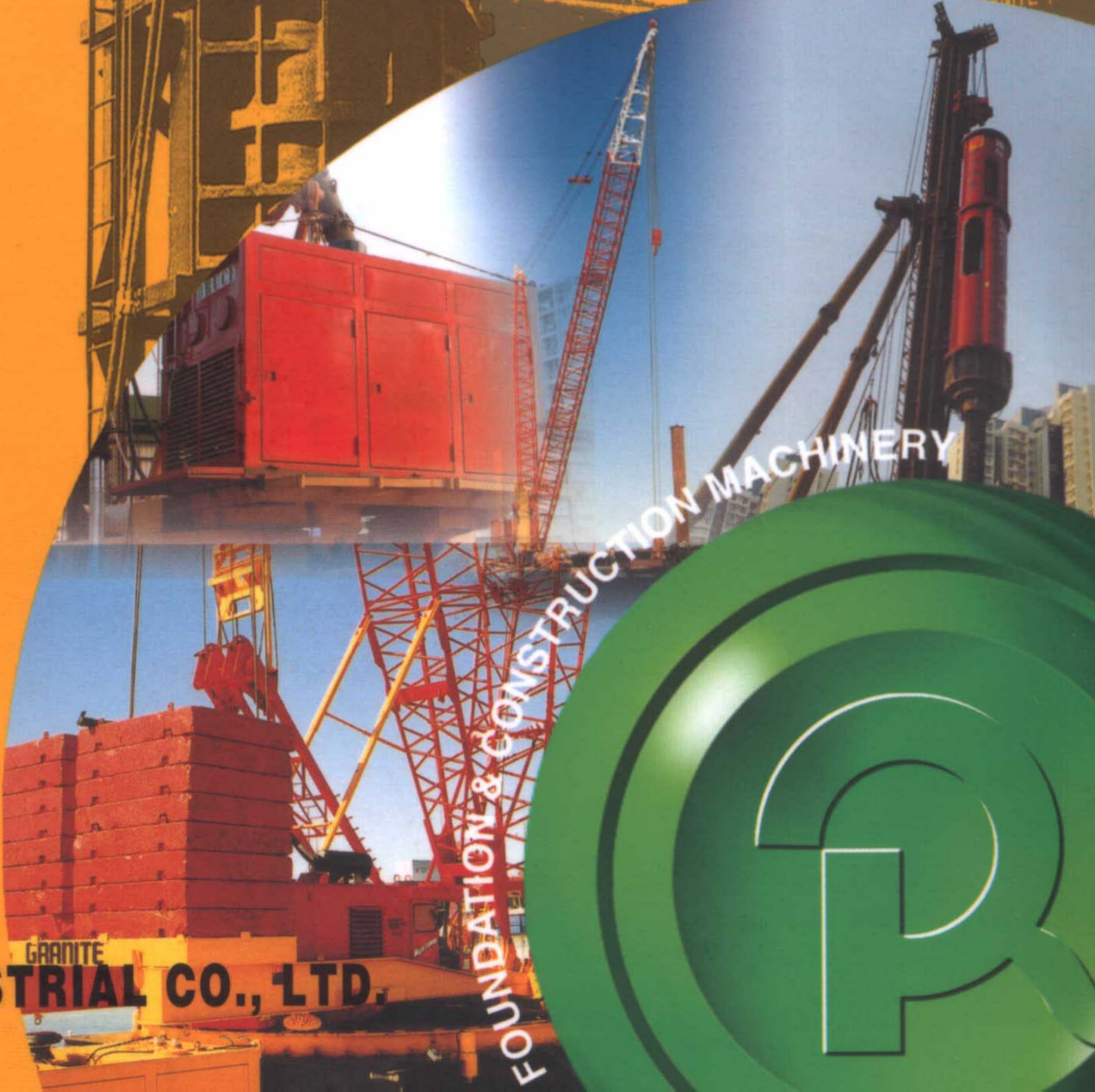


BRUCE

HYDRAULIC IMPACT PILE HAMMER



POWERQUIP INDUSTRIAL CO., LTD.





