



Off-Highway Truck

 **CATERPILLAR**



CAT 777 TRUCK . . . BIG ON ABILITY, DURABILITY, RELIABILITY, SERVICEABILITY, WORKABILITY.

ADVANCEMENTS BASED ON PROVEN PERFORMANCE

Caterpillar's 85 Ton (77t) 777 Off-Highway Truck continues to build on the experience of Cat 769B and 773 Trucks. Things you already know—like Cat mechanical drive train featuring the power shift transmission. And servicing ease because components like the planetary power shift transmission

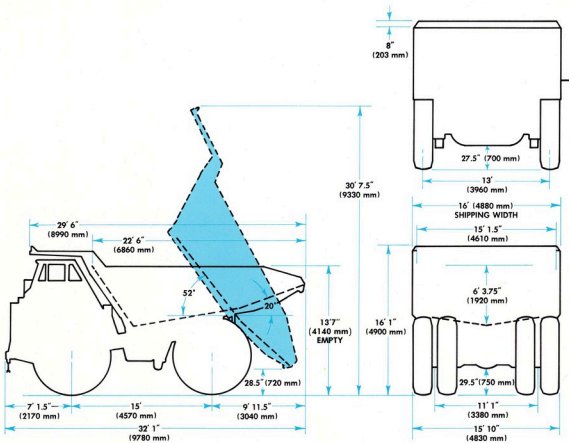
and oil-pneumatic suspension are familiar to your service people. Plus low weight-to-horsepower ratio, unmatched in-frame serviceability and operator comfort to save expensive time and effort—and you get a high performance, big production hauler for rugged mining jobs or rock work.



Above: Cat 773 in rock quarry.

Right: Cat 769B on 10 mile run in copper mine.





SPECIFICATIONS:

Horsepower, flywheel	870
Total empty weight	122,600 lb. (55 600 kg)
Loaded weight to Hp ratio (with standard tires, without optional body liners)	336:1
Capacity, tons	85 (77t)
Cubic yards, struck (SAE)	47.5 (36 m ³)
Heaped 2:1 (SAE)	67.1 cu. yd. (51 m ³)
Transmission	7 range automatic power shift with 1 reverse range.
Brakes	Rear oil-cooled discs; front shoe brake.
Vehicular clearance turning circle	88' (26.8 m)
Top speed loaded	37 MPH (60 km/h)

TIRES*

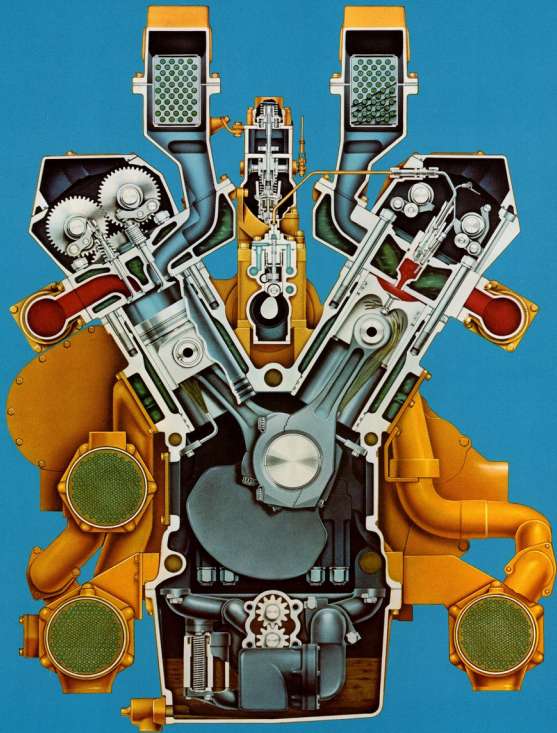


STANDARD
24.00 x 49, 42 PR, E-3



OPTIONAL
24.00 x 49, 42 PR, E-4
24.00 x 49, 48 PR, E-4

*Due to the variance between specific tires, it is recommended that you check with your tire supplier for the manufacturer's specific ton-mph (tkm/h) ratings for the tires purchased.



