Cat® 3508B Diesel Engine

- Gross Power: 698 kW (935 hp)
- Flywheel Power: 634 kW (850 hp)
- Blade Capacity to: 43.6 m³ (57.0 yd³)

D11R CD Carrydozer
Track-Type Tractor

Featured machine may include additional equipment applicable only for special applications. See your Caterpillar Dealer for available options.
**Engine**
The rugged, easy-to-service Caterpillar® 3508B Engine has 25 percent net torque rise and meets Environmental Protection Agency (EPA) and CARB emissions requirements for 2000. The Electronic Unit Injection (EUI) fuel system provides fuel efficiency with automatic air/fuel ratio adjustment and less smoke. The EUI also improves cold starting and simplifies electronic diagnostics.  pg. 4

**Operator's Station**
The comfortable, efficient control deck encourages top output. Electronic controls are low-effort and easy-to-reach. Cat Contour Series Seat provides proper support and automotive comfort. The front, side and rear views from the seat are exceptional. pg. 9

**Cooling System**
The Advanced Modular Cooling System (AMOCS) combines higher cooling capacity with easier servicing. AMOCS allows the machine to be operated in the most demanding environments with less downtime. pg. 5

**Engine/Power Train Integration**
The power train components have been enhanced to accommodate increased load capacity and horsepower. The Caterpillar Data Link System electronically combines engine, transmission and brake information to optimize overall tractor performance. pg. 6, 7, 8

**Keypad**
The easy-to-use keypad works in conjunction with the VIDS, allowing the operator to view details from alert messages for assistance in diagnosis and fast troubleshooting. pg. 11

**Vital Information Display System (VIDS)**
The Vital Information Display System provides the operator with continuous feedback on machine and system operation. The reliable, easy-to-read monitoring system also records performance data for assistance in diagnosis and fast troubleshooting. pg. 10

---

**Engineered for demanding work.**
The D11R CD’s durable construction is made for tough working conditions. It is the most technologically advanced Cat machine and offers the lowest cost-per-yard of any dozer.
Electronic Steering and Transmission Controls
This Caterpillar designed and manufactured system provides smooth, one-handed, Finger Tip Control (FTC) for steering and transmission control. Low-effort controls can reduce cycle time for increased production, while improving operator comfort. pg. 12

Automatic Blade Functions and Ripper Controls
Electro-hydraulic controls feature low-effort buttons and levers which can increase the productivity of even the most experienced operators. Operator can preset blade pitch angle for dig, carry and dump segments of dozing cycle. pg. 13

Work Tools
Tools are matched to the machine for maximum productivity. The carrydozer blade has a unique design for increased dozing efficiency. The single-shank and multi-shank rippers are designed for applications where penetration is difficult. pg. 14

Undercarriage
The elevated sprocket moves the final drives above the work area, isolating them from ground impacts. The suspended undercarriage puts more track on the ground for higher traction and less slippage. It also absorbs shocks for a smoother ride and longer machine life. pg. 15

Structures
Mainframe is heavy, strong and durable. Full box sections, steel castings and continuous rolled rails provide durable support to the suspended undercarriage, elevated final drives and other integral frame components. pg. 16

Serviceability and Customer Support
Major modular component design for excellent serviceability, allows fast in-field component exchange. pg. 17-18
**Caterpillar 3508B Diesel Engine with Electronic Unit Injection (EUI)** performs at rated net power of 634 kW (850 hp) at 1,800 rpm with a torque rise of 25 percent and meets EPA and CARB emissions requirements for 2000.

**Turbocharging and aftercooling** provide high horsepower while keeping rpm and exhaust temperatures low for long hours of continuous operation.

**The Electronic Unit Injection (EUI) system** is a unique and proven high-pressure, direct injection fuel system. This system electronically monitors operator and sensor inputs to optimize engine performance and fuel efficiency by maintaining precise fuel settings.

**The EUI system** provides high injection pressure with short duration for improved fuel economy and reduced emissions.

**Streamlined air system** helps improve combustion system efficiency and decrease exhaust temperatures.

**Deep crater piston and low crevice volume** provide more efficient combustion.

**Automatic engine overspeed control**, actuated hydraulically, helps keep the operator from overspeeding the engine.

**Proven reliability and durability** result by electronically protecting the engine during cold starts, high-altitude operation and operation with plugged air filters.

**Engine maintenance and repair** is easier through monitoring key functions and logging critical indicators. Electronic diagnostic access is possible with the Electronic Technician (ET) or Electronic Control Analyzer Programmer (ECAP).

**An aluminum spacer** between the block and head eliminates the need for block counterbores, extending block life.

**Hardened-faced valves**, through-hardened crankshaft journals and steel-backed, copper-bonded aluminum bearings, help assure reliable performance in the toughest duty.

**Components have longer life** because oil-cooled pistons and full-length, water-cooled cylinder liners provide maximum heat transfer. The cylinder heads also utilize additional coolant passages to provide maximum cooling to the engine.

**Cat Dealers’ exchange program** for major engine components can cut repair time and costs.

---

**Engine**

*The 3508B engine, when matched with a field-proven torque divider and power shift transmission, will provide years of dependable service.*
Advanced Modular Cooling System (AMOCS) utilizes an exclusive two-pass cooling system and increased cooling surface area to provide significantly more cooling capacity than conventional systems.

