CATERPILLAR

613C Elevating Scraper

Summary of features

- **Cat 3208 diesel Engine —** 175 HP/**131 kW**
- **11 cu. yd./8.4 m³** capacity
- **Operating weight —** 32,340 lb/**14 670 kg**

Model shown may have optional equipment.

Caterpillar Engine

Flywheel power @ 2300 RPM .... 175 HP/**131 kW**
(Kilowatts (kW) is the International System of Units equivalent of horsepower.)

The net power at the flywheel of the vehicle engine based on SAE J1349 standard 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 and alternator. No derating required up to 5000 ft/1500* **m** *altitude.*

Caterpillar four-stroke-cycle turbocharged 3208 diesel Engine with 8 cylinders, 4.5"/**114 mm** bore and 5"/**127 mm** stroke, and 636 cu. in/ **10.4 liters** displacement.

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

engine (continued)

Aluminum alloy, two-ring pistons. Molybdenum-faced, twist compression ring; chrome-plated oil ring; integrally cast iron ring band. Forged alloy steel crankshaft, chemically hardened, statically and dynamically balanced, supported by 5 steel-backed aluminum bearings. Alloy cast-iron cylinder heads, integrally cast, interchangeable from left to right. 90° Vee, deep-skirted, grey iron cylinder block, heavily ribbed, angle bolted main bearing caps.

Caterpillar full-range hydraulic governor, and automatic variable injection timing. Six-lobe eccentric oil pump, plate-type oil cooler, twin spin-on, full-flow oil filters, spin-on fuel filter.

24-volt direct electric starting.

613C

Elevating Scraper

transmission

Caterpillar-built for 613C, six manually selected power shift speed ranges forward and one reverse, with single-lever control. All forward and reverse speeds are torque converter drive.

Gear speeds

Gear	MPH	Km/H	Gear	MPH	Km/H
1	2.4	**3.9**	4	9.3	**15.0**
2	3.7	**6.0**	5	16.2	**26.1**
3	6.0	**9.6**	6	24.5	**39.4**

ROPS

ROPS canopy is standard in U.S.A.

ROPS (Rollover Protective Structures) offered by Caterpillar for this machine meet ROPS criteria SAE J396, SAE J1040c and ISO 3471. They also meet FOPS (Falling Object Protective Structure) criteria SAE J231 and ISO 3449. Cab offered by Caterpillar, when tested with doors and windows closed according to ANSI/SAE J1166 SEP80, meets OSHA and MSHA requirements for operator sound exposure limits in effect at the time of manufacture. ROPS structure is designed and certified for 14,991 lb/**6800 kg** tractor operating weight.

final drives

Compact planetary design and large full-floating axles, removable independently of wheel mounting. Service-free, double-row roller bearings. Assemblies protected with Duo-Cone floating ring seals.

brakes

(Complete system meets OSHA regulations.)

Air-actuated, caliper disc brakes on all four wheels provide continuous braking effort. Secondary braking system has a separate air tank and can be actuated by a button on the dash. The system is designed so no single component or line failure will cause a total loss of brakes. If the standard circuit air pressure drops to 60 psi/**414 kPa**/4.14 bar, an electric warning horn sounds and a dash light signals the operator. If the air pressure drops to 40 psi/**276 kPa**/2.76 bar, the brakes actuate automatically.

Braking surface . . . . 300 in^2/**1936 cm^2**

Parking brake is a shoe brake mounted on rear of transmission transfer case.

tires

Productive capabilities of the 613C are such that, under certain job conditions, Ton-MPH/**tkm/h** capabilities of standard or optional tires could be exceeded and therefore limit production. Caterpillar recommends the user evaluate all job conditions in order to make proper tire selection. Consult tire manufacturer for specific data.

Standard for tractor and scraper:
18.00-25, 16 PR (E-2)

Optional for tractor and scraper:
23.5-25, 16 PR (E-2)
23.5-25, 16 PR (E-3)
Radial steel cord, 23.5-25

service refill capacities

	U.S. Gallons	Liters
Fuel tank	66	250
Crankcase	5	18.9
Transmission	9.2	35
Differential	5	19
Cooling system	10.2	38.5
Hydraulic system (steering and scraper)	26.4	100
Final drives (each)	1.5	5.8

steering

Two double-acting hydraulic cylinders.

