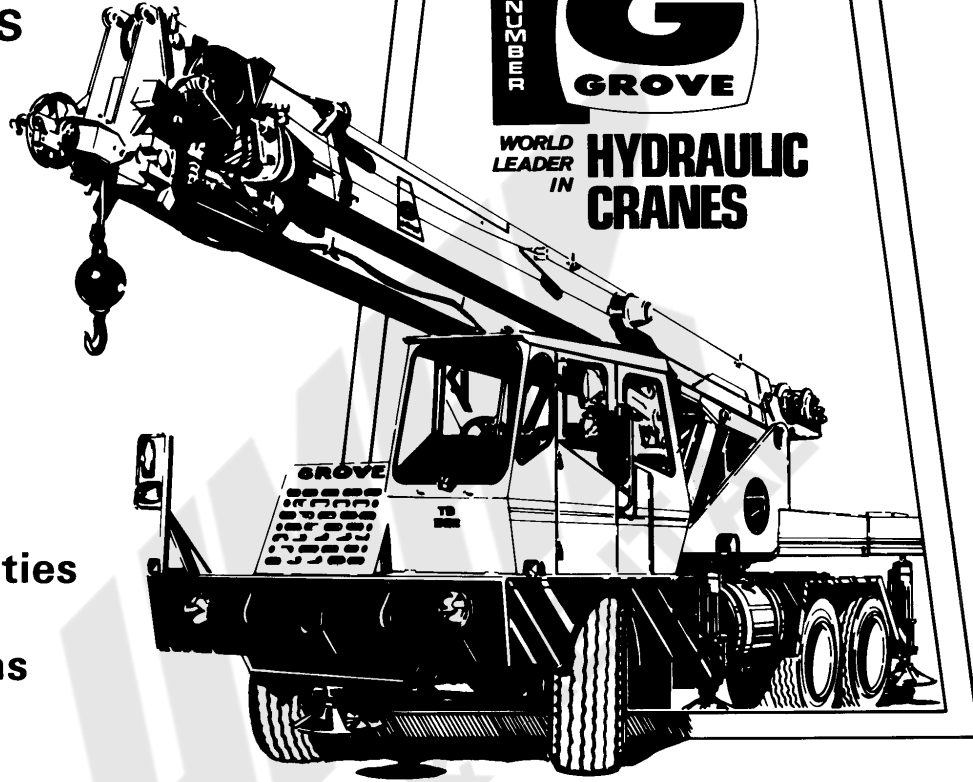


# GROVE TD500 SERIES



**Capacities  
Up to  
25 Tons**

## SUPERSTRUCTURE SPECIFICATIONS

**ANTI-TWO BLOCK (KRUeGER "HAP")** - An audio-visual (light/buzzer) warning system to alert operator to an impending two block condition. System uses solid state circuitry and consists of following basic components: boom nose mounted switch and weight assembly, base boom mounted electric cable reel and in-cab mounted console. Hook-block or headache ball coming in contact with weight suspended from boom nose switch activates the audio-visual warning system. A spring-loaded, key-type switch is provided to permit operator to momentarily override the system for emergencies. System further incorporates electronic boom angle display with "presets". Angle indicator has audio-visual warning system to alert operator if preset boom angles are reached.

**\*ANTI-TWO BLOCK (KRUeGER "HLAP")** - Same as basic anti-two block, audio-visual warning system (Krueger "HAP"), but incorporates selective electronic display of boom angle in degrees and boom length in feet and meters. Angle indicator has "presets" with audio-visual warning system to alert operator should the preset boom angles be reached.

**\*LOAD MOMENT AND ANTI-TWO BLOCK SYSTEM (KRUeGER "LMI")** - A load moment indicating system in combination with anti-two block, audio-visual and Grove control lever lockout of: hoist up, telescope out and boom down crane functions. System uses solid state circuitry and consists of following basic components: boom nose mounted switch and weight assembly, base boom mounted electric cable reel and in-cab mounted console. Dash mounted console displays relative load moment and also provides selective electronic display of boom length in feet and meters and angle in degrees. Angle indicator has "presets" with audio-visual warning system to alert operator if preset boom angles are reached.

## SUPERSTRUCTURE SPECIFICATIONS (CONTINUED)

**BOOM** - 28 ft.-70 ft. (8.6m-21.2m), 3 section trapezoidal-shaped full power mechanically synchronized main boom with boom length decals. Boom extension is composed of a 6-1/2 in. (165mm) bore, double-acting telescope cylinder with integral holding valve which extends the mid section. Fly section is mechanically extended by a 7/8 in. (22mm) dia. cable attached to the mid section which insures positive synchronization at all boom lengths. Extension cable is supported by two 14-7/8 in. (378mm) tread dia., metallic sheaves attached to the outer end of the mid section. A separate 3/4 in. (19mm) dia. cable is provided for boom retraction. Boom telescope sections are supported on nylatron wear pads. Adjustable side wear pads prevent metal-to-metal contact of inner boom sections and permit ease of boom side alignment.

**BOOM NOSE** - Reinforced hi-strength steel construction. Three metallic load bearing sheaves, 10-5/8 in. (270mm) tread dia. mounted on heavy duty tapered roller bearings. One (\*two with auxiliary hoist and/or jib) metallic floating idler sheave, 10-5/8 in. (270mm) tread dia. mounted on bronze bushing. Removable pin-type rope guards for easy reeving. Rope dead ends on either side of boom nose.

**\*AUXILIARY BOOM NOSE** - Removable single metallic load bearing sheave, 13-3/4 in. (349mm) tread dia. mounted to main boom nose for single part line work. Equipped with removable pin-type rope guard.

**BOOM ELEVATION** - Two double-acting 9 in. (229mm) dia. bore, 36 in. (914mm) stroke cylinders with integral holding valves that provide elevation from 0° to 75°. Electronic boom angle indicator (Krueger HAP) mounted inside the operator's cab.

**\*JIBS** - 23 ft.-38 ft. (7.1-11.6m) telescopic "A" frame. Jib length can be adjusted from 23 ft. (7.1m) retracted length to 33 ft. (10.1m) and 38 ft. (11.6m) fully extended lengths.

23 ft. (7.1m) fixed length "A" frame. Both "A" frame jibs attach to the boom nose and stow beneath the main boom for travel. Jibs can be offset at 0°, 15° and 30°. Includes backstops, single rope self-equalizing suspension, removable pin-type rope guard and single 13-3/4 in. (349mm) tread dia. metallic sheave.

**SWING** - Ball bearing swing circle, 360° continuous rotation. Grove planetary "glide swing" with foot actuated multi-disc swing brake, spring set hydraulically released park brake and hand operated two position plunger type houselock. Combination controls provided for hand or foot operation. Maximum swing speed 3.0 RPM. \*Non-free planetary swing with automatic spring applied hydraulic release disc brake.

**COUNTERWEIGHT** - Stationary type, pin mounted to turntable to facilitate removal. Weight varies depending on hoist configuration. (Refer to axle weight distribution chart.)

## HYDRAULIC SYSTEM

**RESERVOIR** - 88 gallon (333 liter) capacity, all-steel welded construction with internal baffles, cleanout access, exterior oil sight level and magnet.

**FILTER** - Return line type, full flow with by-pass protection and filter by-pass indicator, replaceable 25 micron rated cartridge.

**PUMPS** - One, three section gear pump driven off transmission PTO with manual pump disconnect. Combined capacity 112.5 GPM (426 LPM) at 2400 RPM.