Servicing of the AMOCS can be performed without tilting the radiator guard.

- No need to remove or replace a major component as on single-core radiators.
- Each core module can be replaced individually (without removing the entire radiator), saving considerable cost and repair time.

Two-pass cooling system circulates coolant from the sectioned bottom tank (1), up through one side of the cooling element (2), and down through the other side (3), returning it to the bottom of the tank.

The cooling elements are individual core modules that are connected to a sectioned bottom tank. There is no top tank to remove.

- Nine steel fins per inch.
- Brass tube construction within each core.

Variable Speed Fan.

- Engine Control Module (ECM) regulates fan speed through a hydraulic variable displacement pump.
- Increases available horsepower, reducing parasitic load.
- Increases fuel efficiency.
- Reduced spectator and operator sound levels.
Power Train
The D11R CD power train provides maximum efficiency in combination with the Caterpillar 3508B Engine.

**Torque Divider.** A single-stage torque converter with output torque divider sends 75 percent of engine torque through the converter, 25 percent through a direct drive shaft for greater driveline efficiency and higher torque multiplication.

The torque converter shields the driveline from sudden torque shocks and vibration.

The more efficient and better matched torque converter provides high drawbar pull reserves at converter stall.

**Planetary Power Shift Transmission** has three speeds forward and three speeds reverse and utilizes large-diameter, high-capacity, oil-cooled clutches.

- Modulation system permits fast speed and direction changes.
- Modular transmission and bevel gear slide into rear case for servicing ease, even with ripper installed.
- Oil-to-water cooler for maximum cooling capacity.
- Forced oil flow lubricates and cools clutch packs to provide maximum clutch life.
- Controlled throttle shifting regulates engine speed during directional shifts for smoother operation and longer component life.
- Size of bevel group unit increased for higher torque.
Elevated final drives are isolated from ground and attachment induced impact loads for extended power train life.

Double-reduction, planetary final drive gears provide smooth, quiet, low-maintenance operation.

Splash lubrication and Duo-Cone Seals extend service life.

Gears and planet carriers are sized for higher loads and increased durability.

Axle and spline have been enlarged for higher torque.

D11R CD Brakes.

1 Thick, large diameter plates and disks provide higher torque capacity and increased service life.

2 Brake housing has cast-in ribs for more durability and a new valve design.

3 Cooling oil valve controls 75 gallons per minute of oil (increase of 78 percent).

4 Clutch disks allow greater torque capacity on the clutch.

5 Tapered roller bearing design provides increased service life.
**Power Train/Integration**

*Combining the electronic engine control with the Caterpillar electronic transmission control allows these critical power train components to work more intelligently.*

By communicating, these components work to optimize overall power train performance, reliability and component life for reduced power train operating cost.

**Cat Data Link electronically connects** the engine and steering controls for diagnostic and serviceability ease.

**Improved diagnostics and serviceability** are the result of electronic engine and transmission controls. The ability to store both active and intermittent indicators will simplify problem diagnosis and total repair time, resulting in improved mechanical availability and lower operating costs.

- Access to diagnostic data is made easy through the use of a single service tool – ECAP or ET software package. Diagnostic codes may also be viewed using Carrydozer Vital Information Display System.

- ET accesses data stored in the engine control module via the Cat Data Link. Information on engine boost pressure, fuel consumption, engine speed and transmission shift data can be retrieved by ET.

- ET is also a powerful diagnostic tool. It replaces 13 mechanical tools to perform functions like cylinder cut-out checks, injector solenoid test, and timing calibration.

1. Electronic Technician (ET)
2. Caterpillar Data Link
3. Vital Information Monitoring System (VIDS)
4. Engine Control Module (ECM)
5. Variable Speed Fan
6. Odometer Sensor
7. Finger Tip Control (FTC)
8. Electronic Clutch/Brake Control (ECB)
9. Electronic Transmission Control (ETC)
10. Transmission
11. Brakes
12. Automatic Engine Overspeed Control
13. Electronic Attachment Controls
Clear working view. Angled seat, tapered hood and “notched” fuel tank give the operator a clear line of sight to the front and rear work areas. Large single-pane door windows allow the operator to see close-in to each side without leaning.

Comfortable, non-tiring operation.
The isolation-mounted cab reduces noise and vibration, maintaining an internal sound level under 82 dB(A). A powerful heater/air conditioner increases operator comfort. The cab is prewired for a 12-volt or 24-volt radio, and equipped with two speakers, antenna and radio mount recessed in the headliner.

1 Low-effort Finger Tip Controls (FTC) are easily accessible and provide sure, precise maneuvering with enhanced operator comfort.

2 The Caterpillar Contour Series Seat is fully adjustable and designed for comfort and support. The seat cushion reduces the pressure on the lower back and thighs while allowing unrestricted arm and leg movement. Retractable 75 mm (3”) wide seat belt provides positive, comfortable restraints. Padded armrests are adjustable to accommodate different size operators. Air suspension seat available.

3 Cat Vital Information Display System provides instant feedback to the operator on all critical machine functions. The system also records performance data for help in diagnosis and troubleshooting.

4 Throttle rocker switch simplifies operation. High or low idle is delivered with the touch of a finger.

5 Electronic dozer control lever. A low-effort, comfortable-to-grip, electronic dozer control handle allows the operator control of all dozer functions with one hand.

