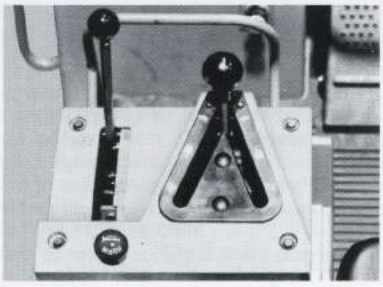
CATERPILLAR

973
Track-type Loader

Electronic Monitoring System.



Governor control and transmission lever.

Model shown may have optional equipment.

Caterpillar Engine

Flywheel power @ 2200 rpm ..... 210 HP/**157 kW** (Kilowatts (kW) is the International System of Units equivalent of horsepower.)

The net power at the flywheel of the vehicle engine operating under SAE standard ambient temperature and barometric conditions, 77°F/25°C and 29.61" Hg/100 kPa, using 35 API gravity fuel oil at 60°F/15.6°C, and after deductions for fan, air cleaner, water pump, lubricating oil pump, fuel pump, muffler and alternator. No derating required up to 7,500 ft/2300 m altitude.

Cat 4-stroke-cycle 3306 turbocharged diesel Engine with six cylinders, 4.75"/**121 mm** bore, 6.0"/**152 mm** stroke and 638 cu. in./**10.45 liters** displacement.

Direct injection Caterpillar fuel system with individual adjustment-free injection pumps and valves.

Cam-ground and tapered aluminum alloy pistons with 3-ring design are spray-cooled. Steel-backed aluminum bearings. Totally hardened crankshaft. Pressure lubrication with full-flow filtered and cooled oil. Dry-type air cleaner with primary and safety elements.

24-volt direct electric starting system with 35-amp alternator and optional ether starting aid.

AEHQ3564

973

Track-type Loader

drive

Hydrostatic drive provides infinite machine speeds to 6.4 mph/**10.3 km/h**, forward or reverse. Each track is driven by a separate hydraulic circuit consisting of one variable displacement piston **pump**, connected by Caterpillar XT-6 hydraulic hose and couplings to a two-speed piston **motor**.

Single lever on operator's left controls machine speed, direction and parking brake. Lever travels in an inverted "V" pattern. Neutral position is point of "V." Moving lever to the right causes hydraulic pressure to disengage the spring applied parking brake, and the machine to move forward. Track speed increases as lever is pulled further back. Reverse travel direction is attained by moving lever to left of "V" pattern, and back to increase speed. Natural posture and arm position maintained with short throw "V" shifting pattern.

Engine/Transmission resiliently mounted as one unit to reduce vibration and shocks. Transmission contains the pumps, control valves, automatic engine speed control system, and synchronizing system that equalizes flow rate between left and right power trains.

Drive pumps . . . Two Caterpillar variable displacement, slipper-axial piston pumps driven from engine flywheel.

Track motors . . . Two Caterpillar link-type, two-speed piston motors mounted inboard of main frame at the sprocket. Pressure summing valve between pumps and motors automatically regulates displacement of both providing increased torque as load increases.

Relief valve setting . . . . . 5500 psi/**379 bar/37 921 kPa**

Charging pump . . . . . One gear type, supplies power to automatic control system.

Full flow filtering of hydrostatic drive system oil.

steering

Steering controlled by foot pedals. Partially depressing left or right pedal slows that track, causing machine to smoothly turn that direction with full power. Full pedal depression causes the track to stop, then reverse for track counterrotation turning within the machine's length.

brakes

Service — hydrostatic, through vehicle drive system resistance using transmission lever.

