

24

Motor Grader



The Cat® 24 Motor Grader continues the Caterpillar tradition of being the industry leader in enabling you to build and maintain your haul roads to maximize your mine-site productivity and lower your owning and operating costs. The 24 motor grader is designed to help you get more work done in less time while keeping you safe and comfortable.

Serviceability

- The improved power train rebuild life, new modular design and new machine protection features can save you up to 2,400 servicing hours over the life of the machine.*
- Cat C27 ACERT™ engine, 533 mm (21 in) transmission and lower power train provide 33 percent additional machine life before needing to be rebuilt.**
- New, innovative main component modular design means they can be removed and installed quicker and easier. Transmission and cooling package can be removed up to 70 percent faster than the 24M.
- Fluid Service Center provides single location at ground level for access to engine, transmission, hydraulic oil and coolant. This feature, along with clustered filters and extended service intervals, saves you maintenance time and operating costs.
- Hoses and electrical harnesses are split at easily accessible bulkhead locations allowing your service technicians to work with smaller sections easier and faster.
- Ok-to-Start and Critically Low Fluid monitoring systems protect your machine by providing electronic verification of fluid levels and alerting you when low fluid levels are detected, protecting your machine.

Performance

- Cat C27 ACERT engine provides enhanced altitude capabilities with no derate up to 3048 m (10,000 ft) for U.S. EPA Tier 4/ EU Stage IV emission standards and 4572 m (15,000 ft) for engines equivalent to Tier 2/Stage II.
- An 11 percent weight increase helps provide more traction and blade down pressure than the 24M.
- Consistent Power-to-the-Ground changes real-time engine power levels to offset cooling fan losses resulting in best performance at all times independent of ambient conditions.

Safety

- Fifteen tie-off points located around engine enclosure and cab provide secure tie off hooks protecting you and your technicians when performing service operations.
- Optional Working at Heights package adds an extra layer of safety by providing handrails and hand holds to improve access and safety.
- The 24 is a Fire Suppression-Ready machine which means you can easily install a fire suppression system to further protect your investment.
- Standard rearview camera provides better visibility from the cab to behind the machine while optional front-facing cameras provide enhanced forward and side visibility.
- Standard seat belt indicator provides visual/audible alerts when the seat belt is not in use. The 24 is pre-wired so you can easily install a beacon on top of the cab to indicate seat belt usage.

Technology

- The 24 features asset protection and performance-improving technologies including: engine overspeed/underspeed, second generation steering system, articulation eStop, ripper auto stow, implements lock out and circle angle limits, to name a few.
- Standard Cat GRADE with Cross Slope improves operator productivity and haul road quality and durability by helping maintain desired cross slope for appropriate water drainage by automatically controlling one side of the blade.
- The Cat 24 is MineStar™ ready and includes Cat Product Link™ Elite and VIMS™ to help optimize equipment management, remote monitoring capabilities, machine availability and component life while reducing both repair cost and the risk of a catastrophic failure.

*Life assumed is 64,000 hours.

**24 power train rebuild life target is 16,000 hours.

24 Motor Grader Specifications

Engine

| | | |
|--------------------------------------|--|-------------------------|
| Engine Model | Cat C27 ACERT | |
| Emissions | Tier 4 Final/Stage IV Equivalent to Tier 2/Stage II | |
| Base Power (1st gear) – Net | 399 kW | 535 hp |
| Base Power (1st gear) – Net (Metric) | 543 hp | |
| Displacement | 27.0 L | 1,649.5 in ³ |
| Bore | 137.2 mm | 5.4 in |
| Stroke | 152.4 mm | 6 |
| Torque Rise ISO 9249 | 19% | |
| Maximum Torque ISO 9249 | 3277 N·m | 2,417 lbf-ft |
| Speed @ Rated Power | 1,800 rpm | |
| Number of Cylinders | 12 | |
| Derating Altitude | | |
| Tier 4 Final/Stage IV | 3048 m | 10,000 ft |
| Equivalent Tier 2/Stage II | 4572 m | 15,000 ft |
| Standard – Fan Speed | | |
| Maximum | 1,330 rpm | |
| Minimum | 50 rpm | |
| Standard Capability | 50° C | 122° F |

- The 24 is offered with two variations of the C27 Engine with ACERT Technology. One meets U.S. EPA Tier 4 Final/EU Stage IV emission standards and is required for higher regulated countries. The other option emits equivalent to Tier 2/Stage II and is available for lesser regulated countries.
- On Tier 4/Stage IV machines, Ultra Low Sulfur Diesel (ULSD) and lower ash oil are required.

