



DAWSON
CONSTRUCTION PLANT LTD

PRODUCT SUMMARY

INNOVATIVE PILING EQUIPMENT



Est. 1974-2015



EXCAVATOR MOUNTED OR CRANE SUSPENDED VIBRATORS

Dawson excavator mounted vibrators have been designed specifically to work in place of an excavator bucket to drive and extract piles. The pile can be lifted to vertical using the built-in lifting chain where it is then gripped tightly in a powerful hydraulic jaw. Once secured, the pile is then vibrated with high frequency vibrations so as to 'fluidise' the soil resisting the pile. Down-crowd force applied by the excavator boom, coupled with the self-weight of the pile and the vibrator, provides sufficient force to push the pile into the ground.

Naturally, the process works in reverse for pile extraction. The equipment offers a highly productive and cost effective piling rig based around a standard, readily available excavator!

Principal Advantages

- Compact, robust and reliable - no electrics!
- Simple and fast attachment to excavator
- Minimal height to maximise pile length
- Slim design to drive single sheet piles
- High power to weight ratio
- Universal joint suspension for easy alignment of piles
- Extremely low vibration transmitted to the excavator
- Environmentally friendly - low noise/localised directional vibration
- Automatic hydraulic clamp operation
- Flexibility in application
- Flow regulator prevents excessive oil supply to vibrator
- Heavy saddles available for crane suspended models

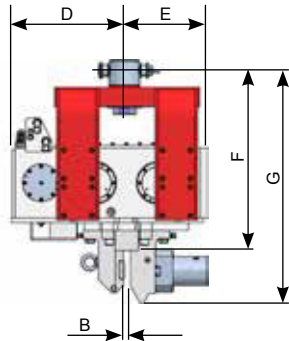
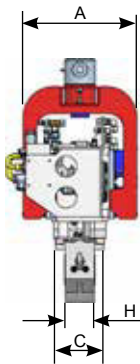
Driving / extracting when the movement is less than 1" (25mm) per minute is considered practical refusal. Driving / extracting when movement is less than 1" (25mm) for more than 5 minutes of driving / extracting or driving at all when penetration is less than 1" (25mm) per minute and amplitude is greater than 1" (25mm) [vibrator and pile are bouncing] is considered improper use and will void the warranty. Contact DCP for an alternative larger vibrator.





TECHNICAL SPECIFICATIONS

SPECIFICATION	UNITS	Excavator Mounted Vibro Model				
		EMV70	EMV220	EMV300A	EMV450	EMV550
STATIC MOMENT	in lbs	60	200	400	600	714
	kgm	0.7	2.3	4.6	6.9	8.23
FREQUENCY	rpm	3,000	3,000	2,400	2,460	2,500
CENTRIFUGAL FORCE	lbs	15,730	50,236	67,420	100,000	125,592
	kN	70	220	300	453	564
AMPLITUDE - PEAK TO PEAK	in	0.157	0.45	0.58	0.54	0.54
	mm	4	12	14.7	13.7	13.7
MINIMUM REQUIRED FLOW RATE	gpm	8	24	35	52	68
	L/min	30	90	130	195	256
MAXIMUM ALLOWABLE FLOW RATE	gpm	32	67	67	94	107
	L/min	120	250	250	350	400
MINIMUM HYDRAULIC PRESSURE	psi	3,480	4,060	4,060	3,915	4,060
	bar	240	280	280	270	280
MAXIMUM HYDRAULIC PRESSURE	psi	5,076	5,076	5,076	5,076	5,076
	bar	350	350	350	350	350
MINIMUM HYDRAULIC MOTOR POWER	hp	16	80	80	118	160
	kW	12	50	60	88	120
DYNAMIC MASS INCLUD- ING UNIVERSAL CLAMP	lbs	781	814	1,380	2,240	2,576
	kg	355	370	625	1,008	1,150
TOTAL MASS INCLUDING UNIVERSAL CLAMP	lbs	1,122	1,155	2,123	2,834	3,360
	kg	510	525	965	1,275	1,500
MAXIMUM PILE MASS	lbs	1,760	1,760	1,760	2,240	3,136
	kg	800	800	800	1,000	1,400
MAXIMUM PUSH/PULL LOADING	lbs	6,171	16,500	33,600	33,600	49,500
	kg	2,800	7,500	15,000	15,000	22,500
TYPICAL EXCAVATOR WEIGHT	Ton	5.5 to 17	7.5 to 24	13 to 39	27 to 50	33 to 60
	tonne	5 to 15	7 to 22	12 to 35	25 to 45	30 to 55
CLAMP FORCE	tonne	30	26.5	36	54	66
DIMENSIONS mm (inch)	A	445 (17.5)	445 (17.5)	615 (24)	615 (24)	646 (25.4)
	B	40 (1.5)	40 (1.5)	25 (1)	32 (1.25)	50 (1.97)
	C	275 (10.8)	275 (10.8)	250 (10)	230 (9)	370 (14.5)
	D	431 (17)	431 (17)	582 (23)	640 (25)	708 (27.9)
	E	431 (17)	431 (17)	429 (17)	510 (20)	555 (21.8)
	F	850 (33.5)	850 (33.5)	927 (36.5)	945 (37)	11.37 (44.8)
	G	1120 (44)	1120 (44)	1200 (47.25)	1250 (49)	1477 (58.2)
	H	130 (5.1)	130 (5.1)	150 (6)	175 (6.9)	190 (7.5)