Emergency and Parking — splash-lubricated disc brakes located between each hydraulic track motor and final drive. Each set consists of six steel discs splined to final drive input pinion, and seven friction discs splined to brake housing. Spring applied when transmission lever is in zero speed position; hydraulically released by oil pressure from hydrostatic control system. Also actuated by center pedal, automatically applied in the event of transmission hydraulic oil pressure loss. Manual release hand pump in operator compartment.

final drives

Single reduction spur gear set inboard of sprocket and single reduction outboard planetary. Final drive is isolated from vehicle weight and ground-induced shock loads by track roller frame pivot shafts.

track roller frames

Roller frames use pinned equalizer bar and pivot shafts for ±1.5° oscillation of idlers. Equalizer bar is pinned to each roller frame and center of main frame to help maintain a stable working platform. Rubber pads between equalizer bar and main frame dampen shocks. Pivot shafts press fit into loader frame ahead of planetary final drives and support vehicle's weight. Roller frames are box-section.

undercarriage

Sealed and Lubricated Track surrounds track pins with lubricant to virtually eliminate wear inside the bushing. Two-piece master link for easy track removal and installation. All rollers and idlers have Duo-Cone Floating Ring Seals and are Lifetime Lubricated.

	Standard	Low Ground Pressure
Track rollers (each side)	7	7
Carrier rollers (each side)	2	2
Number of shoes (each side)	40	40
Width of standard track shoes	19.7"/**500 mm**	26.6"/**675 mm**
Length of track on ground	9'7"/**2.930 m**	9'7"/**2.930 m**
Ground contact area	4541 in^2	6131 in^2
	2.93 m^2	**3.96 m^2**
Ground pressure	11.8 psi/	9.05 psi/
	.81 bar/81.4 kPa	**.62 bar/62.4 kPa**
Grouser height (double grouser)	1.5"/**38 mm**	1.5"/**38 mm**
Gauge	78"/**1980 mm**	82"/**2080 mm**

implement hydraulics

Large capacity 2 section vane-type pump, mounted on engine flywheel housing. Increase in implement loads or tractive effort sufficient to drop engine speed below rated RPM causes a load sensor to reduce power to vehicle drive and increase power available to implement. Operating valves are double spool-type, spring centered, and located under loader frame crossmember for easier access. Lines are steel tubing and high pressure XT-3 hose. System sealed to keep out wear-causing dirt and protected by full-flow filter on return line, helping prevent foreign material from entering reservoir. Pilot-operated control valves require little operator effort while retaining delay free bucket control.

Output @ rated engine speed and 1000 psi/**69 bar/6895 kPa** . . . . . 78 gpm/**295 liters/min**

Relief valve setting (main) . . . . . 2750 psi/**190 bar/19 000 kPa**

Cylinders:

Lift — bore and stroke (2) . . . . . 6.5"×36.8"/**165×935 mm**

Tilt—bore and stroke (2) . . . . . 5.5"×24.9"/**129.7×633 mm**

Pilot system — gear-type pump:

Output @ rated engine speed and 348 psi/**24 bar/2400 kPa** . . . . . 3.2 gpm/**12.2 liters/min**

Relief valve setting . . . . . 325 psi/**22 bar/2240 kPa**

Hydraulic cycle time, rated load in bucket, in seconds (§):

Raise	Dump	Float Down (Empty)	Total
7.2	2.8	2.9	12.9

Bucket Controls

Lift circuit . . . . . Raise, lower, hold, float (Automatic kickout)

Tilt circuit . . . . . Tilt back, hold, dump (Automatic bucket positioner — adjustable to desired digging angle.)

lift arms and loader tower

Solid steel lift arms are straddle mounted to a fabricated single unit main frame. Integral loader tower features wide base, "A" frame profile. Z-bar bucket control linkage has 18 lubrication points accessible with bucket on ground. Job reliable seals provide lubrication intervals to 100 SMH, except for lower bucket hinge pins which are cartridge type and require lubricant every 2000 SMH.

service refill capacities

	U.S. Gallons	Liters
Fuel tank	94	356
Cooling system	13.5	51
Lubricating systems:		
Crankcase	7.25	27.5
Final drives (each)	7.5	28.5
Implement hydraulic system	16	60
Hydrostatic drive system (including reservoir)	16	62
Pump drive	1	4

cab

ROPS cab is standard. Integrally designed with two-post ROPS and resiliently mounted. Sound suppressed. Includes laminated safety glass, washers/wipers for windshield and rear window, rearview mirror. ROPS canopy also available. When properly installed and maintained, cab with doors and windows closed meets OSHA and MSHA requirements for operator sound exposure limits in effect at time of manufacture when tested according to ANSI/SAE J1166 SEP80.

