



# 16G

## MOTOR GRADER

- **Reliable/Durable** — built to withstand the toughest working conditions.
- **Operating Ease** — effortless power shifting, precise blade controls, and exceptional maneuverability for all-around production.
- **Low Operating Cost** — highly efficient, long-life components.
- **Operator Comfort and Convenience** — efficient, productive work environment.
- **Total Customer Support System** — unmatched in the industry.

### Cat® 3406B diesel Engine

Gross Power.....215 kW/288 HP

Flywheel Power.....205 kW/275 HP

Blade width .....4877 mm/16 ft

\*Operating weight .....27 266 kg/60,110 lb

\*Includes ripper and pushplate.  
Machine shown may include optional equipment.



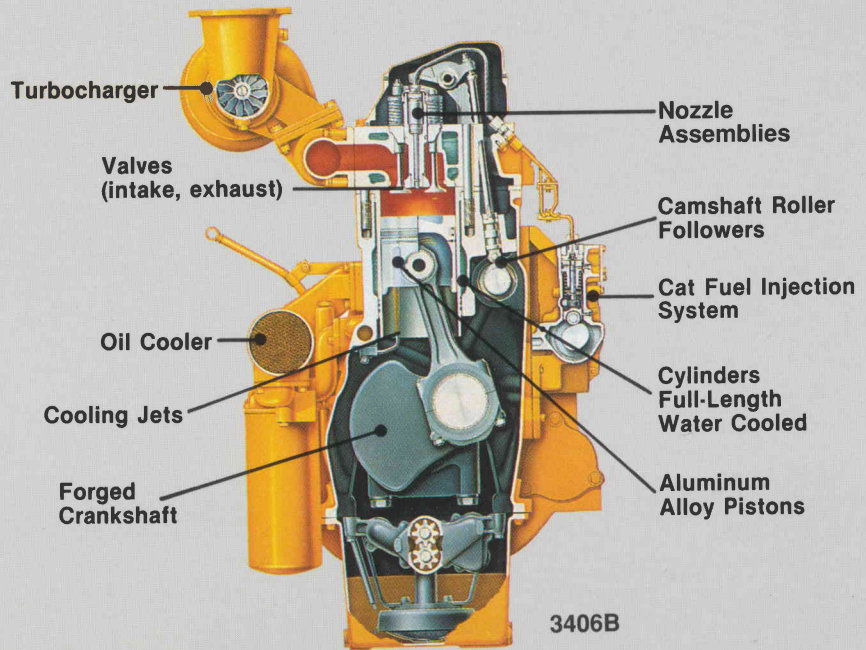
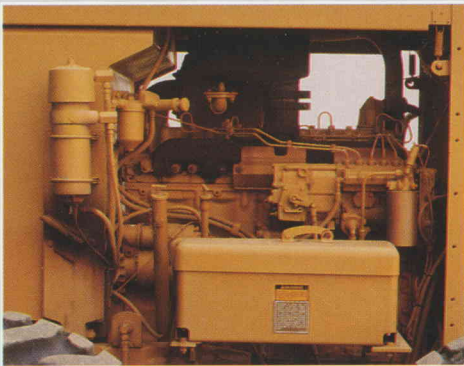
# FEATURES

## Caterpillar® Power Train

Designed for durability and efficiency.

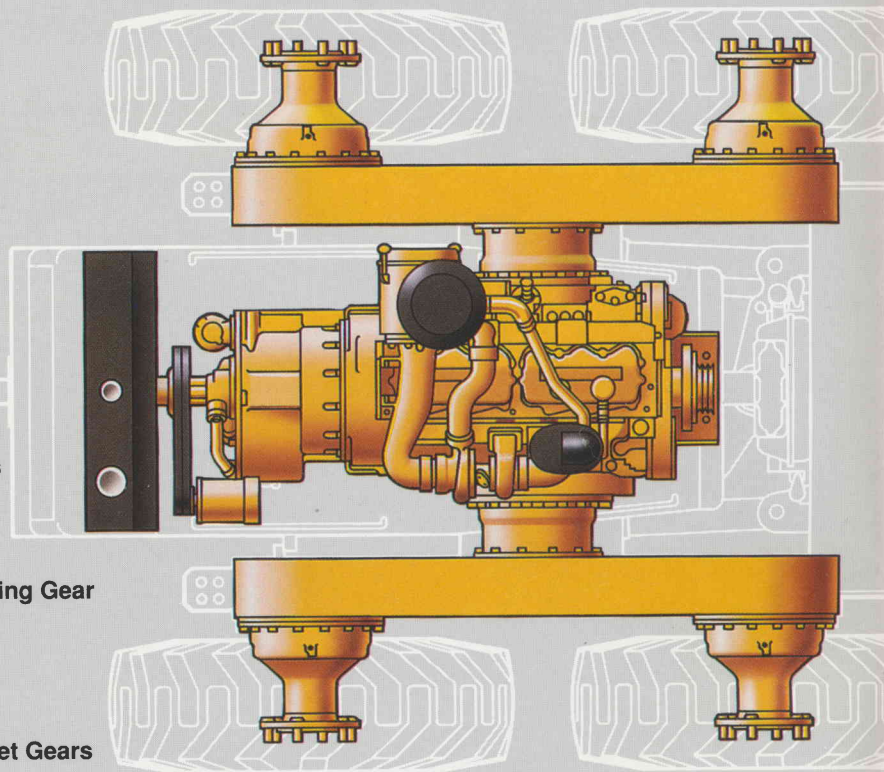
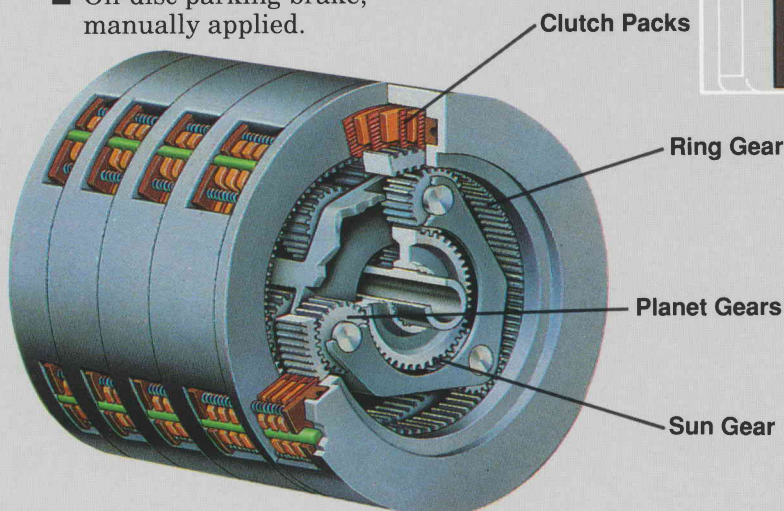
**Cat Diesel Engine...**Caterpillar four-stroke cycle engines blend power and efficiency.

