



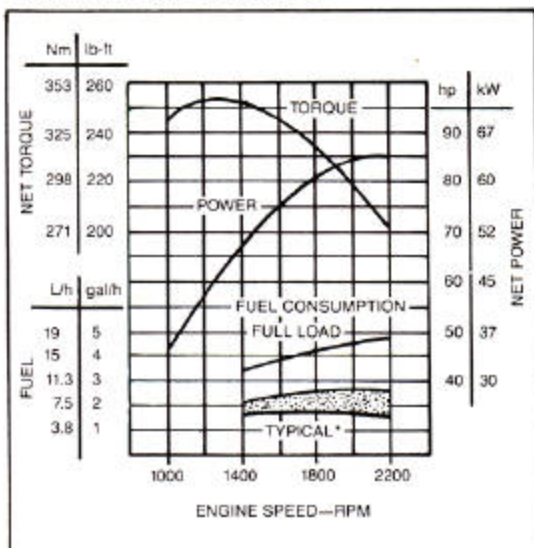
1837-1987  
**150**

# 510C BACKHOE LOADER



Model shown may include options

## ENGINE PERFORMANCE



\* Depending on operating variables.

## FEATURES

85 SAE net hp (63 kW) turbocharged John Deere diesel engine

Backhoe digging depth (SAE)  
15 ft. 9 in. (4.80 m) short dipperstick  
16 ft. 5 in. (5.00 m) long dipperstick

Unitized frame

Isolated engine and operator's station

Walk-in front entry

Designed-in quietness

Closed-center hydraulic system

O-ring face seal hydraulic plumbing

Weight distributed for working stability

Self-adjusting hydraulic wet-disk brakes

Inboard planetary final drives

Transaxle 1st and 2nd collar shift, 3rd and 4th synchronized

Full-power-shift reverser

Torque converter

Single-lever loader control

Two-lever backhoe control

Two-lever stabilizer control

Stabilizer lockouts—raise and lower

Multi-adjustable swivel seat w/high backrest and armrests

Hydrostatic power steering

Soundproofed cab w/integral ROPS/FOPS

Vandal protection w/built-in locks

## ADD VERSATILITY WITH:

Mechanical front-wheel drive with:  
Wet clutch—engage on the go  
Offset driveshaft for better ground clearance  
Extendable dipperstick

# 510C BACKHOE LOADER SPECIFICATIONS

Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, these specifications are based on a unit with 19.5L-24, 10 PR, R4 rear tires, 11L-16, 12 PR, F3 front tires, 1.25 cu. yd. (1.0 m<sup>3</sup>) loader bucket, 24-in. (610 mm) high-capacity backhoe bucket, ROPS/FOPS, full fuel tank and 175 lb. (80 kg) operator.

Rated Power @ 2200 rpm:	SAE	DIN 70 020
Net	85 hp (63 kW)	63 kW
Gross	90 hp (67 kW)	

Net engine power is with standard equipment including air cleaner, exhaust system, alternator and cooling fan, at standard conditions per SAE J1349 and DIN 70 020, using No. 2-D fuel @ 35 API gravity. No derating is required up to 10,000 feet (3050 m) altitude. Gross power is without cooling fan.

## Engine: John Deere 4-276T

Type	4-stroke cycle, turbocharged diesel
Bore and stroke	4.19 x 5.00 in. (106.5 x 127 mm)
No. of cylinders	4
Displacement	276 cu. in. (4.524 L)
Maximum net torque @ 1300 rpm	253 lb-ft (344 Nm) (35 kg-m) 25 percent torque rise
Cooling fan	Suction
Compression ratio	16.8 to 1
Lubrication	Pressure system w/full-flow filter and cooler
Main bearings	5
Air cleaner	Dry
Electrical system	12 volt
Alternator	51 amps

## Torque Converter:

Single stage, dual phase, overrunning stator, 11-in. (280 mm) diameter, stall torque ratio 2.23:1.

## Reverser:

Modulated, full-power shift with multiple wet-disk clutches. Reverser operating lever at left of steering wheel.

## Transmission:

Manual shift with first and second speeds having sliding collar engagement and third and fourth speeds engaged with cone-type synchronizers. Single shift lever, floor mounted.

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 21L-24 (required) 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** ..... Planetary, inboard

**Service Brakes:** Hydraulic, applied with separate pedals; hydraulically equalized when both pedals are depressed. Wet disks and facings are fully enclosed and self-adjusting.

