120M AWD

Motor Grader

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CAT® Defense

120M AWD Motor Grader

Applications	
Airfield Repair	Road Construction
Landing Zones	Anti-Tank Ditches
Base Camp Development	Defensive Berms

Do the work wherever it's needed. Safely. Precisely. Productively.

Constructing airfields, roads, landing zones, defensive berms and anti-tank ditches requires unsurpassed operational readiness.

The Cat® 120M All Wheel Drive (AWD) Motor Grader is the air transportable drive-on, drive-off solution.

Excellent visibility.

Worksite safety and efficiency begins in the cab.

- **Excellent Visibility:** Angled cab doors and the replacement of levers and steering wheel with dual joystick controls, improves the overall visibility of work area.
- **Ergonomic Operator Station:** Remain productive and comfortable all day long with isolation mounts for cab, engine and transmission to significantly reduce sound and vibration.
- **Joystick Controls:** Ergonomically designed left and right joysticks deliver convenient functionality and precise control with low effort.
- **Climate Control:** High capacity system dehumidifies air and pressurizes the cab to circulate fresh air and seal out dust. Get clear windows in every operating condition.

Steering compensation enhances mission efficiencies.

All Wheel Drive (AWD) System. The AWD system utilizes dedicated left and right pumps for precise hydraulic control. The Caterpillar exclusive 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.

Constant Net Power.
Automatically increase the gross power up to 35 hp (26 kW) when the system is engaged. Offset parasitic losses and maintain a constant net power to the ground for maximum productivity.

Hydrostatic Mode.
Hydraulic power is provided to the front wheels only. The ground speed is infinitely variable between 0-5 mph (0-8 km/h), perfect for precise finish work.

Operator-focused ride control and hydraulics.

- **Operator Presence System:** Keeps the parking brake engaged and hydraulic implements disabled until the operator is seated and the machine is ready for safe operation.
- **Secondary Steering System:** This standard 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.
- **Electrical Disconnect Switch:** Conveniently located battery disconnect switch, inside the left rear enclosure, provides ground-level lockout of the electrical system to prevent inadvertent starting of the machine.
- **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 the machine is roading.

MIL-STD-209K lift and tie downs.

C-130 air transportable.

Military Modifications

- C-130 air transportable
- Armored cab (optional)
- Split cab
- NATO start receptacle
- Blackout lighting system
- Keyless engine start switch
- Rifle bracket
- Military data plates, stencils and UIDs
- Cold start aid for -25° F (ether)
- Arctic kit for cold start (-40° F) (optional)
- Military towing lugs
- Decontamination bracket
- Vandalism protection
- Removable glass
- Fresh water fordable to 30 in/762 mm depth
- Reduced lift cylinder mounting arrangement for transport
- Hinged battery access door
- Scarifier tooth storage rack
- MIL-STD-209K lift and tie downs
- Tool box
- Fire extinguisher
- External mirrors
- CARC or special paint

Consult Caterpillar Defense for specific details on military modifications.

Grade with complete confidence.

Every grade is on target and every hazard is avoided. The all wheel drive system and advanced electro-hydraulic system give combat engineers of all experience levels the control needed to perform with the highest accuracy and speed. So even the most complex environments can be modified efficiently and safely.

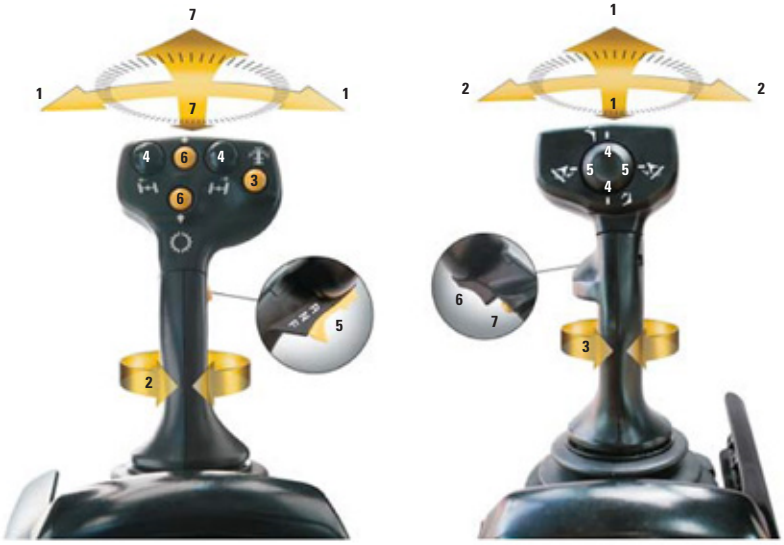
All systems advance comfort, efficiency and performance life.

