

MODEL 2535

25-35 TON
CAPACITY

INDUSTRIAL YARD CRANE



- **LOW PROFILE** . . . under 11' 10" high, the Grove Model 2535 is ideal for close quarter operation in-plant or outside storage yard.
- **SHORT TURNING RADIUS** . . . 26' 2". Much less than other similarly rated machines.
- **POWER TELESCOPING TRAPEZOIDAL* BOOMS** . . . 2 boom lengths available - 30' and 60' providing up to 58' of horizontal reach and a maximum vertical reach of 61' 8". With jib the vertical reach is 81' 5".
- **PICK & CARRY CAPACITY** . . . 50,000 lbs. over the front.
- **OPERATOR SAFETY** . . . operator's cab on left side away from swinging loads . . . high enough so operator can see over right side and rear.
- **CARRY DECK** . . . Front, side and rear carry deck area . . . a total of 130 sq. ft. for carrying material from job-to-job. Easily accessible, with steps to carry deck and cab.

*Patented Grove feature



GROVE
**HYDRAULIC
CRANES**



MODEL 2535

SUPERSTRUCTURE SPECIFICATIONS

STANDARD EQUIPMENT

- BOOM** – 14 ft. – 30 ft., 3 section, trapezoidal full power telescoping.
- BOOM HEAD** – Four sheave, root diameter 13 $\frac{3}{8}$ in. with removable pin-type rope guards.
- BOOM ELEVATION** – Twin double action cylinders (power up/power down) 12 in. diameter; integral holding valves; boom angle range 0° to 70°. Removable pivot bearings.
- BOOM SPEEDS** – Out – 23 seconds; in – 59 seconds; up – 20 seconds; down – 45 seconds.
- WINCH** – Braden Model CH12.5, power up and down, equal speed in both directions, planetary drive with integral automatic brake. Drum 12 $\frac{3}{4}$ in. diameter, 18 $\frac{3}{16}$ in. wide, 25 in. flange diameter.
- | SINGLE LINE SPEEDS – | FULL LOAD | NO LOAD |
|----------------------|-----------|---------|
| Bare Drum | 220 FPM | 225 FPM |
| Mean Drum | 275 FPM | 288 FPM |
| Full Drum | 360 FPM | 393 FPM |
- SINGLE LINE PULL** –
 Bare Drum – 12,000 lbs.
 Mean Drum – 9,400 lbs.
 Full Drum – 6,900 lbs.
- DRUM CAPACITY** – 1,250 ft. of $\frac{5}{8}$ in. wire rope.
- WIRE ROPE** – 350 ft. of 6x37G EIPS, IWRC construction.
- SWING** – 360° rotation, ball bearing swing circle, hydraulic motor powered; with automatic swing brake and positive dog-type swing lock; speed 3.5 r.p.m. maximum.
- HYDRAULIC SYSTEM** – Pump, main, 3 section, gear-type.
 1st section 63.5 g.p.m. for main winch boost, lift, auxiliary winch.
 2nd section 37.0 g.p.m. for mid telescope, outriggers, main winch.
 3rd section 25.0 g.p.m. for swing, fly telescope.
 Total g.p.m. 125.5 @ 2400 r.p.m., 500 p.s.i.
 System pressure 2500 maximum p.s.i.
 Pump, steering; 1 section, gear-type.
 Capacity 18.7 g.p.m. @ 2400 r.p.m., 500 p.s.i.

- HYDRAULIC OIL RESERVOIR** – 125 gallons. In-tank, full flow, return line filter with indicator; 25 micron. Sight level oil gauge.
- CONTROL VALVES** – Four way, double acting, spool-type valves with full metering characteristics. Integral main by-pass valve for system relief. Individual by-pass valves for circuit relief.
- OPERATING PRESSURE** – 2500 p.s.i., crane function, 1800 p.s.i. steering.

OPTIONAL EQUIPMENT

- BOOMS** – 24 ft. – 60 ft., 3 section, full power boom.
 20 ft. jib on 24-60 ft. boom.
- HOOK BLOCK** – 35 ton, 4 sheave, with ball bearing swivel hook; 5 ton, overhaul ball with swivel hook.
- AUXILIARY WINCH** – Braden Model PD10-77, power up and down, equal speed in both directions, planetary drive with integral automatic brake. Drum 9 $\frac{1}{2}$ in. diameter, 12 $\frac{3}{4}$ in. wide, 16 in. flange diameter.
- | SINGLE LINE SPEEDS – | FULL LOAD | NO LOAD |
|----------------------|-----------|---------|
| Bare Drum | 155 FPM | 165 FPM |
| Mean Drum | 195 FPM | 205 FPM |
| Full Drum | 235 FPM | 250 FPM |
- SINGLE LINE PULL** –
 Bare Drum – 10,550 lbs.
 Mean Drum – 8,580 lbs.
 Full Drum – 6,600 lbs.

