

793C XQ

Mining Truck



Engine

Engine Model	Cat® 3516B HD EUI	
Gross Power	1711 kW	2,294 hp
Flywheel Power	1611 kW	2,160 hp

Weights – Approximate

Gross Machine	383 743 kg	846,000 lb
Operating Weight		

Operating Specifications

Nominal Payload Capacity	218 tonnes	240 tons
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793C XQ Mining Truck

Specifically designed for high production hauling in sound sensitive environments.

Environmentally Responsible Design

The 793C XQ not only helps build a better world, it helps maintain and preserve the fragile environment while allowing mining and residential development to peacefully co-exist. **pg. 4**

Cooling System

Hydraulically driven twin fan radiator minimizes sound and maximizes cooling capacity. **pg. 5**

Engine

Electronically controlled and mechanical sound reduction features reduce engine source noise and absorb sound while maximizing hauling performance. **pg. 6**

The purpose built 793C XQ (Extra Quiet) Mining Truck features an innovative sound reduction package designed to minimize environmental impact and preserve quality of life in residential mining areas. The sound reduction system is integrated into the truck system and built to meet the durability, reliability and serviceability expectations of Cat customers.



Exhaust System

The high efficiency muffler and sound barrier help keep the 793C XQ extra quiet. **pg. 8**

Structures and Driveline

Sound barrier and damping materials dampen vibration and reduce structural noise for a quieter ride. **pg. 9**

Serviceability

Designed with serviceability in mind to keep your mining truck on the haul roads. **pg. 10**



Environmentally Responsible Design

The 793C XQ not only helps build a better world, it helps maintain and preserve the fragile environment while allowing mining and residential development to peacefully co-exist.



Hunter Valley, Australia

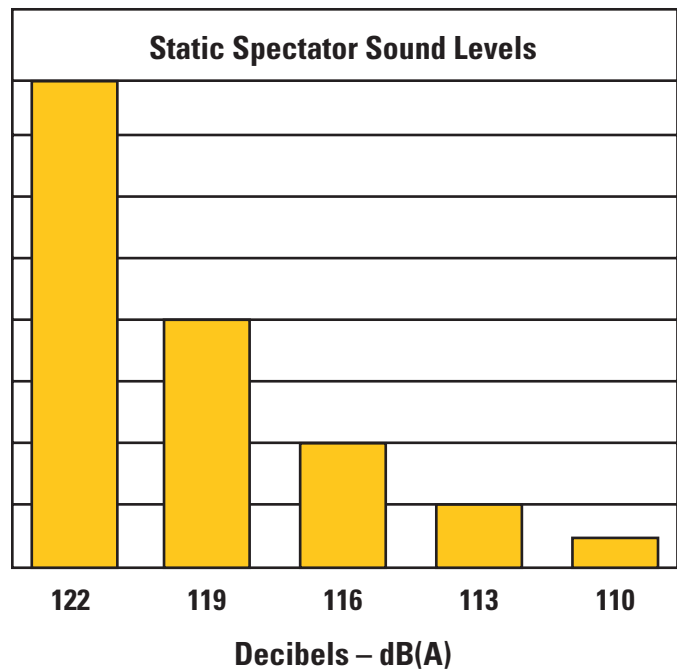
Quiet Operation. Sound suppressed machinery plays a significant role in mitigating the impact of noise in the environment. With the development of the 793C XQ, Caterpillar leads the way in the production of sound reduced off-highway trucks for operation in sound sensitive mining areas. Designed specifically for regions with stringent noise limitations, sound power levels on the 793C were reduced approximately 9 dB(A) making the sound power level on the 793C XQ less than one-eighth the sound level of the standard truck. This effectively means that eight sound reduced trucks emit the same level of sound as a single standard truck, significantly reducing environmental impact and improving quality of life.

Sound Modeling. Through the use of the Caterpillar proprietary Sonic+ sound modeling software, sound treatment options were modeled for the complete truck system. Extensive sound testing was conducted to confirm effectiveness of the model and sound treatments. Optimum sound reduction was achieved by applying sound reduction treatments to the 793C XQ engine, cooling system, exhaust system and driveline.

Sound Treatments. Caterpillar applied various sound treatment options to reduce noise on the sound suppressed 793C XQ.

