

# PRODUCT SPECIFICATIONS FOR 938M

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## ENGINE

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<b>Maximum Gross Power</b>	190 HP
<b>Displacement (Standard Power Mode: Speed Range 1-3*)</b>	427 in <sup>3</sup>
<b>Maximum Rated Gross Power - Maximum Engine Speed (Standard Power Mode: Range 1-3*)</b>	1600 r/min
<b>Rated Net Power - 1,800 rpm - SAE J1349 at Minimum Fan Speed (Performance Power Mode: Range 1-4)</b>	183 HP
<b>Maximum Gross Torque - ISO 14396 (Standard Power Mode: Range 1-3*)</b>	642 ft·lbf
<b>Maximum Rated Gross Power - ISO 14396 (DIN) (Standard Power Mode: Range 1-3*)</b>	176 HP
<b>Maximum Net Torque - SAE J1349 (Performance Power Mode: Range 1-4)</b>	649 ft·lbf
<b>Maximum Rated Gross Power - ISO 14396 (Standard Power Mode: Range 1-3*)</b>	173 HP
<b>Rated Net Power - 1,600 rpm - ISO 9249 (DIN) at Minimum Fan Speed (Standard Power Mode: Range 1-3*)</b>	172 HP
<b>Maximum Net Torque - SAE J1349 (Standard Power Mode: Range 1-3*)</b>	627 ft·lbf
<b>Rated Net Power - 1,800 rpm - ISO 9249 (DIN) at Minimum Fan Speed (Performance Power Mode: Range 1-4)</b>	186 HP
<b>Maximum Rated Gross Power - Maximum Engine Speed (Performance Power Mode: Range 1-4)</b>	1800 r/min
<b>Maximum Gross Torque - ISO 14396 (Performance Power Mode: Range 1-4)</b>	664 ft·lbf
<b>Displacement (Performance Power Mode: Speed Range 1-4)</b>	427 in <sup>3</sup>

**Note (1)**

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.

<b>Engine Model</b>	Cat C7.1 ACERT**
<b>Rated Net Power - 1,600 rpm - SAE J1349 at Minimum Fan Speed (Standard Power Mode: Range 1-3*)</b>	170 HP
<b>Maximum Rated Gross Power - ISO 14396 (Performance Power Mode: Range 1-4)</b>	188 HP
<b>Note (2)</b>	*Range 4 power and torque is equal to Performance Mode with Caterpillar Power by Range technology.
<b>Maximum Rated Gross Power - ISO 14396 (DIN) (Performance Power Mode: Range 1-4)</b>	190 HP
<b>Note (3)</b>	**The Cat C7.1 ACERT engine meets Tier 4 Final/Stage V off-highway emission standards.
<b>Rated Net Power - 1,600 rpm - ISO 9249 at Minimum Fan Speed (Standard Power Mode: Range 1-3*)</b>	170 HP
<b>Maximum Net Torque - ISO 9249:2007 (Standard Power Mode: Range 1-3*)</b>	628 ft·lbf
<b>Rated Net Power - 1,800 rpm - ISO 9249 at Minimum Fan Speed (Performance Power Mode: Range 1-4)</b>	184 HP
<b>Maximum Net Torque - ISO 9249:2007 (Performance Power Mode: Range 1-4)</b>	650 ft·lbf

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#### BUCKETS

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<b>Bucket Capacities</b>	2.5-5 m <sup>3</sup> (3.2-6.5 yd <sup>3</sup> )
<b>Bucket Capacities - Light Material</b>	3.1-5 m <sup>3</sup> (4.0-6.5 yd <sup>3</sup> )
<b>Bucket Capacities - General Purpose</b>	2.5-3.2 m <sup>3</sup> (3.2-4.2 yd <sup>3</sup> )

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#### WEIGHTS

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<b>Operating Weight</b>	35778 lb
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## CAB

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### **ROPS**

ISO 3471:2008

### **FOPS**

ISO 3449:2008 Level II

### **Note (3)**

\*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.

### **Note (1)**

Cab and Rollover Protective Structures (ROPS) are standard in North America and Europe.

### **Note (2)**

The declared dynamic operator sound pressure levels per ISO 6396:2008\*, when properly installed and maintained, are:

- Standard cab:  $68 \pm 3$  dB(A)
- Deluxe cab:  $66 \pm 2$  dB(A)

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## SERVICE REFILL CAPACITIES

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### **Transmission - Gear Box**

2.9 gal (US)

### **Engine Crankcase**

5.3 gal (US)

### **Hydraulic System - Including Tank**

44.9 gal (US)

### **Rear Axles**

9.2 gal (US)

### **Front Axles**

9.2 gal (US)

### **Diesel Exhaust Fluid (DEF) Tank**

5 gal (US)

### **Note**

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

### **Hydraulic Tank**

23.8 gal (US)

### **Fuel Tank**

51.5 gal (US)

### **Cooling System**

7.9 gal (US)

