

NCK-RAPIER ANDES G41B

Loads up to 91,400 lb. 41,460 kg.



**Ransomes & Rapier
Limited**

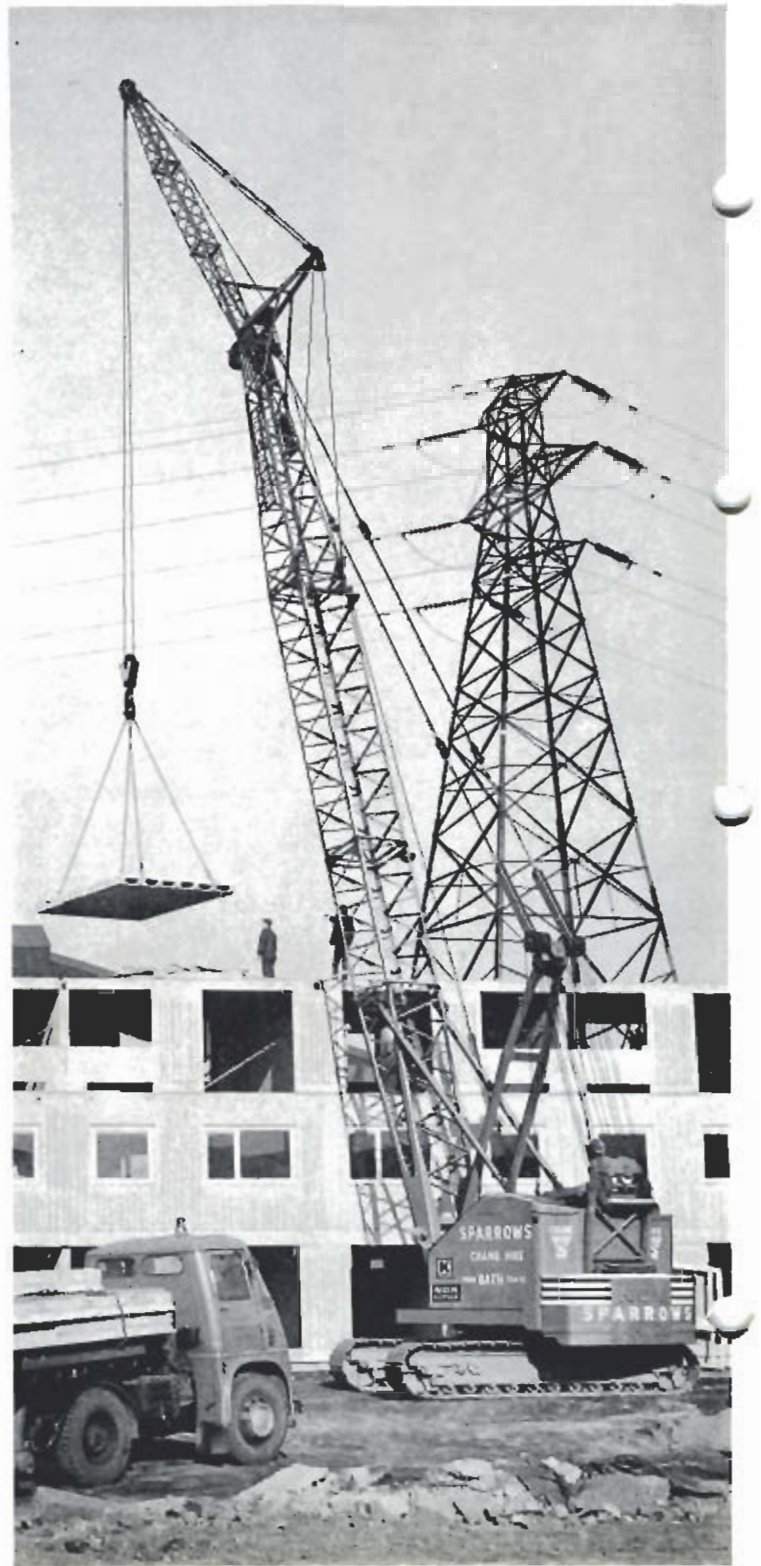
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NCK-RAPIER ANDES C41B

The NCK-RAPIER Andes C41B is a heavy duty crawler crane for loads up to 41 460 kg. (91,4000 lb.) and is specially arranged for stripping down under its own power for easy transport by road or rail.

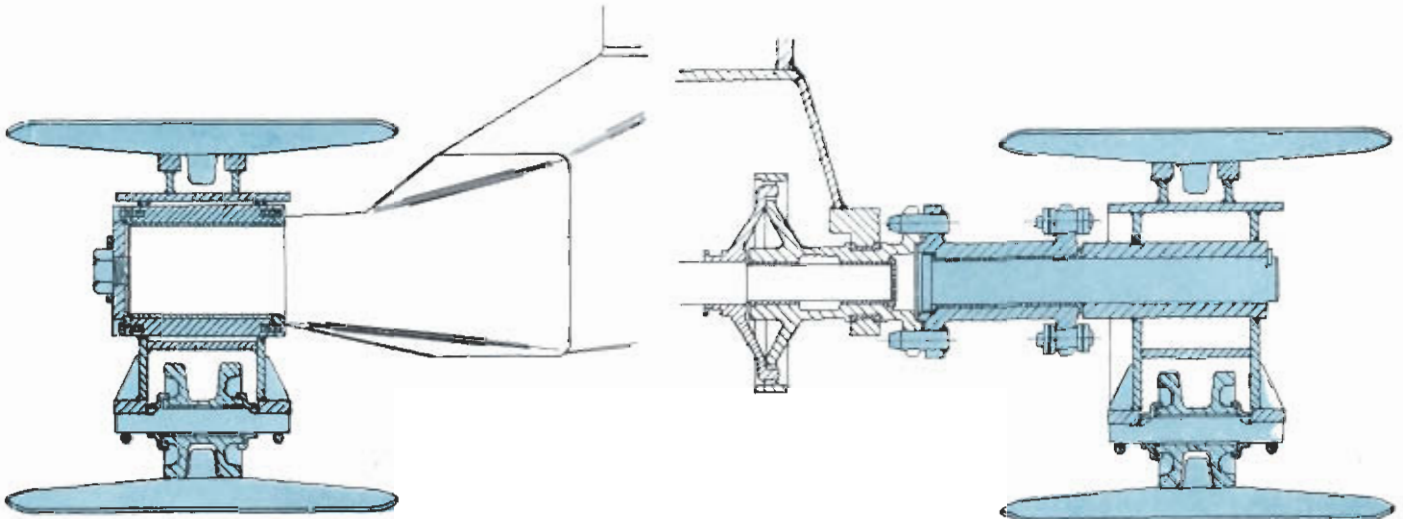
The Andes, a crane of forward looking design to meet the exacting requirements of the Construction Industry, is an unrivalled investment in profit-making potential, in work capacity, reliability and durability.



Stripping down for easy transport

The boom, counterweight and crawler units, complete with driving chains can be easily removed, leaving the machine with an overall width of only 2,84 metres (9 ft. 4 ins.) and a weight of less than 20 320 kg. (20 tons).

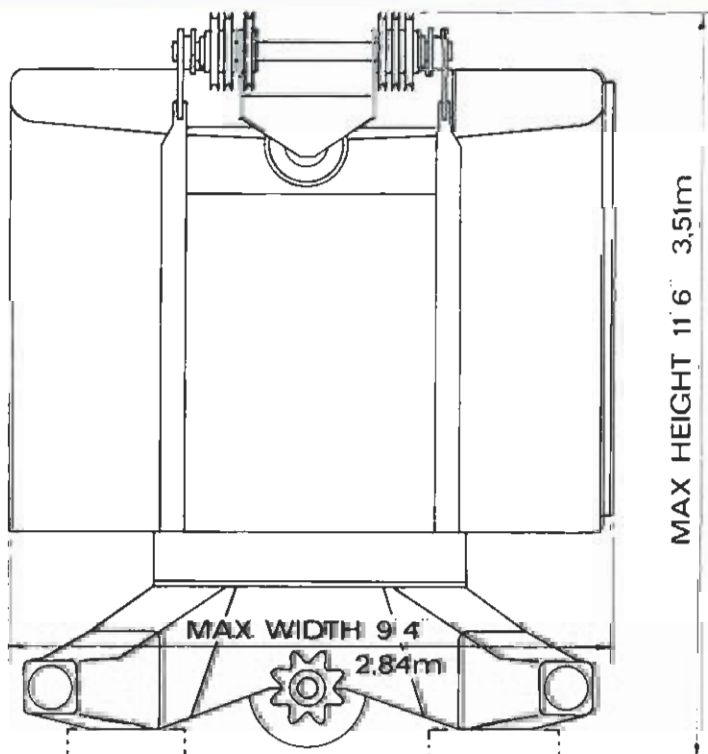
DIAGRAMS SHOWING THE CRAWLER FIXING AND DRIVE



SECTION SHOWING METHOD OF ATTACHING CARBODY AXLE ENDS TO CRAWLER FRAME

SECTION SHOWING DRIVE FROM LOWER TRACTION SHAFT

CRAWLERS REMOVED FOR TRANSPORT

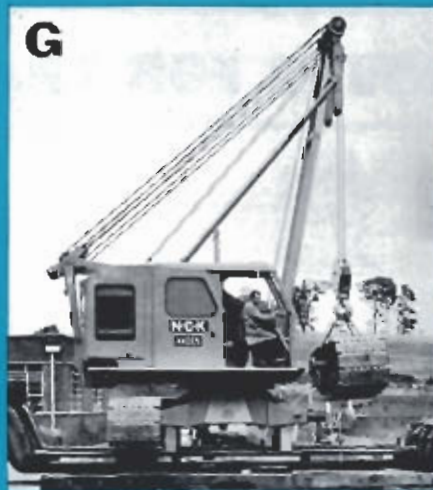
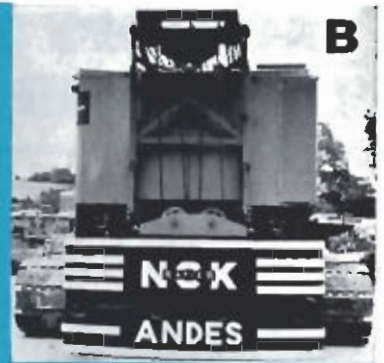


When stripped down with boom, outside counterweight, and both crawler side frames removed, but including the mast, the overall length is 4,62 m. (15' 2") and the weight is 20 280 kg. (44,710 lb.)

