793F Mining Truck

Engine Specifications

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Nominal Payload Capacity</th>
<th>Gross Operating Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat® C175-16</td>
<td>226.8 tonnes 250 tons</td>
<td>386 007 or 390 089 kg</td>
</tr>
<tr>
<td>1976 kW 2,650 hp</td>
<td></td>
<td>(851,000 or 860,000 lb)</td>
</tr>
</tbody>
</table>
Features

Emissions
Meets U.S. EPA Tier 4 Final emission standards, and features the Caterpillar Selective Catalytic Reduction (SCR) system that provides the least Total Fluid Consumption cost with greater reliability.

High Performance Engine
The Cat C175-16 engine offers you the perfect balance between power, robust design and economy.

Enhanced Serviceability
Improved serviceability points and grouped service locations mean your truck spends more time on the haul road than in the shop.

Robust Braking
Cat oil-cooled, multiple disc brakes on all four corners offer you exceptional, fade-resistant braking.

Power Shift Transmission
A smooth shifting six speed transmission using ECPC gives operators a comfortable ride, constant power and improved fuel efficiency. The transmission includes Advanced Productivity Electronic Control Strategy (APECS), which provides a smoother ride for the operator, less spillage on the haul road, and faster machine acceleration.

Reliable Mechanical Drive System
The 793F’s power train gives you the fastest truck on steep grades, poor underfoot conditions and on haul roads with high rolling resistance.

Comfortable Cab
Operators find the large, spacious cab offers excellent visibility and exceptional comfort.

Truck Body
A variety of Caterpillar designed and built bodies provide you optimal performance and reliability.

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Whether you’re hauling copper, coal, gold, iron ore or overburden the 793F provides you with the best in class cost per unit of production. Including the improvements in safety, productivity, serviceability and comfort you will see why the 793F is the industry leader of its class. Combine these features with unmatched dealer support and you will see why more mine sites choose Cat Mining Trucks for their production needs.
How Does Selective Catalytic Reduction Work?
Diesel Exhaust Fluid (DEF) is injected in controlled amounts into the engine exhaust stream. At elevated exhaust temperatures, urea in DEF is converted to ammonia. The ammonia reacts with Nitrous Oxide (NOₓ) in the exhaust in the presence of the SCR catalyst and the reaction converts NOₓ into harmless nitrogen and water.

Diesel Exhaust Fluid
DEF is a non-hazardous solution made up of urea and deionized water that has been commonly used in the on-highway industry for years.
• Similar infrastructure to diesel fuel.
• Requires specific storage container materials and controls to enable thaw and acceptable life.
• Standard ground level DEF fill on 793F.
Performance
• The Tier 4 Final 793F maintains the high top speed capability and productivity of the Tier 2 793F.
• Measured up to 5 percent reduction in diesel fuel consumption.
• Provides 93 percent reduction in Particulate Matter (PM) and 62 percent reduction in NOx.
• Modular design is built on the reliability and durability of the Tier 2 793F.
• Delivers reduced sound levels compared to the Tier 2 793F.
• Closed loop feedback system ensures that Tier 4 Final aftertreatment system is performing at the optimal level.
• Tier 4 Final 793F has increased engine life targets from 3 406 870 liters (900,000 gallons) burned to 3 785 411 liters (1,000,000 gallons) burned before replacement.

Clean Emissions Module (CEM) 1
• Houses catalysts, mixing tube, NOx sensors and DEF injectors.
• Located on the right hand platform for easy accessibility.
• Modular design minimizes impact to engine R&I.
• Exhaust or Body Heat options are available.

Pump, Electronics, and Tank Unit (PETU) 2
• Consists of DEF tank, pumps, controllers, and ground level fill.
• 234.7 L (62 gal) DEF tank integrated in the 2839 L (750 gal) fuel tank.
• DEF tank sized to be refilled when diesel is refilled.
• System effectively manages DEF temperatures via heated DEF tank and insulated DEF lines.