- **Source Reduction.** Reduces sound emissions directly from the prime source. Electronic and mechanical modifications to the engine and cooling system were used to significantly reduce sound emission levels.
- **Absorption.** Specially designed treatments are used throughout the design to absorb sound generated by prime sources on the truck.
- **Barriers.** Materials are strategically placed to block sound paths and reflect it back to the absorption material, preventing a majority of the sound from reaching the environment. All materials are fire resistant.
- **Damping.** Damping materials are used to reduce sound generated by motion, such as rattling of components attached to the vehicle structure that occurs when the engine is running and the truck is moving.

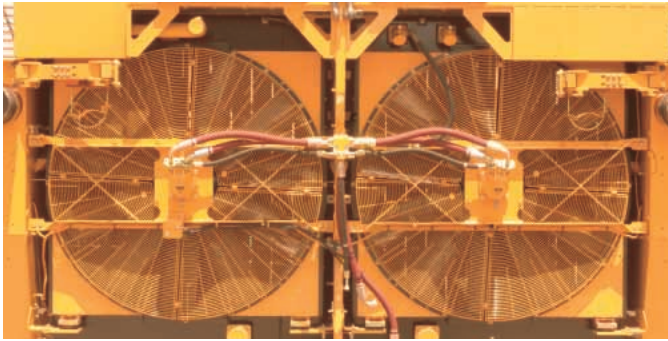
Sound Level Comparison. The static sound power level on the sound reduced 793C XQ was measured at approximately 112 dB(A) per ISO 6393 test method compared with a static level of approximately 121 dB(A) on the standard 793C. The graph below shows the logarithmic scale of decibels and how that slight reductions in decibels can make a tremendous impact on sound levels in the environment.



Cooling System

Hydraulically driven twin fan radiator minimizes sound and maximizes cooling capacity.

Cooling System. The fan is a major noise contributor on mining trucks. And, a considerable amount of fan and engine noise can escape through the radiator. The addition of engine enclosures on the 793C XQ further increased the potential for added noise with greater cooling requirements. A sound suppressed cooling system was designed using proprietary Caterpillar software to model the effects of the engine enclosure on airflow and cooling efficiency. The result is a dual, side-by-side radiator design with two fans and a grill equipped with special sound absorbing materials.

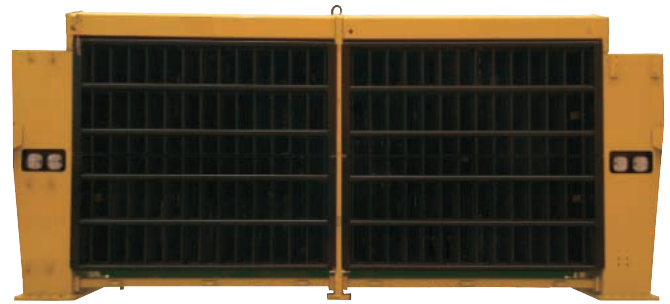


Twin-Fan Radiator

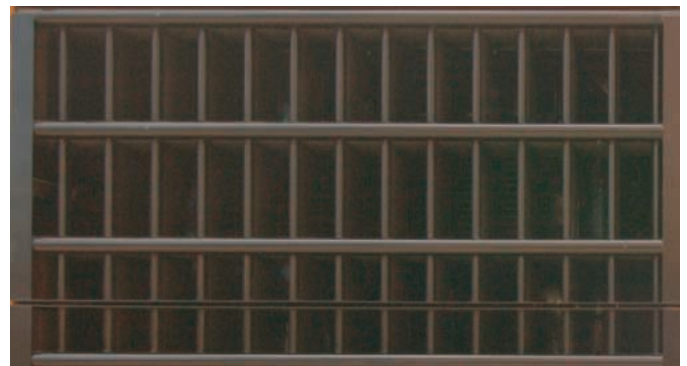
Twin-Fan Radiator. The 793C XQ uses dual fans to increase cooling capacity while minimizing noise. The dual fans are quieter and more efficient than the single fan they replace. The smaller electronically controlled fans are driven by hydraulics instead of a belt driven direct drive system and provides variable speed control, which allows the fans to run only when necessary to maintain proper cooling. This design maximizes airflow and minimizes sound since the fans can operate at a slower rpm, which reduces blade tip noise. When conditions require less cooling, they are even quieter and conserve engine power for better hauling performance.