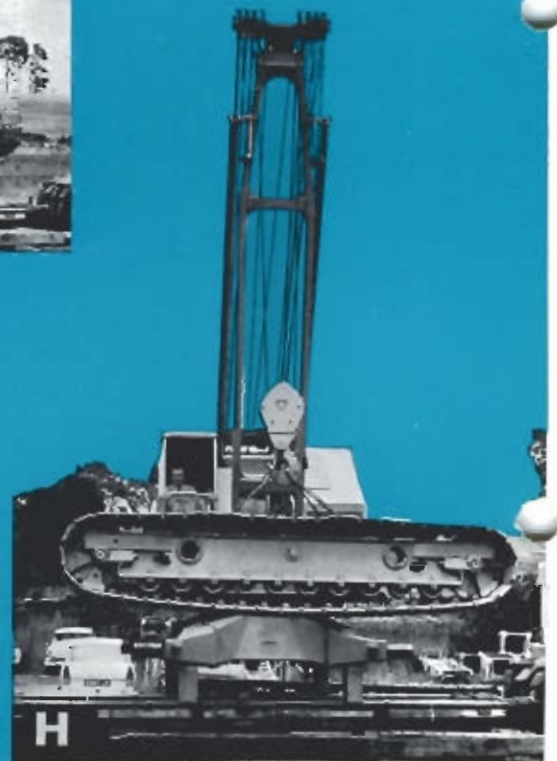
Stripping down procedure is illustrated on following page

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STRIPPING-DOWN PROCEDURE

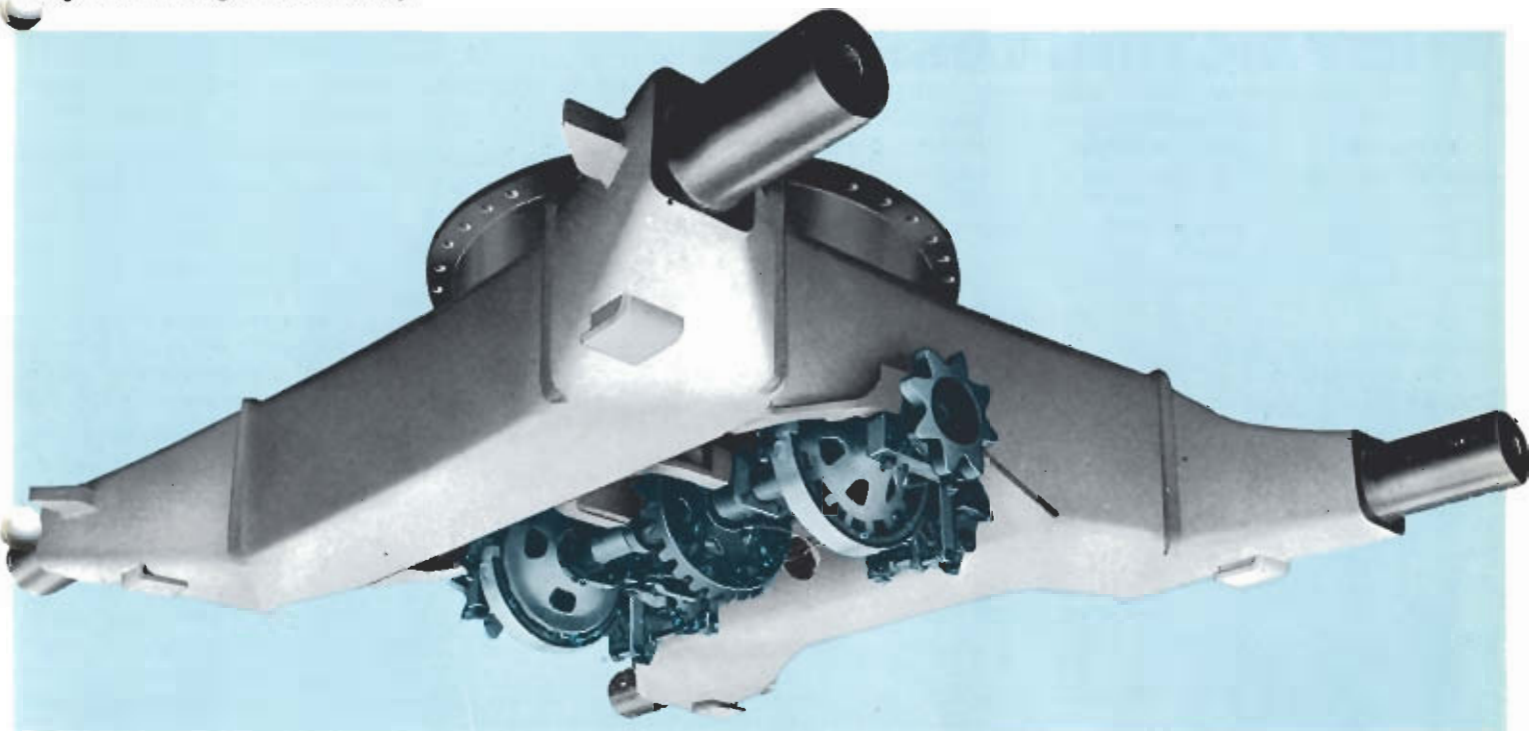


- A Remove boom, reeve one hoist rope over the mast and use mast for loading the boom on to separate vehicle.
- B Reeve second hoist rope for lowering the counterweight to the ground by power.
- C Load counterweight on to separate vehicle using mast and hook block.
- D Drive machine on to low loader from the side with crawlers across vehicle.
- E Jack up machine and block axles so that both tracks are clear of the vehicle deck. Special points for jacking and blocking are provided on the carbody.
- F Remove axle end caps.
- G Slide off first crawler frame complete with driving chain.
- H Remove second crawler and load on to separate vehicle. Pack up under carbody for extra security and rope down before travelling.



Carbody and Axles as integral fabrication

Welded construction of steel castings and rolled sections give rigidity and a great margin of strength to carbody. Axles are integral with fabrication.



The superstructure revolves on a totally enclosed single row ball slewing ring.

Self-cleaning Crawlers for smooth running and reduced wear

Heat treated cast steel shoes have smooth top and bottom surfaces that shed dirt. No holes or pockets to collect stones and jam tracks.

Full length pins join shoes to give longer life and greater strength.

Paired rollers straddle shoe lugs and prevent belts 'walking out'. They also spread the load over a greater area and their close spacing prevent buckling when travelling over rough ground.

Heavy circular axle trunnions fit into machined bores in the crawler side frames which are fitted with special bushings and axles are secured by single bolts and end caps.

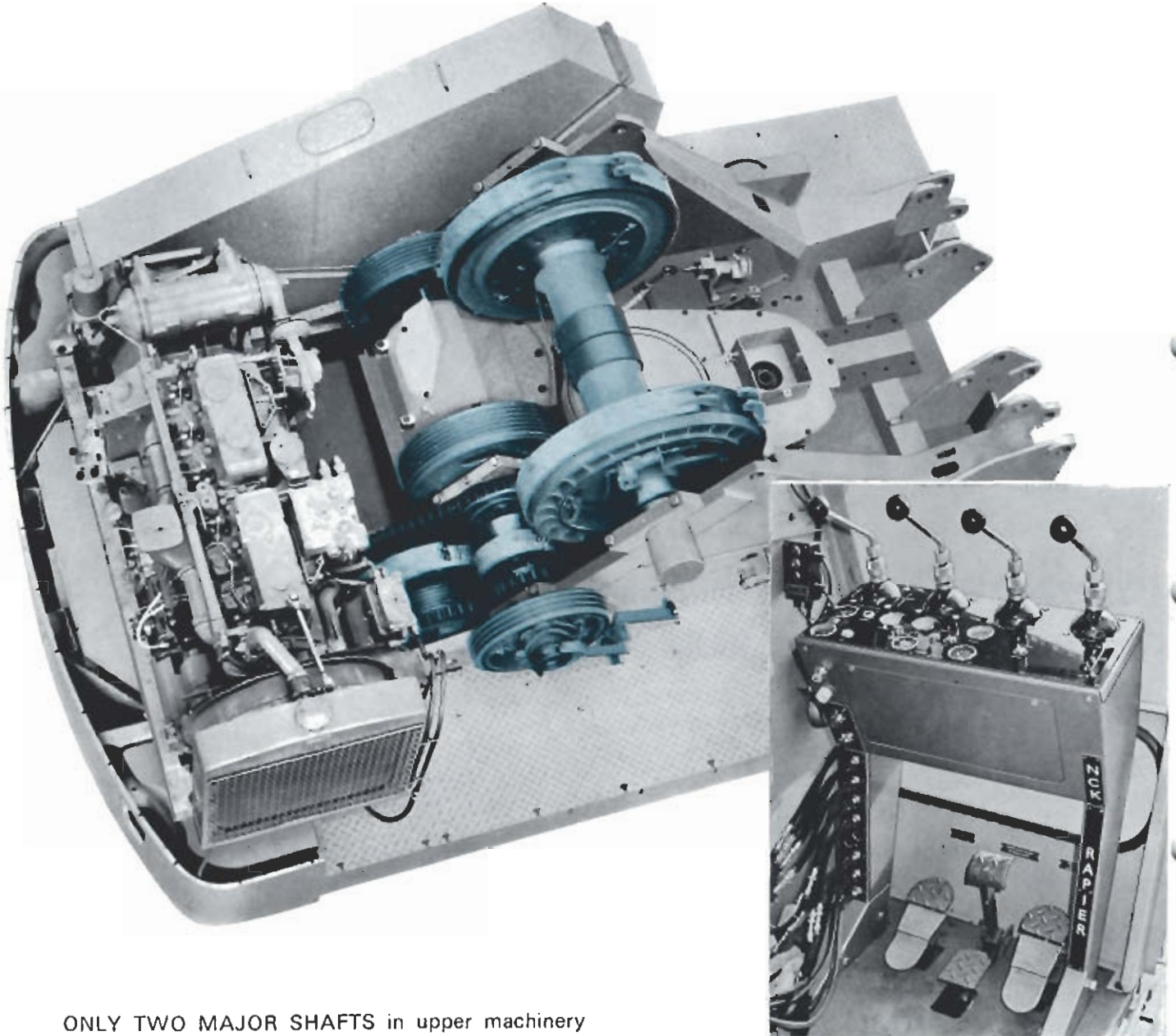
Large tumblers have wide, alternate tapered openings to avoid trapping stones and dirt, and give improved traction under bad ground conditions.