- Long, effective power strokes... more complete fuel combustion.
- Direct-injection fuel system for efficient, precise fuel metering.
- Engine flywheel faces rearward, sending transmission noise and vibration away from the operator.



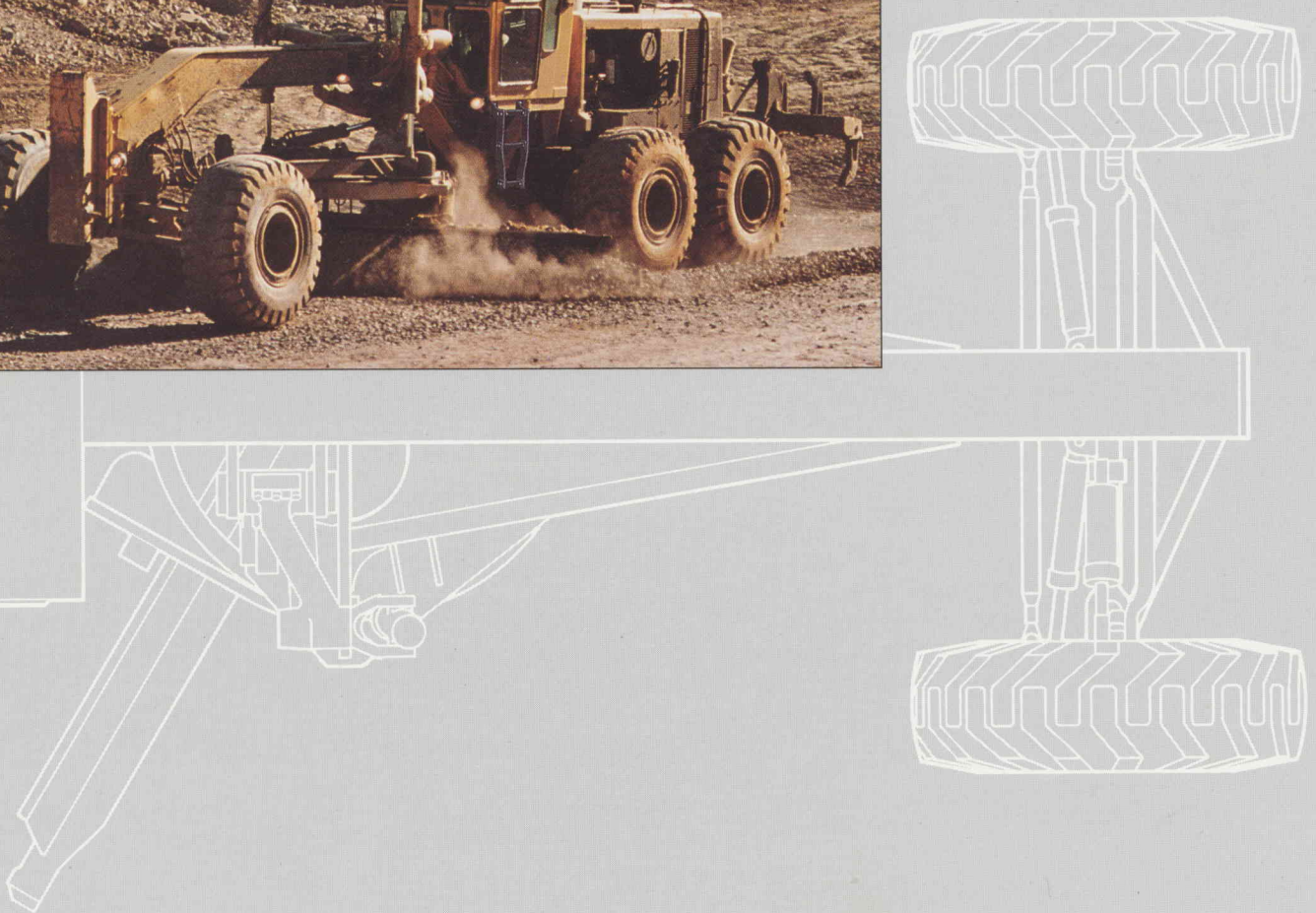
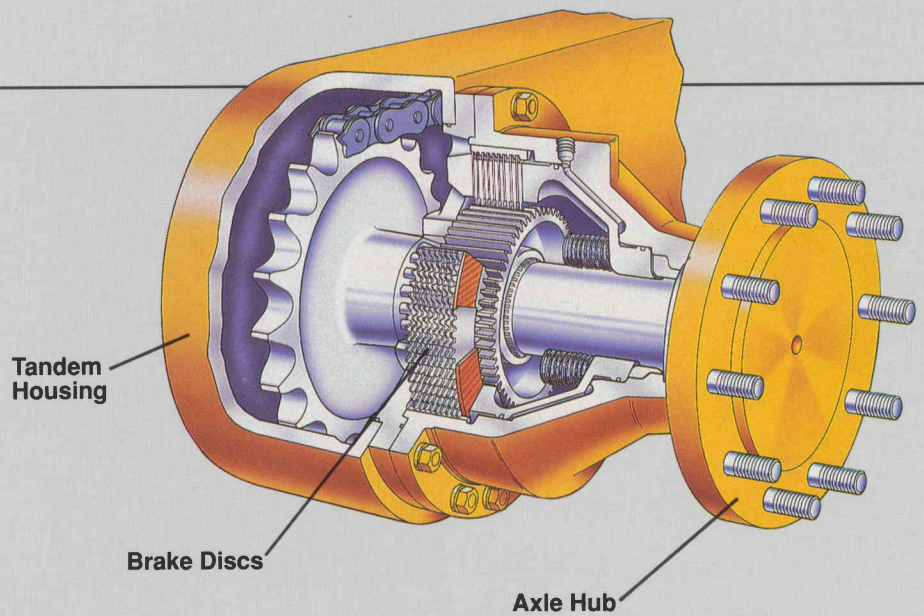
**Direct-Drive, Power Shift Transmission...**designed specifically for motor graders.

