



# CATERPILLAR

## D9L Track-type Tractor

Machine shown may include optional equipment.



### Summary of features

- **Cat 3412 turbocharged diesel Engine** delivers 343 kW/460 fly-wheel power with 30% torque rise.
- **Elevated sprocket design** removes final drives from wear environment and eliminates impact loading for extended power train life.
- **Resilient mounted bogey undercarriage system** means reduced impact loading on rollers and roller frames and improved vehicle traction and operator ride. Sealed and Lubricated Track, Lifetime Lubricated rollers and idlers, and two-piece master link are standard.
- **Pivot shaft and pinned equalizer bar** control roller frame alignment and oscillation.
- **Modular design of major components** speeds repairs, allows component exchange and permits pretesting of units before installation.
- **Tag link dozer stabilizer** brings the blade close to the tracks for better implement control, tractor maneuverability and excellent balance.
- **Isolation mounted operator's compartment** has console mounted machine and implement controls within easy reach. Angled seat helps provide excellent visibility both front and rear.
- **Simple maintenance** with reduced grease points, hydraulic track adjusters, grouped service points, spin-on fuel and oil filters.
- **CAT PLUS services** . . . from your Caterpillar Dealer . . . the most comprehensive, total customer support system in the industry.



### Caterpillar Engine

Flywheel power @ 1900 RPM . . . . . 343 kW/460 HP (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, 29°C/85°F and 995 mbar/29.38" Hg, using 35 API gravity fuel oil at 15.6°C/60°F and after deductions for fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator and muffler. Engine will maintain specified flywheel power up to 2300 m/7,500 ft. altitude.*

Caterpillar four-stroke-cycle 3412 turbocharged diesel Engine, 65° V-12 with 137 mm/5.4" bore, 152 mm/6.0" stroke and 27.0 liters/1,649 cu. in. displacement.

Direct injection Caterpillar fuel system with individual adjustment-free injection pumps and valves. Water cooled turbocharger bearings for longer life. Parallel manifold porting with two intake and two exhaust valves per cylinder. Stellite-faced valves, hard alloy steel seats, valve rotators.

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

24-volt direct electric starting system. 35-amp alternator. Four 12-volt, 172 amp-hour batteries.

Engine/torque-divider module is isolation mounted to the main frame to reduce vehicle vibration and structure-radiated noise.



### transportability

Transporting the D9L is remarkably easy because basic machine design is geared for quick component installation and removal. Where rail transport is available, the D9L can be shipped intact with only the blade removed. Where axle load limits permit, the machine can be shipped in a runnable configuration by truck with just the work tools removed. In areas where weight laws are more restrictive, the D9L can be partially or wholly disassembled for legal transport. The chart at right can be used as a guide when complying with local shipping regulations.

	Kg	Lb
Basic machine (includes lubricants, coolant, 10% fuel and ROPS-FOPS canopy) . . . .	41 098	90,605
Removal of components reduces weight as follows:		
ROPS-FOPS canopy . . . . .	730	1,610
ROPS rollbar for cab . . . . .	662	1,460
Cab . . . . .	426	940
610 mm/24" track (each side) . . . . .	3547	7,820
Track roller frame (each side) . . . . .	6280	13,845
Pivot shaft . . . . .	676	1,490
Dozer lift cylinders . . . . .	272	600
Final drives (each side) . . . . .	1080	2,382
Clutch/brake assembly (each side) . . . . .	392	864
Transmission/bevel gear module . . . . .	1247	2,749