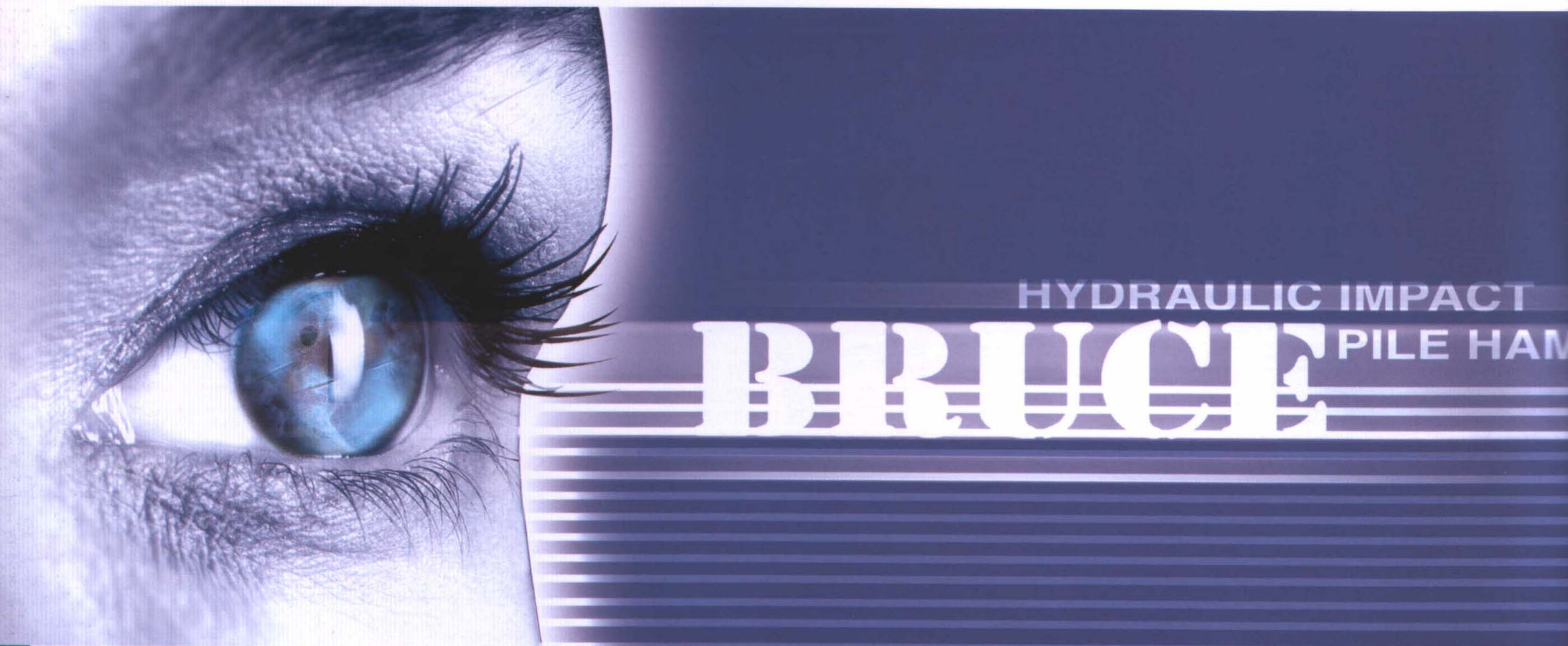
INTRODUCTION

Since we launched brand name Bruce hydraulic impact hammer, we have dedicated ourselves in foundation sector, continuously improving our quality, design and service.

Years of experience in on-site applications enabled us to meet the ever demanding requirements in the sectors of civil engineering and foundation.

Based on such experience, we have followed up our goal to make Bruce hammer most efficient, versatile and reliable, which provides customers a long life of profitable service at the end.

Our experienced and qualified R&D team is ready to help customers optimize their foundation procedures with our expertise, reliable equipments and knowledge in on-site support.



OUTSTANDING FEATURES OF BRUCE HYDRAULIC HAMMER

PROMINENT ENERGY TRANSFERRING RATE

With the help of efficient design of hammer body and the cushion arrangement, impact energy from ram drop can be transferred to pile head with lower energy loss. That means the job efficiency can be maximized.

LONGER LIFE TIME OF CUSHION PARTS INCLUDING BUFFER-RINGS

The well-built structure of hammer cap housing and optimum choice of cushion material ensure longer term use of cushion parts. Therefore customers can achieve the economic operation with lower running cost.

