Engineering Spec

RT-300-C

BMC BRODERSON Manufacturing Corp.
P.O. Box 14770, Lenexa, KS 66285-4770
(913) 888-0606 • FAX (913) 888-8431
• www.bmccranes.com

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BMC's RT-300 Rough Terrain Crane is a self-propelled crane designed for lifting and material handling applications, with the special features of high maneuverability, high flotation, 4-wheel steer and 4-wheel drive. The basic unit consists of a chassis and hydraulic boom assembly. The chassis includes a frame, four hydraulic outriggers, engine, 6-speed transmission, front steering-driving axle, rear steering-driving axle, fuel tank, oil tank, control station and three-mode full-power steering. The boom assembly includes a hydraulic-powered rotating turret, hydraulic telescopic boom, hydraulic boom elevation and a hydraulic powered planetary gear winch. A Rated Capacity Limiter is standard.

RT-300-2C:

4-section hydraulically extended boom with capacity of 30,000 pounds at 10 feet. Horizontal reach of 60 feet and maximum height of 70 feet.

General:

Length:	
Overall	29 feet 10 inches
Chassis	16 feet 7 inches
Width	8 feet 2 inches
Height	11 feet 2 inches
Wheelbase	9 feet 3 inches
Ground Clearance (Chassis)	15 inches
Angle of Approach	26 degrees
Angle of Departure	24 degrees
Turning Radius 4-Wheel Steer: (Min.)	
Outside Tire Centerline Radius	15 feet 3 inches
Vehicle Clearance Circle (Dia.)	35 feet 0 inches
Road Speed	24 miles per hour
Gradeability on Concrete	70 percent grade
Outriggers:	
Spread:	
Pin to Pin of Shoe	12 feet 9 inches
Overall Width	14 feet 5 inches
Ground Penetration	5 inches
Weight For Basic Machine:	
Total	44,000 pounds
Front Axle	23,300 pounds
Rear Axle	20,700 pounds
Drawbar Pull:	30,000 pounds
Hoist Pull (Bare Drum)	10,000 pounds
Boom Movement	
Rotation	Continuous
Elevation	0-70 degrees
Extension	40 feet 0 inches

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General: (Cont'd)

Boom Speeds

Rotation	3.5 RPM
Elevation	18 Seconds
Extension	23 Seconds

Hoist Line Speed 280 FPM

Maximum Boom Height: (Nominal)	**Vertical Reach**	**Horizontal Reach**
Without Boom Extension	70 feet 0 inches	60 feet 0 inches
With Boom Extension	87 feet 11 inches	80 feet 0 inches

Engine:

Standard:

Cummins — QSB5.9 Turbo: (DE-35)

Cummins Model QSB5.9 diesel engine, turbocharged six cylinder, 5.9 liter (359 CID). Bore 4.02 inches, stroke 4.72 inches. Rated 155 HP at 2,500 RPM. 440 ft. pounds maximum torque at 1,500 RPM. 95 amp alternator. Oil capacity, 17 quarts. Coolant capacity, 26 quarts. Electronic controls for three engine speeds during crane operation - 700, 1,200 or 1,800 RPM. Protection system shuts down engine when coolant to hot or oil pressure is too low.

Fuel Tank:

50 gallon capacity.

Optional Engine Accessories:

Engine Heater: (EH-1)

Heater for Cummins diesel engine. Engine coolant heater installed with hoses in coolant system to circulate warm water through engine. Plugs into 120 volt AC extension cord.

Ether Injection System: (EI-1)

Ether starting aid is controlled by switch at operator station and injects ether directly into intake manifold.

Engine Covers: (EC-5)

Quick-detach side covers. (Net Weight: 40 pounds)

Transmission:

Standard:

Funk Manufacturing Co. Model 2000 powershift transmission with 6 forward speeds and 3 reverse. Provides full powershifts at maximum engine speed in all gears. All shifting is done with a single-lever electrical control in the operator compartment. The transmission includes an automatic rear axle disconnect for two-wheel drive in speeds 4, 5 and 6 in forward and speed 3 in reverse. The other speeds are four-wheel drive. A torque converter with a stall torque ratio of 2.640:1 attaches directly to engine fly wheel to drive transmission. Equipped with oil cooler and filter.