Serviceability
• Minimal impact to base-machine service intervals with no impact to the standard 500-hour and 1,000-hour planned maintenance (PM) activities.
• Tier 4 Final component intervals synchronized to minimize downtime.
• Engine oil interval extended from 500 hours to 1,000 hours due to low soot production (dependent on site specific evaluation and approval).
• On-board Tier 4 Final diagnostics integrated in to the machine’s Vehicle Information Management System (VIMS).
• CEM unit is easily accessible from right hand platform allowing easy access to DEF injectors and NOx sensors.
• CEM catalyst array is removable to minimize cost of ownership.
• Ground level fast-fill solution reduces refilling time.

Additional Information
• Available only for North American market.
• For detailed Tier 4 Final 793F machine specifications reference AEHQ8019.
**Engine**

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Cat C175-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque Rise</td>
<td>20%</td>
</tr>
<tr>
<td>Bore</td>
<td>175 mm (6.9 in)</td>
</tr>
<tr>
<td>Stroke</td>
<td>220 mm (8.7 in)</td>
</tr>
<tr>
<td>Displacement</td>
<td>85 L (5,187 in³)</td>
</tr>
</tbody>
</table>

- Power ratings apply at 1,750 rpm when tested under the specified condition for the specified standard.
- Ratings based on SAE J1995 standard air conditions of 25°C (77°F) and 99 kPa (29.61 Hg) dry barometer. Power based on fuel having API gravity of 35 at 16°C (60°F) and an LHV of 42.780 kJ/kg (18,390 Btu/lb) when engine used at 30°C (86°F).
- No engine derating required up to 3200 m (10,500 ft) altitude.
- Meets Tier 4 Final emission standards.

**Weights – Approximate**

| Operating Chassis Weight | 124 586 kg (274,587 lb) |
| Body Weight Range | 26 862-47 627 kg (59,220-105,000 lb) |

- Chassis weight with 100 percent fuel, hoist, body mounting group, rims and 50/80 R57 tires.
- Body weight varies depending on how body is equipped.

**Operating Specifications**

| Nominal Payload Capacity | 226.8 tonnes (250 tons) |
| Top Speed – Loaded | 60 km/h (37.3 mph) |
| Steer Angle | 36 Degrees |
| Turning Diameter – Front | 28 m (93 ft) |
| Turning Circle Clearance Diameter | 33 m (107 ft) |
| Target Gross Machine Weight | 386 007 or 390 089 kg (851,000 or 860,000 lb) |

- Refer to the Cat Mining Truck 10/10/20 Overload Policy for maximum gross machine weight limitations.

**Final Drives**

| Differential Ratio | 1.8:1 |
| Planet Ratio | 16:1 |
| Total Reduction Ratio | 28.8:1 |

**Transmission**

| Forward 1 | 12.9 km/h (8 mph) |
| Forward 2 | 17.4 km/h (10.8 mph) |
| Forward 3 | 23.8 km/h (14.8 mph) |
| Forward 4 | 32.1 km/h (19.9 mph) |
| Forward 5 | 43.6 km/h (27.1 mph) |
| Forward 6 | 60 km/h (37.3 mph) |
| Reverse | 11.8 km/h (7.3 mph) |

**Suspension**

| Effective Cylinder Stroke – Front | 130.5 mm (5.1 in) |
| Effective Cylinder Stroke – Rear | 105.5 mm (4.2 in) |
| Rear Axle Oscillation | ±4.9 degrees |

**Body Hoists**

| Pump Flow – High Idle | 846 L/min (224 gal/min) |
| Relief Valve Setting – Raise | 20 370 kPa (2,955 psi) |
| Body Raise Time – High Idle | 19 Seconds |
| Body Lower Time – Float | 20 Seconds |
| Body Power Down – High Idle | 17.5 Seconds |

- Twin, two-stage hydraulic cylinders mounted outside main frame, double-acting cylinders in second stage.
- Power raise in both stages, power down in second stage.
- Automatic body lower modulation reduces impact on frame.