Net Power

| Gear | Net kW | Net HP | Metric HP |
|----------------|--------|--------|-----------|
| Forward | | | |
| 1st | 399 | 535 | 543 |
| 2nd | 399 | 535 | 543 |
| 3rd | 407 | 546 | 554 |
| 4th | 424 | 569 | 577 |
| 5th | 463 | 621 | 630 |
| 6th | 518 | 694 | 704 |
| Reverse | | | |
| 1st | 399 | 535 | 543 |
| 2nd | 399 | 535 | 543 |
| 3rd | 463 | 621 | 630 |

- Net power is tested per ISO 9249 at rated speed of 1,800 rpm and includes an engine equipped with fan, air cleaner, muffler/after treatment and alternator.

Power Train

| | | |
|--------------------------------|---|---------------|
| Forward/Reverse Gears | 6 forward/3 reverse | |
| Transmission | Automatic, electronic, Power Shift | |
| Brakes | | |
| Service | Oil-actuated, oil-disc | |
| Dynamic Brake Torque Per Wheel | 75 383 N·m | 55,600 lbf-ft |
| Parking | Spring applied, hydraulically released | |
| Secondary | Oil-actuated, oil-disc | |

Hydraulic System

| | | |
|-------------------------|---|-------------|
| Circuit Type | Electro-hydraulic load sensing, closed center | |
| Pump Type | Variable piston | |
| Pump Output | 504 L/min | 133 gal/min |
| Maximum System Pressure | 24 150 kPa | 3,500 psi |
| Standby Pressure | 5800 kPa | 841.2 psi |

- Pump output measured at 1,800 rpm.

Operating Specifications

| | | |
|-------------------------------------|--------------|----------|
| Top Speed | | |
| Forward | 41.9 km/h | 26 mph |
| Reverse | 41.2 km/h | 25.6 mph |
| Turning Radius, Outside Front Tires | 12.5 m | 41 ft |
| Steering Range – Left/Right | 47.5 degrees | |
| Articulation Angle – Left/Right | 25 degrees | |
| Forward | | |
| 1st | 4.8 km/h | 3.0 mph |
| 2nd | 6.9 km/h | 4.3 mph |
| 3rd | 10.3 km/h | 6.4 mph |
| 4th | 14.9 km/h | 9.3 mph |
| 5th | 28.9 km/h | 18.0 mph |
| 6th | 41.9 km/h | 26.0 mph |
| Reverse | | |
| 1st | 6.8 km/h | 4.2 mph |
| 2nd | 14.7 km/h | 9.1 mph |
| 3rd | 41.2 km/h | 25.6 mph |

- Machine speed measured @ 1,800 rpm with 29.5R29 radial tires, no slip.

24 Motor Grader Specifications

Service Refill

| | | |
|--|-------|----------|
| Fuel Capacity | 908 L | 240 gal |
| Cooling System | 191 L | 50.5 gal |
| Hydraulic System | | |
| Total | 270 L | 71.3 gal |
| Tank | 130 L | 34.3 gal |
| Engine Oil | 99 L | 26.2 gal |
| Transmission | 122 L | 32.2 gal |
| Differential and Final Drives | 190 L | 50.2 gal |
| Tandem Housing (each) | 322 L | 85.1 gal |
| Front Wheel Spindle Bearing Housing (each) | 4 L | 1.1 gal |
| Circle Drive Housing (each) | 8 L | 2.1 gal |

Frame

| | | |
|----------------------------|------------|----------|
| Circle | | |
| Diameter | 2631 mm | 103.6 in |
| Blade Beam Thickness | 160 mm | 6.3 in |
| Drawbar | | |
| Height | 215 mm | 8.5 in |
| Thickness | 16 mm | 0.6 in |
| Width | 225 mm | 8.9 in |
| Front-Top/Bottom Plate | | |
| Width | 514 mm | 20.2 in |
| Thickness | 50 mm | 2 in |
| Front Side Plates | | |
| Width | 415 mm | 16.3 in |
| Thickness | 25 mm | 1 in |
| Front Axle | | |
| Height to Center | 882 mm | 34.7 in |
| Wheel Lean, Left/Right | 18 degrees | |
| Total Oscillation Per Side | 32 degrees | |