- The feel and efficiency of direct drive.
- Easy, on-the-go shifting — up or down, forward or reverse.
- Clutch plates are continuously lubricated and oil cooled.
- Oil-disc parking brake, manually applied.



**Oil Disc Brakes...**Protection for man and machine.

- Confident, fade resistant braking with full air actuation.
- Completely sealed and adjustment free.
- Outboard mounted to prevent drive line stress...easy to service.
- Disc-face grooves constantly carry oil between the plates and discs, even when fully applied.
- Each tandem has an independent air circuit, so failure in one line still leaves half braking capacity.



# FEATURES

## Hydraulic System

Fast hydraulic blade controls...precise action at any speed.

### Low Effort Control

- Controls can be positioned to fit each operator's need.
- Low effort for fingertip response and clustered so a single hand can actuate two or more controls when needed.
- Short throws (38.1 mm/1.5" front to back range) and modulation gives precise hydraulic implement movement.
- O-ring face seals used on all fittings for a "dry machine".
- Separate oil system to protect against contamination from other systems.
- Blade Cushion Accumulator protects blade from impact loads.



Left Blade Lift

Moldboard Side Shift

Blade Tip

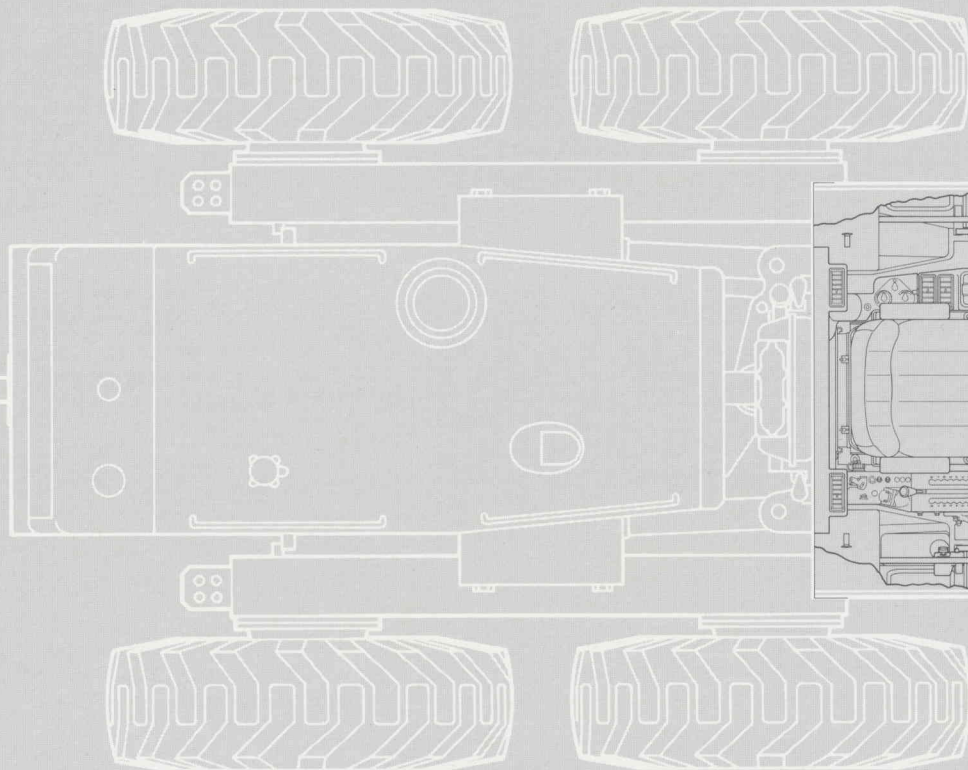
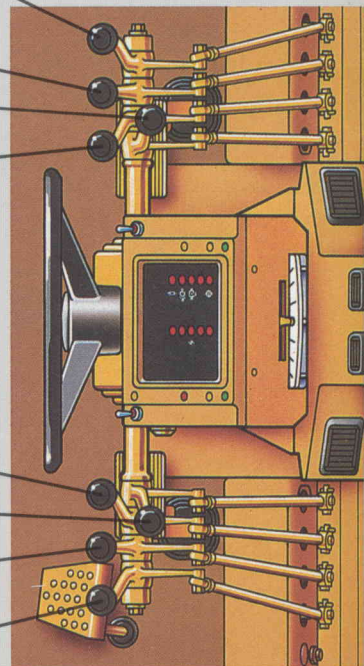
Circle Reverse

Drawbar Center Shift

Articulation

Wheel Lean

Right Blade Lift



### Lock Valves

- In every implement hydraulic circuit...minimizes blade creep and drift.
- Positive hold at each blade setting, for precise finish grading.

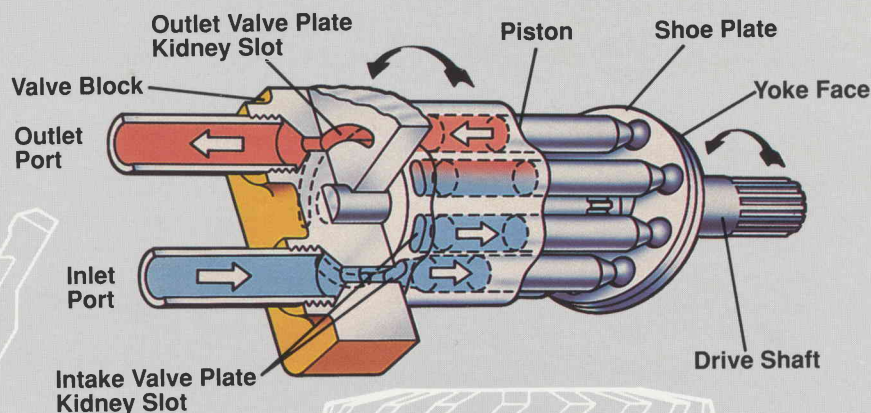
### Circle drive slip clutch standard

- Shock protection for the circle, drawbar assembly, circle drive and moldboard.
- Housed in sturdy cast iron, run in oil and sealed with Duo-Cone Seals.