973 VALUE ANALYSIS

Rear Engine
- Machine balanced with loaded bucket.
- Unsurpassed visibility to bucket.
- Fuel efficient direct injection engine.

Hydrostatic Drive
- Quick, responsive . . . with precise control.
- Fully variable speeds within speed range.
- Gradual turns with power to both tracks.
- Counterrotation.
- Efficient power utilization.

Z-Bar Linkage
- High breakout force.
- Few lubrication points.

Pivot Shafts and Equalizer Bar
- Oscillating roller frames for low machine shocks.
- More track on ground improves operator ride.
- Final drives do not support machine weight.

Operator's Compartment
- Resilient mounting reduces vibration and noise.
- One lever speed and direction control.
- Comprehensive Electronic Monitoring System.
- Sound suppressed, air pressurized ROPS cab.

Routine Maintenance
- Grouped, ground level check points.
- Loader linkage doesn't restrict engine access.
- Hinged access doors.
- Cartridge type lower bucket hinge pins.

Repairs and Servicing
- Tilting cab for easy access.
- Quick connect hydraulic test fittings.
- Modular components allow quick replacement.
- Pretest modules for repair reliability.

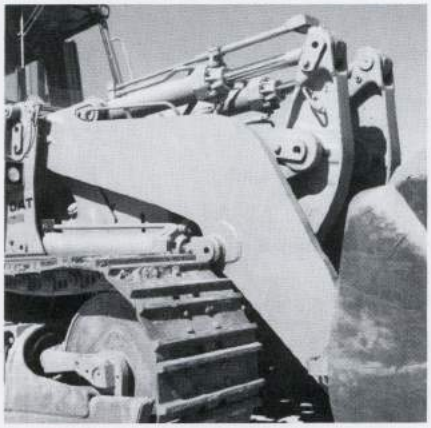
Durability
- Box-section main frame.
- 4-plate 'A' frame loader tower.
- Straddle mounted loader linkage.
- Planetary final drives.
- Sealed and Lubricated Track.

Rear Engine — We've taken the engine out from between you and the bucket, and put it in the back of the machine. You gain two ways. There's not a thing — radiator, hood, exhaust stack or muffler — to interfere with your view of the bucket. And the rear-mounted engine eliminates the need for added counterweighting. There's no dead weight to move, so the machine can move fast.

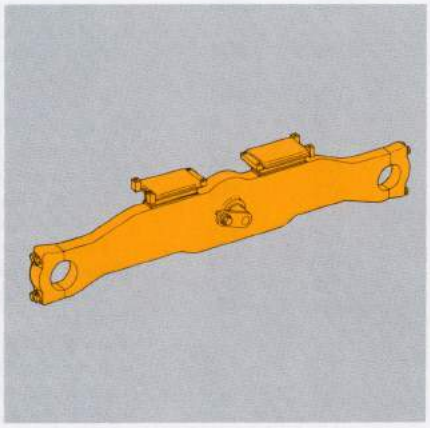
And there's more. Most track loaders with rear counterweights are balanced with an **empty** bucket. The 973 is designed for **natural** balance **with a loaded bucket.** Because reduced machine weight and natural balance allow heavy payloads, the 973 operates more efficiently.

The continuous power matching ability of the Cat hydrostatic drive allows the 973 engine to work at nearly constant rated speed. Therefore, power to the independent bucket hydraulics is immediate.

