

# HYDRAULIC HAMMERS

## DAWSON

### *INNOVATIVE PILING EQUIPMENT*



***The Fastest Hydraulic Hammers in the World.***

# *The Finest Hydraulic Hammers on the Market*

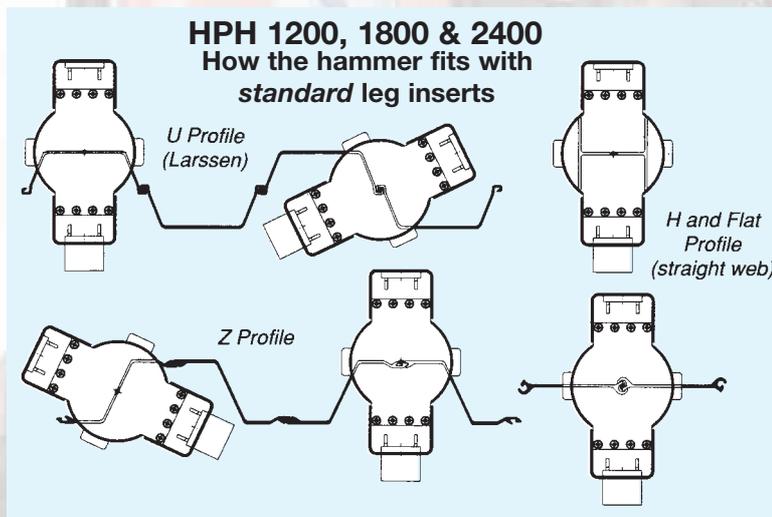
## The Principal Advantages

- **Unrivalled production rates** – rapid blow rates saves time and money, whole project duration is shortened
- **Rapid blow rates** – "chisel" through compacted sands, out-driving much heavier slower hammers
- **High energy transfer efficiency to the pile** – smaller hammer outperforms older more cumbersome equipment
- **Optimum energy output** – potentially damaging high impact velocities are avoided by careful selection of ram mass; specially important with concrete piles
- **Variable energy output** – infinitely adjustable between min/max at the touch of the button, any time during the drive
- **Blow control at the touch of a button** – from single blows at the start of the drive to automatic blows for rest the operator has total control for a quality pile install
- **Versatility** – all hammers are designed to be truly multi-tasking so as to meet the demands of the modern contractor
- **All hydraulic operation** – the absence of electronic components produces simple and reliable functionality
- **Compact enclosed design** – simplifies application and handling whilst protecting vital components
- **Simple integration with alternative power sources** – can be operated from hydraulic excavators, hydraulic crawler cranes or non-Dawson hydraulic power packs

## Driving Steel Sheet Piles – Free Hanging

Steel sheet piles are more often than not driven using some form of vibrator either lead mounted e.g. the ABI Mobilram, or suspended "free hanging" from a crane. When the vibrator is effective it is a method that is hard to beat with current technology. However, all too often it will fail to put the piles all the way down. Time to stop using the vibration technique, even a bigger vibrator will struggle. Instead resort to using an impact hammer – and it makes sense to select one that hits hard, hits fast and has a good chance of interfacing with numerous pile types (particularly single sheets when following on from a struggling vibro that has left piles at different heights).

The HPH1200/1800/2400 & 6500 were designed as standard to permit the hammer to be self-supporting on as many sheet pile sections as possible. Just for good measure, the standard Leg Guides and Inserts permit the hammer to fit numerous H-piles too! The Inserts are suspended within the Leg Guides on elastomers that are kept under compression. When installed on a pile the Inserts are forced apart against the elastomers so they take a powerful hold on the pile top. It is this that keeps the hammer perfectly in-line with the pile during driving and keeps the hammer moving down with the pile – all very important for preventing pile damage and ensuring efficient energy transfer.



In the case of the HPH2400 and HPH6500 special off-set leg inserts can be supplied to drive larger pairs of sheet piles.



