



510C

BACKHOE LOADER



Model shown may include options

**SAE Net
Horsepower**

90 hp
(67 kW)

**Digging
Depth**

16 ft. 5 in.
(5.00 m)
(long stick)

**Operating
Weight SAE**

15,400 lb.
(7000 kg)

ENGINE

John Deere engineered and manufactured. Replaceable wet type cylinder liners provide superior heat dissipation, longer life. High strength alloy heads have replaceable valve seat inserts. The forged steel, 5-main bearing crankshaft is statically and dynamically balanced for smooth operation. Cast aluminum pistons provide good heat transfer and pistons are sprayed with cooling oil for longer life.

Engine: John Deere 4045T
 Rated power @ 2200 rpm 90 SAE net hp (67 kW)
 95 SAE gross hp (71 kW)

Turbocharger standard
 Cylinders 4
 Displacement 276 cu. in. (4.524 L)
 Fuel consumption, typical 1.6 to 2.6 gal/hr (6.0 to 9.8 L/h)
 Torque rise, standard ... 25% at 1300 rpm ... 268 lb-ft (363 Nm)
 Lubrication Pressure system w/full flow filter and cooler
 Air cleaner Dual stage dry type with safety element and precleaner

Electrical system 12 volt
 Alternator 65 amps

TRANSMISSION

John Deere designed and built 4-speed helical gear, synchronized, collar shift transmission with hydraulic reverser. Uses single stage, dual phase 11-inch (280 mm) torque converter with 2.23:1 stall ratio.

TRAVEL SPEEDS

	Gear	Forward		Reverse	
		mph	(km/h)	mph	(km/h)
With standard 19.5L-24 rear and 11L-16 front tires	1	3.2	5.2	3.7	6.0
	2	5.5	8.8	6.4	10.3
	3	11.7	18.8	13.6	21.9
	4	21.4	34.4	24.8	40.0
With MFWD and required 21L-24 rear and 12.00-16.5 front tires	1	3.3	5.3	3.8	6.1
	2	5.7	9.2	6.6	10.6
	3	12.1	19.5	14.0	22.5
	4	22.1	35.6	25.6	41.2

FINAL DRIVES

Heavy-duty, inboard mounted planetary type. Evenly distributes axle shock loads over three gears that run in a cooling oil bath.

BRAKES

Hydraulic wet disk brakes are mounted inboard and are pressure cooled and lubricated. They're self-adjusting, self-equalizing, require no periodic service. Individual pedals allow them to be applied together or separately. Parking/emergency brake is an independent system that uses a mechanical V-groove band on differential ring gear.

STEERING

Hydrostatic power steering gives superior control at all speeds. Excellent steering torque allows easy maneuvering with heavy loads.

Non-powered axle

Curb turning radius with brakes 11 ft. 7 in. (3.53 m)
 without brakes 13 ft. 5 in. (4.10 m)
 Bucket clearance circle with brakes 33 ft. 6 in. (10.22 m)
 without brakes 37 ft. 3 in. (11.34 m)
 Steering wheel turns, stop to stop 2.2 to 2.9

Mechanical-front-wheel drive

Curb turning radius with brakes 11 ft. 7 in. (3.53 m)
 without brakes 13 ft. 8 in. (4.17 m)
 Bucket clearance circle with brakes 31 ft. 6 in. (9.59 m)
 without brakes 35 ft. 8 in. (10.88 m)
 Steering wheel turns, stop to stop 2.3 to 2.8
 Axle oscillation stop to stop, both axles 22 degrees

Axle ratings:	Static	Dynamic	SAEJ43
Front	56,000 lb. (25 500 kg)	56,000 lb. (25 500 kg)	11,790 lb. (5347 kg)
Rear	51,000 lb. (23 200 kg)	68,000 lb. (30 900 kg)	16,150 lb. (7342 kg)

HYDRAULICS

System closed center
 Pressure, main relief 2755 psi (19 000 kPa)(193.7 kg/cm²)
 Pump radial pistons
 Flow at 2500 rpm 35 gpm (133 L/min)
 Filter, return oil 10 micron, spin-on replaceable element