Tandems

| | | |
|--------------------|------------|---------|
| Height | 1040 mm | 41 in |
| Width | 353 mm | 13.9 in |
| Sidewall Thickness | | |
| Inner | 25 mm | 1 in |
| Outer | 30 mm | 1.2 in |
| Drive Chain Pitch | 76 mm | 3 in |
| Wheel Axle Spacing | 2285 mm | 90 in |
| Tandem Oscillation | | |
| Front Up | 20 degrees | |
| Front Down | 20 degrees | |

Moldboard

| | | |
|------------------|-----------|------------|
| Width | 7.3 m | 24 ft |
| Height | 1025 mm | 42.4 in |
| Thickness | 50 mm | 2 in |
| Arc Radius | 550 mm | 21.7 in |
| Throat Clearance | 162 mm | 6.4 in |
| Cutting Edge | | |
| Width | 406 mm | 16 in |
| Thickness | 60 mm | 2.4 in |
| End Bit | | |
| Width | 203 mm | 8 in |
| Thickness | 25 mm | 1 in |
| Blade Pull* | | |
| Base GVW | 46 502 kg | 102,519 lb |
| Maximum GVW | 49 263 kg | 108,607 lb |
| Down Force | | |
| Base GVW | 32 597 kg | 71,863 lb |
| Maximum GVW | 34 020 kg | 75,001 lb |

*Blade pull calculated at 0.9 traction coefficient, which is equal to ideal no-slip conditions, and Gross Machine Weight.

Blade Range

| | | |
|---|------------|---------|
| Circle Centershift | | |
| Right | 437 mm | 17.2 in |
| Left | 804 mm | 31.7 in |
| Moldboard Sideshift | | |
| Right | 1150 mm | 45.3 in |
| Left | 970 mm | 38.2 in |
| Maximum Blade Position Angle | 55 degrees | |
| Blade Tip Range | | |
| Forward | 40 degrees | |
| Backward | 0 degrees | |
| Maximum Shoulder Reach Outside of Tires | | |
| Right | 3175 mm | 125 in |
| Left | 3175 mm | 125 in |
| Maximum Lift Above Ground | 410 mm | 16.1 in |
| Maximum Depth of Cut | 550 mm | 21.7 in |

• Maximum lift above ground and depth of cut with 406 mm × 60 mm (16 in × 2.4 in) cutting edges.

24 Motor Grader Specifications

Ripper

| | | |
|-------------------------|--------|--------------|
| Ripping Depth – Maximum | 454 mm | 17.9 in |
| Ripper Shank Holders | 7 | |
| Shank Holder Spacing | | |
| Minimum | 593 mm | 23.3 in |
| Maximum | 604 mm | 23.8 in |
| Penetration Force | 142 kN | 31,922.9 lbf |
| Pryout Force | 182 kN | 40,915.2 lbf |

Weights – Tier 4/Stage IV

| | | |
|---|-----------|------------|
| Gross Vehicle Weight – Typically Equipped | | |
| Total | 73 344 kg | 161,695 lb |
| Front Axle | 20 170 kg | 44,467 lb |
| Rear Axle | 53 174 kg | 117,228 lb |
| Gross Vehicle Weight – Base* | | |
| Total | 71 563 kg | 157,769 lb |
| Front Axle | 19 894 kg | 43,858 lb |
| Rear Axle | 51 669 kg | 113,910 lb |
| Gross Vehicle Weight – Maximum Tested | | |
| Total | 75 500 kg | 166,449 lb |
| Front Axle | 20 763 kg | 45,775 lb |
| Rear Axle | 54 737 kg | 120,674 lb |

*For machines not equipped with Tier 4 Final emission engine, subtract 40 kg (88.2 lb) from the rear axle weight and total weight. Base operating weight calculated on standard machine configuration with 29.5 R29 tires, full fuel tank operator and ROPS cab.