Forward gear ratios and speeds:

GEAR	RATIO	SPEED (mph)
1st	8.20	2.7
2nd	4.64	4.8
3rd	3.53	6.3
4th	2.00	11.2
5th	1.41	15.8
6th	.80	24

Reverse gear ratios and speeds:

GEAR	RATIO	SPEED
1st	8.20	2.7
2nd	3.53	6.3
3rd	1.41	15.8

Front Axle:

Standard:

Axle Tech Model PSC822 planetary driving-steering axle with 20.06 to 1 ratio. Rigid mounted on front. Axle has limited-slip differential.

Rear Axle:

Standard:

Axle Tech Model PSC822 planetary driving-steering axle with 20.01 to 1 ratio. Rear axle is mounted with rubber elements to allow oscillation. Axle is not available with no-spin or limited-slip differential.

Brakes:

Standard:

Four-wheel hydraulic with hydraulic booster. 17 inch x 4 inch brake at each wheel. Spring-applied and hydraulically released, disc-type parking brake on transmission.

Steering:

Standard:

Hydraulic steering unit with two 3.5 inch cylinders attached to each axle. Allows limited steering when engine is not running. Steering wheel and electronically controlled selector valve control 3-mode steering: crab, round and 2-wheel front axle steering.

Tires:

Standard:

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

Optional Tires:

Spare Wheel and Tire, Standard Size: (SW-51)

Extra wheel with 17.5 x 25, 20-ply rating tire mounted, ready for service. (Net Weight: 510 pounds)

Chassis:

Standard:

Steps:

Grip-strut steps and grab bars provide easy two-step access to operator's compartment.

Outriggers:

Four independently controlled outriggers of swing-down design. Hydraulic cylinders are equipped with direct-connected holding valves. Foot pad dimensions: 20 inches by 16 inches.

Sheave Block and Downhaul Weight Storage:

Tray on left-hand side behind hydraulic tank for storing sheave block and downhaul weight for single-part line. Sheave block and downhaul weight are securely retained by chain and locking device.

Optional Chassis Accessories:

Lifting Eyes: (LR-8)

Consists of four eyes on chassis and turntable so slings can be attached for lifting crane. (Net Weight: 40 pounds)

Towing Eyes: (LR-6)

Consists of four eyes, two on front and two on rear, for towing. (Net Weight: 40 pounds)

Spreader Bar and Sling Assembly: (LS-11)

Spreader bar with four wire rope assemblies to allow balanced lifting of crane. Must be used with Lifting Eyes (LR-8). Order lifting eyes separately (Net Weight: 425 pounds)

Pintle Hook Front: (PH-11)

T-60-AOL Holland pintle hook mounted on front outrigger frame member, rated for 24 tons. (Net Weight: 15 pounds)

Pintle Hook Rear: (PH-12)

T-60-AOL Holland pintle hook mounted on rear frame member, rated for 24 tons. (Net Weight: 15 pounds)

Operator Compartment:

Standard:

Operator Compartment:

Operator control station provides one-position access to all chassis and crane controls.

Mirrors:

A mirror on each side of the operator's compartment provides visibility behind the crane.

Operator Compartment Options:

All Weather Cab: (WC-30)
Consists of rigid-mounted canopy section and two removable hinged doors with safety glass. Rugged canopy structure with laminated glass front and top. Doors are equipped with keyed locks to protect operator's compartment. Includes heater with two-speed fan, interior light, 12-volt electric windshield wiper and a variable-speed electric defroster fan. (Net Weight: 260 pounds)

Window Wiper - Top Window: (WW-1)
12-volt electric wiper on top window operated with its own switch.

Operator Guard: (OG-8)
Tubular steel weldment with heavy expanded steel mesh top and grille front section. May be used with or without a cab. Guard will tilt to allow cab windows to be cleaned. (Net Weight: 140 pounds)

Operator's Suspension Seat - Seats Inc. - Cloth: (SSO-3)
Full-suspension with adjustments for height, tilt, fore-aft, operator weight and with armrest angle adjustment.

Operator's Suspension Seat - Seats Inc. - Vinyl: (SSO-5)
Full-suspension with adjustments for height, tilt, fore-aft, operator weight and with armrest angle adjustment.

Noise Reduction Kit: (NR-3)
Noise reduction panel over control valves. Also grille on front of unit to vent heat from valve area. Reduces noise and helps control heat in cab. (Net Weight: 20 pounds)

Air Conditioning: (AC-1)
Provides factory system using R134a refrigerant. Compact AC unit mounted in operator area, fan cooled condenser mounted on hood and belt driven compressor with magnetic clutch driven by engine. (Net Weight: 125 pounds)

Electrical System:

Standard

Battery:
12 Volt, Group 31, 950 CCA battery.

