428E Backhoe Loader

Engine	Cat 3054C*	C4.4**
Rated power (standard)	2,200 rpm	2,200 rpm
Gross – SAE J1995	68.5 kW/93 hp	70 kW/95 hp
Net – ISO 9249	65 kW/89 hp	67 kW/91 hp
Net – 80/1269/EEC	65 kW/89 hp	67 kW/91 hp
Rated power (optional)	2,200 rpm	2,200 rpm
Gross – SAE J1995	74.5 kW/101 hp	74.5 kW/101 hp
Net – ISO 9249	71 kW/97 hp	71 kW/97 hp
Net – 80/1269/EEC	71 kW/97 hp	71 kW/97 hp
Net torque rise at 1,400 rpm		
68.5 kW/93 hp	33%	—
70 kW/95 hp	—	30%
74.5 kW/101 hp	26%	23%
Peak torque rise at 1,400 rpm		
68.5 kW/93 hp	395 Nm	—
70 kW/95 hp	—	395 Nm
74.5 kW/101 hp	408 Nm	400 Nm
Bore	105 mm	105 mm
Stroke	127 mm	217 mm
Displacement	4.4 liter	4.4 liter

- All engine horsepower (hp) are metric including front page.
- Net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- Can be operated at altitudes up to a maximum of 3000 m.

* Stage II EU Emission Directive 97/68/EC

** Stage IIIA EU Emission Directive 2004/26/EC

Features

- Three ring pistons made of lightweight silicon/aluminium alloy for strength and maximum thermal conductivity.
- Forged, chrome/molybdenum-steel crankshaft with nitro-carbonized journals.
- Front and rear crankshaft oil seals are 'lip' type Viton and PTFE designs featuring an integral dust lip.
- Heat resistant silicon-chrome steel and STELLITE faced exhaust valves are used for long engine life.
- Cylinder block is high strength, cast iron alloy of deep-skirt, monobloc design for increased strength and long life.
- Poly vee front end and auxiliary drive belt that is automatically tensioned for long life reducing operating costs.
- Cylinder head is high strength, cast iron alloy construction with extra duty wall and head thickness. Intake and exhaust ports are precision cast to promote optimum gas flow.
- Direct injection fuel system provides accurate fuel delivery. Self priming electric lift pump for improved cold start capability. One filter fuel system for reduced maintenance costs.
- High torque at low engine speeds for better machine performance.
- Dry type, axial seal air cleaner with automatic, integrated dust ejection providing more efficient preseparation.
- Direct electric 12 volt starting and charging system with 750 CCA group 31 maintenance free battery.

Axles

Choice of standard Two Wheel Drive or optional All Wheel Drive.

Features

- Heavy-duty rear axle with self adjusting inboard brakes, differential lock and final drives.
- All Wheel Drive (AWD) is engaged by front console panel switch or by brake pedal during all-wheel-braking operation. AWD can be engaged on-the-go, under load, in any gear, forward or reverse. AWD has outer final drives for easy maintenance.
- AWD front axle is pendulum mounted and permanently sealed and lubricated, requiring no daily maintenance. Also features double acting steering cylinder with 52° steering angle for increased maneuverability.

Steering

Full hydrostatic steering controlled by a hand-metering unit. Secondary steering system available to meet roading regulations in various countries and to meet ISO 5010.

Type	Front wheel
Power steering	Hydrostatic
Cylinder, one (1) double-acting (AWD)	
Bore	65 mm
Stroke	120 mm
Rod diameter	36 mm
Turning circle	
Inner wheel not braked 4WD	
Outside front wheels	8180 mm
Outside widest loader bucket	10 800 mm

Brakes

Fully enclosed, hydraulic, multiple discs.

Features

- Inboard oil-immersed, hydraulically actuated multiple Kevlar discs on final drive input shaft.
- Completely enclosed and sealed.
- Self-adjusting.
- 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 a hand lever located in the right side console.

Meets ISO 3450:1996 requirements.

428E Backhoe Loader

Weights

Standard single tilt loader, with 1.0 m^3 general purpose loader bucket, 610 mm standard duty backhoe bucket, 80 kg operator and a full fuel tank.

	kg
Operating weight (range)	7570 – 10 200
Standard machine weight	7807
ROPS canopy	–260
Air conditioning	48
Multi purpose bucket 1.03 m^3	
With fold-over forks	755
Without fold-over forks	700
Extendable stick (excludes front counterweight)	230
Counterweights	
Base	115
Stackables – One	235
Stackables – Max	485

Minimum Counterweight Recommendations:

Standard stick (power train AWD)	
General purpose	145
Multi purpose	Base
Multi purpose with fold-over forks	Base
Extendable stick (power train AWD)	
General purpose	460
Multi purpose	235
Multi purpose with fold-over forks	115

