

B A C K H O E L O A D E R S

310 SE





*Boom starts wide at the base and narrows to 9 inches through the line-of-sight. Unlike the large "dorsal fin" on other excavator-style booms, the 310SE's compact cylinders share a single-pin attaching point that doesn't impair side-swing visibility, either.*



*Available extendible dipperstick adds 3 1/2 feet of digging depth and reach. Outer box extends, enabling it to firmly grasp objects between the bucket and box gripper teeth while retracting or extending. Wear strips are easy to lube, simple to replace.*



*310SE's exclusive bucket linkage provides 190-degrees of rotation, making vertical wall excavations a lot easier. What's more, excavator-style curved sidecutters enable you to dig around buried pipe, reducing handwork. Bucket and linkage pins are lubricated for long life.*

*Crane heavy objects? With 5,046 pounds of dipper lift, 310SE can handle it. Hydraulic circuit checks reduce drift. Buckets are equipped with lift eyes.*

*Boom and dipperstick are box-constructed of high-strength steel for heavy-duty durability. Forked top and bottom, and large pins, provide extra beef in this high-stress area.*

*Easy-to-operate boom lock secures the backhoe in a vertical position for smooth transport. Rubber bumper keeps the boom snug and virtually rattle-free.*



**BACKHOE**
**310SE**

	<i>With Standard Backhoe*</i>	<i>With Extendable Dipperstick*</i>	
		<i>Retracted</i>	<i>Extended</i>
<b>A</b> Loading height, truck loading position .....	11 ft. 3 in. (3.43 m)	11 ft. 7 in. (3.53 m)	14 ft. 1 in. (4.29 m)
<b>B</b> Reach from center of swing pivot .....	18 ft. 3 in. (5.56 m)	18 ft. 7 in. (5.66 m)	21 ft. 11 in. (6.68 m)
<b>C</b> Reach from center of rear axle .....	21 ft. 9 in. (6.63 m)	22 ft. 1 in. (6.73 m)	25 ft. 4 in. (7.72 m)
<b>D</b> Maximum digging depth .....	14 ft. 6 in. (4.42 m)	14 ft. 11 in. (4.55 m)	18 ft. 5 in. (5.61 m)
<b>E</b> Digging depth (SAE):			
(1) 2-ft. (610 mm) flat bottom .....	14 ft. 4 in. (4.37 m)	14 ft. 9 in. (4.50 m)	18 ft. 3 in. (5.56 m)
(2) 8-ft. (2440 mm) flat bottom .....	13 ft. 4 in. (4.06 m)	13 ft. 9 in. (4.19 m)	17 ft. 6 in. (5.33 m)
<b>F</b> Ground clearance, minimum .....	13 in. (330 mm)	13 in. (330 mm)	13 in. (330 mm)
<b>G</b> Bucket rotation .....	190 degrees	190 degrees	190 degrees
<b>H</b> Transport height .....	11 ft. 6 in. (3.51 m)	11 ft. 5 in. (3.48 m)	11 ft. 5 in. (3.48 m)
<b>I</b> Overall length, transport .....	23 ft. 6 in. (7.16 m)	23 ft. 6 in. (7.16 m)	23 ft. 6 in. (7.16 m)
<b>J</b> Stabilizer width – transport with ROPS .....	7 ft. 2 in. (2.18 m)	7 ft. 2 in. (2.18 m)	7 ft. 2 in. (2.18 m)
<b>K</b> Stabilizer spread – operating .....	10 ft. 2 in. (3.10 m)	10 ft. 2 in. (3.10 m)	10 ft. 2 in. (3.10 m)
<b>L</b> Stabilizer overall width – operating .....	11 ft. 7 in. (3.53 m)	11 ft. 7 in. (3.53 m)	11 ft. 7 in. (3.53 m)
<b>M</b> Width over tires .....	86 in. (2.18 m)	86 in. (2.18 m)	86 in. (2.18 m)

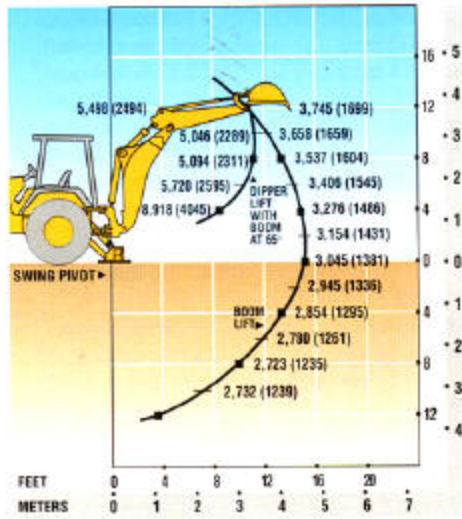
\*Backhoe specifications are with 24 in. x 7.5 cu. ft. (610 mm x 0.21 m<sup>3</sup>) bucket.

