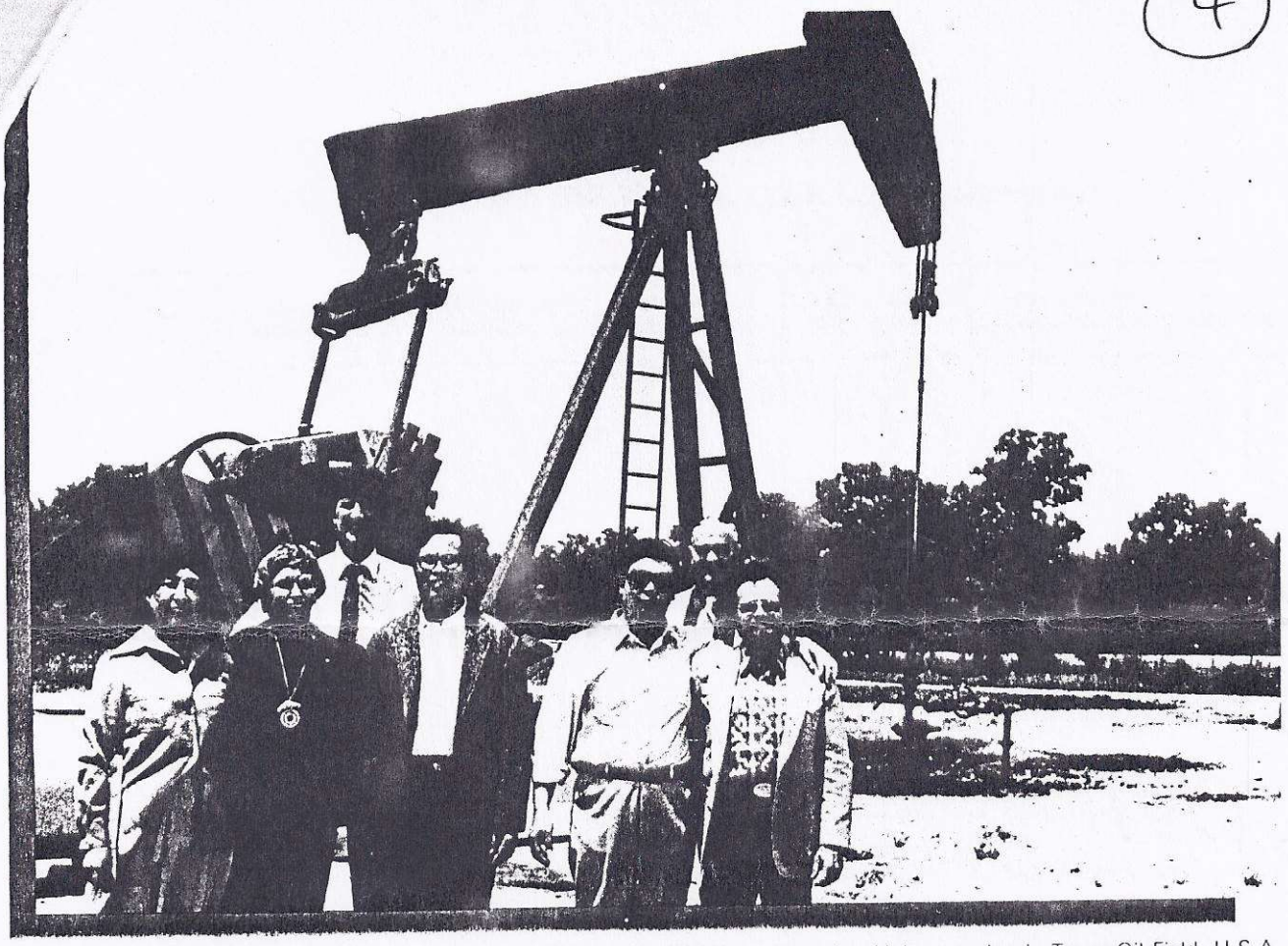


Chinese C-MEC Beam Pumping Unit operating in Texas Oil Field, U.S.A.

