

# 990K

Millyard Arrangement



## Engine

Engine Model	Cat® C27 ACERT™	
Emissions	U.S. EPA Tier 4 Final or Tier 2 equivalent	
Gross (ISO 14396)	561 kW	752 hp
Net Power – SAE J1349	521 kW	699 hp

## Forks

Fork End Area	7.2 m <sup>2</sup>	78 ft <sup>2</sup>
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## Operating Specifications

Tipping Load – Straight	42 180 kg	92,990 lb
Tipping Load – Articulated 35°	37 148 kg	81,896 lb
Operating Weight	91 807 kg	202,398 lb

# Lower your cost per ton with industry leading efficiency.



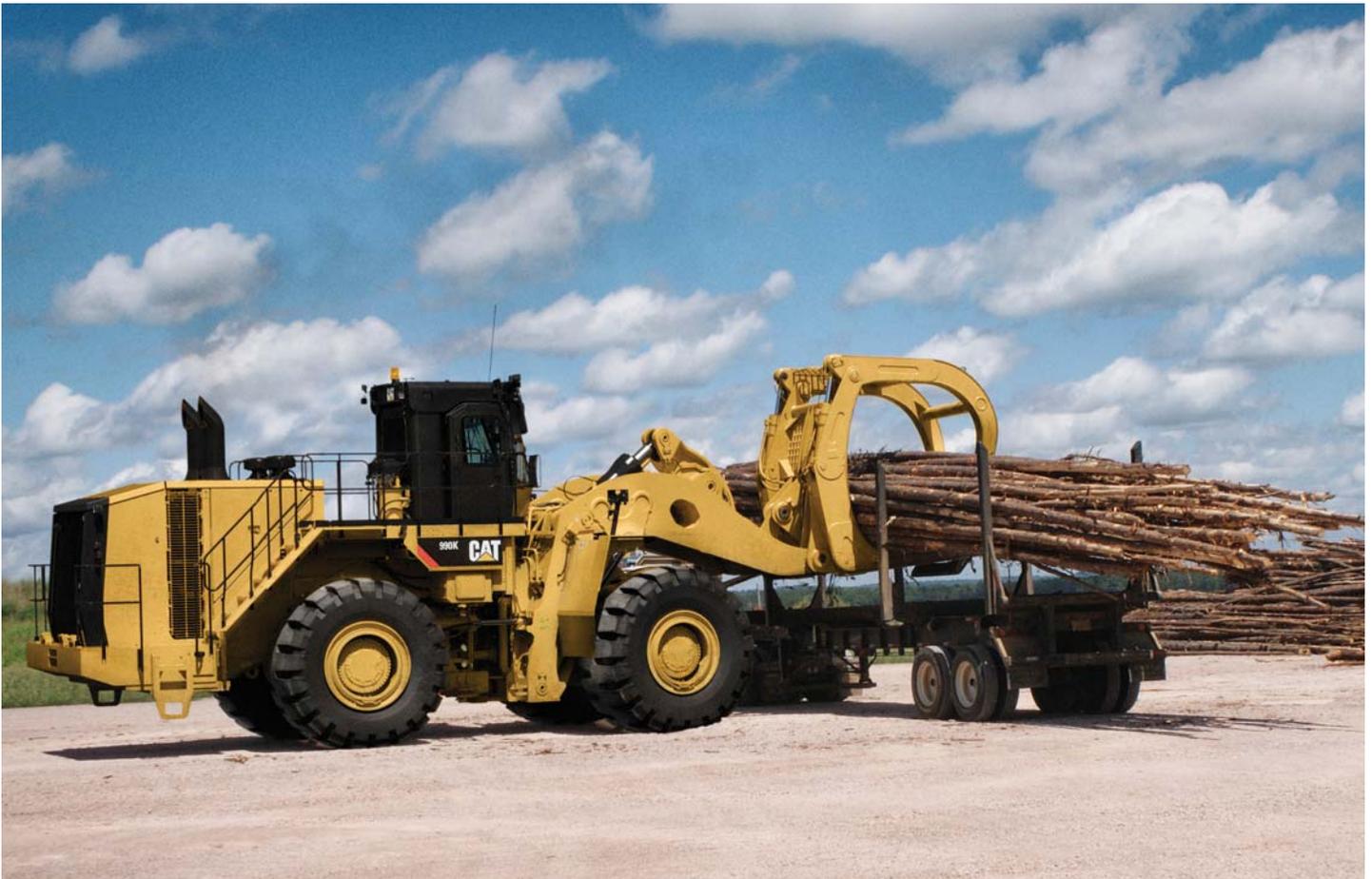
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**Cat Large Wheel Loaders are designed with durability built in, ensuring maximum availability through multiple life cycles. With optimized performance and simplified serviceability, our machines allow you to move more material efficiently and safely.**

**The 990K Millyard Arrangement is designed to meet the demands of millyard applications. The features of the 990K Millyard work together to provide a durable and reliable machine to meet the needs of the modern millyard.**



## Efficiency

Delivering fuel efficiency you demand through integrated machine systems.