### standard equipment

35-amp alternator. Blower fan. Decelerator and hand throttle lever. 24-volt direct electric starting. Rigid drawbar. Precleaner with prescreener. Dry-type air cleaners and pre-cleaner with dust ejector. Muffler. Fuel priming pump. 8-roller track frame. 610 mm/24" extreme service grouser tracks (47-section). Sealed and Lubricated Track. Lifetime Lubricated rollers and idlers. Hydraulic tank. Hydraulic track adjusters. Suspension-type undercarriage. Pinned equalizer bar. Lighting system (four lights for-

ward, two rear). Rain cap. Replaceable sprocket rim segments. Pivot shaft. Hinged extreme service crankcase guard. Pull hook. Hinged power train guard. Track guiding guards. Hinged radiator and blast deflector guards. Power shift transmission. Starting receptacle. Electric hour meter. Adjustable suspension seat. Tool box. Ether starting aid. Backup alarm. Front warning horn. Automatic emergency braking. Lighted instrument panel with electronic monitoring system/warning horn for critical systems. ROPS mounting. ROPS-FOPS canopy (U.S.A.). Seat belt. Rearview mirror (standard with cab or canopy). Air cleaner service indicator. Two-piece master link.



### optional equipment

(with approximate change from operating weight)

	Kg	Lb
Air conditioner and heater . . . . .	44	98
Alternator, 50-amp . . . . .	8	17
Bulldozer . . . . .	See page 3 for weights.	
Cab, FOPS sound suppressed, with ROPS rollbar (includes cab accessory group and mirror) . . . . .	426	940
Canopy, ROPS-FOPS, includes mirror (standard in U.S.A.) . . . . .	730	1,610
Counterweight, rear mounted . . . . .	2268	5,000
front mounted . . . . .	2495	5,500
Fast-fill fuel system . . . . .	5	11
Fire extinguisher . . . . .	14	30
Fire suppression system . . . . .	68	150
Heaters:		
Cab (with defroster) . . . . .	16	35
Engine coolant . . . . .	8	17.5
Low temperature start (includes additional starter and 4-220 amp batteries) . . . . .	95	210
Oil change system, quick service . . . . .	8	18.5
Push block, cushioned . . . . .	1139	2,510
Push plate . . . . .	397	875

	Kg	Lb
Radiator core protector grid . . . . .	41	90
Rippers:		
Single shank, deep ripping (includes 711 kg/1,567 lb. shank) . . . . .	7271	16,038
Multishank (includes one shank) . . . . .	7335	16,170
Ripper shank (for multishank ripper) . . . . .	583	1,285
Temperature gauge package . . . . .	.5	1
Tool kit . . . . .	6	14
Tracks, pair, Sealed and Lubricated:		
686 mm/27", Extreme Service . . . . .	488	1,075
686 mm/27", Standard Service . . . . .	227	500
Vandalism protection:		
Instrument panel guard . . . . .	5	10
Cap locks for:		
Fuel tank . . . . .	.5	1
Implement hydraulic tank filler . . . . .	.5	1
Engine oil filler . . . . .	.6	1.4
Radiator filler . . . . .	2	4.7
Dip sticks for engine and powertrain . . . . .	1	3
Battery box locks (two) . . . . .	.5	1
Winch arrangement . . . . .	1987	4,380

Materials and specifications are subject to change without notice.



## hydraulic controls

Complete system consists of pump, tank with filter, valves, lines, linkage, oil cooler and control levers. Hydraulic pilot valves assist operations of ripper and dozer tilt controls. Four optional hydraulic systems, all with external valves, include:

	Kg	Lb
One valve, for 9C Bulldozer	454	1,000
Two valves, for 9S or 9U Bulldozer and tilt	490	1,080
Three valves, for 9C Bulldozer and ripper with hydraulic shank pitch adjustment	558	1,230
Four valves, for 9S or 9U Bulldozer, tilt function and ripper with hydraulic shank pitch adjustment	581	1,280

Pump, vane; geared from flywheel:

Output @ 6895 kPa (69 bar) 1000 psi	390 liters/min/103 gpm
Tilt cylinder flow	117 liters/min/31 gpm
Pump rpm @ rated engine speed	1800
Relief valve setting, Bulldozer	16 547 kPa (165 bar) 2400 psi
Tilt cylinder	17 237 kPa (172 bar) 2500 psi
Ripper	16 547 kPa (165 bar) 2400 psi
Drive	Geared from flywheel