C-MEC BEAM PUMPING UNITS WITH API APPROVAL

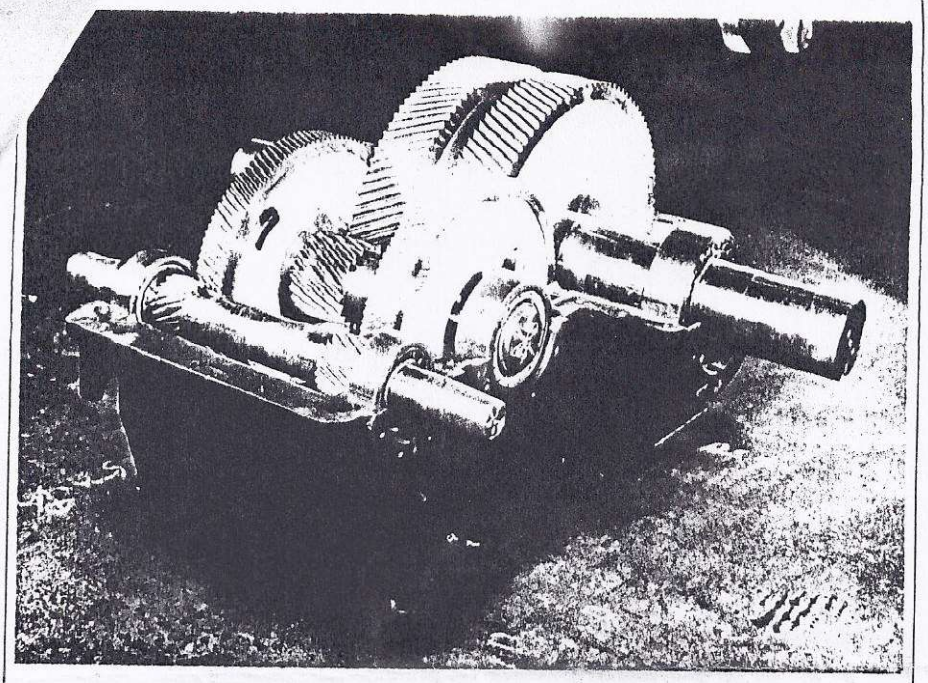
Chinese C-MEC Beam Pumping Units ranging from models 114, 160, 228, 320, 456 up to 640 designed according to API standard, manufactured by Lanzhou Petroleum & Chemical Machinery Works, Lanzhou General Machinery Plant and Luoyang Mining Machinery Works, exported by China National Machinery & Equipment Import & Export Corporation are good in quality, reliable in operation and sound in construction.

C-MEC Beam Pumping Units have been working satisfactorily in the oil fields all over China for more than twenty years. The units require only minimum maintenance and can operate under adverse conditions for long service years.

Based on that rich experiences, starting from early 1981, a great number of C-MEC Beam Pumping Units have been exported and used in the United States, Canada and South America and are favourably received by the users there. The users are very pleased with the units and have made very good comments. For instance, one of the users in Oklahoma State, USA, said: "We have been extremely satisfied with the design and operation of the units. We have had no problems with the units up till now. It appears to be very structurally sound and we have been very pleased with it". Another American user said: "All of these units are working well. They are very well built and the quality is good".

On July 1, 1982, the American Petroleum Institute based on their extensive investigations and the comments of the users officially approved API monogram for the above C-MEC Beam Pumping Units made by the above three factories. To this, one American user said: "You really deserve the title. We are very proud of using Chinese C-MEC Beam Pumping Units".