- **Hydraulic Demand Fan**. The hydraulic demand fan automatically adjusts cooling fan speed according to engine cooling requirements. This system reduces demands on the engine, putting more horsepower to the ground and improving fuel efficiency.
- **Inching Pedal**. Allows precise control of machine movements in any gear with low pedal effort and excellent modulation, critical in close-quarter work or finish grading.
- **Hydraulic Brakes**. The oil bathed, multidisc service brakes are hydraulically actuated (1), providing smooth predictable braking. With brakes located at each tandem wheel (2), dependable stopping power is delivered each time. The parking brake is also integrated into the Operator Presence System to prevent unintended machine movement.
- **Shimless Moldboard Retention System**. The unique shimless moldboard retention system reduces the potential for blade chatter, preventing a washboard effect when grading. Vertical and horizontal adjusting screws keep the moldboard's wear strips aligned for precise blade control and dramatic reductions in service time.
- **Top-Adjust Drawbar Wear Strips**. The patented top-adjust wear strips dramatically reduce drawbar/circle adjustment time. By removing the access plates on top of the drawbar, shims and wear strips can easily be added or replaced. This feature reduces service downtime.
- **Replaceable Wear Inserts**. Durable nylon composite wear inserts reduce rotational friction for maximum circle torque and longer component life. They are located between the drawbar and circle, and between the support shoes and circle. High load-resistant brass wear strips are placed between the blade mounting group and moldboard. This sacrificial wear system can be replaced easily and helps keep components tight for fine grading.

Armor Protection Solutions

The armored Crew Protection Kit (CPK) on the 120M AWD Motor Grader provides 360º protection for operators inside the cab. Its emergency egress hatch gives operators the ability to quickly exit the cab, while providing rescue personnel critical access to those inside. Transparent armor provides a wide field of view of the machine and surrounding areas. Cat armor protection solutions give operators the scalability they need to adapt to changing environments and conditions.

Complete Operator Control



Left Joystick Functions		Right Joystick Functions
The left joystick primarily controls the machine direction and speed.		The right joystick primarily controls the Drawbar, Circle and moldboard functions.
1	Steering: Lean joystick left and right	Right Moldboard Lift Cylinder: Push joystick to lower, pull joystick to raise Right moldboard lift cylinder float: Pushing joystick through detent engages float
2	Articulation: Twist joystick left and right	Moldboard Slide: Lean joystick left and right
3	Articulation Return to Center: Yellow thumb button	Circle Turn: Twist joystick left and right
4	Wheel Lean: Two black thumb buttons	Moldboard Tip: Thumb switch fore and aft
5	Direction: Index trigger shifts transmission to forward, neutral or reverse	Drawbar Center Shift: Thumb switch left and right
6	Gear Selection: Two yellow thumb buttons upshift and downshift	Electronic Throttle Control: Trigger switch is resume and decrement
7	Left Moldboard Lift Cylinder: Push joystick to lower, pull joystick to raise Left Moldboard Lift Cylinder Float: Pushing joystick through detent engages float	Differential Lock/Unlock: Yellow button

More focus. Better decisions.

- **Articulation Return-to-Center**. This exclusive feature automatically returns the machine to a straight frame position from any articulation angle with the touch of a single button. Return-to-Center helps improve productivity and safety by allowing the operator to focus on controlling the moldboard.
- **Advanced Electro-Hydraulic System**. The 120M AWD incorporates a state-of-the-art electro-hydraulic system. Advanced joystick controls provide unmatched controllability with precise, predictable hydraulic movements.
- **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, protecting the machine, operator and surroundings.
- **Scarifier Control Pod**. The scarifier control is ergonomically positioned to allow simple, comfortable operation of the mid-mount scarifier.