**LOADER PERFORMANCE WITH BUCKET OPTIONS**

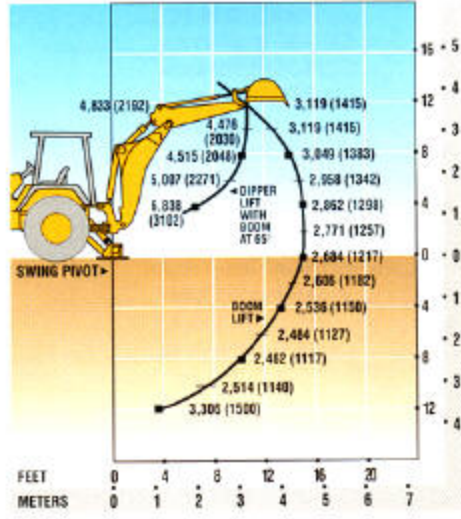
	<i>1.12 cu. yd. (0.86 m<sup>3</sup>) Heavy-Duty Long Lip</i>	<i>1.30 cu. yd. (1.00 m<sup>3</sup>) Heavy-Duty Long Lip</i>	<i>1.00 cu. yd. (0.76 m<sup>3</sup>) Multipurpose</i>	<i>1.25 cu. yd. (0.96 m<sup>3</sup>) Multipurpose</i>
Operator control .....	single lever	single lever	single lever	single lever
Breakout force .....	9,200 lb. (40.9 kN)	8,900 lb. (39.6 kN)	8,325 lb. (37.0 kN)	8,300 lb. (36.9 kN)
Lifting capacity, full height .....	6,300 lb. (2858 kg)	6,150 lb. (2790 kg)	5,900 lb. (2676 kg)	5,800 lb. (2631 kg)
<b>a</b> Height to bucket hinge pin, maximum .....	11 ft. 2 in. (3.40 m)	11 ft. 2 in. (3.40 m)	11 ft. 2 in. (3.40 m)	11 ft. 2 in. (3.40 m)
<b>b</b> Dump clearance, bucket at 45 degrees .....	8 ft. 10 in. (2.69 m)	8 ft. 8 in. (2.64 m)	8 ft. 7 in. (2.62 m)	8 ft. 7 in. (2.62 m)
<b>c</b> Bucket dump angle, maximum .....	45 degrees	45 degrees	45 degrees	45 degrees
<b>d</b> Reach at full height, bucket at 45 degrees .....	30.2 in. (767 mm)	30.1 in. (765 mm)	32.2 in. (818 mm)	32.2 in. (818 mm)
<b>e</b> Rollback angle at ground level .....	40 degrees	40 degrees	40 degrees	40 degrees
<b>f</b> Digging depth below ground, bucket level .....	6.4 in. (163 mm)	8.1 in. (206 mm)	7.3 in. (185 mm)	7.3 in. (185 mm)
Raising time to full height .....	4.9 sec.	4.9 sec.	4.9 sec.	4.9 sec.
Bucket dump time .....	1.1 sec.	1.1 sec.	1.1 sec.	1.1 sec.
Bucket lowering time (power down) .....	1.9 sec.	1.9 sec.	1.9 sec.	1.9 sec.

\*Lift capacities are over-end values in lb. (kg) according to SAE J31. Figures listed are 87% of the maximum lift force available. Base machine includes counterweight.