- Rarely needs adjustment. Top access cover permits quick and easy adjustment if required.

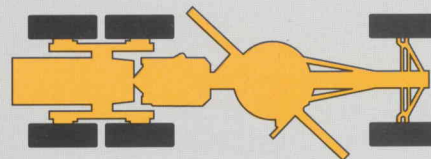
### Load-Sensing Hydraulic System

- Automatically shifts to 2067 kPa/ 21 bar/**300 psi** higher than working pressure.
- Continuously adjusted up to 24 133kPa/241.3 bar/**3500 psi** maximum when required.
- Automatically matches flow and pressure requirements (load sensing) for improved fuel economy and precisely matched horsepower demands.



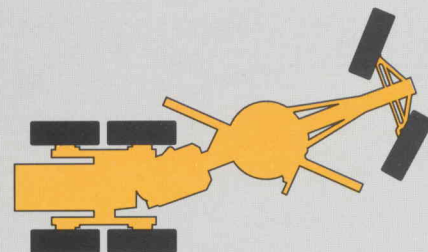
### Maneuverability

**Three excellent maneuvering modes...**for best job match. An important production advantage over conventional motor grader design.



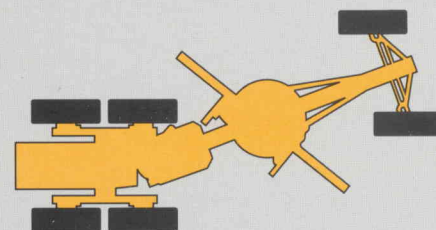
#### Straight Frame

- Frame centered, front wheels turn for steering.
- Best for long-pass grading.



#### Articulated Turn

- 20° frame articulation.
- 50° front wheel steering angle.
- 18° wheel lean.
- Easier maneuvering in close quarters, quicker turn-around at the end of a pass.



#### Crab Steering

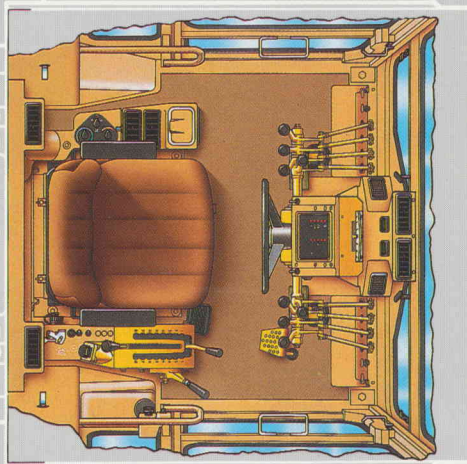
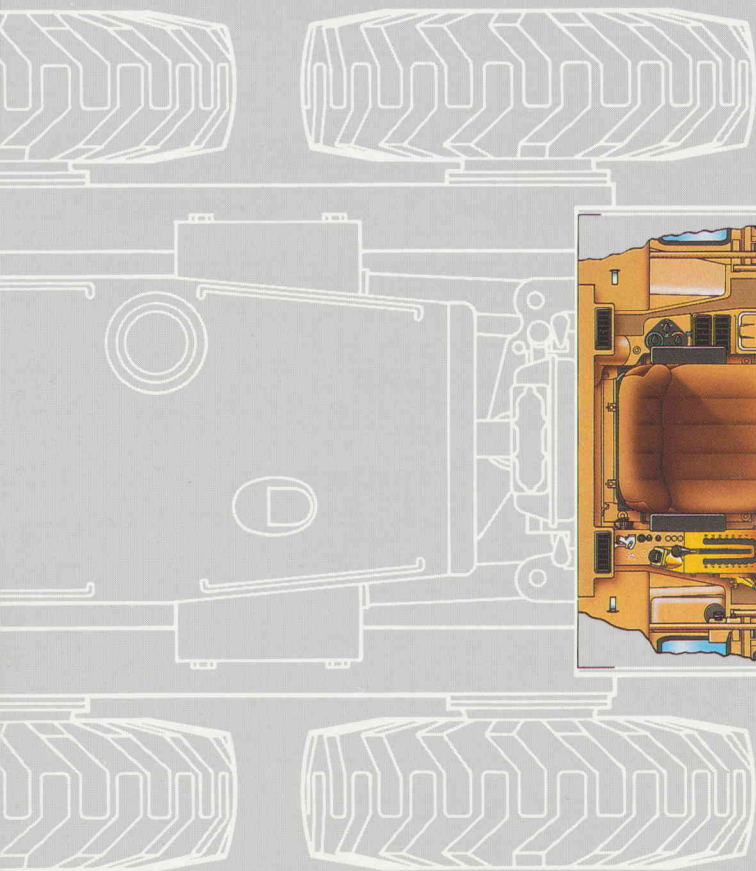
- Compensates for side drift when turning a windrow.
- Keeps tandems on firm footing when cleaning a wet ditch.
- Increases stability, for sideslope work.

# FEATURES

## Operator's Station

Designed for sit-down operation the moment you climb aboard. Equipped for convenience, comfort and control — three keys to productivity.

- Excellent visibility to both ends of blade.
- Standard, fully adjustable suspension seat — the most comfortable position for each operator. (Vinyl static adjustable seat suspension provided with canopies.)
- Control console adjusts back and forth for each operator — comfortable sit-down operation, easy entry and exit.
- Blade control levers engage smoothly and crisply.
- Low- or high-profile, resiliently-mounted, sound-suppressed cab for reduced noise and vibration.
- Cab slopes outward toward top to provide spacious working environment.
- Heavy gauge steel column assembly provides a sturdy, durable console.
- Belted steps provide easy, sure-footed access.



- **Electronic Monitoring System (EMS)** — shows status of important machine systems. Operator concentrates on production instead of watching gauges. Reduces the possibility of catastrophic failures and subsequent costly repair.

Level one — Alternator.

