

# 120M2/120M2 AWD

Motor Graders



## Engine

Engine Model	Cat® C7.1 ACERT™	
Base Power (1st gear) – Net	108 kW	145 hp
Base Power (1st gear) – Net (metric)		147 hp
VHP Plus Range – Net	108-141 kW	145-189 hp
VHP Plus Range – Net (metric)		147-192 hp
AWD Range – Net	114-156 kW	153-209 hp
AWD Range – Net (metric)		155-212 hp

## Emissions

U.S. EPA Tier 4 Interim/EU Stage IIIB equivalent

## Moldboard

Blade Width	3.7 m	12 ft
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## Weights

Operating Weight, Typically Equipped	18 095 kg	39,892 lb
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## Weights – AWD

Operating Weight, Typically Equipped	18 987 kg	41,859 lb
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## 120M2/120M2 AWD Features

### Operator Station

*A revolutionary cab design provides unmatched comfort, visibility and ease of use, making the operator more confident and productive.*

### Engine and Power Train

*Combining power management with advanced technology delivers maximum power and efficiency while reducing the environmental impact. M Series 2 Motor Graders perform at U.S. EPA Tier 4 Interim/ EU Stage IIIB equivalent emission levels using U.S. EPA and EU Flex provisions.*

### Structures, Drawbar, Circle and Moldboard

*Durable structures with fast and simple DCM adjustments deliver precise material control while lowering operating costs.*

### Hydraulics

*The M Series 2 Motor Grader electro-hydraulics enable advanced machine controls with precise and predictable movements.*

### Integrated Technologies

*Cat<sup>®</sup> Connect makes smart use of technology and services to help you monitor, manage and enhance job site operations.*

### All Wheel Drive (AWD)

*Maximum productivity with six powered wheels. Hydrostatic Mode powers only the front wheels, perfect for precise finish work. Steering Compensation adjusts the outside front tire speed for tighter turns, less scuffing and tire wear, and improved control.*

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**The M Series 2 continues the legacy of quality already established by Cat Motor Graders. The extensive validation program, combined with improvements to the manufacturing process, allows Caterpillar to further enhance our quality.**

**The end result of this development process is a motor grader line with breakthrough technologies, tested in the field and built around real applications and real customer needs. M Series 2 Motor Graders meet Tier 4 Interim/Stage IIIB equivalent emission standards.**



# Operator Station

Comfort, productivity, advanced technology

## Visibility

Angled cab doors, a tapered engine enclosure and patented sloped rear window assure excellent visibility to the work area.

## Maximum Control, Maximum Comfort

Caterpillar has built the most comfortable cab in the industry, replacing the control levers and steering wheel with two joystick controls, and lengthening the cab for more leg room. Machine design features, like angled doors, provide excellent visibility.

## Operator Comfort

The Cat Comfort Series suspension seat and arm/wrist rests are fully adjustable for improved comfort and productivity. Extra leg room, easy-to-reach long-life rocker switches and revolutionary joystick controls make this the most comfortable cab in the industry.

## Standard HVAC System

The high capacity system dehumidifies and pressurizes the cab, circulates fresh air, seals out dust and keeps windows clear.

## Low Interior Sound and Vibration Levels

Multiple isolation mounts along with relocated hydraulic pump and valves significantly improve operator comfort and productivity.

## In-Dash Instrument Cluster

Easy-to-read, high-visibility gauges and warning lamps keep the operator aware of critical system information.

# Steering and Implement Controls

## Unprecedented precision and ease of operation

### Ease of Operation

Two electro-hydraulic joysticks require up to 78% less hand and wrist movement than conventional lever controls for greatly enhanced operator comfort and efficiency. The intuitive control pattern allows both new and experienced operators to quickly become productive.

Electronically adjustable control pods help position joysticks for optimal comfort, visibility and proper operation.

### Joystick Functions

- The left joystick primarily controls the machine direction and speed including steering, articulation, return-to-center, wheel lean, gear selection, left moldboard lift cylinder and float.
- The right joystick primarily controls drawbar, circle and moldboard functions including right moldboard lift cylinder and float, moldboard slide and tip, circle turn, drawbar center shift, electronic throttle control and manual differential lock/unlock.

### Intuitive Steering Control

Joystick lean angle mirrors the steer tires' turning angle. A brake tensioning system holds the joystick in position until the operator moves it. The steering control automatically reduces steering sensitivity at higher ground speeds for comfortable and predictable control.

### Electronic Throttle Control

Provides easy, precise and consistent throttle operation. An automatic/manual mode switch offers flexibility for different applications and operator preferences.

### Articulation Return-to-Center

Automatically returns the machine to a straight frame position from any angle with the touch of a button.

### Auxiliary Pod and Ripper Control (Optional)

Ergonomically positioned to allow simple, comfortable operation for the multiple hydraulic options.

- Four fingertip controls and a mini joystick maximize control of up to six hydraulic circuits. Individual functions can be programmed with Electronic Technician (Cat ET). The auxiliary hydraulic pod is provided when the machine is configured with three or more auxiliary functions.
- Infinitely variable roller switches provide precise control of the rear ripper and/or front lift group (when equipped).



### Optional Advanced Control Joysticks

Cat Advanced Control Joysticks allow the operator to easily control automated grading solutions, Cat GRADE with Cross Slope, AccuGrade™, and Snow Wing. Both new and experienced operators can also configure auxiliary hydraulic functions (such as ripper, front plow blade, etc.) without taking their hands off the controls decreasing fatigue, increasing productivity.



# Engine

## Power and reliability

## Emissions Technology

Reliable, integrated solutions

### Cat NO<sub>x</sub> Reduction System

The Cat NO<sub>x</sub> Reduction System captures and cools a small quantity of exhaust gas, then routes it into the combustion chamber where it drives down combustion temperatures and reduces NO<sub>x</sub> emissions.

### Aftertreatment Technologies

To meet Tier 4 Interim/Stage IIIB equivalent emission standards and beyond, Cat aftertreatment components have been designed to match application needs. System components include a **Diesel Oxidation Catalyst (DOC)**, which uses a chemical process to convert regulated emissions in the exhaust system, and a **Diesel Particulate Filter (DPF)** that traps particulate matter that is carried into the exhaust stream.

The DOC, DPF and Cat Regeneration System are contained in a Caterpillar designed Clean Emission Module (CEM) that protects the components, minimizes the aftertreatment footprint and simplifies maintenance.