CHASSIS SPECIFICATIONS

STANDARD EQUIPMENT

- FRAME** – High strength steel; all welded reinforced construction.
- ENGINE DATA**
- | | STANDARD |
|-----------------|--|
| MAKE | Cummins V-555 |
| TYPE | 4 cycle Diesel |
| CYLINDERS | 8 |
| BORE & STROKE | 4.625 x 4.125 in. |
| DISPLACEMENT | 555 cu. in. |
| NET H.P. | 176 @ 2600 r.p.m. |
| NET TORQUE | 391 @ 1800 r.p.m. |
| GOVERNED R.P.M. | 2600 |
| COOLING SYSTEM | 44 qt. capacity |
| FUEL CAPACITY | 60 gal.
(12 hours @ 50% duty cycle) |
- ELECTRICAL SYSTEM**
- | | |
|------------|--|
| ALTERNATOR | 12-volt |
| BATTERY | 58 amp |
| | 275 amp hr. service |
| | from two 204 amp, 150 plate batteries (parallel) |
- ENGINE ACCESS** – Sliding cover for quick access.
- BRAKES** – Service – Four wheel, air operated, drum-type. Front axle 20 $\frac{1}{4}$ in. x 7 in.; rear axle 20 $\frac{1}{4}$ in. x 5 in. Air brake is "maxi-type", fail safe, requires air to release, also has integral manual release.
 Parking – Both axles equipped with 36 sq. in. spring applied, "failsafe" safety brake chambers.
- TIRES** – Front: 16:00x25 – 28 ply non-directional (Duals)
 Rear: 16:00x25 – 28 ply non-directional (Singles)
- CHASSIS CONTROLS** – All basic controls with engine instruments, including hourmeter and electric fuel gauge.
- CAB** – Steel construction, shock mounted and insulated, fully enclosed; weatherstripped, safety glass windows, windshield, skylight, left door, electric windshield wiper, cab heater and sliding cab door.
- WEIGHT** – Basic machine: 64,100 lbs. (25,750 lbs. front) (38,350 lbs. rear)
 24-60 ft. boom Add 3,300 lbs. 6,900 front
 –3,600 rear
- Front outriggers Add 900 lbs.
 Front & rear outriggers Add 1,165 lbs.

PERFORMANCE – Standard engine and transmission (empty vehicle)
 Axle Ratio – 19.03; converter stall ratio 2.4

Gear Range	Ratio	Speed (mph)	Drawbar Pull (lbs.)	Gradeability %
1	5.18	4.3	29,400*	46.1
2	2.45	8.7	13,200	19.1
3	.90	21.2	4,000	5.6

*Wheels slip at 25,700 lbs.

Speed, drawbar pull and gradeability measured on concrete.
 (Based on .6 coefficient of friction.)

TRANSMISSION – Power shift with torque converter; 3 speeds forward and 3 speeds reverse.

DRIVE SHAFT – Heavy duty, industrial type with double universal joints.

AXLES – Front drive axle – hypoid differential; double reduction – planetary final drive; full floating axle; limited slip differential. Rear steer axle – wide track; axle oscillation 0 to 6 in.

OSCILLATION LOCKOUTS – Automatic on rear axle.

STEERING – Hydraulic full power on rear wheels. Failsafe feature when power source is lost.

OPTIONAL EQUIPMENT

LIGHTS – Head, tail, back-up, stop, four-way flashers, turn signals.

ANTI-TWO BLOCK – Automatic lockout or audio/visual.

OUTRIGGERS – Hydraulic, beam & jack, with integral safety holding valve. Individually controlled from operator's position. Activation requires two functions to prevent accidental retraction.

RATED LIFTING CAPACITIES IN POUNDS

14 ft. - 30 ft. BOOM ON OUTRIGGERS FULLY EXTENDED - 360°

RADIUS IN FEET	BOOM LENGTH IN FEET				
	*14	18	22	26	30
10	70,000	60,000	54,000	47,900	43,100
12	60,000	60,000	48,900	42,300	37,900
15		48,500	44,900	36,000	32,300
20			25,500	25,500	25,500
25					18,000
28					14,500

A6-829-001879

ON OUTRIGGERS FULLY EXTENDED - OVER FRONT

RADIUS IN FEET	BOOM LENGTH IN FEET				
	*14	18	22	26	30
10	70,000	60,000	54,000	47,900	43,100
12	60,000	60,000	48,900	42,300	37,900
15		53,500	44,900	36,000	32,300
20			34,400	28,900	25,800
25					21,600
28					18,900

A6-829-001876

Capacities appearing above bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.

*Capacities for 14 ft. boom length shall be lifted with boom fully retracted. If boom is not fully retracted, capacities shall not exceed those shown for 18 ft. boom length.

Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE recommended practice - crane load stability test code - SAE J-765.

Front and rear outriggers required for 360° on outriggers lifts.

Rear outriggers not required for over front on outriggers lifts.

ON RUBBER CAPACITIES

RADIUS IN FEET	STATIONARY CAPACITY	2.5 MPH CAPACITY	STATIONARY CAPACITY
	DEFINED ARC (1) OVER FRONT	BOOM CENTERED (2) OVER FRONT	(3) 360° ARC
10	50,000 (a)	50,000 (a)	21,000
12	44,000 (a)	40,000 (a)	17,000
15	32,300	30,600	12,300
20	22,000	20,800	8,400
25	16,900	15,100	6,400
28	15,200	12,700	5,000

A6-829-001885

(1) Defined Arc - Left front track CL to right front track CL.

(2) Mechanical swing lock must be engaged.

(3) 360° capacities are also applicable to any lifting done outside the on outriggers - over front working area when using front outriggers and rear axle in combination as the supporting points.

Chart based on 16.00x25 (28 ply) tires & 100 PSI cold inflation pressure. Loads must be reduced for lower inflation pressures.

Capacities appearing above bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.

Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE J-765.

Capacities are applicable with machine on a firm level surface only.