Scarifier control pod.

Support and Serviceability

Monitoring Systems

The 120M AWD Motor Grader maximizes on-board diagnostics capability using electronic control modules (ECMs) to monitor engine and machine systems (transmission, hydraulics and brakes). Cat Electronic Technician (ET) software accesses information from the ECMs allowing technicians to view status parameters, logged codes, active codes, perform functional tests and record and view data logs of equipment operation. The instrument panel conveniently displays fault or event codes, while the messenger system provides text related to the fault code. This diagnostic capability allows customers to maintain wheel loader readiness while minimizing the maintenance burden.

Messenger system located inside the cab.

Easy to maintain. Ready for work.

Proper maintenance of your motor grader will keep it running at peak performance with minimal downtime. The 120M AWD Motor Grader is engineered with easy-to-access maintenance points and a full range of systems to ensure operators and technicians are able to efficiently diagnose and maintain the machine.

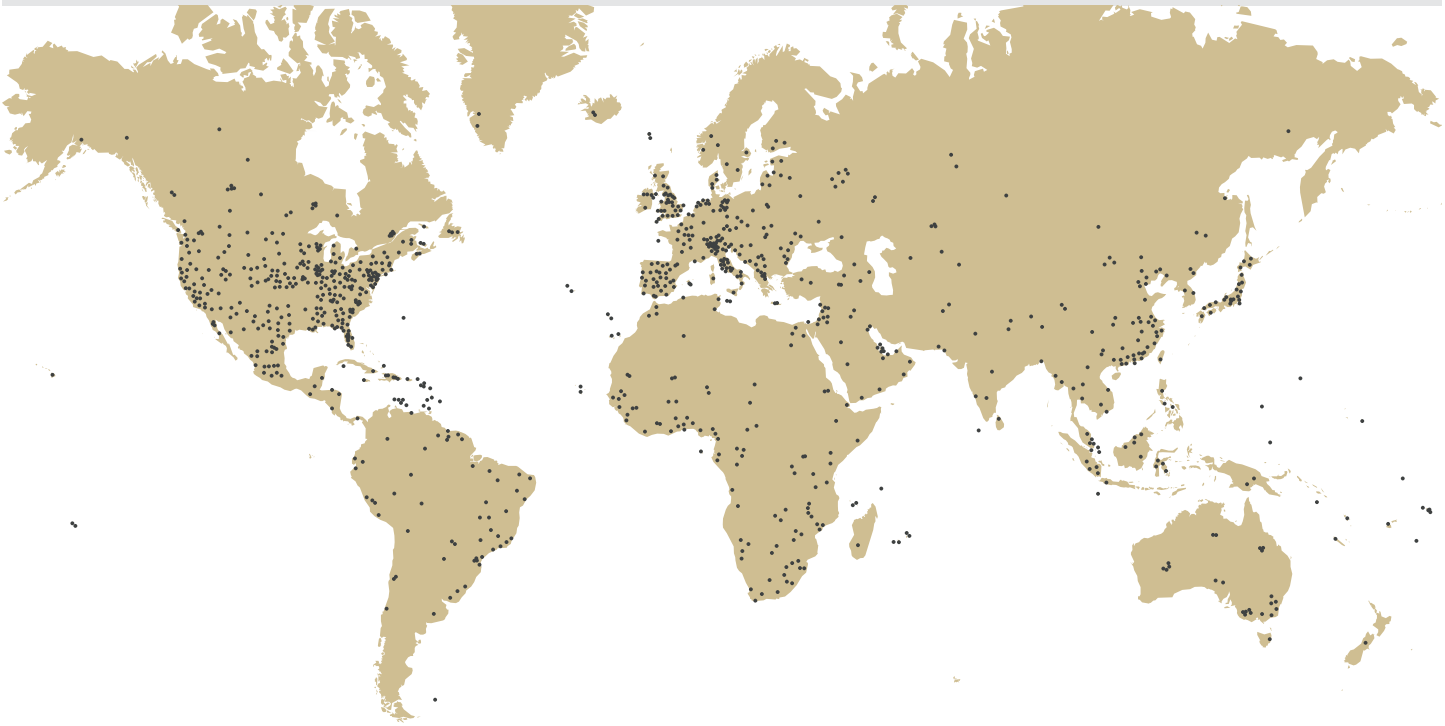
Hydraulic service center	**Electric service center**
Well-protected, easily visible sight gauges	**Ground level maintenance points**
Easy access to engine compartment	**Ecology drains for simple and clean fluid drainage**
Brake wear indicators for easy inspection	**Maintenance-free batteries**
Military sampling valves	

