

# PRODUCT SPECIFICATIONS FOR 416F2

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## ENGINE

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<b>Net Power - SAE J1349</b>	87 HP
<b>Bore</b>	4.13 in
<b>Stroke</b>	5 in
<b>Displacement</b>	268 in <sup>3</sup>
<b>Net Power - 2,200 rpm - SAE J1349</b>	87 HP
<b>Net Peak Power - 1,800 rpm - EEC 80/1269</b>	107 HP
<b>Net Torque Rise - 1,400 rpm - SAE J1349</b>	56%
<b>Net Peak Power - 1,800 rpm - ISO 9249</b>	107 HP
<b>Rated Net Power - 2,200 rpm - ISO 9249</b>	88 HP
<b>Gross Power - ISO 14396</b>	94 HP
<b>Net Peak Power - 1,800 rpm - SAE J1349</b>	106 HP
<b>Gross Power - SAE J1995</b>	95 HP
<b>Engine Model</b>	Cat® C4.4 ACERT™
<b>Rated Net Power - 2,200 rpm - EEC 80/1269</b>	88 HP
<b>Note</b>	Engine meets U.S. EPA Tier 4 Final emission standards.
<b>Net Peak Torque - 1,400 rpm</b>	323 ft-lb
<b>Rated Net Power - SAE J1349</b>	87 HP
<b>Rated Net Power - ISO 9249</b>	88 HP

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## WEIGHTS

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<b>Operating Weight - Maximum</b>	24251 lb
<b>Cab - ROPS/FOPS</b>	359 lb
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<b>Four wheel Drive</b>	392 lb
<b>Counterweights - Option 1</b>	255 lb
<b>Air Conditioning</b>	101 lb
<b>Counterweights - Option 2</b>	530 lb
<b>Counterweights - Option 3</b>	1015 lb
<b>Operating Weight - Maximum - ROPS Capacity</b>	24251 lb
<b>MP Bucket (0.96 m<sup>3</sup>/1.25 yd<sup>3</sup>) - No Forks or Teeth</b>	1642 lb
<b>Extendible Stick</b>	659 lb

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## BACKHOE

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<b>Dig Depth - Standard</b>	14.3 ft
<b>Dig Depth - E-Stick Extended</b>	17.9 ft

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## HYDRAULIC SYSTEM

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<b>Pump Type</b>	Variable Flow, Axial Piston
<b>System Pressure - Loader</b>	3336 psi
<b>Pump Capacity at 2,200 rpm</b>	35 gal/min
<b>System Pressure - Backhoe</b>	3336 psi
<b>Type</b>	Closed Center

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## TRANSMISSION

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<b>Power Shuttle Transmission - Reverse 4th</b>	23 mile/h
<b>Power Shuttle Transmission - Forward 3rd</b>	12 mile/h
<b>Power Shuttle Transmission - Reverse 3rd</b>	12 mile/h
<b>Power Shuttle Transmission - Forward 1st</b>	3.4 mile/h

<b>Power Shuttle Transmission - Reverse 2nd</b>	5.5 mile/h
<b>Power Shuttle Transmission - Reverse 1st</b>	3.4 mile/h
<b>Power Shuttle Transmission - Forward 2nd</b>	5.5 mile/h
<b>Power Shuttle Transmission - Forward 4th</b>	23 mile/h

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#### SERVICE REFILL CAPACITIES

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<b>Fuel Tank</b>	42 gal (US)
<b>Rear Axle</b>	4.4 gal (US)
<b>Diesel Exhaust Fluid (DEF)*</b>	5 gal (US)
<b>Rear Axle - Planetaries</b>	0.4 gal (US)
<b>Cooling System with Air Conditioning</b>	5.8 gal (US)
<b>Transmission - Power Shuttle - 2WD</b>	4 gal (US)
<b>Front Axle (4WD) - Planetaries</b>	0.2 gal (US)
<b>Engine Oil - With Filter</b>	2.3 gal (US)
<b>Hydraulic System</b>	23.8 gal (US)
<b>Front Axle (4WD)</b>	2.9 gal (US)
<b>Transmission - Power Shuttle - 4WD</b>	4 gal (US)
<b>Hydraulic Tank</b>	10.6 gal (US)
<b>Note (1)</b>	Requires ultra-low sulfur fuel less than or equal to 15 ppm fuel sulfur.
<b>Note (2)</b>	* Must meet the requirements outlined in ISO 22241.

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#### AXLE RATINGS

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<b>Rear Axle - Dynamic</b>	20233 lb
<b>Front Axle (2WD) - Static</b>	50582 lb
<b>Front Axle (2WD) - Dynamic</b>	20233 lb

<b>Rear Axle - Static</b>	50582 lb
<b>Front Axle (4WD) - Static</b>	50582 lb
<b>Front Axle (4WD) - Dynamic</b>	20233 lb

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## STANDARDS

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<b>Cab - ROPS</b>	SAE J1040 MAY94; ISO 3741 1994
<b>Cab - FOPS</b>	SAE J/ISO 3449 APR98 LEVEL II and ISO 3449: 1992 LEVEL II
<b>Cab - Sound</b>	ANSI/SAE J1166 OCT98 is 79 dB(A)
<b>Brakes</b>	SAE J/ISO 3450; ISO 3450 1996
<b>Exterior Sound</b>	SAE J188 JUN86 is 76 dB(A)

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## BRAKES

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<b>Feature (5)</b>	Parking brake is mechanically applied through an adjustable hand lever located on the right console.
<b>Feature (2)</b>	Self-adjusting, completely enclosed and sealed.
<b>Feature (3)</b>	Foot operated brake pedals can be interlocked for roading.
<b>Feature (1)</b>	Brakes meet the following standards: SAE J1473 and ISO 3450 requirements.
<b>Feature (4)</b>	Parking/secondary brakes are independent of the service brake system.