6 Electronic ripper control. The rigidly mounted hand grip remains stable even when ripping in the roughest terrain.

7 Computer Aided Earthmoving System (CAES) optional.

Attachment deactivating switch turns power off to the dozer and ripper controls.
The Vital Information Display System (VIDS) provides the operator with continuous feedback on machine and system operation, and includes three levels of operator alert.

The reliable, easy-to-read monitoring system also records performance data for assistance in diagnosis and fast troubleshooting.

The system consists of three display modules:

1. **Gauge cluster module** consists of four electronically driven analog gauges which display engine coolant temperature, transmission oil temperature, hydraulic oil temperature and fuel level.

2. **Speedometer/tachometer module** includes an analog tachometer, ground speed and gear/direction readouts.

3. **Message center module** provides a variety of component and system information through a universal analog gauge and a digital message readout display. The switchable message center allows the operator to access information on several machine functions through the universal gauge, while digitally displaying the function name, status and related instructions to the operator.

Examples of system information are:
- Engine oil pressure, engine boost pressure
- Power train oil temperature
- Main hydraulic pump pressure, blade height

In standard operation the first line of information in the message center is status and the second line of information is a selected gauge parameter.

The alert indicator lamp is also located on the message center. It is activated by the main system module and flashes to indicate a serious or critical abnormal condition.

An alert alarm is activated by the main module to sound when a critical abnormal condition exists.

The keypad allows access to diagnostic data recorded in the main monitoring system module and a menu system which can tailor machine performance to an individual operator.
Keypad
Activates features at the touch of a key or accesses settings using menu keys.

Keypad allows the operator to access and acknowledge machine and system information provided by VIDS, activate automatic dozer functions, access gauge values, customize factory settings and change operator preferences on the message center module.

The easy-to-use keypad works in conjunction with VIDS, allowing the operator to view details from alert messages for assistance in diagnosis and fast troubleshooting.

The keypad consists of eight active keys that enable the operator to perform the following functions:

1. **Auto pitch key** activates auto pitch function with “on” and “off” toggle switch and lights up indicator on panel when enabled.
2. **Float key** activates float function with “on” and “off” toggle switch and lights up indicator on panel when enabled.
3. **Gauge key** accesses message center gauge analog parameter values.
4. **Set pitch key** changes preset blade pitch angle for load, carry and dump segments of dozing cycle in conjunction with auto pitch function.
5. **Set height key** changes preset blade height position for return cycle in conjunction with auto pitch function.
6. **Machine set key** changes preset dozer control response to either standard, fine or fast.
7. **Menu key** changes message center preferences, views acknowledged and logged machine events, accesses current machine stats, shows dozer attachment options, views test display and calibrates gauges.
8. **Setup key** customizes settings for up to nine permanent operator ID accounts, saves shift settings, recalls setup and clears changes.

The keypad also contains several utility keys used in conjunction with the function keys:

- **OK key** allows the operator to accept a text prompt or menu choice — the equivalent of answering YES to a question. It is also used to acknowledge events and snooze event notification.
- **Forward and Backward keys** allow the operator to scroll through various levels of information within a menu.
- **More key** allows the operator to view greater detail of an event, feature, or menu selection.
- **Cancel key** cancels the current menu selection and reverts back to the previous menu level.
Electronic Steering and Transmission Controls

Combines steering, machine direction and gear selection into a control system which can be operated with one hand for enhanced operator comfort and increased productivity.

Finger Tip Controls (FTC) are clustered for easy, one-handed operation to the operator’s left. They control steering, machine direction and gear selection.

1 Electronic Clutch and Brake (ECB) steering system consists of two small levers which send signals that control the steering valve.
- Levers require less than three pounds of pull to actuate.
- Steering is accomplished in much the same way as with traditional clutch and brake arrangements but with less time and effort.

ECB System allows the operator to work more precisely in close areas, around structures, obstacles, grade stakes, other machines or on fine grades.

Adjustable operator comfort
The system is attached to an electrical linear actuator which allows the FTC module to be adjusted up and down. Fore/aft adjustment is controlled by a manual lever on the front of the control module.

2 Machine direction is controlled by a pivoting knob which can be actuated by the thumb of the left hand. Rotating the knob up moves the machine forward. Rotating the knob down reverses the machine. The middle setting puts the machine in neutral.

3 Gear selection is made by two buttons to the right of the machine direction knob. The top (upshift) button shifts the machine transmission to the next higher gear while the bottom (downshift) button shifts to the next lower gear.

4 Parking brake switch electronically locks ECB system and transmission control.

Automatic Shifting features easier upshifts and downshifts which can increase operator productivity, reduce fatigue, and shorten cycle times.

Operators can choose between manual shifting or the Automatic shifting feature, depending on the application and/or operator’s preference.

Auto Shift allows the operator to preset a forward and reverse gear for frequent directional changes. Auto Shift settings include first forward to second reverse.
Automated Blade Assist (ABA) is a semi-automatic dozer control function that increases efficiency and reduces operator workload by automating some of the more common blade functions. The ABA system for Carrydozer tractors consists of AutoPitch, AutoSpread, and Auto Return.

**AutoPitch** allows the operator to preset blade pitch angles for optimal performance during the dozing cycle: one setting each for load, carry, spread and return. Once the AutoPitch key is activated on the VIDS keypad, the operator can select the dozing segment by pushing the yellow button on the left side of the dozer handle.

