



DAWSON
CONSTRUCTION PLANT LTD

PRODUCT SUMMARY

INNOVATIVE PILING EQUIPMENT



Est. 1974-2014



HYDRAULIC PILING HAMMERS

Principal Advantages

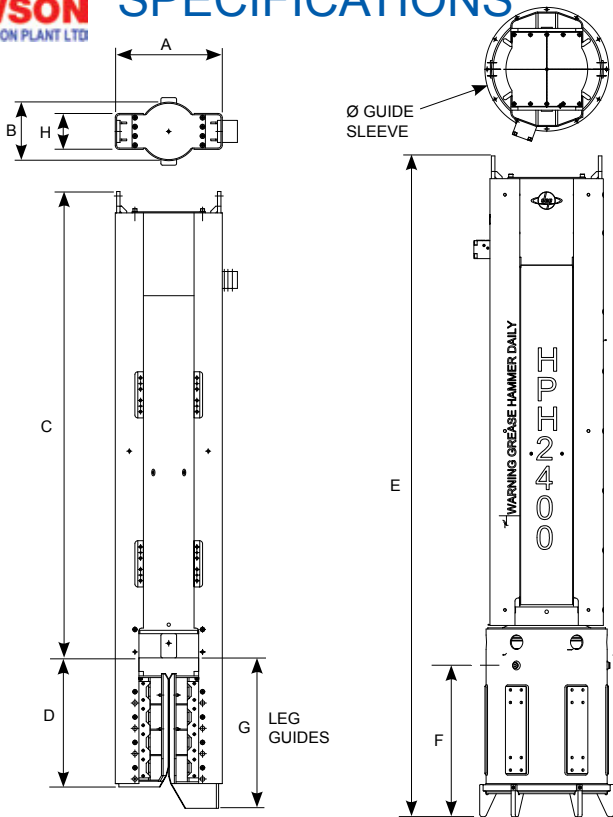
- Unrivalled production rates - rapid blow rates save time and money, shortening project duration
- Rapid blow rates - “chisel” through compacted sands, out-driving heavier, slower hammers
- High energy transfer efficiency to the pile - smaller hammer out performs older more cumbersome equipment
- Variable energy output - stepless adjustment between limits at the touch of a button, with single or automatic blow regulation, these hammers offer complete control of the driving process
- 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
- Versatility - all models are designed to be truly multi-tasking, driving a huge range of pile types either free-hanging or leader mounted
- All Dawson hammers can operate under water in excess of 100m in depth
- Hammers can be crane suspended & Rig mounted





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TECHNICAL SPECIFICATIONS



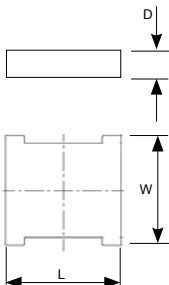
Weights & dims for guidance only & may vary according to application. Hammers can be leader mounted & configured for most pile types. Please contact Dawsons for further information.

