

416E

Backhoe Loader

CATERPILLAR®



Engine

Engine Model	Cat® C4.4 DITA	
Gross Power @ 2,200 rpm – SAE J1995	71 kW	96 hp
Net Power @ 2,200 rpm – SAE J1349	65 kW	87 hp
Net Peak Power @ 2,000 rpm – SAE J1349	66 kW	89 hp

Weights

Operating Weight – Nominal	6750 kg	14,881 lb
Operating Weight – Maximum	10 200 kg	22,466 lb

Backhoe

Dig Depth – Standard	4360 mm	14 ft 4 in
Dig Depth – Extended	5456 mm	17 ft 11 in

416E Features

World-Class Cab

Standard air suspension seat, ergonomic controls layout and more visibility make you feel comfortable – for a safer, more productive work day.

Load-Sensing Hydraulics

Variable displacement piston pump and flow sharing hydraulic valves provide smooth control and optimized fuel efficiency.

Improved Power Train

Top travel speed of 40 km/h/25 mph so you can get on and off the site faster.

Optional Features

Ride Control and AccuGrade™ can improve operator comfort and productivity.



Contents

Operator Station.....	3
Hydraulics	4
Ride Control.....	4
Power Train.....	5
Backhoe.....	6
Loader.....	6
Technology Products.....	7
Work Tools.....	8
Serviceability.....	9
Customer Support.....	9
416E Backhoe Loader Specifications.....	10
416E Standard Equipment.....	18
416E Optional Equipment	19

The 416E lets you get more done with less effort in a more comfortable operator station, with a serviceable extendible stick design and increased performance.



Operator Station

Comfort, visibility and style.

Experience a whole new level of comfort with the spacious E-Series operator station. The ergonomic, automotive style enhances the operator environment. A narrow front dash provides excellent visibility to the front bucket. Reduced vibration keeps operator fatigue low. In-cab storage compartment and lockable tool and battery box provides ample space for tools and belongings. The operator station also features an easy-to-read gauge cluster.

Air Suspension Seat

The standard air suspension seat is adjustable for a greater operating range and more comfortable ride. A switch allows the seat to be tailored to support differing body weights. Adjustable seat height accommodates all operators.

Improved Air Conditioning

The improved air conditioning system features enhanced air distribution and performance for a more comfortable work environment. A nearly 20% increase in air flow over the D-Series combined with improved louver locations provide superior operator comfort.

Backhoe Controls

Two mechanical control patterns are available: two lever excavator, and two lever backhoe.

Configurations

The 416E operator station is available in 5 options – ROPS Canopy, ROPS Canopy Plus, Utility Cab, Utility Cab Plus and Utility Cab Plus with Air Conditioning. See Standard and Optional Equipment for details.

Hydraulics

Load-sensing system matches power to demand.



The 416E has a load-sensing, closed center hydraulic system, which closely matches power and flow to the demand needed by the implements. So whether you're in full trenching mode, or delicately digging around services, you are in control. In applications such as production trenching, speed is important and the system will match the flow needed to get the job done quickly and efficiently. The load-sensing hydraulic system also delivers:

- A cooler hydraulic system
- Better fuel efficiency
- Quieter operation
- Reduced wear on components

Cat XT™-3 ES ToughGuard™ hoses combined with Cat couplings and O-ring face seal fittings provide a leak-free system. The 416E also features new flow-sharing hydraulic valves, ensuring proportional flow of oil to all hydraulic cylinders, providing greater control and improving multi-function performance.

Ride Control

Delivers even greater operator comfort.

The optional Ride Control System smoothes the ride in all conditions, including load and carry, highway roading, or simply moving around the job site. It reduces machine loping, providing a smooth and stable ride for increased operator comfort and reduced operator fatigue. The Ride Control option improves material retention in the loader bucket for increased productivity and a cleaner job site. The system is easily engaged by an On/Off switch on the front console.



Power Train

Built for performance, power, reliability and fuel efficiency.

Cat Engine

The 416E features the Cat® C4.4 DITA (Direct Injection Turbocharged Aftercooled) engine and meets all U.S. EPA Tier 3/EU Stage IIIa emissions requirements. Horsepower and torque rise deliver strong loading and roading performance.

- The water separator service indicator ensures the operator is alerted when service is necessary.
- Dry-type axial seal air cleaner with automatic, integrated dust ejection system for more efficient pre-separation. Both air cleaner and precleaner functions are incorporated into a single unit mounted under the hood.

Transmission

The Cat standard power shuttle transmission provides four speeds forward and reverse. Hydraulically shifted clutches allow on-the-go direction and travel speed shifts.

- Hydraulic proportional control valves smooth speed and directional shifts.
- Four Wheel Drive (4WD) option improves mobility and loader performance in poor underfoot and can be activated on-the-go.
- Maximum roading speed of 40 km/h (25 mph) for faster travel between job sites.
- Cat Rear Axles are designed specifically for demanding backhoe loader applications. Axles feature outboard planetary gear sets for easy serviceability and brake design improvements for longer service life.

Brake Mode Selector

The brake mode selector switch has three positions: two wheel drive, two wheel drive with all wheel braking and four wheel drive. Two wheel drive with all wheel braking provides better tire life while roading and engages the front axle when brakes are applied for improved braking performance.



Backhoe

Designed for high performance and easy service.

