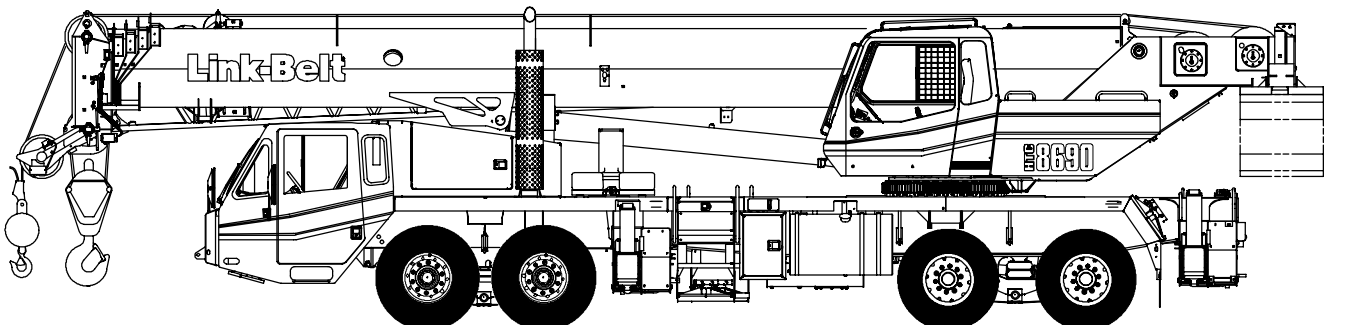


# Technical Data

## Specifications & Capacities

# HTC 8690

Telescopic Boom Truck Crane  
90 ton (81.6 metric ton)



**CAUTION:** This material is supplied for reference use only. Operator must refer to in-cab Crane Rating Manual and Operator's Manual to determine allowable crane lifting capacities and assembly and operating procedures.



# Table Of Contents

<b>Boom, Attachments, and Upper Structure</b> .....	<b>1</b>
Boom .....	1
Boom Wear Pads .....	1
Boom Head .....	1
Boom Elevation .....	1
Auxiliary Lifting Sheave – Optional .....	1
Hook Blocks and Balls – Optional .....	1
Fly – Optional .....	1
Fly Extensions – Optional .....	1
Upper Operator’s Cab and Controls .....	2
Swing .....	3
Electrical .....	3
Additional Equipment .....	3
Load Hoist System .....	3
Load Hoist Performance .....	3
2M Main and Optional Auxiliary Winches .....	3
Hydraulic System .....	4
Counterweight .....	4
<b>Carrier</b> .....	<b>6</b>
General .....	6
Outriggers .....	6
Steering and Axles .....	6
Suspension .....	6
Tires and Wheels .....	6
Brakes .....	6
Electrical .....	6
Engine .....	6
Transmission .....	6
Carrier Speeds and Gradeability .....	7
Fuel Tank .....	7
Hydraulic System .....	7
Pump Drive .....	7
Lower Cab and Controls .....	8
Additional Equipment .....	8
<b>Axle Loads</b> .....	<b>9</b>
<b>Axle Loads with 2–Axle or 3–Axle Boom Dolly</b> .....	<b>10</b>
<b>General Dimensions</b> .....	<b>11</b>
<b>Working Range Diagram</b> .....	<b>12</b>
<b>Boom Extend Modes</b> .....	<b>13</b>
<b>Main Boom Lift Capacity Charts – Standard</b> .....	<b>14</b>
8,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	14
8,500 lb Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	15
8,500 lb Counterweight – On Tires – Pick & Carry (1 mph) – Boom Centered Over Rear .....	15
11,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	16
11,500 lb Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	17
11,500 lb Counterweight – On Tires – Pick & Carry (1 mph) – Boom Centered Over Rear .....	17

<b>Main Boom Lift Capacity Charts – Optional</b> .....	<b>18</b>
32,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	18
32,500 lb Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	19
32,500 lb Counterweight – On Tires – Pick & Carry (1 mph) – Boom Centered Over Rear .....	19
39,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	20
<b>Fly Attachment Lift Capacity Charts – Optional</b> .....	<b>21</b>
8,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	21
140 ft Main Boom Length – 2° Fly Offset .....	21
140 ft Main Boom Length – 15° Fly Offset .....	21
140 ft Main Boom Length – 30° Fly Offset .....	22
140 ft Main Boom Length – 45° Fly Offset .....	22
11,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	23
140 ft Main Boom Length – 2° Fly Offset .....	23
140 ft Main Boom Length – 15° Fly Offset .....	23
140 ft Main Boom Length – 30° Fly Offset .....	24
140 ft Main Boom Length – 45° Fly Offset .....	24
32,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	25
140 ft Main Boom Length – 2° Fly Offset .....	25
140 ft Main Boom Length – 15° Fly Offset .....	25
140 ft Main Boom Length – 30° Fly Offset .....	26
140 ft Main Boom Length – 45° Fly Offset .....	26
39,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation .....	27
140 ft Main Boom Length – 2° Fly Offset .....	27
140 ft Main Boom Length – 15° Fly Offset .....	27
140 ft Main Boom Length – 30° Fly Offset .....	28
140 ft Main Boom Length – 45° Fly Offset .....	28
<b>Main Boom Lift Capacity Charts – Optional (Metric)</b> .....	<b>29</b>
3 856kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	29
3 856kg Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	30
3 856kg Counterweight – On Tires – Pick & Carry (1.6 km/h) – Boom Centered Over Rear .....	30
5 216kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	31
5 216kg Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	32
5 216kg Counterweight – On Tires – Pick & Carry (1.6 km/h) – Boom Centered Over Rear .....	32
14 742kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	33
14 742kg Counterweight – On Tires – Stationary – Boom Centered Over Rear .....	34
14 742kg Counterweight – On Tires – Pick & Carry (1.6 km/h) – Boom Centered Over Rear .....	34
17 917kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	35
<b>Fly Attachment Lift Capacity Charts – Optional (Metric)</b> .....	<b>36</b>
3 856kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	36
42.67m Main Boom Length – 2° Fly Offset .....	36
42.67m Main Boom Length – 15° Fly Offset .....	36
42.67m Main Boom Length – 30° Fly Offset .....	36
42.67m Main Boom Length – 45° Fly Offset .....	36
5 216kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	37
42.67m Main Boom Length – 2° Fly Offset .....	37
42.67m Main Boom Length – 15° Fly Offset .....	37
42.67m Main Boom Length – 30° Fly Offset .....	37
42.67m Main Boom Length – 45° Fly Offset .....	37

14 742kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	38
42.67m Main Boom Length – 2° Fly Offset .....	38
42.67m Main Boom Length – 15° Fly Offset .....	38
42.67m Main Boom Length – 30° Fly Offset .....	39
42.67m Main Boom Length – 45° Fly Offset .....	39
17 917kg Counterweight – Fully Extended Outriggers – 360° Rotation .....	40
42.67m Main Boom Length – 2° Fly Offset .....	40
42.67m Main Boom Length – 15° Fly Offset .....	40
42.67m Main Boom Length – 30° Fly Offset .....	41
42.67m Main Boom Length – 45° Fly Offset .....	41

This Page Intentionally Blank

# Boom, Attachments, and Upper Structure

## ■ Boom

**Design** – Five section, formed construction of extra high tensile steel consisting of one base section and four telescoping sections. The two plate design of each section has multiple longitudinal bends for superior strength. Each telescoping section extends independently by means of one double-acting, single stage hydraulic cylinder with integrated holding valves.