SPECIFICATION		UNITS	Hammer Model						
			HPH1200E	HPH1800E	HPH2400E	HPH4500	HPH6500	HPH10000	HPH15000E
HAMMER									
RAM WEIGHT	kg	1,040	1,500	1,900	3,500	4,650	8,000	12,000	
	lbs	2,300	3,300	4,189	7,840	10,250	17,650	26,450	
IMPACT VELOCITY	m/s	4.76	4.99	4.98	5.05	5.25	5.00	5.00	
	ft/s	15.60	16.40	16.30	16.60	17.20	16.40	16.40	
MAXIMUM IMPACT ENERGY	kgm	1,200	1,900	2,400	4,500	6,500	10,000	15,000	
	ft lb	8,680	13,750	17,360	32,560	47,000	73,750	110,600	
MAXIMUM MOMENTUM	kg.m/s	4,950	7,485	9,462	17,675	24,413	40,000	60,000	
	lbs ft/s	35,880	54,120	68,281	130,144	176,300	289,460	433,780	
BLOW RATE	bpm	80-120	80-120	80-120	80-120	80-120	60-120	80-120	
WEIGHT - WITH SHEET PILE LEGS + SPREADER PLATE	kg	3,000	4,250	7,000	10,750	14,900	-	-	
	lbs	6,600	9,350	15,400	23,700	32,780	-	-	
WEIGHT - WITH GUIDE SLEEVE	Ø914	kg	-	-	7,600	9,600	12,600	21,000	-
		lbs	-	-	16,720	21,120	27,720	46,300	-
	Ø1220	kg	-	-	-	-	13,900	22,300	37,000
		lbs	-	-	-	-	30,580	49,160	81,400
	Ø1450	kg	-	-	-	-	15,600	24,000	-
		lbs	-	-	-	-	34,320	52,900	-
	Ø1530	kg	-	-	-	-	-	-	39,500
		lbs	-	-	-	-	-	-	86,900
All dimensions in mm	A	700	800	950	1335	1050	1200	1800	
	B	Ø406	Ø470	Ø520	Ø640	Ø750	Ø850	1150	
	C	3762	3960	4240	4278	4927	-	-	
	D	950	1036	1145	1260	1458	-	-	
GUIDE SLEEVE TO SUIT MAX. TUBE DIA. (mm)	Ø914 Ø1220 Ø1450 Ø1530	E	-	-	5690	5597	6310	6800	-
		-	-	-	-	6371	6861	7055	
		-	-	-	-	6340	6800	-	
		-	-	-	-	-	-	8300	
	Ø914 Ø1220 Ø1450 Ø1530	F	-	-	1040	1307	1373	1373	-
		-	-	-	-	-	1375	1375	1150
		-	-	-	-	-	1310	1310	-
		-	-	-	-	-	-	-	2340
LEG GUIDES	G	1130	1216	1335	1400	1600	-	-	
	H	280	280	320	550	620	-	700	
POWER PACK									
DIESEL ENGINE POWER	kW	93	93	93	120	168	224	470	
HYDRAULIC SYSTEM PRESSURE	bar	240	230	230	250	270	270	280	
OIL FLOW RATE	L/min	75	105	150	230	270	390	850	
WEIGHT	kg	2000	3000	3000	3200	4800	7800	12000	

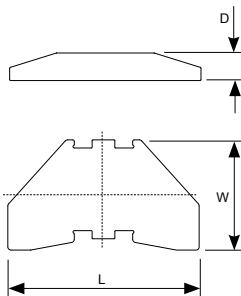


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SPREADER PLATES



TYPICAL
SPREADER PLATE
PROFILE OF 1-161-00-01



DELTA
SPREADER PLATE
PROFILE OF 2-174-00-01

HAMMER SPREADER PLATES

Spreader Plate	Dimensions LxWxD	Type	Hammer Model
1-160-00-01	650 x 530 x 125	Std	HPH1200
1-161-00-01	460 x 434 x 125	Std	HPH1200
1-167-00-01	630 x 480 x 125	Std	HPH1200
1-162-00-01	940 x 440 x 125-130	Std	HPH1200
18-160-00-01	550 x 530 x 125	Std	HPH1800
18-167-00-01	870 x 515 x 125	Std	HPH1800
18-166-00-01	1020 x 600 x 125	Delta	HPH1800
18-168-00-01	630 x 480 x 125	Std	HPH1800
18-162-00-01	940 x 500 x 125-130	Std	HPH1800
18-169-00-01	706 x 530 x 125	Std	HPH1800
2-100-03-01	760 x 610 x 125	Std	HPH2400
2-165-00-01	900 x 560 x 125	Std	HPH2400
2-171-00-01	1060 x 690 x 125	Std	HPH2400
2-166-00-01	1060 x 635 x 125	Std	HPH2400
2-164-00-01	870 x 610 x 125	Std	HPH2400
2-161-00-01	552 x 580 x 125	Std	HPH2400
2-160-00-01	970 x 510 x 120	Std	HPH2400
2-162-00-01	940 x 600 x 125	Std	HPH2400
2-170-00-01	706 x 610 x 125	Std	HPH2400
2-172-00-01	1100 x 730 x 170	Std	HPH2400
2-173-00-01	970 x 745 120	Std	HPH2400
2-174-00-01	1800 x 680 x 170	Delta	HPH2400
2-175-00-01	1180 x 683 x 170	Delta	HPH2400
2-176-00-01	1180 x 780 x 170	Delta	HPH2400
2-177-00-01	950 x 610 x 170	Std	HPH2400
2-178-00-01	900 x 580 x 170	Std	HPH2400
2-180-00-01	1220 x 694 x 190	Delta	HPH2400
45-160-00-01	840 x 610 x 170	Std	HPH4500
45-160-03-01	1040 x 730 x 170	Delta	HPH4500
45-160-01-01	1060 x 730 x 170	Std	HPH4500
45-160-04-01	1240 x 730 x 230	Delta	HPH4500
45-160-05-01	1260 x 730 x 230	Std	HPH4500
6-005-31-02	780 x 800 x 230	Std	HPH6500
6-005-32-02	780 x 1190 x 230	Std	HPH6500
6-005-33-02	780 x 1040 x 230	Std	HPH6500
6-005-30-02	Ø975 x 170	Std	HPH6500
6-005-42-01	1190 x 780 x 230	Delta	HPH6500
6-005-43-01	1070 x 780 x 230	Delta	HPH6500