IMPROVED STABILITY AT RAM MOVEMENT

The elaborate design of ram parts and its housing enables the ram to travel minimizing the shock on whole hammer structure and cylinder parts as well. This fact gives improved stability of hammer operation.

ENERGY MONITORED (OPTIONAL)

To meet the demand for precise piling nowadays, Bruce hammer provides energy monitoring system as an optional kit, which enables continuous record of each blow energy on real time basis. Hard print and PC link are available for recording and further analysis.



MER

LOWER COST OF CONSUMABLE PARTS

As Bruce hammer choose only quality improved supplier of consumable parts, long life time of consumable part is guaranteed. Therefore users can save the cost with consumable parts.

SIMPLICITY IN DESIGN

The adoption of simple design principle allows easy maintenance and quick troubleshooting for operators both on control and mechanical side. Together easy operation can be gained with user-friendly design of remote control.

LONG-TERM RELIABILITY

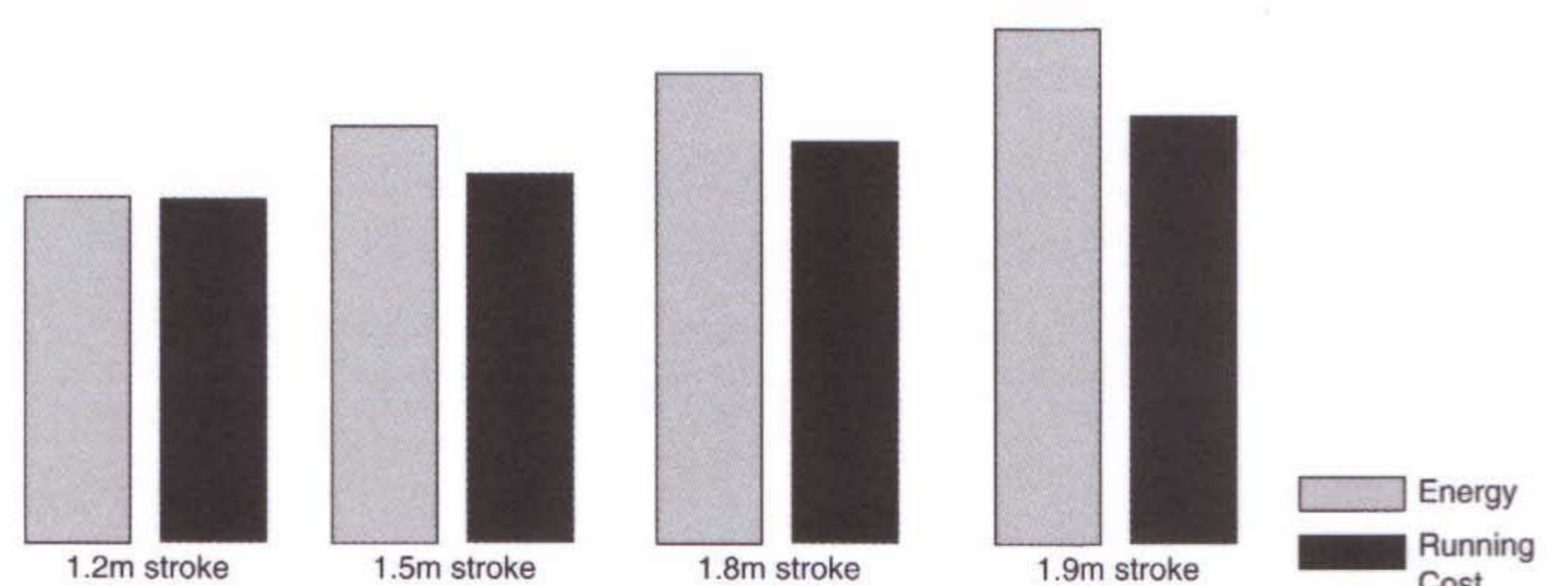
Bruce hydraulic hammers are designed and manufactured for long life service with minimal downtime. For the purpose, accurate and precise workmanship is adopted to electric and hydraulic system ensuring low downtime on both systems and promoted endurance with hoses, cables, couplings and other related parts.

VERSATILITY AND CONTROLABILITY

Bruce hammer can drive all types of piles on leader or crane suspension and can accept drive cap inserts for most types and sizes of piles. Bruce hammer also controls the stroke precisely to match hammer energy helping prevent pile damage and pile runaway.

