CATERPILLAR D4H LGP Tractor*

D4H LGP Features

- **Cat 3204 Turbocharged diesel Engine** . . . 67 kW/90 flywheel hp
- **Operating weight** up to . . . 13 889 kg/30,620 lb
- **Blade capacity** . . . 2.02 m^3/2.64 yd^3 (PAT) or 2.17 m^3/2.84 yd^3 (S)
- **Elevated sprocket design** to give these advantages in an LGP environment:
  - — Optimum balance and stability.
  - — Improved flotation.
  - — High ground clearance and smooth underside.
  - — Long power train life.
- **Power Angling and Tilt Blade** . . . with full hydraulic control of lift, dig, angle and tilt . . . to give exceptional versatility.
- **Load-sensing hydraulic system** to adjust flow rate to load encountered for better fuel efficiency and greater productivity.
- **Economical operation with:**
  - — Low maintenance costs.
  - — Modular design of power train components for faster repair.
  - — Folded core radiator for extended cleaning intervals, less costly repair.

*Low Ground Pressure Tractor

Machine shown may have optional equipment.

AEHQ1193

Service refill capacities

	Liters	U.S. Gallons
Fuel tank	167	44
Cooling system	27	7
Engine crankcase	15	4
Transmission, bevel gear and steering clutch compartments (includes torque converter or oil clutch)	122	31.7
Final drives (each)	6	1.5
Implement hydraulic system	67.3	17.5
Tank	30	7.8

Standard equipment

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

Caterpillar 3204 DIT Engine. Brake system (service, parking and emergency). 24-volt direct electric starting. 35-amp alternator. Blower fan. Backup alarm (U.S.A.). Adjustable seat. Precleaner. Sealed and Lubricated Track with 760 mm/30″ 44-section single grouser track shoes. Hydraulic track adjusters. Power shift or direct drive transmission. Dry-type air cleaner. Diagnostic connector. Drawbar, rigid. Electric hour meter. Muffler. Radiator guard. Single key start. Electronic Monitoring System. Seat belt. Segmented sprocket. Normal service crankcase guards. End guiding guards. Two-piece master link. Front pull hook. Air cleaner service indicator. Front warning horn. Fuel priming pump. Lighted instrument panel. Lockable storage compartment. Adjustable seat. Lifetime lubricated rollers and idlers.

Optional equipment

(with approximate installed weight)

	Kg	Lb
Air conditioning system (for cab only):	49	108
Alternator, 50-amp (24-EM only)	5	11
Backup alarm (standard in U.S.A.)	2	5
Cab, ROPS, sound suppressed	623	1373
Canopy, ROPS (required in U.S.A.)	275	606
Decelerator (standard on PS)	4.5	10
Drawbar, rigid (less off)	−70	−155
Swinging	125	275
Engine enclosure (perforated)	20	44
heavy duty	41	91
Fan, reversible	16	35
Fenders, heavy duty	52	115
Guards:		
Crankcase extreme service	48	106
Fuel tank	117	258
Fuel tank (for use with ROPS & Winch)	29	64
Radiator (heavy duty, hinged)	109	240
Track guiding, center section only	34	76
Track roller, full length	160	353
Gauge package	1	2
Hydraulic controls:		
Two valve for 4S bulldozer and tilt	186	410
Three valve for PAT bulldozer	200	440
Lighting system, six lights		
For use with ROPS cab		
For use with heavy-duty radiator guard	11	25
For use without heavy-duty radiator guard	11	25
For use with ROPS canopy		
For use with heavy-duty radiator guard	11	25
For use without heavy-duty radiator guard	11	25
Precleaner with prescreener	4	10
Rear screen for ROPS and winch	64	142
Sound suppression (COSA)	23	50
Starting aids:		
Ether starting aid	3	6
Heater, engine coolant, choice of 110 or 220 volt	1	3
Starting system, low temperature	9	20
Suspension seat	10	21
Sweeps, logging for ROPS canopy	181	400
Tool kit	7	15
Track, pair: Sealed and Lubricated		
44 section:		
760 mm/30″ self-cleaning	275	606
460 mm/18″	−583	−1285
Vandalism protection		
For ROPS cab	5	10
For ROPS canopy	9	20
Winch	820	1808
Winch fairlead	180	397

AEHQ1193 (4-86)
(Replaces AEHQ5643)

Printed in U.S.A.