The E-Series backhoe delivers industry-leading digging forces. Serrated edges on the stick provide improved material clamping for clearing and demolition applications. The single pin bucket linkage contributes to best-in-class rotation of 205 degrees for all applications.

E-Stick Design

The optional extendible stick (E-stick) increases reach and dig depth by approximately 1.2 meters (4 feet). The new design delivers increased life and easy in-field adjustment with common hand tools.

Curved Boom

The excavator-style boom is built for optimum performance and durability. The curved design provides additional clearance over obstacles while digging a trench or truck loading. The narrow boom enhances the viewing area to the bucket and trench throughout the entire operating range.

Thumbs

Thumb mounting provisions are standard on every Cat Backhoe Loader for added machine versatility. Hydraulic thumbs are available factory-installed. Mechanical thumbs are available through your Cat Dealer.



Loader

Strong lift
and breakout.

Single Tilt

The standard single tilt loader linkage on the 416E features strong lift and breakout forces for solid performance in backfilling and truck loading applications. The 416E is equipped with either a general purpose or multi-purpose pin-on bucket to meet your specific needs.

Return-to-Dig

The return-to-dig system reduces loading cycle times by bringing the loader bucket back to the dig position with an easy pull of the lever. By the time the loader bucket is at ground level, the bucket is angled correctly for the next load or cut.

Technology Products

Advanced technologies improve productivity and simplify serviceability.

AccuGrade™ System

The AccuGrade system for backhoe loaders improves digging accuracy and site safety by eliminating the need for manual grade measuring. Both the Site and Laser Reference Systems save time and money in a variety of digging and trenching applications.

Site Reference System

The Site Reference System allows the operator to excavate to pre-determined coordinates. The intuitive software and controls allow the operator to set target grades.

An in-cab display allows the operator to enter slope and dig depth parameters. Easy to read grade indicator and elevation display delivers all system information to the cab for easy viewing by the operator. System includes rugged components built to withstand the harshest environments:

- In-cab display
- Cylinder position sensors
- Swing position sensor
- Inclinometer
- Wiring harnesses

Laser Reference System

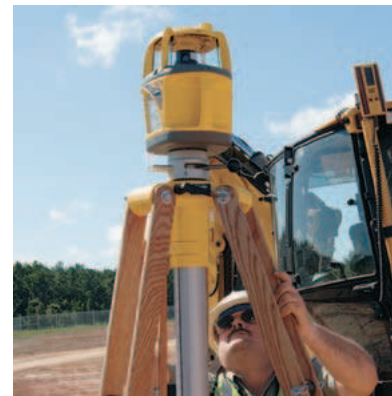
The Laser Reference System works with laser transmitters to accurately grade or excavate to a site plan without the use of grade stakes. The Laser System includes all the components of the Site Reference System with the addition of the following:

- Laser receiver
- Electric mast and mount
- Laser wiring harness

Note: Laser transmitter and tripod sold separately

Product Link

Product Link uses GPS technology to provide machine data, including service hours, location, events and diagnostic information, to you through a web-based application or e-mail/pager notification.



Work Tools

Do more jobs with one machine.



Backhoe Work Tools

A large selection of backhoe tools – including a new hydraulic thumb – gives you the flexibility to serve more customers, more profitably.

- Standard Duty, Heavy Duty, Heavy Duty Rock, Pin Lock, Soil Excavation, Coral and Ditch Cleaning Buckets
- Cold Planer
- Hydraulic Hammer
- Auger
- Ripper
- Mechanical and Hydraulic Thumbs
- Quick Coupler
- Vibratory Plate Compactor

Loader Work Tools

The loader tool line includes the following:

- General Purpose Bucket
- Multi Purpose Bucket
- Side Dump Bucket
- Light Material Bucket
- Loader Forks

The right bucket makes all the difference

To get top performance from your Cat backhoe loader, be sure your machine is equipped with the proper bucket and tips. The soil excavation bucket provides the best productivity in most conditions.

DRS 230 (Diagonal Retention System)

Heavy-duty bucket teeth are attached with diagonal pins rather than horizontal pins for easy exchange.



Serviceability

Easy access and minimal maintenance requirements maximize uptime.



Convenient service features make maintenance easy, reducing your downtime.

- Tilt-up hood provides convenient access to all engine check points.
- Fill caps are color-coded for quick identification.
- S•O•SSM, Coolant Sampling and Technical Analysis help you avoid unscheduled repairs.
- Caterpillar is committed to providing you with a safe work environment. For more information please visit SAFETY.CAT.COMTM.

Customer Support Makes the difference.

Your Cat dealer is ready to assist you with your purchase decision and everything after.

- Financing packages are flexible to meet your needs.
- Your Cat dealer can evaluate the cost to repair, rebuild and replace your machine, so you can make the right choice.
- Nearly all parts are available at your Cat dealer parts counter.
- See your dealer's website or www.cat.com to customize the machine that is right for you using the Build and Quote applications. Also find information on other Cat products, dealer services and industry solutions.



