The RT-400-B is a self-propelled cab down rough terrain crane designed for lifting and material handling, and features 4-wheel steer and 4-wheel drive. It was designed to be used in applications where the easy "stair step" entry and exit of a cab down rough terrain crane is desired. The 20 US ton lifting capacity and the 72' 6" telescopic boom provides a superior lifting capacity and reach envelope compared to other units in the cab down rough terrain category. The RT-400-B incorporates electro-hydraulic control modes to provide superior performance during crane function movement. RT-400-B control levers are multi-axis electronic joysticks mounted on the operator's station arm rests to enable comfortable operation of the crane in a spacious operator can environment. The RT-400-B engine is Tier 4 final / Euromot Stage V emissions compliant. The RT-400-B's CAN bus based electrical design provides trouble shooting data, operation history data and easily integrates to advanced functions like telematics, load indicating external light bars and crane camera systems.

The basic unit consists of a chassis and hydraulic boom turret assembly. The chassis includes, the steel frame, 4 hydraulic independently controlled swing down outriggers, engine, a 2 range; 3-speed range (forward and reverse) transmission, front and rear steering/driving axles, and 4-mode power steering (front 2 wheel steer, 4 wheel steer, crab steer, 2 wheel rear steer), fuel tank, hydraulic oil tank, operator cab and control station, power brakes and lighting package. The turret includes a 4-section boom and hydraulic telescope cylinder, topping cyliner, counterweight, single speed hydraulic powered hoist (2-speed optional), and planetary rotation gear with hydraulic motor and parking brake. A Broderson-designed Rated Capacity Limiter is standard.

RT-400-B:
4-section, 72' 6" (22.1m) hydraulically extended boom with capacity of 40,000 pounds (18,143 g) at 10 feet (3.05 m). Main boom horizontal reach of 69' 6" (21.2 m) and maximum sheave height of 80' (24.4 m).

GENERAL:

Length:	
Overall:	31' (9.44m)
Chassis:	18' 5" (5.69m)
Width:	8' 6" (2.59m)
Height:	11' 2" (3.40m)
Wheelbase:	9' 2" (2.80m)
Ground Clearance, Chassis	16" (.41m)
Angle of Approach:	18 degrees
Angle of Departure:	27 degrees
Turning Radius: (4-Wheel Steering)	
Outside Tire Centerline Radius:	12' (3.65m)
Vehicle Clearance Circle Diameter	15' 1" (4.60m)
Road Speed:	22 MPH (37 km/h)
Gradeability:	70 percent* (34 degrees)

**Calculated, wheels spin before values are reached in 2-wheel drive.*

Grade Limit:	19 percent* (11 degrees)

**Calculated, wheels spin before values are reached in 2-wheel drive.*

ENGINE:

Standard:

Cummins QSF3.8L

Cummins Model QSF3.8 diesel engine, turbocharged, charge air cooled, four-cylinder, 3.8 liter (229 CID). U.S. EPA Tier 4 Final / EU Stage V. Bore 4.02 inches (10.2 cm), stroke 4.53 inches (11.5 cm). Rated 154 hp (115 kw) at 2,500 rpm. 457 foot pounds (620 Nm) maximum torque at 1,500 rpm. 130 amp alternator. Oil capacity, 11.6 quarts (11 L). Coolant capacity, 33.6 quarts (31.8 L). Multiple throttle control modes: foot pedal, auto-idle, speed presets - 1000, 1500 or 2000 rpm, as well as incremental rpm steps at 100 rpm per step between set points. Engine protection system shuts down engine for low pressure or high coolant temperature. Charge air cooler, grid heater and 120v engine block heater. Tier 4 Final engines require ultra- low sulfur diesel (ULSD) 15 parts per million (ppm) and diesel exhaust fluid (DEF). A 10-gallon DEF container is located adjacent to the fuel tank.

Optional:

For sale only to countries that do not require the standard engine emissions ratings.