HIGHER RAM STROKE

Higher ram strokes are available up to 1.9m with Bruce hammer. Therefore you can get more energy with the equivalent ram weight hammer with a little running cost rise.





BRUCE HYDRAULIC POWER PACK

The power pack has been designed to optimize hydraulic oil flow and pressure to match hammer impact energy. Its internal layout allows easy accessibility for maintenance. High cooling capacity design also ensures no overheating of hydraulic oil. Soundproofed design reduces noise level reaching surroundings.



1. TURBOCHARGED DIESEL ENGINE

Bruce hammer powered by Cummins turbocharged diesel engine ensures greater production by having higher horse power and torque ratings.



2. HIGH PERFORMANCE REXROTH SWASHPLATE TYPE PUMP

Adopted with axial piston type pump. Flows are controlled electrically.



3. HIGH COOLING CAPACITY

Applied with high cooling capacity, power pack is operable under high atmospheric temperature up to 40°C

4. BIODEGRADABLE OIL ADAPTABLE

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

5. GOOD FILTRATION

Mounted with high capacity filters prevent hydraulic oil contamination.

6. SIMPLE HYDRAULIC AND ELECTRIC CIRCUIT

Simply-designed hydraulic and electric circuit assures easy and quick maintenance and low down-time.



ELECTRIC REMOTE CONTROL SYSTEM



With Bruce hammer remote control system, you can control piling and failure check in piling rig cabin or long distance from piling area. Abnormalities in each function are monitored on LEDs with high brightness signal so that diagnosis and remedy can be done quickly.

MAIN FUNCTIONS HAMMER OPERATION

- Dwell control for ram staying time on pile
- Digital blow counter recorder
- Stroke control for impact energy
- Operatable in both manual and automatic mode
- Automatic cut-off circuit breaker to prevent
- Electric power abnormality
- Engine start and stop

ABNORMALITY CHECKING ON LEDS

- Coolant temperature
- Checking abnormality with engine oil
- Short-circuit or disconnection on hammer solenoid valve wire
- Main relief valve checking
- Power supply on/off on Led
- Sensor function
- Battery charge

HYDRAULIC IMPACT PILE HAMMER CONTROL SYSTEM POWER PACK



HYDRO CONTROL PANEL

WITH CIRCUIT PROTECTOR, PERFECT PROTECT ON ELECTRIC CIRCUIT IS POSSIBLE. EASY TO MONITOR THE HYDRAULIC SYSTEM WITH CONTROL PANEL

- Battery recharge & coolant temperature meter
- Engine run & stop key
- Main electric supply on/off switch
- Engine oil pressure meter
- Circuit breaker for shortcircuit or fault on electric circuit
- Engine speed lever
- Main hydraulic pressure indication
- Engine speed indication





SPECIFICATION

BRUCE

HYDRAULIC IMPACT PILE HAMMER

POWER PACK SERIES		PQ - 200	PQ - 250	PQ - 300	PQ - 450	PQ - 500	PQ - 600
Engine Type		Cummins/6BT	Cummins/6CT	Cummins /LTA10-C	Cummins/N14-C		
Engine Power	(HP)	185@2100rpm	230@2100rpm	290@2100rpm	425@2100rpm	475@2100rpm	525@2100rpm
	(kw)	138@2100rpm	172@2100rpm	216@2100rpm	317@2100rpm	354@2100rpm	392@2100rpm
Setting Pressure	(bar)	300	300	300	300	300	300
	(psi)	4352	4352	4352	4352	4352	4352
Rated Flow Rate	(lpm)	195	325	400	600	650	690
	(gpm)	52	86	106	159	172	182
Hydraulic Oli Tank Capacity	(liter)	350	350	700	800	800	1000
	(gal)	93	93	185	211	211	264
Fuel Tank Capacity	(liter)	300	500	500	500	500	800
	(gal)	79	132	132	132	132	211

DIMENSIONS

Overall Length	(mm)	2500	2900	3300	3300	3300	3400
	(ft)	8.20	9.51	10.83	10.83	10.83	11.15
Overall Width	(mm)	1300	1600	1600	1600	1600	1700
	(ft)	4.27	5.25	5.25	5.25	5.25	5.58
Overall Height	(mm)	1850	2100	2100	2100	2100	2200
	(ft)	6.07	6.89	6.89	6.89	6.89	7.22

