



# Cat<sup>®</sup> 938M

## WHEEL LOADER

### M SERIES – MAKING YOUR CHOICE EASY:

- Enjoy All Day Comfort** – Have a seat in the new M Series Small Wheel Loader and enjoy automatic temperature control, class leading sound levels, excellent all around visibility and low-effort joystick controls that move with you on a fully adjustable seat suspension. A large spacious operator environment combined with Caterpillar’s hydraulic cylinder damping and smooth predictable controls make this the most comfortable seat on your job site.
- Work Made Easy** – Move more with Caterpillar’s patented quick loading Performance Series buckets and optimized Z-bar linkage with enhanced forward visibility that combines the digging efficiency of a traditional Z-bar with tool carrier capabilities. The parallel lift and high tilt forces throughout the working range allow you to confidently handle loads with precise control.

Multi-function work has never been easier with dedicated pumps for each system and a flow sharing implement valve governed by an intelligent power management system. Simultaneously lift, steer and drive without compromise. The M Series Small Wheel Loader simply does what you ask it to do.

- Efficiently Powerful** – Experience hybrid like fuel efficiency with an intelligent hydrostatic power train and industry leading fuel savings through a lower maximum engine speed of just 1,600 rpm in Standard Mode. Power when you need it with Caterpillar’s exclusive Power-by-Range technology that increases power in Range 4 for improved speed on grade. For your toughest and most demanding applications a new Performance Mode will allow you to boost the power and hydraulic speed in all Ranges to get the job done even quicker. Meets U.S. EPA Tier 4 Final/EU Stage V emission standards with a Cat<sup>®</sup> C7.1 engine that is designed to manage itself so you can concentrate on your work.
- Customize Your Experience** – Meet your application requirements and individual preferences with Caterpillar’s industry first Hystat<sup>™</sup> Operator Modes featuring four unique power train settings. Select classic Torque Converter for smooth rollout, conventional Hystat for aggressive engine braking, an Ice Mode that maximizes your control on slippery underfoot, or default mode which blends the best of Hystat and Torque Converter characteristics. Fine tune machine performance with adjustments at your fingertips through the soft touch buttons and optional secondary display. Quickly set hydraulic response along with linkage kick-out positions, maximum wheel torque, and peak ground speed to efficiently perform a multitude of tasks.

## Specifications

### Engine

Engine Model	Cat C7.1			
Power Mode	Standard Mode		Performance Mode	
Speed Range	Range 1-3*		Range 1-4	
Maximum Gross Power				
Maximum Engine Speed	1,600 rpm		1,800 rpm	
ISO 14396	129 kW	173 hp	140 kW	188 hp
ISO 14396 (DIN)	176 mhp		190 mhp	
Rated Net Power	1,600 rpm		1,800 rpm	
SAE J1349 at				
Minimum Fan Speed	127 kW	170 hp	137 kW	183 hp
ISO 9249 at				
Minimum Fan Speed	127 kW	170 hp	137 kW	184 hp
ISO 9249 (DIN) at				
Minimum Fan Speed	172 mhp		186 mhp	

### Engine (continued)

	Standard Mode		Performance Mode	
Maximum Gross Torque				
ISO 14396	870 N-m	642 lbf-ft	900 N-m	664 lbf-ft
Maximum Net Torque				
SAE J1349	850 N-m	627 lbf-ft	880 N-m	649 lbf-ft
ISO 9249:2007	852 N-m	628 lbf-ft	882 N-m	650 lbf-ft
Displacement	7.01 L	427 in <sup>3</sup>	7.01 L	427 in <sup>3</sup>

- Net power ratings are tested at the reference conditions for the specified standard and denote power available at the flywheel when the engine is equipped with alternator, air cleaner, emission components and fan at specified speed.
- \*Range 4 power and torque is equal to Performance Mode with Caterpillar Power by Range technology.
- \*\*The Cat C7.1 engine meets Tier 4 Final/Stage V off-highway emission standards.