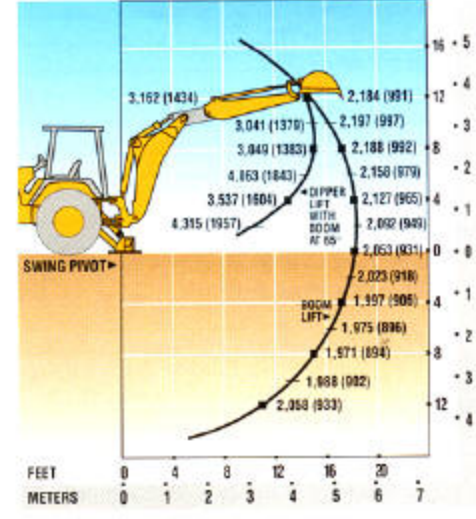
310SE BACKHOE WITH STANDARD DIPPERSTICK



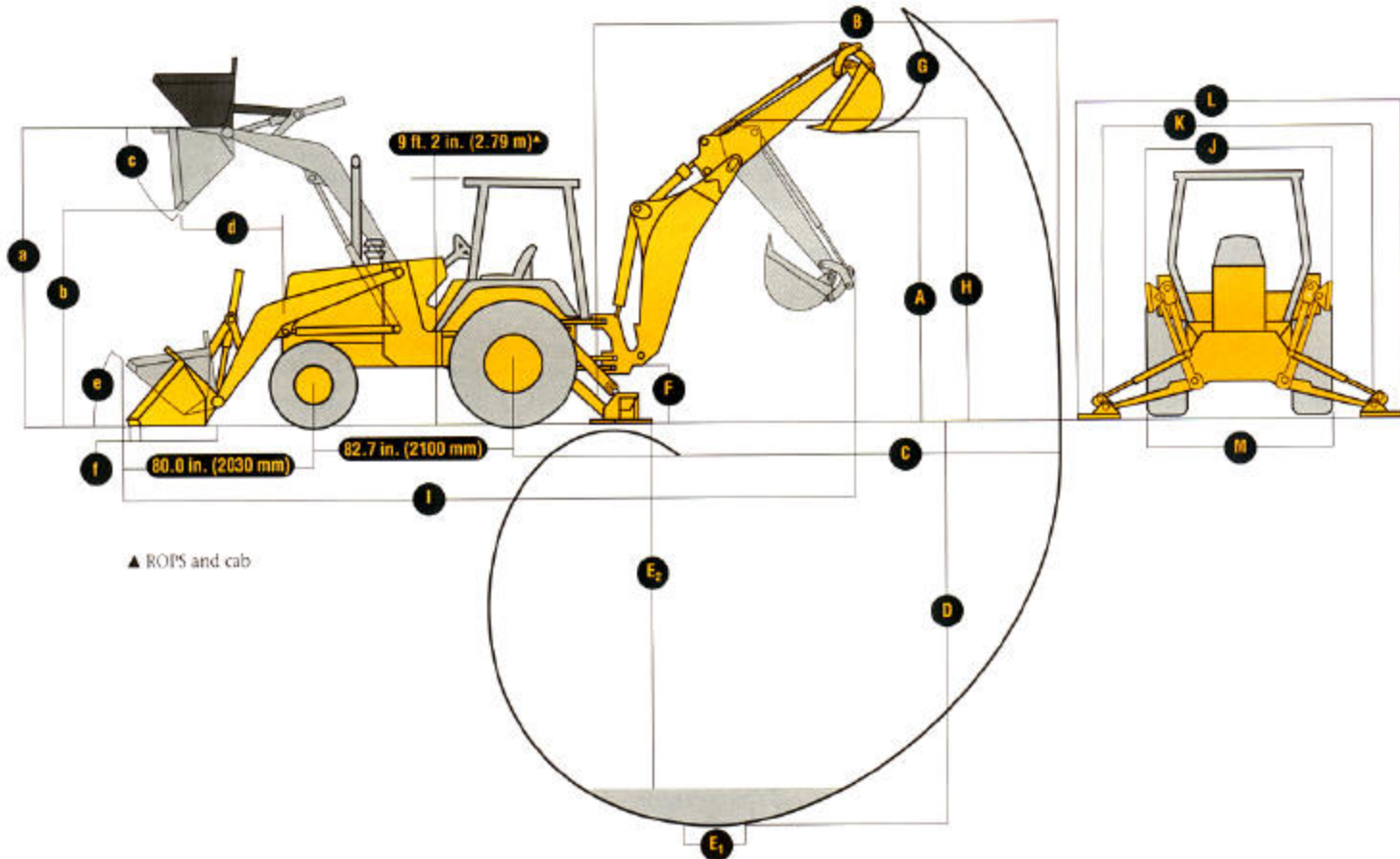
310SE BACKHOE WITH 3-FT. 6-IN. (1.07 M) EXTENDABLE DIPPERSTICK, RETRACTED



310SE BACKHOE WITH 3-FT. 6-IN. (1.07 M) EXTENDABLE DIPPERSTICK, EXTENDED



**DIMENSIONS (SEE PAGE 15.)**



**CYLINDERS****310SE**

	<i>Bore</i>	<i>Stroke</i>	<i>Rod</i>
Loader boom (2).....	3.15 in. (80 mm)	31.1 in. (790 mm)	1.97 in. (50 mm)
Loader bucket (1).....	3.15 in. (80 mm)	33.7 in. (856 mm)	1.77 in. (45 mm)
Backhoe boom (1).....	4.72 in. (120 mm)	31.3 in. (795 mm)	2.20 in. (56 mm)
Backhoe crowd (1).....	4.53 in. (115 mm)	23.9 in. (607 mm)	2.48 in. (63 mm)
Backhoe bucket (1).....	3.54 in. (90 mm)	31.9 in. (810 mm)	2.20 in. (56 mm)
Backhoe swing (2).....	3.54 in. (90 mm)	10.9 in. (278 mm)	1.97 in. (50 mm)
Backhoe extendable dipperstick (1).....	2.76 in. (70 mm)	42.0 in. (1067 mm)	1.77 in. (45 mm)
Backhoe stabilizer (2).....	3.54 in. (90 mm)	19.7 in. (500 mm)	1.97 in. (50 mm)
Steering (1) non-powered axle.....	1.97 in. (50 mm)	9.49 in. (241 mm)	0.98 in. (25 mm)
Steering (1) MFWD.....	2.56 in. (65 mm)	8.27 in. (210 mm)	1.42 in. (36 mm)

**TIRES**

	<i>Rear</i>	<i>Front</i>
With non-powered front axle.....	16.9-24, 8 PR R4 19.5L-24, 8 PR R4	11L-15, 8 PR F3 11L-16, 12 PR F3
With mechanical-front-wheel-drive.....	19.5L-24, 8 PR R4	12.5/80-18, 10 PR

**SAE OPERATING WEIGHTS**

Standard.....	13,500 lb. (6123 kg)
Cab adds.....	580 lb. (263 kg)
