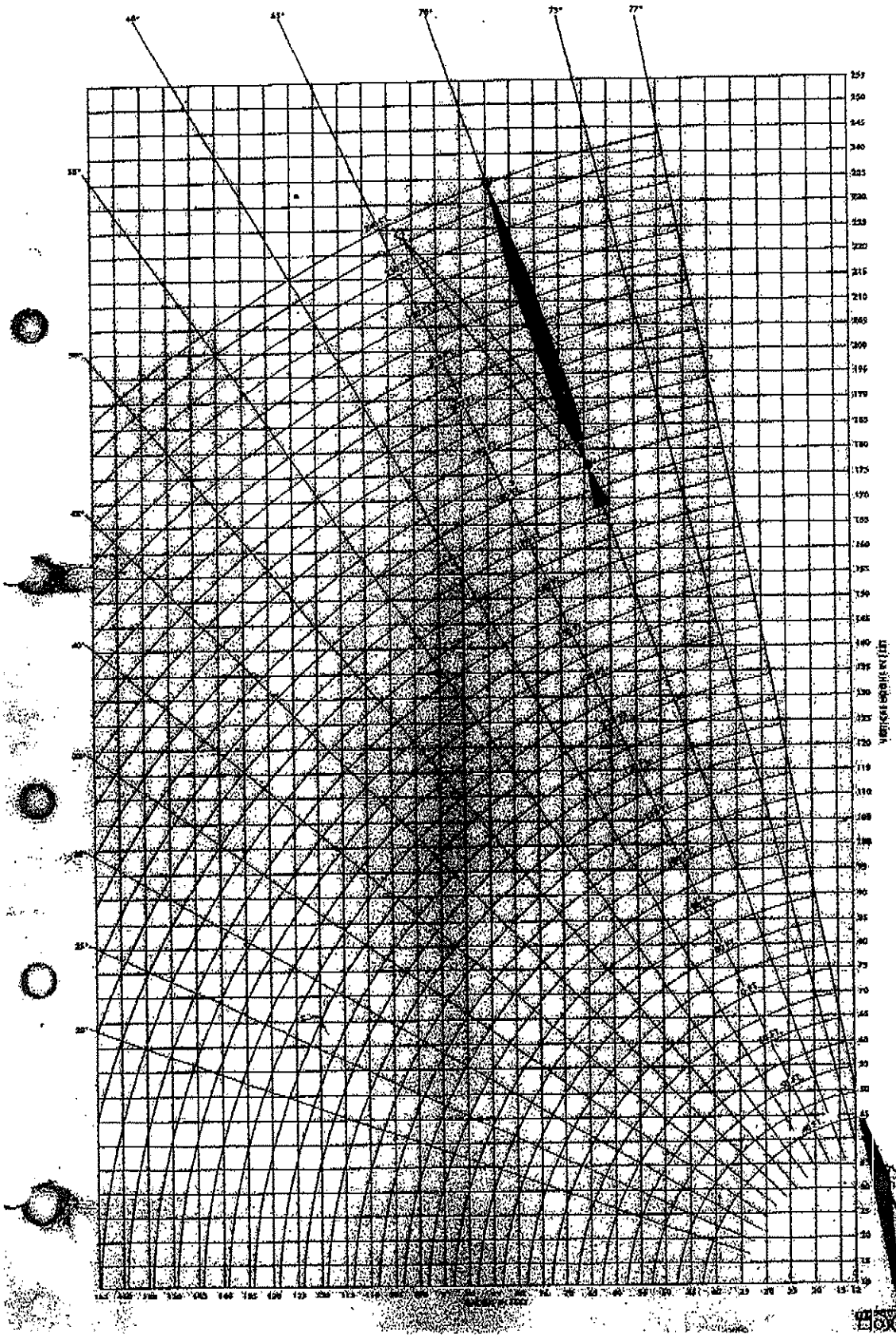
LORAIN MC-680
MOTO-CRANE®
LIFTING CAPACITIES AND WORKING RANGES



D-16 BOOM WORKING RANGES MC-680 8X4

P.C.S.A. 13-480

OFFSET BOOM PEAK

NOTES

1. The rated loads as determined by boom length, radius and weight of load in pounds pertain to this machine as originally manufactured and equipped and as mounted on a Lorain manufactured MC680 Carrier. THEY ARE MAXIMUM lifting capacities. The rated loads are in accordance with standards of Power Crane & Shovel Association as issued by the U.S. Department of Commerce Commercial Standard CS90-58 and the SAE Crane Load Stability Test Code J765.

