



CATERPILLAR

D35C/D35HP

Articulated Dump Truck

D35C

Summary of Features

- **Cat 3306 diesel Engine** delivers 260 FWHP (194kW), with long life and low maintenance costs.
- **Caterpillar powershift transmission** 6-speed planetary design with maximum loaded speed of 35.0 mph (56 km/h). Torque converter lock-up in each gear for fuel efficient hauling.
- Two axle suspension providing increased safety and operator comfort for higher average hauling speeds.
- Excellent traction and flotation for operating in difficult haul conditions.
- Low loading height and compact overall dimensions provide versatile loadability.
- Low fuel consumption, reduced tire wear and durable power train make this truck an excellent investment for rock, overburden or earthmoving contracts irrespective of haul length or conditions.



- 35.0 tons (31.8 tonnes) payload, heavy-duty, wedge-shaped body.
- Low loading height and wide target for versatile loader match.

- All-wheel drive through inter-axle differential eliminating tire scrub.
- All-wheel oil-pneumatic self-levelling suspension system.

- High capacity low pressure tires in single formation.
- Articulated hydraulic steering with full frame oscillation.



D35HP

Summary of Features

- **Cat 3406 diesel Engine** delivers 385 FWHP (287 kW), with long life and low maintenance costs.
- **Caterpillar powershift transmission** 4-speed planetary design with maximum loaded speed of 41.0 mph (66 km/h). Torque converter lock-up in each gear for fuel efficient hauling.
- Proven components in this high speed, high power two axle suspension articulated truck allows high hauling speeds for maximum production.
- High power-to-weight ratio, excellent gradeability and large power reserve contribute to long power train and component life.
- Low loading height and wide wedge-shaped body target for faster cycles.
- Large tire capacity and low fuel consumption for low cost hauling in quarries, mines and earthmoving contracts.

D35C/D35HP

Articulated Dump Truck



Caterpillar D35C Engine

Cat 3306 six cylinder turbocharged and aftercooled 4-stroke diesel with direct injection. High torque rise with low fuel consumption.

Flywheel horsepower: 260 (194 kW) @ 2200 rpm (SAE J816b).

Maximum Torque: 861 lb.ft. (1167 Nm) @ 1400 rpm (SAE J816b).

Bore 4.75" (121 mm), stroke 6.0" (152 mm), displacement 638 cu.in. (10.5 liters). Adjustment free fuel pumps and valves. Pressure lubrication with full flow filtered oil and oil cooler. Water conditioner, dry type air cleaner with primary and safety elements, automatic dust ejector and service indicator and high capacity shock-proof radiator fitted as standard.

24-volt direct electric starting system with ether cold-start aid. 45-amp alternator. Two 172-amp-hour 12-volt batteries.



Caterpillar D35HP Engine

Cat 3406 six cylinder turbocharged and aftercooled 4-stroke diesel with direct injection. High torque rise with low fuel consumption.

Flywheel horsepower: 385 (287 kW) @ 2100 rpm (SAE J816b).

Maximum Torque: 1320 lb.ft. (1790 Nm) @ 1200 rpm (SAE J816b).

Bore 5.4" (137mm), stroke 6.5" (165 mm), displacement 893 cu.in. (14.6 liters). Adjustment free fuel pumps and valves. Pressure lubrication with full flow filtered oil and oil cooler. Water conditioner, dry type air cleaner with primary and safety elements, automatic dust ejector and service indicator and high capacity shock-proof radiator fitted as standard.

24-volt direct electric starting system with ether cold-start aid. 45-amp alternator. Two 172-amp-hour 12-volt batteries.



D35C Transmission

Caterpillar powershift transmission remote-mounted from engine. Large diameter clutch packs for maximum leverage. Planetary design for minimum tooth loading. Modulated control for smooth gear shifts. Integral transfer-box with lockable planetary inter-axle differential.

Torque Converter: Single stage with free-wheeling stator, 2.35:1 stall torque ratio and automatic lock-up in each gear. Matched to engine and transmission for high efficiency hauling, reduces shock loads to entire drive train.