**CONTROL VALVES** - Precision four-way, double-acting with integral load holding main and circuit relief valves with hydraulic pressure test panel. Three individual valve banks permit simultaneous independent control of three crane functions. Standard "low effort" control valves provide for reduced operator effort and smoothness of operation. Maximum system operating pressure 2500 PSI (175 kg/cm<sup>2</sup>).

**OIL COOLER** - Carrier mounted, oil to air with thermostatically controlled electric motor driven fan.

**POWER DISTRIBUTION** - Main hoist, 39.5 GPM (150 liters) at 2250 PSI (158.1 kg/cm<sup>2</sup>). Main hoist boost, auxiliary hoist, lift and boom telescope, 46.5 GPM (171 liters) at 2500 PSI (175.8 kg/cm<sup>2</sup>). Swing, outriggers, 26.5 GPM (100 liters) at 2250 PSI (158.1 kg/cm<sup>2</sup>).

**\*MISCELLANEOUS OPTIONAL EQUIPMENT** - 22 ton (20MT) 3 sheave hookblock, 12 ton (10.9MT) 1 sheave hookblock, 5 ton (4.5MT) headache ball, hoist drum cable follower, spare tire bracket, boom mounted floodlights.

# TD522

## HOIST SPECIFICATIONS

Description: Power up and down, equal speed, planetary reduction with integral automatic brake, and electronic hoist drum rotation indicator.

HOIST DATA	*MAIN HOIST		**MAIN HOIST		*AUXILIARY HOIST	
	GROVE MODEL NO 15H-16B	GROVE MODEL NO 15H-11B	GROVE MODEL NO 15H-11B	GROVE MODEL NO 15H-11B	GROVE MODEL NO 15S-11B	GROVE MODEL NO 15S-11B
DRUM DIMENSIONS	12 in. dia. (305 mm) 16 in. length (406 mm) 17.5 in. flange dia. (445 mm)	12 in. dia. (305 mm) 11 in. length (279 mm) 17.5 in. flange dia. (445 mm)	12 in. dia. (305 mm) 11 in. length (279 mm) 17.5 in. flange dia. (445 mm)	12 in. dia. (305 mm) 11 in. length (279 mm) 17.5 in. flange dia. (445 mm)	12 in. dia. (305 mm) 11 in. length (279 mm) 17.5 in. flange dia. (445 mm)	12 in. dia. (305 mm) 11 in. length (279 mm) 17.5 in. flange dia. (445 mm)
PERFORMANCE:						
MAX. SINGLE LINE SPEED:						
BARE DRUM	287 FPM (87.5 m/min)	287 FPM (87.5 m/min)	287 FPM (87.5 m/min)	287 FPM (87.5 m/min)	154 FPM (46.9 m/min)	154 FPM (46.9 m/min)
MEAN DRUM	340 FPM (103.6 m/min)	340 FPM (103.6 m/min)	340 FPM (103.6 m/min)	340 FPM (103.6 m/min)	183 FPM (55.8 m/min)	183 FPM (55.8 m/min)
FULL DRUM	383 FPM (116.7 m/min)	383 FPM (116.7 m/min)	383 FPM (116.7 m/min)	383 FPM (116.7 m/min)	206 FPM (62.3 m/min)	206 FPM (62.3 m/min)
MAX. SINGLE LINE PULL						
BARE DRUM	9,165 lbs. (4157 kg)	9,165 lbs. (4157 kg)	9,165 lbs. (4157 kg)	9,165 lbs. (4157 kg)	9,165 lbs. (4157 kg)	9,165 lbs. (4157 kg)
MEAN DRUM	7,730 lbs. (3506 kg)	7,730 lbs. (3506 kg)	7,730 lbs. (3506 kg)	7,730 lbs. (3506 kg)	7,730 lbs. (3506 kg)	7,730 lbs. (3506 kg)
FULL DRUM	6,890 lbs. (3125 kg)	6,890 lbs. (3125 kg)	6,890 lbs. (3125 kg)	6,890 lbs. (3125 kg)	6,890 lbs. (3125 kg)	6,890 lbs. (3125 kg)
DRUM ROPE CAPACITY	720 ft. of 1/2 in. dia. rope (219.3 m of 13 mm)	468 ft. of 1/2 in. dia. rope (142.6 m of 13 mm)	468 ft. of 1/2 in. dia. rope (142.6 m of 13 mm)	468 ft. of 1/2 in. dia. rope (142.6 m of 13 mm)	405 ft. of 1/2 in. dia. rope (123.4 m of 13 mm)	405 ft. of 1/2 in. dia. rope (123.4 m of 13 mm)
+MAX. STORAGE	605 ft. of 1/2 in. dia. rope (184.3 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)
+MAX. USABLE	605 ft. of 1/2 in. dia. rope (184.3 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)	396 ft. of 1/2 in. dia. rope (120.7 m of 13 mm)
PERMISSIBLE SINGLE LINE ROPE PULL W/ 3.5:1 SAFETY FACTOR	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 Class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)	1/2 in. (13mm) 6x37 class 7,600 lbs. (3447 kg) 1/2 in. (13mm) 19x7 class 6,150 lbs. (2790 kg)

NOTES:  
 \*Denotes Optional Equipment.  
 + 6th layer of rope not recommended for hoisting operations.  
 #With wire rope minimum 1/2" (13mm) below top of drum flange.  
 NOTE: 19x7 and other rotation resistant wire ropes are best suited for single line lifting operations. Use of rotation resistant wire ropes for multiple part reeving or with swivels requires special consideration - Consult the wire rope manufacturer for specific recommendations.

## CARRIER SPECIFICATIONS MODEL 6422G - 6x4 Drive

**OUTRIGGERS** - Hydraulic, double-box, telescoping beam outriggers, integral welded boxes, removable beams, vertical 5-1/2 in. (140mm) bore x 17 in. (432mm) stroke jack cylinders with integral holding valves and 24 in. (610mm) diameter removable stowable steel floats. Beams extend to 17 ft. (5.2m) centerline to centerline and retract to within 8 ft. (2.4m) overall width by 2-1/2 in. (64mm) bore x 78-1/4 in. (1988mm) double-acting cylinders. Outriggers are independently controlled in, out, up and down with controls and sight-leveling bubble located inside operator's cab. Required sequence control arrangement eliminates unintentional outrigger actuation. \*To insure proper outrigger retraction sequence, the optional front jack cylinder retracts first when outrigger control master switch is activated. In addition to the standard integral holding valve and for added security, the exclusive Grove \*spin-lock is offered, which permits the outrigger vertical jack to be mechanically locked in any position throughout its stroke.

**\*FRONT END STABILIZER** - A fifth hydraulic vertical jack cylinder with integral holding valve is mounted to the front frame section of the chassis to permit 360° lifting capabilities. The 24 in. (610mm) diameter steel float is easily removed for high-way travel. Individual controls for fifth outrigger cylinder conveniently located in cab.

**FRAME** - High strength steel, all-welded construction with triple-box type design and integral welded outrigger boxes.

**STEERING GEAR** - Sheppard rack and pinion design with hydraulic power assist.

**CLUTCH** - 14 in. (356mm) two plate, dry disc (with Roadranger transmission only).

**TRANSMISSION** - Fuller Roadranger RT661s, 13 speeds forward, 3 reverse. \*Allison MT653DR, 5 speeds forward, 1 reverse fully automatic transmission.