Instrument Group:
Located at operator's station and includes fuel gauge, transmission oil temperature gauge, voltmeter, oil pressure, water temperature and hydraulic oil temperature gauges. Key switch, starter and horn button on instrument panel. Hourmeter records only during actual engine operation. Also included are indicator lights for two-wheel drive, four-wheel drive and parking brake.

Back-Up Alarm:
Provides pulsating sound from 97 dB alarm when ignition is on and transmission is in reverse.

Outrigger Alarm System:
112 dB alarm with alternating two-tone sound is actuated by a switch when the "outrigger down" controls are operated.

Optional Electrical Accessories:

Strobe Light: (SL-3)
Yellow strobe light mounted on top of engine hood for high visibility. Flashes 60-120 times per minute. Strobe draws only one-half amp. Includes switch in operator compartment.

Lighting Kit: (LK-3)
Two modular, dual-beam headlights with turn signal lights. Taillights with brake and turn signal lights. Back-up lights. Turn signal and flasher switch. Lights installed in back of instrument gauges for night time operation. High-beam indicator lamp. (Net Weight: 15 pounds)

Amber Rotating Beacon: (ARB-4)
Amber rotating beacon mounted on top of engine hood for high visibility all around crane. Includes switch in operator compartment. (Net Weight: 10 pounds)

Boom Work Lights: (WL-3)
Two halogen work lights, one on left side of boom to light boom tip and one on the turret to light ground under boom tip. Includes switch in operator compartment. (Net Weight: 10 pounds)

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Hydraulic System:

Standard:

Triple vane pump, mounted on and driven by the main transmission, delivers 9, 26, and 44 GPM at 3,000 PSI and 2,500 RPM engine speed. System protected by relief valves, 100 mesh suction-line strainer and 10 micron return-line filter.

Hydraulic Reservoir:

70 gallon capacity, equipped with 40 micron breather filter on top and oil level gauge on side.

Boom Assembly:

Standard:

High strength steel construction, equipped with bearing pads for efficient support and extension. Double-acting hydraulic cylinders extend and retract the second and third boom sections. Double runs of high strength leaf chain extend and retract the fourth section. The second stage extends first and retracts last, controlled by sequencing valves in the boom. The third and fourth sections extend and retract together proportionally, controlled by chains. The extension system is equipped with a holding valve. Twin, double-acting hydraulic cylinders control the boom elevation and are equipped with direct connected holding valves. Boom length markings and boom angle indicators are provided on left side of the boom. Boom tip sheaves are provided for four-part line.

Boom Hoist:

Standard:

Turret-mounted, planetary gear winch, is hydraulically powered to provide a bare-drum line pull of 10,000 pounds and a speed of 280 feet per minute. Line speed of the fourth layer on the drum is 360 feet per minute. Drum diameter is 9.75 inches, length is 13.6 inches. Includes 375 feet of 1/2 inch wire rope, 6 X 25 IWRC-XIP, 26,600 pound breaking strength.

Boom Rotation:

Standard:

Heavy-duty ball bearing with external teeth supports boom. Rotation is by hydraulic motor and compound planetary gear drive. A spring-applied hydraulically released brake and an over-running load valve are provided. Hydraulic centerpost and electric slip rings allow continuous rotation.

Anti-Two-Block Device:

Standard:

Designed to prevent damage to hoist rope and/or machine components from accidentally pulling sheave block or downhaul weight against boom tip. Consists of pivot arm at boom tip that is moved upward by sheave block or downhaul weight as hook approaches boom tip. Pivot arm actuates electric switch that is connected by cable reel to solenoid dump valve in hydraulic circuit. This valve will dump the “hoist raise”, “crowd extend” and “boom lower” circuits. No other circuits are affected. These circuits are returned to normal operation by operating the “hoist lower” or “crowd retract” control. Key-operated, momentary override switch located under dashboard.

Rated Capacity Limiter:

Standard:

Warns operator of impending overload with audible and visual signals. Has read-outs for load, boom angle, boom length and load radius. Prevents overload by dumping boom functions that cause overload: **HOIST RAISE, TELESCOPE EXTEND, BOOM LOWER, SWING LEFT** and **SWING RIGHT**. These circuits are returned to normal by lowering load to a safe resting place with hoist or by retracting or raising boom to a shorter load radius. There is also an override button on the RCL control panel and an override switch under the dashboard.