### Boom

- 38–140 ft (11.6–42.7m) five section boom
- Integral boom dolly connection
- Five boom extend modes (EM1 through EM5), controlled from the operator's cab, provide superior capacities by varying the extension of the telescoping sections:
  - EM1 extends to 140.0 ft (42.7m)
  - EM2 extends to 127.3 ft (38.8m)
  - EM3 extends to 115.8 ft (35.3m)
  - EM4 extends to 102.0 ft (31.1m)
  - EM5 extends to 76.5 ft (23.3m)
- Mechanical boom angle indicator
- Maximum tip height for each extend mode is:
  - EM1 is 148 ft (45.1m)
  - EM2 is 135 ft (41.1m)
  - EM3 is 124 ft (37.8m)
  - EM4 is 110 ft (33.5m)
  - EM5 is 84 ft (25.6m)

### Boom Wear Pads

- Wear pads with Teflon inserts that self-lubricate the boom sections
- Bottom wear pads are universal for all boom sections
- Top wear pads are universal for all boom sections

### Boom Head

- Five 16.5 in (41.9cm) root diameter nylon sheaves to handle up to ten parts of line
- Easily removable wire rope guards
- Rope dead end lugs on each side of the boom head
- Boom head is designed for quick-reeve of the hook block

### Boom Elevation

- One double acting hydraulic cylinder with integral holding valve
- Boom elevation:  $-3^{\circ}$  to  $80^{\circ}$

### Auxiliary Lifting Sheave – Optional

- Single 16.5 in (41.9m) root diameter nylon sheave
- Easily removable wire rope guards
- Does not affect erection of the fly or use of the main head sheaves

### Hook Blocks and Balls – Optional

- 40 ton (36.3mt) 4 sheave quick-reeve hook block with safety latch
- 60 ton (54.4mt) 4 sheave quick-reeve hook block with safety latch
- 90 ton (81.6mt) 6 sheave quick-reeve hook block with safety latch
- 8.5 ton (7.7mt) swivel and non-swivel hook balls with safety latch
- 10 ton (9.1mt) swivel and non-swivel hook balls with safety latch

### Fly – Optional

- 35 ft (10.7m) one piece lattice fly, stowable, offsettable to  $2^{\circ}$ ,  $15^{\circ}$ ,  $30^{\circ}$ , and  $45^{\circ}$ . Maximum tip height is 182 ft (55.5m).
- 35 ft–58 ft (10.7–17.7m) two piece bi-fold lattice fly, stowable, offsettable to  $2^{\circ}$ ,  $15^{\circ}$ ,  $30^{\circ}$ , and  $45^{\circ}$ . Maximum tip height is 205 ft (62.5m).

### Fly Extensions – Optional

- One 16 ft (4.9m) lattice extension, equipped with two 16.5 in (41.9cm) root diameter nylon sheaves, to be mounted between the boom head and fly options. Maximum tip height is 221 ft (67.4m).
- Two 16 ft (4.9m) lattice extensions, one equipped with two 16.5 in (41.9cm) root diameter nylon sheaves, to be mounted between the boom head and fly options. Maximum tip height is 237 ft (72.2m). Minimum of 14,500 lb (6 577.1kg) of counterweight required.

## ■ Upper Operator's Cab and Controls

**Environmental Cab** – Fully enclosed, one person cab of galvanneal steel structure with acoustical insulation.

Equipped with:

- Tinted and tempered glass windows
- Extra—large fixed front window with windshield wiper and washer
- Swing up roof window with windshield wiper
- Sliding left side door with large fixed window
- Sliding rear and right side windows for ventilation
- Six way adjustable, cushioned seat with seat belt and storage compartment
- Engine dependent warm—water heater with air ducts for front windshield defroster and cab floor
- Defroster fan for the front window
- Bubble level
- Circulating fan
- Adjustable sun visor
- Dome light
- Cup holder
- Fire extinguisher
- Left side viewing mirror
- Pull—out cabwalk
- Two position travel swing lock

**Air Conditioning – Optional** – Integral with cab heating system utilizing the same ventilation outlets

**Armrest Controls** – Two dual axis hydraulic joystick controllers or optional single axis hydraulic controllers for:

- Swing
- Boom hoist
- Main rear winch
- Auxiliary front winch – optional
- Drum rotation indication
- Drum rotation indicator activation switch
- Winch high/low speed and disable switch(es)
- Third wrap selector switch – optional
- Counterweight handling switch
- Telescopic override switches
- Warning horn button

**Outrigger Controls** – Hand held control box with umbilical cord gives the operator the freedom to view operation while setting the outriggers.

**Foot Controls**

- Boom telescope
- Swing brake
- Engine throttle

**Right Front Console** – Controls and indicators for:

- |                                     |   |
|-------------------------------------|---|
| • Engine ignition                   | • Heating controls                        |
| • Engine throttle lock              | • Console dimmer switch                   |
| • Pump enable                       | • Bubble level                            |
| • Function disable                  | • 12 volt power connection                |
| • Swing park brake                  | • Air conditioning – optional             |
| • Front windshield wiper and washer | • Boom floodlight – optional              |
| • Cab floodlights                   | • Rotating beacon/Strobe light – optional |
| • Warning horn                      |   |

**Cab Instrumentation** – Ergonomically positioned, analog instrumentation for crane operation including:

- Check and stop engine indicators
- Engine coolant temperature with warning indicator
- Hydraulic oil temperature with warning indicator
- Low air pressure warning indicator
- Fuel level with warning indicator
- Tachometer

**Rated Capacity Limiter** – Microguard 540 color graphic audio—visual warning system integrated into the dash with anti—two block and function limiter. Operating data available includes:

- Crane configuration
- Boom length and angle
- Boom head height
- Allowed load and % of allowed load
- Boom angle
- Radius of load
- Actual load
- Counterweight removal
- Operator settable alarms (include):
  - Maximum and minimum boom angles
  - Maximum and minimum tip height
  - Maximum boom length
  - Left/right swing positions
  - Operator defined area (imaginary plane)

**Integrated Third Wrap Indicator – Optional** – Micro-guard color display visually and audibly warns the operator when the wire rope is on the first/bottom layer and when the wire rope is down to the last three wraps.

**Internal RCL Light Bar – Optional** – Visually informs the operator when crane is approaching maximum load capacity with a series of green, yellow, and red lights.

**External RCL Light Bar – Optional** – Visually informs the ground crew when crane is approaching maximum load capacity with a series of green, yellow, and red lights.

## ■ Swing

**Motor/Planetary** – Bi–directional hydraulic swing motor mounted to a planetary reducer for 360° continuous smooth swing at 1.7 rpm.

**Swing Park Brake** – 360°, electric over hydraulic, (spring applied/hydraulic released) multi–disc brake mounted on the speed reducer. Operated by a switch from the operator's cab.

