

# BRUCE PILING EQUIPMENT



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# BRUCE PILING EQUIPMENT

## PILE DRIVING & EXTRACTING VIBRATORY HAMMER

BRUCE VIBRO HAMMERS  
CRANE SUSPENDED TYPE



BRUCE Vibratory Hammers  
High power & efficient vibratory technology for  
driving and extracting piles



# PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

## BRUCE VIBRATORY HAMMERS / VIBRO HAMMERS

FOUNDATION & CONSTRUCTION MACHINERY - HYDRAULIC VIBRATORY HAMMER

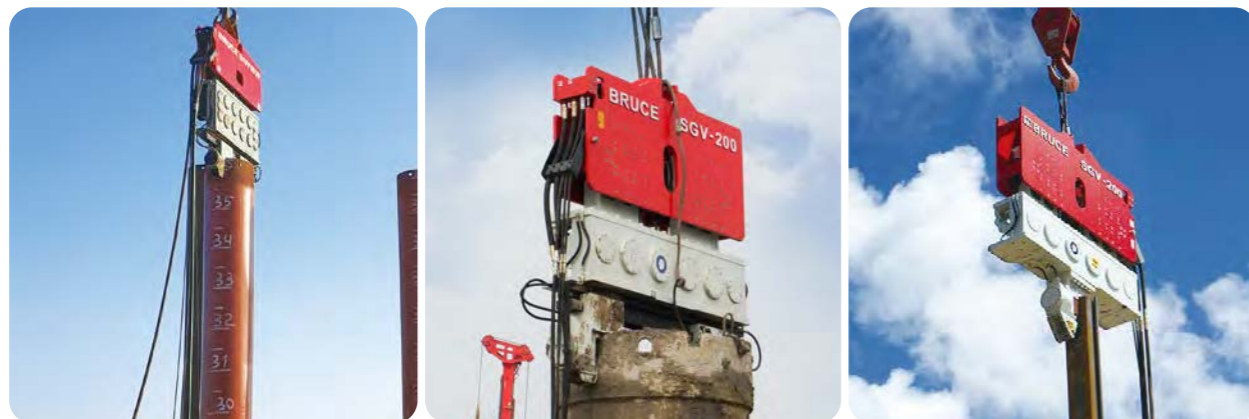


## VIBRATORY HAMMER INTRODUCTION

The Hydraulic vibro hammers have a wide applications in driving and extracting various kinds of piles and are also ideally suited to offshore and onshore, where vibro hammers can operate to considerable depth.

BRUCE PILING EQUIPMENT, the vibro hammer specialist and a worldwide reputable manufacturing and supplier, has introduced a wide range of vibro hammers including suitable power packs that are the most economically benefitted and ensuring high Performance and Efficient vibratory hammer.

BRUCE PILING EQUIPMENT provides a wide applications in driving and extracting the sheet piles, steel pipes, casing piles, H-Beam piles and other profiles that absolutely features with adjusting the vibro frequency, less vibrating effect to the crane and noise reduction along with hydraulic systems to perform the right piledriving work through a wide selection of clamps, elastomer rubbers and followed accessories.



## OUTSTANDING FEATURES OF BRUCE VIBRATORY HAMMERS

### VARIETY RANGE OF VIBRO HAMMERS

BRUCE Vibro hammers have wide range capacity models with Eccentric Moments from 11.5 kgm to 220 kgm, Centrifugal Forces from 510 kN to 4610 kN can be selected for a customer needs.

BRUCE Vibratory hammers are equipped with most quality and efficient hydraulic motors, bearings and reliable Eccentrics and elastomer rubbers and others component. Standard Frequency for BRUCE vibratory hammers are 1500 vpm to 2000 vpm depending on model and other sized vibratory hammers are also available on request.

Excavator Mounted Vibro hammers are also available on request!! The model range of Excavator Mounted Vibro hammers are prepared to suit for mounting on Excavators ranging from 20-50 tons.

### PROOF ECCENTRIC CONCEPT OF A GEAR BOX

The Eccentrics are made of high quality steel and accurately machined to guarantee equal centrifugal Force to each eccentric. The Eccentrics that are connected with gears to maintain a proper synchronization, vibration proof, qualified gear and eccentric to gear fasteners guaranteeing a trouble-free and effective pile driving works.

Computer 3D modular design for Gear Box components are perfectly feasible for a perfect center of gravity.

## PILE DRIVING &amp; EXTRACTING VIBRATORY MACHINERY

## MAIN FEATURES

### BRUCE VIBRO MANAGES THE SOIL CONDITION

The BRUCE Vibro Hammers are well known its elaborated and fine machined components consisting of core parts inside the Gear Box and related hydraulic connection system. Hence, The Vibros matched the Centrifugal force and Amplitude optimally to the soil condition with a Flow Adjust volume dial on a Remote Control Pendant to adjust pump flow control for adjusting centrifugal force depends on soil condition at every job sites.

### A HANDHOLD REMOTE CONTROL PENDANT

A portable and a handheld BRUCE Remote Control Pendant will help you get the Vibro job done in a set of operating to be more comfortable and accurate ways. The vibrating speed can be adjusted depends on driving condition by the Volume switch on it.

### OPTIMUM MATCH TO THE VIBRO PROJECT

The BRUCE Vibro hammers are an efficient hydraulic vibratory hammer that produces vertical vibrations to drive or extract a wide variety of profiles that will help you finished the job done in planed project schedule.

### ROBUST DURABLE CLAMPS & WIDE RANGE OF MODELS

BRUCE Vibro hammers have both universal and casing clamps. Robust structure and powerful cylinder of a clamp in handling a pile safety and convenient work can be done. Heavy duty and reliable clamp cylinder equipped with a check valve to keep cylinder pressurized in case of hose damage and alloy steel ensures the life long.

### QUALIFIED ELASTOMERS

BRUCE Vibro hammers are equipped with high quality elastomer rubbers which guarantee good shock absorbing and a long service life. Elastomers design makes the Vibro hammers to change elastomers easy and safely.



## MAIN FEATURES

## BRUCE VIBRO HAMMER

### PROUD OF DRIVEABILITY

BRUCE offers the most powerful, reliable & efficient Vibro hammers with simple design for operating ease and efficiency. Adjustable Vibro drive frequency and speed for easy work means a low speed and hard work means high speed by a Remote Control Pendant.

### QUALIFIED ELASTOMER RUBBERS

The Suppressor contains Elastomer rubbers to isolate the vibrations from the vibration case to the crane or pile driving rig. Mechanical stops prevent Elastomer rubbers which take a roll as a shock absorber from stretching during operation. Elastomers provide a minimal of vibration isolation for equipment and personal safety.

### APPLY FOR A VARIETY OF AREAS

Compact design of Vibro hammers can be applied many construction areas such as Infrastructure projects detailing bridges, metro, building and trench projects. It is also adaptable for foundation piling working sites.

### LOW COST CONSUMABLE PARTS

As BRUCE Vibro hammers choose the qualified suppliers of consumable parts with a long lasting and durable consumable parts are guaranteed. Thus you can save extra valuable money for the parts.

### SOLIDITY IN SUSPENSION PART

The suspension part of the Vibro hammers which is coupled to the lifting crane. It is connected to the dynamic part using elastomer rubbers allow a traction during extraction benefited less damage to the crane.

### MAXIMUM EFFICIENCY & QUITE OPERATION

High efficiency & quality motors by the gear box consisting of other components like eccentrics, gears, shafts, and bearings deliver power energies to the pile through durability test results in fast and productive driving at the sites.