### Economy Mode

Enabling maximum productivity and efficiency, all day every day.



The 990K systems work hard to save you fuel through advanced technologies. Utilizing On Demand Throttle, operators maintain normal operation with the left pedal and implements while the 990K manages the engine speed.

- Provides similar control and feel to our traditional throttle lock feature.
- Efficiency of manual throttle and the ergonomics of throttle lock.

## Cat® C27 ACERT™ Engine

The Cat C27 ACERT engine is built and tested to meet your most demanding applications while meeting Tier 4 Final or Tier 2 equivalent emission standards.

- Fully integrated electronic engine controls work in concert with the entire machine to make your fuel go farther.
- Use less fuel idling with Engine Idle Shutdown.
- Maximized durability with Delayed Engine Shutdown.



## Cat Planetary Powershift Transmission

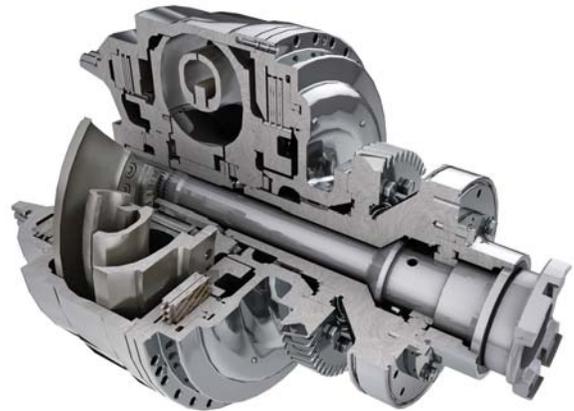
Maximize your uptime with the proven planetary power shift transmission. Improved shift quality, component life and operator comfort with our electronic transmission controls.



## Impeller Clutch Torque Converter (ICTC)

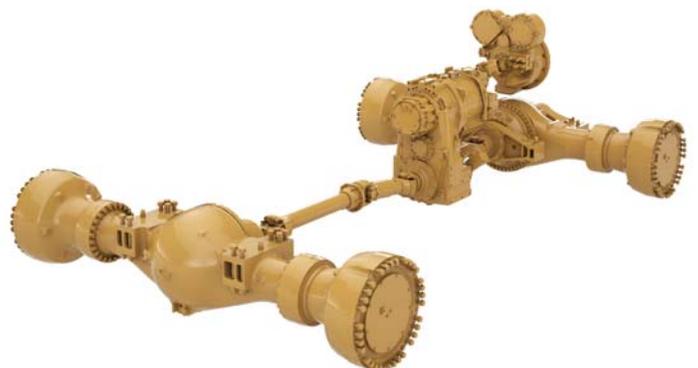
Enable your operators to maximize efficiency by varying machine rimpull while putting more horsepower to hydraulics.

- Reduced tire wear
- Enables full throttle shifts for faster cycle times
- Provides smooth approach to the dump target for less spillage and faster cycle times.



## Cat Torque Converter with Lock-up Clutch

- Eliminates TC losses while lowering system heat
- Improves travel speeds
- Reduces cycle times in load and carry operations



# Structures

Best built for the toughest conditions.



## Lift Arms

- High load stresses are absorbed by the solid steel lift arms.
- Enhance strength in key pin areas through the use of one piece castings.
- Stress relieved lift arms increase durability and lengthen time to repair.



### **Robust Structures**

Your bottom line is improved by highly durable structures that achieve multiple life cycles and withstand the toughest loading conditions.

- Full box-section rear frame resists torsional shock and twisting forces.
- Heavy-duty steering cylinder mounts efficiently transmit steering loads into the frame.
- Axle mounting has been optimized for increased structural integrity.



### **Front Linkage**

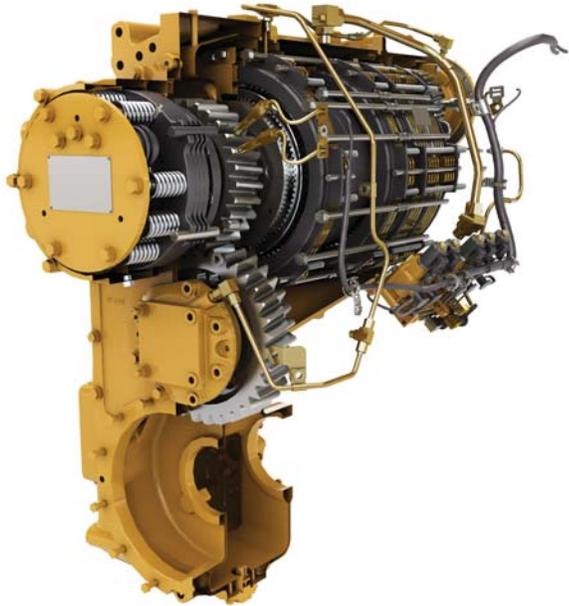
To ensure long life and reliability, the linkage pin joints feature a greased pin design with an auto lube system attachment available from the factory.



### **Steering and Transmission Integrated Control System (STIC™)**

Experience maximum responsiveness and control with STIC that combines directional selection, gear selection and steering into a single lever.

