



## LOAD CHARTS for Use in CCO Written Examinations

# SHUTTLELIFT

## TELESCOPIC BOOM CRANE—FIXED CAB (TSS)

*These charts have been adapted from the original manufacturers' charts for use in NCCCO Written Examinations.*

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# Shuttlelift

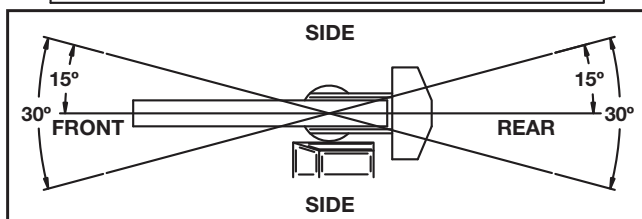
## LIFTING NOTES

- 1) The rated loads are the maximum lifting capacities as determined by operating radius, boom length and boom angle. The operating radius is the horizontal distance from the center of rotation of the crane to the center of gravity of a freely suspended load.
- 2) When boom length is between points listed on the capacity chart, the smallest rated load shown at either the next longer or shorter boom length shall be used.
- 3) For operating radius not shown, use load rating of next larger radius.
- 4) For operating boom angle not shown, use load rating of next smaller boom angle.
- 5) The rated loads shown on outriggers do not exceed 85% of actual tipping. The rated loads shown on rubber do not exceed 75% of actual tipping. These ratings are based on freely suspended loads with the crane leveled, standing on a firm, uniform supporting surface. Practical working loads depend on supporting surface, operating radius and other factors affecting stability. Hazardous surroundings, climatic conditions, experience of personnel and proper handling must all be taken into account by the operator.
- 6) The weights of all load handling devices such as hooks, hook blocks, slings, etc., except the hoist rope, shall be considered as part of the load. See reduction chart.
- 7) Ratings on outriggers are for either outriggers fully extended and down or fully retracted and down. Ratings for outriggers fully retracted and down will apply for any intermediate outrigger setting.
- 8) Ratings on rubber depend on tire capacity, condition of tires and proper inflation pressure (110 psi). When replacing tires, contact Manitowoc for proper specifications. Loads on rubber may be transported at a maximum speed of 2.5 mph on a smooth hard level surface with boom retracted to the shortest length possible and centered over front. For 360° ratings on rubber, rear axle oscillation locks must be in place. Do not use jib with crane on rubber. Jib may only be erected when on outriggers.
- 9) For on-rubber or pick-and-carry operations, the maximum combined total boom and deck load is 20,000 lb. For travel (with no load), the maximum load is 30,000 lb.
- 10) Do not induce any external side loads to boom or jib.

**OPERATION OF THIS EQUIPMENT IN EXCESS OF RATING CHARTS AND DISREGARD OF INSTRUCTIONS IS DANGEROUS AND VOIDS WARRANTY.**

**MAXIMUM PERMISSIBLE SINGLE LINE PULL  
= 12,500 lbs**

**HOIST ROPE: 5/8" diameter  
6 x 19 XIPS IWRC BRIGHT**



RATING REDUCTIONS FOR LOAD HANDLING DEVICES INSTALLED (lbs)		
	FROM MAIN BOOM	FROM JIB
MAIN BLOCK	475	N/A
HOOK & BALL	100	100
JIB STOWED	0	N/A
JIB ERECTED	500	0

# Shuttlelift

## SPECIFICATIONS

### Superstructure

#### Boom

7,21 m – 21,6 m (23 ft 8 in - 71 ft) full power main boom. Four-section boom with three (3) powered sections.

Maximum tip height: 24,0 m (79 ft).

#### \*Offsettable swingaway extension

5,1 m (17 ft) offsettable swingaway extension. Offsets 0°, 15°, and 30° via pivoting boom nose. Stows alongside base boom section.

Maximum tip height: 28,9 m (95 ft).