Cummins model F3.8 diesel engine, turbocharged, charge air cooled, four-cylinder, 3.8 liter (220 CID), U.S. EPA Tier 4 Final / EU Stage V. Bore 4.02 inches (10.2cm), stroke 4.53 inches (11.5 cm). Rated 154 hp (115 kw) at 2,500 rpm. 435 foot pounds (590 Nm) maximum torque at 1,500 rpm. 130 amp alternator. Oil capacity: 11.6 quarts (11 L). Coolant capacity: 33.6 quarts (31.8 L). Multiple throttle control modes: foot pedal, auto-idle, speed presets - 1000, 1500 or 2000 rpm, as well as incremental rpm steps, at 100 rpm per step between set points. Engine protection system shuts down engine for low pressure or high coolant temperature. Charge air cooler, grid heater and 120VAC engine block heater.

Fuel Tank:

70 gallon (265 L) capacity.

TRANSMISSION:

Standard:

Dana 13.5 HR Powershift transmission with 2 ranges and 3 speeds in FORWARD and REVERSE. Provides full powershifts between the 3 FORWARD and REVERSE gears at maximum engine speed. Provides a low range and a high range that can be selected when the machine is at a STOP. All shifting is done with an electric push button operator interface in the operator compartment. The transmission includes a front axle disconnect for 2-wheel drive when commanded by the operator through the electric push button interface in the operator compartment. The machine must be placed in park before changing from 2-wheel drive or 4-wheel drive. The control system will not allow a change in drive state without being in PARK. A Torque convertor with a stall torque ratio of 2.73:1 attaches directly to engine flywheel to drive transmission. Equipped with oil cooler and filter.

Forward and Reverse gear ratios and speeds:

GEAR	RATIO	SPEED	Gear	RATIO	SPEED
1st	9.05	1.7 mph (2.7 km/h)	4th	3.73	4.2 mph (6.8 km/h)
2nd	4.68	3.4 mph (5.5 km/h)	5th	1.93	8.2 mph (13.2 km/h)
3rd	1.72	9.2 mph (14.8 km/h)	6th	0.71	22.3 mph (36 km/h)

FRONT AXLE:

Standard:

Dana 213 Series planetary drive-steer axle with 19.33 to 1 ratio. Front axle is rigid mounted and has 30% limited-slip differential.

REAR AXLE:

Standard:

Dana 213 Series planetary drive-steer axle with 19.33 to 1 ratio. Rear axle is rigid mounted and has 30% limited-slip differential.

BRAKES:

Standard:

Four-wheel hydraulic, internal wet-disc brakes. System includes two, 4 gallon (1.4L) accumulators, unloading valve, and brake malfunction light. Parking brake is internal wet-disc, spring applied, hydraulically released, integral to rear axle.

STEERING:

Standard:

Hydraulic steering unit with a 4 inch (10.1cm) cylinder attached to each axle. Allows limited steering when engine is not running. Push button operator interface to select between 4 steer modes: front-wheel, 4-wheel, or rear-wheel, or crab steer. Electronic sensors sense when wheels are centered upon selection of new mode. Steering wheel, control module, and electronically controlled selector valve control 4-mode steering.

TIRES:

Standard:

17.5 x 25, 20-ply rating, mud lug.

Tire Options:

Spare Wheel and Tire:

Standard Size: Extra wheel with 17.5 x 25, 20-ply rating tire mounted, ready for service. Net Weight: 530 pounds (240kg)

CHASSIS:

Standard:

Steps:

Grip-strut steps forward of driver's side front tire and ergonomically located grab bars enable easy cab entry and exit.

Outriggers:

Four independently controlled outriggers of swing-down design. Hydraulic cylinders are equipped with holding valves. Outrigger pad dimensions: 19 inches (48 cm) by 25 inches (64 cm).

Sheave Block Storage:

Recessed storage location integral to fuel tank for stowing sheave block with hook on top for easy lifting and lowering into storage box.

Tie Downs:

Four tie down points (two front, two rear) for transport.