Cylinders, bore and stroke . . . . 4" x 20"/**102 x 508 mm**
Minimum width required for non-stop turn . . . . 29'4"/**8.93 m**

weights on wheels

(approximate, with ROPS canopy and standard tires)

Empty:	Lb	Kg
Tractor — 63%	20,445	**9274**
Scraper — 37%	11,895	**5396**
Total	32,340	**14 670**

Loaded, based on 26,400 lb/ **11 975 kg** rated load:	Lb	Kg
Tractor — 49%	28,785	**13 057**
Scraper — 51%	29,958	**13 589**
Total	58,743	**26 646**

elevator

Length (overall)	8'0"/2438 mm
Width of flight face	6.7"/170 mm
Length of flights	5'8"/1734 mm
Number of flights	15
Flight spacing	16"/406 mm

Working speeds @ relief valve setting 2500 psi/17 237 kPa/172 Bar

Forward, high	279 fpm/85 m/min
Low	112 fpm/34 m/min
Reverse	112 fpm/34 m/min

Power supply: Hydraulic motor on scraper transmits power to elevator through 38:1 planetary gear reduction box.

Drive sprockets: Split construction for replacement without removing elevator chain.

Chain: Large rollers, pins and links, hardened to resist abrasion. Chain tension adjustable at carrier idlers.

Elevator mounting: Elevator frame has 4-bar linkage. Lower linkage may be adjusted to position the flights from 1" to 16"/25 to 400 mm from the cutting edge.

bowl

Hi-carbon steel with box construction for maximum strength and abrasion resistance.

Maximum depth of cut	6.3"/160 mm
Maximum ground clearance, with rated load	17.7"/450 mm
Capacity: Rated load	26,400 lb./11 975 kg
Heaped, SAE rated	11 cu. yd./8.4 m^3

Cutting edge: Integral with retractable floor; may be moved to clear obstructions; facilitates accurate finish grading.

Type: Three sections, reversible. Center stinger section is predrilled for four optional teeth to increase penetration in hard materials.

Center section	.75" x 13" x 43.4"/19 x 330 x 1100 mm
Each end section	.75" x 13" x 22.1"/19 x 330 x 560 mm
Width of cut (outside router bits)	7'8.5"/2350 mm

Ejection: Sliding floor and cutting edge retract 45"/1140 mm and dozer-type ejector moves forward 36"/914 mm to cutting edge for fast, controlled dumping. Ejector is repositioned before cutting edge returns for loading.

hydraulics

Hydraulic circuits are filtered, closed systems powered by vane-type pumps. Bowl, ejector and steering circuits are served by a double-section pump. One section serves the bowl and ejector circuit at a flow of 26 gpm/100 liters/min. The other section provides 25 gpm/94 liters/min to the steering circuit. Elevator motor circuit is served by a double-section pump delivering 45 gpm/170 liters/min for low speed and reverse and 75 gpm/284 liters/min for high speed, at 2300 engine RPM.

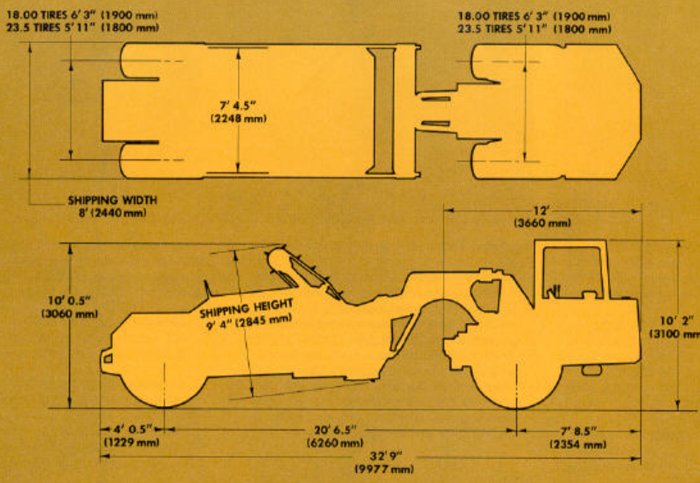
controls

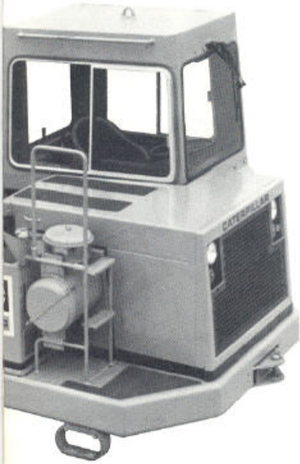
Three levers for hydraulic actuation.