#### Boom nose

Two nickel plated steel sheaves mounted on heavy duty tapered roller bearings with removable pin-type rope guards. Quick reeve type boom nose with four-position (0°, +30°, +60°, and +80°) pivoting to minimize head height requirements. Lowers head height by 0,6 m (2 ft).

#### Boom elevation

Two double acting hydraulic cylinders with integral holding valves provides elevation from -0° to +80°.

#### Anti-two block device

Standard anti-two block device, which, when activated, provides an audible warning to the operator and “locks-out” all functions whose movement can cause two-blocking.

#### Load indicator (LSI)

A simple effective and easy to use load indicating system used in conjunction with the anti-two block system to assist the operator in efficient operation of the unit within the limits of the load chart. The display panel displays the hook load and cuts-out the telescope and boom lift down function when a load limit is exceeded. The warning is by a flashing light on the display panel. In conjunction with the load display panel (receiver) there is a wireless transmitter and load sensing pin attached to the boom head that transmits the hook load to the display panel.

(wireless system)



#### \*Rated Capacity Limiter (RCL)

Similar to the Load Indicator System, the Rated Capacity Limiter uses a similar display panel (receiver) with the addition of displaying boom angle and boom length read-outs on the panel.

(wireless system)



#### \*Load Moment Indicator (LMI)

“Graphics Display” of boom angle, boom length, boom radius, capacity, and allows for operator input to set the limit parameters based on the load chart. Displays color coded light bar and audible alarm with function cut-out if load exceeds the load chart parameters.

(hardwired system)



#### Swing

Ball bearing swing circle with 360° continuous rotation. Hydraulic motor driven pinion with brake. Maximum speed: 2.5 rpm



#### Hydraulic system

One pressure compensated variable displacement axial piston pump with load sensing combined with two (2) gear pumps.

Maximum output of: 238 LPM (79 GPM).

Maximum operating pressure: 248 bars (3600 psi).

Six section valve bank, chassis mounted, operated via dash mounted, pilot pressure hydraulic joysticks. 227 L (60 gal) hydraulic reservoir with sight level gauge and steel side plating to guard against side impacts.

10 micron return line filter with full flow by-pass protection and service indicator.

# Shuttlelift

## SPECIFICATIONS

### Superstructure continued



#### Hoist specifications

Piston motor driven with automatic spring applied / hydraulically released wet brake.

Maximum hoist pull (first layer): 6804 kg (15,000 lb)

Maximum permissible single line pull:  
5670 kg (12,500 lb) (3.5:1 design factor)

Maximum single line speed: 61 m/min (200 fpm)

Rope construction: 6X19 XIPS/IWRC

Rope diameter: 16 mm (5/8 in)

Rope length:  
Main hoist: 119 m (390 ft)

Maximum rope stowage:  
Main hoist: 151 m (495 ft)

### Carrier



#### Chassis

High strength alloy frame constructed with integral outrigger housings; front and rear lifting, tie-down, and towing lugs. 60 ft<sup>2</sup> carrydeck size with 13 608 kg (30,000 lb) deck only carrying capacity. Deck coated with anti-skid treatment.



#### Outriggers

Two-stage hydraulic telescoping beam with vertical jack at the four corners provides extended and down and retracted and down lifting capacities. Integral holding valves on both beam and jack cylinders.

Outrigger pad size:  
29,2 cm x 29,2 cm (11.5 in x 11.5 in)

Maximum outrigger pad load:  
20 321 kg (44,800 lb) / 339 p.s.i.



#### Outrigger controls

Independent outrigger control rocker switches for beam or jack selection with separate extend/retract rocker switch. 360° bubble level located inside cab.



#### Standard engine (Tier III)

Cummins QSB 4.5L, four cylinders / turbo-charged diesel rated at 974 kW (130 bhp) (Gross) at 2500 rpm. Standard 110V engine block heater and cold weather “ether” assist system. Engine hour meter located inside operators compartment.

Maximum torque: 370 N-m (273 ft lb) at 2500 rpm.