416E Backhoe Loader Specifications

Engine		
Engine Model (Standard)	Cat® C4.4 DITA	
Gross Power – SAE J1995	71 kW	96 hp
Gross Power – ISO 14396	70 kW	94 hp
Net Power – SAE J1349	65 kW	87 hp
Net Power – ISO 9249	66 kW	88 hp
Net Power – EEC 80/1269	66 kW	88 hp
Net Peak Power @ 2,000 rpm – SAE J1349	66 kW	89 hp
Net Peak Power @ 2,000 rpm – ISO 9249	67 kW	90 hp
Net Peak Power @ 2,000 rpm – EEC 80/1269	67 kW	90 hp
Bore	105 mm	4.13 in
Stroke	127 mm	5 in
Displacement	4.4 L	268 in ³
Net Torque Rise @ 1,400 rpm – Standard	35%	
Net Peak Torque @ 1,400 rpm – Standard – SAE J1349	384 N·m	283 lb ft

- Engine meets all U.S. EPA Tier 3/ EU Stage IIIa emissions requirements.
- The net power ratings apply at 2,200 rpm when tested under the specified conditions for the specified standard.
- Net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- Based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 in) in dry barometer.
- Used 35° API gravity fuel having an LHV of 42 780 kJ/kg (18,390 BTU/lb) when used at 30° C (89° F) (reference a fuel density of 838.9 g/L [7.001 lb/gal]).
- No derating required up to 3000 m (9,843 ft).
- Net torque rise meets SAE J1349.
- Net peak power ratings apply at conditions specified above.

Weights		
Operating Weight – Nominal	6750 kg	14,881 lb
Operating Weight – Maximum	10 200 kg	22,466 lb
Cab, ROPS/FOPS	260 kg	573 lb
Ride Control	25 kg	55 lb
Air Conditioning	39 kg	86 lb
Four Wheel Drive	155 kg	342 lb
Extendible Stick (no weights)	299 kg	659 lb
Counterweights (Option 1)	116 kg	255 lb
Counterweights (Option 2)	231 kg	510 lb
Counterweights (Option 3)	488 kg	1,075 lb

- Total gross machine weight not to exceed 10 200 kg (22,466 lb).

Backhoe		
Dig Depth – Standard	4360 mm	14 ft 4 in
E-Stick Retracted	4402 mm	14 ft 5 in
E-Stick Extended	5456 mm	17 ft 11 in
Reach from Swing Pivot – Standard	5618 mm	18 ft 5 in
E-Stick Retracted	5657 mm	18 ft 7 in
E-Stick Extended	6666 mm	21 ft 10 in
Bucket Rotation	205 Degrees	
Bucket Dig Force – Standard	52.2 kN	11,749 lb
E-Stick Retracted	51.5 kN	11,491 lb
E-Stick Extended	51.5 kN	11,491 lb
Stick Dig Force – Standard	32 kN	7,200 lb
E-Stick Retracted	32 kN	7,200 lb
E-Stick Extended	23.5 kN	5,250 lb
Stick Lift @ 2440 mm (8 ft) – Standard	2275 kg	5,005 lb
E-Stick Retracted	2063 kg	4,539 lb
E-Stick Extended	1290 kg	2,839 lb
Loading Height – Standard	3643 mm	11 ft 11 in
E-Stick Retracted	3600 mm	11 ft 9 in
E-Stick Extended	4170 mm	13 ft 7 in
Loading Reach – Standard	1837 mm	6 ft 0 in
E-Stick Retracted	1923 mm	6 ft 2 in
E-Stick Extended	2836 mm	9 ft 1 in

Loader

Bucket Capacity – General Purpose	0.76 m ³	1 yd ³
Bucket Width – General Purpose	2262 mm	7 ft 5 in
Dump Height @ Max Angle – Single Tilt	2651 mm	8 ft 8 in
Dump Reach @ Max Angle – Single Tilt	772 mm	2 ft 6 in
Dig Depth – Single Tilt	106 mm	4 in
Lift Capacity @ Full Height – Single Tilt	2803 kg	6,180 lb
Bucket Breakout Force – Single Tilt	44.6 kN	10,036 lb

Hydraulic System

Circuit Type	Closed center, load sensing	
Pump Capacity (@ 2,200 rpm)	132 L/min	34.8 gal/min
System Pressure – Backhoe	22 700 kPa	3,300 psi
System Pressure – Loader	20 700 kPa	3,000 psi
Pump Type	Variable-flow, axial piston	
Steering Type	Front wheel	
Power Steering	Hydrostatic, HMU	
2WD Cylinder – Bore	65 mm	2.6 in
Stroke	120 mm	4.7 in
Rod Diameter	36 mm	1.4 in
4WD Cylinder – Bore	65 mm	2.6 in
Stroke	120 mm	4.7 in
Rod Diameter	36 mm	1.4 in
Brake System	Inboard, oil-immersed, multiple disc	

Power Train

Power-Shuttle, Forward 1st	6 km/h	3.7 mph
Forward 2nd	9.6 km/h	5.9 mph
Forward 3rd	20 km/h	12 mph
Forward 4th	40 km/h	25 mph
Power-Shuttle, Reverse 1st	6 km/h	3.7 mph
Reverse 2nd	9.6 km/h	5.9 mph
Reverse 3rd	20 km/h	12 mph
Reverse 4th	40 km/h	25 mph

- Conveniently placed, hand operated lever provides instant direction changes between forward and reverse through power hydraulic clutches.
- Torque converter free-wheel clutch allows the converter stator to free-wheel during high speed, low torque conditions such as roading.
- Single-stage, 2.63:1 stall ratio.
- Travel speeds of two wheel drive backhoe loader at full throttle when equipped with 19.5 × 24 rear tires.