The addition of a simple spreader plate under the standard drive cap or Anvil permits all Dawson hammers to achieve almost total head coverage on any pair of sheet piles. This significantly reduces the likelihood of pile top damage in difficult driving.

## ***Driving Bearing Piles – Free Hanging***

Steel sheet piles are not the only type of piles to be driven free hanging. It is often necessary to drive numerous types of bearing pile using this technique also.

Again, this has been planned into the basic hammer design from the very start. The standard Leg Guide and Leg Inserts allow numerous H-piles to be driven free hanging with the HPH range.



*HPH2400 on Ø508 x 60m Tubes - Scotland*



*HPH1200 on 305 x 305 Columns - Singapore*



*HPH1200 on 350 x 350 Concrete Piles - UK*

The HPH1200, 1800 and 2400 models can be readily adapted to drive Pipe, Timber, Concrete and many other bearing pile types. The standard Leg Inserts can be quickly removed then substituted with simple alternative guides.



*HPH6500 with Universal Guide Sleeve Ø864 x 20m Tubes - UK*



*HPH6500 with Ø1420 Guide Sleeve driving 30m long Combi-Wall Caissons – Hamburg, Germany*

The HPH6500 has a flange at the bottom end of the hammer casing. This permits various types of Guide Sleeve to be fitted so as to accommodate numerous piles types and sizes. A Universal Guide Sleeve is available that will fit pipe sizes up to Ø914mm (36"). Guide Sleeves can be fitted out with Adaptors so as to interface with H-piles, concrete piles etc

## ***Driving Piles – Lead Mounted***

The method of attaching a Dawson HPH Hydraulic Hammer to any given leader has been planned into the basic hammer design.

Whether it be an HPH1200 fitted to an ABI Mobilram or an HPH1800 or HPH2400 fitted to American style U-leads (21" or 26" respectively) or an HPH6500 fitted to conventional European leads the method of attachment is straightforward. The key to interfacing with different pile types whilst lead mounted is to keep the solution simple.



*HPH6500 on European swinging leads driving HP400 x 47m long on 1.4:1 rake (approx. 32° to the horizontal) – Hamburg, Germany*



*HPH6500 on 32" American leads driving 14" H-pile x 130' long to bearing of 450 ton – Northern Kentucky, USA*



*HPH1200 on ABI Mobilram driving pairs/single steel sheet piles - UK*



*HPH2400 fitted in 26" American leads driving 12" H-pile on a 2:3 batter – Chicago, IL, USA  
Note the simple lead guide design with H-pile guide box fitted in place of standard Leg Inserts*



## **Additional Equipment**

A full range of accessories are available from Dawson to help solve numerous pile driving challenges. If it is not contained within this brochure please do not hesitate to contact us to discuss your requirements – there is a good chance we may have met the challenge successfully before.



### **Hydraulic Interface Control Module**

Integrates the HPH Hydraulic Hammer range with a vast array of hydraulic power sources e.g. crawler crane, power packs etc, with minimum installation effort.

Maximum flow input 400 l/min (107 gpmUS)  
 Maximum pressure input 350 bar (5,075 psi)  
 Unit requires a 24V/5A power supply

### **Underwater Pile Driving**

All Dawson hammers can be fitted with underwater kits. This, together with an adequate compressed air supply to the hammer, makes the hammer suitable for driving piles fully immersed in water. "Pile Followers" or "Dolly Piles" are not required and there is no reduction in delivered energy. Piles have been driven to a depth of 60m but it is possible to operate at greater depths – please consult us for advise.



### **Energy Monitoring System (EMS)**

The EMS is an electronic system developed by Dawson for monitoring and recording hammer performance during the pile driving process.

This system produces driving records and provides critical feedback to site personnel. Optional on new HPH1800, 2400 & 6500's and retrofittable on older HPH1800's and 6500's, the system is supplied in two modules.

One module is installed inside the hammer in a sealed data collection box connected to monitoring sensors. The other module is installed inside the hydraulic power pack – this is where the electronic brain is housed - in relative safety. On new hammers this option is supplied with a revised control pendant that displays EMS data in front of the operator as well as on the power pack instrumentation panel.