**Brakes**

| Outside Diameter | 874.5 mm (34.5 in) |
| Brake Surface – Front | 89 817 cm² (13,921 in²) |
| Brake Surface – Rear | 34 500 cm² (20,847 in²) |

**Weight Distributions – Approximate**

| Front Axle – Empty | 49% |
| Rear Axle – Empty | 51% |
| Front Axle – Loaded | 33% |
| Rear Axle – Loaded | 67% |
Mining Truck Specifications

Capacity – HP – 100% Fill Factor

<table>
<thead>
<tr>
<th>Struck</th>
<th>112.6-151 m³</th>
<th>147-197.5 yd³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heaped (SAE 2:1)*</td>
<td>162-191 m³</td>
<td>212-250 yd³</td>
</tr>
</tbody>
</table>

* Contact your local Cat dealer for body recommendation.


Service Refill Capacities

<table>
<thead>
<tr>
<th>Fuel Tank</th>
<th>2839 L</th>
<th>750 gal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling System</td>
<td>1074 L</td>
<td>284 gal</td>
</tr>
<tr>
<td>Crankcase</td>
<td>312 L</td>
<td>82 gal</td>
</tr>
<tr>
<td>Rear Axle Housing</td>
<td>984 L</td>
<td>260 gal</td>
</tr>
<tr>
<td>Steering System (Includes Tank)</td>
<td>290 L</td>
<td>77 gal</td>
</tr>
<tr>
<td>Brake/Hoist System (Includes Tank)</td>
<td>1315 L</td>
<td>347 gal</td>
</tr>
<tr>
<td>Torque Converter/Transmission Sump</td>
<td>102 L</td>
<td>27 gal</td>
</tr>
<tr>
<td>Torque Converter/Transmission System (Includes Sump)</td>
<td>209 L</td>
<td>55 gal</td>
</tr>
<tr>
<td>Diesel Exhaust Fluid Tank</td>
<td>234.7 L</td>
<td>62 gal</td>
</tr>
</tbody>
</table>

ROPS

ROPS Standards


Sound

Sound Standards

- The operator sound pressure level measured according to work cycle procedures specified in ISO 6394:2008 and ISO 6396:2008 is 74 dB(A) for cab offered by Caterpillar, when properly installed and maintained and tested with doors and windows closed.
- 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 a noisy environment.

Steering

Steering Standards ISO 5010:2007
793F Mining Truck Specifications

Dimensions

All dimensions are approximate.
Shown with 162 m³ (212 yd³) HP Body.

