



# Cat<sup>®</sup> 416F2

## BACKHOE LOADER

The Cat<sup>®</sup> 416F2 Backhoe Loader delivers performance, increased fuel efficiency, superior hydraulic system and an all new operator station. The 416F2 features the following:

- **Ergonomic Operator Station** – Ample legroom inside the cab makes rotating the seat simple. The air suspension seat provides comfort to the operator while roading.
- **Joystick Controls** – Pilot joysticks are available for additional operator comfort, reduced fatigue and increased productivity. The 416F2 comes standard with mechanical controls.
- **Load Sensing Hydraulics** – The Cat Backhoe Loader's load sensing piston pump provides full hydraulic lifting and digging forces at any engine speed. Variable flow pump matches hydraulic power to work demands.
- **Machine Performance** – The proven Cat C4.4 ACERT<sup>™</sup> engine delivers solid performance and meets Tier 4 Final/Stage IV emission standards by utilizing Selective Catalytic Reduction technology with a diesel oxidation catalyst. The system allows the operator to disconnect the machine, even while the diesel exhaust fluid is being purged from the system.
- **Machine Versatility** – A broad range of performance matched Cat Work Tools make the Cat Backhoe Loader the most versatile machine on the job site. All Backhoe Loaders have standard thumb ready sticks.
- **Dual Lock Coupler** – Cat dual lock coupler is available from the factory with either mechanical or hydraulic operation. The coupler makes work tool changes quick and easy.

## Specifications

### Engine

Engine Model	Cat C4.4 ACERT	
Gross Power		
SAE J1995	71 kW	95 hp
ISO 14396	70 kW	94 hp
Rated Net Power @ 2,200 rpm		
SAE J1349	65 kW	87 hp
ISO 9249	66 kW	88 hp
EEC 80/1269	66 kW	88 hp
Net Peak Power @ 1,800 rpm		
SAE J1349	79 kW	106 hp
ISO 9249	80 kW	107 hp
EEC 80/1269	80 kW	107 hp
Bore	105 mm	4.13 in
Stroke	127 mm	5 in
Displacement	4.4 L	268 in <sup>3</sup>
Net Torque Rise @ 1,400 rpm	56%	
Net Peak Torque SAE J1349	438 N-m	323 lbf-ft

- Engine meets U.S. EPA Tier 4 Final/EU Stage IV emission standards.

### Weights\*

Operating Weight		
Minimum	6898 kg	15,207 lb
Maximum (ROPS Capacity)	11 000 kg	24,251 lb
Cab, ROPS/FOPS	163 kg	359 lb
Air Conditioning	46 kg	101 lb
Four Wheel Drive	178 kg	392 lb
MP Bucket (0.96 m <sup>3</sup> /1.25 yd <sup>3</sup> ) (no forks or teeth)	745 kg	1,642 lb
Extendible Stick	299 kg	659 lb
Counterweights (Option 1)	115 kg	255 lb
Counterweights (Option 2)	240 kg	530 lb
Counterweights (Option 3)	460 kg	1,015 lb

\*Specifications shown are for machine equipped with OROPS Canopy, 2WD, standard stick, 0.76 m<sup>3</sup> (1.0 yd<sup>3</sup>) general purpose loader bucket, 610 mm (24 in) standard duty backhoe bucket, 115 kg (255 lb) counterweight and full fuel tank.



# 416F2 Backhoe Loader

## Transmission

### Power Shuttle Transmission – Standard

Forward – 1st	5.4 km/h	3.4 mph
2nd	8.9 km/h	5.5 mph
3rd	20 km/h	13 mph
4th	36 km/h	23 mph
Reverse – 1st	5.4 km/h	3.4 mph
2nd	8.9 km/h	5.5 mph
3rd	20 km/h	13 mph
4th	36 km/h	23 mph

## 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

## Hydraulic System

Type	Closed Center	
Pump Type	Variable Flow, Axial Piston	
Pump Capacity @ 2,200 rpm	132 L/min	35 gal/min
System Pressure – Backhoe	23 000 kPa	3,336 psi
System Pressure – Loader	23 000 kPa	3,336 psi

## Steering

Type	Front Wheel	
Power Steering	Hydrostatic	
Bore	65 mm	2.6 in
Stroke	120 mm	4.7 in
Rod Diameter	36 mm	1.4 in
Axle Oscillation	11°	
Turning Circle – 2WD/4WD (inner wheel not braked)		
Outside, Front Wheels	8.18 m	26'10"
Outside, Widest Loading Bucket	10.97 m	36'0"