### SIMPLICITY IN DESIGN

The adoption of simple design principle allows easy maintenance and prompt troubleshooting both on control and mechanical side. Together easy operation can be obtained user friendly design of a Remote Control Pendant.

### POWERFUL DYNAMIC PARTS

The dynamic part where the eccentric weights are assembled, and clamps if the Vibro hammer is used for pile driving and extraction, these are used for transmitting the motion to the eccentric weights.

### CREATE MORE AMPLITUDE

Precision cast high density eccentric moment combined with a low mass transmission provides the maximum possible pile amplitude. It shows exceptional performances both temporary and fixed constructions. Amplitude is designed for most efficient performance.

### PROOF OF GEAR BOX ASSEMBLY

The eccentric weights rotate in a vertical plane to create vibration in a gear box. It is gear connected to maintain proper synchronization, vibration proof, qualified gear and eccentric to gear fasteners are guaranteed to never fail. Extremely low vibration created environmentally friendly low noise and localized directional vibration.

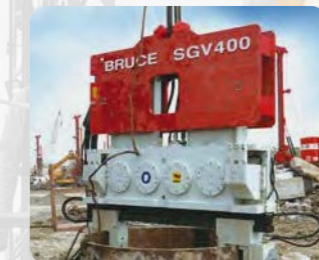
### MAIN PARAMETERS OF BRUCE VIBRO

**MOMENT** corresponds to the distance between the rotation axis and the eccentric center of gravity.

**FREQUENCY** corresponds to the number of turns per minutes of the eccentric weights.

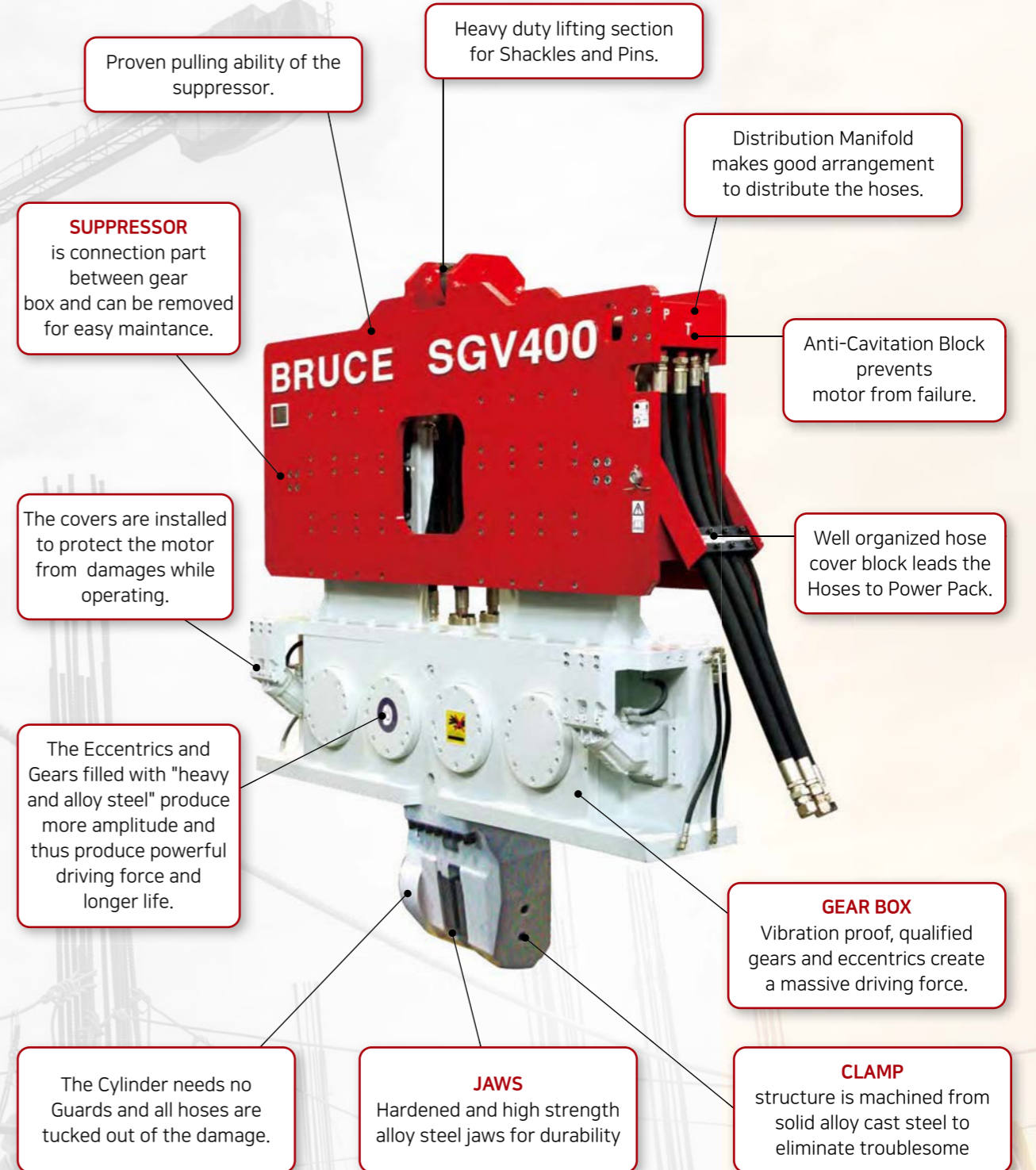
**AMPLITUDE** defines as the vertical run of the dynamic part unit determined by its overall weight and the eccentric moment.

**EXTRACTING** is the maximum pull that can be applied in the suspension. The Vibro has an end-stop plate which stops the operator from having an excessivetraction for the elastomers on the suppressor.



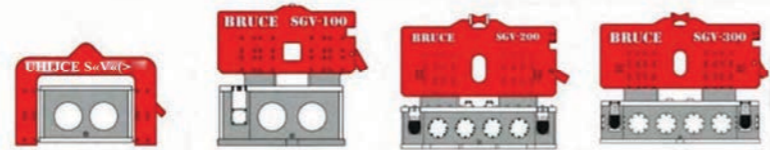
# BRUCE VIBRO HAMMER FEATURES

PILE DRIVING & EXTRACTING VIBRATORY MACHINERY



# PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

## BRUCE VIBRO HAMMER MODEL



BRUCE VIBRO HAMMER MODEL		SGV-80	SGV-100	SGV-200	SGV-300
Eccentric moment	kg-m	11.5	17.3	26	34
	in-lbs	998	1,502	2,257	2,951
	Nm	113	170	255	333
Centrifugal force	tons	51	62	84	112
	kN	510	620	840	1,120
Max. frequency	vpm	2,000	1,800	1,730	1,730
Amplitude incl sheet pile clamp	mm	22	22	19	19
	inch	0.875	0.875	0.75	0.75
Max. line pull for extraction	tons	25	30	40	40
	kN	250	300	400	400
Max. hydraulic power	kW	91	144	191	191
	HP	121	193	256	256
Max. operating pressure	bar	320	320	320	320
	psi	4,641	4,641	4,641	4,641
Max. oil flow	lpm	170	270	360	360
	gpm	45	71	95.1	95.1
Overall length, L	mm	1,618	1,665	2,401	2,620
	inch	63.7	65.6	94.5	103.2
Overall width, W	mm	700	402	480	480
	inch	27.6	15.8	18.9	18.9
Overall height with sheet pile clamp	mm	1,755	2,350	2,675	2,850
	inch	69.1	92.5	105.3	112.2
Weight with sheet pile clamp	kg	2,400	2,900	4,526	5,370
	lbs	4,410	6,393	9,978	11,839

Clamping Head						
		MODEL	60U	80U	100U	130U
Sheet pile clamp	Force	tons	60	80	100	130
		kN	600	800	1,000	1,300
	Weight	kg	250	480	500	640
		lbs	551	1,058	1,102	1,411
Double clamp (Casing pile clamp)	MODEL		2x40D	2x40D	2x80D	2x80D
	Force	tons	80	80	160	160
		kN	800	800	1,600	1,600
	Weight with Beam	kg	1,000	1,000	1,408	1,408
lbs		2,205	2,205	3,104	3,104	
Suitable Power Pack Series			PQ-200V	PQ-250V	PQ-350V	PQ-350V

\* Subject to modifications without prior notice.