### Cat Regeneration System

The Cat Regeneration System is designed to work transparently, without any interaction needed from the operator. Under most operating conditions, engine exhaust is hot enough to oxidize soot through passive regeneration. If supplemental regeneration is needed, the Cat Regeneration System elevates exhaust gas temperatures to remove soot in the Diesel Particulate Filter (DPF). This is a process that happens automatically, but the operator can initiate the cycle when convenient or interrupt regeneration as needed. A soot level monitor can be viewed on the Cat Messenger screen and regeneration indicator lights are integrated into the front console.

A C7.1 ACERT engine and Cat Clean Emissions Module deliver the performance and efficiency that customers demand, while meeting Tier 4 Interim/Stage IIIB equivalent emission standards.

The C7.1 ACERT has superior torque and lugging capability to pull through sudden, short-term loads and maintain consistent, desirable grading speeds to get work done faster without downshifting. The High Pressure Common Rail Fuel System improves precision and control with full electronic injection that boosts performance and reduces soot.

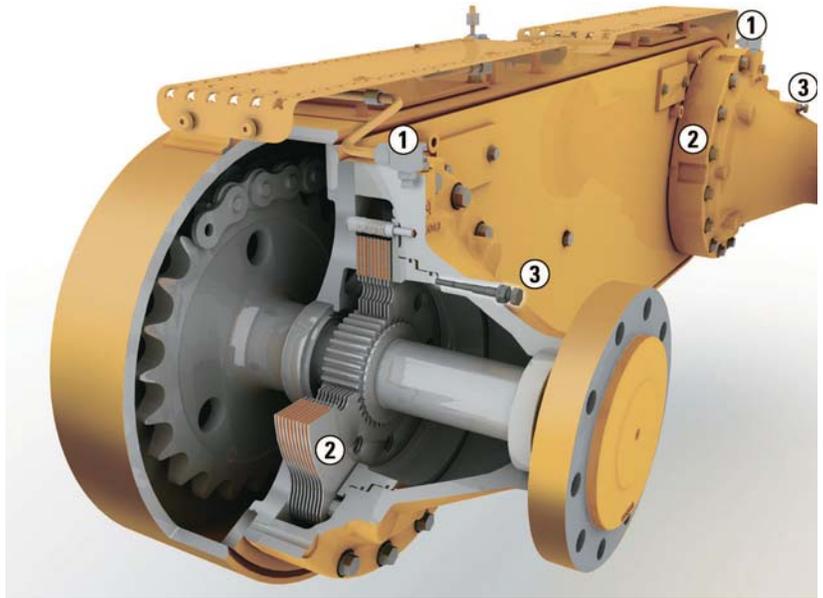
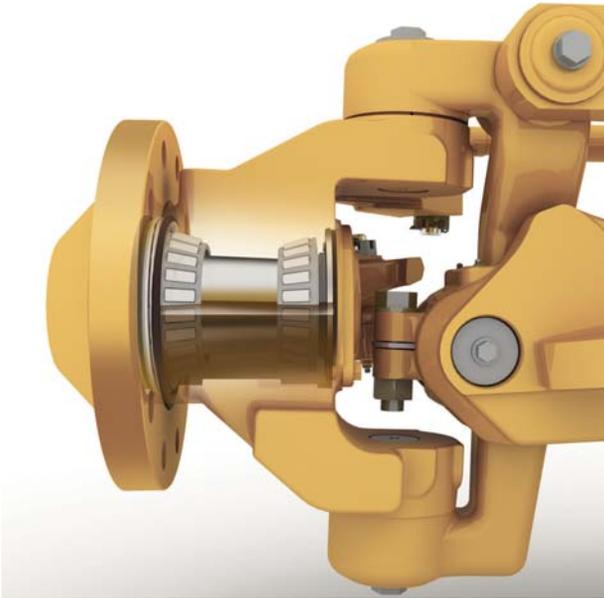
### Hydraulic Demand Fan

The hydraulic demand fan automatically adjusts cooling fan speed according to engine cooling requirements. This reduces demand on the engine, putting more horsepower to the ground and improves fuel efficiency. Swing-out design allows easy access to cooling cores and reduces clean out time.



# Power Train

## Maximum power to the ground



### Automatic Differential Lock

Unlocks the differential during a turn, re-locks when straight, for easier operation and lower power train protection.

### Front Axle

The Cat sealed spindle keeps bearings free from contaminants and lubricated in a light weight oil. The Cat “Live Spindle” design places the larger tapered roller bearing outboard where the load is greater, extending bearing life.

### Inching Pedal

Allows precise control of machine movements and excellent modulation, critical in close-quarter work or finish grading.

### Smooth Shifting Transmission

Several key innovations ensure smooth, powerful shifts.

- Full Electronic Clutch Pressure Control (ECPC) system optimizes inching modulation for smooth shifts and directional changes, reducing stress on gears.
- Controlled Throttle Shifting helps to smooth directional and gear changes without using the inching pedal.
- Load Compensation ensures consistent shift quality regardless of blade or machine load.

- This standard feature automatically shifts the transmission at optimal points so the operator can focus on the work to help improve safety, productivity and ease of operation.
- Power Shift Countershaft Transmission and the Cat C7.1 engine maximize power to the ground. Eight forward/six reverse gears optimize productivity.
- Engine Over-Speed Protection prevents downshifting until an acceptable safe travel speed has been established.

### Bolt-On Modular Rear Axle

Improves serviceability and contamination control with easy access to differential components.

### Hydraulic Brakes

Hydraulically actuated, oil bathed, multi-disc service brakes at each tandem wheel (1) offer the industry’s largest total brake surface area (2) for dependable stopping power and long brake life. The brake wear indicator/compensator system (3) maintains brake performance and indicates brake wear without disassembly, for fast servicing and longer brake service life. The spring-applied, hydraulically released multi-disc parking brake, sealed and oil-cooled for long life and low service, is integrated into the Operator Presence System to prevent unintended machine movement.

# Structures and DCM

Service ease and precise blade control

## Heavy Duty Durability

The frame, drawbar and one-piece forged steel circle are designed for durability in heavy duty applications. The strong A-frame drawbar uses a durable tubular design. The front 240° of circle teeth are hardened to reduce wear and ensure component reliability.

## Articulation Hitch

A large tapered roller bearing at the lower pivot carries loads evenly and smoothly. Sealed to prevent contamination, a locking pin prevents articulation for safety during service or transport.