- Simple side-to-side motion turns machine right or left, minimizing operator movements.
- Easy to operate finger controlled gear selection.
- Smoother, faster cycles and less operator fatigue through the use of low effort integrated controls.



### **Cat Planetary Powershift Transmission**

Building your success begins with a best-in-class transmission designed specifically for mining applications.

- Consistent, smooth shifting and efficiency through integrated electronic controls.
- Long life and reliability through heat treat gear and metallurgy.
- Three forward and three reverse speeds to match your application.

### **Cat C27 ACERT Engine**

Durability and efficiency at the heart of your 990K comes from the Cat C27 ACERT Engine. Optimum performance is built in through the use of a 12 cylinder, direct injection design.

- Optimized performance and quick engine response with an electronic control module.
- Reliable efficiency with complete control over injection timing, duration and pressure with Mechanically Actuated Electronic Unit Injection (MEUI™).
- Extended engine life and improved fuel efficiency with reduced rated speed.
- Available in two versions: one that meets Tier 4 Final emission standards, and another that meets Tier 2 equivalent emission standards.



# Power Train

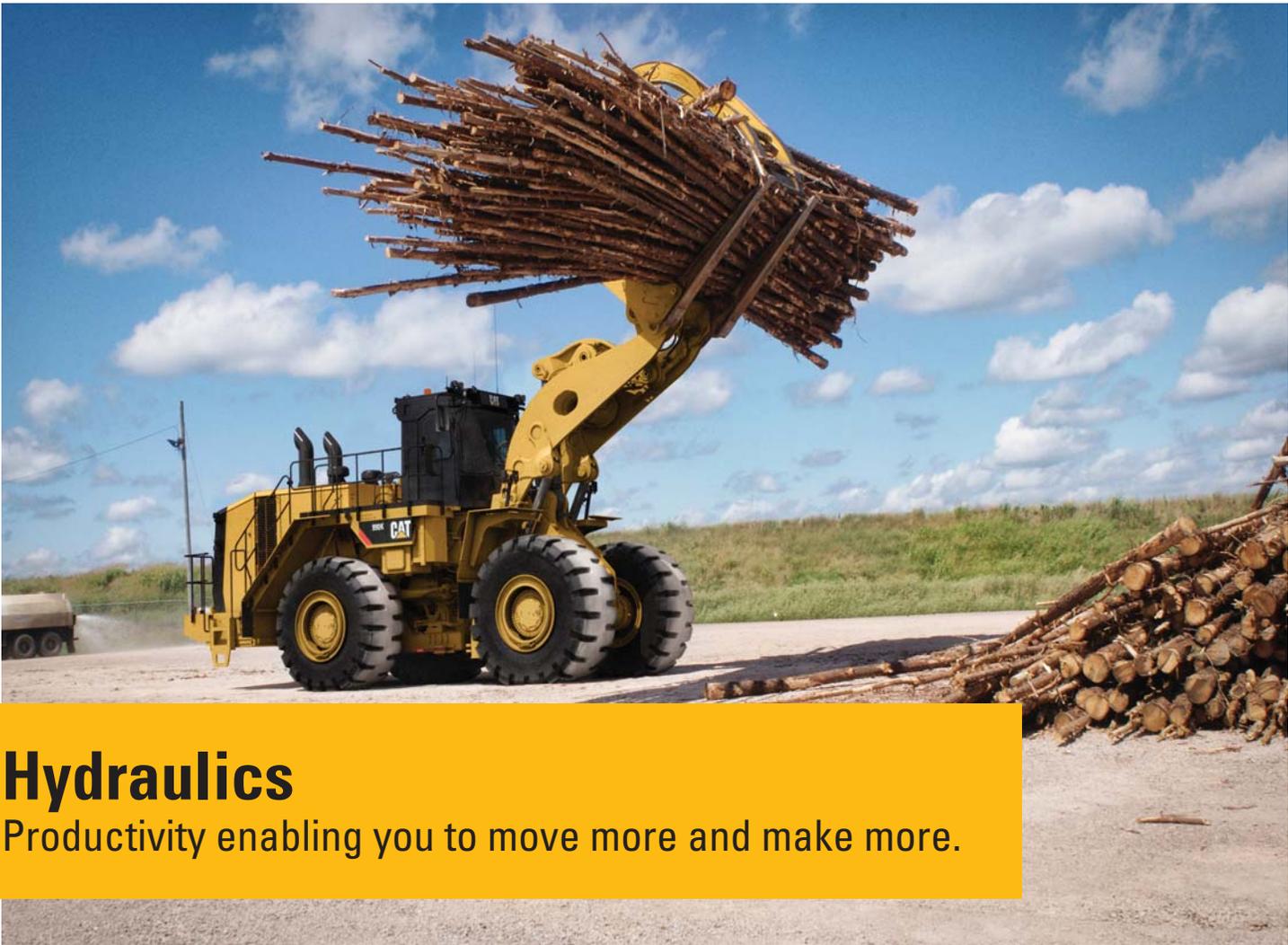
Move material more efficiently with improved power and control.