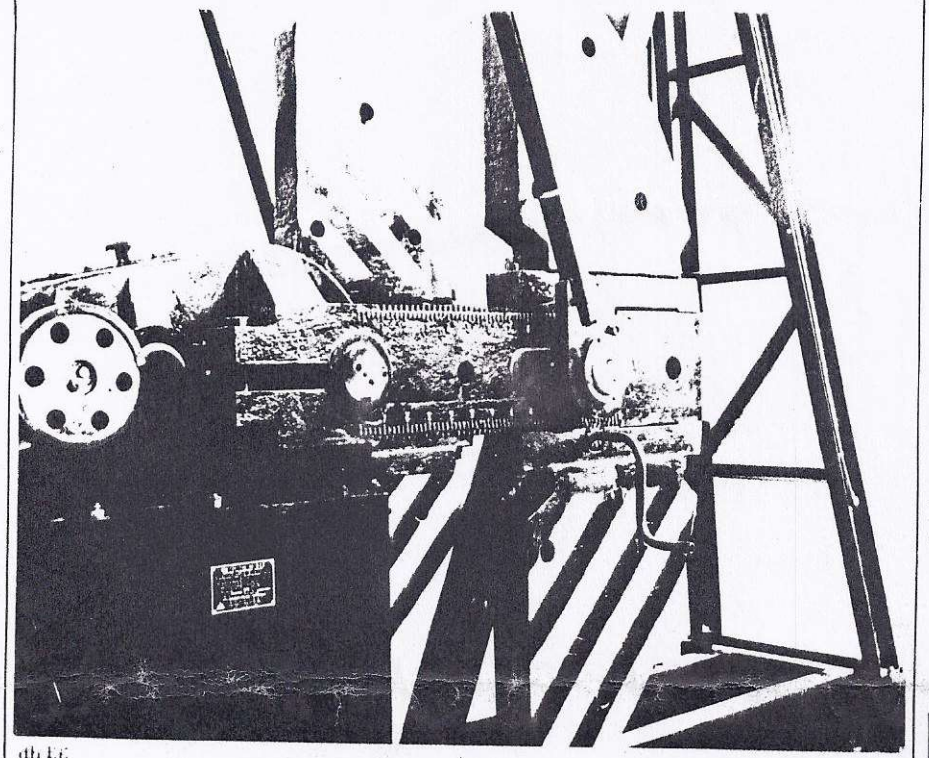
C-MEC Beam Pumping Units are not only good in quality but also prompt in delivery and most competitive in price. Besides, spare parts supply is guaranteed and technical service can be offered at the request of the users. If you want to benefit from your oil fields, please don't hesitate to contact China National Machinery & Equipment Import & Export Corporation, 12 Fu Xing Men Wai Street, Beijing, China. Telex: 22186 EQUIP CN.



圓弧齒輪減速器，加工精細，檢驗嚴格，嚙合精度高，運轉平穩，噪音小，壽命長。

Gear reducer

The circular-arc tooth gear reducer is excellent in workmanship, stringent in inspection, high-precision in mesh. It runs smoothly with less noise and has a long service life.



為使懸點準確對正油井中心，在游樑中部有四個調整螺釘，可使游樑前後移動。連接到頂部軸承的管綫引到適當高度，便於在地面潤滑。軸承上部裝有釋放閥，防止損壞密封。

Walking beam

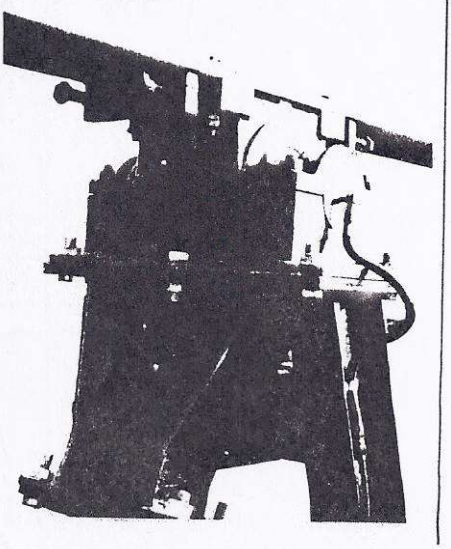
In order to coincide the center of polish rod with the center of the well-head, there are four screws in the middle of the walking beam to move it forward or backward. The pipelines connected to the top bearings are led to a suitable level to facilitate the lubrication on the ground. Relieve valves are furnished on the top of the bearing to prevent the seal from damage.