Mechanical-front-wheel-drive with tires adds.....	485 lb. (220 kg)
Extendable dipperstick excluding required counterweight adds.....	490 lb. (222 kg)
Optional 400-lb. counterweight adds.....	400 lb. (181 kg)
Optional 650-lb. counterweight adds.....	650 lb. (295 kg)
Optional 250-lb. bolt-on counterweight adds.....	250 lb. (113 kg)
Backhoe bucket coupler adds.....	138 lb. (63 kg)

See backhoe and loader performance data for bucket weights.

**LOADER BUCKETS**

	<i>Width</i>	<i>Heaped Capacity</i>	<i>Weight</i>
Heavy-duty long lip.....	86 in. (2180 mm) 92 in. (2340 mm)	1.12 cu. yd. (0.86 m <sup>3</sup> ) 1.30 cu. yd. (1.00 m <sup>3</sup> )	940 lb. (426 kg) 1,050 lb. (476 kg)
Multipurpose.....	86 in. (2180 mm) 92 in. (2340 mm)	1.00 cu. yd. (0.76 m <sup>3</sup> ) 1.25 cu. yd. (0.96 m <sup>3</sup> )	1,450 lb. (658 kg) 1,550 lb. (703 kg)

Auxiliary cutting edge and skid shoes are standard on all buckets.

**BACKHOE PERFORMANCE**

	<i>With Standard Backhoe*</i>	<i>With Extendable Dipperstick*</i>	
		<i>Retracted</i>	<i>Extended</i>
Digging force, bucket cylinder.....	11,990 lb. (53.3 kN)	12,158 lb. (54.1 kN)	12,158 lb. (54.1 kN)
Digging force, crowd cylinder.....	8,090 lb. (36.0 kN)	7,796 lb. (34.7 kN)	5,628 lb. (25.0 kN)
Swing arc.....	180 degrees	180 degrees	180 degrees
Operator control.....	two levers	right foot treadle	right foot treadle
Bucket rotation.....	190 degrees	190 degrees	190 degrees
Stabilizer angle rearward.....	18 degrees	18 degrees	18 degrees
Leveling angle.....	14 degrees	14 degrees	14 degrees