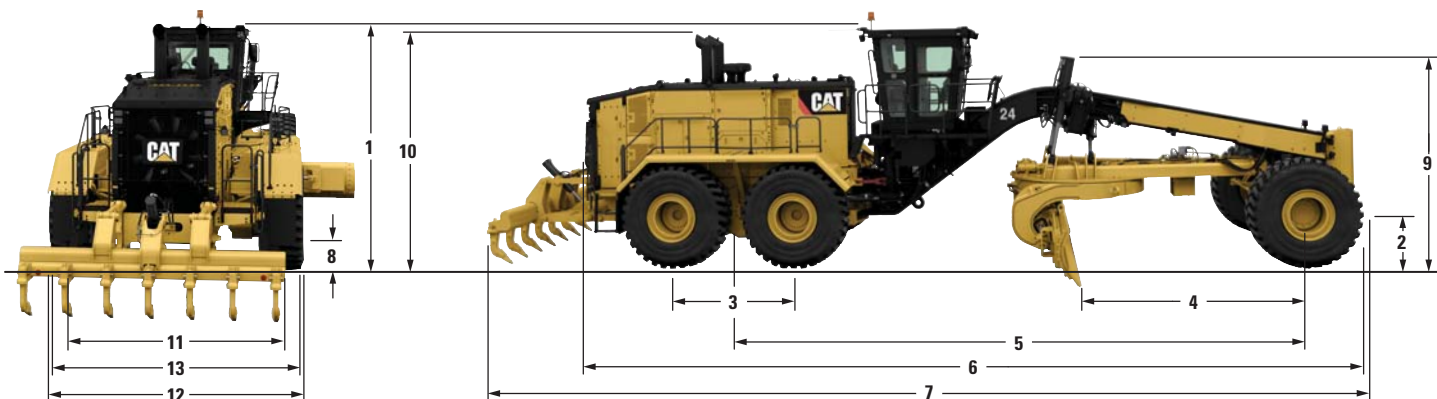
Standards

| | |
|-----------|------------------------------------|
| ROPS/FOPS | ISO 3471, ISO 3499 |
| Steering | ISO 5010:2007 |
| Brakes | ISO 3450 |
| Sound | ISO 6394, ISO 6395, ISO 6396 |

- The dynamic spectator sound power level is 112 dB(A) for Tier 4/ Stage IV certified configurations and 113 dB(A) for equivalent Tier 2/Stage II configurations when measured according to the dynamic test procedures that are specified in ISO 6395:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed. The machine was equipped with a sound suppression system.
- The dynamic operator sound pressure level is 77 dB(A) for Tier 4/ Stage IV certified configurations and 73 dB(A) for equivalent Tier 2/Stage II configurations when measured according to the dynamic test procedures that are specified in ISO 6396:2008. The measurement was conducted at 70 percent of the maximum engine cooling fan speed, with the cab doors and the cab windows closed. The cab was properly installed and maintained. The machine was equipped with a sound suppression system.

24 Motor Grader Specifications

Dimensions



| 24 | | |
|--|-----------|-----------|
| | mm | in |
| 1 Height – Top of Cab | 4380 | 172.4 |
| 2 Height – Front Axle Center | 914 | 36 |
| 3 Length – Between Tandem Axles | 2285 | 90 |
| 4 Length – Front Axle to Moldboard | 4048 | 159.4 |
| 5 Length – Front Axle to Mid Tandem | 10 388 | 409 |
| 6 Length – Front Tire to Rear of Machine (includes tow hitch) | 14 880 | 585.8 |
| 7 Length – Counterweight to Ripper | 16 707 | 657.8 |
| 8 Ground Clearance at Rear Axle | 404 | 15.9 |
| 9 Height to Top of Cylinders | 3800 | 149.6 |
| 10 Height to Exhaust Stack | 4373 | 172.2 |
| 11 Width – Tire Center Lines | 3664 | 144.3 |
| 12 Width – Outside Rear Tires | 4433 | 174.5 |
| 13 Width – Outside Front Tires | 4280 | 168.5 |

All dimensions are approximate, based on standard machine configuration with 29.5R29 tires.

Optional Tire Arrangements

Common tire options for the 24.

| Wheel Group | Tires |
|--------------------|-----------------------------------|
| 29.5 × 29 | 29.5R29 Michelin XLDD2A ★ L5 |
| 29.5 × 29 | 29.5R29 Bridgestone VSTD D2A ★ L5 |

Factory options may vary based on availability.