曲柄

曲柄上的銷孔是用來調整冲程長度的，每種抽油機的曲柄上都有三個銷孔可供選用。曲柄上的平衡塊是用來調整平衡力矩的。一個人用小齒輪手搖把就能將它移動，以改變力矩的半徑，這樣，在現場調整平衡力矩非常方便。當曲柄處於水平位置時，平衡塊的重心通過小齒輪的中心，小齒輪中心對應的曲柄上的刻度標明平衡力矩半徑的數值。

Crank

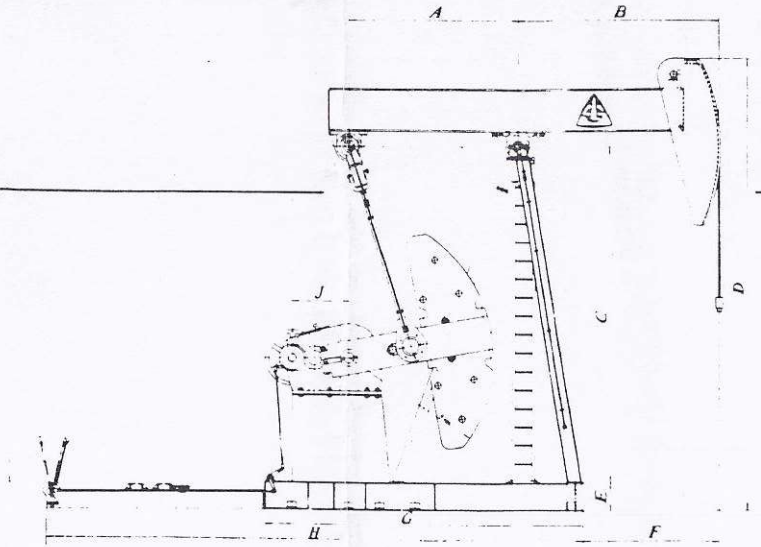
The pin holes on the crank are used for adjusting the length of the stroke. There are three pin holes to be selected on the crank for each kind of the pumping units. The counter-weights on the crank are used for adjusting balancing torque. They can be moved by one man with a pinion crank handle to change the radius of the torque. Thus, adjusting balancing torque can be performed with ease in oilfield. The center of gravity of counter-weight passes through the center of the pinion while the crank is at horizontal position. The scale on the crank corresponding to the center of the pinion indicates the radius of balancing torque.

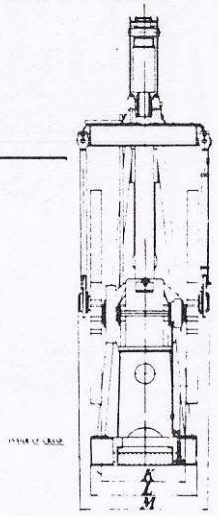


MAIN DESIGN DIMENSIONS

Type	Unit	A	B	C	D	E	F	G	H	I	J	K	L	M	R max
114-143B-64	mm	1830	2135	3360	4680	300	1405	3300	5060	1135	650	1100	1290	1845	1425
	in	72 3/64	84 3/64	132 9/32	184 1/4	11 13/16	55 5/16	129 59/64	199 13/64	44 11/16	25 19/32	43 5/16	50 25/32	72 5/8	56 3/32
160-200B-74	mm	2440	2440	4625	6110	360	1535	4600	8395	1695	750	1210	1350	1950	1985
	in	96 1/16	96 1/16	182 5/64	240 9/16	14 11/64	60 7/16	181 3/32	330 1/2	66 23/32	29 17/32	47 41/64	53 9/64	76 49/64	78 9/64
320-305B-100	mm	2820	3280	5480	7295	400	2200	5310	8340	2050	950	1500	1770	2285	2400
	in	111 1/32	129 9/64	215 47/64	287 13/64	15 47/64	86 39/64	209 3/64	328 11/32	80 45/64	37 25/64	59 3/64	69 43/64	89 61/64	94 31/64
640-365B-144	mm	3050	4600	6050	8450	400	3440	5800	9020	2250	1200	1842	1930	2730	2600
	in	120 5/64	181 7/64	238 11/64	332 43/64	15 47/64	135 27/64	228 11/32	355 1/8	88 37/64	47 1/41	72 33/64	75 63/64	107 31/64	102 23/64