D35HP Transmission

Caterpillar powershift transmission remote-mounted from engine. Large diameter clutch packs for maximum leverage. Planetary design for minimum tooth loading. Modulated control for smooth gear shifts. Inhibitor prevents engine overspeeding when downshifting. Integral transfer-box with lockable planetary inter-axle differential.

Torque Converter: Single stage with free-wheeling stator, 3:1 stall torque ratio and automatic lock-up in each gear. Matched to engine and transmission for high efficiency hauling, reduces shock loads to entire drive train.



Axles

Two heavy duty cast steel drive axles; with axle casings, differentials and wheel groups with fully floating half-shafts. Transfer box assures constant drive and equalizes wheel speeds.



Brakes

Service Brake: Foot operated system activates self-adjusting drum brakes. Air and hydraulic actuated. Wedge shoe type on front and expander tube on rear. Independent circuits for front and rear. System air dryer fitted as standard.

Secondary Brake: Independent hand operated, all-wheel secondary back-up system with separate air tank.

Park Brake: Hand operated, spring applied and air released, acts on front axle and on transmission drive-line and automatically locks inter-axle differential.

Retarder: 'Jake Brake' retarder is standard on D35HP only. Hydraulically adjusts exhaust valve sequence on over-run, converting engine into energy-absorbing air compressor.

D35C has an optional oil-immersed, multi-plate drive-line retarder.



Tires and Wheels

Four large capacity, wide base, low pressure radial tires provide exceptional hauling capacity. Good ground clearance and reduced rolling resistance, wear and fuel consumption are also features of these tires.

Front: Two 29.5 X 25 on 20 stud rims.

Rear: Two 33.25 X 29 on 23 stud rims.



Hydraulics

Modular design and construction of hydraulic system with integral control valves and centralised test points.

Pump: Dual vane type operating at engine speed; maximum combined flow 78.5 U.S. gpm (297 liters/min) @ 2500 psi (170 bars); serves steering, body hoist and suspension systems.

Tank: Pressurized with suction strainer and ten micron return line filtration.

Circuits: Large bore pipes minimize power loss and heat build-up. High pressure hoses are interchangeable with Cat XT-3 hose.



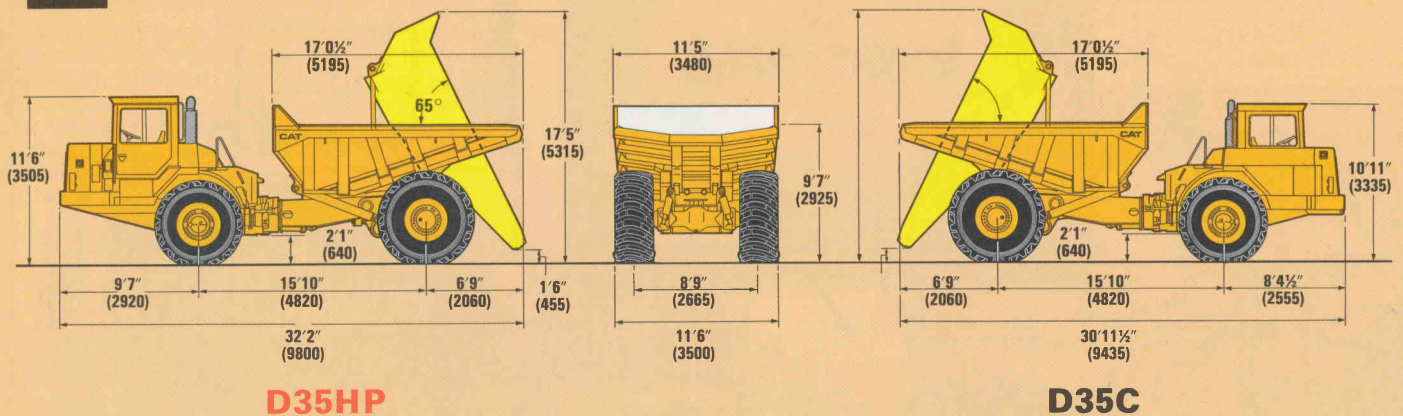
Steering

Articulated frame hydraulic steering. Double-acting cushioned steer cylinders articulate 45° left or right.