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## ENGINE FEATURES

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<b>Feature (8)</b>	Cylinder head is high strength, cast iron alloy construction with extra duty wall and deck thickness.
<b>Feature (5)</b>	For durability, inlet valves are nitrided, martensitic chrome silicon steel.

<b>Feature (1)</b>	Regeneration is passive and does not require any input from the operator or disrupt work.
<b>Feature (12)</b>	Direct electric, 12-volt starting and charging system with 880 CCA Group 31 maintenance free battery.
<b>Feature (14)</b>	High contact ratio/gear train, peripheral fixed isolation top cover and open deck block design reduce bare engine noise.
<b>Feature (11)</b>	Dry-type axial seal air cleaner with integral precleaner, automatic dust ejection system, and filter condition indicator.
<b>Feature (10)</b>	Direct injection fuel system provides accurate fuel delivery and efficiency.
<b>Feature (15)</b>	Higher low end torque for better engine/machine performance.
<b>Feature (7)</b>	Cylinder block is high strength, cast iron alloy of deep skirt, monobloc design for increased strength and long life.
<b>Feature (3)</b>	Forged chrome/molybdenum-steel crankshaft with salt bath nitrocarburized pins and journals.
<b>Feature (9)</b>	Cylinder head's intake and exhaust ports are precision cast to promote optimum gas flow.
<b>Feature (6)</b>	For durability, exhaust valves are nitrided, austenitic chrome manganese-nickel steel.
<b>Feature (16)</b>	Engine is equipped with electric fuel priming pump.
<b>Feature (4)</b>	Front and rear crankshaft oil seals are "lip" type Viton and PTFE designs featuring an integral dust lip.
<b>Feature (2)</b>	Three-ring pistons made of lightweight, silicon/aluminum alloy for strength and maximum thermal conductivity.
<b>Feature (13)</b>	Standard glow plug starting aid system for efficient cold weather starting.

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## STEERING

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<b>Stroke</b>	4.7 in
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<b>Rod Diameter</b>	1.4 in
<b>Turning Circle - (inner wheel not braked) - Outside Front Wheels</b>	26.8 ft
<b>Axle Oscillation</b>	11°
<b>Bore</b>	2.6 in
<b>Type</b>	Front Wheel
<b>Turning Circle - (inner wheel not braked) - Outside Widest Loader Bucket</b>	36 ft
<b>Power Steering</b>	Hydrostatic

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## TIRES

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<b>Choice 2</b>	Front: 12.5/80-18 (12 ply) 1-3; Rear: 19.5L-24 (12 ply) ATU
<b>Choice 3</b>	Front: 12.5/80-18 NHS (12 ply) 1-3; Rear: 21L-24 (16 ply) R4 ATU
<b>Choice 4</b>	Front: 340/80R18; Rear: 19.5L-24 (12 ply) R4 ATU
<b>Choice 1</b>	Front: 11L-16 (12 ply) F-3; Rear: 19.5L-24 (12 ply) R4 ATU

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## 416F2 STANDARD EQUIPMENT

AIR CLEANER

ALARM, BACK-UP

ALTERNATOR, 150 AMP

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

DOMELIGHT (CAB ONLY)

DIAGNOSTIC PORT FOR ENGINE

DIFFERENTIAL LOCK, LOADER JOYSTICK

DRINK HOLDERS, TWO

ENGINE, CAT C4.4 ACERT (DIRECT INJECTION TURBOCHARGED), MEETS U.S. EPA TIER 4 FINAL EMISSION STANDARDS, SELECTIVE CATALYST 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

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

HYDRAULIC SYSTEM LOAD SENSING WITH VARIABLE DISPLACEMENT PISTON PUMP

...SUSPENSION, LOAD SENSING WITH VARIABLE DISTANCEMENT, FRONT END...

INDICATOR LIGHTS: ECO MODE ACTIVE, WATER IN FUEL, REMOTE DIAL THROTTLE ACTIVE, ENGINE WARNING, WARNING LAMP, EMISSIONS MODULE MALFUNCTION, AESC ACTIVE, LOW BATTERY/CHARGING SYSTEM WARNING, HIGH HYDRAULIC OIL TEMPERATURE; LCD WARNINGS: ENGINE OIL PRESSURE, MACHINE LOCKED (IF EQUIPPED), 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, OIL LIFE RESET, DPF FORCE REGENERATION, 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  
WARNING HORN, ELECTRIC

## 416F2 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.