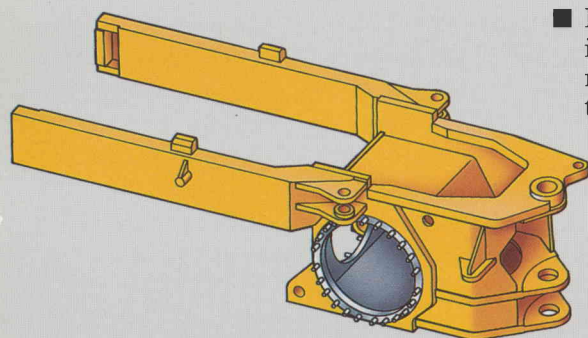
Level two — Engine coolant, Hydraulic oil temperature.

Level three — Engine oil pressure, Brake pressure.

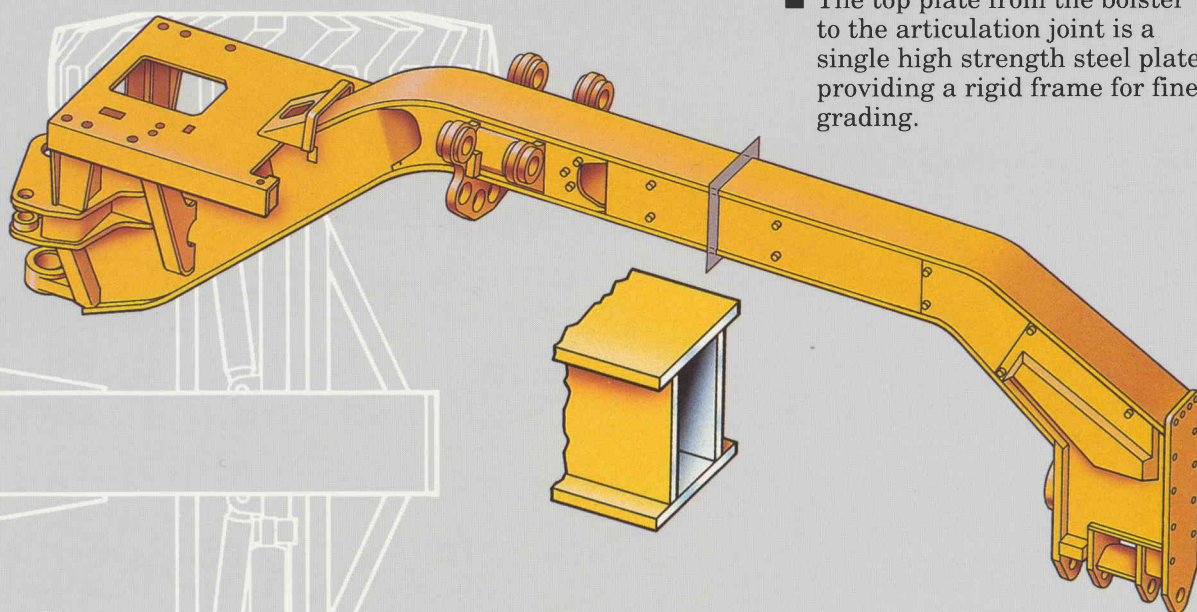
### Total Climate Systems (optional)

- **Air Conditions**...high capacity...cools and freshens hot, humid cab air.
- **Heats**...high capacity...protects against biting cold air in winter operation.
- **Dehumidifies**...removes excess moisture in the air down to 0°C/32°F. On hot, humid days, operator stays fresh and alert.
- **Pressurizes**...keeps air fresh, seals out dust. (Approximately one quarter of the total air flow is filtered outside air.)
- **Multiple ducting**...allows you to direct the air flow. More ducts, strategically placed, means more uniform temperature throughout the cab.
- Lower cab windows open to provide excellent ventilation.

## Structure



- Differential housing is built into the frame, thus maintaining better alignment than a bolt-on unit.



- Double tapered roller bearings on the bottom of articulation joint are dependable and maintenance free.
- Box-section rear frame is connected to the case with steel castings.
- Side plates are welded to the top and bottom plates away from the edges resulting in a flanged box-section, giving a rigid, long lasting frame.
- The top plate from the bolster to the articulation joint is a single high strength steel plate, providing a rigid frame for fine grading.

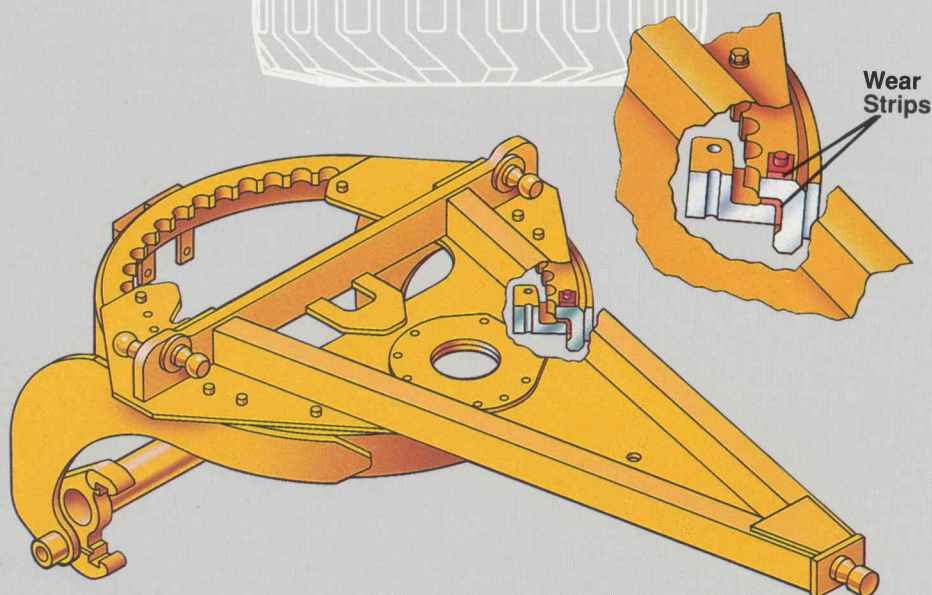
**Drawbar/Circle...**Built strong and durable for long life.

### ■ Drawbar

- Features a box-section, A-frame, for high strength.
- Machined to provide accurate adjustment and precision blading.

