Standard Wheel Tractor Scrapers From Caterpillar

CATERPILLAR 621

CATERPILLAR 631

CATERPILLAR 641B

CATERPILLAR 651B

CATERPILLAR 660B

621 631C 641B 651B 660B

Five standard scrapers from Caterpillar To Meet Your Needs.

Caterpillar offers five standard, single-engine scrapers, ranging from 20 to 54 cu. yd. (15.3-41.3 m³) heaped. Their ability to move earth at low cost in a wide variety of materials has made them the backbone of earthmoving spreads. You'll find the size—and the reliable production you need—in one of them:

The 660B, at 54 cu. yd. heaped (41.3 m³), is the top of the standard scraper line. With two-axle tractor design, it has the stability as well as the speed for high-volume, long-distance hauling.

The 651B, like the 660, qualifies for volume production with its 44 cu. yd. heaped (33.6 m³) capacity. With cushion hitch as a major feature, it has the smooth haul road performance of a three-axle machine, plus the traction and maneuverability of a single-axle tractor.

The 641B is a 38 cu. yd. heaped (29.0 m³) machine. With 550 flywheel horsepower, as much power as the 660B and 651B, the 641B is a machine you can work hard in those larger jobs.

The 631C is the workhorse of two-axle, single-engine scrapers. Its reliability and productivity have made it the most frequently purchased machine of this kind in the world. 30 cu. yd. (23 m³) heaped, 21 yd. (16 m³) struck.

The 621 is a 20 cu. yd. heaped (15.3 m³) machine. It is now equipped with a standard 8-speed semi-automatic transmission and cushion hitch arrangement to make it an even more capable worker.

SPECIFICATIONS	621	631C	641B	651B
Capacity:				
Heaped	20 cu. yd. (15.3 m³)	30 cu. yd. (23 m³)	38 cu. yd. (29.0 m³)	44 cu. yd. (33.6 m³)
Struck	14 cu. yd. (10.7 m³)	21 cu. yd. 16 m³)	28 cu. yd. (21.4 m³)	32 cu. yd. (24.5 m³)
Flywheel HP	300 HP	415 HP	550 HP	550 HP
Engine:				
Bore and Displacement	4.5″-700 in.³ (114 mm-11.5 litres)	5.4″-893 in.³ (137 mm-14.6 litres)	5.4″-1190 in.³ (137 mm-19.5 litres)	5.4″-1190 in.³ (137 mm-19.5 litres)
Model and Type	D336, 60° V-8	D343, in-line 6	D346, 60° V-8	D346, 60° V-8
Transmission Type	8 speed semi-automatic	8 speed semi-automatic	8 speed semi-automatic	8 speed semi-automatic
Top Speed, Loaded	32 mph (51.5 km/h)	31 mph (50 km/h)	32 mph (51.5 km/h)	31 mph (50 km/h)
Weight, Empty:				
Cushion Hitch	54,800 lb. (24 800 kg)	76,700 lb. (34 800 kg)	113,300 lb. (51 400 kg)	117,900 lb. (53 500 kg)
Non-Cushion Hitch	52,500 lb. (23 800 kg)	74,500 lb. (33 800 kg)	108,900 lb. (49 400 kg)	113,500 lb. (51 500 kg)
Weight, Loaded:				
Cushion Hitch	102,800 lb. (46 600 kg)	148,700 lb. (67 400 kg)	207,300 lb. (94 000 kg)	221,900 lb. (100 600 kg)
Non-Cushion Hitch	100,500 lb. (45 600 kg)	146,500 lb. (66 400 kg)	202,900 lb. (92 000 kg)	217,500 lb. (98 600 kg)
Width required for non-stop turn to left (restricted by ROPS)	42′6″ (12.9 m)	47′1″ (14.4 m)	52′0″ (15.8 m)	53′10″ (16.1 m)
...to right (unrestricted by ROPS)	32′10″ (10.0 m)	37′7″ (11.4 m)	42′7″ (13.0 m)	44′2″ (13.4 m)
Standard Tire: Tractor & Scraper w/cushion hitch	29.5-29 22 PR (E-3)	29.5 x 35 34 PR (E-3)	37.5-39 36 PR (E-3)	37.5 x 39 36 PR (E-3)
Max. Depth of Cut	13″ (330 mm)	15″ (380 mm)	16″ (405 mm)	16″ (405 mm)
Width of Cut (outside router bits)	9′11″ (3000 mm)	10′10″ (3300 mm)	11′4″ (3450 mm)	11′11″ (3650 mm)
Apron Closure Force w/Cut Edge Fully Raised and Apron Open 12″ (Approx.)	24,000 lb. (10 900 kg)	31,000 lb. (14 000 kg)	38,000 lb. (17 200 kg)	34,800 lb. (15 800 kg)
Max. Available Hydraulic Penetration Force at Cutting Edge	56,800 lb. (25 800 kg)	82,400 lb. (37 400 kg)	106,500 lb. (48 300 kg)	134,000 lb. (60 800 kg)
Max. Depth of Spread	17″ (430 mm)	18″ (460 mm)	20″ (510 mm)	20″ (510 mm)
Apron Opening w/Bowl 6″ (150 mm) off ground	5′8″ (1730 mm)	7′6″ (2280 mm)	7′7″ (2310 mm)	7′3″ (2210 mm)
Dimensions:				
A. Shipping Width	11′7″ (3550 mm)	11′4″ (3450 mm)	11′9″ (3600 mm)	12′6″ (3800 mm)
B. Overall Width	11′7″ (3550 mm)	12′6″ (3800 mm)	13′3″ (4050 mm)	14′2″ (4300 mm)
C. Overall Wheel Base	23′5″ (7100 mm)	27′ (8200 mm)	30′10″ (9400 mm)	31′11″ (9750 mm)
D. Overall Length	38′1″ (11 600 mm)	44′5″ (13 500 mm)	48′10″ (14 900 mm)	50′4″ (15 300 mm)
E. Overall Height	11′2″ (3400 mm)	12′10″ (3900 mm)	13′7″ (4150 mm)	14′1″ (4300 mm)