**Swing Brake** – 360°, foot operated, hydraulic applied disc brake mounted to the speed reducer.

**Swing Lock** – Two–position swing lock (boom over front or rear) operated from the operator's cab.

**360° Positive Swing Lock – Optional** – Meets New York City requirement.

## ■ Electrical

**Swing Alarm** – Audio warning device signals when the upper is swinging.

### Lights

- Two working lights on front of the cab
- One rotating amber beacon on top of the cab – optional
- One amber strobe beacon on top of the cab – optional
- Boom floodlight – optional

## ■ Additional Equipment

- Left side aluminum storage box

## ■ Load Hoist System

### Load Hoist Performance

Main (Rear) and Auxiliary (Front) Winches – 3/4 in (19mm) Rope										
Layer	Maximum Line Pull		Normal Line Speed		High Line Speed		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	ft	m	ft	m
1	16,880	7 656.6	179	54.6	356	108.5	114	34.7	114	34.7
2	15,519	7 039.3	195	59.4	387	118.0	124	37.8	238	72.5
3	14,362	6 514.5	211	64.3	418	127.4	134	40.8	372	113.4
4	13,365	6 062.3	226	68.9	449	136.9	144	43.9	516	157.3
5	12,497	5 668.5	242	73.8	480	146.3	154	46.9	670	204.2
6	---	---	---	---	---	---	164	50.0	834	254.2

Wire Rope Application		Diameter		Type	Maximum Permissible Load	
		in	mm		lb	kg
Main (Rear) Winch	Standard	3/4	19	18x19 rotation resistant – right regular lay (Type RB)	12,920	5 860.5
	Optional	3/4	19	36x7 rotation resistant – right regular lay (Type ZB)	15,600	7 076.2
Auxiliary (Front) Winch	Standard	3/4	19	18x19 rotation resistant – right regular lay (Type RB)	12,920	5 860.5
	Optional	3/4	19	36x7 rotation resistant – right regular lay (Type ZB)	15,600	7 076.2

### 2M Main and Optional Auxiliary Winches

- Axial piston, full and half displacement (2–speed) motors driven through planetary reduction unit for positive control under all load conditions.
- Grooved lagging
- Power up/down mode of operation
- Hoist drum cable follower – optional

- Drum rotation indicator
- Drum diameter: 16 in (40.6cm)
- Rope length:
  - Main: 730 ft (222.5m)
  - Auxiliary: 600 ft (182.9m) or 730 ft (222.5m)
- Maximum rope storage: 834 ft (254.2m)
- Terminator style socket and wedge

**Third wrap indicator – optional** – Visually and audibly warns the operator when the wire rope is on the bottom layer and when the wire rope is down to the last three wraps.

## ■ Hydraulic System

All circuits of the hydraulic system are pressure compensated.

**Counterbalance Valves** – All hoist motors, boom extend cylinders, and boom hoist cylinders are equipped with counterbalance valves to provide load lowering and to prevent accidental load drop if hydraulic power is suddenly reduced.

**Hydraulic Oil Coolers** – Two carrier mounted coolers remove heat from the hydraulic oil. One is integral to the engine radiator/charge air cooler and the other is mounted in left side access ladder.

**Boom Hoist Float Valves (Optional)** – For transporting the boom over the rear of the crane with a boom dolly. Allows hydraulic oil within the boom hoist cylinder to flow between piston side and case side, allowing the boom to float while on the boom dolly.

**Swing Brake Release** – For transporting the boom over the rear of the crane with a boom dolly. Holds the 360° swing park brake in the released position allowing free rotation of the upper structure.

## ■ Counterweight

**Standard** – Total of 11,500 lb (5 216kg) of total counterweight consisting of three, hydraulically removable counterweights. Assembled and disassembled by hydraulic cylinders controlled from the operator's cab with capacities for:

- 0 lb (0kg) counterweight
- 2,500 lb (1 134.0kg) counterweight
- 5,500 lb (2 494.8kg) counterweight
- 8,500 lb (3 855.5kg) counterweight
- 11,500 lb (5 216.3kg) counterweight

**Optional** – 15,000 lb (6 803.9kg) in addition to standard counterweight for a total of 26,500 lb (12 020.2kg) with additional capacities for:

- 14,500 lb (6 577.1kg) counterweight
- 20,500 lb (9 298.6kg) counterweight
- 23,500 lb (10 659.4kg) counterweight
- 26,500 lb (12 020.2kg) counterweight

**Optional** – 21,000 lb (9 525.4kg) in addition to standard counterweight for a total of 32,500 lb (14 741.8kg) with additional capacities for:

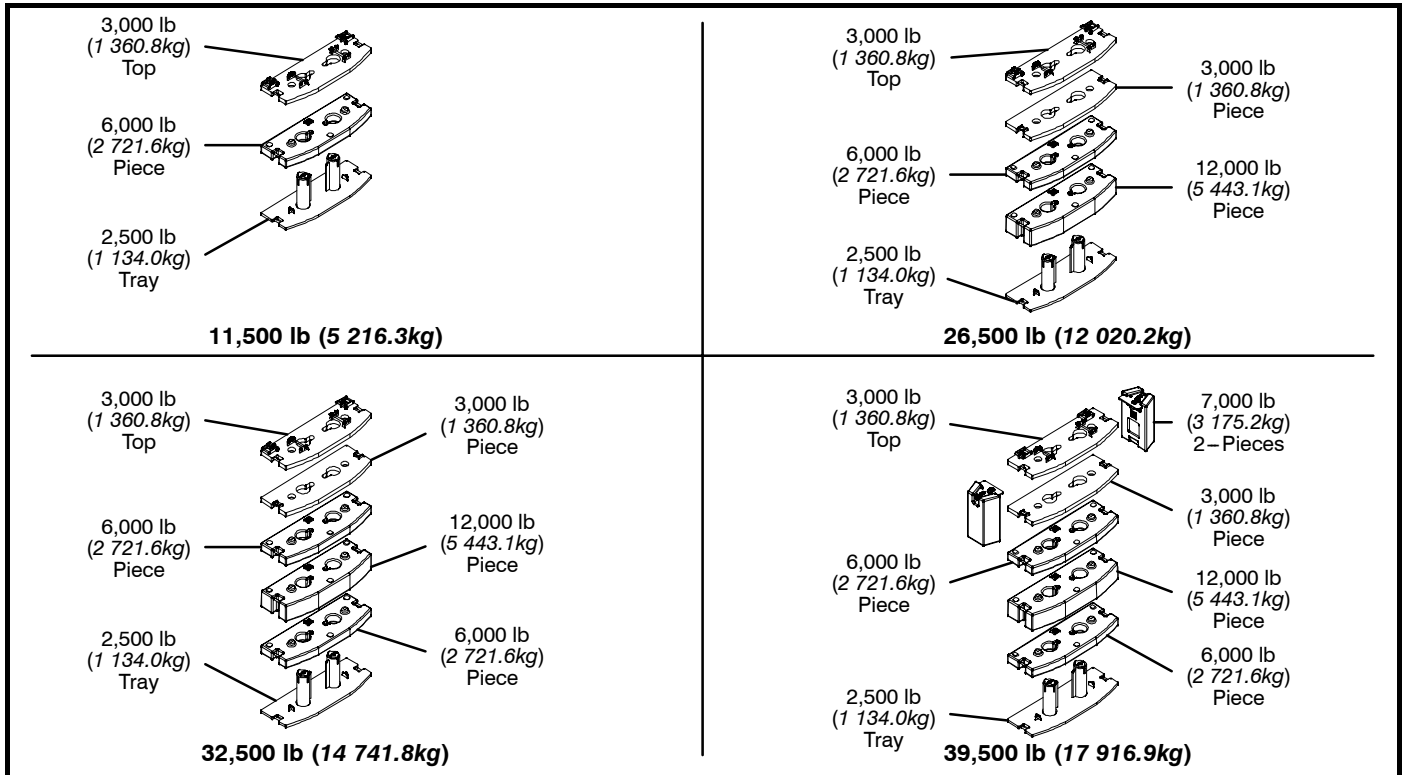
- 14,500 lb (6 577.1kg) counterweight
- 17,500 lb (7 937.9kg) counterweight
- 20,500 lb (9 298.6kg) counterweight
- 23,500 lb (10 659.4kg) counterweight
- 26,500 lb (12 020.2kg) counterweight
- 29,500 lb (13 381.0kg) counterweight
- 32,500 lb (14 741.8kg) counterweight

**Optional** – 28,000 lb (12 700.6kg) in addition to standard counterweight for a total of 39,500 lb (17 916.9kg) with additional capacities for:

- 14,500 lb (6 577.1kg) counterweight
- 17,500 lb (7 937.9kg) counterweight
- 20,500 lb (9 298.6kg) counterweight
- 23,500 lb (10 659.4kg) counterweight
- 26,500 lb (12 020.2kg) counterweight
- 29,500 lb (13 381.0kg) counterweight
- 32,500 lb (14 741.8kg) counterweight
- 39,500 lb (17 916.9kg) counterweight\*

Low speed jobsite travel is offered for these optional counterweight configurations and a boom dolly or boom trailer may be required for on–highway travel.