<table>
<thead>
<tr>
<th></th>
<th>Dimension</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Height to Top of ROPS</td>
<td>5712 mm</td>
<td>18 ft 9 in</td>
</tr>
<tr>
<td>2</td>
<td>Overall Length</td>
<td>13 360 mm</td>
<td>44 ft 10 in</td>
</tr>
<tr>
<td>3</td>
<td>Wheelbase</td>
<td>5905 mm</td>
<td>19 ft 5 in</td>
</tr>
<tr>
<td>4</td>
<td>Rear Axle to Tail</td>
<td>3997 mm</td>
<td>13 ft 2 in</td>
</tr>
<tr>
<td>5</td>
<td>Ground Clearance</td>
<td>1041 mm</td>
<td>3 ft 5 in</td>
</tr>
<tr>
<td>6</td>
<td>Dump Clearance</td>
<td>1301 mm</td>
<td>5 ft 4 in</td>
</tr>
<tr>
<td>7</td>
<td>Loading Height – Empty</td>
<td>6181 mm</td>
<td>20 ft 4 in</td>
</tr>
<tr>
<td>8</td>
<td>Overall Height – Body Raised</td>
<td>13 710 mm</td>
<td>45 ft</td>
</tr>
<tr>
<td>9</td>
<td>Centerline Front Tire Width</td>
<td>5609 mm</td>
<td>18 ft 5 in</td>
</tr>
<tr>
<td>10</td>
<td>Engine Guard Clearance</td>
<td>1325 mm</td>
<td>4 ft 4 in</td>
</tr>
<tr>
<td>11</td>
<td>Overall Canopy Width</td>
<td>8563 mm</td>
<td>28 ft 1 in</td>
</tr>
<tr>
<td>12</td>
<td>Outside Body Width</td>
<td>7942 mm</td>
<td>26 ft 1 in</td>
</tr>
<tr>
<td>13</td>
<td>Inside Body Width</td>
<td>7334 mm</td>
<td>24 ft 1 in</td>
</tr>
<tr>
<td>14</td>
<td>Front Canopy Height</td>
<td>7074 mm</td>
<td>23 ft 3 in</td>
</tr>
<tr>
<td>15</td>
<td>Rear Axle Clearance</td>
<td>1130 mm</td>
<td>3 ft 9 in</td>
</tr>
<tr>
<td>16</td>
<td>Centerline Rear Dual Tire Width</td>
<td>4963 mm</td>
<td>16 ft 3 in</td>
</tr>
<tr>
<td>17</td>
<td>Overall Tire Width</td>
<td>7605 mm</td>
<td>24 ft 11 in</td>
</tr>
</tbody>
</table>
To determine gradeability performance: Read from gross weight down to the percent of total resistance. Total resistance equals actual percent grade plus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-resistance point, read horizontally to the curve with the highest obtainable gear, then down to maximum speed. Usable rimpull will depend upon traction available and weight on drive wheels.

**Typical Field Empty Weight**

**Target Gross Machine Weight**

390 089 kg (860,000 lb)

---

1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear
5 – 5th Gear
6 – 6th Gear

E – Empty
L – Loaded

* at sea level

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**Torque Converter Drive**

**Direct Drive**
To determine retarding performance: Add lengths of all downhill segments and, using this total, refer to proper retarding chart. Read from gross weight down to the percent effective grade. Effective grade equals actual % grade minus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-effective grade point, read horizontally to the curve with the highest obtainable gear, then down to maximum descent speed brakes can properly handle without exceeding cooling capacity. The following charts are based on these conditions: 32° C (90° F) ambient temperature, at sea level, with 46/90R-57 tires.

**NOTE:** Select the proper gear to maintain engine rpm at the highest possible level, without overspeeding the engine. If cooling oil overheats, reduce ground speed to allow transmission to shift to the next lower speed range.
793F Mining Truck Specifications

### 793F Standard Retarding – 450 m (1,475 ft)*

**Typical Field Empty Weight**

**Target Gross Machine Weight**
390,089 kg (860,000 lb)

1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear
5 – 5th Gear
6 – 6th Gear

* at sea level

---

### 793F Standard Retarding – 1500 m (4,900 ft)*

**Typical Field Empty Weight**

**Target Gross Machine Weight**
390,089 kg (860,000 lb)

1 – 1st Gear
2 – 2nd Gear
3 – 3rd Gear
4 – 4th Gear
5 – 5th Gear
6 – 6th Gear

* at sea level

---

* at sea level
To determine retarding performance: Add lengths of all downhill segments and, using this total, refer to proper retarding chart. Read from gross weight down to the percent effective grade. Effective grade equals actual % grade minus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-effective grade point, read horizontally to the curve with the highest obtainable gear, then down to maximum descent speed brakes can properly handle without exceeding cooling capacity. The following charts are based on these conditions: 32° C (90° F) ambient temperature, at sea level, with 46/90R-57 tires.