Match the machine to the job

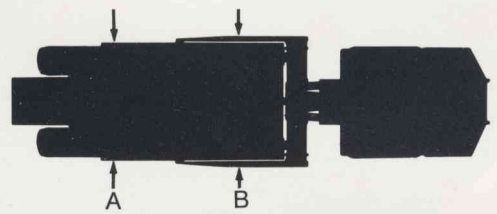
Caterpillar Standard Scrapers keep producing no matter where you put them to work, because they're rugged. The 621, 631C, 641B, 651B and 660B all have features you want in your machines. Things like:

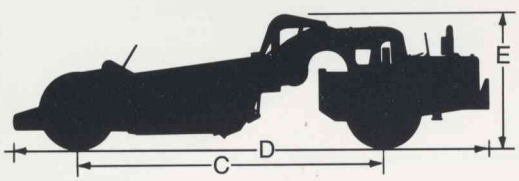
8-Speed Semi-Automatic Power Shift Transmission that gives you:

- Pre-set, automatic shift points when the proper rpm is reached. This maximizes performance and reduces cycle time.
- Easier operation with operator free to concentrate on other controls.
- Reduced danger of engine overspeed.
- Reduced operator fatigue.
- Higher production rates for new operators.

Cushion Hitch (except 660B), for:

- Faster haul road speed and increased production.
- Extended machine life and reduced downtime by relieving stress on the machine.
- Safer machine operation from increased operator control.
- Less machine loping and less wear-and-tear on haul roads.





A. Shipping Width
B. Overall Width
C. Overall Wheel Base
D. Overall Length
E. Overall Height

Some Series B & C Improvements (631C, 641B, 651B, 660B)

Engine

- Increased horsepower.
- Improved in-line 6-cylinder engine in 631C.
- Air-to-air aftercooling.
- 60° V-8 in Series B machines.

Transmissions

- Eight speed semi-automatic.
- Easier servicing.

Brakes

- Emergency system is standard.
- Brakes apply automatically with loss of air.
- Cat-built retarder is standard on Series B tractors.