JOB-PROVEN CAT DIESEL ENGINE DELIVERS CONTINUOUS, RELIABLE PERFORMANCE.

The proven V-12 D348—delivers smooth, powerful performance for high speed, high-production hauling. The same engine that's work-tested and proven in the Cat 992 Wheel Loader. Its 870 flywheel

horsepower (649 kW) gives the 777 excellent acceleration and climbing power to move out of deep pits or down long haul roads quickly.



Stellite-faced valves resist warping while valve rotators turn valves for even wear and long life.



Two jacket water oil coolers continuously cool the oil flowing to the rear disc brakes.



Rubber mountings reduce engine vibration for quieter operation.



Separate circuit after-cooling has its own radiator to help lower temperatures of turbocharged air for increased air density. Lower intake temperatures also mean lower exhaust temperatures.



Four dry-type air cleaners with primary and safety elements filter engine intake air keeping it clean to help keep your engine running trouble-free.



Adjustment-free fuel system has individual pumps for the cylinders. Large, single orifice injection valves allow use of economical No. 2 fuel oil (No. 2 ASTM specification D396).



Cam-ground, tapered aluminum alloy pistons give tough but lightweight performance with less strain on the engine.



Overhead camshafts, two for each cylinder bank, give better valve response because the cams work the valves directly.

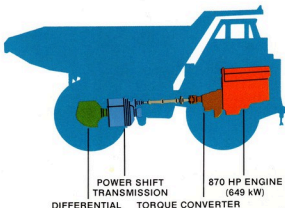


Twin turbochargers force more air into the cylinders for more complete combustion and more working horsepower.

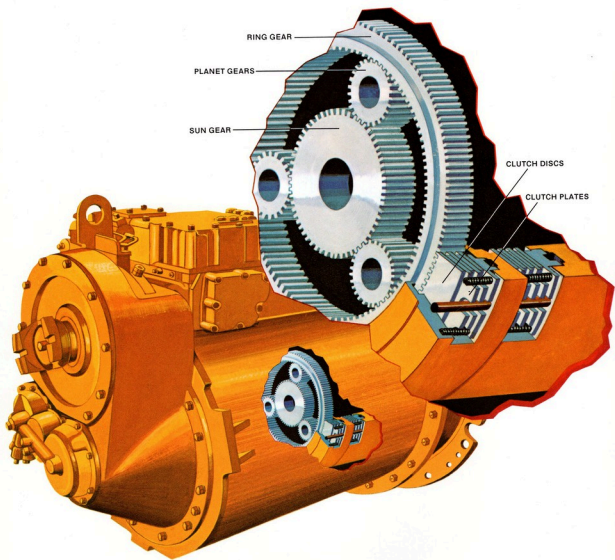
DEPENDABILITY FROM THE CAT-BUILT MECHANICAL POWER TRAIN.

Cat's rugged, dependable and time-proven power train makes the 777 Truck a solid performer:

- 870 flywheel horsepower is *usable* engine power.
- The 7 speed fully automatic power shift transmission uses hydraulically-actuated clutches for fast, smooth response—and ranges 3 through 7 use only highly-efficient direct drive. Rearward mounting of the transmission reduces high torque loads on power train components. And the transmission is easily accessible for servicing.
- A torque converter with lock-up clutch cushions the driveline briefly when changing gears and provides smooth acceleration.
- The planetary final drives are connected to the differential by a full floating axle, which transmits torque without carrying the weight of the truck.



RUGGED CAT PLANETARY AUTOMATIC POWER SHIFT HAS DIRECT D



The Caterpillar 777 offers the most efficient transmission available for an off-highway truck. With seven speeds forward and one reverse, this fully automatic planetary transmission provides hauling speeds up to 37 MPH (60 km/h). Reverse, first and low second gear are torque converter drive to multiply torque for maximum rimpull to get the

load moving. All other gears are efficient direct drive. Hydraulically actuated clutch discs shift quickly. And to cushion the driveline and smooth shifts in direct drive ranges, the torque converter lock-up clutch briefly disengages as the clutch packs engage on gear changes.



