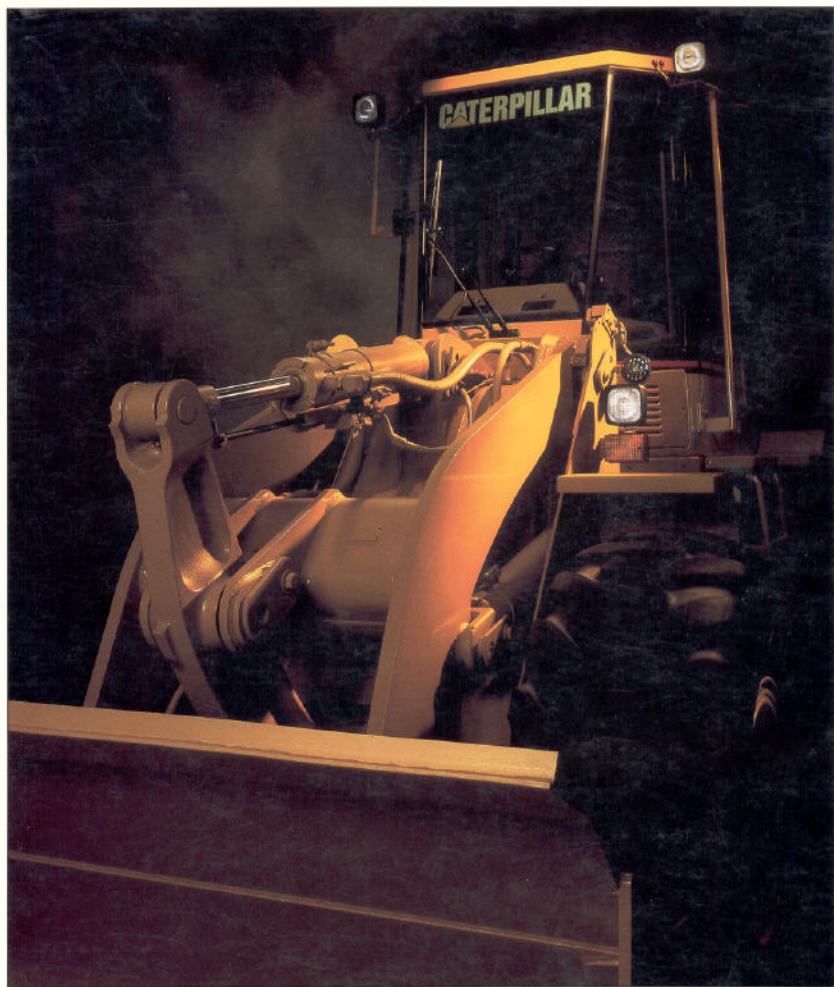




Cat 3116T Engine
Gross Power.....95.4 kW (128.1 HP)
Flywheel Power.....89.5 kW (120 HP)
Bucket Capacities1.8 to 2.1 m³ (2.4 to 2.75 yd³)
Operating Weight to11,170 kg (24,574 lbs)

928F



928F WHEEL LOADER FROM CATERPILLAR



We Put Operator Comfort First.

This is the command center of the new Caterpillar 928F Wheel Loader. From here, a lot of hard work can get done. Without so much hard work.

This Operator's Environment is the culmination of your ideas and suggestions, combined with our advanced engineering. The result is a quiet, comfortable and productive work environment.



Standard Equipment

NOTE: Standard and optional equipment may vary outside USA. Consult your Caterpillar Dealer for specifics.

Air cleaner, radial seal, dry-type

Alarm, back-up

Alternator, 50-amp

Batteries, (2)

Blower fan

Brakes, inboard, oil immersed

Bucket positioner, automatic

Cab, ROPS (sound-suppressed and pressurized) with:

- Heater/defroster
- Personal storage space
- Rearview mirrors (2 inside).
- Seat, adjustable suspension.
- Seat belt, retractable, 3"
- Tinted safety glass
- Wiper/washer (front/rear)

Differentials, conventional

Electrical system (24-V)