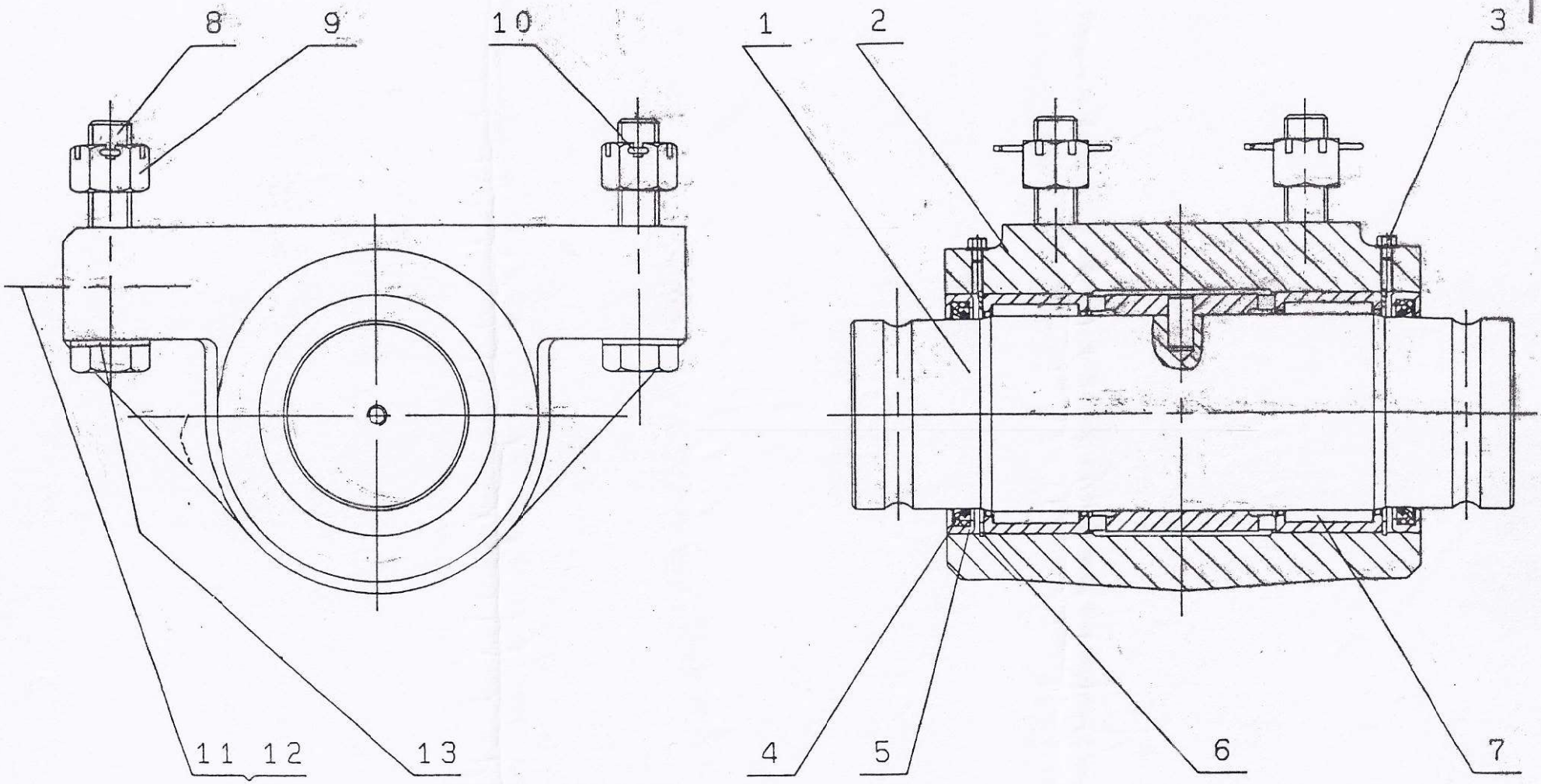
NOTES: 1. Do not use above dimensions for foundation.
2. The works reserves the right to modify the design and specifications without incurring any obligation.