Operating Specifications – Backhoe

Turning Circle: outside, front wheels	8.18 m	26 ft 10 in
Turning Circle: outside, widest loading bucket	10.97 m	36 ft

- ISO 5010.
- 2WD, 4WD (inner wheel not braked).

Service Refills

Cooling System	20.5 L	5.4 gal
Fuel Tank	170 L	45 gal
Engine Oil w/Filter	7.6 L	2 gal
Transmission-Torque Converter, 2WD, Power Shuttle	18.5 L	4.9 gal
Transmission-Torque Converter, 4WD, Power Shuttle	18.5 L	4.9 gal
Rear Axle	16.5 L	4.4 gal
Rear Axle, Planetaries	1.7 L	0.4 gal
Front Axle, 4WD	11 L	2.9 gal
Front Axle, Planetaries	0.7 L	0.2 gal
Hydraulic System	90 L	23.8 gal
Hydraulic Tank	38 L	10 gal

Standards

Brakes	SAE J/ISO 3450, ISO 3450 1996
Cab – ROPS	SAE J1040 May 1994/ ISO 3741 1994
Cab – FOPS	SAE J/ISO 3449 APR98 LEVEL II and ISO 3449: 1992 LEVEL II
Cab – Sound	ANSI/SAE J1166 Oct 98 is 80 dB (A)
Exterior Sound	SAE J88 JUN86 is 76 dB (A)

416E Backhoe Loader Specifications

Axle Ratings

Front Axle, 2WD, Static	22 964 kg	50,582 lb
Dynamic	9186 kg	20,233 lb
Front Axle, 4WD, Static	22 964 kg	50,582 lb
Dynamic	9186 kg	20,233 lb
Rear Axle, Static	22 964 kg	50,582 lb
Dynamic	9186 kg	20,233 lb
Axle Oscillation	10 Degrees	

- 4WD and 2WD axles are pendulum mounted and permanently sealed and lubricated, requiring no daily maintenance. Also features double-acting steering cylinder with 52° steering angle for increased maneuverability.

Engine Features

- Three-ring pistons made of lightweight, silicon/aluminum alloy for strength and maximum thermal conductivity.
- Forged chrome/molybdenum-steel crankshaft with salt bath nitrocarburized pins and journals.
- Front and rear crankshaft oil seals are “lip” type Viton and PTFE designs featuring an integral dust lip.
- For durability, inlet valves are nitrided, martensitic chrome silicon steel, while exhaust valves are nitrided, austenitic chrome manganese-nickel steel.
- Cylinder block is high strength, cast iron alloy of deep skirt, monobloc design for increased strength and long life.
- Cylinder head is high strength, cast iron alloy construction with extra duty wall and deck thickness. Intake and exhaust ports are precision cast to promote optimum gas flow.
- Direct injection fuel system provides accurate fuel delivery and efficiency.
- Dry-type axial seal air cleaner with integral precleaner, automatic dust ejection system, and filter condition indicator.
- Direct electric, 12-volt starting and charging system with 880 CCA Group 31 maintenance free battery.
- Standard glow plug starting aid system for efficient cold weather starting.
- High contact ratio/gear train, peripheral fixed isolation top cover and open deck block design reduce bare engine noise.
- Higher low end torque for better engine/machine performance.

Tires

Choices listed as combination of front/rear tires:

- 11L-16 (12 ply) F-3/19.5L-24 (12 ply) R4 ATU
- 12.5/80-18 NHS (12 ply) 1-3 Super Traction/19.5L-24 (12 ply) R4 ATU
- 12.5/80-18 NHS (12 ply) 1-3 Super Traction/21L-24 (16 ply) R4 ATU
- 340/80R 18 XMCL/500/70R 24 XMCL
- 340/80R 18 XMCL/19.5L-R24 (12 ply) R4 ATU

Brakes

Features:

- Brakes meet the following standards: SAE J1473 and ISO 3450 requirements.
- Self-adjusting, completely enclosed and sealed.
- Foot operated brake pedals can be interlocked for roading.
- Parking/secondary brakes are independent of the service brake system. Parking brake is mechanically applied through an adjustable hand lever located on the right console.

Counterweights

Minimum Counterweight Recommendations

Standard Stick			
Loader Bucket	Power Train	kg	lb
GP	2WD	231	510
GP	4WD	116	255
MP	2WD/4WD	no counterweight	

Extendible Stick			
Loader Bucket	Power Train	kg	lb
GP	2WD/4WD	488	1,075
GP	2WD	231	510
MP	4WD	116	255

Backhoe Buckets

With weld on adapters and pin-on teeth

Standard Duty						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	78	2.8	97	213	3
457	18	118	4.2	115	253	4
610	24	175	6.2	132	290	5
762	30	233	8.2	147	323	5
914	36	292	10.3	165	363	6

Heavy Duty						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	78	2.8	105	231	3
406	16	105	3.7	128	282	3
457	18	118	4.2	129	284	4
610	24	175	6.2	151	332	5
762	30	233	8.2	167	367	5
914	36	292	10.3	189	416	6

Soil Excavation						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
457	18	181	6.4	153	336	4
610	24	241	8.5	179	395	5
762	30	320	11.3	197	434	5
914	36	380	13.4	223	491	6