Electronic Monitoring System

- Category I

- Alternator

- Category II

- Coolant temperature
- Transmission oil temperature

- Category III

- Engine oil pressure
- Brake oil pressure
- Parking brake applied

Engine, Caterpillar 3116T

Engine enclosure, lockable

Fenders (front/rear)

Gauge group:

- Fuel level
- Transmission/torque converter temperature
- Engine coolant temperature
- Hydraulic oil temperature

Horn, steering wheel mounted

Hour meter, electric

Hydraulic control, two lever

Hydraulic control lock

Indicators

- Air cleaner service
- Coolant sight gauge
- Hydraulic oil level sight gauge

Lift kickout, automatic

Lighting system:

- Brake lights
- Working lights, halogen (2 front, 2 rear)

Loader linkage, Z-bar

Muffler

Parking brake

Pump, fuel priming

Switch, key start/stop

Tilt steering column

Torque converter

Transmission neutralizer

with lockout

Transmission, power shift, 4 forward/3 reverse

Vandalism protection group (locked service points)

Optional Equipment

Air conditioner

Batteries, heavy duty (2)

Buckets/ground engaging tools

Canopy, ROPS

Cooler, hydraulic oil

Counterweight

Differential, Limited Slip, (2 axles)

Differential, NoSPIN, rear axle

Guard, crankcase

Guard, power train

Heater, engine coolant

Hydraulic control, single lever

Hydraulic third valve

Mirrors, external

Radio installation package

Ride Control System

Rotating warning beacon

Starting aid, air intake heater

Starting aid, ether

Starting receptacle

Steering, supplemental

Tires, 15.5 and 20.5 x 25

Toolbox

Transmission control, autoshift

Turn signals

Vandalism protection (for use with ROPS canopy)

Wipers, intermittent (front)

Working lights (2 cab mounted)

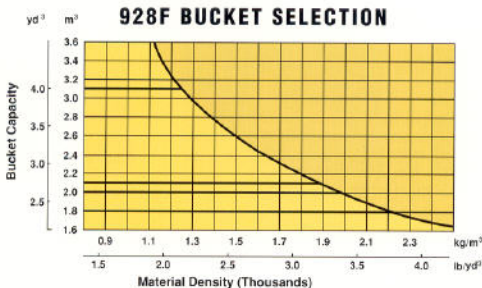


Supplemental Specifications

| | Change in Operating Weight | | Change in Articulated Static Tipping Load | |
|--|----------------------------|-------|---|-------|
| | kg | lb | kg | lb |
| 15.5-25, 8PR (L-2) tires & rims..... | -79 | -174 | -51 | -112 |
| 15.5-25, 12 PR (L-3) tires & rims..... | -19 | -42 | -12 | -26 |
| 15.5-25, Radial (L-2 Equivalent) tires & rims..... | -30 | -66 | -19 | -42 |
| 15.5-25, Radial (L-3 Equivalent) tires & rims..... | +62 | +137 | +41 | +90 |
| 17.5-25, 12 PR (L-2) tires & rims..... | 0 | 0 | 0 | 0 |
| 17.5-25, Radial (L-2 Equivalent) tires & rims..... | +46 | +101 | +31 | +68 |
| 17.5-25, Radial (L-3 Equivalent) tires & rims..... | +166 | +366 | +109 | +240 |
| 17.5-25, Radial (L-2/L-3 Equivalent) tires & rims..... | +139 | +306 | -91 | +202 |
| 20.5-25, 12 PR (L-2) tires & rims..... | +435 | +959 | +283 | +624 |
| 20.5-25, 12 PR (L-3) tires & rims..... | +580 | +1279 | +378 | +833 |
| 20.5-25, Radial (L-2 Equivalent) tires & rims..... | +452 | +997 | +294 | +648 |
| 20.5-25, Radial (L-3 Equivalent) tires & rims..... | +668 | +1473 | +434 | +957 |
| 20.5-25, Radial (L-2/L-2 Equivalent) tires & rims..... | +627 | +1383 | +407 | +897 |
| Canopy, ROPS..... | -152.2 | -336 | -143 | -315 |
| Counterweight, 302 kg (666 lb)..... | +302 | +666 | +566 | +1248 |