Fan Hydraulics



Acoustic Grill



Baffles

Grill. The specially engineered acoustic grill uses a patented grid of baffles to absorb sound from the engine and fan to keep noise from transmitting through the radiator. The grill is lightweight and modular for easy assembly, disassembly and serviceability. Formed metal channels are used to protect the sound absorbing materials from damage.

Engine

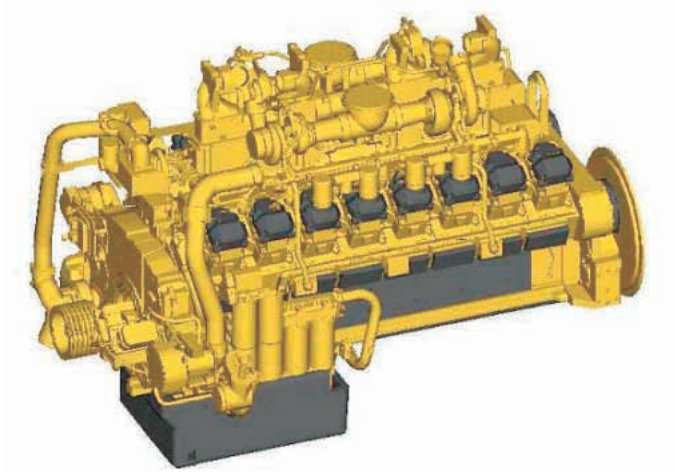
Electronically controlled and mechanical sound reduction features reduce engine source noise and absorb sound while maximizing hauling performance.

Electronic sound reduction. Electronically controlled sound reduction treatments are used to reduce engine source noise while maximizing performance and lowering cost-per-ton.

Modifications to the engine, such as reduced rpm ratings, are designed to help reduce engine noise levels.

Electronically controlled sound reduction features include:

- 1600 rpm rated engine speed
- 1840 rpm top gear engine speed limit
- 1600 rpm maximum during body hoisting
- 1600 rpm limit in reverse



Mechanical Engine Treatments

Mechanical sound reduction. Mechanical treatments are used in engine areas that emit the most sound. Valve, block, oil pan and camshaft covers are engineered to absorb sound and reduce engine noise. An engine enclosure lined with fire resistant, sound absorbing materials is used to reduce overall engine noise. Additional sound absorbing materials are used under the hood to create a sound barrier and keep engine noise from escaping into the environment.



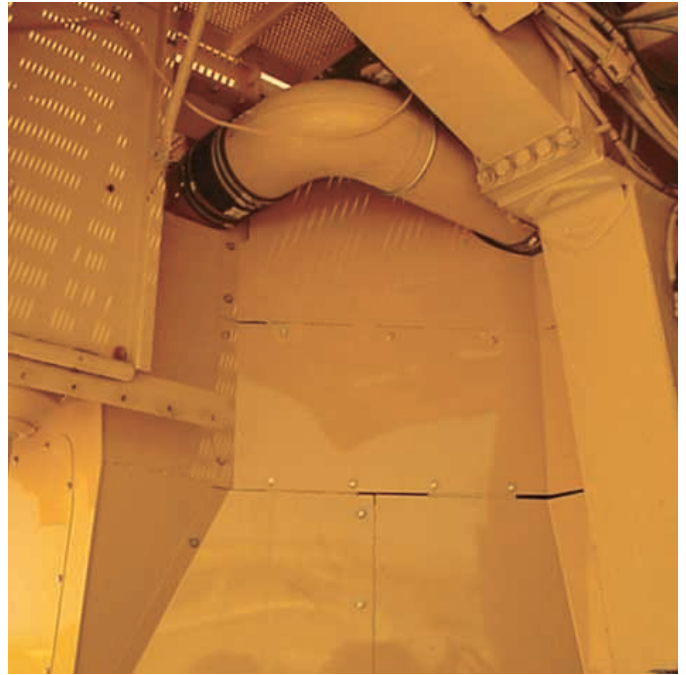
Valve Covers



Engine Camshaft Covers



Oil Pan Cover



Engine Enclosure (left side)



Engine Enclosure (right side)

Exhaust System

The high efficiency muffler and sound barrier help keep the 793C XQ extra quiet.