Sealed and Lubricated Track

Sealed and Lubricated Track greatly reduces pin and internal bushing wear by surrounding the track pin with lubricant. The lubricant is held in place by a sealing arrangement consisting of a polyurethane seal, a rubber load ring and a thrust ring. Two-piece master link and hydraulic track adjusters are standard.

Gauge ..... 2000 mm/78.7″
Number of shoes (each side) 44
Width of standard shoe ..... 760 mm/30″
Length of track on ground ..... 2620 mm/103″
Ground contact area with standard shoes ..... 3.98 m^2/6,169 in^2
Grouser height (from ground face of shoe) ..... 47 mm/1.85″
Ground pressure with standard shoes ..... 0.28 kg/cm^2/4.0 psi

Hydraulic controls

Load sensing hydraulics. A variable displacement piston pump senses implement load and automatically adjusts flow rate to the load encountered. Sight gauge for checking fluid level.

Implement pump; variable displacement piston type:
Flow 94.6 L/min/25.5 gpm @ 2200 rpm
Pump will destroke to minimum angle at 18,600 kPa/2700 psi maximum pressure.
Drive ..... Geared from engine

ROPS

ROPS Canopy is required in U.S.A.
ROPS (Rollover Protective Structures) offered by Caterpillar for this machine meet ROPS criteria SAE J395, 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 J21166 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 operating weight ..... 14 500 kg/32,000 lb

Weight (approximate)

Shipping (includes: lubricants, coolant, ROPS canopy and 10% fuel and standard 760 mm/30″ shoes)

Powershift ..... 9222 kg/20,330 lb
Direct drive ..... 9358 kg/20,631 lb

Operating (includes lubricants, coolant, ROPS canopy, 100% fuel, operator, PAT Bulldozer, track end guiding guards and standard shoes)

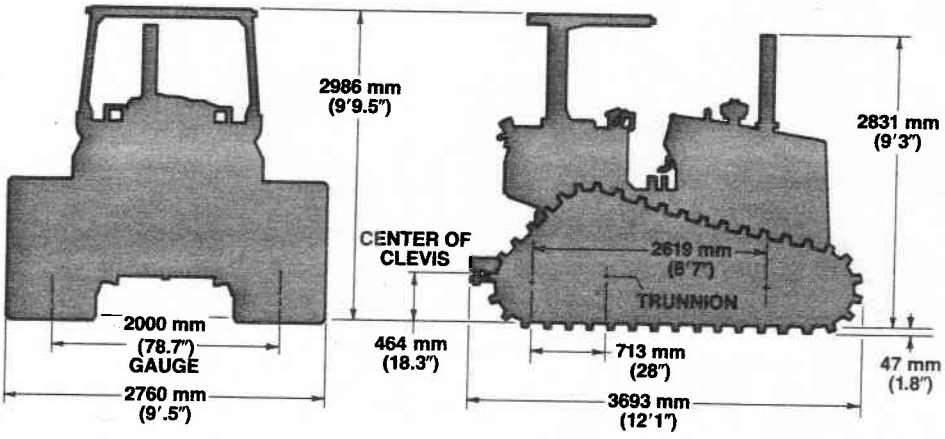
Powershift ..... 11 245 kg/24,790 lb
Direct drive ..... 11 381 kg/25,090 lb

Dimensions (approximate)

Ground clearance, from ground face of shoe (per SAE J1234) .... 362.5 mm/14.3″
actual clearance under case .... 430 mm/17″