1a. DO NOT TIP the machine to determine the allowable loads. Rated loads should not be exceeded. Rated loads are based on 85% of stability except where identified with bold face type in which case they are based on machinery and structural strength.

1b. All rated loads are based on the machine being on a firm, level and uniform supporting surface. Before lifting at, or near, rated loads, the machine should be leveled with a commercial level in two directions. FOR SAFE WORKING LOADS THE USER is expected to make due allowances for his particular job conditions such as: Soft or uneven ground, out of level conditions, side loads, pendulum action, jerking or sudden stopping of loads, hazardous conditions, experience of personnel, etc. Side pull on boom or jib is extremely dangerous. CAUTION: The operator and other personnel should fully read and acquaint themselves with Operators Manual furnished by the manufacturer BEFORE operating this machine, and Rules for Safe Operation of equipment should be adhered to at all times. Operators and supervisors should also acquaint themselves with Standard Safety Codes for Cranes, Derricks and Hoists, ASA-B 30.2—1943 (R-1952).

1c. Do not exceed the "over-the-rear" capacities when lifting over a corner.

1d. "With Outrigger" capacities are based on a 7000# bumper counterweight installed.

1e. Use blocking under front tires or front part of carrier frame if boom and/or load is to be moved forward of front outrigger.

1f. All lifting must be done with gantry erected. When working conditions will not permit erected gantry, consult Lorain for proper capacity chart.

1g. The total weight of bucket plus load must not exceed 70% of the rated "without outriggers" lifting capacities up to a maximum of 11000 lbs. for dragline service and 12000 lbs. for clamshell service.

1h. More than one part of hoist line must be used on any boom when lifting radius is less than 20 ft.

2. Load handling devices are part of the load. For jibs, see Notes 4, 4a and 4b.

3. Maximum length of main boom ..... 180 ft.

4. Jibs may be used straight or goosenecked. 30 ft. jib is of two-piece design and may be extended to 60 ft. length with center sections. The following data applies:

Jib Lgth.	Radius	Max. Lgth. of Boom Including Jib	Maximum Lifting Capacity (Lbs.) Offset From Extended Centerline Of Boom					Weight Of Jib And Backstays
			0 Ft.	6 Ft.	12 Ft.	18 Ft.	24 Ft.	
30 Ft.	Up thru 50' Over 50'	210 Ft.	24000 20000	23000 17000	20000 15000			1700 lbs.
40 Ft.	Up thru 50' Over 50'	220 Ft.	18000 14000	17000 12000	14000 11000	10000 8000		2100 lbs.
50 Ft.	Up thru 50' Over 50'	230 Ft.	15000 10000	13000 9000	11000 8000	9000 7000	8000 6000	2350 lbs.
60 Ft.	Up thru 50' Over 50'	240 Ft.	12000 8000	11000 7500	10000 7000	8000 6000	7000 5000	2550 lbs.

4a. Capacities for jibs are the same as the boom length which is equal to the length of main boom plus jib, but in no case may they exceed the capacities shown in Note 4.

4b. With jib installed, lifting capacities over main boom head must be reduced as follows:
1800 lbs. for 30 ft. jib
2400 lbs. for 40 ft. jib
2750 lbs. for 50 ft. jib
3000 lbs. for 60 ft. jib

5. With gantry erected (19'-1⅝" overall height), the following maximum lengths may be carried* over the back without outriggers:
150 ft. boom without jib
120 ft. boom and 30 ft. jib
110 ft. boom and 50 ft. jib
100 ft. boom and 60 ft. jib
*For straight back and forward movement, remove 10 ft. of boom from that specified for conditions which require maneuverability.

5a. With gantry lowered (12'-2" overall height), the following maximum boom lengths may be carried over the back without outriggers:
100 ft. boom without jib
80 ft. boom and 30 ft. jib
70 ft. boom and 50 ft. jib
60 ft. boom and 60 ft. jib

6. With outriggers set and gantry erected, the following boom lengths may be raised, unassisted, from the horizontal over the rear:
180 ft. boom without jib
180 ft. boom and 60 ft. jib

7. Minimum number of parts of hoist line to be determined by dividing the load to be lifted by 16000 lbs. for ¾ in. hoist cable with breaking strength of 29.4 tons.

