



**TAKE  
COMMAND  
OF YOUR  
LOADING**

**CAT® COMMAND FOR LOADING  
988K WHEEL LOADER**



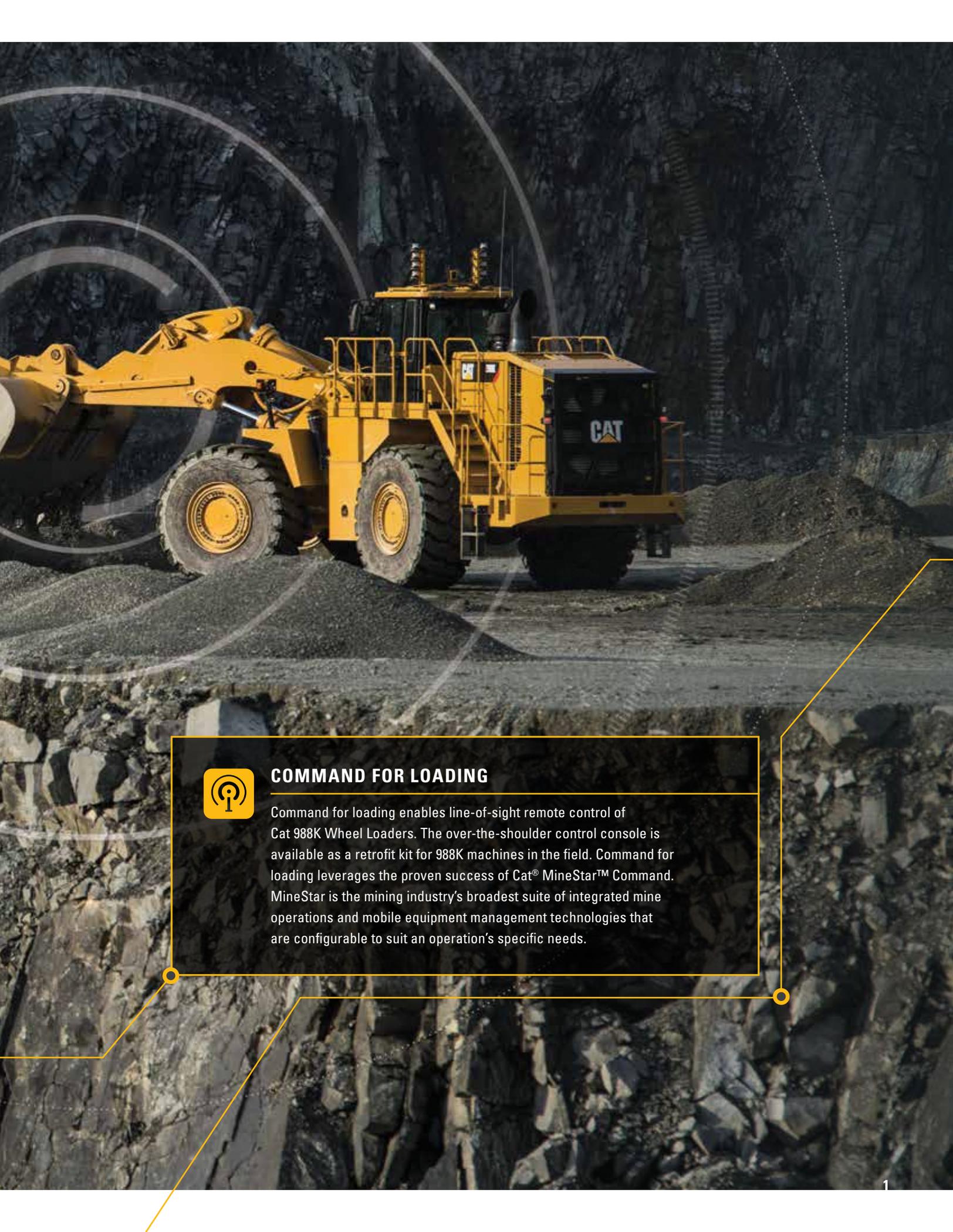
# KEEP LOADING NO MATTER THE CONDITIONS

Wheel loader operators in mining and quarry & aggregates applications face a number of potentially dangerous areas, such as high walls, stockpiles, steep slopes, unstable surfaces and areas where there are hazardous materials or the possibility of falling debris.

Cat® Command for loading removes operators from these hazardous environments to a safer location with less risk. The system uses wireless technology and on-board electronic systems to allow the machine to be controlled without an operator in the cab. This is ideal for mining and quarry & aggregates applications including high wall/edge operation, slide and vehicle recovery, and stockpile feeding.

Having a remotely operated loader on site can be the difference between continued production and a full stop, preventing a costly stretch of downtime and keeping your operators safe at the same time. The system also allows access to valuable material that may be considered unsafe to extract, such as reclamation of benches at the end of life.