Muffler. There is a direct correlation between the volume of the muffler and the sound emitted by the muffler. A high efficiency muffler, designed with more than twice the volume of the standard muffler, is used on the 793C XQ to substantially reduce exhaust sound levels. The design features dual inlets and single outlet for optimum sound reduction. The muffler is enclosed in a specially engineered sound barrier housing to further contain exhaust sound emissions. A specially designed muffler mounting with isolation mounts is used to reduce vibration.



High Efficiency Muffler



Muffler Housing and Walkway



Muffler Housing and Walkway

Structures and Driveline

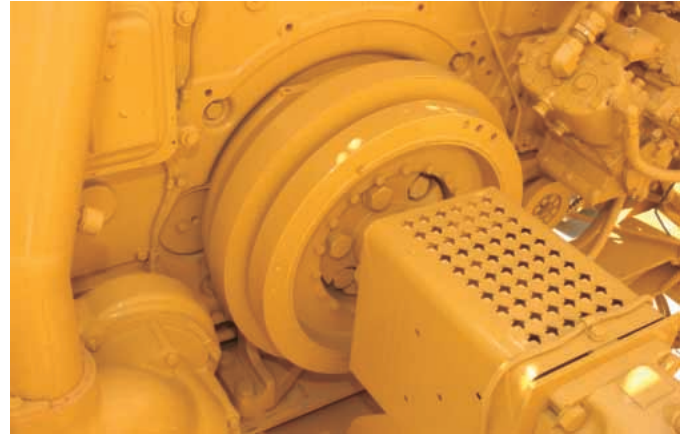
Sound barrier and damping materials dampen vibration and reduce structural noise for a quieter ride.

Structures. The Cat 793C XQ sound treatment package was designed from the ground up using a complete design approach since the addition of sound treatments could increase component weight and require structural changes. Caterpillar used static and dynamic finite element analysis of the frame and structures to ensure sound treatments would not compromise structural durability of the truck during redesign of the engine, cooling system, exhaust system and driveline.



Structural Durability

Driveline. Innovative sound barrier and damping materials, added to driveline components, effectively dampen vibration and reduce traveling structural noise from the driveline.



Quieter Driveline

Serviceability

Designed with serviceability in mind to keep your mining truck on the haul roads.

Service Access. The sound suppression system was designed with the service technician in mind. Sound treatments were engineered for easy access to daily service and maintenance points to keep the 793C XQ on the haul roads.



Engine Enclosure Service Access

Snap Retainers. Snap retainers allow easy assembly, disassembly and replacement of sound suppression materials.



Easily Serviceable Sound Suppression

Engine

Engine Model	Cat 3516B HD EUI	
Gross Power	1711 kW	2,294 hp
Flywheel Power	1611 kW	2,160 hp
Net Power – Cat	1611 kW	2,160 hp
Net Power – ISO 9249	1611 kW	2,160 hp
Net Power – SAE J1349 (6/95)	1611 kW	2,160 hp
Net Power – EEC 80/1269	1611 kW	2,160 hp
Bore	170 mm	6.7 in
Stroke	215 mm	8.5 in
Displacement	78 L	4,760 in ³

- Net power advertised is the power available at rated speed of 1600 rpm, measured at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- Ratings based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 Hg) dry barometer. Power based on fuel having API gravity of 35 at 16° C (60° F), LHV of 42 780 kJ/kg (18,390 Btu/lb), and density of 838.9 g/L (7.001 lb/gal) when engine used at 30° C (86° F).
- Automatic derate included in electronic controls. No engine derating required up to 2591 m (8,500 ft) altitude.
- Compliant with U.S. Environmental Protection Agency Tier 1 emissions standards.