## Service Refill Capacities

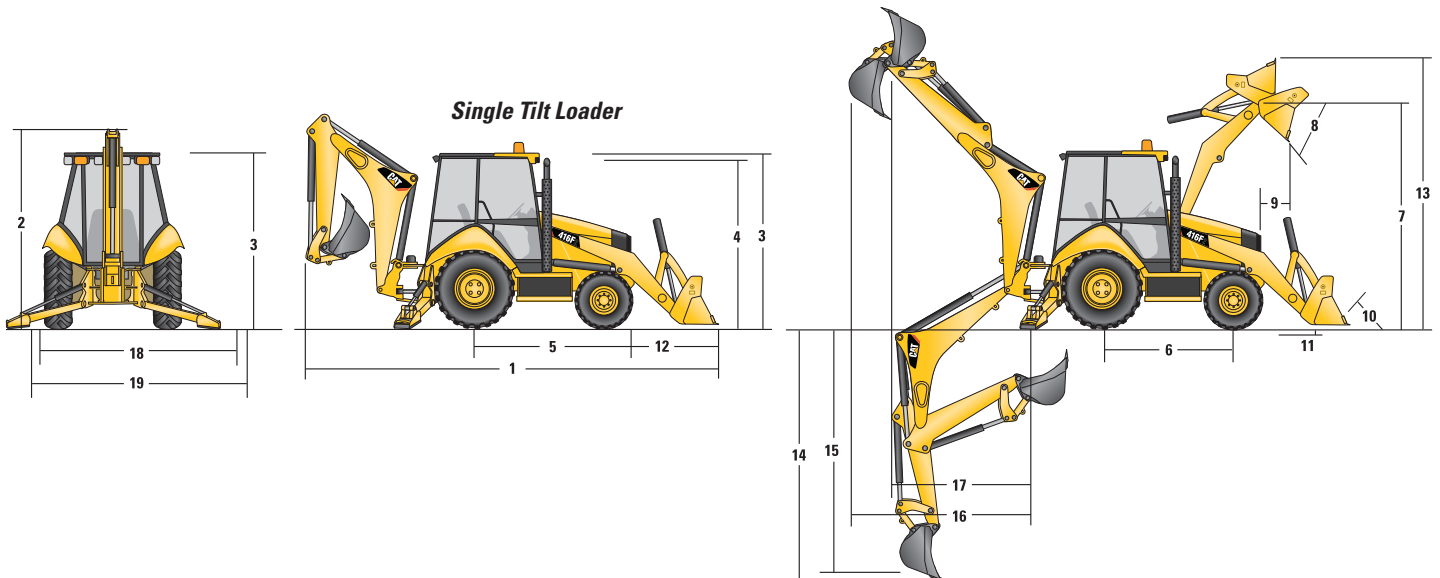
Cooling System with Air Conditioning	22 L	5.8 gal
Fuel Tank	160 L	42 gal
Diesel Exhaust Fluid (DEF)	19 L	5 gal
Engine Oil with Filter	8.8 L	2.3 gal
Transmission – Power Shuttle		
2WD	15 L	4 gal
4WD	15 L	4 gal
Rear Axle	16.5 L	4.4 gal
Planetaries	1.7 L	0.4 gal
Front Axle (4WD)	11 L	2.9 gal
Planetaries	0.7 L	0.2 gal
Hydraulic System	90 L	23.8 gal
Hydraulic Tank	40 L	10.6 gal

- Requires ultra-low sulfur fuel  $\leq$  15 ppm fuel sulfur

## Tires

Choices listed as combination of front/rear tires:

- Front: 11L-16 (12 ply) F-3; Rear: 19.5L-24 (12 ply) R4 ATU
- Front: 12.5/80-18 (12 ply) 1-3; Rear: 19.5L-24 (12 ply) ATU
- Front: 12.5/80-18 NHS (12 ply) 1-3; Rear: 21L-24 (16 ply) R4 ATU
- Front: 340-80R 18; Rear: 19.5L-24 (12 ply) R4 ATU