BRUCE VIBRO HAMMER MODEL		SGV-400	SGV-450	SGV-600	SGV-1000	SGV-2000
Eccentric moment	kg-m	46	55	79	110	220
	in-lbs	3,993	4,773	6,857	9,548	17,359
	Nm	451	539	774	1,079	2,157
Centrifugal force	tons	148	179	255	305	461
	kN	1,480	1,752	2,502	3,050	4,610
Max. frequency	vpm	1,710	1,700	1,700	1,590	1,380
Amplitude incl sheet pile clamp	mm	18	20	22	25	20
	inch	0.71	0.79	0.87	0.98	0.79
Max. line pull for extraction	tons	60	80	110	120	180
	kN	600	800	1,078	1,200	1,800
Max. hydraulic power	kW	297	318	397	581	900
	HP	398	427	532	780	1,207
Max. operating pressure	bar	320	320	320	320	320
	psi	4,641	4,641	4,641	4,641	4,641
Max. oil flow	lpm	560	590	745	1,100	1,689
	gpm	148	156	197	291	446
Overall length, L	mm	2,695	2,750	2,850	3,286	3,700
	inch	106.1	108.3	112.2	129.4	145.7
Overall width, W	mm	634	560	713	615	1,730
	inch	25	22.1	28.1	24.2	68.1
Overall height with sheet pile clamp	mm	3,220	3,245	3,916	4,100	4,253
	inch	126.8	127.8	154	161.4	167.4
Weight with sheet pile clamp	kg	7,150	7,600	11,000	14,800	29,000
	lbs	15,763	16,755	24,251	32,328	63,934

Clamping Head							
		MODEL	160U	180U	240U	320U	2x240U
Sheet pile clamp	Force	tons	160	180	240	320	480
		kN	1,600	1,800	2,400	3,200	4,800
	Weight	kg	1,190	1,200	1,800	2,500	4,000
		lbs	2,624	2,646	3,968	5,516	8,818
Double clamp (Casing pile clamp)	MODEL		2x80D	2x120D	2x140D	2x160D	4x160D
	Force	tons	160	240	280	320	640
		kN	1,600	2,400	2,800	3,200	6,400
	Weight with Beam	kg	1,484	2,480	2,760	3,000	7,000
lbs		3,272	5,468	6,085	6,614	15,432	
Suitable Power Pack Series			PQ-500V	PQ-600V	PQ-800V	PQ-1000V	PQ-1600V

\* Quad clamp with cross beam for larger casing pile diameter is available as optional on request.

\* Subject to modifications without prior notice.

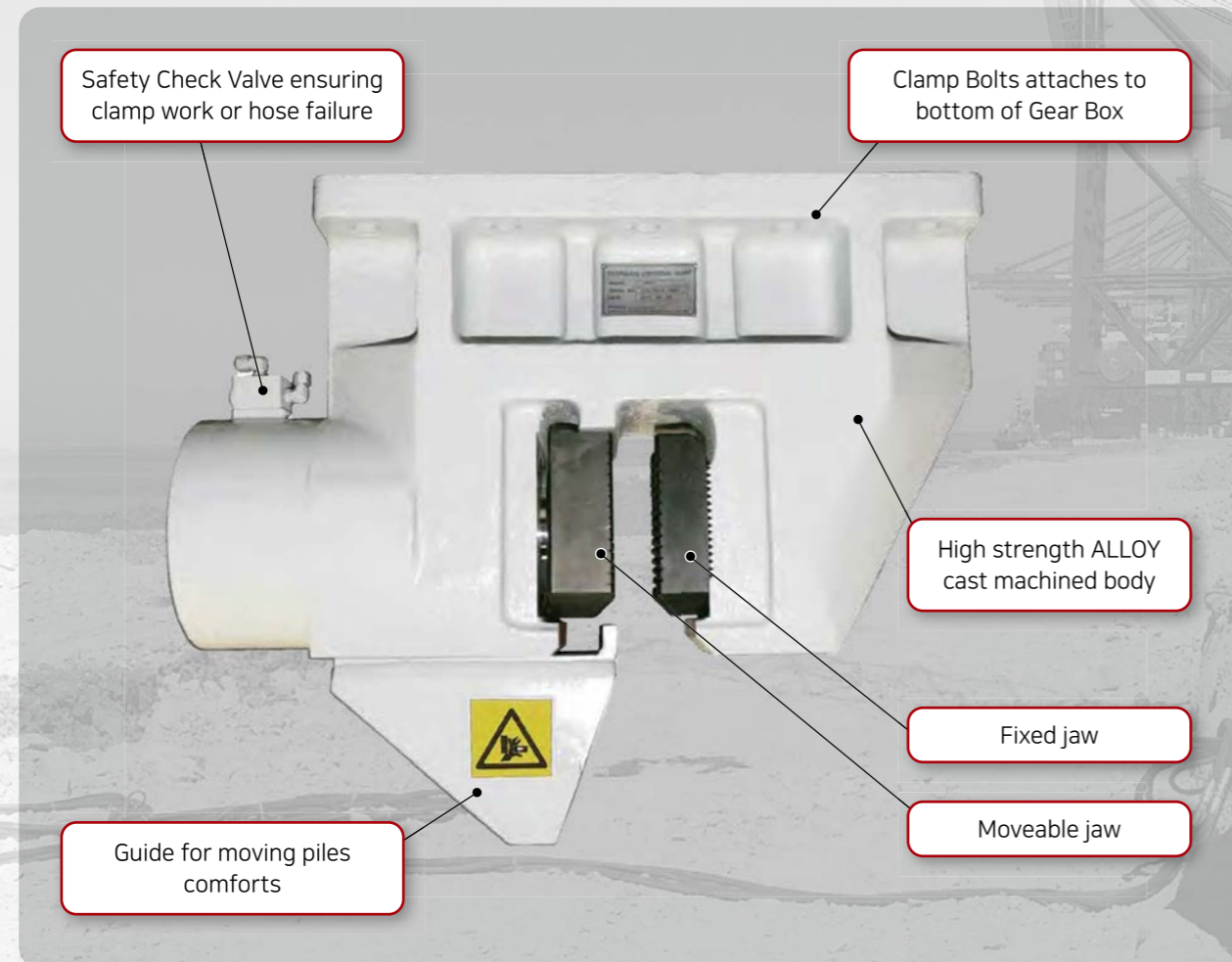
PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# BRUCE UNIVERSAL & SHEET PILE CLAMP

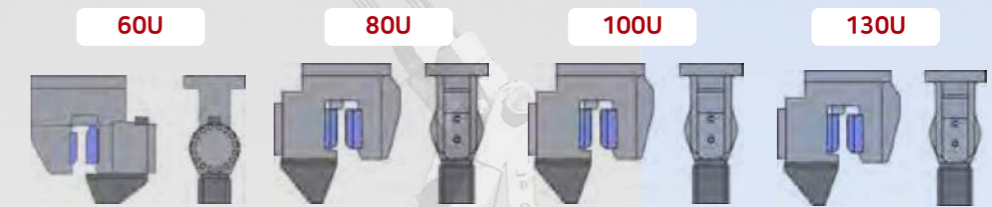
The BRUCE Universal & Sheet Pile Clamp comes with a standard sheet pile clamp attachment. The clamp contains two gripping jaws. One is "fixed" and the other is "moveable". A large cylinder operates the moveable jaw depends on clamp pump relief pressure.