Heavy Duty Rock						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	70	2.5	120	265	3
457	18	127	4.5	150	331	4
610	24	198	7.0	175	386	5
762	30	255	9.5	195	430	5
914	36	311	11.5	210	463	6

Coral						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft ³	kg	lb	
305	12	60	2.1	134	295	4
457	18	100	3.5	155	341	6
610	24	140	4.9	182	402	8
762	30	190	6.7	210	463	10

416E Backhoe Loader Specifications

Machine Dimensions

	Single-Tilt Loader					
	General Purpose (0.76 m ³ /1.0 yd ³)		General Purpose (0.96 m ³ /1.25 yd ³)		Multi Purpose (1.0 m ³ /1.3 yd ³)	
	mm	ft/in	mm	ft/in	mm	ft/in
(1) Overall transport length	7233	23 ft 9 in	7321	24 ft 0 in	7285	23 ft 11 in
Overall length (loader on ground)	7180	23 ft 7 in	7293	23 ft 11 in	7209	23 ft 8 in
(2) Overall transport height (standard stick)	3577	11 ft 9 in	3577	11 ft 9 in	3577	11 ft 9 in
Overall transport height (extendible stick)	3631	11 ft 11 in	3631	11 ft 11 in	3631	11 ft 11 in
Overall width	2322	7 ft 7 in	2322	7 ft 7 in	2322	7 ft 7 in
(3) Height to top of cab/canopy	2819	9 ft 3 in	2819	9 ft 3 in	2819	9 ft 3 in
(4) Height to top of exhaust stack	2754	9 ft 0 in	2754	9 ft 0 in	2754	9 ft 0 in
Height to loader hinge pin (transport)	365	1 ft 2 in	365	1 ft 2 in	417	1 ft 4 in
Ground clearance (minimum)	320	1 ft 1 in	320	1 ft 1 in	320	1 ft 1 in
(5) Rear axle centerline to front grill	2704	8 ft 10 in	2704	8 ft 10 in	2704	8 ft 10 in
Front wheel tread gauge	1880	6 ft 2 in	1880	6 ft 2 in	1880	6 ft 2 in
Rear wheel tread gauge	1727	5 ft 8 in	1727	5 ft 8 in	1727	5 ft 8 in
(6) Wheelbase 2WD/4WD	2200	7 ft 3 in	2200	7 ft 3 in	2200	7 ft 3 in

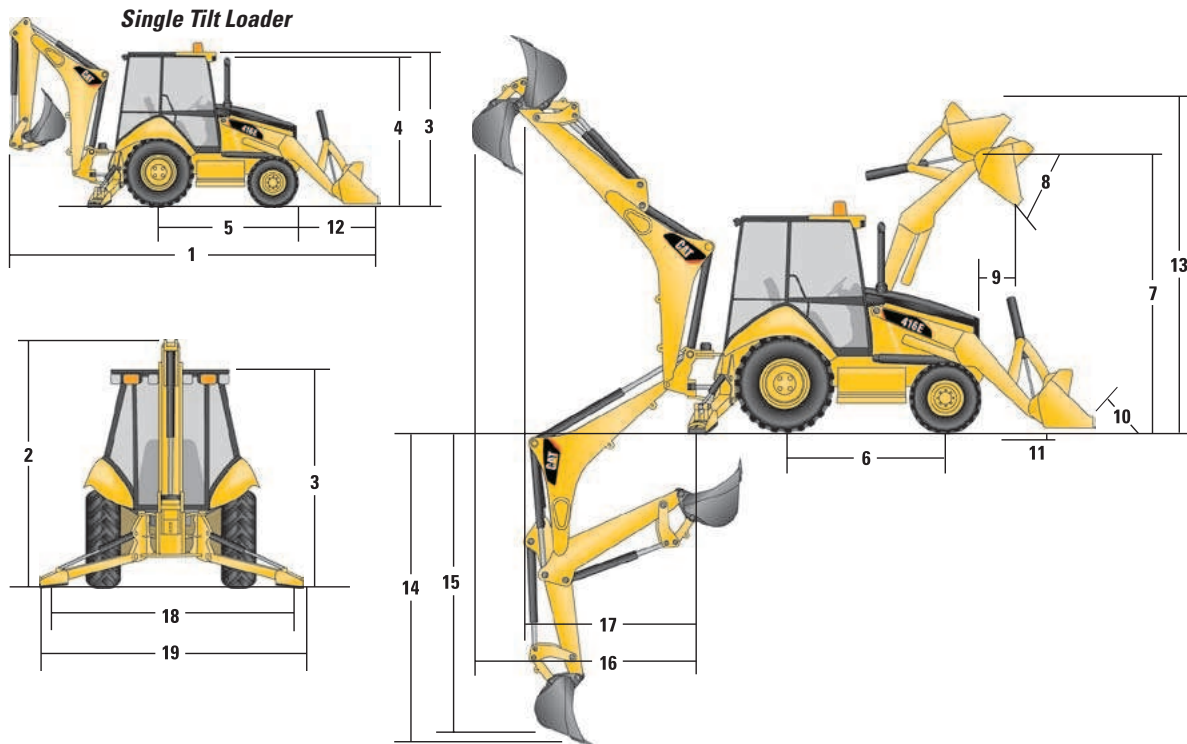
Loader Bucket Dimensions and Performance