Rear View Mirrors:

Right and left side mounted to cab provide visibility to rear and sides of crane.

Optional Chassis Accessories:

Auxiliary Front Winch:

Planetary gear winch with manual free spool drum disconnect, mounted beneath front chassis frame with push button controls located in operator's compartment. Hydraulic powered to provide bare drum line pull of 15,000 lbs (6800 kg) and 40 ft/min (12m/min) line speed. Includes 125 feet (38.1 m) of 9/16 inch (14 mm) diameter 6x36-EIP-IWRC wire rope, minimum breaking strength of 33,600 pounds (150kN). A Pintle hook is recommended for 2-parting line with a sheave block (not included). Option includes folding cab front window guard. Net Weight: 580 lbs (265 kg)

Pintle Hook Front:

T-60-AOL Holland pintle hook mounted on front outrigger frame member, rated for 30,000 pounds (13,600 kg) trailer weight. Not available with Auxiliary Front Winch. Net Weight: 15 pounds (6.8 kg)

Pintle Hook Rear:

T-60-AOL Holland pintle hook mounted on rear frame member, rated for 30,000 pounds (13,600 kg) trailer weight. Net Weight: 15 pounds (6.8 kg)

OPERATOR'S COMPARTMENT:

Standard:

Operator control station with one-position access to all chassis and crane control functions. Includes adjustable suspension seat, seat belt, and tilting steering column. Also includes access point to J1939 CAN Bus System, DC charging plug and cup holder. Operator compartment is equipped with safety glass and sliding door for entry and egress. Door is equipped with a keyed lock to protect the operator's station. Includes dome light, heater/AC with 2-speed can, 12V-electric windshield wiper on front and top glass, and retractable shade for top glass. There is a sliding window in the right side of the operator compartment and kick out emergency window in the rear of the cab.

Drum Rotation Indicator:

Feedback device attached to hoist control handle provides tactile feedback to operator when hoist drum is rotating. Feedback is proportional to hoist speed.

Air Conditioning and Heating:

Integrally-designed HVAC system. Heating system using water from engine and a two-speed fan to deliver warmth to the operator station. Compact AC united mounted in operator area, fan-cooled condenser integral to the machine cooling system, and belt-driven compressor with magnetic clutch, driven by engine, uses R134a coolant. All HVAC controls are located in the operator's station.

Hydraulic Controls:

Two (2) electronic, multi-axis joysticks provide control of boom functions and hoist. "Arm" command, in conjunction with the seat switch enables or disables the function of the joysticks. Keypads on armrest console control outrigger, transmission and steering functions.

ELECTRICAL SYSTEM - Standard 12 Volt DC:

Standard:

Batteries:
Two (2) 12 Volt, Group 31, 950 CCA batteries.

Lighting Group:
Consists of two (2), 12V LED headlamps; LED front turn signal lights, LED taillights with brake, backup and turn signal lights, and one (1) emergency flasher.

Horn:
12V horn actuated by button located on steering wheel and joystick.

Operator Display:
10.1" LED screen shows engine data including RPMs, battery voltage, fuel level, Hydraulic oil level and temperature. DEF fluid level. Display also shows engine hour-meter, engine fault codes, and control system faults. Screen indicates hydraulic oil temperature. Also included are indicators for engine warning and engine shutdown. In addition to a diagnostics page to aid with trouble shooting and fuse/relay failure identification.

Back-Up Alarm:
Provides pulsating sound from a 97 dB alarm when ignition is on and transmission is in REVERSE. Conforms to SAE J994B.

Outrigger Alarm System:
Provides pulsating sound from a 97 dB alarm when the OUTRIGGER UP or DOWN controls are operated.

Emergency Stop-Switch:
A two-position push button switch located on the top of the left armrest console. Designed to stop the engine and shut down the hydraulic system.