*Constant improvement and engineering progress
make it necessary that we reserve the right to make
specification, equipment, and price changes without notice.*

24 ft. - 60 ft. BOOM ON OUTRIGGERS FULLY EXTENDED - 360°

RADIUS IN FEET	BOOM LENGTH IN FEET						
	*24	30	36	42	48	54	60
10	70,000	60,000					
12	60,000	53,000	51,600				
15	44,300	44,100	42,900	39,700			
20	26,800	26,800	26,800	26,800	26,800	25,700	25,000
25		18,200	18,200	18,200	18,200	18,200	18,200
30			13,300	13,300	13,300	13,300	13,300
35				10,200	10,200	10,200	10,200
40				8,000	8,000	8,000	8,000
45					6,400	6,400	6,400
50						5,200	5,200
55							4,200
58							3,700

A6-829-001843

ON OUTRIGGERS FULLY EXTENDED - OVER FRONT

RADIUS IN FEET	BOOM LENGTH IN FEET						
	*24	30	36	42	48	54	60
10	70,000	60,000					
12	60,000	53,000	51,600				
15	50,000	44,100	42,900	39,700			
20	38,000	34,400	33,400	30,800	28,400	25,700	25,000
25		28,200	27,300	25,000	23,300	21,000	20,400
30			22,600	20,900	19,700	17,600	17,100
35				17,800	17,000	15,200	14,600
40				14,500	14,500	13,300	12,700
45					12,000	11,800	11,200
50						10,100	10,000
55							8,500
58							7,700

A6-829-001837

Capacities appearing above bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.

*Capacities for 24 ft. boom length shall be lifted with boom fully retracted. If boom is not fully retracted, capacities shall not exceed those shown for 30 ft. boom length.

Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE recommended practice - crane load stability test code - SAE J-765.

Front and rear outriggers required for 360° on outriggers lifts.

Rear outriggers not required for over front on outriggers lifts.

ON RUBBER CAPACITIES

RADIUS IN FEET	STATIONARY CAPACITY	2.5 MPH CAPACITY	STATIONARY CAPACITY
	DEFINED ARC (1) OVER FRONT	BOOM CENTERED (2) OVER FRONT	360° ARC (3)
10	*45,200	50,000 (a)	21,250
12	**39,400	40,000 (a)	16,500
15	33,000	30,600 (a)	11,900
20	21,800	20,800 (a)	7,500
25	16,200	15,100 (b)	4,950
30	12,500	11,500 (c)	3,250
35	9,900	9,100 (d)	2,050
40	8,000	7,300 (d)	1,200
45	6,600		500
50	5,450		
55	4,550		
58	4,050		

A6-829-001857

Maximum Permissible Boom Length:

- (a) 24 ft.
- (b) 30 ft.
- (c) 36 ft.
- (d) 42 ft.

Permissible Stationary Capacity

- with Boom Centered Over Front:
- *50,000 lbs.
- *40,000 lbs.

(1) Defined Arc - Left front track CL to right front track CL.

(2) Mechanical swing lock must be engaged.

(3) 360° capacities are also applicable to any lifting done outside the on outriggers - over front working area when using front outriggers and rear axle in combination as the supporting points. Chart based on 16.00x25 (28 ply) tires & 100 PSI cold inflation pressure. Loads must be reduced for lower inflation pressures.

Capacities appearing above bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.

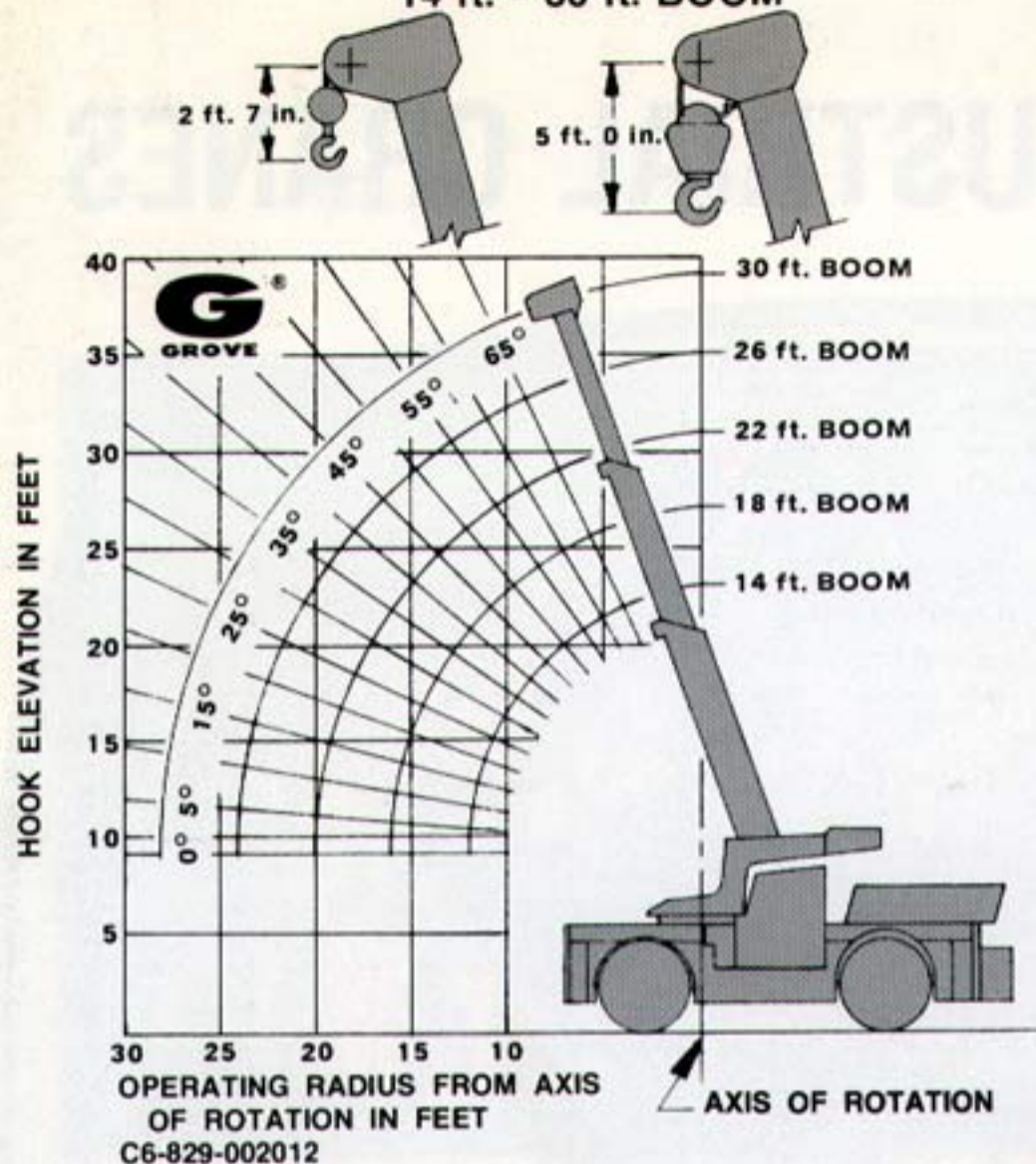
Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE J-765.