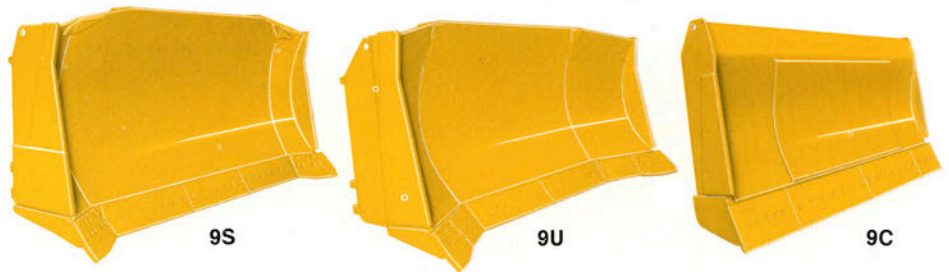
### Control Valve Positions:

Bulldozer	Raise, hold, lower, float
Ripper	Raise, lower, extend, return, hold
Tilt cylinder	Tilt right, hold, tilt left

### Reservoir:

Mounting	Fender (isolation mounted)
Tank capacity	83 liters/22 gal.

**D9 Bulldozers** are designed for tough dozing, reclamation and push-loading jobs. Cutting edges and end bits are DH-2 steel for durability. Tag link dozer coupling brings blade close to tracks for excellent balance and control. Dozer lift cylinders mount to top corners of radiator guard to improve operator visibility and mechanical advantage. Single lever controls all blade movement, including tilt.



## Bulldozer Specifications

Blade Type	Capacity per SAE J1265	Overall width* (Tractor with bulldozer)	Height	Digging Depth	Ground Clearance	Maximum Tilt	Weight**	Total Operating Weight*** (Tractor with bulldozer)
9S	15.1 m <sup>2</sup> 19.9 yd <sup>2</sup>	4.541 m 14'11"	1.988 m 78"	628 mm 24.7"	1.435 m 56.5"	1.163 m 45.8"	8324 kg 18,350 lb	51 189 kg 112,850 lb
9U	18.2 m <sup>2</sup> 23.4 yd <sup>2</sup>	4.972 m 16'4"	1.988 m 78"	628 mm 24.7"	1.435 m 56.5"	1.257 m 49.5"	8823 kg 19,450 lb	51 688 kg 113,950 lb
9C	—	3.315 m 10'11"	1.505 m 59"	1219 mm 48"	900 mm 35.4"	Not Applicable	6396 kg 14,100 lb	49 225 kg 108,520 lb

\*Width over corner bits.

\*\*Does not include hydraulic controls, but 9S and 9U include blade tilt cylinder.

\*\*\*Includes hydraulic controls, blade tilt cylinder (9U, 9S or 9C), coolant, lubricants, full fuel tank, ROPS with FOPS cab and operator, 610 mm/24" ES track. 9C includes crankcase guard group compatible with 9C dozer trunnion.