WEIGHT

Operating	(kg)	3500	3800	4000	4000	4000	5000
	(lbs)	7716	8378	8819	8819	8819	11023
Dry	(kg)	4000	4400	5000	5000	5000	6000
	(lbs)	8819	9700	11023	11023	11023	13228
SUITABLE BRUCE HAMMER SERIES		3, 4, 5, 7	10, 12	14, 1415	16, 1615	1618, 1619, 1815, 20, 2015	30

- Other ram weights on request.
- The operating data, dimensions and values are submitted from the last specification.
- We reserve the right to make modifications without further notice.





BRUCE SGH - 3013 working at bridge foundation site in Panama City, Florida driving concrete pile (O.D 60" x 1.D 45" x 120' length)



BRUCE SGH - 1618 & 1619 in Hong Kong driving H-beam piles (305 x 305, 223 kg/m, 12m length)



IMPACT ENERGY MONITOR SYSTEM - OPTIONAL



Using energy monitoring system, impact energy and blow rate can be controlled according to soil conditions and piles. The measured blow and energy can be printed on-site or stored in data logger, which enables data transfer to PC.

Therefore further analysis of piling procedure can be done.



IEA system
Impact Energy Analyzer ver 2.0

BRUCE

IEA S/N : IEA-####
Project name : #####
Hammer model : #####
Hammer S.N : #####
Ram weight : ##### ton
Max. stroke : ##### m
Location : #####
Contractor : #####
Operator : #####
Pile No. : #####

A - Penetration depth(m)
B - Blows per step
C - Cumulative blows
D - Blow-rate(bpm)
E - Avg. energy per step(ton.m)
F - Stroke height(m)

```

A B C D E F
### ## ## ## ## ##
### ## ## ## ## ##
### ## ## ## ## ##
### ## ## ## ## ##
### ## ## ## ## ##
### ## ## ## ## ##
Piling start depth : ## m
Piling date : ##/##/####
Piling start time : #####
Piling end time : #####
  
```

SPECIFICATION

BRUCE HAMMER SERIES	3	4	5	7	10	12
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OPERATING DATA

Ram Weight	(ton)	3	4	5	7	10	12
	(lbs)	6614	8819	11023	15432	22046	26455
Minimum Stroke	(mm)	200	200	200	200	200	200
	(inch)	7.87	7.87	7.87	7.87	7.87	7.87
Maximum Stroke	(mm)	1200	1200	1200	1200	1200	1200
	(ft)	3.94	3.94	3.94	3.94	3.94	3.94
Maximum Potential Energy	(ton.m)	3.6	4.8	6.0	8.4	12.0	14.4
	(lb.ft)	26038	34718	43397	60756	86794	104153
Blow Rate at Maximum Stroke	(bpm)	42	42	40	40	38	38
Operating Pressure	(bar)	230	230	230	230	250	250
	(psi)	3337	3337	3337	3337	3627	3627
Required Flow Rate	(lpm)	170	170	170	190	260	320
	(gpm)	45	45	45	50	69	85

DIMENSIONS

Overall Length of Hammer	(mm)	5300	5300	5300	5660	5910	6260
	(ft)	17.3	17.3	17.3	18.57	19.39	20.54
Overall Width of Hammer	(mm)	650	650	650	1020	1130	1130
	(ft)	2.13	2.13	2.13	3.35	3.71	3.71
Overall Height of Hammer	(mm)	930	930	930	1180	1530	1530
	(ft)	3.05	3.05	3.05	3.87	5.02	5.02

GUIDE PIPE MATCHING FOR LEADER

Standard	(mm)	330 × ø 70	330 × ø 70	330 × ø 70	330 × ø 70	600 × ø 101.6	600 × ø 101.6
Option	(mm)	600 × ø 101.6	600 × ø 101.6	600 × ø 101.6	600 × ø 101.6	330 × ø 70	-

DIMENSIONS

Hammer Weight (W/O, Drive Cap)	(kg)	7000	8000	9000	11000	15300	18600
	(lbs)	15432	17637	19842	24251	33731	41006
Drive Cap Weight	(kg)	1000	1000	1000	1000	1200	1200
	(lbs)	2204	2204	2204	2204	2645	2645
SUITABLE PACK SERIES		PQ - 200	PQ - 200	PQ - 200	PQ - 200	PQ - 250	PQ - 250