With the following attachments, add to basic tractor length of 3693 mm/12′1″:
54 Winch ..... 304 mm/12″
PAT-Blade ..... 1124 mm/3′8″
S-Blade ..... 996 mm/3′3″

Machine height from tip of grouser with the following equipment:
ROPS Canopy ..... 3033 mm/9′11.5″
ROPS Cab ..... 3039 mm/10′0″



Bulldozer specifications

Blade	Blade Capacity (per SAE J1265)	Blade Width Over End Bits	Height	Digging Depth	Ground Clearance	Maximum Tilt	Weight (w/o hyd. controls)
4 LGP Power angle and tilt	2.02 m^3 2.64 yd^3	3256 mm 10′6″	908 mm 35.7″	414 mm 16.3″	906 mm 35.7″	491 mm 19.3″	1618 kg 3,567 lb
4 LGP Straight	2.17 m^3 2.84 yd^3	3256 mm 10′6″	920 mm 36.2″	459 mm 18.1″	899 mm 35.4″	421 mm (HYD) 16.6″ 683 mm (HYD & MAN) 26.9″	1592 kg 3,510 lb

Caterpillar Engine

Gross power (PS) @ 2200 RPM ..... 74 kW/99 hp
Flywheel power (PS) at 2200 RPM ..... 67 kW/90 hp
(Kilowatts (kW) is the International System of Units equivalent of horsepower.)

*Net power at the flywheel of the vehicle engine is based on SAE J1349 standard conditions of 25° C/77° F and 100 kPa/ 29.61" Hg. Power is based on using 35° API (15.6° C/60° F) gravity fuel having an LHV of 42 780 kJ/kg/*18,390 Btu/lb *when used at 29.4° C/*85° F *and with a density of 838,9 g/L/* 7.001 lb/U.S. gal. *Power rating is adjusted for vehicle equipped with fan, air cleaner, water pump, fuel pump, muffler and lubricating oil pump. No derating is required up to 2300 m/* 7,500 ft. *altitude.*

These additional ratings also apply at 2200 RPM

	kW	HP
ISO	69.3	93
ISO 3046-1	68.6	92
EEC 80/1269	69.3	93

Caterpillar 4-stroke-cycle 3204 turbocharged diesel with four cylinders, 114 mm/4.5" bore, 127 mm/5.0" stroke, and 5.2 liters/ 318 cu. in. displacement.

Individual adjustment-free injection pumps and valves. Cam-ground and tapered aluminum alloy pistons with 2-ring design. Steel-backed copper aluminum bearings, die quenched crankshaft, piston cooling jets, stellite faced exhaust valves and replaceable valve seat inserts are standard.

Pressure lubrication with full-flow filtered oil. Dry-type air cleaner with primary and safety elements.

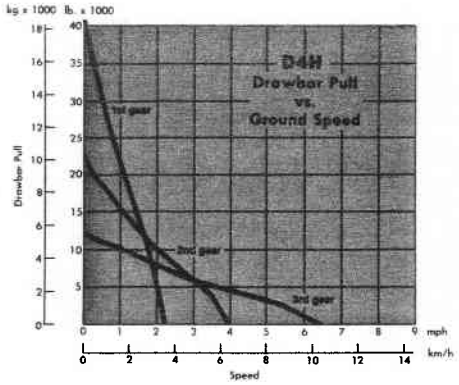
Two 24-volt direct electric starting systems — standard or low temperature (includes ether aid, engine coolant heater, heavy duty batteries and heavy duty starter motor). Ether aid, heavy duty batteries and engine coolant heater are also available separately for cold weather starting.

Transmission

Power shift:
Planetary power shift with high-torque-capacity oil clutches. Special valve modulates clutch engagement for fast speed and direction changes. Single-stage torque converter connects directly to flywheel. Oil to water exchangers cool the torque converter oil. Live PTO for use with 54 Winch.