\*Backhoe specifications are with 24 in. x 7.5 cu. ft. (610 mm x 0.21 m<sup>3</sup>) bucket.**BACKHOE BUCKETS**

	<i>Width</i>	<i>Capacity</i>	<i>Weight</i>
Standard duty.....	24 in. (610 mm)	7.5 cu. ft. (0.21 m <sup>3</sup> )	350 lb. (159 kg)
Heavy duty with lift loop.....	12 in. (305 mm) 18 in. (457 mm) 24 in. (610 mm) 24 in. (610 mm) 30 in. (762 mm) 36 in. (914 mm)	3.3 cu. ft. (0.09 m <sup>3</sup> ) 5.1 cu. ft. (0.14 m <sup>3</sup> ) 7.5 cu. ft. (0.21 m <sup>3</sup> ) 8.8 cu. ft. (0.25 m <sup>3</sup> ) 10.0 cu. ft. (0.28 m <sup>3</sup> ) 12.5 cu. ft. (0.35 m <sup>3</sup> )	295 lb. (134 kg) 335 lb. (152 kg) 400 lb. (181 kg) 420 lb. (191 kg) 445 lb. (202 kg) 510 lb. (231 kg)
Severe duty with lift loop.....	18 in. (457 mm) 24 in. (610 mm) 24 in. (610 mm) 30 in. (762 mm)	5.1 cu. ft. (0.14 m <sup>3</sup> ) 7.5 cu. ft. (0.21 m <sup>3</sup> ) 8.8 cu. ft. (0.25 m <sup>3</sup> ) 10.0 cu. ft. (0.28 m <sup>3</sup> )	362 lb. (164 kg) 425 lb. (193 kg) 455 lb. (206 kg) 475 lb. (215 kg)
Ditch cleaning.....	36 in. (914 mm)	12.5 cu. ft. (0.35 m <sup>3</sup> )	510 lb. (231 kg)

**ENGINE****310SE**

Type	John Deere 4045T – Turbocharged	
Rated power @ 2,200 rpm	88 SAE gross hp (66 kW)	
	80 SAE net hp (60 kW)	
Cylinders	4	
Displacement	276 cu. in. (4.524 L)	
Fuel consumption, typical	1.3 to 2.3 gal./hr. (4.9 to 8.7 L/h)	
Torque rise	42 percent	
Maximum net torque	271 lb.-ft. (368 Nm)	
Lubrication	pressure system with spin-on filter and cooler	
Air cleaner	dual stage dry type with safety element and precleaner	
Electrical system	12 volt with 65-amp alternator	
Sucker-type cooling fan		

**TRANSMISSION**

four-speed, helical cut gear, collar shift transmission synchronized in all gears with hydraulic reverser

Torque converter, single stage, dual phase with 2.63:1 stall ratio	11 in. (280 mm)	
Travel speeds with 19.5L-24 rear tires	<i>Forward</i>	<i>Reverse</i>
Gear 1	3.6 mph (5.8 km/h)	4.0 mph (6.4 km/h)
Gear 2	5.9 mph (9.5 km/h)	6.6 mph (10.6 km/h)
Gear 3	14.4 mph (23.2 km/h)	16.1 mph (25.9 km/h)
Gear 4	24.4 mph (39.3 km/h)	27.2 mph (43.8 km/h)

**FINAL DRIVES**

heavy-duty, inboard planetary final drives evenly distribute shock loads over three gears

**BRAKES**

hydraulic wet disk, mounted inboard, self adjusting and self equalizing

**CAPACITIES**

Fuel tank (with ground level fueling)	36 gal. (136 L)
Engine coolant	17 qt. (16 L)
Engine oil including filter	9 qt. (8.5 L)
Torque converter and transmission	15 qt. (14 L)
Hydraulic system	24 gal. (91 L)
Rear axle	3.5 gal. (13 L)
Mechanical-front-wheel-drive axle	2.3 gal. (8.5 L)