TIRES

Front	Rear
11L-16, 12 PR, F3	19.5L-24, 10 PR, R4
11L-16, 12 PR, F3 w/calcium chloride	19.5L-24, 12 PR, R4
14.5/75-16.1, 10 PR, F3	21L-24, 10 PR, R4
14.5/75-16.1, 10 PR, F3 w/calcium chloride	
With mechanical-front-wheel drive	
12.00-16.5, 8 PR, lug tread	21L-24, 10 PR, R4
14-17.5, 8 PR	18.4-28L, 12 PR, R4

CAPACITIES

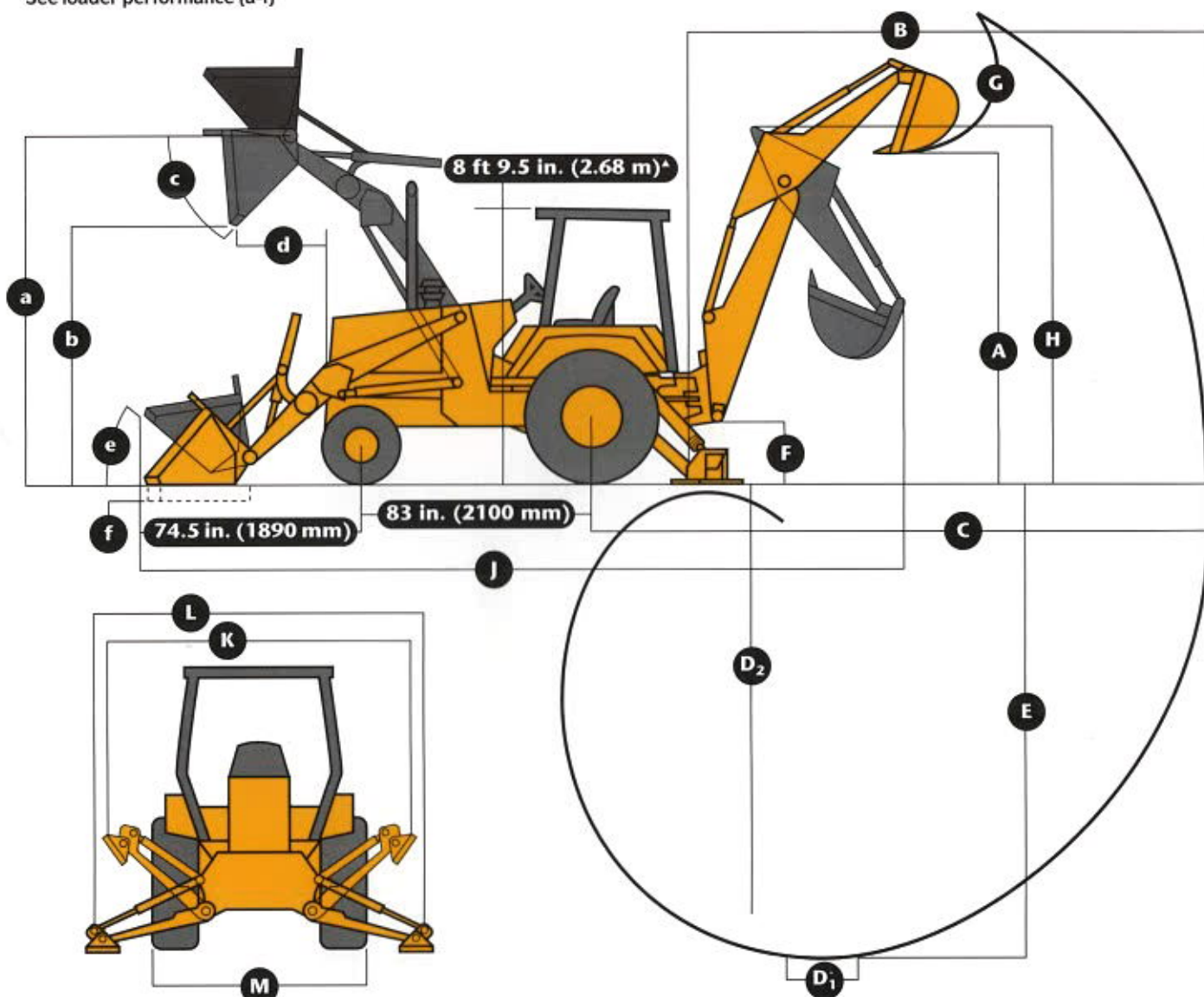
Fuel tank 38 gal. (144 L)
 Engine coolant 17 qt. (16 L)
 Engine oil including filter 9 qt. (8.5 L)
 Torque converter and reverser system 14 qt. (13 L)
 Transaxle and hydraulic system 21 gal. (79 L)