As an added benefit the rear-mounted engine is removed from the dust and dirt of the working face. This means less chance of filter failure and engine contamination.

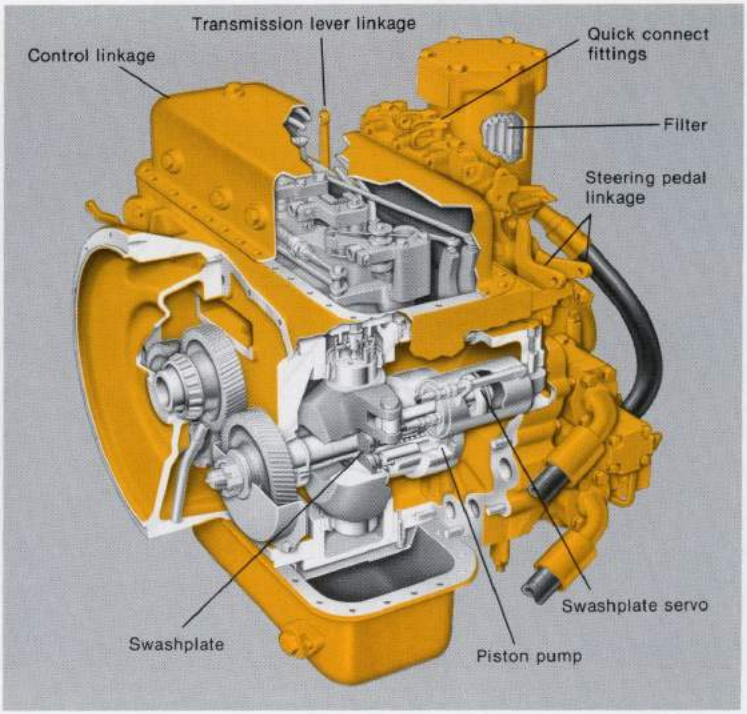


Z-bar Loader Linkage is an extremely effective design that multiplies force through its superior geometry. Breakout force is exceptionally high, contributing to high productivity. This is due to (1) mechanical advantage generated by the tilt link pivot point, (2) increased piston area on which to exert hydraulic force, and (3) combination of double tilt cylinders (mounted for head end rack-back and rod end dump) and linkage geometry provide fast dumping.



Equalizer Bar — is solid steel and supports the front of the machine, allowing the undercarriage to oscillate. It's joined to the main frame using a hardened pin in a sealed and lubricated bearing. Both ends are attached to the track frames and pivot on sealed bushings. Bonded rubber pads on the bar absorb shocks and limit oscillations.

Repair ease — Supplied jack tilts cab 24° to change transmission filter or troubleshoot engine and transmission. Cab also tilts 90° with outside power for removal of engine and transmission, together or separately. 14 quick connect fittings allow rapid diagnosis of malfunctions in implement or drive hydraulic systems. Modular design and accessibility alone significantly cut repair time over life of the 973.



Fast Hydrostatic Drive — The 973 is more productive than the 977L it replaces. Part of the reason is its hydrostatic track drive. It's designed for outstanding maneuverability, quick response and optimum efficiency. The 973 **moves** up to speed fast, through the cycle fast — but not at the expense of control. You can slow it down for fine work. It offers the modulated precision you need for shaving excavation walls, for grading next to forms and footings, and other work where touch and control are critical.

The drive system — is all Caterpillar-built. It's simple, efficient and provides immense design flexibility by getting rid of mechanical drive components. There's no gear-type transmission. No steering clutches or brakes, no bevel and pinion gears, no massive final drive case. Just piston pumps, XT-6 hose and track motors.

