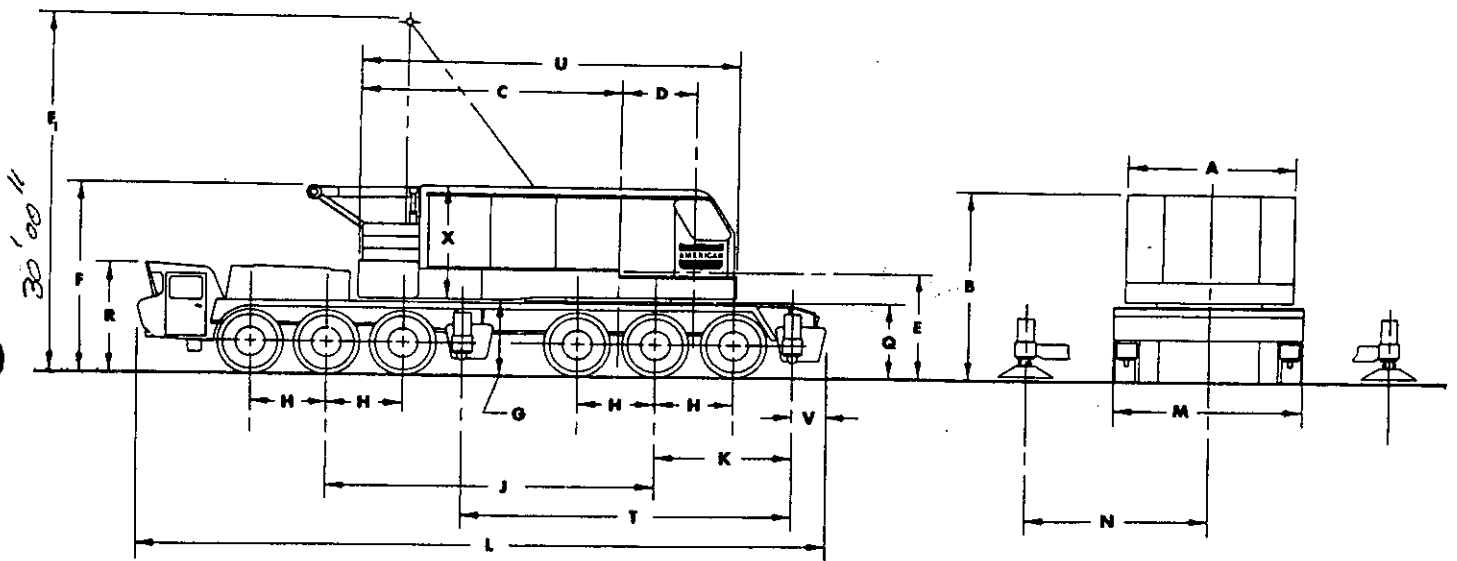




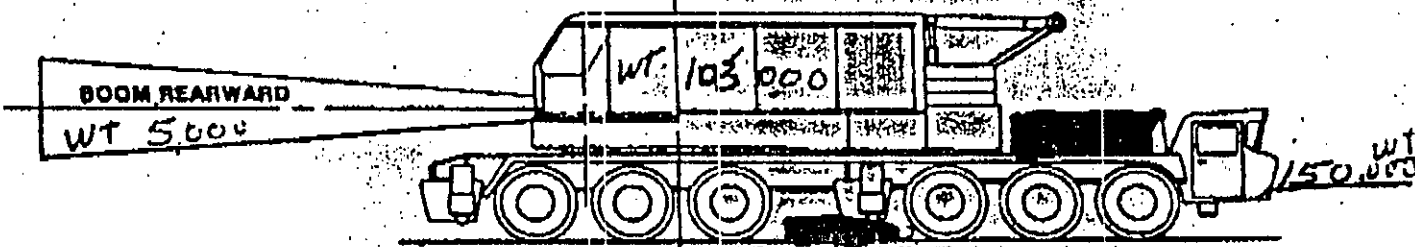
# 9530 CARRIER SPECIFICATIONS



## GENERAL DIMENSIONS

|    |   |                            |    |   |        |
|----|---|----------------------------|----|---|--------|
| A. | Width of Cab .....  |                            | L. | Overall Length of Carrier.....                                    | 47'7"  |
| B. | Height to Top of Cab .....                                  | 13'5"                      | M. | Overall Width of Carrier.....                                     | 13'    |
| C. | Tail Swing .....  | 17'7"                      | N. | Centerline of Carrier to Centerline<br>of Outrigger .....         | 11'6"  |
| D. | Centerline of Rotation to Centerline of<br>Boom Foot .....  | 5'0-3/4"                   | Q. | Top of Mounting Plate to Ground .....                             | 5'3"   |
| E. | Ground to Centerline of Boom Foot .....                     | 7'7-3/4"                   | R. | Top of Carrier Cab to Ground.....                                 | 7'7"   |
| F. | Height Over A-Frame (Lowered).....                          | 13'6-1/2"                  | T. | Centerline Front Outrigger to Center Line<br>Rear Outrigger ..... | 22'5"  |
| F. | Height Over A-Frame (Raised) .....                          | <del>30' 00"</del> 30' 00" | U. | Rear of Counterweight to Front of Cab .....                       | 25'9"  |
| G. | Ground to Bottom of Counterweight.....                      | 5'7"                       | V. | Centerline of Rear Outrigger to<br>End of Carrier.....            | 2'3"   |
| H. | Distance Between Axles .....                                | 5'4"                       | X. | Bottom of Machinery Deck to Top of Cab....                        | 7'-10" |
| I. | Centerline of Rotation to Centerline of<br>Rear Bogie ..... | 2'7-1/4"                   |    | Turning Radius.....   | 66'    |
| J. | Wheel Base .....  | 23'2-1/4"                  |    | Clearance Under Raised Outrigger Float.....                       | 4-1/2" |
| K. | Centerline Rear Bogie to Centerline<br>Rear Outrigger ..... | 9'4"                       |    | Clearance Under Equalizer Beam.....                               | 12"    |

# 9530 TRAVELING WEIGHTS (IN POUNDS)



## Boom Rearward\*

X = IN PLACE  
0 = REMOVED

| 92" INNER ROOM | 77" INNER ROOM | COUNTER-WEIGHT | FRONT OUT-RIGGER | REAR OUT-RIGGER | FRONT TRIDEM | REAR TRIDEM | GROSS WEIGHTS |
|----------------|----------------|----------------|------------------|-----------------|--------------|-------------|---------------|
| 0              | X              | X              | X                | X               | 137,750      | 155,330     | 293,080       |
| 0              | X              | 0              | X                | X               | 67,890       | 135,200     | 203,090       |
| 0              | X              | 0              | 0                | X               | 62,990       | 131,100     | 194,090       |
| 0              | X              | 0              | X                | 0               | 71,680       | 122,430     | 194,090       |
| 0              | X              | 0              | 0                | 0               | 66,760       | 118,330     | 185,090       |
| X              | 0              | X              | X                | X               | 134,630      | 162,530     | 297,160       |
| X              | 0              | 0              | X                | X               | 64,760       | 142,390     | 207,150       |
| X              | 0              | 0              | 0                | X               | 69,870       | 138,290     | 198,160       |
| X              | 0              | 0              | X                | 0               | 68,530       | 129,620     | 198,150       |
| X              | 0              | 0              | 0                | 0               | 63,640       | 125,520     | 189,160       |
| 0              | 0              | X              | X                | X               | 140,680      | 148,130     | 288,790       |
| 0              | 0              | 0              | X                | X               | 70,800       | 128,000     | 198,800       |
| 0              | 0              | 0              | 0                | X               | 65,900       | 123,900     | 189,800       |
| 0              | 0              | 0              | X                | 0               | 74,570       | 115,230     | 189,800       |
| 0              | 0              | 0              | 0                | 0               | 69,670       | 111,130     | 180,800       |

NOTE: Because of variable manufacturing tolerances a variance of  $\pm 3\%$  should be allowed on these weights.

SEE OPERATOR'S MANUAL FOR MAXIMUM MPH TRAVEL SPEED RESTRICTIONS AS LIMITED BY TIRE LOADS.

Carrier - 104,150 lbs  
upperworks w/ boom ft. - 103,000 lbs  
boom ft - 5,000 lbs

## IMPORTANT

The full counterweight cannot be swung over the side or rear of the machine when the outriggers are not set, due to back stability.

\*In all conditions, the weight distribution between the front and rear tridem is more equally balanced when the boom foot is facing the rear of the carrier (boom rearward). Therefore, we have not charted the boom forward condition.

# CRANE RATING DATA

Load ratings are in pounds and do not exceed 85% of the load which would cause tipping with crane standing level on firm uniformly supporting surface. Safe loads depend on ground conditions, boom length, radius of operation, and proper handling, all of which must be taken into consideration by user.

Tire inflation pressure for "Free Ratings" is 100 P.S.I. Free ratings do not exceed maximum permissible tire load. Tire pressure shall be reduced for over-the-road travel.

Approved working areas "Free Over Side" and "Free Over Rear" are shown under Diagram No. 1. Approved working areas "Outriggers Extended and Set Over Side or Rear" are shown under Diagram No. 2.

"Radius in feet" is the horizontal distance at crane base level from center of rotation to a vertical line through the center of gravity of the suspended load.

Lifting is approved only in those areas for which ratings are shown in the rating chart. Blocks, slings, buckets, and other load carrying devices are considered part of the load. The weight of the hoisting line has been deducted from these capacities. Retractable A-frame must be in fully raised position for all ratings. Ratings in shaded areas are limited by strength of material or factors other than stability.

Main load line is 1-1/8 inch diameter with a minimum breaking strength of 130,000 pounds. Boom suspension line is 7/8 inch diameter with a minimum breaking strength of 79,600 pounds. Boom suspension pendants are 1-3/8 inch diameter with a minimum breaking strength of 211,000 pounds.

Boom and jib erection is over the rear of the machine with outriggers extended and set and with "Lift Rating" counterweight. A-frame must be fully raised and blocks, slings and other load carrying devices must be on the ground.

Compliance to B30.5 based on AMERICAN® carrier mounting. Designed and rated to comply with ANSI Code B30.5.

## LOAD HOISTING DATA \*

| Maximum Lifting Capacity - Lbs. | Min. Pts. of Line | Main (Rear) Drum With Controlled Load Lowering | Auxiliary (Front) Drum With Controlled Load Lowering |
|---------------------------------|-------------------|--|--|
| 440,000                         | 12                | 182  | 85   |
| 408,570                         | 11                | 177  | 93   |
| 371,420                         | 10                | 195  | 102  |
| 334,280                         | 9                 | 216  | 113  |
| 297,140                         | 8                 | 244  | 128  |
| 260,000                         | 7                 | 278  | 146  |
| 222,850                         | 6                 | 325  | 170  |
| 185,710                         | 5                 | 390  | 204  |
| 148,570                         | 4                 | 488  | 256  |
| 111,420                         | 3                 | 650  | 341  |
| 74,280                          | 2                 | 976  | 512  |
| 37,140                          | 1                 | 1952   | 1024   |

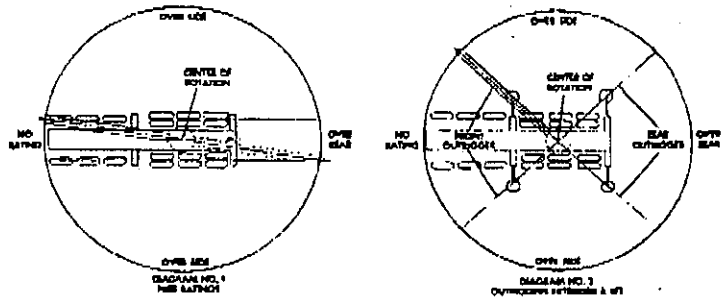
\*With 1-1/8 inch dia. rope on main drum and 1 inch dia. rope on aux. drum.

## MAX BOOM AND JIB ERECTION WITH 90,000# CTWT.

| 77H Tubular Boom | No. 16 HL Jib      |
|------------------|--------------------|
| 250' Hammerhead  | 100' No. 16 HL Jib |
| 260' Hammerhead  | 80' No. 16 HL Jib  |
| †260' Hammerhead | 100' No. 16 HL Jib |
| 290' Tapered Tip | 100' No. 16 HL Jib |

†With 10,000 lb front bumper counterweight and boom erection assistor.

NOTE: In accordance with varying material situations, and the Company's policy of constant product improvement these specifications subject to change without notice and without incurring responsibility to units previously sold.



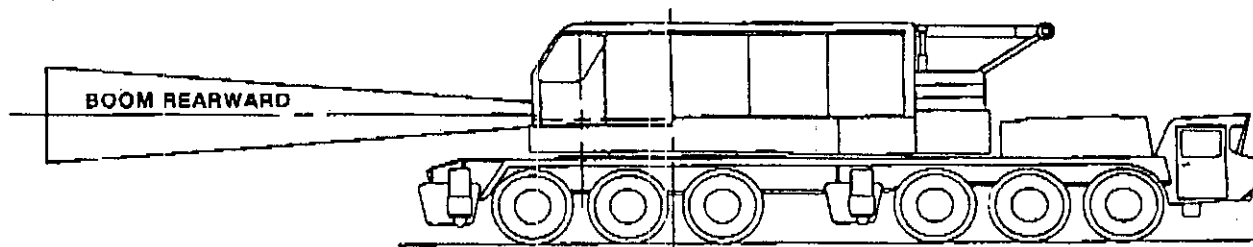
## 77H HAMMERHEAD BOOM COMPOSITION

| Boom Length (In Feet) | 30 Ft. 77S Inner | 10 Ft. 77S Center | 20 Ft. 77S Center | 50 Ft. 77S Center | 40 Ft. 77H Outer Base | Hammer-Head Tip |
|-----------------------|------------------|-------------------|-------------------|-------------------|-----------------------|-----------------|
| 70'                   | 1                | -                 | -                 | -                 | 1                     | 1               |
| 80'                   | 1                | 1                 | -                 | -                 | 1                     | 1               |
| 90'                   | 1                | -                 | 1                 | -                 | 1                     | 1               |
| 100'                  | 1                | 1                 | 1                 | -                 | 1                     | 1               |
| 110'                  | 1                | -                 | 2                 | -                 | 1                     | 1               |
| 120'                  | 1                | -                 | -                 | 1                 | 1                     | 1               |
| 130'                  | 1                | 1                 | -                 | 1                 | 1                     | 1               |
| 140'                  | 1                | -                 | 1                 | 1                 | 1                     | 1               |
| 150'                  | 1                | 1                 | 1                 | 1                 | 1                     | 1               |
| 160'                  | 1                | -                 | 2                 | 1                 | 1                     | 1               |
| 170'                  | 1                | -                 | -                 | 2                 | 1                     | 1               |
| 180'                  | 1                | 1                 | -                 | 2                 | 1                     | 1               |
| 190'                  | 1                | -                 | 1                 | 2                 | 1                     | 1               |
| 200'                  | 1                | 1                 | 1                 | 2                 | 1                     | 1               |
| 210'                  | 1                | -                 | 2                 | 2                 | 1                     | 1               |
| 220'                  | 1                | -                 | -                 | 3                 | 1                     | 1               |
| 230'                  | 1                | 1                 | -                 | 3                 | 1                     | 1               |
| 240'                  | 1                | -                 | 1                 | 3                 | 1                     | 1               |
| 250'                  | 1                | 1                 | 1                 | 3                 | 1                     | 1               |
| 260'                  | 1                | -                 | 2                 | 3                 | 1                     | 1               |

## 77H TAPERED TIP BOOM COMPOSITION

| Boom Length (In Feet) | 30 Ft. 77S Inner | 10 Ft. 77S Center | 20 Ft. 77S Center | 50 Ft. 77S Center | 40 Ft. 77H Outer Base | 30 Ft. 77H Tapered Tip |
|-----------------------|------------------|-------------------|-------------------|-------------------|-----------------------|------------------------|
| 100'                  | 1                | -                 | -                 | -                 | 1                     | 1                      |
| 110'                  | 1                | 1                 | -                 | -                 | 1                     | 1                      |
| 120'                  | 1                | -                 | 1                 | -                 | 1                     | 1                      |
| 130'                  | 1                | 1                 | 1                 | -                 | 1                     | 1                      |
| 140'                  | 1                | -                 | 2                 | -                 | 1                     | 1                      |
| 150'                  | 1                | -                 | -                 | 1                 | 1                     | 1                      |
| 160'                  | 1                | 1                 | -                 | 1                 | 1                     | 1                      |
| 170'                  | 1                | -                 | 1                 | 1                 | 1                     | 1                      |
| 180'                  | 1                | 1                 | 1                 | 1                 | 1                     | 1                      |
| 190'                  | 1                | -                 | 2                 | 1                 | 1                     | 1                      |
| 200'                  | 1                | -                 | -                 | 2                 | 1                     | 1                      |
| 210'                  | 1                | 1                 | -                 | 2                 | 1                     | 1                      |
| 220'                  | 1                | -                 | 1                 | 2                 | 1                     | 1                      |
| 230'                  | 1                | 1                 | 1                 | 2                 | 1                     | 1                      |
| 240'                  | 1                | -                 | 2                 | 2                 | 1                     | 1                      |
| 250'                  | 1                | -                 | -                 | 3                 | 1                     | 1                      |
| 260'                  | 1                | 1                 | -                 | 3                 | 1                     | 1                      |
| 270'                  | 1                | -                 | 1                 | 3                 | 1                     | 1                      |
| 280'                  | 1                | 1                 | 1                 | 3                 | 1                     | 1                      |
| 290'                  | 1                | -                 | 2                 | 3                 | 1                     | 1                      |

# 9530 TRAVELING WEIGHTS IN POUNDS



## BOOM REARWARD\*

X = IN PLACE  
0 = REMOVED

| 92" INNER BOOM | 77" INNER BOOM | COUNTER-WEIGHT | FRONT OUT-RIGGER | REAR OUT-RIGGER | FRONT TRIDEM | REAR TRIDEM | GROSS WEIGHTS |
|----------------|----------------|----------------|------------------|-----------------|--------------|-------------|---------------|
| 0              | X              | X              | X                | X               | 141,190      | 173,610     | 314,800       |
| 0              | X              | 0              | X                | X               | 71,350       | 153,450     | 224,800       |
| 0              | X              | 0              | 0                | X               | 63,060       | 146,470     | 209,530       |
| 0              | X              | 0              | X                | 0               | 77,820       | 131,700     | 209,520       |
| 0              | X              | 0              | 0                | 0               | 69,540       | 124,720     | 194,260       |
| X              | 0              | X              | X                | X               | 137,920      | 181,150     | 319,070       |
| X              | 0              | 0              | X                | X               | 68,080       | 160,990     | 229,070       |
| X              | 0              | 0              | 0                | X               | 59,790       | 154,000     | 213,790       |
| X              | 0              | 0              | X                | 0               | 74,560       | 139,240     | 213,800       |
| X              | 0              | 0              | 0                | 0               | 66,270       | 132,260     | 198,530       |
| 0              | 0              | X              | X                | X               | 144,100      | 166,410     | 301,510       |
| 0              | 0              | 0              | X                | X               | 74,260       | 146,250     | 220,510       |
| 0              | 0              | 0              | 0                | X               | 65,970       | 139,270     | 205,240       |
| 0              | 0              | 0              | X                | 0               | 80,730       | 124,500     | 205,230       |
| 0              | 0              | 0              | 0                | 0               | 72,450       | 117,520     | 189,970       |

NOTE: Because of variable manufacturing tolerances a variance of  $\pm 3\%$  should be allowed on these weights.

SEE OPERATOR'S MANUAL FOR MAXIMUM MPH TRAVEL SPEED RESTRICTIONS AS LIMITED BY TIRE LOADS.

## IMPORTANT

The full counterweight cannot be swung over the side or rear of the machine when the outriggers are not set, due to back stability.

\*In all conditions, the weight distribution between the front and rear tridem is more equally balanced when the boom foot is facing the rear of the carrier (boom rearward). Therefore, we have not charted the boom forward condition.

# 9530 GENERAL SPECIFICATIONS (cont.)

**CAB:** Fully enclosed with glazed doors and windows; all safety glass windows mounted in rubber; removable windows in operator's cab; operator's compartment totally enclosed, shielding him from engine and machinery noise; door at rear of operator's compartment provides direct access to machinery; sliding doors on sides and rear; overhead window in operator's cab roof for unobstructed vision; ladder to roof at left front.

## ATTACHMENTS:

**GUY DERRICK ATTACHMENT:** Increases load handling capacity to 600,000 pounds; modified 77" crane boom is fitted with 50 ft. mast tip with anti-friction bearing guy cap and becomes guy derrick mast; derrick boom is 92" heavy duty with six sheave boom point; auxiliary hoist drum becomes guy derrick boom hoist drum with special single lever control; main hoist drum is guy derrick load drum; included are required guide sheaves, boom suspension and 300 ton load tackle; 77" crane boom center sections and pendants are interchangeable in guy derrick mast; 92" crane boom sections are interchangeable in guy derrick boom; maximum mast height is 240 ft.; maximum boom length is 220 ft. with full 360° swing under the guy lines or up to 350 ft. with limited swing between guy lines.

**CONTAINER HANDLING MODIFICATION:** Consists of an alteration to the main drum, lagging to permit reeving both load lines on the main hoist drum permitting the two load lines to spool evenly and run at the same line speed; a special double fall hammerhead permitting one load line to be reeved over the boom point through the crane block deadending on the machinery deck and the second load line to be reeved over the boom point through a second crane block deadending on the auxiliary drum; this line being used to raise or lower the second load block to equalize the load.

## GENERAL:

**CONTROLS:** Graduated air controls, pioneered by AMERICAN, put "feel" at every operator's fingertips.

insure higher production, more accurate control; air line alcohol dispenser absorbs excess moisture in air system due to condensation. American has designed its control system to conform with ANSI code B30.5 requirements of standard control arrangement and control functions, which allows operators to easily shift from one machine to another.

**MATERIALS:** Gears and pinions are heat-treated alloy or high carbon steel; cut teeth on all gears except rotating ring gear which has accurately moulded teeth.

Involute splines are used throughout machine for maximum tooth strength through minimum diameter where needed; self centering; equalized bearing and stresses among all teeth, smooth tooth surface; easy interchangeability of parts.

Anti-friction bearings are used on all constantly rotating or high speed shafts and wherever practical to provide friction-free, smooth operation with minimum maintenance.

**LUBRICATION:** All anti-friction bearings and bronze bushings requiring short period lubrication are provided with pressure grease fittings; swing deck gears are provided with oil bath lubrication; drum gear train and the swing bullgear are arranged for grease lubrication.

## PERFORMANCE:

|                            |                 |
|----------------------------|-----------------|
| Rated Swing Speed .....    | 2.28 rpm        |
| Single Line Speed          |                 |
| Main Hoist Drum .....      | 186 FPM         |
| Auxiliary Hoist Drum ..... | 189 FPM         |
| Single Line Pull:          |                 |
| Main Hoist Drum .....      | 40,000 lbs. SLP |
| Auxiliary Hoist Drum ..... | 30,000 lbs. SLP |

## DESIGNED AND RATED TO COMPLY WITH (ANSI) CODE B30.5.

**CARRIER:** For details and general dimensions see separate specification.

**NOTE:** In accordance with our established policy of constant product improvement and varying material situations, these specifications are subject to change without notice and without incurring responsibility for machines previously sold.

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FORM NO. 9530-TGS-1

R807

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**AMERICAN HOIST & DERRICK COMPANY**  
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# 9530 CARRIER SPECIFICATIONS

**CARRIER:** Six axle, 12 x 6 drive carrier with a gross vehicle weight (dynamic) rating of 270,000 lbs., 13 ft. wide over fenders with hydraulic outriggers retracted; 23'2-1/4" wheelbase; 47' overall length.

**FRAME:** Triple box fabricated design, manufactured from high tensile strength steel 100,000 lb. yield; alloy cast steel integral tooth bullgear with integral double tapered roller path is accurately located and welded to carrier frame; dropout hole is provided for removal of swing pinion; heavy duty front bumper; front and rear towing loops.

**STANDARD ENGINE:** GM. Diesel. Model 8V92TAC, 8 cylinder, 405 SAE BHP at 2100 RPM, 4.84" bore, 5" stroke, 736 cu. in. displacement; 1120 ft. lbs. torque at 1400 RPM; fuel injection; "Full-Flo" oil filter and oil cooler.

**OPTIONAL ENGINE:** Cummins diesel Model KT-450 six cylinder, 450 SAE BHP at 2100 RPM, 6-1/4" bore, 6-1/4" stroke, 1150 cu. in. displacement, 1350 ft. lbs. torque at 1500 RPM, turbo-charged and aftercooled.

**TRANSMISSION:** Allison Powershift Model CLBT 5960, six speeds forward, one reverse fitted with single stage torque converter ratio at stall 2.6:1. Cotta transfer box 1863C with ratio low 1.26 and high 1 has shift control located at the side of Carrier.

**PROPEL SHAFTS:** Mechanics 8LN and 9LN.

**BRAKES:** Bendix Westinghouse, internal expanding brake system on all wheels, two 12 cfm engine driven air compressors, four service reservoirs, spring set, air released parking and emergency brakes on three rear axles, two air reservoirs for release of spring set chambers, control lever mounted on dash panel, front brakes 20-1/4" x 5", rear brakes 20-1/4" x 7". Cummins engine has a single Cummins 30 cfm compressor.

**RETARDER:** Allison Hydro-Dynamic retarder brake fitted integrally into the power shift transmission to permit braking on long grades. Retarder offers 1200 ft. lbs. torque resistance at 2000 RPM, converter oil is radiator cooled through a GM two stage oil cooler in the engine.

**FRONT AXLES:** Rockwell FU-910 tubular tridem axle assembly, 90,000 lbs. total capacity, 129" track.

**REAR AXLES:** Clark BD 101000 planetary tridem assembly, 180,000 lbs. total capacity, 117" track, ratio 16.187:1. Fitted with heavy-duty carrier assembly in front rear axle to accommodate high through-drive torque converter conditions.

**SUSPENSION: FRONT:** Hendrickson tridem walking beam type solid mounted to frame and fitted with rubber bushed torque rods. **REAR:** Hendrickson tridem walking beam under-slung type; solid mounted; fitted with three tubular rubber bushed torque rods and cast steel hanger brackets.

**STEERING:** Ross TE-71 cam and lever gear; U-joint flex drive to column; 20" dia. steering wheel; self cancelling directional signal switch column mounted. Power steering with three independent Garrison rams mounted on axles; Vickers 25 gpm hydraulic pump direct coupled; hydraulic oil filter; flow control valve and pressure relief.

**WHEELS:** Dayton 25" spoke wheel assemblies mounted on front axles; rear wheels cast integrally with planetary hub assemblies. Rims 11.25, three piece demountable type.

**FUEL SYSTEM:** Fuel injection system; engine driven fuel pump; 150 gal. fuel tank; fuel filter engine mounted; large diameter suction and return lines, vents and 3" dia. filler neck with gauze filler.

**TIRES:** Eighteen 16.00 x 25-24 ply rating NDMS.

**OPTIONAL TIRES:** Michelin 1600 x 25 XRP two star.

**CAB AND SHEET METAL:** All steel full forward two man low profile cab; front and rear continuous fenders from #10 non-skid tread plate. Separate engine compartment; radiator grill; lock-up hood covers; rear air vents and side mounted tool and storage lockers.

**ELECTRICAL:** 12/24 volt system negative ground; 500 watt alternator with regulator; 24 volt starter; sealed beam dual headlights; front and rear directional signals; combination stop and tail lights; clearance lights on cab side and top; also on rear corners and on center decks; rotating amber flasher mounted on cab; cab dome light.

**OUTRIGGERS:** Front and rear hydraulic outriggers with 12" dia. vertical jacks operated from right and left hand consoles; 42" float assemblies; sliding beams to extend to a maximum of 11'6" from center of carrier to center line of hydraulic jack; overall width retracted with vertical jacks in place 13'0".

**STANDARD EQUIPMENT:** Bostrom Viking driver's seat; RH and LH West Coast mirrors with lights air windshield wipers; heater and defroster; hand throttle control; lock-up side mounted sling boxes; dry type "Cyclopac" engine air filters; front boom rest; four way flasher system; four alternating flashers on rear fenders, two rotating flashers on front; access step into cab, engine compartment and rear deck; tool kit comprising wheel wrench and bar, air chuck and pressure gauge, 50' air hose.