Typical Material Densities - Loose

| | kg/m ³ | lb/yd ³ | | kg/m ³ | lb/yd ³ | | kg/m ³ | lb/yd ³ |
|-------------------------|-------------------|--------------------|------------------------|-------------------|--------------------|---------------------------|-------------------|--------------------|
| Basalt..... | 1960 | 3,305 | Granite, broken..... | 1660 | 2,799 | Sand: | | |
| Bauxite, Kaolin..... | 1420 | 2,394 | Gravel: | | | dry, loose..... | 1420 | 2,394 |
| Clay: | | | pitrun..... | 1930 | 3,254 | damp..... | 1690 | 2,849 |
| natural bed..... | 1660 | 2,799 | dry..... | 1510 | 2,546 | wet..... | 1840 | 3,102 |
| dry..... | 1480 | 2,495 | dry, 6-50 mm/2-2"..... | 1690 | 2,849 | Sand and clay, loose..... | 1600 | 2,698 |
| wet..... | 1660 | 2,799 | wet, 6-50 mm/2-2"..... | 2020 | 3,406 | Sand and gravel: | | |
| Clay and gravel: | | | Gypsum: | | | dry..... | 1720 | 2,900 |
| dry..... | 1420 | 2,394 | broken..... | 1810 | 3,052 | wet..... | 2020 | 3,406 |
| wet..... | 1540 | 2,596 | crushed..... | 1600 | 2,698 | Sandstone..... | 1510 | 2,546 |
| Decomposed rock: | | | Limestone: | | | Shale..... | 1250 | 2,107 |
| 75% rock, 25% earth.... | 1960 | 3,305 | broken..... | 1540 | 2,596 | Slag, broken..... | 1750 | 2,950 |
| 50% rock, 50% earth.... | 1720 | 2,900 | crushed..... | 1540 | 2,596 | Stone, crushed..... | 1600 | 2,698 |
| 25% rock, 75% earth.... | 1570 | 2,647 | | | | | | |
| Earth: | | | | | | | | |
| dry, packed..... | 1510 | 2,546 | | | | | | |
| wet, excavated..... | 1600 | 2,968 | | | | | | |





Caterpillar® Engine

| | |
|----------------------------------|--------------------|
| Gross power at 2200 RPM | 95.4 kW (128.1 HP) |
| Net power at 2200 RPM | 89.5 kW (120 HP) |

Rating of Caterpillar machine engines are based on standard conditions of 25°C (77°F) and 99 kPa (29.32" Hg) dry barometer. Power is based on using 35° API gravity fuel having an LHV of 42 780 kJ/kg (18,350 Btu/lb) when used at 30°C (86°F) ref. a density of 838.9 g/L (7.001 lb/U.S. gal). Not power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler, and alternator. No derating is required up to 2286 m (7,500 ft) altitude.

The following ratings apply at 2200 RPM when tested under the specified standard conditions for the specified standard:

| Net Power | kW | HP | PS |
|-------------------------|------|-------|-----|
| Caterpillar | 89.5 | 120.0 | — |
| EEC 80/1269 | 89.5 | 120.0 | — |
| ISO 9249 | 89.5 | 120.0 | — |
| SAE J1349 (JAN90) | 88.8 | 118.8 | — |
| DIN 70020 | 92.7 | 124.3 | 126 |

Gross Power

| | | | |
|------------------|------|-------|---|
| ISO 3046-2 | 95.4 | 128.1 | — |
|------------------|------|-------|---|

Exhaust Emissions

One of the world's cleanest burning engines, meets all 88/77/EEC directives.

Measured emission values:

| | g/kwh |
|----------------------------|-------|
| Hydrocarbons (HC) | 0.67 |
| Carbon Monoxide (CO) | 2.01 |
| Nitrous Oxide (NOX) | 14.34 |

Caterpillar four-stroke-cycle, six-cylinder 3116 turbocharged diesel engine with 105 mm (4.13") bore, 127 mm (5.0") stroke and 6.6 L (403 in³) displacement.

Direct-injection, fuel system with individual, adjustment-free unit injectors for the cylinders. Cam-turned and tapered, aluminum-alloy pistons have three rings each and are cooled by oil spray. Oil cooler is standard. Connecting rods are tapered.