Cab Features

RH fixed door with opening window	√
RH opening door with opening window	√
LH opening door with opening window	√
2 rear side fixed windows	√
Basic air suspension seat	√
8 working lights	√
Floor mat	√
LH storage console	√
Tilt steering column	√
Exterior rear view mirror	√
Beacon socket (2)	√
Internal power socket	√
Radio ready headliner	√
Instrument cluster display gauge	√
Sun visor	√
Steering wheel knob	√
Vandal guard	√
Cab heater	√
Cab air conditioning	optional
Seat belt (50 mm)	√

Canopy Features

Glazed front screen and wiper	√
LH storage console	√
8 working lights	√
Standard air suspension seat	√
Floor mat	√
Tilt steering column	√
Vandal guard	√
Rear view mirror	√
Seat belt (50 mm)	√

Service Refill Capacities

	Liters
Cooling system	
without heater	24.0
with heater	25.0
Fuel tank	160.0
Engine with oil filter	7.6
Transmission	
Power shuttle	18.5
Rear axle (rigid/steerable)	
Center housing	16.5
Center housing additive	0.5
Wheel end/Final drive (volume per side)	1.7
Front axle AWD	
Center housing	11.0
Wheel end/Final drive (volume per side)	0.7
Hydraulic system min/max	79/99
Hydraulic tank	40

Hydraulic System

Load-sensing, closed-center system. Variable-flow, closed-center, load-sensing system provides full hydraulic force to cutting edges at all engine speeds. Provides low fuel consumption and low effort controls.

Type	Closed-center
Pump type	Variable-flow, axial-piston
Pump capacity	125 l/min at 2,200 rpm
System pressure	227 bar

Transmission

The standard power-shuttle transmission provides four speed forward and reverse, full synchromesh in all gears. Constant mesh gears on all ratios permit on-the-go shifting of all gears, up or down. Neutral start provision prevents starting while shuttle is engaged. Torque convertor free-wheel clutch allows the convertor stator to free-wheel during high speed, low-load conditions, such as roading.

Transmission disconnect
Hand operated power disconnect for easy, on-the-go shifting and full engine rpm when in the loading cycle.

Forward/Reverse electric power shuttle
Conveniently placed, hand operated lever provides instant direction changes between forward and reverse through power hydraulic clutches.

Torque convertor
Single stage, 2.64 stall ratio

Travel Speeds
Travel speeds of All Wheel Drive backhoe loader at full throttle, when equipped with 16.9 × 28 rear tires.

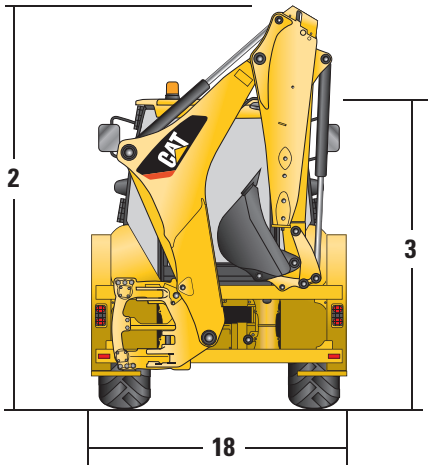
	Power Shuttle (standard)	Power Shift (optional)
Forward	km/h	km/h
1st	6	6
2nd	10	9
3rd	20	20
4th	40	27
5th (auto selected)	—	40
Reverse		
1st	6	6
2nd	10	12
3rd	20	26
4th	40	—