**INSTRUMENTS:** Indirectly lighted instrument panel with speedometer, engine oil pressure gauge, charge indicator, water temp. gauge, air pressure gauge, converter oil temp. gauge, engine tachometer, low air pressure warning, hi/low beam indicators, brake-lock and emergency air controls.

**OPTIONAL FRONT BUMPER COUNTERWEIGHT:** 10,000 lb., pin connected; required for maximum boom and jib erection.

## PERFORMANCE:

|   |         |
|---|---------|
| Maximum governed speed (high-high):                             | 31 MPH  |
| Minimum governed speed (low-low):                               | 1.6 MPH |
| Maximum gradeability based on torque converter stall (low-low): |         |
| On Highway  | 35%     |
| Off Highway   | 28%     |

**NOTE:** In accordance with varying material situations, and the Company's policy of constant product improvement, these specifications subject to change without notice and without incurring responsibility to units previously sold.

# 9530 GENERAL SPECIFICATIONS (cont.)

booms, is capable of holding the rated load indefinitely without attention from the operator, and will function under all conditions of brake temperature and lining wear, provided the brake mechanism receives proper adjustment.

**AUXILIARY DRUM ASSEMBLY:** Drum shaft is mounted on anti-friction bearings forward of main hoist drum; alloy cast iron friction drum with integral brake and clutch surfaces is mounted in anti-friction bearings on the drum shaft; drum is skeleton type with full width split steel lagging bolted in place; drum has storage capacity of 1534 ft. of 1" dia. rope; dual, synchronized, air controlled clutches with tandem external contracting bands; dual, synchronized, external contracting band brakes with air assist; cooling flange on brake drums to dissipate heat, brake shafts and pins mounted on anti-friction bearings for positive, effortless response; brake and clutch surface stress relieved. Spring set, air released brake mechanism is similar to main drum brake.

**CONTROLLED LOAD LOWERING FOR MAIN HOIST DRUM:** Roller chain sprocket is bolt connected to drum lagging; heavy duty roller chain drives sprocket on auxiliary clutch shaft mounted below and between main and auxiliary drums; air operated internal expanding tandem band clutch; loads are lowered through overrunning friction torque of engine and converter; capable of lowering rated loads at stable speeds without brake assistance; included as standard equipment on main hoist drum; controlled load lowering is completely independent of all other operations.

**CONTROLLED LOAD LOWERING FOR AUXILIARY HOIST DRUM:** A second clutch and chain sprocket are mounted on auxiliary clutch shaft; lowering is controlled through roller chain driven from chain sprocket on auxiliary hoist drum; clutch and clutch shaft mounted on anti-friction bearings; loads are lowered through overrunning friction torque of engine and torque converter.

**STANDARD BOOM:** Pin connected deep section crane boom has chords of tubular T-1 steel and tubular lattice; boom is 77" cross section and can be extended to 290 ft.; the basic inner section is 30 ft. long; a 40 ft. long tapered intermediate section can be fitted either with a six sheave pin connected hammerhead or with a 30 ft. two sheave pin connected outer section; the hammerhead is for heavy lifts; the tapered outer section is for long boom operations and has a second sheave for an auxiliary load line or for occasional clamshell service; tapered tip is closed throat design, center sections are available in 10, 20 and 50 ft. lengths, pin connected; the maximum 290 ft. length is made up of three 50 ft. and two 20 ft. center sections; boom suspension arrangement consists of two double 1-3/8" diameter pendant suspension cables extending from

the outer bail to the boom point; pendants are premium grade wire rope with swaged pendant fittings; pendants are added or removed for boom length changes; boom hoist line is 14 parts.

**OPTIONAL 92" TUBULAR CHORD BOOM:** Pin connected deep section crane boom has chords of tubular T-1 steel and tubular lattice; boom is 70 ft., 2 piece, 92" cross section, and can be extended to 260 ft., the basic inner section is 30 ft. long; outer section is 40 ft. long with six 36" diameter sheaves mounted on anti-friction bearings in offset boom point; center sections are available in 10, 20, and 50 ft. lengths, boom suspension arrangement consists of two double 1-3/8" diameter pendant suspension cables extending from the outer bail to the boom point; pendants are premium grade wire rope with swaged pendant fittings, pendants are added or removed for boom length changes; boom sections and pendants are pin connected for quick, easy removal or replacement; boom hoist line is 14 parts. Maximum boom length can be increased to 350 ft. with the addition of lightweight 50 ft. transition section, 50 ft. tapered intermediate section, and 50 ft. 2-sheave tapered tip outer section. Boom suspension arrangement consists of two double 1-3/8" diameter pendant suspension cables, the lower set extending from the outer bail to approximately mid point on the boom and the upper set extending from the outer bail to the boom point.

**BOOM STOPS:** Telescoping tubular boom stops restrain the boom from overtopping in the event of hoist line or hoisting tackle failure; standard on all machines furnished with crane boom.

**BOOM HOIST SHUT OFF:** Automatically stops the boom hoist mechanism when the boom reaches a predetermined angle; the adjustable actuator arm, located near the base of the boom, simultaneously disengages the boom hoist clutch and sets the boom hoist brake when the boom reaches the pre-set high limit; standard on all machines sold with crane boom.

**RETRACTABLE A-FRAME:** Is raised or lowered by means of bail rigging with hydraulic cylinder assist from fully retracted position; standard on all machines.

**JIB:** Lightweight No. 16HL jib is constructed with T-1 tubular chords and tubular lattice; basic length is 40 ft. two piece; length extendable to 100 ft. maximum with 10 ft. and 20 ft. center sections; front stay and back stay lines are included on 77" boom.

Jib back stay ears are located on the 40 ft. outer base section; jib back stay length must equal or exceed jib length, for longer jibs the back stay line is attached at boom inner section or optional ears on center boom section. On 92" boom jib back stay line is attached at boom inner section or on 50 ft. center sections which have back stay ears as standard equipment.

# 9530 GENERAL SPECIFICATIONS

## UPPER MACHINERY:

**ENGINE:** Detroit Diesel (GM) 8V-71-N Model No. 7083-7000 diesel engine, eight cylinder, 4-1/4" bore, 5" stroke, 568 cu. in. displacement, net rated 268 h.p. (304 gross h.p.) @ 2100 rpm converter input; Twin Disc three stage hydraulic torque converter; mechanical limiting speed engine governor with variable speed tail shaft governor; 24 volt electric starting.

**POWER TRANSMISSION:** Power is transmitted from engine to operating machinery by multiple strand roller chain, enclosed and running in oil.

**FUEL TANK:** 184 gallon capacity.

**ROTATING MACHINERY BASE:** Electric welded steel plate and alloy steel casting unit; tapered deep girder construction with integral walkways; accurate milling, boring and drilling with modern computer controlled machine tools using jigs and heavy duty fixtures insures proper alignment of machinery under the most severe operating conditions and provides accurate fit of replacement parts.

## COUNTERWEIGHT:

| Model | Type Cl. Wt. | 45,000# Basic Casting | 2,525# L.H. Corner Overlay | 9,950# Center Overlay | 2,525# R.H. Center Overlay | Total Weight |
|-------|--------------|-----------------------|----------------------------|-----------------------|----------------------------|--------------|
| 9530  | T-U-R-R      | 1                     | 3                          | 3                     | 3                          | 80,500#      |

After removal of the top layer (16,000 lbs) of overlays, the remaining 75,000 lbs of counterweight is removed, without assistance, through use of counterweight removal attachment; two cast alloy steel arms are pivoted from rear of machinery deck; alloy steel links suspend the counterweight from these arms and machined cast steel latches secure the arms; counterweight is further secured by two over-center locking arms; no bolts are employed; counterweight is lowered and raised by hydraulic cylinders.

**LOAD AND HOOK ROLLERS:** Tapered load rollers transmit downward loads to machined upper roller path on carrier; tapered hook rollers transmit uplift loads to lower path; two sets double equalizing anti-friction bearing load rollers and two sets double equalizing bronze bushed hook rollers in front; two sets anti-friction bearings double equalizing hook rollers and two single bronze bushed load rollers in rear; hook rollers easily adjustable by eccentric hook roller axle.

**DRIVE SHAFT ASSEMBLY:** Independent primary drive shaft consists of alloy steel shaft with cut steel pinion and ductile iron roller chain sprocket with steel hub insert splined to shaft; shaft mounted in pressure grease lubricated anti-friction bearings. This shaft assembly has a single purpose of speed reduction and is not compromised by mounting clutches for other functions.

**SWING ASSEMBLY:** Variable displacement piston pump is direct driven off the front of the engine; two constant displacement piston motors are geared to

swing turntable through spur gear reduction; closed hydraulic circuit between pump motors; operator has direct control of the pressure exerted on the motors for swinging in either direction; swing motion is substantially independent of engine speed; swing brake on vertical swing shaft is spring set, air released; brake control valve on lever stand permits variable pressure from "released" to "set"; in addition, side motion of swing clutch lever applies variable air pressure to swing brake.

**INDEPENDENT BOOM HOIST:** Cast steel drum and integral cut steel spur gear operate on bronze bushings; boom hoist drum shaft is high carbon steel, mounted in bored holes in machinery base; auxiliary drum provided for take up of boom hoist line required for raising "A" frame and outer bail to working position; jaw clutch shifter with positive interlocks between main and auxiliary drums; spring set, air released locking pawl provided to hold boom during operation or when machine is standing idle; integral cut tooth spur gear and clutch ring are mounted on anti-friction bearings on clutch shaft; shaft is high carbon steel and operates in bronze bushings pressed into machinery deck; clutch spider and pinion splined to clutch shaft. Boom hoist clutch is air controlled, internal expanding band; cast alloy iron brake wheel is keyed to shaft to facilitate removal; brake is spring set and air released with single valve control for both hoisting and lowering.

**CONTROLLING BOOM LOWERING:** Boom lowering speed limited by speed of engine; rapid boom handling is possible; overruning sprag clutch mechanism mounted on independent shaft engages positively and smoothly; disconnect provided for reversed gear operations; shifter inter-locked with boom brake to prevent "live boom."

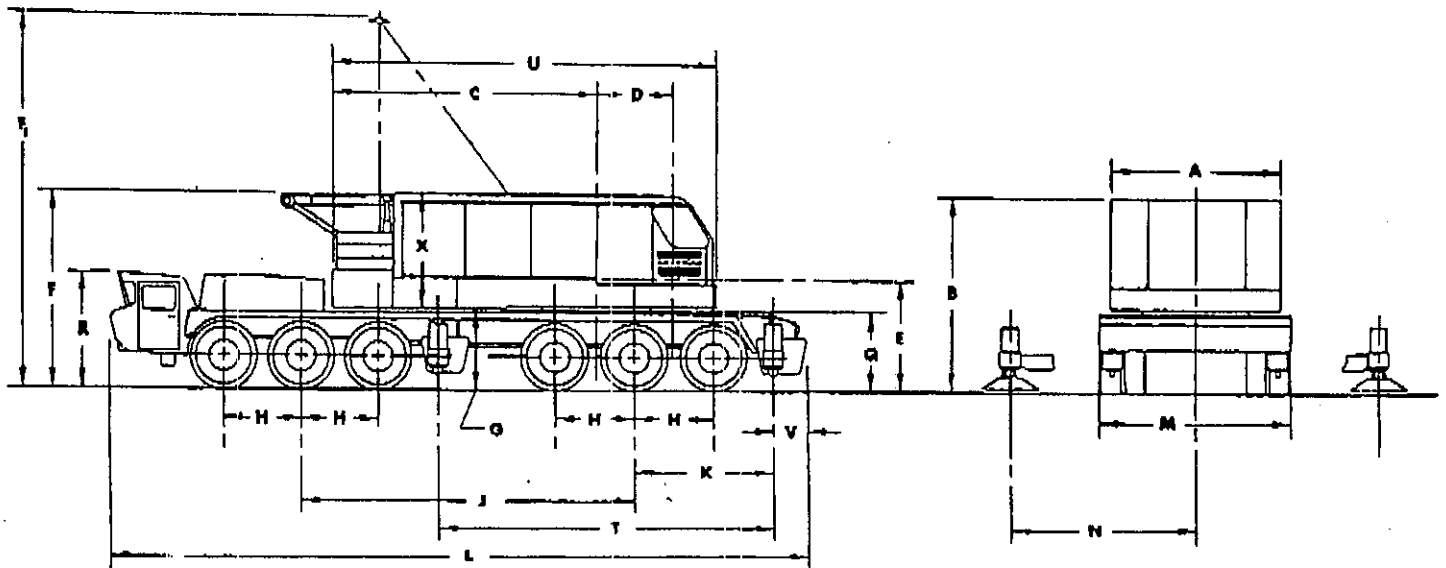
**MAIN DRUM ASSEMBLY:** Main hoist drum shaft is mounted on anti-friction bearings in machinery base; alloy cast iron friction drum with integral brake and clutch surfaces; drum mounted on anti-friction bearings; split steel lagging runs full width between friction drums for greater rope capacity; drum storage capacity is 2560 ft. of 1-1/8" dia. rope; dual, synchronized, air controlled clutches with tandem external contracting bands; dual synchronized brakes are large, external contracting bands with air assist, for smooth operation; extra thick moulded liners; raised cooling flanges on brake drums dissipate heat; brake and clutch surfaces are stress relieved for smooth operation without scoring; brake shafts and pins are mounted on anti-friction bearings for responsive operation with minimum effort.

A spring set, air released brake mechanism on each drum, controllable from the operator's lever stand, actuates automatically in the event there is a loss of air during crane operations. This brake, furnished as standard equipment on all machines sold with crane





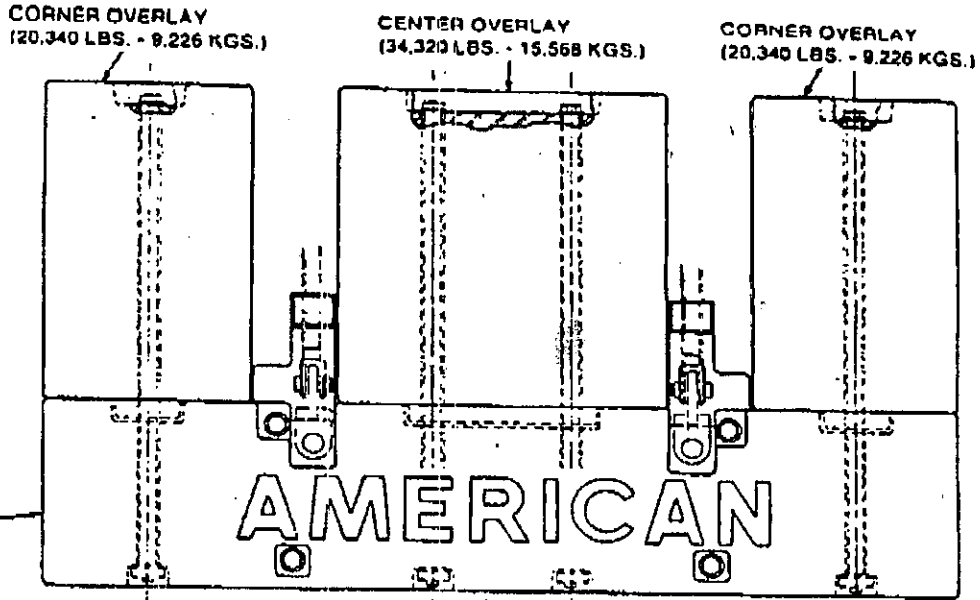
# 9530 CARRIER SPECIFICATIONS



## GENERAL DIMENSIONS

|    |   |           |    |   |        |
|----|---|-----------|----|---|--------|
| A. | Width of Cab .....  | 11'9"     | L. | Overall Length of Carrier.....                                    | 47'7"  |
| B. | Height to Top of Cab .....                                  | 13'5"     | M. | Overall Width of Carrier.....                                     | 13'    |
| C. | Tail Swing .....  | 17'7"     | N. | Centerline of Carrier to Centerline<br>of Outrigger .....         | 11'6"  |
| D. | Centerline of Rotation to Centerline of<br>Boom Foot .....  | 5'0-3/4"  | Q. | Top of Mounting Plate to Ground .....                             | 5'3"   |
| E. | Ground to Centerline of Boom Foot .....                     | 7'7-3/4"  | R. | Top of Carrier Cab to Ground.....                                 | 7'7"   |
| F. | Height Over A-Frame (Lowered).....                          | 13'6-1/2" | T. | Centerline Front Outrigger to Center Line<br>Rear Outrigger ..... | 22'5"  |
| F. | Height Over A-Frame (Raised) .....                          | 29'3"     | U. | Rear of Counterweight to Front of Cab .....                       | 25'9"  |
| G. | Ground to Bottom of Counterweight.....                      | 5'7"      | V. | Centerline of Rear Outrigger to<br>End of Carrier .....           | 2'3"   |
| H. | Distance Between Axles .....                                | 5'4"      | X. | Bottom of Machinery Deck to Top of Cab.....                       | 7'-10" |
| I. | Centerline of Rotation to Centerline of<br>Rear Bogie ..... | 2'7-1/4"  |    | Turning Radius.....   | 66'    |
| J. | Wheel Base .....  | 23'2-1/4" |    | Clearance Under Raised Outrigger Float.....                       | 4-1/2" |
| K. | Centerline Rear Bogie to Centerline<br>Rear Outrigger ..... | 9'4"      |    | Clearance Under Equalizer Beam.....                               | 12"    |

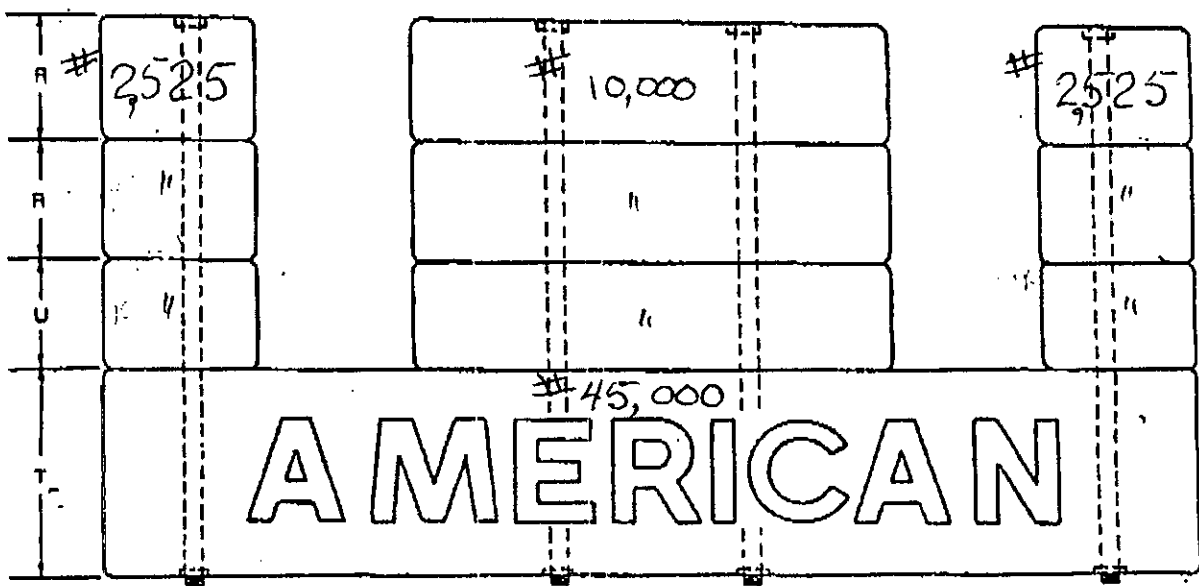
Bob Craft



TYPE "S-S" COUNTERWEIGHT 135,000 LBS. (61,236 KGS.)

TM0060001-3

TYPES "T-U-R" AND "T-U-R-R"



"T" Base weighs 44,000 lbs. (19,958 kgs.)  
"U" Layer weighs 15,500 lbs. (7,031 kgs.)  
Each "R" layer weighs 15,500 lbs. (7,031 kgs.)

TM0060001-4

0  
3 50'  
1 20'  
1 40'  
3 AS 10'  
Wheel  
30'  
60'

2 PCS  
410'



Lube Item #5 & #7: For enclosed gearing. Apply arctic (shaded column) or temperate lubricant (unshaded column), as conditions require.

| Must conform to industry standards:<br>1) Agma 5EP 3) ASTM Gr. 1000<br>2) ISO 220 4) Mil-L-2105 B/C   |  | Must conform to industry standards:<br>1) Mil-L-2105C                      |  |
|---|--|--|--|
| Manufacturer  | Brand Name   | Manufacture  | Brand Name   |
| Amoco<br>BP (British Petroleum)<br>Chevron<br>Citgo<br>Conaco<br>Exxon<br>Fina<br>Kendall<br><br>Lubriplate<br>Mobil<br>Shell<br>Texaco<br>Whitmore | Permagear EP90<br>Energrease GG<br><br>NL Gear Cmpnd 220<br>Citgo EP Compound<br>Gear Oil 220<br>Spartan EP220<br>Giran 220<br>Super Three Star 80W/140<br><br>APG 90<br>Mobilube 46 SAE 90<br>Spirax 85W/140<br>Meropa 220<br>17-HD | Amoco<br><br>Conaco<br>Emery<br>Kendall<br>Lubriplate<br>Mobil<br>Whitmore | Multi-Purpose Gear Lubricant No. 90<br>DN-600 Gear Oil<br>Frigid-Go EP 75W-90<br>NS-MP 75W<br>APG 80<br>SHC 629<br>17-HD |

Lube Item #6A: For open gears. Apply arctic (shaded column) or temperate lubricant (unshaded column), as conditions require.

| Must conform to industry standards:<br>1) AGMA 15R<br>2) NLGI No. 2,3   |   | Must conform to industry standards:  |  |
|---|---|--|--|
| Manufacturer  | Brand Name  | Manufacturer   | Brand Name   |
| Amoco<br>Citgo<br>Chevron<br>Exxon<br>Kendall<br><br>Lubriplate<br><br>Mobil<br>Shell<br>Texaco<br>Whitmore                   | Amovis 10X<br>Open Gear No. 4A<br>Pinion Grease MS-CB<br>Surett N 26K<br>Open Gear Compound SR-12K Gear<br>Shield Extra Heavy<br>Mobiltac E<br>Alvania EP2<br>Crater 5X<br>LGC Medium | Amoco<br><br>Conaco<br>Exxon<br>Kendall<br>Lubriplate<br>Mobil<br>Whitmore   | Amoco Polar Compound<br>Polar Start DN-600<br>SRI Grease<br>Beacon 325<br>Open Gear Compound SR-12X<br>Low Temp Gear Shield<br>KM TR 147<br>LGC Sub-zero |
| The above listed lubricants are for service in TEMPERATE climates, in ambient temperatures from 20°F to 110°F (-7°C to 43°C). |   | The above listed lubricants are for service in ARCTIC climates, in ambient temperatures from -45°F to 32°F (-43°C to 0°C). |  |



Lube Items #13: For railroad journal boxes, axle gear case bearings. Apply arctic (shaded column) or temperate lubricant (unshaded column), as conditions apply.

| Manufacturer  | Brand Name                            | Manufacturer   | Brand Name                            |
|---|---------------------------------------|--|---------------------------------------|
| Amoco   | Superla AAR<br>All-weather<br>Car Oil | Amoco  | Superla AAR<br>All-Weather<br>Car Oil |
| Getty Oil   | Veedol Arvella 82                     | Getty Oil  | Veedol Arvella 70                     |
| Gulf  | All Year<br>Car Oil 35                | Gulf   | All Year<br>Car Oil 35                |
| Shell   | All Year<br>Car Oil 33                | Shell  | All Year<br>Car Oil 33                |
| Texaco  | Engine Oil No. 30                     | Texaco   | Engine Oil No. 20W                    |
| Union   | Motoreze 40                           | Union  | Motoreze 20                           |
| The above listed lubricants are for service in TEMPERATE climates, in ambient temperatures from 20°F to 110°F (-7°C to 43°C). |                                       | The above listed lubricants are for service in ARCTIC climates, in ambient temperatures from -45°F to 32°F (-43°C to 0°C). |                                       |

Lube Item #0: For special applications, such as low speed/medium-to-high load flexible gear couplings. Use where specified only. This light viscosity grease may be used in either temperate or arctic ambient temperatures, depending upon specific requirements for lubricant viscosity, adsorption and cohesiveness, as well as bearing load/speed conditions.

| Manufacturer                 | Brand Name             |
|------------------------------|------------------------|
| Amoco Oil Company            | Rykon Grease #0 EP     |
| Chevron U.S.A., Inc.         | Dura-Lith Grease EPO   |
| Exxon Company, USA           | Lidok EP-0             |
| Gulf Oil Company             | Gulfcrown Grease EP #0 |
| Kendall Refining Co.         | Kendall L-406 Grease   |
| Keystone Div. Pennwalt Corp. | Zeniplex #0            |
| Mobil Oil Company            | Mobilux EPO            |
| Phillips Petroleum Co.       | Philube EP-0           |
| Shell Oil Company            | Alvania EP RO          |
| Standard Oil Co. (Ohio)      | Bearing Gard LT-0      |
| Sun Oil Co.                  | Sun Prestige 740 EP    |
| Texaco Oil Company           | Multifak EPO           |
| Union Oil Co. (Calif.)       | Union Unoba EPO        |



LUBRICATION CHECK LIST

| ASSEMBLY                                       | INTERVAL | DATE AND INITIAL OF OILER |  |  |  |  |  |  |  |
|--|----------|---------------------------|--|--|--|--|--|--|--|
| Crawler Drive Chains                           | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Boom Clutch Pins                               | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Boom Gear Shifter Pins                         | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Boom Hoist Dog                                 | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Swing Shaft Clutch Pins                        | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Shaft Bearing-Hydrostatic                      | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Swing Roller Brackets                          | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Vert. Swing Shaft Splines<br>& Jaw Clutch      | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Swing-Travel Shifter                           | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Drive Shaft Sprocket<br>Bearings               | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Main Hoist Clutch Pins                         | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Third Drum Clutch Pins                         | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Aux. Shaft Clutch Pins                         | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| C. L. L. Sprockets                             | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Steering Shifter Pins and<br>Shafts            | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Vert. Travel Shaft Splines<br>& Jaw Clutch     | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Bail, Jib and Boom Point<br>Sheaves (Bearings) | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Blocks & Hooks (Bearings)                      | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Shaft Splines/Overrunning<br>Shaft             | 40 Hrs.  |                           |  |  |  |  |  |  |  |
| Inner Bail & A-Frame Axle                      | 40 Hrs.  |                           |  |  |  |  |  |  |  |

| ASSEMBLY                           | INTERVAL | DATE AND INITIAL OF OILER |  |  |  |  |  |  |  |
|------------------------------------|----------|---------------------------|--|--|--|--|--|--|--|
| Swing Brake                        | Monthly  |                           |  |  |  |  |  |  |  |
| Boom Hoist Brake                   | Monthly  |                           |  |  |  |  |  |  |  |
| Third Drum Brake                   | Monthly  |                           |  |  |  |  |  |  |  |
| Main Hoist Brake                   | Monthly  |                           |  |  |  |  |  |  |  |
| Main & Aux. Hoist Brake<br>(Truck) | Monthly  |                           |  |  |  |  |  |  |  |

### HYDRAULIC FLUID RECOMMENDATIONS

Figure 2 (a gear-type design) and Figure 3 (an axial-piston design with the pistons arranged parallel to the center shaft) show the types of pumps that are in widespread use in the majority of hydraulic systems. These designs do not require special fluids with higher viscosity at normal operating temperatures.

## CAUTION

WHICHEVER TYPE OF FLUID IS REQUIRED IN THE SYSTEM, IT IS EXTREMELY IMPORTANT FOR THE OPERATOR TO BE AWARE THAT NEGLIGENCE TO EQUIPMENT CAN RESULT FROM OPERATION WITH COLD OIL, JUST AS IT CAN FROM OPERATION IN AN OVERHEATED CONDITION. FOR MAXIMUM SERVICE LIFE AND BEST RESULTS WITH WHATEVER BRAND OF HYDRAULIC FLUID IS USED, ALWAYS STAY WITHIN THE RECOMMENDED OPERATING TEMPERATURE LIMITS.