Weights – Approximate

Gross Machine Operating Weight	383 743 kg	846,000 lb
Chassis Weight	121 018 kg	266,800 lb
Body Weight – MSD	31 354 kg	69,124 lb

- Chassis weight with hoist, body mounting group and tires.
- Body weight varies depending on how body is equipped.
- Maximum material density 1.70 tonnes/LCY (2866 lb/LCY)

Operating Specifications

Nominal Payload Capacity	218 tonnes	240 tons
SAE (2:1) Capacity	153 m ³	200 yd ³
Top Speed – Loaded	21.5 kph	13.5 mph
Steer Angle	36°	
Turning Radius – Front	28.4 m	93.2 ft
Maximum Capacity Struck (SAE)	185 m ³	242 yd ³
Turning Circle Clearance Diameter	32.9 m	108 ft

- With MSD II body.

Transmission

Forward 1	11.8 kph	7.3 mph
Forward 2	15.9 kph	9.9 mph
Forward 3	21.5 kph	13.4 mph
Forward 4	39 kph	18.1 mph
Forward 5	39.4 kph	24.5 mph
Forward 6	54.3 kph	33.7 mph
Reverse	10.9 kph	6.8 mph

- Maximum travel speeds with 40.00R57 tires.

Final Drives

Differential Ratio	1.8:1
Planetary Ratio	16:1
Total Reduction Ratio	28.8:1

Suspension

Effective Cylinder Stroke – Front	318 mm	12.5 in
Effective Cylinder Stroke – Rear	165 mm	6.5 in
Rear Axle Oscillation	4.9°	

Brakes

Brake Surface – Front	224 317 cm ²	34,769 in ²
Brake Surface – Rear	224 317 cm ²	34,769 in ²

- Meets J-ISO 3450 JAN88, ISO 3450-1996 brake standards based on maximum operating weight up to 383 743 kg (846,000 lb).

Body Hoists

Pump Flow – High Idle	826 L/min	218 gal/min
Body Raise Time – High Idle	20.25 Seconds	
Body Lower Time – High Idle	19.26 Seconds	
Body Power Down – High Idle	17.51 Seconds	
Body Lower Time – Low Idle	19.26 Seconds	
Body Power Down – Low Idle	19.25 Seconds	

Weight Distributions – Approximate

Front Axle – Empty	47%
Rear Axle – Empty	53%
Front Axle – Loaded	33.3%
Rear Axle – Loaded	66.7%

Capacity – Dual-slope – 100% fill factor

Heaped 2:1 (SAE)	129 m ³	169 yd ³
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Capacity – Flat Floor – 100% fill factor

Heaped 2:1 (SAE)	148 m ³	193 yd ³
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Service Refill Capacities

Fuel Tank	4467 L	1,180 gal
Cooling System	775 L	205 gal
Crankcase	291 L	77 gal
Differentials and Final Drives	1022 L	270 gal
Steering Tank	130 L	34 gal
Steering System (Includes Tank)	190 L	50 gal
Brake/Hoist Hydraulic Tank	566 L	150 gal
Brake/Hoist System (Includes Tank)	1137 L	300 gal
Torque Converter/Transmission Sump	102 L	27 gal
Torque Converter/Transmission System (Includes Sump)	227 L	60 gal
Fan Hydraulic Tank	69 L	18.3 gal

ROPS

ROPS Standards

- ROPS (Rollover Protective Structure) for cab offered by Caterpillar meets SAE J1040 APR88, SAE J231 JAN81, ISO 3471-1994, ISO 3449-1992 Level II ROPS criteria.
- FOPS (Falling Objects Protective Structure) for cab offered by Caterpillar meets ISO 3449-1992 Level II FOPS criteria.

Sound

Sound Standards

- The static spectator sound power level measured according to the test procedures and conditions specified in ISO 6393 is approximately 110 dB(A).
- The dynamic sound power level measured according to the test procedures specified in ISO 6395 is approximately 115 dB(A).
- Actual recorded data during mining operations has produced dynamic sound power levels between 112 dB(A) uphill loaded and 117 dB(A) downhill loaded.
- Hearing protection may be needed when operating with an open operator station and cab (when not properly maintained or doors/windows open) for extended periods or in noisy environment.

Steering

Steering Standards

- Normal and secondary systems meet SAE J1511 OCT90, and ISO 5010-1984 standards up to gross machine operating weight 383 743 kg (846,000 lb).

