



# Cat<sup>®</sup> 988

## Wheel Loader

***The Cat<sup>®</sup> 988 Wheel Loader helps you move more material in less time, at a lower cost per ton, for a faster return on your investment. This machine offers significant fuel savings with durability to achieve multiple lifecycles.***

### Proven Reliability

- Cat C18 engine is built and tested to meet your most demanding applications.
- Cat torque converter with lock-up clutch eliminates torque converter losses and lowers system heat.
- Maximum responsiveness with Steering and Transmission Integrated Control (STIC™).
- Moves more material more efficiently with improved power and control.
- Durable construction withstands the toughest loading conditions and multiple lifecycles.

### Durability

- Best-in-class transmission for long life and consistent, smooth shifting; specifically designed for mining applications.
- Advanced productivity electronic control strategy (APECS) transmission controls for greater momentum on grades.
- Positive flow control (PFC) hydraulic system increases efficiency, bucket feel, and responsiveness with consistent performance.
- Advanced filtration system for extended performance and reliability of the hydraulic system.
- Impeller clutch torque converter (ICTC) minimizes tire spin by allowing torque to adjust to underfoot conditions.

### Achieve Greater Productivity

- Improved cycle times and bucket fill factors with optional operator coaching.
- Optimized dig segment cycle with optional operator assist – tire slip prevention, auto set tires, and lift stall prevention.
- Superior digging, higher bucket fill factors, reduced dig times.
- Improved visibility over the top of the linkage.
- Up to 10% more payload per pass, higher efficiency, and improved pass match.
- Operators can now check tire pressure during operation with any change sending a fault code to VisionLink<sup>®</sup>, preventing premature tire failure.
- In-truck loading applications.
- Convenient, responsive, electro-hydraulic controls increase operator productivity.
- Integrated steering and transmission controls.

### Superior Fuel Efficiency

- Economy mode optimizes engine speed control for reduced fuel consumption no matter if operating in manual throttle or throttle lock.
- Flow sharing hydraulics for full flow at reduced engine rpm.
- Fully integrated electronic engine controls make your fuel go farther.
- Engine idle shutdown for less fuel used while idling.
- Increased hydraulic speed and faster cycle times for decreased idle, decreased fuel burn, and increased efficiency.

### Increase Productivity and Efficiency with Integrated Technologies

- Cat technologies developed to monitor, manage, and enhance your jobsite operations.
- Cat Payload provides accurate weighing\* of the materials you are loading and hauling. Payload data is displayed in real-time to improve productivity and reduce overloading.
- Cat Detect enhances awareness of the environment around working equipment and provides alerts to help keep people and assets safe on the jobsite.
- Product Link™ wirelessly connects you to your equipment, giving you access to essential information you need to know to run your business.
- Gain valuable insight into how your machine or fleet is performing.
- Optional advanced productivity subscription provides comprehensive actionable information to help you manage and improve the productivity and profitability of your operations.



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## Safety Features

- Achieve precise positioning for easy loading in tight areas with 43 degrees of steering articulation.
- Precise machine control by load-sensing hydraulic steering system.
- Reduced stairway angles and standard stairway lighting provide reduced risk of slips, trips, and falls due to better visibility of the steps and stairway.
- Left- and right-hand stairs with 45-degree angle.
- Computerized monitoring system with warning indicators.
- Standard Cat Vision enhances visibility behind the machine, helping you work safely and confidently.
- Pressurized cabin with filtered air and reduced sound levels.

## Reduced Maintenance Time and Costs

- 10% lower maintenance costs.
- Grouped service points provide easy access to critical daily service checks.
- Electro-hydraulic controls.
- Swing-out engine compartment service doors.
- Reduced waste with maintenance-free batteries.
- Ecology drains to prevent spilled contaminants and allow for easier service.
- Vehicle Information Management System (VIMS™) notifications to resolve problems before failure.
- Ground level access to transmission control valves.
- Longer life, rebuildability, and high resale value.

## Easy, Comfortable Operator Environment

- Best-in-class operator comfort and ergonomics.
- Cat Premium Plus seat with standard features including leather finish, forced air heating and cooling, two-way thigh adjustment, power lumbar and back bolster adjustment, and dynamic end dampening to provide total comfort throughout the workday.
- Easy-to-reach levers and seat-mounted implement pod to reduce fatigue.
- Ergonomic switch placement and displays with large, backlit switches and LED indicators.
- Two-position rocker switch activates the electro-hydraulic parking brake.
- Reduced vibrations from isolated cab mounts and seat air suspension.
- Automatic cab temperature controls.

## PURPOSE-BUILT SPECIALTY ARRANGEMENTS

### Block Handler

- Delivers stability and durability with an optimized counterweight for block handling applications.
- A high rimpull powertrain features a torque converter and transmission specially designed for this application to maximize rimpull.
- An additional hydraulic valve with the quick coupler allows the operator to switch work tools and immediately lock the work tool during load and carry applications.
- Larger tilt and lift cylinders on the linkage help improve load control and ensure safe and long lasting operation.
- Ride control acts as a shock absorber, providing the operator with a smoother ride over rough terrain.

