

# D11R

Track-Type Tractor



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#### Cat® 3508B Diesel Engine

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Gross Power	698 kW	935 hp
Flywheel Power	634 kW	850 hp
Blade Capacity to	34.4 m <sup>3</sup>	45.0 yd <sup>3</sup>

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Featured machine may include additional equipment applicable only for special applications. See your Caterpillar Dealer for available options.



## D11R Track-Type Tractor

*The D11R combines power and efficiency with advanced technology for outstanding production at lower cost-per-yard.*

### Engine

The rugged, easy-to-service Caterpillar 3508B engine has a 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**

### 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**

### Cooling System

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

### 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**

### 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**

### *Engineered for demanding work.*

*The D11R's durable construction is made for tough working conditions. It keeps material moving with the reliability and low operating costs you expect from Cat machines.*





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### **Electronic Steering and Transmission Controls**

This Caterpillar designed and manufactured system provides smooth, one-handed, Finger Tip Control (FTC) for steering and transmission. Low-effort controls can reduce cycle time for increased production, while improving operator comfort.

**pg. 12**

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### **✓ 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**

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### **Work Tools**

Tools are matched to the machine for maximum productivity. A variety of bulldozer blades, rippers and other attachments allow you to adapt the D11R to match your specific application. **pg. 14**

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### **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 absorbs shocks for a smoother ride and longer machine life. **pg. 15**

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### **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**

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### **Serviceability and Customer Support**

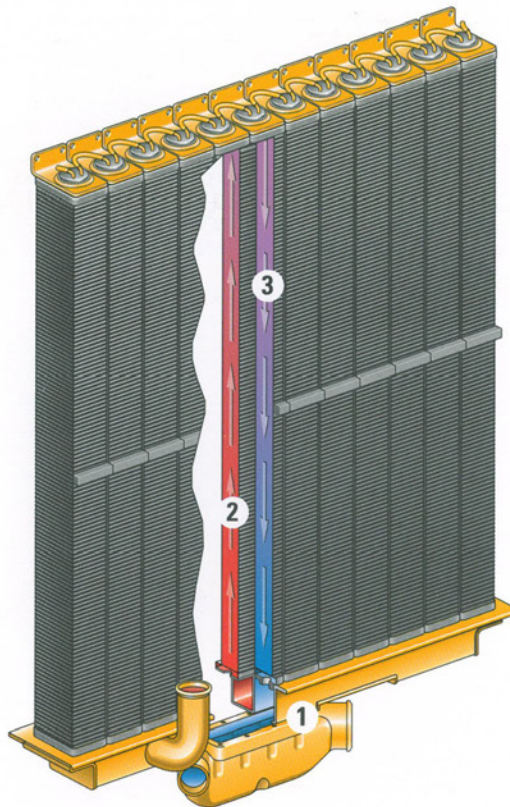
Major modular component design for excellent serviceability allows fast in-field component exchange. **pg. 17-18**



**✓ New feature**

## Cooling System

*Superior cooling in the most demanding work conditions.*



**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 power train provides maximum efficiency in combination with the Caterpillar 3508B Engine.*

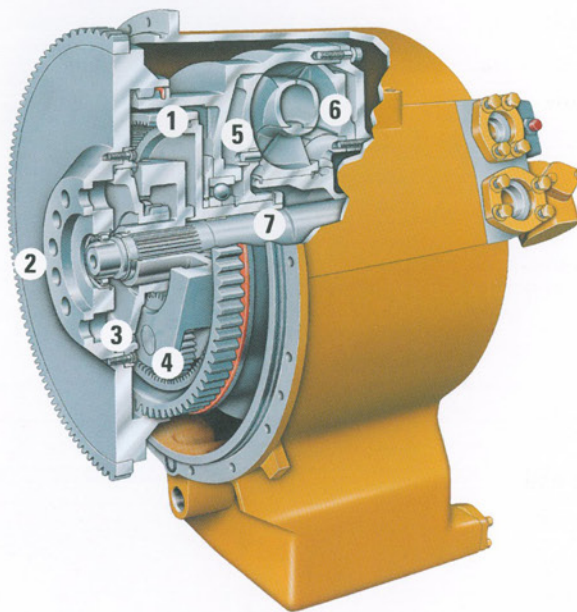
**Torque Divider.** A single-stage torque converter with output torque divider sends 75 percent of engine torque through the converter, 25 percent through a direct drive shaft for greater driveline efficiency and higher torque multiplication.