## **Impeller Clutch Torque Converter (ICTC) and Rimpull Control System (RCS)**

Lower your cost per ton utilizing advanced ICTC and RCS for modulated rimpull.

- Reduce tire slippage and wear by modulating rimpull from 100 to 25 percent while depressing left pedal. After 25 percent rimpull is achieved the left pedal applies the brake.
- Reduce the potential for wheel slippage without reducing hydraulic efficiency with RCS.
- Improve fuel efficiency in certain applications with our lock-up clutch torque converter providing direct drive.



# Hydraulics

Productivity enabling you to move more and make more.



## Positive Flow Control Hydraulics

Increase efficiency through our Positive Flow Control (PFC) Hydraulic System. PFC has concurrent pump and valve control. By optimizing pump control, hydraulic oil flow is proportionate to implement lever movement.

- Fast, productive cycles are enabled by the fully variable implement pump.
- Increase fork feel and control through increased hydraulic response.
- Consistent performance and efficiency with lower system heat.
- Full hydraulic flow down to 1,400 engine rpm enabled by flow sharing technology.

## Electro Hydraulic Controls

Operators increase productivity with our responsive implements feature.

- Operate comfortably through electronically controlled hydraulic cylinder stops.
- Handle easy-to-use soft detent controls.
- Conveniently set automatic implement kickouts from inside the cab.

## Steering System

Confident loader operation starts with precise machine control enabled by the 990K's load sensing hydraulic steering system.

- Increase efficiency with our variable displacement piston pumps.
- Achieve precise positioning for easy loading in tight areas with 35 degrees of steering articulation.
- Enhance operator comfort with integrated steering and transmission control functions.

## Filtration System

Benefit from extended performance and reliability of your hydraulic system with our advanced filtration system.

- Case drain screens.
- Hydraulic oil cooler return filter.
- Pilot filter.
- Return screens inside hydraulic tank.
- Axle oil cooler screens if equipped.





**Your operators can work more efficiently and stay comfortable with our customer-inspired cab features.**

### **Entry and Exit**

Enter and exit the cab easily and safely with these newly designed, ergonomic features.

- Fold up STIC steer/armrest.
- Reduced access stairway angles.
- Standard stairway lighting.

### **Cat Comfort Series III Seat**

Enhance comfort and reduce operator fatigue with Cat Comfort Series III seat.

- Mid back design and extra thick, contoured cushions.
- Air suspension system.
- Easy-to-reach seat levers and controls for six way adjustments.
- Seat-mounted implement pod and STIC steer that moves with the seat.
- 76 mm (3 in) wide retractable seat belt.
- Optional heated and ventilated seat.

### **Control Panel**

Ergonomic placement of switches and information display keep your operators comfortable all day every day.

- Large backlit membrane switches feature LED activation indicators.
- Switches feature ISO symbols for quick function identification.
- Two position rocker switch activates the electro hydraulic park brake.



### **Environment**

Your operator's productivity is enhanced with our clean, comfortable cab environment.

- Experience reduced vibrations from isolation cab mounts and seat air suspension.
- Maintain desired cab temperature with automatic temperature controls.
- Pressurized cab with filtered air.
- Sound level reduced to a quiet 69 dB(A).
- Convenient floor storage tray/lunch box.



# Operator Station

Best-in-class operator comfort and ergonomics.





## Technology Solutions

Greater productivity through  
Integrated Electronic Systems.

**The 990K electronic systems have been completely integrated to function as one machine. This integration creates a smart machine and more informed operator, maximizing the productivity of both.**

### **Cat Product Link™**

Cat Product link allows remote monitoring of equipment to improve overall fleet management effectiveness. Events and diagnostic codes, as well as hours, fuel, idle time and other information are transmitted to a secure web based application, VisionLink®. VisionLink includes powerful tools to convey information to users and dealers, including mapping, working and idle time, fuel level and more.

### **VIMS™ 3G**

We have worked hard to help our customers and operators perform at their best through our Vital Information Management System (VIMS 3G).

- Easy-to-view graphical information display features a large touch screen interface.
- Intuitive operation and easy navigation with our enhanced user interface.
- Decrease service time by keeping operators informed about machine system malfunction or operation.

# Serviceability

Enabling high uptime by reducing your service time.

**We can help you succeed by ensuring your 990K has design features to reduce your downtime.**

- Safe and convenient service with ground level or platform access and grouped service points.
- Swing-out doors on both sides of the engine compartment provide easy access to important daily service checks.
- Ecology drains for ease of service and spill prevention.
- Reduce downtime with VIMS system notifications so your operators and technicians can resolve any problems before failure.
- Ground level access to transmission control valves.



## Customer Support

Your Cat dealers know how to keep your machines productive.



### Legendary Cat Dealer Support

A valued partner, your Cat dealer is available whenever you need them.

- Preventive maintenance programs and guaranteed maintenance contracts.
- Best-in-class parts availability.
- Improve your efficiency with operator training.
- Genuine Cat Remanufactured parts.