24 Motor Grader Standard Equipment

Standard Equipment

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

POWER TRAIN

- Engine: C27 with ACERT technology
- 24-volt electric start
- Air filters, dual with precleaner
- Automatic dust ejector
- Aftercoolers, air-to-air
- Ether starting aid
- Automatic fan, suction with hydraulic demand
- Drive, near zero fan speed
- Torque divider, lock-up
- Transmission, 533 mm (21 in) planetary powershift with 6F/3R, ECPC
- Enhanced auto-shift, APECS
- Directional shift management
- Differential, lock/unlock (auto/manual)
- Parking brake, multi-disc, sealed and oil cooled
- Fast fill (fuel, hydraulic, transmission, coolant)
- Fuel priming pump, electric
- Electronic prescreener water/fuel
- Prescreener separator, water/fuel
- Thermal shields
- Fluid monitoring (engine, transmission, hydraulic, differential)

ELECTRICAL

- Alarm, back-up
- Alternator, 150 ampere, sealed, filtered air intake
- Maintenance free batteries, 12V (4), 200 amp-hour
- Heavy duty starter (two)
- Electrical hydraulic valves, base 8
- Electrical system, 24 volt
- Lights, reversing, stop, tail, turn
- Starter receptacle plug-in

OPERATOR ENVIRONMENT

- Air conditioner and heater sound suppressed, pressurized cab 73 dB(A) ISO 6394 at 70 percent fan speed.
- Rollover protective structure (ROPS/FOPS)
- Adjustable armrest
- Electro-hydraulic controls
- Electronic throttle control
- Automatic return to center articulation
- 10 inch digital touch screen information display
- Rear vision camera
- Coat hook
- Comfort suspension seat, cloth-covered
- Front fixed laminated window glass with intermittent wiper, sides (two), rear with wiper/washer
- Retractable seat belt, 76 mm (3 in)
- Hydraulic implement lockout for roading and servicing

TECHNOLOGY PRODUCTS

- VIMS – 3G
- Grade control X slope
- Overspeed/underspeed protection
- Second generation steering system
- Ripper auto stow
- Circle angle limits

SAFETY AND SECURITY

- Fire suppression ready
- Circle drive slip clutch
- Locking doors
- Ground level engine shutdown
- Secondary steering
- Working at heights tie-off anchors
- Rear tandem access platforms
- Seat belt indicator

GROUND ENGAGING TOOLS

- Moldboard, 7315 mm × 1067 mm × 50 mm (24 ft × 42 in × 2 in)
- Rear ripper with seven shank capacity, three shanks/tips provided

OTHER STANDARD EQUIPMENT

- Blade lift accumulators
- Lincoln Centro-Matic Autolube System
- Drawbar, eight shoe with replaceable wear strips
- Fuel tank, 908 L (240 gal) fast fill
- Ground level fueling
- Push plate-counterweight
- S·O·SSM ports, engine, hydraulic, transmission, coolant, fuel
- Hydraulic and electric bulkheads
- Fluid service center: engine, transmission, hydraulic oil, and coolant ports

Optional Equipment

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

OPERATOR ENVIRONMENT

- Heated seat
- Heated and ventilated seat
- Air horn
- Radio Bluetooth®
- Radio Satellite Sirius
- Outside mounted mirrors
- Heated outside mounted mirrors 24V
- Rear view camera additional dedicated monitor
- Auto articulation

POWER TRAIN

- Bar and plate dual core radiator
- Precleaner Sy-klone
- Control bade variable float

GUARDS

- Guard Package including mud guard (two) bottom, eng. compartment and front axle (two)
- Tandem fenders with mounted guardrails
- Sound suppression guard package

ELECTRICAL

- Halogen operator access lighting package
- LED operator access lighting package
- Working halogen lighting package
- Working LED lighting package
- LED warning strobe light

SAFETY

- Dual Access CAB platform
- Front facing cameras (two)
- Fire suppression system
- Wheel chocks with mounting bracket

OTHER ATTACHMENTS

- VIMS and Satellite Product Link
- VIMS and Dual (Cell/Satellite) Product Link
- Rims Only option , 25" × 29" MP

WORK TOOLS/G.E.T.

- Flat 406 mm × 60 mm (16 in × 2.36 in) cutting edge
- Serrated 406 mm × 75 mm (16 in × 2.95 in) cutting edge
- Miningbit™ 355.6 mm × 75 mm (14 in × 2.13 in) cutting edge system
- Tooth, ripper

FLUIDS

- Cold Weather Package – Arctic hydraulic oil, engine, hydraulic, transmission and coolant heater (240V/30A)

24 Motor Grader

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