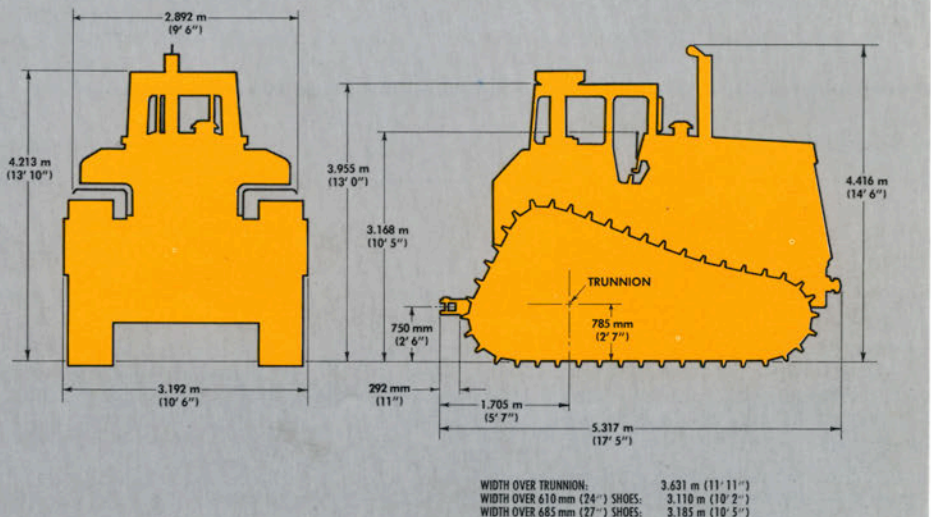


## dimensions (approximate)

Ground clearance, from ground face of shoe per SAE J894 . . . 610 mm/24"

WITH FOLLOWING ATTACHMENTS, ADD TO BASIC TRACTOR LENGTH OF 5317 mm (17' 5")

SINGLE SHANK RIPPER	2.565 m (8' 5")
MULTI-SHANK RIPPER	2.007 m (6' 7")
S-DOZER	1.676 m (5' 6")
U-DOZER	1.905 m (6' 3")
C-DOZER	1.295 m (4' 3")
CUSHION PUSH BLOCK	838 mm (2' 9")



# D9L

## Track-type Tractor



### transmission

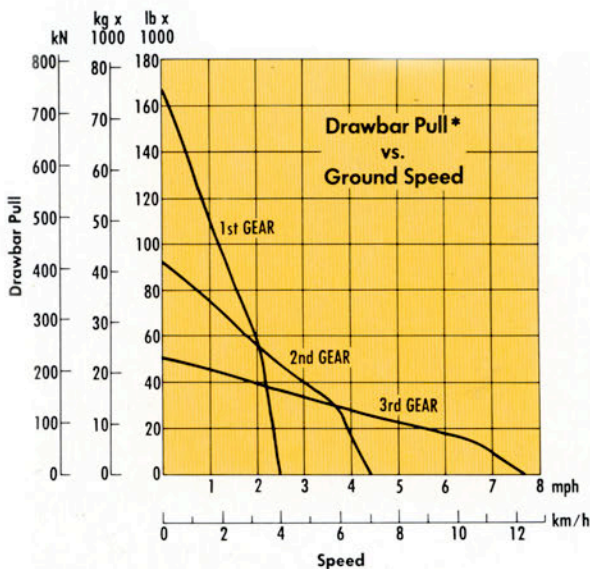
Planetary-type power shift with 432 mm/17" diameter, high-torque-capacity oil clutches. Special modulation system permits unrestricted speed and direction changes under full load.

Single-stage torque converter with output torque divider. Connected to transmission by double universal joint for unit construction to provide servicing ease.

Modular transmission and bevel gear plug into rear of main drive case and can be exchanged with ripper installed.

#### Travel speeds at rated engine RPM:

Gear	Forward Speed		Reverse Speed	
	Km/h	MPH	Km/h	MPH
1	3.9	2.4	5.1	3.2
2	7.2	4.5	9.0	5.6
3	12.4	7.7	15.4	9.6



\*Usable pull will depend on weight and traction of equipped tractor.



### steering and braking

Hydraulically released, spring applied multiple-disc clutches and brakes are cooled by pressurized oil and require no adjustment. Each assembly serviceable as a unit.

Hand levers combine steering clutch disengagement and braking in one control for each track. Pull back slightly to disengage steering clutches, fully back to brake track.

A single pedal simultaneously applies brakes to both tracks for service or emergency stops. Parking-emergency brake is applied by transmission lock lever. A service tool, electrically driven from auxiliary start receptacle, is available when towing is required to allow in-seat brake release in absence of control system pressure.



### track roller frame

Tubular design to resist bending and torsional loads. Lifetime Lubricated rollers and idlers are resiliently mounted to roller frame by a series of bogeys. Bogeys oscillate on sealed and lubricated cartridge pin connections; travel controlled by resilient pads.