Hydraulics

- Cat-built XT-3 hose.
- Single tank serves all circuits.
- Fluid level sight glass.

Tractor

- Larger radiator area.
- Fuel tank enlarged.
- Larger fenders.
- Fender-tire clearance increased.
- Three section, hinged crankcase guard.
- Operator's seat raised.

Scraper

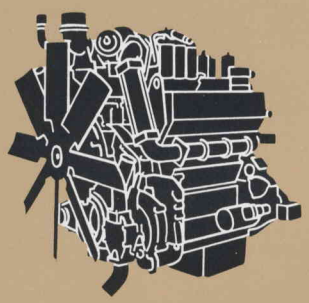
- Wide mounted bowl lift cylinders.
- Wider tread (641B & 651B).
- Apron arms trunion mounted.
- Draft arms trunion mounted.

660B
54 cu. yd. (41.3 m³) 40 cu. yd. (30.6 m³)
550 HP
5.4″-1190 in.³ (137 mm-19.5 lit) D346, 60° V-8
8 speed semi-automatic
31 mph (50 km/h)
— — 127,700 lb. (57 900 kg)
— — 255,700 lb. (116 000 kg)
46′0″ (14.0 m) 46′0″ (14.0 m)
Tractor Front 18.0-25 (20 PR) (E-1) Tractor Drive 37.5-39 (28 PR) (E-3) Scraper Wheels 37.5-51 (36 PR) (E-3)
19″ (408 mm)
11′11″ (3650 mm)
36,000 lb. (16 400 kg)
134,000 lb. (60 800 kg)
24″ (610 mm)
9′2″ (2800 mm)
12′6″ (3800 mm) 14′2″ (4300 mm) 32′5″ (9900 mm) 56′8″ (17 300 mm) 14′4″ (4400 mm)

RELIABLE

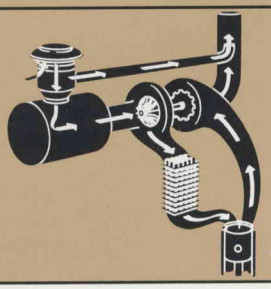
Reliable Power for Reliable Work

RELIABLE CAT DIESEL ENGINES power the 621, 631C, 641B, 651B and 660B Wheel Tractor Scrapers. You get realistic flywheel horsepower that delivers full power to the drive train and hydraulic system under actual operating conditions.



Model	Engine	Rated Altitude	Aspirated*
621	D336	10,000 ft. (3000 m)	T/A
631C	D343	7,500 ft. (2300 m)	T/A
641B	D346	5,000 ft. (1500 m)	T/A
651B	D346	5,000 ft. (1500 m)	T/A
660B	D346	5,000 ft. (1500 m)	T/A

*T—Turbocharged
A—Aftercooled

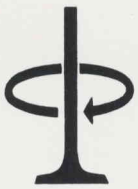


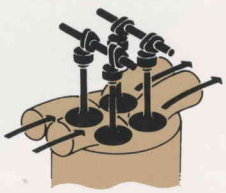
These Cat-built Engines are turbocharged and aftercooled. Unlike naturally aspirated engines, they retain full power to the altitudes shown in the chart above.

Fuel System is adjustment-free, trouble-free. Individual precombustion chambers atomize the fuel before it's burned in the main cylinder. Result: cleaner, more complete combustion.

Forged Crankshafts are precision ground, induction hardened, super finished, statically and dynamically balanced.

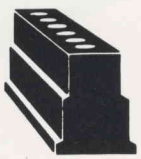
Valves rotate 3° as they operate, for longer life, and seat on nickel-base-alloy replaceable inserts.





Dual Overhead Camshafts on the D343 and D346 eliminate valve "float" at higher engine rpms. Four valves per cylinder (two intake and two exhaust) combine with a turbocharger to increase engine air intake and to aid exhaust.

