



446

BACKHOE LOADER

- **Load-Sensing Hydraulics** — maximum hydraulic force to cutting edges at all engine speeds.
- **Reliable/Durable** — built to withstand severe working conditions.
- **Operating Ease** — convenient, easy-to-reach, low-effort controls.
- **Service and Maintenance Ease** — conveniently located service points, all accessible from the ground.
- **Total Customer Support System** — unmatched in the industry.

Gross Power	76.8 kW/103 HP
Flywheel Power	70.8 kW/95 HP
Operating Weight	8892 kg/19,603 lb
Backhoe digging depth up to	6528 mm/21'5"

Featured machines may include additional equipment applicable only for special applications. See your authorized Caterpillar dealer for available options.



FEATURES

■ Hydraulic Tank

- Strategically placed for optimal balance and weight distribution when roading.
- Sealed to prevent contamination.

■ General Purpose Loader Bucket

- Top of the bucket is parallel to the cutting edge, providing a built-in level indicator.
- Vertical heel plate for excellent back dragging capabilities.
- Reinforced torque tubes help prevent bucket distortion when lifting objects or backfilling.
- Reversible, bolt-on cutting edge for longer life.

■ Heavy Duty Caterpillar 3114 Diesel Engine

- Turbocharged for added performance and efficiency.
- "Cat designed" unit injection fuel system provides long service life and fuel efficiency.
- Cast oil sump resists impact damage.
- Low noise powerplant — balancers reduce vibration and sound providing quiet power for maximum operator comfort.

- High torque rise offers superior lugging ability to keep machine moving through tough applications without downshifting.



■ Divergent Loader Arms

- Excellent visibility — a clear view to the bucket corners.
- Automatic bucket leveling — return-to-dig feature improves operator efficiency for faster loader cycles.

■ Single Tilt Cylinder

- Provides good visibility with fewer wear and service points.
- Excellent loader breakout forces.

■ Front Axle

- Two large, 140 mm/5.5" trunnion bearings support the axle to ensure durability.
- Short steering rods well protected from the work environment for long life.
- Large-diameter steering cylinder resists bending.

■ Variable-Flow, Axial-Piston Hydraulic Pump

- Automatically matches power to work demands.
- Reduces fuel consumption.
- Provides full hydraulic force at any engine speed.

■ Cat Power Shift Transmission

- Easy, on-the-go shifting between all gears, two- and four-wheel drive.
- A single lever controls both direction and speed for improved operator efficiency.
- Instant forward and reverse changes for reduced cycle times and increased productivity.
- Modular, for easy servicing.
- Four-wheel drive engaged on-the-go by the flip of a switch.
- Torque converter provides good match to engine and transmission for optimum loader/roading performance.

■ Heavy Duty Main Frame

- Fully welded, one-piece frame designed to absorb stress loads and minimize shock loads to the power train.
- Integral backhoe reduces maintenance and service...for a true backhoe loader.

■ Operator's Compartment

- Quiet, roomy, uncluttered, with entry from either side of machine.
- Designed for operator comfort and efficiency.

■ Excavator Style Boom

- Provides excellent visibility for narrow buckets.
- Allows for closer digging to the machine for better in-trench visibility and less repositioning.
- Excellent ground clearance to the bucket.
- Allows for easy digging over obstructions, through holes in concrete/blacktop and reaching over the stabilizers.
- Conveniently located hand lever easily locks boom in transport position.
- Heavy steel foot casting absorbs high stresses and shocks for reliability and durability.
- Maintenance procedures are simplified with remote lube points.

■ Durable Stick

- Tapered rectangular design and larger wrapper sheet for greater durability.
- Hoses routed through open wrapper are protected for longer life.

■ Versatile, Two-Position Bucket Linkage

- Maximum digging force in either position for heavy digging requirements.
- 180° bucket rotation for superior load retention and deep vertical wall digging.

■ Excellent Hose Routing

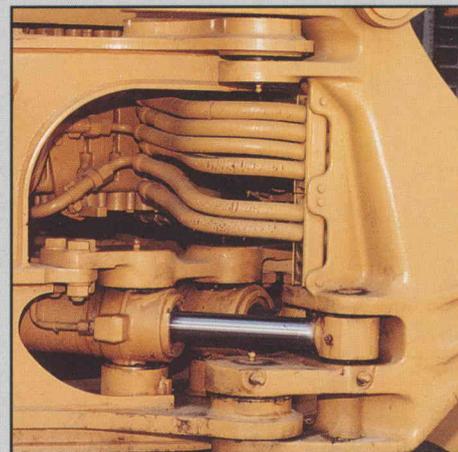
- Reduces leaks.
- Reduces hose damage.
- Prolongs life.
- Permits easy accessibility.

■ Stabilizers — optional shoe styles available to match job requirements.