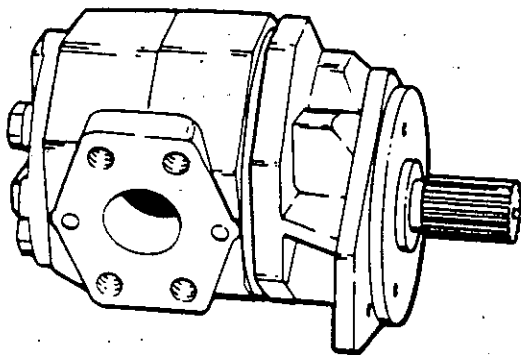


Figure 2

If duty cycling or other prolonged, repeated operation causes reservoir temperatures to exceed the recommended maximum, use a numerically higher ISO grade fluid, or change brands. To ensure adequate lubrication during start-up,

precautions such as tank heaters or heated enclosures should be used to warm oil to minimum start-up temperature, whenever required.

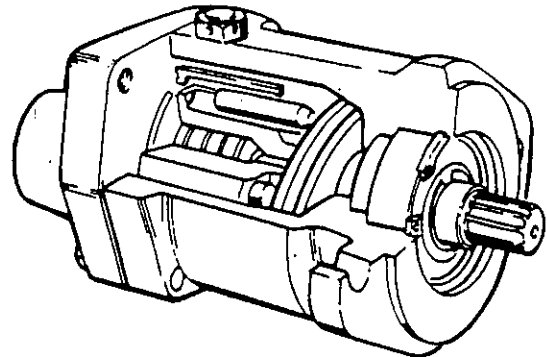


Figure 3

## CAUTION

CONTAMINATED OR DIRTY OIL ACCOUNTS FOR THE LARGEST SHARE OF HYDRAULIC EQUIPMENT FAILURES. TO PREVENT PREMATURE WEAR AND RESULTING SERVICE PROBLEMS, IT IS ESSENTIAL THAT ALL NEW HYDRAULIC FLUID BE PRE-FILTERED BEFORE BEING PUT INTO ANY AMERICAN CRANE MACHINE. IN TOO MANY CASES IT HAS BEEN FOUND THAT THE CONTAMINATION LEVEL OF NEW HYDRAULIC FLUID (AS RECEIVED) IS NOT ACCEPTABLE IN OUR HYDRAULIC SYSTEMS. IT IS RECOMMENDED THAT ALL FLUID BE PUMPED THROUGH A  $B_{10}=2$  NON-BYPASS FILTER, BEFORE IT IS INTRODUCED INTO THE HYDRAULIC SYSTEM RESERVOIR.

NOTE: "BETA" values or ratios for filtering media are derived from efficiency tests which compare the number of particles (of a given size X) upstream of the filter, against the number of particles downstream, according to



HYDRAULIC FLUID RECOMMENDATIONS

ANSI spec B93.31-1973 and ISO DIS 4572.  
A filter with a B<sub>10</sub>=2 rating is 50% efficient for 10 micron or larger particles.

Drums should be stored in a clean, dry location. Never allow water to collect around bungs— store all drums with the bungs down or horizontal, and clean around bungs thoroughly prior to opening.

All oils used must satisfy the following performance requirements.

- 1.) Specify Gravity - .84 to .90
- 2.) Viscosity Index - 90 or greater
- 3.) Anti-foam and Rust - must pass ASTM standards D665 and D892. No foam allowable after 10 minutes.
- 4.) Fluid must meet military specification MIL-H-24459 including the following viscosity range:

Axial Piston  
or Gear

Radial  
Piston

|                         |       |        |
|-------------------------|-------|--------|
| Start-up,<br>SSU Max    | 7,500 | 48,000 |
| Full Power<br>SSU Max.  | 750   | 750    |
| Full Power,<br>SSU Min. | 60    | 142    |

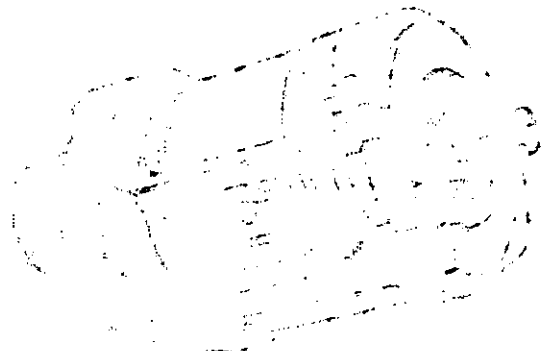




TABLE OF APPROVED FLUID APPLICATIONS

|  | TROPICAL        | SUMMER          | WINTER          | ARCTIC           |
|--|-----------------|-----------------|-----------------|------------------|
| Minimum Reservoir Temperature<br>(Coldest Start-up Oil Temp Allowed) | 60°F<br>(15°C)  | 30°F<br>(-1°C)  | 0°F<br>(-18°C)  | -30°F<br>(-34°C) |
| Maximum Ambient Air Temperature                                      | 120°F<br>(49°C) | 90°F<br>(32°C)  | 60°F<br>(16°C)  | 30°F<br>(-1°C)   |
| Maximum Reservoir Temperature<br>-Axial/Gear Equipment               | 200°F<br>(93°C) | 170°F<br>(77°C) | 140°F<br>(60°C) | 110°F<br>(43°C)  |
| Maximum Reservoir Temperature<br>-Radial Piston Equipment            | 150°F<br>(65°C) | 140°F<br>(60°C) | 100°F<br>(38°C) | 70°F<br>(21°C)   |

| MANUFACTURER/BRAND NAME |                         | TEMPERATURE/APPLICATION |        |          |    |
|-------------------------|-------------------------|-------------------------|--------|----------|----|
| Autoline                | Super Blue Hyd. Oil 32  |                         |        | [**]     |    |
|                         | Super Blue Hyd. Oil 46  |                         | **     | [**] [⊙] |    |
|                         | Super Blue Hyd. Oil 68  |                         | ** [⊙] |          |    |
|                         | Super Blue Hyd. Oil 100 | **                      |        |          |    |
|                         | Super Blue Hyd. Oil 150 | ** ⊙                    |        |          |    |
| British Petroleum       | Energol HLP 32          |                         |        | [**]     |    |
| Petroleum               | Energol HLP 46          |                         | **     |          |    |
|                         | Energol HLP 68          | **                      | ** [⊙] |          |    |
|                         | Energol HLP 100         | **                      | ** ⊙   |          |    |
|                         | Energol HLP 150         | ** ⊙                    |        |          |    |
|                         | Energol SHF 22          |                         |        | **       | ** |
|                         | Energol SHF 32          |                         |        | **       |    |
|                         | Energol SHF 46          |                         | **     | ** ⊙     |    |
|                         | Energol SHF 68          | **                      | ** [⊙] |          |    |
|                         | Energol SHF 100         | **                      | ** ⊙   |          |    |
|                         | Chevron                 | AW 32                   |        |          | ** |
| AW 46                   |                         |                         | **     |          |    |
| AW 68                   |                         |                         | ** ⊙   |          |    |
| Conoco                  | Super Hyd. Oil 32       |                         |        | **       |    |
|                         | Super Hyd. Oil 46       |                         | **     |          |    |

KEY: \*\* - APPROVED FOR GEAR/AXIAL PISTON EQUIPMENT  
 ⊙ - APPROVED FOR RADIAL PISTON EQUIPMENT  
 [\*\*] and [⊙] - APPROVED FOR USE ONLY IF MINIMUM ALLOWABLE (COLD START-UP) RESERVOIR TEMPERATURE IS INCREASED BY 10°F [Summer conditions to 40°F (4°C), winter conditions to 10°F (-12°C), and arctic conditions to -20°F (-23°C)]. PREHEAT WHEN REQUIRED.





## MAINTENANCE

1. Maintain oil level at one half full. (See illustration for location of oil ports.)
2. Change oil every 6 months.
3. Flush clutch in the Spring and in the Fall of the year . . . when oil is changed.
4. It is recommended that clutches which have been out of service or on machines being switched to booming operation be flushed to remove any wax or gum formation resulting from vaporization of the oil in the unit and reoiled prior to committing the crane to operation.

## FLUSHING PROCEDURE

1. Drain clutch, then fill clutch 3/4 full with suitable mineral spirits, such as ESSO "Varsol No. 1" or Shell "Sol No. 340". Kerosene may be used as a substitute.
2. Run clutch for 15-20 minutes to break up and dissolve oily residue which may have formed inside.
3. Drain clutch completely and relubricate with any of the lubricants recommended on Page 230.

## PREVENTATIVE MAINTENANCE

It is recommended that after two (2) years or five thousand hours (5,000) of machine operation, whichever comes first, this clutch be replaced. Contact the nearest American Crane distributor for all replacement clutch requirements.

## CLUTCH RECONDITIONING SERVICE

Some clutches may be reconditioned by the manufacturer while others may not. Contact an American Crane distributor for information concerning clutch reconditioning services available. Reconditioned clutches carry a new clutch warranty.

## NOTE:

*These instructions cannot cover all details nor provide every possible contingency which may be met in installation, operation or maintenance. Should further information be needed, contact American Crane Corporation.*

## WARNING

Failure to strictly follow the maintenance procedures set forth herein may cause the boom to fall and impose a safety danger to personnel and property. The overrunning clutch should be replaced every two years or 5,000 hours of machine use. Failure to follow proper lubrication and replacement procedures could affect any rights to warranty claims.

## WARRANTY

The manufacturer of the clutch guarantees that its products will leave the factory in good condition. They warrant their products against defects in workmanship and material for a period of 365 days (1 year) after shipment. Adjustments under this warranty will be made only after completion of inspection of the part or product in manufacturer's factory. The manufacturer's liability under this warranty shall extend only to the replacement or correction of any defective part or product determined by inspection as not conforming to this warranty.

This warranty shall not apply to any product which shall have been repaired or altered without the manufacturer's knowledge and consent or operated or installed contrary to the manufacturer's instruction or subjected to misuse, improper maintenance or is damaged by accident or negligence.

This warranty is made in lieu of all warranties express or implied, including but not limited to warranties of merchantability or fitness for a particular purpose, and there are no other warranties that extend beyond this express warranty.

The manufacturer reserves the right to discontinue models or to change specifications at any time without notice. No discontinuance or change shall create any liability on the part of the manufacturer in respect to its products in the hands of its customers or products on order not incorporating such change even though delivered after any such change.

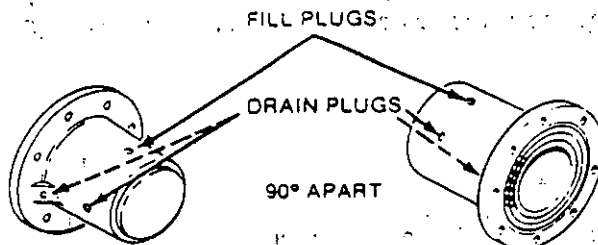
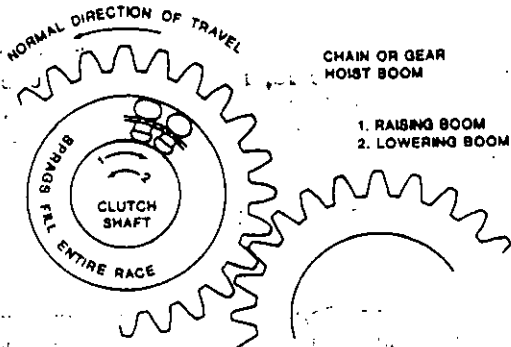


## OVERRUNNING (SPRAG) CLUTCH

Refer to your operator's manual for the location of the sprag clutch. This clutch is connected through a chain drive, or through gears, to the boom hoist drum.

**(NOTE:)**

The sprag clutch is a precision made product; it is very important to maintain and lubricate it properly. The clutch will then provide safe and excellent performance.



The drain plug may be located on the side of the barrel, or on the face of the housing.

**IMPORTANT: Check the oil level every 30 days**

Oils listed on the front of this page may be obtained in quarts by contacting the American Crane Parts Department and ordering part number 1058094.

**CAUTION:** Improper lubrication maintenance may result in excessive wear. Follow maintenance instructions and check oil level every 30 days. Low oil level may prevent proper operation which could result in injury, death, or property damage.

### LUBRICATION REQUIREMENTS

| FOR TEMPERATURES FROM<br>(-) 40F (-40C) TO (+) 120F (+49C)   |  | WARNING  |
|--|--|--|
| Chevron  | Chevron Aviation Hydraulic Fluid Grade "A" | THE USE OF ANY LUBRICANTS IN CLUTCH ASSEMBLIES, OTHER THAN THOSE SHOWN, CAN RESULT IN IMPROPER ENGAGEMENT. IMPROPER SPRAG ENGAGEMENT MAY CAUSE THE BOOM TO FALL RESULTING IN INJURY, DEATH OR PROPERTY DAMAGE. |
| Shell Oil Co.  | Aeroshell Fluid #4                         |  |
| Mobil Oil Corp.  | Aero HFA Oil                               |  |
| Exxon Oil Co.  | Univis J-13                                | THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY CHANGES MADE BY THE MANUFACTURERS IN THEIR LUBRICANTS.   |
| The above oils are equivalent to military specification MIL-H-5606 and can be obtained by contacting the nearest oil company sales office. |  | THE USE OF ANY LUBRICANTS, OTHER THAN THOSE LISTED AND/OR CONFORMING WITH MILITARY SPECIFICATIONS MIL-H-5606, WILL AUTOMATICALLY VOID ANY WARRANTY ON THE CLUTCH   |

**IMPORTANT: Do not mix one brand of oil with another. They are not compatible. When switching from one brand to another, drain old oil and flush clutch before adding new oil. DO NOT ADD ANY EP OR SLIPPERY ADDITIVES TO ABOVE OILS.**



DUTY CYCLE AND TRAVEL

Different lubrication intervals are required for duty cycle work and operations in which the machine is continually under travel.

DUTY CYCLE - LUBRICATE EVERY FOUR HOURS

|  |          |
|--|----------|
| Fairlead - - - - -                           | Page 256 |
| All Swing Rollers - - - - -                  | Page 237 |
| Center Pin Bushing - - - - -                 | Page 236 |
| Vertical Swing Shaft Lower Bushing - - - - - | Page 236 |
| Vertical Swing Shaft Upper Bushing - - - - - | Page 238 |

TRAVEL - LUBRICATE EVERY 1/2 HOUR OR 1/2 MILE

|  |               |
|--|---------------|
| Vertical Travel Shaft Bushings - - - - -   | Page 236, 244 |
| Horizontal Travel Shaft Bushings - - - - - | Page 244      |
| Track Rollers - - - - -                    | Page 245-246  |
| Drive Tumblers - - - - -                   | Page 245-246  |
| Idler Tumblers - - - - -                   | Page 245-246  |
| Crawler Drive Sprocket Bushings - - - - -  | Page 245-246  |



LUBRICATION INTERVAL CHART (CONTINUED)

| <u>INTERVAL</u> | <u>LUBRICANT*</u> | <u>ASSEMBLY LUBRICATED</u>                               | <u>FITTINGS</u> | <u>PAGE</u> |
|-----------------|-------------------|--|-----------------|-------------|
| Daily           | #2                | Boom, Jib and Bail Sheaves<br>With Bushings              |                 | 252         |
| Daily           | #2                | Positive Swing Lock Crawler<br>Cranes                    | 1               | 241         |
| Weekly          | #8                | Crawler Drive Chains                                     | Coat            | 246         |
| Weekly          | #8                | Boom Clutch Lever Pins                                   | Pins            | 232         |
| Weekly          | #8                | Boom Gear Shifter Pins                                   | 5 Places        | 232         |
| Weekly          | #2                | Boom Hoist Dog   | 1, 2            | 233         |
| Weekly          | #8                | Horizontal & Vertical Reverse<br>Shaft Clutch Lever Pins | Pins            | 238         |
| Weekly          | #2                | Shaft Bearing-Hydrostatic<br>Swing                       | 1               | 240         |
| Weekly          | #2                | Swing Roller Brackets                                    | 4               | 237         |
| Weekly          | #8                | Vertical Swing Shaft Splines<br>& Jaw Clutch             | Oil Cup         | 238         |
| Weekly          | #8                | Swing-Travel Shifter                                     | Shaft           | 239         |
| Weekly          | #2                | Drive Shaft Sprocket Bearings                            | 2               | 220         |
| Weekly          | #8                | Main Hoist Clutch Lever Pins                             | Pins            | 221         |
| Weekly          | #8                | Third Drum Clutch Lever Pins                             | Pins            | 221         |
| Weekly          | #8                | Auxiliary Shaft Clutch Lever<br>Pins                     | Pins            | 222         |
| Weekly          | #2                | Controlled Load Lowering<br>Sprockets                    | 1 Each          | 222         |
| Weekly          | #8                | Steering Shifter Pins and<br>Shafts                      |                 | 244         |
| Weekly          | #8                | Vertical Travel Shaft Splines<br>and Jaw Clutch          | Oil Cup         | 244         |
| Weekly          | #2                | Bail, Jib and Boom Point<br>Sheaves With Bearings        |                 | 252         |
| Weekly          | #2                | Blocks & Hooks With Bearings                             |                 | 252         |
| Weekly          | #8                | Shaft Splines On Overrunning<br>Clutch Shaft             |                 | 229         |
| Weekly          | #2                | Inner Bail and A-Frame Axle                              | 3               | 255         |
| Monthly         | #2                | Thrust Nuts and Bearings on<br>The Swing Brake           | 3               | 238         |
| Monthly         | #2                | Boom Hoist Brake Bearing                                 | 1               | 232         |
| Monthly         | #8                | Third Drum Brake   | Oil Shaft       | 224         |
| Monthly         | #2                | Main Hoist Brake Bearings                                | 8               | 223         |
| Monthly         | #2                | Main & Auxiliary Hoist<br>Brake Bearings (Truck)         | 8               | 224         |

\*Please see page 260 for product recommendations.

## GENERAL LUBRICATION INFORMATION

In order to properly protect your machine and get the best performance and longest life out of it, schedules of lubrication and preventive maintenance must be adhered to. All lubrication and maintenance schedules are guidelines based upon normal work cycles under average working conditions. At any time that unusually tough working conditions and operation are encountered, maintenance and lubrication intervals must be shortened. Operating at extreme temperatures (hot or cold), under constant heavy load, operating intermittently, or operating in very dirty conditions constitute tougher than average working conditions and operation. Both service recommendations and actual working conditions must be taken into consideration to determine when the machine should be serviced.

### Lubrication

Keeping your machine properly lubricated is the most effective way to prevent part failures and consequent costly repairs. The lubrication chart provided on page 210 shows the crane assemblies to be lubricated by interval. The pages following the chart illustrate the assemblies and their lubrication fittings.

The following information contains additional recommendations.

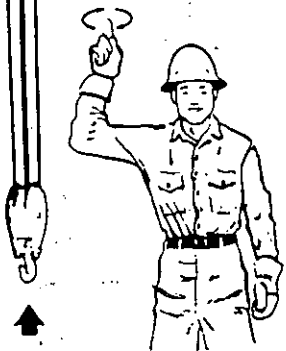
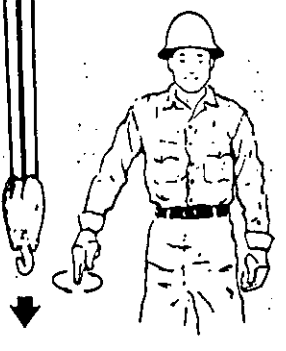
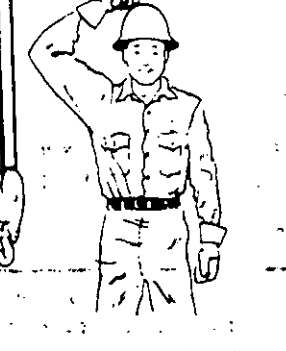

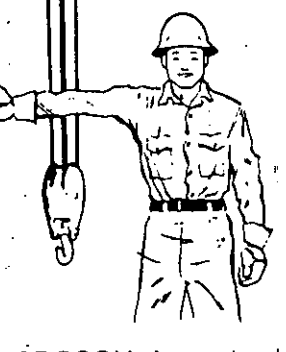
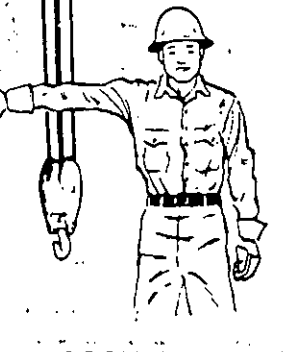
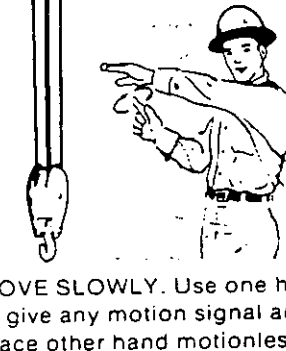
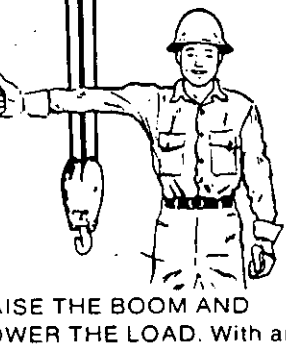
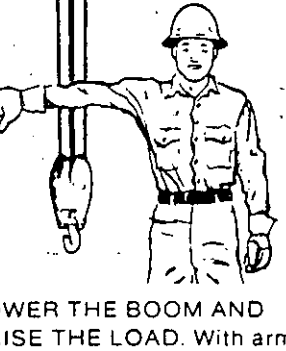
- a. Keep all lubricants and lubricating equipment clean and free of contamination both while in storage and while in use.
- b. Clean all grease fittings and surfaces before applying a grease gun. Dirt on fittings will be forced through along with clean grease, and will cause wear and premature material failures.
- c. Wipe off excess grease and other lubricants. Oily and greasy surfaces collect dirt which may work its way into moving parts and cause wear and failures.
- d. Avoid overgreasing. Excess lubricants will be thrown into clutches and brakes and will cause slipping.
- e. Always maintain a film of grease on exposed gears; however, avoid overgreasing (see "d" above and Lubrication Interval Chart).

### **IMPORTANT**

*Under no circumstances may the recommended lubrication intervals be exceeded. Avoiding service intervals will be construed as negligence and will void the warranty on the machine.*



Hand Signals

|   |   |   |
|---|---|---|
|  <p><b>HOIST.</b> With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>   |  <p><b>LOWER.</b> With arm extended downward, forefinger pointing down, move hand in small horizontal circles.</p>                                     |  <p><b>USE MAIN HOIST.</b> Tap fist on head; then use regular signals.</p>   |
|  <p><b>USE WHIPLINE (Auxiliary Hoist).</b> Tap elbow with one hand; then use regular signals.</p>   |  <p><b>RAISE BOOM.</b> Arm extended, fingers closed, thumb pointing upward.</p>   |  <p><b>LOWER BOOM.</b> Arm extended, fingers closed, thumb pointing downward.</p>   |
|  <p><b>MOVE SLOWLY.</b> Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</p> |  <p><b>RAISE THE BOOM AND LOWER THE LOAD.</b> With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</p> |  <p><b>LOWER THE BOOM AND RAISE THE LOAD.</b> With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</p> |



## COLD WEATHER OPERATION

The static load carrying characteristic of the steels used in our crane structures are not affected by cold temperatures. The impact and fatigue characteristics of these materials are affected, however, with the result that cyclic operations such as dragline, clamshell, magnet, backhoe, or concrete placing must be curtailed in extremely cold weather. Since some of our materials are more affected than others, this curtailment will vary depending upon the components used in the machine. For example, the T-1 steel crane booms have excellent cold weather characteristics and require no derating down to  $-30^{\circ}\text{F}$ . Other components may require either reduced loading or insulation and heating provisions for low temperature cyclic operations.

During low temperature operation extreme care must be exercised to prevent shock loading during hoisting and lowering loads. Impacting results from sudden stops or quick engagement of clutches with machinery rotating at high speeds.

On the basis of studies and experience we do not reduce ratings for lift crane service in temperatures down to  $-30^{\circ}\text{F}$ . The wire ropes used in lift crane work are subject to fatigue. Information received from wire rope manufacturers indicate that there should be no embrittlement at  $-30^{\circ}\text{F}$  temperature, but rope lubrication may be a problem. Normal lubricants will become hard and chip off leaving the wires without lubrication. Special low temperature lubricants such as Texaco "#1973 Low-Temp" must be used on the wire rope and appropriate low temperature lubricants must be used throughout the crane.

## AVOIDING ROTATION OF SUSPENDED LOADS

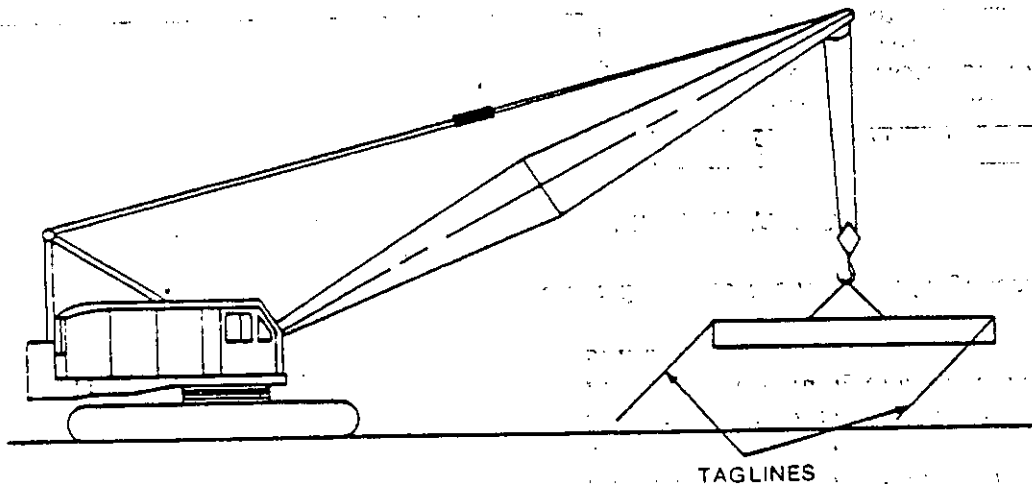
In order to prevent turning of the load lines, particularly when reeved with lesser parts of line, the swivel hook should be locked to the block by means of its locking pin. When the load must be swung, the swivel should not be locked in order that the load can be shifted into its designated drop position.

Load line spinning can be reduced in some cases by removing the load line from the drum and untwisting it until it is as straight as possible (5 to 10 turns) and reinstalling on the drum.

When lifting heavy or bulky loads it is recommended to attach taglines (ropes) to each side of the load to prevent its rotation.

### WARNING

*When using hand lines to guide or snub a load, do not wrap the line around any part of your body.*



(CRAWLER CRANE SHOWN FOR REFERENCE ONLY).





### TAILSHAFT AND ENGINE GOVERNOR OPERATION

Your crane may be equipped with both an engine governor and a tailshaft governor. These two governors are used to limit and control the maximum engine and torque converter output shaft speeds, which in turn controls drum speeds.

For crane or lifting work, set the tailshaft governor control in the wide open position. Set the engine governor control in its zero position. The operator now controls the engine speed up to maximum with the foot throttle. The engine governor control lever may be set at any position to keep the engine running at a desired speed. When it is not set at full speed, the foot throttle will still control the engine speed above the lever setting.

The tailshaft governor control will limit the engine speed as desired, and thus control maximum drum turning speed. With the tailshaft governor lever set below wide open, for example, the engine speed will be governed to less than full speed, even with the foot pedal fully depressed. This allows the operator to select and hold a desired drum speed below the maximum.

For high speed hook work disconnect the tail shaft governor. This will allow the engine to be operated at full governed speed, by the use of the foot throttle. In turn, the increased engine speed will increase the torque converter output. The drum shaft speed increases and the net result will be the ability to raise or lower a load more rapidly.

#### IMPORTANT

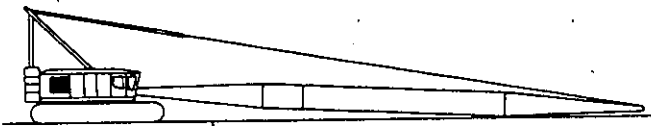
While doing high speed hook work, excessive heat build up develops in the torque converter, especially when lifting light loads. (HEAT BUILD UP VERY RAPID)! Check the torque converter temperature gauge located on the engine instrument panel, making sure the needle does not go into the red. If it does, slow the machine down to allow the oil in the torque converter to cool.