# Safety

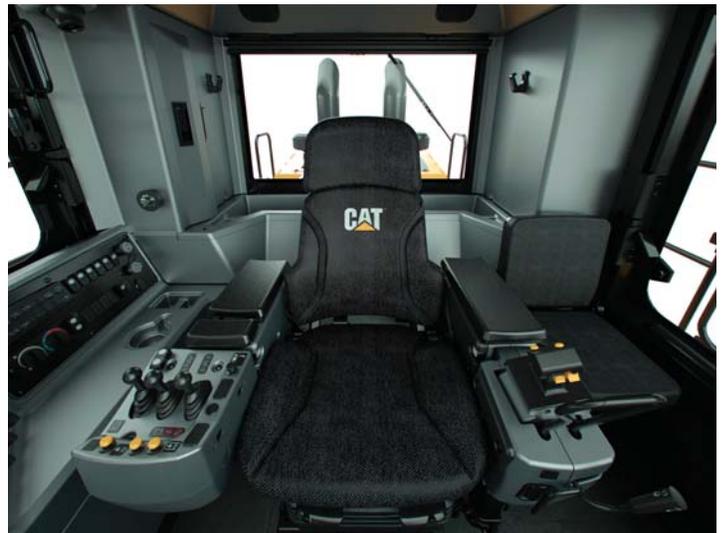
Making your safety our priority.



**We are constantly introducing features on our machines in an effort to enhance safety for the operators.**

## **Machine Access**

- Left and right hand stairs with 45 degree angle enhance safety for operators getting on and off the 990K.
- Continuous walkway with non-skid surfaces are designed into the service areas.
- Maintain three points of contact at all times through ground level or platform accessible service areas.



## Visibility

- Optional heated mirrors ensure enhanced visibility for safe operation.
- Standard Cat Vision or optional Cat Detect with radar increase operator awareness around the machine.
- Optional HID or LED lights provide excellent workspace visibility.
- Optional cab mounted LED warning beacons.

## Operator Environment

- Reduced vibrations to the operator with isolated cab mounts and seat mounted implement and steering controls.
- Low interior sound levels.
- Pressurized cab with filtered air.
- Safely train other operators in comfort with our standard training seat.
- Standard 76 mm (3 in) seat belts on the operator seat and the standard trainer seat.



# Sustainability

Making sustainable progress possible.

## Sustainable Benefits

Sustainability is designed and built into our 990K's features.

- Engine Idle Shutdown can help you save fuel by avoiding unnecessary idling.
- The 990K is built for multiple lives. To assist with maximizing machine life, Caterpillar provides a number of sustainable options such as our Reman and Certified Rebuild programs. In these programs, reused or remanufactured components can deliver cost savings of 40 to 70 percent, which lowers operating cost.
- Caterpillar offers retrofit packages to bring new features to older machines, maximizing your resource. And, when you go through the Cat Certified Rebuild program, these retrofit kits are part of the rebuild process.

# Cat Forks

Efficiency with forks designed for your application.



## Efficiency and Durability

Cat forks are designed for maximum productivity and durability. Whether unloading trucks in a single pass or reclaiming wood the high capacity forks bring productivity to your operation.

- Bypassing style top clamp design to clasp full or partial truck loads.
- Heavy duty top clamp design with durable mesh guarding to contain debris and protect the cab.
- Pivoting tines with replaceable tips for efficient log reclaim.
- Integrated front camera mounting location for maximum visibility to the tine tips for truck unloading.

# 990K Millyard Arrangement Specifications

## Engine

Engine Model	Cat C27 ACERT	
Emissions	Tier 4 Final or Tier 2 equivalent	
Rated Speed	1,800 rpm	
Gross (ISO 14396)	561 kW	752 hp
Gross (SAE J1995)	571 kW	766 hp
Net Power – SAE J1349 (Standard Ambient)	521 kW	699 hp
Net Power – SAE J1349 (High Ambient)	483 kW	648 hp
Bore	137.2 mm	5.4 in
Stroke	152.4 mm	6.0 in
Displacement	27.03 L	1,649.5 in <sup>3</sup>
Peak Torque @ 1,200 rpm	3557 N·m	2,624 lbf-ft
Torque Rise	18%	

## Operating Specifications

Operating Weight	91 807 kg	202,398 lb
Tipping Load		
Straight	42 180 kg	92,990 lb
Articulated	37 148 kg	81,896 lb

## Transmission

Transmission Type	Cat planetary power shift	
Forward 1	7.3 km/h	4.5 mph
Forward 2	13.3 km/h	8.3 mph
Forward 3	22.9 km/h	14.2 mph
Reverse 1	7.9 km/h	4.9 mph
Reverse 2	14.7 km/h	9.1 mph
Reverse 3	24.9 km/h	15.5 mph
Direct Drive Forward 1	Lock-up disabled	
Direct Drive Forward 2	13.7 km/h	8.5 mph
Direct Drive Forward 3	24.5 km/h	15.2 mph
Direct Drive Reverse 1	8.7 km/h	5.4 mph
Direct Drive Reverse 2	15.4 km/h	9.6 mph
Direct Drive Reverse 3	26.4 km/h	16.4 mph

• Travel speeds based on Michelin 45/65R39 LD D2\*\*L5 tires.