Oscillating roller frames attach to tractor by a pivot shaft and pinned equalizer bar. Large pivot bushings operate in an oil reservoir.

Equalizer bar oscillation restrained by resilient pads. Saddle connection is a low friction, no maintenance bushing. Recoil system is fully sealed and lubricated.

Number of rollers (each side) . . . . . 8



### Sealed and Lubricated Track

Sealed and Lubricated Track surrounds the track pin with lubricant to eliminate internal bushing wear as a critical maintenance consideration. Lubricant is held in place by a sealing arrangement consisting of a polyurethane seal, a rubber load ring and a thrust ring. Additional lubricant is contained in a reservoir drilled into the track pin. Extends track wear life and undercarriage maintenance intervals — reduces costs. Hydraulic track adjusters, track guiding guards and two-piece master link standard.

- Pitch . . . . . 229 mm/9"
- Number of shoes (each side) . . . . . 47
- Shoe type . . . . . Extreme Service
- Width of standard shoe . . . . . 610 mm/24"
- Length of track on ground . . . . . 3.556 m/140"
- Ground contact area with standard shoes . . . . . 4.336 m<sup>2</sup>/6,720 in.<sup>2</sup>
- Grouser height (from ground face of shoe) . . . . . 93 mm/3.66"



### service refill capacities

	Liters	U.S. Gallons
Fuel tank . . . . .	965	255
Cooling system . . . . .	129	34
Lubrication systems:		
Diesel engine crankcase . . . . .	57	15
Transmission, bevel gear and steering clutch compartments (includes torque converter) . . . . .	178	47
Final drives (each) . . . . .	19	5
Roller frame (each) (includes recoil bearing and pivot shaft compartment) . . . . .		
Implement hydraulic system . . . . .		
Tank only . . . . .	83	22