OPERATING WEIGHTS

510C 15,400 lb. (7000 kg)
 cab adds 450 lb. (204 kg)
 mechanical-front-wheel drive adds 245 lb. (111 kg)
 extendable dipperstick with
 required counterweight adds 1182 lb. (536 kg)
 optional front counterweighting adds 250 lb. (113 kg)
 reversible stabilizer pads add 120 lb. (54 kg)
 See backhoe and loader performance data for bucket weights

DIMENSIONS

See loader performance (a-f)



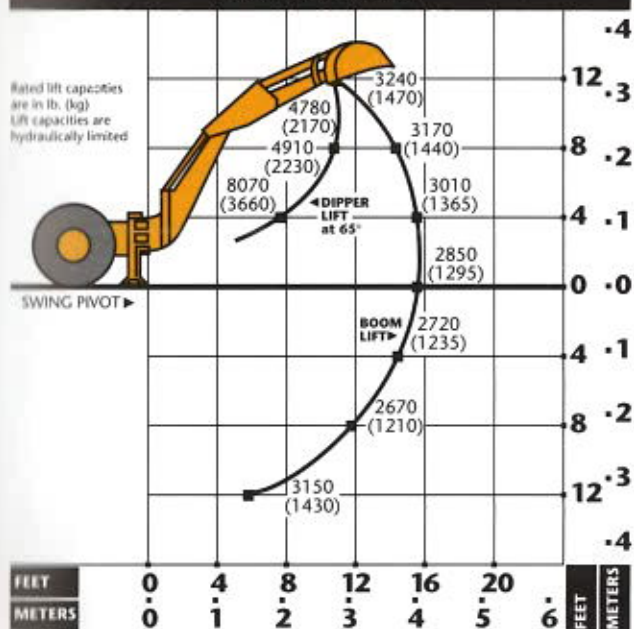
▲ ROPS and Cab

Key:

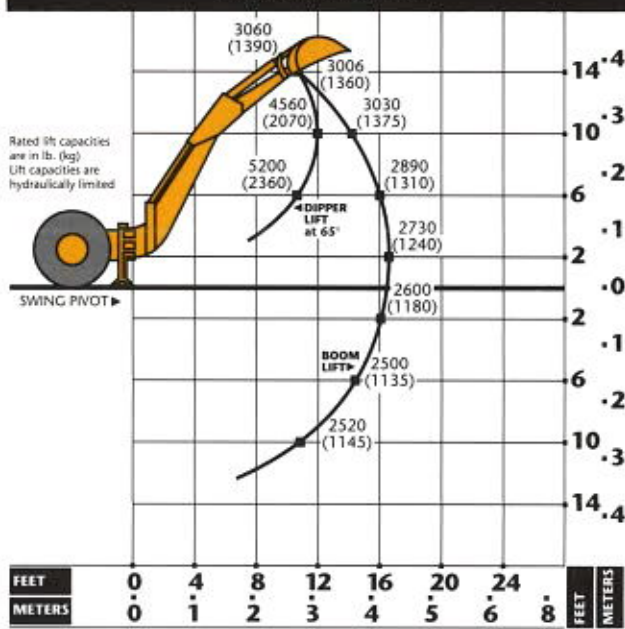
	Backhoe* w/Long Dipperstick	Backhoe* w/Short Dipperstick	Extendable Dipperstick	
			Retracted	Extended
A. Loading height, truck loading position	13 ft. (3.96 m)	12 ft. 4 in. (3.76 m)	12 ft. 4 in. (3.76 m)	15 ft. 3 in. (4.65 m)
B. Reach from center of swing mast	19 ft. 11 in. (6.07 m)	19 ft. 3 in. (5.87 m)	19 ft. 3 in. (5.87 m)	23 ft. 11 in. (7.29 m)
C. Reach from center of rear axle	23 ft. 8 in. (7.21 m)	23 ft. (7.01 m)	23 ft. (7.01 m)	27 ft. 8 in. (8.43 m)
D. Digging depth (SAE):				
(1) 2-ft. (610 mm) flat bottom	16 ft. 4 in. (4.98 m)	15 ft. 8 in. (4.78 m)	15 ft. 8 in. (4.78 m)	20 ft. 7 in. (6.27 m)
(2) 8-ft. (2440 mm) flat bottom	15 ft. 4 in. (4.67 m)	14 ft. 8 in. (4.47 m)	14 ft. 8 in. (4.47 m)	19 ft. 10 in. (6.05 m)
E. Maximum digging depth	16 ft. 5 in. (5.00 m)	15 ft. 9 in. (4.80 m)	15 ft. 9 in. (4.80 m)	20 ft. 8 in. (6.30 m)
F. Ground clearance, minimum	13 in. (330 mm)	13 in. (330 mm)	13 in. (330 mm)	13 in. (330 mm)
G. Bucket rotation	160 or 180 deg.	160 or 180 deg.	160 or 180 deg.	160 or 180 deg.
H. Transport height	12 ft. 1 in. (3.68 m)	12 ft. 1 in. (3.68 m)	12 ft. 8 in. (3.86 m)	12 ft. 8 in. (3.86 m)
J. Overall length, transport	23 ft. 4 in. (7.11 m)	22 ft. 11 in. (6.99 m)	23 ft. (7.01 m)	23 ft. (7.01 m)
K. Stabilizer width - transport	7 ft. 8 in. (2.34 m)	7 ft. 8 in. (2.34 m)	7 ft. 8 in. (2.34 m)	7 ft. 8 in. (2.34 m)
L. Stabilizer spread - operating	9 ft. 10 in. (3.00 m)	9 ft. 10 in. (3.00 m)	9 ft. 10 in. (3.00 m)	9 ft. 10 in. (3.00 m)
M. Overall width (less loader bucket)	86 in. (2185 mm)	86 in. (2185 mm)	86 in. (2185 mm)	86 in. (2185 mm)
Digging force, bucket cylinder (power dig position)	11,000 lb. (48.9 kN) (4990 kg)	11,000 lb. (48.9 kN) (4990 kg)	11,000 lb. (48.9 kN) (4990 kg)	11,000 lb. (48.9 kN) (4990 kg)
Digging force, crowd cylinder	7600 lb. (33.8 kN) (3450 kg)	8100 lb. (36.0 kN) (3675 kg)	8100 lb. (36.0 kN) (3675 kg)	5300 lb. (23.6 kN) (2405 kg)
Swing arc	180 deg.	180 deg.	180 deg.	180 deg.
Operator control	Two levers	Two levers	Right foot treadle	Right foot treadle
Bucket positions	8 or 17 deg. rollback	8 or 17 deg. rollback	8 or 18 deg. rollback	12 or 21 deg. rollback
Stabilizer angle rearward	14.5 deg.	14.5 deg.	14.5 deg.	14.5 deg.
Lifting capacity, maximum, boom at 65 deg.	5400 lb. (2450 kg)	5400 lb. (2450 kg)	5300 lb. (2400 kg)	2400 lb. (1090 kg)
Leveling angle	13 deg.	13 deg.	13 deg.	13 deg.

*Backhoe specifications are with 24-in. x 8.8 cu. ft. (610 mm x 0.25 m³) bucket.

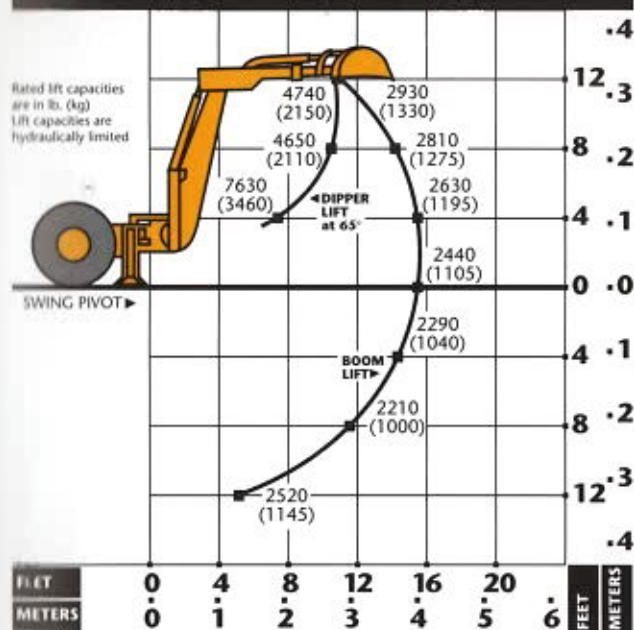
LIFT CAPACITY Backhoe with short dipperstick. Based on SAE J31.