The jaws open and close by turning a switch on the remote control pendant, or may be operated by turning the switch at the main control panel mounted on power pack. The pressure hole at cylinder cover can be tested for a proper pressure 320 to 350 bars.

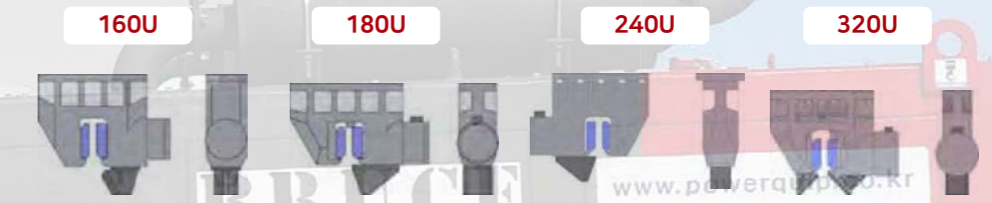
The BRUCE standard pile clamp can be fitted with jaws to fit many different types of piles including sheet piles, H-Beams, steel plates, and pipe piles. (Contact BRUCE for more information on clamp attachments for special pile types.)



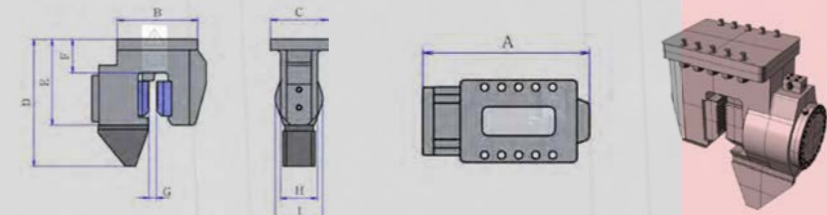
# SELECTION OF UNIVERSAL & SHEET PILE CLAMP



Clamp type	Universal & sheet pile				
Clamping force ton/kN	60/600	80/800	100/1000	130/1300	
Working pressure bar/psi	300/4351	300/4351	300/4351	300/4351	
Weight	kg / lbs	250/551	480/1058	500/1102	630/1389
L X W X H	mm	590 X 300 X 380	685 X 340 X 705	685 X 340 X 705	730 X 340 X 750



Clamp type	Universal & sheet pile				
Clamping force ton/kN	160/1600	180/1800	240/2400	320/3200	
Working pressure bar/psi	300/4351	300/4351	300/4351	300/4351	
Weight	kg / lbs	1190/2624	1200/2646	1800/3968	2500/5516
L X W X H	mm	1140 X 350 X 1045	1140 X 350 X 1045	1160 X 350 X 1045	1100 X 460 X 1097



Clamp model	Clamping force	Operating pressure	Weight	A	B	C	D	E	F	G	H	I
60U	60 ton	300 bar	250 kg	590	470	310	380	388	150	0~40	310	300
80U	80 ton	300 bar	480 kg	685	480	340	705	515	200	0~45	310	340
100U	100 ton	300 bar	500 kg	685	480	340	705	515	200	0~45	310	340
130U	130 ton	300 bar	630 kg	730	480	340	750	580	215	0~45	340	240
160U	160 ton	300 bar	1,190 kg	1140	935	305	1045	668	319	0~50	305	350
180U	180 ton	300 bar	1,200 kg	1140	935	305	1045	668	319	0~50	305	350
240U	240 ton	300 bar	1,800 kg	1160	940	305	1045	790	420	0~60	305	350
320U	320 ton	300 bar	2,500 kg	1172	1100	460	1097	870	415	0~62	400	460

\* Subject to modifications without prior notice.

PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# BRUCE CASING PILE CLAMP WITH AUTO LOCKING SYSTEM

All the Bruce vibro hammers are designed for Casing Pile Clamps to be able quick mounted on the bottom of the gear box of Vibro hammers with a conjunction hydraulic Auto Locking system so that it can be applicable at all times for a quick change according to different pile size or maintenance piling works in case of casing piles.

The BRUCE Casing pile clamp can simply adjust the clamping span that is thought to be hassle and burdensome for most of foremen on site with the help of hydraulic auto locking system adopted on both sides of beams based on casing pile size. It can be adjusted either by narrowing or expanding the both clamps whenever needed for fitting in. BRUCE Casing pile clamp will give you a plenty time saving for the job resulting in super profitability.



Casing clamps

Cassion Beams

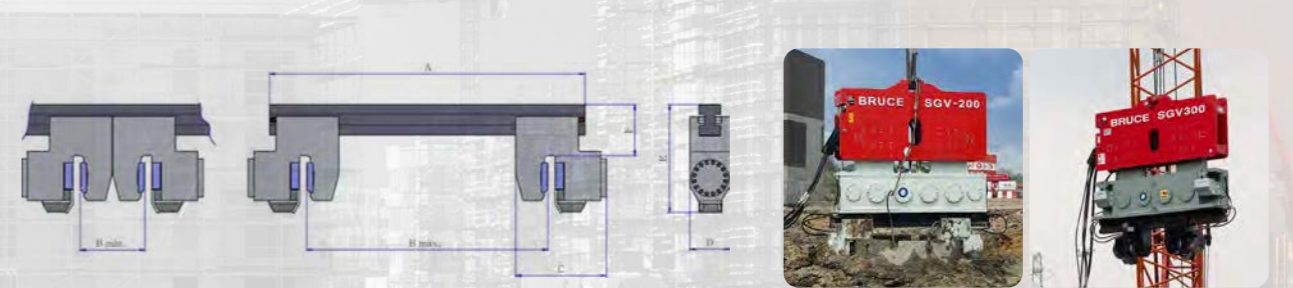
Auto Locking

PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# BRUCE CASING PILE CLAMP WITH BEAMS