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

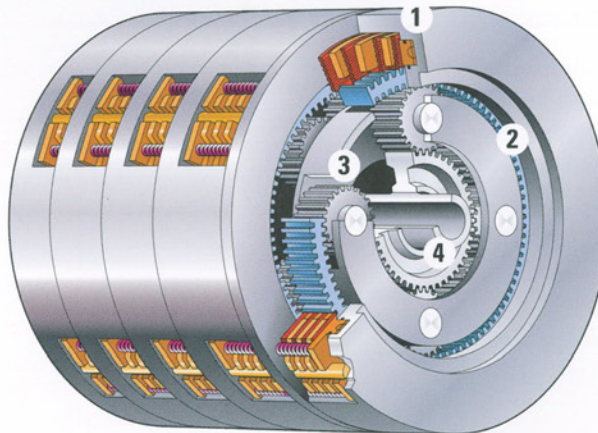
**The more efficient and better matched torque converter** provides high drawbar pull reserves at converter stall.

**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.



- 1 Ring gear
- 2 Flywheel
- 3 Sun gear
- 4 Planet gear
- 5 Turbine
- 6 Impeller
- 7 Output shaft



- 1 Clutch packs
- 2 Ring gear
- 3 Planet gear
- 4 Sun gear



**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 Brakes.**

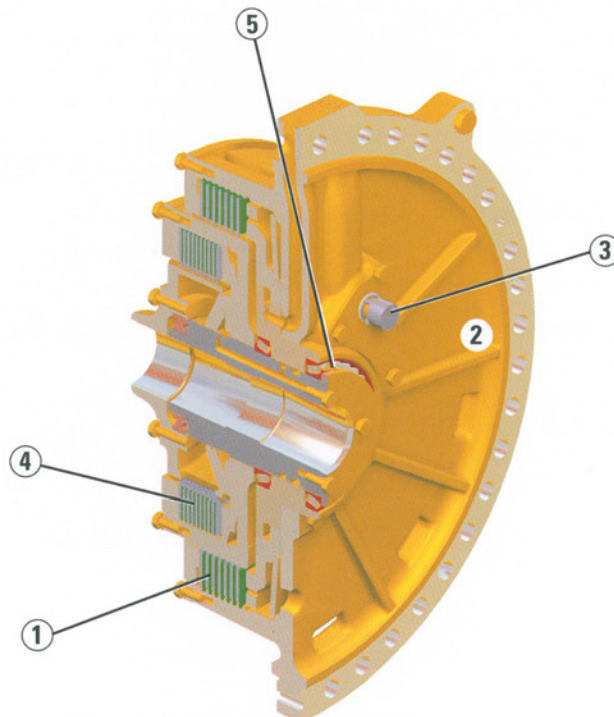
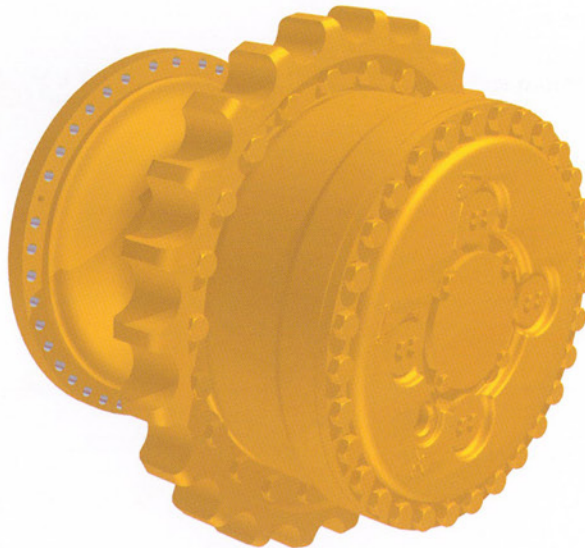
**1 Thick, large diameter plates and disks** provide higher torque capacity and increased service life.