RAISING AND LOWERING LONG BOOMS

With the increased length of booms on mobile cranes comes an increased need for proper and safe operating procedures. The information in this writeup is generalized for long boom lengths on mobile cranes. Specific information on long boom lengths for your particular model crane may be found in your Operator's Manual.

The procedure for raising long booms is as follows:

1. The crane must be standing on firm and level ground. Familiarize yourself with the ground bearing pressure of your crane at MAXIMUM LOAD. Know the specified ground level limits of your machine.



TM0000008-1

GROUND MUST BE FIRM & LEVEL

2. Before raising or lowering the boom the outriggers must be set (truck cranes) or side frame tumblers must be blocked (crawler cranes--see "Blocking of Track Side Frames for Long Boom Erection" procedure in the installation Section of your Operator's Manual).

NOTE

All maximum boom or boom and jib erection information supplied on AMERICAN rating charts is based on erecting the boom over the blocked end of the crawler side frames (drive chains to the rear) or over the rear of the carrier on truck cranes.

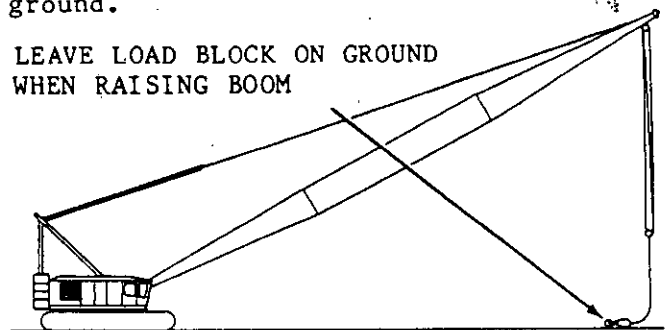
3. After the maximum allowable boom length is installed and while the boom is on the ground, carefully inspect the boom for damage. Pay particular attention to the outer base and taper tip lacings and chords. Bent lacings or damaged chords can drastically reduce the structural strength of the boom. If any damage is discovered the appropriate boom sections must be repaired or replaced before raising the boom (a lacing repair procedure can be found in the maintenance section of your Operator's Manual. A damaged chord member cannot be repaired.).

4. Once the boom has been inspected and the crane appropriately stabilized, the raising procedure can be implemented unless the wind speed is greater than 20 mph (32 km/h). The boom should be raised over the end of the machine.

**CAUTION**

LARGE WIND CATCHING SURFACES CAN RESULT IN LOSS OF CONTROL OF THE CRANE. WIND LOADING IS DEPENDENT ON SUCH FACTORS AS BOOM LENGTH, BOOM ANGLE AND DIRECTION AND SPEED OF THE WIND.

5. When raising the boom the load line should be payed out so that the load block remains on the ground until the boom is approximately 20 to 25 degrees above the ground. Do not stop booming during erection from ground until boom is at least 25 to 30 degrees above ground.



LEAVE LOAD BLOCK ON GROUND  
WHEN RAISING BOOM

TM0000008-2



PRE-START INSPECTION

Before starting the engine each day, it is important to inspect the machine to insure proper operating condition.

These levels must be correct:

- |                    |                               |
|--------------------|-------------------------------|
| Engine Oil         | Deck Gear Housing             |
| Engine Coolant     | Center Bevel Gear Travel Case |
| Transmission Fluid | Formsprag Clutch              |
| Chain Case         | Hydrostatic Swing Oil         |

Add the correct fluids as necessary to maintain recommended levels. Read the engine manual for suggested periodic maintenance.

The drain valves on the air reservoirs must be closed.  
The engine air filter indicators must not show a need for change.  
All lubrication requirements must be satisfied before operating. The lubrication section explains these requirements in detail.

The machine should carefully be checked for the condition and adjustment of the following items.

- |                               |                               |
|-------------------------------|-------------------------------|
| All Ropes and Sheaves         | All Hoist Clutches and Brakes |
| A-Frame                       | Drum Parking Brakes           |
| Engine Air Filter             | Swing Brake                   |
| All Pulleys and Belts         | Open Gears                    |
| Radiator and Hoses            | Boom Stops                    |
| Compressor and Intake         | Panel Lights and Instruments  |
| Automatic Boom Hoist Shut Off | Boom Lacings                  |

Disengage the master clutch before starting the engine.

START-UP

Turn on the fuel solenoid toggle switch (when so equipped) located on the left cab wall. Set the throttle at 1/4 on and turn the starter switch. Do not crank the engine for more than 30 seconds at a time as starter motor damage could result. Should the engine fail to start within 30 seconds, allow the starting motor to rest for 1 or 2 minutes before cranking again.

Run the engine at 800 to 1000 RPM for a few minutes. As it warms up, run it at 75% of the rated speed until fully warmed up. Reduce the engine speed to idle and engage the master clutch. CAUTION: Only engage the master clutch at low engine RPM.

The correct operating air pressure will be 110 to 130 PSI (7.73 to 9.14kg/cm<sup>2</sup>) read on the console air pressure gage. Engine operating temperature for normal operation is between 160°F to 185°F (71°C to 85°C). Never allow the engine to operate at a temperature above 200°F (93°C).



TRAVEL RESTRICTIONS AROUND THE JOB SITE:

- A. Maximum job site travel speed is 5 MPH (8.05km/hr).
- B. Travel only with loads given in the ratings under "on rubber".
- C. Only travel on firm, level ground.
- D. The crane may travel with full counterweight. The boom should be over the rear only.

TRAVEL RESTRICTIONS OVER THE ROAD:

Depending upon weight restrictions, the crane may be traveled over the road in different configurations. See "Truck Crane Traveling Weights" for more information on specific models.

- A. With the boom inner and outer sections attached, travel with the boom over the carrier's rear. Load devices should be off.
- B. With only the boom inner section attached, suspend the boom a few inches above the carrier saddle and lash it in that position. Do not allow the boom to ride in contact with the saddle.
- C. Remove the counterweight for all over the road travel. Block the machinery deck to prevent the crane upperworks from rocking on its hook and load rollers.
- D. Set the swing brake and engage the spud lock when furnished.
- E. Lower the A-frame to allow bridge and underpass clearance.
- F. All truck crane carriers are governed to travel at only certain maximum speeds. **WARNING:** Attempting to exceed governed speeds may result in serious structural damage to the equipment.

TIRE PRESSURES

| MODELS                   | STATIC & UP<br>TO 1 MPH<br>(0-1.61km/hr) | 1-5 MPH<br>(1.61-<br>8.05km/hr)       | 5-35 MPH<br>(8.05-<br>56.32km/hr)   | 5-45 MPH<br>(8.05-<br>72.41km/hr)    | STATIC<br>LIFTING                     |
|--------------------------|--|---------------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|
| 5460, 5470<br>5530, 7460 | 100 PSI<br>(7.03kg/cm <sup>2</sup> )     | 100 PSI<br>(7.03kg/cm <sup>2</sup> )  | —————                               | 90 PSI<br>(6.33kg/cm <sup>2</sup> )  | 100 PSI<br>(7.03kg/cm <sup>2</sup> )  |
| 7530, 8450               | 150 PSI<br>(10.55kg/cm <sup>2</sup> )    | 150 PSI<br>(10.55kg/cm <sup>2</sup> ) | —————                               | 115 PSI<br>(8.09kg/cm <sup>2</sup> ) | 150 PSI<br>(10.55kg/cm <sup>2</sup> ) |
| 9520, 9530               | 100 PSI<br>(7.03kg/cm <sup>2</sup> )     | 95 PSI<br>(6.68kg/cm <sup>2</sup> )   | 70 PSI<br>(4.92kg/cm <sup>2</sup> ) | —————                                | 100 PSI<br>(7.03kg/cm <sup>2</sup> )  |

\*With Michelin tire G24Y 14:00 x 24, 4 steel ply



OPERATING INSTRUCTIONS (CONTINUED)

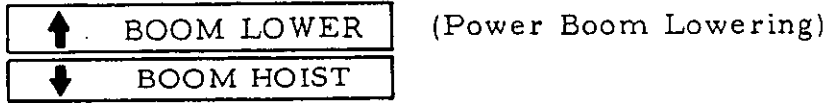
12. AIR PRESSURE GAGE
13. CRANE LEVEL
14. WINDSHIELD WIPERS
15. AUXILIARY HOIST FOOT BRAKE
16. MAIN HOIST FOOT BRAKE
17. 0-300 PSI (0-21.09kg/cm<sup>2</sup>) GAGE

**CAUTION:**  
HYDROSTATIC SWING GAGE  
DO NOT OPERATE BELOW  
30 PSI (2.11kg/cm<sup>2</sup>) IN-  
CREASE ENGINE RPM TO  
RAISE PRESSURE.



OPERATING INSTRUCTIONS

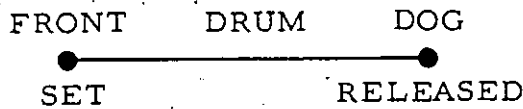
1. BOOM HOIST CLUTCH CONTROL



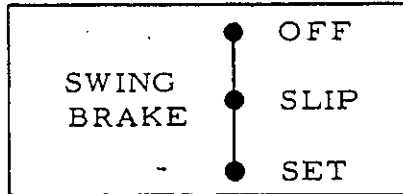
2 & 3. HOIST CLUTCH CONTROL  
2=MAIN HOIST  
3=AUXILIARY HOIST



4. AUXILIARY HOIST DOG



5. SWING BRAKE



6. MAIN HOIST PARKING BRAKE

7. AUXILIARY HOIST PARKING BRAKE

6.

\*MAIN HOIST PARKING BRAKE

\*FOOT PEDAL TO BE USED IN CONJUNCTION WITH PARKING BRAKE FOR PARKING WITH FULL LINE PULL.

BRAKE WILL SET AUTOMATICALLY IN CASE OF AIR LOSS.

7.

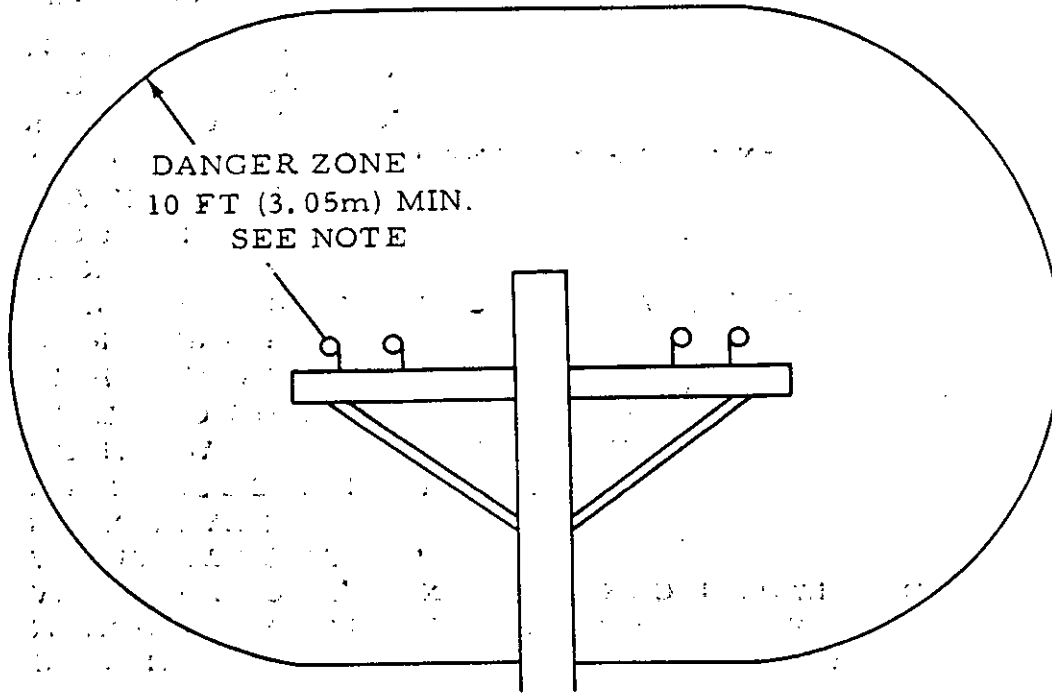
\*FRONT DRUM PARKING BRAKE

\*FOOT PEDAL TO BE USED IN CONJUNCTION WITH PARKING BRAKE FOR PARKING WITH FULL LINE PULL.

BRAKE WILL SET AUTOMATICALLY IN CASE OF AIR LOSS.



**DANGER ZONE NEAR ELECTRICAL TRANSMISSION**



WHEN OPERATING NEAR HIGH VOLTAGE POWER LINES:

| <u>NORMAL VOLTAGE</u><br><u>(PHASE TO PHASE)</u> | <u>MINIMUM REQUIRED</u><br><u>CLEARANCE</u> |
|--|---|
| To 50 KV   | 10 Ft (3.05m)                               |
| Over 50 To 200 KV                                | 15 Ft (4.60m)                               |
| Over 200 To 350 KV                               | 20 Ft (6.10m)                               |
| Over 350 To 500 KV                               | 25 Ft (7.62m)                               |
| Over 500 To 750 KV                               | 35 Ft (10.67m)                              |
| Over 750 To 1,000 KV                             | 45 Ft (13.72m)                              |

WHILE IN TRANSIT WITH NO LOAD AND BOOM OR MAST LOWERED:

| <u>NORMAL VOLTAGE</u><br><u>(PHASE TO PHASE)</u> | <u>MINIMUM REQUIRED</u><br><u>CLEARANCE</u> |
|--|---|
| To .75 KV  | 4 Ft (1.22m)                                |
| Over .75 To 50 KV                                | 6 Ft (1.83m)                                |
| Over 50 To 345 KV                                | 10 Ft (3.05m)                               |
| Over 345 To 750 KV                               | 16 Ft (4.87m)                               |
| Over 750 To 1,000 KV                             | 20 Ft (6.10m)                               |

## ACCIDENT PREVENTION SIGNS

### GENERAL INFORMATION:

Accident prevention signs are found in several locations on American cranes. They are color and format coded to convey 5 different types of messages. The first two of these five designs will be found on every American product that has been issued with accident prevention signs. The latter 3 types may or may not be found on a given machine, depending upon the safety requirements for that product. If any sign is lost or damaged, a replacement may be ordered from the Parts Book supplied with your machine. The correct mounting location for each sign can be found on a separate drawing in the Parts Book which is included for reference, so that the crane owner may be assured that all required safety information is properly posted at all times.

Accident prevention signs on your machine should be read, understood and complied with.

I. Signs marked "DANGER" are posted to warn anyone in the vicinity of the machine of an immediate hazard or peril capable of causing serious injuries or severe equipment damage. This sign may also be used to prohibit any activity or practice which is hazardous. The right half of each sign carries a graphic symbol inside a red circle identifying the type of hazard or prohibiting a specific activity. The sign shown in Figure 1, for example, warns of the danger present during assembly or disassembly of boom sections. A falling boom can cause serious injury to anyone standing on, in, or under a boom section. Booms can fall when pins are removed, if not properly supported by blocking, or if boom suspension ropes are not relocated as described in the operator's manual.

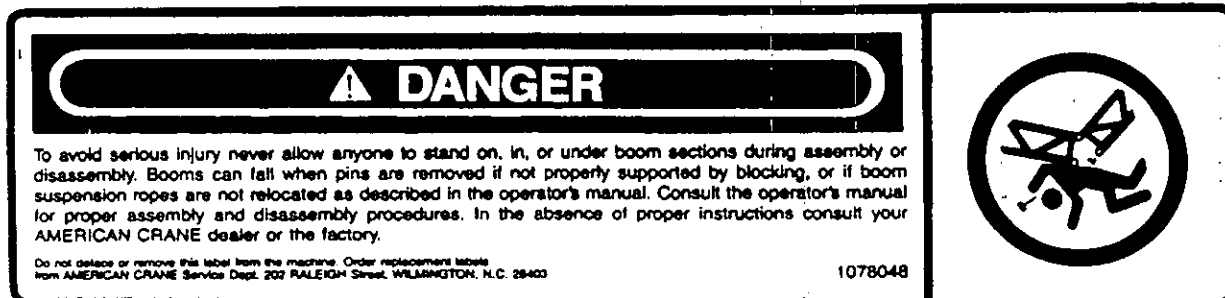


Figure 1





OBSERVATION OF THE FOLLOWING NOTES WILL HELP KEEP THE MACHINE OPERATING SAFELY AND EFFICIENTLY.

1. Do not make any lifts without first becoming totally familiar with all the load lifting restrictions and regulations on page 3499 in the Ratings Section of this book.
2. Never exceed the rated capacity of your machine. Rating charts are found on the cab wall of the crane. Radius in feet is the horizontal distance at the crane base level from the center of rotation to a vertical line through the center of gravity of the suspended load.
3. Never make lifts while the machine is on soft ground. Use mats to properly support the machine.
4. Do not start or stop the engine with the master clutch engaged.
5. Do not engage the master clutch unless the engine is at an idle. Be sure everything is in the clear and in neutral.
6. Do not lift loads without first checking the brakes, clutches and rigging. Wire rope should be replaced immediately if worn out or defective.
7. After a machine has been standing in rainy weather, ride the brakes while hoisting before handling a load to evaporate moisture.
8. Do not allow a load to swing back and forth or in and out while traveling. This may side load the boom or cause the crane to tip. Use taglines to steady the load.
9. Never drag a load sideways by swinging.
10. Do not travel over rough ground with the boom high. Do not back up with the boom high without being certain that the ground is firm, level, and free of obstructions.
11. Do not travel long distances with the crawler drive chains ahead.
12. Keep clear of high voltage lines. See Page 106 for detailed restrictions
13. Block the crawlers when operating on steep slopes. Set the travel locks in both directions.
14. Turning sharply on loose ground results in a large accumulation of dirt on the crawler shoes and chains. Keep them free of dirt.

## IMPORTANT LOAD LIFTING RESTRICTIONS AND REGULATIONS

### Crawlers and Truck Cranes

#### WARNING

**Study the following carefully.  
Failure to observe any of the following  
limitations may result in serious structural  
or mechanical failure or accidents.**

Ratings have been established by American Crane on the basis of sound engineering methods and testing procedures. The machine complies with applicable U. S. Industry standards for stability and material strength factors. These standards require operation within rated capacities and in accordance with good operating practice, including the limitations shown on these pages and Page 100.

**DO NOT EXCEED THE RATING OF THE MACHINE.** Lifting loads greater than those shown on the rating chart or operation at positions not shown **CAN CAUSE STRUCTURAL FAILURE, TIPPING OR COLLAPSE OF THE BOOM OR CRANE.**

1. All ratings apply only to machines as originally manufactured and equipped but include machines on which repairs or replacements have been made in accordance with original specifications. American Crane shall have no responsibility for machines or components on which replacements have been made with parts or spares not manufactured by American Crane, or on which any unauthorized changes have been made, or which are operated after damage which has not been repaired. The safe handling of loads with a crane depends on ground conditions, boom length and radius. These factors as well as many others must be taken into consideration by the operator.

2. Ratings are based on the machine standing level on a firm, uniformly supporting surface. Level should be within 1/2% of true level and the supporting surface must be sufficiently firm to maintain this level under load. If the operating surface is not level, the crane should be

removed and the foundation leveled before making a lift. If the operating surface is not sufficiently firm and stable, crane mats should be used to reduce soil loadings. If operation is necessary under adverse conditions, contact American Crane for further information before attempting operation.

3. For operation of land-based cranes (truck, crawler or wagon mounted) from a barge or other floating platform the above listed level requirements must be maintained throughout the lift cycle. In addition, other factors such as securing the crane to the platform must be considered by the user. Contact American Crane for further information.

4. Under certain conditions cranes can be overturned without load. This can be prevented by observing the rating chart and avoiding boom positions which show no load ratings.

5. The rating charts apply up to maximum wind speeds as indicated in the table below. This table lists the maximum wind velocity for which ratings apply. These wind speeds refer to steady winds or gusts where the maximum wind speeds reached are the magnitudes stated. Velocities must be measured at a point equivalent to the highest boom or job elevation and should be taken at some location in close proximity to the crane. No account is taken of the wind force on the load. This effect, which is substantial for loads with large surface areas, must be considered by the user and ratings reduced accordingly. For more information contact American Crane.

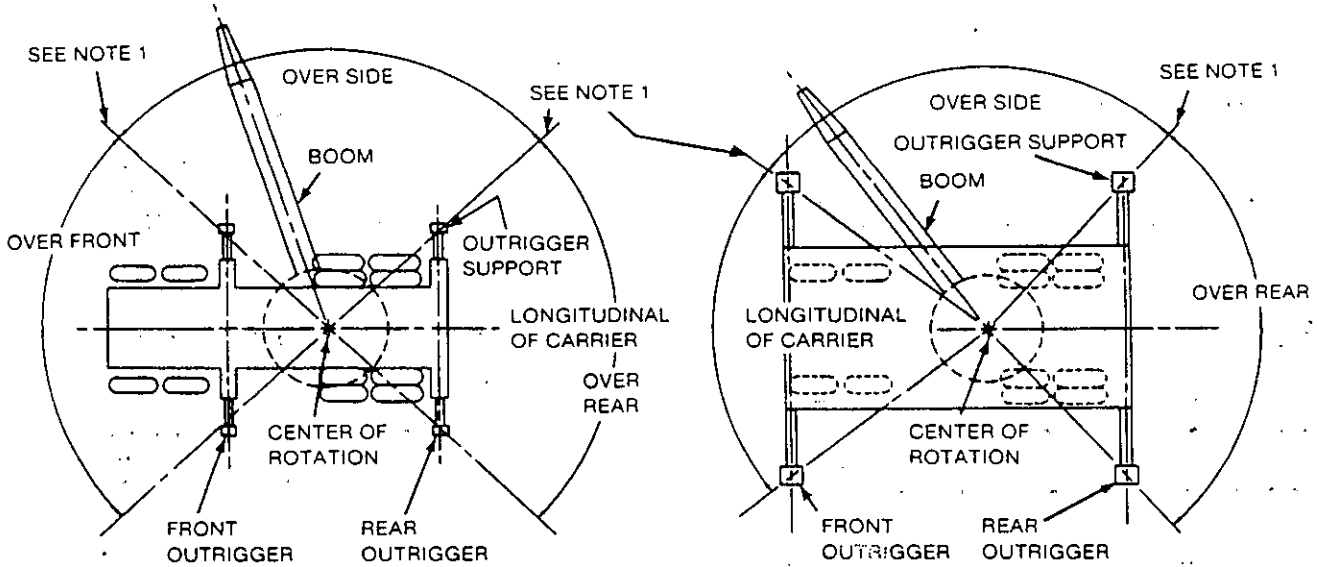
WIND SPEED LIMITATIONS

| BOOM SIZE    | Boom or Boom Plus Jib | Operation                | No operation. Lower boom to 50-60 degrees. Position rear of crane into wind. | Lower or secure boom      |
|--------------|-----------------------|--------------------------|--|---------------------------|
| 37"          | 0-140'<br>(0-42.3m)   | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 37"          | Over 140'<br>(42.3m)  | 0-20 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |
| 46"-47"      | 0-170'<br>(0-51.8m)   | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 46"-47"      | Over 170'<br>(51.8m)  | 0-20 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |
| 58"-59"      | 0-220'<br>(0-67.1m)   | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 58"-59"      | Over 220'<br>(67.1m)  | 0-30 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |
| 77"          | 0-290'<br>(0-88.4m)   | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 77"          | Over 290'<br>(88.4m)  | 0-20 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |
| 92"-94"-118" | 0-360'<br>(0-109.8m)  | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 92"-94"-118" | Over 360'<br>(109.8m) | 0-20 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |
| 130"         | 0-400'<br>(0-122m)    | 0-30 mph<br>(0-13.4 mps) | 30-50 mph<br>(13.4-22.4 mps)   | Over 50 mph<br>(22.4 mps) |
| 130"         | Over 400'<br>(122m)   | 0-20 mph<br>(0-8.9 mps)  | 20-30 mph<br>(8.9-13.4 mps)  | Over 30 mph<br>(13.4 mps) |

6. Crawler sideframes and truck or wagon crane outriggers must be fully extended and set to maximum width to obtain ratings listed for such on the chart. When operating in the "FREE" condition without outriggers on a truck or wagon crane, the boom must never be operated at radii for which no ratings are shown in the "Outriggers Free-Over The Side" area of the chart. Tires must be in good condition and properly inflated for operation. For truck cranes equipped with a front outrigger jack, the ratings designated "Outriggers Set-Over Side" can be used for 360 degree rotation.

7. Do not lift over the front of a truck crane either with or without outriggers. See diagrams on next page for definition of working areas with various types of cranes. If such a lift is unavoidable, consult American Crane for special instructions and suitably reduced ratings.

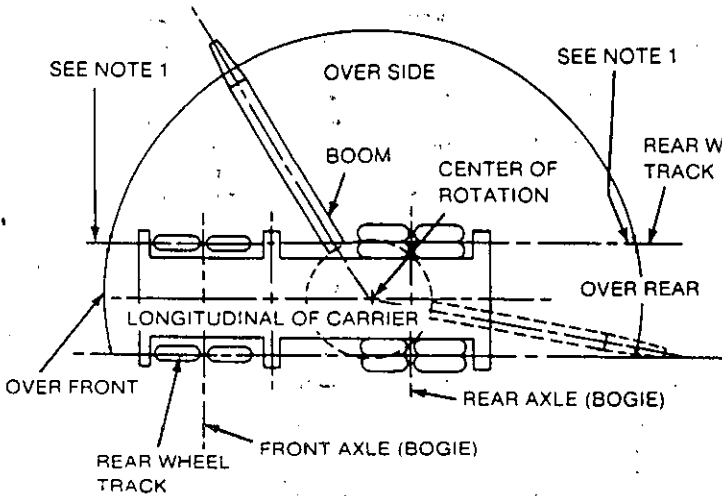
8. NEVER SIDELOAD THE BOOM. Such sideloading can cause structural failure or collapse. Always keep the boom point directly over the load to avoid sideloading. Operating the crane while out of level or in high winds as well as dragging a load sideways by swinging or pulling on a load while it is partially or fully attached to a structure are all causes of sideloading and must be avoided.