#### Fuel tank capacity

189 L (50 gal)



#### Transmission

Powershift with four speeds forward and reverse. Stalk mounted direction shifter with rotary gear selection.



#### Operators control station

Frame mounted, open air style control station with cab shell includes all crane functions, driving controls, and overhead safety glass. Other standard equipment includes a suspension seat with seat belt, hourmeter, sight level bubble, and 2.5lb (1.1kg) fire extinguisher. The dash panel includes a multi-cluster gauge showing fuel, water temperature, oil pressure, and battery voltage. An engine monitoring indicator strip shows engine warning, stop engine, transmission low pressure, transmission high temperature, and low brake system pressure. The load indicator receiver is mounted to the top of the dash panel.



#### \*Operators control station enclosed

Includes the standard cab shell with the addition of front, rear, and right side glass, a split (2 piece) hinged door with sliding glass, front windshield wiper and washer, hot water heater and defroster with fan and cab dome light are included.

# Shuttlelift

## SPECIFICATIONS

### Carrier continued



#### Electrical system

Two 12V maintenance-free batteries, 820CCA at 0°. 63 amp alternator.

#### I-●-I Drive

2 wheel (rear drive) or 4 wheel selection, front and rear axle drive with planetary hubs and limited slip differential.



#### Steer

Standard three steering modes. Front two wheel, four-wheel coordinated, and four-wheel crab steer with electronic self alignment, three-position rocker selector on dash panel.

Outside turning radius:

**Two-wheel steer:** 7,32 m (24 ft)

**Four-wheel steer:** 4,04 m (13 ft 3 in)



#### Suspension/axles

**Front:** Drive/steer with differential and planetary reduction hubs, axle is rigid mounted to frame.

**Rear:** Drive/steer with differential and planetary reduction hubs, axle is pivot mounted to frame allows up to 3.5° of oscillation.



#### Oscillation lockouts

Manual switch to engage and disengage the rear axle lockouts. Engage when lifting on rubber and in crab steer mode, Disengage to allow oscillation when traveling over rough terrain.



#### Brakes

Hydraulic actuated internal wet-disc service brake acting on all four wheels. Dash mounted toggle switch with light for activating or release of the dry disc parking brake mounted on the transmission output yoke .



#### Tires

**Standard:** 17.5 x 25 Bias

**Optional:** 17.5R25 radials



#### Lights

Full lighting including turn indicators, head, tail, brake and hazard warning lights recessed mounted.



#### Maximum speed

31,3 km/h (19.5 MPH)



#### Gradeability (theoretical)

63%..... (at engine stall) NO LOAD

38%.....(at engine stall) with 13 608 kg (30,000 lb)  
DECK LOAD

#### Gross vehicle weight (G.V.W.)

**Open cab:** 19 786 kg (43,620 lb)

**Closed cab:** 20 285 kg (44,720 lb)

#### Miscellaneous standard equipment

22 t (25 USt) Two sheave “galvanize coated” hookblock, with “Quick Reeve”.