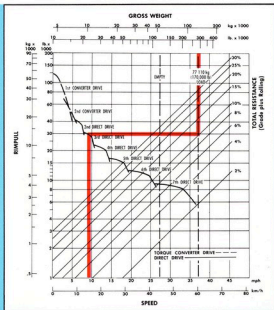
DRIVE EFFICIENCY.



Automatic shifts—for easy operation. Once the operator selects the top operating range, there's no need to touch the single transmission control until the unit stops to reverse in the load or fill area. It automatically shifts up and down between 1st and the selected top range.

Standard downshift inhibitor prevents the operator from overriding the automatic shifting if the shift would overspeed the engine. The operator can manually move the lever, but it will not downshift until the proper ground speed is attained.

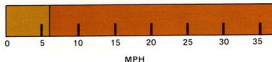
Reverse inhibitor is available as an additional safety device. Should the operator forget to shift the transmission to neutral before dumping the load, the reverse inhibitor will not allow the 777 to back up while the body is being raised. In case of emergency, the truck can pull forward no matter what position the hoist lever is in.



To determine gradeability performance: read from gross weight down to the point of total resistance. From this weight-resistance point, read straight across to the left to the curve with the highest obtainable speed range, then straight down to the maximum speed. Usable rimpull depends upon traction available and weight on drive wheels.

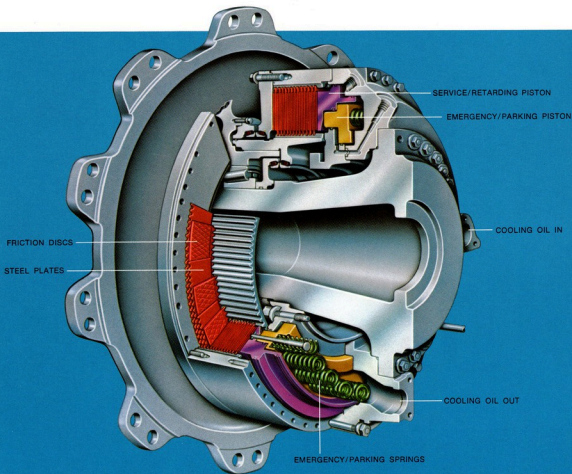
Example (colored line): a 777 with a rated load of 170,000 lb (77 110 kg) can climb a grade of 10% total resistance (8% actual grade, plus 2% rolling resistance) between 8 and 9 mph (12.8-14.4 km/h).

Direct Drive Efficiency—Reverse, first and low second are torque converter drive. High 2nd gear through 7th gear are direct drive with the converter automatically locked-up. Result: a greater percent of travel time spent in direct drive for improved fuel economy. Together with smooth torque converter cushioning on all shifts for operator comfort and longer component life.



CONVERTER DRIVE 
DIRECT DRIVE 

OIL-COOLED MULTIPLE DISC BRAKES FOR DEPENDABLE BRAKING.

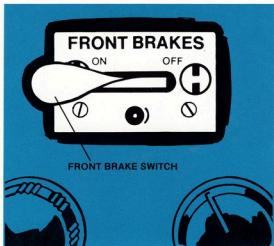


Caterpillar's time-proven, fade-resistant rear oil-cooled disc brakes are used in the 777 to combine four braking functions. Acting as part of the service and emergency systems and all of the parking and retarding systems—they supply a braking surface area of 12,462 square inches (80 400 cm²) for reliable, long-life performance. The oil-cooled discs are completely sealed against moisture and dirt. The entire system complies with OSHA brake requirements.

Spring-applied emergency braking without air pressure. The 777 brake has two separate control pistons. Oil pressure against one piston applies the service brakes or retarder. Pressure against the other piston holds the spring-applied emergency and parking brakes in disengagement. This provides an extra margin of braking—a self-contained emergency brake which operates without external energy.