- Grouser pad — durable ductile iron footpad for soil applications.
- Street pad — bolts to standard pad. Suitable for blacktop and areas damaged by grouser stabilizer pad.
- Flipover pad — gives user ability to convert from soil to pavement surfaces, vice-versa, just by flipping the pad.

■ Rear Axle

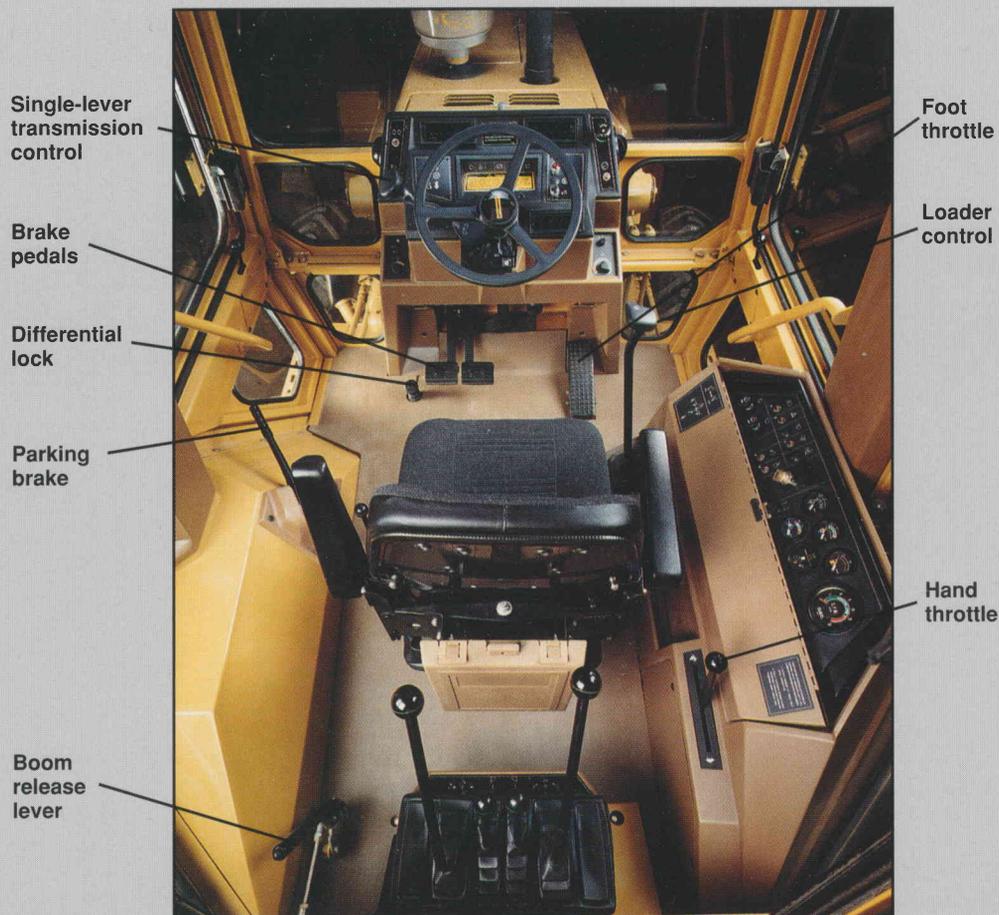
- Forged steel, induction-hardened axle shafts for drive line longevity.
- Differential lock reduces wheel spin and increases productivity.
- Hydraulically assisted brakes for low effort and precise control.