## Dimensions

	Single Tilt Loader							
	0.76 m <sup>3</sup> (1.0 yd <sup>3</sup> ) GP Bucket		0.96 m <sup>3</sup> (1.25 yd <sup>3</sup> ) GP Bucket		1.0 m <sup>3</sup> (1.31 yd <sup>3</sup> ) MP Bucket		1.00 m <sup>3</sup> (1.31 yd <sup>3</sup> ) MP Bucket with Forks	
1 Overall Length (Loader on Ground) – Standard Stick	7027 mm	23' 1"	7140 mm	23' 5"	7057 mm	23' 2"	7057 mm	23' 2"
Overall Length (Loader on Ground) – Extendible Stick	7033 mm	23' 1"	7145 mm	23' 5"	7063 mm	23' 2"	7063 mm	23' 2"
Overall Transport Length – Standard Stick	7085 mm	23' 3"	7168 mm	23' 6"	7132 mm	23' 5"	7132 mm	23' 5"
Overall Transport Length – Extendible Stick	7091 mm	23' 3"	7174 mm	23' 6"	7137 mm	23' 5"	7137 mm	23' 5"
2 Overall Transport Height – Standard Stick	3577 mm	11' 9"	3577 mm	11' 9"	3577 mm	11' 9"	3577 mm	11' 9"
Overall Transport Height – Extendible Stick	3631 mm	11' 11"	3631 mm	11' 11"	3631 mm	11' 11"	3631 mm	11' 11"
Overall Width	2322 mm	7' 7"	2322 mm	7' 7"	2322 mm	7' 7"	2322 mm	7' 7"
3 Height to Top of Cab/Canopy	2819 mm	9' 3"	2819 mm	9' 3"	2819 mm	9' 3"	2819 mm	9' 3"
4 Height to Top of Exhaust Stack	2744 mm	9' 0"	2744 mm	9' 0"	2744 mm	9' 0"	2744 mm	9' 0"
Height to Loader Hinge Pin (Transport)	381 mm	1' 3"	381 mm	1' 3"	432 mm	1' 5"	432 mm	1' 5"
Ground Clearance (minimum)	294 mm	1' 0"	294 mm	1' 0"	294 mm	1' 0"	294 mm	1' 0"
5 Rear Axle Centerline to Front Grill	2705 mm	8' 10"	2705 mm	8' 10"	2705 mm	8' 10"	2705 mm	8' 10"
Front Wheel Tread Gauge	1895 mm	6' 3"	1895 mm	6' 3"	1895 mm	6' 3"	1895 mm	6' 3"
Rear Wheel Tread Gauge	1714 mm	5' 7"	1714 mm	5' 7"	1714 mm	5' 7"	1714 mm	5' 7"
6 Wheelbase 2WD/4WD	2200 mm	7' 3"	2200 mm	7' 3"	2200 mm	7' 3"	2200 mm	7' 3"

## Loader Bucket Dimensions and Performance

	Single Tilt Loader							
	0.76 m <sup>3</sup> (1.0 yd <sup>3</sup> ) GP Bucket		0.96 m <sup>3</sup> (1.25 yd <sup>3</sup> ) GP Bucket		1.0 m <sup>3</sup> (1.31 yd <sup>3</sup> ) MP Bucket		1.00 m <sup>3</sup> (1.31 yd <sup>3</sup> ) MP Bucket with Forks	
Capacity (SAE Rated)	0.76 m <sup>3</sup>	1.0 yd <sup>3</sup>	0.96 m <sup>3</sup>	1.25 yd <sup>3</sup>	1.0 m <sup>3</sup>	1.31 yd <sup>3</sup>	1.0 m <sup>3</sup>	1.31 yd <sup>3</sup>
Overall Bucket Width	2262 mm	89 in	2262 mm	89 in	2279 mm	90 in	2279 mm	90 in
Lift Capacity at Maximum Height	3062 kg	6,751 lb	2964 kg	6,535 lb	2771 kg	6,108 lb	2656 kg	5,855 lb
Lift Breakout Force	47 919 N	10,772 lbf	45 326 N	10,189 lbf	44 392 N	9,979 lbf	42 904 N	9,645 lbf
Tilt Breakout Force	54 629 N	12,281 lbf	45 993 N	10,339 lbf	52 674 N	11,841 lbf	51 760 N	11,636 lbf
Tipping Load at Breakout Point	6831 kg	15,059 lb	6358 kg	14,016 lb	6428 kg	14,172 lb	6286 kg	13,858 lb
7 Maximum Hinge Pin Height	3474 mm	11' 5"	3474 mm	11' 5"	3474 mm	11' 5"	3474 mm	11' 5"
8 Dump Angle at Full Height	44°		44°		44°		44°	
Dump Height at Maximum Angle	2824 mm	9' 3"	2746 mm	9' 0"	2798 mm	9' 2"	2798 mm	9' 2"
9 Dump Reach at Maximum Angle	727 mm	2' 5"	808 mm	2' 8"	716 mm	2' 4"	716 mm	2' 4"
10 Maximum Bucket Rollback at Ground Level	37°		37°		38°		38°	
11 Digging Depth	83 mm	3"	83 mm	3"	110 mm	4"	110 mm	4"
Maximum Grading Angle	116°		112°		116°		116°	
Width of Dozer Cutting Edge	N/A		N/A		2262 mm	7' 5"	2262 mm	7' 5"
12 Grill to Bucket Cutting Edge, Carry Position	1404 mm	4' 7"	1487 mm	4' 11"	1451 mm	4' 9"	1451 mm	4' 9"
13 Maximum Operating Height	4206 mm	13' 10"	4355 mm	14' 3"	4404 mm	14' 5"	4878 mm	16' 0"
Jaw Opening Maximum	N/A		N/A		790 mm	2' 7"	790 mm	2' 7"
Bucket Jaw Clamping Force	N/A		N/A		50 600 N	11,375 lbf	50 600 N	11,375 lbf
Weight (does not include teeth or forks)	384 kg	847 lb	451 kg	994 lb	745 kg	1,642 lb	915 kg	2,017 lb