In normal operation the springs of the emergency/parking brake piston are held in compression. That means that in case of a drop in air or oil pressure, the brakes are automatically engaged by the springs. The operator can also apply the emergency brakes manually.





Service brakes team the power of oil-cooled disc brakes in the rear and standard wedge-type shoe brakes in front. Both are air-over-oil actuated for fast response when the operator engages the floor pedal. A switch on the dash lets the operator switch the front brakes in or out of the system depending on haul road conditions and operator technique. (Even if switched out of the service system, the front brakes will still activate as a part of the emergency system.)



The retarder lever on the steering column lets the operator apply up to 1100 continuous retarding horsepower including engine resistance—to handle steep, continuous grades. To reduce stresses throughout the driveline, retarding is done at the rear wheels rather than on a transmission output shaft.

Jacket water oil coolers on each side of the engine constantly recycle a flow of cooled oil over rear brakes to help keep operating temperatures low, retarding and braking capacity high.



The emergency brake system uses both the front shoe brakes and the rear oil-cooled disc brakes to provide full braking power. The front emergency brakes are applied by air from the emergency air tank. The rear emergency brakes are spring-engaged and oil-disengaged by pressure from the transmission charging pump which prevents the springs from applying the emergency brakes during normal operation. They are actuated by a signal from the emergency air system. A hand lever on the left side of the steering column allows the operator to modulate the application and release of the emergency brakes. In the event of total air or brake hydraulic system failure, the self-contained rear emergency brakes will engage without external energy.

The parking brake uses the spring-applied rear oil-cooled disc brakes only. A switch on the transmission console activates the parking brake.

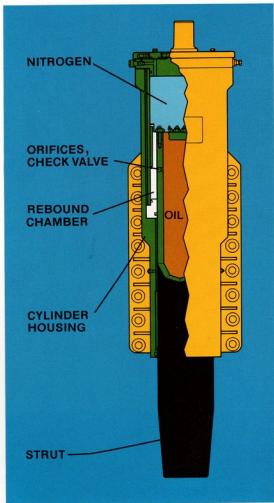
FOUR OIL-PNEUMATIC SUSPENSION CYLINDERS ABSORB HAUL ROAD SHOCKS.

Oil-pneumatic suspension cylinders on all four wheels absorb loading shocks and smooth haul road bumps to reduce twisting and pounding stresses on the truck and provide the operator with a comfortable, more productive ride.

Front suspension cylinders act as steering kingpins for a short turning radius in tight loading spots—and good maneuverability on the haul road. The 777 can make a clearance turning circle in 88' (26.8 m).



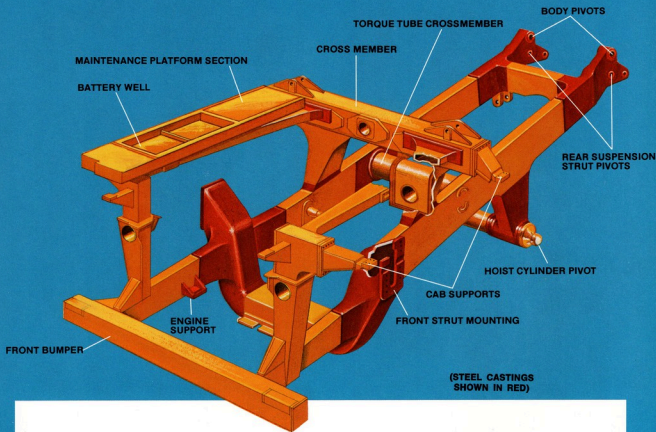
The two rear suspension cylinders attach to steel castings on the axle housing, letting either rear dual rise or drop 6° so all wheels remain firmly on the ground while rolling over a bump. The rear axle sway bar holds frame and rear axle housing in alignment and prevents side-sway.



