Product Specifications For 988 XE

Engine

Engine Power - ISO 14396:2002	432 kW
Engine Model	Cat® C18
Rated Speed	1,700 rpm
Peak Power Speed	1,500 rpm
Gross Power - SAE J1995:2014	439 kW
Net Power - SAE J1349:2011	401 kW
Bore	145 mm
Stroke	183 mm
Displacement	18.1 l
Peak Torque - 1,200 rpm	3023 N·m
Torque Rise	58%
Note (1)	Two engine emissions options are available: 1. Meets U.S. EPA Tier 4 Final, EU Stage V, and Japan 2014 emission standards. 2. Meets Brazil MAR-1 emission standards, equivalent to U.S. EPA Tier 3 and EU Stage IIIA.
Note (2)	Net power advertised is the power available at the flywheel when the engine is equipped with fan at minimum speed, air intake system, exhaust system, and alternator.

Operating Specifications

Operating Weight	52781 kg

Bucket Capacity Range	4.7-13 m3 (6.2-17 yd3)
Rated Payload - Quarry Face	11.3 t
Rated Payload - Loose Material	14.5 t

Transmission

Transmission Type	Cat switched reluctance electric drive
Forward 1 (virtual)	7 km/h
Forward 2 (virtual)	11.3 km/h
Forward 3 (virtual)	22.2 km/h
Forward 4 (virtual)	32.1 km/h
Reverse 1 (virtual)	7 km/h
Reverse 2 (virtual)	11.3 km/h
Reverse 3 (virtual)	28.2 km/h

Hydraulic System - Lift/Tilt

Lift/Tilt System - Circuit	EH-Positive Flow Control, Flow Sharing
Lift/Tilt System - Pump	Variable displacement piston
Maximum Flow at 1,400-1,600 rpm	580 L/min
Relief Valve Setting - Lift/Tilt	32800 kPa
Lift Cylinder - Bore	210 mm
Lift Cylinder - Stroke	1050 mm
Tilt Cylinder - Bore	266 mm

Tilt Cylinder - Stroke	685 mm

Hydraulic Cycle Times

Rack Back	4.5 s
Raise	8 s
Dump	2.2 s
Lower Float Down	3.5 s
Total Hydraulic Cycle Time	18.2 s

Hydraulic System - Steering

Steering System - Circuit	Pilot, load sensing
Steering System - Pump	Piston, variable displacement
Maximum Flow at 1,400-1,600 rpm	270 L/min
Steering Cut Off Pressure	30000 kPa
Total Steering Angle	86°
Steering Cycle Times - High Idle	3.4 s
Steering Cycle Times - Low Idle	5.6 s

Air Conditioning System

Air Conditioning	The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a or R1234yf. See the label or instruction manual for identification of the gas. • If equipped with R134a (Global Warming Potential = 1430), the system contains 1.8 kg (3.9 lb) of refrigerant which has a CO2 equivalent of 2.574 metric tonnes (2.837 tons).

Axles

Front	Fixed

Rear	Trunnion
Oscillation Angle	13°

Brakes

Brakes	ISO 3450:2011

Operator's Cab

ROPS/FOPS	ROPS/FOPS meet ISO 3471:2008 and ISO 3449:2005 Level II standards

Sound Performance - Tier 4 Final / Stage V

Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	109 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)*	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)**	109 dB(A)
Note (1)	* For machines in European Union countries and in countries that adopt the “EU Directives” and “UK Directives”
Note (2)	** European Union Directive “2000/14/EC” as amended by “2005/88/EC” and UK Noise Regulation 2001 No. 1701
Note (3)	The machine sound power level was measured according to ISO 6395:2008. The measurement was conducted at 70% of the maximum engine cooling fan speed.
Note (4)	The operator sound pressure level was measured according to ISO 6396:2008. The measurement was conducted at 70% of the maximum engine cooling fan speed.

Note (5)	Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors or windows are open for extended periods or in a noisy environment.