## Aggressive Blade Angle

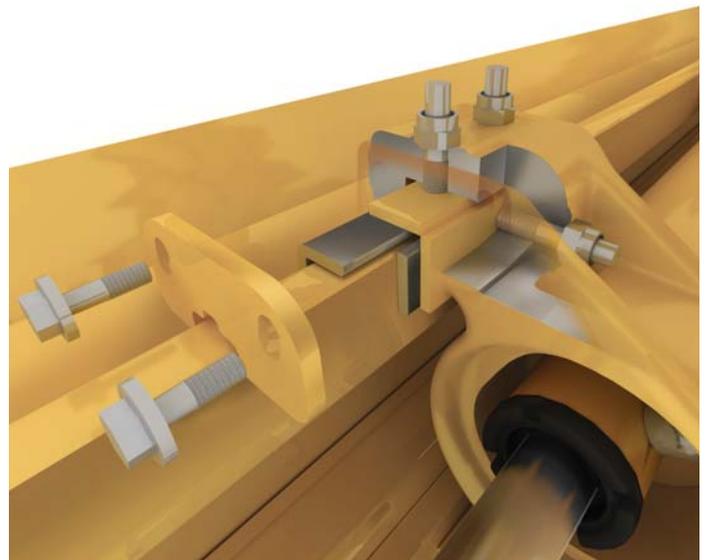
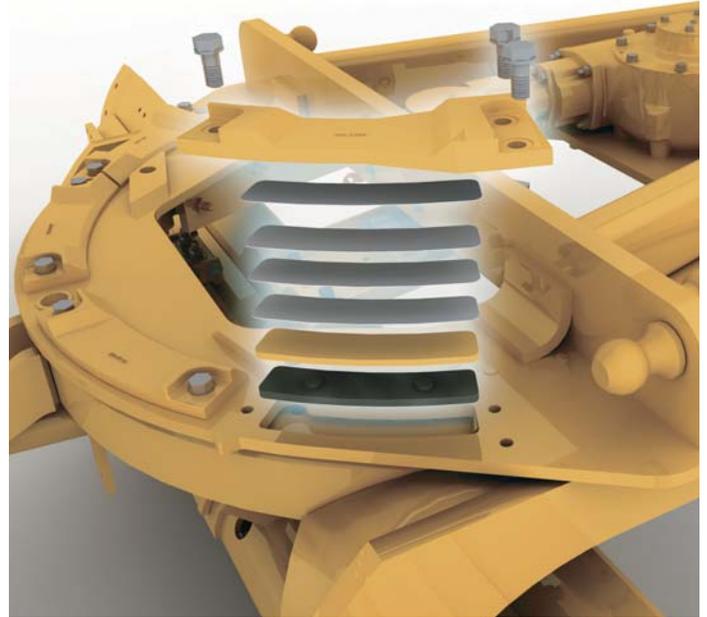
Allows material to roll more freely along the blade, particularly dry materials or cohesive soils. Better material control gets the job done faster, requires less power and saves fuel.

## Fast, Easy Adjustment Means Tight Components

Shims and patented top-adjust wear strips are easy to add or replace, dramatically reducing downtime and operating costs. Durable nylon composite wear inserts maximize circle torque and component life. Sacrificial brass wear strips between the blade mounting group and moldboard can be replaced easily. Shimless Moldboard Retention System uses vertical and horizontal adjusting screws to keep moldboard wear strips aligned for reduced blade chatter, precise blade control and dramatic reductions in service time.

## Moldboard

Heat-treated rails, hardened cutting edges and end bits, and heavy duty bolts assure reliability and long service life. The link bar allows extreme moldboard positioning for bank sloping, ditch cutting and cleaning.



# “Smart” Machine Systems

Advanced diagnostics

Sharing key data among systems helps optimize machine performance and aids serviceability.

- Cat Messenger, combined with full systems integration, enhances diagnostic capability. Machine system errors are displayed in both text and fault codes for quick analysis of critical data.
- Electronic Technician (Cat ET) lets service technicians access stored diagnostic data and configure machine parameters through the Cat Data Link.
- Low Battery Elevated Idle raises idle speed when low system voltage is detected, ensuring adequate system voltage and improving battery reliability.
- Automatic Engine Deration protects the engine and aftertreatment by automatically lowering engine torque output and alerting the operator if critical conditions are detected.



## All-Wheel Drive (AWD)

Expanded machine versatility

### All Wheel Drive (AWD)

The AWD arrangement utilizes dedicated left and right pumps for precise hydraulic control. The infinitely variable pumps and motors maximize torque in each gear. This delivers the most power to the ground in the industry and increases productivity.

### Maximum Net Power

When AWD is engaged, flywheel horsepower is automatically increased up to an additional 45 kW (60 hp) from base power. This offsets the parasitic losses and maximizes net power to the ground for increased productivity.

### Hydrostatic Mode

Standard with AWD, this mode disengages the transmission and provides hydraulic power to the front wheels only. The ground speed is infinitely variable between 0-8 km/h (0-5 mph), perfect for precise finish work.

### Steering Compensation

Cat Steering Compensation System enables a “powered turn” by adjusting the outside front tire speed up to 50% faster than the inside tire. The result is improved control, less damage to surfaces and a dramatic reduction of turning radius in poor underfoot conditions.



# Integrated Technologies

Monitor, manage, and enhance job site operations



Cat Connect makes smart use of technology and services to improve your job site efficiency. Using the data from technology-equipped machines, you'll get more information and insight into your equipment and operations than ever before.

## LINK Technologies

LINK technologies, like Product Link™, are deeply integrated into your machine and wirelessly communicates key information, including location, hours, fuel usage, idle time and event codes.

## Product Link/VisionLink®

Easy access to Product Link data via the online VisionLink user interface can help you see how your machine or fleet is performing. You can use this information to make timely, fact based decisions that can boost job site efficiency and productivity, and lower costs.



## GRADE Technologies

Grade technologies combine digital design data and in-cab guidance to help you reach target grade quickly and accurately, with minimal staking and checking. That means you'll be more productive, complete jobs faster, in fewer passes, using less fuel, at a lower cost.