Simple hydraulic rams give accurate fast crawler belt adjustment.



NCK-RAPIER ANDES C41B

DESIGNED TO CUT WEAR AND FRICTION LOSSES



ONLY TWO MAJOR SHAFTS in upper machinery result in fewer parts, reduced wear and lower friction losses. With this simplified two major shaft design there is a main drum shaft, and a combined swing and traction and boom hoist shaft. They have involute splines for strength and easy removal of driving gears all of which are **totally enclosed and run in oil**. Both shafts are mounted on anti friction bearings.

MAIN DRUM SHAFT. Large diameter main drum clutch housings run on taper roller bearings. The split grooved drum laggings are easily changed for all front end equipments.

ALL CLUTCHES ARE AIR OPERATED, equipped with air chambers and quick release valve to ensure positive engagement and release of clutch giving light control and minimum operator fatigue.

SWING, TRACTION, BOOM HOIST SHAFT. Swing clutch housings mounted on anti friction bearings, are rotating constantly for maximum cooling. Boom hoist clutch is located at one end with separate drive to low mounted boom hoist drum.

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POWER: Diesel engine developing 133 B.H.P. at 1,640 R.P.M. Full load speed, fully equipped driving through a single stage torque convertor with over speed device and root accelerator. Nett power output is 100 B.H.P. at 1,485 R.P.M. full load speed. Equipment includes tropical radiator, cooling fan, air cleaner, lubricating oil filter, fuel pump, fuel filter and fuel tank.

OVER SPEED DEVICE: This is standard equipment with the torque convertor. It prevents the output shaft revolving faster than the input shaft when derricking out or lowering a heavy load at a low engine speed. If the output shaft tends to revolve faster than the input shaft then the over speed device forms a lock-up between the input and output shafts of the convertor; thus both shafts revolve at the same speed and the lowering speed is directly related to the engine speed. A tailshaft governor is necessary for dragline and grabcrane duty.

ADJUSTMENT: Power units can be readily adjusted to maintain correct drive chain tension.

GRADES: Machine will climb 30 per cent grades (1 in 33).

TURNTABLE: A welded structure built up from steel castings and structural steel. The side stands and bearings which support the horizontal and vertical shafts are integral with the turntable fabrication and shaft alignment remains true for the life of the machine. The superstructure revolves on a totally enclosed single row ball slewing ring.

CRAWLER SHOES: Heat treated steel castings providing great strength and large bearing area on the ground. They are linked by full length hinge pins giving long life. NCK-RAPIER design of crawler shoes and sprockets are self-cleaning thus reducing wear and increasing reliability.

TRANSPORTATION: To facilitate easy transport, the Andes can remove its own crawlers, and outer counterweight, and load them on to a lorry, all under its own power and without the assistance of another crane. The crawlers are removed from the carbody in complete units without removing the driving chains, and neither shoes nor driving chains need adjusting after re-assembly.

CRANE BOOM: Two piece pin jointed boom 12,2 m. (40 ft.) long, constructed of four alloy steel cord angles with welded bracing. Boom inserts are available for extending the boom up to a maximum length of 42,7 m. (140 ft.). Fly jibs up to 12,2 m. (40 ft.) long are available for use on booms up to 36,6 m. (120 ft.). Loads on fly jibs must not exceed 5 260 kg. (11,600 lb.). Pendant boom suspension and a boom hoist clutch cut out are standard equipment. The boom point section has a hammer head with one guide sheave and four reeving sheaves. The hammer head gives greater clearance for handling bulky loads and enables them to be lifted higher without fouling the boom structure. Telescopic boom limit stops are standard equipment on liftcranes and grabcranes, and a boom hoist clutch cut out prevents over hoisting the boom.

STEERING: Air controlled by means of lever with finger tip control; can turn right or left while travelling forward or backward. Wear on parts and losses of power due to friction are at a minimum. Can readily steer on a slope as well as on the level.

OPERATION: Air control valves for main auxiliary operations mounted on a centralized console. The console itself is designed for maximum operator efficiency giving improved visibility and with valves arranged to minimise the amount of hand movement. Controls include swing, hoist and forward/reverse clutches. All engine instruments are also mounted on console. Main drum brakes, boom hoist brakes and boom hoist pawl are mechanically operated.

CLUTCHES: Main drum and boom hoist are inside band type. Swing and traction clutches are 2-shoe, internal-expanding type. All clutches are air operated equipped with air chambers and quick release valve to ensure positive engagement and release of clutch.

TRACTION BRAKES: Two traction brakes, one for each crawler. The traction brakes are provided with a safety feature which permits the brakes to be applied without disengaging the steering jaw clutches. Brakes are spring set with air power release.

SHAFTS: All shafts are of large diameter and made from high carbon or alloy steels, heat treated for maximum strength. Power is transmitted through accurately machined involute splines, which combine highly efficient operation with quick replacement of worn parts, with a consequent saving in fitting time. All high speed shafts run on ball or self-aligning roller bearings.

DRUMS AND DRUM LAGGING: Removeable split grooved drum laggings are detailed in the table below. The boom hoist drum is an independent unit, mounted low in the turntable to reduce centre of gravity.

POWER BOOM LOWERING: Power controlled boom lowering equipment is standard. The selection of live boom operation is retained.

POWER LOAD LOWERING: An independent planetary clutch unit to give power controlled lowering on the right hand hoist drum is available.

THIRD DRUM: An independent auxiliary third drum is available and is mounted forward of the main drum shaft.

AUDIBLE WARNING INDICATOR: An audible and visible safe load indicator is available.

ALTERNATIVE FRONT END EQUIPMENTS: The Andes Crane may also be used as a Dragline or Grabcrane.

WEIGHT: Crane with 12,2 m. (40 ft.) boom complete with counterweight 47 006 kg. (103,560 lb.).

For weight stripped for transport see page 3.
For weights of major components see page 20.

GEARING: All gears except boom hoist are machine cut and totally enclosed, running in oil tight cases.

DRUM LAGGING CAPACITIES

Location	Application	Diameter		Width	Type	Effective Capacity 1st Layer		No. of Layers	Maximum Effective Capacity to BSS 1757		Rope Size (Diameter)	
		mm.	in.			m.	ft.		m.	ft.		
R.H.	Crane Main Hoist P.L.L.	384	15½	424	16½	LeBus	17.4	57	5	119	392	24
L.H.	Crane Jib Hoist ...	381	15	167	6½	Grooved	6.4	21	6	63	208	20
R.H.	Dragline—Drag ...	394	15½	397	15½	Grooved	17.7	58	2	41	134	22
L.H.	Dragline—Hoist ...	444	17½	260	10½	Grooved	13.7	45	4	75	246	19
R.H.	Grab—Closing ...	444	17½	229	9	Grooved	11.0	36	2	25	82	22
L.H.	Grab—Holding ...	444	17½	406	16	Grooved	20.1	66	2	47	154	22
Rear	Boom Hoist ...	279	11	140	5½	Sleeved	7.9	26	7	74	244	16
	Third Drum ...	343	13½	222	8½	Grooved	12.8	42	3	47	156	16

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TECHNICAL DATA

CRAWLER DATA

Distance C to C Tumblers		Width Frame C to C Girders		Length Over Crawlers		Width Over Crawlers		Width of Shoe		Pitch		No. of Shoes		Flat Bearing Surface		Bearing Pressure Approx.		
m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	in.	m.	in.	sq.m.	sq.ft.	kg./sq.cm.	lb./sq.in.			
4.45	14 7	3.30	10 10	5.38	17 8	4.22	13 10	0.91	36	0.25	10	90	8.47	91.3	0.55	7.8		

GENERAL DATA

Tailradius (less c'weight)	3.71 m.	12' 2"
Height over 'A' frame	3.76 m.	12' 4"
Ground clearance under lower Traction Case	0.25 m.	10"
Centre of Rotation to Centre of Boom Foot	1.03 m.	3' 4½"
Height of Boom Foot from Ground ...	1.56 m.	5' 1½"
Width of Cab (Max.)	2.85 m.	9' 4"
Length of Cab (Max.)	4.05 m.	13' 4"
Height of Cab inside (Max.) ...	2.04 m.	6' 8"
Travel Speed ...	1 km./hr.	0.61 M.P.H.
Rotating Speed ...	3 R.P.M.	3 R.P.M.
Fuel Tank Capacity ...	208 litres	46 Imp. Gals.
Counterweight ...	12 700 kg.	28,000 lb.

CLUTCHES

Boom Hoist (Retract.)	457 x 76 mm.	18" x 3"
Main Drum ...	660 x 127 mm.	26" x 5"
Swing and Traction (2 Shoe) ...	559 x 127 mm.	22" x 5"
Automatic Power Boom Lowering (optional)	533 x 44 mm.	21" x 1¾"
Third Drum ...	508 x 76 mm.	20" x 3"

All the above clutches are of the internal expanding friction type.