Sheave Block:

Standard:

Double sheave block for four-part-line requirements. 12 inch O.D. sheaves for 1/2 or optional 9/16 inch diameter wire rope. Swivel hook with safety latch. Includes bar on top to actuate trip arm of Anti-Two-Block Device. 440 pound weight provides positive overhaul.

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Optional Boom Attachments:

Boom Extension - 20 Ft., Offset: (BE-20)

Provides 20 feet of additional length for lifting loads with load line. May be set at 0 (in-line), 15 or 30 degrees offset. Swing-away boom extension may be stowed alongside base boom section when not in use. Tip sheave, knuckle sheave, attaching brackets and pins included. When boom extension is in the towed position, the crane payload must be reduced by 500 pounds. When boom extension is extended to the work position, the main boom payload must be reduced by 1,000 pounds. Includes anti-two-block system. Requires Downhaul Weight and Hook option, DH-1. (Net Weight: 770 pounds)

Downhaul Weight and Hook: (DH-1)

Downhaul weight and 5-ton swivel hook to use with existing wedge socket on 1/2 inch or 9/16 inch load line. Specially designed to work with the anti-two-block system and to clamp the dead end of the rope. (Net Weight: 170 pounds)

Should you, as the end user, require an option or special equipment on your RT-300-2C that is not listed on our sales literature, please contact your dealer salesperson or the factory to receive a special quoted price.

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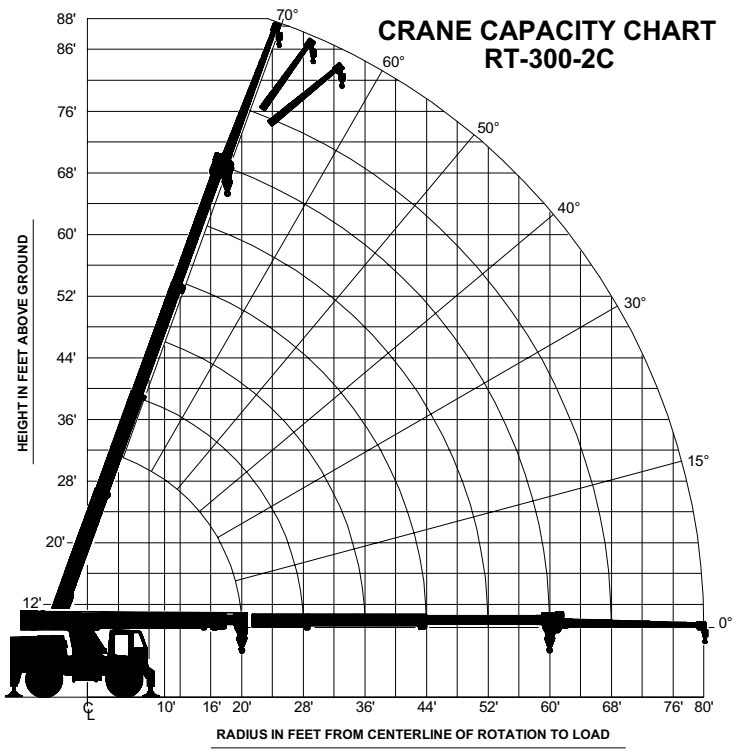
CRANE CAPACITY CHART
RT-300-2C

	CAPACITIES APPLY TO OPERATION ON FIRM LEVEL SURFACE			
LOAD RADIUS FEET	MAIN BOOM CAPACITIES IN POUNDS			
	360° ROTATION		OVER FRONT	
	ON RUBBER	ON OUTRIGGERS	ON RUBBER	ON OUTRIGGERS
MAIN BOOM				
10	18300	30000	26300	30000
12	13500	28500	22500	28500
14	10400	25900	17600	25900
16	8300	22500	14000	22500
18	6700	19500	11400	19500
20	5500	16900	9400	17000
22	4500	14200	7900	15000
24	3700	12100	6800	13300
26	3100	10500	5700	11900
28	2500	9100	4800	10600
30	2000	7900	4200	9600
32	1600	6900	3600	8600
34	1400	6300	3200	8000
36	1200	5700	2900	7500
38	900	5200	2600	6900
40	800	4800	2400	6500
44	600	4100	1900	5600
48	----	3500	1600	4900
52	----	3100	1300	4200
56	----	2700	1000	3700
60	----	2300	800	3200
BOOM EXTENSION				
64	----	1950	----	2300
68	----	1750	----	2300
72	----	1500	----	2250
76	----	1300	----	1950
80	----	1000	----	1600