**UNIVERSAL JOINTS** - Needle bearing type.

**AXLES** - Front: (1) Rockwell tubular type steer axle model FL-931, 18,000 lbs. (8 165 kg) capacity.  
Rear: Rockwell SLHD drive tandem, 34,000 lbs. (15 422 kg) capacity with inter-axle differential and dash mounted control.

**SUSPENSION** - Front: Dana multi-leaf spring type with shock absorbers 18,000 lbs. (8 165 kg) capacity.  
Rear: Hendrickson R-340 tandem-axle equalizing beam with solid steel saddles, 34,000 lbs. (15 422 kg) capacity.

**FUEL TANK** - Single 60 gallon (227 liter) capacity mounted on left side of frame.

**TIRES** - Front: 15.00x22.5-16PR duplex highway tread tubeless singles. \*Optional are 16.5x22.5-16PR duplex highway tread tubeless and Michelin 14/80Rx20-18PR tube type.  
Rear: 10.00x20-12PR highway tread tube-type duals. \*Optional is Michelin 9.00x20R-12PR.

**RIMS** - Front: Demountable 22.5 in. x 12.25 in. (572mm x 311mm) with 15.00/16.5x22.5 tires. \*20.00 in. 13.0 in. (508mm x 330mm) with 14/80Rx20 tires.  
Rear: Demountable 20.00 in. x 8.0 in. (508mm x 203mm) with 10.00 x 20 tires. \*20.00 in. x 7.0 in. (508mm x 178mm) with 9.00 x 20 tires.

**WHEELS** - Steel spoke; 6 spoke front and 5 spoke rear.

\***TIRE INFLATION KIT** - Quick connect air outlet located at midpoint on left side of carrier. Includes dual foot air chuck and 25 ft. (7.6m) coiled nylon tubing.

**BRAKES** - Full air on all wheels. Separate independent front and rear circuits.  
Front: 15 in. x 6 in. (381mm x 152mm)  
Rear: 15 in. x 7 in. (381mm x 178mm)  
Total lining area: 1,256 in.<sup>2</sup> (8 103 cm<sup>2</sup>)  
Air dryer provided to preclude system-damaging moisture accumulation.

**PARKING BRAKES** - Spring-set, air-released chambers on both rear axles with manual emergency release feature.

**ELECTRICAL SYSTEM** - 12 volt lighting, 24 volt starting. Federal safety standard lights and reflection.

**CAB** - One-man, left-hand drive, all steel construction, acoustically treated, tinted safety glass throughout, Bostrum "T" bar deluxe fabric seat with seat belt swivels 180° to either crane operating or driving position, electric wiper and washer on front/rear windshields, door and window locks, hot water heater, forced hot air defroster, 2 circulating air fans (front/rear), dual rearview mirrors, dome light, instrument lights, electric horn, traffic hazard warning switch (4-way flashers) complete engine instrumentation and driving controls, 2-3/4 lb. (1.3 kg) dry type fire extinguisher. Crane operating cab section has hinged skylight, full length control levers, swing horn, combination hand and foot controls for swing, engine throttle, outrigger control panel and sight leveling bubble, Krueger electronic boom angle indicator (HAP) with high/low angle presets and audio-visual warning.

**CAB INSTRUMENTATION** - (International type) - Engine oil pressure gauge, speedometer, dual air pressure gauge, fuel level gauge, engine water temperature gauge, voltmeter, tachometer, low air pressure audio-visual warning system, high beam indicator, hourmeter (10,000 hr.) and ignition on indicator light.

**MISCELLANEOUS STANDARD EQUIPMENT** - Wheel nut wrench and handle, channel-type front bumper, two front and rear towing loops, fenders, sling box, full width decking, mud flaps, maintenance free batteries, back-up light, air cleaner service indicator, combination lifting/tie-down lugs, electronic back-up alarm, fuel/water separator and ether cold start aid. Also, all provisions for future auxiliary hoist installation, but less hoist/rope, are included.

\***MISCELLANEOUS OPTIONAL EQUIPMENT** - Engine block heater, spare tire and wheel carrier (located on superstructure), automatic transmission oil heater and engine low oil pressure/high water temperature audio-visual warning system, cab mounted spot-light and amber rotating beacon.

## SPEED AND GRADEABILITY WITH CUMMINS VT225 ENGINE

TRANS.	SPEED RANGES @ MAX. GOV'D RPM	% OF GRADE @ MAX. TORQUE
Fuller RT6613	3.1-56.1 MPH (4.98-90.3 KPH)	52.47 to 1.51 %
Allison MT653DR Auto.	1.91-56 MPH (3.07-90.1 KPH)	41.86 to .72%

NOTE: Performance based on 46,400 lb. (21 047 kg) GVW and standard SAE engine rating conditions using standard tires, transmission and axles. Performance data may vary plus or minus 10% due to variations in engine performance and vehicle weights. Machines should be operated within the limits of crane case design (15°).

## ENGINE SPECIFICATIONS

Make & Model	Cummins VT225
Type	8 cylinder OHV diesel
Bore	4-5/8 in. (117 mm)
Stroke	4-1/8 in. (105 mm)
Displacement	555 cu. in. (9 095 cm <sup>3</sup> )
Horsepower (Gross)	225 @ 3000 RPM
Horsepower (Net Flywheel)	182.5 @ 3000 RPM
Governed RPM	3000
Torque (Net Flywheel)	361 ft/lb (50 kg-m) @ 1900 RPM
Electrical System	12 volt neg. ground
Starting System	24 volt
Combustion System	4 cycle, turbo-charged
Cooling System Cap.	10 gal. (38 liter)
Fuel Tank Cap.	60 gal. (227 liter)
Alternator	90 AMP
Battery	(4) 475 CCA @ 0°F
Air Compressor	13.2 CFM (374 liter/min.)
Air Cleaner	Single stage dry type
Hourmeter	Standard
•CCA = Cold Cranking Amperage per battery.	

# AXLE-WEIGHT DISTRIBUTION CHART

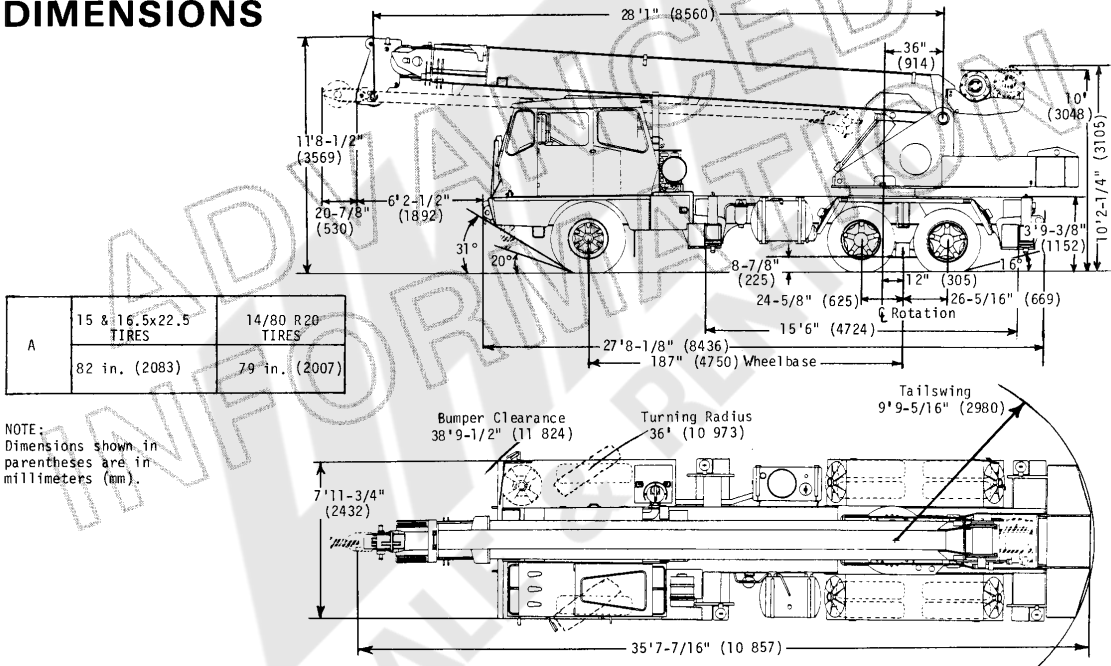
NOTE: Appropriate counterweight substitutions must be made depending on main and auxiliary hoist configuration specified.