BRAKES

Boom Hoist ...	572 x 76 mm.	22½" x 3"
Main Drum ...	864 x 76 mm.	34" x 3"
Swing ...	559 x 76 mm.	22" x 3"
Traction ...	508 x 76 mm.	20" x 3"
Power Load Lowering	279 x 89 mm.	11" x 3½"
Third Drum ...	635 x 76 mm.	25" x 3"

All the above brakes are of the external contracting type.

WORKING WEIGHTS (approx.)

Liftcrane, 40 ft. boom, standard crawlers, 36" shoes, standard counterweight, less hook block ...	47 006 kg.	103,560 lb.
Dragline, 40 ft. boom, standard crawlers, 36" shoes, standard counterweight, less bucket	46 407 kg.	102,240 lb.
Grabcrane, 40 ft. boom, standard crawlers, 36" shoes, standard counterweight, less bucket	46 361 kg.	102,140 lb.

LIFTCRANE

Capacities and Boom Lengths, refer chart.			
Main Hoist (Power Load Lowering Fitted) and Fly Jib.			
Hoist Speed			
(single part line) ...	43.4 m./min.	142 ft./min.	
Hoist Rope Pull			
(single part line) ...	11 211 kg.	24,700 lb.	
	23 871 kg.	52,590 lb.	
	at stall	at stall	
Lowering Speed			
(single part line) ...	12.5 m./min.	41 ft./min.	
Hoist Drum ...	384 mm.p.c.dia.	15½" p.c. dia.	
Boom Point Sheaves ...	546 mm.p.c.dia.	21½" p.c. dia.	
Third Drum Rope Speed	48 m/min.	157 ft./min.	
*Third Drum Rope Pull	2 270 kg.	5,000 lb.	

*The maximum permissible line pull when used for other than lifting purposes should not exceed 4 540 kg. (10,000 lb.)

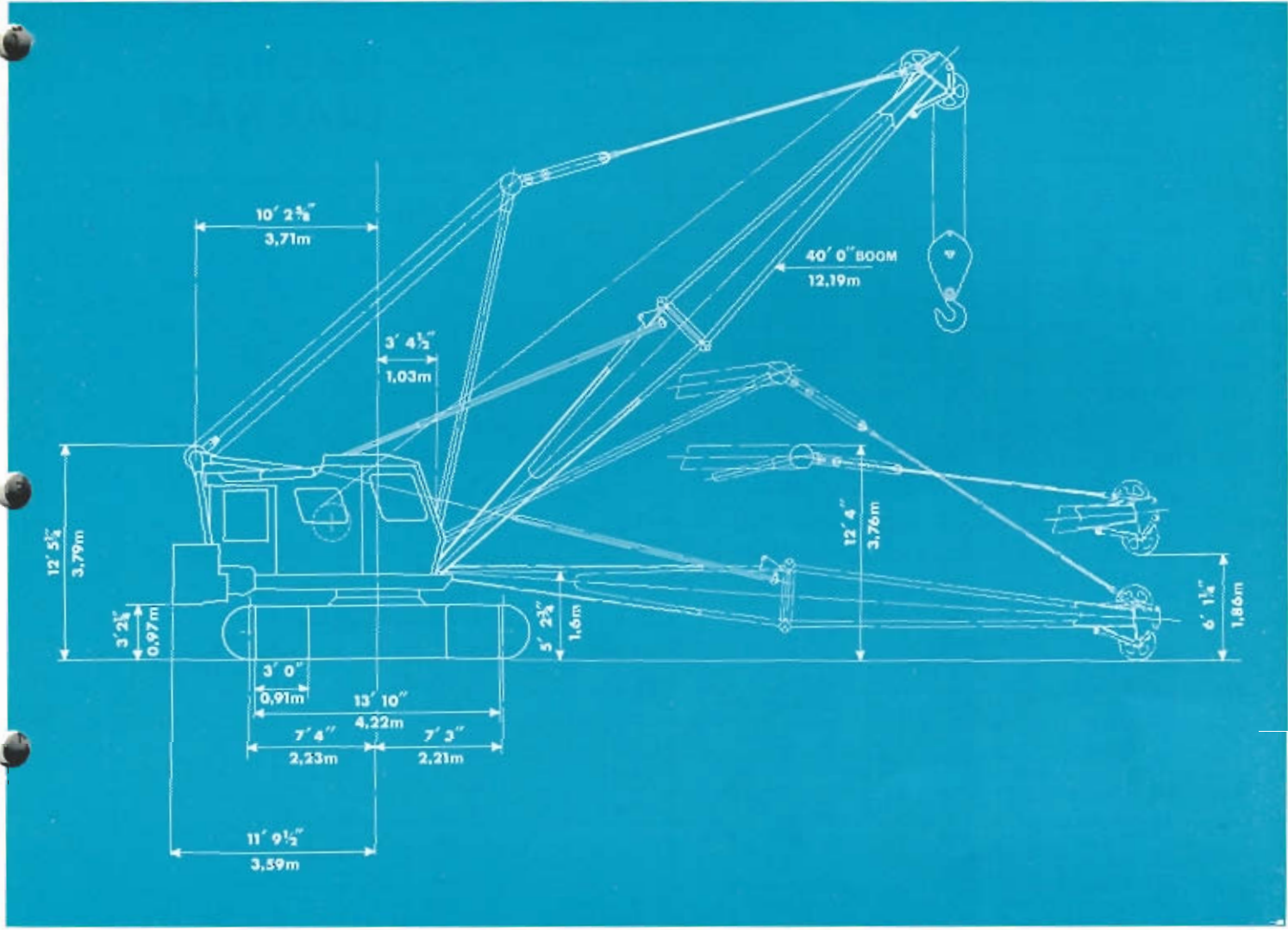
DRAGLINE

Capacities and Boom Lengths, refer chart.			
Drag Rope Speed ...	45.4 m/min.	145 ft./min.	
Drag Rope Pull ...	10 944 kg.	24,110 lb.	
	23 294 kg.	51,320 lb.	
	at stall	at stall	
Bucket Hoist Rope			
Speed ...	50 m/min.	164 ft./min.	
Bucket Hoist Rope			
Pull ...	9 691 kg.	21,350 lb.	
	20 630 kg.	45,450 lb.	
	at stall	at stall	
Drag Drum ...	394 mm.p.c.dia.	15½" p.c. dia.	
Hoist Drum ...	444 mm.p.c.dia.	17½" p.c. dia.	
Dragline Fairlead:			
2 Sheaves ...	318 mm.p.c.dia.	12½" p.c. dia.	
2 Rollers ...	102 mm. dia.	4" dia.	
Boom Point Sheave ...	546 mm.p.c.dia.	21½" p.c. dia.	

GRABCRANE

Capacities and Boom Lengths, refer chart.			
Holding Rope Speed			
(single rope) ...	50 m/min.	164 ft./min.	
Holding Rope Pull			
(single rope) ...	9 691 kg.	21,350 lb.	
	20 630 kg.	45,450 lb.	
	at stall	at stall	
Hoisting Drum ...	444 mm.p.c.dia.	17½" p.c. dia.	
Closing Rope Speed			
(single rope) ...	50 m/min.	164 ft./min.	
Closing Rope Pull			
(single rope) ...	9 691 kg.	21,350 lb.	
	20 630 kg.	45,450 lb.	
	at stall	at stall	
Closing Drum ...	444 mm.p.c.dia.	17½" p.c. dia.	

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DRAGLINE

See Page 15 for technical data and capacities of Dragline.