## COMMAND FOR LOADING

Command for loading enables line-of-sight remote control of Cat 988K Wheel Loaders. The over-the-shoulder control console is available as a retrofit kit for 988K machines in the field. Command for loading leverages the proven success of Cat® MineStar™ Command. MineStar is the mining industry's broadest suite of integrated mine operations and mobile equipment management technologies that are configurable to suit an operation's specific needs.



# ENHANCING OPERATOR SAFETY AND OPERATIONAL EFFICIENCY



You can't always predict when a hazardous condition will threaten to put a stop to your operation. The key is being prepared. The Command for loading remote operator console allows your operators to continue working—safely away from the machine and any dangerous conditions.

Familiar control icons enable operators to switch between standard in-cab machine operation and remote control with little training or orientation. Integration of this technology system into the machine electronics enables reduced latency and quick response to commands from the operator console, keeping operators productive and efficient.

## ENHANCED SAFETY

- » Reduces operator safety risks such as high wall collapse, machine rollover or fall.
- » Decreases potential for injury from slips, trips and falls when climbing on and off machine.
- » Includes multiple, redundant safety features to stop all motion of machine if a stop switch is pressed, wireless communications are lost, a severe fault is detected or the console is tilted more than 60 degrees from normal operating position.
- » Prevents accidental activation with console that is unique to each machine system.
- » Prevents coasting in neutral thanks to auto hold feature.

## EFFICIENT OPERATIONS

Command for loading is the only remote control solution that integrates directly with Cat wheel loader electronic control systems. Command gives the remote operator the same control and response time as if he or she was sitting in the cab.

- » Simple installation procedures provide step-by-step instructions to quickly and efficiently implement the system with minimal machine downtime.
- » By utilizing the machine's existing hydraulic valves and electronic harnessing, reliability is greatly increased over non-integrated systems.
- » Quick system response and fine modulation of controls are enabled through comprehensive machine integration of the electronic and hydraulic systems.
- » Commands from the operator console are sent directly to the engine and implement electronics via a dedicated radio, reducing delays.
- » The system allows complete control with access to advanced features offered on Cat machines, such as Autodig, an optional feature that increases productivity.



### **FULL FUNCTIONALITY**

Basic machine functions such as start-up/shutdown, gear selection, rack/dump and lift/lower are easily accessed through the ergonomic layout of the console controls, all of which are protected from impact by the aluminum roll bar. Advanced options such as Autodig (if machine-equipped) are also accessible from the console.

Critical machine and system status information is also delivered to the operator through an intuitive layout of the console. LED indicator lights and display show the operator the gear selection, temperatures, operational mode, faults, system status and low battery warning.



# COMFORTABLE, RUGGED AND FUNCTIONAL OPERATOR CONSOLE

The Command for loading operator console is a backpack-style unit that enables line-of-sight machine control, minimizing fatigue while allowing control of the machine at a safe distance from potentially hazardous working conditions. While operators are removed from the cab, the console allows them to effectively operate the machine while maintaining visibility to critical machine health information.

## INTEGRATED SAFETY FEATURES

Integration of Cat electronics enables the activation of several safety features to ensure that the operator remains in control of the machine at all times. For example, a machine shutdown will be activated if an off-board transceiver loses power or if radio or on-board communications are lost. A shutdown also will occur if the operator console is tipped more than 60 degrees, which could indicate that the operator has fallen. Any manual stopping of the machine results in the application of parking brakes.

## RELIABLE COMMUNICATION

The operator console allows for line-of-sight control of up to 400.0 meters (437.4 yards) with the option of a 900 MHz version or a 2.4 GHz version for worldwide coverage. The console and on-board transceiver utilize spread spectrum technology to virtually eliminate interference from other wireless devices utilizing the 900 MHz or 2.4 GHz frequency bands. Proprietary algorithms secure the communications between the on-board wireless receiver and the console, preventing communications from unauthorized devices.

## ERGONOMIC DESIGN

The operator console has been designed to enable an operator to work an entire shift comfortably. The console weighs only 3.85 kg (8.5 lb) with battery and is suspended on the operator by backpack-style shoulder straps. Controls have been laid out to allow the use of heavy gloves. At the end of the day, cleanup is easily performed as the console is sealed to enable cleaning with low pressure water spray.



# RUGGED COMPONENTS FOR HARSH ENVIRONMENTS

Command for loading includes rugged on-board components that are sealed to keep out dust and moisture. Exterior components are housed in steel enclosures to protect from damage.