**Secondary Brake:** Mechanical "V" groove band located on differential ring gear.

## Steering: Hydrostatic power

Steering axle, regular:	
Turning radius (brake applied)	9 ft. 11 in. (3.02 m)
Clearance circle (brake applied)	29 ft. 6 in. (9.00 m)
Steering wheel turns, left to right	2.2
right to left	2.9
Axle oscillation stop to stop	22 deg.
Mechanical front-wheel drive (engaged):	
Turning radius (brake applied)	10 ft. 7 in. (3.23 m)
Clearance circle (brake applied)	30 ft. 4 in. (9.25 m)
Steering wheel turns, left to right	2.3
right to left	2.8
Axle oscillation stop to stop	22 deg.

## Hydraulic System: Closed-center

(variable flow, constant pressure)  
 Pressure ..... 2755 psi (19 000 kPa) (193.7 kg/cm<sup>2</sup>)  
 Pump ..... 8 radial pistons, variable flow  
 Flow @ 2500 psi (17 238 kPa) (175.8 kg/cm<sup>2</sup>) ..... 35 gpm (2.21 L/s)  
 Filter, return oil ..... 10 micron, steel-enclosed replaceable element  
 Screen, pressure oil ..... 50/in. (20 cm) mesh

Hydraulic Cylinders:	Bore		Stroke		Rod	
	In.	(mm)	In.	(mm)	In.	(mm)
Loader boom (2)	3.54	90	29.8	757	1.77	45
Loader bucket (1)	3.94	100	28.2	716	1.97	50
Backhoe boom (1)	5.0	127	42.7	1085	2.5	64
Backhoe crowd (1)	4.53	115	34.5	876	2.48	63
Backhoe bucket (1)	3.54	90	31.0	787	1.97	50
Backhoe swing (2)	4.0	102	9.5	241	2.0	51
Backhoe extendable dipper (1)	2.5	64	60.0	1524	1.25	32
Backhoe stabilizers (2)	3.94	100	20.3	516	1.94	50
Steering (1) regular axle	2.0	51	9.5	241	1.0	25
Steering (1) MFWD	2.0	51	12.6	320	1.0	25

Tires:	Front		Rear	
	11L-16, 12 PR, F3	19.5L-24, 10 PR, R4	11L-16, 12 PR, F3	19.5L-24, 12 PR, R4
	w/calcium chloride			
	14.5/75-16.1, 10 PR, F3	21L-24, 10 PR, R4		
	14.5/75-16.1, 10 PR, F3	21L-24, 12 PR, R4		
	w/calcium chloride			
MFWD	12.00-16.5, 8 PR, R4	21L-24, 10 PR, R4		

## Wheel Treads:

Front	68 in. (1730 mm)
Rear	66 in. (1675 mm)
MFWD—Front	68 in. (1730 mm)
—Rear	69 in. (1750 mm)

**Wheelbase** ..... 82.7 in. (2100 mm)

Axle Ratings:	Static Rating	Dynamic Rating	SAE J43
Front	56,000 lb. (25 500 kg)	56,000 lb. (25 500 kg)	11,700 lb. (7000 kg)
Rear	51,000 lb. (23 200 kg)	68,000 lb. (30 900 kg)	16,200 lb. (7400 kg)

## Capacities:

	U.S.	Liters
Fuel tank	38 gal.	144
Engine coolant	17 qt.	16
Engine oil including filter	9 qt.	8.5
Torque converter and reverser system	14 qt.	13
Transaxle and hydraulic system	19 gal.	72