\* Overall width of the crane increases to 11 ft (3.4m) for this counterweight configuration



Counterweight Packages		11,500 lb (5 216.3kg) – Standard						
		26,500 (12 020.2kg) – Optional						
Counterweight Modules		32,500 (14 741.8kg) – Optional						
		39,500 (17 916.9kg) – Optional						
		2,500 lb (1 134.0kg) Tray	6,000 lb (2 721.6kg) Piece	3,000 lb (1 360.8kg) Top	3,000 lb (1 360.8kg) Piece	12,000 lb (5 443.1kg) Piece	6,000 lb (2 721.6kg) Piece	7,000 lb (3 175.2kg) 2-Pieces
Counterweight Usage Configurations	0 lb (0kg)							
	2,500 lb (1 134.0kg)	X						
	5,500 lb (2 494.8kg)	X		X				
	8,500 lb (3 855.5kg)	X	X					
	11,500 lb (5 216.3kg)	X	X	X				
	14,500 lb (6 577.1kg)	X	X	X	X			
	17,500 lb (7 937.9kg)	X	X	X			X	
	20,500 lb (9 298.6kg)	X	X	X	X		X	
	23,500 lb (10 659.4kg)	X	X	X		X		
	26,500 (12 020.2kg)	X	X	X	X	X		
	29,500 lb (13 381.0kg)	X	X	X		X	X	
	32,500 (14 741.8kg)	X	X	X	X	X	X	
39,500 (17 916.9kg)	X	X	X	X	X	X	X	

# Carrier

## ■ General

- 8 ft 6 in (2.6 m) wide
- 23 ft 10 in (7.26m) wheelbase (centerline of first axle to centerline of fourth axle)
- **Frame** – Box-type, torsion resistant, welded construction made of high tensile steel. Equipped with front and rear towing and tie-down lugs, tow connections, and access ladders.

## ■ Outriggers

**Boxes** – Two double box, front and rear welded to the carrier frame

**Beams and Jacks** – Four dual stage beams with Confined Area Lifting Capacities (CALC) provide selectable outrigger extensions of full, intermediate, and retracted positions. Jacks with integral check valves, hydraulically controlled from the operator's cab and on both sides of carrier. A fifth front bumper outrigger with integral check valves is hydraulically controlled from the operator's cab and at the front bumper of carrier.

**Pontoons** – Four lightweight, stow'n go, 23.5" x 27.25" (59.7 x 69.2cm) hexagonal steel pontoons with a contact area of 485 in<sup>2</sup> (3 129cm<sup>2</sup>) can be stored for road travel in either the storage racks on the carrier or under the outrigger boxes.

**Main Jack Reaction** – 106,000 lb (48 080.8kg) force and 217 psi (1 496.2kPa) ground bearing pressure

## ■ Steering and Axles

- Sheppard full integral master gear/slave gear steering system provides hydraulic assisted steering with mechanical link between steering wheel and wheels
- **Drive** – 8 x 4 for on/off-highway travel
- **Axle 1 & 2** – Tandem steered, non-driven
- **Axle 3 & 4** – Tandem non-steered, driven with reduction: 5.38 to 1
- **Inter-Axle Differential Lock** – Traction adding device that locks axle 3 with axle 4. Operated by a switch from the carrier cab.

## ■ Suspension

**Front** – Raydan Air Link walking beam air suspension

**Rear** – Raydan Air Link walking beam air suspension

- **Axle Lift System – Optional** – Improves rear tire ground clearance when the crane is up on outriggers. The rear tandem axles are raised and lowered with a switch in the carrier cab. The axle lift system can be controlled with a switch on both sides of the carrier.

## ■ Tires and Wheels

**Front** – Four (single) 445/65R22.5 tires on aluminum disc wheels

**Rear** – Eight (dual) 12R22.5 tires on aluminum disc wheels

- Spare tires and wheels – optional
- Tire inflation kit – optional

## ■ Brakes

**Service** – Full air anti-lock (ABS) brakes on all wheel ends. Dual circuit compressed air system with air dryer.

**Parking/Emergency** – Spring loaded type, acting on 3rd and 4th axles automatically apply when air pressure drops below 40 psi (275.8kPa) in both circuits.

## ■ Electrical

**Battery** – Three batteries provide 12 volt starting and operation

### Lights

- Front lighting includes two main headlights, two high beam lights, two parking/directional indicators, and three cab marker lights.
- Side lighting includes three parking/directional indicators per side.
- Rear lighting includes two parking/directional indicators, two parking/brake lights, two reverse lights, three marker lights, and a license plate light.
- Other equipment includes hazard/warning system, cab light, instrument panel light, and signal horn.
- One amber strobe beacon on top of the cab – optional
- Daytime running lights – optional

## ■ Engine

Specification	Detroit Diesel Series 60
Numbers of cylinders	6
Cycle	4
Bore and Stroke: inch (mm)	5.12 x 6.30 (130x160)
Piston Displacement: in <sup>3</sup> (L)	778 (12.7)
Max. Brake Horsepower: hp (kW)	445 (331.8) @ 1,800 rpm 430 (320.7) @ 2,100 rpm
Peak Torque: ft lb (J)	1,450 (1 966.1) @ 1,200 rpm
Alternator: volts – amps	12 – 130
Crankcase Capacity: qt (L)	32 (30.3)
<ul style="list-style-type: none"> <li>• Cruise control</li> <li>• Three-stage engine compression brake</li> <li>• Thermostatically controlled, hydraulically driven radiator fan</li> <li>• 120 volt engine block heater</li> <li>• Ether injection system – optional</li> </ul>	

## ■ Transmission

**Automated** – ZF AS-TRONIC (no clutch pedal) manual transmission with 12 forward gears and 2 reverse gears.

## Carrier Speeds and Gradeability

ZF Astronic		Governed Speed		Gradeability (@ Peak Torque Except Creep @ Idle)
Gear	Ratio	mph	km/h	% Grade
12th	0.778	62.3	100.3	2.1
11th	1.000	48.5	78.1	3.1
10th	1.267	38.3	61.6	4.2
9th	1.629	29.8	48.0	5.8
8th	2.101	23.1	37.2	7.8
7th	2.700	18.0	29.0	10.2
6th	3.552	13.7	22.0	13.7
5th	4.565	10.6	17.1	17.8
4th	5.784	8.4	13.5	22.8
3rd	7.435	6.5	10.5	29.5
2nd	9.590	5.1	8.2	38.2
1st	12.326	3.9	6.3	49.3
Reverse (Low)	11.413	4.3	6.9	45.6
Reverse (High)	8.880	5.5	8.9	35.3
1st @ 700 rpm	12.326	1.3	2.1	20.9
Rev. (Low) @ 700 rpm	11.413	1.4	2.3	19.3
Rev. (High) @ 700 rpm	8.880	1.8	2.9	14.9

Based on a gross vehicle weight of 95,000 lb (43 091.3kg)

### Fuel Tank

One 95 gal (359.6L) capacity tank

### Hydraulic System

All functions are hydraulically powered allowing positive, precise control with independent or simultaneous operation of all functions.