Capacities are applicable with machine on a firm level surface only.

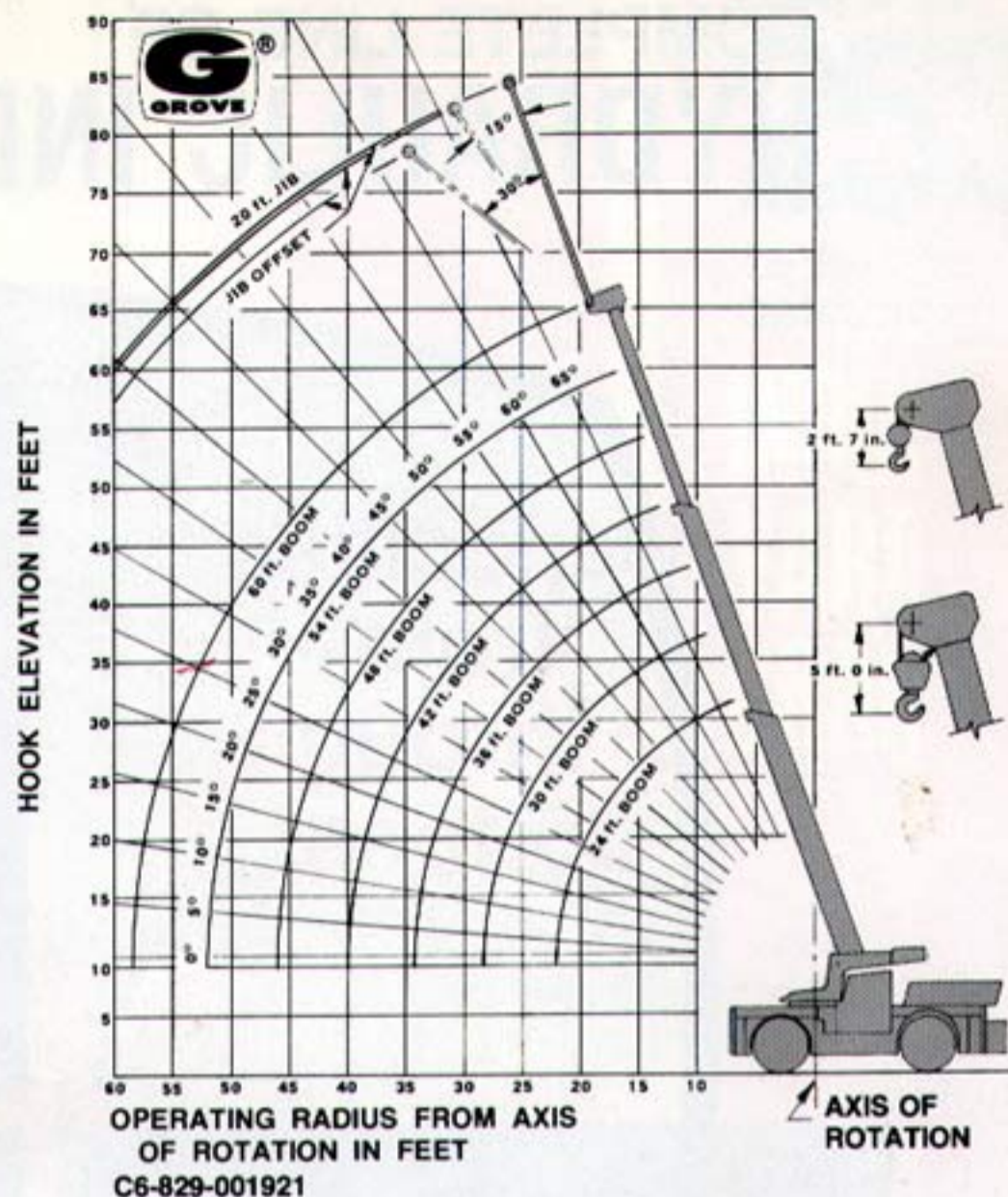
Jib not permitted for on rubber lifts.