Worldwide Service Capabilities

Cat dealer field service technicians have the experience and tools necessary to service your machine on-site. Field service trucks are fully loaded with state-of-the-art tools and diagnostic equipment, as well as specifications and schematics for every Cat machine. Technical experts at the dealership and the Caterpillar team are available to provide assistance to field service technicians. When on-site repair isn't enough, Cat dealerships are fully-equipped to service your motor grader quickly.

Dealer Support

The Caterpillar global network of dealers is the best in the world at providing support to keep your bulldozer up and running. With over 99% of customer orders shipped the same day, Cat dealers are partners in support.



Operating Specifications

Engine

MODEL	Cat® C6.6 ACERT™ VHP
VHP Plus Range - Net (hp/kW)	138 - 173 / 103 - 129
Displacement (in³/L)	403 / 6.6
Bore (in/mm)	4.13 / 105
Stroke (in/mm)	4.92 / 125
Torque Rise - VHP Plus	40%
Maximum Torque - VHP Plus (ft-lb/Nm)	690 / 859
Speed @ Rated Power (rpm)	2,000
Number of Cylinders	6

- Cat engine with ACERT™ Technology – EPA Tier 3, EU Stage IIIA Compliant.
- Net power is tested per ISO 9249, SAE J1349, and EEC 80/1269.
- Standards in effect at the time of manufacture.
- VHP Plus is standard on Military Machines with AWD.
- Max torque (VHP Plus) measured at 1,400 rpm.
- Net power advertised is the power available at rated speed of 2,000 rpm, measured at the flywheel when engine is equipped with fan running at minimum speed, air cleaner, muffler and alternator.

120M AWD VHP Plus Net Power

Forward - 1st (hp/kW)	138 / 103
- 2nd (hp/kW)	143 / 107
- 3rd (hp/kW)	148 / 110
- 4th (hp/kW)	153 / 114
- 5th (hp/kW)	158 / 118
- 6th (hp/kW)	163 / 121
- 7th (hp/kW)	168 / 125
- 8th (hp/kW)	173 / 129
Reverse - 1st (hp/kW)	138 / 103
- 2nd (hp/kW)	143 / 107
- 3rd – 6th (hp/kW)	148 / 110

Power Train

Forward/Reverse Gears	8 Forward / 6 Reverse
Transmission	Direct Drive, Power Shift, Countershaft
Brakes - Service	Multiple Oil-Disc
- Parking	Multiple Oil-Disc
- Secondary	Dual Circuit Control System

All-Wheel Drive System

Motor Type	2 Infinitely Variable Axial Piston
Pump Type	2 Variable Piston
Operational Gears	Forward = 1 - 7 Reverse = 1 - 5

Hydraulic System

Type	Electro-hydraulic Load Sensing, Closed Center
Pump Type	Variable Piston
Pump Capacity @ 2,150 rpm (gpm/Lpm)	40 / 151
Maximum System Pressure (psi/kPa)	3,500 / 24 100
Standby Pressure (psi/kPa)	450 / 3100