#### Main Pumps

- Three fixed displacement gear pumps with automatic disconnect for the main and auxiliary winches, swing, boom hoist, control circuit, and telescope for use when pick & carry switch is in travel mode.
- One fixed displacement gear pump for steering and the front bumper outrigger
- Two fixed displacement gear pumps for engine cooling fan and main outriggers. These pumps also provide flow to the winches and boom hoist for “pick & carry” mode. Operated by a switch in the carrier cab.
- Combined pump capacity of 188 gpm (711.7Lpm)

**Hydraulic Reservoir** – 144 gal (545.1L) capacity equipped with sight level gauge. Diffusers built in for deaeration.

**Filtration** – One 10 micron, full flow, return line filter. All oil is filtered prior to return to reservoir. Accessible for easy filter replacement.

### Pump Drive

All pumps are mechanically driven by the diesel engine. Main and auxiliary winches, swing, boom hoist, control circuit, and telescope pumps are mounted to an automatic pump disconnect on the rear of the transmission to aid in cold weather starting as well as to reduce pump wear while traveling.

## ■ Lower Cab and Controls

**Environmental Cab** – Fully enclosed, one person cab of composite structure with acoustical insulation. Equipped with:

- Tinted and tempered glass windows
- Roll down left side window for ventilation
- Sliding rear and right side windows for ventilation
- Windshield wiper and washer
- Six way adjustable and air suspended driver's seat with seat belt
- Two adjustable rear view mirrors
- Engine dependent warm–water heater with air ducts for windshield defroster and cab floor
- Adjustable sun visor
- Dome light
- 12 volt connection
- Fire extinguisher

**Air Conditioning – Optional** – Integral with cab heating system utilizing the same ventilation outlets

**Cab Instrumentation** – Ergonomically positioned analog instrumentation for driving including:

- Speedometer with odometer, hourmeter, trip odometer, and clock
- Front and rear air pressure with warning indicator
- Engine coolant temperature with warning indicator
- Engine oil pressure with warning indicator
- Voltage indicator with warning indicator
- Fuel level
- Tachometer

**Right Side Console** – Controls and indicators for:

- Transmission gear shifting
- Transmission digital readout
- Cruise controls
- Engine compression brake controls

**Dash Mounted Controls For:**

- Windshield wiper and washer
- Carrier lights
- Carrier/upper throttle control
- Engine cooling fan override
- Cab heater/air conditioning
- Console dimmer switch
- Engine diagnostic switch
- Park brake
- Engine ignition
- Pick & carry switch

**Dash Mounted Indicator For:**

- Check and stop engine
- Turn signal indication
- Park brake
- Cruise activation
- High beam headlights
- Check anti–lock brake system

**Foot Controls For:**

- Carrier service brakes
- Engine throttle

## ■ Additional Equipment

**Standard:**

- Aluminum full deck fenders with mud flaps
- Left and right bubble levels
- Air hose connection ports
- Clearance flags

**Optional:**

- Pneumatic and electrical quick disconnect connectors mounted on the rear for trailer or boom dolly brakes and lights
- Left side aluminum storage box
- Rear mounted pintle hook

# Axle Loads

Base crane with full tank of fuel and no counterweight	Gross Vehicle Weight ( <sup>1</sup> )		Front Axles		Rear Axles	
	lb	kg	lb	kg	lb	kg
	79,206	35 927	34,938	15 848	44,268	20 080
Driver in carrier cab	250	113	315	143	-65	-29
Rear pintle hook	13	6	-6	-3	19	8
Pneumatic and electrical connectors for trailer or boom dolly	11	5	-4	-2	15	7
Carrier aluminum storage box	59	27	28	13	31	14
Air ride lift system – rear axles	48	22	0	0	48	22
Ether injection	13	6	12	5	1	1
Air conditioning – carrier	45	20	55	25	-10	-4
Hoist drum follower – main	69	31	-35	-16	104	47
Auxiliary winch with 600 ft (182.9m) of 3/4" (19mm) type "RB" rope	731	332	-239	-108	970	440
Hoist drum follower – auxiliary	69	31	-21	-10	90	41
Substitute 600 ft (182.9m) of rope with 730 ft (222.5m) of rope – auxiliary	163	74	-54	-24	217	98
Remove 730 ft (222.5m) of rope from rear (main) winch	-931	-422	373	169	-1,304	-591
Remove 600 ft (182.9m) of rope from front (auxiliary) winch	-768	-348	252	114	-1,020	-463
Upper aluminum storage box	42	19	-4	-2	46	21
Air conditioner – operator's cab	220	100	-7	-3	227	103
360° mechanical swing lock	140	64	21	9	119	54
2,500 lb (1 134.0kg) counterweight tray on upper	2,544	1 154	-1,255	-569	3,799	1 723
3,000 lb (1 360.8kg) counterweight on upper	2,981	1 352	-1,471	-667	4,452	2 019
6,000 lb (2 721.6kg) counterweight on upper	6,000	2 722	-2,961	-1 343	8,961	4 065
6,000 lb (2 721.6kg) counterweight on upper	6,000	2 722	-2,961	-1 343	8,961	4 065
12,000 lb (5 443.1kg) counterweight on upper	12,050	5 466	-5,947	-2 697	17,997	8 163
3,000 lb (1 360.8kg) top counterweight on upper	3,009	1 365	-1,485	-674	4,494	2 038
Floodlight to the front of boom base section	7	3	6	3	1	1
Fly mounting brackets to boom base section for fly options	176	80	136	62	40	18
35 ft (10.7m) offsettable, one-piece lattice fly – stowed	1,591	722	1,539	698	52	24
35–58 ft (10.7–17.7m) offsettable, two-piece (bi-fold) lattice fly – stowed	2,263	1 026	1,886	855	377	171
Auxiliary lifting sheave	110	50	200	91	-90	-41
40 ton (36.3mt) 4-sheave hook block at front bumper	900	408	1,570	712	-670	-304
60 ton (54.4mt) 4-sheave hook block at front bumper	1,109	503	1,935	878	-826	-375
90 ton (81.6mt) 6-sheave hook block at front bumper	1,554	705	2,711	1 230	-1,157	-525
8.5 ton (7.7mt) hook ball at front bumper	360	163	628	285	-268	-122
10 ton (9.1mt) hook ball at front bumper	580	263	1,012	459	-432	-196

Counterweight Load Transfer	Front Axles		Rear Axles	
	lb	kg	lb	kg
Transfer 2,500 lb (1 134.0kg) counterweight tray to carrier deck	3,194	1 449	-3,194	-1 449
Transfer 3,000 lb (1 360.8kg) counterweight to carrier deck	3,742	1 697	-3,742	-1 697
Transfer 6,000 lb (2 721.6kg) counterweight to carrier deck	7,532	3 416	-7,532	-3 416
Transfer 6,000 lb (2 721.6kg) counterweight to carrier deck	7,532	3 416	-7,532	-3 416
Transfer 12,000 lb (5 443.1kg) counterweight to carrier deck	15,128	6 862	-15,128	-6 862
Transfer 3,000 lb (1 360.8kg) top counterweight to carrier deck	3,778	1 714	-3,778	-1 714

Axle	Maximum Load @ 65 mph (105km/h)
Front	46,400 lb (21 047kg) – aluminum disc wheels with 445/65R22.5 tires
Rear	52,000 lb (23 587kg) – aluminum disc wheels with 12R22.5 tires

(<sup>1</sup>) Adjust gross vehicle weight and axle loading according to component weight. All weights are ±3%.