Hand metering unit and flow priority valve with steer circuit capacity 50 US gpm (190 liters/min). Ground driven supplementary steering standard on D35HP.



Dimensions



D35HP

D35C

Speeds (loaded)

D35HP

Gear	1st	2nd	3rd	4th
Forward/Reverse	7.0	13.0	23.0	41.0
mph	(11.0)	(21.0)	(37.0)	(66.0)
km/h				

D35C

Gear	1st	2nd	3rd	4th	5th	6th	Reverse
mph	3.0	4.0	7.0	12.0	21.0	35.0	4.0
km/h	(5.0)	(6.0)	(11.0)	(19.0)	(34.0)	(56.0)	(6.0)



Body Capacities

D35HP		Struck	Heaped SAE 2:1	Heaped SAE 1:1
Standard Body	yd ³ (m ³)	18.6 (14.2)	26.4 (20.2)	33.6 (25.7)
4" (100mm) Side Extensions	yd ³ (m ³)	20.8 (15.9)	28.4 (21.7)	35.3 (27.0)
8" (200mm) Side Extensions	yd ³ (m ³)	22.9 (17.5)	30.1 (23.0)	36.9 (28.2)

D35C		Struck	Heaped SAE 2:1	Heaped SAE 1:1
Standard Body	yd ³ (m ³)	18.6 (14.2)	26.4 (20.2)	33.6 (25.7)
4" (100mm) Side Extensions	yd ³ (m ³)	20.8 (15.9)	28.4 (21.7)	35.3 (27.0)
8" (200mm) Side Extensions	yd ³ (m ³)	22.9 (17.5)	30.1 (23.0)	36.9 (28.2)

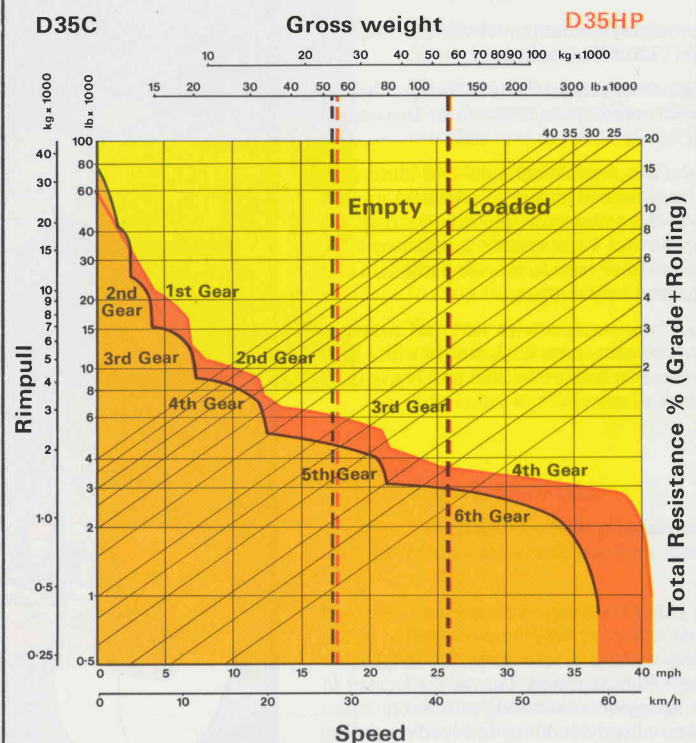


Operating Weights

D35HP		Front Axle	Rear Axle	Totals
Empty	tons (tonnes)	16.7 (15.2)	10.8 (9.8)	27.5 (25.0)
Rated Load	tons (tonnes)	7.1 (6.5)	27.9 (25.3)	35.0 (31.8)
Loaded	tons (tonnes)	22.5 (21.7)	38.6 (35.1)	62.4 (56.8)

D35C		Front Axle	Rear Axle	Totals
Empty	tons (tonnes)	15.3 (13.9)	11.0 (10.0)	26.3 (23.9)
Rated Load	tons (tonnes)	7.2 (6.5)	27.9 (25.3)	35.0 (31.8)
Loaded	tons (tonnes)	22.5 (20.4)	38.9 (35.3)	61.4 (55.7)