CAPACITIES ON OUTRIGGERS ARE 85% OF TIPPING LOADS – ON RUBBER 75% OF TIPPING. CAPACITIES ABOVE BOLD LINES ARE LIMITED BY STRUCTURAL OR HYDRAULIC CAPABILITIES. CAPACITIES BELOW BOLD LINES ARE LIMITED BY TIPPING. DO NOT POSITION BOOM AT LOAD RADII WHERE NO LOAD CAPACITIES ARE SHOWN.



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

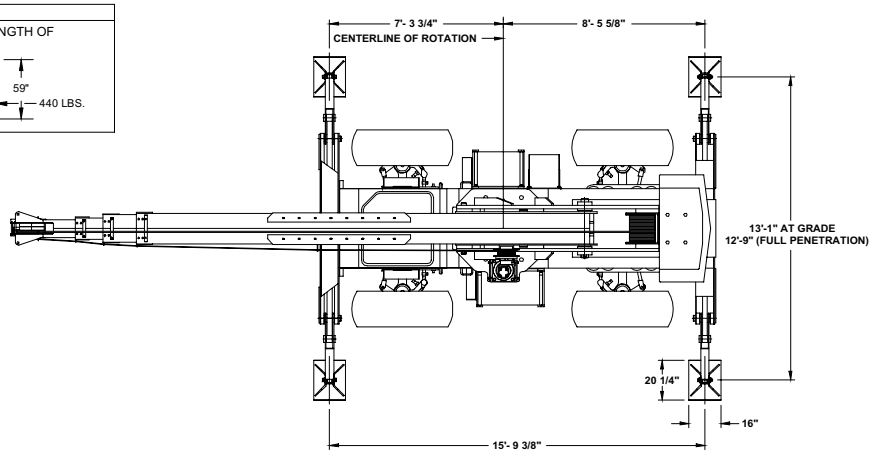
CAUTION: BOOM EXTENSION LOADS MUST NOT EXCEED MAIN BOOM CAPACITY.

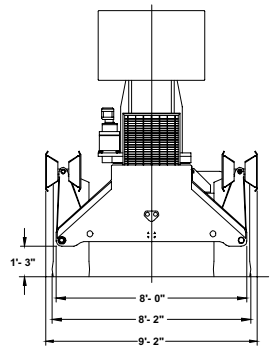
BOOM EXTENSION DEDUCT: 500 LBS. WHEN STOWED ON BASE BOOM.
1000 LBS. IN WORK POSITION WITH LOAD ON MAIN BOOM.

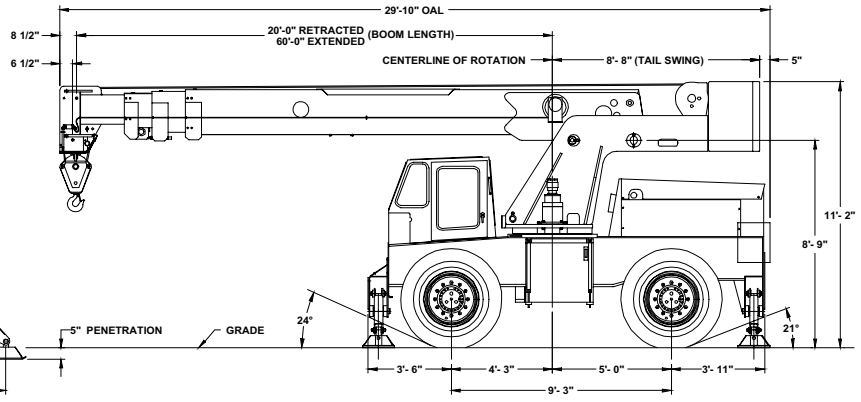
LOAD HOIST ROPE
1/2" 6 X 25 XIP IWRC ROPE WITH MIN. BREAKING STRENGTH OF 13.3 TONS (26,600 LBS.)