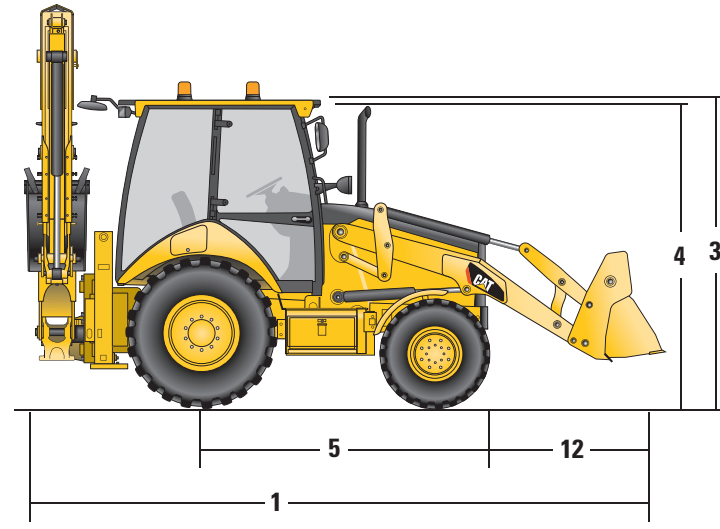
Operator Station

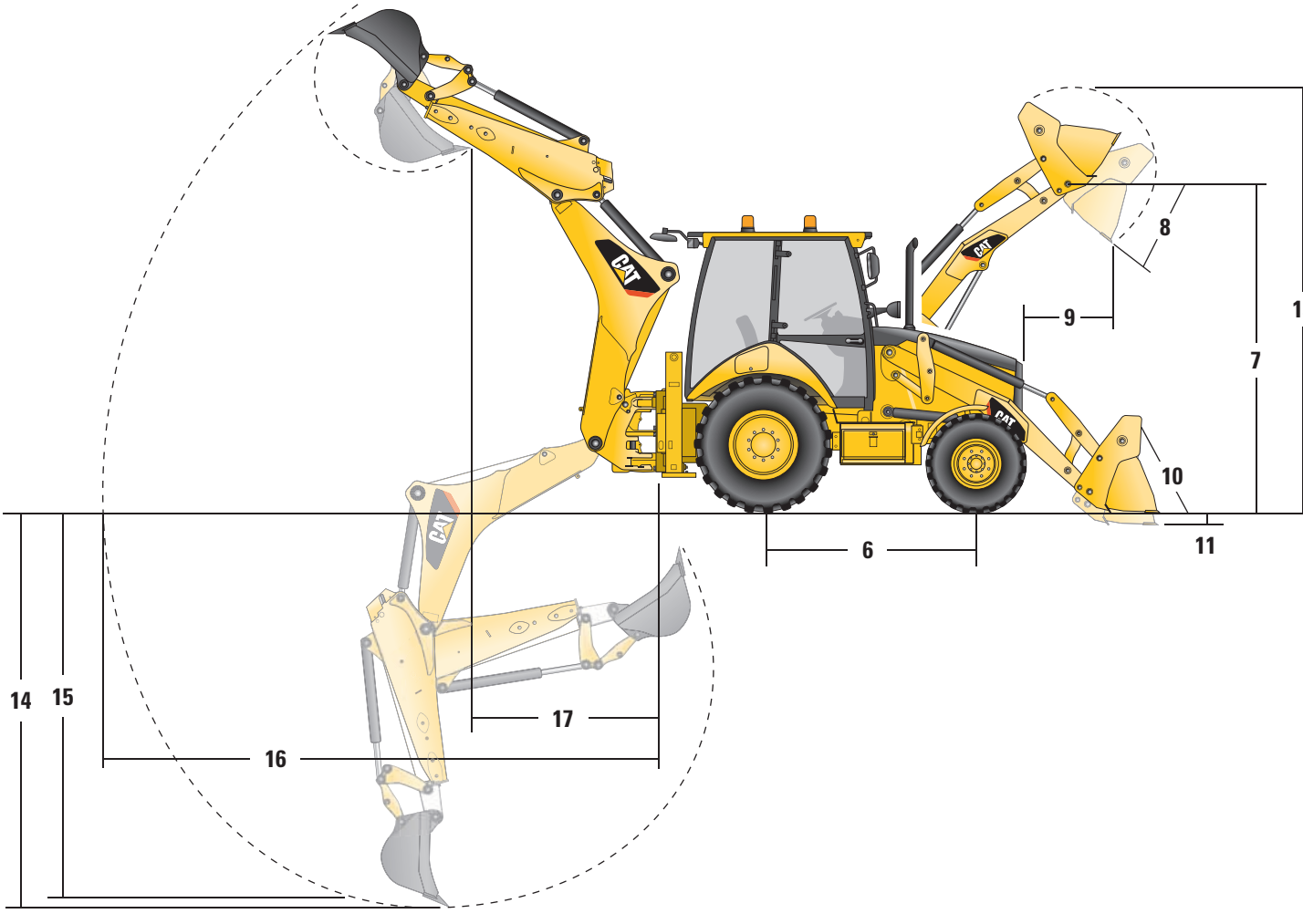
ROPS/FOPS is standard.

ROPS (Roll Over Protective Structure) offered by Caterpillar for this machine meets ROPS criteria ISO 3471:1994 and FOPS (Falling Objects Protective Structure) criteria ISO 3449:1992.