Sound Performance - Tier 3 / Stage IIIA

Operator Sound Pressure Level (ISO 6396:2008)	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)	110 dB(A)
Operator Sound Pressure Level (ISO 6396:2008)*	72 dB(A)
Machine Sound Power Level (ISO 6395:2008)**	110 dB(A)
Note (1)	* For machines in European Union countries and in countries that adopt the “EU Directives” and “UK Directives”
Note (2)	** European Union Directive “2000/14/EC” as amended by “2005/88/EC” and UK Noise Regulation 2001 No. 1701
Note (3)	The machine sound power level was measured according to ISO 6395:2008. The measurement was conducted at 70% of the maximum engine cooling fan speed.
Note (4)	The operator sound pressure level was measured according to ISO 6396:2008. The measurement was conducted at 70% of the maximum engine cooling fan speed.
Note (5)	Hearing protection may be needed when the machine is operated with a cab that is not properly maintained or when the doors or windows are open for extended periods or in a noisy environment.

Service Refill Capacities

Fuel Tank	555 l
Cooling System - Jacket Water	112 l

Cooling Systems - Power Train	30 l
Engine Crankcase	60 l
Diesel Exhaust Fluid Tank	33 l
Transmission	60 l
Differential - Final Drives - Front	186 l
Differential - Final Drives - Rear	186 l
Hydraulic System - Implement/Steering	475 l
Note	Cat U.S. EPA Tier 4 Final, EU Stage V, and Japan 2014 diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) and are compatible* with ULSD blended with the following lower-carbon intensity fuels** up to: • 20% biodiesel FAME (fatty acid methyl ester)*** • 100% renewable diesel, HVO (hydrotreated vegetable oil and GTL (gas-to- liquid) fuels • Cat engines meeting Brazil MAR-1 emissions standards, equivalent to U.S. EPA Tier 3 and EU Stage IIIA, are compatible with diesel fuel blended with the following lower-carbon intensity fuels** up to: • 100% biodiesel FAME (fatty acid methyl ester)*** • 100% renewable diesel, HVO (hydrotreated vegetable oil and GTL (gas-to- liquid) fuels Refer to guidelines for successful application. Please consult your Cat dealer or “Caterpillar Machine Fluids Recommendations” (SEBU6250). * Caterpillar engines are compatible with these alternative fuels, some regions may not allow their use. ** Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels. *** Engines with no aftertreatment devices can use higher blends, up to 100% biodiesel (for use of blends higher than 20% biodiesel, consult your Cat dealer).

Dimensions (Approximate) - Standard Lift

Ground to Top of ROPS	4202 mm
Ground to Top of Exhaust Stacks	4521 mm

Ground to Top of Hood	3334 mm
Ground to Bumper Clearance	933 mm
Rear Axle - Centerline to Bumper	3187 mm
Front Axle Centerline to Bucket Tip	4254 mm
Wheel Base	4550 mm
Maximum Overall Length	11991 mm
Ground to Lower Hitch Clearance	568 mm
Ground to Center of Axles	978 mm
Clearance at Maximum Lift	3641 mm
B-Pin Height - Maximum Lift	5491 mm
Maximum Overall Height - Bucket Raised	7455 mm
Reach - Maximum Lift	1981 mm
Note	Specifications are calculated with 6.9 m3 (9 yd3) rock bucket and Michelin XLDD2 with 978 mm (3.2 ft) centerline of rear axle height.

Dimensions (Approximate) - High Lift

Ground to Top of ROPS	4202 mm
Ground to Top of Exhaust Stacks	4521 mm
Ground to Top of Hood	3334 mm

Ground to Bumper Clearance	933 mm
Rear Axle - Centerline to Bumper	3187 mm
Front Axle Centerline to Bucket Tip	4661 mm
Wheel Base	4550 mm
Maximum Overall Length	12398 mm
Ground to Lower Hitch Clearance	568 mm
Ground to Center of Axles	978 mm
Clearance at Maximum Lift	4043 mm
B-Pin Height - Maximum Lift	5887 mm
Maximum Overall Height - Bucket Raised	7849 mm
Reach - Maximum Lift	2062 mm
Note	Specifications are calculated with 6.9 m3 (9 yd3) rock bucket and Michelin XLDD2 with 978 mm (3.2 ft) centerline of rear axle height.