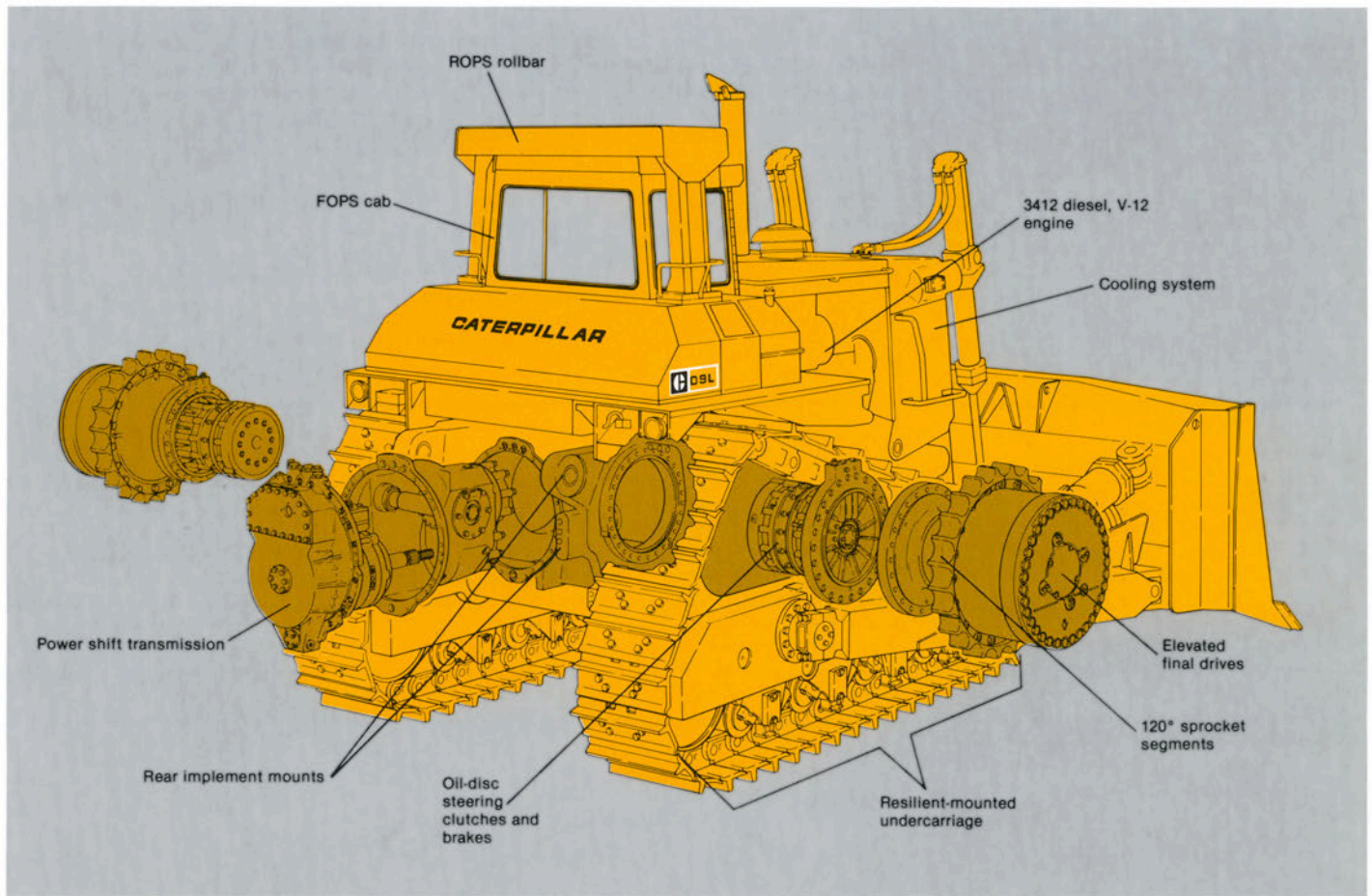


### weight (approximate)

<b>Shipping, includes lubricants, coolant, 10% fuel and</b>		
ROPS-FOPS canopy . . . . .	41 098 kg	90,605 lb
ROPS with FOPS cab . . . . .	41 525 kg	91,545 lb
<b>Operating, includes lubricants, coolant, full fuel tank, hydraulic controls,</b>		
9S Bulldozer, 610 mm/24" ES track, ROPS, FOPS canopy and operator . . . . .	50 762 kg	111,910 lb



### ROPS



**Elevated sprocket design** means extended power train component life. With sprockets separated from the track roller frames, the final drives and steering clutches and brakes are relieved of (1) all vertical shock loads from ground contact, (2) all dozer and drawbar implement loads, and (3) gear and bearing misalignment commonly associated with track frame bending. Final drives are also less exposed to water and mud that can freeze and damage seals. And abrasive wear usually caused by materials lodging between sprocket teeth and bushings is greatly reduced.

**Resiliently mounted undercarriage** has four major bogeys pinned to each track roller frame. Each bogey in turn has a minor bogey carrying two track rollers. All bogeys oscillate on sealed and lubricated cartridge pins. Rubber pads control resiliency and travel of the major bogeys. Front and rear idlers are part of the front and rear major bogey assemblies, which allows either idler to "ramp" over obstacles. Successive minor bogeys conform to the obstruction through floating action. Results:

- Improved vehicle and operator ride.
- Low impact loading of track rollers, links, pins, track frames — also reducing noise.
- Increased traction . . . rollers are almost always in contact with the rails and sharing the load with neighboring rollers, keeping track on the ground.

**Tubular roller frames** have added resistance to bending and torsional loading . . . hence long service life. A 200 mm/7.87" diameter rear pivot shaft and pinned equalizer bar eliminate diagonal bracing. Clean design



provides 610 mm/24" ground clearance, reduces mud retention and abrasive wear to components, and improves machine mobility.

