concrete Pile Puller

150 tons of clamping force available for a maximum of 24" concrete pile.

Caisson Clamp

HPSI caisson clamps available with 35, 50, 125 and 150 tons of clamping force for driving 12" to 15' diameter pipe. Hydraulic locking devices eliminate moving of clamps during driving.



Shipping Stand

For ease of shipping and convenience of storing on barges and limited access job sites.

Four Point Clamp

Standard on Models 1200, 1600 and 2000. Available as an accessory assembly for use with the Model 500 and smaller vibratory hammers.

Wood Pile Clamp

Models 8" to 18" and 10" to 20" are available for all vibratory hammers and are operated by 2500 P.S.I. hydraulic cylinders.

Radio Remote Control

Available for all vibratory models. Controls vibro, clamp, engine rpm and emergency stop.

Other Custom Designed Accessories are Available to Solve Your Pile Driving Equipment Needs

Let Our Experience Work For You Today!

Engineering Data

Technical data on vibratory pile hammers can often be useful when selecting a machine for a particular application.

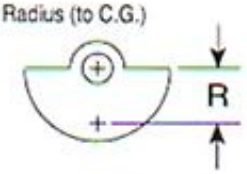
It is very useful to select a machine with the right combination of eccentric moment, amplitude, dynamic force, hydraulic horsepower, engine horsepower and total weight for a particular application.

The following information may be valuable in your selection of equipment for your job.

Eccentric Moment

A value in inch pounds equal to the weight of the eccentric multiplied by the distance from the center of rotation to the center of gravity of the eccentric.

Eccentric Moment = Weight x Radius (to C.G.)



Centrifugal Force

A weight rotating about a center of rotation at a fixed radius equal to outward force.

$$\text{Centrifugal Force, lbs.} = \frac{\text{Weight x Radius x RPM x RPM}}{35204}$$

Clamp Force

The area of the piston rod head of the clamp multiplied by the available clamp pressure of the Power Pack. Clamp force is very important to the life of the jaws of the clamp.

$$\text{Clamp Force Tons} = \frac{\text{Dia}^2 \text{ x } .7854 \text{ x Pressure}}{2000}$$

Hydraulic Horsepower

Output horsepower of the hydraulic motors is equal to the actual gallons per minute of hydraulic oil being delivered multiplied by the maximum relief setting of the hydraulic system. It is important when reviewing hammer specifications that the diesel engine horsepower is capable of providing more power than is required to achieve the required hydraulic horsepower. Without this horsepower available, it is not possible to maintain frequency to obtain maximum driving forces.

$$\text{Hydraulic Horsepower} = \frac{\text{GPM x Pressure}}{1714} \div \text{Motor Efficiency}$$

Dynamic Forces

Also sometimes known as driving force, is the force generated by the rotation of the eccentrics. The driving force is the product of the eccentric moment multiplied by a constant multiplied by the steady state frequency squared.

$$\text{Force Tons} = \frac{\text{Eccentric Moment x .0142 x Frequency}^2}{1{,}000{,}000}$$

Driving Amplitude

The total vertical travel of the vibrating mass including the vibrating portion of the Exciter and the weight of the pile being driven.

$$\text{Amplitude in inches} = \frac{\text{Eccentric Moment}}{\text{Vibrating Mass}} \text{ x } 2$$

Vibrating Mass

In determining the drivability of very heavy pile such as caissons, it is helpful to know the vibrating mass of the particular machine you are using. With known factors of eccentric moment and amplitude, the vibrating mass may be expressed as follows.

$$\text{Vibrating Mass} = \frac{\text{Eccentric Moment x 2}}{\text{Amplitude}}$$

Caisson Weight

To calculate the total vibrating mass for determining available amplitude, it is necessary to know the weight of the caisson. The simplified formula for pipe is shown as

$$\text{Weight per Foot} = \text{O.D. of Pipe} - \text{Wall Thickness x Wall Thickness x } 10.68$$

Model 130 installing wick drains

Model 260 Exciter

Model 150 Exciter

Model 500 Exciter

Model 20 Exciter

80E Excavator Mounted Exciter

Model 450 Extracting 24" Concrete Pile

- Diesel, gasoline and electrically-driven hydraulic power units
- Hydraulic drilling equipment
- Barge and rail movers
- Hydraulic impact hammers
- Hydraulic vibratory pile hammers
- Add-on crane drums
- Winch systems
- Rigging accessories
- Hydraulic winches
- Jet pumps
- Control systems
- Hydraulic system design
- Special applications
- Custom manufacturing

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