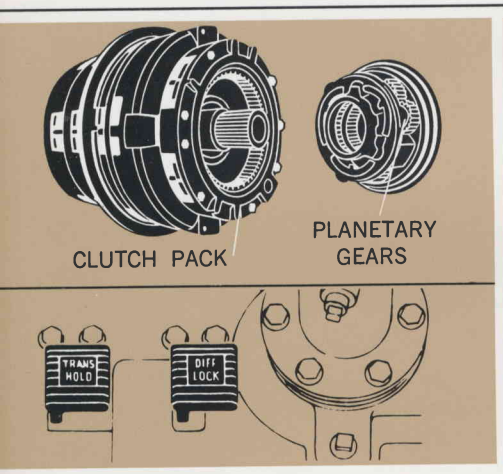
Strong Grey Iron Blocks are heavily ribbed to hold bearing and crankshaft in perfect alignment.

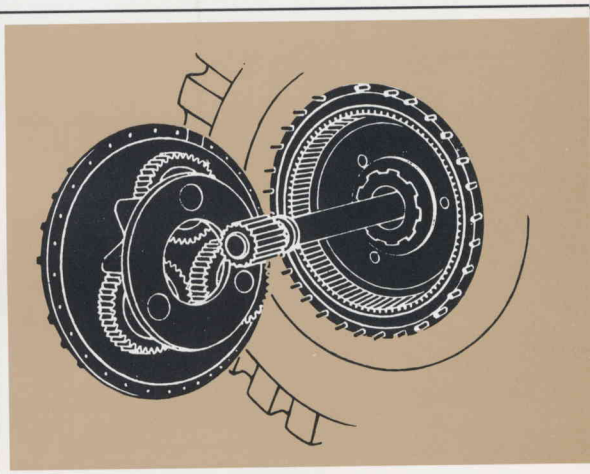


EFFICIENT

Strong, Efficient Drive Train

8-SPEED SEMI-AUTOMATIC TRANSMISSIONS are standard equipment in Caterpillar standard scrapers. These transmissions are heavy-duty barrel planetary gear-type, with large oil-cooled clutch plates, strong shafts and heavy-duty bearings and gearing. Exclusive hydraulic modulation between shifts dampens shock on components for smooth operation and long life.





The transmission hold pedal, located on the floor to the left of the differential lock, lets the operator override the automatic shift. Depressing it holds the transmission in the gear being used. Holding the transmission in a lower gear (1) keeps engine rpm high for added hydraulic power, and (2) prevents unwanted up-shifts on downgrades.

The transmission control, located on the operator's right, seldom needs to be touched throughout the workday. The operator can load, haul and dump in the automatic ranges of 2nd through 8th. Second gear is torque converter drive for plenty of loading and dumping power; 3rd through 8th are direct drive for hauling efficiency. Yet the operator keeps complete control: he sets the desired range and the transmission shifts up or down through the gears to that range. When extra power is needed, he can shift manually to 1st gear (a torque converter gear). Reverse is also manually selected. (*All* gears are true power shift, requiring *no* clutching, decelerating or pausing in neutral.)

Final drives are compact planetary sets. Axles are full floating and independently removable of wheel mounting. And Duo-Cone®Floating Ring Seals keep dirt out and oil in. These long life, self-aligning seals are reusable.

PRODUCTION

Operating Ease and Hauling Speed For Volume Production.

Production is important. So Caterpillar provides easy-to-use controls and excellent handling characteristics so your operator can concentrate on production rather than operation.

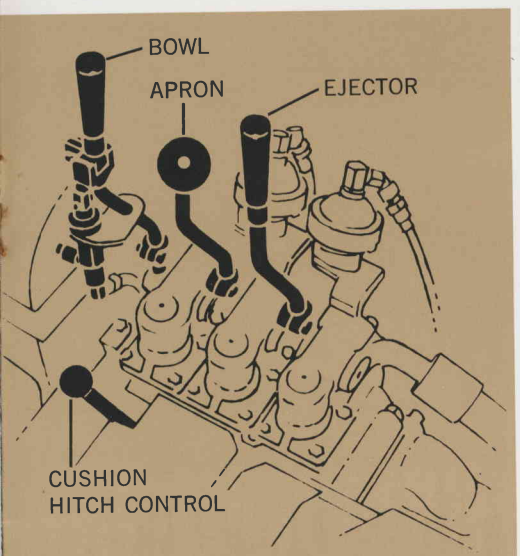
Scraper controls, located to the operator's right, are three hydraulically boosted levers that independently operate the bowl, apron and ejector. An optional bowl-apron lever is available for split second timing of the bowl and apron while loading loose materials. The bowl control lever has "raise," "hold," "power down" and "quick drop" positions (quick drop valves optional on 621 & standard on 631C, 641B, 651B, 660B). The ejector lever holds in "bowl return" until the ejector seats, then kicks out automatically. This frees the operator's hands for steering to get the machine back on the return road fast.