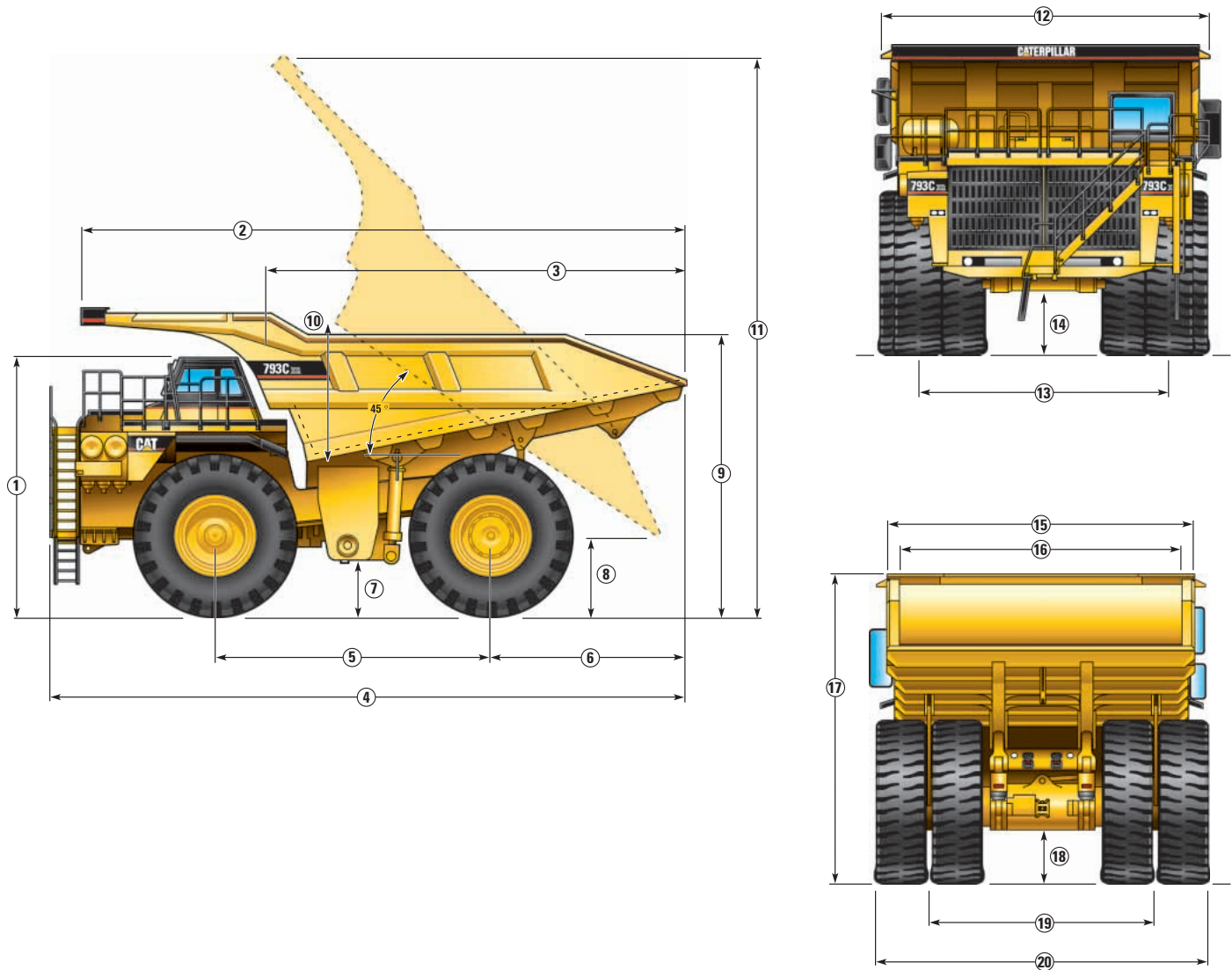
Tires

Standard Tire	40.00R57
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- Productive capabilities of the 793C XQ truck are such that, under certain job conditions, TKPH (TMPH) limits of the tires could be exceeded and, therefore, affect production.
- Caterpillar recommends the user evaluate all job conditions and consult the tire manufacturer to make proper tire selection.

Dimensions

All dimensions are approximate. With MSD II body.