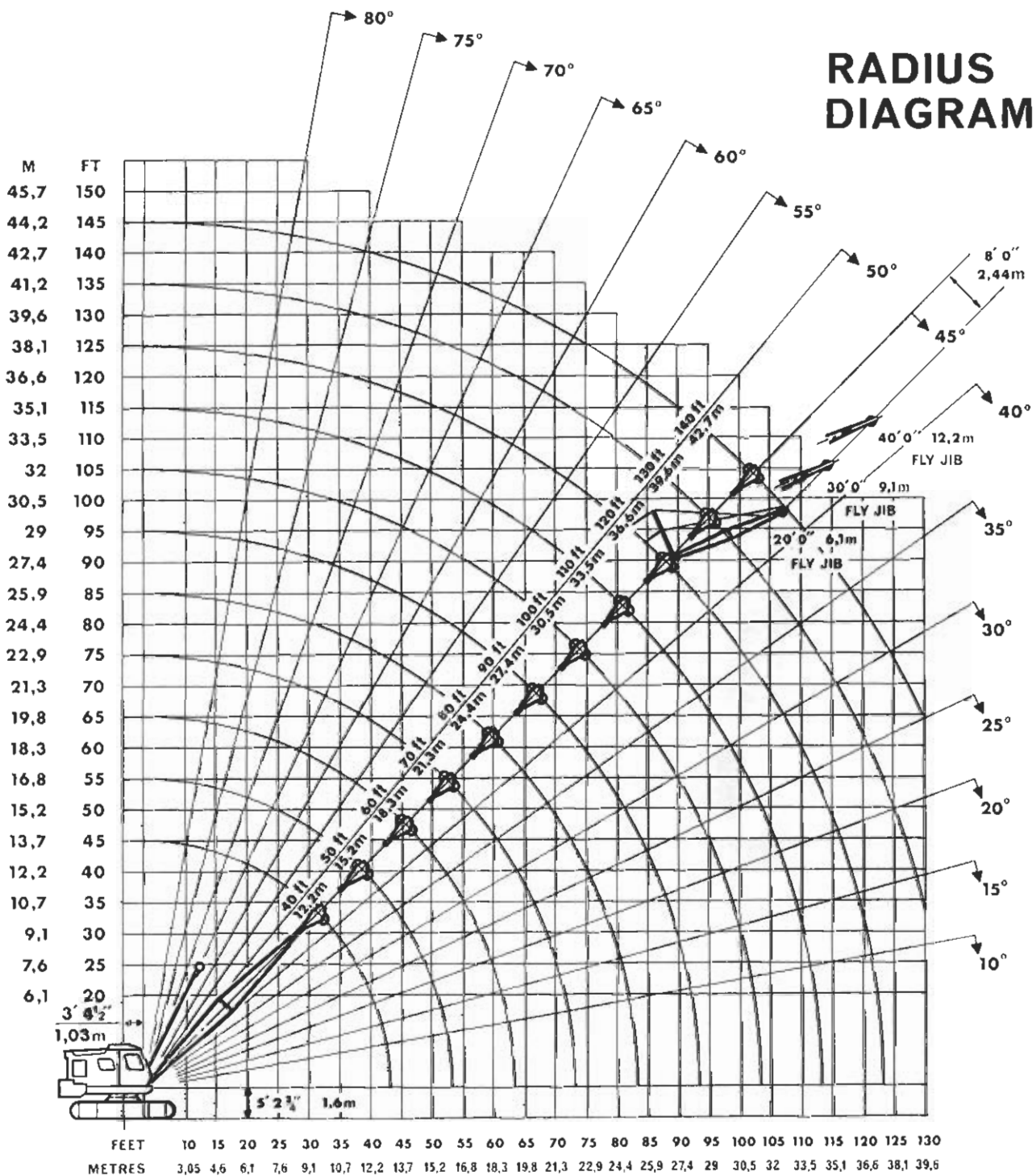
MAGNET AND GRABCRANE

See Pages 16, 17, 18 and 19 for technical data and capacities of Magnet and Grabcrane.

ROPE SIZES

<p>LIFT CRANE</p> <p>Load Hoist 24 mm.</p> <p>Fly Jib Load Hoist 20 mm. 1 Part</p> <p>Fly Jib and strut suspension 22 mm. 2 Part</p>		<p>DRAGLINE</p> <p>Bucket Drag 22 mm. 1 Part</p> <p>Bucket Hoist 19 mm. 1 Part</p>	
<p>GRABCRANE</p> <p>Bucket Holding 22 mm. 1 Part</p> <p>Bucket Closing 22 mm. 1 Part</p> <p>Grabline 8 mm. 1 Part</p>		<p>BOOM HOIST</p> <p>Boom Hoist 16 mm. 14 Part</p> <p>Pendant 32 mm. 2 Part</p>	

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Maximum allowable boom and fly jib lengths

Max. length of Main Boom 42.7 m. (140 ft.). Max length of Fly Jib 12.2 m. (40 ft.). Maximum length of Main Boom with Fly Jib fitted 36.6 m. (120 ft.).

Main Boom Loads—Chart loads are gross loads. Allowances must be made for the weight of suspended Hook Blocks, Slings, Bucket etc., when calculating nett working loads.

When a Fly Jib is fitted the weight of all suspended Hook Blocks, Slings etc., must be deducted when calculating nett working loads.

The main Boom loads must be further reduced by the following loads when a Fly Jib is fitted:

6.1 m. (20 ft.) Fly Jib— 726 kg. (1,600 lb.)

9.1 m. (30 ft.) Fly jib— 953 kg. (2,100 lb.)

12.2 m. (40 ft.) Fly jib—1 180 kg. (2,600 lb.)

Fly Jib Loads—Fly Jib gross loads are the same as Main Boom gross loads for any given radius, but must not exceed rated capacity of Fly Jib.

Maximum Fly Jib Capacity 5 260 kg. (11,600 lb.)—Weight of all suspended Hook Blocks must be deducted when calculating nett working loads. (Special Fly Jib duties are shown on page 14.)

Fly jib must not be used for Dragline or Grabcrane duties.

Fly Jib Offset—Regardless of Jib length, the offset must not exceed or be less than 2.44 m. (8 ft.).

Weight of Hook Blocks—40 644 kg. (40 ton)—830 kg. (1,800 lb.); 15 241 kg. (15 ton)—340 kg. (740 lb.);

6 100 kg. (6 ton)—140 kg. (300 lb.)

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LIFTING CAPACITIES

METRIC

IMPERIAL

LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD		LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD		
		75% of Tipping Load				Stability to B.S.S. 1757: 1964		75% of Tipping Load
m.	m.	kg.		ft.	ft.	lb.	tons	lb.
12.2	3.66	*41 460		40	12	*91,400	40.8	*91,400
	4.57	33 370			15	73,570	32.9	73,570
	6.1	21 530			20	47,460	21.1	47,460
	7.62	16 150			25	35,610	15.9	35,610
	9.14	12 240			30	26,980	12.0	26,980
	10.0	10 800			35	20,430	9.1	22,010
15.2	4.27	*34 380		50	14	*75,800	33.8	*75,800
	4.57	33 230			15	73,270	32.7	73,270
	6.1	21 390			20	47,160	21.0	47,160
	7.62	16 020			25	35,310	15.7	35,310
	9.14	12 070			30	26,570	11.8	26,620
	10.0	10 660			35	20,050	8.9	21,800
	12.0	8 600			40	16,760	7.4	18,830
					45	14,770	6.6	16,600
18.3	4.57	*31 890		60	15	*70,300	31.3	*70,300
	6.1	21 250			20	46,860	20.9	46,860
	7.62	15 880			25	35,010	15.6	35,010
	9.14	11 950			30	26,130	11.6	26,360
	10.0	10 530			35	19,670	8.7	21,480
	12.0	8 470			40	16,500	7.3	18,570
	15.0	6 700			45	14,500	6.4	16,300
					50	12,700	5.6	14,600
					55	10,940	4.9	12,620
21.3	5.18	*25 400		70	17	*56,000	25.0	*56,000
	6.1	21 120			20	46,560	20.8	46,560
	7.62	15 740			25	34,710	15.4	34,710
	9.14	11 790			30	25,690	11.4	26,000
	10.0	10 400			35	19,210	8.5	21,200
	12.0	8 340			40	16,260	7.2	18,300
	15.0	6 550			45	14,230	6.3	16,000
	18.0	4 900			50	12,430	5.5	14,160
					55	10,700	4.7	12,040
					60	9,550	4.2	10,760
					65	8,500	3.8	9,550
24.4	5.79	*21 140		80	19	*46,600	20.8	*46,600
	6.1	20 980			20	46,260	20.6	46,260
	7.62	15 610			25	34,410	15.3	34,410
	9.14	11 660			30	25,260	11.3	25,700
	10.0	10 260			35	18,830	8.4	20,920
	12.0	8 210			40	16,020	7.1	18,040
	15.0	6 400			45	13,960	6.2	15,700
	18.0	4 780			50	12,160	5.4	13,690
	21.0	3 900			55	10,460	4.6	11,680
					60	9,290	4.1	10,480
					65	8,260	3.6	9,260
					70	7,350	3.2	8,280
					75	6,610	2.9	7,460
27.4	6.1	*18 460		90	20	*40,700	18.1	*40,700
	7.62	15 470			25	34,110	15.2	34,110
	9.14	11 510			30	24,830	11.1	25,380
	10.0	10 130			35	18,450	8.2	20,620
	12.0	8 080			40	15,780	7.0	17,780
	15.0	6 250			45	13,690	6.1	15,400
	18.0	4 660			50	11,890	5.3	13,400
	21.0	3 750			55	10,220	4.5	11,520
	24.0	2 900			60	9,030	4.0	10,190
					65	8,020	3.5	9,000
					70	7,120	3.1	8,000
					75	6,370	2.8	7,290
					80	5,640	2.5	6,350
					85	4,920	2.1	5,550

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LIFTING CAPACITIES

METRIC

IMPERIAL

LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD		LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD		
		75% of Tipping Load	kg.			Stability to B.S.S. 1757: 1964		75% of Tipping Load
				lb.	tons	lb.		
30.5	6.7	*15 330		100	22	*33,800	15.1	*33,800
	7.62				25	*33,000	14.7	*33,000
	9.14				30	24,390	10.9	25,110
	10.0				35	18,070	8.0	20,350
	12.0				40	15,520	6.9	17,500
	15.0				45	13,420	6.0	15,110
	18.0				50	11,620	5.2	13,100
	21.0				55	9,980	4.4	11,230
	24.0				60	8,780	3.9	9,900
	27.0				65	7,780	3.4	8,730
					70	6,890	3.0	7,750
					75	6,130	2.7	6,920
					80	5,400	2.4	6,090
					85	4,710	2.1	5,300
	90	4,090	1.8	4,600				
33.5	7.62	*12 160		110	25	*26,800	11.9	*26,800
	9.14				30	23,950	10.6	24,690
	10.0				35	17,820	7.9	20,010
	12.0				40	15,260	6.8	17,200
	15.0				45	13,150	5.8	14,810
	18.0				50	11,350	5.0	12,800
	21.0				55	9,740	4.3	10,980
	24.0				60	8,530	3.8	9,620
	27.0				65	7,540	3.3	8,460
					70	6,650	2.9	7,480
					75	5,900	2.6	6,640
					80	5,170	2.3	5,840
					85	4,500	2.0	5,070
					90	3,850	1.7	4,340
36.6	9.14	*9 720		120	30	*21,440	9.6	*21,440
	10.0				35	17,570	7.8	19,780
	12.0				40	15,000	6.7	16,950
	15.0				45	12,890	5.7	14,510
	18.0				50	11,090	4.9	12,500
	21.0				55	9,500	4.2	10,700
	24.0				60	8,280	3.7	9,340
	27.0				65	7,300	3.2	8,200
					70	6,410	2.8	7,220
					75	5,670	2.5	6,380
					80	4,930	2.2	5,560
					85	4,290	1.9	4,830
					90	3,610	1.6	4,070
	39.6				9.14	*8 280		130
10.0		35	17,320	7.7	17,820			
12.0		40	14,760	6.5	16,700			
15.0		45	12,630	5.6	14,220			
18.0		50	10,830	4.8	12,200			
21.0		55	9,260	4.1	10,410			
24.0		60	8,030	3.5	9,040			
27.0		65	7,040	3.1	7,920			
		70	6,180	2.7	6,960			
		75	5,430	2.4	6,120			
		80	4,700	2.1	5,300			
		85	4,090	1.8	4,600			
		90	3,370	1.5	3,800			
42.7		9.14	*6 700		140			
	10.0	35				*14,340	6.4	*14,340
	12.0	40				13,900	6.2	13,900
	15.0	45				12,370	5.5	13,560
	18.0	50				10,570	4.7	11,900
	21.0	55				9,020	4.0	10,170
	24.0	60				7,780	3.4	8,750
	27.0	65				6,800	3.0	7,650
		70				5,950	2.6	6,700
		75				5,200	2.3	5,810
		80				4,470	1.9	5,040
		85				3,880	1.7	4,380
		90				3,130	1.4	3,530