Gradeability/Speed/Rimpull

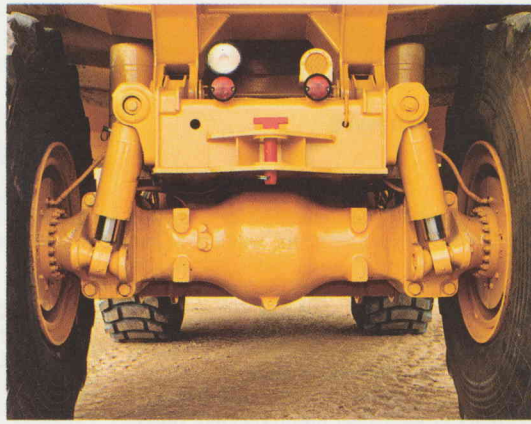


To determine gradeability performance read from Gross Weight down to % Total Resistance. (Total Resistance equals actual % grade plus 1% for each 20lb/ton (10kg/tonne) of Rolling Resistance). From this weight-resistance point, read horizontally to the curve with the highest obtainable speed range, then down to Maximum Speed. Useable Rimpull depends upon traction available.

Axles/Suspension

Two cast steel axle casings with drive components mount directly to fabricated cradles. The cradles locate on spherical bushings within the frames, providing maximum strength, clear of any mud and debris.

Long stroke suspension cylinders cushion the axle movement and damp truck rebound caused by haul road conditions. An equalizing transfer-box proportions the drive to the front and rear wheels assuring the best possible traction and reducing tire wear. The complete system operates at low peak pressures giving excellent component life and durability.



Body

Wide wedge-shaped body design with low loading height has closely spaced wrap-around ribs to cushion and reinforce the body against loading shocks.

Strength and durability is assured by 145,000 psi (1000 MPa) high-yield heat treated steel. Sidewall and front plate thickness 5/16" (8mm), bottom plate thickness 1/2" (12mm). The 18" ducktail retains the load on steep grades. Two double acting, single stage hoist cylinders tip body to 65° for fast, clean load ejection.

Power up: 10 secs. **Power down:** 6 secs.

Cab

The ROPS/FOPS Cab is designed and tested to meet safety standards for roll-over and falling object protection (SAE J1040c and J231). Rubber mountings and high quality insulating material isolate the cab from noise, heat and vibration. The cab has an ergonomically designed instrument/control layout and a four-way adjustable suspension seat to provide a safe and comfortable working environment for the operator. The large window area permits good all-round visibility, with tinted/laminated front and rear screens and toughened side screens for additional safety.

The cab tilts 20° rearwards to assist service access. D35C illustrated.



Frame

The frame assembly consists of three main frames manufactured from 51,000 psi

The front frame is an internally-braced torsion bar design with a heavy-duty bumper and full-box horse-collar cylinders and the ROPS/FOPS cab.

Articulating/oscillating hitch provides torsional stress between front and rear frames. It incorporates widely-spaced, tapered roller bearings for correct alignment of articulation pivot. The hitch uses 4" diameter adjustable plain bearings in the front and 6" diameter in the rear to carry the high vertical and longitudinal loads.

The rear frame is an enclosed full box design with a heavy-duty cross tube, to minimize frame bending and stress concentrations, and service life. Body hoist and rear suspension cylinders are mounted to the cross tube, to minimize frame bending.

Suspension

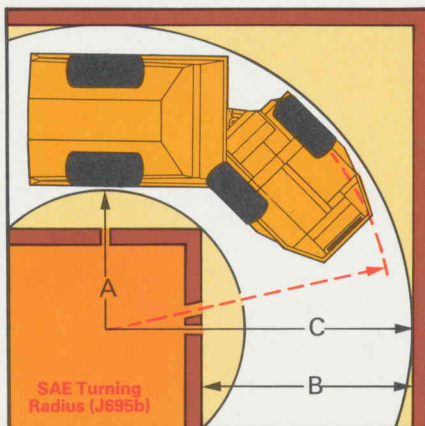
The unique two-axle oil-nitrogen suspension provides a smooth ride for both trucks at low and high speeds.