Dimensions - Millyard Linkage

Ground to Top of ROPS	4221 mm
Ground to Top of Exhaust Stacks	4214 mm
Ground to Top of Hood	3334 mm
Ground to Bumper Clearance	933 mm

Rear Axle - Centerline to Bumper	3187 mm
Front Axle Centerline to Fork Tip	5023 mm
Wheel Base	4550 mm
Maximum Overall Length	12761 mm
Ground to Lower Hitch Clearance	568 mm
Ground to Center of Front Axle	978 mm
Fork Height with Level Arms	2474 mm
Fork Top Clamp Opening	4006 mm
Fork Height at Maximum Lift	5242 mm
Hinge Pin Height at Maximum Lift	4918 mm
Dump Angle at Maximum Lift	-39.4 °

988 XE Standard Equipment

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

ELECTRICAL

Alarm, back-up
Alternator, single 150 amp
Batteries, dry
High voltage indicator light
Lighting system (LED, work lights, access and service platform lighting)
Starting and charging system, 24V
Auxiliary jump start receptacle
Starter lockout in bumper
Transmission lockout in bumper

OPERATOR ENVIRONMENT

Graphical Information Display, displays real time operating information, performs calibrations and customizes operator settings
Air conditioner
Cat Vision, rear vision camera system
Cat Production Measurement ready
Cab, sound suppressed and pressurized, integrated rollover protective structure / falling objects protective structure (ROPS/FOPS) radio ready for entertainment, includes antenna, speakers and converter (12-volt 5-amp) and power port
Controls, lift and tilt function
Heater, defroster
Horn, electric
Instrumentation, gauges
– Coolant temperature
– Engine hour meter
– Hydraulic oil temperature
– Powertrain oil temperature
Light, cab, dome
Lunchbox, beverage holders
CB radio-ready
Mirrors, rearview (externally mounted)
Rimpull Control System (RCS)
Seat, Deluxe
Seat belt minder
Seat belt, retractable, 76 mm (3 in) wide
Steering and Transmission Integrated Control (STIC™) system
UV glass
Virtual gear indicator
Vital Information Management System (VIMS™) with Graphical Information Display: External Data Port
Wet-arm wipers/washers (front and rear)
– Intermittent front and rear wipers
Lights, directional

POWERTRAIN

Brakes, oil-cooled, multi-disc, service/secondary
Hydraulic system case drain screens
Electro hydraulic parking brake
Engine, C18 Mechanically Actuated Electronic Unit Injection (MEUI™) diesel, turbocharged/aftercooled
Engine oil change system, high speed, Wiggins
Ground level engine shutdown switch
Turbine precleaner, engine air intake
Radiator, Aluminum Modular Radiator (AMR)
Single Pedal Mode with three levels of dynamic braking
Starting aid, ether, automatic
Throttle lock, electronic
Manual switch and automatic fuel priming
Cat switched reluctance (SR) generator/pump drive
Cat switched reluctance (SR) drive motor
Cat Integrated Powered Electronics

Automatic retarding controls

ADDITIONAL EQUIPMENT

Automatic bucket lift kickout/positioner
Base machine price includes a rim allowance
Hydraulically driven demand fan
Couplings, Cat O-ring face seals
Doors, service access (locking)
Ecology drains for engine, radiator, hydraulic tank
Fuel tank, 555 L (147 gal)
Hitch, drawbar with pin
Hoses, Cat XT™
Hydraulic, steering and brake filtration/screening system
Cat Clean Emission Module (CEM)
Operator assist feature, Tire Slip Prevention
Oil sampling valves
Premixed 50 percent concentration of extended life coolant with freeze protection to –34° C (–29° F)
Rear access to cab and service platform
Steering, load sensing
Toe kicks
Vandalism protection caplocks

988 XE Optional Equipment

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

POWERTRAIN

–50° C (–58° F) antifreeze
Engine block heater 120V or 240V
High ambient cooling – software
Crankcase guard
Engine brake, software enabled attachment (SEA)

OPERATOR ENVIRONMENT

Cab precleaner
Cat Detect, object detection system
Cat Production Measurement
Radio, AM/FM/CD/MP3 Bluetooth®
LED warning strobe
Window pull down visor
Handrail mounted mirrors

ADDITIONAL EQUIPMENT

Front and rear roading fenders

Fast fill fuel system (Shaw-Aero)
Cold Weather Package: Additional Starter and 2 Batteries, Engine Block Heater 120V or 240V, Heated Fuel Lines
Engine compartment service lights
Autolube with Auto shutoff
Generative braking
Wheel Chocks
Operator Coaching
Tire Pressure Monitoring System
Operator assist features, Auto Set Tires, and Lift Stall Prevention
Additional Counterweight

OTHER OPTIONAL CONFIGURATIONS

Aggregate Handler
Millyard