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BEARING CAPACITY

The Bearing Capacities tabulated below are based on the Hiley Formula;

Bearing Capacity (tonnes) = Blow Efficiency x $E/(s+2.54)$, where
 E =Hammer Energy (kg.m), s =Final Set per Blow (mm/blow).

Blow efficiency for a hydraulic hammer is typically around 80% and adding a safety factor of 2 permits the formula to be modified to -
Bearing Capacity (tonnes) = $0.4 \times E/(s+2.54)$.

Irrespective of hammer selection the Hiley formula is a simplified analysis and actual bearing capacity achieved will be significantly affected by pile type, length, mass and stiffness, in addition to prevailing ground conditions. The Hiley formula was originally devised to estimate pile bearing capacity based on actual site measurements.

The Dawson Hydraulic Impact Hammer has a visible stroke marker on the side of the hammer. This marker can be calibrated to indicate maximum and minimum hammer energy outputs and any energy figure between those two limits. In addition, it is possible to relate the hammer blow rate at final drive to hammer energy output as set out in the table and on the graph shown below providing hammer performance meets with manufacturers specifications.

Please note that practical refusal is considered to be 10 blows/25mm. Driving in excess of 10 blows/25mm for more than 150mm of pile penetration or any driving in excess of 20 blows/25mm will invalidate the hammer warranty.





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HPH1200

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	640	6.2	4629	17	29	38	45	50	55	59	62	65	67
115	710	6.9	5135	19	32	42	50	56	61	65	69	72	75
110	780	7.6	5641	20	35	46	55	61	67	72	76	79	82
105	850	8.3	6148	22	38	50	59	67	73	78	82	86	89
100	930	9.1	6726	24	42	55	65	73	80	85	90	94	98
95	1000	9.8	7233	26	45	59	70	79	86	92	97	101	105
90	1070	10.4	7739	28	48	63	75	84	92	98	104	108	112
85	1140	11.1	8245	30	51	67	80	90	98	105	110	115	120
80	1210	11.8	8751	32	54	71	85	95	104	111	117	122	127

HPH1800

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	1005	9.8	7269	26	45	59	70	79	86	92	97	102	106
115	1119	10.9	8093	29	50	66	78	88	96	103	108	113	117
110	1233	12.0	8918	32	55	73	86	97	106	113	119	125	129
105	1347	13.2	9742	35	61	80	94	106	116	124	131	136	141
100	1458	14.2	10545	38	66	86	102	115	125	134	141	148	153
95	1567	15.3	11334	41	71	93	110	123	135	144	152	159	165
90	1680	16.4	12151	44	76	99	118	132	144	154	163	170	176
85	1797	17.6	12997	47	81	106	126	141	154	165	174	182	189
80	1910	18.7	13815	51	87	114	135	152	165	177	186	194	202



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HPH2400

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	998	9.7	7218	26	45	59	70	79	86	92	97	101	105
115	1166	11.4	8433	31	52	69	82	92	100	107	113	118	122
110	1333	13.0	9641	35	60	79	93	105	115	122	129	135	140
105	1496	14.6	10820	39	67	88	105	118	129	137	145	151	157
100	1668	16.3	12064	44	75	99	117	131	143	153	162	169	175
95	1832	17.9	13250	48	82	108	128	144	157	168	178	185	192
90	1996	19.5	14437	52	90	118	140	157	171	183	193	202	210
85	2167	21.2	15673	57	98	128	152	171	186	199	210	219	228
80	2335	22.8	16889	61	105	138	163	184	201	215	226	236	245
78	2402	23.5	17373	63	108	142	168	189	206	221	233	243	252