## Backhoe Dimensions and Performance

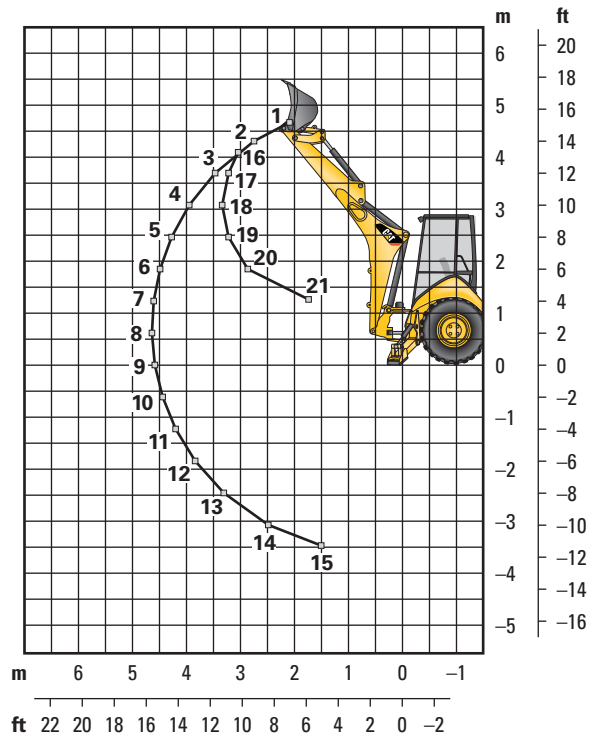
	Standard Stick		E-Stick Retracted		E-Stick Extended	
14 Digging Depth, SAE (max.)	4348 mm	14' 3"	4389 mm	14' 5"	5441 mm	17' 11"
15 Digging Depth, 610 mm (2 ft) Flat Bottom	4309 mm	14' 2"	4350 mm	14' 4"	5404 mm	17' 10"
Reach from Rear Axle Centerline at Ground Line	6702 mm	22' 1"	6738 mm	22' 2"	7742 mm	25' 6"
16 Reach from Swing Pivot at Ground Line	5612 mm	18' 5"	5648 mm	18' 7"	6652 mm	21' 10"
Maximum Operating Height	5525 mm	18' 2"	5549 mm	18' 3"	6286 mm	20' 8"
Loading Height	3643 mm	11' 11"	3600 mm	11' 9"	4170 mm	13' 7"
17 Loading Reach	1838 mm	6' 0"	1925 mm	6' 4"	2840 mm	9' 4"
Swing Arc	180°		180°		180°	
Bucket Rotation	205°		205°		205°	
18 Stabilizer Spread, Operating Position (center)	3310 mm	10' 10"	3310 mm	10' 10"	3310 mm	10' 10"
Stabilizer Spread, Operating Position (outside)	3770 mm	12' 4"	3770 mm	12' 4"	3770 mm	12' 4"
Stabilizer Spread, Transport Position	2322 mm	7' 7"	2322 mm	7' 7"	2322 mm	7' 7"
Bucket Dig Force	59 118 N	13,290 lbf	58 287 N	13,103 lbf	58 287 N	13,103 lbf
Stick Dig Force	32 378 N	7,279 lbf	32 421 N	7,289 lbf	23 796 N	5,350 lbf