428E Backhoe Loader







428E Backhoe Loader

Machine Dimensions

			General Purpose	Multi Purpose	Multi Purpose with Forks
1	Overall length (loader on ground) S-Stick	mm	5855	5799	5799
	Overall length (loader on ground) E-Stick	mm	5855	5799	5799
	Overall transport length S-Stick	mm	5881	5856	5856
	Overall transport length E-Stick	mm	5881	5856	5856
2	Overall transport height S-Stick	mm	3736	3736	3736
	Overall transport height E-Stick	mm	3736	3736	3736
	Overall width (standard)	mm	2368	2368	2368
	Overall width (narrow)	mm	2242	2242	2242
3	Height to top of cab/canopy	mm	2863	2863	2863
4	Height to top of exhaust stack	mm	2779	2779	2779
	Height to loader hinge pin (transport)	mm	403	429	429
	Ground clearance (minimum)	mm	358	358	358
5	Rear axle centerline to front grill	mm	2704	2704	2704
	Front wheel tread gauge	mm	1915	1915	1915
	Rear wheel tread gauge	mm	1713	1713	1713
6	Wheel based (AWD)	mm	2200	2200	2200

Dimensions and Performance – Loader Bucket

			General Purpose	Multi Purpose	Multi Purpose with Forks
	Capacity (SAE rated)	m^3	1.0	1.03	1.03
	Width	mm	2406	2406	2406
	Lift capacity at maximum height	kg	3322	3069	2899
	Breakout force	kN	55	61	60
	Tipping load at bucket load point	kg	5664	5655	5504
7	Maximum hinge pin height	mm	3340	3340	3340
8	Dump angle at full height		45°	45°	45°
	Dump height at maximum angle	mm	2634	2668	2668
9	Dump reach at maximum angle	mm	795	724	724
10	Maximum bucket rollback at ground level		40°	40°	40°
11	Digging depth	mm	91	118	118
	Maximum grading angle	mm	112°	115°	115°
	Width of dozer cutting edge	mm	—	2406	2406
12	Grill to bucket cutting edge, carry position	mm	1505	1480	1480
13	Maximum operating height	mm	4238	4264	4721
	Jaw open maximum	mm	—	790	790
	Bucket jaw clamping force	kN	—	56	56
	Weight (not including teeth)	kg	428	611	844

Dimensions and Performance – Backhoe

			Standard Stick	Extendable Stick	
				Retracted	Extended
14	Digging depth, SAE maximum	mm	4298	4301	5294
	Digging depth, maximum	mm	4913	4914	5853
15	Digging depth, 610 mm flat bottom, SAE maximum	mm	4255	4259	5255
	Digging depth, 610 mm flat bottom, maximum	mm	4872	4874	5792
16	Reach from swing pivot at ground line	mm	5652	5657	6583
	Loading height	mm	3819	3914	4458
17	Loading reach	mm	1743	1661	2560
	Swing arc		180°	180°	180°
	Bucket rotation		205°	205°	205°
18	Stabilizer width	mm	2368	2368	2368
	Bucket dig force	kN	63	63	63
	Stick dig force	kN	35	36	26
	Total side shift travel	mm	1258	1258	1258

428E Backhoe Loader

	422E
Engine Power (Gross)	**56.6 kW/77 hp**
Control type	Mechanical
Steer mode	Two Wheel Steer
SAE maximum dig depth (standard stick)	4.2 m
Loader bucket capacity	1.0 m^3
Loader breakout force	33 kN
Stick tearout force	35 kN
Bucket tearout force	63 kN
Hydraulic oil flow	125 l/min

	428E	432E	442E
Engine Power (Gross)	**68.5 kW/93 hp**	**68.5 kW/93 hp**	**74.5 kW/101 hp**
Control type	Mechanical	Pilot	Pilot
Steer mode	Two Wheel Steer	Two Wheel Steer	Two Wheel Steer
SAE maximum dig depth (standard stick)	4.2 m	4.4 m	4.6 m
Loader bucket capacity	1.0 m^3	1.0 m^3	1.0 m^3
Loader breakout force	55 kN	55 kN	55 kN
Stick tearout force	35 kN	41 kN	46 kN
Bucket tearout force	63 kN	63 kN	63 kN
Hydraulic oil flow	125 l/min	156 l/min	156 l/min

	434E Mechanical	434E Pilot	444E
Engine Power (Gross)	**68.5 kW/93 hp**	**74.5 kW/101 hp**	**74.5 kW/101 hp**
Control type	Mechanical	Pilot	Pilot
Steer mode	Equal Size Wheel	Equal Size Wheel	Equal Size Wheel
SAE maximum dig depth (standard stick)	4.3 m	4.3 m	4.6 m
Loader bucket capacity	1.15 m^3	1.15 m^3	1.3 m^3
Loader breakout force	56 kN	56 kN	55 kN
Stick tearout force	35 kN	41 kN	41 kN
Bucket tearout force	63 kN	63 kN	63 kN
Hydraulic oil flow	125 l/min	156 l/min	156 l/min