## Hydraulic System – Lift/Tilt

Lift/Tilt System – Circuit	Positive flow control	
Lift/Tilt System	Variable displacement piston	
Maximum Flow at 1,800 rpm	817 L/min	216 gal/min
Relief Valve Setting – Lift/Tilt	33 000 kPa	4,786 psi
Cylinders, Double Acting: Lift, Bore and Stroke	254 mm × 1264 mm	10.0 in × 49.8 in
Cylinders, Double Acting: Tilt, Bore and Stroke	317.5 mm × 819 mm	12.5 in × 32.2 in
Pilot System	Open loop and pressure reducing	
Maximum Flow at 1,800 rpm	84 L/min	22.2 gal/min
Relief Valve Setting	3500 kPa	507 psi

# 990K Millyard Arrangement Specifications

## Hydraulic Cycle Time

Rack Back	4.8 Seconds
Raise	9.4 Seconds
Dump	2.9 Seconds
Lower	3.7 Seconds
Lower Float Down	3.6 Seconds

## Hydraulic System – Steering

Steering System – Circuit	Pilot, load sensing	
Steering System – Pump	Piston, variable displacement	
Maximum Flow @ 1,400 rpm	358 L/min	94.5 gal/min
Relief Valve Setting – Steering	32 000 kPa	4,641 psi
Total Steering Angle	70°	

## Service Refill Capacities

Fuel Tank	1114 L	294.3 gal
Cooling System	208 L	54.9 gal
Engine Crankcase	75.7 L	20.0 gal
Transmission	110 L	29.1 gal
Differentials and Final Drives – Front	271 L	71.6 gal
Differentials and Final Drives – Rear	261 L	68.9 gal
Hydraulic System Factory Fill	795 L	210.0 gal
Hydraulic Tank (Implement and Hydraulic Fan)	261 L	68.9 gal
Hydraulic Tank (Steering and Braking)	132 L	34.9 gal

- All nonroad U.S. EPA Tier 4 Final, European Union (EU) Stage IIIB and IV, and Japan (2011 and 2014) Step 4 diesel engines are required to use only Ultra Low Sulfur Diesel (ULSD) fuels containing 15 ppm (mg/kg) sulfur or less. Biodiesel blends up to B20 (20% blend by volume) are acceptable when blended with 15 ppm (mg/kg) sulfur or less ULSD. B20 should meet ASTM D7467 specification (biodiesel blend stock should meet Cat biodiesel spec, ASTM D6751 or EN 14214). Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, and ACEA E9 specification are required. For further fluid specifications and guidelines, visit: <http://parts.cat.com/cdalfiles/3244668/7/SEBU6250-19.pdf>.

## Axles

Front	Fixed
Rear	Trunnion
Oscillation Angle	8.5°

## Brakes

Brakes	SAE J1473 OCT90, ISO 3450:1992
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## Sound Performance

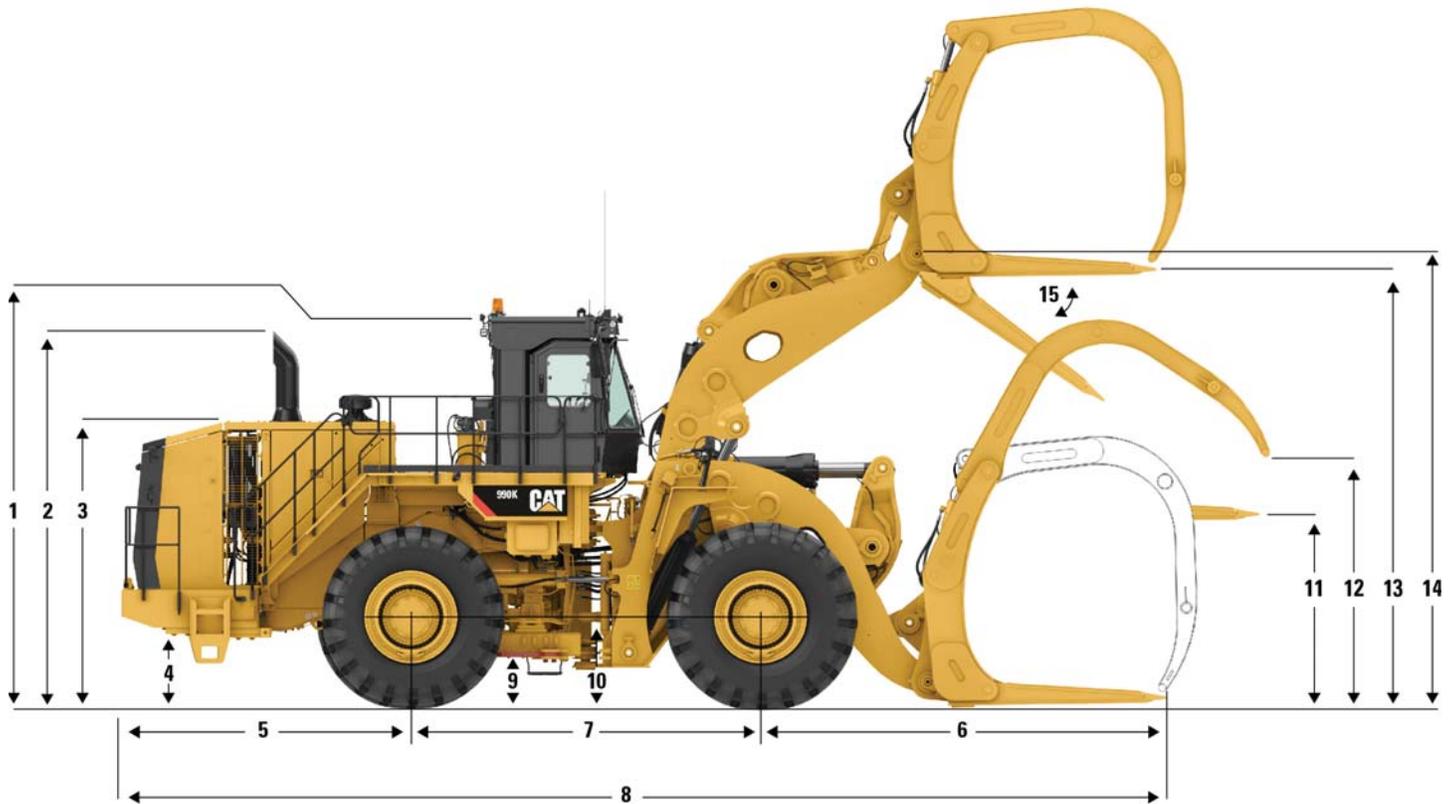
	Standard	Suppression
Operator Sound Level (ISO 6396:2008)	69 dB(A)	69 dB(A)
Machine Sound Level (ISO 6395:2008)	115 dB(A)	113 dB(A)