Speeds with power shift transmission (approximate):

	Forward		Reverse	
Gear	Km/h	MPH	Km/h	MPH
1	3.5	2.2	4.3	2.7
2	6.2	3.9	7.5	4.7
3	10.2	6.3	12.2	7.6



Direct drive:
Constant mesh sliding collar countershaft transmission. The D4H offers six speeds forward and reverse, enabling the operator to more closely match tractor speed and drawbar pull to job requirements.

Gears in the D4H LGP sliding collar transmission are in constant mesh so helical gears can be used. The curvature of the gears allows two teeth to be in contact at all times, sharing the loads. Helical gears mesh more smoothly for quiet operation.

Flywheel clutch has three plates. Foot pedal operated clutch is lubricated and cooled by pressure-circulated oil. Clutch is hydraulically actuated and requires no adjustment. Live PTO for use with 54 Winch.

Standard transmission speeds and drawbar pulls:

	Forward		Reverse		Drawbar Pull Forward At rated RPM		Max. at Lug	
Gear	Km/h	MPH	Km/h	MPH	Kg	Lb	Kg	Lb
1	2.5	1.6	3.3	2.1	74.6	16,798	95.7	21,533
2	3.2	2.0	4.2	2.6	57.3	12,884	73.7	16,583
3	4.3	2.6	5.6	3.4	42.5	9,554	55.0	12,375
4	5.5	3.4	7.2	4.5	31.4	7,071	41.1	9,248
5	7.2	4.4	9.4	5.8	22.9	5,149	30.3	6,818
6	9.5	5.9	12.4	7.7	16.1	3,617	21.7	4,883

Transmissions are modular and located at the rear of the tractor for easy removal and installation with or without the bevel and pinion and transfer gears.

Steering

Hydraulically actuated, multiple-disc oil-cooled steering brakes are held in engagement by springs and disengaged hydraulically. Clutches are multiple-disc, oil cooled, hydraulically engaged and disengaged. The disc assemblies provide high load carrying capability, long life and require no adjustment.

Combined clutch and brake hand controls are located to the operators left. A single brake pedal suspended from the dash brakes both tracks without disengaging the clutches.

Final drives

Single reduction planetary final drives spread the torque loads over three gears instead of one. Modular design greatly reduces the time required for removal. The elevated design isolates the final drives from ground impact induced loads for long service life. Segmented sprocket for replacement ease.

Pivot shaft and equalizer bar

The D4H LGP employs a pivot shaft and pinned equalizer bar oscillation system. The pivot shaft transmits ground impact loads directly to the main frame rather than through the power train components. The pinned equalizer bar protects track roller frames from misalignment loads. This design improves ground clearance and provides a smooth underside to prevent the collection of mud and debris.

Track roller frame

Reinforced box-section and tubular construction. Lifetime Lubricated rollers and idlers.
Number of rollers (each side) 7
Oscillation at front idlers ..... ±86 mm/3.4"

D4H LGP FEATURES

Wet or soft underfoot and steep sideslopes call for all the flotation, balance and stability you can get. That's what the D4H LGP delivers. It's the Shape of the Future . . . Here Today.

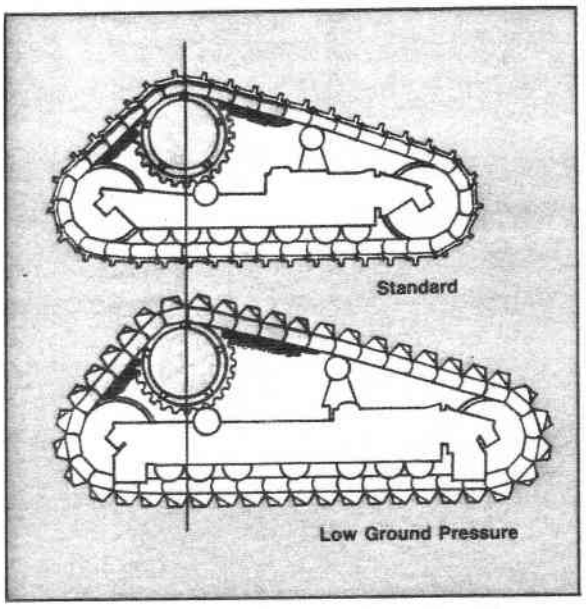
Elevated sprocket design: better performance, more durability, lower costs