Cylinder operation: Riding over a bump forces the strut into the cylinder housing, compressing nitrogen in the cylinder which absorbs the initial force of the impact. This also forces oil into the rebound chamber through orifices. The compressed nitrogen smoothly returns the strut to its normal position as the bump is passed. The orifices and a ball check valve control oil flow and effectively dampen rebound rate. The cylinder can handle a series of road shocks simultaneously, absorbing new shocks as it dampens old ones.



STURDY BOX-SECTION FRAME DESIGN WITHSTANDS POUNDING AND TWISTING FORCES.



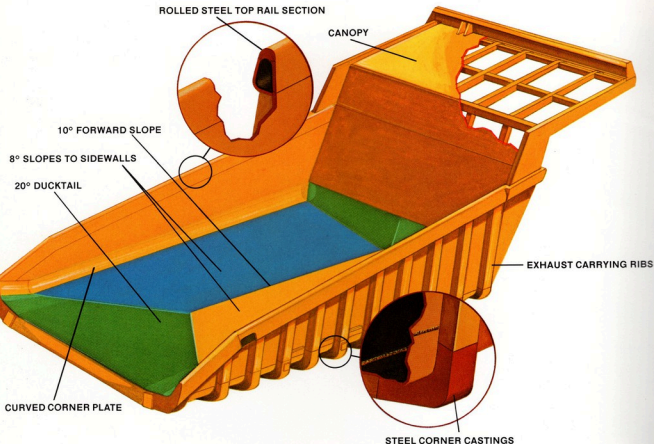
A **box section frame** withstands shock loads and twisting forces far better than a C-section frame. The four sided box reinforces the frame against stress forces from any direction. The steel plates used to construct the frame all have a 40,000 psi yield-strength (276 MPa) for rigidity and maximum durability. And support for the cab is an integral part of the 777 frame design. Sturdy 4" x 4" (102 x 102 mm) steel sections are designed into the cab and attach directly to the frame.

Steel Castings reduce the amount of stress between connected frame members and they're much stronger than fabricated transition points.

The 777 frame uses these transition castings for the *hoist pivots, dump pivots, rear suspension strut pivots, front strut mountings and engine supports.*

The frame design is similar to the 769B and 773 frames that have proven their toughness in the field. It includes a *rear crossmember attachment rail* for the maintenance platform and cab. This design greatly increases engine accessibility for easier servicing of the engine right in the frame.

FAMILIAR DUAL SLOPE CAT BODY . . . BIG ON DURABILITY AND LOAD RETENTION.



The **Cat 777 Body** has the same familiar features that have proven reliable and durable on the 769B and 773 Trucks: dual slope designed for retaining heaped loads hauling up slopes, wrap-around ribs for added toughness and strength, steel corner castings and rolled steel top rail sections to reinforce critical stress areas, and a low loading height.

Ten box-sectioned wrap-around ribs are closely spaced to increase body strength and durability. These ribs also carry exhaust to heat the bed for easier dumping of sticky materials in cold weather.

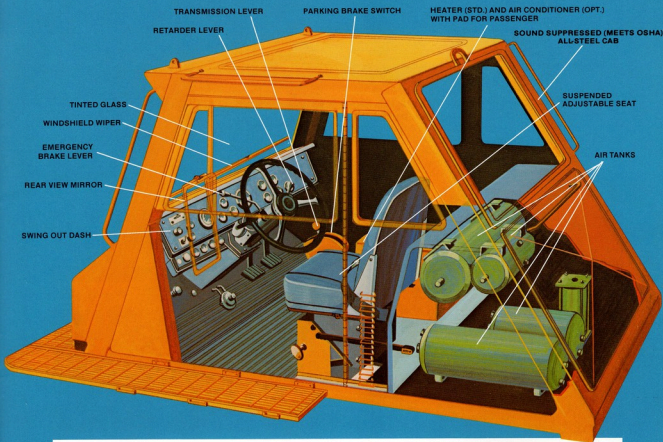
Heavy materials and the impact of loading put heavy stress at the corners where the floor meets

the sidewalls. So we've designed *steel corner castings* into each of the wrap-around ribs to reinforce this critical stress area. Similarly *curved corner plate* sections are welded to the sidewall and floor, eliminating vulnerable corner welds. *Heavy rolled steel top rail* sections reinforce the sidewalls for greater impact strength. Yet the loading height remains a low 13'7" (4140 mm).