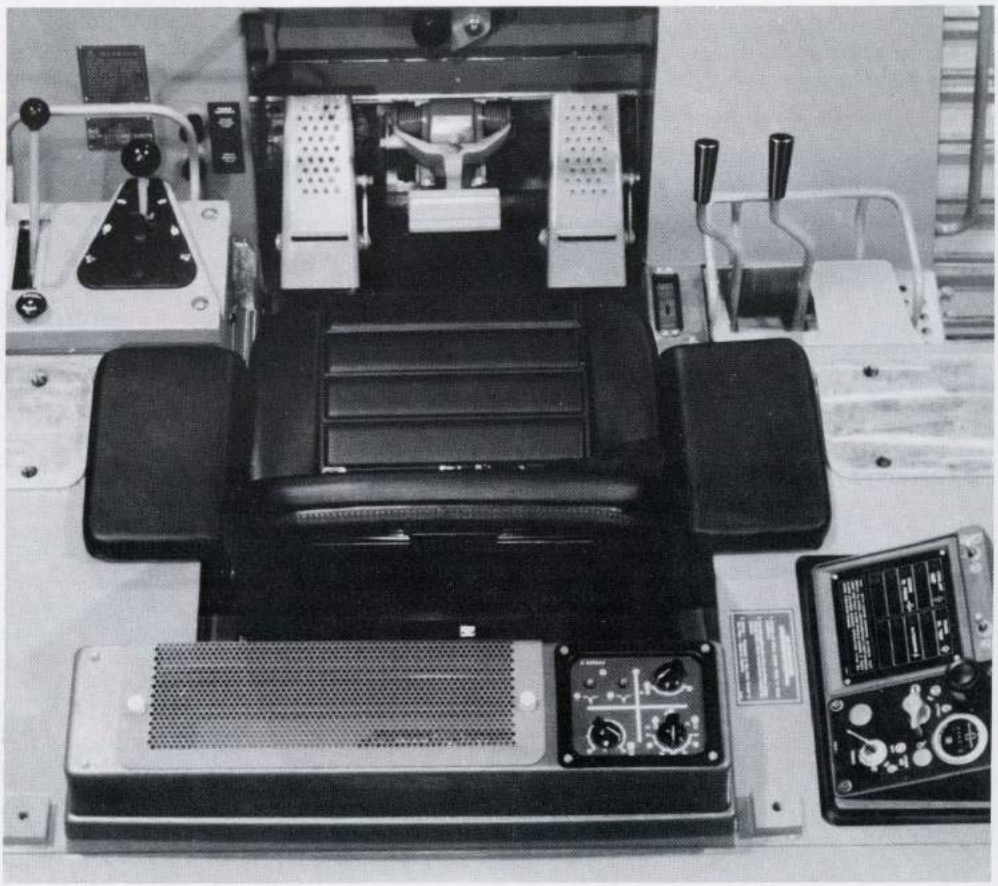
The transmission (shown here) — houses the drive pumps, balances the needs of the two separate track drives, provides for priority of the separate bucket hydraulics, and maintains rated engine RPM for optimum machine performance. Flywheel driven gear train powers two piston pumps. Mechanical control linkage regulates speed and direction. Field adjustable.

COMFORTABLE BY DESIGN —

Caterpillar knows that men who ride iron most of their working hours need comfort to be productive. This human-engineered operator's station is dedicated to that simple principle. It's clean and uncluttered. You enter easily from either side. The well-cushioned seat is contoured for day-long support. It has fore and aft, vertical, and cushion adjustments. Carefully designed controls allow natural posture and comfortable arm positions. They're located in a familiar position, require low effort, and provide precise actuation. Visibility is superb. And the latest sound-suppression technology makes the machine **quiet. Electronic monitoring system** (EMS) gives quick visual status check of important machine systems with three levels of warning.

I. **Operator Awareness:** LED light on instrument panel indicates a potential but not yet critical problem.
II. **Operator Response Required:** A main warning light directly in front of operator indicates continued operation could cause eventual component failure.
III. **Immediate Shutdown:** Flashing warning light and horn warn that operation will cause immediate failure of a component.

A circuit test switch verifies system reliability.