# 938M Wheel Loader

## Buckets

Bucket Capacities – General Purpose	2.5-3.2 m <sup>3</sup>	3.2-4.2 yd <sup>3</sup>
Bucket Capacities – Light Material	3.1-5.0 m <sup>3</sup>	4.0-6.5 yd <sup>3</sup>

## Steering

Steering Articulation Angle (each direction)	40°	
Maximum Flow – Steering Pump	130 L/min	34 gal/min
Maximum Working Pressure – Steering Pump	24 130 kPa	3,500 psi
Maximum Steering Torque:		
0 degrees (straight machine)	57 630 N·m	42,506 lbf-ft
40 degrees (full turn)	42 570 N·m	31,398 lbf-ft
Steering Cycle Times (full left to full right):		
At 1,800 rpm: 90 rpm steering wheel speed	2.3 seconds	
Number of Steering Wheel Turns – full left to full right or full right to full left	3.3 turns	

## Loader Hydraulic System

Maximum Flow – Implement Pump	190 L/min	50 gal/min
3rd Function Maximum Flow*	190 L/min	50 gal/min
4th Function Maximum Flow*	160 L/min	42 gal/min
Maximum Working Pressure – Implement Pump	28 000 kPa	4,061 psi
Relief Pressure – Tilt Cylinder	30 000 kPa	4,351 psi
3rd and 4th Function Maximum Working Pressure	28 000 kPa	4,061 psi
3rd and 4th Function Relief Pressure	30 000 kPa	4,351 psi

Hydraulic Cycle Times:	Standard Mode	Performance Mode
	At 1,600 rpm	At 1,800 rpm
Raise (ground level to maximum lift)	6.2 seconds	5.5 seconds
Dump (at maximum lift height)	1.7 seconds	1.5 seconds
Float Down (maximum lift to ground level)	2.7 seconds	2.7 seconds
Total Cycle Time	10.6 seconds	9.7 seconds

\*3rd and 4th function flow is fully adjustable from 20% to 100% of maximum flow through the secondary display, when equipped.

## Service Refill Capacities

Fuel Tank	195 L	51.5 gal
Cooling System	32 L	7.9 gal
Engine Crankcase	20 L	5.3 gal
Transmission (gearbox)	11 L	2.9 gal
Axles:		
Front	35 L	9.2 gal
Rear	35 L	9.2 gal
Hydraulic System (including tank)	170 L	44.9 gal
Hydraulic Tank	90 L	23.8 gal
Diesel Exhaust Fluid (DEF) Tank	19 L	5 gal

- DEF used in Cat SCR systems must meet the requirements outlined in the International Organization for Standardization (ISO) standard 22241-1.

## Transmission

Forward and Reverse:		
Range 1*	1-13 km/h	0.6-8 mph
Range 2	13 km/h	8 mph
Range 3	27 km/h	17 mph
Range 4	40 km/h	25 mph

\*Creeper control allows maximum speed range adjustability from 1 km/h (0.6 mph) to 13 km/h (8 mph) in Range 1 through the secondary display, when equipped. Factory default is 7 km/h (4.4 mph).

## Tires

Standard Size	20.5 R25, radial (L-3)	
Other Choices Include:	20.5 R25, radial (L-2)	23.5 R25, radial (L-3)
	20.5 R25, radial (L-5)	650/65 R25 radial (L-3)
	20.5-25 12PR (L-2)	Skidder/Agriculture
	20.5-25 12PR (L-3)	Solid Tires
	20.5-25 16PR (L-5)	

- Other tire choices are available. Contact your Cat dealer for details.
- In certain applications, the loader's productive capabilities may exceed the tire's tonnes-km/h (ton-mph) capabilities.
- Caterpillar recommends that you consult a tire supplier to evaluate all conditions before selecting a tire model.

## Cab

ROPS	ISO 3471:2008
FOPS	ISO 3449:2008 Level II

- Cab and Rollover Protective Structures (ROPS) are standard in North America and Europe.
- The declared dynamic operator sound pressure levels per ISO 6396:2008\*, when properly installed and maintained, are:
  - Standard cab: 68 ±3 dB(A)
  - Deluxe cab: 66 ±2 dB(A)

\*The measurements were conducted with the cab doors and windows closed and at 70% of the maximum engine cooling fan speed. The sound level may vary at different engine cooling fan speeds.

## Sound

Operator Sound Pressure (ISO 6396:2008)	72 dB(A)
Average Exterior Sound Pressure (ISO 6395:2008)	101 dB(A)

- European Union Directive "2000/14/EC"