## Cat GRADE with Cross Slope

Cat GRADE with Cross Slope is an integrated 2D system that provides automated control to one side of the blade to help operators more easily achieve accurate surface cross slope. The system calculates blade slope positioning and adjusts the left or right cylinder to achieve target slope, reducing operator inputs by up to 50%. The operator can select which side of the blade to control automatically and swap direction on the return pass without readjusting the settings. Elevation is controlled manually by matching grade or automatically by adding an elevation control device, such as a sonic or laser. The operator can monitor cross slope in real-time on the in-cab display and make quick adjustments using integrated joystick buttons while keeping hands on the controls.

Cross slope systems are ideal for maintaining accurate cross slope over long distances with greater consistency and less effort. Add AccuGrade for additional 2D and/or 3D control.



## Cat AccuGrade™

The dealer-installed AccuGrade system uses a dedicated monitor with a digital design plan for 3D blade slope and elevation control. AccuGrade indicates precisely where to work and how much to cut or fill – eliminating staking and checking. Plug and play capability simplifies upgrading. Choose from sonic or laser for flat planes and slopes, and satellite (GNSS) or total station (UTS) control for large complex designs.

## Stable Grade

Optional Stable Grade detects and reduces machine bounce during operation before it negatively affects the desired grade by reducing engine rpm at 15% intervals as needed to stabilize machine bounce. Once the motor grader has stabilized, Stable Grade modulates increased speed back to the set level.



# Hydraulics

## Advanced machine control

### Advanced Electro-Hydraulic System

Incorporates a state-of-the-art electro-hydraulic system as the foundation for revolutionary changes in machine and advanced joystick controls.

### Blade Float

Allows the blade to move freely under its own weight. By floating both cylinders, the blade can follow the contours of the road, especially useful when removing snow. Floating only one cylinder permits the toe of the blade to follow a hard surface while the operator controls the slope with the other lift cylinder.

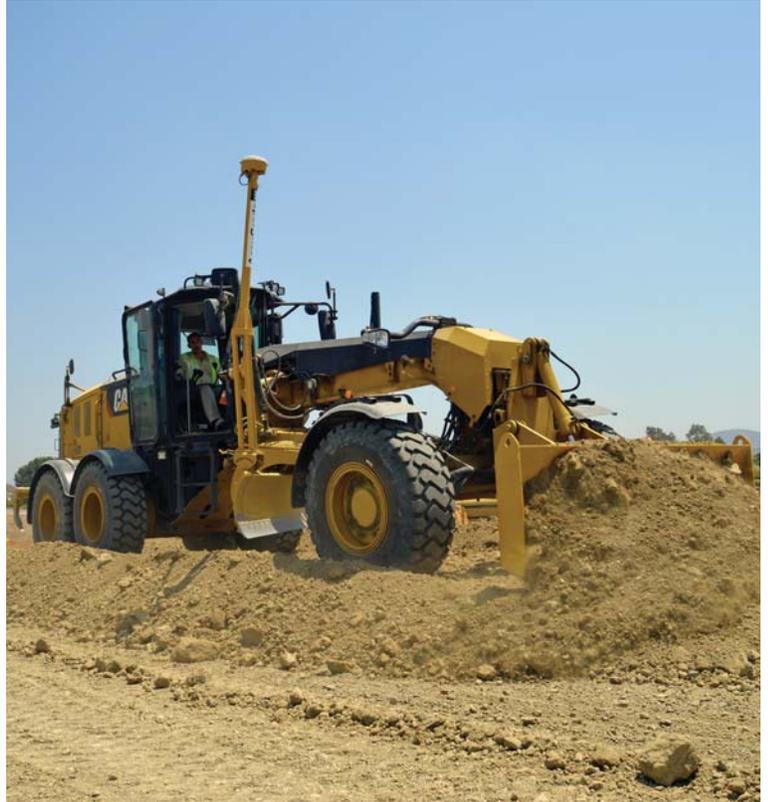
### Independent Oil Supply

Large, separate hydraulic oil supplies prevent cross-contamination and provide proper oil cooling, which reduces heat build-up and extends component life.

### Load Sensing Hydraulics (PPPC)

The proven load-sensing system and the advanced Proportional Priority Pressure-Compensating (PPPC or “triple P – C”) electro-hydraulic valves provide superior implement control and enhanced machine performance in all applications. Continuously matching hydraulic flow/pressure to power demands creates less heat and reduces power consumption.

- Consistent, Predictable Movement – PPPC valves have different flow rates for the head (red) and rod ends (blue) of the cylinder, ensuring consistent extension and retraction speeds.
- Balanced Flow – Hydraulic flow is proportioned so all implements operate simultaneously with little effect on the engine or implement speeds.



# Work Tools and Attachments

Equip your machine for the job



## Moldboard Options

Standard 3.7 m (12 ft) or optional 4.3 m (14 ft). Left and right side extensions are also available.

## Ground Engaging Tools (GET)

A variety of tools are available from Cat Work Tools, including cutting edges, graderbits and end bits, all designed for maximum service life and productivity.

## Front Mounted Groups

A front mounted push plate/counterweight or front lift group are available. The front lift group can be combined with a front dozer blade or front scarifier for added versatility.

## Rear Ripper/Scarifier

Made to penetrate tough material fast and rip thoroughly for easier movement with the moldboard. The ripper includes three shanks (with holders for five). Nine scarifier shanks can also be added for additional versatility.

## Snow Removal Work Tools

Multiple snow plow, snow wing and mounting options increase machine versatility and utilization throughout the year.

# Safety

## Protect your most valuable resource

### Designed with Protection in Mind

Features are designed to enhance operator and job site safety, such as drop-down rear lights and a rearview camera. Among many standard safety features are laminated glass, back-up lights, and perforated tandem walkways and grab rails.

### Operator Presence System

The parking brake remains engaged and hydraulic implements disabled until the operator is initially seated and the machine is ready for operation.

### Secondary Steering System

Automatically engages an electric hydraulic pump in case of a drop in steering pressure, allowing the operator to steer the machine to a stop.

### Hydraulic Lockout

A simple switch located in the cab disables all implement functions while still providing machine steering control. This safety feature is especially useful while roading.

### Brake Systems

Brakes are located at each tandem wheel to eliminate braking loads on the power train. Redundant brake systems utilize accumulators to enable stopping in case of machine failure, further increasing operational safety.

### Circle Drive Slip Clutch

This standard feature protects the drawbar, circle and moldboard from shock loads when the blade encounters an immovable object. It also reduces the possibility of abrupt directional changes in poor traction conditions.