To deflect the impact forces of loading and help keep a low center of gravity, the 90,000 psi (620 MPa) yield strength body uses a 10° slope forward and an 8° slope from the center of the bed to each sidewall. There's also a 20° ducktail to help retain loads on the haul road.



STANDARD ALL-STEEL CAB FOR OPERATOR COMFORT. MEETS OSHA REQUIREMENTS FOR SOUND SUPPRESSION.



The 777 cab is designed for operator comfort and efficiency. It's constructed with 42,000 psi (290 MPa) yield-strength steel and meets current OSHA requirements for sound suppression. Easy-to-read dash gauges with international symbols, all point to 3 o'clock in the normal position for fast, at-a-glance checking. Warning lights immediately signal a major malfunction. The fully suspended, adjustable operator's seat and the cushioned passenger seat both have seat belts. A floor mat is also standard, as are tinted glass all-around, windshield wiper and washer, and rear view mirrors on both sides. For operator comfort and productive work en-

vironment, a 24,500 BTU/hr. (7180 W) heater is standard. And optional air conditioning is modulated within the heater housing.

Other standard 777 features

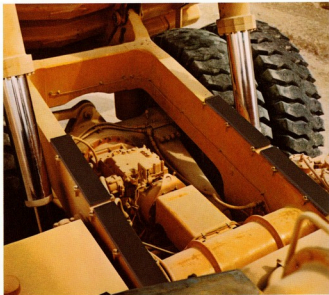
- The emergency brake and retarder controls are each single levers mounted on either side of the steering column.
- A supplemental steering system provides enough steering control for the operator to bring the truck to a stop. It uses an electric-motor-driven supplemental steering pump manually activated by a dash-mounted switch.

IN-FRAME SERVICEABILITY FOR SIMPLE ON-THE-JOB MAINTENANCE.

In-frame serviceability is a major boost to easy servicing and quick repairs on the job. Engine, torque converter, drive shaft, transmission and pump groups are all easily reached without restrictive cross-over wires, lines or hoses. Just raise the dump body and insert self-storing retaining pins to protect the serviceman. He can easily get at any power train component for servicing. Engine service is done right in place—valves, fuel system, oil coolers, alternator—whatever needs service can be easily reached. Hydraulic lines are all located near the pump drive so they can be serviced easily, without restricting other components. The transmission is mounted rearward and can be conveniently reached without restriction.



Specially designed service deck with a slip-resistant surface covers important service areas, including radiators, battery well and engine. Full-length handhold runs along the front of the canopy to aid the operator when moving on the service deck or entering cab.



Rear section of the service deck tilts forward so the serviceman has unrestricted access to the engine for routine maintenance or repairs. There's a brace to hold the deck in place while servicing. And because the service area is uncluttered, engine parts can be repaired or replaced in the frame. So there's less time lost for in-shop repairs.



Simple, accessible routine maintenance points.



Radiator filler spouts for both the engine coolant and after-cooler radiators are recessed in the front section of the deck.



Engine oil dipstick and oil filler spout can be reached from the service deck without raising the deck.



A battery well opens easily by unlatching two rubber fasteners. And the cover is hinged for easy servicing.



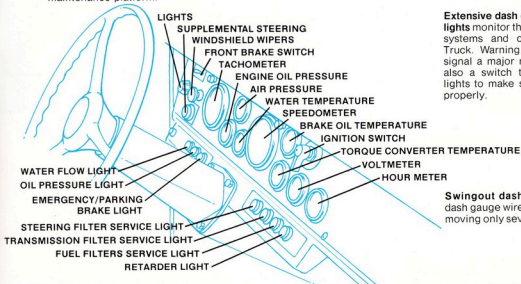
Two air filter housings beside the engine in each front wheel well are easily removed from the ground. A service indicator between the air filters and the engine in each wheel well shows when filters need servicing. Indicators are visible from the maintenance platform.