8. To handle rated lifting capacities, gantry and floating harness required with 1¼" swaged pendants with breaking strength of 87 tons and 16 parts of 9/16" derricking cable with breaking strength of 16.0 tons.

9. "Without Outriggers" capacities are for over rear and over side as indicated. If loads are to be rotated over the corners of the vehicle, the outriggers should be extended to reduce tire and axle loadings. Carrier bumper counterweight must be removed when operating "without outriggers" or traveling on the highway.

KOEHRING
Koehring
Lorain Division
Lorain, Ohio 44055

MC-680 WITH D-1
CRANE LIFTING C

Boom Length	Rad.	Boom Angle	With Outriggers		Without Outriggers	
			Over Rear	Over Side	Over Rear	Over Side
40 Ft.	12	78.4	160000	160000	99100	71300
	15	74.0	135000	135000	70500	51300
	20	66.4	105000	105000	49300	36800
	25	58.3	80700	80700	36800	27500
	30	49.4	67200	67200	29100	21700
	35	39.1	55600	52600	23900	17800
	40	25.8	40900	40900	20200	15000
50 Ft.	15	77.2	133000	133000	70300	51100
	20	71.3	103000	103000	49100	36600
	25	65.1	80400	80400	36600	27300
	30	58.6	67000	67000	28900	21500
	35	51.6	57200	52500	23700	17600
	40	43.9	48400	43000	20000	14800
	45	34.9	41100	36200	17200	12600
	50	23.0	31700	31200	15000	10900
60 Ft.	15	79.4	127000	127000	70100	51000
	20	74.5	102000	102000	48900	36400
	25	69.5	80100	80100	36400	27100
	30	64.3	66700	66700	28700	21300
	35	58.8	57000	52400	23500	17400
	40	53.1	48300	42800	19800	14600
	45	46.8	40900	36100	17000	12400
	50	39.9	35400	31100	14800	10700
	60	21.0	25400	24100	11600	8300
70 Ft.	20	76.7	99800	99800	48700	36200
	25	72.5	79900	79900	36200	26900
	30	68.1	66400	66400	28500	21100
	35	63.7	56700	52200	23300	17200
	40	59.0	48100	42700	19600	14400
	45	54.1	40700	35900	16800	12200
	50	48.9	35200	30900	14600	10600
	60	36.8	27500	23900	11400	8100
	70	19.4	20900	19300	9200	6400
80 Ft.	20	78.4	98700	98700	48600	36000
	25	74.7	78400	78400	36000	26700
	30	70.9	66200	66200	28900	20900
	35	67.2	56400	52100	23100	17000
	40	63.2	48000	42500	19400	14200
	45	59.1	40600	35700	16600	12000
	50	54.9	35000	30700	14400	10400
	60	45.5	27300	23800	11200	7900
	70	34.4	22200	19200	9000	6200
	80	18.1	17500	15900	7300	4900
90 Ft.	20	79.7	91400	91400	48400	35800
	25	76.5	76400	76400	35800	26500
	30	73.2	65900	65900	28100	20700
	35	69.8	56200	51900	22900	16800
	40	66.4	47800	42300	19200	14000
	45	62.8	40400	35600	16400	11800
	50	59.2	34900	30600	14200	10200
	60	51.5	27200	23600	11000	7700
	70	42.8	22000	19000	8800	6000
	80	32.3	18300	15700	7100	4700
	90	17.1	14800	13300	5900	3800
100 Ft.	25	77.8	76300	76300	35600	26300
	30	74.9	61800	61800	27900	20500
	35	71.9	55900	51800	22700	16600
	40	68.8	47600	42200	19000	13800
	45	65.7	40300	35400	16200	11600
	50	62.6	34700	30400	14000	10000
	60	55.9	27000	23400	10800	7500
	70	48.7	21800	18800	8600	5800
	80	40.5	18200	15500	7000	4500
	90	30.6	15400	13100	5700	3600
	100	18.2	12600	11200	4700	2800