**AutoSpread** raises the blade at an operator selectable rate during the spread/dump portion of the dozing cycle. AutoSpread is activated on the keypad and is initiated by pushing the yellow button on the left side of the dozer handle.

**AutoReturn** will raise the blade fully to the end of the dozing pass and then return the blade to a starting pitch and height to begin the next dozing pass. AutoReturn is activated on the keypad and is initiated when the tractor is placed into reverse.

**Automatic Tilt limiting function** helps the operator to keep the pusharms from interfering with the track. Low-effort, automatic control functions increase productivity.

1. Thumb button selects doze segment. First hit actuates carry (lays the blade back), second hit actuates auto dump.
2. Thumb button returns blade pitch to “ready to carry”.
3. Auto pitch indicator.
4. A set of operator preferences can individually take and sort through nine ID accounts via an easy-to-use keypad.
5. Float indicator.

**Ripper control**

6. Rigidly mounted hand grip provides firm support for the operator even when ripping in the roughest terrain.
7. Low-effort thumb lever controls ripper raise and lower.
8. Low-effort finger lever controls shank in and shank out positioning.
9. Thumb button activates auto raise and stow feature.
**Carrydozer Blade** carries material inside the blade curvature for maximum productivity. This increases the effective weight of the tractor which enables pushing a larger pile of material in front of the blade.

- The carrying/pushing effects combine to significantly increase productivity.
- Material carried in the blade also enables operation on steeper slopes.
- Blade pitch improves load control. Allows the operator to optimize the blade pitch angle for each portion of the dozing cycle.
- Single lever controls all blade movements including dual-tilt, blade pitch and blade dump.
- Blade features a strong box section made of high-strength, low-alloy steel to resist twisting and cracking.
- Additional wear plating is not necessary.
- Blade cutting edges and end bits are made of proprietary Cat DH-2 steel which has high tensile strength to withstand the most severe applications.
- Standard rock guards and deflector shields on the back of the blade help protect lift and tilt cylinders from spillover.
- All rotating joint assemblies use factory-installed shims to maintain correct spacing.
- Pusharm-to-blade joints feature replaceable bearings to simplify rebuilding.
- Pin-on router protectors.

**Rippers.** Single and multi-shank rippers are made to penetrate tough material fast and rip thoroughly for use in a variety of materials.

**Single-shank Ripper.**

- Operator can adjust the shank depth from the seat using an optional single-shank pin puller.
- Large ripper frame view hole improves viewing of ripper tip.
- Heat treated, cast spacer bars in ripper carriage help to extend pocket life and reduce shank notching.
- Large, one-piece shank.

**Multi-shank ripper** tailors the tractor to the material by using one, two or three shanks.

**Hydraulic pitch adjustment cylinders** vary the shank angle to get the best penetration so the material is lifted and shattered.

**Straight pin mountings** enhance serviceability for installation and removal.

**Ripper hydraulic lines group** uses Caterpillar’s XT-3 hoses for durability and reliability in tough applications.

**Pin puller hydraulic hoses** routed along lift cylinder to increase service life and hoses are larger in diameter to increase response time for cold weather operation.

**Rear counterweights** provide proper tractor balance to maximize dozing production. Recommended if other rear attachment not specified.

**Remote lube** provides improved access to grease mainframe and to ripper frame pin joint.
**Undercarriage**

*The Caterpillar elevated sprockets are designed for better machine balance and component life.*

Suspended undercarriage design absorbs impact loads to reduce the shock loads transferred to undercarriage by up to 50 percent.

Bogie suspension conforms more closely to the ground to provide up to 15 percent more ground contact, especially in hard, uneven terrain. Higher traction means less slippage, better balance and a smoother ride.

Sprockets have five bolt-on replaceable rim segments of abrasion-resistant steel for long wear life.

Roller frames are tubular, to resist bending and twisting, with added reinforcement where operating loads are the highest.

- Roller frames attach to tractor by a pivot shaft and pinned equalizer bar.
- Large pivot shaft bushings and equalizer bar end pins, operate in an oil reservoir.
- A low-friction, no-maintenance bushing is used in the saddle connection.
- Resilient pads restrain equalizer bar oscillation.
- The recoil system is sealed and lubricated.
- Patented alignment design increases undercarriage wear life.
- Idler guards (optional) increase undercarriage life.
- Track adjustment provided to 120 percent undercarriage wear limit.

1 Positive pin retention sealed and lubricated track permanently coats the track pin with a sealed-in lubricant, minimizing metal-to-metal contact.

- Virtually eliminates internal pin and bushing wear.
- Lubricant is held in a reservoir in the track pin.
- Coated track bushing maximizes sealability.
- Stronger track link resists high impact loads.
Structures
Engineered to provide durability and the solid support necessary for maximum production and service life.

Mainframe strength. The D11R CD mainframe is built to absorb high impact shock loads and twisting forces.

1 Frame rails are full box section, designed to keep components rigidly aligned.

2 Heavy steel castings give added strength to the main case, equalizer bar saddle, front cross member and tag-link trunnion.

3 The top and bottom rails are continuous rolled sections, with no machining or welding to provide superior mainframe durability.

4 The main case elevates the final drives well above the ground level work area to protect them from impact loads, abrasion and contaminants.