# 416F2 Backhoe Loader

## Backhoe Lift Capacity

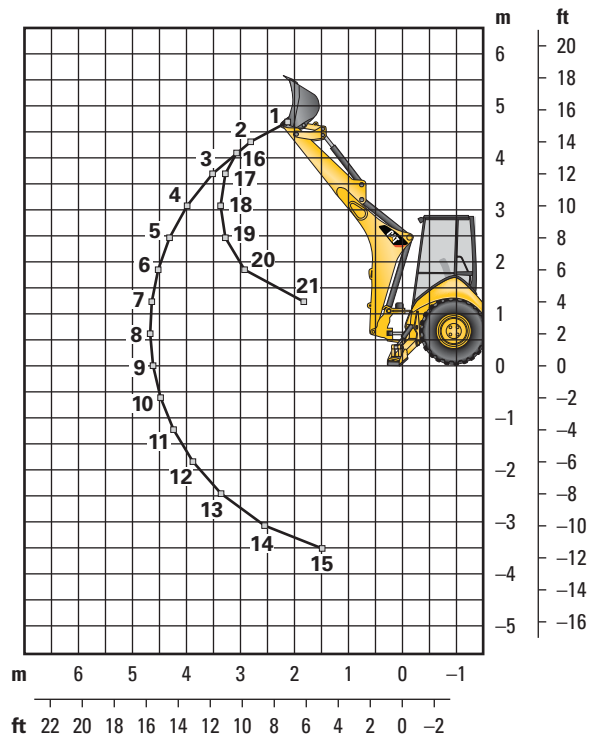
### Cat 416F2 Standard Stick

Boom Lifting	kg	lb
1	1296	2,851
2	1410	3,101
3	1419	3,123
4	1379	3,033
5	1326	2,917
6	1271	2,797
7	1218	2,680
8	1168	2,569
9	1121	2,466
10	1078	2,372
11	1039	2,286
12	1006	2,213
13	981	2,157
14	979	2,153
15	1073	2,361
Stick Lifting	kg	lb
16	1312	2,885
17	1849	4,068
18	2307	5,075
19	2400	5,280
20	2790	6,137
21	5561	12,234



### Cat 416F2 Extendible Stick – Retracted

Boom Lifting	kg	lb
1	1117	2,457
2	1214	2,670
3	1212	2,665
4	1166	2,566
5	1111	2,444
6	1054	2,319
7	999	2,197
8	946	2,082
9	897	1,974
10	852	1,873
11	809	1,780
12	771	1,696
13	738	1,623
14	718	1,580
15	767	1,687
Stick Lifting	kg	lb
16	1169	2,572
17	1694	3,726
18	2107	4,634
19	2183	4,802
20	2533	5,573
21	4983	10,963

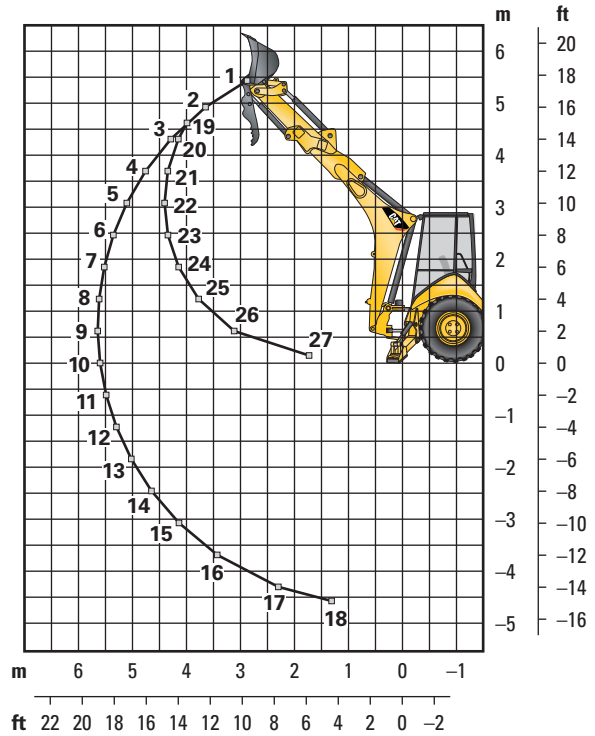


Lift Capacities are over-end values. Machine equipped with 4WD, OROPS, 0.76 m<sup>3</sup> (1.00 yd<sup>3</sup>) general purpose bucket and no counterweight. Extendible stick includes 460 kg (1,015 lb) counterweight.