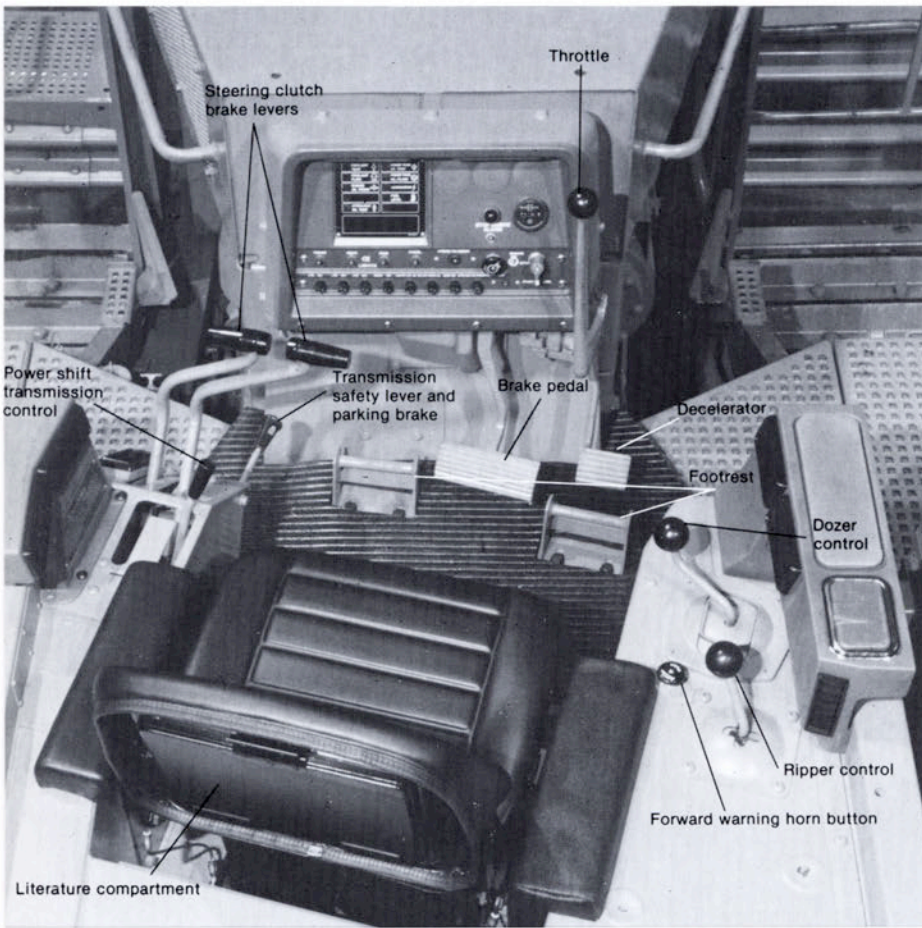
**And modular design throughout:**

- **Power shift transmission** plugs into rear of main drive case, easily removes as a unit. Also, complete transmission and bevel gear modules can be pulled out as a package by simply pulling the drive axles, removing one bolt ring, a transmission lube line, a pressure line and the control linkage. Ripper need not be removed.

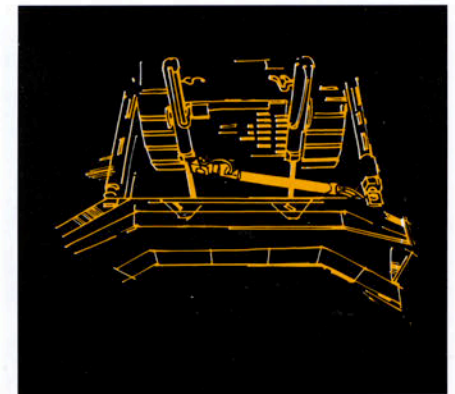
- **Final drive** planetary gears and bearings can be inspected or changed without breaking the track. Entire final drive system, or final drive plus steering and brake system, can be removed as a unit by breaking the track.