### Blade Lift Accumulators (Optional)

This optional feature uses accumulators to help absorb impact loads to the moldboard by allowing vertical blade travel. Blade lift accumulators help reduce unnecessary wear and also help reduce impact loading for enhanced operator safety.

### Rearview Camera (Optional)

Visibility is further enhanced with an optional Work Area Vision System (WAVS) through a 178 mm (7 in) LCD color monitor in the cab. Developed specifically for rugged applications, this durable camera improves productivity and increases operator awareness of surroundings.

### Front and Rear Fenders (Optional)

To help reduce objects flying from the tires, as well as build-up of mud, snow and debris, optional fenders can be added.



# Customer Support

## Unparalleled worldwide support

### Renowned Dealer Service

From helping you choose the right machine to financing and ongoing support, your Cat dealer provides the best in sales and service.

Manage your costs with preventive maintenance programs like S-O-S<sup>SM</sup> analysis, Coolant Sampling and guaranteed maintenance contracts.

Stay productive with best-in-class parts availability. Your Cat dealer can even help boost your profits with operator training.

And when it's time for component replacement, your Cat dealer can help you save even more. Genuine Cat Remanufactured parts carry the same warranty and reliability as new products at savings of 40 to 70 percent for power train and hydraulic components.



# Sustainability

## Thinking generations ahead

M Series 2 Motor Graders are designed to benefit your business and reduce emissions.

- Cat engine and aftertreatment meet Tier 4 Interim/Stage IIIB equivalent emission standards.
- Integrated machine systems and technologies improve productivity for greater accuracy, lower fuel use and reduced machine wear.
- Replaceable wear parts save maintenance time and cost, and extend major component life.
- Major structures and components are built to be rebuilt, reducing waste and replacement costs.
- Extended service intervals reduce maintenance time/cost and waste.
- A variety of safety features help safeguard operators and others on the job site.



# 120M2/120M2 AWD Motor Graders Specifications

Engine		
Engine Model	Cat C7.1 ACERT	
Emissions	Tier 4 Interim/Stage IIIB equivalent	
Base Power (1st gear) – Net	108 kW	145 hp
Base Power (1st gear) – Net (metric)	147 hp	
VHP Plus Range – Net	108-141 kW	145-189 hp
VHP Plus Range – Net (metric)	147-192 hp	
AWD Range – Net	114-156 kW	153-209 hp
AWD Range – Net (metric)	155-212 hp	
Displacement	7.01 L	428 in <sup>3</sup>
Bore	105 mm	4.13 in
Stroke	135 mm	5.31 in
Torque Rise	45%	
Maximum Torque	939 N·m	693 lbf-ft
Speed @ Rated Power	2,100 rpm	
Number of Cylinders	6	
Derating Altitude	3048 m	10,000 ft
Hi Ambient – Fan Speed		
Standard	1,000 rpm	
Maximum	1,350 rpm	
Minimum	500 rpm	
Standard Capability	43° C	109° F
Hi Ambient Capability	50° C	122° F

VHP Plus – Gear		
1F, Net	108 kW	145 hp
2F, Net	114 kW	153 hp
3F, Net	120 kW	161 hp
4F, Net	126 kW	169 hp
5F, Net	130 kW	174 hp
6F, Net	134 kW	179 hp
7F, Net	137 kW	184 hp
8F, Net	141 kW	189 hp

- Net power is tested per ISO 9249, SAE J1349, and EEC 80/1269 Standards in effect at the time of manufacture.
- VHP Plus is a standard attachment for the 120M2; standard for the 120M2 AWD.
- Net power advertised is the power available at rated speed of 2,100 rpm, measured at the flywheel when engine is equipped with fan running at minimum speed, air cleaner, muffler and alternator.
- No engine derating required up to 3048 m (10,000 ft).
- Power as declared per ISO 14396  
Rated rpm 2,100  
VHP+ = 142 kW (190 hp)  
AWD = 157 kW (211 hp)
- All non-road Tier 4, Stage IIIB and IV certified diesel engines are required to use:
  - Ultra Low Sulfur Diesel (ULSD) and Sulfur-Free fuels that are 15 ppm (mg/kg) sulfur or less.
  - Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, and ACEA E9 specification.

# 120M2/120M2 AWD Motor Graders Specifications

## Power Train

Forward/Reverse Gears	8 Forward/6 Reverse	
Transmission	Direct Drive, Powershift	
Brakes		
Service	Multiple Oil Disc	
Service, Surface Area	23 000 cm <sup>2</sup>	3,565 in <sup>2</sup>
Parking	Multiple Oil Disc	
Secondary	Dual Circuit	

## Hydraulic System

Circuit Type	Parallel	
Pump Type	Variable Piston	
Pump Output	210 L/min	55.7 gal/min
Maximum System Pressure	24 150 kPa	3,500 psi
Reservoir Tank Capacity	60 L	15.85 gal
Standby Pressure	4200 kPa	609 psi

- Pump output measured at 2,150 rpm

## Operating Specifications

Top Speed		
Forward	45.7 km/h	28.4 mph
Reverse	36.1 km/h	22.4 mph
Turning Radius, Outside Front Tires	7.4 m	24 ft 3 in
Steering Range – Left/Right	47.5°	
Articulation Angle – Left/Right	20°	
Forward		
1st	4.0 km/h	2.5 mph
2nd	5.4 km/h	3.4 mph
3rd	7.8 km/h	4.9 mph
4th	10.8 km/h	6.7 mph
5th	16.8 km/h	10.4 mph
6th	22.8 km/h	14.2 mph
7th	31.4 km/h	19.5 mph
8th	45.7 km/h	28.4 mph
Reverse		
1st	3.1 km/h	1.9 mph
2nd	5.9 km/h	3.9 mph
3rd	8.5 km/h	5.3 mph
4th	13.2 km/h	8.2 mph
5th	24.8 km/h	15.4 mph
6th	36.1 km/h	22.4 mph

Calculated with no slip and 14.0R24 tires.