•Use 6,500 lb. (2 948 kg) counterweight with main hoist only.

••Use 5,900 lb. (2 676 kg) counterweight with auxiliary hoist only.


	POUNDS			KILOGRAMS		
	GROSS	FRONT	REAR	GROSS	FRONT	REAR
Basic standard machine to include: 6x4 carrier 28-70 ft. (8.6-21.2 m) trapezoidal boom, Grove model H015H-16B main hoist with 400 ft. of 1/2 in. (13mm) rope, 6,500 lb. (2 948 kg) counterweight.	46,879	14,638	32,241	21 264	6 639	14 625
<b>REMOVE</b>						
•Standard 6,500 lb. (2 948 kg) counterweight	-6,500	3,144	-9,644	-2 948	1 426	4 374
<b>ADD</b>						
23 ft. (7.1 m) A-frame jib	997	965	32	452	437	15
23-38 ft. (7.1-11.6 m) telescopic jib	1,686	1,498	188	764	679	85
Auxiliary boom nose	100	175	-75	45	79	-34
Front outrigger jack	269	321	-52	122	145	-23
22 ton (20 MT) hookblock	455	762	-307	206	345	-139
12 ton (10.9 MT) hookblock	360	603	-243	163	273	-110
5 ton (4.5 MT) headache ball	150	251	-101	68	113	-45
•Grove model H015S-11B auxiliary hoist with 350 ft. (107m) of 1/2 in. (13 mm) dia. rope	1,021	-334	1,355	463	-151	614
<b>SUBSTITUTE</b>						
•5,900 lb. (2 676 kg) counterweight	-600	290	-890	-272	131	-403
•Grove model H015H-11B main hoist with 400 ft. (122 m) of 1/2 in. (13 mm) dia. rope	-58	13	-71	-26	6	-32
Spin lock jack cylinders	172	23	149	78	10	68
Allison automatic transmission	-260	-223	-37	-117	-101	-16

# DIMENSIONS

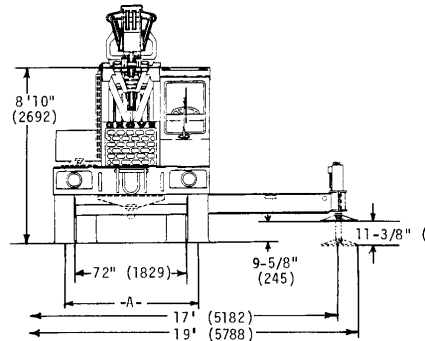


A	15 & 16.5x22.5 TIRES	14/80 R20 TIRES
	82 in. (2083)	79 in. (2007)

NOTE: Dimensions shown in parentheses are in millimeters (mm).



**GROVE MANUFACTURING COMPANY**  
Division of Kidde, Inc.  
**KIDDE**  
Shady Grove, Pa. 17256





# TD

22 TON  
28 ft. - 70 ft. BOOM

PCSA CLASSIFIED  
85% OF

## RATED LIFTING CAPACITY ON OUTRIGGERS

### OVER SIDE – Without Front Jack

Radius in Feet	Main Boom Length in Feet							
	28	34	40	46	52	58	64	70
10	44,000 (64)	36,000 (69)	36,000 (73)					
12	40,000 (59.5)	36,000 (65.5)	36,000 (70)	35,000 (73)				
15	31,000 (51.5)	31,000 (59.5)	30,700 (65)	29,850 (69)	29,150 (72)	28,600 (74.5)		
20	23,200 (36.5)	23,200 (49)	23,200 (57)	23,200 (62)	23,000 (66)	22,600 (69.5)	22,150 (72)	20,500 (74)
25	17,950 (6)	17,950 (36)	17,950 (47.5)	17,950 (54.5)	17,950 (60)	17,950 (64)	17,950 (67)	17,650 (69.5)
30		13,430 (15.5)	13,430 (36.5)	13,430 (46.5)	13,430 (53)	13,430 (58)	13,430 (62)	13,430 (65)
35	See Warning Note 16		9,960 (20)	9,960 (36.5)	9,960 (45.5)	9,960 (51.5)	9,960 (56.5)	9,960 (60)
40				7,510 (23)	7,510 (36.5)	7,510 (45)	7,510 (50.5)	7,510 (55)
45					6,100 (25)	6,100 (37)	6,100 (44.5)	6,100 (49.5)
50						4,830 (26.5)	4,830 (37)	4,830 (43.5)
55						4,010 (3.5)	4,010 (28)	4,010 (37)
60							3,410 (13)	3,410 (28.5)
65								2,920 (15.5)
Min. boom angle (deg.) for indicated length (no load)								0
Max. boom length (ft.) at 0 deg. boom angle (no load)								70

NOTE: Boom angles are in degrees.

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### OVER REAR – With d

Radius in Feet	Main Boom Length in Feet			
	28	34	40	46
10	44,000 (64)	36,000 (69)	36,000 (73)	
12	40,000 (59.5)	36,000 (65.5)	36,000 (70)	35,000 (73)
15	31,000 (51.5)	31,000 (59.5)	30,700 (65)	29,850 (69)
20	23,200 (36.5)	23,200 (49)	23,200 (57)	23,200 (62)
25	17,950 (6)	17,950 (36)	17,950 (47.5)	17,950 (54.5)
30		15,050 (15.5)	15,050 (36.5)	15,050 (46.5)
35	See Warning Note 16		12,010 (20)	12,010 (36.5)
40				9,960 (23)
45				
50				
55				
60				
65				
Min. boom angle (deg.) for indicated length (no load)				0
Max. boom length (ft.) at 0 deg. boom angle (no load)				70

NOTE: Boom angles are in degrees.

### LIFTING CAPACITY NOTES:

#### GENERAL:

- Rated loads as shown on capacity chart pertain to this crane as originally manufactured and equipped. Modifications to the crane or use of optional equipment other than that specified can result in a reduction of capacity. Use only the jib or boom extension supplied with this crane, do not substitute jibs or boom extensions without the written approval of Grove Mfg. Co.
- Construction equipment can be hazardous if improperly operated or maintained. Operation and maintenance shall be in compliance with the information in the Operator's and Safety Handbooks, Service and Parts Manuals supplied with this crane. If these manuals are missing, order replacements from the manufacturer.
- The operator and other personnel associated with this crane shall fully acquaint themselves with the latest applicable American National Standards Institute (ANSI) Safety Standards for cranes.