Boom Length	Rad.	Boom Angle	With Outriggers		Without Outriggers	
			Over Rear	Over Side	Over Rear	Over Side
110 Ft.	25	78.9	71000	71000	35400	26100
	30	76.3	57300	57300	27700	20300
	35	73.6	53100	51600	22600	16400
	40	70.8	47500	42000	18800	13600
	45	68.1	40100	35300	16000	11400
	50	65.2	34600	30200	13800	9800
	60	59.3	26800	23200	10600	7300
	70	53.1	21700	18600	8400	5600
	80	46.2	18000	15400	6800	4300
	90	38.5	15200	12900	5500	3400
	100	29.2	13100	11000	4500	2600
	110	15.4	10700	9500	3700	2000
120 Ft.	25	79.9	64500	64500	35200	25900
	30	77.4	56400	56400	27500	20100
	35	75.0	49300	49300	22400	16200
	40	72.5	45900	41900	18600	13400
	45	70.0	39900	35100	15800	11200
	50	67.4	34400	30100	13600	9600
	60	62.1	26600	23100	10400	7100
	70	56.6	21500	18500	8200	5400
	80	50.7	17800	15200	6600	4100
	90	44.2	15000	12700	5300	3200
	100	36.8	12900	10800	4300	2400
	110	27.9	11200	9300	3500	
	120	14.8	9200	8100	2800	
130 Ft.	30	78.4	54000	54000	27300	19900
	35	76.2	45700	45700	22200	16000
	40	73.9	42500	41700	18400	13200
	45	71.6	39700	35000	15600	11100
	50	69.2	34200	29900	13400	9400
	60	64.4	26500	22900	10200	6900
	70	59.4	21300	18300	8000	5200
	80	54.2	17600	15000	6400	3900
	90	48.5	14900	12500	5100	3000
	100	42.3	12700	10600	4100	2200
	110	35.3	11000	9100	3300	
	120	26.8	9600	7900	2600	
	130	14.2	7800	6800	2100	
140 Ft.	30	79.2	49200	49200	27100	19700
	35	77.2	42400	42400	22000	15800
	40	75.0	39400	39400	18200	13000
	45	72.9	36800	34800	15400	10900
	50	70.8	34000	29700	13200	9200
	60	66.4	26300	22700	10000	6700
	70	61.8	21100	18100	7800	5000
	80	57.1	17400	14800	6200	3800
	90	52.0	14700	12400	4900	2800
	100	46.7	12500	10500	3900	2000
	110	40.7	10800	8900	3100	
	120	34.0	9400	7700	2500	
	130	25.8	8200	6700		
	140	13.7	6600	5800		
150 Ft.	35	78.0	42000	42000	21800	15600
	40	76.1	36500	36500	18100	12800
	45	74.1	34000	34000	15200	10700
	50	72.1	31800	29600	13100	9000
	60	68.0	26100	22600	9800	6500
	70	63.8	20900	17900	7600	4800
	80	59.5	17300	14600	6000	3600
	90	55.0	14500	12200	4700	2600
	100	50.2	12300	10300	3700	
	110	45.0	10600	8800	2900	
	120	39.3	9200	7500	2300	
	130	32.8	8100	6500		
	140	24.9	7100	5600		
	150	13.2	5600	4900		