	Single-Tilt Loader					
	General Purpose (0.76 m ³ /1.0 yd ³)		General Purpose (0.96 m ³ /1.25 yd ³)		Multi Purpose (1.0 m ³ /1.3 yd ³)	
	mm	ft/in	mm	ft/in	mm	ft/in
Capacity (SAE rated)	0.76 m ³	1.0 yd ³	0.96 m ³	1.25 yd ³	1.0 m ³	1.3 yd ³
Width	2262 mm	7 ft 5 in	2262 mm	7 ft 5 in	2279 mm	7 ft 6 in
Lift capacity at maximum height	2547 kg	5,615 lb	2427 kg	5,351 lb	2225 kg	4,905 lb
Breakout force	40.9 kN	9,185 lb	38.1 kN	8,565 lb	37.2 kN	8,363 lb
(7) Maximum hinge pin height	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in
(8) Dump angle at full height	44°		44°		44°	
Dump height at maximum angle	2651 mm	8 ft 8 in	2573 mm	8 ft 5 in	2624 mm	8 ft 7 in
(9) Dump reach at maximum angle	772 mm	2 ft 6 in	853 mm	2 ft 10 in	761 mm	2 ft 6 in
(10) Maximum bucket rollback at ground level	39°		39°		40°	
(11) Digging depth	106 mm	4 in	106 mm	4 in	133 mm	5 in
Maximum grading angle	110°		107°		110°	
Width of dozer cutting edge	N/A		N/A		2262 mm	7 ft 5 in
(12) Grill to bucket cutting edge, carry position	1428 mm	4 ft 8 in	1516 mm	5 ft 0 in	1480 mm	4 ft 10 in
(13) Maximum operating height	4063 mm	13 ft 4 in	4196 mm	13 ft 9 in	4244 mm	13 ft 11 in
Jaw opening maximum	N/A		N/A		790 mm	2 ft 7 in
Bucket jaw clamping force	N/A		N/A		50.6 kN	11,385 lb
Weight (does not include teeth or forks)	384 kg	847 lb	451 kg	994 lb	745 kg	1,642 lb

Backhoe Dimensions and Performance

	Standard Stick		Extendible Stick Retracted		Extendible Stick Extended	
(14) Digging depth, SAE (max.)	4360 mm	14 ft 4 in	4402 mm	14 ft 5 in	5456 mm	17 ft 11 in
(15) Digging depth, 610 mm (2 ft) flat bottom	4321 mm	14 ft 2 in	4363 mm	14 ft 4 in	5420 mm	17 ft 10 in
Reach from rear axle centerline at ground line	6721 mm	22 ft 1 in	6760 mm	22 ft 2 in	7769 mm	25 ft 6 in
(16) Reach from swing pivot at ground line	5618 mm	18 ft 5 in	5657 mm	18 ft 7 in	6666 mm	21 ft 10 in
Maximum operating height	5523 mm	18 ft 1 in	5555 mm	18 ft 3 in	6302 mm	20 ft 8 in
Loading height	3636 mm	11 ft 11 in	3577 mm	11 ft 9 in	4145 mm	13 ft 7 in
(17) Loading reach	1768 mm	5 ft 10 in	1868 mm	6 ft 2 in	2771 mm	9 ft 1 in
Swing arc	180°		180°		180°	
Bucket rotation	205°		205°		205°	
(18) Stabilizer spread, operating position (center)	3310 mm	10 ft 10 in	3310 mm	10 ft 10 in	3310 mm	10 ft 10 in
(19) Stabilizer spread, operating position (outside)	3770 mm	12 ft 4 in	3770 mm	12 ft 4 in	3770 mm	12 ft 4 in
Stabilizer spread, transport position	2322 mm	7 ft 7 in	2322 mm	7 ft 7 in	2322 mm	7 ft 7 in
Bucket dig force	51.8 kN	11,655 lb	51.1 kN	11,491 lb	51.1 kN	11,491 lb
Stick dig force	31.8 kN	7,151 lb	31.8 kN	7,151 lb	23.4 kN	5,250 lb

Dimensions and performance specifications shown are for machines equipped with 12.5/80-18 SGL front tires, 19.5L-24 IT525 rear tires, ROPS canopy, standard stick with 610 mm (24 inch) standard-duty bucket, and 0.76 m³ (1.0 yd³) loader bucket and standard equipment unless otherwise specified.