Operating Specifications

Bucket Type	General Purpose	Multi-Purpose	Rock	General Purpose Low Ground Pressure
Capacity, Rated § (nominal heaped)	3.75 yd³/2.8 m³	3.25 yd³/2.4 m³	3.75 yd³/2.8 m³	3.75 yd³/2.8 m³
Capacity struck	3.21 yd³/2.46 m³	2.77 yd³/2.12 m³	3.21 yd³/2.46 m³	3.16 yd³/2.41 m³
Cutting edge type	Straight	Straight	Spade	Straight
Width (without teeth)***§	103″/2610 mm	104″/2651 mm	106.5″/2705 mm	112″/2854 mm
Teeth	8, optional, bolt-on with replaceable tips.	8, optional, bolt-on with replaceable tips.	8, weld-on, with optional replaceable tips.	8, optional, bolt-on with replaceable tips.
Dump clearance @ full lift and 45° discharge §	10′5″/3187 mm	9′10″/3037 mm	10′3″/3120 mm	10′7″/3240 mm
Reach @ 45° discharge angle, 7′/2133 mm clearance §	6′2″/1889 mm	6′1″/1850 mm	6′4″/1931 mm	6′1″/1855 mm
Reach @ full lift and 45° discharge §	4′2″/1262 mm	4′2″/1281 mm	4′4″/1329 mm	3′11.5″/1209 mm
Digging depth §	4.9″/125 mm	8.6″/218 mm	4.9″/125 mm	4.9″/125 mm
Machine overall length §	22′9″/6941 mm	23′4″/7124 mm	24′0″/7310 mm	22′6″/6866 mm
Machine overall height §	19′3″/5869 mm	19′2″/5853 mm	18′9″/5718 mm	18′11.5″/5777 mm
Static tipping load §**	37,630 lb/17 069 kg	32,044 lb/14 534 kg	36,766 lb/16 677 kg	39,096 lb/17 734 kg
Breakout force §*	45,373 lb/20 581 kg/ 202 kN	39,707 lb/18 011 kg/ 177 kN	41,223 lb/18 700 kg 183 kN	48,540 lb/22 018 kg/ 216 kN
Operating weight**	53,642 lb/24 332 kg	56,023 lb/25 412 kg	54,275 lb/24 619 kg	55,496 lb/25 173 kg

*Measured 4″/102 mm behind tip of cutting edge with bucket hinge pin as pivot point.
**Includes coolant, lubricants, full fuel tank, ROPS cab, General Purpose bucket, and 176 lb/80 kg operator.
***For bucket width with teeth add 2.5″/64 mm; for bolt-on cutting edge, add .75″/19 mm.

Machine stability can be affected by the addition of other attachments. Add or subtract the following to/from machine operating weight and static tipping load:

	Change in Operating Weight	Change in Static Tipping Load
Remove ROPS and cab	−1059 lb/−480 kg	−1204 lb/−546 kg
ROPS canopy only (cab removed)	−403 lb/−183 kg	−443 lb/−201 kg
Ripper and three shanks	+2798 lb/+1269 kg	+6115 lb/+2774 kg
Air conditioner	+225 lb/+102 kg	+348 lb/+158 kg
Bumper	+333 lb/+151 kg	+763 lb/+346 kg