## Additional Standard Equipment:

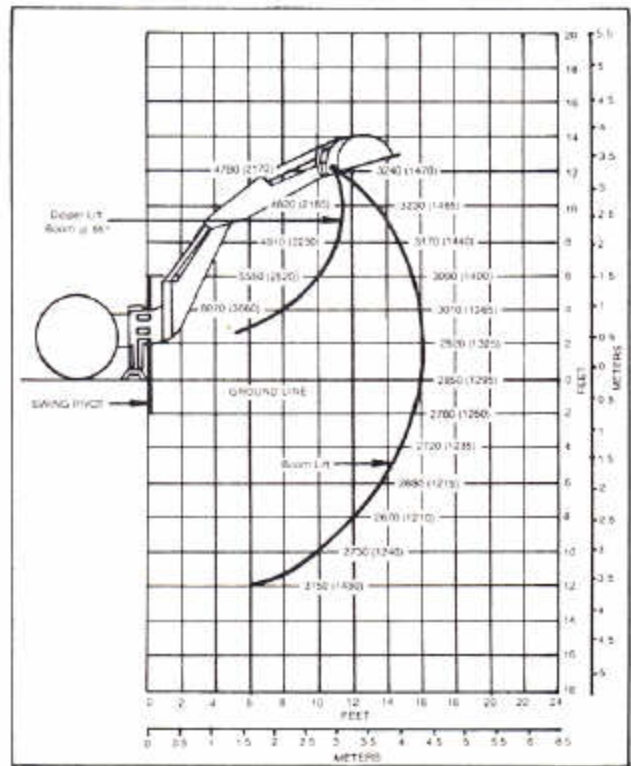
Air cleaner restriction indicator	Loader bucket level indicator
Air cleaner, dry type w/safety element and pre-cleaner	Monitor for:
Alternator, 51-amp w/ transistorized voltage regulator	Alternator
Altitude-compensating engine turbocharger	Engine coolant temperature
Antifreeze to -34°F (-37°C)	Engine oil pressure
Automatic return-to-dig	Hydraulic filter
Auxiliary fuel tank	Parking brake
Backhoe transport lock	Torque converter temperature
Battery, 180-minute reserve capacity	Muffler, under hood w/vertical exhaust and rain cap
Differential lock	Multiple fuse protected electrical system—12 volt
Electric automatic destroke for hydraulic pump	Oil-to-air cooler for hydraulic system and transaxle
Electric combination tachometer/hourmeter	Oil-to-air cooler for reverser/torque converter system
Electric fuel shutoff	Rear fenders
Emergency/parking brake	Rear reflectors
Engine side shields w/built-in locks	ROPS/FOPS canopy, isiplation mounted, with roof and seat belt
Floor mat	Steps and handholds
Foot and hand throttles	Swivel vinyl seat, fully adjustable
Fuel gauge	Vandal protection w/built-in locks
Fuel tank sump w/easy access drain	
Headliner	
Horn	
Hydraulic self-leveling loader	
Key start switch	
Light:	
Flashing hazard lights	
Halogen driving lights	
Halogen work lights	
Tail and brake lights	
Turn signal lights	

**SAE Operating Weight** ..... 15,400 lb. (7000 kg)

# 510C BACKHOE LOADER LIFTING CAPACITIES

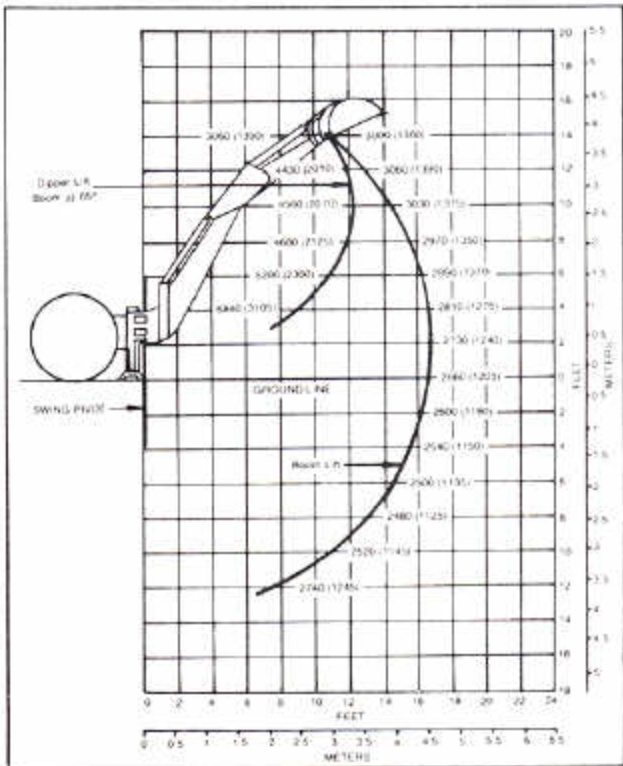
Lifting Capacity Ratings made from bucket hinge pin, loader bucket and stabilizer on firm, level ground. Lifting capacities are 87 percent of the maximum lift over any point on the swing arc and do not exceed 75 percent of the tipping load. Angle between boom and ground at 65 degrees. Machine equipped with 24-in. (610 mm) trenching bucket, standard or optional dipperstick (as indicated below) and standard equipment.