- The operator sound pressure level is 69 dB(A), measured according to the test procedures and conditions specified in ISO 6396:2008 for the standard machine configuration. 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.
- The machine sound power level is 115 dB(A), measured according to the test procedures and conditions specified in ISO 6395:2008 for the standard machine configuration. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.
- The machine sound power level is 113 dB(A), measured according to the test procedures and conditions specified in ISO 6395:2008 for the sound suppressed machine configuration. The measurement was conducted at 70 percent of the maximum engine cooling fan speed.

# 990K Millyard Arrangement Specifications

## Dimensions

All dimensions are approximate.



	<b>Millyard Linkage</b>	
<b>1</b> Ground to Top of ROPS	5240 mm	17.2 ft
<b>2</b> Ground to Top of Exhaust Stack	5049 mm	16.6 ft
<b>3</b> Ground to Top of Hood	3862 mm	12.7 ft
<b>4</b> Ground to Bumper Clearance	959 mm	3.1 ft
<b>5</b> Rear Axle Center Line to Bumper	3795 mm	12.5 ft
<b>6</b> Front Axle Center Line to Fork Tip	5362 mm	17.6 ft
<b>7</b> Wheelbase	4600 mm	15.1 ft
<b>8</b> Maximum Overall Length	13 840 mm	45.4 ft
<b>9</b> Ground to Lower Hitch Clearance	596 mm	2.0 ft
<b>10</b> Ground to Center of Front Axle	1186 mm	3.9 ft
<b>11</b> Fork Height with Level Arms	2708 mm	8.9 ft
<b>12</b> Fork Top Clamp Opening	3745 mm	12.3 ft
<b>13</b> Fork Height at Maximum Lift	5591 mm	18.3 ft
<b>14</b> Hinge Pin Height at Maximum Lift	5903 mm	19.4 ft
<b>15</b> Dump Angle at Maximum Lift	29.3 degrees	

## Standard Equipment

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

### OPERATOR ENVIRONMENT

- Air conditioner and heater with automatic temperature control
- Cab, sound-suppressed pressurized, protective structure (ROPS/FOPS), radio ready for (entertainment) includes antenna, speakers and converter (12V, 10-15 amp)
- 12V power port for mobile phone or laptop connection
- Camera, rear vision
- Cigar lighter and ashtray
- Coat hook
- Electro-hydraulic tilt and lift controls (seat mounted)
- Flip-up armrest
- Heater and defroster
- Horn, electric
- Implement hydraulic lockout
- Instrumentation, gauges:
  - Engine coolant temperature
  - Fuel level
  - Ground speed
  - Gear
  - Hydraulic oil temperature
  - Speedometer/tachometer
  - Torque converter temperature
- Instrumentation, warning indicators:
  - Action alert system, three category
  - Automatic transmission model enable status
  - Brake malfunction
  - Bucket float status
  - Delayed engine shutdown status
  - Engine idle shutdown status
  - Engine malfunction
  - Fuel economy mode enable status
  - Hydraulic lockout
  - Lockup clutch enable status
  - Low fuel level
  - Parking brake status
  - Rimpull control enable status
  - Seatbelt warning
  - Secondary steering (if equipped)
  - Throttle lock status
  - Transmission gear