## Backhoe Lift Capacity

### Cat 416F2 Extendible Stick – Extended

Boom Lifting	kg	lb
1	617	1,357
2	750	1,650
3	797	1,752
4	802	1,765
5	791	1,741
6	770	1,695
7	750	1,649
8	726	1,597
9	702	1,544
10	679	1,493
11	657	1,445
12	637	1,401
13	620	1,363
14	607	1,334
15	601	1,322
16	612	1,347
17	699	1,537
18	1030	2,267
Stick Lifting	kg	lb
19	552	1,214
20	735	1,617
21	987	2,171
22	1162	2,556
23	1307	2,876
24	1460	3,212
25	1679	3,694
26	2192	4,823
27	5301	11,662



Lift Capacities are over-end values. Machine equipped with 4WD, OROPS, 0.76 m<sup>3</sup> (1.00 yd<sup>3</sup>) general purpose bucket and no counterweight. Extendible stick includes 460 kg (1,015 lb) counterweight.

# 416F2 Backhoe Loader

## Counterweights (Minimum Counterweight Recommendations)

Standard Stick			
Loader Bucket	Power Train	kg	lb
GP	2WD	240	530
GP	4WD	115	255
MP	2WD/4WD	no counterweight	

Extendible Stick			
Loader Bucket	Power Train	kg	lb
GP	2WD/4WD	460	1,015
MP	2WD	240	530
MP	4WD	115	255

## Backhoe Buckets (With weld on adapters and pin-on teeth)

Standard Duty						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
305	12	80	2.8	111	245	3
457	18	120	4.2	122	268	4
610	24	180	6.2	141	291	5
762	30	230	8.1	157	345	5
914	36	290	10.2	176	388	6

Heavy Duty						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
305	12	80	2.8	121	266	3
406	16	110	3.9	128	282	3
457	18	120	4.2	135	299	4
610	24	180	6.2	151	333	5
762	30	230	8.1	177	391	5
914	36	290	10.2	201	443	6

Soil Excavation						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
457	18	180	6.4	155	341	4
610	24	240	8.5	182	402	5
762	30	320	11.3	206	454	5
914	36	380	13.4	233	513	6

Heavy Duty Rock						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
305	12	70	2.5	127	279	3
457	18	130	4.6	146	322	4
610	24	200	7.0	174	381	5
762	30	270	9.5	197	434	5
914	36	330	11.7	224	493	6

Coral						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	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

Heavy Duty – Pin Lock						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
305	12	96	3.4	113	249	3
406	16	123	4.3	131	288	3
457	18	139	4.9	139	307	4
610	24	207	7.3	168	370	5
762	30	275	9.7	194	428	5
914	36	345	12.2	224	494	6

High Capacity – Pin Lock						
Width		Rated Capacity		Weight		No. of Teeth
mm	in	L	ft <sup>3</sup>	kg	lb	
305	12	96	4.6	113	287	3
406	16	123	5.6	131	327	3
457	18	139	6.5	139	346	4
610	24	207	9.6	168	414	5
762	30	275	12.9	194	475	5
914	36	345	16.2	224	543	6