**NOTE:** Select the proper gear to maintain engine rpm at the highest possible level, without overspeeding the engine. If cooling oil overheats, reduce ground speed to allow transmission to shift to the next lower speed range.
**793F Mining Truck Specifications**

### 793F Additional Retarding – 450 m (1,475 ft)*

- **GROSS WEIGHT**
  - Typical Field Empty Weight
  - Target Gross Machine Weight 390 089 kg (860,000 lb)
  - 1 – 1st Gear
  - 2 – 2nd Gear
  - 3 – 3rd Gear
  - 4 – 4th Gear
  - 5 – 5th Gear
  - 6 – 6th Gear
  - * at sea level

### 793F Additional Retarding – 1500 m (4,900 ft)*

- **GROSS WEIGHT**
  - Typical Field Empty Weight
  - Target Gross Machine Weight 390 089 kg (860,000 lb)
  - 1 – 1st Gear
  - 2 – 2nd Gear
  - 3 – 3rd Gear
  - 4 – 4th Gear
  - 5 – 5th Gear
  - 6 – 6th Gear
  - * at sea level
Standard Equipment may vary. Consult your Cat dealer for details.

**ELECTRICAL**
- Alarm, Back-up
- Brushless Alternator, 225 ampere
- Batteries, 210-amp hour, low maintenance, 12-volt (2)
- Converter, 12-volt electrical
- Electrical System, 24-volt, 10, 15 and 20 amp
- Jump Start Receptacle
- Lighting System
  - Back-up and Hazard Lights
  - Directional Signals (front and rear LED)
  - Front Stair Access/Service Deck
  - Stop/Tail Lights (LED)
- Engine Compartment
- VIMS, Blue Light (LED)
- Headlights, with Lo-Hi Beam Selector
- Brake and Retarder Light Status Ready

**OPERATOR ENVIRONMENT**
- Air Conditioner with Automatic Climate Control
- 12-volt DC Power Supply (3)
- Coat Hook
- Cup Holder
- Diagnostic Connection Port
- Dome Courtesy Light
- Entertainment Radio Ready
- 5 amp Converter, Speakers and Wiring Harness
- Gauge/Indicators
  - Gauge Panel:
    - Transmission Fluid Temperature
    - Brake Oil Temperature
    - Engine Coolant Temperature
    - Fuel Level
    - Torque Converter Oil Temperature
  - Electric Engine Control Fault Indicator
  - Electric Hour Meter
  - Speedometer
  - Tachometer
  - Diesel Exhaust Fluid Level Indicator
- Heater/Defroster, 11 070 kCal (45,930 Btu)
- Hoist, Body Control (electric)
- Horn
- Integrated Object Detection System
- Heated Mirrors, Right and Left
- ROPS Cab, Insulated/Sound Suppressed
- Seat, Operator, Air Suspension
- Seatbelt, Operator, Three Points, Retractable
- Seatbelt, Trainer, Two Points, Retractable
- Stairway and Walkway Access, 600 mm (23.6 in)
- Steering Wheel, Tilt, Padded, Telescopic
- Storage Compartments
- Tinted Glass
- Transmission Gear Indicator
- VIMS Message Center with Advisor
- Window, Operator, Electric Powered
- Windshield Wiper, Intermittent Control and A/C Condenser Filled Washer Bottle
- Plug and Play Radio 12V Unswitched Power Supply Outlets
- Fire Suppression Ready Cab