The front axle is suspended by two long stroke suspension cylinders. Graduated ports and internal damper, allow controlled damping. The front frame is pivoted to the front axle by a swinging cradle arrangement. A nitrogen accumulator is used to transmit the force by displaced oil from the front frame to the rear frame.

The rear axle suspension is similar in design to the front suspension system. Two long stroke suspension cylinders are mounted to the rear frame by a swinging cradle arrangement. Nitrogen accumulators set at different pressures are used for hauling and loading shocks, and provide a smooth ride whether loaded or unloaded.

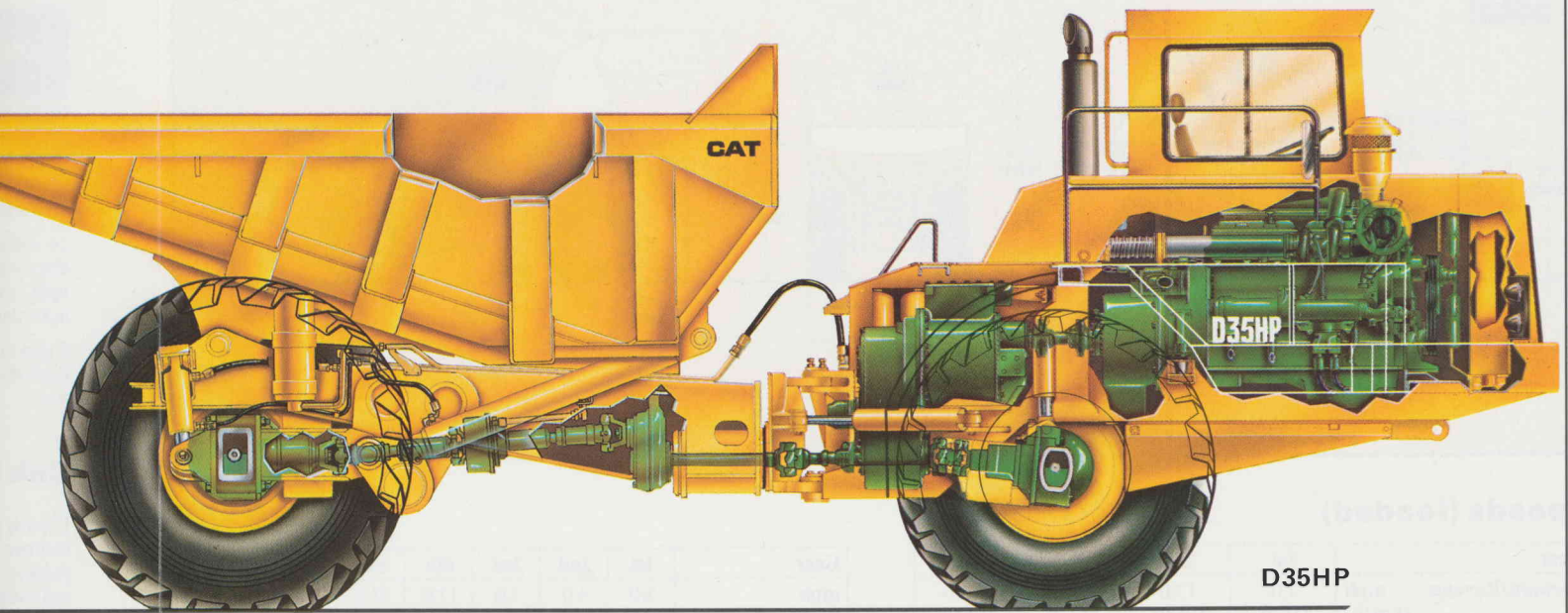
Independent automatic self-levelling system allows the truck to automatically and hydraulically adjust the level to maintain a constant level under all conditions.

Turning Circle



Small outside turn circle and large inside turn circle allow the D35C/D35HP to negotiate narrow aisles and tight corners. Articulated frame hydraulic steering and compact overall dimensions allow easy and precise positioning of the truck in restricted areas.

Turning Dimensions ft. ins. (meters)	A	B	C	SAE Radius (J695b)
D35C and D35HP	12'0" (3.65m)	17'9" (5.42m)	26'3" (8.00m)	24'8" (7.52m)



Assembly consists of three main components, with the front and rear frames constructed from 51,000 psi (360 MPa) yield steel.