Visibility is vital when the cut or fill gets crowded. That's why Caterpillar standard scrapers offer excellent visibility, both to the front for traveling and to the rear for loading.

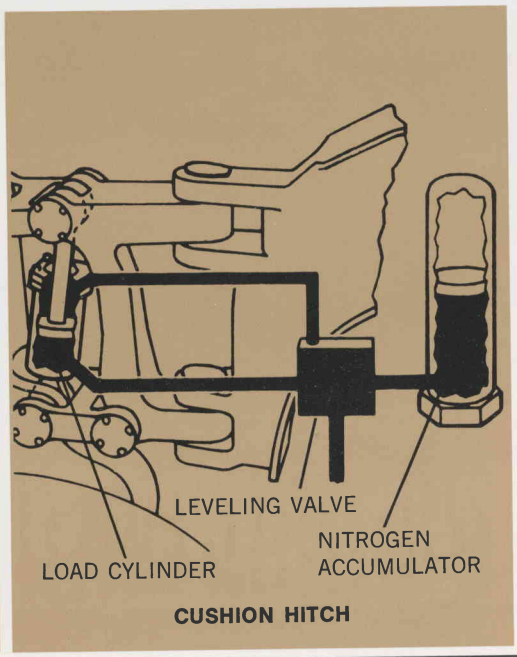
Cushion Hitch—Rough rides and low haul road speeds aren't the problem they used to be, because Cat now offers *cushion hitch* on the 621, 631C, 641B and 651B. This significant feature consists of a hydraulic cylinder in the scraper hitch connected to a nitrogen accumulator. Hydraulic oil transfers road shocks to the accumulator where they are absorbed to control movement between tractor and scraper. The benefits?

- Higher usable speeds over rough terrain.
- Less machine loping, less haul road washboarding.
- Reduced operator fatigue.
- Lower maintenance cost, longer machine life, less machine stress.

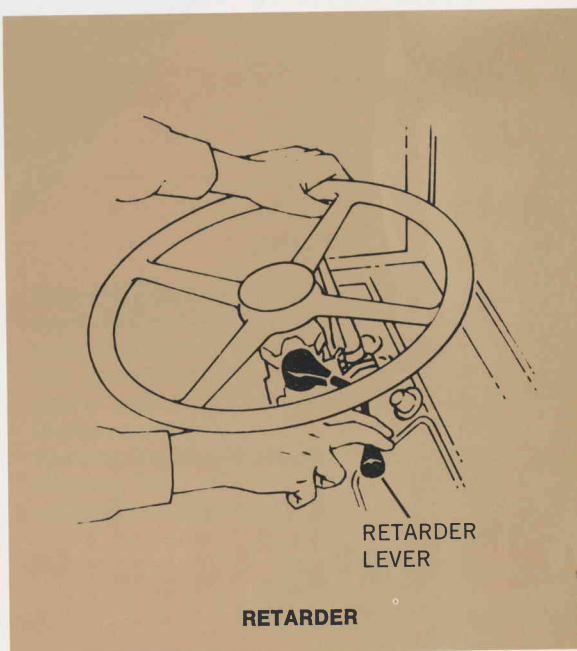
Caterpillar-built retarders are standard on the 641B, 651B and 660B and available for the 621 and 631C. They let you select auxiliary braking from zero to maximum on long downhill runs, to reduce wear on service brakes. There are six complete ranges. You can modulate the retarder in each range with a lever on the steering column.