Uniflow cylinder head design eliminates crossover manifold piping. Internal fuel, oil and water passages used instead of external lines. Deep-skirted, cast cylinder block. Induction-hardened, forged crankshaft. Steel camshaft is fully journaled at every block bulkhead. Oscillating roller-followers and short pushrods for precision engine timing. Two alloy-steel valves per cylinder.

Direct-electric, 24-V starting and charging system with two 12-V, 100-amp-hr batteries and 50-amp alternator. Ether starting aid, air intake heater and heavy duty starting system are optional.



Final Drives

Planetary reduction gear inboard mounted for optimal protection and durability. It consists of a ring gear pressed and doweled into the axle housing and a carrier assembly including the planet gears and the sun gear.



Transmission

Electrically controlled Caterpillar power shift transmission with four forward and three reverse speed ranges. Allows on-the-go directional and speed changes. Optional automatic shift control provides unmatched operator comfort. Steering column mounted, single lever transmission control allows easy and precise gear and direction selection.

Speeds are measured with machine equipped with 17.5-25 (L-2) tires.

| | 1st | 2nd | 3rd | 4th |
|---------------------|-----|------|------|--------------|
| Forward, km/h | 6.8 | 12.0 | 21.1 | 36.5 (39.5*) |
| MPH | 4.2 | 7.4 | 13.1 | 22.6 (24.5*) |
| Reverse, km/h | 6.8 | 12.0 | 21.1 | — |
| MPH | 4.2 | 7.4 | 13.1 | — |

*When equipped with 20.5-25 tires.



Axles

New axle design with inboard mounted brakes and final drives for improved service life and maintenance.

Front axle fixed; rear axle oscillates 15 degrees each way for greater machine stability. The rear wheel can raise or drop a total of 480 mm (18.9") and still keeps all wheels on the ground for maximum traction.

Conventional differentials standard. Optional limited slip differentials for both axles improves significantly traction in adverse underfoot condition and reduces wheel slip for extended tire life.



Tires

A wide selection of 15.5-25, 17.5-25, and 20.5-25 tires are available.



Loader Linkage

Z-bar design for use in the toughest applications. Positive, fast bucket control. Sealed pins and bushing in bucket and lift arm hinges for durability and reduced maintenance costs.

928F Operating Specifications

| Bucket Type | Excavating Buckets | | | | | | Penetration |
|---|---------------------------|-----------------------|---------------|---------------------------|-----------------------|---------------|--------------------------|
| | With Bolt On Cutting Edge | With Teeth & Segments | With Teeth | With Bolt On Cutting Edge | With Teeth & Segments | With Teeth | With Flush Mounted Teeth |
| Capacity heaped (\$) | 2.0 2.6 | 2.0 2.6 | 1.8 2.3 | 2.1 2.75 | 2.1 2.75 | 2.0 2.6 | 2.0 2.6 |
| Capacity, struck (\$) | 1.7 2.25 | 1.7 2.25 | 1.6 2.1 | 1.8 2.4 | 1.8 2.4 | 1.7 2.25 | 1.7 2.25 |
| Width (\$) | 2549 ft/in | 2549 ft/in | 2549 ft/in | 2549 ft/in | 2549 ft/in | 2549 ft/in | 2549 ft/in |
| Dump clearance at full lift and 45° discharge (\$) ^a | 2736 ft/in | 2631 ft/in | 2631 ft/in | 2736 ft/in | 2631 ft/in | 2631 ft/in | 2623 ft/in |
| Reach at full lift and 45° discharge (\$) ^a | 956 ft/in | 1059 ft/in | 1059 ft/in | 956 ft/in | 1059 ft/in | 1059 ft/in | 958 ft/in |
| Reach at 45° discharge angle, 2130 mm (70") clearance (\$) ^a | 1410 ft/in | 1453 ft/in | 1453 ft/in | 1410 ft/in | 1453 ft/in | 1453 ft/in | 1345 ft/in |
| Reach with arms horizontal and bucket level | 2182 ft/in | 2329 ft/in | 2329 ft/in | 2182 ft/in | 2329 ft/in | 2329 ft/in | 2284 ft/in |
| Digging depth (\$) | 119 in | 133 in | 133 in | 119 in | 133 in | 133 in | 107 in |
| Overall length (\$) ^a | 6946 ft/in | 7093 ft/in | 7093 ft/in | 6946 ft/in | 7093 ft/in | 7093 ft/in | 7030 ft/in |
| Overall height (bucket at full raise) (\$) | 4783 ft/in | 4783 ft/in | 4783 ft/in | 4861 ft/in | 4861 ft/in | 4861 ft/in | 4924 ft/in |
| Bucket floor angle at full dump and maximum lift | 52.9° | 52.9° | 52.9° | 52.9° | 52.9° | 52.9° | 48.1° |
| Static tipping load, straight (\$) | 9071 lb | 8976 lb | 9139 lb | 9074 lb | 8979 lb | 9143 lb | 9127 lb |
| Static tipping load, full 40° turn (\$) | 7930 lb | 7836 lb | 7989 lb | 7930 lb | 7836 lb | 7990 lb | 7969 lb |
| Breakout force (\$) | 10 106 lb | 10 057 lb | 10 912 lb | 10 091 lb | 10 042 lb | 10 896 lb | 11 365 lb |
| Operating weight | 11 069 lb | 11 150 lb | 11 077 lb | 11 089 lb | 11 170 lb | 11 097 lb | 11 148 lb |
| Shipping weight | 10 852 lb | 10 933 lb | 10 860 lb | 10 872 lb | 10 953 lb | 10 880 lb | 10 931 lb |