Communications between the hammer and power pack are by radio link so there are no electrical cables to get in the way. The hammer module is fitted with long service life disposable batteries. For underwater use a cable is installed between the hammer and power pack.

Functionality of the hammer remains completely independent of the EMS. In the unlikely event that the EMS should malfunction, the hammer will continue to function completely as normal.

# Technical Specifications

Specification	Units	Hammer Type							
		HPH1200	HPH1800	HPH2400	HPH4500	HPH6500	HPH10K	HPH12K	HPH15K
<b>Hammer</b>									
Ram Weight	kg	1,040	1,500	1,900	3,500	4,650	8,000	10,000	12,000
	lbs	2,300	3,300	4,189	7,840	10,250	17,650	22,050	26,450
Impact Velocity	m/s	4.76	4.99	4.98	5.05	5.25	5.00	5.00	5.00
	ft/s	15.60	16.40	16.30	16.60	17.20	16.40	16.40	16.40
Maximum Pile Energy	kg.m	1,200	1,900	2,400	4,500	6,500	10,000	12,000	15,000
	ft.lbs	8,680	13,750	17,360	32,560	47,000	73,750	88,500	110,600
Maximum Momentum	kg.m/s	4,950	7,485	9,462	17,675	24,413	40,000	50,000	60,000
	lbs.ft/s	35,880	54,120	68,281	130,144	176,300	289,460	361,620	433,780
Blow Rate	bpm	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120
Length - Lead Mounted	mm	3,800	3,930	4,430	4,650	5,350	6,500	6,500	6,500
	ins	150	155	175	183	210	256	256	256
Length - Free Hanging with Sheet Pile Leg Guides	mm	4,670	5,050	5,300	5,500	6,458	-	-	-
	ins	184	199	208	216	137	-	-	-
Length - Free Hanging with Guide Sleeve	mm	-	-	-	5,597	6,310	7,500	7,500	7,500
	ins	-	-	-	220	249	295	295	295
Weight - Lead Mounted	kg	3,000	4,250	6,000	8,500	10,400	15,000	17,000	19,000
	lbs	6,600	9,350	13,227	19,000	23,300	33,000	37,400	41,800
Weight - Free Hanging with Sheet Pile Leg Guides	kg	3,000	4,250	6,000	10,750	14,600	-	-	-
	lbs	6,600	9,350	13,227	23,700	32,700	-	-	-
Weight - Free Hanging with Guide Sleeve	kg	-	-	-	10,000	13,500	23,000	25,000	27,000
	lbs	-	-	-	22,040	29,750	50,700	55,100	59,500
Weight - Ram removed for transport	kg	-	-	-	-	-	11,000	13,000	15,000
	lbs	-	-	-	-	-	24,250	28,660	33,100
<b>Power Pack</b>									
Diesel Engine Power	kW	40	50	68	129	150	400	400	400
	hp	54	67	90	173	200	536	536	536
Hydraulic System Pressure	bar	230	230	230	255	260	180	220	260
	psi	3,300	3,300	3,300	3,700	3,800	2,610	3,190	3,770
Oil Flow Rate	l/min	75	105	150	230	260	750	750	750
	gpm	20	28	40	61	69	200	200	200



HPH1200 running from IHI Hydraulic Crawler Crane - UK



HPH1200 running from Hydraulic Excavator with Delmag style Leads - Germany



HPH1200 running from H&M Vibrator Power Pack - USA

## About us

The name Dawson has become synonymous with the highest standards of piling installation. The unique combination of contracting experience blended with mechanical engineering originality and know-how has resulted in a range of truly innovative, highly productive and inherently safe products.

Company headquarters are located on a seven-acre site in Milton Keynes, the newest city in England, where the factory and offices occupy 46,000 square-feet of modern engineering investment. A highly trained, versatile and capable workforce ensures the company has the experience necessary to produce world class products. Investment in the latest production technology and manufacturing systems ensures this experience is harnessed.



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