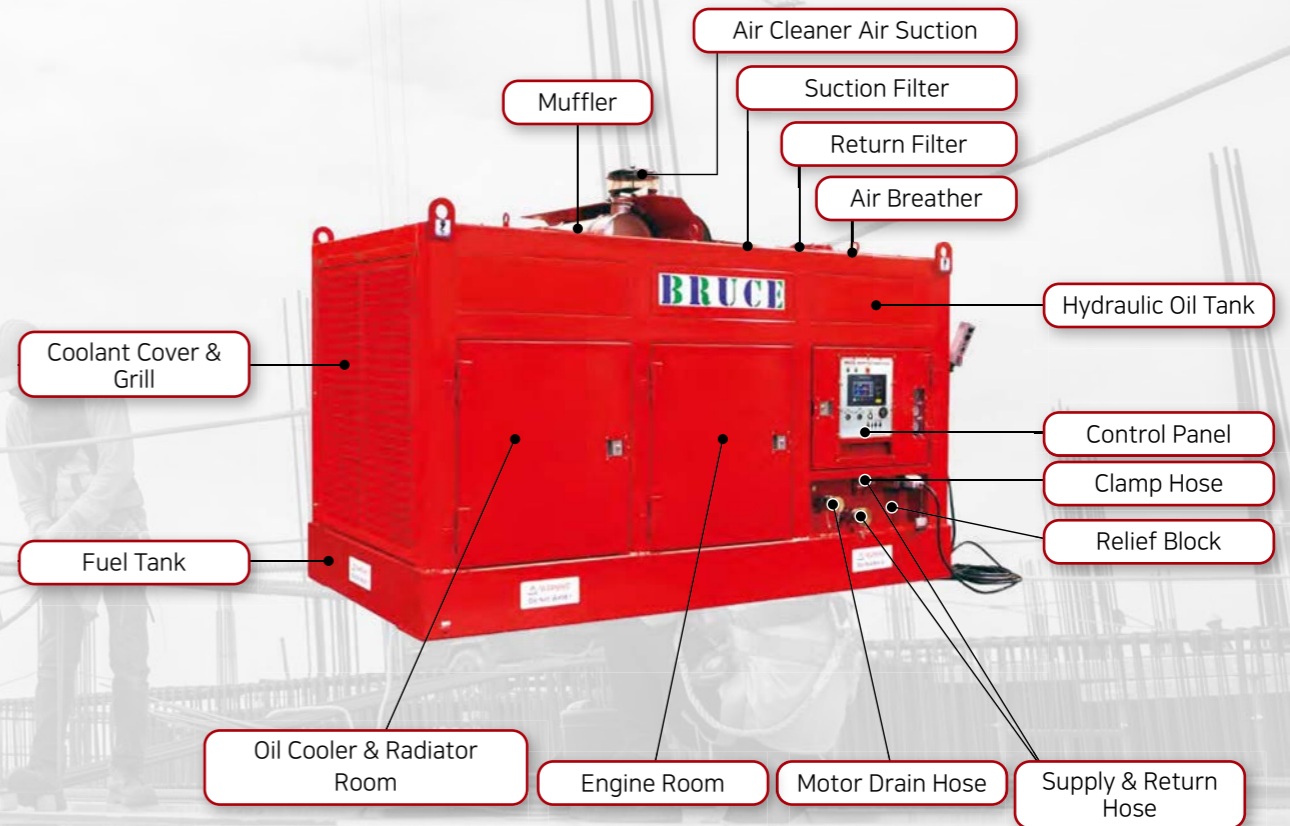
Clamp model	Clamping force	Operating pressure	Weight	A	B	C	D	E	F	G	H	I
40D	40 ton	300 bar	310 kg	520	400	250	510	105	160	0-30	130	160
80D	80 ton	300 bar	480 kg	635	440	280	535	145	225	0-50	150	160
120D	120 ton	300 bar	955 kg	700	569	340	651	150	272	0-55	150	190
140D	140 ton	300 bar	1100 kg	825	630	300	700	185	295	0-55	160	210
160D	160 ton	300 bar	1250 kg	895	695	375	720	195	345	0-55	160	230



Clamp model	A	Bmin	Bmax	C	D	E	F	Weight
2x80D	1520	450	1070	635	280	670	274	1220 kg
	2216	450	1696	635	280	670	274	1408 kg
	2400	450	1840	635	280	670	274	1420 kg
	2660	450	2140	635	280	670	274	1562 kg
2x120D	2700	545	1747	630	290	803	285	1606 kg
	3000	545	2055	630	290	803	285	2550 kg
2X140D	2800	590	2130	825	300	883	335	2800 kg
	3400	700	2700	825	300	883	335	3000 kg
2X160D	3400	700	2700	885	330	972	445	3000 kg
	3800	700	2700	885	330	972	445	3500 kg

\* Subject to modifications without prior notice.

# BRUCE HYDRAULIC POWER PACK



## BRUCE HYDRAULIC POWER PACK

The BRUCE power packs have designed and manufactured to optimize the hydraulic system for a constant stability of piling performance with high efficiency of BRUCE Vibro operations.

A sound proofed frame style with heavy steel enclosure and enough space of inside layout enables to obtain an easy access for quick maintenance and ensures durability of power pack.

Maximum efficiency and reliability ensured by BRUCE efficient open-loop hydraulic system equipped with reputable quality hydraulic pump and motor.

High cooling capacity of hydraulic system provides a stable high efficiency of hydraulic systems together with larger sized radiator, cooler and hydraulic tank ensures no overheat problems.

**Full Line Up : Horse power ranging from 100PS to 1600PS** for a wide selection of BRUCE Vibro hammer range and required capacity from small sized to large sized power packs

BRUCE power pack is adoptable Environmentally friendly non-toxic & biodegradable hydraulic oil.



### TURBOCHARGED HIGH POWER DIESEL ENGINE

Bruce power pack powered by Doosan or Cummins turbocharged diesel engine as standard ensures greater production by having higher horse power and torque ratings. The engine has functioning of electronic & computer controls reduce fuel consumption and optimizing the engine power.



### HIGH PERFORMANCE SWASH PLATE TYPE PUMP

Adopted with axial piston type pump and quality brand pump. Flows are controlled electrically - Optional



### HIGH COOLING CAPACITY & WIDE INTERNAL SPACE

Applied with high cooling capacity with larger sized radiator, oil cooler and hydraulic tank, Bruce power pack can be used under high atmospheric temperature up to 40°C or little higher and cold regional area up to -30°C and even lower temperature.

### BIODEGRADABLE HYDRAULIC OIL ADAPTABLE

All hydraulic components are 100% applicable to biodegradable oil in order to meet environmental concern.

### RELIABLE & GOOD FILTRATION

Equipped with high capacity filters and quality brand filters prevent hydraulic oil contamination and ensure filtration system for hydraulic and engine fuel system.

### HYDRAULIC COMPACT & CONTROL SYSTEM BLOCK

Most of valve system and components are equipped and built-in Manifold block which is beneficial for easy to check, control the system and supply accurate system flow and pressure to the machine.

## REMOTE CONTROL PENDANT

With a BRUCE Remote Control Pendant, the operators can have it operating the Vibro operation in a long way even from a distance. It comes with functioning of emergency stop, clamp operation, Vibrating operation and engine frequency adjustment depends on soil conditions.

### Main Function

- Start and stop vibration in a few seconds
- Clamp and unclamp from piles.
- Accomplishment of vibration in forward direction
- Emergency stop button for an urgent situation
- Frequency Adjust
- Easy cable connections adopted
- Very light and easy portability
- Built and designed for customized size
- LED lamp for clamping indication
- Simplicity design for easy control with less faulty



## POWER PACK CONTROL PANEL

### SIMPLICITY DESIGN OF CONTROL PANNEL

With user friendly simple design concept but well equipped functions in the control panel is provided easy electrical operational system and hydraulic system. The variety functioning and utilize are provided as below.