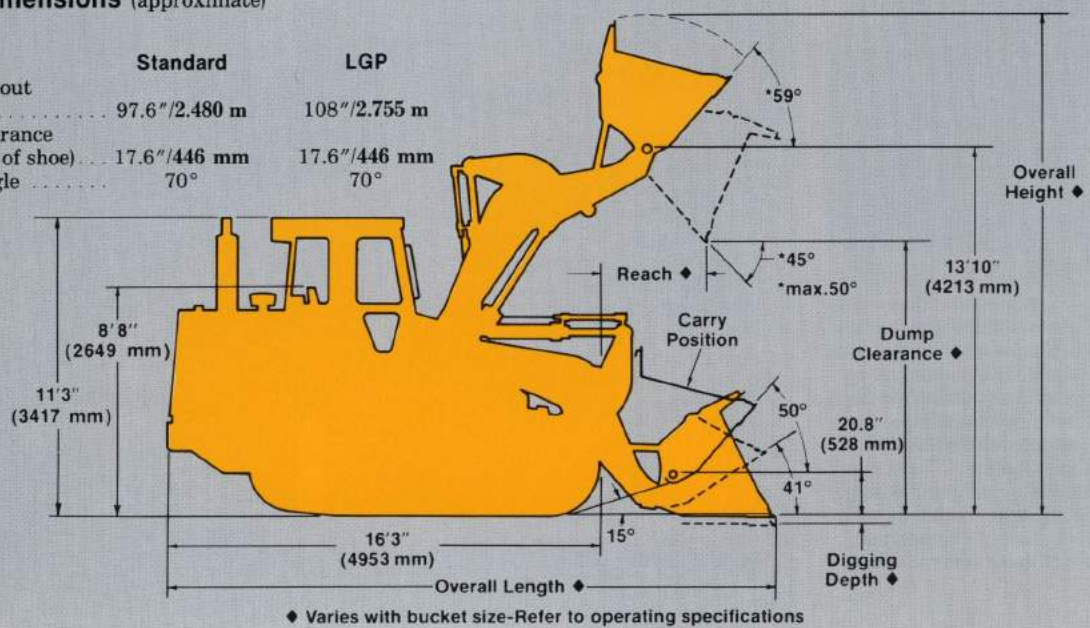
ROPS

Rollover Protective Structure meets criteria of SAE J395, SAE J1040c and ISO 3471. It also meets FOPS (Falling Object Protective Structure) criteria SAE J231 and ISO 3449.

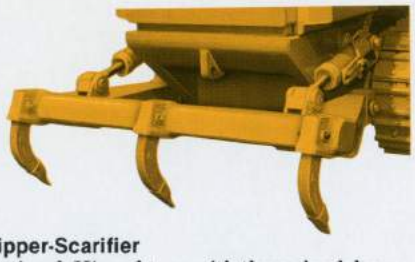
Specifications and ratings conform to all applicable standards recommended by the Society of Automotive Engineers. SAE Standard J732 and SAE Standard J742 govern loader ratings, denoted in the text by (§).

dimensions (approximate)

	Standard	LGP
Width, without bucket	97.6″/2.480 m	108″/2.755 m
Ground clearance (from face of shoe)	17.6″/446 mm	17.6″/446 mm
Grading angle	70°	70°

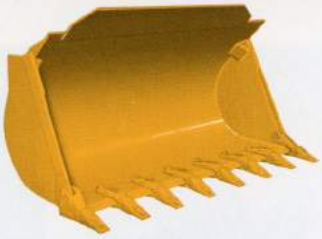


◆ Varies with bucket size-Refer to operating specifications



Ripper-Scarifier
Optional. Hinged-type with three-shank beam (one shank supplied). Mounted with two pins pressed into each side of main frame; raised and lowered with two wide-mounted cylinders. Six pin linkage requires no lubrication.

Penetration . . . . . 16 inches/**410 mm**
Ground Clearance
(under tip) . . . . . 27.2 inches/**693 mm**
Ripping Width . . . . . 78.7 inches/**2.000 m**
Cylinders (2) . . . . . 5″/**127 mm** bore with 14.3″/**365 mm** stroke
Overall Width/beam . . . 85.5 inches/**2.172 m**



General Purpose bucket features high-strength, low alloy steel plate for resistance to dents and abrasions. Shell tine assembly in bucket floor increases structural strength. 7° tapered floor design for additional reinforcement, long life, and improved bucket loading. Weld-on integral spill plate for excellent material retention.