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

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

**4 Clutch disks** allow greater torque capacity on the clutch.

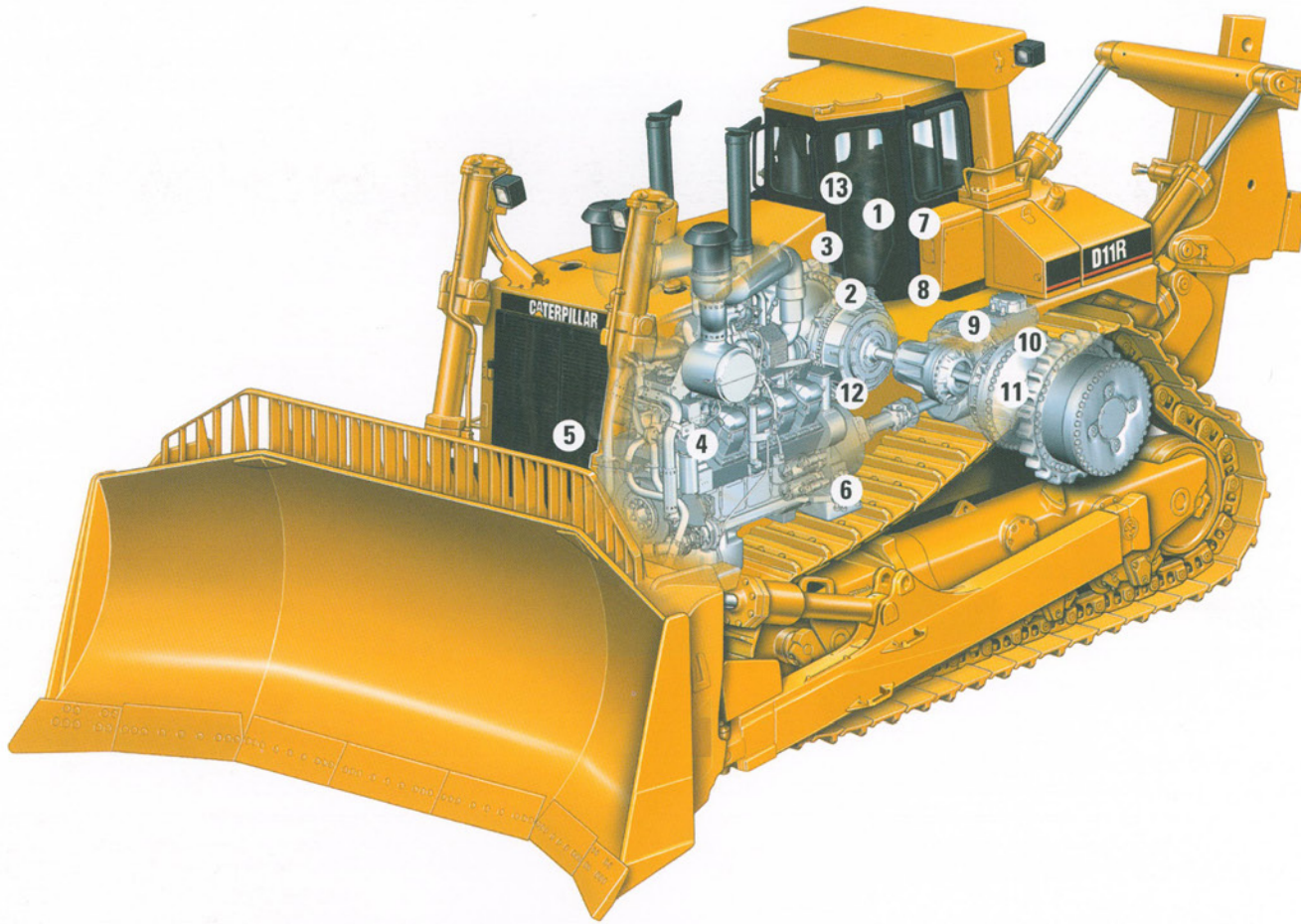
**5 Tapered roller bearing design** provides increased service life.





## 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.
- 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 Display 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**



## Operator's Station

*Designed for comfort and ease of operation.*



**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.



# Vital Information Display System

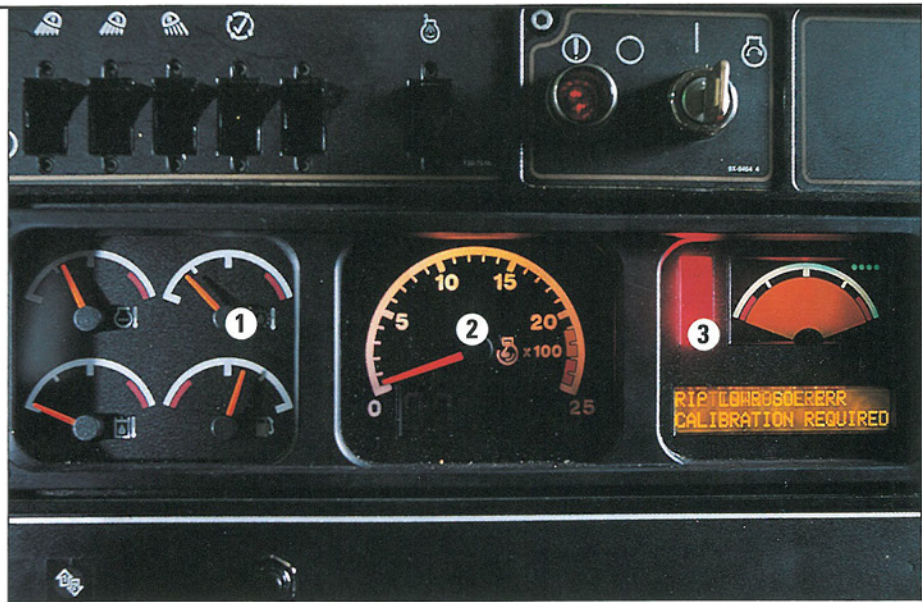
*Electronic monitoring system continuously watches machine systems and alerts operator to abnormal conditions.*