FEATURES

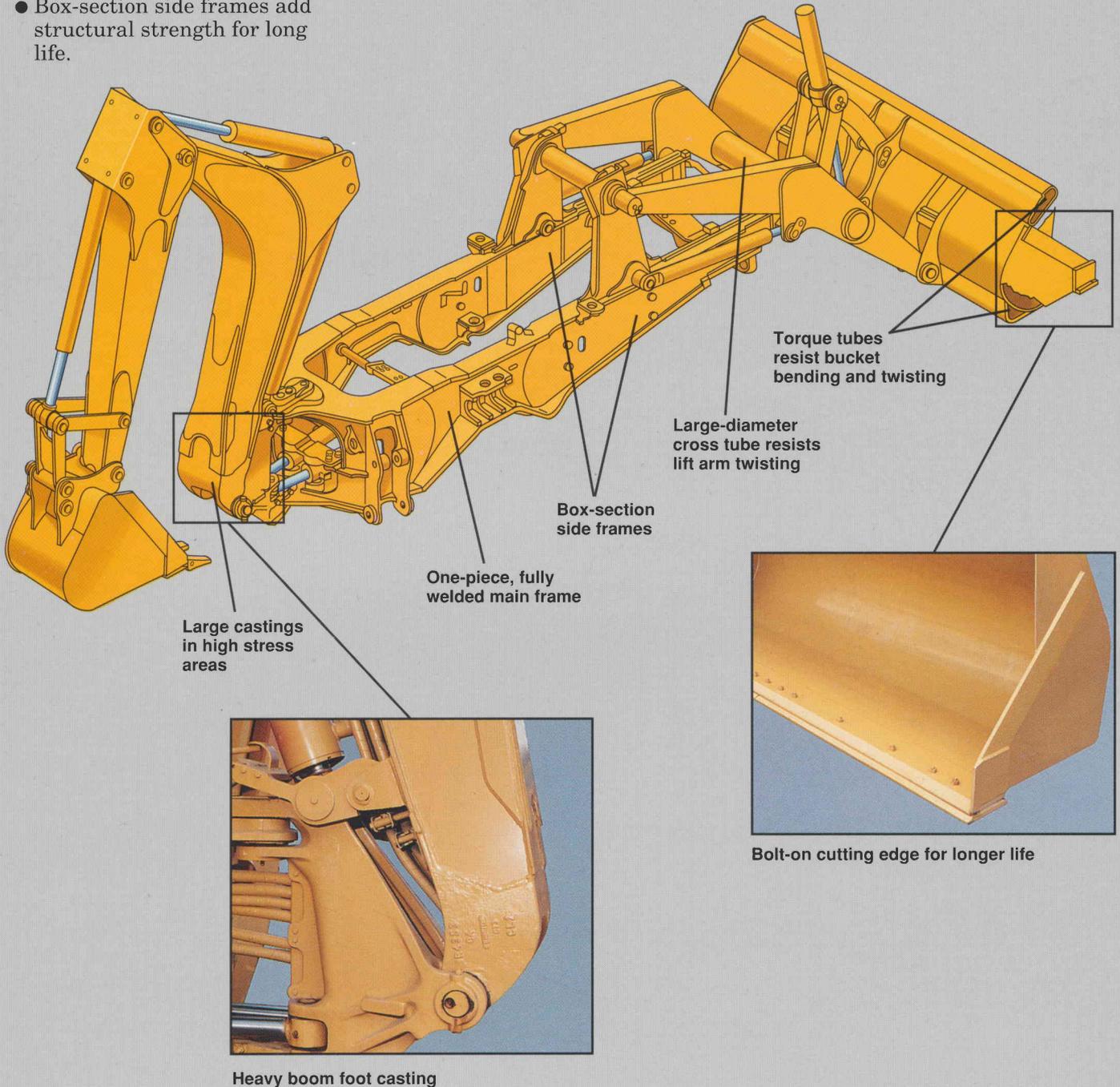
Operator's Station Designed for operator ease and comfort.

- **Dual access** — easy entry to operator's compartment from either side.
- **Convenient controls** — low-effort, easy-to-reach, for day-long productivity.
- **Resiliently mounted cab** — isolates the operator, reduces noise and vibration.
- **Side-mounted gauge panel** — visible while operating either loader or backhoe.
- **Audible/visual warning system** — continuous operator awareness of machine functions
- **Rear-mounted hand throttle** — easy actuation from backhoe position.
- **Fully adjustable suspension seat** — for added operator comfort.
- **Transmission disconnect switch** — on loader control lever transfers full engine power to hydraulics when more force or speed is needed.
- **Excellent visibility** — outstanding forward and rear view from the operator's seat to the loader and backhoe.
- **Single-lever transmission control** — provides convenient access for fast, on-the-go gear selections and direction changes.



Structure Built to withstand the toughest working conditions.

- **Fully welded, one-piece frame** — absorbs stress loads and minimizes shock loads to the power train.
 - Integral backhoe — reduces maintenance and service, backhoe frame is welded directly to main frame of tractor.
 - Box-section side frames add structural strength for long life.
- **Large-diameter axle trunion and bearings** — provides greater wear surface, longer life.
- **Excavator style boom** — welded fabrication with large casting at high stress area.
- **Stick** — reinforced with a large wrapper sheet to reduce stress.
- **Pins and bushings** — large diameter, heat treated for long life.



FEATURES



Cat® Hydraulics

Automatically match hydraulic flow and pressure requirements to work demands, a necessity for top backhoe loader productivity and efficiency.

- **Variable-displacement, load-sensing system** — maximum hydraulic force is transferred efficiently to the cutting edges for superior performance at any engine speed.
- **Variable-flow, axial-piston pump** — matches speed and power requirements for efficient fuel usage.
- **Control valves** — pressure compensated for low lever efforts. Stacked design provides servicing ease.
- **Caterpillar's XT-3 hose** — proven reliable for long-life performance. Excellent hose routing reduces hose damage.
- **O-ring face seal couplings** minimize leaks for a virtually dry machine.
- **Hydraulic cylinders** — designed and built for durability and leak-free operation.



Total Customer Support

Unmatched in the industry.