## Service Refill

Fuel Capacity	378 L	100 gal
Cooling System	49 L	12.9 gal
Hydraulic System		
Tank	64 L	16.9 gal
Engine Oil	30 L	7.9 gal
Trans./Diff./ Final Drives	62.5 L	16.5 gal
Tandem Housing (each)	59 L	15.6 gal
Front Wheel Spindle Bearing Housing	0.5 L	0.13 gal
Circle Drive Housing	7 L	1.8 gal

## Frame

Circle		
Diameter	1530 mm	60.2 in
Blade Beam Thickness	35 mm	1.4 in
Drawbar		
Height	152 mm	6.0 in
Width	76.2 mm	3.0 in
Thickness	9.5 mm	0.4 in
Front-Top/Bottom Plate		
Width	255 mm	10.0 in
Thickness	22 mm	0.87 in
Front Frame Structure		
Height	280 mm	11.0 in
Width	204 mm	8.0 in
Front Axle		
Height to Center	572 mm	22.5 in
Wheel Lean, Left/Right	18°	
Front Axle – Total Oscillation Per Side	32°	

- Front-top/bottom plate – width tolerance  $\pm 2.5$  mm (0.098 in)

## Tandems

Height	502 mm	19.8 in
Width	172 mm	6.8 in
Sidewall Thickness		
Inner	14 mm	0.5 in
Outer	16 mm	0.6 in
Drive Chain Pitch	44.5 mm	1.8 in
Wheel Axle Spacing	1510 mm	59.5 in
Tandem Oscillation		
Front Up	15°	
Front Down	25°	

# 120M2/120M2 AWD Motor Graders Specifications

## Moldboard

Blade Width	3.7 m	12 ft
Moldboard		
Height	610 mm	24 in
Thickness	22 mm	0.87 in
Arc Radius	413 mm	16.3 in
Throat Clearance	123.9 mm	4.9 in
Cutting Edge		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
End Bit		
Width	152 mm	6 in
Thickness	16 mm	0.6 in
Blade Pull		
Base GVW	10 767 kg	23,737 lb
Maximum GVW	13 599 kg	29,980 lb
Maximum GVW AWD	19 998 kg	44,088 lb
Blade Down Pressure		
Base GVW	6818 kg	15,030 lb
Maximum GVW	12 354 kg	27,235 lb

## Blade Range

Circle Centershift		
Right	656 mm	25.8 in
Left	656 mm	25.8 in
Moldboard Sideshift		
Right	660 mm	26 in
Left	510 mm	20.1 in
Maximum Blade Position Angle	90°	
Blade Tip Range		
Forward	40°	
Backward	5°	
Maximum Shoulder Reach Outside of Tires		
Right	1905 mm	75 in
Left	1742 mm	68.6 in
Maximum Lift Above Ground	427 mm	16.8 in
Maximum Depth of Cut	720 mm	28.3 in

## Ripper

Ripping Depth, Maximum	226.5 mm	8.9 in
Ripper Shank Holders	5	
Ripper Shank Holder Spacing	534 mm	21 in
Penetration Force	8024 kg	17,692 lb
Pryout Force	2567 kg	5,660 lb
Machine Length Increase, Beam Raised	1053 mm	41.5 in

## Scarifier

Front, V-Type: Working Width	1205 mm	47.4 in
Front, V-Type, 5 or 11 Tooth		
Working Width	1031 mm	40.6 in
Scarifying Depth, Maximum	467 mm	18.4 in
Scarifier Shank Holders	5/11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Mid, V-Type		
Working Width	1184 mm	46.6 in
Scarifying Depth, Maximum	292 mm	11.5 in
Scarifier Shank Holders	11	
Scarifier Shank Holder Spacing	116 mm	4.6 in
Mid, Straight		
Working Width	1800 mm	71 in
Ripping Depth, Maximum	317 mm	12.5 in
Scarifying Depth, Maximum	426 mm	16.8 in
Scarifier Shank Holders	17	
Scarifier Shank Holder Spacing	111 mm	4.4 in

## Weights

Gross Vehicle Weight, Base		
Total	15 887 kg	35,025 lb
Front Axle	3924 kg	8,651 lb
Rear Axle	11 963 kg	26,374 lb
Gross Vehicle Weight, Maximum		
Total	22 220 kg	48,987 lb
Front Axle	7110 kg	15,675 lb
Rear Axle	15 110 kg	33,312 lb
Operating Weight, Typically Equipped		
Total	18 095 kg	39,892 lb
Front Axle	4791 kg	10,563 lb
Rear Axle	13 304 kg	29,329 lb

# 120M2/120M2 AWD Motor Graders Specifications

## Weights – AWD

Gross Vehicle Weight, Base		
Total	16 880 kg	37,214 lb
Front Axle	4435 kg	9,777 lb
Rear Axle	12 445 kg	27,438 lb
Gross Vehicle Weight, Maximum		
Total	22 220 kg	48,987 lb
Front Axle	7110 kg	15,675 lb
Rear Axle	15 110 kg	33,312 lb
Operating Weight, Typically Equipped		
Total	18 987 kg	41,859 lb
Front Axle	5268 kg	11,614 lb
Rear Axle	13 719 kg	30,244 lb

- Base operating weight calculated on standard machine configuration with 14.0R24 tires, full fuel tank, coolant, lubricants and operator.
- Typically equipped operating weight is calculated with push block, rear ripper/scarifier, and other equipment.

## Standards

ROPS/FOPS	ISO 3471/ISO 3449
Steering	ISO 5010
Brakes	ISO 3450
Sound	ISO 6394; ISO 6395

- The static sound operator sound pressure level measured according to ISO 6394:2008 for a cab offered by Caterpillar, when properly installed, maintained and tested with doors and windows closed and engine cooling hydraulic fan at maximum speed is 70 dB(A).
- The dynamic spectator sound power level measured according to ISO 6395:2008 for the standard machine when equipped with optional sound suppression package and engine cooling hydraulic fan running at 70% of maximum speed, machine sound is 106 dB(A) for 120M2 and 120M2 AWD, complying with EU 2000/14/EC requirement.