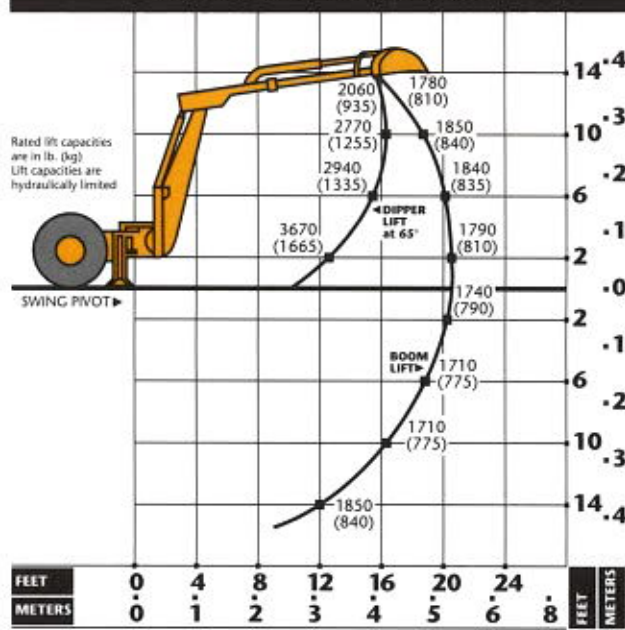
LIFT CAPACITY Backhoe with long dipperstick. Based on SAE J31.



LIFT CAPACITY Backhoe with extendable dipperstick, retracted. Based on SAE J31.



LIFT CAPACITY Backhoe with extendable dipperstick, extended. Based on SAE J31.



BACKHOE BUCKETS

	Width		Capacity		Weight	
	In.	(mm)	Cu. Ft.	(m ³)	lb.	(kg)
Standard-duty	12	(305)	2.5	(0.07)	247	(112)
	16	(406)	3.6	(0.10)	270	(122)
	18	(457)	5.1	(0.14)	358	(153)
	24	(610)	7.5	(0.21)	378	(171)
	30	(762)	10.0	(0.28)	428	(194)
	36	(914)	10.0	(0.28)	432	(196)
Heavy-duty	36	(914)	14.5	(0.41)	674	(306)
	18	(457)	5.1	(0.14)	348	(158)
	24	(610)	7.5	(0.21)	400	(181)
	30	(762)	10.0	(0.28)	472	(214)

LOADER BUCKETS

Loader:	Width		Heaped Capacity		Weight	
	In.	(mm)	Cu. Yd.	(m ³)	lb.	(kg)
General purpose	92	(2340)	1.3	(1.0)	796	(361)
Long lip	89	(2270)	1.25	(0.96)	750	(340)

LOADER PERFORMANCE

	w/1.3 cu. yd. (1.0 m ³) Bucket	w/1.25 cu. yd. (0.95 m ³) Long Lip Bucket	w/1.5 cu. yd. (1.15 m ³) Bucket
Operator control	single lever	single lever	single lever
Breakout force	9700 lb. (43.1 kN) (4400 kg)	9200 lb. (40.9 kN) (4170 kg)	8950 lb. (39.8 kN) (4060 kg)
Lifting capacity, full height	7200 lb. (3265 kg)	6900 lb. (3130 kg)	6850 lb. (3100 kg)
a) Height to bucket hinge pin, max	11 ft. (3.35 m)	11 ft. (3.35 m)	11 ft. (3.35 m)
b) Dump clearance, bucket at 45 deg.	8 ft. 9 in. (2.67 m)	8 ft. 5 in. (2.58 m)	8 ft. 7 in. (2.63 m)
c) Bucket dump angle, max	45 deg.	45 deg.	45 deg.
d) Reach at full height, bucket at 45 deg.	30 in. (762 mm)	34 in. (868 mm)	32 in. (813 mm)
e) Rollback at ground level	40 deg.	40 deg.	40 deg.
f) Digging depth below ground bucket level	4 in. (100 mm)	4 in. (100 mm)	4 in. (100 mm)
Raising time to full height	4.4 sec.	4.4 sec.	4.4 sec.
Bucket dump time	1.0 sec.	1.0 sec.	1.0 sec.
Bucket lowering time [power down]	3.0 sec.	3.0 sec.	3.0 sec.