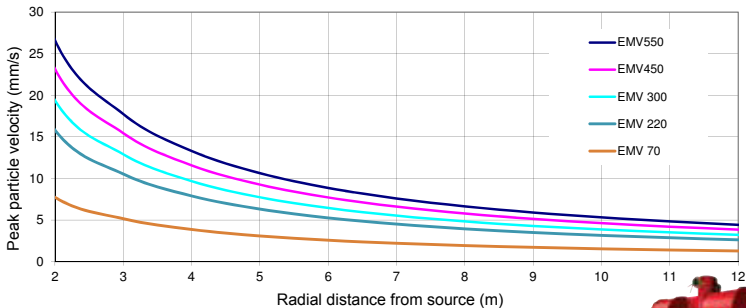


EMV300 Stand = 115kg

Clamps	Mass
300 Universal Clamp	163 kg
450 Universal Clamp	273 kg
550 Universal Clamp	416 kg
Caisson Beam with Clamps	670 kg

SPECIFICATION	UNITS	VIBRO MODEL				
		EMV70	EMV220	EMV300A	EMV450	EMV550
TRANSPORT WEIGHTS (approx)	kg	725	530	1165	1300	1500
DIMENSION ON A PALLET (approx)	mm LxWxH	1.2x0.8x1.6	1.2x0.8x1.7	1.2x0.8x1.93	1.2x0.8x1.8	1.6x0.85x1.7

EMV - Maximum Predicted vibration from piling operations - from BS5228



$$\text{kW} = \frac{\text{Flow (L/min)} \times \text{Pressure (bar)}}{600}$$





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CHAIN CLAMP

For all lifting applications. The unit indexes along the links of the chain and locks into place giving a quick and simple chain lock for lifting.

Features

- SWL of 2000kg for the 8mm chain clamp
3200kg for the 10mm chain clamp
8000kg for the 16mm chain clamp
- Robust high strength steel body
- Designed to withstand vibration - no screws or bolts!
- Minimal parts for durability
- Proof loading to twice the safe working load
- Quick coupling and release from load



Part Number		Chain Type	Safe Working Load
4130	4130-2	16 mm	8 tonnes
TLR 360	TLR 360-2	10 mm	3.2 tonnes
4082	4082-2	8 mm	2 tonnes

(OLD TYPE) (LATCH TYPE)

SELECTION GUIDE

EXCAVATOR SIZING GUIDE

For completeness, the flow and pressure from the excavator to the EMV should be checked against the specification sheets to confirm adequate hydraulic power. As a guide the EMVs typically suit the following base machine sizes:

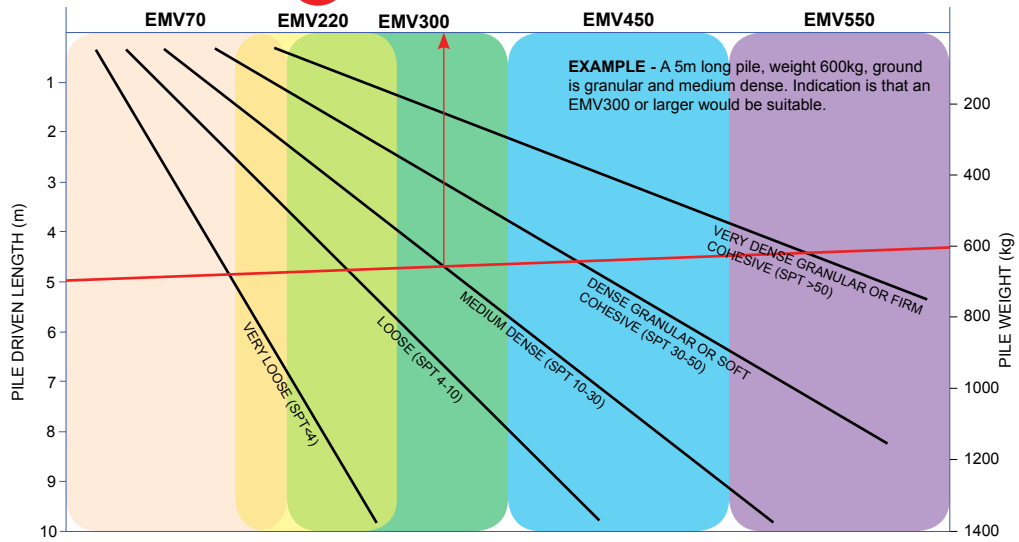
EMV70 (requires 30 L/min, 240 bar)	~ 5.5 - 17 t excavator
EMV220 (requires 90 L/min, 280 bar)	~ 7 - 22 t excavator
EMV300 (requires 130 L/min, 280 bar)	~ 12 - 35t excavator
EMV450 (requires 195 L/min, 270 bar)	~ 25 - 45t excavator
EMV550 (requires 256 L/min, 280 bar)	~ 30 - 55t excavator

EMV SELECTION GUIDE

There are many variables that determine how effectively a vibratory pile driver will perform. This graph below is a guide, not a guarantee!

Vibratory drivers work at their best in granular (gravels and sands) materials, where the amplitude in the pile can "fluidise" the ground and allow the pile to advance as the ground rearranges itself. They will still function in cohesive materials (clays), but piles will not penetrate as far.

NEW



EXAMPLE - A 5m long pile, weight 600kg, ground is granular and medium dense. Indication is that an EMV300 or larger would be suitable.

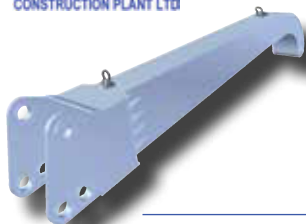
For further soils & driving characteristics see Pg 74, 75.





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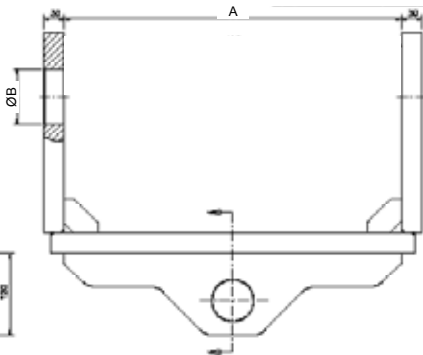
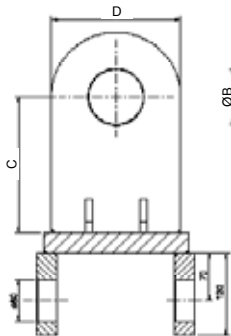
SWAN NECK



For extended reach and greater pile clearance on your excavator arm, enabling longer piles to be driven.

Part Number	Swan Neck
SN01-000-01	

ADAPTOR BRACKET



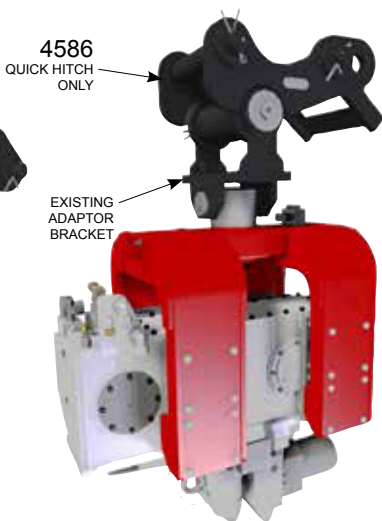
Part Number	Dimensions - mm				Dipper Pin Part Number
	A	B	C	D	
4063	340	60	175	140	4089
4063A	495	80	200	190	4089A
4063C	458	89.5	225	190	4089C
4063D	410	60	200	190	4089D
4063E	458	60	225	190	4089E
4063F	495	63.75	200	190	4089F
4063M	458	63.75	225	190	4089M
4063R	495	69.85	225	190	4089R



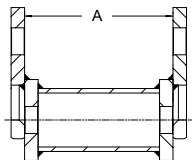
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QUICK HITCH ADAPTOR

When an excavator has a guide hitch fitted and a double acting breaker to supply the EMV, the Dawson quick hitch adaptor bracket supplies fast, easy connection to the end equipment while maintaining the same degree of movement.



Part Number	Dimensions - mm			
	A	B	C	D
4586	330	380	480	60
4589	452	475	590	80



SECTION A-A