Optional Electrical Accessories:

Strobe Lights:
Two amber LED Strobe lights, one mounted on each side of counterweight for high 360-degree visibility around crane. Flashes 60-120 times per minute. Activated with outriggers down and/or moving. Net Weight: 15 pounds (7 kg)

Boom Work Lights:
Two LED work lights, one on left side of boom to light boom tip and one on the right side of the turret to light ground under boom tip. Includes switch on the display in the operator compartment. Net Weight: 10 pounds (4.5 kg)

HYDRAULIC SYSTEM:

Standard:

Two (2) axial piston pumps, mounted on and driven by the main transmission, delivers a combined flow of 95 GPM (360 L/min) at 4000 PSI (280 bar) at 2500 RPM engine speed. System protected by relief valves, pressure filters (20 micron), and return filters (10 micron). Hydraulic oil cooler is standard.

Hydraulic Reservoir:

110 gallon (416 L) capacity, equipped with 10-micron breather filter on top and oil level gauge on side.

BOOM:

Standard:

Four-section, high strength steel construction. Single, telescopic, hydraulic cylinder with wire rope and sheave system that extends and retracts the second, third, and fourth stages proportionally. The telescope cylinder and the boom elevation cylinder are equipped with cylinder-mounted holding valves. Boom angle indicator is provided on the left side of the boom

BOOM ROTATION:

Standard:

Heavy-duty bearing rotation gear with external teeth supports turn table. Rotation is powered by hydraulic motor and planetary drive with integral spring set, hydraulic released brake. Rotation gearbox may be adjusted as wear occurs, to minimize backlash. Manual turret lock pin for transport.

MAIN HOIST:

Standard:

Hydraulic powered single speed planetary gear hoist with spring set, hydraulically released brake and load holding valve. Grooved drum, spring applied cable follower and 3rd wrap indicator. Maximum bared drum line pull of 13,792 lbs. and maximum line speed of 209 ft/min (5th layer).

Optional:

Hydraulic powered two-speed (12 VDC solenoid at motor for speed selection) planetary gear hoist with spring set, hydraulically released brake and load holding valve. Grooved drum, spring applied cable follower and 3rd wrap indicator. Minimum bare drum line pull of 13,792 lbs. and maxiumum line speed of 297 ft/min (5th layer).

HOIST PERFORMANCE

Wire Rope: 5/8" diameter, Compact 35 rotation resistant rope, RRL lay, 2160 Grade. Line pulls are not based on wire rope strength.

	Normal Speed		High Speed (Optional)				
Rope Layer	Max Line Pull (Lb)	Line Speed (ft/min)	Max Line Pull (Lb)	Line Speed (ft/min)	Pitch Dia (in)	Layer (ft)	Total (ft)
1	13,792	151.8	6,896	215.3	13.2	84.5	84.5
2	12,598	166.2	6,299	235.7	14.4	92.5	177.0
3	11,594	180.6	5,797	256.1	15.7	100.5	277.5
4	10,738	195.0	5,369	276.6	16.9	108.5	386.0
5	10,000	209.0	5,000	297.0	18.2	116.5	502.5

Main Hoist Rope:

Standard:

Main hoist rope is 5/8" diameter. Compact 35 rotation resistant rope, RRL lay, 2160 Grade, minimum breaking strength 56,400 lbs. (251 kN), 425' (130 m) long. Weight per foot is 0.88 lbs. (1.31 kg per m). Note that rope weight is not included in load calculations.

Boom Attachments:

Standard:

Downhaul Weight & Hook:

Downhaul weight and 14,000-pound (6250 kg) rated swivel hook to use with wedge socket on 5/8-inch (16 mm) load line. Specially designed to work with the anti-two-block system and to clamp the dead end of the rope. Weights 180 pounds (82 kg).