**POWER TRAIN**
- Cat C175-16 meets Tier 4 Final emission standards
  - Air Cleaner with Preseparator (4)
  - Air-to-Air Aftercooler (ATAAC)
  - Automatic Starter Protection
  - Ether Starting Aid (automatic)
  - Multi-Point Oil Pressure Sensing
  - Turbocharging (4)/Aftercooled
- Engine Aftertreatment System
  - Pump Electronic Tank Unit (PETU)
  - Clean Emissions Module (CEM)
- Braking System
  - Automatic Retarder Control, Adjustable
  - Brake Release Motor (towing)
  - Engine Overspeed Protection
  - Extended Life Brake Disc Material
  - Oil-cooled, Multi-disc (front and rear)
  - Service, Retarding, Parking, Secondary
  - Park Brake Integrated with Gear Selector
  - Secondary, Emergency
- Advanced Productivity Electronic Controls Strategy (APECS)
- Transmission
  - 6-speed, Automatic Powershift with Electronic Control (ECPC)
  - Body-up Reverse Neutralizer
  - Body-up Shift Inhibitor
  - Controlled Throttle Shifting
  - Directional Shift Management
  - Downshift/Reverse Shift Inhibitor
  - Individual Clutch Modulation
  - Lock-up Torque Converter
  - Neutral Coast Inhibitor
  - Neutral Start Switch
  - Programmable Top Speed
  - Pre-lubrication/Engine
  - Rear Axle Continuous Lubrication/Filtration

(continued on next page)
Standard Equipment (continued)

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

OTHER STANDARD EQUIPMENT
• Auto Lubrication System with 41 kg (90 lb) barrel, auto shutoff, and grease filter
• Aux “Buddy” Dumping Quick Connect
• Aux Steering Quick Connect (towing)
• Driveline Guard
• Fast Fill Diesel Exhaust Fluid System
• Fast Fill Diesel Fuel System
• Fuel Filter with Water Separator
• Ground Level Battery Lockout
• Ground Level Engine Shut-down
• Ground Level Engine Start Lockout
• Ground Level Transmission Lockout
• Ground Level VIMS Data Port
• Hi-speed Crankcase Oil Change
• Hydraulic Filters, 1,000 hour
• Reservoirs (3 separate)
  – Brake/Hoist, Steering/Fan, Transmission/Converter
  • Rock Ejectors
  • Service Points, Ground Level
  • Sight Level Gauges for Hydraulic/Engine Oil
  • S•O•SSM Sample Ports
  • Supplemental Steering (automatic)
  • Tie Down Eyes
  • Tow Hooks (front)/Tow Pin (rear)
  • Traction Control System
  • Vandalism Protection Locks
  • Vital Information Management System (VIMS)
    – Includes VIMS Payload Monitor with MAX Payload and Speed Manager
  • (Recommend using download cable 127-9797 and PC based software JERD2175. Supplemental software “VIMS Supervisor” YERA1403. Order separately. Computer not provided.)
  • Primary Access Anti-slip High Visibility Demarcations
  • Tie Off Points
  • Rubber-lined Battery Box Lid
  • Portable Fire Extinguisher Mounting
  • SL-V Grease Injectors
  • Fuel Tank Mud Guards

ANTIFREEZE
• Extended Life Coolant to –35° C (–30° F)
Optional Equipment

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

- Additional Retarding for Downhill Hauls
- Body Heat
- Cat Comfort Air Suspension Trainer Seat
- Antifreeze/Coolant Protects to –50° C (–58° F)
- Brake Wear Indicator Gauge
- Cabin Air Precleaner
- Center Tow Bumper Attachment
- Electric Powered Window, Right Side
- Electric Starting System
- Engine Coolant and Oil Heater for Cold Weather Starts
- Additional Lighting
- High Visibility Reflector Group
- Workshop Horn
- Working at Heights
- Emergency Stop
- Four Mirror Package
- Hydraulic Tank Mud Guards
- Engine Delay Shutdown Timer
- Extended Life Wheel Stations
- External Digital Payload Display
- Fast Fill Service Center with Live S•O•S and Keypad
- Cat Comfort Heated Operator Seat
- Hub Odometer (km and miles)
- Portable Fire Extinguisher
- Rear Axle Lubrication Cooler
- Retractable Front Sun Visor
- Rim Guard
- Rims (813 mm/32 in)
- Road Analysis Control (RAC)
- Throttle Lock
- Walkway and Handrail for Rear Cab Access
- Wheel Chocks
- Work Area Vision System (WAVS)

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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