**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

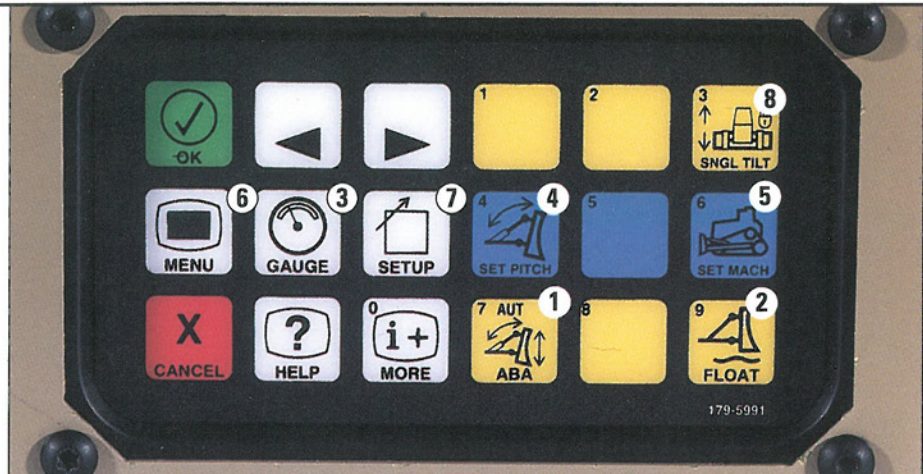
*Activates features at the touch of a key or accesses settings using menu keys.*

**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 **Machine set key** changes preset dozer control response to either standard, fine or fast.
- 6 **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.
- 7 **Setup key** customizes settings for up to nine permanent operator ID accounts, saves shift settings, recalls setup and clears changes.
- 8 **Single tilt key** changes operating mode from dual tilt to single tilt for improved pryout capability.

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 (up-shift) button shifts the machine transmission to the next higher gear while the bottom (down-shift) 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.



## Automatic Blade Function and Ripper Controls

*Low-effort, automatic control functions significantly reduce operator fatigue for increased performance.*



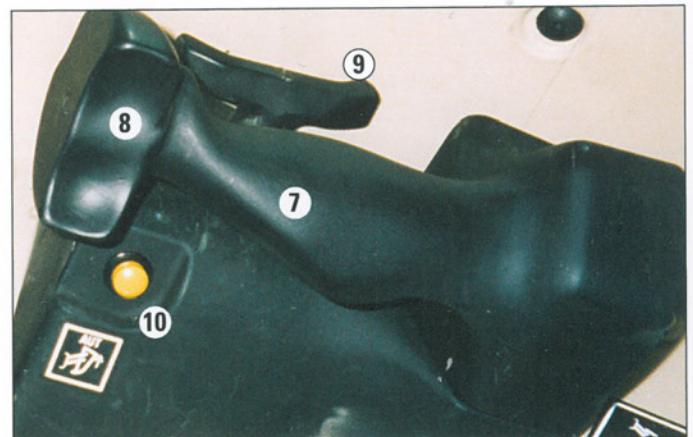
**Automated Blade Assist (ABA)** is a semi-automatic dozer control function that increases efficiency and reduces operator workload by automating some of the more common blade functions. The ABA system for a dual-tilt tractor consists of AutoPitch.

**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 then select the dozing segment by pushing the yellow button on the left side of the dozer handle.

- 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.
- 6 Single tilt indicator.

### Ripper control

- 7 Rigidly mounted hand grip provides firm support for the operator even when ripping in the roughest terrain.
- 8 Low-effort thumb lever controls ripper raise and lower.
- 9 Low-effort finger lever controls shank in and shank out positioning.
- 10 Thumb button activates auto raise and stow feature.





## Work Tools

*A variety of attachments provides the flexibility to match the machine to the job.*



**Bulldozers.** The 11SU blade, rated at 27.2 m<sup>3</sup> (35.5 yd<sup>3</sup>) and the 11U blade at 34.4 m<sup>3</sup> (45.0 yd<sup>3</sup>) make full use of D11R power.