Note: Static tipping loads and operator weight are based on standard machine configuration with 17.5-25, 12 PR (L-2) tires, full fuel tank, coolant, lubricants, and operator.

^a Dump clearance, reach and overall length dimensions for buckets equipped with teeth reflect actual dimensions. SAE J732c allows dimensions for buckets with teeth to reflect the dimension using the cutting edge. Caterpillar uses actual, equipped bucket dimensions.





Loader Hydraulic System

Open-center, interrupted series system with full-flow filtering. System is completely sealed.

Implement system, vane-type pump:

| | |
|--|--------------------------------|
| Output at 2400 RPM and 6900 kPa (1,000 psi) with SAE 10W oil at 66°C (150°F) | 139 L/min (36.1 gpm) |
| Relief valve setting | 24 800 kPa (3,596 psi) |
| Cylinder, double-acting: | |
| Lift - bore and stroke | 114.3 x 712 mm (4.5 x 28.03") |
| Tilt - bore and stroke | 120.6 x 520 mm (4.75 x 20.47") |
| Hydraulic cycle time in seconds with rated load in bucket \$: | |
| Raise | 6.2 |
| Dump | 1.1 |
| Lower, power down | 2.3 |
| Total | 9.6 |



Bucket Controls

Two lever pilot actuating control (single lever optional). Adjustable automatic kickout. Can be locked for roading.

Lift circuit - controls raise, hold, lower and float positions. Automatic kickout adjustable from horizontal to full lift.

Tilt circuit - controls tilt back, hold and dump positions. Automatic bucket positioner adjustable to desired loading angle. No visual spotting required.



Brakes

System meets SAE J1473 DEC84, ISO 3450-1985 and OSHA regulations.

Service brake system - Inboard mounted oil immersed disc brakes, enclosed and sealed, therefore maintenance free. Fully hydraulically actuated. Separate brake circuit for front and rear axle for added security. Two brake pedals. A separate switch neutralizes the transmission during braking.

Parking brake system - Mechanical, shoe-type brake mounted on the drive shaft. Operator engages manually.

Secondary brake system - If the engine stalls, two continually charged nitrogen accumulators incorporated into the brake system brings the machine to a stop with minimal operator effort.



ROPS

ROPS and cab are standard in North America and Europe. Rollover Protective Structure (ROPS) offered by Caterpillar for this machine meets ROPS criteria SAE J394, SAE1040 APR88 and ISO 3471-1986. They also meet Falling Objects Protective Structure (FOPS) criteria SAE J231 JAN81 and ISO 3449-1984.