IFFSET BOOM 8X4
ACITIES POUNDS

Boom Length	Rad.	Boom Angle	With Outriggers		Without Outriggers	
			Over Rear	Over Side	Over Rear	Over Side
160 Ft.	35	78.8	38800	38800	21600	15400
	40	76.9	35400	35400	17900	12600
	45	75.1	31400	31400	15100	10500
	50	73.2	29300	29300	12900	8800
	60	69.5	25800	22400	9700	6300
	70	65.6	20800	17800	7400	4600
	80	61.6	17100	14500	5800	3400
	90	57.4	14300	12000	4500	2400
	100	53.1	12200	10100	3500	
	110	48.5	10400	8600	2700	
	120	43.5	9000	7300	2100	
	130	38.0	7900	6300		
	140	31.7	6900	5400		
	150	24.1	6000	4700		
	160	12.8	4600	4000		
170 Ft.	35	79.4	36000	36000	21400	15200
	40	77.7	32700	32700	17700	12400
	45	76.0	28900	28900	14900	10300
	50	74.3	27000	27000	12700	8600
	60	70.7	23600	22200	9500	6100
	70	67.1	20600	17600	7200	4400
	80	63.4	16900	14300	5600	3200
	90	59.6	14100	11800	4300	2200
	100	55.6	12000	9900	3300	
	110	51.4	10300	8400	2500	
	120	46.9	8900	7100		
	130	42.1	7700	6100		
	140	36.8	6700	5200		
	150	30.8	5800	4500		
	160	23.4	5100	3800		
180 Ft.	40	78.4	28800	28800	17500	12200
	45	76.8	26600	26600	14700	10100
	50	75.1	24800	24800	12500	8400
	60	71.8	21600	21600	9300	5900
	70	68.4	19000	17400	7000	4200
	80	65.0	16700	14100	5400	3000
	90	61.4	14000	11600	4100	2000
	100	57.7	11800	9700	3100	
	110	53.9	10100	8200	2300	
	120	49.8	8700	7000		
	130	45.5	7500	5900		
	140	40.9	6500	5000		
	150	35.7	5700	4300		
	160	29.9	4900	3700		
	180	12.1	2900	2600		
CAPACITIES BELOW INCLUDE JIB (SEE NOTE 4A)						
190 Ft.	40	79.0	24000	24000	17300	12000
	45	77.5	24000	24000	14500	9900
	50	75.9	22700	22700	12300	8200
	60	72.8	19700	19700	9100	5700
	70	69.6	17200	17200	6800	4000
	80	66.4	15300	13900	5200	2800
	90	63.0	13200	11500	3900	
	100	59.6	11600	9600	3000	
	110	56.0	9900	8000	2100	
	120	52.3	8500	6800		
	130	48.4	7300	5700		
	140	44.2	6300	4900		
	150	39.7	5500	4100		
	160	34.8	4700	3500		
	180	22.1	3400	2400		
200 Ft.	40	79.6	24000	24000	17100	11800
	45	78.1	22400	22400	14300	9700
	50	76.7	20700	20700	12100	8000
	60	73.7	17900	17900	8900	5600
	70	70.7	15600	15600	6600	3800
	80	67.6	13900	13800	5000	2600
	90	64.5	12400	11300	3800	
	100	61.3	10700	9400	2800	
	110	57.9	9600	7800		
	120	54.5	8300	6600		
	130	50.9	7100	5600		
	140	47.1	6100	4700		
	150	43.1	5300	3900		
	160	38.7	4500	3300		
	180	28.3	3100	2200		

Boom Length	Rad.	Boom Angle	With Outriggers		Without Outriggers	
			Over Rear	Over Side	Over Rear	Over Side
210 Ft.	45	78.7	20500	20500	14100	9500
	50	77.3	18900	18900	11900	7800
	60	74.5	16200	16200	8700	5400
	70	71.6	14200	14200	6500	3600
	80	68.7	12600	12600	4800	2400
	90	65.8	11200	11100	3600	
	100	62.7	9600	9200	2600	
	110	59.6	8500	7700		
	120	56.4	7600	6400		
	130	53.1	6500	5400		
	140	49.6	5700	4500		
	150	45.9	4900	3700		
	160	42.0	4100	3100		
	180	33.0	2600	2000		
220 Ft.	45	79.2	18000	18000	13900	9300
	50	77.9	17200	17200	11700	7600
	60	75.2	14000	14000	8500	5200
	70	72.5	13000	13000	6300	3400
	80	69.7	11400	11400	4600	2200
	90	66.9	10000	10000	3400	
	100	64.1	8500	8500	2400	
	110	61.1	7500	7500		
	120	58.1	6600	6200		
	130	55.0	5700	5200		
	140	51.8	4800	4300		
	150	48.4	4100	3600		
	160	44.8	3400	2900		
	180	36.8	2000			
230 Ft.	45	79.7	15000	15000	13700	9100
	50	78.4	15000	15000	11500	7400
	60	75.9	10000	10000	8300	5000
	70	73.3	10000	10000	6100	3300
	80	70.7	10000	10000	4400	2000
	90	68.0	8900	8900	3200	
	100	65.3	7800	7800	2200	
	110	62.5	6500	6500		
	120	59.7	5700	5700		
	130	56.7	4900	4900		
	140	53.7	4100	4100		
	150	50.5	3300	3300		
	160	47.2	2700	2700		
240 Ft.	45	80.1	12000	12000	12000	8900
	50	78.9	12000	12000	11300	7200
	60	76.5	8000	8000	8000	4800
	70	74.0	8000	8000	5900	3100
	80	71.5	8000	8000	4200	
	90	69.0	8000	8000	3000	
	100	66.4	6800	6800	2000	
	110	63.7	5600	5600		
	120	61.0	4800	4800		
	130	58.3	4000	4000		
	140	55.4	3300	3300		
	150	52.5	2600	2600		
	160	49.4	2000	2000		

LOAD DISTRIBUTION AND WEIGHTS FOR MOTO-CRANE MC-680 (8 x 4)