**Dual-tilt 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.

**Two position tilt cylinder mounting** for increased flexibility for your specific application.

**Cutting edges are DH-2 steel.** End bits are DH-3 to provide maximum service life in tough materials.

**Tilt cylinder lines** are routed along outside of tag-link for improved serviceability.



**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.
- Available in deep rip configuration.

**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.

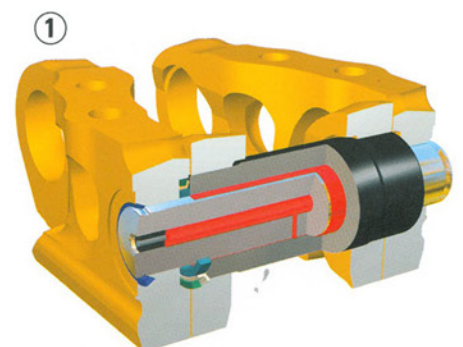
**Sprockets** have five bolt-on replaceable rim segments of abrasion resistant steel for long wear life.

**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 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.

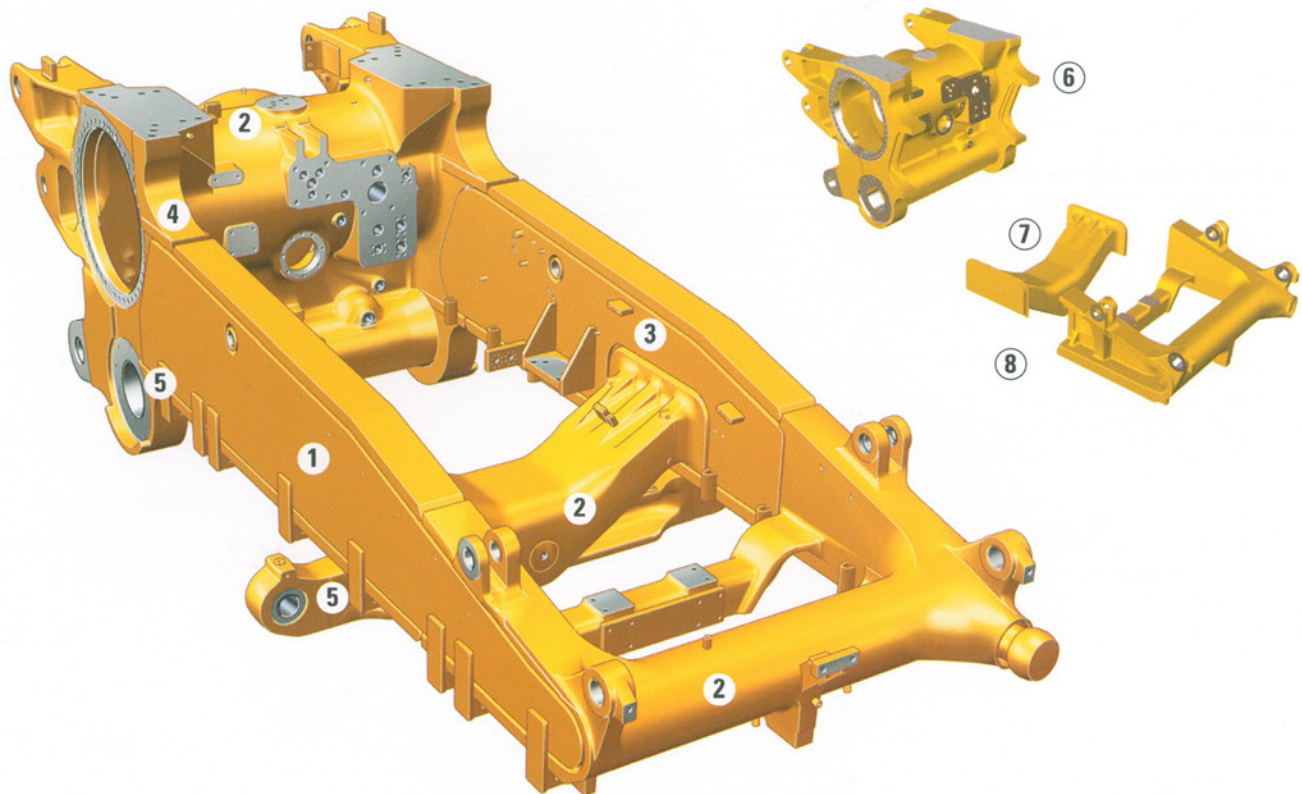
- Virtually eliminates internal pin and bushing wear.
- Lubricant is held in a reservoir in the track pin.
- Coated track bushing maximizes sealability.
- Stronger track link resists high impact loads.





## Structures

*Engineered to provide durability and the solid support necessary for maximum production and service life.*



**Mainframe strength.** The D11R 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 necessary. This provides 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 casting.
- 7 **Heavy cast saddle** with ribs increases frame life.
- 8 **Radiator guard mounts, engine mounts and tag-link connection** utilizes one-piece cast front support to reduce the amount of welding in the front section of the frame.