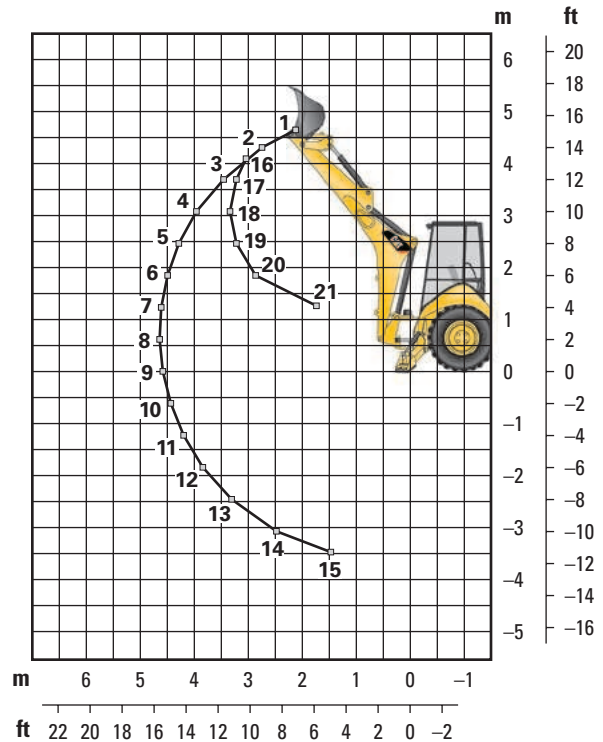


416E Backhoe Loader Specifications

Backhoe Lift Capacity

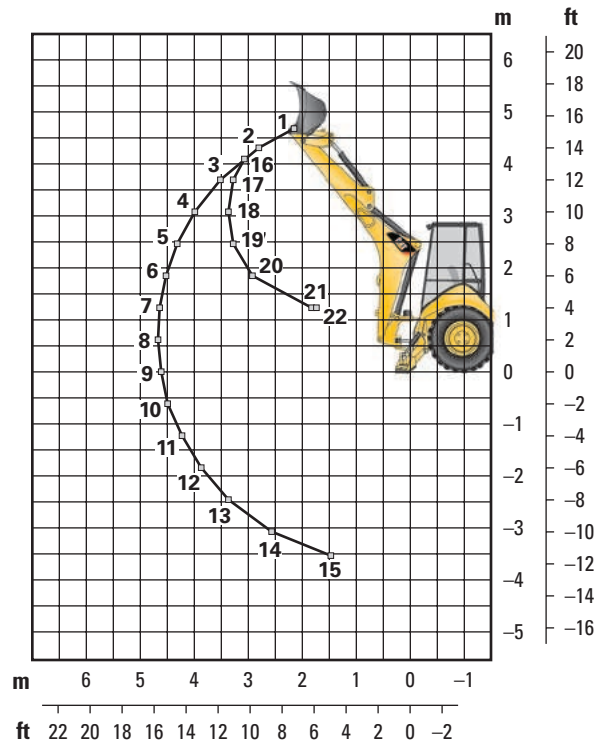
Cat 416E Standard Stick

Boom Lifting	kg	lb
1	1262	2,776
2	1378	3,031
3	1394	3,066
4	1356	2,984
5	1306	2,873
6	1253	2,757
7	1202	2,643
8	1153	2,536
9	1107	2,436
10	1065	2,344
11	1028	2,261
12	995	2,190
13	972	2,138
14	973	2,141
15	1081	2,377
Stick Lifting	kg	lb
16	1297	2,853
17	1827	4,020
18	2195	4,828
19	2275	5,005
20	2645	5,818
21	5285	11,627



Cat 416E Extendible Stick – Retracted

Boom Lifting	kg	lb
1	1084	2,385
2	1186	2,608
3	1190	2,618
4	1149	2,527
5	1096	2,412
6	1042	2,291
7	988	2,174
8	938	2,063
9	890	1,958
10	846	1,860
11	805	1,771
12	768	1,690
13	738	1,623
14	722	1,589
15	788	1,734
Stick Lifting	kg	lb
16	1155	2,541
17	1672	3,679
18	1992	4,382
19	2063	4,539
20	2395	5,269
21	4688	10,313
22	5059	11,129

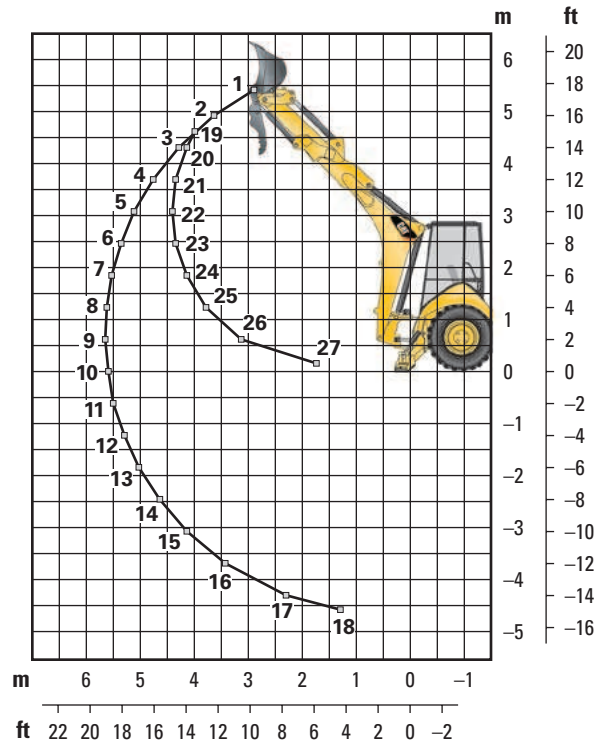


Lift capacities are over-end values. Machine equipped with 4WD, OROPS, 0.76 m³ (1.0 yd³) general purpose bucket, and 116 kg (255 lb) counterweight. Extendible stick includes 488 kg (1,075 lb) counterweight.