## STANDARD EQUIPMENT

---

- Air cleaner
- Alarm, back-up
- Audible system fault alarm
- Backhoe controls, mechanical two lever
- Battery, maintenance-free, 880 CCA
- Battery disconnect switch
- Battery remote jumpstart
- Boom transport lock
- Brace, lift cylinder
- Brake, secondary parking
- Brakes, hydraulically boosted, oil disc, dual pedals, interlocking
- Bucket level indicator
- Canopy, ROPS/FOPS
- Coat restraint
- Coolant/antifreeze, extended life
- Counterweight, bumper
- Dome light (cab only)
- Diagnostic port for engine
- Differential lock, loader joystick
- Drink holders, two
- Engine, Cat C4.4 ACERT (Direct Injection Turbocharged), meets Tier 4 Final/Stage IV emission standards, selective catalytic reduction, diesel oxidation catalyst (DOC)
- Engine enclosure, sound suppression removal panels
- Face seals, O-ring
- Fan, suction and guard
- Fast reversing shuttle, all gears
- Fenders, rear
- Filters, spin-on: fuel, engine oil, transmission oil, water separator
- Filters, bowl and cartridge: hydraulic fluid
- Flashing hazards/signal lights
- Floor mat
- Fuel tank, fully enclosed
- Fully hinged front grill for cooling package cleaning access
- Gauge cluster: coolant temperature, fuel level, torque converter temperature, DEF level
- Ground level fuel fill and DEF fill
- High ambient cooling package
- Hood lock, inside cab
- Hydraulic hose, XT™
- Hydraulic oil cooler
- Hydraulic oil level sight gauge
- Hydraulic valve, hydrostatic steering
- Hydraulic valves, loader 2 function
- Hydraulic valves, backhoe 4 function
- Hydraulics, load sensing with variable displacement piston pump
- Indicator lights: wait to start, water in fuel, engine warning, warning lamp, emissions module malfunction, low battery/charging system warning, high hydraulic oil temperature: LCD warnings: engine oil pressure, machine locked, service due, air filter blocked, high coolant temperature, auto idle shutdown, high torque converter temperature, hydraulic filter bypass
- Instrument panel lights
- Key start/stop system
- LCD screen: engine speed, hour meter, gear/direction, battery voltage, hydraulic oil temperature, torque converter temperature, coolant temperature, trip totals (fuel and hours), lifetime totals (fuel and hours), operator settings (units, brightness, programmable hoe auxiliary flow), service mode diagnostics, maintenance intervals, ECM/system info
- Lights, working (2 front, 2 rear)
- Loader, self-leveling, return-to-dig and transmission disconnect switch
- Loader, single tilt
- Mechanical two lever controls
- Mirror, rearview
- Open circuit breather
- Power receptacle, 12 volt, 2 internal, 1 external
- Power steering, hydrostatic
- Seat belt, retractable, 51 mm (2 in)
- Socket, two roof
- Stabilizer shoes, street
- Steering knob
- Seat, air suspension, fabric or vinyl cover, with armrest
- Starting system, glow plugs
- Steering, hydrostatic
- Storage compartment, lockable
- Storage tray
- Stop and tail lights
- Swing transport lock
- Tilt steering column
- Tires
- Toolbox, external, lockable
- Torque converter
- Throttle, hand and foot, electronic
- Transmission, four speed, syncromesh
- Transmission neutralizer switch
- Transport tie-downs
- Two Wheel Drive
- Vandalism locks, four
- Warning horn, electric

# 416F2 Backhoe Loader

## OPTIONAL EQUIPMENT

- Backhoe controls, pilot joysticks
- Battery, additional, 880 CCA
- Cab, standard
- Cold weather fuel (-30° C/-22° F)
- Cold weather package, including additional battery, engine block heater, radiator antifreeze (-50° C/-58° F), cold weather fuel (-30° C/-22° F) and mounting for an ether bottle
- Counterweights, 115 kg (255 lb), 240 kg (530 lb) or 460 kg (1,015 lb)
- Fenders, front with integral steps
- Four Wheel Drive
- Guard, boom protection plate
- Guard, stabilizer, rock
- Hydraulic valves, loader (3rd valve for GP, MP or Quick Coupler)
- Hydraulic valves, backhoe (5th and 6th function)
- Hydraulic lines, combined function auxiliary
- Product Link™, satellite, PL631E
- Product Link, cellular, PL641I
- Quick Coupler, hydraulic, dual lock
- Quick Coupler, manual, dual lock
- Quick Coupler, pin lock
- Radio and CD player
- Radio and CD player, Bluetooth
- Ride Control
- Rotating beacon, magnetic mount
- Seat belt, 75 mm (3 in)
- Security system keypad
- Stabilizer pads, grouser type
- Stabilizer pads, reversible
- Stick, extendible
- Storage box
- Vandalism protection, gauge cover
- Work Tool Attachments such as buckets, forks, material handling arms, augers, hammers, brooms, cold planers and vibratory plate compactors. See your Cat dealer for more information.

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at [www.cat.com](http://www.cat.com)

AEHQ7373 (11-14)

© 2014 Caterpillar  
All Rights Reserved  
Printed in U.S.A.

Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat 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.