- 9 **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.





## Serviceability

*Major modular component design allows fast infield component exchange, lowering time spent on maintenance.*

**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 better ease of service.



## Total Customer Support

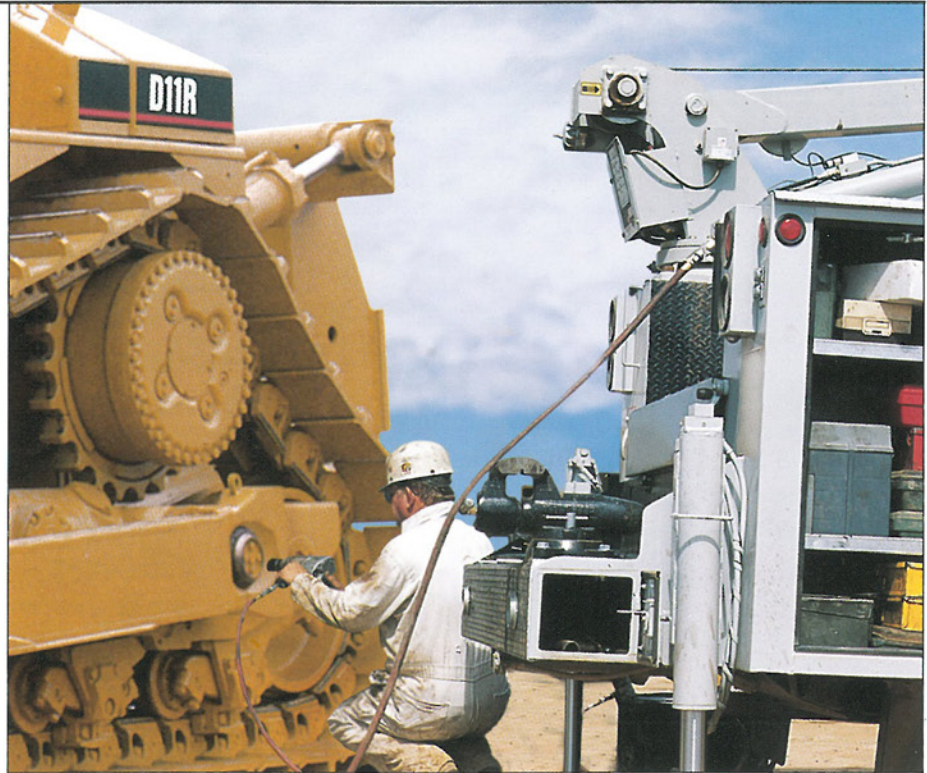
*Unmatched in the industry!*

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.

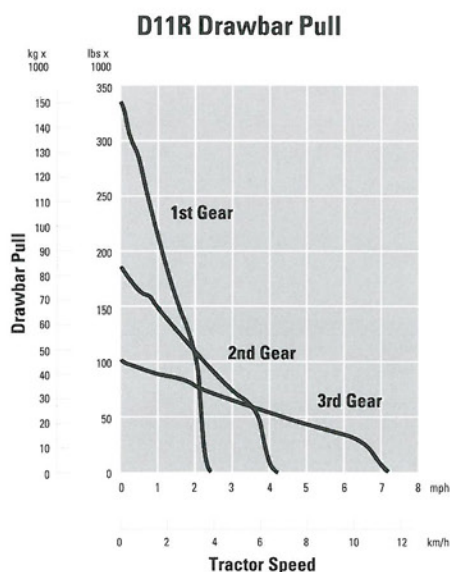
Ratings at 1800 rpm*	kW	hp
Gross power	698	935
Flywheel power	634	850

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

Net power	kW	hp
Caterpillar	634	850
ISO 9249	634	850
ISO 3046-2	634	850
EEC 80/1269	634	850

### Dimensions

Bore	170 mm	6.7"
Stroke	190 mm	7.5"
Displacement	34.5 liters	2105 in <sup>3</sup>



### \*Power rating conditions

- based on standard conditions of 25°C (77°F) and 99 kPa (29.32 in Hg) dry barometer
- used 35°C API gravity fuel having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 30°C (86°F) [ref. a fuel density of 838.9 g/L (7.001 lb/U.S. gal)]
- net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator
- no derating required up to 2286 m (7,500 ft) altitude beyond 2286 m (7,500 ft) automatic derating occurs

### 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 two 12-volt, 244 amp-hour batteries
- engine/torque divider module is isolation mounted to the main frame reducing machine vibration and structure-radiated noise
- water-cooled turbocharger bearing for longer life

## Final Drives

Double reduction planetary final drive gears with tapered roller bearings.