POWRSPAN OUTRIGGERS

	Gross Weight	Turntable Facing Front		Turntable Facing Rear	
		Front	Rear	Front	Rear
1. Basic Crane	65630	21525	44105	28005	37625
Less:					
a. Counterweight and Front Bumper Counterweight					
b. Front and Rear Outrigger Boxes and Beams					
c. Complete 40' D-16 Offset Boom, Floating Harness, Boom Hoist Cable and Boom Stops					
d. Hoist Cables					
2. Add: Rear Outrigger Box and Beams (POWRSPAN)	+6300	-1945	+8245	-1945	+8245
3. Add: Front Outrigger Box and Beams (POWRSPAN)	+6300	+4190	+2110	+4190	+2110
4. Add: Counterweight	+24200	-7270	+31470	+18370	+5830
5. Add: Load Hoist Cable, Front Drum	+775	+130	+645	+225	+550
6. Add: D-16 Boom Base, Floating Harness, Boom Hoist Cable and Boom Stops	+4565	+4600	-35	-2505	+7070
7. Add: D-16 35' Offset Boom Peak	+2115	+4500	-2385	-3545	+5660
8. Add: D-16 35' Long Tapered Boom Peak	+2905	+7650	-4745	-6320	+9225
9. Add: P.L.L. Front Drum	+625	+155	+470	+130	+495
10. Add: P.L.L. Rear Drum	+420	+50	+370	+140	+280
11. Add: High Speed Hoist	+860	+10	+850	+380	+480
12. Add: 3rd Drum	+1450	+505	+945	+160	+1290
13. Add: GM 6V-53N Engine w/Torque Converter	-670	+115	-785	-425	-245
14. Add: GM 6-71N Engine to Carrier	-615	-775	+160	-775	+160
15. Add: Cummins NHCT-270 Engine to Carrier	+100	+120	-20	+120	-20
16. Add: 80-ton 5-Sheave Hook Block to Boom Peak	+1600	+4095	-2495	-3360	+4960
17. Add: 25-ton 1-Sheave Hook Block to Boom Peak	+1000	+2560	-1560	-2100	+3100

LOAD DISTRIBUTION AND WEIGHTS FOR MOTO-CRANE MC-680

VERTI-POWER-SET OUTRIGGERS

	GROSS WEIGHT	TURNTABLE FACING FRONT	TURNTABLE FRONT REAR	TURNTABLE FACING REAR	TURNTABLE FRONT REAR
1. Basic Crane ..... Less: a. Counterweight and Front Bumper Counterweight b. Front and Rear Outrigger Boxes and Beams c. Complete 40' D16 Offset Boom, Floating Harness, Boom Cable and Boom Stops d. Hoist Cables	69250	22170	47080	28650	40600
2. Add: Rear Outrigger Box and Beams (Verti-Power-Set)	+5870	-1815	+7685	-1815	+7685
3. Add: Front Outrigger Box and Beams (Verti-Power-Set)	+5870	+3905	+1965	+3905	+1965
4. Add: Counterweight	+24200	-7270	+31470	+18370	+5830
5. Add: Load Hoist Cable, Front Drum	+775	+130	+645	+225	+550
6. Add: D16 Boom Base, Floating Harness Boom Hoist Cable and Boom Stops	+4565	+4600	-35	-2505	+7070
7. Add: D16 35' Offset Boom Peak	+2115	+4500	-2385	-3545	+5660
8. Add: D16 35' Long Tapered Boom Peak ..	+2905	+7650	-4745	-6320	+9225
9. Add: P.L.L. Front Drum	+625	+155	+470	+130	+495
10. Add: P.L.L. Rear Drum	+420	+50	+370	+140	+280
11. Add: High Speed Hoist	+860	+10	+850	+380	+480
12. Add: 3rd. Drum	+1450	+505	+945	+160	+1290
13. Add: GM 6V-53N Engine W/Torque Conv....	-670	+115	-785	-425	-245
14. Add: GM 6-71N Engine To Carrier	-615	-775	+160	-775	+160
15. Add: Cummins NHCT-270 Eng. To Carrier..	+100	+120	-20	+120	-20
16. Add: 80 Ton 5 Sheave Hook Block To Boom Peak	+1600	+4095	-2495	-3360	+4960
17. Add: 25 Ton 1 Sheave Hook Block To Boom Peak	+1000	+2560	-1560	-2100	+3100