#### SETUP:

- The crane shall be leveled on a firm supporting surface. Depending on the nature of the supporting surface, it may be necessary to have structural supports of sufficient strength under the outrigger floats or tires to spread the load to a larger bearing surface.
- For outrigger operation, outriggers shall be fully extended with tires raised free of crane weight before operating the boom or lifting loads.
- When equipped with front jack cylinder, the front jack cylinder shall be set in accordance with the written procedure.
- When equipped with extendable counterweight, the counterweight shall be fully extended before operation.
- Tires shall be inflated to the recommended pressure before lifting on rubber.
- With certain boom and hoist tackle combinations, maximum capacities may not be obtainable with standard cable lengths.
- Rotation resistant wire rope is best suited for single line lifting operations. Consult the wire rope manufacturer for specific recommendations concerning multiple part reeving.
- Do not transport crane with boom extension or jib erected.

#### OPERATION:

- Rated loads at rated radius shall not be exceeded. Do not tip the machine to determine allowable loads. For clamshell operation, weight of load must not exceed 80% of rated lifting capacities.
- All rated loads have been tested to and meet minimum requirements of SAE J-1063 - Cantilevered Boom Crane Structures - Method of Test, and do not exceed 85% of the tipping load as determined by SAE J-765a Crane Stability Test Code.
- Rated loads include the weight of hook block, slings and auxiliary lifting devices and their combined weights shall be subtracted from the listed ratings to obtain the net load which may be lifted.
- Load ratings are based on freely suspended loads. No attempt shall be made to move a load horizontally on the ground in any direction.

# TD522

22 TON CAPACITY  
28 ft. - 70 ft. BOOM (FULL POWER)

PCSA CLASS 10-75  
85% OF TIPPING

**GR**  
FUL  
**CARRIER**

## RATED LIFTING CAPACITIES IN POUNDS ON OUTRIGGERS FULLY EXTENDED

OVER REAR – With or Without Front Jack

70
20,500 (74)
17,650 (69.5)
13,430 (65)
9,960 (60)
7,510 (55)
6,100 (49.5)
4,830 (43.5)
4,010 (37)
3,410 (28.5)
2,920 (15.5)
0
70

Radius in Feet	Main Boom Length in Feet							
	28	34	40	46	52	58	64	70
10	44,000 (64)	36,000 (69)	36,000 (73)					
12	40,000 (59.5)	36,000 (65.5)	36,000 (70)	35,000 (73)				
15	31,000 (51.5)	31,000 (59.5)	30,700 (65)	29,850 (69)	29,150 (72)	28,600 (74.5)		
20	23,200 (36.5)	23,200 (49)	23,200 (57)	23,200 (62)	23,000 (66)	22,600 (69.5)	22,150 (72)	20,500 (74)
25	17,950 (6)	17,950 (36)	17,950 (47.5)	17,950 (54.5)	17,950 (60)	17,950 (64)	17,950 (67)	17,650 (69.5)
30		15,050 (15.5)	15,050 (36.5)	15,050 (46.5)	15,050 (53)	15,050 (58)	14,950 (62)	14,750 (65)
35	See Warning Note 16		12,010 (20)	12,010 (36.5)	12,010 (45.5)	12,010 (51.5)	12,010 (56.5)	12,010 (60)
40				9,650 (23)	9,650 (36.5)	9,650 (45)	9,650 (50.5)	9,650 (55)
45					8,030 (25)	8,030 (37)	8,030 (44.5)	8,030 (49.5)
50						6,700 (26.5)	6,700 (37)	6,700 (43.5)
55						5,620 (3.5)	5,620 (28)	5,620 (37)
60							4,780 (13)	4,780 (28.5)
65								4,100 (15.5)
Min. boom angle (deg.) for indicated length (no load)								0
Max. boom length (ft.) at 0 deg. boom angle (no load)								70

NOTE: Boom angles are in degrees.

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Radius in Feet	Main Boom Length in Feet	
	28	34
10	44,000 (64)	36,000 (69)
12	40,000 (59.5)	36,000 (65.5)
15	31,000 (51.5)	31,000 (59.5)
20	23,200 (36.5)	23,200 (49)
25	17,950 (6)	17,950 (36)
30		14,270 (15.5)
35	See Warning Note 16	
40		
45		
50		
55		
60		
65		
Min. boom angle (deg.) for		
Max. boom length (ft.) at C		

NOTE: Boom angles are in deg

to this crane as originally manufactured and equipped. Any modification other than that specified can result in a reduction of capacity. Do not substitute jibs or boom extensions.

Crane must be properly operated or maintained. Operation and maintenance instructions, operator's and safety handbooks, service and parts manuals, and order replacements from the manufacturer.

Operator shall fully acquaint themselves with the latest ANSI Safety Standards for cranes.

Crane shall be placed on a firm, level surface. Depending on the nature of the supporting surface, it may be necessary to use sufficient strength under the outrigger floats or tires to spread the load.

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Crane shall be placed on a firm, level surface. Depending on the nature of the supporting surface, it may be necessary to use sufficient strength under the outrigger floats or tires to spread the load.

5. Rated loads do not account for wind on lifted load or boom. It is recommended when operating in high wind conditions, rated loads and boom lengths be appropriately reduced.

6. Rated loads are for lift crane service only.

7. Do not operate at a radius or boom length where capacities are not listed. At these capacities, the crane may overturn without any load on the hook.

8. The maximum load which can be telescoped is not definable because of variations in maintenance, but it is safe to attempt retraction and extension within the limits of the manufacturer's instructions.

9. When either boom length or radius or both are between values listed, the smallest load capacity shall be used.

10. For safe operation, the user shall make due allowances for his particular job conditions, ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stops, hazardous conditions, experience of personnel, two machine lifts, traveling with load, pull on boom or jib is extremely dangerous.

11. Power telescoping boom sections must be extended equally at all times.

12. Handling of personnel from the boom is not authorized except with equipment furnished by the manufacturer.

13. Keep load handling devices a minimum of 18 inches (45.7 cm) below boom head at all times.

14. The boom angle before loading should be greater than the loaded boom angle to account for deflection.

15. Capacities appearing above the bold line are based on structural strength and tipping capacities as a capacity limitation.

16. Capacities for the 28 ft. (8.6m) boom length shall be lifted with the boom fully retracted, capacities shall not exceed those shown for the 34 ft. (10.4m).

17. Radii less than 35 feet or 12 meters not recommended when lifting over front on machines equipped with front jack cylinder.)

DEFINITIONS:

1. Operating Radius: Horizontal distance from a projection of the axis of rotation to the center of the vertical hoist line or tackle with load applied.

2. Loaded Boom Angle (Shown in Parenthesis on Main Boom Capacity Chart): is the angle between the boom section and the horizontal, after lifting the rated load at the rated radius with the rated load.