- Keypad, control with indicator lights:
  - Auto trans mode speed range
  - Auto/manual transmission mode
  - Fuel economy mode
  - Implement kickout
  - Lockup clutch
  - Reduced rimpull
  - Throttle lock
- Light, dome (cab)
- Lunchbox and beverage holders
- Mirrors, rearview (externally mounted)
- Seat, Cat comfort (cloth) air suspension
- Seat belt, retractable, 76 mm (3 in) wide
- STIC control system with steering lock
- Tinted glass
- Trainer seat with lap belt
- Vital Information Management System (VIMS) 3G with graphical information display: external data port, customizable operator profiles, cycle timer, and integral Payload Control System (PCS)
  - Wet-arm wipers/washers (front, rear and corner) intermittent front wiper

### POWER TRAIN

- Brakes, full hydraulic, enclosed, oil-disc
- Axle-shaft oil-disc service brake
- Electro hydraulic parking brake
- Case drain filters
- Cat clean emission module (Tier 4 Final only)
- Demand fan
- Engine Cat C27 ACERT
- Fuel priming pump (electric)
- Ground level engine shutoff, bumper
- Mufflers (under hood) (Tier 2 only)
- Precleaner, engine air intake
- Radiator, Aluminum Modular (AMR)
- Separated cooling system
- Starting aid, (ether) manual override
- Throttle Lock
- Torque Converter, Impeller Clutch with lock-up clutch feature and rimpull control system
- Transmission, 534 mm (21 in) planetary power shift (electronic) (3F/3R)

### ELECTRICAL

- Alarm, back-up
- Alternator, 150 amp
- Batteries, maintenance free (2 – 1,400 CCA)
- Converter, 10/15 amp, 24V to 12V
- Deutsch component connectors
- Electrical system, 24V
- Electronic transmission control
- Lighting system, halogen (front and rear) lighting, access stairway, engine compartment
- Starter, electric
- Starter lockout in bumper
- Starting receptacle for emergency start
- Transmission lockout in bumper

### OTHER

- Automatic tilt/lift kickouts electronically adjustable from cab
- Axle temperature sensor
- Battery disconnect and jump start receptacle, bumper
- Coupling, Caterpillar O-ring face seals
- Economy mode with on demand throttle
- Emergency platform egress
- Engine, crankcase, 500 hour interval with CH4
- Engine idle management features:
  - Auto idle kickdown
  - Delayed engine shutdown
  - Engine idle shutdown
- Fenders, steel (front)
- Guards, crankcase and power train
- Grouped/labeled lube points
- Hitch, drawbar with pin
- Hoses, Cat XT™
- Oil sampling valves
- Positive flow control hydraulic system
- Product Link
- Sight Gauges: hydraulic tanks, steering/fan and implement/brake, and transmission
- Stairway, left and right rear access
- Steering, load sensing
- Toe kicks
- Vandalism protection caplocks
- Venturi stack
- Premixed 50% concentration of extended life coolant with freeze protection to –34° C (–29° F)

# 990K Optional Equipment

## Optional Equipment

With approximate changes in operating weights. Optional equipment may vary. Consult your Cat dealer for specifics.

### POWER TRAIN

- -50° C (-58° F) antifreeze
- Engine oil change system, high speed, Wiggins
- Engine block heater 120V or 240V
- High ambient cooling – software

### OPERATOR ENVIRONMENT

- Cab precleaner
- AM/FM/CD/MP3 radio
- Satellite Sirius radio with Bluetooth
- LED warning strobe
- CB radio ready
- Window sun shade

### MISCELLANEOUS ATTACHMENTS

- Front and rear roading fenders
- Fast fill fuel system (Shaw-Aero)
- Axle oscillation stop
- Heavy duty cab mounts

## Mandatory Attachments

Select one from each group. Mandatory and optional equipment may vary. Consult your Cat dealer for specifics.

### LINKAGE

- Standard
- Autolube
- Manual grease pins

### ELECTRICAL

- No Product Link
- Product Link (Satellite)
- Product Link (Cellular)

### STEERING

- Standard steering
- Secondary steering

### POWER TRAIN

- Axle oil cooler
- Standard fuel lines
- Heated fuel lines
- Extreme temperature axle
- No engine brake
- Engine brake

### LIGHTING

- Standard lighting
- HID lighting
- LED lighting

### OPERATOR ENVIRONMENT

- No suppression arrangement
- Sound suppression
- Standard seat
- Heated seat
- Standard seat belt
- Seat belt minder
- Standard cab glass
- Rubber mounted cab glass
- Standard cab air cleaner
- RESPA cab air cleaner
- Standard mirror
- Heated mirror
- Vision Display
- Cat Detect (Object Detection)

### HYDRAULICS

- Ride control
- Standard hydraulic oil
- Fire resistant (EcoSafe) hydraulic oil
- Cold weather hydraulic oil

### FUEL SYSTEM

- Conventional fuel arrangement
- Cold weather starting





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)

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(Global)

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