**Lift Capacity  
Backhoe with short dipperstick.  
Based on SAE J31.**



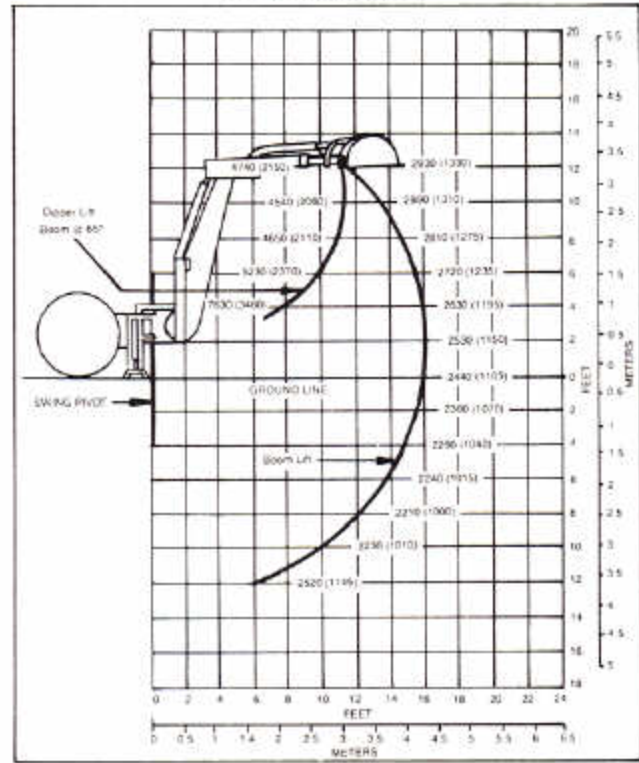
Rated lift capacities are in lb. (kg)  
Lift capacities are hydraulically limited.

**Lift Capacity  
Backhoe with long dipperstick.  
Based on SAE J31.**



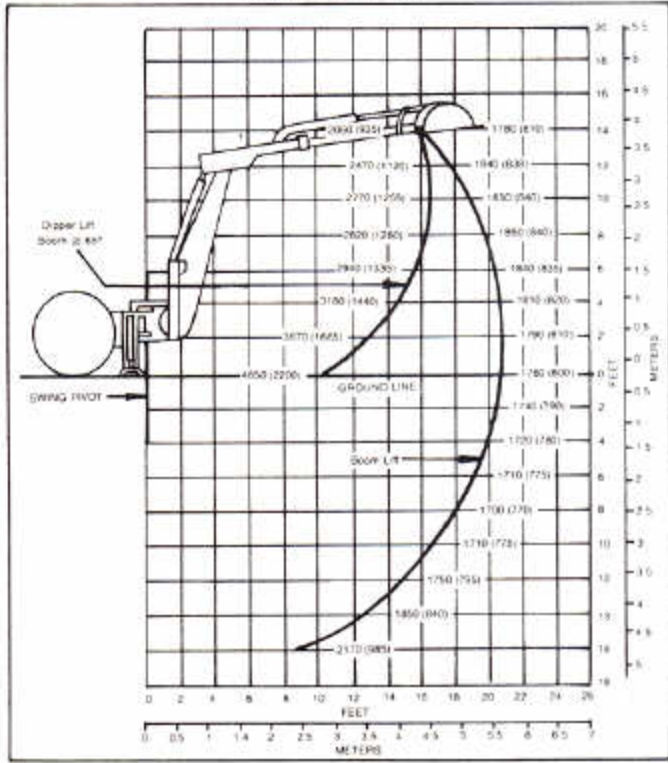
Rated lift capacities are in lb. (kg)  
Lift capacities are hydraulically limited.