- Other ram weights on request.
- The operating data, dimensions and values are submitted from the last specification.
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HYDRAULIC IMPACT PILE HAMMER

14	1415	16	1615	1618	1619	18	1815	20	2015	30
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14	14	16	16	16	16	18	18	20	20	30
30865	30865	35274	35274	35274	35274	39683	39683	44092	44092	66193
200	200	200	200	200	200	200	200	200	200	200
7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.87
1200	1500	1200	1500	1800	1900	1200	1500	1200	1500	1200
3.94	4.92	3.94	4.92	5.90	6.53	3.94	4.92	3.94	4.92	3.94
16.8	21.0	19.2	24.0	28.8	30.4	21.6	27.0	24.0	30.0	36.0
121511	151893	138979	173592	208116	219883	156232	195291	173592	216990	260387
35	35	32	30	28	26	30	28	30	28	26
250	250	250	250	250	250	250	270	270	270	270
3627	3627	3627	3627	3627	3627	3627	3917	3917	3917	3917
320	370	350	410	480	480	410	480	410	480	550
85	98	93	108	127	127	108	127	108	127	145

6380	6770	6420	6760	7990	8165	7590	7990	8730	9570	9800
20.93	22.05	21.06	22.18	26.21	26.79	24.90	26.21	28.64	31.40	32.15
1130	1130	1350	1350	1350	1350	1350	1350	1350	1350	2080
3.71	3.71	4.43	4.43	4.43	4.43	4.43	4.43	4.43	4.43	6.82
1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	2180
5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02	7.15

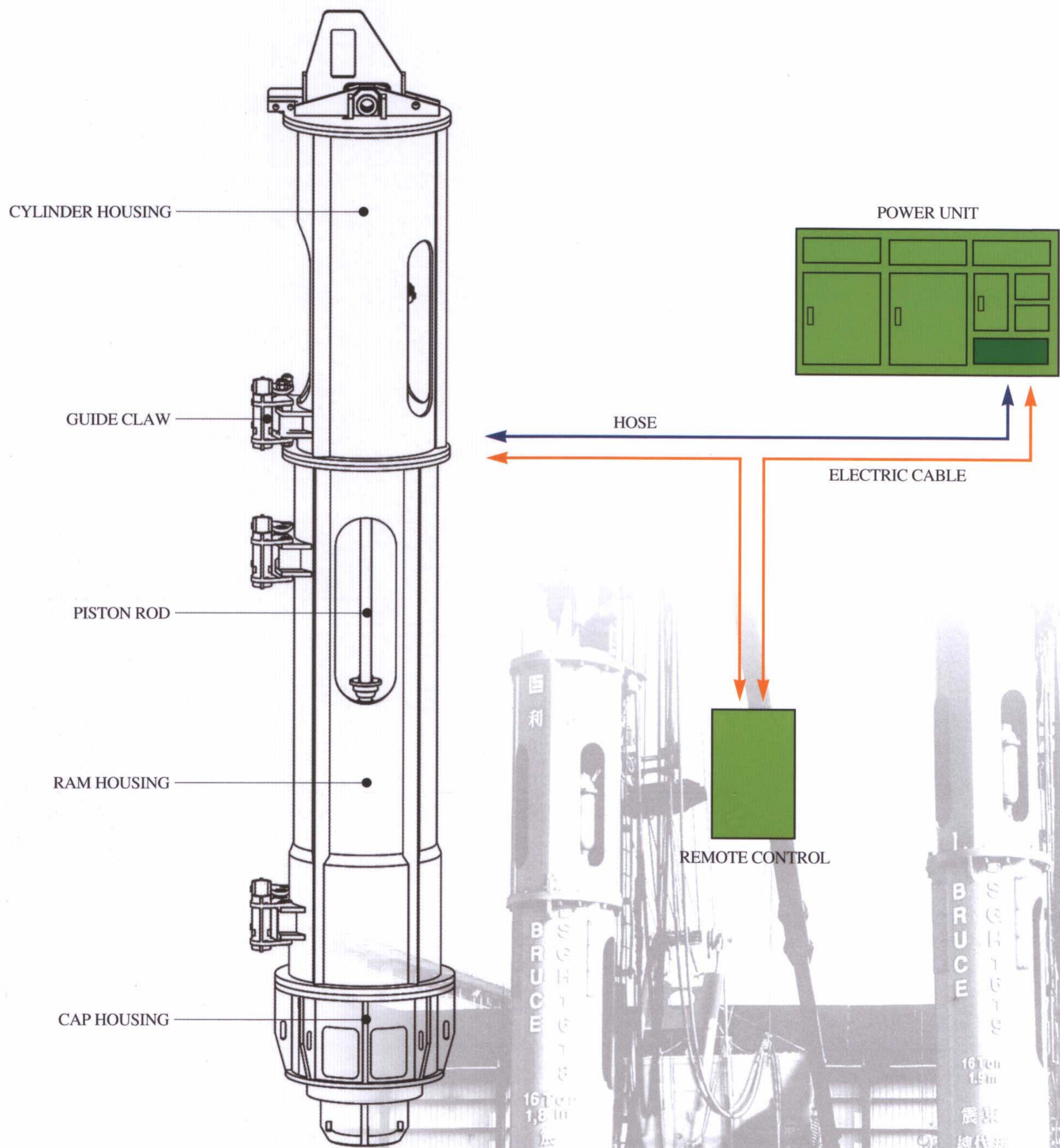
600 × ø 101.6										On request
-	-	-	-	-	-	-	-	-	-	-