Easy-to-read sight gauges on both the hydraulic and fuel tanks show fluid levels at a glance.



Four engine oil filters on the right side of the engine and a transmission filter behind each front strut are easily changed from the ground. And there's a dash warning light to show when the transmission filters need service.



Extensive dash gauges and warning lights monitor the operation of major systems and circuits of the 777 Truck. Warning lights immediately signal a major malfunction. There's also a switch to test the warning lights to make sure all are working properly.

Swingout dash lets you get at all dash gauge wires for servicing by removing only seven screws.

STANDARD EQUIPMENT

Diesel engine electric starting ■ Automatic shifting transmission with downshift inhibitor ■ Crankcase guard ■ Drive line protection ■ Oil disc brakes (rear) ■ Wedge-type shoe brakes (front) with shields and "on-off" switch ■ Parking brake ■ Emergency braking system ■ Brake heat exchanger ■ Supplemental steering system with indicator light ■ Horn ■ Back-up alarm ■ Back-up light ■ Stop and tail lights ■ Directional signals ■ Hazard lights ■ Headlights with dimmer switch ■ Vandalism protection cap locks for fuel tank, hydraulic tank, radiators and dip sticks ■ Exhaust heated body with mechanical body position indicator ■ Rear tire rock ejector bars ■ Tow pins, front and rear ■ Tires—24.00 x 49, 42 PR (E-3) ■ Insulated and sound-suppressed all-steel cab ■ Full suspension seat ■ Passenger seat ■ Seat belts, driver and passenger seats ■ Dome light with switch ■ Courtesy light; "on" when left door opens ■ Floor mat ■ Sun visor ■ Tinted glass all around ■ Windshield wiper and washer ■ Mirrors, right and left ■ Tachometer ■ Speedometer, including odometer ■ Hour meter, clock hour type (in cab). (Service meter on engine.) ■ Heater/defroster ■ **Gauges or warning systems for:** Air pressure gauge; Low air pressure alarm; Engine oil pressure gauge; Engine water temperature gauge; Torque converter temperature gauge; Brake oil temperature gauge; Oil pressure light; Steering filter service light; Transmission filter service light; Fuel filter service light; Voltmeter; Warning light for parking brake; Retarder "on" light; Air cleaner service indicator.

OPTIONAL EQUIPMENT

Air conditioning.
Air line dryer.
Air starting arrangement.
Fast fuel filler, automatic or manual.
High-speed oil change system (hose, crankcase attachment and frame rail attachment).
Body, heavy material.
38.8 cu. yd. (29.7m³) struck.
59.1 cu. yd. (42.2m³) heaped, 2:1 SAE.
Body liners—heavy duty only.
Sideboards 6" (13 mm).
NoSPIN differential.
Reverse inhibitor.
Tachograph.
Tires:
24.00 x 49, 42 PR (E-4).
Extra Tread
24.00 x 49, 48 PR (E-4).
Extra Tread
24.00 x 49, Radial steel cord.



DEPENDABLE DEALER SERVICE

You get more than just a machine when you purchase from your Caterpillar Dealer. Because you also get **CAT PLUS**—a total customer support commitment. Investigate the many programs that are specially designed to eliminate downtime, save repair and maintenance and help you get more life, more productivity from your Caterpillar-built equipment. Things like:

Inspection programs to let you catch minor problems before they become major repairs. On-the-job technical analysis by a qualified inspector keeps a careful check on equipment performance to keep it running in top condition.

Parts Exchange Service includes engines, transmissions and torque converter to keep machines working without extensive downtime. You replace a failed component with a factory-rebuilt one, and get your machine back to work fast.

Product Application Service can carefully analyze your job layout and determine exactly the proper type and amount of equipment to perform your job most efficiently.

Personnel Training is available to thoroughly prepare your operators and mechanics for working with Caterpillar-built machines.

Materials and specifications are subject to change without notice.