Compared to conventionally designed tractors, the D4H Low Ground Pressure Tractor with its elevated sprocket design provides significant benefits in performance, durability/reliability and low operating costs.

Optimum fore and aft balance:

With the D4H LGP you don't have to accept compromises in performance because the elevated sprocket allows Caterpillar to tailor the D4H roller frame mounting location for the best possible balance in an LGP application.

The LGP has the same basic upper structure as the standard model, but the roller frames are extended forward and relocated to provide the more neutral center of gravity desired in an LGP environment. This provides even weight distribution on the tracks for maximum stability and optimum flotation performance in soft underfoot.



Excellent sideslope capability:

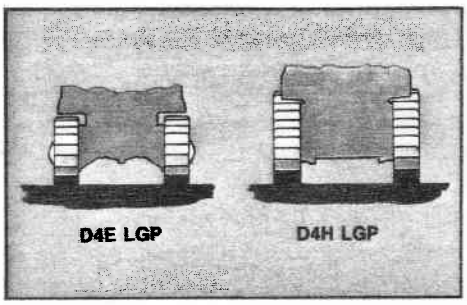
The D4H LGP has a wide 2000 mm/78.7″ gauge and a lower center of gravity height than its predecessor, the D4E LGP. This gives the D4H LGP excellent sideslope stability.

Better flotation:

The D4H LGP has a long 2620 mm/103″ of track on the ground . . . plus a wide 2000 mm/78.7″ gauge for use with 760 mm/30″ shoes. The result is a ground pressure of 0.28 kg/cm²/4.05 psi. Compared to the standard D4H, with a ground pressure of 0.61 kg/cm²/8.7 psi, the LGP model has 53% better flotation.

Better ground clearance:

The D4H LGP uses a pivot shaft and pinned equalizer bar to maintain roller frame alignment. Because there are no diagonal braces, the D4H LGP has 429 mm/17″ of ground clearance under the power train case, or 21% more than the D4E LGP. There's less chance of getting hung up on a stump or rock — or snagging brush or debris. Mobility in very soft underfoot is greatly improved.



A longer-lasting power train

With the elevated sprocket design, final drives and associated power train components are raised above the work area . . . isolating them from ground impact shocks, as well as implement and roller frame alignment loads. And that means longer component life.

The D4H LGP elevated sprocket position also gets sprocket teeth, bushings and final drives away from the grit, mud, ice and dust that plague conventional tractor designs. The result is longer track, sprocket and final drive life.

Operator environment designed for efficiency

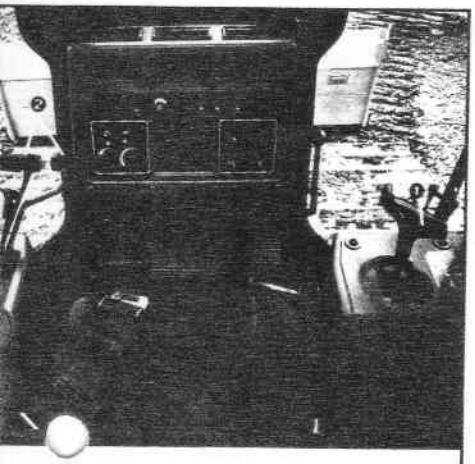
Your operator will be more efficient and productive on the D4H LGP due to:

Better all-around visibility

Because the operator sits higher, overall visibility is excellent, especially to the blade corners. A tapered engine hood enhances forward visibility. There's a better view to the winch, too, because the fuel tank is tapered. And the seat is fully adjustable five ways.