1	Height to Top of ROPS	5638 mm	222 in
2	Overall Body Length	13 300 mm	524 in
3	Inside Body Length	8736 mm	344 in
4	Overall Length	13 584 mm	535 in
5	Wheelbase	5900 mm	232 in
6	Rear Axle to Tail	3796 mm	149 in
7	Ground Clearance	1132 mm	45 in
8	Dump Clearance	1417 mm	56 in
9	Loading Height – Empty	5832 mm	230 in
10	Inside Body Depth – Max	2980 mm	117 in
11	Overall Height – Body Raised	13 219 mm	520 in

12	Operating Width	7713 mm	304 in
13	Centerline Front Tire Width	5628 mm	222 in
14	Engine Guard Clearance	1352 mm	53 in
15	Outside Body Width	6846 mm	270 in
16	Inside Body Width	6556 mm	258 in
17	Front Canopy Height	6630 mm	261 in
18	Rear Axle Clearance	1026 mm	40 in
19	Centerline Rear Dual Tire Width	5003 mm	197 in
20	Overall Tire Width	7523 mm	296 in

Standard Equipment

Standard equipment may vary. Consult your Caterpillar dealer for details.

Air Line Dryer	Ether Starting Aid (Automatic)
Alarm, Backup	Ground Level Engine Shutdown
Alternator, 105 Ampere	Low Altitude Certified
Antifreeze, Extended Life Coolant	Multi-point Oil Pressure Sensing
Auto Lubrication System (Lincoln)	Turbocharging (4) Aftercooled
Auxiliary “Buddy” Dumping Quick Connect	Fast-fill Fuel System (Wiggins)
Auxiliary Steering Quick Connect (Towing)	Ground Level
Batteries, 12V (2), 93 Amp-hour	Battery Disconnect
Brake System	VIMS Data Port
Automatic Retarder Control	High Speed Crankcase Oil Change (Wiggins)
Brake Release Motor (Towing)	Lighting System
Engine Overspeed Protection	Back-up and Hazard Lights
Oil-cooled, Multiple-disc, Front and Rear	Directional Signals (Front and Rear LED)
Cab, ROPS, Insulated/Sound Suppressed	Engine Compartment
Air Cleaner Service Indicator	Front Stair Access and Service Deck
Air Conditioner	Headlights, with Dimmer
Ashtray/Cigarette Lighter	Stop and Tail Lights (LED)
Coat Hook	Reservoirs (Separate)
Diagnostic Connection Port	Brake
Dome Courtesy Light	Converter
Electric Engine Control Fault Indicator	Cooling Fan
Electric Hour Meter/Tachometer	Hoist/Steering/Transmission
Entertainment Radio Ready	Rock Ejectors
5 Amp Converter	Sound Suppression
Antenna	Sound Suppressed Engine Compartment
Speakers	Silent Stream Grill
Wiring Harness	Dual Cooling Fans
Heater/defroster, 11 070 kCal (43,930 Btu)	Sound Reduction Electronic Technology
Hoist, Body Control (Electric)	Body-up Sound Control
Horn	Top Gear Sound Control
Quad-Gauge Panel	Quiet Reverse Sound Control
Air Pressure	Sound Reduced Muffler Arrangement
Brake Oil Temperature	Stairway, 600 mm (23.5 in) per Australian Standard 1657
Engine Coolant Temperature	Supplemental Steering (Automatic)
Fuel Level	Tie Down Eyes
Seat Belt, 75 mm (3 in) wide retractable	Tow Hooks, Front
Speedometer	Tow Pin, Rear
Steering Wheel, Tilt, Padded, Telescopic	Traction Control System
Storage Compartment	Transmission
Tachometer	6-speed, Auto Powershift with Electronic Control (TCC)
Tinted Glass	Body-up Reverse Neutralizer
Transmission Gear Indicator	Body-up Shift Inhibitor
VIMS Keypad	Controlled Throttle Shifting
VIMS Message Center with Universal Gauge	Directional Shift Management
Window, Electric (Operator Only)	Downshift/Reverse Shift Inhibitor
Windshield Wiper, Intermittent Control and Washer	Individual Clutch Modulation
Converter, 12-volt Electrical	Lock-up Torque Converter
Driveline Operator Safety Guard	Neutral Coast Inhibitor
Electrical System, 24V, 15A	Neutral Start Switch
Engine – Caterpillar 3516B HD EUI Diesel Engine	Programmable Top Gear
Air Cleaner with Pre-cleaner (4)	Vital Information Management System (VIMS) with
Automatic Starter Protection	Payload Monitor and MAX Payload and Speed Monitor
Elevated Low Idle Control	

Optional Equipment

Optional equipment may vary. Consult your Caterpillar dealer for details.