### ■ Circle

- One-piece, forged circle with induction-hardened, flame-cut teeth.
- Replaceable, bronze-alloy wear strips eliminate circle shoe grease fittings, extend wear life.



Wear Strips

# FEATURES

## Serviceability

Less time spent on maintenance gives you more time on the job.

### Outside-Mounted Hydraulic Valves

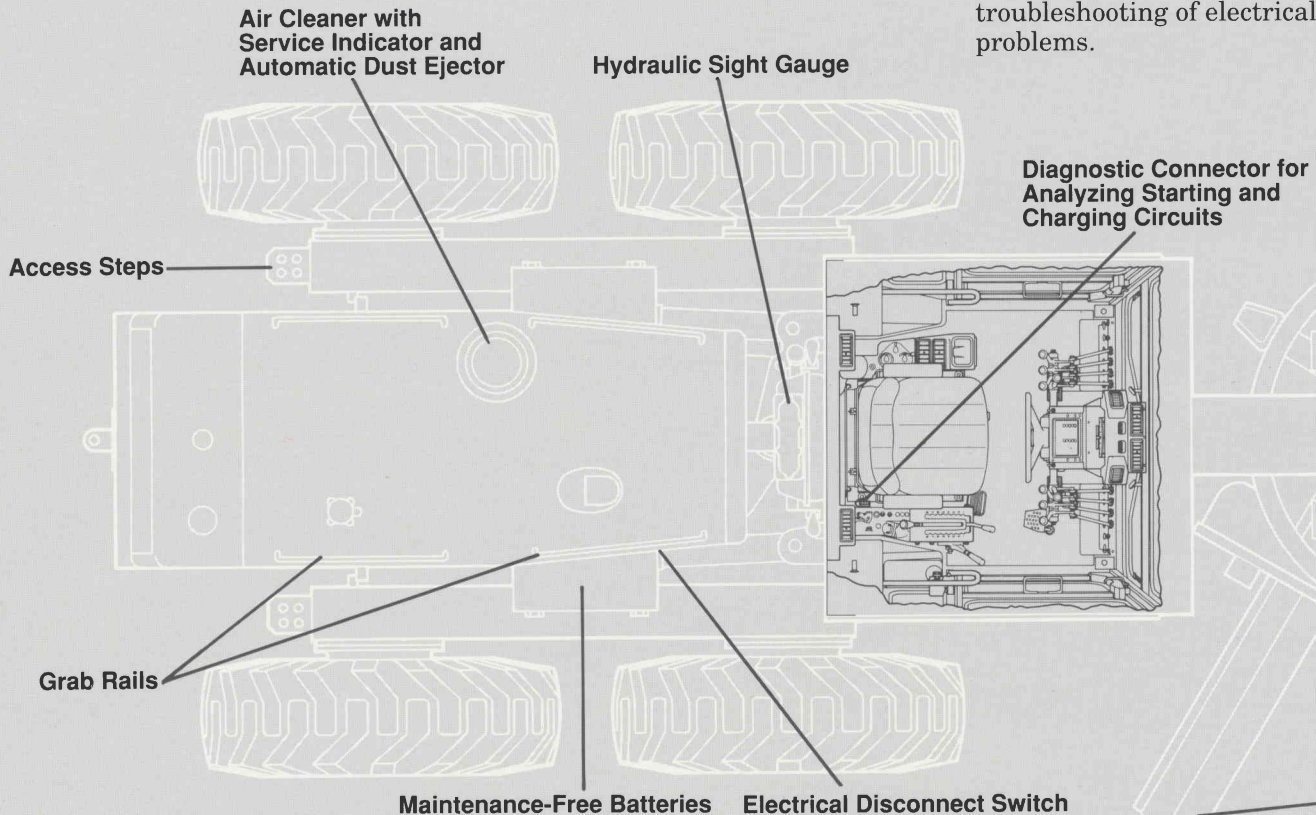
- Easier to check or service than valves located inside the hydraulic tank.

### Electrical Connectors

- Sure-Seal Electrical Connectors provide long service life, resist moisture, corrosion and dirt.

### Power Train Components

- Easily accessible for adjustments and major repairs.
- Transmission and final drives can be removed as units without disturbing the engine.
- Diagnostic connector for special service tool allows quick troubleshooting of electrical problems.



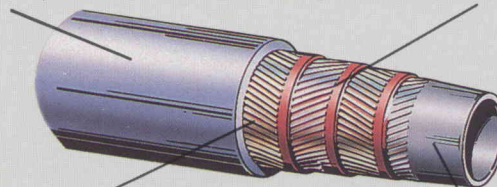
### Oil and Fuel Filters

- Disposable, easy to change without allowing contaminants into systems.
- Transmission and hydraulic systems use identical filters, simplify parts stocking.