Anti-Two-Block Device:

Prevents damage to hoist rope and/or machine components from accidentally pulling sheave block or downhaul weight against boom tip. Consists of trip arm at boom tip which is moved upward by Sheave block or downhaul weight as hook approaches boom tip. Trip arm actuates electric switch that is connected by cable reel mounted on boom, to the crane control system. Thus system will stop HOIST RAISE, TELESCOPE EXTEND, and BOOM LOWER. No other circuits are affected. These circuits are returned to normal operation by operating the HOIST LOWER or TELESCOPE RETRACT control.

Rated Capacity Limiter:

Operational aid that warns the operator of impending overload with audible and visual signals. LED Screen has readouts for maximum permissible and actual load, boom angle, boom length and load radius. System senses on outriggers or on rubber tires. In the event of an overload, it will block the following boom functions: HOIST RAISE, BOOM TELESCOPE EXTEND, BOOM LOWER, AND SWING. Operator configurable working range limits for: Swing angle, maximum radius, maximum boom tip height. Real time display of outrigger ground bearing pressure.

Four-Part-Line Sheave Block:

Double sheave block for 4-part-line requirements. 12-inch (305 mm) OD sheaves for 5/8-inch (16 mm) diameter wire rope. Swivel hook with safety latch. 480-pound (218 kg) weight provides positive overhaul. Includes bar on top tp actuate trip arm of Anti-Two-Block device.

Optional Boom Attachments:

Boom Extension - 20 Ft. (6.1 m), Offset:

Provides 20 feet (6.1m) of additional length for lifting loads with load line. Boom extension may be stowed alongside base boom section when not in use. Tip sheave, attaching brackets, and pins are included. Deduct 500 pounds (220kg) from Capacity Chart when boom extension is in the stowed position. Includes trip arm for Anti-Two Block device. Boom extension will tilt through 3 positions: in-line, 15° offset and 30° offset. Net Weight: 775 pounds (350 kg).

Two-Part-Line Sheave Block:

Single sheave block for 2-part-line requirements. 12-inch (305 mm) OD sheaves for 5/8-inch (16 mm) diameter wire rope. Swivel hook with safety latch. 480-pound (218 kg) weight provides positive overhaul. Includes bar on top to actuate trip arm of Anti-Two-Block Device.