HPH4500

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	1838	18.0	13294	48	83	109	129	145	158	169	178	186	193
115	2173	21.3	15717	57	98	128	152	171	187	200	211	220	228
110	2509	24.6	18147	66	113	148	176	198	216	230	243	254	263
105	2854	27.9	20642	75	128	169	200	225	245	262	277	289	300
100	3192	31.3	23087	84	144	189	223	251	274	293	309	323	335
95	3533	34.6	25554	93	159	209	247	278	303	325	342	358	371
90	3874	37.9	28020	102	174	229	271	305	333	356	375	392	407
85	4213	41.3	30472	111	190	249	295	332	362	387	408	427	442
80	4549	44.6	32902	119	205	269	318	358	391	418	441	461	478



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HPH6500

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	2500	24.5	18082	65	113	148	175	197	215	230	243	254	264
116	2900	28.4	20975	76	131	172	204	229	250	267	282	295	305
112	3300	32.3	23868	87	149	195	232	261	285	305	321	335	347
108	3700	36.2	26762	97	167	219	260	293	319	341	360	375	390
104	4100	40.2	29655	108	185	243	288	324	354	378	399	416	432
100	4500	44.1	32548	118	204	266	316	355	388	415	437	457	475
96	4900	48	35441	129	221	291	345	387	423	452	476	498	516
92	5300	51.9	38334	139	239	314	372	418	455	487	515	537	557
88	5700	55.8	41228	150	257	337	399	449	490	525	553	578	599
84	6100	59.8	44121	160	275	361	427	481	525	561	592	618	642
80	6500	63.7	47014	171	293	385	455	513	559	598	631	659	684

HPH10000

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes												
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20	22	24	25
120	4078	40	29502	108	186	243	289	325	354	379	400	417	433	446	458	464
115	4894	48	35402	128	220	288	342	384	419	448	473	494	512	528	543	549
110	5608	55	40565	148	254	333	395	444	485	518	547	571	592	611	627	635
105	6424	63	46466	168	288	378	448	503	549	587	620	647	671	692	711	719
100	7138	70	51629	188	322	423	501	564	615	658	694	725	751	775	796	805
95	7953	78	57529	208	357	468	555	624	681	728	769	803	833	859	882	892
90	8667	85	62692	228	392	514	609	685	748	799	843	881	914	942	967	979
85	9483	93	68593	249	426	559	663	746	814	870	918	959	995	1026	1053	1066
80	10197	100	73756	269	460	604	716	806	879	940	992	1036	1074	1108	1138	1151



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HPH15000

Blow Rate bpm	Impact Energy			Bearing Capacity at Final Set (blows/25 mm) - tonnes									
	kgm	kNm	ft lb	2	4	6	8	10	12	14	16	18	20
120	6220	61	44991	162	278	365	433	487	531	568	599	626	649
115	7341	72	53104	192	329	432	512	577	629	673	710	741	769
110	8463	83	61217	222	381	500	592	666	727	778	820	857	889
105	9585	94	69330	252	432	566	671	755	824	881	929	971	1007
100	10707	105	77443	282	483	634	752	846	922	986	1041	1087	1127
95	11930	117	86294	312	535	702	833	937	1022	1093	1153	1204	1249
90	13052	128	94407	343	587	771	914	1028	1121	1199	1265	1322	1371
85	14174	139	102520	373	639	839	995	1119	1221	1305	1377	1438	1492
80	15397	151	111371	403	691	907	1075	1209	1319	1410	1488	1554	1612

Driving in excess of 10 blows per inch (25 mm) is considered practical refusal. Driving in excess of 10 blows per inch (25 mm) for more than 6 inches (150 mm) or driving in excess of 20 blows per inch (25 mm) at all is considered improper use and will void the hammer warranty.





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HYDRAULIC HAMMER POWER PACKS



IMAGE OF
DHP170

This Dawson power pack is fully self contained, including all oil and fuel reservoirs, prime mover and hydraulic circuitry. The power pack is designed to be directly connected to the working element of the system; however it can be connected through further hydraulic valves to perform alternative operations with guidance from the manufacturer.

The power pack is designed to produce a fixed oil flow rate at a pre-set pressure to supply hydraulic piling hammers in various environments from hot summers in Kuwait to cold winters in Ontario.

The diesel engine runs at a fixed RPM and is calibrated against the pump flow rate. A built in offline filtration system is used to condition the hydraulic oil to 2 microns and remove an amount of water contamination.