## Tires

17.5 R25 Tire (14x25 Rim) Dimension Adjustments – Standard and AWD

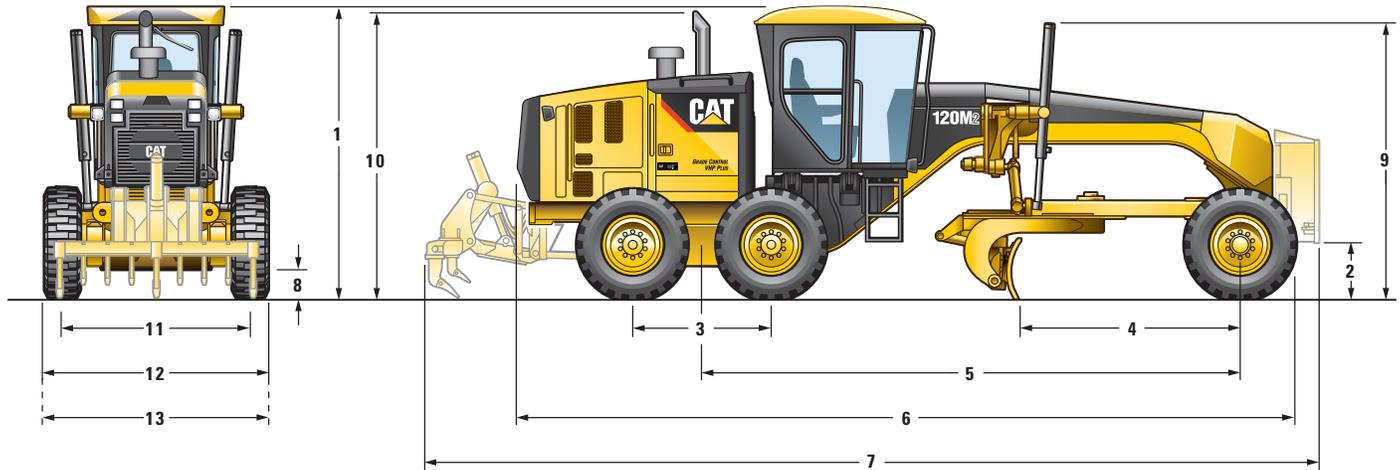
Height to Dimensions 1, 2, 8, 9, 10	-20 mm	-0.8 in
Length Front Tire to Rear of Machine Dimension 6	-15 mm	-0.6 in
Width to Tire Centerline Dimension 11	+103 mm	+4.1 in
Width to Tire Front/Rear Tires Dimensions 12, 13	+192 mm	+7.6 in

- Note: Dimension changes may vary by brand/type and inflation of tires.

# 120M2/120M2 AWD Motor Graders Specifications

## Dimensions

All dimensions are based on 14.0R24 tires.



<b>1</b>	Height – Top of Cab	3308 mm	130.2 in
<b>2</b>	Height – Front Axle Center	596 mm	23.5 in
<b>3</b>	Length – Between Tandem Axles	1510 mm	59.4 in
<b>4</b>	Length – Front Axle to Moldboard	2510 mm	98.8 in
<b>5</b>	Length – Front Axle to Mid Tandem	5917 mm	233 in
<b>6</b>	Length – Front Tire to Rear of Machine	8820 mm	347.2 in
<b>7</b>	Length – Counterweight to Ripper	10 032 mm	395.0 in
<b>8</b>	Ground Clearance at Rear Axle	348 mm	13.7 in
<b>9</b>	Height to Top of Cylinders	2917 mm	114.8 in
<b>10</b>	Height to Exhaust Stack	3258 mm	128.3 in
<b>11</b>	Width – Tire Center Lines	2119 mm	83.4 in
	Width – Tire Center Lines Front (AWD)	2223 mm	87.5 in
<b>12</b>	Width – Outside Rear Tires	2490 mm	98.0 in
<b>13</b>	Width – Outside Front Tires	2511 mm	98.9 in
	Width – Outside Front Tires (AWD)	2594 mm	102.1 in

# 120M2/120M2 AWD Motor Graders Specifications

## Optional Tire Arrangements

Wheel Group		Tires	Tire Arrangement Weight (Total – 6 Tires)	
9x24 SP	13.00-24	Firestone SGG RB 12PR	775 kg	1,709 lb
14x25 MP	17.5-25	Goodyear HRL DL 3A 16 PR	1487 kg	3,278 lb
14x25 MP	17.5R25	Michelin XHA 1 Star	1523 kg	3,357 lb
14x25 MP	17.5R25	Michelin XTLA 1 Star	1373 kg	3,026 lb
10x24 MP	14.0-24	Goodyear SGG-2A 16 PR	1173 kg	2,586 lb
10x24 MP	14.0R24	Michelin XGLA2 1 Star	1209 kg	2,666 lb
10x24 MP	14.0R24	Bridgestone VKT 1 Star	1371 kg	3,023 lb
10x24 MP	14.0R24	Michelin XSNO+ 1 Star	1305 kg	2,877 lb
10x24 MP	14.0R24	Bridgestone VUT 1 Star	1269 kg	2,798 lb
9x24 SP	14.0R24	Michelin XGLA2 1 Star	1049 kg	2,313 lb
14x25 MP	17.5R25	Bridgestone VKT 1 Star	1523 kg	3,357 lb
13x25 SP	17.5R25	Michelin XHA 1 Star	1320 kg	2,911 lb
13x25 SP	17.5R25	Michelin XTLA 1 Star	1170 kg	2,580 lb
<b>120M2 AWD</b>				
14x25 MP	17.5R25	Michelin XSNO+ 1 Star	1403 kg	3,094 lb
14x25 MP	17.5-25	Firestone SGG 12PR	1207 kg	2,661 lb
14x25 MP	17.5R25	Bridgestone VSW 1 Star	1673 kg	3,688 lb
10x24 MP	14.0R24	Bridgestone VSW 1 Star	1395 kg	3,076 lb

For a complete list of tire options, contact your local Cat dealer.

# 120M2/120M2 AWD Standard Equipment

## Standard Equipment

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

### POWER TRAIN

- Air cleaner, dual stage, dry type, diesel, with automatic engine derate and automatic dust ejector, service indicator through Cat Messenger
- Air-to-air after cooler (ATAAC)
- Belt, serpentine, automatic tensioner
- Brakes, oil disc, four-wheel, hydraulic
- Demand fan, hydraulic, swing-out
- Differential lock/unlock, automatic
- Drain, engine oil, ecology
- Electronic over speed protection
- Engine, C7.1 with ACERT Technology, Tier 4 Interim and Stage IIIB equivalent emission standards
- Fuel tank, 378 L (100 gal), ground level access and sediment drain
- Parking brake – multi-disc, sealed, oil-cooled
- Priming pump, fuel
- Rear axle, modular
- Sediment drain, fuel tank
- Tandem drive
- Transmission, 8F/6R, power shift, direct drive
- VHP Plus (Variable Horsepower)