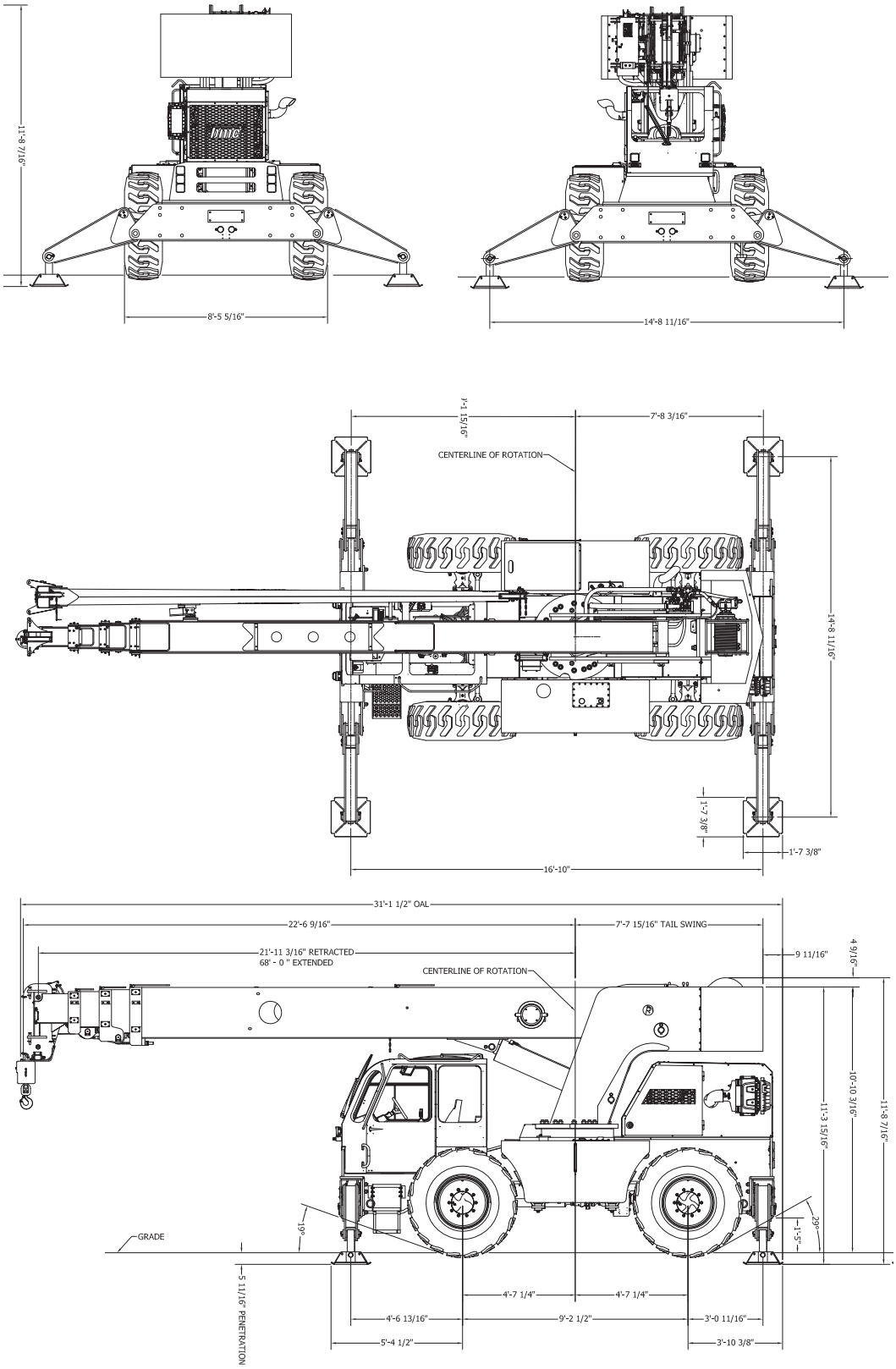
Specifications subject to change without notice.

For additional options or special equipment not listed, please consult your dealer salesperson or contact **Broderson Manufacturing Corp.**

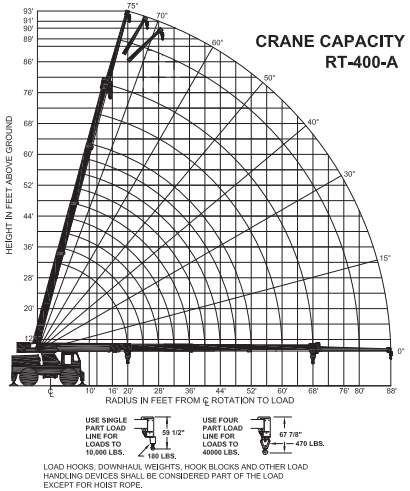
BRODERSON® Manufacturing Corp.
14741 West 106th Street
Lenexa, KS 66215 USA

(913) 888-0606
www.BMCcranes.com

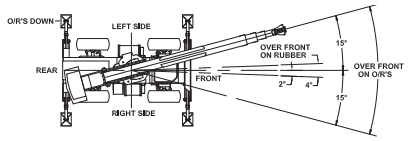
Dimensions and values shown are for reference purposes only. Specifications subject to change.



Crane Capacity Chart:
Imperial



Load hooks, downhaul weights, hook blocks and other load handling devices except hoist rope shall be considered part of the load.



The load hoist line on this unit must be 5/8" dia. 425 Foot long compact 35x7 class grade 2160 wire rope (or equivalent) with a minimum breaking strength of 35,000 lbs.

Approved tires: 17.5-2520 Pr-100 psi

Torque wheel nuts to 475 ft. Lbs. (These conditions must be maintained to handle rated loads on this crane.)