- **Parts availability** — Most Cat parts are immediately available off the shelf. Dealer parts availability is backed up by Cat's computer-controlled, emergency search system.
- **Service capability** — Whether in the dealer's fully equipped shop or in the field, you'll get trained service people using the latest technology and tools.
- **Machine management service** — Cat dealers help manage equipment investments with:
 - Effective preventive maintenance programs.
 - Diagnostic programs like Scheduled Oil Sampling and Technical Analysis.
 - Information to make the most cost-effective repair option decisions.
 - Customer meetings, training for operators and mechanics.
- **Exchange components for quick repairs** — Low-cost components assure maximum, cost-effective uptime.
- **Literature support** — Easy-to-use operation and maintenance guides help you get the full value out of your equipment investment.



SPECIFICATIONS



Engine

Gross power at 2200 RPM 76.8 kW/**103 HP**
 Flywheel power at 2200 RPM 70.8 kW/**95 HP**
 (Kilowatt (kW) is the International System of Units equivalent of horsepower.)

Net power at the flywheel of the vehicle engine is based on SAE J1349 standard conditions of 25°C / 77°F and 100 kPa / 29.61" Hg. Power is based on using 35° API (15.6°C / 60°F) gravity fuel having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29.4°C / 85°F and with a density of 838.9g/L (7.001 lb/U.S. gal). Power rating is adjusted for vehicle equipped with fan, air cleaner, alternator, water pump, fuel pump, muffler and lubricating oil pump. No derating is required up to 3000 m / 10,000 ft altitude.

These additional ratings also apply at 2200 RPM

	kW	HP
ISO 1585	70.8	95.0
ISO 3046-1	69.6	93.3
EEC 80/1269	70.8	95.0
	kW	PS
DIN 6271-1	69.6	94.6
DIN 70020	70.8	96.3
Torque rise (Net)	20%	

Caterpillar four-stroke cycle, 3114 turbocharged diesel engine with four cylinders, 105 mm/4.13" bore, 127 mm/5.0" stroke and 4.40 liter/**268 cu. in.** displacement.

Direct-injection fuel system with an individual, adjustment-free unit injector for each cylinder. Cam-turned and tapered, aluminum-alloy pistons have three rings each and are oil cooled. Connecting rods are tapered. Uniflow cylinder head design eliminates crossover manifold piping. Internal fuel, oil and water passages used instead of external lines. Deep-skirted, cast cylinder block. Induction-hardened, forged crankshaft. Steel camshaft is fully journaled at every block bulkhead. Oscillating roller followers and short pushrods for precision engine timing. Two alloy-steel valves per cylinder.

Direct-electric, 12-volt starting system with a 55-amp alternator and two 12-volt, 100-amp hour batteries.



Brakes

(Meet SAE J1473 DEC84 and ISO 3450-1985).
Service — Two fully enclosed, hydraulically actuated, self-energizing, oil-disc brakes on final drive input shaft. Foot-operated brake pedals can be interlocked for road-ing or used independently in working applications.

Parking/Secondary — Caliper-type disc brake on the input shaft to rear axle. Brake assembly is mechanically engaged through hand lever in cab.



Transmission

Power shift transmission with four speeds forward and reverse. Constant-mesh gears permit on-the-go shifting between all gears — up or down. Conveniently placed, hand-operated lever allows instant speed and direction changes with power hydraulic clutches. Neutral start provision prevents starting machine while transmission is in gear.

Transmission Disconnect

Hand-operated power disconnect — no clutch — for faster cycle times.

Torque Converter

Single stage. 2.09:1 stall ratio.

Travel Speeds

Travel speeds, two-wheel drive backhoe loader, full throttle, equipped with 21L-24 rear tires.

	1st		2nd		3rd		4th	
	Km/H	MPH	Km/H	MPH	Km/H	MPH	Km/H	MPH
Forward	6.6	4.1	12.1	7.5	21.7	13.5	33.0	20.5
Reverse	7.3	4.5	13.4	8.3	24.1	15.0	36.5	22.7



Axles

Axle rating, two-wheel drive

Front axle rating

SAE J43 9630 kg/**21,230 lb**
 Dynamic 40 728 kg/**89,788 lb**
 Rear axle rating

SAE J43 9160 kg/**20,194 lb**
 Dynamic 33 980 kg/**74,912 lb**

Rear Axle

Heavy duty, fixed axle with inboard planetary reduction and differential lock.

Front Axle (with standard two-wheel drive or optional four-wheel drive). Trunnion-mounted, cast axle with 11° oscillation each direction from center line. Switch on instrument panel engages four-wheel drive on-the-move, in any gear, forward or reverse.

Drive from differential to front wheels via planetary reduction in each wheel. On-the-go shifting — up or down, forward or reverse — between all gears is retained in four-wheel drive.



Hydraulic System

Variable-flow, load-sensing, pressure-compensating design provides efficient use of power.

Type Closed-center, load-sensing
 Pump type Variable-flow, axial-piston
 Pump capacity 162 l/min/**43 gpm** at 2200 RPM
 System pressure 20 000 kPa/200 bar/**2900 psi**



Steering

Turning radius, two-wheel drive, wheels not braked 4204 mm/**13'10"**
 Type Front wheel
 Power Hydrostatic
 Cylinder one double-acting, bore 82.55 mm/**3.25"**
 stroke 281 mm/**11.06"**, rod 53.98 mm/**2.13"**
 Supplemental steering option is available to provide full steering capability in the event of a hydraulic power failure.