Backhoe Lift Capacity

Cat 416E Extendible Stick – Extended

Boom Lifting	kg	lb
1	597	1,313
2	729	1,605
3	780	1,715
4	725	1,596
5	681	1,498
6	659	1,449
7	653	1,437
8	663	1,458
9	687	1,512
10	672	1,478
11	651	1,432
12	632	1,390
13	616	1,354
14	604	1,328
15	600	1,319
16	613	1,348
17	704	1,550
18	1071	2,355
Stick Lifting	kg	lb
19	543	1,195
20	724	1,593
21	973	2,141
22	1146	2,522
23	1290	2,839
24	1442	3,172
25	1653	3,637
26	2160	4,751
27	5031	11,069



Lift capacities are over-end values. Machine equipped with 4WD, OROPS, 0.76 m³ (1.0 yd³) general purpose bucket, and 116 kg (255 lb) counterweight. Extendible stick includes 488 kg (1,075 lb) counterweight.

416E Standard Equipment

Standard equipment may vary. Consult your Caterpillar dealer for details.

Air cleaner	Fast reversing shuttle, all gears	Mirror, rear view
Alarm, back-up	Fenders, rear	Open circuit breather
Backhoe position footrests	Filters, spin-on: fuel, engine oil,	Power receptacle, 12V, internal
Backhoe controls, 2-lever mechanical	transmission oil, water separator,	and external
backhoe pattern	hydraulic fluid	Power steering, hydrostatic
Battery, maintenance-free, 880 CCA	Flashing hazard/signal lights	Rubber impact strips on radiator guard
Battery disconnect switch	Floor mat	Seat belt, retractable (51 mm/2 in)
Boom transport lock	Gauges: coolant temperature, fuel level,	Stabilizer shoes, grouser type
Brace, lift cylinder	tachometer, hour meter, torque converter	Seat, air suspension with armrest
Brake, secondary parking	oil temperature	Stabilizer controls, cable operated
Brakes, oil disc, dual pedals, interlocking	Ground level fuel fill	Starting system, glow plugs
Bucket level indicator	High ambient cooling package	Storage compartment, internal
Canopy, ROPS/FOPS	Hydraulic hose, XT™-3 ES	Stop and tail lights
Coat hook	Hydraulic oil cooler	Swing transport lock
Coolant/Antifreeze, extended life	Indicators: air cleaner service, water	Tilt steering wheel
Counterweight, bumper	separator service, brake on, engine	Tires, see page 12
Differential lock	coolant, hydraulic oil level sight gauge,	Toolbox, external, lockable
Dome light (cab only)	oil pressure	Torque converter
Engine, Cat® C4.4 DITA	Instrument panel lights	Throttles, hand and foot
(Direct Injection Turbocharged	Key start/stop system	Transmission, four speed, syncromesh
and Aftercooled)	Lights, working (2 front, 2 rear)	Transmission neutralizer switch
Engine enclosure	Loader, self-leveling, return-to-dig	Transport tie-downs
Face seals, O-ring	and transmission disconnect switch	Warning horn, electric
Fan, suction and guard	Lunch box holder	

Optional equipment may vary. Consult your Caterpillar dealer for details.

	kg	lb		kg	lb		kg	lb
AccuGrade™ Site Reference System for Backhoe Loaders	19	42	Backhoe Controls			Hydraulic lines		
AccuGrade Laser Reference System for Backhoe Loaders	48	105	Excavator pattern	0	0	Combo, Std Stick	27	59
Attachments, backhoe			Battery, additional, 880 CCA	25	55	Combo, E-Stick	27	59
Mechanical Quick Coupler			Cab, utility	210	462	One-way, E-Stick	22	48
D and E-Series buckets	75	165	Cab, utility plus	220	484	Lights: Working, additional (2 front, 2 rear)	0	0
C-Series buckets	75	165	Cab, utility plus with A/C	258	568	Product Link	4	9
D, E and Deere buckets	75	165	Canopy Plus, ROPS	15	33	Ride Control	22	48
D, E and Case buckets	80	176	Coolant, additional protection, -50° C (-58° F)	0	0	Rotating beacon		
Hydraulic thumb	139-157	306-345	Counterweights			Magnetic mount	5	11
Attachments, front loader			116 kg (255 lb)	116	255	Seat belt, 75 mm (3 in)	0	0
General purpose buckets			231 kg (510 lb)	231	510	Stabilizers, available with guards		
0.76 m ³ (1.0 yd ³)	385	847	488 kg (1,075 lb)	488	1,075	Street	37	81
0.96 m ³ (1.25 yd ³)	452	994	Cutting edge, bolt-on, two piece	70	154	Reversible	38	84
Multi purpose buckets			Fenders, 4WD, front	12	26	Sticks		
1.0 m ³ (1.3 yd ³)	714	1,571	Fenders, rear extensions	1	2	Extendible	299	659
1.0 m ³ (1.3 yd ³) w/ forks	884	1,945	Guards			Teeth, loader bucket	45	99
Axle, front			Boom protection plate	18	39	Vandalism protection		
Four wheel drive with driveshaft guard	155	341	Stabilizer, rock	31	68	Gauge cover	1	2
			Hydraulic valves, loader (3rd valve for MP)	27	59	Padlocks	1	2
			Hydraulic valves, backhoe			Hood lock	0	0
			5th Function	5	11			
			6th Function	5	11			

416E Backhoe Loader

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com

© 2008 Caterpillar Inc.
All rights reserved

AEHQ6025 (12-2008)
Replaces AEHQ5684-02

Materials and specifications are subject to change without notice. Featured machines in may include additional equipment. See your Caterpillar dealer for available options.

CAT, CATERPILLAR, SAFETY.CAT.COM, their respective logos, "Caterpillar Yellow" and the POWER EDGE trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.