## Axle Loads with 2–Axle or 3–Axle Boom Dolly

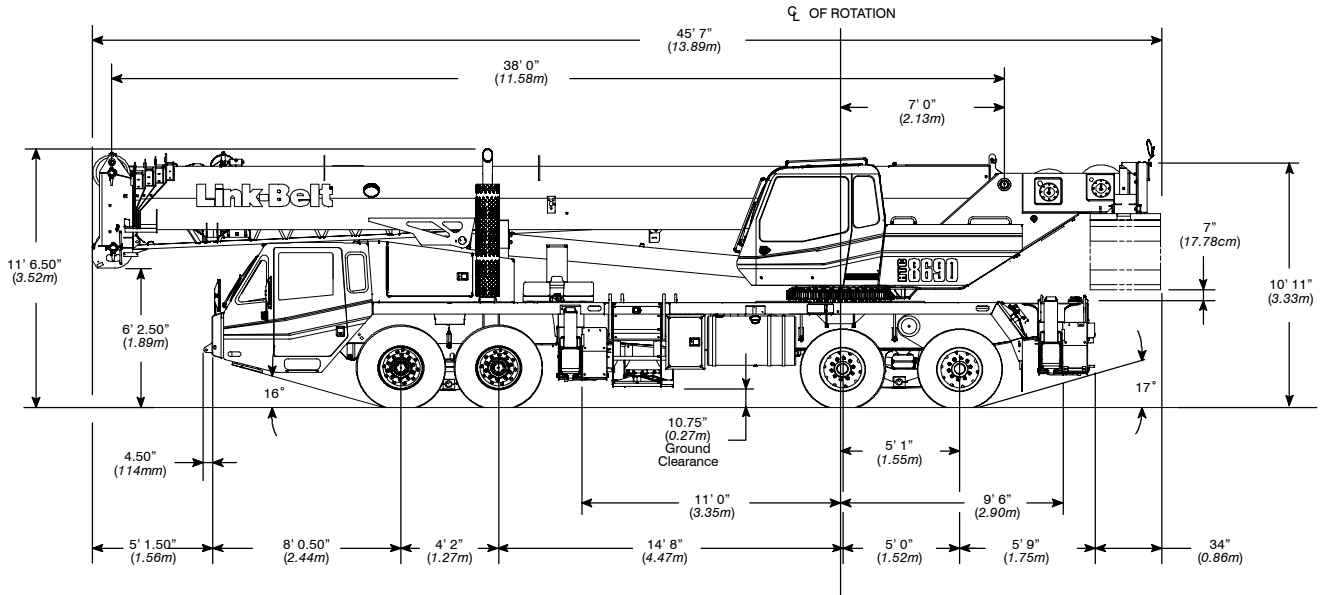
Base crane with full tank of fuel and no counterweight	Gross Vehicle Weight <sup>(1)</sup>		Front Axles		Rear Axles		Dolly Axles	
	lb	kg	lb	kg	lb	kg	lb	kg
	79,206	35 927	29,457	13 361	35,680	16 184	14,069	6 382
Nelson 2–axle boom dolly	6,000	2 722	0	0	0	0	6,000	2 722
Nelson 3–axle boom dolly	9,000	4 082	0	0	0	0	9,000	4 082
Driver in carrier cab	250	113	315	143	–65	–29	0	0
Rear pintle hook	13	6	–6	–3	19	8	0	0
Pneumatic and electrical connectors for trailer or boom dolly	11	5	–4	–2	15	7	0	0
Carrier aluminum storage box	59	27	28	13	31	14	0	0
Air ride lift system – rear axles	48	22	0	0	48	22	0	0
Ether injection	13	6	12	5	1	1	0	0
Air conditioning – carrier	45	20	55	25	–10	–4	0	0
Hoist drum follower – main	69	31	53	24	16	7	0	0
Auxiliary winch with 600 ft (182.9m) of 3/4" (19mm) type "RB" rope	731	332	435	197	296	134	0	0
Hoist drum follower – auxiliary	69	31	40	18	29	13	0	0
Substitute 600 ft (182.9m) of rope with 730 ft (222.5m) of rope – auxiliary	163	74	97	44	66	30	0	0
Remove 730 ft (222.5m) of rope from rear (main) winch	–931	–422	–623	–282	–308	–140	0	0
Remove 600 ft (182.9m) of rope from front (auxiliary) winch	–768	–348	–458	–208	–310	–140	0	0
Upper aluminum storage box	42	19	15	7	27	12	0	0
Air conditioner – operator's cab	220	100	66	30	154	70	0	0
360° mechanical swing lock	140	64	17	8	123	56	0	0
2,500 lb (1 134.0kg) counterweight tray on carrier deck	2,544	1 154	1,938	879	606	275	0	0
3,000 lb (1 360.8kg) counterweight on carrier deck	2,981	1 352	2,271	1 030	710	322	0	0
6,000 lb (2 721.6kg) counterweight on carrier deck	6,000	2 722	4,571	2 074	1,429	648	0	0
6,000 lb (2 721.6kg) counterweight on carrier deck	6,000	2 722	4,571	2 074	1,429	648	0	0
12,000 lb (5 443.1kg) counterweight on carrier deck	12,050	5 466	9,181	4 164	2,869	1 301	0	0
3,000 lb (1 360.8kg) top counterweight on upper	3,009	1 365	2,293	1 040	716	325	0	0
Flood light to the front of boom base section	7	3	1	1	1	1	5	2
Fly mounting brackets to boom base section for fly options	176	80	30	14	30	14	116	53
35 ft (10.7m) offsettable, one–piece lattice fly – stowed	1,591	722	168	76	170	77	1,253	568
35–58 ft (10.7–17.7m) offsettable, two–piece (bi–fold) lattice fly – stowed	2,263	1 026	339	154	342	155	1,583	718
Two 16 ft (4.9m) lattice inserts (stowed on 3–axle boom dolly)	1,584	718	0	0	0	0	1,584	718
Auxiliary lifting sheave	110	50	–19	–9	–19	–9	149	67
40 ton (36.3mt) 4–sheave hook block at boom head	900	408	–134	–61	–135	–61	1,169	530
60 ton (54.4mt) 4–sheave hook block at boom head	1,109	503	–165	–75	–167	–76	1,441	654
90 ton (81.6mt) 6–sheave hook block at boom head	1,554	705	–231	–105	–233	–106	2,019	916
8.5 ton (7.7mt) hook ball at boom head	360	163	–54	–24	–54	–25	468	212
10 ton (9.1mt) hook ball at boom head	580	263	–87	–39	–87	–39	754	342

Counterweight Load Transfer	Front Axles		Rear Axles		Dolly Axles	
	lb	kg	lb	kg	lb	kg
Transfer 3,000 lb (1 360.8kg) counterweight to the boom dolly	–2,271	–1 030	–710	–322	2,981	1 352
Transfer 6,000 lb (2 721.6kg) counterweight to the boom dolly	–4,571	–2 074	–1,429	–648	6,000	2 722
Transfer 6,000 lb (2 721.6kg) counterweight to the boom dolly	–4,571	–2 074	–1,429	–648	6,000	2 722
Transfer 12,000 lb (5 443.1kg) counterweight to the boom dolly	–9,181	–4 164	–2,869	–1 301	12,050	5 466
Transfer 3,000 lb (1 360.8kg) top counterweight to the boom dolly	–2,293	–1 040	–716	–325	3,009	1 365

Axle	Maximum Load @ 65 mph (105km/h)
Front	46,400 lb (21 047kg) – aluminum disc wheels with 445/65R22.5 tires
Rear	52,000 lb (23 587kg) – aluminum disc wheels with 12R22.5 tires

(1) Adjust gross vehicle weight and axle loading according to component weight. All weights are ±3%.