Body, Dual Slope, 31 797 kg (70,100 lb)

Body, Dual Slope Attachments:

Extensions, Body Side, 1416 kg (3,121 lb)

Extension, Body Wraparound Tail, 1005 kg (2,215 lb)

Liner, Entire Body, 11 076 kg (24,418 lb)

Liner, Body Tail Extension, 442 kg (975 lb)

Body, Flat Floor, 0 kg (0 lb)

Body, Flat Floor Attachments:

Liner, Body, 0 kg (0 lb)

Liner, Grid Rear 1/3 Sidewall, 254 kg (560 lb)

Liner, Solid Rear 1/3, 1905 kg (4200 lb)

Fire Extinguisher, Portable, 0 kg (0 lb)

Footrest, Operator, 4 kg (8 lb)

Hose, Cab Clean-out, 7 kg (15 lb)

Hub Odometer, Kilometers, 7 kg (15 lb)

Hub Odometer, Miles, 7 kg (15 lb)

Lights, Rear, 29 kg (64 lb)

Road Analysis Control (RAC), 6 kg (13 lb)

Tires

Spare Rim with 6 in Flange

29 × 57 in used w/40.00R57 and 46/90R57 Tires,
1540 kg (3,400 lb)

32 × 57 in used w/40.00R57 and 46/90R57 Tires,
1610 kg (3,542 lb)

Spare Rims with 5 in Flange

32 × 57 in used w/44/80R57 XDR Tires, 0 kg (0 lb)

Tires for Rims with 6 in Flange

40.00R57 MX XDRB4**E4, 21 000 kg (46,200 lb)

40.00R57 GY RL-4B 4SL**, 22 100 kg (48,750 lb)

40.00R57 BS VELS E1A**E4, 21 400 kg (47,100 lb)

Mandatory Equipment

Must choose from each category. Consult your Caterpillar dealer for more information.

Body Mounting Groups

Dual Slope, 328 kg (742 lb)

Flat Floor, 426 kg (940 lb)

Mine Specific Design (MSD), 425 kg (937 lb)

Exhaust System

Muffler, 188 kg (414 lb)

Fuel Tank

4466 L (1180 gal), 1715 kg (3,780 lb)

Operator Environment

Seat, Cat Comfort Air Suspension, 59 kg (131 lb)

Seat, Isringhausen Air Suspension, 57 kg (125 lb)

Companion Seat, Cat Air Suspension, 37 kg (82 lb)

Companion Seat, IRSI Air Suspension, 37 kg (81 lb)

Companion Seat, Cat Non-suspension, 25 kg (56 lb)

Front Flipdown Visor, 1 kg (3 lb)

Front Retractable Visor, 2 kg (5 lb)

Radiator

Guard, Heavy Duty, 73 kg (162 lb)

Rear Axle

Standard, includes (6) 29 × 57 in Rims with 6 in Flange
(Uses 40.00R57 and 46/90R57 tires) 33 124 kg
(73,026 lb)

Wide, 5 in Flange, includes (6) 32 × 57 in Rims
(Uses 44/80R57 tires) 33 670 kg (74,230 lb)

Wide, 6 in Flange includes (6) 32 × 57 in Rims
(Uses 40.00R57 (except Bridgestone) and 46/90R57 tires)
33 779 kg (74,470 lb)

Starting System – Air

Vane Ingersoll, 131 kg (288 lb)

Turbine TDI, 131 kg (288 lb)

Turbine Ingersoll, 135 kg (297 lb)

793C XQ Mining Truck

For more complete information on Cat products, dealer services,
and industry solutions, visit us on the web at www.cat.com

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Materials and specifications are subject to change without notice.
Featured machines in photos may include additional equipment.
See your Caterpillar dealer for available options.

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