Tires

Type	Size	Ply Rating
Front		
Standard 2wd	14.5/75-16.1 F3	10
Standard 4wd	12.5-20. R4	10
Rear		
Standard 2wd	21L-24, R4	12
Standard 4wd	21L-24, R4	12



ROPS

ROPS canopy is standard.
 ROPS (Rollover Protective Structure) offered by Caterpillar for this machine meets ROPS criteria SAE J394, SAE J1040 APR88 and ISO 3471-1986.



Cab

Cab offered by Caterpillar, when properly installed and tested with doors and windows closed according to ANSI/SAE J1166 MAY90, meets OSHA and MSHA requirements for operator and sound exposure limits in effect at the time of manufacture.



Service Refill Capacities

	Liters	U.S. Gallons
Cooling system	30	7.9
Fuel tank	125	33
Engine oil, with filter	11	2.9
Transmission	26	6.9
Rear axle	31	8.2
Hydraulic reservoir	57	15.1
Hydraulic system	154	41
Four-wheel drive front axle	9.30	2.5
Front planetary (each, 4wd only)	0.80	0.21



Weights

Standard two-wheel drive backhoe loader with additional 1.1 m³/**1.5 yd³** general purpose loader bucket, 610 mm/**24"** backhoe bucket, 80 kg/**176lb** operator and full fuel tank .
 SAE operating weight 8892 kg/**19,603 lb**

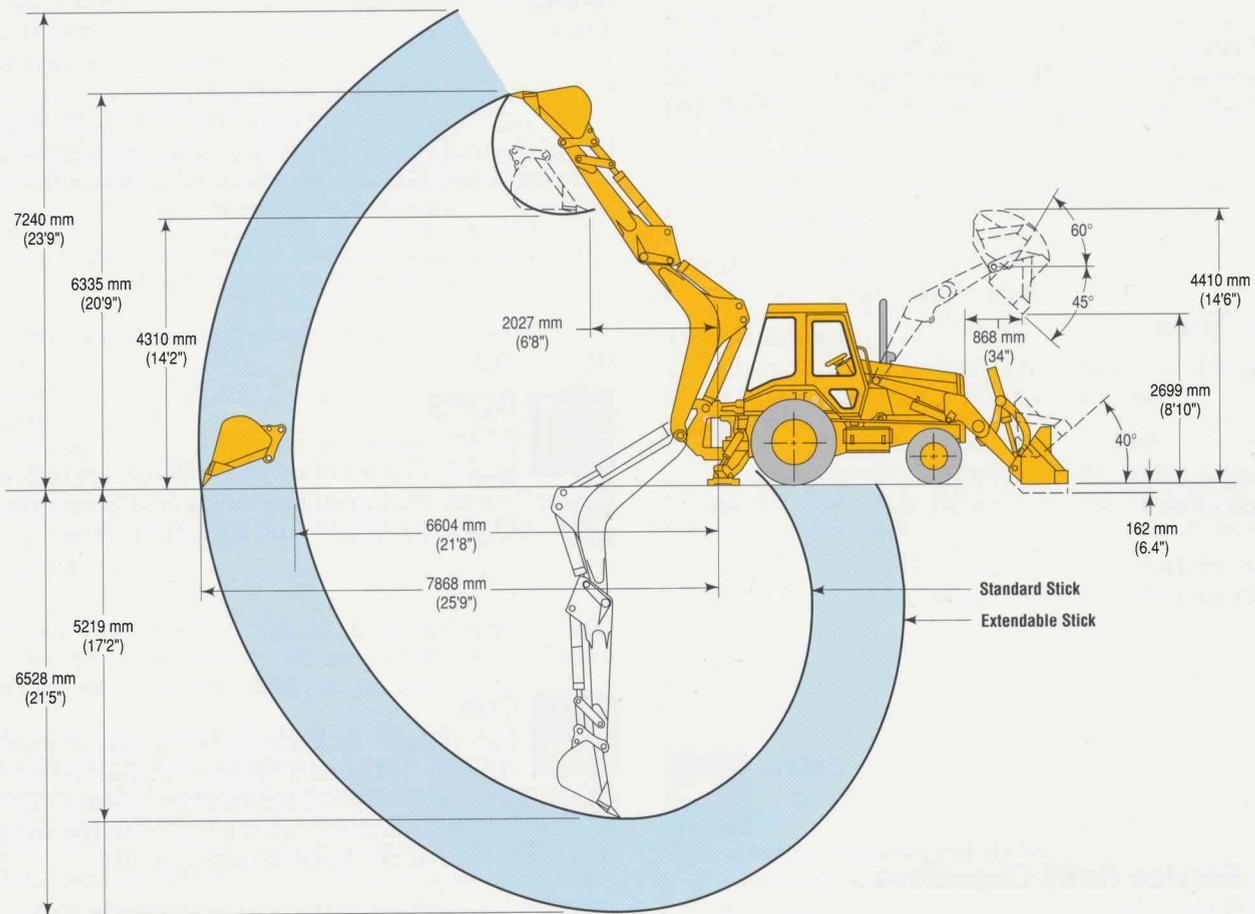
	Kg	Lb
Cab	+234	+515
Front-wheel drive	+196	+432
Extendable stick*	+293	+645
Multi-purpose bucket	+201	+444