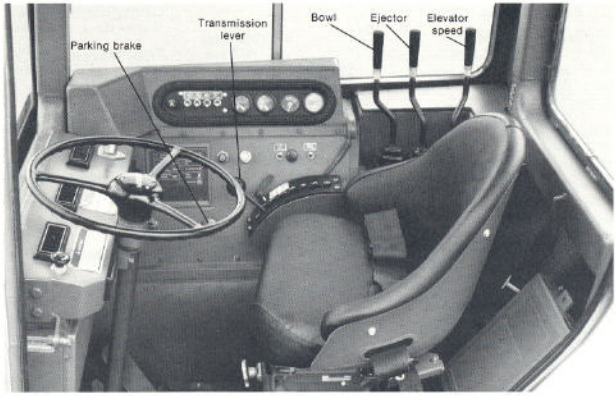
Elevator	Two speeds forward, stop, reverse
Bowl	Raise, hold, lower
Ejection	Dump, hold, return

("Return" is detent-held with automatic kickout to "hold" when ejector reaches full return. Detent can be over-ridden any time.)

dimensions (approximate)







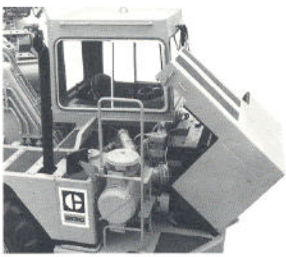
Efficient, comfortable compartment lets operator concentrate on production.

- Transmission console is at arm level on right.
- Scraper controls . . . bowl, ejector, elevator speed, elevator direction and elevator direction lock . . . are within easy reach to the right and back of transmission console.
- Ejector "return" is detent-held, with automatic kickout to "hold" when ejector reaches full return, to free operator's hand for other controls.
- Straight line shift pattern conveniently located provides fast, easy shifting.
- Single key system fits ignition and all security locks.
- Electronic Monitoring System (EMS) allows operator to concentrate on production, with confidence in the system's ability to monitor critical machine functions.
- Unobstructed visibility to the cutting edge aids productivity and finish grading.
- Optional bucket-type hydraulic suspension seat increases operator comfort for high speed, long haul operation.

Electronic Monitoring System (EMS) shows status of important machine systems with three different warning signals. Each indicates status of system and appropriate operator response:

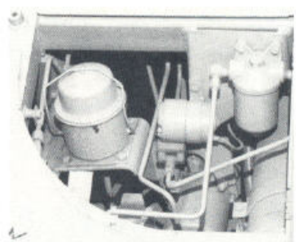
I. **Operator Awareness:** LED light on instrument panel indicates a potential but not yet critical problem.
II. **Operator Response Required:** Main warning light in front of operator indicates continued operation could cause eventual component failure.
III. **Immediate Operator Shutdown required:**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

A circuit test switch verifies reliability of system.



Servicing ease reduces downtime on the 613C.

- One latch releases hood, which tilts forward for easy engine access.
- Operator's compartment tilts to left for access to torque converter and hydraulic pumps, as well as engine.
- Tractor brake line connections are centralized under operator's compartment.
- Electrical diagnostic connector in conjunction with light, tough service tool provides fast diagnosis of fifteen different areas of the starting and charging systems.



Scraper service hatch allows easy access to the reverse warning alarm, water separator, fuel filter, scraper brake liner and master cylinder.

613C VALUE ANALYSIS

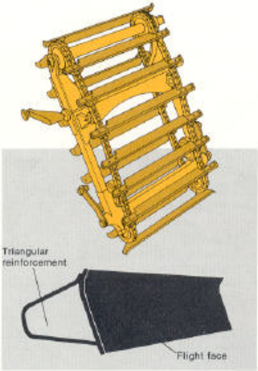
Cat 3208 engine
- Fuel efficient direct injection.
- Performance-proven reliability.
- Conservative power rating for long life.
- 37% torque rise for superior lugging ability and response.

Productivity
- 6-speed Cat planetary power shift transmission for precise speed choices.
- Larger elevator pump increases chain speed and loading efficiency.

Operator Efficiency
- Convenient, simplified controls.
- Increased visibility to cutting edge.
- Comprehensive Electronic Monitoring System.