### Millyard

- Swing-out fan radiator design for easier service in high-debris millyard applications, reducing maintenance and service downtime.
- Auto reversing fan system to help dislodge debris and keep air flowing across the radiator cores.
- Ecology drains for ease of service and prevention of spilling potential environmental contaminants.
- Achieve precise positioning for easy loading in tight areas with 37 degrees of steering articulation.
- Millyard and logging forks are designed to move wood in the millyard.
- Woodchip buckets are designed with performance characteristics to bring productivity and fuel efficiency to load-and-carry work in the yard.
- Stress relieved lift arms increase durability and lengthen time to repair.

### Steel Mill Arrangement

- Durable and reinforced attachments for operator comfort, safety, and easy machine access.
- Radiator is designed for easy cleaning and to keep material from building up.
- Auto reversing fan and easy access to cooling cores keeps cab at comfortable temperature.
- Equipped with extra guarding and heat protection for critical machine functions.
- Flame resistant ecosafe hydraulic fluid available as an option.
- Performance series, serrated edge slag, straight edge slag, and slag buckets maximize material retention and minimize dig time.

*\*Not legal for trade.*

## Standard and Optional Equipment

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

	Standard	Optional		Standard	Optional
<b>ELECTRICAL</b>			<b>POWERTRAIN (CONTINUED)</b>		
Alarm, back-up	✓		Cat Production Measurement ready	✓	
Alternator, single 150 amp	✓		Crankcase guard	✓	
Converter, 10/15 amp, 24V to 12V	✓		Electro-hydraulic parking brake	✓	
Lighting system (halogen, work lights, access and service platform lighting)	✓		Engine block heater 120V or 240V		✓
Starting and charging system, 24V	✓		Engine, C18 Mechanically Actuated Electronic Unit Injection (MEUI™) diesel, turbocharged/aftercooled	✓	
Starter emergency start receptacle	✓		Engine oil change system, high speed, Wiggins		✓
Starter lockout in bumper	✓		Ground level engine shutoff	✓	
Transmission lockout in bumper	✓		High ambient cooling – software		✓
<b>OPERATOR ENVIRONMENT</b>			Turbine precleaner, engine air intake	✓	
Air conditioner	✓		Radiator, aluminum modular radiator (AMR)	✓	
Cab precleaner		✓	Starting aid, ether, automatic	✓	
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	✓		Throttle lock, electronic	✓	
Cat® Detect, object detection system		✓	Torque converter, impeller clutch torque converter (ICTC) with lock-up clutch (LUC), rimpull control system	✓	
Cat Vision, rear vision camera system	✓		Transmission, planetary powershift, 4F/3R electronic control	✓	
Heater, defroster	✓		Manual switch and automatic fuel priming	✓	
Horn, electric	✓		<b>ADDITIONAL EQUIPMENT</b>		
LED warning strobe		✓	Aggregate handler		✓
Light, directional	✓		Automatic bucket lift kickout/positioner	✓	
Lights, high intensity discharge (HID) or LED		✓	Base machine price includes a rim allowance	✓	
Lunchbox, beverage holders	✓		Block handler		✓
Mirrors, heated		✓	Cat Clean Emission Module (CEM)	✓	
Mirrors, rearview (externally mounted)	✓		Cold weather package: additional starter and 2 batteries, engine block heater 120V or 240V, heated fuel lines		✓
Radio, AM/FM/CD/MP3		✓	Doors, service access (locking)	✓	
Bluetooth® with Satellite Sirius			Ecology drains for engine, radiator, hydraulic tank	✓	
Radio, CB ready		✓	Fast fill fuel system (Shaw-Aero)		✓
Rimpull control system (RCS)	✓		Front and rear roading fenders		✓
Seat, deluxe	✓		Hitch, drawbar with pin	✓	
Seat, cab – heated and ventilated		✓	Hydraulic, steering and brake filtration/screening system	✓	
Seat belt minder	✓		Hydraulically driven demand fan	✓	
Seat belt, retractable, 76 mm (3 in) wide	✓		Load and carry counterweight		✓
Steering and Transmission Integrated Control (STIC™) system	✓		Millyard		✓
UV glass	✓		Oil sampling valves	✓	
Wet-arm wipers/washers (front and rear) – intermittent front and rear wipers	✓		Premixed 50% concentration of extended life coolant with freeze protection to -34° C (-29° F)	✓	
Window pull-down visor		✓	Rear access to cab and service platform	✓	
<b>POWERTRAIN</b>			Steel mill		✓
Antifreeze -50° C (-58° F)		✓	Steering, load sensing	✓	
Brakes, oil-cooled, multi-disc, service/secondary	✓		Tire pressure monitoring system		✓
Case drain screens	✓		Toe kicks	✓	
Cat Production Measurement		✓	Vandalism protection caplocks	✓	