3. Working Area: Areas measured in a circular arc about the center line of rotation as shown in the diagram.

4. Freely Suspended Load: Load hanging free with no direct external force applied except gravity.

5. Side Load: Horizontal force applied to the lifted load either on the ground or in the air.

# 522

**CAPACITY**  
**100,000 LB (FULL POWER)**  
**CLASS 10-75**  
**TIPPING**

# GROVE®

## FULL HYDRAULIC

# CARRIER-MOUNTED CRANE

**CAPACITIES IN POUNDS**  
**FULLY EXTENDED**

**Without Front Jack**

Length in Feet	Main Boom Length in Feet			
	52	58	64	70
10				
15	29,150 (72)	28,600 (74.5)		
20	23,000 (66)	22,600 (69.5)	22,150 (72)	20,500 (74)
25	17,950 (60)	17,950 (64)	17,950 (67)	17,650 (69.5)
30	15,050 (53)	15,050 (58)	14,950 (62)	14,750 (65)
35	12,010 (45.5)	12,010 (51.5)	12,010 (56.5)	12,010 (60)
40	9,650 (36.5)	9,650 (45)	9,650 (50.5)	9,650 (55)
45	8,030 (25)	8,030 (37)	8,030 (44.5)	8,030 (49.5)
50		6,700 (26.5)	6,700 (37)	6,700 (43.5)
55		5,620 (3.5)	5,620 (28)	5,620 (37)
60			4,780 (13)	4,780 (28.5)
65				4,100 (15.5)
Height (no load)	0			
Angle (no load)	70			

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**360° — With Front Jack**

Radius in Feet	Main Boom Length in Feet							
	28	34	40	46	52	58	64	70
10	44,000 (64)	36,000 (69)	36,000 (73)					
12	40,000 (59.5)	36,000 (65.5)	36,000 (70)	35,000 (73)				
15	31,000 (51.5)	31,000 (59.5)	30,700 (65)	29,850 (69)	29,150 (72)	28,600 (74.5)		
20	23,200 (36.5)	23,200 (49)	23,200 (57)	23,200 (62)	23,000 (66)	22,600 (69.5)	22,150 (72)	20,500 (74)
25	17,950 (6)	17,950 (36)	17,950 (47.5)	17,950 (54.5)	17,950 (60)	17,950 (64)	17,950 (67)	17,650 (69.5)
30		14,270 (15.5)	14,270 (36.5)	14,270 (46.5)	14,270 (53)	14,270 (58)	14,270 (62)	14,270 (65)
35	See Warning Note 16		10,920 (20)	10,920 (36.5)	10,920 (45.5)	10,920 (51.5)	10,920 (56.5)	10,920 (60)
40				8,420 (23)	8,420 (36.5)	8,420 (45)	8,420 (50.5)	8,420 (55)
45					6,920 (25)	6,920 (37)	6,920 (44.5)	6,920 (49.5)
50						5,840 (26.5)	5,840 (37)	5,840 (43.5)
55						4,870 (3.5)	4,870 (28)	4,870 (37)
60							3,980 (13)	3,980 (28.5)
65								3,260 (15.5)
Min. boom angle (deg.) for indicated length (no load)	0							
Max. boom length (ft.) at 0 deg. boom angle (no load)	70							

NOTE: Boom angles are in degrees.

A6-829-005925 & -003716D

- Rated loads do not account for wind on lifted load or boom. It is recommended when wind velocity is above 20 mph (32 km/h), rated loads and boom lengths be appropriately reduced.
- Rated loads are for lift crane service only.
- Do not operate at a radius or boom length where capacities are not listed. At these positions, the crane may overturn without any load on the hook.
- The maximum load which can be telescoped is not definable because of variations in loadings and crane maintenance, but it is safe to attempt retraction and extension within the limits of the capacity chart.
- When either boom length or radius or both are between values listed, the smallest load shown at either the next larger radius or boom length shall be used.
- For safe operation, the user shall make due allowances for his particular job conditions, such as; soft or uneven ground, out of level conditions, high winds, side loads, pendulum action, jerking or sudden stopping of loads, hazardous conditions, experience of personnel, two machine lifts, traveling with loads, electric wires, etc. Side pull on boom or jib is extremely dangerous.
- Power telescoping boom sections must be extended equally at all times.
- Handling of personnel from the boom is not authorized except with equipment furnished and installed by Grove Manufacturing Company.
- Keep load handling devices a minimum of 18 inches (45.7 cm) below boom head at all times.
- The boom angle before loading should be greater than the loaded boom angle to account for deflection.
- Capacities appearing above the bold line are based on structural strength and tipping should not be relied upon as a capacity limitation.
- Capacities for the 28 ft. (8.6m) boom length shall be lifted with the boom fully retracted. If boom is not fully retracted, capacities shall not exceed those shown for the 34 ft. (10.4m).
- Radii less than 35 feet or 12 meters not recommended when lifting over front on machine. (Only applicable to machines equipped with front jack cylinder.)

**DEFINITIONS:**

- Operating Radius:** Horizontal distance from a projection of the axis of rotation to the supporting surface before loading to the center of the vertical hoist line or tackle with load applied.
- Loaded Boom Angle (Shown in Parenthesis on Main Boom Capacity Chart):** is the angle between the boom base section and the horizontal, after lifting the rated load at the rated radius with the rated boom length.
- Working Area:** Areas measured in a circular arc about the center line of rotation as shown on the working area diagram.
- Freely Suspended Load:** Load hanging free with no direct external force applied except by the lift cable.
- Side Load:** Horizontal force applied to the lifted load either on the ground or in the air.



# TD522

**22 TON CAPACITY**  
**28 ft. - 70 ft. BOOM (FULL POWER)**

**PCSA CLASS 10-75**  
**85% OF TIPPING**

## JIB CAPACITIES IN POUNDS

**23 ft. - 38 ft. TELE. JIB**  
**On Outriggers - Over Side & Rear**  
**Without Front Jack**

Boom Angle	23 ft. JIB (fully retracted)						33 ft. JIB						38 ft. JIB (fully extended)					
	0° OFFSET		15° OFFSET		30° OFFSET		0° OFFSET		15° OFFSET		30° OFFSET		0° OFFSET		15° OFFSET		30° OFFSET	
	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.
75°	27.5	12,500	31.4	7,300	35.0	4,500	29.0	7,600	35.3	4,900	41.5	2,900	31.0	5,000	39.0	3,750	45.4	2,230
70	33.3	9,390	37.8	6,390	40.6	4,150	35.9	6,500	42.5	4,270	48.8	2,650	37.9	4,650	45.6	3,300	51.8	1,990
65	40.2	6,440	44.7	5,750	47.2	3,900	43.9	5,300	50.2	3,820	56.1	2,440	46.3	4,470	53.7	2,950	59.3	1,870
60	47.0	4,780	51.3	4,410	53.6	3,680	51.6	4,100	57.5	3,280	62.8	2,330	54.3	3,470	61.2	2,640	66.4	1,770
55	53.2	3,570	57.3	3,370	59.5	3,020	58.8	3,120	64.3	2,580	69.2	2,230	62.0	2,810	68.4	2,450	72.9	1,680
50	59.2	2,760	62.9	2,630	65.1	2,500	65.7	2,440	70.7	2,040	74.9	1,910	69.2	2,150	75.0	1,910	78.9	1,620
45	64.7	2,180	68.0	2,070	69.9	2,030	71.9	1,900	76.5	1,620	80.2	1,510	75.8	1,630	81.1	1,500	84.3	1,410
40	69.6	1,730	72.6	1,650	74.2	1,620	77.7	1,510	81.7	1,280	84.7	1,270	81.8	1,290	86.4	1,190	89.0	1,150
35	74.0	1,360	76.6	1,350	77.9	1,260	82.8	1,200	86.2	1,030	88.6	1,030	87.2	1,040	91.2	970	93.0	900
30	77.8	1,040	80.1	1,040	81.0	950	87.3	960	90.2	810	91.8	810	92.0	820				