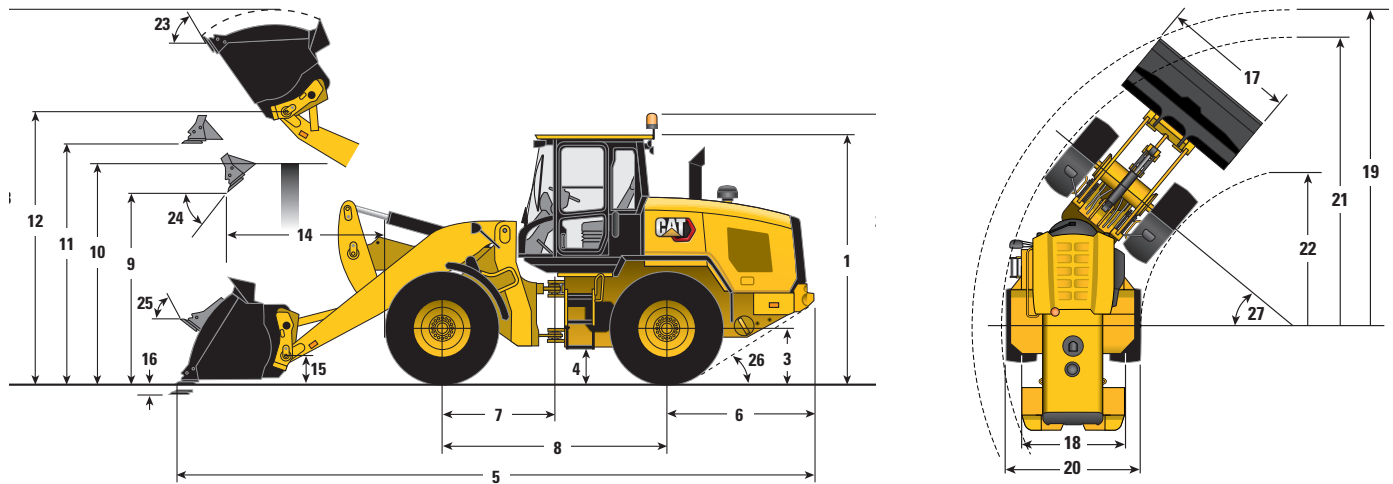
## Axles

Front	Fixed
	Locking differential (standard)
Rear	Oscillating ±11 degrees
	Open differential (standard)
	Limited slip differential (optional)

## Air Conditioning System

The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a (Global Warming Potential = 1430). The system contains 1.9 kg of refrigerant which has a CO<sub>2</sub> equivalent of 2.717 metric tonnes.

## Dimensions and Operating Specifications (All dimensions are approximate. Dimensions vary with bucket and tire choice.)



	Standard Lift		High Lift	
** 1 Height: Ground to Cab	3340 mm	10'11"	3340 mm	10'11"
** 2 Height: Ground to Beacon	3707 mm	12'2"	3707 mm	12'2"
** 3 Height: Ground Axle Center	685 mm	2'3"	685 mm	2'3"
** 4 Height: Ground Clearance	386 mm	1'3"	386 mm	1'3"
* 5 Length: Overall	7656 mm	25'1"	8397 mm	27'7"
6 Length: Rear Axle to Bumper	1968 mm	6'5"	1968 mm	6'5"
7 Length: Hitch to Front Axle	1525 mm	5'0"	1525 mm	5'0"
8 Length: Wheel Base	3050 mm	10'0"	3050 mm	10'0"
* 9 Clearance: Bucket at 45 degrees	2834 mm	9'4"	3415 mm	11'2"
** 10 Clearance: Load Over Height	3354 mm	11'0"	3561 mm	11'8"
** 11 Clearance: Level Bucket	3641 mm	11'11"	4222 mm	13'10"
** 12 Height: Bucket Pin	3969 mm	13'0"	4550 mm	14'11"
** 13 Height: Overall	5273 mm	17'4"	5853 mm	19'2"
* 14 Reach: Bucket at 45 degrees	1146 mm	3'9"	1413 mm	4'8"
15 Carry Height: Bucket Pin	394 mm	1'4"	612 mm	2'0"
** 16 Dig Depth	101 mm	4.0"	135 mm	5.3"
17 Width: Bucket	2750 mm	9'0"	2750 mm	9'0"
18 Width: Tread Center	2083 mm	6'10"	2083 mm	6'10"
19 Turning Radius: Over Bucket	6120 mm	20'1"	6483 mm	21'3"
20 Width: Over Tires	2693 mm	8'10"	2693 mm	8'10"
21 Turning Radius: Outside of Tires	5546 mm	18'2"	5546 mm	18'2"
22 Turning Radius: Inside of Tires	2843 mm	9'4"	2843 mm	9'4"
23 Rack Angle at Full Lift	54 degrees		53 degrees	
24 Dump Angle at Full Lift	49 degrees		47 degrees	
25 Rack Angle at Carry	43 degrees		48 degrees	
26 Departure Angle	33 degrees		33 degrees	
27 Articulation Angle	40 degrees		40 degrees	
* Tipping Load – Straight (ISO 14397-1)	11 729 kg	25,857 lb	8660 kg	19,091 lb
* Tipping Load – Full Turn (ISO 14397-1)	9949 kg	21,934 lb	7271 kg	16,030 lb
* Breakout	13 167 kg	29,028 lb	12 660 kg	27,910 lb
* Operating Weight	16 229 kg	35,778 lb	16 556 kg	36,499 lb

\*Vary with bucket.