Convenient control placement

The console-mounted steering and braking controls are just to his left. They're low-effort and easily operated with one hand. On the powershift model, the transmission lever is there, too — as is the directional lever on the direct drive version. Single-lever dozer or winch controls are console-mounted to his right.



① Single-Lever Implement Control
② Steering and Braking Controls
③ Transmission Lever

Reliable warning system

An Electronic Monitoring System analyzes critical temperatures and pressure and gives visual and audible warning if corrective action or machine shutdown is required. This three-level warning system includes:

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 may cause immediate failure of a component.

A circuit test switch verifies system reliability.

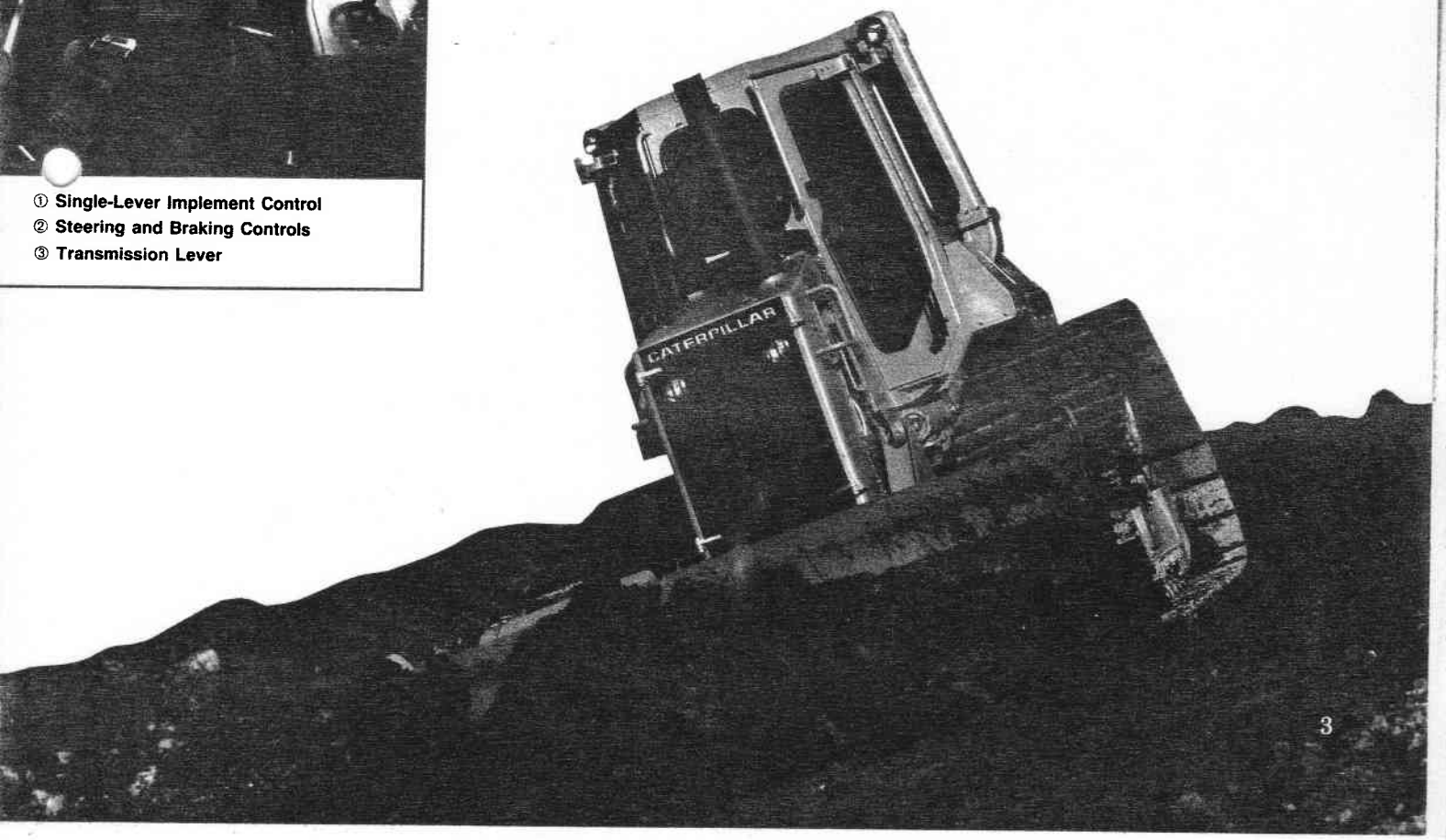
ROPS cab for year-round comfort

For even more comfort there's an optional sound-suppressed ROPS cab with air pressurizer and heater. It's resiliently mounted to minimize noise and vibration. Visibility to blade corners is excellent, as door glass is shaped to allow maximum view. Side and rear windows slide open and doors can be latched open. An optional air conditioner gives added hot-weather comfort.

D4H LGP Power Angling and Tilt Blade

The LGP Power Angling and Tilt (PAT) or P-Blade works especially well in low ground pressure applications. This extra-wide blade . . . with 17% more capacity than the LGP Straight Blade on the D4E LGP model . . . makes quick work of finish grading. It also has more digging depth, penetration and pryout force. Full hydraulic control of lift, dig, angle and tilt give maximum versatility.