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## LOADER HYDRAULIC SYSTEM

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**Note (1)**

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

**Hydraulic Cycle Time - Performance Mode at 1,800 rpm - Raise, Ground Level to Maximum Lift**

5.5 s

**Hydraulic Cycle Time - Performance Mode at 1,800 rpm - Total Cycle Time**

9.7 s

**Relief Pressure - Tilt Cylinder**

4351 psi

**Hydraulic Cycle Time - Standard Mode at 1,600 rpm - Total Cycle Time**

10.6 s

**Maximum Working Pressure - Implement Pump**

4061 psi

**Relief Pressure - Tilt Cylinder - 3rd and 4th Function Maximum Working Pressure**

4061 psi

**Hydraulic Cycle Time - Standard Mode at 1,600 rpm - Dump, at Maximum Lift Height**

1.7 s

**Hydraulic Cycle Time - Performance Mode at 1,800 rpm - Dump, at Maximum Lift Height**

1.5 s

**Hydraulic Cycle Time - Standard Mode at 1,600 rpm - Raise, Ground Level to Maximum Lift**

6.2 s

**Hydraulic Cycle Time - Performance Mode at 1,800 rpm - Float Down, Maximum Lift to Ground Level**

2.7 s

**Maximum Flow - Implement Pump - 4th Function Maximum Flow\***

42 gal/min

**Relief Pressure - Tilt Cylinder - 3rd and 4th Function Relief Pressure**

4351 psi

**Hydraulic Cycle Time - Standard Mode at 1,600 rpm - Float Down, Maximum Lift to Ground Level**

2.7 s

**Maximum Flow - Implement Pump**

50 gal/min

**Maximum Flow - Implement Pump - 3rd Function Maximum Flow\***

50 gal/min

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**STEERING**

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**Maximum Working Pressure - Steering Pump**

3500 psi

<b>Steering Articulation Angle - Each Direction</b>	40°
<b>Maximum Flow - Steering Pump</b>	34 gal/min
<b>Number of Steering Wheel Turns - Full Left to Full Right or Full Right to Full Left</b>	3.3 turns
<b>Maximum Steering Torque - 0° (Straight Machine)</b>	42506 ft·lbf
<b>Maximum Steering Torque - 40° (Full Turn)</b>	31398 ft·lbf
<b>Steering Cycle Times - Full Left to Full Right - At 1,800 rpm: 90 rpm Steering Wheel Speed</b>	2.3 s

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## TRANSMISSION

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<b>Forward and Reverse - Range 3</b>	17 mile/h
<b>Forward and Reverse - Range 4</b>	25 mile/h
<b>Note</b>	*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).
<b>Forward and Reverse - Range 1*</b>	1-13 km/h (0.6-8 mph)
<b>Forward and Reverse - Range 2</b>	8 mile/h

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## SOUND

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<b>Note (1)</b>	European Union Directive "2000/14/EC"
<b>Average Exterior Sound Pressure (ISO 6395:2008)</b>	101 dB(A)
<b>Operator Sound Pressure (ISO 6396:2008)</b>	72 dB(A)

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## TIRES

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<b>Note (1)</b>	Other tire choices are available. Contact your Cat dealer for details.
<b>Standard Size</b>	20.5 R25, radial (L-3)

**Note (2)** In certain applications, the loader's productive capabilities may exceed the tire's tonnes-km/h (ton-mph) capabilities.

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

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**Note (3)** Caterpillar recommends that you consult a tire supplier to evaluate all conditions before selecting a tire model.

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## AXLES

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**Rear** Oscillating  $\pm 11$  degrees; Open differential (standard); Limited slip differential (optional)

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**Front** Fixed; Locking differential (standard)

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## AIR CONDITIONING SYSTEM

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**Air Conditioning** 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.

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## 938M STANDARD EQUIPMENT

### POWER TRAIN

Auto idle shut down feature

Cat C7.1 ACERT engine

- Power modes (Standard and Performance)
- Power by range (High Power in Range 4)
- Turbocharged and aftercooled
- Filtered crankcase breather
- Diesel particulate filter
- Selective Catalyst Reduction

Coded start (requires secondary display)

— **Start frequency secondary display** —

Coolant protection to  $-34^{\circ}\text{ C}$  ( $-29^{\circ}\text{ F}$ )

Enclosed wet disc full hydraulic brakes

Fuel priming pump, automatic

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

Throttle lock and max speed limiter

## HYDRAULICS

Automatic lift and bucket 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) in fork mode

Hydraulic response setting (fast, medium, slow)

Hydraulic diagnostic connectors and S-O-SSM ports

Load sensing hydraulics and steering

## ELECTRICAL

Alternator, 115 amp, heavy duty

12V power supply in cab (2)

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

— **Start frequency secondary display** —

Resettable main and critical function breakers

#### OPERATOR ENVIRONMENT

75 mm (3 in) retractable seat belt, with audible alarm and indicator

Automatic temperature control

External heated mirrors with lower parabolic

Hydraulic control lockout

Interior cab lighting, door and dome

Interior rearview mirrors (2)

Lunch box storage

Radio ready speakers

Rear window defrost, electric

Seat-mounted electronic implement controls, adjustable

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

#### OTHER STANDARD EQUIPMENT

Large-access enclosure doors with adjustable close/open force

Parallel lift loader linkage

#### EU STANDARD EQUIPMENT

Deluxe cab

Secondary display

Rearview camera

## 938M OPTIONAL EQUIPMENT

#### OPTIONAL EQUIPMENT

Autolube, integrated in secondary display

Auxiliary flow, third and fourth function, adjustable through secondary display

Beacon light strobe

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Cab, deluxe (standard in Europe, optional in North America)

- Electrically adjustable external heated mirrors (2)
- Secondary display to enable features and adjust parameters
- Sunscreen, front and rear

Camera, rearview (standard in Europe)

Cold start package

Counterweight, (heavy and logger)

Coupler, (Fusion and ISO 23727)

Debris packages (low, medium, high)

Fenders (extended cover and full coverage)

Guarding (machine and operator)

Linkage, high lift

Lights, auxiliary, halogen or LED with engine and DEF compartment lights

Object Detection

Product Link ELITE with capabilities for software push, data logging, histogram and trend mapping

Radio packages

Ride Control System, adjustable through secondary display

Seats

- Deluxe seat – fully adjustable fabric air suspension seat with mid backrest and mechanical lumbar support
- 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

NOTE: Not all features are available in all regions.