**STEERING**

hydrostatic power steering conforms to SAE J1151, emergency steering to SAE J53

Non-powered axle	
Curb turning radius with brakes	11 ft. 9 in. (3.57 m)
Without brakes	13 ft. 3 in. (4.04 m)
Bucket clearance circle with brakes	31 ft. 6 in. (9.61 m)
Without brakes	34 ft. 7 in. (10.55 m)
Steering wheel turns, stop to stop	2.3 to 3.0
Mechanical-front-wheel-drive	
Curb turning radius with brakes	10 ft. 11 in. (3.34 m)
Without brakes	13 ft. 8 in. (4.17 m)
Bucket clearance circle with brakes	29 ft. 9 in. (9.07 m)
Without brakes	35 ft. 3 in. (10.74 m)
Steering wheel turns, stop to stop	2.5
Axle oscillations stop to stop, both axles	22 degrees
Axle ratings (SAE J43)	
Front	18,860 lb. (8555 kg)
Rear	13,670 lb. (6200 kg)

**HYDRAULIC SYSTEM**

System	open center
Pressure	
Backhoe	3,625 psi (25 000 kPa)
Loader	3,000 psi (20 700 kPa)
Pump	gear type, tandem with unloader
Flow @ 2,200 rpm	
Backhoe	36 gpm (136 L/min.)
Loader	28 gpm (106 L/min.)
Filter, return oil	10-micron, spin-on enclosed replaceable element

*Electric reverser lever allows fingertip direction changes. Built-in detents give smooth, positive control and neutral-start switch prevents accidental machine movement. Reverse is 10 percent faster than forward for fast cycles.*

*Available full-suspension cloth-covered armchair with flip-up arms and front-mount controls adjusts 8 ways. Standard non-suspension vinyl-covered seat features the same sculpted deep-cushioning and single-hand control of simultaneous slide and swing.*

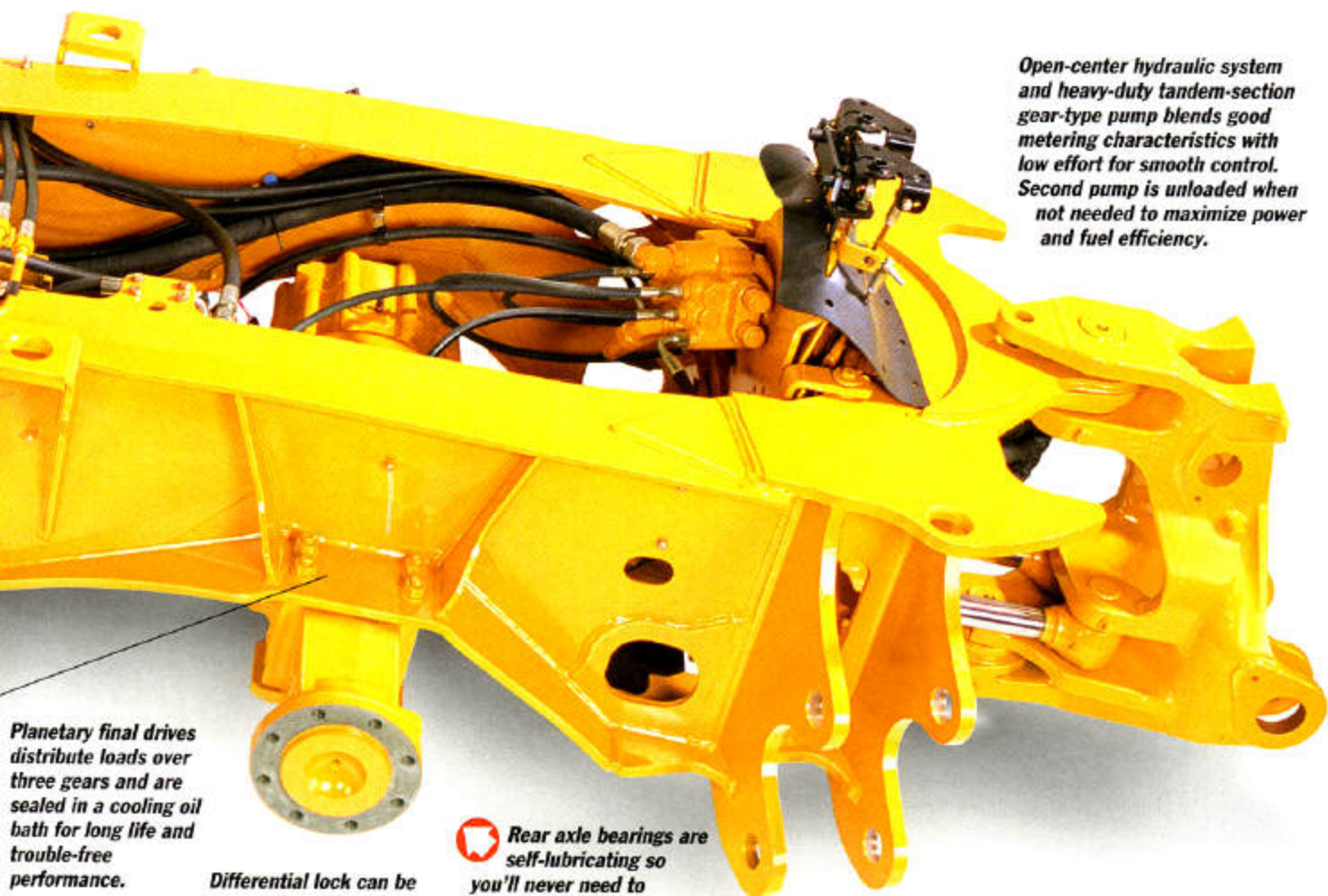
*Directional automotive-type vents provide comfortable ventilation and effective defogging.*