- Electronic engine control unit
- Electronic engine governor
- Battery recharge & coolant temperature indicate
- Engine start & stop
- Main electric power ON/OFF switch
- Engine oil pressure indicate
- Circuit breaker for protection from short circuit and fault of electric system
- Engine speed lever for change the engine speed
- Pressure gauge for vibro, clamp, motor drain
- LED lamp for clamping indication
- LED lamp for MAIN POWER
- Engine speed indicate
- Operating hour indicate
- Fuel gauge
- Emergency stop button
- Engine temperature indicate
- VIBRO/CLAMP operational switch
- Vibrator frequency adjust



PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# SPECIFICATION OF BRUCE POWER PACK

**OPERATING DATA**

Power Pack Model		PQ-200V	PQ-250V	PQ-350V	PQ-500V	PQ-600V	PQ-800V	PQ-1000V	PQ-1600V
Engine power	(HP)	180	230	320	475	525	650	1,000	1,600
	(kW)	132	172	239	354	392	485	746	1,193
Engine speed	(rpm)	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Setting pressure	(bar)	320	320	320	320	320	320	320	320
	(psi)	4,641	4,641	4,641	4,641	4,641	4,641	4,641	4,641
Max. flow rate	(lpm)	190	280	400	600	630	764	1,100	1,700
	(gpm)	50	74	106	159	166	202	291	449
Hydraulic tank capacity	(liter)	350	600	700	800	1,000	1,200	2,400	2,400
	(gal)	93	159	185	211	264	317	634	634
Fuel tank capacity	(liter)	300	500	520	600	800	900	960	2,000
	(gal)	79	132	137	159	211	238	254	528

The Doosan engine is as standard and the Cummins engine is as optional.

**DIMENSION**

Overall length	(mm)	2,500	2,900	3,300	3,500	3,500	3,800	3,800	5,500
	(ft)	8.2	9.5	10.8	11.5	11.5	12.6	12.6	18
Overall width	(mm)	1,300	1,600	1,600	1,800	1,800	2,000	2,200	2,500
	(ft)	4.3	5.3	5.3	5.9	5.9	6.7	7.2	8.2
Overall height	(mm)	1,850	2,100	2,100	2,100	2,200	2,200	2,200	2,700
	(ft)	6.1	6.9	6.9	6.9	7.2	7.2	7.2	8.9

**WEIGHT**

Dry	(kg)	3,700	4,000	4,300	4,700	4,900	6,200	8,000	14,000
	(lbs)	8,157	8,819	9,480	10,362	10,803	13,669	17,637	30,865
Operating	(kg)	4,100	4,400	5,400	5,800	6,600	8,200	10,000	17,000
	(lbs)	9,039	9,700	11,905	12,787	14,551	18,078	22,046	37,479
Suitable Bruce vibro model		SGV-80	SGV-100	SGV-200 SGV-300	SGV-400	SGV-450	SGV-600	SGV-1000	SGV-2000

Others power pack size can be supplied upon request. \* We reserve the right to make modifications without prior notice.

# BRUCE VIBRO TECHNOLOGY

A vibratory hammer is a specialized piece of equipment that uses vibration to change the soil formations so that the vibratory hammer can drive in the pile using its own weight.

A vibratory hammer makes quick work of hammering into heavy or hard piles, and allows for an increase of efficiency on the worksite. Vibratory hammers are used to drive in piles as well remove them.

There are two components to a vibratory hammer, the gear box and the suppressor. The gear box contains eccentric weights that rotate around the case, creating a vibration. The eccentric weights are set in motion and maintain their synchronicity with a hydraulic motor attached to the gear box. A clamp attached to the bottom of the gear box transports the vibration into the pile.

The vibratory hammer is placed over the pile with the help of a piece of large equipment, such as a crane or excavator. The vibratory hammer is then attached to the pile through a series of clamps. A separate trailer containing hydraulic fluid is attached to the hammer. If the vibratory hammer is put in place with an excavator, the hammer can run off the excavator's power source.

Vibratory hammers are effective in a variety of different types of soil, including clay, sand, and granular. Vibratory hammers can also be modified for use underwater. Vibratory hammers are very large and used in the industrial setting. They are commonly used to drive and extract piles for such projects as ports, building, highway construction and others huge application of sheet pile or casing pile driving and extracting.

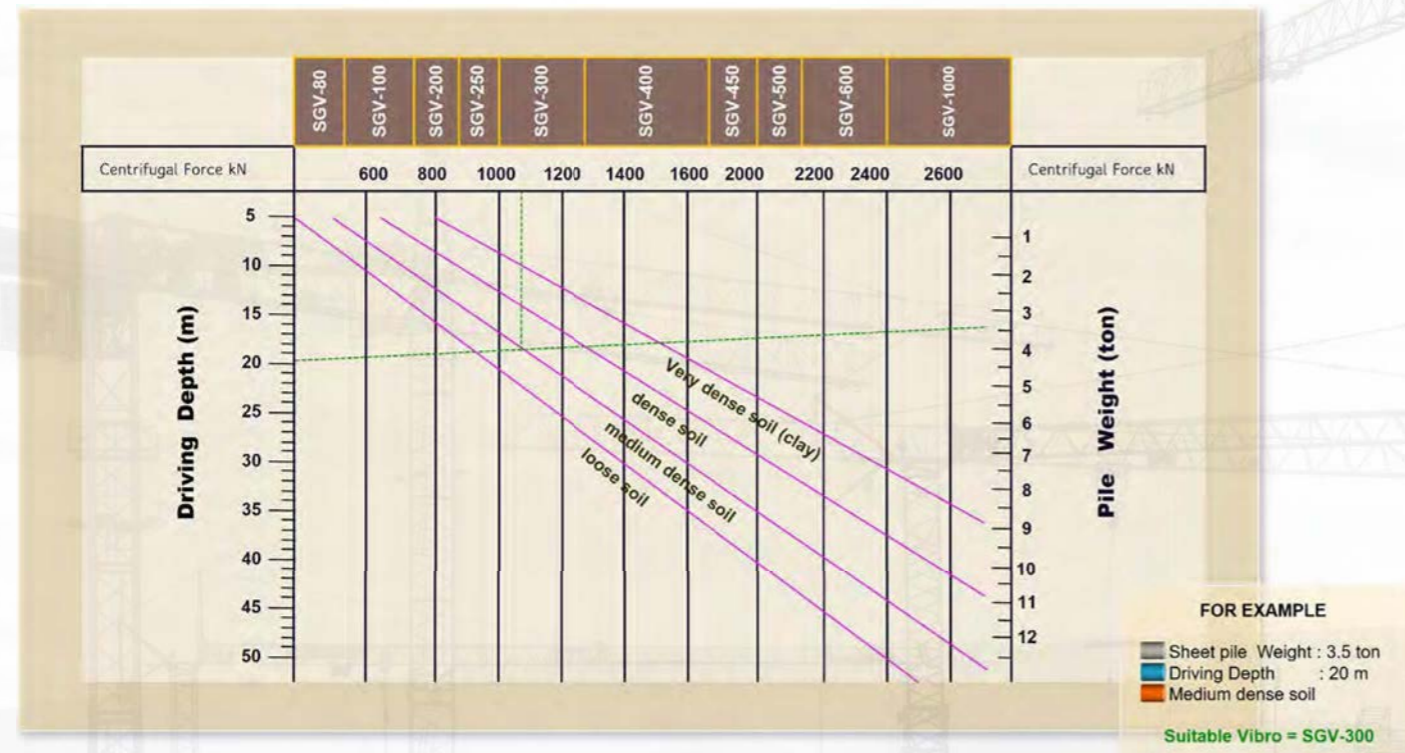
There are many benefits to the use of vibratory hammers. A vibratory hammer requires less force to drive a pile. Compared to other hammers that would be used in the same situation, vibratory hammers are relatively quiet. Vibratory hammers are often chosen when piling & construction work is conducted in an urban area where the noise of a traditional pile hammer would be a problem. Vibratory hammers also make a good choice when the pile is located in an area without sufficient clearance to accommodate a traditional pile driver.