	CAPACITIES APPLY TO OPERATION ON FIRM LEVEL SURFACE			
LOAD RADIUS	MAIN BOOM OR EXTENSION CAPACITIES IN POUNDS			
	360° ROTATION		OVER FRONT	
FEET	ON RUBBER	ON OUTRIGGERS	ON RUBBER	ON OUTRIGGERS
MAIN BOOM				
10	18300	40000	26300	40000
12	13900	34100	22000	34100
14	10900	29200	18000	29200
16	8600	25500	14800	25500
18	7300	23200	12400	22700
20	6000	22000	10000	22000
22	5000	19000	8300	20000
24	4200	17800	7000	18300
26	3600	16100	6100	16900
28	3000	13300	5200	15700
30	2500	12000	4600	14600
32	2200	10700	4000	13700
34	1800	9700	3500	12900
36	1500	8900	3100	11900
38	1300	8000	2700	10900
40	1000	7300	2400	9900
42	800	6700	2000	9200
46	----	5600	1600	8100
50	----	4700	1200	7000
54	----	4000	800	6100
58	----	3400	500	5300
62	----	2900	----	4600
66	----	2400	----	4000
68	----	2300	----	3600
BOOM EXTENSION				
72	----	2500	----	2800
76	----	2000	----	2800
80	----	1600	----	2800
84	----	1300	----	2800
88	----	1100	----	2000

BOOM EXTENSION	20-FOOT BOOM EXTENSION CAPACITIES							
	MAIN BOOM ANGLE							
ANGLE	0°	15°	30°	40°	50°	60°	70°	75°
0°	2300	2400	2700	3100	3700	4800	6200	7000
15°	----	2300	2400	2600	2900	3400	4100	4800
30°	----	----	2300	2400	2500	2700	3100	3400

DO NOT POSITION BOOM AT LOAD RADII WHERE NO LOAD CAPACITIES ARE SHOWN.

EXCEEDING CAPACITY RATINGS OR APPLYING SIDE LOADS TO THE BOOM OR BOOM EXTENSION IS MISUSE, IS HAZARDOUS, AND VOIDS WARRANTY.

CAUTION: BOOM EXTENSION LOADS MUST NOT EXCEED MAIN BOOM CAPACITY.
DO NOT PICK AND CARRY WITH LOADS ON BOOM EXTENSION.
DO NOT LIFT LOADS ON BOOM EXTENSION WHEN ON RUBBER.

LOAD RADIUS IS THE HORIZONTAL DISTANCE FROM THE CENTER OF ROTATION OF THE UNLOADED CRANE TO THE VERTICAL LOAD LINE WITH THE LOAD APPLIED.

CAPACITIES ON OUTRIGGERS ARE 85% OF TIPPING LOADS. CAPACITIES ON RUBBER ARE 75% OF TIPPING LOADS. CAPACITIES BELOW BOLD LINES ARE LIMITED BY TIPPING. OTHER CAPACITIES ARE LIMITED BY STRUCTURAL OR HYDRAULIC CAPACITY.

PICK AND CARRY WITH THE SHORTEST PRACTICAL BOOM, CENTERED OVER THE FRONT. OPERATE WITH BOOM AS LOW AS POSSIBLE, WITH THE LOAD CLOSE TO THE GROUND. PICK AND CARRY CAPACITIES ARE FOR SMOOTH, LEVEL PAVED SURFACE. SPEED MUST BE LESS THAN 3 MPH.

THE BOOMS ON THIS UNIT ARE ALL STEEL AND HAVE NO LINE VOLTAGE RATING - NO ELECTRICAL INSULATION VALUE.

MAXIMUM HYDRAULIC PRESSURE: 3000 PSI

BOOM EXTENSION DEDUCT: 500 LBS WHEN STOWED ON BASE BOOM

ENSURE ANTI-TWO-BLOCK SWITCH IS FUNCTIONAL AFTER DEPLOYING OR STOWING BOOM EXTENSION.

BMC BRODERSON® Manufacturing Corp.®
(913) 888-0606 | www.BMCcranes.com