Cab

When properly installed and maintained, cab offered by Caterpillar, when tested with doors and windows closed as per work cycle procedures specified in ANSI/SAE J1166 MAY 90, results in an operator sound exposure L_{eq} (equivalent sound pressure level) of 75 dB (A). This operator A-weighted sound exposure level can be used in conjunction with OSHA, MSHA and EEC Occupational Noise Exposure Criteria. Also, when tested as per the static specifications of 86/662/EEC and ISO 6394, in a closed cab configuration, the respective operator sound pressure level is 75 dB (A).



Steering

Center point frame articulation. Front and rear wheel track. Load sensing hydraulic steering system with its variable flow piston pump gives excellent machine control at all ground speeds and engine RPM. Steering column is adjustable. Supplemental steering system available as an option to meet roading regulations in various countries. This will allow steering of the machine with a stopped engine.

| | |
|---|------------------------|
| Minimum turning radius (over tire) \$..... | 5672 mm (18' 7") |
| Steering angle, each direction | 40° |
| Hydraulic system consists of two 69.9 mm (2.75") bore, double acting cylinders powered by a variable displacement pump. Output at 2400 RPM and 7000 kPa (1,015 psi) | 104 lpm (27 gpm) |
| Relief valve setting | 20 700 kPa (3,000 psi) |



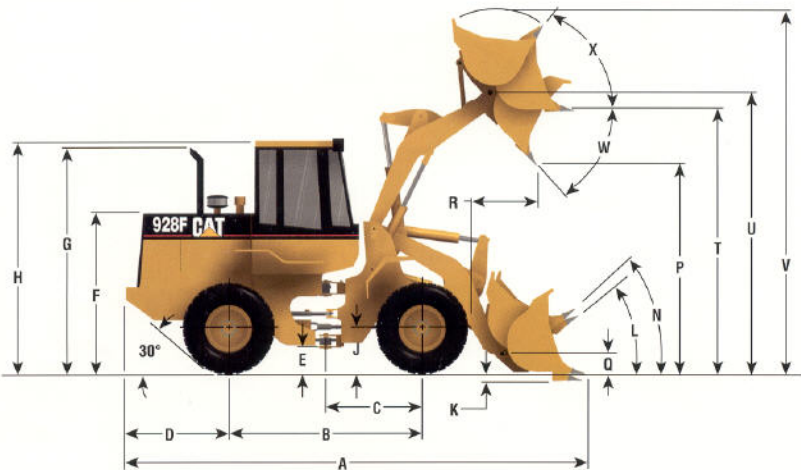
Service Refill Capacities

| | L | U.S. Gallons |
|---|-----|--------------|
| Fuel Tank | 189 | 49.1 |
| Cooling System | 48 | 12.5 |
| Crankcase | 20 | 5.2 |
| Transmission | 30 | 7.8 |
| Differentials and Final Drives: | | |
| Front | 26 | 6.7 |
| Rear | 25 | 6.5 |
| Hydraulic System, (includes tank) | 100 | 26 |
| Hydraulic Tank | 55 | 14.3 |



Dimensions (approximate) §

| | Tread width | Width over tires | Change in vertical height |
|--------------------------|-----------------|------------------|---------------------------|
| 15.5-25, 12P (L-2) | 1950 mm (76.7") | 2372 mm (93.4") | -34 mm (-1.4") |
| 17.5-25, 12P (L-2) | 1950 mm (76.7") | 2427 mm (95.6") | — |
| 20.5-25, 12P (L-2) | 1850 mm (73") | 2437 mm (95.9") | +68 mm (+2.7") |



- | | | | |
|------------------------|-----------------------|-------------------------|------------------------|
| A) See Overall Length† | G) 3135 mm (10' 3") | N) 46.4° Carry Position | T) 3367 mm (11' 1") |
| B) 2870 mm (9' 5") | H) 3193 mm (10' 4") | P) See Dump Clearance | U) 3695 mm (12' 1") |
| C) 1435 mm (4' 8") | J) 613 mm (2' 0") | Q) 446 mm (1' 5.5") | V) See Overall Height† |
| D) 1762 mm (5' 9") | K) See Digging Depth† | R) See Reach at 45° | W) 45° |
| E) 318 mm (1' 1") | L) 40.3° From Ground | Discharge Angle | X) 58.5° |
| F) 2140 mm (7' 0") | | | |

† See dimensions for areas indicated in operating specifications chart.
Note: Dimensions listed are for machine equipped with 17.5-25" tires.