Simply the Bruce vibratory hammers consist of several major parts in the gear box, each eccentric pair turns at the same angular velocity but in opposite directions, producing a vertical vibration. Both eccentrics generate centrifugal forces  $f_c$ . The horizontal components  $f_h$  are offset at the same time that the vertical components  $f_v$  are added, resulting in centrifugal force  $F_c$ . A yoke is located above the gearbox and prevents the transmission of vibrations through elastomer rubber.



PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

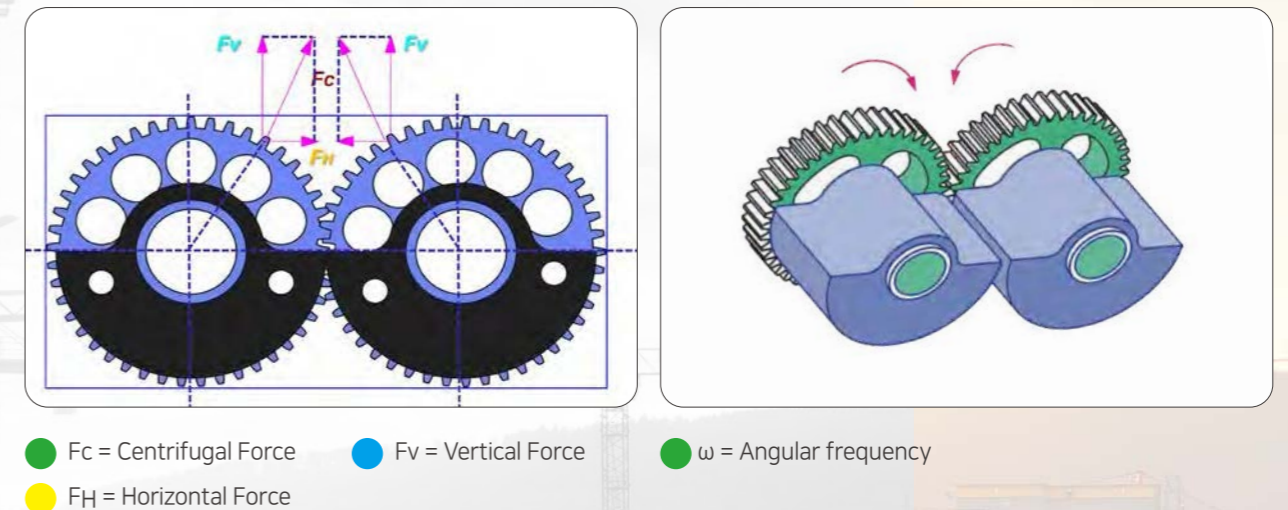
# SELECTING THE OPTIMUM BRUCE VIBRO HAMMERS WITH SELECTION CHART



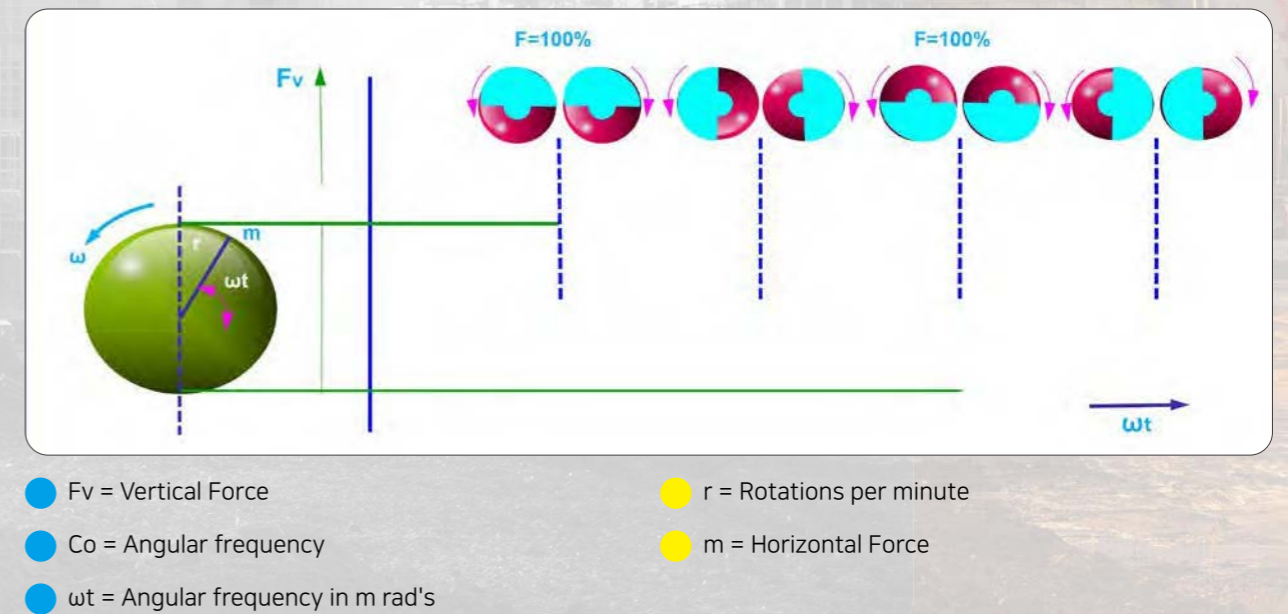
PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# HOW DOES VIBRO HAMMER WORKS ?

THE PRINCIPLE OF VIBRATION START-UP THROUGH CENTRIFUGAL FORCE ADJUSTMENT WITH SWIVELLING OF THE ECCENTRICS.