**Lift Capacity  
Backhoe with extendable dipperstick, retracted.  
Based on SAE J31.**



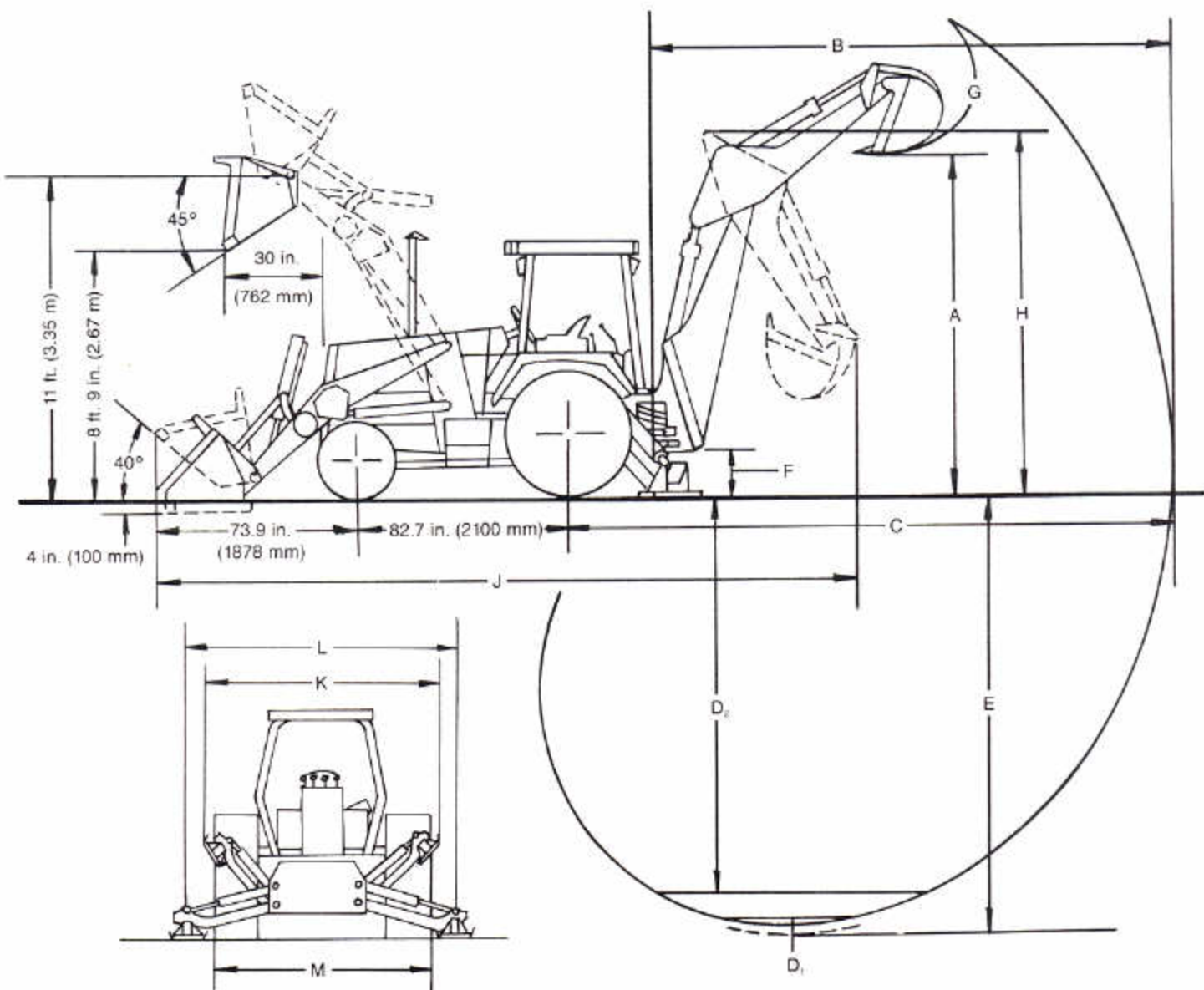
Rated lift capacities are in lb. (kg)  
Lift capacities are hydraulically limited.

**Lift Capacity  
Backhoe with extendable dipperstick, extended.  
Based on SAE J31.**



Rated lift capacities are in lb. (kg)  
Lift capacities are hydraulically limited.

# 510C BACKHOE LOADER SPECIFICATION AND DIMENSIONS



## 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 degrees	160 or 180 degrees	160 or 180 degrees	160 or 180 degrees
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 degrees	180 degrees	180 degrees	180 degrees
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 degrees	14.5 degrees	14.5 degrees	14.5 degrees
Lifting capacity, maximum, boom @ 65°	5200 lb. (2360 kg)	5400 lb. (2450 kg)	5300 lb. (2400 kg)	2400 lb. (1090 kg)
Leveling angle	13 degrees	13 degrees	13 degrees	13 degrees

\*Note: Backhoe specifications are with 24-in. (610 mm) 8.8 cu. ft. (.25 m) bucket.