NCK-RAPIER ANDES C41B

LIFTING CAPACITIES

METRIC			IMPERIAL				
LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD	LENGTH OF BOOM	LOAD RADIUS	GROSS WORKING LOAD		
		75% of Tipping Load			Stability to B.S.S. 1757: 1964	75% of Tipping Load	
	m.	LOAD ON MAIN HOOK kg.		ft.	LOAD ON MAIN HOOK		
					lb.	tons	
						lb.	
						lb.	
	9,14	8 360		30	18,840*	8.41	20,850*
	10,0	8 040		35	14,970	6.68	16,805
	12,0	6 440		40	12,400	5.53	13,950
	15,0	4 390		45	10,290	4.59	11,550
	18,0	2 940		50	8,490	3.79	9,550
	21,0	1 990		55	6,900	3.08	7,785
36,6 m.	21,0	1 990	120 ft.	60	5,680	2.53	6,380
	24,0	1 240		65	4,700	2.09	5,295
				70	3,810	1.70	4,295
BOOM			BOOM	75	3,070	1.37	3,455
				80	2,330	1.04	2,625
and			and	85	1,690	0.75	1,905
12,2 m.		LOAD ON FLY JIB	40 ft.	90	1,010	0.45	1,135
FLY JIB			FLY JIB	40	11,600	5.17	11,600
				45	11,600	5.17	11,600
	12,0	5 260		50	11,090	4.95	11,600
	15,0	5 260		55	9,500	4.24	10,700
	18,0	4 300		60	8,280	3.69	9,340
	21,0	3 350		65	7,300	3.26	8,200
	24,0	2 600		70	6,410	2.86	7,220
	27,0	1 920		75	5,670	2.53	6,380
				80	4,930	2.20	5,560
				85	4,290	1.91	4,830
				90	3,610	1.61	4,070

*Load limited by boom or rope strength
Deduct weight of all suspended hook blocks.
Maximum Fly Jib load is 5 260 kg. (11,600 lb.)

ROPE SAFETY FACTORS

FACTORS OF SAFETY	B.S.S. 1757	75% Rating			
		4.5:1	5.0:1	5.5:1	6.0:1
Boom Length		Number of Falls of Hoist Rope			
12,2 m.	40 ft.	7	7	7	7
15,2 m.	50 ft.	6	6	6	7
18,3 m.	60 ft.	6	5	6	7
21,3 m.	70 ft.	5	4	4	5
24,4 m.	80 ft.	4	4	4	5
27,4 m.	90 ft.	4	3	4	4
30,5 m.	100 ft.	3	3	3	4
33,5 m.	110 ft.	3	3	3	3
36,6 m.	120 ft.	2	2	2	3
39,6 m.	130 ft.	2	2	2	2
42,7 m.	140 ft.	2	2	2	2

Falls of hoist rope and Factors of Safety are based on maximum working loads at minimum radii.
At greater radii Factors of Safety increase.

NCK-RAPIER ANDES C41B

LIFTING CAPACITIES FOR 9,1m (30' 0") FLY JIB

ON 27,4 m. (90 ft.) and 30,5 m. (100 ft.) MAIN BOOMS ONLY

METRIC & IMPERIAL

LENGTH OF BOOM AND FLY JIB		LOAD RADIUS		GROSS WORKING LOAD ON FLY JIB			
				CRAWLER 5,38m (17' 8") LONG x 3,3m (10' 10") CENTRES			
m. ft.		m. ft.		B.S.S. 1757: 1964 RATING		75% RATING	
				kg.	Tons	lb.	kg.
27,4 90' and 9,1 30' Fly Jib.	Boom	10,7 35	5 995	5.9	13,220	5 995	13,220
		12,2 40	5 995	5.9	13,220	5 995	13,220
		13,7 45	5 995	5.9	13,220	5 995	13,220
		15,2 50	5 397	5.3	11,890	5 995	13,220
		16,8 55	4 639	4.5	10,220	5 229	11,520
		18,3 60	4 099	4.0	9,030	4 625	10,190
		19,8 65	3 640	3.5	8,020	4 085	9,000
		21,3 70	3 232	3.1	7,120	3 631	8,000
		22,9 75	2 891	2.8	6,370	3 309	7,290
30,5 100' and 9,1 30' Fly Jib.	Boom	24,3 80	2 560	2.5	5,640	2 882	6,350
		25,9 85	2 233	2.19	4,920	2 519	5,550
		27,4 90	1 932	1.9	4,250	2 170	4,780
		10,7 35	5 995	5.9	13,220	5 995	13,220
		12,2 40	5 995	5.9	13,220	5 995	13,220
		13,7 45	5 995	5.9	13,220	5 995	13,220
		15,2 50	5 274	5.2	11,620	5 946	13,100
		16,8 55	4 530	4.4	9,980	5 097	11,230
		18,3 60	3 985	3.9	8,780	4 494	9,900
9,1 30' Fly Jib.	Boom	19,8 65	3 531	3.4	7,780	3 963	8,730
		21,3 70	3 127	3.0	6,890	3 518	7,750
		22,9 75	2 782	2.7	6,130	3 141	6,920
		24,3 80	2 451	2.4	5,400	2 764	6,090
		25,9 85	2 138	2.1	4,710	2 406	5,300
		27,3 90	1 856	1.8	4,090	2 088	4,600

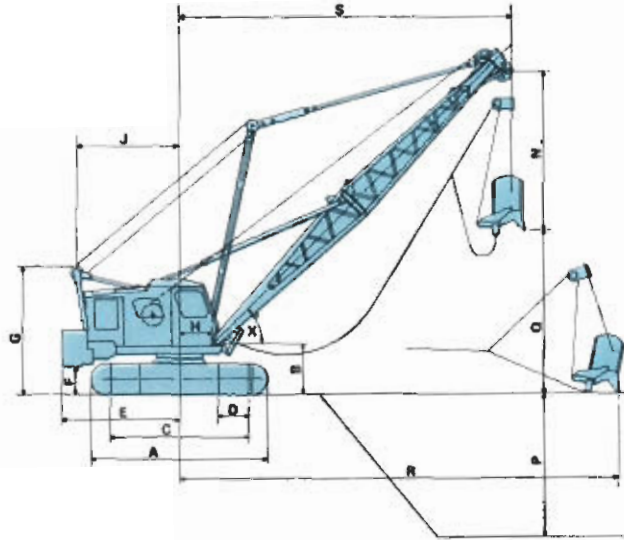
The above loads are gross loads and allowance must be made for the weight of all suspended hook blocks, slings and lifting tackle, when calculating the nett loads that can be hung from the fly jib hook.

A 6 100 Kg (6 ton) capacity fly jib hook must be used with single part hoist reeving. The weight of a 6 100 Kg (6 ton) hook block is 140 Kg (300 lb).

NCK-RAPIER ANDES C41B

DRAGLINE

	m.	ft. in.
A Overall length of crawlers	5.38	17 8
B Height of boom foot centre above ground ...	1.6	5 2½
C Overall width of crawlers	4.22	13 10
D Width of shoes ...	0.91	3 0
E Tailradius over c'weight ...	3.59	11 9½
F Clearance under c'weight	0.97	3 2½
H Distance centre line boom foot to c'tre line rotation	1.03	3 4½
R Digging Reach ...	Depends on Operator	



WORKING RANGES

Boom Length		12.2 m. 40 ft.				15.2 m. 50 ft.			
X	Angle of Boom ...	40°		50°		35°		46°	
		m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	ft. in.
S	Dumping Radius ...	10.7	35 0	9.1	30 0	13.7	45 0	12.2	40 0
Q	Maximum Dumping Height ...	5.8	19 0	6.55	21 6	5.95	19 6	7.75	25 6
P	Depth End Cut ...	5.34	17 6	4.57	15 0	6.85	22 6	6.1	20 0

Boom Length		18.3 m. 60 ft.				21.3 m. 70 ft.			
X	Angle of Boom ...	33°		48°		30°		50°	
		m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	ft. in.
S	Dumping Radius ...	16.7	55 0	13.7	45 0	19.8	65 0	15.2	50 0
Q	Maximum Dumping Height ...	6.85	22 6	10.5	34 6	7.46	24 6	13.25	43 6
P	Depth End Cut ...	8.35	27 6	6.85	22 6	9.9	32 6	7.61	25 0

DUTIES BASED ON 66⅔% RATINGS AND 75% RATINGS

Metric and Imperial

DRAGLINE

Loads in kgs., long tons and lbs.