### Features

- splash lubricated and sealed with Duo-cone floating ring seals
- sprockets have five bolt-on, replaceable rim segments with more bolts to resist high impact loads
- eliminate ground and implement induced impact loads for extended power train life
- abrasion resistant steel increases sprocket segment wear life

## Transmission

Planetary power shift with three speeds forward and reverse.

### Maximum travel speeds

Speed		km/h	mph
Forward	1	3.9	2.4
	2	6.8	4.2
	3	11.8	7.3
Reverse	1	4.7	2.9
	2	8.2	5.1
	3	14.0	8.7

### Features

- special modulation system permits fast speed and direction changes
- 533 mm (21") 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

	L	Gallons
Fuel tank	1609	425
Cooling system	238.8	63
Engine crankcase	106	28
Power train	344	91
Final drives (each)	30	8
Roller frames (each)	95	25.1
Pivot shaft compartment	51	13.5
Implement hydraulic system tank only	227.8	60

## Weight

(approximate)

### Shipping:

(Includes lubricants, coolant, 20 percent fuel and ROPS with FOPS cab) 74 182 kg (163,200 lb)

### Operating:

[Includes lubricant, coolant, full fuel tank, hydraulic controls and fluids, 810 mm (32 in) extreme service shoes, 11U ABR bulldozer, single-shank ripper with pin puller and fast fuel, engine doors (optional equipment) and operator 104 590 kg (230,100 lb)]



## 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 dB(A) when measured per ISO 6394 or 86/662/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)

## 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	710 mm	28.0"
Length of track on ground	4444 mm	14' 7"
Ground contact area	6.3 m <sup>2</sup>	9,781 in <sup>2</sup>
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

## 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)	620 liters/min	164 gpm
Tilt cylinder flow	155 liters/min	41 gpm

Relief valve settings

Bulldozer	22 750 kPa	3300 psi
Tilt cylinder	24 300 kPa	3525 psi
Ripper (lift)	22 750 kPa	3300 psi
Ripper (pitch)	22 750 kPa	3300 psi

Electro-hydraulic pilot valves assist operations of ripper and dozer tilt controls. Standard hydraulic systems include two valves for 11SU or 11U bulldozer and tilt.

### Optional hydraulic component

Two additional valves for ripper function:

- hydraulic shank pitch adjustment
- adds 122 kg (268 lb)

## 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; saddle connection is a low-friction, no-maintenance bushing
- improved center bearing in equalizer bar for improved life, improved corrosion resistance, and easier to remove
- 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



## Dimensions

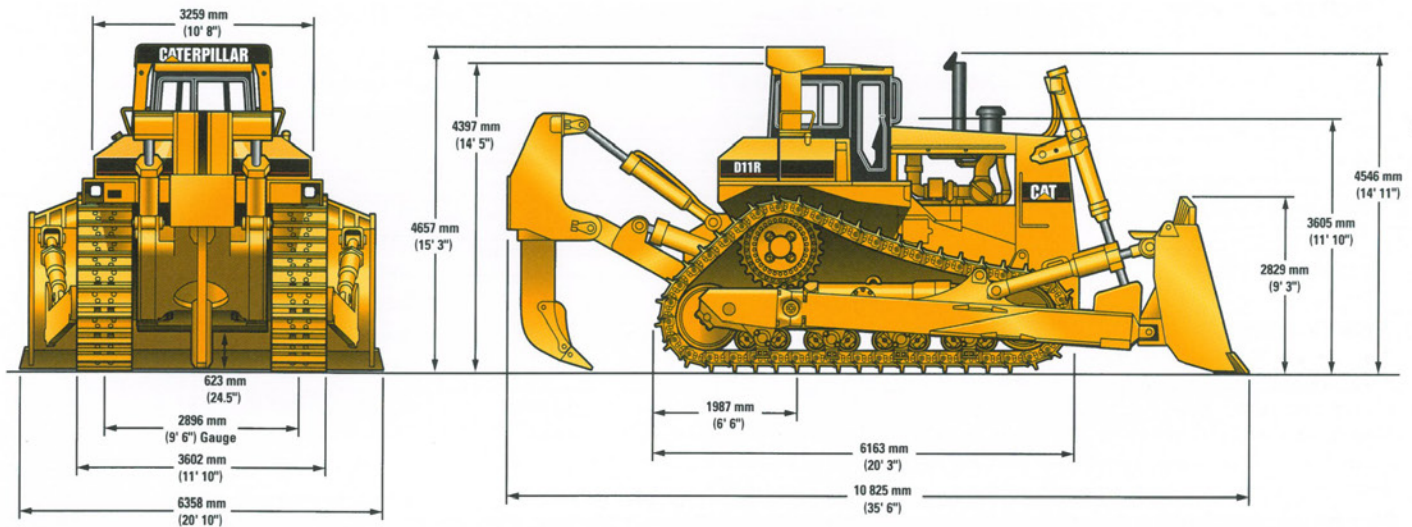
All dimensions are approximate.