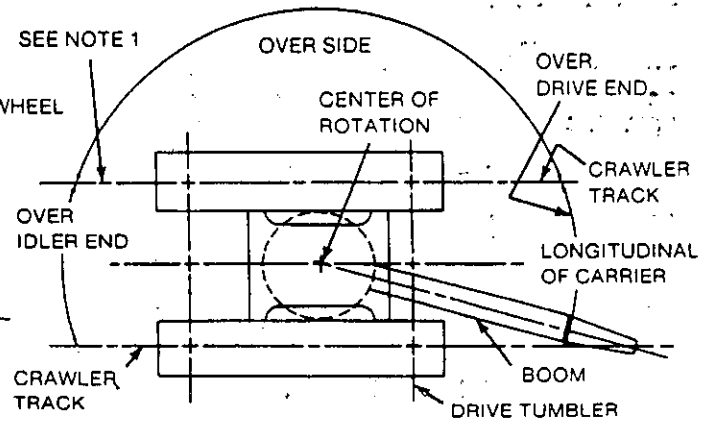
**CARRIERS ON OUTRIGGERS**

CASE 1 - FRONT OUTRIGGER BEHIND FRONT WHEELS

CASE 2 - FRONT OUTRIGGER AHEAD OF FRONT WHEELS



**CARRIER ON TIRES**



**CRAWLER TYPE LOWER**

**WORKING AREA DEFINITIONS**

**NOTE 1**  
 These lines determine the limiting position of any load for operation within working areas indicated.

| BOOM & JIB LENGTH                  | JIB RADIUS (FEET) | 5° JIB OFFSET   |                    | 15° JIB OFFSET  |                    | 25° JIB OFFSET  |                    |
|------------------------------------|-------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|
|                                    |                   | BOOM ANGLE      | RATINGS (LBS)      | BOOM ANGLE      | RATINGS (LBS)      | BOOM ANGLE      | RATINGS (LBS)      |
| 60' JIB & 240' BOOM                | 48                | 82.8            | 27,270*            |                 |                    |                 |                    |
|                                    | 50                | 82.4            | 27,110*            |                 |                    |                 |                    |
|                                    | 60                | 80.5            | 26,680*            | 82.4            | 23,860*            |                 |                    |
|                                    | 70                | 78.6            | 26,130*            | 80.5            | 23,560*            | 82.3            | 21,180*            |
|                                    | 80                | 76.6            | 25,580*            | 78.5            | 23,240*            | 80.3            | 21,080*            |
|                                    | 90                | 74.7            | 25,040*            | 76.6            | 22,890*            | 78.3            | 20,880*            |
|                                    | 100               | 72.7            | 24,570*            | 74.6            | 22,490*            | 76.3            | 20,290*            |
|                                    | 110               | 70.7            | 24,000*            | 72.5            | 22,130*            | 74.3            | 19,260*            |
|                                    | 120               | 68.7            | 23,540*            | 70.5            | 21,780*            | 72.2            | 18,410*            |
|                                    | 130               | 66.6            | 21,720             | 68.4            | 21,460*            | 70.1            | 17,600*            |
|                                    | 140               | 64.5            | 18,840             | 66.3            | 18,850             | 68.0            | 16,910*            |
|                                    | 150               | 62.3            | 16,390             | 64.2            | 16,400             | 65.8            | 16,240*            |
|                                    | 160               | 60.2            | 14,260             | 62.0            | 14,270             | 63.6            | 14,280             |
|                                    | 170               | 57.9            | 12,420             | 59.7            | 12,420             | 61.3            | 12,440             |
|                                    | 180               | 55.6            | 10,780             | 57.4            | 10,790             | 58.9            | 10,800             |
|                                    | 190               | 53.3            | 9,340              | 55.0            | 9,350              | 56.5            | 9,360              |
|                                    | 200               | 50.8            | 8,050              | 52.6            | 8,060              | 54.0            | 8,070              |
|                                    | 210               | 48.3            | 6,900              | 50.0            | 6,910              | 51.4            | 6,920              |
|                                    | 220               | 45.7            | 5,870              | 47.4            | 5,870              | 48.7            | 5,890              |
|                                    | 230               | 42.9            | 4,930              | 44.6            | 4,930              | 45.9            | 4,950              |
| 240                                | 40.0              | 4,070           | 41.6               | 4,080           | 42.9               | 4,100           |                    |
| 60' JIB & 250' BOOM                | 49                | 82.9            | 26,690*            |                 |                    |                 |                    |
|                                    | 50                | 82.7            | 26,660*            |                 |                    |                 |                    |
|                                    | 60                | 80.8            | 26,200*            | 82.7            | 23,450*            |                 |                    |
|                                    | 70                | 79.0            | 25,720*            | 80.8            | 23,220*            | 82.6            | 20,720*            |
|                                    | 80                | 77.1            | 25,140*            | 78.9            | 22,860*            | 80.6            | 20,580*            |
|                                    | 90                | 75.2            | 24,680*            | 77.0            | 22,480*            | 78.7            | 20,300*            |
|                                    | 100               | 73.3            | 24,070*            | 75.1            | 22,150*            | 76.8            | 19,390*            |
|                                    | 110               | 71.3            | 23,580*            | 73.1            | 21,760*            | 74.8            | 18,410*            |
|                                    | 120               | 69.4            | 23,010*            | 71.2            | 21,110*            | 72.8            | 17,390*            |
|                                    | 130               | 67.4            | 21,220             | 69.2            | 19,990*            | 70.8            | 16,400*            |
|                                    | 140               | 65.4            | 18,340             | 67.1            | 18,350             | 68.7            | 15,480*            |
|                                    | 150               | 63.3            | 15,890             | 65.1            | 15,900             | 66.6            | 14,570*            |
|                                    | 160               | 61.2            | 13,760             | 63.0            | 13,770             | 64.5            | 13,710*            |
|                                    | 170               | 59.1            | 11,900             | 60.8            | 11,910             | 62.3            | 11,920             |
|                                    | 180               | 56.9            | 10,280             | 58.6            | 10,280             | 60.1            | 10,300             |
|                                    | 190               | 54.7            | 8,830              | 56.4            | 8,840              | 57.8            | 8,850              |
| 200                                | 52.3              | 7,540           | 54.0               | 7,550           | 55.5               | 7,560           |                    |
| 210                                | 50.0              | 6,380           | 51.6               | 6,390           | 53.0               | 6,400           |                    |
| 220                                | 47.5              | 5,350           | 49.1               | 5,350           | 50.5               | 5,370           |                    |
| 230                                | 44.9              | 4,400           | 46.5               | 4,410           | 47.8               | 4,430           |                    |
| 240                                | 42.2              | 3,550           | 43.8               | 3,560           | 45.0               | 3,580           |                    |
| 250                                | 39.3              | 2,780           | 40.9               | 2,790           | 42.0               | 2,800           |                    |
| <del>60' JIB &amp; 260' BOOM</del> | <del>50</del>     | <del>82.9</del> | <del>26,050*</del> | <del>82.9</del> | <del>22,940*</del> |                 |                    |
|                                    | <del>60</del>     | <del>81.1</del> | <del>25,630*</del> | <del>81.1</del> | <del>22,600*</del> | <del>82.8</del> | <del>19,840*</del> |
|                                    | <del>70</del>     | <del>79.3</del> | <del>25,110*</del> |                 |                    |                 |                    |
|                                    | <del>80</del>     | <del>77.5</del> | <del>24,510*</del> | <del>79.3</del> | <del>22,300*</del> | <del>80.9</del> | <del>18,840*</del> |
|                                    | <del>90</del>     | <del>75.7</del> | <del>24,020*</del> | <del>77.4</del> | <del>21,790*</del> | <del>79.1</del> | <del>17,810*</del> |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 60' JIB & 210' BOOM | 120               | 66.1          | 23,920*       | 68.2           | 22,160*       | 70.0           | 17,680*       |
|                     | 130               | 63.8          | 23,170        | 65.8           | 21,120*       | 67.7           | 16,890*       |
|                     | 140               | 61.4          | 20,310        | 63.4           | 20,030*       | 65.2           | 16,190*       |
|                     | 150               | 59.0          | 17,850        | 60.9           | 17,860        | 62.7           | 15,540*       |
|                     | 160               | 56.4          | 15,740        | 58.4           | 15,740        | 60.1           | 14,990*       |
|                     | 170               | 53.8          | 13,890        | 55.8           | 13,900        | 57.5           | 13,910        |
|                     | 180               | 51.1          | 12,270        | 53.1           | 12,280        | 54.7           | 12,290        |
|                     | 190               | 48.3          | 10,830        | 50.2           | 10,840        | 51.8           | 10,860        |
|                     | 200               | 45.4          | 9,550         | 47.3           | 9,560         | 48.8           | 9,570         |
|                     | 210               | 42.3          | 8,400         | 44.1           | 8,410         | 45.6           | 8,420         |
| 60' JIB & 220' BOOM | 45                | 82.9          | 28,120*       |                |               |                |               |
|                     | 50                | 81.9          | 27,810*       |                |               |                |               |
|                     | 60                | 79.8          | 27,240*       | 81.9           | 24,510*       |                |               |
|                     | 70                | 77.8          | 26,630*       | 79.8           | 24,080*       | 81.7           | 21,880*       |
|                     | 80                | 75.7          | 26,120*       | 77.7           | 23,730*       | 79.6           | 21,670*       |
|                     | 90                | 73.6          | 25,440*       | 75.6           | 23,330*       | 77.4           | 20,890*       |
|                     | 100               | 71.4          | 24,960*       | 73.4           | 22,880*       | 75.3           | 19,790*       |
|                     | 110               | 69.2          | 24,370*       | 71.2           | 22,530*       | 73.1           | 18,850*       |
|                     | 120               | 67.0          | 23,920*       | 69.0           | 22,180*       | 70.8           | 17,920*       |
|                     | 130               | 64.8          | 22,710        | 66.8           | 21,550*       | 68.5           | 17,180*       |
|                     | 140               | 62.5          | 19,840        | 64.5           | 19,840        | 66.2           | 16,410*       |
|                     | 150               | 60.2          | 17,390        | 62.1           | 17,390        | 63.8           | 15,780*       |
|                     | 160               | 57.8          | 15,270        | 59.7           | 15,280        | 61.4           | 15,250*       |
|                     | 170               | 55.3          | 13,420        | 57.2           | 13,420        | 58.9           | 13,440        |
| 180                 | 52.8              | 11,790        | 54.7          | 11,800         | 56.3          | 11,810         |               |
| 190                 | 50.1              | 10,350        | 52.0          | 10,360         | 53.5          | 10,380         |               |
| 200                 | 47.4              | 9,070         | 49.2          | 9,080          | 50.7          | 9,090          |               |
| 210                 | 44.5              | 7,930         | 46.3          | 7,930          | 47.8          | 7,950          |               |
| 220                 | 41.5              | 6,890         | 43.3          | 6,890          | 44.6          | 6,910          |               |
| 60' JIB & 230' BOOM | 46                | 83.0          | 27,760*       |                |               |                |               |
|                     | 50                | 82.2          | 27,570*       |                |               |                |               |
|                     | 60                | 80.2          | 26,960*       | 82.2           | 24,170*       |                |               |
|                     | 70                | 78.2          | 26,430*       | 80.2           | 23,920*       | 82.0           | 21,570*       |
|                     | 80                | 76.2          | 25,920*       | 78.1           | 23,530*       | 80.0           | 21,410*       |
|                     | 90                | 74.1          | 25,300*       | 76.1           | 23,100*       | 77.9           | 21,110*       |
|                     | 100               | 72.1          | 24,750*       | 74.0           | 22,740*       | 75.8           | 20,060*       |
|                     | 110               | 70.0          | 24,290*       | 71.9           | 22,410*       | 73.7           | 19,030*       |
|                     | 120               | 67.9          | 23,780*       | 69.8           | 21,990*       | 71.5           | 18,180*       |
|                     | 130               | 65.7          | 22,210        | 67.6           | 21,690*       | 69.3           | 17,360*       |
|                     | 140               | 63.5          | 19,330        | 65.4           | 19,340        | 67.1           | 16,690*       |
|                     | 150               | 61.3          | 16,880        | 63.2           | 16,890        | 64.8           | 16,010*       |
|                     | 160               | 59.0          | 14,770        | 60.9           | 14,770        | 62.5           | 14,790        |
|                     | 170               | 56.7          | 12,910        | 58.5           | 12,920        | 60.1           | 12,930        |
|                     | 180               | 54.3          | 11,290        | 56.1           | 11,290        | 57.7           | 11,310        |
| 190                 | 51.8              | 9,850         | 53.6          | 9,850          | 55.1          | 9,870          |               |
| 200                 | 49.2              | 8,560         | 51.0          | 8,560          | 52.5          | 8,580          |               |
| 210                 | 46.5              | 7,410         | 48.3          | 7,420          | 49.7          | 7,440          |               |
| 220                 | 43.7              | 6,370         | 45.4          | 6,380          | 46.8          | 6,390          |               |
| 230                 | 40.7              | 5,430         | 42.4          | 5,440          | 43.7          | 5,460          |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 60' JIB & 180' BOOM | 110               | 65.6          | 24,170*       | 67.9           | 22,310*       | 70.0           | 17,760*       |
|                     | 120               | 62.9          | 23,580*       | 65.2           | 20,970*       | 67.3           | 16,880*       |
|                     | 130               | 60.2          | 23,040*       | 62.5           | 19,790*       | 64.5           | 16,130*       |
|                     | 140               | 57.4          | 21,810        | 59.6           | 18,750*       | 61.6           | 15,410*       |
|                     | 150               | 54.5          | 19,370        | 56.7           | 17,840*       | 58.6           | 14,780*       |
|                     | 160               | 51.5          | 17,250        | 53.7           | 17,050*       | 55.6           | 14,280*       |
|                     | 170               | 48.4          | 15,420        | 50.5           | 15,420        | 52.3           | 13,770*       |
|                     | 180               | 45.0          | 13,800        | 47.2           | 13,810        | 48.9           | 13,380*       |
| 60' JIB & 190' BOOM | 42                | 82.8          | 28,950*       |                |               |                |               |
|                     | 50                | 80.9          | 28,400*       |                |               |                |               |
|                     | 60                | 78.6          | 27,660*       | 80.9           | 24,920*       | 80.7           | 22,400*       |
|                     | 70                | 76.3          | 26,910*       | 78.6           | 24,420*       | 78.3           | 21,480*       |
|                     | 80                | 73.9          | 26,210*       | 76.2           | 23,990*       | 75.9           | 20,200*       |
|                     | 90                | 71.5          | 25,530*       | 73.8           | 23,500*       | 73.4           | 19,080*       |
|                     | 100               | 69.1          | 24,940*       | 71.3           | 22,970*       | 70.9           | 18,100*       |
|                     | 110               | 66.6          | 24,360*       | 68.8           | 22,530*       | 68.3           | 17,150*       |
|                     | 120               | 64.1          | 23,720*       | 66.3           | 21,390*       | 65.6           | 16,400*       |
|                     | 130               | 61.5          | 23,250*       | 63.7           | 20,220*       | 62.9           | 15,670*       |
|                     | 140               | 58.9          | 21,310        | 61.0           | 19,220*       | 60.1           | 15,050*       |
| 150                 | 56.1              | 18,870        | 58.3          | 18,260*        | 57.2          | 14,510*        |               |
| 160                 | 53.3              | 16,760        | 55.4          | 16,760         | 54.2          | 14,040*        |               |
| 170                 | 50.4              | 14,920        | 52.5          | 14,920         | 51.1          | 13,310         |               |
| 180                 | 47.3              | 13,290        | 49.4          | 13,300         | 47.7          | 11,880         |               |
| 190                 | 44.1              | 11,860        | 46.1          | 11,870         |               |                |               |
| 60' JIB & 200' BOOM | 43                | 82.8          | 28,650*       |                |               |                |               |
|                     | 50                | 81.3          | 28,200*       |                |               |                |               |
|                     | 60                | 79.1          | 27,590*       | 81.3           | 24,860*       | 81.1           | 22,270*       |
|                     | 70                | 76.8          | 26,910*       | 79.0           | 24,350*       | 78.8           | 21,790*       |
|                     | 80                | 74.5          | 26,230*       | 76.7           | 23,860*       | 76.4           | 20,430*       |
|                     | 90                | 72.3          | 25,570*       | 74.4           | 23,450*       | 74.1           | 19,300*       |
|                     | 100               | 69.9          | 24,950*       | 72.1           | 23,050*       | 71.7           | 18,290*       |
|                     | 110               | 67.6          | 24,410*       | 69.7           | 22,630*       | 69.2           | 17,470*       |
|                     | 120               | 65.2          | 23,820*       | 67.3           | 21,950*       | 66.7           | 16,650*       |
|                     | 130               | 62.7          | 23,320*       | 64.8           | 20,660*       | 64.1           | 15,950*       |
|                     | 140               | 60.2          | 20,800        | 62.3           | 19,640*       | 61.5           | 15,340*       |
|                     | 150               | 57.6          | 18,350        | 59.7           | 18,360        | 58.8           | 14,750*       |
|                     | 160               | 54.9          | 16,240        | 57.0           | 16,250        | 55.9           | 14,250*       |
| 170                 | 52.2              | 14,400        | 54.2          | 14,410         | 53.0          | 12,800         |               |
| 180                 | 49.3              | 12,780        | 51.3          | 12,790         | 49.9          | 11,370         |               |
| 190                 | 46.3              | 11,350        | 48.3          | 11,350         | 46.6          | 10,090         |               |
| 200                 | 43.2              | 10,060        | 45.1          | 10,070         |               |                |               |
| 60' JIB & 210' BOOM | 44                | 82.9          | 28,480*       |                |               |                |               |
|                     | 50                | 81.6          | 28,050*       |                |               |                |               |
|                     | 60                | 79.5          | 27,400*       | 81.6           | 24,630*       | 81.4           | 22,110*       |
|                     | 70                | 77.3          | 26,830*       | 79.4           | 24,250*       | 79.2           | 21,840*       |
|                     | 80                | 75.1          | 26,130*       | 77.2           | 23,850*       | 77.0           | 20,740*       |
|                     | 90                | 72.9          | 25,540*       | 75.0           | 23,440*       | 74.7           | 19,620*       |
| 100                 | 70.7              | 24,970*       | 72.8          | 22,980*        | 72.4          | 18,580*        |               |
| 110                 | 68.4              | 24,460*       | 70.5          | 22,530*        |               |                |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 60' JIB & 150' BOOM | 37                | 82.8          | 29,810*       |                |               |                |               |
|                     | 40                | 81.9          | 29,440*       |                |               |                |               |
|                     | 50                | 79.2          | 28,530*       | 81.9           | 25,810*       |                |               |
|                     | 60                | 76.4          | 27,560*       | 79.1           | 25,150*       | 81.7           | 23,090*       |
|                     | 70                | 73.6          | 26,660*       | 76.3           | 24,480*       | 78.8           | 22,030*       |
|                     | 80                | 70.8          | 25,810*       | 73.4           | 23,780*       | 75.9           | 20,400*       |
|                     | 90                | 67.8          | 25,030*       | 70.5           | 23,200*       | 72.9           | 19,010*       |
|                     | 100               | 64.9          | 24,270*       | 67.5           | 22,200*       | 69.9           | 17,840*       |
|                     | 110               | 61.8          | 23,650*       | 64.4           | 20,700*       | 66.8           | 16,810*       |
|                     | 120               | 58.6          | 22,890*       | 61.2           | 19,370*       | 63.5           | 15,930*       |
|                     | 130               | 55.4          | 21,150*       | 57.9           | 18,270*       | 60.2           | 15,200*       |
| 140                 | 52.0              | 19,730*       | 54.5          | 17,340*        | 56.7          | 14,500*        |               |
| 150                 | 48.4              | 18,510*       | 50.9          | 16,450*        | 52.9          | 13,950*        |               |
| 60' JIB & 160' BOOM | 38                | 82.8          | 29,650*       |                |               |                |               |
|                     | 40                | 82.3          | 29,410*       |                |               |                |               |
|                     | 50                | 79.7          | 28,530*       | 82.3           | 25,730*       |                |               |
|                     | 60                | 77.0          | 27,660*       | 79.6           | 25,090*       | 82.1           | 23,090*       |
|                     | 70                | 74.4          | 26,730*       | 76.9           | 24,460*       | 79.4           | 22,290*       |
|                     | 80                | 71.7          | 25,960*       | 74.2           | 23,860*       | 76.6           | 20,680*       |
|                     | 90                | 68.9          | 25,220*       | 71.4           | 23,310*       | 73.8           | 19,350*       |
|                     | 100               | 66.1          | 24,520*       | 68.6           | 22,770*       | 70.9           | 18,190*       |
|                     | 110               | 63.2          | 23,810*       | 65.7           | 21,280*       | 68.0           | 17,140*       |
|                     | 120               | 60.2          | 23,210*       | 62.7           | 19,910*       | 64.9           | 16,290*       |
|                     | 130               | 57.2          | 22,030*       | 59.6           | 18,760*       | 61.8           | 15,530*       |
| 140                 | 54.0              | 20,500*       | 56.4          | 17,800*        | 58.5          | 14,820*        |               |
| 150                 | 50.7              | 19,190*       | 53.1          | 16,900*        | 55.1          | 14,220*        |               |
| 160                 | 47.2              | 18,110*       | 49.5          | 16,160*        | 51.5          | 13,720*        |               |
| 60' JIB & 170' BOOM | 39                | 82.9          | 29,470*       |                |               |                |               |
|                     | 40                | 82.6          | 29,360*       |                |               |                |               |
|                     | 50                | 80.1          | 28,560*       | 82.6           | 25,610*       |                |               |
|                     | 60                | 77.6          | 27,650*       | 80.1           | 25,040*       | 82.5           | 23,010*       |
|                     | 70                | 75.1          | 26,880*       | 77.5           | 24,540*       | 79.9           | 22,580*       |
|                     | 80                | 72.5          | 26,030*       | 74.9           | 23,930*       | 77.2           | 21,010*       |
|                     | 90                | 69.9          | 25,310*       | 72.3           | 23,430*       | 74.5           | 19,690*       |
|                     | 100               | 67.2          | 24,640*       | 69.6           | 22,920*       | 71.8           | 18,480*       |
|                     | 110               | 64.4          | 24,070*       | 66.8           | 21,770*       | 69.0           | 17,470*       |
|                     | 120               | 61.6          | 23,420*       | 64.0           | 20,420*       | 66.2           | 16,630*       |
|                     | 130               | 58.8          | 22,910*       | 61.1           | 19,310*       | 63.2           | 15,820*       |
| 140                 | 55.8              | 21,320*       | 58.1          | 18,300*        | 60.2          | 15,150*        |               |
| 150                 | 52.7              | 19,880        | 55.0          | 17,380*        | 57.0          | 14,510*        |               |
| 160                 | 49.5              | 17,770        | 51.7          | 16,620*        | 53.6          | 14,010*        |               |
| 170                 | 46.1              | 15,940        | 48.3          | 15,860*        | 50.1          | 13,560*        |               |
| 60' JIB & 180' BOOM | 40                | 82.9          | 29,210*       |                |               |                |               |
|                     | 50                | 80.6          | 28,460*       | 82.9           | 25,560*       |                |               |
|                     | 60                | 78.1          | 27,660*       | 80.5           | 25,060*       | 82.8           | 22,850*       |
|                     | 70                | 75.7          | 26,900*       | 78.1           | 24,530*       | 80.3           | 22,480*       |
|                     | 80                | 73.2          | 26,180*       | 75.6           | 23,910*       | 77.8           | 21,250*       |
| 90                  | 70.7              | 25,480*       | 73.1          | 23,420*        | 75.2          | 19,970*        |               |
| 100                 | 68.2              | 24,800*       | 70.5          | 22,950*        | 72.6          | 18,750*        |               |



| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 50' JIB & 240' BOOM | 200               | 49.0          | 7,760         | 50.5           | 7,760         | 51.7           | 7,780         |
|                     | 210               | 46.4          | 6,600         | 47.8           | 6,610         | 49.0           | 6,620         |
|                     | 220               | 43.5          | 5,560         | 45.0           | 5,570         | 46.1           | 5,580         |
|                     | 230               | 40.6          | 4,630         | 42.0           | 4,640         | 43.0           | 4,650         |
|                     | 240               | 37.4          | 3,780         | 38.7           | 3,790         | 39.7           | 3,800         |
| 50' JIB & 250' BOOM | 47                | 82.9          | 29,690*       |                |               |                |               |
|                     | 50                | 82.3          | 29,540*       |                |               |                |               |
|                     | 60                | 80.4          | 28,940*       | 82.0           | 26,200*       |                |               |
|                     | 70                | 78.4          | 28,310*       | 80.0           | 25,850*       | 81.5           | 23,410*       |
|                     | 80                | 76.5          | 27,790*       | 78.1           | 25,410*       | 79.5           | 22,720*       |
|                     | 90                | 74.5          | 27,220*       | 76.1           | 25,070*       | 77.5           | 21,580*       |
|                     | 100               | 72.5          | 26,620*       | 74.1           | 24,550*       | 75.5           | 20,430*       |
|                     | 110               | 70.5          | 25,090*       | 72.1           | 23,180*       | 73.5           | 19,250*       |
|                     | 120               | 68.5          | 23,620*       | 70.0           | 21,890*       | 71.4           | 18,200*       |
|                     | 130               | 66.4          | 20,920        | 68.0           | 20,630*       | 69.3           | 17,140*       |
|                     | 140               | 64.3          | 18,040        | 65.8           | 18,050        | 67.2           | 16,120*       |
|                     | 150               | 62.2          | 15,580        | 63.7           | 15,590        | 65.0           | 15,100*       |
|                     | 160               | 60.0          | 13,460        | 61.5           | 13,470        | 62.8           | 13,480        |
|                     | 170               | 57.8          | 11,610        | 59.3           | 11,610        | 60.5           | 11,620        |
|                     | 180               | 55.5          | 9,970         | 56.9           | 9,980         | 58.2           | 9,990         |
|                     | 190               | 53.1          | 8,530         | 54.6           | 8,530         | 55.8           | 8,550         |
|                     | 200               | 50.7          | 7,240         | 52.1           | 7,240         | 53.3           | 7,260         |
| 210                 | 48.2              | 6,090         | 49.6          | 6,100          | 50.7          | 6,110          |               |
| 220                 | 45.5              | 5,050         | 46.9          | 5,050          | 48.0          | 5,070          |               |
| 230                 | 42.8              | 4,110         | 44.1          | 4,110          | 45.2          | 4,130          |               |
| 240                 | 39.8              | 3,260         | 41.2          | 3,270          | 42.2          | 3,280          |               |
| 250                 | 36.7              | 2,490         | 38.0          | 2,500          | 39.0          | 2,510          |               |
| 50' JIB & 260' BOOM | 48                | 82.9          | 29,010*       |                |               |                |               |
|                     | 50                | 82.5          | 28,820*       |                |               |                |               |
|                     | 60                | 80.7          | 28,250*       | 82.2           | 25,640*       |                |               |
|                     | 70                | 78.8          | 27,640*       | 80.3           | 25,260*       | 81.8           | 21,170*       |
|                     | 80                | 76.9          | 26,560*       | 78.4           | 24,230*       | 79.9           | 19,890*       |
|                     | 90                | 75.0          | 24,720*       | 76.5           | 22,720*       | 78.0           | 18,750*       |
|                     | 100               | 73.1          | 23,080*       | 74.6           | 21,300*       | 76.0           | 17,570*       |
|                     | 110               | 71.2          | 21,610*       | 72.7           | 19,990*       | 74.0           | 16,480*       |
|                     | 120               | 69.2          | 20,130*       | 70.7           | 18,700*       | 72.1           | 15,430*       |
|                     | 130               | 67.2          | 18,850*       | 68.7           | 17,540*       | 70.0           | 14,330*       |
|                     | 140               | 65.2          | 17,550        | 66.7           | 16,350*       | 68.0           | 13,350*       |
|                     | 150               | 63.2          | 15,090        | 64.6           | 15,100        | 65.9           | 12,420*       |
|                     | 160               | 61.1          | 12,960        | 62.5           | 12,970        | 63.8           | 11,480*       |
|                     | 170               | 58.9          | 11,100        | 60.4           | 11,110        | 61.6           | 10,620*       |
|                     | 180               | 56.7          | 9,480         | 58.2           | 9,480         | 59.4           | 9,490         |
|                     | 190               | 54.5          | 8,020         | 55.9           | 8,030         | 57.1           | 8,040         |
|                     | 200               | 52.2          | 6,740         | 53.6           | 6,750         | 54.8           | 6,760         |
| 210                 | 49.8              | 5,580         | 51.2          | 5,590          | 52.3          | 5,600          |               |
| 220                 | 47.3              | 4,540         | 48.7          | 4,540          | 49.8          | 4,550          |               |
| 230                 | 44.7              | 3,590         | 46.1          | 3,600          | 47.1          | 3,610          |               |
| 240                 | 42.0              | 2,740         | 43.3          | 2,750          | 44.3          | 2,760          |               |
| 250                 | 39.2              | 1,970         | 40.5          | 1,970          | 41.4          | 1,990          |               |
| 260                 | 36.1              | 1,260         | 37.4          | 1,260          | 38.2          | 1,280          |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 50' JIB & 220' BOOM | 130               | 63.6          | 22,400        | 65.3           | 22,400        | 66.8           | 19,870*       |
|                     | 140               | 61.2          | 19,530        | 62.9           | 19,530        | 64.4           | 19,090*       |
|                     | 150               | 58.8          | 17,080        | 60.4           | 17,090        | 61.9           | 17,100        |
|                     | 160               | 56.3          | 14,970        | 57.9           | 14,970        | 59.3           | 14,980        |
|                     | 170               | 53.7          | 13,110        | 55.3           | 13,120        | 56.6           | 13,130        |
|                     | 180               | 51.0          | 11,490        | 52.6           | 11,500        | 53.9           | 11,510        |
|                     | 190               | 48.2          | 10,050        | 49.7           | 10,060        | 51.0           | 10,070        |
|                     | 200               | 45.2          | 8,770         | 46.8           | 8,780         | 48.0           | 8,790         |
| 50' JIB & 230' BOOM | 210               | 42.1          | 7,630         | 43.6           | 7,640         | 44.8           | 7,650         |
|                     | 220               | 38.8          | 6,590         | 40.3           | 6,600         | 41.4           | 6,620         |
|                     | 44                | 83.0          | 30,700*       |                |               |                |               |
|                     | 50                | 81.7          | 30,410*       |                |               |                |               |
|                     | 60                | 79.7          | 29,770*       | 81.4           | 27,020*       | 83.0           | 24,580*       |
|                     | 70                | 77.6          | 29,100*       | 79.3           | 26,540*       | 80.9           | 24,400*       |
|                     | 80                | 75.5          | 28,530*       | 77.2           | 26,160*       | 78.7           | 24,140*       |
|                     | 90                | 73.4          | 27,950*       | 75.1           | 25,790*       | 76.6           | 23,860*       |
|                     | 100               | 71.2          | 27,350*       | 72.9           | 25,430*       | 74.4           | 23,210*       |
|                     | 110               | 69.1          | 26,870*       | 70.7           | 25,040*       | 72.2           | 22,150*       |
|                     | 120               | 66.9          | 25,300        | 68.5           | 24,610*       | 70.0           | 21,130*       |
|                     | 130               | 64.6          | 21,910        | 66.3           | 21,910        | 67.7           | 20,190*       |
|                     | 140               | 62.3          | 19,040        | 64.0           | 19,040        | 65.4           | 19,050        |
|                     | 150               | 60.0          | 16,580        | 61.6           | 16,580        | 63.0           | 16,590        |
|                     | 160               | 57.6          | 14,460        | 59.2           | 14,470        | 60.6           | 14,480        |
|                     | 170               | 55.1          | 12,610        | 56.7           | 12,610        | 58.1           | 12,620        |
| 180                 | 52.6              | 10,980        | 54.2          | 10,990         | 55.5          | 11,000         |               |
| 190                 | 50.0              | 9,540         | 51.5          | 9,550          | 52.8          | 9,560          |               |
| 200                 | 47.2              | 8,260         | 48.7          | 8,260          | 50.0          | 8,280          |               |
| 210                 | 44.4              | 7,110         | 45.8          | 7,110          | 47.0          | 7,130          |               |
| 220                 | 41.3              | 6,080         | 42.8          | 6,080          | 43.9          | 6,100          |               |
| 230                 | 38.1              | 5,140         | 39.5          | 5,150          | 40.5          | 5,170          |               |
| 50' JIB & 240' BOOM | 46                | 82.8          | 30,140*       |                |               |                |               |
|                     | 50                | 82.0          | 30,030*       |                |               |                |               |
|                     | 60                | 80.0          | 29,350*       | 81.7           | 26,650*       |                |               |
|                     | 70                | 78.0          | 28,770*       | 79.7           | 26,250*       | 81.2           | 23,950*       |
|                     | 80                | 76.0          | 28,280*       | 77.6           | 25,860*       | 79.2           | 23,750*       |
|                     | 90                | 74.0          | 27,630*       | 75.6           | 25,530*       | 77.1           | 23,440*       |
|                     | 100               | 71.9          | 27,170*       | 73.5           | 25,150*       | 75.0           | 23,260*       |
|                     | 110               | 69.8          | 26,630*       | 71.4           | 24,730*       | 72.9           | 22,410*       |
|                     | 120               | 67.7          | 24,820        | 69.3           | 24,360*       | 70.7           | 21,220*       |
|                     | 130               | 65.6          | 21,420        | 67.1           | 21,420        | 68.6           | 20,150*       |
|                     | 140               | 63.4          | 18,540        | 64.9           | 18,550        | 66.3           | 18,560        |
|                     | 150               | 61.1          | 16,080        | 62.7           | 16,090        | 64.1           | 16,100        |
|                     | 160               | 58.9          | 13,970        | 60.4           | 13,970        | 61.7           | 13,980        |
|                     | 170               | 56.5          | 12,110        | 58.0           | 12,120        | 59.3           | 12,130        |
| 180                 | 54.1              | 10,490        | 55.6          | 10,490         | 56.9          | 10,500         |               |
| 190                 | 51.6              | 9,040         | 53.1          | 9,040          | 54.4          | 9,050          |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 50' JIB & 190' BOOM | 150               | 54.3          | 18,560        | 56.1           | 18,560        | 57.7           | 17,460*       |
|                     | 160               | 51.3          | 16,440        | 53.1           | 16,450        | 54.6           | 16,460        |
|                     | 170               | 48.2          | 14,610        | 49.9           | 14,610        | 51.4           | 14,630        |
|                     | 180               | 44.8          | 12,980        | 46.6           | 12,990        | 48.0           | 13,000        |
| 50' JIB & 200' BOOM | 190               | 41.3          | 11,550        | 43.0           | 11,560        | 44.3           | 11,570        |
|                     | 41                | 82.8          | 31,710*       |                |               |                |               |
|                     | 50                | 80.7          | 30,970*       | 82.6           | 27,970*       |                |               |
|                     | 60                | 78.4          | 30,310*       | 80.3           | 27,500*       | 82.1           | 25,360*       |
|                     | 70                | 76.1          | 29,590*       | 78.0           | 27,100*       | 79.7           | 25,040*       |
|                     | 80                | 73.7          | 28,890*       | 75.6           | 26,610*       | 77.3           | 24,780*       |
|                     | 90                | 71.3          | 28,160*       | 73.2           | 26,070*       | 74.9           | 23,630*       |
|                     | 100               | 68.9          | 27,510*       | 70.7           | 25,630*       | 72.4           | 22,300*       |
|                     | 110               | 66.4          | 26,970*       | 68.3           | 25,280*       | 69.9           | 21,210*       |
|                     | 120               | 63.9          | 26,390*       | 65.7           | 24,860*       | 67.4           | 20,180*       |
|                     | 130               | 61.3          | 23,350        | 63.1           | 23,360        | 64.7           | 19,270*       |
|                     | 140               | 58.7          | 20,490        | 60.5           | 20,500        | 62.0           | 18,480*       |
|                     | 150               | 55.9          | 18,050        | 57.7           | 18,050        | 59.2           | 17,770*       |
|                     | 160               | 53.1          | 15,940        | 54.9           | 15,940        | 56.4           | 15,950        |
|                     | 170               | 50.2          | 14,090        | 51.9           | 14,090        | 53.3           | 14,100        |
|                     | 180               | 47.1          | 12,470        | 48.8           | 12,480        | 50.2           | 12,490        |
| 190                 | 43.9              | 11,040        | 45.5          | 11,050         | 46.9          | 11,060         |               |
| 200                 | 40.4              | 9,760         | 42.1          | 9,770          | 43.3          | 9,780          |               |
| 50' JIB & 210' BOOM | 42                | 82.9          | 31,360*       |                |               |                |               |
|                     | 50                | 81.1          | 30,830*       | 82.9           | 27,800*       |                |               |
|                     | 60                | 78.9          | 30,100*       | 80.7           | 27,440*       | 82.4           | 25,120*       |
|                     | 70                | 76.6          | 29,490*       | 78.4           | 26,910*       | 80.1           | 24,920*       |
|                     | 80                | 74.4          | 28,860*       | 76.2           | 26,470*       | 77.8           | 24,570*       |
|                     | 90                | 72.1          | 28,210*       | 73.9           | 26,060*       | 75.5           | 23,910*       |
|                     | 100               | 69.7          | 27,540*       | 71.5           | 25,660*       | 73.2           | 22,670*       |
|                     | 110               | 67.4          | 27,080*       | 69.2           | 25,210*       | 70.8           | 21,500*       |
|                     | 120               | 65.0          | 26,260        | 66.7           | 24,860*       | 68.3           | 20,480*       |
|                     | 130               | 62.5          | 22,860        | 64.3           | 22,870        | 65.8           | 19,590*       |
|                     | 140               | 60.0          | 19,990        | 61.7           | 20,000        | 63.3           | 18,780*       |
|                     | 150               | 57.4          | 17,540        | 59.1           | 17,550        | 60.6           | 17,560        |
|                     | 160               | 54.8          | 15,430        | 56.5           | 15,440        | 57.9           | 15,450        |
|                     | 170               | 52.0          | 13,590        | 53.7           | 13,590        | 55.1           | 13,610        |
|                     | 180               | 49.1          | 11,960        | 50.8           | 11,970        | 52.1           | 11,980        |
|                     | 190               | 46.1          | 10,530        | 47.8           | 10,530        | 49.1           | 10,540        |
| 200                 | 43.0              | 9,240         | 44.6          | 9,250          | 45.8          | 9,260          |               |
| 210                 | 39.6              | 8,110         | 41.2          | 8,110          | 42.3          | 8,130          |               |
| 50' JIB & 220' BOOM | 43                | 82.9          | 31,020*       |                |               |                |               |
|                     | 50                | 81.4          | 30,680*       |                |               |                |               |
|                     | 60                | 79.3          | 29,960*       | 81.0           | 27,170*       | 82.7           | 24,900*       |
|                     | 70                | 77.1          | 29,390*       | 78.9           | 26,840*       | 80.5           | 24,660*       |
|                     | 80                | 74.9          | 28,750*       | 76.7           | 26,390*       | 78.3           | 24,440*       |
|                     | 90                | 72.7          | 28,140*       | 74.5           | 25,940*       | 76.1           | 24,200*       |
|                     | 100               | 70.5          | 27,520*       | 72.2           | 25,550*       | 73.8           | 22,960*       |
| 110                 | 68.3              | 27,000*       | 70.0          | 25,140*        | 71.5          | 21,800*        |               |
| 120                 | 66.0              | 25,800        | 67.7          | 24,740*        | 69.2          | 20,800*        |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 50' JIB & 160' BOOM | 120               | 58.4          | 25,800*       | 60.6           | 22,860*       | 62.4           | 18,750*       |
|                     | 130               | 55.1          | 25,180*       | 57.3           | 21,640*       | 59.1           | 17,860*       |
|                     | 140               | 51.7          | 22,470        | 53.8           | 20,500*       | 55.6           | 17,100*       |
|                     | 150               | 48.1          | 20,030        | 50.2           | 19,490*       | 51.9           | 16,500*       |
|                     | 160               | 44.3          | 17,930        | 46.3           | 17,930        | 47.9           | 15,920*       |
| 50' JIB & 170' BOOM | 37                | 82.9          | 32,000*       |                |               |                |               |
|                     | 40                | 82.1          | 32,000*       |                |               |                |               |
|                     | 50                | 79.5          | 31,150*       | 81.6           | 28,360*       | 81.0           | 25,630*       |
|                     | 60                | 76.8          | 30,230*       | 79.0           | 27,760*       | 78.3           | 25,240*       |
|                     | 70                | 74.1          | 29,470*       | 76.3           | 27,090*       | 75.5           | 24,070*       |
|                     | 80                | 71.4          | 28,620*       | 73.6           | 26,550*       | 72.7           | 22,560*       |
|                     | 90                | 68.7          | 27,860*       | 70.8           | 26,010*       | 69.8           | 21,240*       |
|                     | 100               | 65.9          | 27,240*       | 67.9           | 25,470*       | 66.9           | 20,140*       |
|                     | 110               | 63.0          | 26,610*       | 65.0           | 25,070*       | 63.9           | 19,120*       |
|                     | 120               | 60.0          | 26,020*       | 62.1           | 23,530*       | 60.7           | 18,260*       |
|                     | 130               | 56.9          | 24,860        | 59.0           | 22,240*       | 57.5           | 17,480*       |
|                     | 140               | 53.8          | 22,010        | 55.8           | 21,070*       | 54.1           | 16,790*       |
|                     | 150               | 50.5          | 19,570        | 52.4           | 19,580        | 50.5           | 16,240*       |
| 160                 | 47.0              | 17,460        | 48.9          | 17,470         | 46.6          | 15,640         |               |
| 170                 | 43.3              | 15,620        | 45.1          | 15,630         |               |                |               |
| 50' JIB & 180' BOOM | 38                | 82.9          | 32,000*       |                |               |                |               |
|                     | 40                | 82.4          | 32,000*       |                |               |                |               |
|                     | 50                | 79.9          | 31,190*       | 82.0           | 28,270*       | 81.4           | 25,550*       |
|                     | 60                | 77.4          | 30,330*       | 79.5           | 27,640*       | 78.8           | 25,210*       |
|                     | 70                | 74.8          | 29,560*       | 76.9           | 27,180*       | 76.2           | 24,440*       |
|                     | 80                | 72.3          | 28,720*       | 74.3           | 26,570*       | 73.5           | 22,930*       |
|                     | 90                | 69.6          | 28,060*       | 71.7           | 26,060*       | 70.8           | 21,650*       |
|                     | 100               | 67.0          | 27,350*       | 69.0           | 25,610*       | 68.0           | 20,530*       |
|                     | 110               | 64.2          | 26,790*       | 66.2           | 25,160*       | 65.2           | 19,470*       |
|                     | 120               | 61.4          | 26,180*       | 63.4           | 24,120*       | 62.2           | 18,600*       |
|                     | 130               | 58.6          | 24,360        | 60.5           | 22,770*       | 59.2           | 17,860*       |
|                     | 140               | 55.6          | 21,490        | 57.5           | 21,500        | 56.0           | 17,160*       |
|                     | 150               | 52.5          | 19,060        | 54.4           | 19,070        | 52.7           | 16,560*       |
| 160                 | 49.3              | 16,950        | 51.1          | 16,960         | 49.2          | 15,130         |               |
| 170                 | 45.9              | 15,110        | 47.7          | 15,110         | 45.4          | 13,520         |               |
| 180                 | 42.2              | 13,500        | 44.0          | 13,500         |               |                |               |
| 50' JIB & 190' BOOM | 39                | 83.0          | 31,920*       |                |               |                |               |
|                     | 40                | 82.7          | 31,920*       |                |               |                |               |
|                     | 50                | 80.3          | 31,030*       | 82.3           | 28,110*       | 81.8           | 25,510*       |
|                     | 60                | 77.9          | 30,340*       | 79.9           | 27,670*       | 79.3           | 25,110*       |
|                     | 70                | 75.5          | 29,520*       | 77.5           | 27,090*       | 76.8           | 24,820*       |
|                     | 80                | 73.0          | 28,810*       | 75.0           | 26,590*       | 74.2           | 23,310*       |
|                     | 90                | 70.5          | 28,110*       | 72.5           | 26,100*       | 71.7           | 21,990*       |
|                     | 100               | 68.0          | 27,440*       | 69.9           | 25,630*       | 69.0           | 20,880*       |
|                     | 110               | 65.4          | 26,950*       | 67.3           | 25,230*       | 66.3           | 19,850*       |
|                     | 120               | 62.7          | 26,310*       | 64.6           | 24,770*       | 63.5           | 18,990*       |
| 130                 | 60.0              | 23,860        | 61.9          | 23,360*        | 60.7          | 18,200*        |               |
| 140                 | 57.2              | 21,000        | 59.1          | 21,000         |               |                |               |

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| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 50' JIB & 130' BOOM | 32                | 82.9          | 32,000*       |                |               |                |               |
|                     | 35                | 81.9          | 32,000*       |                |               |                |               |
|                     | 40                | 80.3          | 32,000*       | 83.0           | 29,160*       |                |               |
|                     | 50                | 77.1          | 30,890*       | 79.7           | 28,350*       | 82.2           | 26,320*       |
|                     | 60                | 73.8          | 29,760*       | 76.5           | 27,580*       | 78.9           | 25,790*       |
|                     | 70                | 70.5          | 28,730*       | 73.1           | 26,760*       | 75.5           | 24,200*       |
|                     | 80                | 67.1          | 27,820*       | 69.7           | 26,140*       | 72.0           | 22,370*       |
|                     | 90                | 63.6          | 27,000*       | 66.2           | 25,540*       | 68.5           | 20,820*       |
|                     | 100               | 60.0          | 26,250*       | 62.5           | 23,840*       | 64.8           | 19,530*       |
|                     | 110               | 56.3          | 25,640*       | 58.7           | 22,210*       | 60.9           | 18,410*       |
|                     | 120               | 52.3          | 23,810*       | 54.8           | 20,890*       | 56.9           | 17,500*       |
|                     | 130               | 48.1          | 22,110*       | 50.5           | 19,660*       | 52.5           | 16,640*       |
| 50' JIB & 140' BOOM | 33                | 82.9          | 32,000*       |                |               |                |               |
|                     | 35                | 82.3          | 32,000*       |                |               |                |               |
|                     | 40                | 80.8          | 32,000*       |                |               |                |               |
|                     | 50                | 77.8          | 30,950*       | 80.3           | 28,430*       | 82.7           | 26,300*       |
|                     | 60                | 74.7          | 29,930*       | 77.2           | 27,670*       | 79.5           | 25,800*       |
|                     | 70                | 71.6          | 28,970*       | 74.0           | 26,920*       | 76.3           | 24,630*       |
|                     | 80                | 68.4          | 28,110*       | 70.8           | 26,300*       | 73.1           | 22,870*       |
|                     | 90                | 65.1          | 27,350*       | 67.5           | 25,660*       | 69.7           | 21,320*       |
|                     | 100               | 61.7          | 26,550*       | 64.1           | 24,600*       | 66.3           | 20,040*       |
|                     | 110               | 58.2          | 25,910*       | 60.6           | 23,020*       | 62.7           | 18,870*       |
|                     | 120               | 54.6          | 24,890*       | 56.9           | 21,560*       | 59.0           | 17,890*       |
|                     | 130               | 50.8          | 23,160*       | 53.1           | 20,330*       | 55.1           | 17,080*       |
|                     | 140               | 46.8          | 21,540*       | 49.0           | 19,320*       | 50.9           | 16,390*       |
| 50' JIB & 150' BOOM | 35                | 82.7          | 32,000*       |                |               |                |               |
|                     | 40                | 81.3          | 32,000*       |                |               |                |               |
|                     | 50                | 78.4          | 31,130*       | 80.8           | 28,430*       |                |               |
|                     | 60                | 75.5          | 30,150*       | 77.8           | 27,650*       | 80.1           | 25,810*       |
|                     | 70                | 72.5          | 29,180*       | 74.9           | 27,050*       | 77.1           | 25,100*       |
|                     | 80                | 69.5          | 28,360*       | 71.8           | 26,350*       | 74.0           | 23,260*       |
|                     | 90                | 66.4          | 27,540*       | 68.7           | 25,860*       | 70.8           | 21,730*       |
|                     | 100               | 63.3          | 26,780*       | 65.5           | 25,300*       | 67.6           | 20,410*       |
|                     | 110               | 60.0          | 26,110*       | 62.3           | 23,650*       | 64.3           | 19,340*       |
|                     | 120               | 56.6          | 25,560*       | 58.9           | 22,240*       | 60.8           | 18,350*       |
|                     | 130               | 53.1          | 24,190*       | 55.3           | 20,980*       | 57.2           | 17,500*       |
|                     | 140               | 49.4          | 22,560*       | 51.6           | 19,870*       | 53.4           | 16,740*       |
|                     | 150               | 45.5          | 20,540        | 47.6           | 18,950*       | 49.3           | 16,150*       |
| 50' JIB & 160' BOOM | 36                | 82.8          | 32,000*       |                |               |                |               |
|                     | 40                | 81.7          | 32,000*       |                |               |                |               |
|                     | 50                | 79.0          | 31,200*       | 81.2           | 28,430*       |                |               |
|                     | 60                | 76.2          | 30,240*       | 78.4           | 27,750*       | 80.6           | 25,800*       |
|                     | 70                | 73.4          | 29,260*       | 75.6           | 27,070*       | 77.7           | 25,370*       |
|                     | 80                | 70.5          | 28,490*       | 72.7           | 26,500*       | 74.8           | 23,650*       |
|                     | 90                | 67.6          | 27,720*       | 69.8           | 25,930*       | 71.8           | 22,150*       |
|                     | 100               | 64.6          | 27,070*       | 66.8           | 25,390*       | 68.8           | 20,840*       |
|                     | 110               | 61.6          | 26,370*       | 63.7           | 24,320*       | 65.7           | 19,740*       |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 40' JIB & 250' BOOM | 45                | 82.8          | 32,000*       |                |               |                |               |
|                     | 50                | 81.8          | 32,000*       |                |               |                |               |
|                     | 60                | 79.9          | 32,000*       | 81.2           | 32,000*       | 82.4           | 26,790*       |
|                     | 70                | 77.9          | 32,000*       | 79.2           | 30,450*       | 80.4           | 25,360*       |
|                     | 80                | 75.8          | 31,110*       | 77.1           | 28,720*       | 78.3           | 24,050*       |
|                     | 90                | 73.8          | 29,240*       | 75.1           | 27,010*       | 76.3           | 22,650*       |
|                     | 100               | 71.7          | 27,380*       | 73.0           | 25,460*       | 74.2           | 21,360*       |
|                     | 110               | 69.7          | 25,790*       | 70.9           | 24,060*       | 72.1           | 20,100*       |
|                     | 120               | 67.5          | 24,000        | 68.8           | 22,600*       | 69.9           | 18,940*       |
|                     | 130               | 65.4          | 20,600        | 66.6           | 20,600        | 67.8           | 17,770*       |
|                     | 140               | 63.2          | 17,720        | 64.4           | 17,730        | 65.5           | 16,640*       |
|                     | 150               | 61.0          | 15,260        | 62.2           | 15,270        | 63.3           | 15,280        |
|                     | 160               | 58.7          | 13,150        | 59.9           | 13,150        | 61.0           | 13,160        |
|                     | 170               | 56.3          | 11,290        | 57.6           | 11,300        | 58.6           | 11,300        |
|                     | 180               | 53.9          | 9,660         | 55.1           | 9,660         | 56.1           | 9,670         |
|                     | 190               | 51.5          | 8,220         | 52.6           | 8,220         | 53.6           | 8,230         |
|                     | 200               | 48.9          | 6,930         | 50.0           | 6,930         | 51.0           | 6,940         |
|                     | 210               | 46.2          | 5,770         | 47.3           | 5,780         | 48.2           | 5,790         |
|                     | 220               | 43.4          | 4,740         | 44.5           | 4,750         | 45.4           | 4,760         |
|                     | 230               | 40.4          | 3,800         | 41.5           | 3,810         | 42.3           | 3,820         |
| 240                 | 37.2              | 2,950         | 38.3          | 2,960          | 39.1          | 2,970          |               |
| 250                 | 33.8              | 2,180         | 34.8          | 2,190          | 35.5          | 2,200          |               |
| 40' JIB & 260' BOOM | 46                | 82.9          | 32,000*       |                |               |                |               |
|                     | 50                | 82.1          | 32,000*       |                |               |                |               |
|                     | 60                | 80.2          | 31,440*       | 81.5           | 28,700*       | 82.7           | 23,800*       |
|                     | 70                | 78.3          | 29,260*       | 79.5           | 26,870*       | 80.7           | 22,390*       |
|                     | 80                | 76.3          | 27,170*       | 77.6           | 25,100*       | 78.7           | 21,000*       |
|                     | 90                | 74.3          | 25,420*       | 75.6           | 23,550*       | 76.8           | 19,640*       |
|                     | 100               | 72.4          | 23,710*       | 73.6           | 22,030*       | 74.7           | 18,370*       |
|                     | 110               | 70.4          | 22,070*       | 71.6           | 20,630*       | 72.7           | 17,140*       |
|                     | 120               | 68.3          | 20,620*       | 69.5           | 19,260*       | 70.7           | 15,940*       |
|                     | 130               | 66.3          | 19,280*       | 67.5           | 18,000*       | 68.6           | 14,830*       |
|                     | 140               | 64.2          | 17,230        | 65.4           | 16,790*       | 66.4           | 13,720*       |
|                     | 150               | 62.0          | 14,770        | 63.2           | 14,780        | 64.3           | 12,740*       |
|                     | 160               | 59.8          | 12,640        | 61.0           | 12,650        | 62.1           | 11,760*       |
|                     | 170               | 57.6          | 10,800        | 58.8           | 10,800        | 59.8           | 10,810*       |
|                     | 180               | 55.3          | 9,160         | 56.5           | 9,170         | 57.5           | 9,180         |
|                     | 190               | 53.0          | 7,720         | 54.1           | 7,720         | 55.1           | 7,730         |
|                     | 200               | 50.5          | 6,430         | 51.7           | 6,430         | 52.6           | 6,440         |
|                     | 210               | 48.0          | 5,270         | 49.1           | 5,280         | 50.0           | 5,290         |
|                     | 220               | 45.4          | 4,230         | 46.5           | 4,230         | 47.3           | 4,240         |
|                     | 230               | 42.6          | 3,290         | 43.7           | 3,290         | 44.5           | 3,300         |
| 240                 | 39.7              | 2,440         | 40.7          | 2,450          | 41.5          | 2,460          |               |
| 250                 | 36.6              | 1,660         | 37.6          | 1,660          | 38.3          | 1,680          |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 40' JIB & 220' BOOM | 180               | 49.0          | 11,170        | 50.3           | 11,180        | 51.3           | 11,190        |
|                     | 190               | 46.0          | 9,740         | 47.2           | 9,740         | 48.3           | 9,750         |
|                     | 200               | 42.8          | 8,450         | 44.0           | 8,460         | 45.0           | 8,470         |
|                     | 210               | 39.4          | 7,310         | 40.6           | 7,310         | 41.5           | 7,330         |
|                     | 220               | 35.8          | 6,290         | 37.0           | 6,290         | 37.8           | 6,310         |
| 40' JIB & 230' BOOM | 42                | 82.9          | 32,000*       |                |               |                |               |
|                     | 50                | 81.2          | 32,000*       | 82.7           | 32,000*       |                |               |
|                     | 60                | 79.1          | 32,000*       | 80.5           | 32,000*       | 81.8           | 32,000*       |
|                     | 70                | 76.9          | 32,000*       | 78.3           | 32,000*       | 79.6           | 32,000*       |
|                     | 80                | 74.8          | 32,000*       | 76.2           | 32,000*       | 77.4           | 31,180*       |
|                     | 90                | 72.6          | 32,000*       | 73.9           | 32,000*       | 75.2           | 29,470*       |
|                     | 100               | 70.3          | 32,000*       | 71.7           | 32,000*       | 73.0           | 27,930*       |
|                     | 110               | 68.1          | 29,070        | 69.4           | 29,080        | 70.7           | 26,570*       |
|                     | 120               | 65.8          | 24,980        | 67.1           | 24,980        | 68.3           | 24,990        |
|                     | 130               | 63.4          | 21,580        | 64.8           | 21,580        | 66.0           | 21,590        |
|                     | 140               | 61.0          | 18,710        | 62.4           | 18,710        | 63.5           | 18,720        |
|                     | 150               | 58.6          | 16,260        | 59.9           | 16,270        | 61.0           | 16,270        |
|                     | 160               | 56.1          | 14,130        | 57.4           | 14,140        | 58.5           | 14,150        |
|                     | 170               | 53.5          | 12,290        | 54.8           | 12,300        | 55.8           | 12,310        |
|                     | 180               | 50.8          | 10,660        | 52.1           | 10,670        | 53.1           | 10,680        |
| 190                 | 48.0              | 9,220         | 49.2          | 9,230          | 50.2          | 9,240          |               |
| 200                 | 45.0              | 7,940         | 46.3          | 7,950          | 47.2          | 7,960          |               |
| 210                 | 41.9              | 6,800         | 43.1          | 6,810          | 44.1          | 6,820          |               |
| 220                 | 38.6              | 5,760         | 39.8          | 5,770          | 40.7          | 5,780          |               |
| 230                 | 35.1              | 4,840         | 36.2          | 4,840          | 37.0          | 4,860          |               |
| 40' JIB & 240' BOOM | 43                | 83.0          | 32,000*       |                |               |                |               |
|                     | 50                | 81.6          | 32,000*       | 82.9           | 32,000*       |                |               |
|                     | 60                | 79.5          | 32,000*       | 80.9           | 32,000*       | 82.1           | 30,010*       |
|                     | 70                | 77.4          | 32,000*       | 78.8           | 32,000*       | 80.0           | 28,720*       |
|                     | 80                | 75.3          | 32,000*       | 76.7           | 32,000*       | 77.9           | 27,390*       |
|                     | 90                | 73.2          | 32,000*       | 74.5           | 30,960*       | 75.8           | 26,070*       |
|                     | 100               | 71.1          | 31,630*       | 72.4           | 29,310*       | 73.6           | 24,750*       |
|                     | 110               | 68.9          | 28,590        | 70.2           | 27,840*       | 71.4           | 23,450*       |
|                     | 120               | 66.7          | 24,500        | 68.0           | 24,500        | 69.2           | 22,220*       |
|                     | 130               | 64.5          | 21,100        | 65.7           | 21,100        | 66.9           | 21,050*       |
|                     | 140               | 62.2          | 18,220        | 63.5           | 18,220        | 64.6           | 18,230        |
|                     | 150               | 59.8          | 15,770        | 61.1           | 15,770        | 62.2           | 15,780        |
|                     | 160               | 57.4          | 13,640        | 58.7           | 13,640        | 59.8           | 13,650        |
|                     | 170               | 55.0          | 11,800        | 56.2           | 11,800        | 57.3           | 11,810        |
|                     | 180               | 52.4          | 10,160        | 53.7           | 10,170        | 54.7           | 10,180        |
| 190                 | 49.8              | 8,720         | 51.0          | 8,730          | 52.0          | 8,740          |               |
| 200                 | 47.1              | 7,440         | 48.3          | 7,440          | 49.2          | 7,450          |               |
| 210                 | 44.2              | 6,280         | 45.4          | 6,290          | 46.3          | 6,300          |               |
| 220                 | 41.2              | 5,260         | 42.3          | 5,260          | 43.2          | 5,270          |               |
| 230                 | 37.9              | 4,320         | 39.0          | 4,330          | 39.8          | 4,340          |               |
| 240                 | 34.4              | 3,470         | 35.5          | 3,480          | 36.2          | 3,500          |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 40' JIB & 200' BOOM | 80                | 72.8          | 32,000*       | 74.4           | 32,000*       | 75.8           | 29,960*       |
|                     | 90                | 70.3          | 32,000*       | 71.9           | 32,000*       | 73.3           | 28,170*       |
|                     | 100               | 67.8          | 32,000*       | 69.3           | 32,000*       | 70.7           | 26,680*       |
|                     | 110               | 65.2          | 30,500        | 66.7           | 30,500        | 68.1           | 25,380*       |
|                     | 120               | 62.5          | 26,410        | 64.0           | 26,420        | 65.4           | 24,140*       |
|                     | 130               | 59.8          | 23,030        | 61.3           | 23,030        | 62.6           | 23,040        |
|                     | 140               | 57.0          | 20,160        | 58.5           | 20,160        | 59.7           | 20,170        |
|                     | 150               | 54.1          | 17,710        | 55.6           | 17,720        | 56.8           | 17,730        |
|                     | 160               | 51.1          | 15,600        | 52.5           | 15,610        | 53.7           | 15,620        |
|                     | 170               | 48.0          | 13,770        | 49.4           | 13,770        | 50.5           | 13,780        |
|                     | 180               | 44.6          | 12,140        | 46.0           | 12,150        | 47.1           | 12,160        |
| 190                 | 41.1              | 10,710        | 42.5          | 10,720         | 43.5          | 10,730         |               |
| 200                 | 37.3              | 9,440         | 38.6          | 9,450          | 39.5          | 9,460          |               |
| 40' JIB & 210' BOOM | 40                | 82.8          | 32,000*       |                |               |                |               |
|                     | 50                | 80.5          | 32,000*       | 82.1           | 32,000*       |                |               |
|                     | 60                | 78.2          | 32,000*       | 79.7           | 32,000*       | 81.2           | 32,000*       |
|                     | 70                | 75.9          | 32,000*       | 77.4           | 32,000*       | 78.8           | 32,000*       |
|                     | 80                | 73.5          | 32,000*       | 75.0           | 32,000*       | 76.4           | 30,400*       |
|                     | 90                | 71.1          | 32,000*       | 72.6           | 32,000*       | 74.0           | 28,670*       |
|                     | 100               | 68.7          | 32,000*       | 70.2           | 32,000*       | 71.5           | 27,160*       |
|                     | 110               | 66.2          | 30,010        | 67.7           | 30,020        | 69.0           | 25,760*       |
|                     | 120               | 63.7          | 25,920        | 65.2           | 25,930        | 66.4           | 24,530*       |
|                     | 130               | 61.1          | 22,530        | 62.6           | 22,540        | 63.8           | 22,550        |
|                     | 140               | 58.5          | 19,660        | 59.9           | 19,670        | 61.1           | 19,680        |
|                     | 150               | 55.8          | 17,220        | 57.2           | 17,220        | 58.4           | 17,230        |
|                     | 160               | 52.9          | 15,110        | 54.3           | 15,110        | 55.5           | 15,120        |
| 170                 | 50.0              | 13,260        | 51.4          | 13,260         | 52.5          | 13,270         |               |
| 180                 | 46.9              | 11,640        | 48.3          | 11,650         | 49.3          | 11,660         |               |
| 190                 | 43.7              | 10,210        | 45.0          | 10,210         | 46.0          | 10,220         |               |
| 200                 | 40.2              | 8,930         | 41.5          | 8,940          | 42.5          | 8,950          |               |
| 210                 | 36.5              | 7,790         | 37.8          | 7,800          | 38.6          | 7,810          |               |
| 40' JIB & 220' BOOM | 41                | 82.9          | 32,000*       |                |               |                |               |
|                     | 50                | 80.9          | 32,000*       | 82.4           | 32,000*       |                |               |
|                     | 60                | 78.7          | 32,000*       | 80.1           | 32,000*       | 81.5           | 32,000*       |
|                     | 70                | 76.4          | 32,000*       | 77.9           | 32,000*       | 79.2           | 32,000*       |
|                     | 80                | 74.2          | 32,000*       | 75.6           | 32,000*       | 76.9           | 30,800*       |
|                     | 90                | 71.9          | 32,000*       | 73.3           | 32,000*       | 74.6           | 29,080*       |
|                     | 100               | 69.6          | 32,000*       | 71.0           | 32,000*       | 72.3           | 27,490*       |
|                     | 110               | 67.2          | 29,560        | 68.6           | 29,570        | 69.9           | 26,220*       |
|                     | 120               | 64.8          | 25,470        | 66.2           | 25,480        | 67.4           | 24,950*       |
|                     | 130               | 62.3          | 22,070        | 63.7           | 22,070        | 64.9           | 22,080        |
|                     | 140               | 59.8          | 19,210        | 61.2           | 19,220        | 62.4           | 19,220        |
|                     | 150               | 57.2          | 16,750        | 58.6           | 16,760        | 59.8           | 16,770        |
|                     | 160               | 54.6          | 14,640        | 55.9           | 14,650        | 57.1           | 14,650        |
| 170                 | 51.8              | 12,800        | 53.1          | 12,800         | 54.2          | 12,810         |               |