* Excludes counterweight

SPECIFICATIONS

Backhoe Operating Specifications

DIGGING RANGE



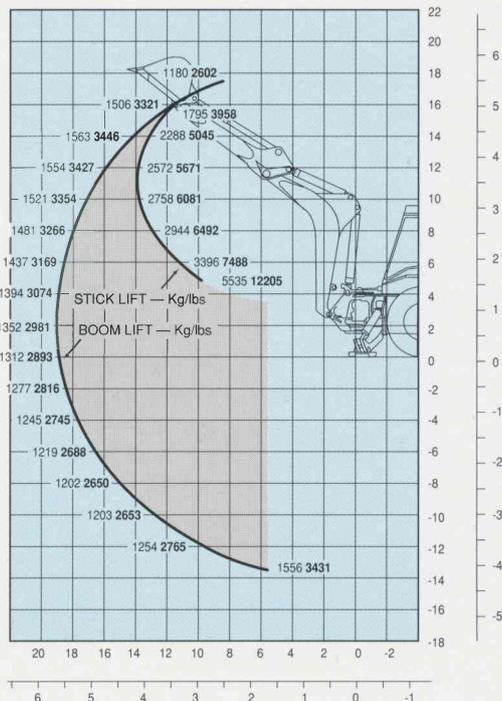
	Extendable stick		
	Standard stick	Retracted	Extended
Digging depth — SAE (max)	5219 mm/17'2"	5182 mm/17'	6528 mm/21'5"
610 mm/2' flat bottom	5173 mm/17'	5134 mm/16'10"	6479 mm/21'3"
Overall reach from rear axle center line at ground line	7866 mm/25'10"	7825 mm/25'8"	9130 mm/29'11"
Overall reach from swing pivot at groundline	6604 mm/21'8"	6563 mm/21'6"	7868 mm/25'9"
Maximum operating height — fully raised.	6335 mm/20'9"	6298 mm/20'8"	7240 mm/23'9"
Loading height	4310 mm/14'2"	4205 mm/13'10"	4894 mm/16'1"
Loading reach	2027 mm/6'8"	2070 mm/6'9"	3261 mm/10'8"
Swing arc	180°	180°	180°
Bucket rotation			
Position #1 and #2	169°	163°	163°
Stabilizer spread — operating position	4084 mm/13'5"	4084 mm/13'5"	4084 mm/13'5"
Stabilizer spread — transport position	2405 mm/7'11"	2405 mm/7'11"	2405 mm/7'11"
Digging force, bucket cylinder, SAE	60.3 kN/13,573 lb	60.1 kN/13,523 lb	60.1 kN/13,523 lb
Digging force, dipper cylinder, SAE	43.0 kN/9,666 lb	44.5 kN/10,002 lb	31.1 kN/6,995 lb
Leveling angle (maximum slope on which backhoe will make vertical cut)	13°	13°	13°

Machine Dimensions (SAE J49 and J732c)

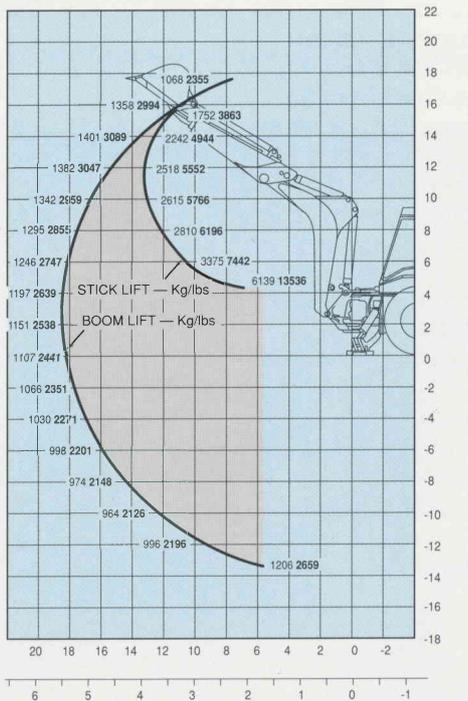
	mm	ft-in
Overall transport length	7954	26'1"
Overall length (loader on ground)	7922	26'0"
Overall transport height	4193	13'9"
Overall width with loader bucket	2434	8'0"
Height to top of canopy	2864	9'5"
Height to top of cab	2864	9'5"
Height to top of exhaust stack	2960	9'9"
Height to top of steering wheel	2111	6'11"
Height to loader hinge pin, transport position	465	18"
Ground clearance to machine main frame	332	13"
Rear axle centerline to front grill	2752	9'
Front wheel tread	1970	6'6"
Rear wheel tread	1800	5'11"
Wheel base, two-wheel drive	2233	7'4"
four-wheel drive	2233	7'4"