Operating Specs

Top Speed - Forward (mph/km/h)	27.7 / 44.5
- Reverse (mph/km/h)	23.5 / 37.8
Turning Radius, Ouside Front Tires (ft/m)	37 / 11.3
Steering Range - Left/Right	42°
Articulation Angle - Left/Right	20°
Forward - 1st (mph/km/h)	2.4 / 3.9
- 2nd (mph/km/h)	3.3 / 5.3
- 3rd (mph/km/h)	4.75 / 7.6
- 4th (mph/km/h)	6.5 / 10.5
- 5th (mph/km/h)	10.2 / 16.4
- 6th (mph/km/h)	13.8 / 22.2
- 7th (mph/km/h)	19 / 30.6
- 8th ((mph/km/h)	27.7 / 44.6
Reverse - 1st (mph/km/h)	2 / 3.2
- 2nd (mph/km/h)	3.8 / 6.1
- 3rd (mph/km/h)	5.6 / 9
- 4th (mph/km/h)	8.6 / 13.8
- 5th (mph/km/h)	16.1 / 25.9
- 6th (mph/km/h)	23.5 / 37.8

Service Refill Capacities

Fuel Tank (gal/L)	90 / 340
Cooling System (gal/L)	10.4 / 40
Hydraulic System (gal/L)	15.9 / 60
Engine Oil (gal/L)	4.1 / 15.5
Trans. / Diff. / Final Drives (gal/L)	13.2 / 50
Tandem Housing - each (gal/L)	16.9 / 61
Front Wheel Spindle Bearing Housing (gal/L)	0.1 / 0.5
Circle Drive Housing (gal/L)	1.8 / 7

Frame

Circle - Diameter (in/mm)	60.2 / 1530
- Blade Beam Thickness (in/mm)	1.4 / 35
Drawbar - Height (in/mm)	6 / 152
- Width (in/mm)	3 / 76.2
- Thickness (in/mm)	0.4 / 9.5
- Yoke Bar Thickness (in/mm)	0.75 / 19.1
Front Frame Structure - Height (in/mm)	10 / 254
- Width (in/mm)	10 / 254
- Thickness (in/mm)	0.6 / 16
Front Axle - Height to Center (in/mm)	22.5 / 572
- Wheel Lean, Left/Right	18°
- Total Oscillation Per Side	32°

Tandems

Height (in/mm)	19.76 / 502
Width (in/mm)	6.76 / 171.7
Sidewall Thickness - Inner (in/mm)	0.5 / 12.7
- Outer (in/mm)	0.6 / 15.2
Drive Chain Pitch (in/mm)	1.8 / 45.7
Wheel Axle Spacing (in/mm)	59.5 / 1511
Tandem Oscillation - Front Up	15°
- Front Down	25°

Scarifier

Mid, V-Type	
Working Width (in/mm)	46.6 / 1184
Scarifying Depth, Maximum (in/mm)	11.5 / 292
Scarifier Shank Holders	11
Scarifier Shank Holder Spacing (in/mm)	4.6 / 117

Moldboard

Blade Width ft/m	12 / 3.668
Moldboard - Height (in/mm)	24 / 609.6
- Thickness (in/mm)	0.87 / 22
Arc Radius (in/mm)	16.3 / 414
Throat Clearance (in/mm)	4.9 / 123.9
Cutting Edge - Width (in/mm)	6 / 152.4
- Thickness (in/mm)	0.6 / 15.2
End Bit - Width (in/mm)	6 / 152.4
- Thickness (in/mm)	0.6 / 15.2

Blade Range

Circle Centershift - Right (in/mm)	25.8 / 655.3
- Left (in/mm)	25.8 / 655.3
Moldboard Sideshift - Right (in/mm)	26 / 660.4
- Left (in/mm)	20.1 / 510.5
Maximum Blade Position Angle	90°
Blade Tip Range - Forward	40°
- Backward	5°
Maximum shoulder reach outside of tires - Right (in/mm)	75 / 1905
- Left (in/mm)	68.6 / 1742
Maximum Lift Above Ground (in/mm)	16.8 / 427
Maximum Depth of Cut (in/mm)	28.3 / 719