IT VIBRATES PILE S TO BE DRIVEN OR EXTRACTED

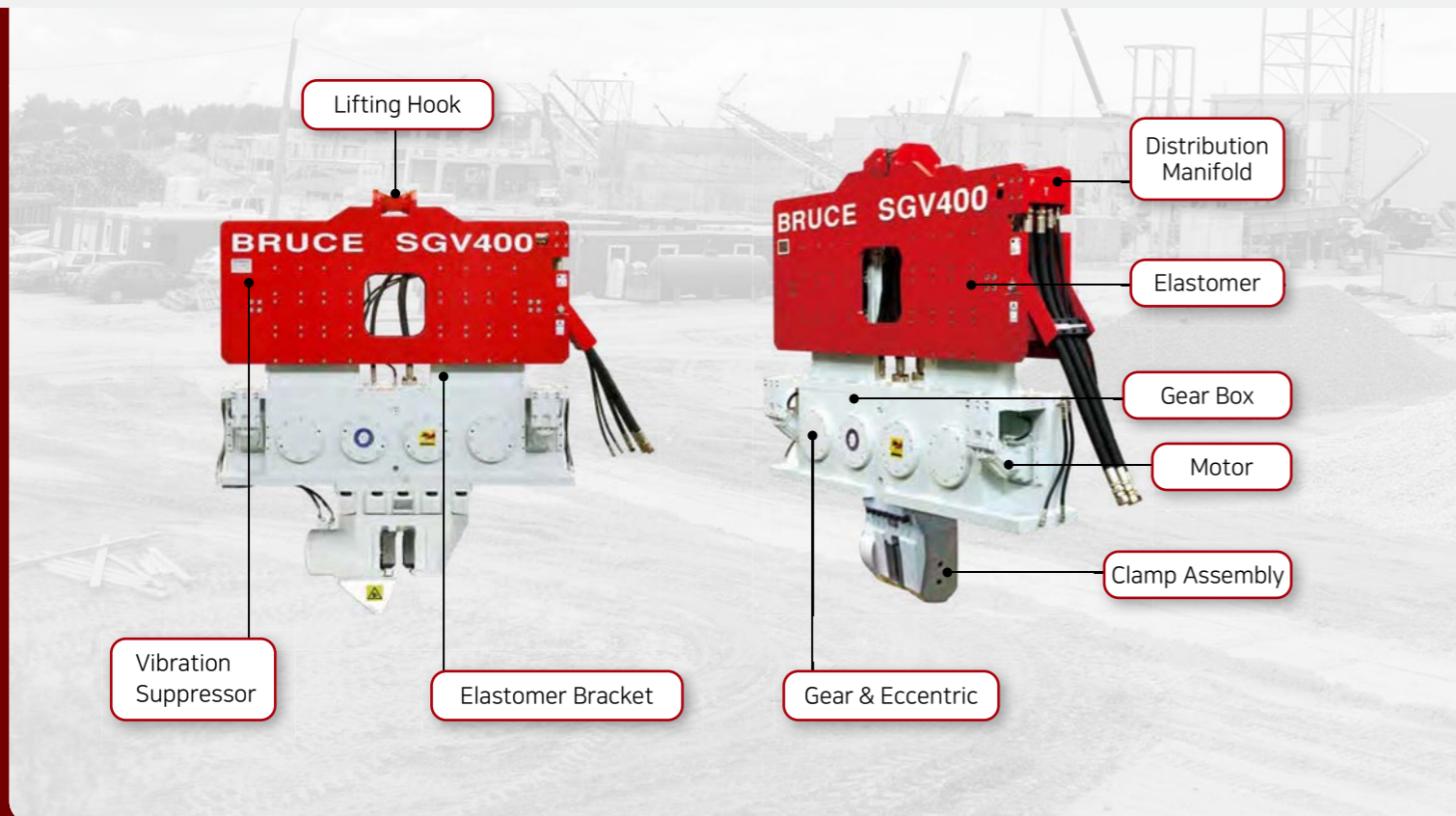
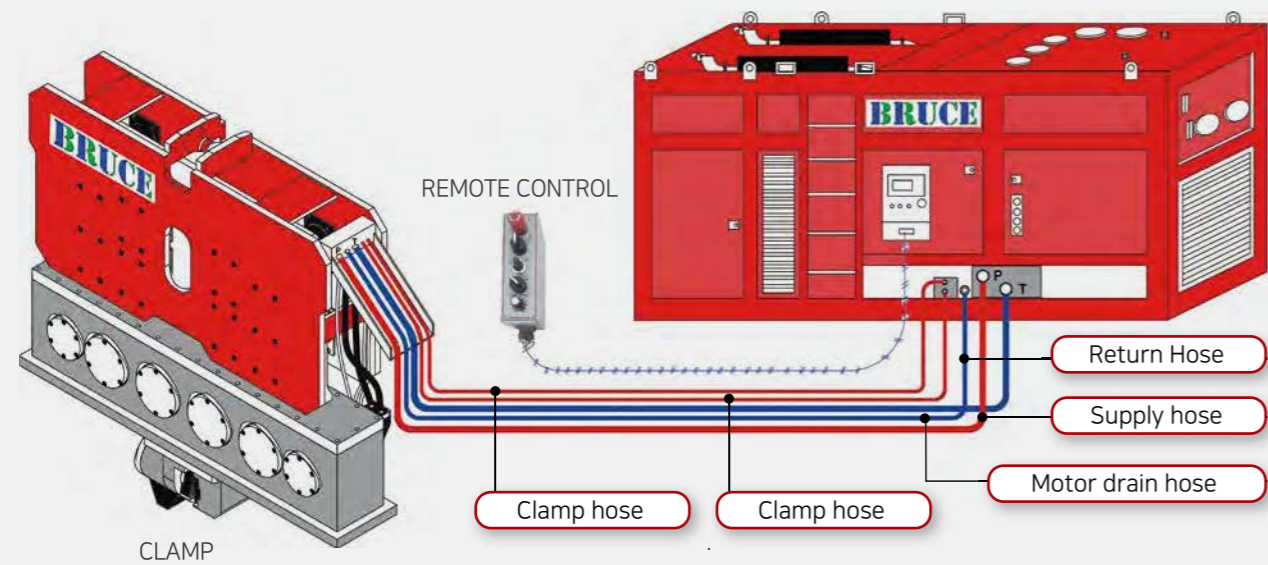


# OPERATING STRUCTURE OF CRANE SUSPENDED VIBRATORY HAMMER

## OPERATING STRUCTURE OF CRANE SUSPENDED TYPE

HYDRAULIC VIBRO HAMMER

HYDRAULIC POWER PACK



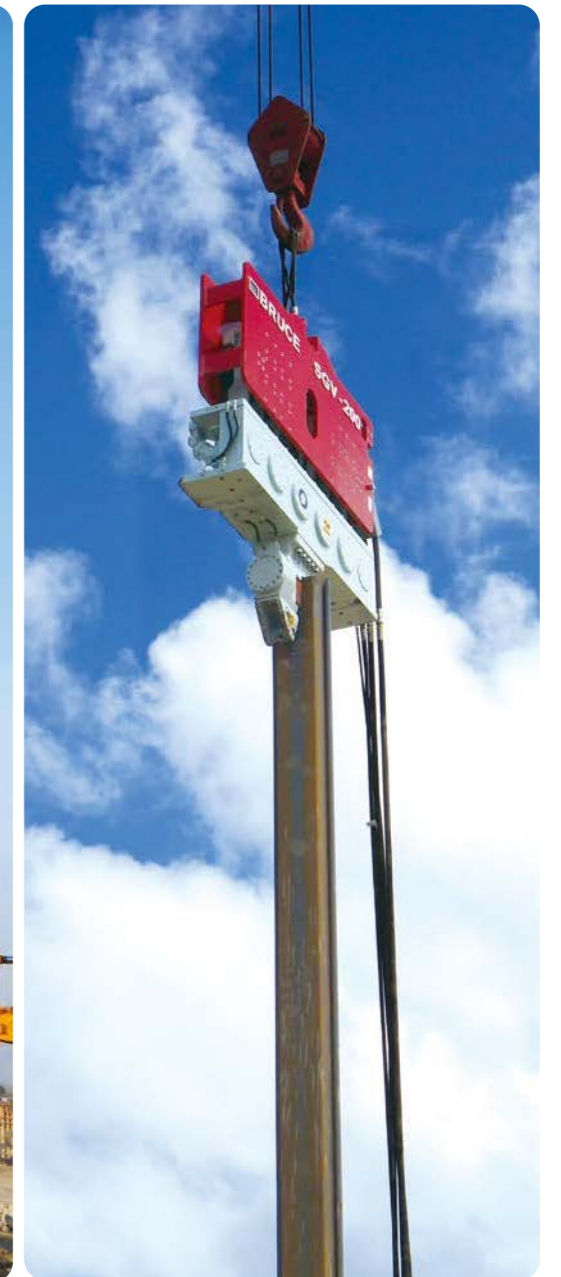
PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# Make Successful Pile Driving Solution

HYDRAULIC VIBRATORY HAMMERS



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# BRUCE VIBRATORY



PILE DRIVING & EXTRACTING VIBRATORY MACHINERY

# HAMMERS

through the world with BRUCE PILING EQUIPMENT !