### XT-3 Hydraulic Hose

**Cover...** Abrasion and weather resistant. Mine Safety and Health Administration (MSHA) Certified.

**Cushion...** Holds wire in place and eliminates wire rubbing.



**High Strength Wire...** Spiral wound for flexibility.

**Flexible Inner Liner...** Fabric reinforced for strength.

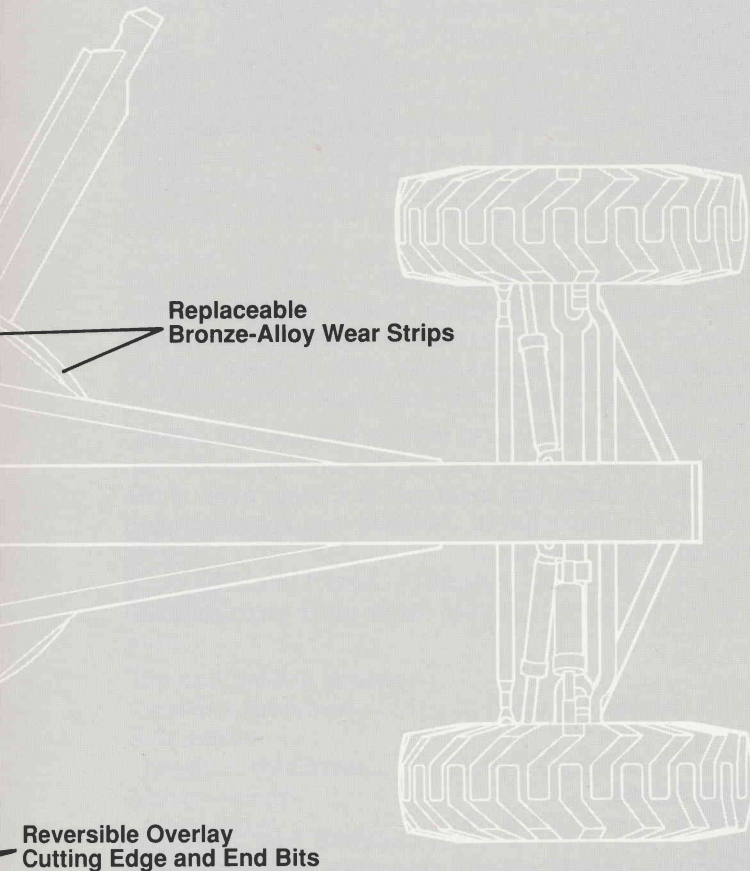


## Engine

- Injection nozzles are field replaceable. Six hole tip converts fuel flow to fine spray for complete combustion.

- Individual scroll-type fuel pumps for each cylinder require no balancing ...maintaining fuel efficiency without periodic adjustment.

- Forged, induction-hardened crankshaft can be reground and reused.
- Caterpillar Remanufactured cylinder heads, unit injectors, oil pumps, connecting rods, crankshafts, turbochargers, water pumps and starters are available for fast economical repairs.



## Total Customer Support

Unmatched in the industry!

- **Parts availability** — Most Cat parts are immediately available off the shelf. Dealer parts availability is backed up by Cat's computer-controlled emergency search system.
- **Service capability** — Whether in the dealer's fully equipped shop or in the field, you'll get trained servicemen using the latest technology and tooling.

- **Machine management services** — Cat dealers help manage equipment investments with:
  - 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.

- **Exchange components for quick repairs** — Assure maximum, cost-effective uptime.
- **Literature support** — Easy-to-use operation and maintenance guides help you get the full value out of your equipment investment.

# SPECIFICATIONS



## Caterpillar Engine

Gross power @

2000 RPM .....215 kW/288 HP

Flywheel power @ 2000 RPM.....205 kW/275 HP  
(Kilowatts (kW) is the International System of Units equivalent of horsepower.)

*The net power at the flywheel of the vehicle engine is based on SAE J1349 standard conditions of 25°C/77°F and 100 kPa/29.61" Hg. Power is based on using 35° API (15.6°C/60°F) gravity fuel having an LHV of 42 780 kJ/kg /18,390 Btu/lb when used at 29.4°C/85°F and with a density of 838.9 g/L / 7,001 lb/U.S. gal. Power rating is adjusted for vehicle equipped with fan, air cleaner, water pump, fuel pump, muffler and lubricating oil pump. No derating is required up to 2250 m/7,500 ft. altitude.*

Caterpillar four-stroke-cycle 3406B turbocharged diesel Engine with six cylinders, 137 mm/5.4" bore, 165 mm/6.5" stroke, and 14.6 liters/893 in<sup>3</sup> displacement.

Caterpillar direct-injection fuel system with individual, adjustment-free injection pumps and nozzles.

Cam-ground and tapered, aluminum-alloy pistons have three rings each; both compression rings ride in iron band cast into piston. Piston undersides are cooled by oil spray. Steel-backed, aluminum-alloy precision bearings with copper-bonded lead-tin overlay for improved seizure resistance. Carbon steel crankshaft completely case hardened for superior fatigue strength. Pressure lubrication with full-flow filtered oil and heat exchanger oil cooler. Dry-type air cleaner with primary and secondary elements, automatic dust ejector and service indicator.

Direct-electric, 24-volt starting system with 50-amp alternator and ether starting aid.



## Transmission

Caterpillar direct-drive power shift. Single lever at operator's right controls eight forward and eight reverse speeds. Foot pedal provides inching capability for close-quarter maneuvering. Transmission lock prevents accidental gear engagement; machine won't move even if engine is started with transmission engaged.

**Speeds (at rated RPM):**

**Forward &**

Reverse	1st	2nd	3rd	4th	5th	6th	7th	8th
Km/h .....	3.8	5.4	7.3	10.5	15.9	22.3	30.1	43.6
MPH.....	2.4	3.3	4.5	6.5	9.9	13.8	18.7	27.1



## Brakes

(System meets OSHA regulations.)

**Service** – Four-wheel, air-actuated, oil disc brakes are completely sealed and adjustment-free with 4.22 m<sup>2</sup>/6544 in<sup>2</sup> total braking surface. Low air pressure, below 448 kPa/4.5 bar/65 psi in either circuit of the brake system, is indicated to the operator by visual (red light and flashing LED) and audible (horn) warnings.

**Parking** – (System meets SAE J1152 and ISO 3450.) Multiple oil-disc located in transmission case, manually actuated, spring-engaged, air-disengaged. Push the red lever on the transmission control console forward to actuate. This neutralizes the transmission, engages the parking brake and activates the transmission neutral lock to prevent machine movement if engine is started with transmission engaged.

**Secondary braking system** – Dual circuit air system includes an individual circuit to each tandem for added braking protection. A malfunction in one circuit still leaves the machine with at least half its original braking capacity for fast stops.

In the event of total loss of service brakes, the spring-actuated, nonmodulated parking/secondary brake can be applied to bring the machine to a stop, even if the air supply is interrupted. (Method not recommended for repeated applications.)



## Axles

Front – solid steel, arched bar provides 660 mm/26" ground clearance. Oscillates total of 32°.

Front wheel lean angle ..... 18° left or right

Rear – full-floating, forged, heat-treated steel.