RANGE DIAGRAMS

14 ft. - 30 ft. BOOM



24 ft. - 60 ft. BOOM



JIB CAPACITIES IN POUNDS 20 ft. JIB with 24-60 ft. BOOM

ON OUTRIGGERS FULLY EXTENDED - 360°

BOOM ANGLE	JIB OFFSET		
	0°	15°	30°
70°	9,000	6,000	4,400
65°	7,750	5,600	4,150
60°	6,900	5,200	3,950
55°	6,300	4,950	3,800
50°	5,800	4,700	3,700
45°	4,820	4,310	3,600
40°	4,080	3,700	3,520
35°	3,520	3,240	3,130
30°	3,090	2,890	
25°	2,760	2,620	

A6-829-001851

Capacities appearing above bold line are based on structural strength of 20 ft. jib at given boom angle regardless of boom length.

Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE J-765 with a 60 ft. boom length. Front and rear outriggers required for 360° on outriggers lifts.

ON OUTRIGGERS FULLY EXTENDED - OVER FRONT

BOOM ANGLE	JIB OFFSET		
	0°	15°	30°
70°	9,000	6,000	4,400
65°	7,750	5,600	4,150
60°	6,900	5,200	3,950
55°	6,300	4,950	3,800
50°	5,800	4,700	3,700
45°	5,450	4,550	3,600
40°	5,200	4,400	3,550
35°	5,000	4,300	3,550
30°	4,850	4,250	
25°	4,700	4,200	
20°	4,600	4,150	
15°	4,550		
10°	4,550		
5°	4,500		

A6-829-001849

Capacities are based on structural strength of 20 ft. jib at given boom angle regardless of boom length.

Capacities do not exceed 85% of tipping loads as determined by test in accordance with SAE J-765.

Rear outriggers not required for over front on outriggers lifts.