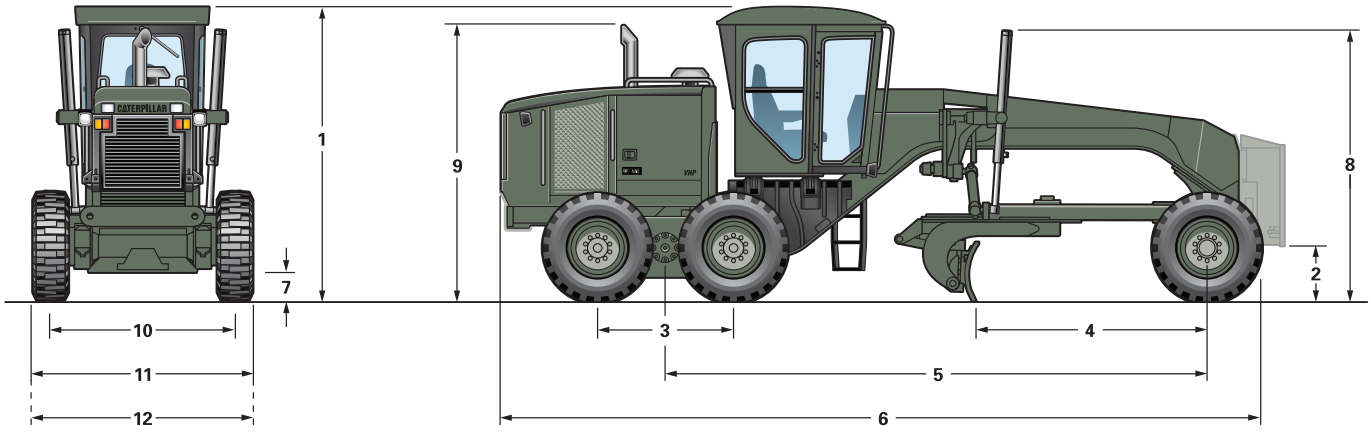
Weights

Gross Vehicle Weight - No Armor	
- Total (lb/kg)	39,080 / 17 726
- Front Axle (lb/kg)	11,830 / 5366
- Rear Axle (lb/kg)	27,250 / 12 360
Gross Vehicle Weight - With Armor	
- Total (lb/kg)	45,090 / 20 452
- Front Axle (lb/kg)	13,680 / 6205
- Rear Axle (lb/kg)	31,410 / 14 247

- Base operating weight calculated on standard machine configuration with 14.00 R24 tires, full fuel tank, coolant, lubricants and operator.

Standard equipment may vary. Consult Caterpillar Defense for details.
All dimensions are approximate and may vary with configuration.
Specific military service configurations are available upon request.

Dimensions



1)	Height - Top of Cab (in/mm)	131 / 3278
2)	Height - Front Axle Center (in/mm)	24 / 610
3)	Length - Between Tandem Axles (in/mm)	59.5 / 1511
4)	Length - Front Axle to Moldboard (in/mm)	98.9 / 2511
5)	Length - Front Axle to Mid Tandem (in/mm)	232.8 / 5915
6)	Length - Front Tire to Rear of Machine (in/mm)	334.1 / 8488
7)	Ground Clearance at Rear Axle (in/mm)	14.3 / 363
8)	Height to Top of Cylinders (in/mm)	115.5 / 2934
9)	Height at Exhaust Stack (in/mm)	113.5 / 2883
10)	Width - Tire Center Lines (in/mm)	82.5 / 2096
11)	Width - Outside Rear Tires (in/mm)	101 / 2565
12)	Width - Outside Front Tires (in/mm)	100 / 2540

Operating Specifications

Standards

ROPS/FOPS	ISO 3471:1992 / ISO 3449:1992
Steering	ISO 5010:1992
Brakes	ISO 3450:1996
Sound	ISO 6394:1998 / ISO 6395:19882

- The static sound operator pressure level measured according to ISO 6394:1988 for a cab offered by Caterpillar, when properly installed, maintained and tested with doors and windows closed and hydraulic fan at maximum speed is 70 dB(A).
- The dynamic spectator sound power level for the standard machine when equipped with sound suppression package and hydraulic fan running at 70% of maximum speed, machine sound measured is less than 105 dB(A), complying with EU 2000/14/EC requirement.