## Tandems

Height x width.....648 x 236 mm/25.51 x 9.29"  
Sidewall thickness.....22 mm/.87"  
Drive chain pitch.....63 mm/2.5"  
Wheel axle spacing.....1830 mm/72"



# SPECIFICATIONS



## Operating Weight (approximate)

Basic operating weight includes lubricants, coolant, full fuel tank, operator, 4877 mm/16' blade with hydraulic sideshift and tip, and 18.00 - 25", 12 PR (E-2) traction-type tires and low profile ROPS cab (standard in U.S.):

	<b>Kg</b>	<b>Lb</b>
Weight on front wheels .....	6888	15,185
Weight on rear wheels .....	17 842	39,335
Total weight.....	24 730	54,520

Equipped as above and including ripper and push plate :

	<b>Kg</b>	<b>Lb</b>
Weight on front wheels .....	6754	14,890
Weight on rear wheels .....	20 512	45,220
Total weight.....	27 266	60,110

Add or subtract weights of additional equipment from Optional Equipment list to obtain total equipped operating weight.



## Ripper Specifications

Ripper is designed for utility ripping. Standard arrangement includes 3 shanks, with 4 additional shanks optional.

Working width .....	2970 mm/9'9"
Ripping depth, maximum .....	409 mm/16.1"
Maximum ground clearance (to tooth tip).....	720 mm/28.5"
Shank spacing.....	444 to 500 mm/17.5" to 19.7"



## Service Refill Capacities

	<b>Liters</b>	<b>U.S. Gallons</b>
Fuel tank .....	492	130
Radiator .....	79	21
Crankcase.....	34	9
Transmission differential and final drive .....	197	52
Tandem housings (each) .....	121	32
Hydraulic system .....	114	30





## Blade Range

Circle centershift, Right .....	560 mm/22"
Left .....	690 mm/27.2"
Moldboard sideshift, hydraulic,	
Right .....	790 mm/31.1"
Left .....	650 mm/25.6"
Maximum shoulder reach outside of tires:	
Right.....	2311 mm/7'7"
Left .....	2311 mm/7'7"
Maximum blade position, angle, both sides.....	90°
Maximum lift above ground .....	419 mm/16.5"
Maximum depth of cut.....	470 mm/18.5"
Hydraulic blade tip.....	40° forward; 5° rearward



## Hydraulic Controls

Full hydraulic controls provide fast, constant control speed regardless of engine speed. Lock valves in each implement circuit minimize drift. Operator controls all blading operations with six levers: left blade lift, blade sideshift, blade tip, circle reverse, centershift and right blade lift. Hydraulic system lets operator use more than one control without decrease in control response speed.



## Steering

Front wheels – full two cylinder hydraulic steering system.

Steering range .....	50° left or right
Frame — hydraulically actuated steering.....	20° left or right
Minimum turning radius (outside front tires).....	8.2 m/27*

\*Using front wheel steering, frame articulation and differential unlock.



## Load-Sensing Hydraulics

The closed-center, variable-displacement pressure pump senses a load requirement from an implement or steering and increases the output pressure to 2067 kPa/21 bar/**300 psi** above the load. With no requirement, the pump maintains 2965 kPa/29.6 bar/**430 psi** output pressure. This reduces heat generation, increases hydraulic efficiency, and improves fuel economy. Hydraulic lock valves in all implement circuits minimize undesirable cylinder drift.

Output at 2200 engine RPM and 2965 kPa/29.6 bar/  
**430 psi** to 24 133kPa/241.3 bar/**3500 psi**  
.....0 to 258 liters/min/0 to 68 gpm



## Drawbar

Box-section, 165 x 89 x 13 mm/**6.5 x 3.5 x 0.5"**  
A-frame with six widely spaced shoes to support the circle. All have vertical and horizontal adjustment. Replaceable **bronze-alloy wear strips** between circle and drawbar, and support shoes and circle, eliminate circle shoe grease fittings and extend wear life.



## Circle

Rolled ring forging, 1822 mm/72" diameter. Uniform, flame-cut, heat-treated teeth. Raised wear surfaces, top and bottom, prevent circle teeth from contacting support shoes. Hydraulically driven worm and gear provide full 360° circle rotation. Circle drive slip clutch provides protection for teeth and other components.

Blade beam – thickness ..... 50 mm/2.0"

## The Competitive Edge

### Performance

- Articulated frame — for excellent maneuverability.
- Direct drive power train — high torque rise Cat diesel engine combined with a direct drive power shift transmission gives the feel and efficiency of direct drive. Easy on-the-go shifting up or down, forward or reverse.

### Reliability/Durability

- Frame — flanged box-section main frame resists shocks and vertical flexing.
- Drawbar — box-section, A-frame design for high strength and precision blading.
- Rolled ring forging — with flame-cut teeth. Induction hardened for long life. Exclusive bronze alloy wear strips between all circle and drawbar assembly wear surfaces, and moldboard sideshift rails.
- Caterpillar's XT-3 hose — reliable, long life performance.

### Maintenance/Repair

- Transmission and final drives can be removed as units without disturbing the engine.
- Sealed, adjustment-free, air-actuated, four-wheel oil disc brakes.
- Long lubrication intervals with ground accessible fittings.
- Easy access to daily service areas for maintenance ease.
- No daily grease fittings.
- Spin-on oil filters for easy replacement.

### Operating Ease

- Adjustable operator's console and steering wheel with short throw, low-effort controls for ease of operation.
- Adjustable suspension seat — the most comfortable position for each operator.
- Good blade visibility.
- Electronic Monitoring System to check all critical functions.
- Low profile, resiliently-mounted, sound-suppressed cab for reduced noise and vibration.

### Total Customer Support System

- Parts availability — most Cat parts on dealer's shelf when you need them — computer-controlled, emergency search system backup.
- Service capability — dealer's shop or fast field service — trained servicemen — latest tooling and technology.
- Machine management services — effective preventive maintenance programs, diagnostic programs (Scheduled Oil Sampling, Technical Analysis), cost effective repair options, customer meetings, operator and mechanic training.
- Exchange components for quick repair — choose remanufactured products or rebuilt components for maximum availability and lower costs.
- Literature support — easy-to-use operation, maintenance guides help you get the maximum value out of your equipment investment.
- Flexible Financing — your dealer can arrange attractive financing on the entire line of Cat equipment. Terms structure to meet your cash flow requirements. See how affordable and easy it is to own Cat equipment.

### Custom Machine Products

- In addition to the standard range of optional equipment, special attachments and machine configurations to suit particular customer applications can be made. Contact your Caterpillar dealer for details on matching the Caterpillar product to your special applications.

**CATERPILLAR®**