The front frame is an internally-braced deep box-section with integral heavy-duty and full-box horse-collar which locates the front suspension on the ROPS/FOPS cab.

The **oscillating hitch** provides steering articulation and eliminates lateral movement between front and rear frames, ensuring all-wheel ground contact. It incorporates widely-spaced large diameter spherical bearings for articulation pivots and steer cylinders, and two large diameter plain bearings in the hitch tube to provide oscillation and absorb high vertical and longitudinal load stresses.

The rear frame is an enclosed full box-section with internal bracing, stress concentrations, and providing a low basic weight with a long wheelbase. Hoist and rear suspension pivots are located on a heavy-duty frame to minimize frame bending stresses.

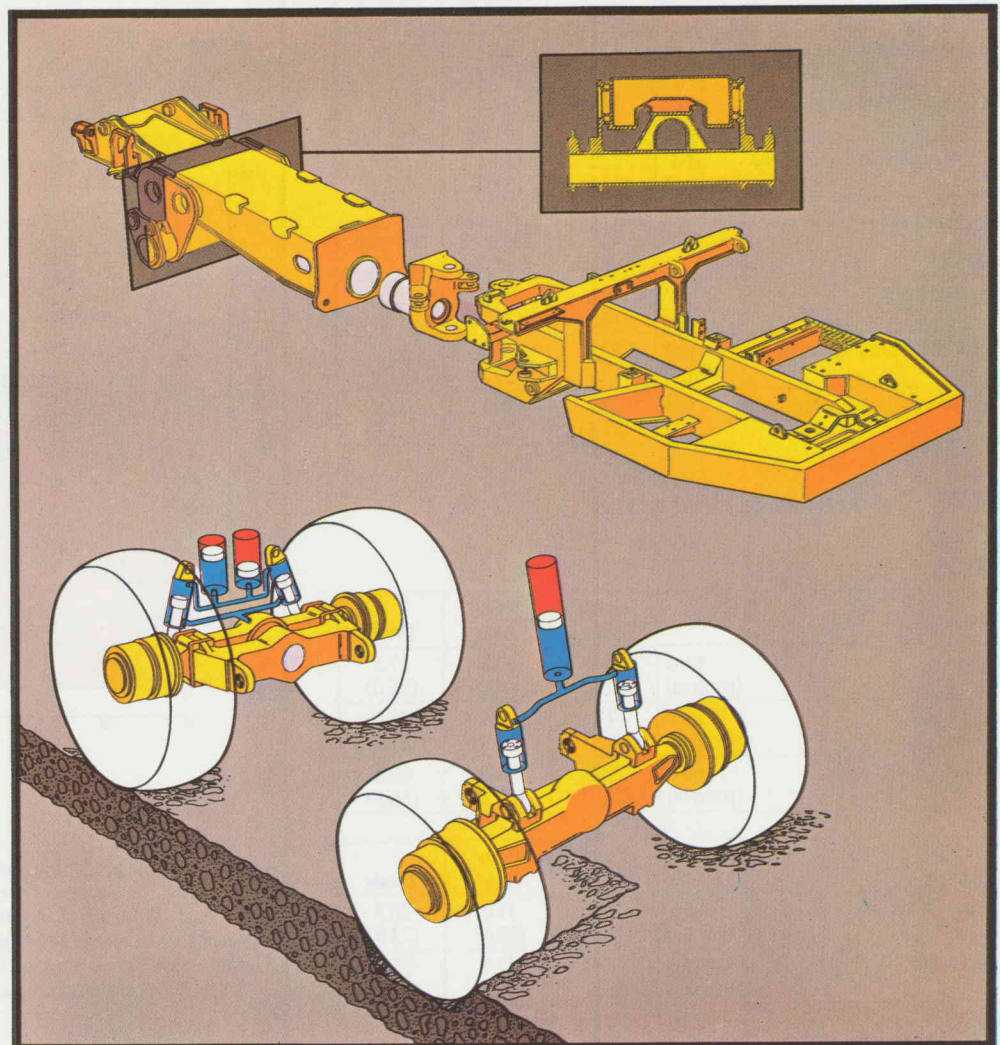
Suspension

The **front axle oil-nitrogen suspension system** with full frame oscillation provides a smooth ride for both truck and operator, allowing high average

The front axle is suspended by two long-stroke large-bore purpose designed shock absorbers. Graduated ports in the rod, together with vented piston rings, allow controlled transfer of oil within the suspension cylinders, providing excellent damping and cushioning. The axle is located to the frame by a swinging cradle arrangement allowing movement in the vertical plane. A nitrogen accumulator absorbs hauling and loading shocks and displaces oil from the suspension cylinders.