Additional Equipment

Air Conditioner with Heater (lb/kg)	107 / 49
Mirrors, Outside: Mounted (lb/kg)	22 / 10
All Wheel Drive (lb/kg)	1,300 / 590
Starting Aid, Ether (lb/kg)	1 / 0.5
Mid Mount Scarifier (lb/kg)	2,114 / 959
Fan, Defroster, Rear Window (lb/kg)	4 / 2

Optional Equipment

Transmission Guards (lb/kg)	293 / 133
Precleaner, Sy-Klone (lb/kg)	20 / 9
Accumulators, Blade Lift (lb/kg)	170 / 77
Camera, Rearview (lb/kg)	15 / 7
Compressor/Tank, Air (lb/kg)	50 / 23

Standard Equipment

Operator Environment

- Arm/wrist rest, adjustable
- Articulation, automatic Return-to-Center
- Cat Messenger, operator information system
- Centershift pin indicator
- Beverage holders
- Display, digital speed and gear
- Door, driver access (left side) with wiper
- Gauge cluster – articulation, engine coolant temp, engine RPM, fuel, system voltage
- Gauge, machine level
- Heater, cab
- Hour meter, digital
- Joystick hydraulic controls implements, steering, transmission
- Messenger Operator Info System
- Mirror, inside rearview, wide angle outside mirrors
- Power port, 12V
- ROPS cab, sound suppressed
- Seat belt, retractable, 3 inch (76 mm) wide
- Seat, cloth-covered, comfort suspension
- Storage area for cooler/lunchbox
- Throttle control, electronic
- Windows, laminated glass: door, left with dual wipers fixed, window right with dual wipers fixed, front with intermittent wipers
- Windows, tempered glass side and rear (3)

Power Train

- Engine, Cat® C6.6 with ACERT™ Technology
- Air cleaner, dual stage, dry type, automatic dust ejector, service indicator through Cat Messenger
- Air-to-air after cooler (ATAAC)
- Belt, serpentine, automatic tensioner
- Brakes, four-wheel hydraulic
- Differential, lock/unlock
- Drain, engine oil
- Electronic over speed protection
- Fuel-water separator
- Hydraulic demand fan
- Muffler, under hood
- Parking brake – multi-disc, sealed, oil-cooled
- Priming pump, fuel
- Rear axle, modular
- Sediment drain, fuel tank
- Transmission, 8F/6R, power shift, direct drive
- VHP (Variable Horsepower)

Tires, Rims and Wheels

- 14R24 tires on multi-piece rims

Electrical System

- Alarm, back up
- Alternator, 150 ampere, sealed
- Batteries, maintenance free, 1400 CCA (x2)
- Breaker panel, ground accessible
- Electrical system, 24V
- Grade Control Ready – Cab harness, software, electrical hydraulic valves, bosses and brackets
- Lights, reversing
- Lights, stop and tail, LED

Other Standard Equipment

- Brake accumulators, dual certified
- Bumper, rear, integrated with hitch
- Clutch, circle drive slip
- Cutting edges
  curved DH-2 steel, 8 inch x 5/8 inch (203 mm x 16 mm), 3/4 inch (19 mm) mounting bolts
- Doors (3), engine compartment, locking
- Drawbar – 4 shoes with replaceable wear strips
- Endbits
  5/8 inch (16 mm) DH-2 steel, 3/4 inch (19 mm) mounting bolts
- Extended Life Coolant to –30° F (–35° C)
- Fluid check, ground level
- Frame, articulated, with safety lock
- Fuel tank, ground level access
- Ground level engine shutdown
- Hammer (emergency exit)
- Horn, electric
- Hydraulics, base 8 implement controls
- Hydraulics, load-sensing
- Lockout, hydraulic implement for roading
- Moldboard
  144 inch x 24 inch x 7/8 inch (3658 mm x 610 mm x 22 mm), hydraulic sideshift and tip
- Anti-glare paint – top of front frame and rear enclosure
- Radiator cleanout access
- Secondary steering
- Serviceability, LH side
- S•O•S℠ ports: engine, hydraulic, transmission, coolant, fuel
- Tandem walkway/guards
- Tool box
- Tow hitch

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