\*\*Vary with tire.

Dimensions listed are for a machine configured with 2.5 m<sup>3</sup> (3.2 yd<sup>3</sup>) general purpose Fusion™ bucket, bolt-on cutting edge, heavy counterweights, additional guarding, 80 kg (176 lb) operator and Michelin 20.5 R25 (L-3) XHA2 tires.

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## STANDARD EQUIPMENT

### POWER TRAIN

- Axle Duo-Cone™ seal guards
- Auto idle shut down feature
- Cat C7.1 engine
  - Power modes (Standard and Performance)
  - Power by range (High Power in Range 4)
  - Turbocharged and aftercooled
  - Diesel particulate filter (Fit for Life)
- Coded start (requires secondary display)
- Differential lock in front axle
- Enclosed wet disc full hydraulic brakes
- Hydraulically driven demand cooling fan
- Hydrostatic transmission with electronic control
  - Operator modes (Default, TC, Hystat, and Ice)
  - Directional Shift Aggressiveness (fast, medium, slow)
  - Rimpull control, adjust wheel torque
  - Creeper control, adjust ground speed
- Parking brake, electric
- Single plane cooling package wide six fins per inch density
- Oil sampling ports
- Throttle lock and max speed limiter

### HYDRAULICS

- Automatic lift lower and tilt kickouts, adjustable in-cab
- Bucket and fork modes, adjustable in-cab
- Cylinder damping at kickout and mechanical end stops
- Fine mode control (fast, medium, slow)
- Hydraulic response setting (fast, medium, slow)
- Load sensing hydraulics and steering
- Seat-mounted hydraulic joystick controls

### ELECTRICAL

- Alternator, 115 amp, heavy duty
- Batteries, 1,000 CCA (2) 24V system, disconnect switch
- Back-up alarm
- Emergency shutdown switch
- Halogen work and roading lights, LED rear tail lights
- Product Link™ PRO with three year subscription
- Remote jump start post
- Resettable main and critical function breakers

### OPERATOR ENVIRONMENT

- 75 mm (3 in) High-Vis retractable seat belt, with audible alarm and indicator
- Automatic temperature control
- Cab, pressurized
- Camera, rearview, with dedicated display
- External heated mirrors with lower parabolic
- Ground level cab door release
- Hydraulic control lockout
- Mirror, single
- Lunch box storage
- Radio ready speakers
- Rear window defrost, electric
- Column mounted multi function control – lights, wipers, turn signal
- Tilt and telescopic steering wheel
- Tinted front glass
- Wet arm wiper/washer, 2-speed and intermittent, front, lights, wipers, turn signal
- Suspension seat, fabric

### OTHER STANDARD EQUIPMENT

- Large-access enclosure doors with adjustable close/open force
- Cat optimized Z-bar linkage with parallel lift
- Recovery hitch, with pin
- Remote mounted lubrication points
- Lockable compartments and enclosures

## OPTIONAL EQUIPMENT

- Autolube, integrated in secondary display
- Auxiliary flow, third and fourth function
- Differential, limited slip, rear
- Beacon light, strobe
- Cab, deluxe (standard in Europe)
  - Camera, rearview integrated into advanced display
  - Electrically adjustable external heated mirrors (2)
  - Secondary display to enable features and adjust parameters
  - LED interior lighting
  - Sunscreen, front and rear
  - Touchscreen secondary display
  - Ride control adjustable speed activation
  - Preventative maintenance reminders
  - Integrated help function (26 languages)
- Camera, roof mounted, front view with separate display
- Cold start package
  - Ether starting aid, block heater and additional batteries, 1,000 CCA (4 total)
- Counterweight, additional options
- Coupler, (Fusion and ISO 23727)
- Debris packages (low, medium, high)
- Fenders (extended cover and full coverage)
- Guarding packages
- Linkage, high lift
- Lights, auxiliary, halogen or LED with engine and DEF compartment lights
- Payload Technology
  - Cat Production Measurement (CPM)
  - CPM Printer
- Product Link ELITE with capabilities for software push, data logging, histogram and trend mapping
- Radio packages
- Rear Object Detection
- Ride Control System, adjustable through secondary display
- Seats
  - Deluxe seat – fully adjustable fabric air suspension seat with mid seat backrest
  - Premium seat – fully adjustable leather and fabric air suspension with high backrest and air lumbar support. Seat is heated and ventilated on bottom cushion and backrest.
- Steering
  - Dual mode and secondary
- Tire Pressure Monitoring (TPM)

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