*MFWD switch is uniquely shaped and within easy reach for no-look on/off.*

All backhoes dig dirt. But not all backhoes have what it takes to deliver a long-term commitment. A peek beneath the sheet metal reveals the many advantages that make the 310SE your best choice.

From the heavy-duty wet-sleeve Deere-built diesel to its planetary final drives, the 310SE is loaded with traditional John Deere features. Positioned securely in the one-piece high-strength unitized frame, components are isolated from shock-load stress, yet can be individually removed to speed repairs and decrease downtime.

Looking for a dependable co-worker and a smart long-term investment? John Deere backhoes are manufactured to exacting quality standards in an ISO9001- certified North American factory so you can rest assured you're getting the best. When you know how they're built, you'll choose a 310SE.



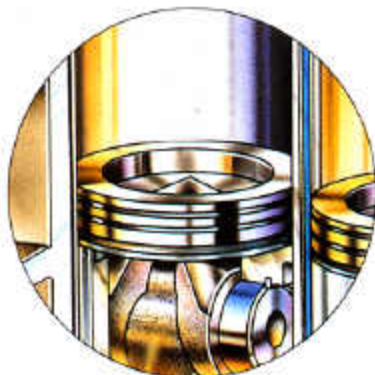
**Open-center hydraulic system and heavy-duty tandem-section gear-type pump blends good metering characteristics with low effort for smooth control. Second pump is unloaded when not needed to maximize power and fuel efficiency.**

**Planetary final drives distribute loads over three gears and are sealed in a cooling oil bath for long life and trouble-free performance.**

**Differential lock can be engaged on-the-go to improve traction in poor underfoot conditions.**

**Rear axle bearings are self-lubricating so you'll never need to grease this frequently overlooked service point.**

# Inside beats the heart of a Deere



Free-breathing cross-flow cylinder head, specially shaped pistons, and contoured valves increase intake and exhaust flows for maximum power output and top fuel efficiency.