5 A pivot shaft and pinned equalizer bar maintain track roller frame alignment.

6 Case and frame design features one-piece cast case with ripper and ROPS mounting. Oil reservoir included in one-piece cast casing.

7 New, heavier and stronger cast saddle with ribs increases fatigue life.

8 Radiator guard mounts, engine mounts and tag-link connections utilize one-piece cast front support to reduce the amount of welding in the front section of the frame.

Tag-link construction has fewer parts for reduced wear and brings the blade closer to the machine for more precise dozing and load control.

- Tag-link design provides solid lateral stability and better cylinder positions for constant pryout independent of blade height.
Built-in servicing ease. Less service time means more working time. Major components are made as modules and most can be removed without disturbing or removing others.

Air conditioner core can be cleaned without disconnecting line.

Air conditioner unit uses positive air pressure to help prevent dust and dirt entry.

Advanced Modular Cooling System individual cooling elements allow radiator servicing without major component removal, reducing considerable downtime and cost.

Quick disconnect fittings allow for fast diagnosis of the power train and attachment oil systems.

Diagnostic connector allows connection to Electronic Technician (ET) or ECAP. This connection gives capability of troubleshooting engine, obtaining total fuel usage history and other data stored in the Electronic Control Module.

A second diagnostic connector allows the Cat Dealer’s electronic test instrument to quickly troubleshoot the electrical system.

Pressure test points for power train and hydraulic systems are provided.

Grouped service points and excellent access to service areas make routine checks fast and convenient.

Quick, easy service access and inspection of daily maintenance items.

Caterpillar remanufactured dozer hydraulic cylinders and rods, starters, alternators, cylinder heads, short blocks, engines, oil pumps and final drive hubs are available for fast, economical repairs.

Caterpillar Vital Information Display System analyzes critical temperatures and pressure, giving visual and audible warning for fast troubleshooting.

Ecology drains provide an environmentally safer method to drain fluids. They are included on the radiator, hydraulic tank and major power train components.

Scheduled Oil Sampling made easier through live sampling ports for the engine, power train and hydraulics.

Oil change system optional for quick service to engine and power train oil.

Tilt cylinder lines are routed on the outside of the tag-link for ease of service.
Your Cat Dealer offers a wide range of services that can be set up under a customer support agreement when you purchase your equipment. The dealer will help you choose a plan that can cover everything from machine and attachment selection to replacement to help you get the best return on your investment.

**Selection.** Make detailed comparisons of the machines you are considering before you buy. How long do components last? What is the cost of preventive maintenance? What is the true cost of lost production? Your Cat Dealer can give you precise answers to these questions.

**Purchase.** Look past initial price. Consider the financing options available as well as day-to-day operating costs. This is also the time to look at dealer services that can be included in the cost of the machine to yield lower equipment owning and operating costs over the long run.

**Operation.** Improving operating techniques can boost your profits. Your Cat Dealer has training videotapes, literature and other ideas to help you increase productivity.

**Machine management services.** Cat Dealers help manage equipment investments with:
- Custom Track Service.
- Effective preventive maintenance programs.
- Diagnostic programs like Scheduled Oil Sampling and Technical Analysis.
- Information to make the most cost effective repair option decisions.
- Customer meetings, training for operators and mechanics.

**Replacement.** Repair, rebuild or replace? Your Cat Dealer can help you evaluate the cost involved so you can make the right choice.

**Product support.** You will find nearly all parts at our dealer parts counter. Cat Dealers utilize a world wide computer network to find in-stock parts to minimize machine down time. Save money with remanufactured parts. You receive the same warranty and reliability as new products at a cost savings of 40 to 70 percent.
Engine
Four-stroke cycle, 60° V8, Cat 3508B Diesel Engine.

**Features**
- meets EPA and CARB emissions requirements for 2000
- heavy cast modular iron block with extensive ribbing for reduced internal stress
- Electronic Unit Injection (EUI) for increased reliability, reduces particulate emissions, better starting, optimum fuel consumption, easy diagnostics
- parallel manifold porting with two intake and two exhaust valves per cylinder. Hardened-faced valves, hardened-alloy steel seats and valve rotators
- cam-ground and tapered, two-piece ferrous/aluminum pistons with three rings, cooled by oil spray
- steel-backed, copper-bonded, aluminum bearings, through-hardened crankshaft journals
- pressure lubricated with full-flow filtered and cooled oil
- dry-type air cleaner with primary and secondary elements
- 24-volt, direct-electric starting system, 100-amp alternator with four 12-volt, 190 amp-hour batteries
- engine/torque divider module is isolation-mounted to the mainframe reducing machine vibration and structure-radiated noise
- water-cooled turbocharger bearing for longer life

**Dimensions**
- Bore 170 mm 6.7"
- Stroke 190 mm 7.5"
- Displacement 34.5 liters 2105 in³

**Ratings at 1800 rpm**

<table>
<thead>
<tr>
<th></th>
<th>kW</th>
<th>hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross power</td>
<td>698</td>
<td>935</td>
</tr>
<tr>
<td>Flywheel power</td>
<td>634</td>
<td>850</td>
</tr>
</tbody>
</table>

The following ratings apply at 1800 rpm when tested under the specified standard conditions for the specified standard:

**Net power**

<table>
<thead>
<tr>
<th></th>
<th>kW</th>
<th>hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caterpillar</td>
<td>634</td>
<td>850</td>
</tr>
<tr>
<td>ISO 9249</td>
<td>634</td>
<td>850</td>
</tr>
<tr>
<td>ISO 3046-2</td>
<td>634</td>
<td>850</td>
</tr>
<tr>
<td>EEC 80/1269</td>
<td>634</td>
<td>850</td>
</tr>
</tbody>
</table>

**Final Drives**
Double-reduction planetary final drive gears with tapered roller bearings.

**Transmission**
Planetary power shift with three speeds forward and reverse.

**Maximum travel speeds**

<table>
<thead>
<tr>
<th></th>
<th>km/h</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward</td>
<td>1</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>11.8</td>
</tr>
<tr>
<td>Reverse</td>
<td>1</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8.2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>14.0</td>
</tr>
</tbody>
</table>

**Features**
- special modulation system permits fast speed and direction changes
- 533 mm (21 in) diameter, high torque capacity oil-cooled clutches
- exclusive F 37 friction material for excellent life
- modular transmission, bevel gear and differential plug into rear of main drive case
- two oil-to-water coolers mounted under radiator
- single-stage torque converter with output torque divider
- double universal joint eases service

**Service Refill Capacities**

<table>
<thead>
<tr>
<th>Component</th>
<th>L</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>1609</td>
<td>425</td>
</tr>
<tr>
<td>Cooling system</td>
<td>238.8</td>
<td>63</td>
</tr>
<tr>
<td>Engine crankcase</td>
<td>106</td>
<td>28</td>
</tr>
<tr>
<td>Power train</td>
<td>344</td>
<td>91</td>
</tr>
<tr>
<td>Final drives (each)</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Roller frames (each)</td>
<td>95</td>
<td>25.1</td>
</tr>
<tr>
<td>Pivot shaft compartment</td>
<td>51</td>
<td>13.5</td>
</tr>
<tr>
<td>Implement hydraulic system tank only</td>
<td>227.8</td>
<td>60</td>
</tr>
</tbody>
</table>

**Weight**
(approximate)

**Shipping:**
Includes lubricants, coolant, 20% fuel and ROPS with ROPS cab 75 455 kg (166,000 lb)

**Operating:**
Includes lubricant, coolant, full fuel tank, hydraulic controls and fluids, 910 mm (36 in) extreme service shoes, 11 carrydozer, single-shank ripper [optional equipment and operator 113 000 kg (248,600 lb)]
Sealed and Lubricated Track
Positive Pin Retention (PPR) for extra protection of track seal in high impact conditions.

- **Pitch**: 318 mm 12.5"
- **Number shoes/side**: 41
- **Shoe type**: Extreme service
- **Width of shoe**: 910 mm 36.0"
- **Length of track on ground**: 4444 mm 14' 7"
- **Grouser height (from ground face of shoe)**: 102 mm 4.0"
- **Ground clearance**: 623 mm 24.5"
- **Gauge**: 2896 mm 9' 6"

Features:
- Lubricant reduces internal bushing wear
- Hydraulic track adjusters, track guiding guards and large, positive-clamping, two-piece master link are standard
- Improved track joint sealability
- Stronger track link to resist high impact loads

Track Roller Frame
Lifetime lubricated rollers and idlers resiliently mounted to roller frame by a series of bogies.

Features:
- Tubular design resists torsional loads
- Bogies oscillate on sealed and lubricated cartridge pin connections, travel controlled by resilient pads
- Roller frame attaches by a pivot shaft and fully pinned equalizer bar
- Eight rollers per side
- Large pivot bushings operate in an oil reservoir
- Equalizer bar-roller frame ball joint pins and high capacity bearings have improved seal and operate in oil reservoir
- Improved center bearing in equalizer bar for improved life. Improved pin corrosion resistance, provides ease of serviceability.
- Recoil system is fully sealed and lubricated
- Oscillation of 362 mm (14.3 in)
- Large idler caps with three-bolt mounting
- Improved track roller frame alignment
- Increased track adjustment

Cab
Caterpillar cab and Rollover Protective Structure (ROPS) are standard in North America, Europe, and Japan.

Features:
- Meets OSHA and MSHA limits for operator and sound exposure with doors and windows closed (according to ANSI/SAE J1166 MAY90)
- ROPS meets the following criteria: SAE J394
  - SAE J1040 APR88
  - SAE J1040 MAY94
  - ISO 3471-1; 1986
  - ISO 3471-1; 1994
- Also meets the following criteria for Falling Objects Protective Structure (FOPS):
  - SAE J231 JAN81
  - ISO 3449; 1992 LEVEL II

Note: When properly installed and maintained, the cab offered by Caterpillar when tested with doors and windows closed according to ANSI/SAE J1166 MAY90, meets OSHA and MSHA requirements for operator sound exposure limits in effect at time of manufacture. The operator sound pressure level is under 82 dBA when measured per ISO 6394 or 88/682/EEC.

Steering and Brakes
Electronic Finger Tip Controls (FTC) combine steering clutch disengagement and braking for each track. Pull back slightly to disengage steering clutches, fully back to brake track.

- Low-effort, Finger Tip Controls for steering
- Hydraulically applied multiple-disk clutches
- High capacity brakes are hydraulically released, spring applied, and have computerized electronic brake control for excellent brake modulation
- Single pedal simultaneously applies brakes to tracks for fast stops
- Parking brake applied electronically, which engages parking brake and locks the Finger Tip Controls
- Increased capacity (50 percent greater power dissipation)
- Larger diameter disks (24 in vs 18.25 in)

Hydraulic Controls
Complete system consists of pump, tank with filter, oil cooler, valves, lines, linkage and control levers.