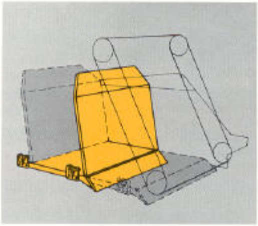
Durability
- Redesigned hitch bearing for reduced stress, longer life.
- Larger axles accommodate increased engine power.
- Improved brake system for better stopping power.
- Stronger elevator chain for longer life.

Repair and Servicing
- New fuel tank system for faster, more efficient filling.
- Redesigned tractor service platform.
- Diagnostic connector to analyze starting/charging systems.
- Maintenance-free twelve volt batteries.

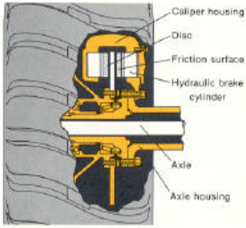


Two-speed elevator increases versatility and productivity by allowing operator to match elevator speed to material conditions. Use high speed for normal conditions and low speed for tough materials. Elevator reverse mechanism is standard. Linkage allows elevator to ride over rocks, but returns the flights quickly to keep biting and lifting dirt.

Loading flights are triangularly reinforced for strength. Chain pins and bushings are heat-treated alloy steel to resist wear. And the chain bushings never touch the roller guide flange. The chains and flights can withstand several times the force that may be exerted on them.



Ejection is simple, fast and effective for two reasons:
(1) The scraper floor and cutting edge slide back about half the floor's length, leaving a large opening.
(2) The dozer-ejector moves forward to the cutting edge, forcing out all the material.

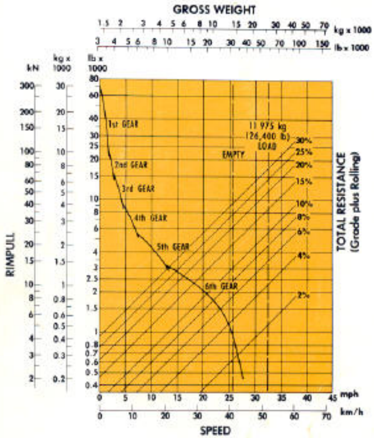


Fade-resistant four-wheel caliper disc brakes stop the 613C dependably and quickly. They're self-adjusting for wear . . . and self-cleaning for continuous operation.

optional equipment

(with approximate installed weights)

	Lb	Kg
Air conditioner/heater	125	57
Cab, ROPS, sound suppressed	460	209
Differential lock	100	45
Fenders, scraper	165	75
Floodlight, loading	7	3
Gage group	1.1	.5
Heater/defroster	12	5
Lighting systems:		
Tractor (hazard lights and directional lights)	10	5
Scraper (directional, stop and tail lights)	15	7
Seat group	40	18
Starting aid, ether	4	2
Starting receptacle, auxiliary	5	2
Supplemental steering	60	27
Suspension seat, hydraulic	40	18
Teeth, scraper, set of four	94	43
Tires, set of two:		
Tractor or Scraper:		
23.5-25, 16 PR (E-2)	135	62
23.5-25, 16 PR (E-3)	330	150
23.5-25, radial steel cord	480	218
Tool kit	23	10
Transmission guard	62	28
Vandalism protection:		
Instrument panel guard	10	5



gradeability/speed/rimpull

To determine gradeability performance: Read from gross weight down to the % of total resistance. (Total resistance equals actual % grade plus 1% for each 20 lb./ton/**10 kg/t** of rolling resistance.) From this weight-resistance point, read horizontally to the curve with the highest obtainable speed range, then down to maximum speed. Usable rimpull depends upon traction available and weight on drive wheels.

standard equipment

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

24-volt direct electric starting. 35-amp charging alternator with built-in full transistor voltage regulator. 2-92 amp. 12-volt batteries. Suction fan. Bowl cylinder carry check valve. Cab tilt jack. Crankcase guard. Dimmable headlights. Dash lights. Dry-type air cleaner. Secondary braking system. Hood lock. Air horn. Muffler. Parking brake. ROPS canopy. Seat belt. Air suspension seat. Tachometer with clock hour meter. 18.00-25, 16 PR (E-2) tires. Windshield.

Functions monitored by EMS — See page 5 for additional information:

Warning Signal I — Alternator.
Warning Signal II — Coolant temperature. Converter/retarder oil temperature. Brake.
Warning Signal III — Brake air pressure. Engine oil pressure. Brake oil pressure.

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