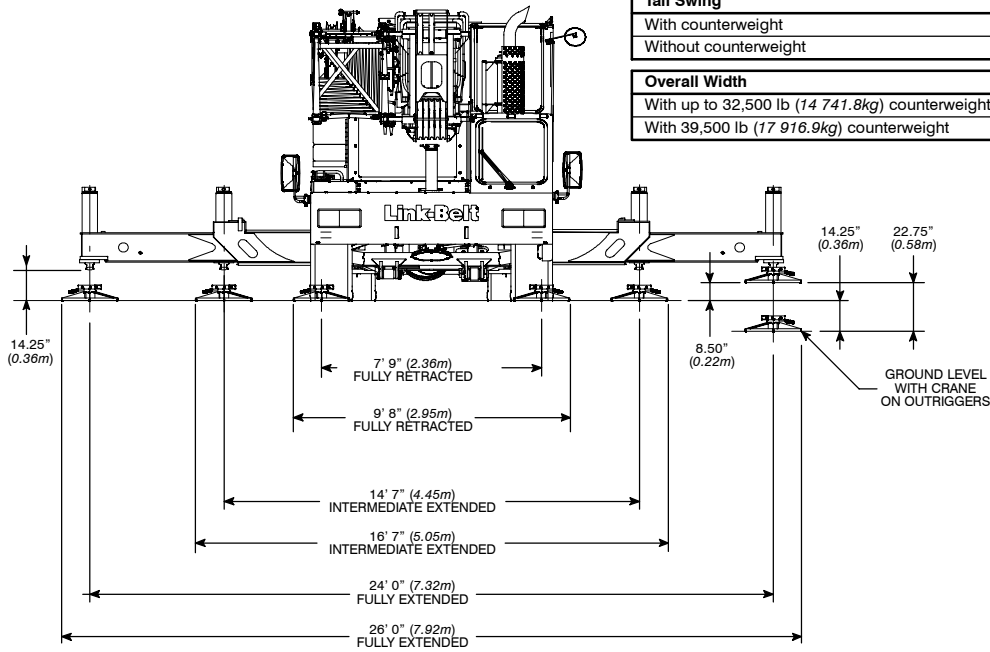
# General Dimensions



Turning Radius	English	Metric
Wall to wall over carrier	48' 4"	14.7m
Wall to wall over boom	49' 2"	15.0m
Wall to wall over boom attachment	51' 0"	15.5m
Curb to curb	44' 1"	13.4m
Centerline of tire	43' 4"	13.2m

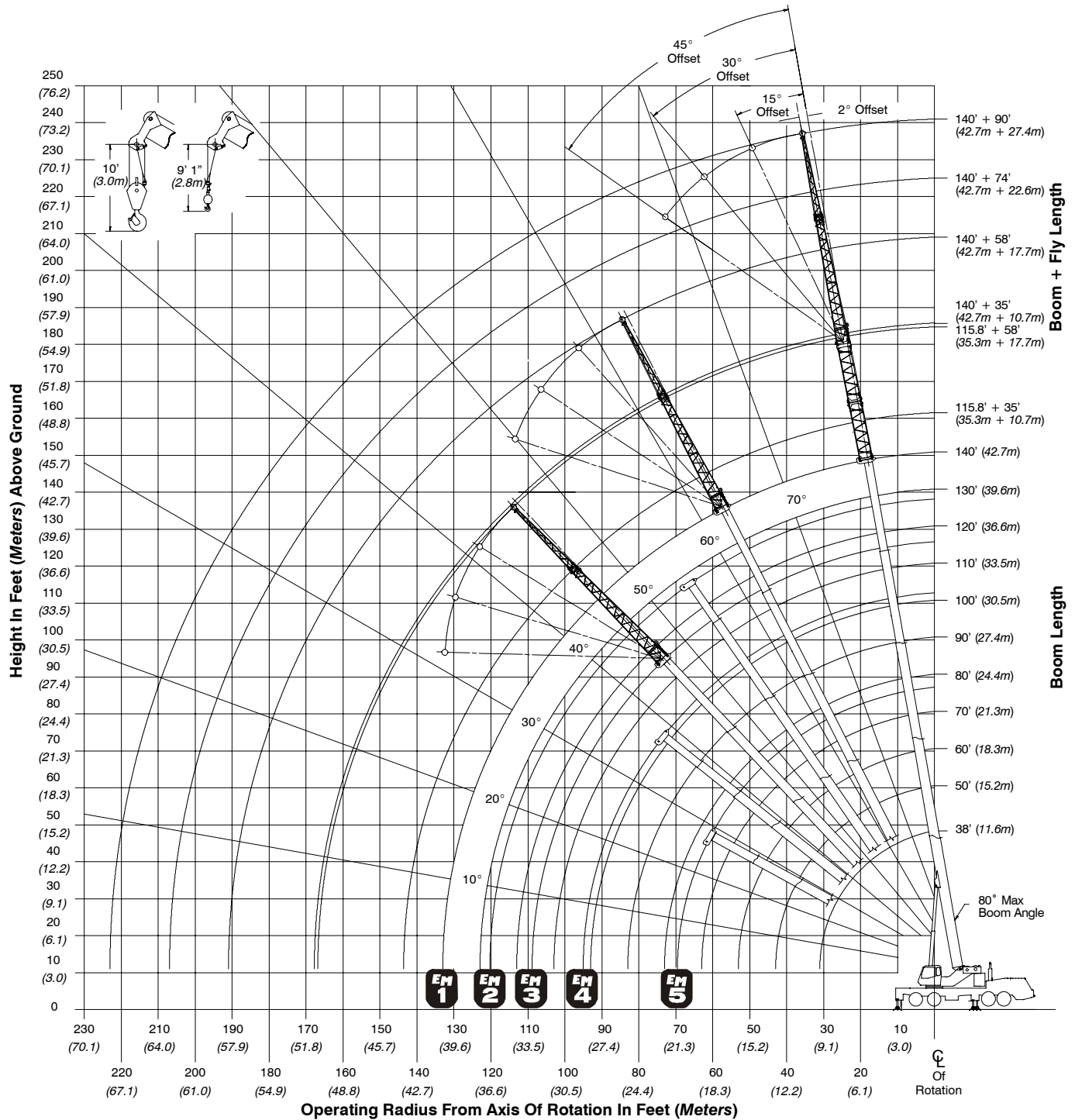
Tail Swing	English	Metric
With counterweight	13' 8"	4.2m
Without counterweight	13' 1"	4.0m

Overall Width	English	Metric
With up to 32,500 lb (14 741.8kg) counterweight	8' 6"	2.6m
With 39,500 lb (17 916.9kg) counterweight	11' 0"	3.4m



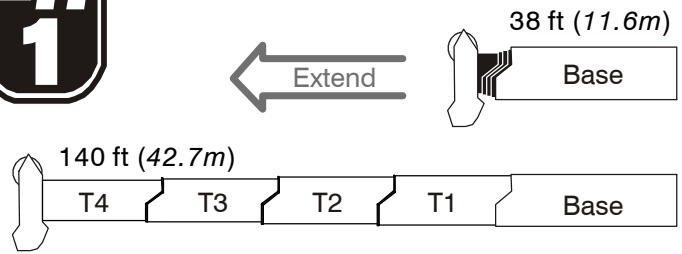
Not To Scale

# Working Range Diagram

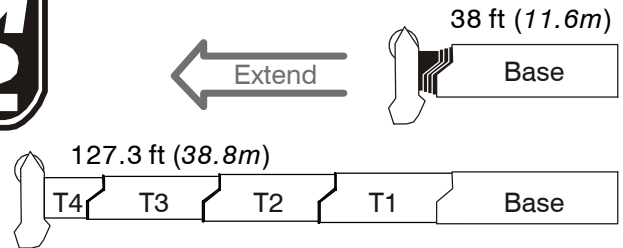


# Boom Extend Modes

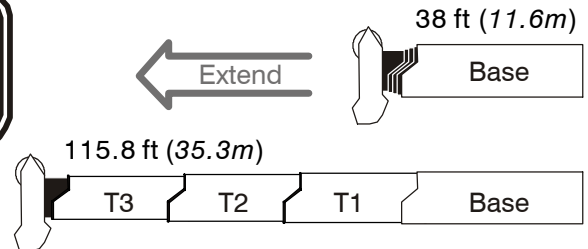
Boom Length		Section Length			
ft	m	T4	T3	T2	T1
50	15.2	50%			
60	18.3	91%			
70	21.3	100%	31%		
80	24.4	100%	71%		
90	27.4	100%	100%	11%	
100	30.5	100%	100%	49%	
110	33.5	100%	100%	88%	
120	36.6	100%	100%	100%	25%
130	39.6	100%	100%	100%	63%
140	42.7	100%	100%	100%	100%