Attachments – Gear-type pump

| Output at 1890 rpm and 6895 kPa (1000 psi) | 670 liters/min | 177 gpm |
| Tilt cylinder flow | 250 liters/min | 66 gpm |

Relief valve settings

| Carrydozer | 24 135 kPa | 3500 psi |
| Dump cylinder | 24 825 kPa | 3600 psi |
| Ripper (Lift) | 24 135 kPa | 3500 psi |
| Ripper (Pitch) | 24 135 kPa | 3500 psi |

Electro-hydraulic pilot valves assist operations of ripper and dozer tilt controls. Standard hydraulic systems include two valves for carrydozer and dump, and a regeneration valve for quick dump.

Optional hydraulic component

Two additional valves for ripper function
- Hydraulically applied multiple-disk clutches
- Adds 137 kg (303 lb)
Dimensions
All dimensions are approximate.

With attachments add to overall machine length:

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Length</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Shank ripper</td>
<td>2156 mm</td>
<td>7' 0.7&quot;</td>
</tr>
<tr>
<td>Multi-Shank ripper</td>
<td>1935 mm</td>
<td>6' 4&quot;</td>
</tr>
<tr>
<td>11 Carrydozer</td>
<td>2178 mm</td>
<td>7' 1.5&quot;</td>
</tr>
<tr>
<td>Width over trunnions</td>
<td>4365 mm</td>
<td>14' 4&quot;</td>
</tr>
</tbody>
</table>

Note: model shown equipped with 910 mm (36") shoes.

Bulldozer
Tag-link dozer coupling brings blade closer for better balance and control.

11 Carrydozer Blade

<table>
<thead>
<tr>
<th>Specification</th>
<th>Length</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade capacity</td>
<td>43.6 m³</td>
<td>57.0 yd³</td>
</tr>
<tr>
<td>Width with blade (over end bits)</td>
<td>6706 mm</td>
<td>22'</td>
</tr>
<tr>
<td>Blade height w/cutting edge at 53°</td>
<td>2740 mm</td>
<td>9' 0&quot;</td>
</tr>
<tr>
<td>Blade height w/cutting edge at 53° and rock guard</td>
<td>3255 mm</td>
<td>10' 8&quot;</td>
</tr>
<tr>
<td>Digging depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack back</td>
<td>688 mm</td>
<td>27.1&quot;</td>
</tr>
<tr>
<td>Full dump</td>
<td>1708 mm</td>
<td>67.2&quot;</td>
</tr>
<tr>
<td>Ground clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack back</td>
<td>1846 mm</td>
<td>6' 1&quot;</td>
</tr>
<tr>
<td>Full dump</td>
<td>307 mm</td>
<td>12.1&quot;</td>
</tr>
<tr>
<td>Maximum tilt</td>
<td>1800 mm</td>
<td>5' 11&quot;</td>
</tr>
<tr>
<td>Weight*</td>
<td>23 600 kg</td>
<td>51,920 lb</td>
</tr>
<tr>
<td>Total operating weight**</td>
<td>113,000 kg</td>
<td>248,600 lb</td>
</tr>
</tbody>
</table>

Features
- dual-tilt/dump cylinders are standard for improved blade loading, carrying and dumping
- cutting edges and end bits are DH-2 steel for maximum durability
- dozer lift cylinders mount to top corners of radiator guard to improve mechanical advantage
- single lever controls all blade functions
- aggressive heel clearance for improved blade penetration
- rock guard
- wear plates
- router protectors

* Does not include hydraulic controls but includes blade cylinders.
** Includes blade and single-shank ripper, hydraulic controls, blade cylinders, coolant, lubricants, full fuel tank, 910 mm (36 in) shoes, ROPS/FOPS cab and operator.
Ripper

Redesigned ripper frame for improved visibility to ripper tip. Hydraulic tip adjustment cylinders vary shank angle to aid penetration and help lift and shatter rock.

<table>
<thead>
<tr>
<th>Overall beam width</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>–</td>
<td>3330</td>
</tr>
<tr>
<td>ft/in</td>
<td>–</td>
<td>10' 11”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum penetration force* (shank vertical)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>kN</td>
<td>326</td>
<td>306</td>
</tr>
<tr>
<td>lb</td>
<td>73,350</td>
<td>68,850</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum penetration (standard tip)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>1612</td>
<td>1070</td>
</tr>
<tr>
<td>ft/in</td>
<td>5' 3”</td>
<td>3' 6”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pryout force (multi-shank ripper with one tooth)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>kN</td>
<td>642</td>
<td>650</td>
</tr>
<tr>
<td>lb</td>
<td>144,450</td>
<td>146,250</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum clearance raised (under tip, pinned in bottom hole)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>1115</td>
<td>1137</td>
</tr>
<tr>
<td>in</td>
<td>43.9”</td>
<td>44.8”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of shank holes</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight (without hydraulic controls)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>12 733</td>
<td>12 025</td>
</tr>
<tr>
<td>lb</td>
<td>28,076</td>
<td>26,515</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total operating weight** (with 11 CD blade and ripper)</th>
<th>Single-shank</th>
<th>*Multi-shank Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>113 000</td>
<td>112 521</td>
</tr>
<tr>
<td>lb</td>
<td>248,600</td>
<td>247,039</td>
</tr>
</tbody>
</table>

Features
- optional single-shank pin puller lets operator adjust shank depth from seat
- large one-piece shank

** Specifications are converted from British to metric measure and rounded.

** Operating weight includes lubricant, coolant, full fuel tank, hydraulic controls, 910 mm (36 in) extreme service shoe, ROPS/FOPS cab, and operator.