- **Engine and torque divider** form a module, isolation mounted to the main frame at three points.

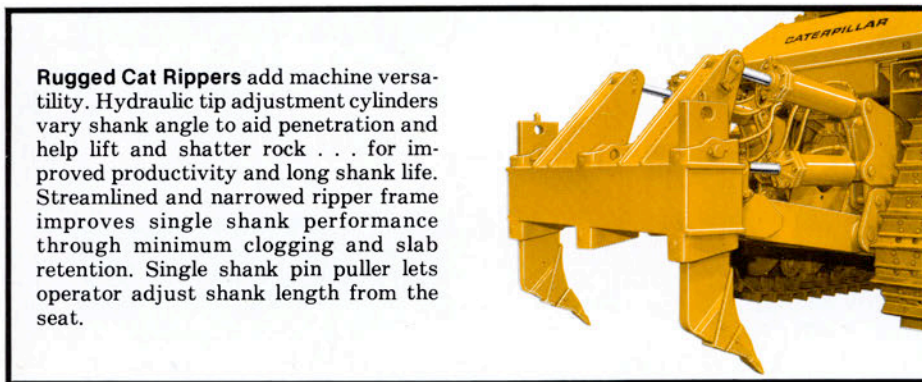
◀ **Reduced maintenance** means low operating costs and high machine productivity. Fast-check sight gauge used for hydraulic oil. Only two grease points on the basic tractor and long grease intervals on ripper and dozer for fast, economical service. Spin-on oil filters provide quick, contaminant-free filter replacement. Spin-on fuel filters and fuel priming pump are located inside service door located forward of fuel tank for easy servicing.



Isolation mounted operator's compartment is designed for efficiency, comfort and convenience. Transmission, transmission safety and steering/brake levers are console mounted on the left for convenient machine control. Dozer and ripper controls at operator's right provide easy implement actuation. Single brake pedal applies brakes to both tracks simultaneously. Fully adjustable suspension seat, angled 15° to the right, joins with the tapered fuel tank, hood and track to give excellent visibility front and rear. Instrument panel mounted directly in front of the operator has three stage electronic monitoring protection for critical machine systems.



Tag link dozer stabilizer brings the blade in close to the tracks for excellent machine balance and maneuverability, excellent control of dozer and high blade penetration and pryout force. Tag link bar connects and transmits dozer side loads to the main frame, eliminating the need for diagonal bracing.



Rugged Cat Rippers add machine versatility. Hydraulic tip adjustment cylinders vary shank angle to aid penetration and help lift and shatter rock . . . for improved productivity and long shank life. Streamlined and narrowed ripper frame improves single shank performance through minimum clogging and slab retention. Single shank pin puller lets operator adjust shank length from the seat.

## Ripper Specifications

Ripper	Beam Width	Cross Section	Maximum Penetration	Maximum Clearance Raised (under tip)	*** Shank Positions	Weight (without hydraulic controls)	Total Tractor Operating Weight (with 9S blade and ripper)**
Single Shank, Standard Arrangement . . . .	639 mm 24.8"	Not Applicable	1366 mm 53.8"	1247 mm 49.1"	4	7271 kg 16,030 lb	57 809 kg 127,445 lb
Single Shank, Deep Ripping Arrangement . . . .	639 mm 24.8"	Not Applicable	1916 mm 75.4"	510 mm 20.1"	4	7510 kg 16,557 lb	57 948 kg 127,752 lb
Multishank Arrangement . . . . .	2690 mm 106"	460 × 485 mm 18.1" × 19.9"	1011 mm 39.8"	765 mm 30.1"	2	7335 kg 16,170 lb*	58 072 kg 128,025 lb

\*Includes one shank. Add 583 kg/1,285 lb. for each additional shank.

\*\*Machine operating weight also includes 4 valve hydraulic controls, blade tilt cylinder, lubricants, full fuel tank, ROPS cab and operator.

\*\*\*Shank cross section 90 × 355 mm/3.5" × 14".