The inside arm C-frame is solidly pinned to the main frame for good blade control and elimination of blade motion due to track oscillation. The sliding-plate, sub-frame design puts the blade close to the front of the tractor for better stability and balance. Pryout and penetration forces are also maximized.



A redesigned winch

54 Winch improvements include an anti-fallback device to prevent dropping the load when shifting from brake-on to reel-in.

Other improvements:

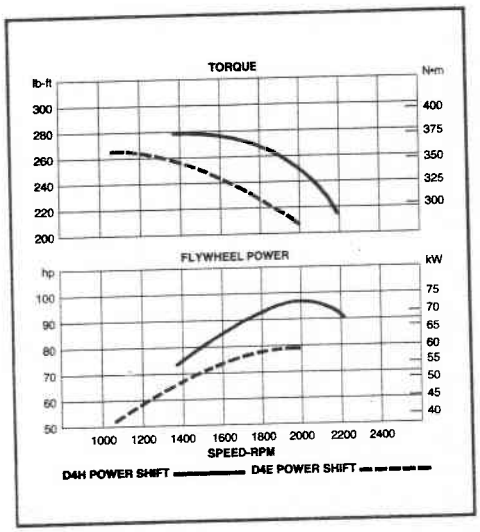
- Multiple-disc, oil-cooled clutches and brakes for adjustment free, long life.
- Freespool with drag adjustment to disengage the drum from the rest of the winch power train — so less effort is needed to pull out the cable.
- Single-lever control of all winch functions.
- Full-filtered hydraulics for pressure lubrication to all bearings, gears and clutches.
- An integral drawbar as part of the winch.

Maximum rated line pull is 28 418 kg/**62,650 lb** on the power shift model and 19 954 kg/**43,991 lb** on direct drive. Three options are available for specific job requirements:

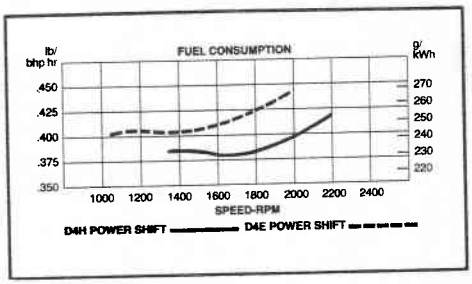
- **Power-in/power-out** . . . for applications where releasing a load for extended distances with speed control is required. It also can help the operator reel out line to hook up a load.
- **Slow-speed** . . . with power-in/power-out option. For applications requiring very slow line speeds as well as additional line control.
- **Fairlead or guide rolls** . . . to protect the winch case and extend cable life in applications where frequent pulls over the side of the winch are required. Arches with fairleads are available also through your Cat Dealer.