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## Technical Specifications

Engine		
Engine Model	C18	
Rated Speed	1,700 rpm	
Peak Power Speed	1,500 rpm	
Engine – ISO 14396:2002	432 kW	580 hp
Gross – SAE J1995:2014	439 kW	588 hp
Net Power – SAE J1349:2011	401 kW	541 hp
Bore	145 mm	5.7 in
Stroke	183 mm	7.2 in
Displacement	18.1 L	1,105 in <sup>3</sup>
Peak Torque @ 1,200 rpm	3023 N·m	2,230 lb-ft
Torque Rise	58%	

Three engine emission options are available:

1. Meets U.S. EPA Tier 4 Final, EU Stage V, and Japan 2014 emission standards.
  2. Meets Brazil MAR-1 and China Nonroad Stage III emission standards, equivalent to U.S. EPA Tier 3 and EU Stage IIIA.
  3. U.S. EPA Tier 2 and EU Stage II equivalent.
- 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	51 062 kg	112,574 lb
Rated Payload – Quarry Face	11.3 tonnes	12.5 tons
Rated Payload – Loose Material	14.5 tonnes	16 tons
Bucket Capacity Range	4.7-13 m <sup>3</sup>	6.2-17 yd <sup>3</sup>
Cat Truck Match – Standard	770-772	
Cat Truck Match – High Lift	773-775	

Transmission					
Transmission Type		Cat planetary power shift			
Speed	km/h	mph	Speed	km/h	mph
Forward 1	6.5	4.0	Direct Drive Forward 1	Lock-up disabled	
Forward 2	11.6	7.2	Direct Drive Forward 2	12.5	7.8
Forward 3	20.4	12.7	Direct Drive Forward 3	22.3	13.9
Forward 4	34.7	21.6	Direct Drive Forward 4	39.3	24.4
Reverse 1	7.5	4.7	Direct Drive Reverse 1	8.0	5.0
Reverse 2	13.3	8.3	Direct Drive Reverse 2	14.3	8.9
Reverse 3	23.2	14.4	Direct Drive Reverse 3	25.5	15.8

• Travel speeds based on 35/65-R33 tires.

Hydraulic System – Lift/Tilt		
Lift/Tilt System – Circuit	EH – Positive Flow Control, Flow Sharing	
Lift/Tilt System	Variable Displacement Piston	
Relief Valve Setting – Lift/Tilt	32 800 kPa	4,757 psi

Hydraulic Cycle Time (1,400-1,860 rpm)	
Rackback	4.5 Seconds
Raise	8.0 Seconds
Dump	2.2 Seconds
Lower Float Down	3.5 Seconds
Total Hydraulic Cycle Time (empty bucket)	18.2 Seconds

Hydraulic System – Steering		
Steering System – Circuit	Pilot, load sensing	
Steering System – Pump	Piston, variable displacement	
Relief Valve Setting – Steering	30 000 kPa	4,351 psi
Total Steering Angle	86°	
Steering Cycle Time (high idle)	3.4 Seconds	
Steering Cycle Time (low idle)	5.6 Seconds	

Service Refill Capacities		
Fuel Tank	712 L	188 gal
Diesel Exhaust Fluid Tank (for Tier 4 Final/Stage V only)	33 L	8.7 gal

- All non-road Tier 4 Final/Stage V diesel engines are required to use:
  - ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or 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
 Refer to guidelines for successful application. Please consult your Cat dealer or “Caterpillar Machine Fluids Recommendations” (SEBU6250) for details.
  - \* 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).
  - \*\* Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.
- For pre-Tier 4 engines: Cat engines 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) for details.
- \* For use of blends higher than 20% biodiesel, consult your Cat dealer.
- \*\* Tailpipe greenhouse gas emissions from lower-carbon intensity fuels are essentially the same as traditional fuels.

Air Conditioning System	
The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a (Global Warming Potential = 1430). The system contains 1.8 kg of refrigerant which has a CO <sub>2</sub> equivalent of 2.574 metric tonnes.	

Sound Performance – Tier 4 Final/Stage V		
	Standard	Suppression
Operator Sound Level (ISO 6396:2008)	72 dB(A)	72 dB(A)*
Machine Sound Level (ISO 6395:2008)	111 dB(A)	109 dB(A)**

Sound Performance – Tier 2/Stage II Equivalent, Tier 3/Stage IIIA Equivalent		
	Standard	Suppression
Operator Sound Level (ISO 6396:2008)	73 dB(A)	72 dB(A)*
Machine Sound Level (ISO 6395:2008)	112 dB(A)	110 dB(A)**

- The operator sound pressure level was measured according to the test procedures and conditions specified in ISO 6396:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- 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.
- \* Including countries that adopt the EU and UK directives.
- \*\* European Union Directive 2000/14/EC and UK Noise Regulation 2001 No. 1701.



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