| BOOM & JIB LENGTH   | JIB RADIUS (FEET)   | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |  |
|---------------------|---------------------|---------------|---------------|----------------|---------------|----------------|---------------|--|
|                     |                     | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |  |
| 40' JIB & 170' BOOM | 80                  | 70.3          | 32,000*       | 72.1           | 32,000*       | 73.7           | 28,530*       |  |
|                     | 90                  | 67.4          | 32,000*       | 69.1           | 32,000*       | 70.7           | 26,770*       |  |
|                     | 100                 | 64.4          | 32,000*       | 66.1           | 31,370*       | 67.7           | 25,220*       |  |
|                     | 110                 | 61.3          | 31,970        | 63.1           | 29,460*       | 64.6           | 23,960*       |  |
|                     | 120                 | 58.2          | 27,900        | 59.9           | 27,690*       | 61.4           | 22,810*       |  |
|                     | 130                 | 54.9          | 24,520        | 56.6           | 24,520        | 58.0           | 21,810*       |  |
|                     | 140                 | 51.5          | 21,670        | 53.2           | 21,670        | 54.5           | 20,900*       |  |
|                     | 150                 | 47.9          | 19,230        | 49.5           | 19,230        | 50.9           | 19,240        |  |
| 40' JIB & 180' BOOM | 160                 | 44.1          | 17,130        | 45.7           | 17,130        | 46.9           | 17,140        |  |
|                     | 170                 | 40.0          | 15,290        | 41.5           | 15,290        | 42.7           | 15,310        |  |
|                     | 36                  | 82.9          | 32,000*       |                |               |                |               |  |
|                     | 40                  | 81.9          | 32,000*       |                |               |                |               |  |
|                     | 50                  | 79.2          | 32,000*       | 81.0           | 32,000*       | 82.6           | 32,000*       |  |
|                     | 60                  | 76.6          | 32,000*       | 78.3           | 32,000*       | 79.9           | 32,000*       |  |
|                     | 70                  | 73.9          | 32,000*       | 75.6           | 32,000*       | 77.2           | 31,140*       |  |
|                     | 80                  | 71.2          | 32,000*       | 72.9           | 32,000*       | 74.5           | 29,010*       |  |
|                     | 90                  | 68.4          | 32,000*       | 70.1           | 32,000*       | 71.6           | 27,330*       |  |
|                     | 100                 | 65.6          | 32,000*       | 67.3           | 32,000*       | 68.8           | 25,710*       |  |
| 40' JIB & 190' BOOM | 110                 | 62.7          | 31,480        | 64.4           | 30,250*       | 65.9           | 24,460*       |  |
|                     | 120                 | 59.8          | 27,400        | 61.4           | 27,400        | 62.8           | 23,240*       |  |
|                     | 130                 | 56.7          | 24,010        | 58.3           | 24,020        | 59.7           | 22,260*       |  |
|                     | 140                 | 53.6          | 21,160        | 55.1           | 21,160        | 56.5           | 21,170        |  |
|                     | 150                 | 50.2          | 18,720        | 51.8           | 18,720        | 53.1           | 18,730        |  |
|                     | 160                 | 46.7          | 16,610        | 48.3           | 16,620        | 49.5           | 16,630        |  |
|                     | 170                 | 43.0          | 14,780        | 44.5           | 14,790        | 45.7           | 14,800        |  |
|                     | 180                 | 39.0          | 13,170        | 40.5           | 13,170        | 41.6           | 13,180        |  |
|                     | 40' JIB & 200' BOOM | 37            | 83.0          | 32,000*        |               |                |               |  |
|                     |                     | 40            | 82.2          | 32,000*        |               |                |               |  |
| 50                  |                     | 79.7          | 32,000*       | 81.4           | 32,000*       | 82.9           | 32,000*       |  |
| 60                  |                     | 77.2          | 32,000*       | 78.8           | 32,000*       | 80.4           | 32,000*       |  |
| 70                  |                     | 74.6          | 32,000*       | 76.3           | 32,000*       | 77.8           | 31,580*       |  |
| 80                  |                     | 72.1          | 32,000*       | 73.7           | 32,000*       | 75.2           | 29,590*       |  |
| 90                  |                     | 69.4          | 32,000*       | 71.0           | 32,000*       | 72.5           | 27,750*       |  |
| 100                 |                     | 66.8          | 32,000*       | 68.3           | 32,000*       | 69.8           | 26,250*       |  |
| 110                 |                     | 64.0          | 31,000        | 65.6           | 30,980*       | 67.0           | 24,850*       |  |
| 120                 |                     | 61.2          | 26,920        | 62.8           | 26,920        | 64.2           | 23,720*       |  |
| 130                 |                     | 58.3          | 23,530        | 59.9           | 23,530        | 61.2           | 22,660*       |  |
| 40' JIB & 200' BOOM | 140                 | 55.4          | 20,660        | 56.9           | 20,670        | 58.2           | 20,680        |  |
|                     | 150                 | 52.3          | 18,220        | 53.8           | 18,230        | 55.0           | 18,240        |  |
|                     | 160                 | 49.1          | 16,110        | 50.5           | 16,120        | 51.7           | 16,130        |  |
|                     | 170                 | 45.7          | 14,280        | 47.1           | 14,280        | 48.3           | 14,290        |  |
|                     | 180                 | 42.0          | 12,660        | 43.5           | 12,660        | 44.5           | 12,670        |  |
| 40' JIB & 200' BOOM | 190                 | 38.1          | 11,230        | 39.5           | 11,240        | 40.5           | 11,250        |  |
|                     | 39                  | 82.8          | 32,000*       |                |               |                |               |  |
|                     | 40                  | 82.5          | 32,000*       |                |               |                |               |  |
|                     | 50                  | 80.1          | 32,000*       | 81.7           | 32,000*       |                |               |  |
| 200' BOOM           | 60                  | 77.7          | 32,000*       | 79.3           | 32,000*       | 80.8           | 32,000*       |  |
|                     | 70                  | 75.3          | 32,000*       | 76.9           | 32,000*       | 78.3           | 32,000*       |  |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 40' JIB & 140' BOOM | 31                | 82.9          | 32,000*       |                |               |                |               |
|                     | 35                | 81.7          | 32,000*       |                |               |                |               |
|                     | 40                | 80.1          | 32,000*       | 82.2           | 32,000*       |                |               |
|                     | 50                | 76.8          | 32,000*       | 78.9           | 32,000*       | 80.9           | 32,000*       |
|                     | 60                | 73.6          | 32,000*       | 75.7           | 32,000*       | 77.6           | 31,640*       |
|                     | 70                | 70.2          | 32,000*       | 72.3           | 32,000*       | 74.2           | 29,030*       |
|                     | 80                | 66.8          | 32,000*       | 68.9           | 32,000*       | 70.7           | 26,940*       |
|                     | 90                | 63.3          | 32,000*       | 65.4           | 30,930*       | 67.2           | 25,170*       |
|                     | 100               | 59.7          | 32,000*       | 61.7           | 28,730*       | 63.5           | 23,650*       |
|                     | 110               | 56.0          | 31,440*       | 57.9           | 26,890*       | 59.7           | 22,310*       |
|                     | 120               | 52.0          | 28,960*       | 54.0           | 25,290*       | 55.6           | 21,220*       |
| 130                 | 47.9              | 25,980        | 49.8          | 23,960*        | 51.3          | 20,290*        |               |
| 140                 | 43.4              | 23,140        | 45.2          | 22,730*        | 46.7          | 19,560*        |               |
| 40' JIB & 150' BOOM | 32                | 83.0          | 32,000*       |                |               |                |               |
|                     | 35                | 82.1          | 32,000*       |                |               |                |               |
|                     | 40                | 80.6          | 32,000*       | 82.6           | 32,000*       |                |               |
|                     | 50                | 77.5          | 32,000*       | 79.5           | 32,000*       | 81.4           | 32,000*       |
|                     | 60                | 74.5          | 32,000*       | 76.4           | 32,000*       | 78.3           | 32,000*       |
|                     | 70                | 71.3          | 32,000*       | 73.3           | 32,000*       | 75.1           | 29,610*       |
|                     | 80                | 68.1          | 32,000*       | 70.1           | 32,000*       | 71.8           | 27,520*       |
|                     | 90                | 64.8          | 32,000*       | 66.8           | 31,920*       | 68.5           | 25,740*       |
|                     | 100               | 61.5          | 32,000*       | 63.4           | 29,680*       | 65.1           | 24,240*       |
|                     | 110               | 58.0          | 32,000*       | 59.9           | 27,800*       | 61.5           | 22,920*       |
|                     | 120               | 54.4          | 28,850        | 56.2           | 26,080*       | 57.8           | 21,730*       |
| 130                 | 50.6              | 25,470        | 52.4          | 24,740*        | 53.9          | 20,810*        |               |
| 140                 | 46.5              | 22,630        | 48.3          | 22,630         | 49.7          | 19,970*        |               |
| 150                 | 42.2              | 20,200        | 43.9          | 20,200         | 45.2          | 19,280*        |               |
| 40' JIB & 160' BOOM | 34                | 82.8          | 32,000*       |                |               |                |               |
|                     | 35                | 82.5          | 32,000*       |                |               |                |               |
|                     | 40                | 81.0          | 32,000*       | 83.0           | 32,000*       |                |               |
|                     | 50                | 78.2          | 32,000*       | 80.1           | 32,000*       | 81.8           | 32,000*       |
|                     | 60                | 75.2          | 32,000*       | 77.1           | 32,000*       | 78.9           | 32,000*       |
|                     | 70                | 72.3          | 32,000*       | 74.1           | 32,000*       | 75.9           | 30,170*       |
|                     | 80                | 69.3          | 32,000*       | 71.1           | 32,000*       | 72.8           | 28,050*       |
|                     | 90                | 66.2          | 32,000*       | 68.0           | 32,000*       | 69.7           | 26,260*       |
|                     | 100               | 63.0          | 32,000*       | 64.8           | 30,610*       | 66.4           | 24,720*       |
|                     | 110               | 59.8          | 32,000*       | 61.6           | 28,630*       | 63.1           | 23,400*       |
|                     | 120               | 56.4          | 28,360        | 58.2           | 26,880*       | 59.7           | 22,290*       |
| 130                 | 52.9              | 24,970        | 54.6          | 24,980         | 56.1          | 21,260*        |               |
| 140                 | 49.2              | 22,130        | 50.9          | 22,130         | 52.3          | 20,480*        |               |
| 150                 | 45.3              | 19,690        | 46.9          | 19,700         | 48.3          | 19,710         |               |
| 160                 | 41.0              | 17,590        | 42.7          | 17,600         | 43.9          | 17,610         |               |
| 40' JIB & 170' BOOM | 35                | 82.8          | 32,000*       |                |               |                |               |
|                     | 40                | 81.5          | 32,000*       |                |               |                |               |
|                     | 50                | 78.7          | 32,000*       | 80.5           | 32,000*       | 82.2           | 32,000*       |
|                     | 60                | 76.0          | 32,000*       | 77.7           | 32,000*       | 79.4           | 32,000*       |
| 70                  | 73.1              | 32,000*       | 74.9          | 32,000*        | 76.6          | 30,620*        |               |

| BOOM & JIB LENGTH   | JIB RADIUS (FEET) | 5° JIB OFFSET |               | 15° JIB OFFSET |               | 25° JIB OFFSET |               |
|---------------------|-------------------|---------------|---------------|----------------|---------------|----------------|---------------|
|                     |                   | BOOM ANGLE    | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) | BOOM ANGLE     | RATINGS (LBS) |
| 40' JIB & 100' BOOM | 26                | 83.0          | 32,000*       |                |               |                |               |
|                     | 30                | 81.3          | 32,000*       |                |               |                |               |
|                     | 35                | 79.3          | 32,000*       | 82.0           | 32,000*       |                |               |
|                     | 40                | 77.2          | 32,000*       | 79.9           | 32,000*       | 82.5           | 32,000*       |
|                     | 50                | 73.0          | 32,000*       | 75.7           | 32,000*       | 78.2           | 32,000*       |
|                     | 60                | 68.7          | 32,000*       | 71.4           | 32,000*       | 73.8           | 28,910*       |
|                     | 70                | 64.3          | 32,000*       | 66.9           | 32,000*       | 69.3           | 26,260*       |
|                     | 80                | 59.7          | 32,000*       | 62.2           | 29,210*       | 64.5           | 24,210*       |
| 40' JIB & 110' BOOM | 90                | 54.8          | 30,740*       | 57.3           | 26,800*       | 59.5           | 22,410*       |
|                     | 100               | 49.6          | 27,820*       | 52.1           | 24,760*       | 54.2           | 21,020*       |
|                     | 28                | 82.7          | 32,000*       |                |               |                |               |
|                     | 30                | 81.9          | 32,000*       |                |               |                |               |
|                     | 35                | 80.0          | 32,000*       | 82.5           | 32,000*       |                |               |
|                     | 40                | 78.1          | 32,000*       | 80.6           | 32,000*       | 83.0           | 32,000*       |
|                     | 50                | 74.2          | 32,000*       | 76.7           | 32,000*       | 79.0           | 32,000*       |
|                     | 60                | 70.2          | 32,000*       | 72.7           | 32,000*       | 75.0           | 29,700*       |
| 40' JIB & 120' BOOM | 70                | 66.1          | 32,000*       | 68.5           | 32,000*       | 70.8           | 27,080*       |
|                     | 80                | 61.9          | 32,000*       | 64.3           | 30,410*       | 66.5           | 24,910*       |
|                     | 90                | 57.5          | 32,000*       | 59.8           | 27,840*       | 61.9           | 23,190*       |
|                     | 100               | 52.8          | 29,510*       | 55.1           | 25,770*       | 57.1           | 21,710*       |
|                     | 110               | 47.8          | 27,020*       | 50.1           | 24,080*       | 52.0           | 20,500*       |
|                     | 29                | 82.8          | 32,000*       |                |               |                |               |
|                     | 30                | 82.4          | 32,000*       |                |               |                |               |
|                     | 35                | 80.6          | 32,000*       | 83.0           | 32,000*       |                |               |
| 40' JIB & 130' BOOM | 40                | 78.8          | 32,000*       | 81.2           | 32,000*       |                |               |
|                     | 50                | 75.2          | 32,000*       | 77.5           | 32,000*       | 79.7           | 32,000*       |
|                     | 60                | 71.5          | 32,000*       | 73.8           | 32,000*       | 76.0           | 30,350*       |
|                     | 70                | 67.7          | 32,000*       | 70.0           | 32,000*       | 72.1           | 27,810*       |
|                     | 80                | 63.8          | 32,000*       | 66.0           | 31,510*       | 68.1           | 25,680*       |
|                     | 90                | 59.7          | 32,000*       | 62.0           | 28,940*       | 63.9           | 23,850*       |
|                     | 100               | 55.5          | 31,110*       | 57.7           | 26,830*       | 59.6           | 22,380*       |
|                     | 110               | 51.0          | 28,460*       | 53.2           | 25,090*       | 55.0           | 21,180*       |
| 40' JIB & 130' BOOM | 120               | 46.2          | 26,300*       | 48.3           | 23,520*       | 50.0           | 20,120*       |
|                     | 30                | 82.8          | 32,000*       |                |               |                |               |
|                     | 35                | 81.2          | 32,000*       |                |               |                |               |
|                     | 40                | 79.5          | 32,000*       | 81.7           | 32,000*       |                |               |
|                     | 50                | 76.1          | 32,000*       | 78.3           | 32,000*       | 80.4           | 32,000*       |
|                     | 60                | 72.6          | 32,000*       | 74.8           | 32,000*       | 76.8           | 30,940*       |
|                     | 70                | 69.0          | 32,000*       | 71.2           | 32,000*       | 73.2           | 28,460*       |
|                     | 80                | 65.4          | 32,000*       | 67.6           | 32,000*       | 69.5           | 26,340*       |
| 40' JIB & 130' BOOM | 90                | 61.7          | 32,000*       | 63.8           | 30,020*       | 65.7           | 24,540*       |
|                     | 100               | 57.8          | 32,000*       | 59.9           | 27,880*       | 61.7           | 23,000*       |
|                     | 110               | 53.7          | 29,990*       | 55.7           | 26,000*       | 57.5           | 21,770*       |
|                     | 120               | 49.4          | 27,630*       | 51.4           | 24,480*       | 53.1           | 20,690*       |
|                     | 130               | 44.7          | 25,690*       | 46.7           | 23,140*       | 48.3           | 19,810*       |

| BOOM LENGTH (FEET) | RADIUS IN FEET  | BOOM ANGLE DEGREES | FREE            |                  | OUTRIGGERS SET     |                    | FEET FROM BOOM POINT TO GROUND |
|--------------------|-----------------|--------------------|-----------------|------------------|--------------------|--------------------|--------------------------------|
|                    |                 |                    | OVER SIDE       | OVER REAR        | OVER SIDE          | OVER REAR          |                                |
| 250'               | 160             | 52.4               |                 |                  | 12,930             | 18,340*            | 206                            |
|                    | 170             | 49.4               |                 |                  | 11,030             | 15,930*            | 198                            |
|                    | 180             | 46.3               |                 |                  | 9,370              | 13,740*            | 189                            |
|                    | 190             | 43.0               |                 |                  | 7,890              | 11,780*            | 179                            |
|                    | 200             | 39.5               |                 |                  | 6,570              | 10,040*            | 167                            |
|                    | 210             | 35.7               |                 |                  | 5,390              | 8,490*             | 154                            |
|                    | 220             | 31.6               |                 |                  | 4,310              | 7,090*             | 139                            |
|                    | 230             | 26.8               |                 |                  | 3,350              | 5,820*             | 121                            |
|                    | 240             | 21.1               |                 |                  | 2,460              | 4,650*             | 98                             |
|                    | 250             | 13.1               |                 |                  | 1,660              | 3,580*             | 64                             |
|                    | <del>260'</del> | <del>39</del>      | <del>83.0</del> |                  |                    | <del>70,960*</del> | <del>70,960*</del>             |
| <del>40</del>      |                 | <del>82.8</del>    |                 |                  | <del>70,790*</del> | <del>70,790*</del> | <del>266</del>                 |
| <del>50</del>      |                 | <del>80.5</del>    |                 |                  | <del>69,340*</del> | <del>69,340*</del> | <del>265</del>                 |
| <del>60</del>      |                 | <del>78.3</del>    |                 |                  | <del>67,590*</del> | <del>67,590*</del> | <del>263</del>                 |
| <del>70</del>      |                 | <del>76.0</del>    |                 |                  | <del>57,980</del>  | <del>65,500*</del> | <del>261</del>                 |
| <del>80</del>      |                 | <del>73.8</del>    |                 |                  | <del>46,900</del>  | <del>58,940*</del> | <del>258</del>                 |
| <del>90</del>      |                 | <del>71.5</del>    |                 |                  | <del>38,640</del>  | <del>49,070*</del> | <del>255</del>                 |
| <del>100</del>     |                 | <del>69.1</del>    |                 |                  | <del>32,810</del>  | <del>41,900*</del> | <del>251</del>                 |
| <del>110</del>     |                 | <del>66.7</del>    |                 |                  | <del>27,710</del>  | <del>35,870*</del> | <del>247</del>                 |
| <del>120</del>     |                 | <del>64.3</del>    |                 |                  | <del>23,550</del>  | <del>30,740*</del> | <del>243</del>                 |
| <del>130</del>     |                 | <del>61.9</del>    |                 |                  | <del>20,080</del>  | <del>26,590*</del> | <del>238</del>                 |
| <del>140</del>     |                 | <del>59.3</del>    |                 |                  | <del>17,170</del>  | <del>23,790</del>  | <del>232</del>                 |
| <del>150</del>     |                 | <del>56.7</del>    |                 |                  | <del>14,660</del>  | <del>20,580*</del> | <del>226</del>                 |
| <del>160</del>     |                 | <del>54.0</del>    |                 |                  | <del>12,500</del>  | <del>17,810*</del> | <del>219</del>                 |
| <del>170</del>     |                 | <del>51.3</del>    |                 |                  | <del>10,600</del>  | <del>15,300*</del> | <del>211</del>                 |
| <del>180</del>     |                 | <del>48.4</del>    |                 |                  | <del>8,930</del>   | <del>13,120*</del> | <del>203</del>                 |
| <del>190</del>     |                 | <del>45.3</del>    |                 |                  | <del>7,460</del>   | <del>11,310*</del> | <del>193</del>                 |
| <del>200</del>     | <del>42.1</del> |                    |                 | <del>6,130</del> | <del>9,510*</del>  | <del>183</del>     |                                |
| <del>210</del>     | <del>38.7</del> |                    |                 | <del>4,950</del> | <del>7,950*</del>  | <del>171</del>     |                                |
| <del>220</del>     | <del>35.0</del> |                    |                 | <del>3,870</del> | <del>6,520*</del>  | <del>157</del>     |                                |
| <del>230</del>     | <del>30.9</del> |                    |                 | <del>2,900</del> | <del>5,260*</del>  | <del>152</del>     |                                |
| <del>240</del>     | <del>26.3</del> |                    |                 | <del>2,010</del> | <del>4,090*</del>  | <del>123</del>     |                                |
| <del>250</del>     | <del>20.7</del> |                    |                 | <del>0</del>     | <del>3,050*</del>  | <del>100</del>     |                                |
| <del>260</del>     | <del>12.8</del> |                    |                 | <del>0</del>     | <del>2,060*</del>  | <del>66</del>      |                                |