Efficient power over a wide operating range

The D4H LGP's Cat 3204 DIT diesel Engine delivers 67 kW/**90 FWHP** . . . with 30% torque rise on the powershift version and 25% on the direct drive models. That means superior lugging power and fast response to changing loads. The D4H LGP also has a 700 RPM operating range for less shifting under changing loads.



This turbocharged Cat 3204 has a scroll-type fuel system, which gives more precise fuel injection than a sleeve-metering system. This fuel efficiency — combined with more track on the ground, better balance and improved blade penetration and pryout — means more material moved per unit of fuel.



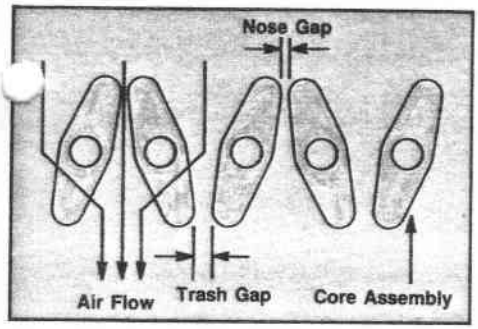
A load-sensing hydraulic system

With the load-sensing hydraulic system, a variable displacement piston pump senses implement loads and automatically adjusts flow rates to match the loads encountered. That means engine power required by the hydraulic system is matched to the implement demand. Fuel is conserved, heat generation is reduced and more engine power is available to the tracks for greater productivity.

Low-cost operation adds to D4H LGP value

Several D4H LGP features contribute to economical operations:

Folded-core radiator.
Narrow modular cores assembled in an accordion-type arrangement between top and bottom tanks have a high fin density. This deflects debris through trash gaps, which greatly extends cleaning intervals. The folded-core radiator is also less costly to repair, as individual core assemblies can be replaced rather than an entire conventional core.



Diagnostic connector.
This allows faulty electrical system components to be pinpointed in minutes. Cat Dealers have a test tool that plugs into this connector to quickly and accurately troubleshoot the system.

Easy access plugs.
These let the mechanic quickly and easily diagnose problems in the power train oil, steering system and implement oil systems.

Lower maintenance costs.
Ball joints, trunnions, pivot pins and cylinder mounts incorporate hardened steel, heat-treated components or sintered iron bushings — which eliminate the need for grease fittings. That means no lube points on the tractor . . . none on dozer blades. Grouped service points and excellent access to service areas make routine checks fast and convenient. And the D4H's multiple-disc brakes require no adjustment — a significant improvement.

Low repair costs/higher availability

Modular design of major D4H LGP power train components results in a sizeable reduction in removal and installation times. This means lower labor costs . . . plus less time in the repair shop and more on the job.

Modular power train components provide other benefits, too. Since they can be removed independently without major disassembly of nearby components, there are fewer repair steps than on a conventional tractor. Repairs are less complex, reducing the possiblity of mistakes that lengthen repair times. Modular components can also be assembled and tested before installation in the tractor, ensuring high quality.

Major component removal and installation times in man-hours

(Assuming one trained mechanic with occasional assistance from a helper and appropriate tools and lifting devices)

	D4H LGP	D4E LGP	Time saved, man hours
Engine	7.5	9.5	2
Torque converter	5.5	7	1.5
PS Transmission and bevel gear module	1.5	14	12.5
Steering clutch and brake	4	12	8
Final drive	3	6.5	3.5
DD Master clutch	1	6	5

The D4H LGP does more . . . costs you less, too. And isn't that the final measure of value?