Length of Boom		Operating Radius		Angle of Boom	66⅔% Rating Standard Crawlers			75% Rating Standard Crawlers		
					Standard Counterweight			Standard Counterweight		
m.	ft.	m.	ft.	Degrees	kg.	tons	lb.	kg.	tons	lb.
12.2	40	10.7	35	42	4 530	4.4	10,000	4 530	4.4	10,000
		12.2	40	29	4 530	4.4	10,000	4 530	4.4	10,000
15.2	50	12.2	40	46	4 530	4.4	10,000	4 530	4.4	10,000
		13.7	45	37	4 530	4.4	10,000	4 530	4.4	10,000
		15.2	50	25	4 530	4.4	10,000	4 530	4.4	10,000
18.3	60	13.7	45	49	4 530	4.4	10,000	4 530	4.4	10,000
		15.2	50	42	4 530	4.4	10,000	4 530	4.4	10,000
		16.8	55	34	4 530	4.4	10,000	4 530	4.4	10,000
21.3	70	16.8	55	45	4 530	4.4	10,000	4 530	4.4	10,000
		18.3	60	38	4 330	4.2	9,550	4 530	4.4	10,000
		19.8	65	31	3 850	3.7	8,500	4 330	4.2	9,550

Working loads indicated at not exceeding 66⅔% of tipping load are based on British Standard recommendations and should be used in U.K. and certain other territories.

Working loads indicated at not exceeding 75% of tipping load are permitted, but are subject to local regulations.

Maximum weight of bucket and spoil must not exceed 4 530 kg. (10,000 lb.) which gives a factor of safety of 5.2 to 1 in the hoist Rope.

Where a factor of safety of 5.5 to 1 is required total weight must not exceed 4 300 kg. (9,480 lb.).

Where a factor of safety of 6.0 to 1 is required total weight must not exceed 3 940 kg. (8,690 lb.).

Buckets

Bucket Capacity ...	1.4 m ³ . 1½ cu.yd.	1.2 m ³ . 1½ cu.yd.	1 m ³ . 1¼ cu.yd.	760 litres 1 cu.yd.	670 litres ¾ cu.yd.
Weight of Empty Bucket	1 398 kg. 3,080 lb.	1 350 kg. 2,970 lb.	1 170 kg. 2,580 lb.	1 000 kg. 2,200 lb.	815 kg. 1,800 lb.
Weight full (material 3,000 lb./cu.yd.) ...	3 780 kg. 8,330 lb.	3 390 kg. 7,470 lb.	2 870 kg. 6,330 lb.	2 360 kg. 5,200 lb.	2 000 kg. 4,420 lb.

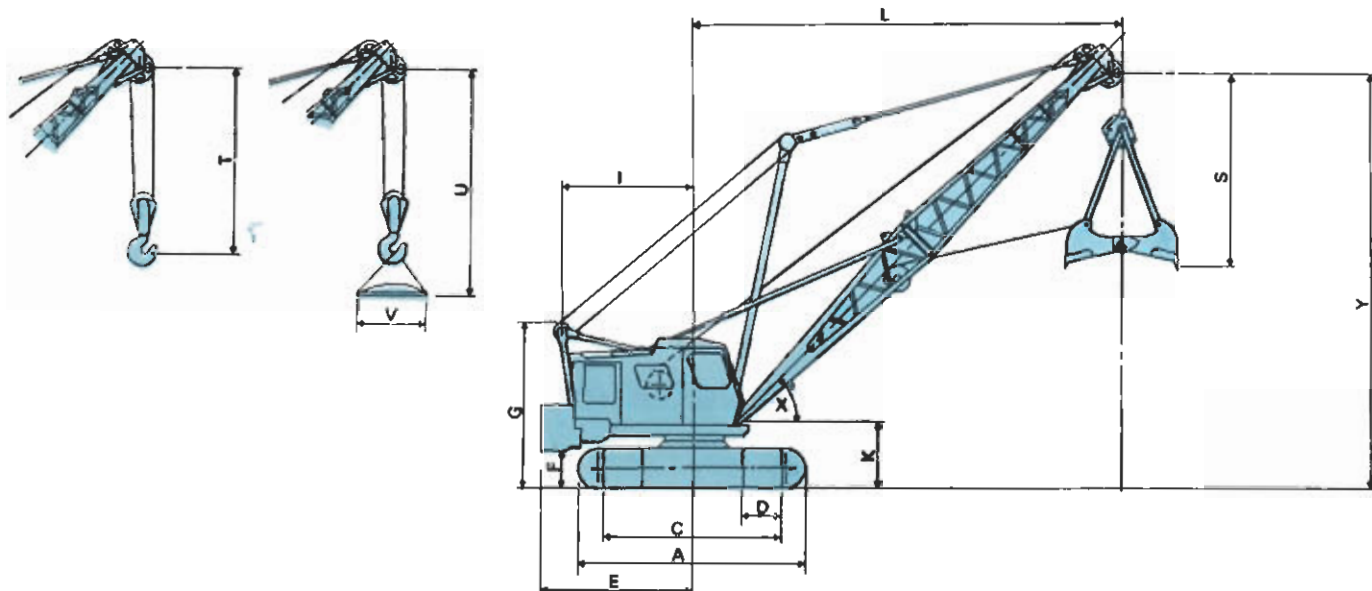
Dimensions R and P vary considerably depending on operating skill and material.

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NCK-RAPIER ANDES C41B

GRABCRANE AND MAGNET



		m.	ft. in.			m.	ft. in.
A	Overall length of crawlers ...	5.38	17 8	K	Height over boom foot above ground	1.6	5 2½
C	Overall width of crawlers ...	4.22	13 10	S	Distance from boom point pin ...	3.81	12 6
D	Width of Shoes ...	0.91	3 0	T	Distance from boom point pin ...	2.13	7 0
E	Tailradius over counterweight ...	3.59	11 9½	U	Distance from boom point pin ...	3.20	10 6
F	Clearance under counterweight ...	0.97	3 2½	V	Diameter of magnet ...		
G	Height over 'A' Frame ...	3.8	12 5½				

WORKING RANGES

Boom Length		12.2 m. 40 ft.				15.2 m. 50 ft.			
X	Boom Angle ...	40°		60°		45°		60°	
		m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	ft. in.
Y	Height of boom point pin ...	7.6	25 0	11.9	39 0	12.0	39 6	14.6	47 9
L	Radius-Loading ...	11.0	36 0	7.9	26 0	12.4	40 9	9.5	31 0

Boom Length		18.3 m. 60 ft.				21.3 m. 70 ft.			
X	Boom Angle ...	47°		60°		43°		60°	
		m.	ft. in.	m.	ft. in.	m.	ft. in.	m.	ft. in.
Y	Height of boom point pin ...	13.2	43 3	16.95	55 6	16.0	52 6	19.9	65 0
L	Radius-Loading ...	15.6	51 0	11.0	36 0	17.2	56 6	12.5	41 0

NCK-RAPIER ANDES C41B

GRABCRANE CAPACITIES

DUTIES BASED ON 80% B.S.S. 1757, 1964 RATINGS

Metric and Imperial		GRABCRANE			Loads in kg., long tons and lbs.		
LENGTH OF BOOM		OPERATING RADIUS		ANGLE OF BOOM	STANDARD CRAWLERS		
m.	ft.	m.	ft.	Degrees	STANDARD COUNTERWEIGHT		
					kg.	Tons	lb.
12.2	40	6.1	20	69	5 890	5.8	13,000
		7.6	25	61	5 890	5.8	13,000
		9.1	30	52	5 890	5.8	13,000
15.2	50	7.6	25	67	5 890	5.8	13,000
		9.1	30	61	5 890	5.8	13,000
		10.7	35	54	5 890	5.8	13,000
		12.2	40	46	5 890	5.8	13,000
18.3	60	9.1	30	66	5 890	5.8	13,000
		10.7	35	60	5 890	5.8	13,000
		12.2	40	55	5 890	5.8	13,000
		13.7	45	49	5 260	5.2	11,600
21.3	70	10.7	35	65	5 890	5.8	13,000
		12.2	40	60	5 890	5.8	13,000
		13.7	45	56	5 170	5.1	11,400
		15.2	50	50	4 510	4.4	9,950
		16.8	55	45	3 880	3.8	8,570

Working loads listed are based on British Standard recommendations and do not exceed 80% of B.S.S. 1757:1964 with regard to tipping load, and should be used in U.K. and certain other territories.

Total Weight of grab must not exceed 5 890 kg. (13,000 lb.) which gives a Factor of Safety of 5.2 to 1 in the closing rope. Where a Factor of Safety of 5.5 to 1 is required total load must not exceed 5 550 kg. (12,250 lb).

MAGNETCRANE CAPACITIES

DUTIES BASED ON 80% B.S.S. 1757, 1964 RATINGS

Metric and Imperial		MAGNET			Loads in kg., long tons and lbs.		
LENGTH OF BOOM		OPERATING RADIUS		ANGLE OF BOOM	STANDARD CRAWLERS		
m.	ft.	m.	ft.	Degrees	STANDARD COUNTERWEIGHT		
					kg.	Tons	lb.
12.2	40	4.6	15	75	10 880	10.7	24,000
		6.1	20	67	10 880	10.7	24,000
		7.6	25	59	10 880	10.7	24,000
		9.1	30	50	9 790	9.6	21,600
15.2	50	6.1	20	72	10 880	10.7	24,000
		7.6	25	66	10 880	10.7	24,000
		9.1	30	59	9 610	9.4	21,200
		10.7	35	52	7 300	7.2	16,100
18.3	60	12.2	40	44	6 080	5.9	13,400
		6.1	20	75	10 880	10.7	24,000
		7.6	25	70	10 880	10.7	24,000
		9.1	30	65	9 480	9.3	20,900
		10.7	35	59	7 140	7.0	15,750
21.3	70	12.2	40	54	5 980	5.8	13,200
		13.7	45	47	5 260	5.1	11,600
		7.6	25	73	10 880	10.7	24,000
		9.1	30	69	9 340	9.2	20,600
		10.7	35	64	6 980	6.8	15,400
12.2	40	12.2	40	60	5 890	5.7	13,000
		13.7	45	55	5 170	4.9	11,400
		15.2	50	49	4 510	4.4	9,950
		16.8	55	44	3 880	3.8	8,570

Working loads listed as based on British Standard recommendations do not exceed 80% of B.S.S. 1757:1964 with regard to tipping load, and should be used in U.K. and certain other territories.