With 24-in. (610 mm) standard-duty bucket, the digging forces increase and the depth and reach decrease.

# 510C BACKHOE LOADER

LOADER:	W/1.3 yd <sup>3</sup> (1.0 m <sup>3</sup> ) Bucket	W/1.25 yd <sup>3</sup> (.96 m <sup>3</sup> ) Long Lip Bucket	W/1.5 yd <sup>3</sup> (1.15 m <sup>3</sup> ) Bucket
Operator control	Single lever	Single lever	Single lever
Rollback at ground level	40 degrees	40 degrees	40 degrees
Breakout force	9700 lb. (43.1 kN) (4400 kg)	9200 lb. (40.9 kN) (4170 kg)	8950 lb. (39.8 kN) (4060 kg)
Digging depth below ground, bucket level	4 in. (100 mm)	4 in. (100 mm)	4 in. (100 mm)
Lifting capacity, full height	7200 lb. (3265 kg)	6900 lb. (3130 kg)	6850 lb. (3100 kg)
Height to bucket hinge pin, max.	11 ft. (3.35 m)	11 ft. (3.35 m)	11 ft. (3.35 m)
Bucket dump angle, max.	45 degrees	45 degrees	45 degrees
Dump clearance, bucket @ 45 degrees	8 ft. 9 in. (2.67 m)	8 ft. 5 in. (2.58 m)	8 ft. 7 in. (2.63 m)
Reach at full height, bucket @ 45 degrees	30 in. (762 mm)	34 in. (868 mm)	32 in. (803 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.

## BUCKETS

Loader:	Width		Heaped Capacity	
	In.	(mm)	Cu. Yd.	(m <sup>3</sup> )
General purpose	92	(2340)	1.25	(1.00)
Long lip	89.4	(2270)	1.25	(1.00)
<b>Backhoe:</b>			<b>Cu. Ft.</b>	<b>(m<sup>3</sup>)</b>
Standard-duty	12	(305)	3.0	(0.08)
	16	(406)	4.5	(0.13)
	18	(457)	5.1	(0.14)
	24	(610)	7.5	(0.21)
	24	(610)	8.8	(0.25)
	30	(762)	10.0	(0.28)
	36	(914)	10.0	(0.28)
	36	(914)	14.5	(0.41)
Heavy-duty	18	(457)	5.1	(0.14)
	24	(610)	7.5	(0.21)
	30	(762)	10.0	(0.28)
Ejector	24	(610)	5.7	(0.16)

### Optional or Special Equipment:

- Auxiliary hydraulic valves and circuit for loader and backhoe
- Backup alarm
- Cab pressurizer
- Cab with:
  - Fabric-covered swivel seat, suspension or non-suspension
  - Front defroster fan
  - Front and rear wipers
  - Integral ROPS/FOPS
  - Standard heater—19,000 Btu/hr (5.6 kW)
- Cold-weather starting aid, remote mounted
- Deluxe heater w/fresh air intake—40,000 Btu/hr (11.7 kW)
- Air conditioner, 24,000 Btu/hr (7.0 kW)
- Economy seat, vinyl covered, suspension or rigid mounted
- Engine coolant heater
- Extendable dipperstick for backhoe
- Fire extinguisher
- Front counterweight
- Heavy-duty batteries
- Instrument panel vandal cover
- Mechanical front-wheel drive
- Rear defroster fan
- Rearview mirror, inside mounted, curved, heavy-duty
- Rear wheel spacers for tire chain clearance
- Reversible stabilizer pads
- Rotating beacon light
- SMV emblem
- 3-in. (76 mm) seat belt
- Three- or four-lever, pedal-swing backhoe controls
- Toolbox

### Additional Available Equipment:\*

- Auxiliary bolt-on cutting edge for loader buckets
- Backhoe lift eye
- Bolt-on teeth for loader bucket
- Front windshield and door kit
- Grille guard
- Lateral slides for operator's seat
- Loader bucket chain hooks, outer
- Longer dipperstick
- Light materials/snow loader buckets
- MFWD driveshaft guard
- Multipurpose loader buckets
- Radio or radio cassette
- Special paint