Optional replaceable corner guard 8-tooth group or cutting edge group to protect the high wear area of bucket corners. Easy one bolt replacement of corner adapters. This edge system improves performance and reduces repair costs. Quick conversion from digging configurations to bolt-on reversible cutting edge.

CATERPILLAR

Multi-Purpose bucket gives versatility with strength. It loads, strips topsoil, bulldozes and cleans up debris. The bucket clamps hydraulically to grip logs, carry pipe or handle other tough-to-grasp materials. Forged corners, side and bottom plates combine with heat-treated hinge guards to increase strength and reduce wear. Options: Corner Guard System with teeth for digging applications or bolt-on cutting edge group for clean-up work.

standard equipment

NOTE: *Standard and optional equipment may vary outside U.S.A. Consult your Caterpillar Dealer for specifics.*

General arrangement — Alternator, 35-amp. Automatic bucket positioner and lift kickout. Backup alarm. Cab, ROPS, sound-suppressed with air pressurization. Crankcase guard. 24-volt direct electric starting motor. Blower fan. Floor mat. Forward warning horn. Front and rear retrieval hitch. Fuel priming pump. Hydraulic track adjuster. Hydrostatic transmission. Muffler. Operator panel includes: Illumination lights, electric hour-meter and EMS operator warning system. Rearview mirror. Segmented sprocket rims. Sealed and Lubricated Track with two-piece master link. Seat belt. Literature compartment in seat back. 19.7″/**500 mm** double bar grouser track shoes. Track guiding guards. Sprocket guards. Windshield and back window washers and wipers.
LGP Machine Arrangement includes all above but with 26.5″/**675 mm** track shoes.

optional equipment

(with approximate change from operating weight)

	Lb	Kg
Air conditioner (includes 50-amp alternator)	225	102
Alternator, heavy-duty (50-amp)	11	5
Buckets, 3.75 yd^3/2.8 m^3 General Purpose —		
Standard Gauge	3663	1662
LGP	3733	1693
Multi-purpose 3.25 yd^3/2.4 m^3	5888	2671
Rock 3.75 yd^3/2.8 m^3	4177	1895
Bucket control, single lever	0	0
Bucket cutting edge, reversible, sharpened, bolt-on for Std. gauge	433	196
for LGP	475	215
Bucket teeth, 8 bolt-on (includes corner teeth)		
Long (abrasion)	492	223
Short (impact)	482	219
Bumper	332	151
Canopy, ROPS (includes rearview mirror)	−404	−183
Cold weather starting aids:		
Engine coolant heater	1	.5
Ether starting aid (less canister)	5	2
Drawbar hitch	67	30
Gauge package (coolant and transmission oil temperatures)	2	1
Guards, idler	266	121
Guard, perforated radiator	13	6
Guards, track roller	645	293
Heater, for use with canopy	19	9
Heater and defroster (hot water 24V)	19	9
Hydraulic system:		
3rd valve for front or rear attachments	167	76
Diverter valve for use when both required on same machine	260	118
Lighting systems:		
Four lights (machine-mounted, 2 forward, 2 rear)	28	13
Two lights (ROPS-mounted forward)	4	1.8
Ripper-scarifier (with one ripper shank)	2305	1046
Ripper extra shanks (2), each	163	74
Seat, suspension (replace standard seat)	15	7
Fabric seat cover for adjustable static seat	2	1
Fabric seat cover for suspension seat	2	1
Sound suppression (spectator) (available in selected areas)	0	0
Tool kit	15	6.8
Vandalism protection:		
For use with cab — consists of lockable fuel tank cap with padlock, lockable radiator cap with padlock, and lockable hydraulic tank cap cover with padlock	4	1.8
For use with canopy — consists of cab vandalism package plus padlock to prevent movement of the implement and transmission control lever, and an instrument panel guard group with padlock	9	4

Materials and specifications are subject to change without notice.

AEHQ3564 (1-84)
(Replaces AEHQ8803)

Printed in U.S.A.