NOTES TO LIFTING CAPACITIES

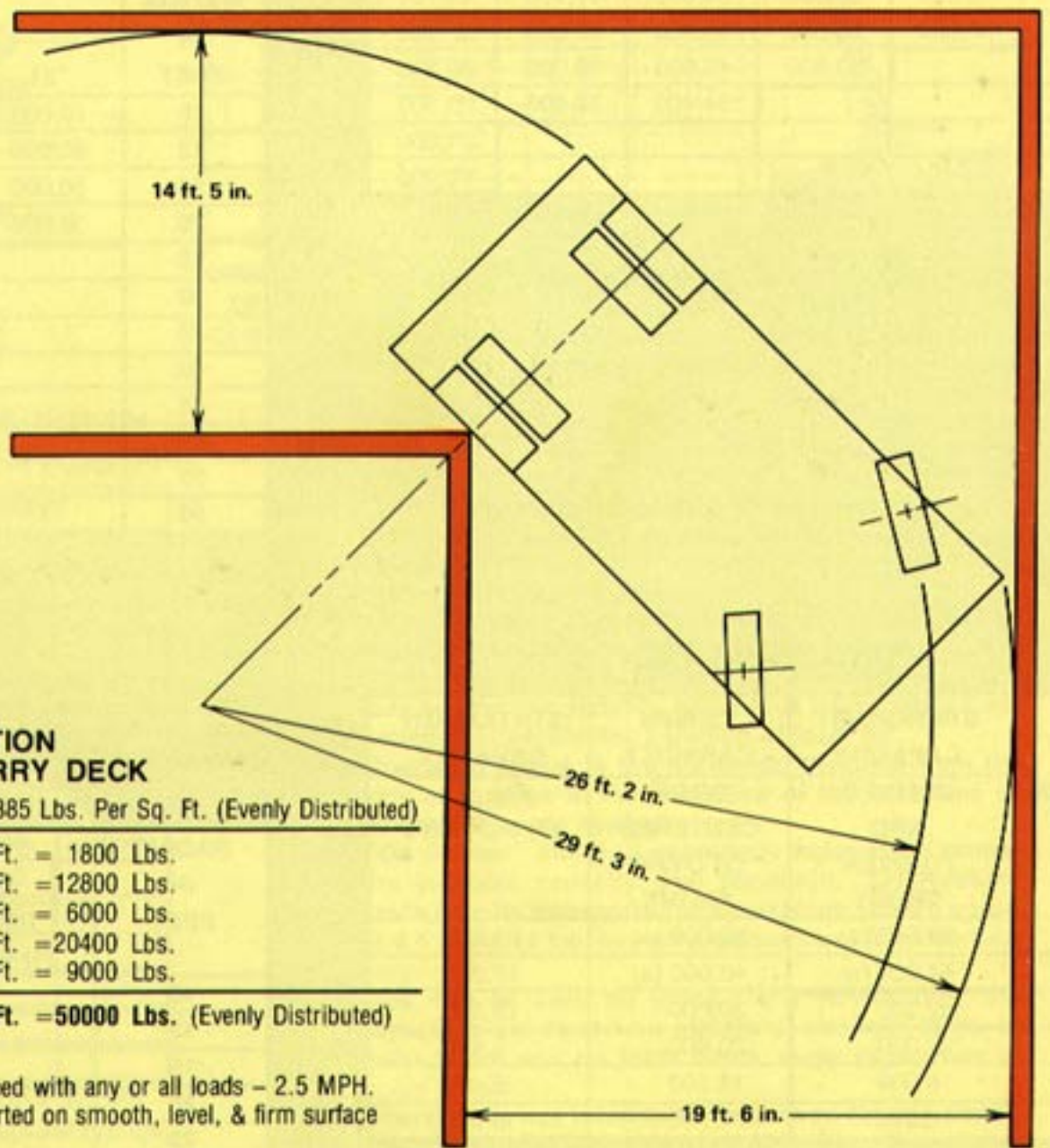
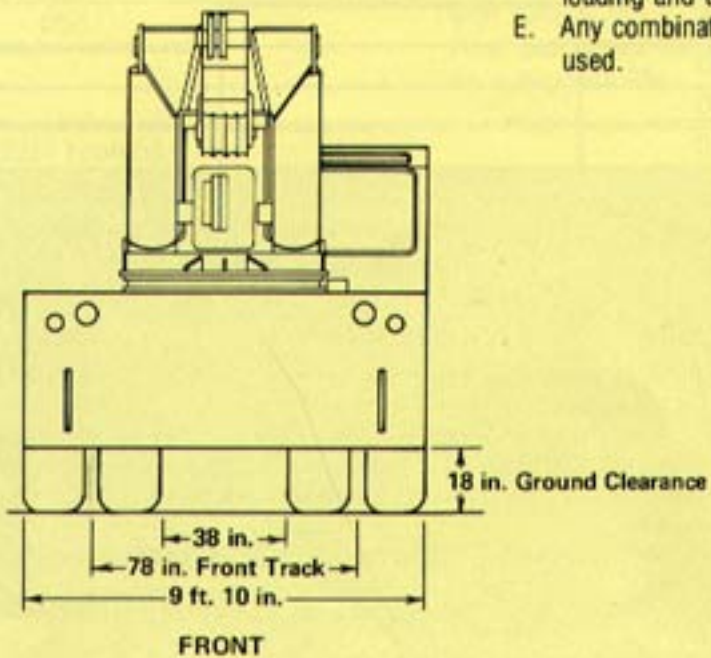
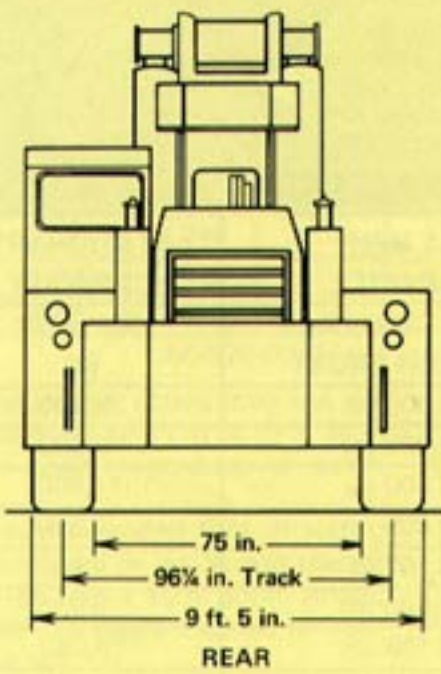
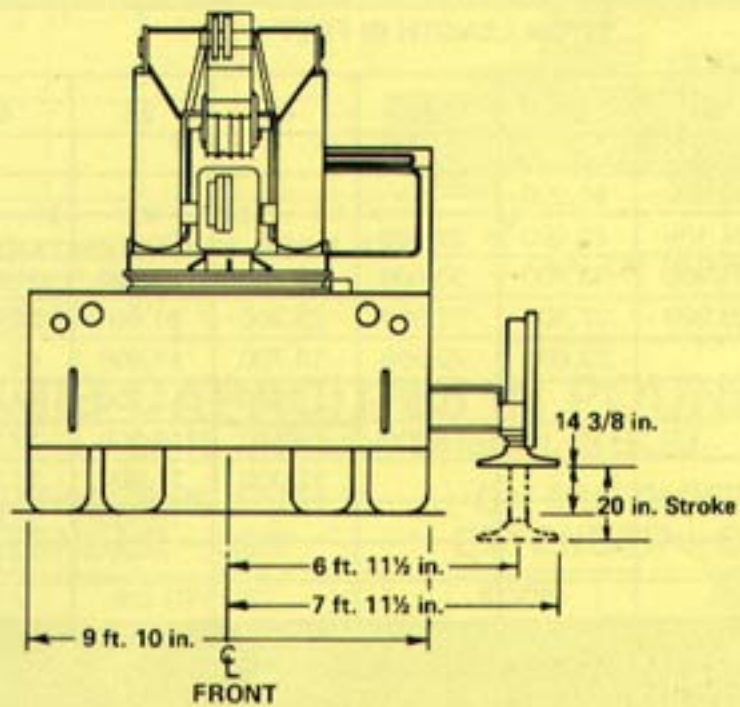
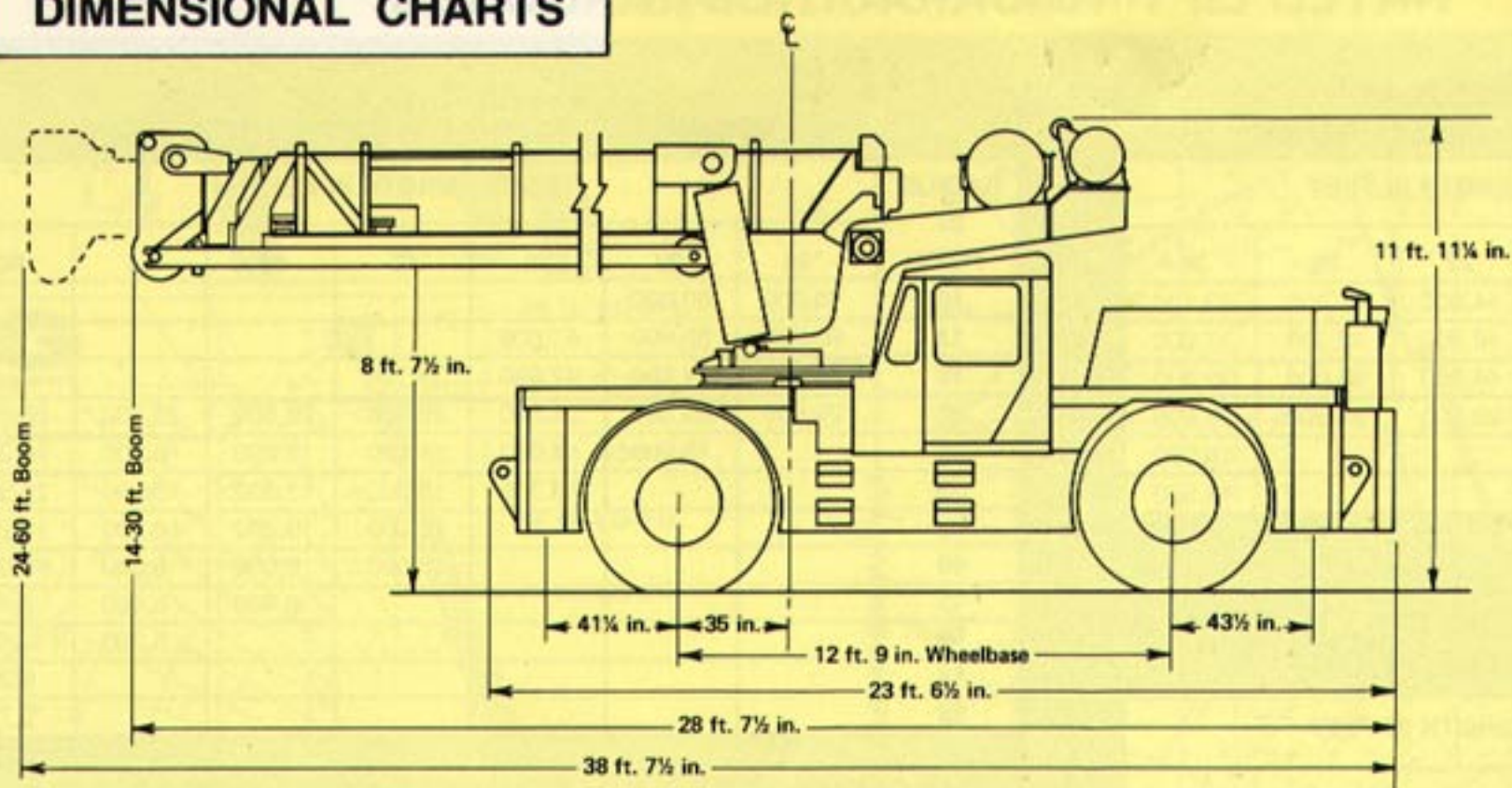
1. Rated lifting capacities are based on freely suspended loads. They are the maximum covered by the manufacturer's warranty with the machine leveled and standing on a firm supporting surface. Ratings with outriggers are based on outriggers being extended to their maximum positions.
2. Practical working loads for each particular job shall be established by the user depending on operating conditions; including the supporting surface, wind and other factors affecting stability, hazardous surroundings, experience of personnel, handling of load, etc.
3. Operating radius is the horizontal distance from the axis of rotation to the centerline of the hoist line or tackle with loads applied.
4. "On Rubber" lifting (if permitted) depends on proper tire inflation, capacity, and condition. "On Rubber" loads may be transported at a maximum vehicle speed of 2.5 mi/hr. (4 km./hr.) on a smooth and level surface only.
5. Jibs may be used for lifting crane service only. Jib capacities are based on structural strength of jib or main boom and on main boom angle regardless of boom length.
6. Operation is not intended or approved for any conditions outside of those shown hereon. Handling of personnel from the boom is not authorized except with equipment furnished and installed by Grove Manufacturing Company.
7. For clamshell or concrete bucket operation, weight of bucket and load must not exceed 90% of rated lifting capacities.
8. Power-telescoping boom sections must be extended equally at all times. Long cantilever booms can create a tipping condition when in extended and lowered position.
9. The maximum load which may be telescoped is limited by hydraulic pressure, boom angle, boom lubrication, etc. It is safe to attempt to telescope any load within the limits of rated lifting capacity chart.
10. With certain boom and hoist tackle combinations, maximum capacities may not be obtainable with standard cable lengths.
11. With certain boom and load combinations, raising of load with boom lift cylinders may not be possible. Operational safety is not affected by this condition.
12. Keep load handling devices a minimum of 12 inches (30 cm) below boom head when lowering or extending boom.
13. If actual boom length is between rated lengths shown, use lifting capacity for the next longer rated length.