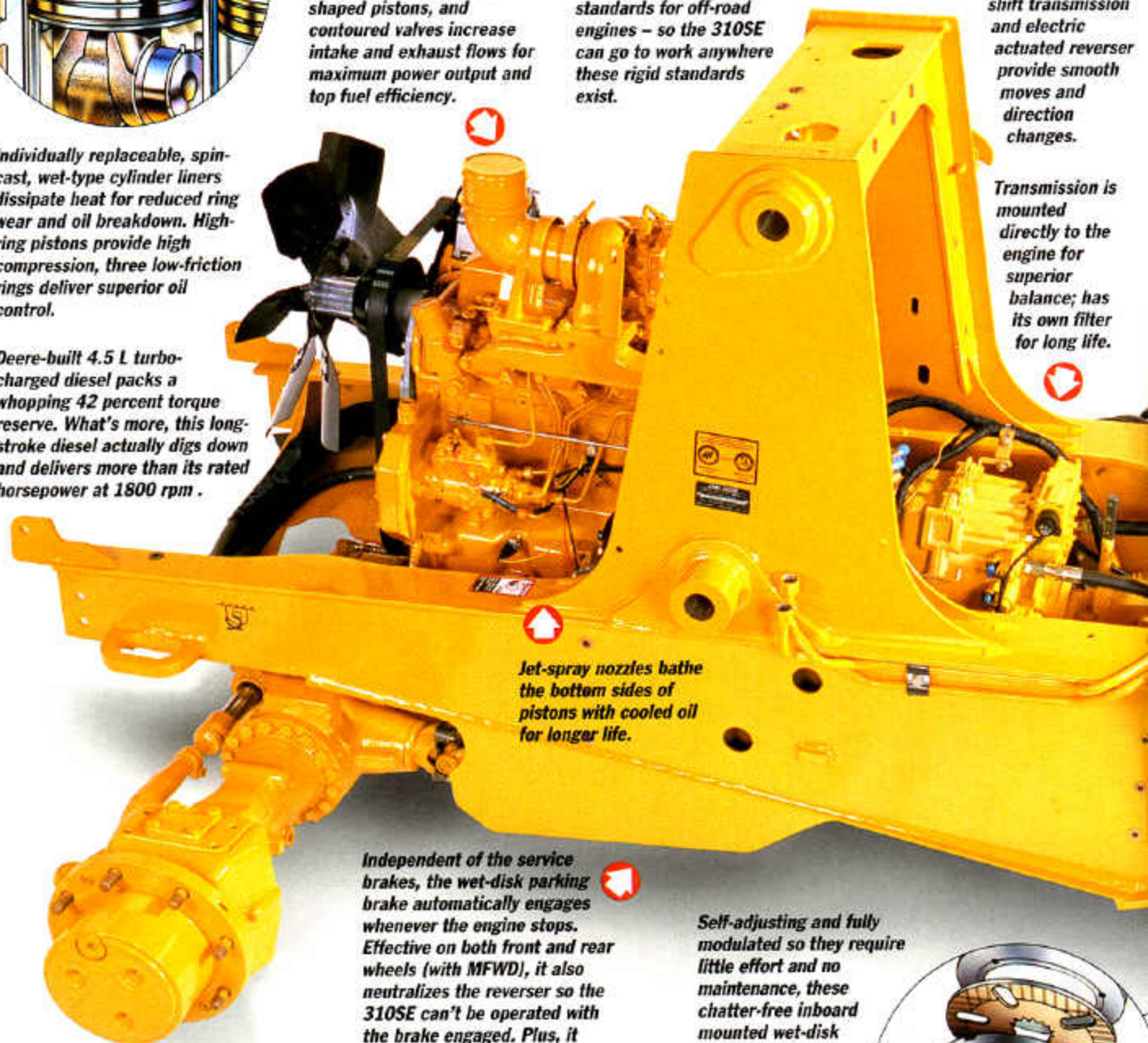
Advanced PowerTech™ diesel meets all worldwide emission standards for off-road engines – so the 310SE can go to work anywhere these rigid standards exist.

A 4-speed fully synchronized collar-shift transmission and electric actuated reverser provide smooth moves and direction changes.

Individually replaceable, spin-cast, wet-type cylinder liners dissipate heat for reduced ring wear and oil breakdown. High-ring pistons provide high compression, three low-friction rings deliver superior oil control.

Deere-built 4.5 L turbo-charged diesel packs a whopping 42 percent torque reserve. What's more, this long-stroke diesel actually digs down and delivers more than its rated horsepower at 1800 rpm.

Transmission is mounted directly to the engine for superior balance; has its own filter for long life.



Jet-spray nozzles bathe the bottom sides of pistons with cooled oil for longer life.

Independent of the service brakes, the wet-disk parking brake automatically engages whenever the engine stops. Effective on both front and rear wheels (with MFWD), it also neutralizes the reverser so the 310SE can't be operated with the brake engaged. Plus, it never needs adjusting.

Self-adjusting and fully modulated so they require little effort and no maintenance, these chatter-free inboard mounted wet-disk brakes also self-equalize for no-swerve braking in traffic.

Available industrial-strength MFWD is totally sealed and features a unique offset differential for superior ground clearance. Its limited-slip design delivers true all-wheel-drive.

High torque rise, tight torque converter match, and aggressive gearing give 310SE a powertrain that accelerates fast and climbs grades, even in 4th gear.