Back-up motion alarm

Outrigger motion alarm

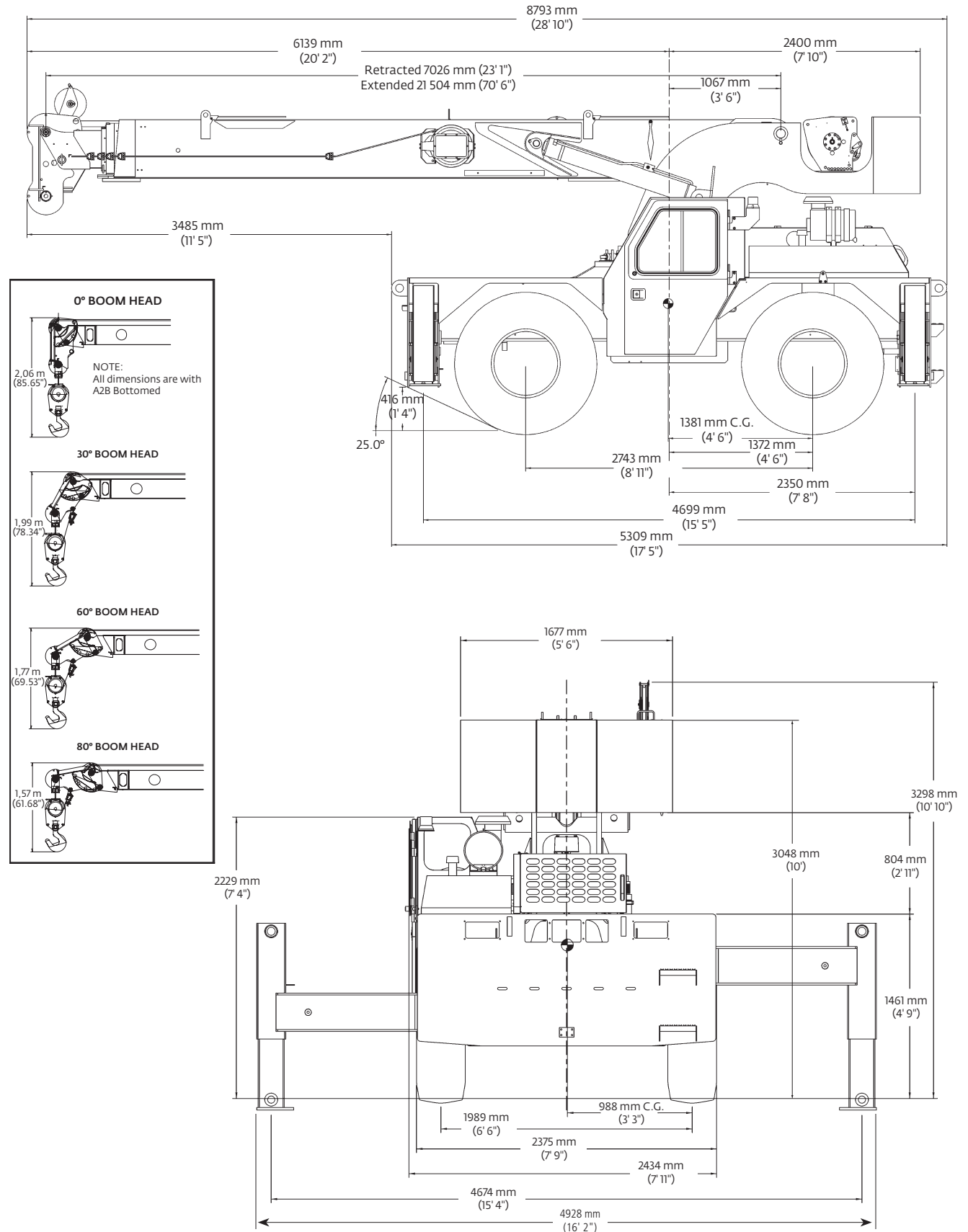
Dual rear-view mirrors

#### \*Optional equipment

- ▶ **AUXILIARY LIGHTING:** includes cab mounted amber flashing light, dual base boom mounted floodlights
- ▶ **CONVENIENCE PACKAGE:** includes front and rear pintle hitch and headlight/taillight grille covers
- ▶ **ENCLOSED CAB PACKAGE:** includes heater and defroster, cab dome light, all window glass, and two piece split door
- ▶ 5,2m (17 ft) fixed extension
- ▶ Air conditioner
- ▶ Catalytic convertor
- ▶ Hoist drum rotation indicator
- ▶ Wire rope 3rd wrap indicator with hoist function cut-out
- ▶ 3629 kg (8000 lb) below deck mounted tow winch
- ▶ Foam – filled tires