### ELECTRICAL

- Alarm, back up
- Alternator, 150 ampere, sealed
- Batteries, maintenance free, heavy duty, 1,125 CCA
- Breaker panel, ground accessible
- Cab harness and electrical hydraulic valves
- Electrical system, 24V
- Grade Control Ready – Cab harness, software, electrical hydraulic valves, bosses and brackets
- Lights, roof-mounted roading, reversing, LED stop and tail
- Product Link Ready
- Starter, electric

### OPERATOR ENVIRONMENT

- Accelerator
- Air conditioning with heater
- Arm and wrist rest, electronically adjustable
- Articulation, automatic Return-to-Center
- Ashtray and lighter
- Cat Messenger operator information system
- Centershift pin indicator
- Coat hook
- Cup holder
- Display, digital speed and gear
- Doors, left and right side with wiper
- Gauge, machine level
- Gauge cluster (analog) – fuel, articulation, engine coolant temp, engine RPM, hydraulic oil temp, regen
- Hour meter, digital
- Joystick hydraulic controls right/left blade lift with float position, circle drive, blade sideshift and tip, centershift, front wheel lean, articulation and power steering
- Joystick, adjustable armrests
- Joystick gear selection
- Joystick hydraulic power steering
- Ladders, cab, left and right side
- Lights, night time cab
- Mirror, inside rearview, wide angle
- Power port, 12V
- Radio Ready, Entertainment
- ROPS cab, sound suppressed 70 dB(A)
- Seat, cloth-covered, comfort suspension
- Seat belt, retractable 76 mm (3 in)
- Storage area for cooler/lunchbox
- Throttle control, electronic
- Windows, laminated glass:
  - fixed front with intermittent wiper
  - side and rear (3)

### FLUIDS

- Antifreeze
- Extended Life Coolant to  $-35^{\circ}\text{C}$  ( $-30^{\circ}\text{F}$ )

### TIRES, RIMS AND WHEELS

- Partial allowance for tires on  $254 \times 607$  mm ( $10 \times 24$  in) multi-piece rims is included in the base machine price and weight

### OTHER STANDARD EQUIPMENT

- Accumulators, brake, dual certified
- Anti-glare paint
- Bumper, rear, integrated with hitch
- CD ROM Parts Book
- Clutch, circle drive slip
- Cutting edges
  - $152 \times 16$  mm ( $6 \times 5/8$  in)
  - curved DH-2 steel
  - 19 mm ( $3/4$  in) mounting bolts
- Doors (3), engine compartment, locking
- Drawbar – 6 shoes, replaceable wear strips
- Electrical hydraulic valves, hydraulic lines for base 8 functions
- Endbits
  - 16 mm ( $5/8$  in) DH-2 steel
  - 19 mm ( $3/4$  in) mounting bolts
- Fluid check, ground level
- Frame, articulated, with safety lock
- Ground level engine shutdown
- Hammer (emergency exit)
- Horn, electric
- Hydraulic lines for base functions
- Lockout, hydraulic implement (for roading and servicing)
- Moldboard –  $3658 \times 610 \times 22$  mm ( $12 \text{ ft} \times 24 \text{ in} \times 7/8 \text{ in}$ )
- Mounting, cab roof accessories
- Pump, hydraulic, high capacity,  $98 \text{ cm}^3$  ( $6 \text{ in}^3$ )
- Radiator, cleanout access (both sides with swing doors)
- Secondary steering
- Serviceability, LH side
- S·O·S ports: engine, hydraulic, transmission, coolant, fuel
- Tandem walkway/guards
- Tool box
- Tow hitch

## Optional Equipment

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

	kg	lb		kg	lb		kg	lb
<b>ELECTRICAL</b>			<b>POWER TRAIN</b>			<b>WORK TOOLS/G.E.T.</b>		
Alternator, 280 ampere	2	5	All Wheel Drive	590	1,300	Blade extension, left hand, 610 mm (2 ft)	113	249
<b>Batteries:</b>			Fuel tank, fast fill	14	31	Cutting edges, curved	43	95
extreme duty, 1,400 CCA	14	30	Oil, hydraulic, biodegradable synthetic	0	0	Endbits, overlay	24	52
Converter, communication (CB)	5	11	Precleaner, snow	2	4.4	Front lift group, mounting	5	11
<b>Lights:</b>			Starter, heavy duty, 1,000 Amp	10	22	Front lift group, mechanical	680	1,500
Headlights, high	5	11	Transmission, autoshift	2	5	Grader bit, narrow and super penetration	181	400
Headlights, low	5	11	<b>OTHER ATTACHMENTS</b>			Mid-Mount Scarifier, Package	942	2,077
Working lights, basic	9	20	AccuGrade ARO	39	85	Mid-Mount Scarifier, Mounting	57	125
Working lights, plus	10	22	Accumulators, blade lift	77	170	Moldboard		
Warning: beacon or strobe	2	5	Camera, rearview	9	20	4267 mm × 610 mm × 22 mm (14 ft × 24 in × 7/8 in)	100	220
Mounting for warning light	5	11	Cat Product Link 321SR	5	10	4267 mm × 686 mm × 25 mm (14 ft × 27 in × 1 in)	257	567
<b>GUARDS</b>			Drain, ecology, engine Wiggins	2	5	Push plate, counterweight	1285	2,833
Fenders, front	56	123	Fenders, front, AWD	56	124	Ripper, mounting	32	70
Fenders, rear	34	75	Fenders, rear	119	262	Ripper, rear	962	2,120
Sound suppression (bottom)	110	243	<b>Heater, engine coolant:</b>			Ripper tooth	28	61
Sound suppression (enclosure)	110	243	120V	1	3	Scarifier, front	434	956
Transmission	141	311	240V	1	3	Snow Arrangement	161	355
<b>OPERATOR ENVIRONMENT</b>			Hydraulic arrangements with one or more additional hydraulic valves are available for rear ripper, dozer, snow plow and snow wing.			Snow Wing Ready Package	114	355
Fan, defroster, rear window	2	4	Snow wing mounting, frame ready	91	200	<b>MACHINE ARRANGEMENTS</b>		
<b>Mirrors, outside:</b>			Sound suppression	15	32	Canadian Arrangement	2	4
heated 24V mounted	15	33	Starting aid, ether	0.5	1	European Arrangement	289	637
Precleaner, HVAC	5	10				European Roading Arrangement	451	994
Radio ready, AM/FM	9	20						
Seat, air suspension, cloth	2	5						
Shade, sun	2	5						
Wiper/washer, rear	2	4						

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