MAXIMUM LIFT — RECOMMENDED ROPE REEVING

ROPE	SINGLE PART		TWO PART	
	kg.	lb.	kg.	lb.
Crane Main Hoist	5 770	12,720	11 320	24,960
Grabcrane	5 550	12,250	10 900	24,040

NCK-RAPIER ANDES C41B

GRABCRANE CAPACITIES DUTIES BASED ON 67½% RATINGS

Metric and Imperial GRABCRANE Loads in kg., long tons and lbs.

LENGTH OF BOOM		OPERATING RADIUS		ANGLE OF BOOM	STANDARD CRAWLERS		
					STANDARD COUNTERWEIGHT		
m.	ft.	m.	ft.	Degrees	kg.	Tons	lb.
12.2	40	6.1	20	69	5 890	5.8	13,000
		7.6	25	61	5 890	5.8	13,000
		9.1	30	52	5 890	5.8	13,000
15.2	50	7.6	25	67	5 890	5.8	13,000
		9.1	30	61	5 890	5.8	13,000
		10.7	35	54	5 890	5.8	13,000
		12.2	40	46	5 890	5.8	13,000
18.3	60	9.1	30	66	5 890	5.8	13,000
		10.7	35	60	5 890	5.8	13,000
		12.2	40	55	5 890	5.8	13,000
		13.7	45	49	5 890	5.8	13,000
21.3	70	10.7	35	65	5 890	5.8	13,000
		12.2	40	60	5 890	5.8	13,000
		13.7	45	56	5 890	5.8	13,000
		15.2	50	50	5 730	5.6	12,640
		16.8	55	45	4 910	4.8	10,830

Working loads indicated as not exceeding 67½% of tipping load are permitted in certain territories. Listed working loads represent the total loaded weight as recommended by the P.C.S.A.

Total weight of grab must not exceed 5 890 kg. (13,000 lb.) which gives a Factor of Safety of 5.4 to 1 in the closing rope. Where a Factor of 5.5 to 1 is required, the total weight must not exceed 5 760 kg. (12,700 lb.) Where a Factor of Safety of 6.0 to 1 is required the total weight must not exceed 5 300 kg. (11,700 lb.).

MAGNETCRANE CAPACITIES DUTIES BASED ON 67½% RATINGS

Metric and Imperial MAGNET Loads in kg., long tons and lbs.

LENGTH OF BOOM		OPERATING RADIUS		ANGLE OF BOOM	STANDARD CRAWLERS		
					STANDARD COUNTERWEIGHT		
m.	ft.	m.	ft.	Degrees	kg.	Tons	lb.
12.2	40	4.6	15	75	11 000	10.8	24,260
		6.1	20	67	11 000	10.8	24,260
		7.6	25	59	11 000	10.8	24,260
		9.1	30	50	11 000	10.8	24,260
15.2	50	6.1	20	72	11 000	10.8	24,260
		7.6	25	66	11 000	10.8	24,260
		9.1	30	59	11 000	10.8	24,260
		10.7	35	52	8 900	8.7	19,620
		12.2	40	44	7 680	7.5	16,940
18.3	60	6.1	20	75	11 000	10.8	24,260
		7.6	25	70	11 000	10.8	24,260
		9.1	30	65	10 760	10.3	23,720
		10.7	35	59	8 770	8.6	19,330
		12.2	40	54	7 580	7.4	16,710
		13.7	45	47	6 650	6.5	14,670
21.3	70	7.6	25	73	11 000	10.8	24,260
		9.1	30	69	10 610	10.2	23,400
		10.7	35	64	8 650	8.5	19,080
		12.2	40	60	7 470	7.3	16,470
		13.7	45	55	6 530	6.4	14,400
		15.2	50	49	5 780	5.6	12,740
		16.8	55	44	4 910	4.8	10,830

Working loads indicated as not exceeding 67½% of tipping loads are permitted in certain territories. Listed working loads represent the total loaded weight as recommended by the P.C.S.A.

MAXIMUM LIFT — RECOMMENDED ROPE REEVING

Factor of Safety

5.5 to 1

6.0 to 1

ROPE	SINGLE PART		TWO PART		SINGLE PART		TWO PART	
	kg.	lb.	kg.	lb.	kg.	lb.	kg.	lb.
Crane Main Hoist	6 000	13,230	12 000	26,460	5 500	12,130	11 000	24,260
Grabcrane	5 780	12,740	11 550	25,480	5 300	11,680	10 590	23,360

NCK-RAPIER ANDES C41B

TYPICAL DOUBLE ROPE GRAB BUCKETS

CAPACITY				APPROXIMATE LOADED WEIGHT					
Heaped		Flush		Sand		Coal		Excavating	
metres ³	cu.ft.	metres ³	cu.ft.	kg.	lb.	kg.	lb.	kg.	lb.
0,70	25	0,55	20	1 800	3,950	—	—	2 650	5,850
0,90	31	0,70	25	2 400	5,300	—	—	3 350	7,400
1,00	35	0,80	28	—	—	1 600	3,500	3 675	8,100
1,10	40	0,90	32	2 850	6,300	—	—	—	—
1,25	44	1,00	35	3 350	7,350	1 850	4,050	4 625	10,200
1,40	50	1,10	40	3 650	8,050	—	—	5 075	11,200
1,60	56	1,25	45	—	—	2 425	5,350	—	—
1,75	63	1,50	51	4 600	10,150	—	—	—	—
1,80	65	1,50	52	—	—	2 700	5,950	—	—
2,00	71	1,60	57	5 500	11,000	—	—	—	—
2,25	80	1,75	64	—	—	3 350	7,450	—	—
2,50	90	2,00	72	—	—	3 850	8,050	—	—
2,75	100	2,25	80	—	—	4 400	9,650	—	—
3,50	125	2,75	100	—	—	5 100	11,200	—	—

The above weights are based on the following information:—

Sand weighing 1.6 kg./litre (100 lb./cu.ft.)

Coal weighing 0.8 kg./litre (50 lb./cu.ft.)

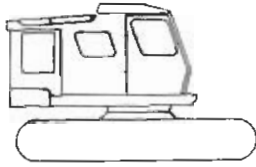
Earth weighing 1.6 kg./litre (100 lb./cu.ft.)

and Nominal heaped capacity ratings.

NCK-RAPIER ANDES C41B

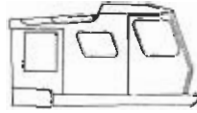
WEIGHTS OF MAJOR COMPONENTS

BASE MACHINE w/out outside c/weight



69,050 lb. 31 342 kg.

UPPER UNIT without outside c/weight



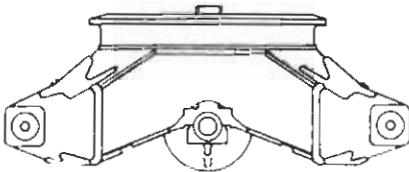
33,210 lb. 15 074 kg.

CRAWLER ASSEMBLY



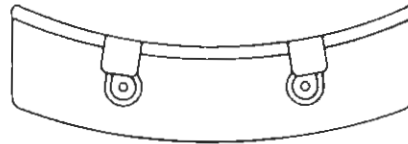
Each 13,150 lb. 5 960 kg.
Pair 26,300 lb. 11 930 kg.

CARBODY with lower traction shaft



9,540 lb. 4 300 kg.

COUNTERWEIGHT



Outside 28,000 lb. 12 700 kg.

BASIC BOOM — 40ft. (12,2m)



4,300 lb. 1 950 kg.

INSERTS



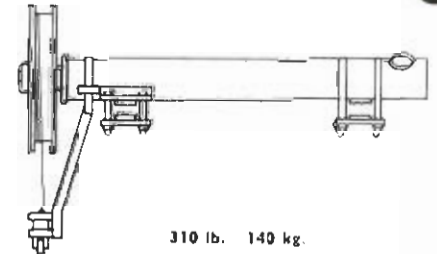
10 ft. (3,05m) 730 lb. 330 kg.
20 ft. (6,1m) 1,360 lb. 620 kg.

FLY JIBS



20 ft. (6,1m) 1,340 lb. 610 kg.
30 ft. (9,14m) 1,450 lb. 750 kg.
40 ft. (12,2m) 1,960 lb. 890 kg.

GRAB LINE



310 lb. 140 kg.

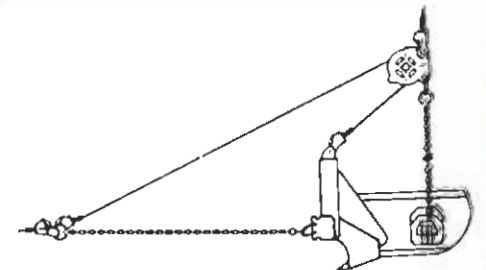
HOOK BLOCKS

40 ton 40 640 kg. 1,800 lb. 820 kg.
15 ton 10 160 kg. 740 lb. 340 kg.
5 ton 5 080 kg. 300 lb. 140 kg.

EXTRA EQUIPMENT

Pendant Boom Suspension Ropes
2 x 10 ft. (3,05m) pendants 100 lb. 50 kg.
2 x 20 ft. (6,1m) pendants 290 lb. 130 kg.
Basic Pendant 250 lb. 113 kg.
Fairlead 450 lb. 200 kg.
Mast 1,960 lb. 890 kg.

DRAGLINE BUCKET fully rigged



1 cu. yd. 1,800 lb. 816 kg.
1 cu. yd. 2,200 lb. 998 kg.
1 cu. yd. 2,576 lb. 1 169 kg.
1 cu. yd. 2,965 lb. 1 347 kg.
1 cu. yd. 3,080 lb. 1 398 kg.

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