# Shuttlelift

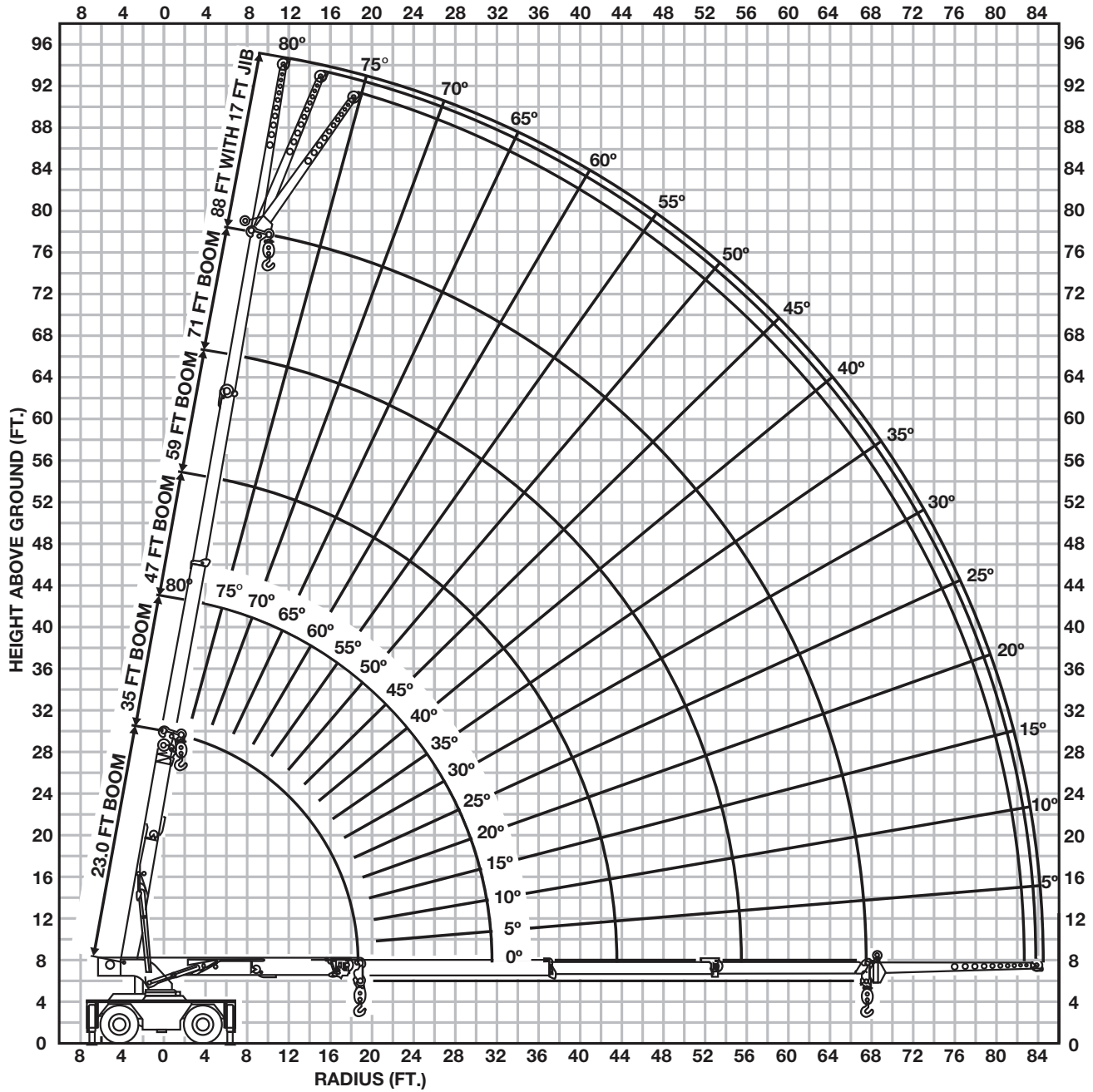
## DIMENSIONS





# Shuttlelift

## RANGE DIAGRAM





# Shuttlelift

## RATED LOADS

MAIN BOOM LOAD RATINGS ON OUTRIGGERS Extended and Down 360° or Retracted and Down Front/Rear										
23 ft Boom		35 ft Boom		47 ft Boom		59 ft Boom		71 ft Boom		
Radius (ft)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)
8.5	64.2	50,000	73.2	34,300	78.1	33,600				
10	59.8	38,793	70.6	34,500	76.2	33,017	79.7	27,800		
12	53.6	34,893	66.9	31,426	73.6	29,285	77.8	25,900		
14	46.8	31,256	63.2	28,464	71	26,357	75.8	24,100	78.7	18,200
16	38.8	26,699	59.2	26,076	68.3	24,016	73.7	22,400	77.1	16,750
18	28.7	23,186	55.1	23,496	65.6	22,096	71.7	20,792	75.4	15,500
19.5	0	21,044	51.9	21,379	63.5	20,902	70.1	19,582	74.2	14,650
22	-	-	46	18,471	59.9	18,629	67.4	17,872	72	13,400
24	-	-	40.8	16,592	56.9	16,747	65	16,300	70.3	12,500