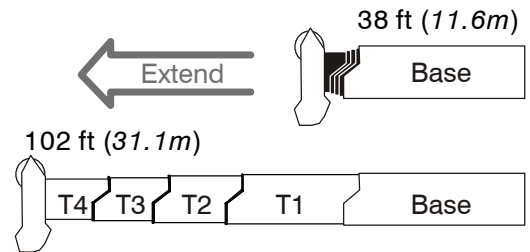
Boom Length		Section Length			
ft	m	T4	T3	T2	T1
50	15.2	48%	2%		
60	18.3	48%	42%		
70	21.3	48%	82%		
80	24.4	48%	100%	21%	
90	27.4	48%	100%	60%	
100	30.5	48%	100%	98%	
110	33.5	48%	100%	100%	35%
120	36.6	48%	100%	100%	73%
127.3	38.8	48%	100%	100%	100%



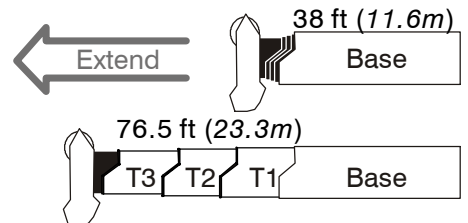
Boom Length		Section Length			
ft	m	T4	T3	T2	T1
50	15.2	0%	48%		
60	18.3	0%	88%		
70	21.3	0%	100%	27%	
80	24.4	0%	100%	65%	
90	27.4	0%	100%	100%	4%
100	30.5	0%	100%	100%	41%
115.8	35.3	0%	100%	100%	100%



Boom Length		Section Length			
ft	m	T4	T3	T2	T1
50	15.2	48%	2%		
60	18.3	48%	42%		
70	21.3	48%	51%	30%	
80	24.4	48%	51%	50%	18%
90	27.4	48%	51%	50%	55%
102	31.1	48%	51%	50%	100%



Boom Length		Section Length			
ft	m	T4	T3	T2	T1
50.7	15.5	0%	51%		
63.7	19.4	0%	51%	50%	
76.5	23.3	0%	51%	50%	48%



# Main Boom Lift Capacity Charts – Standard

8,500 lb Counterweight – Fully Extended Outriggers – 360° Rotation (All Capacities Are Listed In Pounds)												
Radius (ft)	Boom Length (ft)											Radius (ft)
	38	50	60	70	76.5/80	90	100	110	120	130	140	
9	164,400*											9
10	154,600*	152,100*	117,900	89,700								10
12	129,300*	131,300*	108,800	85,000	85,100**							12
15	102,500	104,600	104,900	78,800	78,400**	57,700						15
20	74,700	77,000	77,400	70,300	76,500**	56,200	49,100	42,500				20
25	54,700	57,900	59,400	60,100	59,700	55,300	45,800	42,500	33,700	29,700		25
30	39,600	43,300	44,400	44,600	44,300	43,800	43,200	38,300	31,200	29,400	24,400	30
35		33,100	34,100	34,900	34,100	35,000	33,500	34,500	30,900	29,100	24,100	35
40		26,100	27,200	27,900	28,100	28,000	28,000	27,500	28,100	26,900	24,000	40
45			22,800	23,500	23,900	23,300	24,000	23,800	23,500	23,100	22,700	45
50			18,900	19,600	20,000	20,200	20,100	19,900	19,600	19,100	18,800	50
55				16,500	16,900	17,100	16,900	16,800	16,400	16,000	15,700	55
60				14,000	14,400	14,600	14,500	14,300	14,000	13,600	13,200	60
65					12,500	12,700	12,500	12,400	12,100	11,700	11,400	65
70					10,800	11,000	10,900	10,800	10,400	10,100	9,700	70
75						9,600	9,500	9,400	9,100	8,700	8,400	75
80						8,400	8,300	8,200	7,900	7,500	7,200	80
85							7,300	7,200	6,800	6,500	6,200	85
90							6,300	6,300	6,000	5,600	5,300	90
95								5,500	5,200	4,800	4,500	95
100								4,800	4,500	4,100	3,800	100
105									3,900	3,500	3,200	105
110									3,300	3,000	2,700	110
115										2,500	2,200	115
120										2,000	1,700	120
125											1,300	125
130											900	130

\* Special Conditions Or Wire Rope Required  
 \*\* 76.5 EM5 mode

This information is not for crane operation. Operator must refer to the in-cab information for crane operation. Rated lifting capacities shown on fully extended outriggers do not exceed 85% of the tipping loads and on tires do not exceed 75% of the tipping loads.

<b>8,500 lb Counterweight – On Tires – Stationary – Boom Centered Over Rear</b> (All Capacities Are Listed In Pounds)								
Radius (ft)	Boom Length (ft)							Radius (ft)
	38	50	60	70	80	90	100	
10	32,200							10
12	29,000	30,400						12
15	25,000	26,500	22,300					15
20	19,700	21,400	22,300	17,700				20
25	13,100	15,700	17,100	17,700	13,600			25
30	8,800	11,400	12,700	13,300	13,600	10,800	8,900	30
35		8,400	9,600	10,200	10,600	10,800	8,900	35
40		6,100	7,400	8,000	8,400	8,600	8,500	40
45			5,600	6,200	6,600	6,800	6,800	45
50			4,300	4,900	5,200	5,400	5,400	50
55				3,800	4,100	4,300	4,300	55
60				2,900	3,200	3,400	3,400	60
65					2,400	2,600	2,600	65
70					1,800	2,000	1,900	70
75						1,400	1,400	75
80						900	900	80

<b>8,500 lb Counterweight – On Tires – Pick &amp; Carry (1 mph) – Boom Centered Over Rear</b> (All Capacities Are Listed In Pounds)								
Radius (ft)	Boom Length (ft)							Radius (ft)
	38	50	60	70	80	90	100	
10	22,200							10
12	19,800	21,100						12
15	16,600	18,100	18,900					15
20	12,500	14,200	15,100	15,500				20
25	9,300	11,200	12,200	12,600	12,800			25
30	6,800	8,800	9,800	10,300	10,600	10,800	8,900	30
35		6,900	7,900	8,400	8,800	8,900	8,900	35
40		5,300	6,400	6,900	7,200	7,400	7,400	40
45			5,100	5,600	6,000	6,100	6,100	45
50			3,900	4,500	4,900	5,100	5,000	50
55				3,600	3,900	4,100	4,100	55
60				2,700	3,100	3,300	3,300	60
65					2,400	2,600	2,500	65
70					1,800	2,000	1,900	70
75						1,400	1,400	75
80						900	900	80

This information is not for crane operation. Operator must refer to the in-cab information for crane operation. Rated lifting capacities shown on fully extended outriggers do not exceed 85% of the tipping loads and on tires do not exceed 75% of the tipping loads.