NOTE: Specifications shown with 14.5/75 — 16.1, 10 PR front tires, 21L-24, 12PR rear tires, ROPS canopy, 5219 mm/17'2" backhoe with 610 mm/24" trenching bucket, loader with 2434 mm/96", 1.1 m³/1.5 yd³ General Purpose bucket and standard equipment unless otherwise specified.

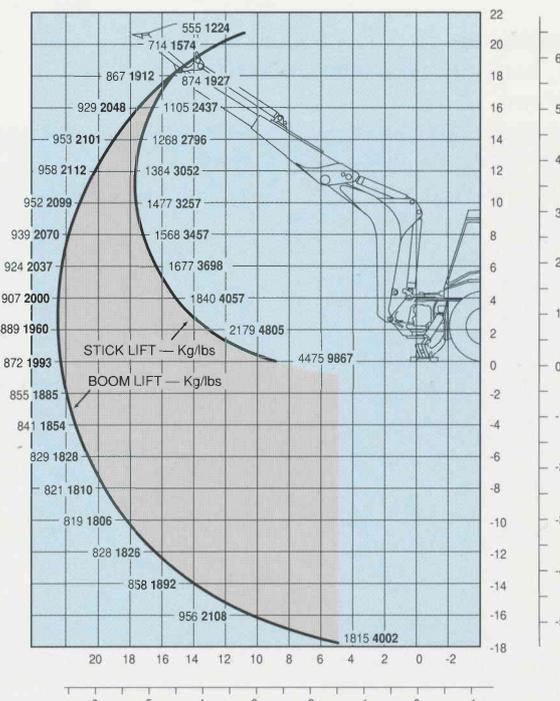
446 BACKHOE LIFT CAPACITY Standard Stick



446 BACKHOE LIFT CAPACITY Extendable Stick, Retracted *



446 BACKHOE LIFT CAPACITY Extendable Stick, Extended *



NOTE: Lift capacities as per SAE J31 with loader bucket on ground and boom at 65° from horizontal.

* Vehicle equipped with 682 kg/1500 lb counterweight.

Loader Dimensions (SAE J742c)
Loader Bucket Capacities (SAE J742)

Type	General Purpose	Multi-Purpose
Width	2434 mm/96"	2434 mm/96"
Heaped capacity	1.1 m ³ /1.5 yd ³	1.05m ³ /1.375 yd ³
Lift capacity at full height	3710 kg/8160 lb	3530 kg/7,780 lb
Breakout force	5460kg/53.5 kN/ 12,038 lb	5593 kg/54.8 kN/ 12,330 lb
Hinge pin height (full height)	3490 mm/11'5"	3490 mm/11'5"
Dump angle	45°	45°
Dump height at 45°	2699 mm/8'10"	2731 mm/9'0"
Reach at full height/45°	868 mm/34"	868 mm/34"
Maximum rollback at ground	40°	40°
Digging depth	162 mm/6.4"	143 mm/5.6"
Grading angle	115°	115°
Weight	604 kg/1,331 lb	805 kg/1,775 lb

Backhoe Bucket Dimensions and Capacities
(SAE J296)

Width		Heaped		Weight		No. of Teeth
mm	in	L	cu ft	kg	lb	
457	18	190	6.5	178	392	3
610	24	280	10	216	476	4
762	30	380	13	237	523	5
914	36	480	17	267	589	6
Extreme Service						
600	24	270	9	227	501	4
760	30	370	13	249	549	5

Heavy Duty — Heavy duty buckets include reinforced plates on back of bucket and at torque tube, weld-on tooth adapters, cutting edge and heavy duty long tooth tips.

Extreme Service — Includes weld-on adapters, cutting edge and heavy duty long tooth tips.

NOTE: All specification dimensions are rounded.





Standard Equipment

NOTE: Standard and optional equipment may vary. Consult your Caterpillar dealer for specifics.