Reliable Power Train

High-tech Cat 3116 Turbocharged Engine provides more power.

Electrically-controlled power shift transmission.

Optional Autoshift transmission.

Heavy duty axles.

Loader Linkage

Z-bar design for strong breakout force.

Excellent bucket visibility.

Less maintenance with sealed pins.

Rugged Construction

Four plate loader tower.

Solid-plate lift arms.

Simplified Maintenance/Repair Procedures

No daily maintenance.

Ground-level access to lubrication points, fluid levels and battery.

Hydraulic pressure taps for troubleshooting.

Cat Hydraulics

High pressure hydraulics provide excellent force for lifting, tilting, steering.

Pilot hydraulic controls for low effort, quiet operation.

Automatic bucket positioner with lift kickout.

Cat's XT-3 hose and couplings offer greater strength and flexibility.

Load sensing steering for more efficient control at all engine and ground speeds.



CAT



The Cat 928F Wheel Loader

Buckets

Caterpillar's wide choice of buckets help you match the machine to do the job.

General purpose bucket is best for most general applications.

Choice of ground engaging tools.

Shell-tine construction resists twisting and distortion under high loads.

Integral spill plates to reduce spilling.

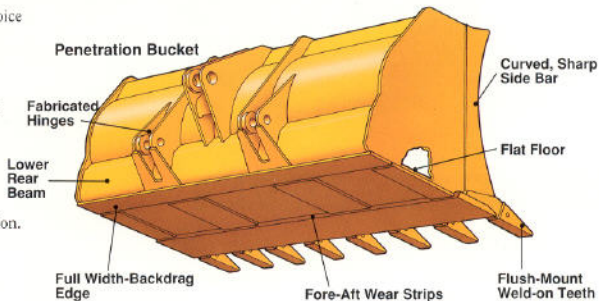
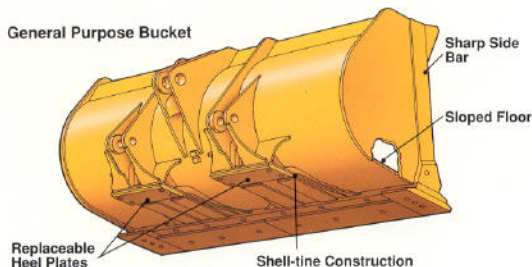
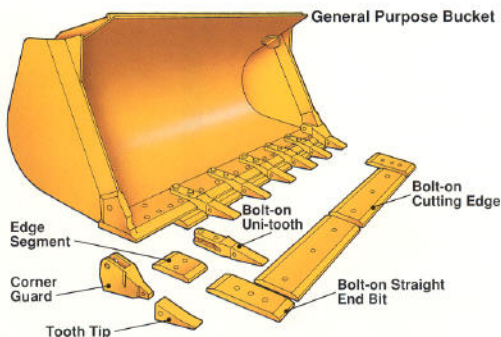
Replaceable heel wear plates.

Patented Corner Guard Cutting Edge System delivers superior wear resistance.

Penetration bucket is the right choice for materials requiring moderate impact and breakout forces.

Long, flat floor aids in loading and allows smooth, level cut for final grading.

Sharpened cutting edges and sidebars allow maximum penetration.



Caterpillar® 3116T Engine

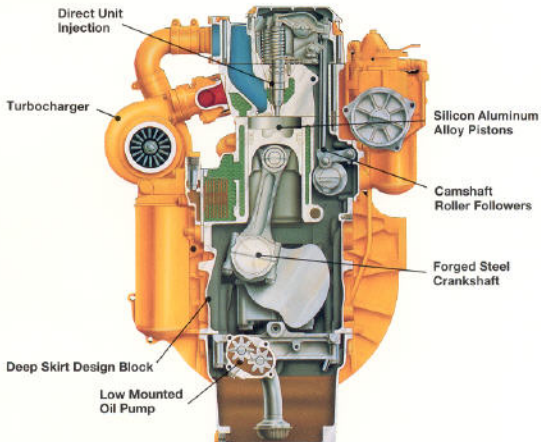
Six-cylinder power to get almost any job done quicker.