26	-	-	36	14,600	54	14,850	63	14,200	68.5	11,750
28	-	-	29	12,750	51	13,050	60.5	13,150	66.7	11,050
30	-	-	20	11,250	47.5	11,600	58.5	11,700	65.2	9,800
31.5	-	-	0	10,300	45	10,650	56.5	10,750	63.9	9,400
34	-	-	-	-	40	9,350	53.5	9,480	61.5	8,850
36	-	-	-	-	36	8,460	51	8,590	59.6	8,400
38	-	-	-	-	31	7,680	48.5	7,830	57	7,940
40	-	-	-	-	25	7,000	45.5	7,150	55	7,270
42	-	-	-	-	17.5	6,400	42.5	6,550	53	6,680
43.5	-	-	-	-	0	6,000	40.5	6,000	51.5	6,270
46	-	-	-	-	-	-	36	5,440	48.5	5,680
48	-	-	-	-	-	-	32.5	5,040	46.5	5,250
50	-	-	-	-	-	-	28	4,680	44	4,860
52	-	-	-	-	-	-	23	4,350	41.5	4,510
54	-	-	-	-	-	-	16	4,040	38.5	4,190
55.5	-	-	-	-	-	-	0	3,820	36.5	3,960
58	-	-	-	-	-	-	-	-	32.5	3,620
60	-	-	-	-	-	-	-	-	29	3,370
62	-	-	-	-	-	-	-	-	25	3,130
64	-	-	-	-	-	-	-	-	20	2,920
66	-	-	-	-	-	-	-	-	13	2,720
67	-	-	-	-	-	-	-	-	0	2,620