OPTIONAL EQUIPMENT (cont'd.)

ENGINE DATA

	6-V53N Detroit Diesel	Caterpillar 3208
MAKE	6-V53N Detroit Diesel	Caterpillar 3208
TYPE	2 cycle diesel	4 cycle diesel
CYLINDERS	6	8
BORE & STROKE	3.875 x 4.50 in.	4.5 x 5 in.
DISPLACEMENT	318 cu. in.	636 cu. in.
NET HP	173 @ 2500 r.p.m.	178 @ 2600 r.p.m.
NET TORQUE	396 lbs. ft. @ 1500 r.p.m.	468 lbs. ft. @ 1200 r.p.m.
GOVERNED RPM	2500	2600
COOLING SYSTEM	Liquid, 42 qt. capacity	Liquid, 54 qt. capacity
ELECTRICAL SYSTEM	12-volt	12-volt
ALTERNATOR	60 amp	55 amp
BATTERY	275 amp hr. service from two 204 amp, 150 plate batteries (parallel)	275 amp hr. service from two 204 amp, 150 plate batteries (parallel)

DIMENSIONAL CHARTS



LOAD DISTRIBUTION CHART FOR CARRY DECK

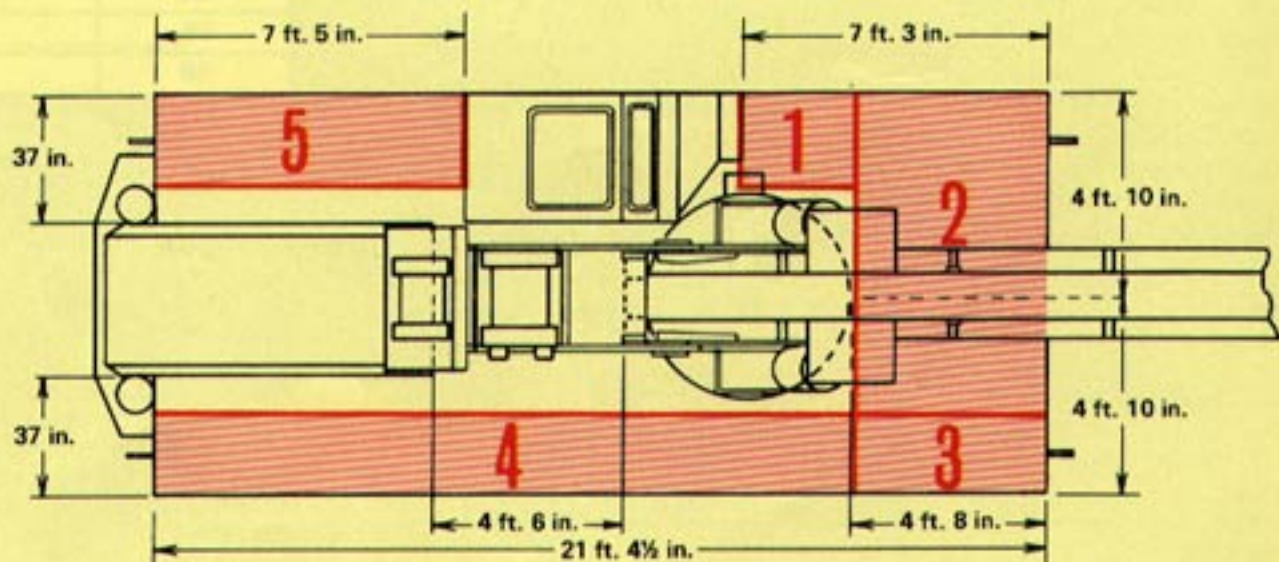
Max. Allowable Load - 385 Lbs. Per Sq. Ft. (Evenly Distributed)

- Area #1 - 4.6 Sq. Ft. = 1800 Lbs.
- Area #2 - 33.3 Sq. Ft. = 12800 Lbs.
- Area #3 - 15.8 Sq. Ft. = 6000 Lbs.
- Area #4 - 53 Sq. Ft. = 20400 Lbs.
- Area #5 - 23.3 Sq. Ft. = 9000 Lbs.

Total 130.0 Sq. Ft. = 50000 Lbs. (Evenly Distributed)

NOTES:

- A. Maximum travel speed with any or all loads - 2.5 MPH.
- B. Loads to be transported on smooth, level, & firm surface only.
- C. Boom must be completely retracted and turntable locked in center forward position.
- D. Lifting is not permitted when carry deck is loaded except for loading and unloading of carry deck.
- E. Any combination or total of Areas #1 through #5 can be used.



THE WORLD'S MOST COMPLETE LINE OF HYDRAULIC INDUSTRIAL CRANES

Capacities
from
2 through
35 tons.



MODEL 24
4/5 1/2 - Ton Capacity



MODEL 1012
15/17 1/2-Ton Capacity



MODEL 68
10/12-Ton Capacity



STEVEDORE
2-Ton Capacity



MODEL 36
6/7 1/2-Ton Capacity



INDUSTRIAL CRANES

GROVE MANUFACTURING COMPANY
DIVISION OF WALTER KODDE & COMPANY, INC.
SHADY GROVE, PA. 17256 U.S.A.

Your Grove Distributor