22300	23600	26000	26300	26500	26700	28000	29000	32000	32500	53000
49163	52029	57319	57980	58422	58863	61729	63934	70547	71650	116845
1200	1500	3240	3240	3240	3240	3240	3240	3240	3240	8000
2645	3307	7143	7143	7143	7143	7143	7143	7143	7143	17637
PQ - 300	PQ - 300	PQ - 450	PQ - 450	PQ - 500	PQ - 500	PQ - 500	PQ - 500	PQ - 500	PQ - 500	PQ - 600

GRANITE

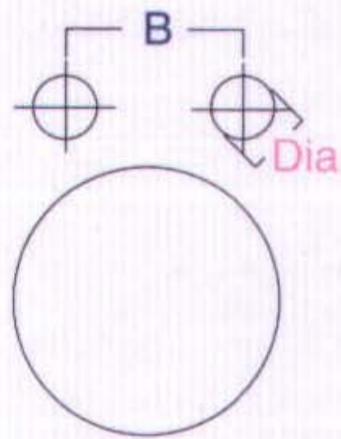


BASIC STRUCTURE



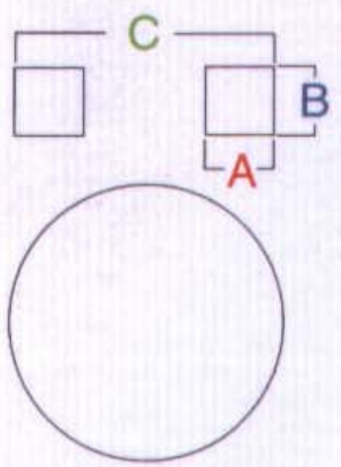


APPLICATION OF LEADER AND GUIDE



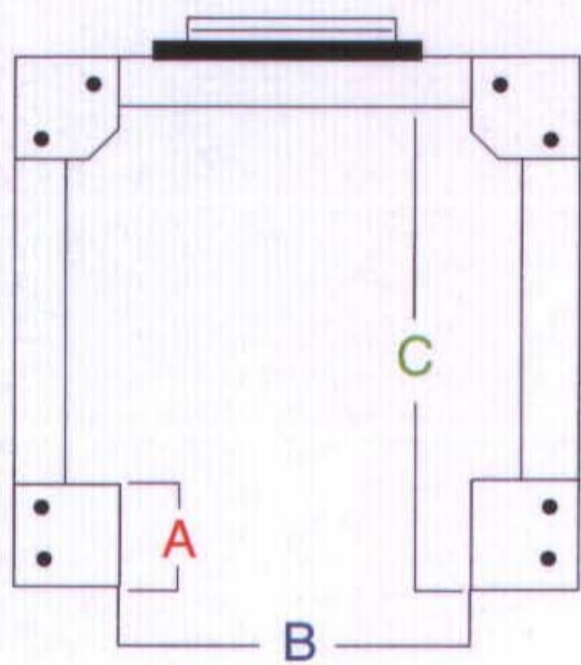
DIA	B
ϕ 70	330
ϕ 1016	600

mm



A	B	C
100	330	600
120	120	720

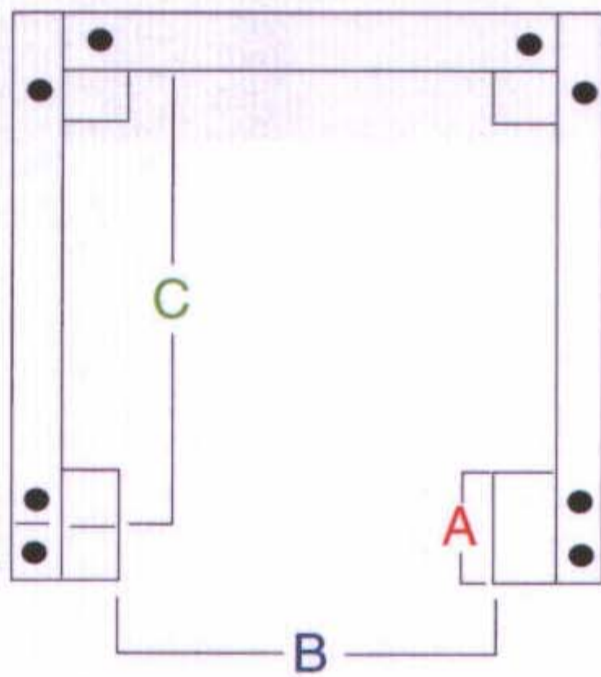
mm



HPSI "U" Type Leads

(inch / mm)

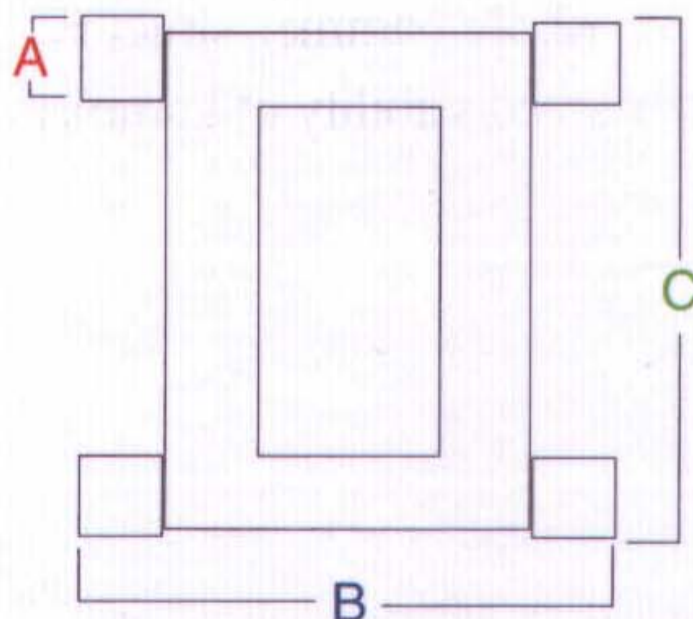
Size	A	B	C
8 x 21	8 / 203	21 / 533	28 / 711
8 x 27	8 / 203	27 / 686	32 / 813
8 x 33	8 / 203	33 / 838	42 / 1067
10 x 38	10 / 254	38 / 965	48 / 1219



MKT "U" Type Leads

(inch / mm)

Size	A	B	C
8 x 20	8 / 203	21 / 533	28 / 711
8 x 26	8 / 203	27 / 686	32 / 813
8 x 32	8 / 203	33 / 838	42 / 1067
8 x 35	8 / 203	36 / 914	53 / 1346
11 x 32	11 / 279	33 / 838	44 / 1118
11 x 37	11 / 279	37 / 940	53 / 1346



FEC "BOX" Type Leads

(inch / mm)

Size	A	B	C
ST 75	3 / 76	21.5 / 546	24 / 610*
8 x 27	3 / 76	28.5 / 724	39 / 914
8 x 33	5 / 127	28.5 / 724	36 / 914

* Leads & Mounting Guide

Leads & Mounting Guide can be tailor-made according to customer requirement.

* Drive Caps

Drive Caps are tailor - made to match with the customers' pile dimensions.

* Other shape and size can be applied



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