A6-829-005943

No Load Stability On Outriggers Side & Rear with 23' - 38' Tele. Jib Installed:

	Tele. Jib Fully Retracted 93'	33' Tele. Jib Length 103'	Tele. Jib Fully Extended 108'
Minimum boom angle for indicated boom length	17°	20°	25°
Maximum boom length including jib for 0° boom angle	88.7'	96.2'	97'

**23 ft. - 38 ft. TELE. JIB**  
**On Outriggers - 360°**  
**With Front Jack**

Boom Angle	23 ft. JIB (fully retracted)						33 ft. JIB						38 ft. JIB (fully extended)					
	0° OFFSET		15° OFFSET		30° OFFSET		0° OFFSET		15° OFFSET		30° OFFSET		0° OFFSET		15° OFFSET		30° OFFSET	
	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.
75°	27.5	12,500	31.4	7,300	35.0	4,500	29.0	7,600	35.3	4,900	41.5	2,900	31.0	5,000	39.0	3,750	45.4	2,230
70	33.3	9,390	37.8	6,390	40.6	4,150	35.9	6,500	42.5	4,270	48.8	2,650	37.9	4,650	45.6	3,300	51.8	1,990
65	40.2	6,670	44.7	5,750	47.2	3,900	43.9	5,300	50.2	3,820	56.1	2,440	46.3	4,470	53.7	2,950	59.3	1,870
60	47.0	5,020	51.3	4,630	53.6	3,680	51.6	4,300	57.5	3,450	62.8	2,330	54.3	3,550	61.2	2,640	66.4	1,770
55	53.2	3,860	57.3	3,420	59.5	3,120	58.8	3,320	64.3	2,770	69.2	2,230	62.0	2,910	68.4	2,450	72.9	1,680
50	59.2	3,080	62.9	2,790	65.1	2,650	65.7	2,590	70.7	2,190	74.9	1,910	69.2	2,430	75.0	2,030	78.9	1,620
45	64.7	2,450	68.0	2,280	69.9	2,180	71.9	2,060	76.5	1,730	80.2	1,600	75.8	1,920	81.1	1,660	84.3	1,500
40	69.6	1,980	72.6	1,870	74.2	1,750	77.7	1,640	81.7	1,400	84.7	1,360	81.8	1,480	86.4	1,360	89.0	1,240
35	74.0	1,580	76.6	1,530	77.9	1,440	82.8	1,300	86.2	1,150	88.6	1,130	87.2	1,080	91.2	1,020	93.0	980
30	77.8	1,290	80.1	1,270	81.0	1,230	87.3	1,020	90.2	940	91.8	920	92.0	860	95.2	840	96.3	830

A6-829-005939

No Load Stability On Outriggers 360° With 23' - 38' Tele. Jib Installed:

	Tele. Jib Fully Retracted 93'	33' Tele. Jib Length 103'	Tele. Jib Fully Extended 108'
Minimum Boom Angle for Indicated Boom Length	0°	3°	6°
Maximum Boom Length Including Jib for 0° Boom Angle	93'	102'	106.7'

## JIB CAPACITY NOTES

- 23' (7.1m) Tele. Jib length may be used for double line lifting service. 33' (10.1m) and 38' (11.6m) jib lengths may be used for single line lifting service only. Capacities are based on structural strength of 23'-38' (7.1m-11.6m) Tele. Jib at a given main boom angle regardless of main boom length.
- WARNING:** Operation of machine with heavier loads than the capacities listed is strictly prohibited. Machine tipping with jib occurs rapidly and without advance warning.
- Capacities listed are with fully extended outriggers only.
- WARNING:** Lifting on rubber with jib is prohibited.
- Reference radii listed are for fully extended boom only 70' (21.2m).

## WEIGHT REDUCTIONS FOR LOAD HANDLING DEVICES

<b>23 ft. JIB with 28-70 ft. BOOM</b>	
*Stowed	- 250 lbs.
*Erected	- 1,985 lbs.

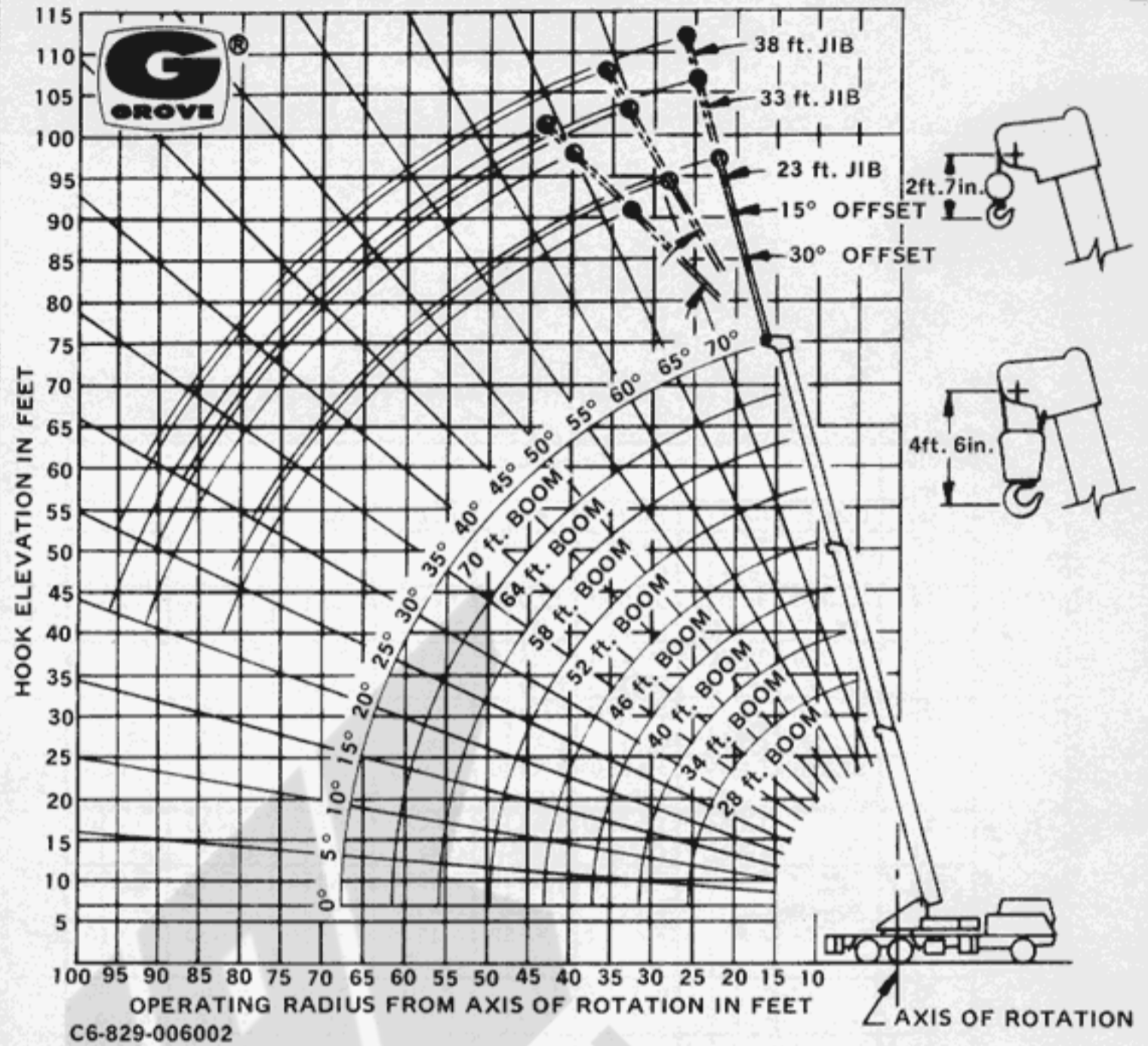
<b>23-38 ft. TELE. JIB with 28-70 ft. BOOM</b>	
*Stowed	- 414 lbs.
*Erected (Retracted)	- 3,659 lbs.
*Erected (Extended)	- 4,611 lbs.