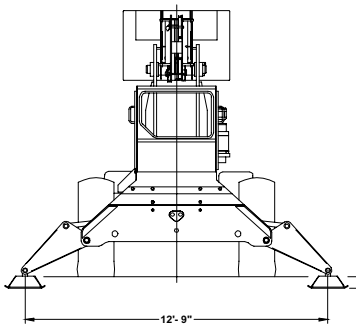
USE SINGLE PART LOAD LINE FOR LOADS TO 7500 LBS. — 54" — 180 LBS.

USE FOUR PART LOAD LINE FOR LOADS TO 30000 LBS. — 59" — 440 LBS.









Specifications Subject to Change

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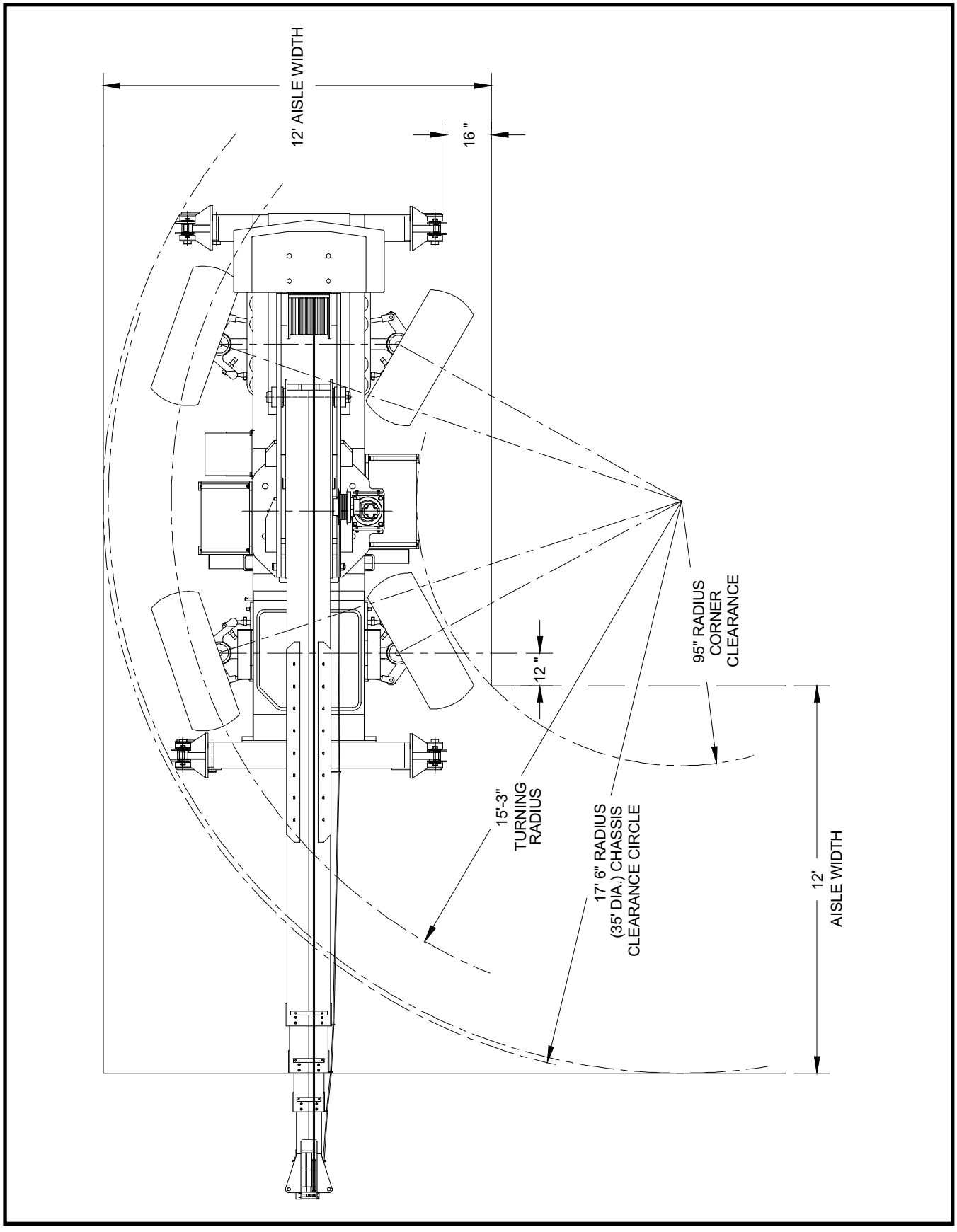

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