Standard Equipment

Standard and optional equipment may vary. Consult your Caterpillar Dealer for specifics.

Electrical
- Alarm, back-up
- Alternator, 100-amp
- Batteries, 12-volt (4), 190 amp-hour
- Converter, 12-volt, 5 amp
- Deutsch electrical connectors
- Diagnostic connector (3)
- Horn, forward warning
- Lighting system, Halogen (2 forward, 2 rear)
- Receptacle, starting

Operator Environment
- Armrests, adjustable
- Attachment control lever lockout switch
- Cat VIDS with fuel gauge, temperature gauges, tachometer, odometer, hour meter and diagnostic code readout
- Decelerator and governor switch
- Electronic controls
- Finger Tip Control (FTC) steering
- Heater
- Radio-ready cab
- Rearview mirror
- ROPS/FOPS sound suppressed cab with rollbar

Seat, adjustable contour suspension
Seat belt, retractable

Power Train
- 3508B Diesel Engine:
  - 24-volt electric start
  - Air cleaner with precleaner (2)
  - Electronic Unit Injection (EUI)
  - Ether starting aid, automatic
  - Fuel priming pump
  - Muffler with rain cap (2)
  - Turbocharged/aftercooled
- Advanced Modular Cooling System (AMOCS)
- Blower fan with hydraulic demand drive
- Clutch and brake system, electronic
- Controlled throttle shifting
- Drains, ecology fluid
- Electronic transmission control module
- Parking brake, electronic
- Planetary final drives, 4-planet, double-reduction
- Power shift transmission (3 speed)
- Pre cleaner with dust ejector
- Torque divider

Undercarriage
- Grousers, 910 mm (36”), extreme service, with sealed and lubricated PPR track (41 section)
- Hydraulic track adjusters
- Suspension-type undercarriage, 8-roller tubular track roller frame
- Track guides

Other Standard Equipment
- Dual-tilt blade control
- Guards:
  - Bottom, extreme service, hinged, with front towing device
  - Hinged radiator
  - Hinged power train
- Pilot-operated, two-valve hydraulic system for bulldozer control
- Vandalism protection (8 caplocks)
## Optional Equipment

(with approximate change in operating weight)

<table>
<thead>
<tr>
<th>Item</th>
<th>kg</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air conditioner (R134a)</td>
<td>50</td>
<td>110</td>
</tr>
<tr>
<td>Antifreeze -50°C (-58°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulldozer:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Carrydozer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Converter, Aux. 24-volt to 12-volt</td>
<td>2.7</td>
<td>6</td>
</tr>
<tr>
<td>Counterweight:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Rear mounted (basic)</td>
<td>13436</td>
<td>29,620</td>
</tr>
<tr>
<td><em>(additional weight for two)</em></td>
<td>2145</td>
<td>4700</td>
</tr>
<tr>
<td>Engine enclosure</td>
<td>97</td>
<td>214</td>
</tr>
<tr>
<td>Fan, defroster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast-fill fuel system for use with:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counterweight</td>
<td>34</td>
<td>58</td>
</tr>
<tr>
<td>Ripper</td>
<td>34</td>
<td>58</td>
</tr>
<tr>
<td>Guards:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final drive seal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heater:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine coolant (120-volt or 240-volt)</td>
<td>1.4</td>
<td>3</td>
</tr>
<tr>
<td>Fuel</td>
<td>7.7</td>
<td>17</td>
</tr>
<tr>
<td>Hydraulic controls for ripper (two additional valves)</td>
<td>108</td>
<td>238</td>
</tr>
<tr>
<td>Lights, supplemental</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 front</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>2 rear</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Lines, cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting, cylinder</td>
<td>324</td>
<td>745</td>
</tr>
<tr>
<td>Oil change system for quick service to engine</td>
<td>1.8</td>
<td>4</td>
</tr>
<tr>
<td>Paint, black, hood and cylinders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pin puller</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-shank ripper</td>
<td>100</td>
<td>220</td>
</tr>
<tr>
<td>Hydraulic control</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Prelubrication system, engine</td>
<td>8.2</td>
<td>18</td>
</tr>
<tr>
<td>Ripper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-shank</td>
<td>12969</td>
<td>28,592</td>
</tr>
<tr>
<td>Single-shank</td>
<td>13584</td>
<td>29,885</td>
</tr>
<tr>
<td>Roller, carrier</td>
<td>327</td>
<td>720</td>
</tr>
<tr>
<td>Rollers, single-flange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seat, air suspension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seat, vinyl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steps, heavy-duty, and handles</td>
<td>102</td>
<td>255</td>
</tr>
<tr>
<td>Sound suppression, spectator</td>
<td>2.3</td>
<td>5</td>
</tr>
</tbody>
</table>

*A rear attachment and/or counterweight is required.*