\*Reduction of main boom capacities.

<b>HOOKBLOCKS</b>	
22 Ton, 3 Sheave	455 lbs.
15 Ton, 2 Sheave	292 lbs.
12 Ton, 1 Sheave	360 lbs.
Auxiliary Boom Head	100 lbs.
5 Ton Headache Ball	172 lbs.

**NOTE:** All Load Handling Devices and Boom Attachments are Considered Part of the Load and Suitable Allowances **MUST BE MADE** for Their Combined Weights. Weights are for Grove furnished equipment.

## RANGE DIAGRAM



C6-829-006002

### 23 ft. "A" FRAME JIB On Outriggers - Over Side & Rear Without Front Jack

Boom Angle	0° OFFSET		15° OFFSET		30° OFFSET	
	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.
75°	27.0	12,000	32.5	7,700	35.7	5,070
70	33.3	9,550	38.1	7,000	41.2	4,800
65	40.2	6,840	44.9	5,840	47.8	4,500
60	47.0	5,370	51.3	4,620	54.0	4,030
55	53.2	4,230	57.3	3,660	59.8	3,360
50	59.2	3,350	62.9	2,940	65.1	2,750
45	64.7	2,610	68.0	2,370	69.9	2,200
40	69.6	2,080	72.6	1,910	74.2	1,800
35	74.0	1,780	76.6	1,540	77.9	1,520
30	77.8	1,500	80.1	1,250	81.0	1,230

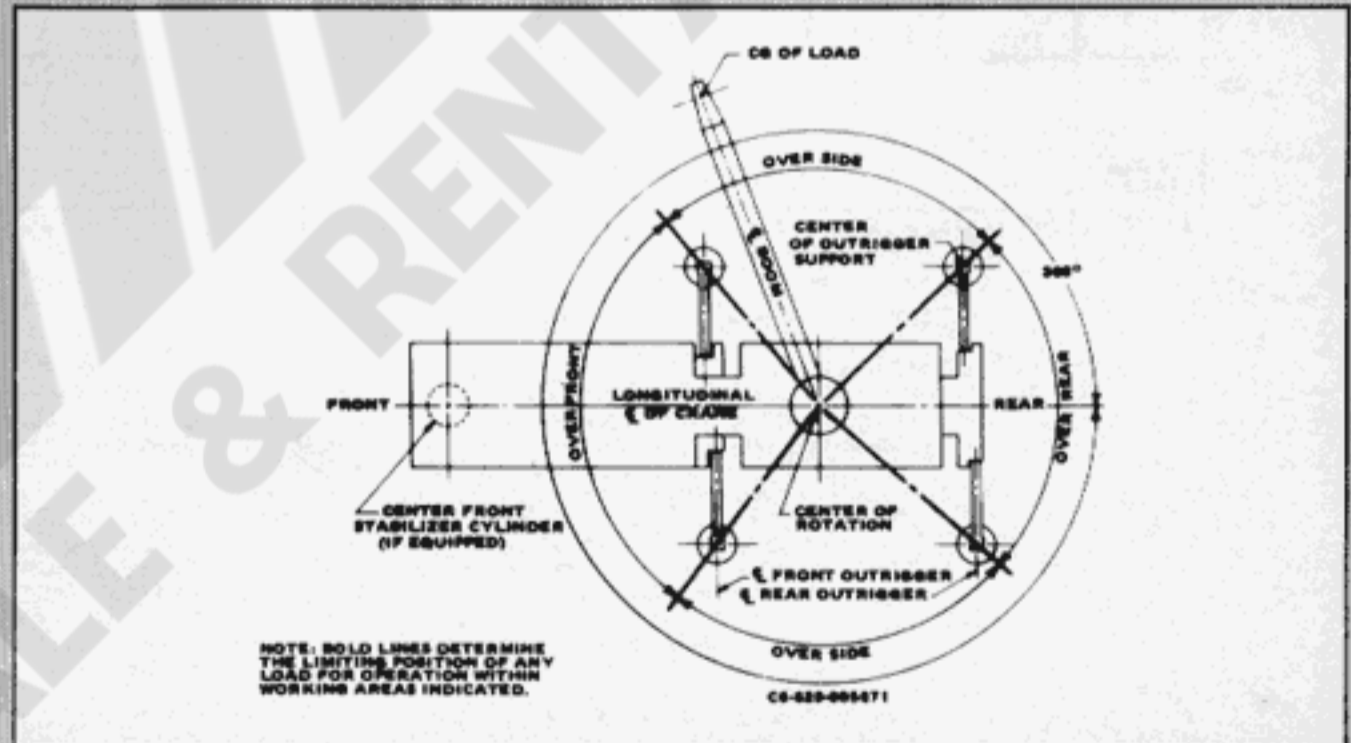
A6-829-005941

### 23 ft. "A" FRAME JIB On Outriggers - 360° With Front Jack

Boom Angle	0° OFFSET		15° OFFSET		30° OFFSET	
	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.	Rad. Ref. ft.	Cap. lbs.
75°	27.0	12,000	32.5	7,700	35.7	5,070
70	33.3	10,400	38.1	7,000	41.2	4,800
65	40.2	8,300	44.9	6,300	47.8	4,500
60	47.0	5,870	51.3	5,450	54.0	4,300
55	53.2	4,450	57.3	4,080	59.8	3,690
50	59.2	3,560	62.9	3,170	65.1	3,030
45	64.7	2,910	68.0	2,610	69.9	2,590
40	69.6	2,400	72.6	2,230	74.2	2,160
35	74.0	2,020	76.6	1,920	77.9	1,880
30	77.8	1,730	80.1	1,680	81.0	1,670

A6-829-005937

## LIFTING AREA DIAGRAM



C6-829-005471

### JIB CAPACITY NOTES:

- All capacities are in pounds 23 ft. jib may be used for double line lifting service. Capacities are based on structural strength of 23 ft. jib at a given main boom angle regardless of main boom length.
- WARNING:** Operation of machine with heavier loads than the capacities listed is strictly prohibited. Machine tipping with jib occurs rapidly and without advance warning.
- Capacities listed are with fully extended outriggers only.
- WARNING:** Lifting on rubber with jib is prohibited.
- Reference radii listed are for fully extended main boom only.
- No load stability on outriggers with 23 ft. jib installed:
  - Minimum boom angle for fully extended main boom = 0°.
  - Maximum boom length at 0° main boom angle = 93 ft.



**GROVE MANUFACTURING COMPANY**

Division of Kidde, Inc.

**KIDDE**

Box 21, Shady Grove, Pennsylvania 17256-0021

Phone: (717) 597-8121 Telex: 842308 Cable: GROVE MFG

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