**RATED LOADS LISTED IN SHADED AREAS  
ARE GOVERNED BY STRUCTURAL  
STRENGTH, DO NOT RELY ON TIPPING.**

# Shuttlelift

## RATED LOADS

MAIN BOOM LOAD RATINGS ON OUTRIGGERS Retracted and Down 360°										
23 ft Boom			35 ft Boom		47 ft Boom		59 ft Boom		71 ft Boom	
Radius (ft)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)	Boom Angle (deg)	Rated Load (lbs)
8.5	63.5	26,350	73	24,000	78	21,900				
10	59	20,800	70.5	19,300	76	17,900	79.5	16,650		
12	52.5	16,000	67	15,100	73.5	14,200	77.5	13,350		
14	45.5	12,300	63	12,250	71	11,600	75.5	11,000	79	10,500
16	37	9,850	59.5	10,150	68.5	9,710	73.5	9,280	77	8,870
18	26	8,070	55.5	8,370	65.5	8,230	71.5	7,910	75.5	7,590
19.5	0	7,090	52	7,300	63.5	7,330	70	7,060	74	6,810
22	-	-	46.5	5,900	60	6,050	67.5	5,900	72	5,720
24	-	-	41.5	5,040	57	5,170	65	5,150	70	5,000
26	-	-	36	4,330	54	4,450	63	4,520	68.5	4,400
28	-	-	29	3,740	51	3,850	60.5	3,930	66.5	3,880
30	-	-	20	3,250	47.5	3,340	58.5	3,410	65	3,420
31.5	-	-	0	2,910	45	3,010	56.5	3,080	63.5	3,120
34	-	-	-	-	40	2,530	53.5	2,590	61	2,640
36	-	-	-	-	36	2,200	51	2,260	59	2,310
38	-	-	-	-	31	1,910	48.5	1,960	57	2,010
40	-	-	-	-	25	1,660	45.5	1,700	55	1,750
42	-	-	-	-	17.5	1,410	42.5	1,470	53	1,510
43.5	-	-	-	-	0	1,230	40.5	1,310	51.5	1,350
46	-	-	-	-	-	-	36	1,070	48.5	1,110
48	-	-	-	-	-	-	32.5	890	46.5	930
50	-	-	-	-	-	-	28	720	44	780
52	-	-	-	-	-	-	23	570	41.5	630
54	-	-	-	-	-	-	16	430	38.5	500
55.5	-	-	-	-	-	-	0	330	36.5	410
58	-	-	-	-	-	-	-	-	32.5	270
60	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-

# Shuttlelift

## RATED LOADS

<b>MAIN BOOM ON RUBBER</b>		
<b>Any Boom Length</b>		
<b>Radius (ft)</b>	<b>Front Rating (lbs)</b>	<b>360° Rating (lbs)</b>
6	<b>30,000</b>	<b>21,000</b>
8	<b>24,950</b>	<b>17,900</b>
10	<b>21,000</b>	<b>15,000</b>
12	<b>18,000</b>	<b>13,000</b>
14	<b>15,650</b>	<b>10,000</b>
16	13,300	7,920
18	10,900	6,410
20	9,460	5,780
22	8,060	4,880
24	6,960	4,140
26	6,050	3,520
28	5,300	2,990
30	4,670	2,540
32	4,130	2,160
34	3,670	1,820
36	3,260	1,530
38	2,900	1,270
40	2,590	1,040
42	2,300	830
44	2,280	720
46	2,050	610
48	1,840	500
50	1,650	390
52	1,480	280
54	1,320	-
56	1,220	-
58	1,080	-
60	950	-
62	840	-
64	730	-
66	620	-
67	570	-

**RATED LOADS LISTED IN SHADED AREAS  
ARE GOVERNED BY STRUCTURAL  
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# Shuttlelift

## RATED LOADS

17 FT JIB CAP. ON EXT. OUTRIGGERS (lbs)					
Main Boom Angle (deg)	Jib Offset Angle				
	0 deg		15 deg		30 deg
	23 ft–55 ft Main Boom	>55 ft–71 ft Main Boom	23 ft–55 ft Main Boom	>55 ft–71 ft Main Boom	Any Boom Length
80	–	–	5000	5000	3500
75	7500	–	4400	4400	3100
70	6100	–	3900	3900	2800
65	5000	4600	3500	3500	2550
60	4300	3800	3150	3150	2350
55	3800	3300	2850	2850	2200
50	3400	2900	2600	2600	2100
45	3050	2600	2400	2400	2000
40	2800	2400	2250	2250	1950
35	2600	2150	2150	2050	1900
30	2400	1930	2080	1850	1830
25	2300	1750	2050	1720	–
20	2200	1600	2000	1590	–
15	2100	1500	1950	1520	–
10	2050	1460	–	–	–
5	2020	1450	–	–	–
0	2000	1440	–	–	–

**RATED LOADS LISTED IN SHADED AREAS ARE GOVERNED BY STRUCTURAL STRENGTH, DO NOT RELY ON TIPPING.**

## IMPORTANT CONTACT INFORMATION



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