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TECHNICAL SPECIFICATIONS

	Power Packs					
	HPH1200	HPH1800E	HPH2400E	HPH4500	HPH6500	HPH15000
Pack Type	Dawson	Dawson	Dawson	Dawson	DHP170	DHP470
Engine	93 kW 125 hp 2100 rpm	93 kW 125 hp 2100 rpm	93 kW 125 hp 2100 rpm	128 kW 172 hp 2100 rpm	168 kW 225 hp 2200 rpm	470 kW 630 hp 2100 rpm
DIMS LxWxH (mm)	2850x1340 x2260	2850x1340 x2260	2850x1340 x2260	3300x1340 x2260	3800x1500 x2000	5250x2200 x2400
Main Flow	75 L/min	105 L/min	150 L/min	230 L/min	270 L/min	850 L/min
Working Pressure	240 bar	230 bar	230 bar	250 bar	270 bar	280 bar
Weight	2000 kg	3000 kg	3000 kg	3200 kg	4800 kg	12000 kg
Fuel Consumption @ 60%	15.2 L/h	15.2 L/h	15.2 L/h	19.9 L/h	28 L/h	78.6 L/h
Fuel Capacity	275 Ltr	275 Ltr	275 Ltr	300 Ltr	460 Ltr	1000 Ltr
Hydraulic Oil Capacity	360 Ltr	360 Ltr	360 Ltr	540 Ltr	500 Ltr	1875 Ltr



IMAGE OF
350E

Powerpack Model	Vibro Model	Engine	Power	Operating Speed	Max Drive Pressure	Max Drive Flow	Clamp Pressure	Clamp Flow	Weight (w/fluid)	Length	Width	Height	Fuel Capacity	Fuel Consumption	Hydraulic Reservoir
Units		Cat	kW	rpm	bar	lpm	bar	lpm	kg	mm	mm	mm	litres	ltr/hr	litres
230E		C6.6	168	2200	310	292	331	24	3900	3200	1500	1700	462	28	1041
350CE	28C/32	C9	261	2200	380	366	331	24	5800	4200	1700	1900	447	42.1	1041
595CE	44B/51	C15	444	2100	380	592	331	24	7800	4700	1800	2200	568	74.1	1628
800CE	66C/76	C18 TTA	597	2100	380	900	331	24	10000	5000	2200	2400	901	88.5	2082



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 gpm US)
Maximum pressure input 350 bar (5,075 psi)
Unit requires a 24V/5A power supply.
Dimensions - 650x450x470 (LxHxW)
Weight - 126 kg



Underwater Kit

All Dawson hammers can be set up to operate under water in depths of excess of 100 m.

electrical switching



Dawson Construction Plant has developed an industry leading, robust and simple, electronic control system that **constantly** monitors the drop weight position. This constant monitoring allows the switching timing on the main hydraulic spool to be trended to continually optimise hammer performance throughout varying piling conditions, such as:

- 1 – Hard driving with pile recoiling
- 2 – Soft driving with a running pile
- 3 – Cold hydraulic oil on start up
- 4 – Raking piles



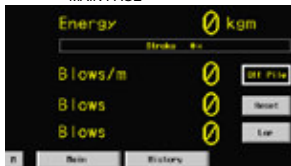
DATA CAN BE RECORDED TO A LAPTOP



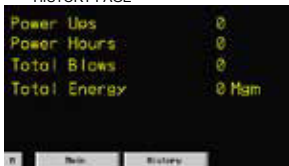
INTERFACE SCREEN MOUNTED ON POWER PACK

With constant drop weight position monitoring, the velocity of the drop weight is also known, therefore energy output can be accurately measured and is displayed to the operator on the powerpack interface screen. This information can be recorded direct to a laptop via a Dawson software interface, and can be saved in standard spreadsheet formats, giving a blow by blow account of every pile driven and a day to day productivity record.

MAIN PAGE



HISTORY PAGE



TYPICAL SCREEN SHOTS

The main screen displays bar graphs showing hammer stroke & hydraulic oil temperature.

An Off Pile indicator confirms when the hammer is securely seated on the pile, and allows piling to commence.

There are numerical read outs showing blows per minute, energy per blow and total blows. The lower reading shows blows in LAP cycle. (Measuring blows per increment). The units can be changed from imperial to metric.

The history screen provides information on the total number of start ups / total hours / total blows and total energy through out the life of the hammer.





PRODUCT SUMMARY

WORLDWIDE
DEALER
NETWORK

GLOBAL
SUPPLY,
LOCAL
SUPPORT.

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D.C.P. RESERVES THE RIGHT TO DISCONTINUE
EQUIPMENT AT ANY TIME, OR CHANGE SPECIFICATIONS
OR DESIGNS WITHOUT NOTICE OR INCURRING
OBLIGATIONS

Rev.DCPS.011a