The **rear suspension** is similar in design and operation but independent of the front suspension system. Two suspension cylinders suspend the rear axle in a swinging cradle arrangement, and two interconnected nitrogen accumulators at different pressures provide a dual-rate system to absorb hauling shocks, and provide optimum suspension performance whether loaded or unloaded.

The **automatic self-levelling** systems for front and rear axles monitor and automatically adjust the level to maintain the mean ride-height of the truck, compensating for the differences between the loaded and unloaded





Standard Equipment

ROPS/FOPS cab with full instrumentation, heater/defroster with two-speed circulating fan, two adjustable overhead air vents, ventilation flap, windshield wiper and washer, mirrors (left and right), adjustable suspension seat. Seat belt, sun visor, air horns, tinted safety glass all-round. Two sliding windows. Rear window guard. Ventilated rear screen.

24-volt electrical system. Four headlights with dip switch, front side lights, direction indicator/hazard warning lights. Front light guards, rear working light, reversing light and back-up alarm, two stop/tail lights and cab interior light. Jake brake and supplementary ground steer pump (D35HP only).

Crankcase and axle guard, radiator protection grille, sliding battery tray. Lockable tool box. Rear tow pin. Front tow-eyes. Four wide base radial tires.

Cab Instrumentation

Electric gauges for engine oil pressure, transmission oil temperature, water temperature. Tachometer. Ammeter. Hourmeter. Air pressure gauges. Externally mounted fuel level gauge and hydraulic oil level indicator.

Warning lights for engine oil pressure, transmission oil pressure, engine water temperature, park brake engaged, differential-lock engaged, torque converter lock-up disengaged, steering system low fluid level. Main beam, direction/hazard indicators. Jake brake position (1 and 2) - D35HP only.

Warning horn for low brake system air pressure. Air cleaner indicator mounted to cleaner.



Service Refill Capacities

D35C

	US Gallons	Liters
Fuel Tank	112.0	420.0
Cooling System	18.5	70.0
Hydraulic System	52.8	200.0
Crankcase	9.0	34.0
Transmission	9.3	35.0

D35HP

	US Gallons	Liters
Fuel Tank	112.0	420.0
Cooling System	23.0	87.0
Hydraulic System	54.0	203.0
Crankcase	8.0	30.0
Transmission	27.0	102.0



Optional Equipment

- Air Conditioner
- Body Liners:
 - Rock wear plates
 - Rock wear strips
- Differential, NoSPIN (rear axle)
- Exhaust scrubber - PTX Catalytic type
- Extensions:
 - Front spill guard
 - Body side, 4 in. (100mm)
 - Body side, 8 in. (200mm)
- Fan, fresh air and filter
- Guard, radiator, includes extra bumper
- Light, supplementary back-up
- Retarder, drive-line, oil cooled (D35C)
- Speedometer, electric
- Steering system, supplemental (D35C)
- Starting receptacle, electric
- Tachograph, electric
- Tool kit
- Tow Bracket, front
- Vandalism protection
 - (Lockable filler caps: fuel, hydraulic oil and radiator)
- Wiper/Washer, rear window

Custom Machine Products

In addition to the standard range of Optional Equipment, special attachments and machine configurations to suit particular customer applications can be made available. These include:

Rough Terrain Chassis for special purpose carriers
(Containers, Water Wagons etc).

Low Profile Trucks with reduced height for tunnelling and mining.

Light Materials Bodies for high volume, low density materials.

Special Bodies and Carriers for special materials handling.

Contact your Caterpillar dealer, with your special application, for details of Custom Machine Products.

Materials and specifications are subject to change without notice.

- FEB. 1991