## INDICATOR LIGHTS

The roof-mounted electronics enclosure houses the antenna, indicator lights and wireless receiver. The high-intensity green LED lights indicate when the machine is in manual operation. A solid blue LED light indicates remote-control-ready state, while a blinking blue light indicates a remote control is connected to the machine. The red LED light is used to indicate when there is a software-commanded stop. These lights are housed in a rugged vibration-isolated steel enclosure to minimize damage from falling debris. Two sets of lights enhance visibility from all directions around the machine.

## GROUND LEVEL SERVICE CENTER

The ground level service center contains a remote/manual switch and an engine shutdown switch as well as optional ladder and delayed lighting switches. As Cat wheel loaders can come equipped with optional attachments, mounting kits are available to accommodate these different configurations.

## WIRELESS TRANSCIVER

A rugged wireless transmitter/receiver is used to communicate between the operator console and the remote control electronics that are located on the machine. The transceiver is located within the roof-mounted electronics enclosure.

## UNMATCHED GLOBAL SUPPORT

For more than 25 years, Caterpillar has been providing electronic and electrical components and systems for the mining and quarry & aggregates industries. These real-world technology solutions keep people safe and enhance the value of Cat products, making your operations more productive and profitable.

Your Cat dealer is ready to assist you with matching machine guidance systems to the application and obtaining responsible, knowledgeable support. From sales and implementation to support and service, count on your Cat dealer to provide all of your technology product needs.



CAT® CONNECT

# COMBINING EQUIPMENT, TECHNOLOGY AND SERVICES TO HELP BUILD YOUR SUCCESS

## CAT CONNECT SERVICES



EQUIPMENT  
MANAGEMENT



PRODUCTIVITY



SAFETY

Cat Connect Technologies and Services include hardware and software designed to improve your operation—including Cat and competitive assets—as well as help you leverage data generated by your assets to boost business results and strengthen your competitive advantage.

Because every jobsite has its own unique challenges, you need technologies and services that can be combined and customized in ways that make the most sense for your business and the work you do. Cat Connect Technologies and Services will help you monitor, manage and enhance your jobsite in several key areas that impact business results, including Equipment Management, Productivity and Safety.

Cat Connect offerings are designed to meet the specific needs of your unique fleet and business. You can choose a single product or service, if that's all you need, or connect multiple options across your jobsites. Whether you run a single machine, manage a mixed fleet or oversee several jobsites, Cat Connect and your Cat dealer can help you find the best ways to build your success—and realize gains that go straight to your bottom line.

## CAT CONNECT TECHNOLOGY



**LINK** technologies wirelessly connect you to your equipment, giving you access to valuable machine data, analysis and reporting so you can make fact-based decisions that improve total jobsite efficiency and productivity.



**GRADE** technologies combine design data, in-cab operator guidance and automatic machine controls to help you finish projects faster, with greater precision and in fewer passes.



**COMPACT** technologies provide advanced measurement options and reliable reporting capabilities to help you meet compaction targets with more speed and less rework.



**PAYLOAD** technologies provide on-the-go load weighing to deliver optimum payloads every time. With access to information on load times and cycle counts, you can maximize productivity and reduce total operating costs.



**DETECT** technologies combine safety features, functionalities and alerts to enhance your jobsite awareness and keep your people and assets safe.



**COMMAND** remote control technologies remove operators from the cab and away from harsh and challenging environments, bringing new levels of productivity, safety and efficiency to your jobsite.



## CAT COMMAND FOR LOADING SPECIFICATIONS

### OPERATOR CONSOLE

Weight (approximate)	3.85 kg	8.5 lb
Temperature Range	-20° C to 70° C -4° F to 158° F	
Water and Dust Intrusion	Dust & Water Jet Tight (IP 65)	
Frequency	2.4 GHz (2.402 GHz to 2.48 GHz)	900 MHz (902 MHz to 928 MHz)
Modulation Type	Frequency-hopping spread spectrum	
Transmit Power	100 mW	
Battery	3.7V Li-Ion	
Battery Duration	18 hours	

### ON-BOARD RECEIVER

Temperature Range	-40° C to 75° C -40° F to 167° F	
Frequency	2.4 GHz (2.402 GHz to 2.48 GHz)	900 MHz (902 MHz to 928 MHz)
Modulation Type	Frequency-hopping spread spectrum	
Transmit Power	100 mW	
Water and Dust Intrusion	Receiver is sealed (IP 67)	
Input Voltage	9 to 32 Volts	

### STANDARDS COMPLIANCE

ISO 15817	Earthmoving Machinery — Safety Requirements for Remote Operator Control
AS/NZS 4240	Remote Controls for Mining Equipment

## CAT CONNECT

Because every jobsite has its own unique challenges, you need technologies and services that can be combined and customized in ways that make the most sense for your business and the work you do.

**LEARN MORE AT [CAT.COM](http://CAT.COM)**

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