(NOTE) WE HAVE ONLY 250' OF BOOM  
 It CAN BE 40' OR 60' ONLY

| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |     |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|-----|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |     |
| 230'               | 70             | 74.2               |           |           | 59,190         | 71,640*   | 230                            |     |
|                    | 80             | 71.6               |           |           | 48,150         | 59,290*   | 227                            |     |
|                    | 90             | 68.9               |           |           | 39,920         | 50,940*   | 223                            |     |
|                    | 100            | 66.2               |           |           | 34,050         | 43,630*   | 219                            |     |
|                    | 110            | 63.5               |           |           | 28,960         | 37,500*   | 214                            |     |
|                    | 120            | 60.7               |           |           | 24,810         | 32,580*   | 209                            |     |
|                    | 130            | 57.8               |           |           | 21,360         | 28,270*   | 203                            |     |
|                    | 140            | 54.8               |           |           | 18,450         | 24,720*   | 196                            |     |
|                    | 150            | 51.7               |           |           | 15,950         | 22,070    | 189                            |     |
|                    | 160            | 48.4               |           |           | 13,800         | 19,490    | 180                            |     |
|                    | 170            | 45.0               |           |           | 11,910         | 17,010*   | 171                            |     |
|                    | 180            | 41.3               |           |           | 10,240         | 14,830*   | 160                            |     |
|                    | 190            | 37.3               |           |           | 8,760          | 12,900*   | 148                            |     |
|                    | 200            | 33.0               |           |           | 7,450          | 11,200*   | 133                            |     |
| 240'               | 210            | 28.0               |           |           | 6,270          | 9,610*    | 116                            |     |
|                    | 220            | 22.0               |           |           | 5,200          | 8,200*    | 94                             |     |
|                    | 230            | 13.7               |           |           | 4,230          | 6,890*    | 62                             |     |
|                    | 37             | 82.9               |           |           | 86,400*        | 86,400*   | 247                            |     |
|                    | 40             | 82.2               |           |           | 86,240*        | 86,240*   | 246                            |     |
|                    | 50             | 79.7               |           |           | 84,610*        | 84,610*   | 245                            |     |
|                    | 60             | 77.3               |           |           | 73,850         | 83,300*   | 243                            |     |
|                    | 70             | 74.9               |           |           | 58,790         | 71,170*   | 240                            |     |
|                    | 80             | 72.4               |           |           | 47,730         | 58,750*   | 237                            |     |
|                    | 90             | 69.9               |           |           | 39,500         | 50,400*   | 234                            |     |
|                    | 100            | 67.3               |           |           | 33,640         | 43,140*   | 230                            |     |
|                    | 110            | 64.7               |           |           | 28,550         | 37,030*   | 225                            |     |
|                    | 120            | 62.0               |           |           | 24,390         | 31,980*   | 220                            |     |
|                    | 130            | 59.3               |           |           | 20,940         | 27,750*   | 215                            |     |
| 250'               | 140            | 56.4               |           |           | 18,030         | 24,120*   | 208                            |     |
|                    | 150            | 53.5               |           |           | 15,530         | 21,650    | 201                            |     |
|                    | 160            | 50.5               |           |           | 13,370         | 18,950    | 193                            |     |
|                    | 170            | 47.3               |           |           | 11,480         | 16,470*   | 185                            |     |
|                    | 180            | 44.0               |           |           | 9,820          | 14,320*   | 175                            |     |
|                    | 190            | 40.4               |           |           | 8,340          | 12,390*   | 164                            |     |
|                    | 200            | 36.5               |           |           | 7,020          | 10,620*   | 151                            |     |
|                    | 210            | 32.2               |           |           | 5,830          | 9,050*    | 136                            |     |
|                    | 220            | 27.4               |           |           | 4,760          | 7,650*    | 118                            |     |
|                    | 230            | 21.5               |           |           | 3,790          | 6,380*    | 96                             |     |
|                    | 240            | 13.4               |           |           | 2,920          | 5,190*    | 63                             |     |
|                    | 250'           | 38                 | 82.9      |           |                | 79,130*   | 79,130*                        | 257 |
|                    |                | 40                 | 82.5      |           |                | 78,760*   | 78,760*                        | 256 |
|                    |                | 50                 | 80.2      |           |                | 77,190*   | 77,190*                        | 255 |
| 60                 |                | 77.8               |           |           | 73,450         | 75,830*   | 253                            |     |
| 70                 |                | 75.5               |           |           | 58,380         | 71,940*   | 251                            |     |
| 80                 |                | 73.1               |           |           | 47,310         | 59,290*   | 248                            |     |
| 90                 |                | 70.7               |           |           | 39,070         | 49,590*   | 244                            |     |
| 100                |                | 68.2               |           |           | 33,230         | 42,630*   | 241                            |     |
| 110                |                | 65.8               |           |           | 28,130         | 36,360*   | 236                            |     |
| 120                |                | 63.2               |           |           | 23,970         | 31,360*   | 232                            |     |
| 130                |                | 60.6               |           |           | 20,510         | 27,170*   | 226                            |     |
| 140                | 58.0           |                    |           | 17,590    | 24,200         | 220       |                                |     |
| 150                | 55.2           |                    |           | 15,090    | 21,180*        | 214       |                                |     |

| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |
| 200'               | 160            | 40.2               |           |           | 15,020         | 20,700    | 137                            |
|                    | 170            | 35.5               |           |           | 13,140         | 18,450    | 124                            |
|                    | 180            | 30.1               |           |           | 11,470         | 16,430*   | 108                            |
|                    | 190            | 23.7               |           |           | 10,000         | 14,460*   | 88                             |
|                    | 200            | 14.7               |           |           | 8,690          | 12,650*   | 59                             |
| 210'               | 33             | 83.0               |           |           | 115,320*       | 115,320*  | 217                            |
|                    | 35             | 82.4               |           |           | 115,320*       | 115,320*  | 217                            |
|                    | 40             | 81.0               |           |           | 115,320*       | 115,320*  | 216                            |
|                    | 50             | 78.3               |           |           | 98,640         | 111,560*  | 214                            |
|                    | 60             | 75.5               |           |           | 75,030         | 87,800*   | 212                            |
|                    | 70             | 72.6               |           |           | 59,940         | 72,600*   | 209                            |
|                    | 80             | 69.8               |           |           | 48,940         | 60,370*   | 206                            |
|                    | 90             | 66.8               |           |           | 40,730         | 51,810    | 202                            |
|                    | 100            | 63.8               |           |           | 34,820         | 44,570    | 197                            |
|                    | 110            | 60.7               |           |           | 29,740         | 38,460    | 192                            |
|                    | 120            | 57.6               |           |           | 25,600         | 33,470    | 186                            |
|                    | 130            | 54.3               |           |           | 22,160         | 29,340    | 179                            |
|                    | 140            | 50.8               |           |           | 19,250         | 25,770*   | 171                            |
|                    | 150            | 47.2               |           |           | 16,760         | 22,870    | 162                            |
|                    | 160            | 43.3               |           |           | 14,600         | 20,290    | 152                            |
|                    | 170            | 39.2               |           |           | 12,720         | 18,040    | 141                            |
|                    | 180            | 34.6               |           |           | 11,060         | 15,910*   | 127                            |
| 190                | 29.3           |                    |           | 9,590     | 13,950*        | 111       |                                |
| 200                | 23.1           |                    |           | 8,270     | 12,200*        | 90        |                                |
| 210                | 14.3           |                    |           | 7,090     | 10,590*        | 60        |                                |
| 220'               | 35             | 82.8               |           |           | 103,880*       | 103,880*  | 227                            |
|                    | 40             | 81.4               |           |           | 103,500*       | 103,500*  | 226                            |
|                    | 50             | 78.8               |           |           | 98,300         | 102,340*  | 224                            |
|                    | 60             | 76.1               |           |           | 74,660         | 88,590*   | 222                            |
|                    | 70             | 73.5               |           |           | 59,580         | 72,070*   | 219                            |
|                    | 80             | 70.7               |           |           | 48,560         | 59,850*   | 216                            |
|                    | 90             | 67.9               |           |           | 40,350         | 51,430*   | 212                            |
|                    | 100            | 65.1               |           |           | 34,450         | 44,210    | 208                            |
|                    | 110            | 62.2               |           |           | 29,370         | 38,090    | 203                            |
|                    | 120            | 59.2               |           |           | 25,240         | 33,110    | 197                            |
|                    | 130            | 56.1               |           |           | 21,780         | 28,790*   | 191                            |
|                    | 140            | 52.9               |           |           | 18,880         | 25,300*   | 184                            |
|                    | 150            | 49.6               |           |           | 16,390         | 22,500    | 176                            |
|                    | 160            | 46.0               |           |           | 14,230         | 19,910    | 167                            |
|                    | 170            | 42.3               |           |           | 12,340         | 17,580*   | 156                            |
| 180                | 38.2           |                    |           | 10,680    | 15,430*        | 144       |                                |
| 190                | 33.7           |                    |           | 9,200     | 13,450*        | 130       |                                |
| 200                | 28.6           |                    |           | 7,890     | 11,740*        | 114       |                                |
| 210                | 22.5           |                    |           | 6,700     | 10,130*        | 92        |                                |
| 220                | 14.0           |                    |           | 5,650     | 8,700*         | 61        |                                |
| 230'               | 36             | 82.8               |           |           | 94,600*        | 94,600*   | 237                            |
|                    | 40             | 81.8               |           |           | 94,280*        | 94,280*   | 236                            |
|                    | 50             | 79.3               |           |           | 92,930*        | 92,930*   | 235                            |
|                    | 60             | 76.8               |           |           | 74,250         | 88,660*   | 232                            |

| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |
| 180'               | 30             | 82.7               |           |           | 158,580*       | 158,580*  | 187                            |
|                    | 35             | 81.1               |           |           | 158,580*       | 158,580*  | 186                            |
|                    | 40             | 79.5               |           |           | 139,340        | 149,200*  | 186                            |
|                    | 50             | 76.3               |           |           | 99,740         | 113,880*  | 183                            |
|                    | 60             | 73.0               |           |           | 76,220         | 89,790*   | 181                            |
|                    | 70             | 69.6               |           |           | 61,120         | 74,450*   | 177                            |
|                    | 80             | 66.2               |           |           | 50,160         | 62,060*   | 173                            |
|                    | 90             | 62.7               |           |           | 41,980         | 52,710*   | 168                            |
|                    | 100            | 59.0               |           |           | 36,010         | 45,750    | 163                            |
|                    | 110            | 55.2               |           |           | 30,950         | 39,650    | 156                            |
|                    | 120            | 51.2               |           |           | 26,830         | 34,690    | 149                            |
|                    | 130            | 47.0               |           |           | 23,390         | 30,560    | 140                            |
|                    | 140            | 42.5               |           |           | 20,480         | 27,080    | 130                            |
|                    | 150            | 37.5               |           |           | 18,000         | 24,100    | 118                            |
| 160                | 31.8           |                    |           | 15,850*   | 21,530         | 103       |                                |
| 170                | 25.0           |                    |           | 13,960    | 19,270         | 84        |                                |
| 180                | 15.5           |                    |           | 12,310    | 17,290         | 56        |                                |
| 190'               | 31             | 82.8               |           |           | 141,400*       | 141,400*  | 197                            |
|                    | 35             | 81.6               |           |           | 141,400*       | 141,400*  | 197                            |
|                    | 40             | 80.1               |           |           | 139,020        | 141,400*  | 196                            |
|                    | 50             | 77.0               |           |           | 99,380         | 113,280*  | 194                            |
|                    | 60             | 73.9               |           |           | 75,820         | 89,100*   | 191                            |
|                    | 70             | 70.7               |           |           | 60,740         | 73,830*   | 188                            |
|                    | 80             | 67.5               |           |           | 49,760         | 61,510*   | 184                            |
|                    | 90             | 64.2               |           |           | 41,570         | 52,250*   | 180                            |
|                    | 100            | 60.8               |           |           | 35,620         | 45,370    | 174                            |
|                    | 110            | 57.3               |           |           | 30,560         | 39,260    | 168                            |
|                    | 120            | 53.6               |           |           | 26,430         | 34,300    | 161                            |
|                    | 130            | 49.8               |           |           | 22,990         | 30,170    | 153                            |
|                    | 140            | 45.7               |           |           | 20,090         | 26,680    | 144                            |
|                    | 150            | 41.3               |           |           | 17,610         | 23,710    | 134                            |
| 160                | 36.4           |                    |           | 15,450    | 21,130         | 121       |                                |
| 170                | 30.9           |                    |           | 13,560    | 18,870         | 106       |                                |
| 180                | 24.3           |                    |           | 11,910    | 16,890         | 86        |                                |
| 190                | 15.1           |                    |           | 10,430    | 14,900*        | 57        |                                |
| 200'               | 32             | 82.9               |           |           | 127,700*       | 127,700*  | 207                            |
|                    | 35             | 82.0               |           |           | 127,700*       | 127,700*  | 207                            |
|                    | 40             | 80.6               |           |           | 127,700*       | 127,700*  | 206                            |
|                    | 50             | 77.7               |           |           | 99,000         | 112,460*  | 204                            |
|                    | 60             | 74.7               |           |           | 75,420         | 88,420*   | 201                            |
|                    | 70             | 71.7               |           |           | 60,340         | 73,200*   | 198                            |
|                    | 80             | 68.7               |           |           | 49,340         | 60,930*   | 195                            |
|                    | 90             | 65.6               |           |           | 41,150         | 52,220    | 191                            |
|                    | 100            | 62.4               |           |           | 35,210         | 44,960    | 186                            |
|                    | 110            | 59.1               |           |           | 30,150         | 38,860    | 180                            |
|                    | 120            | 55.7               |           |           | 26,010         | 33,880    | 174                            |
|                    | 130            | 52.2               |           |           | 22,570         | 29,750    | 166                            |
|                    | 140            | 48.4               |           |           | 19,570         | 26,210*   | 158                            |
|                    | 150            | 44.5               |           |           | 17,170         | 23,280    | 148                            |

American Crane Corporation  
 Wilmington, North Carolina 28412

Model 9530 Truck Crane - Ratings in Pounds  
 77H Tubular Boom with Hammerhead  
 90,000 Pounds Counterweight - American Carrier

| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |
| 150'               | 26             | 82.8               |           |           | 227,370*       | 227,370*  | 157                            |
|                    | 30             | 81.3               |           |           | 212,120*       | 212,120*  | 157                            |
|                    | 35             | 79.4               |           |           | 172,590        | 174,520*  | 156                            |
|                    | 40             | 77.4               |           |           | 140,280        | 149,110*  | 155                            |
|                    | 50             | 73.5               |           |           | 100,760        | 114,060*  | 152                            |
|                    | 60             | 69.5               |           |           | 77,330         | 91,520*   | 149                            |
|                    | 70             | 65.3               |           |           | 62,220         | 76,226*   | 145                            |
|                    | 80             | 61.0               |           |           | 51,290         | 63,760*   | 140                            |
|                    | 90             | 56.6               |           |           | 43,150         | 54,190    | 134                            |
|                    | 100            | 51.8               |           |           | 36,830         | 46,830    | 126                            |
|                    | 110            | 46.8               |           |           | 32,060         | 40,740    | 118                            |
|                    | 120            | 41.2               |           |           | 27,940         | 35,790    | 107                            |
|                    | 130            | 35.0               |           |           | 24,510         | 31,670    | 94                             |
|                    | 140            | 27.5               |           |           | 21,600         | 28,180    | 77                             |
|                    | 150            | 17.1               |           |           | 19,110         | 25,200    | 52                             |
| 160'               | 27             | 82.9               |           |           | 200,040*       | 200,040*  | 167                            |
|                    | 30             | 81.8               |           |           | 200,040*       | 200,040*  | 167                            |
|                    | 35             | 80.0               |           |           | 172,290        | 175,750*  | 166                            |
|                    | 40             | 78.2               |           |           | 139,960        | 148,820*  | 165                            |
|                    | 50             | 74.5               |           |           | 100,400        | 113,730*  | 163                            |
|                    | 60             | 70.8               |           |           | 76,940         | 90,760*   | 160                            |
|                    | 70             | 67.0               |           |           | 61,840         | 75,640*   | 156                            |
|                    | 80             | 63.0               |           |           | 50,910         | 63,360*   | 151                            |
|                    | 90             | 58.9               |           |           | 42,750         | 53,710*   | 145                            |
|                    | 100            | 54.6               |           |           | 36,730         | 46,460    | 139                            |
|                    | 110            | 50.1               |           |           | 31,680         | 40,380    | 131                            |
|                    | 120            | 45.2               |           |           | 27,560         | 35,410    | 122                            |
|                    | 130            | 39.8               |           |           | 24,130         | 31,290    | 111                            |
|                    | 140            | 33.8               |           |           | 21,220         | 27,810    | 97                             |
|                    | 150            | 26.6               |           |           | 18,730         | 24,830    | 80                             |
| 160                | 16.5           |                    |           | 16,570    | 22,240         | 53        |                                |
| 170'               | 28             | 83.0               |           |           | 176,640*       | 176,640*  | 177                            |
|                    | 30             | 82.3               |           |           | 176,640*       | 176,640*  | 177                            |
|                    | 35             | 80.6               |           |           | 172,000        | 176,640*  | 176                            |
|                    | 40             | 78.9               |           |           | 139,670        | 149,430*  | 175                            |
|                    | 50             | 75.5               |           |           | 100,090        | 112,950*  | 173                            |
|                    | 60             | 72.0               |           |           | 76,610         | 90,530*   | 170                            |
|                    | 70             | 68.4               |           |           | 61,510         | 75,090*   | 167                            |
|                    | 80             | 64.7               |           |           | 50,560         | 62,600*   | 162                            |
|                    | 90             | 60.9               |           |           | 42,400         | 53,430*   | 157                            |
|                    | 100            | 57.0               |           |           | 36,410         | 46,150    | 151                            |
|                    | 110            | 52.8               |           |           | 31,350         | 40,050    | 144                            |
|                    | 120            | 48.5               |           |           | 27,230         | 35,090    | 136                            |
|                    | 130            | 43.8               |           |           | 23,790         | 30,960    | 126                            |
|                    | 140            | 38.6               |           |           | 20,900         | 27,480    | 114                            |
|                    | 150            | 32.8               |           |           | 18,410         | 24,500    | 100                            |
| 160                | 25.7           |                    |           | 16,260    | 21,930         | 82        |                                |
| 170                | 16.0           |                    |           | 14,370    | 19,670         | 55        |                                |



| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |
| 110'               | 80             | 48.6               | 20,450*   | 24,850*   | 52,670         | 65,410    | 91                             |
|                    | 90             | 41.2               | 16,860*   | 20,730*   | 44,550         | 55,560    | 81                             |
|                    | 100            | 32.3               | 13,960*   | 17,470    | 38,270         | 47,970    | 67                             |
|                    | 110            | 20.1               | 11,630*   | 14,890    | 33,330         | 42,000    | 46                             |
| 120'               | 22             | 82.9               | 0*        | 116,210*  | 309,880*       | 309,800*  | 128                            |
|                    | 25             | 81.5               | 0*        | 107,850*  | 263,390*       | 263,390*  | 127                            |
|                    | 30             | 79.1               | 0*        | 88,610*   | 212,700*       | 212,700*  | 126                            |
|                    | 35             | 76.7               | 0*        | 73,350*   | 173,430        | 177,130*  | 125                            |
|                    | 40             | 74.2               | 0*        | 62,240*   | 141,200        | 151,460*  | 124                            |
|                    | 50             | 69.2               | 38,230*   | 46,930*   | 101,770        | 115,780*  | 121                            |
|                    | 60             | 64.0               | 30,240*   | 36,760*   | 78,440*        | 93,050*   | 116                            |
|                    | 70             | 58.5               | 24,570*   | 29,850*   | 63,310         | 78,010*   | 111                            |
|                    | 80             | 52.7               | 20,050*   | 24,540*   | 52,420         | 65,170    | 104                            |
|                    | 90             | 46.4               | 16,470*   | 20,430    | 44,300         | 55,320    | 95                             |
|                    | 100            | 39.3               | 13,580*   | 17,160    | 38,010         | 47,710    | 84                             |
|                    | 110            | 30.9               | 11,320*   | 14,650    | 33,140         | 41,810    | 70                             |
| 120                | 19.2           | 9,260*             | 12,400    | 29,000    | 36,830         | 47        |                                |
| 130'               | 24             | 82.6               | 0*        | 109,550*  | 278,690*       | 278,690*  | 137                            |
|                    | 25             | 82.2               | 0*        | 106,810*  | 264,920*       | 264,920*  | 137                            |
|                    | 30             | 79.9               | 0*        | 88,080*   | 211,870*       | 211,870*  | 137                            |
|                    | 35             | 77.7               | 0*        | 72,840*   | 173,160        | 176,380*  | 136                            |
|                    | 40             | 75.4               | 0*        | 61,740*   | 140,900        | 150,820*  | 134                            |
|                    | 50             | 70.8               | 37,660*   | 46,440*   | 101,430        | 115,400*  | 131                            |
|                    | 60             | 66.1               | 29,600*   | 36,280*   | 78,070         | 92,490*   | 127                            |
|                    | 70             | 61.2               | 23,970*   | 29,400*   | 62,950         | 77,490*   | 122                            |
|                    | 80             | 56.0               | 19,450*   | 24,080*   | 52,050         | 64,750*   | 116                            |
|                    | 90             | 50.5               | 15,880*   | 19,980    | 43,910         | 54,940    | 109                            |
|                    | 100            | 44.5               | 13,000*   | 16,720    | 37,620         | 47,340    | 99                             |
|                    | 110            | 37.7               | 10,800*   | 14,240    | 32,780         | 41,460    | 88                             |
|                    | 120            | 29.6               | 8,760*    | 12,010    | 28,660         | 36,500    | 72                             |
| 130                | 18.4           | 7,000*             | 10,100    | 25,210    | 32,360         | 49        |                                |
| 140'               | 25             | 82.7               | 0*        | 105,850*  | 259,280*       | 259,600*  | 147                            |
|                    | 30             | 80.7               | 0*        | 87,580*   | 211,720*       | 211,720*  | 147                            |
|                    | 35             | 78.6               | 0*        | 72,350*   | 172,880        | 175,820*  | 146                            |
|                    | 40             | 76.5               | 0*        | 61,270*   | 140,590        | 150,290*  | 145                            |
|                    | 50             | 72.3               | 37,050*   | 46,000*   | 101,110        | 114,450*  | 142                            |
|                    | 60             | 67.9               | 29,000*   | 35,830*   | 77,710         | 91,820*   | 138                            |
|                    | 70             | 63.4               | 23,400*   | 28,970*   | 62,610         | 76,750*   | 134                            |
|                    | 80             | 58.7               | 18,890*   | 23,650    | 51,680         | 64,370*   | 128                            |
|                    | 90             | 53.8               | 15,330*   | 19,550    | 43,540         | 54,580    | 121                            |
|                    | 100            | 48.5               | 12,450*   | 16,290    | 37,240         | 46,960    | 113                            |
|                    | 110            | 42.8               | 10,300*   | 13,860    | 32,450         | 41,130    | 103                            |
|                    | 120            | 36.2               | 8,280*    | 11,630    | 28,330         | 36,170    | 91                             |
|                    | 130            | 28.5               | 6,540*    | 9,740     | 24,880         | 32,040    | 75                             |
| 140                | 17.7           | 5,030*             | 8,120     | 21,970    | 28,550         | 50        |                                |

| BOOM LENGTH (FEET) | RADIUS IN FEET | BOOM ANGLE DEGREES | FREE      |           | OUTRIGGERS SET |           | FEET FROM BOOM POINT TO GROUND |
|--------------------|----------------|--------------------|-----------|-----------|----------------|-----------|--------------------------------|
|                    |                |                    | OVER SIDE | OVER REAR | OVER SIDE      | OVER REAR |                                |
| 70'                | 16             | 82.8               | 0°        | 142,320*  | 440,000*       | 440,000*  | 78                             |
|                    | 20             | 79.5               | 0°        | 127,420*  | 349,600*       | 349,600*  | 77                             |
|                    | 25             | 75.4               | 0°        | 112,440*  | 265,050*       | 265,050*  | 76                             |
|                    | 30             | 71.1               | 0°        | 90,820*   | 213,710*       | 213,710*  | 75                             |
|                    | 35             | 66.7               | 0°        | 75,470*   | 174,400        | 178,330*  | 73                             |
|                    | 40             | 62.2               | 0°        | 64,250*   | 142,270        | 153,700*  | 70                             |
|                    | 50             | 52.4               | 0°        | 48,830*   | 102,980        | 118,370*  | 64                             |
|                    | 60             | 41.0               | 0°        | 38,660*   | 79,790         | 95,230*   | 54                             |
|                    | 70             | 25.6               | 26,890*   | 31,560*   | 64,560         | 79,580*   | 38                             |
| 80'                | 17             | 83.0               | 0°        | 137,070*  | 433,460*       | 433,460*  | 88                             |
|                    | 20             | 80.8               | 0°        | 126,340*  | 349,360*       | 349,360*  | 88                             |
|                    | 25             | 77.2               | 0°        | 111,470*  | 264,510*       | 264,510*  | 87                             |
|                    | 30             | 73.5               | 0°        | 90,390*   | 213,340*       | 213,340*  | 85                             |
|                    | 35             | 69.8               | 0°        | 75,060*   | 174,260        | 179,180*  | 84                             |
|                    | 40             | 65.9               | 0°        | 63,870*   | 142,120        | 153,320*  | 82                             |
|                    | 50             | 57.8               | 0°        | 48,460*   | 102,790        | 117,580*  | 76                             |
|                    | 60             | 48.8               | 32,320*   | 38,300*   | 79,560         | 94,930*   | 68                             |
|                    | 70             | 38.2               | 26,470*   | 31,260*   | 64,380         | 79,440    | 58                             |
|                    | 80             | 23.8               | 21,870*   | 25,910*   | 53,500         | 66,210    | 40                             |
| 90'                | 19             | 82.5               | 0°        | 128,650*  | 373,410*       | 373,410*  | 98                             |
|                    | 20             | 81.9               | 0°        | 125,350*  | 348,810*       | 348,810*  | 98                             |
|                    | 25             | 78.7               | 0°        | 110,570*  | 264,950*       | 264,950*  | 97                             |
|                    | 30             | 75.4               | 0°        | 89,970*   | 213,210*       | 213,210*  | 96                             |
|                    | 35             | 72.1               | 0°        | 74,660*   | 174,100        | 178,840*  | 94                             |
|                    | 40             | 68.7               | 0°        | 63,480*   | 141,920        | 152,970*  | 92                             |
|                    | 50             | 61.7               | 0°        | 48,110*   | 102,580        | 117,600*  | 88                             |
|                    | 60             | 54.2               | 31,840*   | 37,950*   | 79,320         | 94,800*   | 81                             |
|                    |                | 70                 | 45.8      | 26,040*   | 30,950*        | 64,160    | 79,130*                        |
|                    | 80             | 35.9               | 21,480*   | 25,620*   | 53,290         | 66,020    | 61                             |
|                    | 90             | 22.4               | 17,850*   | 21,490*   | 45,170         | 56,170    | 42                             |
| 100'               | 20             | 82.7               | 0°        | 124,250*  | 348,120*       | 348,120*  | 108                            |
|                    | 25             | 79.8               | 0°        | 109,550*  | 265,520*       | 265,520*  | 107                            |
|                    | 30             | 76.9               | 0°        | 89,470*   | 213,930*       | 213,930*  | 106                            |
|                    | 35             | 73.9               | 0°        | 74,180*   | 173,870        | 177,980*  | 105                            |
|                    | 40             | 70.9               | 0°        | 63,020*   | 141,670        | 151,860*  | 103                            |
|                    | 50             | 64.8               | 0°        | 47,680*   | 102,290        | 117,040*  | 99                             |
|                    | 60             | 58.2               | 31,250*   | 37,520*   | 79,010         | 93,970*   | 93                             |
|                    | 70             | 51.2               | 25,500*   | 30,550*   | 63,860         | 78,610*   | 86                             |
|                    |                | 80                 | 43.3      | 20,950*   | 25,220*        | 52,980    | 65,710                         |
|                    | 90             | 34.0               | 17,350*   | 21,110*   | 44,860         | 55,870    | 64                             |
|                    | 100            | 21.2               | 14,430*   | 17,840    | 38,580         | 48,280    | 44                             |
| 110'               | 21             | 82.8               | 0°        | 120,170*  | 328,320*       | 328,320*  | 118                            |
|                    | 25             | 80.7               | 0°        | 108,610*  | 263,830*       | 263,830*  | 117                            |
|                    | 30             | 78.1               | 0°        | 88,990*   | 212,620*       | 212,620*  | 116                            |
|                    | 35             | 75.4               | 0°        | 73,730*   | 173,640        | 177,040*  | 115                            |
|                    | 40             | 72.7               | 0°        | 62,600*   | 141,420        | 152,050*  | 114                            |
|                    | 50             | 67.2               | 38,770*   | 47,260*   | 102,000        | 116,510*  | 110                            |
|                    | 60             | 61.4               | 30,690*   | 37,110*   | 78,700         | 93,710*   | 105                            |
|                    | 70             | 55.3               | 24,980*   | 30,160*   | 63,560         | 78,430*   | 99                             |