SCRAPER CONTROLS



CUSHION HITCH

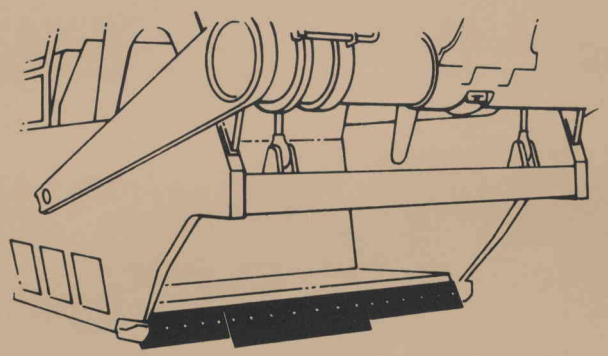


RETARDER

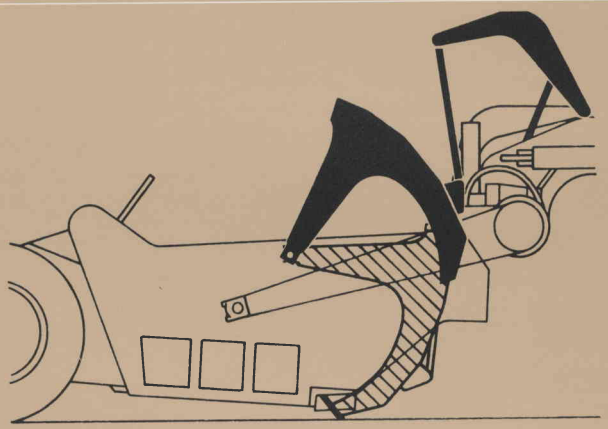
PRODUCTION

Fast Loading, Positive Dumping

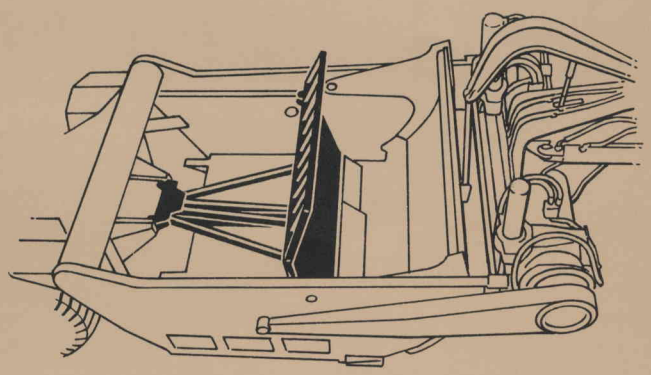
The 621, 631C, 641B, 651B and 660B offer you a unique bowl that gets big loads fast, and positive ejection systems to assure you the work won't slow down. Cat-built standard scrapers are truly "built for production."



Caterpillar's low wide bowl design gets rated loads fast. The wide cutting edge gathers volume loads from shallow cuts. And because the bowl is low, incoming earth meets less resistance, quickly piling up into those big loads.



The apron won't bulldoze because it's hinged above the cutting edge to swing *up* when opened—not forward. The lip follows the swing radius of the rest of the apron. A double-acting hydraulic cylinder closes the apron, slicing through dirt slabs to hold the load.

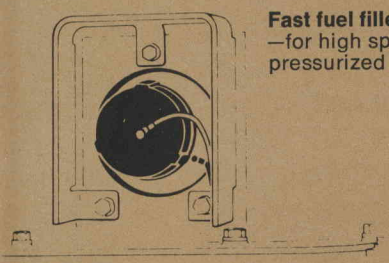


You get positive ejection from the bulldozer design ejection system. You have complete control over the rate of material spreading with clean ejection of sticky materials. Rollers on the floor, the bowl walls and in the rear guiding system keep the ejector precisely aligned. The ejector blade is double walled for added strength.