SPECIFICATIONS OF BEAM PUMPING UNIT

TYPE		114-143B-64 114H-143B-64			160-200B-74 160H-200B-74			228-246B-86 228H-246B-86			320-305B-100 320H-205B-100			456-365B-120 456H-365B-120			640-365B-144 640H-365B-144		
Maximum Polished Rod Capacity	kg	6500			9100			11200			13840			16560			16560		
	lbs	14300			20000			24600			30500			36500			36500		
Stroke Length of Polished Rod	m	1.62	1.31	1.01	1.88	1.62	1.37	2.18	1.88	1.58	2.54	2.16	1.78	3.05	2.60	2.16	3.66	3.12	2.60
	in	64	52	40	74	64	54	86	74	62	100	85	70	120	102.5	85	144	123	102
Type of Balance		CRANK BALANCE																	
Maximum Counterbalance Effect of Counterweights on Polished Rod	kg	5192	6211	7786	7304	8612	10537	8617	9854	11542	11589	13447	16066	13526	15600	18478	12694	14722	17538
	lbs	11446	13913	17172	16102	18986	23230	18997	21724	25445	25550	29644	35420	29819	34391	40736	27985	32456	38664
Wireline Hanger	mm x mm	28 x 212			28 x 212			28 x 212			32.5 x 300			36.5 x 304			36.5 x 400		
	in x in	1.102 x 8.346			1.102 x 8.346			1.102 x 8.346			1.28 x 11.81			1.44 x 11.97			1.44 x 15.75		
One Section for Walking Beam	mm, in	450 x 320mm, 17.7 x 12.6 in			560 x 360 mm, 22 x 14.2 in			690 x 250 mm, 27 x 10 in			690 x 355 mm, 27 x 14 in			765 x 380 mm, 30 x 15 in			840 x 400 mm, 33 x 15.8 in		
	lb/ft	44			61			117			165			187			200		
Cranks	kg	626 x 4			820 x 4			1430 x 4			1540 x 4			1988 x 4			2005 x 4		
GEAR REDUCER Type: Involute Tooth Gear		JS-650			JS-750			JS-850			JS-950			JS-1070			JS-1200		
GEAR REDUCER Type: Circular-arc Tooth Gear		JS-650H			JS-750H			JS-850H			JS-950H			JS-1070H			JS-1200H		
GEAR REDUCER Peak Torque Rating	kg-m	1310			1850			2625			3685			5250			7375		
	in-lbs	114000			160000			228000			320000			456000			640000		
GEAR REDUCER Total Gear Ratio		28.355			28.504			28.873			28.807			28.5			28		
GEAR REDUCER Sheave Diameter	mm	700			750			850			900			850, 1220			1130		
	in	27.559			29.528			33.465			35.433			33.465, 48.031			44.488		
GEAR REDUCER Oil Capacity	litre	170			180			240			260			475			728		
	gallon	45			48			64			70			127			194		
Type x Pcs of V-belt		C x 4			C x 5			C x 6			C x 6			D x 6			D x 6		
Overall Dimensions (L x W x H)	mm	6570 x 1845 x 4680			9000 x 1470 x 6110			9400 x 2000 x 6180			10570 x 2285 x 7295			11708 x 2514 x 8095			12460 x 2730 x 8450		
	in	259 x 73 x 184			355 x 58 x 241			370 x 79 x 243			416 x 90 x 287			461 x 99 x 319			491 x 107 x 333		
Total Weight																			



228-246-86"

BAJOU PLANT

Fig. 4 Equaling Bearing Assembly

Chinese - Bajoui

PARTS LIST OF PUMPING UNIT*

Ills No.	Part No.	Description	Material AISI, ASTM	QTY	
1	CB12004-09.02.01.00	Shaft	(Assembly)	1	
2	CB12004-09.02.02	Bearing Housing	Gray Cast-Iron 35	1	
3	CB12004-09.02.03	Safety Plug	A36	2	
4	CB12004-09.02.04.00	Oil Seal ϕ95xϕ120x12	(Assembly)	2	←
5	CB12004-09.02.05	Outer Ring	A36	2	
6	CB12004-09.02.06	Circlip	C1065	2	
7	CB12004-09.02.07.00	Needle Bearing 4"x5"x2"	(Assembly)	2	←
8	CB12004-09.02.08	Bolt M39x3x155	C1045	4	
9	CB12004-09.02.09	Nut M39x3	C1035	4	
10	0910570	Cotter Pin 5x70	A36	4	
11	0303080	Bolt M30x80	A36	1	
12	05230	Nut M30	A36	1	
13	CB12004-09.02.10	Washer 39	A36	4	

* See Fiqure 4.