With attachments add to overall machine length:

Single-shank ripper	1850 mm	6' 1"
Single-shank ripper with push block	2190 mm	7' 2.2"
Multi-shank ripper	1915 mm	6' 3.4"
11SU Dozer	2220 mm	7' 3.4"
11U Dozer	2668 mm	8' 9"

Width over trunnions	4365 mm	14' 4"
Drawbar height (centerline of clevis) from ground face of shoe	777 mm	30.6"

**Note:** model shown equipped with 710 mm (28") shoes.



## Bulldozers

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

Blade		11SU ABR	11U ABR	11SU	11U
Blade capacity (SAE J1265)	m <sup>3</sup>	27.2	34.4	27.2	34.4
	yd <sup>3</sup>	35.5	45.0	35.5	45.0
Width with blade (over end bits)	mm	5600	6358	5600	6358
	ft/in	18' 4"	20' 10"	18' 4"	20' 10"
Blade height	mm	2370	2370	2370	2370
	ft/in	7' 9"	7' 9"	7' 9"	7' 9"
Digging depth	mm	766	766	766	766
	in	30.2	30.2	30.2	30.2
Ground clearance	mm	1533	1533	1533	1533
	ft/in	5' 0"	5' 0"	5' 0"	5' 0"
Maximum tilt	mm	1184	1344	1184	1344
	ft/in	3' 11"	4' 5"	3' 11"	4' 5"
Weight*	kg	16 192	18 823	14 813	17 296
	lb	35,698	41,498	32,658	38,131
Total operating weight** (with blade and single-shank ripper)	kg	101 955	104 590	100 573	103 060
	lb	224,300	230,100	221,260	226,733

\* Does not include hydraulic controls but includes blade cylinders.

\*\* Includes blade and single shank ripper, hydraulic controls, blade cylinders, coolant, lubricants, full fuel tank, 810 mm (32 in) shoes, ROPS/FOPS cab and operator.

### Features

- dual-tilt is standard for improved blade loading, carrying and dumping
- cutting edges are DH-2 steel and end bits are DH-3 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



## Optional Equipment

(with approximate change in operating weight)

	kg	lb		kg	lb
Air conditioner (R134a)	50	110	Hydraulic controls for ripper (two additional valves)	122	268
Air conditioner, ROPS mounted (R134A)	164	360	Lights, supplemental		
Bulldozers:			2 front	10	20
11SU Abrasion (includes tilt cylinders, wear plates, rock guard and extended wear life cutting edges)	16 192	35,698	2 rear	11	24
11U Abrasion (includes tilt cylinders, wear plates, rock guard and extended wear life cutting edges)	18 823	41,498	Oil change system for quick service to engine	1.8	4
11SU (removes wear plates, rock guard and extended wear life cutting edges. Adds push plate.)	14 813	32,658	Operator arrangement, modified (improves visibility and comfort for smaller operators)	24	54
11U (removes wear plates, rock guard and extended wear life cutting edges)	17 296	38,131	Pin puller (for single-shank ripper)	100	220
Converter, Aux. 24-volt to 12-volt	2.7	6	Pin puller, hydraulic control	5	11
Counterweight:			Prelubrication system, engine	8.2	18
*Rear mounted (basic)	4990	11,000	Pushblock (for single-shank ripper)	145	320
*Rear mounted (additional weight)	2268	5,000	*Rippers:		
Cylinder, single-tilt (dual-tilt is standard)	-21	-46	Single-shank, standard arrangement	9643	21,215
Engine enclosure	97	214	Single-shank, deep ripping (requires pin puller and hydraulic controls)	10 022	22,050
Fan, defroster	6.8	15	Multi-shank (includes one shank)	9698	21,335
Fast-fill fuel system for use with:			Ripper shank, additional (for multi-shank ripper)	671	1,498
Counterweight	22	48	Roller, carrier	327	720
Ripper	34	58	Seat, air suspension	—	—
Guard, rear hitch and transmission	1618	3,568	Seat, vinyl	1	2
Guards, undercarriage	34	75	Sound suppression, spectator	—	—
Heater, engine coolant (120-volt or 240-volt)	1.4	3	Tracks, pair, sealed and lubricated:		
Heater, fuel	7.7	17	810 mm (32 in), PPR Extreme Service	831	1,831
			910 mm (36 in), PPR Extreme Service	1703	3,754

\*A rear attachment and/or counterweight is recommended for improved performance and balance.



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