Turbocharged for increased performance and efficiency at high altitudes.

Rated at 89.5 kW (120 FWHP) SAE net.

High-pressure, unit-injection fuel system — individual unit injectors provide excellent fuel atomization for excellent fuel economy, low emissions, reliability and durability.

Resiliently mounted engine — reduces noise and vibration for greater operator comfort and productivity.



Cat® Axles and Brakes

Heavy duty axles feature simpler designs using fewer parts for greater reliability.

Fully enclosed, oil-disc brakes are adjustment-free and completely sealed from contaminants.

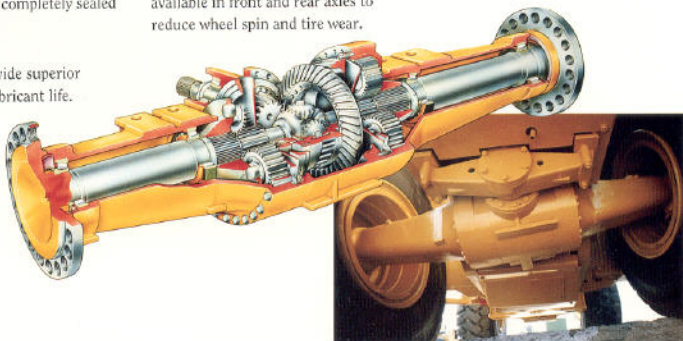
Duo-Cone Seals provide superior sealing for longer lubricant life.

Hydraulically actuated brakes for easy operation.

Spiral bevel gear set provides high contact ratio resulting in lower sound levels.

Optional Limited-Slip differentials available in front and rear axles to reduce wheel spin and tire wear.

Oscillating rear axle for maximum machine stability and traction.



On - The - Job - Support**Larger, Quieter Cab.**

Another important aspect of operator comfort on the 928F is the advanced sound insulation. Thanks to Caterpillar's improved sound reduction designs, the 928F is one of the quietest cabs in the world.

The cab is 6 inches wider and 25% larger than previous models. The front windows are larger, too, offering a better view of the working end of the 928F.

Extra Space.

In addition to making the 928F cab larger and more comfortable, we've also added some extras. Like a radio mounting area overhead that's prewired for easy installation. And more "personal storage space" that's perfect for storing lunch and other personal items.



The Caterpillar Contour Series Seat offers more comfort, thanks to a variety of easy-to-make adjustments.

Adjust up, down, fore, aft, tilt...even ride firmness and arm rest angle.

928F



s Hard. And Looks Great.

forms. And we think you'll be very pleased! We've made sure the 928F is
transmission. All incorporated into a sleek, modern package.

More Power and Performance.

The Turbocharged Cat 3116 diesel engine in the 928F brings more power to your job.

The engine is smooth running, fuel efficient and includes some unique Caterpillar advances that help it last longer.

Channeling the power is handled by your choice of transmissions, standard or autoshift. The heavy duty axles offer superior performance. And the totally enclosed braking system means wet weather, mud or other contaminants won't affect braking.

The net result is exceptional performance through excellent rimpull/hydraulic match, responsiveness and fast cycle times.



The 928F Work

Of course, the true test of the 928F Wheel Loader is how well it performs ready to work: with a bigger engine, new inboard brakes and a new

Your Cat Dealer



There's one other very important component included with every Caterpillar 928F Wheel Loader that no one else can offer: your CAT Dealer.

Whether you have questions about performance, financing or service, your CAT Dealer has the answers. He's dedicated to helping you make the right equipment choice for your requirements.

He can help you with all the details of a purchase or rental, including a full explanation of Caterpillar's warranty and service options. You'll find he's easy to talk to, and genuinely interested in your business.

CATERPILLAR®