Air cleaner, dry-type.	Torque converter oil temperature.	Lock, differential.
Alternator, 55-amp, 12-volt.	Voltmeter.	Mirror, rear view.
Backhoe, center-pivot, two-lever control.	Indicators:	Seat, vinyl suspension, fully adjustable with armrests.
Brakes:	Air cleaner service.	Seat belt. (76 mm/3").
Oil-disc, service.	Clock hour meter.	Starting system, electric.
Parking.	Coolant light, with audible alarm.	Steering, power.
Canopy, ROPS, dual access.	Hydraulic oil level sight gauge.	Tires:
Cooler, hydraulic oil.	Oil pressure light, with audible alarm.	Front 14.5/75-16.1, 10 PR.
Enclosure, engine.	Lights:	Rear 21L--24, 12 PR.
Fan, suction.	Hazard/signal, flashing.	Throttles, hand and foot.
Fenders, rear.	Instrument panel.	Tool box.
Floor mat.	Stop and tail, (2).	Torque converter.
Front grill, impact-absorbing.	Working, front and rear, Halogen, (4).	Transmission, four-speed full power shift.
Gauges:	Loader, self-leveling with Return to Dig and transmission disconnect switch on single-lever control.	Vandalism protection.
Coolant temperature.		Warning horn, front.
Fuel level.		
Tachometer.		



Optional Equipment

(with approximate change in operating weight)

	Kg	Lb		Kg	Lb
Air conditioner	46	101	Hydraulic arrangements:		
Alarm, back up (required in North America).....	1	2	3rd valve (for loader)	27	60
Armrests, for vinyl non-suspension seat.	4.5	10	7th valve (backhoe) for stick-mounted attachments	8.6	19
Backhoe control lever options (each)	9	20	7th and 8th valve (backhoe) for additional circuits on std. stick	17	38
Backhoe buckets	See page 12		8th valve (backhoe) for unit equipped with extendable stick and second additional circuit	8.6	19
Cab, ROPS (includes heater, defroster and pressurizer)	234	515	Additional hydraulic line to boom	9	20
Counterweight	455	1000	Loader buckets	See page 12	
Counterweight	682	1500	Mirrors, outside mounted	12	27
Ether starting aid	1	2	Radio installation kit	3	7
Extendable stick (without counterweight)	293	645	Rotating beacon	2	5
Fan, operator's compartment	2	4	Seat, vinyl, non-suspension	-16	-35
Four-wheel drive	196	432	fabric, suspension	0	0
Guards:			Stabilizer street pads	37	82
Stabilizer cylinder	35	78	Stabilizer reversible pads	68	150
4wd driveshaft	36	80	Supplemental steering	20	45

NOTE: All specification dimensions are rounded.

The Competitive Edge

Performance

- **Load-sensing hydraulic system** — full hydraulic force to cutting edges at all engine speeds.
- **Fully synchronized transmission** — on-the-go shifting in all four gears, two- or four-wheel drive.
- **5460 kg/53.5 kN/12,038 lb loader bucket breakout force** — excellent production capabilities.
- **Automatic bucket leveling/Return-to-Dig** — improved operator efficiency, lower cycle times, increased productivity.
- **Versatile, two-position bucket linkage** — maximum digging force in either pin position for best match to job.

Reliable/Durable

- **Main frame** — fully welded, one-piece frame designed to absorb stress loads and minimize shock loads to the power train.
- **Integral backhoe** — reduces maintenance and service...for a true backhoe loader.
- **Load-sensing hydraulic system** — proven reliable, on-demand hydraulics.
- **Caterpillar's XT-3 hose with O-ring face seal couplings** — designed to provide a virtually dry machine.
- **Sure-Seal Connectors** on electrical system, moisture proof and positive locking for a reliable, long life.

Maintenance/Repair

- **Modular components** — remove as a single unit for simpler, quicker repairs, less downtime.
- **Superior hose routing** — reduces hose damage, easily accessible for service.
- **Service points** — conveniently located, all accessible from the ground.
- **Built-in lift cylinder brace** — suspends loader arms for engine servicing.

Operating Ease

- **Conveniently placed, precise, low-effort controls** — increase operator efficiency.
- **Adjustable suspension seat** — for added operator comfort.
- **Hydrostatic steering** — effortless control, even at low idle.
- **Excellent visibility** — outstanding forward and rear view from the operator's seat to the loader and backhoe.

Total Customer Support System

- **Parts availability** — most Cat parts on dealer's shelf when you need them — computer-controlled, emergency search system backup.
- **Service capability** — dealer's shop or fast field service — trained service people — latest tooling and technology.
- **Machine management services** — effective preventive maintenance programs, diagnostic programs (Scheduled Oil Sampling, Technical Analysis), cost-effective repair options, customer meetings, operator and mechanic training.
- **Exchange components for quick repairs** — choose remanufactured products or rebuilt components for maximum availability and lower costs.
- **Literature support** — easy-to-use operation, maintenance guides help you get the maximum value out of your equipment investment.
- **Flexible financing** — your dealer can help arrange attractive financing on the entire line of Cat equipment. Terms structured to meet your cash flow requirements. See how affordable and easy it is to own Cat equipment.

Custom Products

- In addition to the standard range of optional equipment, special attachments and machine configurations to suit particular customer applications can be made. Contact your Caterpillar dealer for details on matching the Caterpillar product to your special applications.

The Caterpillar logo consists of the word "CATERPILLAR" in a bold, black, sans-serif font. A yellow triangle is positioned below the letter "A". A registered trademark symbol (®) is located to the upper right of the word.