VERSATILITY

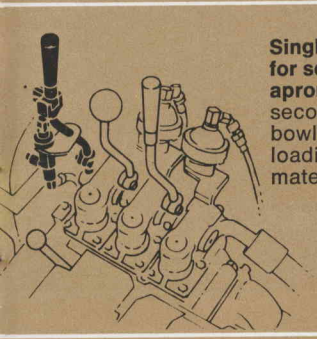
Equip Your Machine for Your Job

Your work can vary greatly from job site to job site, from day-to-day, in the demands it puts on both man and machine. To help meet these changing needs, Caterpillar offers the following attachments:

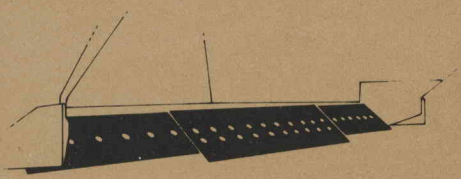


Fast fuel filler adapter—for high speed pressurized fueling.

Cap locks for fuel and hydraulic tanks, oil filler cap and radiator—protect major systems. When locked, the caps rotate freely and cannot be twisted off.



Single lever control for scraper bowl and apron—allows split second timing of the bowl and apron while loading loose materials.



Special application cutting edge—available for use in rock and abrasive materials.

TRACTOR ATTACHMENTS	621	631C	641B	651B	660B
Fast fuel filler adapter	•	•	•	•	•
Auxiliary start receptacle	•	•	•	•	•
Parking brake (tractor & scraper)	•	•	•	•	•
Brake shields	•	•	•	•	•
Vandalism protection group (service caps and instrument panel guard)	•	•	•	•	•
Single lever control for scraper bowl and apron	•	•	•	•	•
Hood door	•	•	•	•	—
Blower fan	•	Std.	Std.	Std.	Std.
Reversible fan	—	•	•	•	•
Rear mounted floodlight	•	•	•	•	•
Rollover protective structure	•	•	•	•	•
Guards for crankcase	—	•	•	•	—
Radiator core protector grid	—	—	•	•	•
Hydraulic retarder	•	•	Std.	Std.	Std.
Ether starting aid	•	•	•	•	•
Optional tires	•	•	—	•	•
Tool kit	•	•	•	•	•
Windshield wipers	•	•	•	•	•
Backup alarm	•	•	•	•	•
SCRAPER ATTACHMENTS					
Brake shields	•	•	•	•	•
Cutting edges for special application	•	•	•	Std.	Std.
Fenders	•	•	•	•	•
Optional tires	•	•	—	•	•
Quick drop bowl valve	•	Std.	Std.	Std.	Std.

CATERPILLAR

Caterpillar Dealer Service

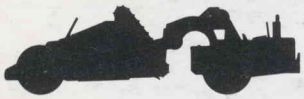
Your Caterpillar Dealer stands behind you, always ready to be of service with factory-trained servicemen and a complete stock of parts. He is your assurance of low cost operation and minimum downtime.

Choose from the widest line of wheel tractor-scrapers in the world. All 15 models are engineered and built to quality standards that give them a reputation for reliability unmatched in the earthmoving industry.

Four basic configurations:

Tandem Powered Scrapers

- 14-40 cu. yd. (10.7-30.6 m³) struck... 20-54 cu. yd. (15-41 m³) heaped... four machines.
- Twin engine power and traction for a wide range of jobs.

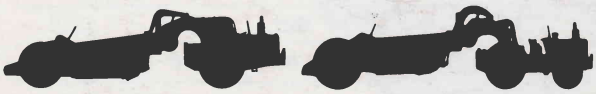


Elevating Scrapers

- 11-32 cu. yds. (8.4-24.5 m³) heaped capacities...three machines.
- Self-load, save time and pusher cost ...versatile, reliable work-alone machines.

Push-Pull Scrapers

- 14-32 cu. yd. (10.7-24.5 m³) struck... 20-44 cu. yd. (15-34 m³) heaped... three machines.
- Team-loading tandem powered machines that separate on-the-go for haul and dump. No pusher needed.



Standard Scrapers

- 14-40 cu. yd. (10.7-30.6 m³) struck ...20-54 cu. yd. (15.3-41.3 m³) heaped...five machines.
- Powerful engines, semi-automatic power shift transmissions and cushion hitch make these scrapers the most productive in their class.

You get more from a Caterpillar product. Because more goes into it.

EMPIRE
MACHINERY CO
CATERPILLAR®

PHOENIX TUCSON FLAGSTAFF KINGMAN

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