MONTANA
Department of Transportation

MDT-BRG-015 04/23

Montana Department of Transportation
Bridge Bureau
Approved Construction Equipment List

Make:	*Caterpillar*
Model:	*CS78B*
Equipment Type:	*Vibratory Roller*
Contractor Modifications:	*None*

Interstate Approval Conditions

Approval Type	*Crossing Only*
Speed:	*No restriction*
Weight:	*42,631 lb or less*
Traffic:	*Approved with regular traffic*
Location Restrictions:	*No restriction*

Non-Interstate Approval Conditions

Approval Type	*Crossing Only*
Speed:	*No restriction*
Weight:	*42,631 lb or less*
Traffic:	*Approved with regular traffic*
Location Restrictions:	*No restriction*

Comments:

Equipment configuration, weights, and specifications on following pages. Approval does not apply to load posted bridges. Other construction equipment is not allowed to operate on or cross bridge at the same time this equipment is on the bridge. Vibratory system must be turned off while on bridge.



Cat® CS78B

Smooth Drum Vibratory Soil Compactor

The Cat® CS78B features a smooth drum and is ideally suited for granular soil applications.

Comfortable and Ergonomic Operator Station

- Features pivoting seat with integrated multifunction LCD display and control console
- Outstanding visibility to the front and rear of machine
- Low sound levels and vibration for greater operator comfort and productivity

Rear Vision Camera

- The rear vision camera enhances visibility for more complete operator control and safety

Exceptional Propel System

- Built around the exclusive Cat dual pump propel system, two pumps provide separate dedicated flow to drum drive motor and rear axle motor for exceptional gradeability and traction in forward and reverse
- Electronic propel control provides more precise machine control

Virtually Maintenance Free

- Maintenance-free hitch bearings
- Extended maintenance intervals for vibratory system and hydraulic system, providing more uptime and lower maintenance costs

Enhanced Compaction Performance

- More weight at the drum and greater amplitude
- Automated speed control and vibratory system functions make it easy to ensure consistent, high quality compaction

Technologies that Enhance Quality and Productivity

- Exclusive semi-autonomous Command for Compaction technology automates compaction to offer complete process control and help promote more uniform results
- Measurement and documentation technologies help the operator determine when compaction has been complete to specification for greater productivity and uniform compaction quality
- Accelerometer-based (CMV) and exclusive Machine Drive Power (MDP) measurement technologies available

Cat® CS78B Smooth Drum Vibratory Soil Compactor

Standard and Optional Equipment

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

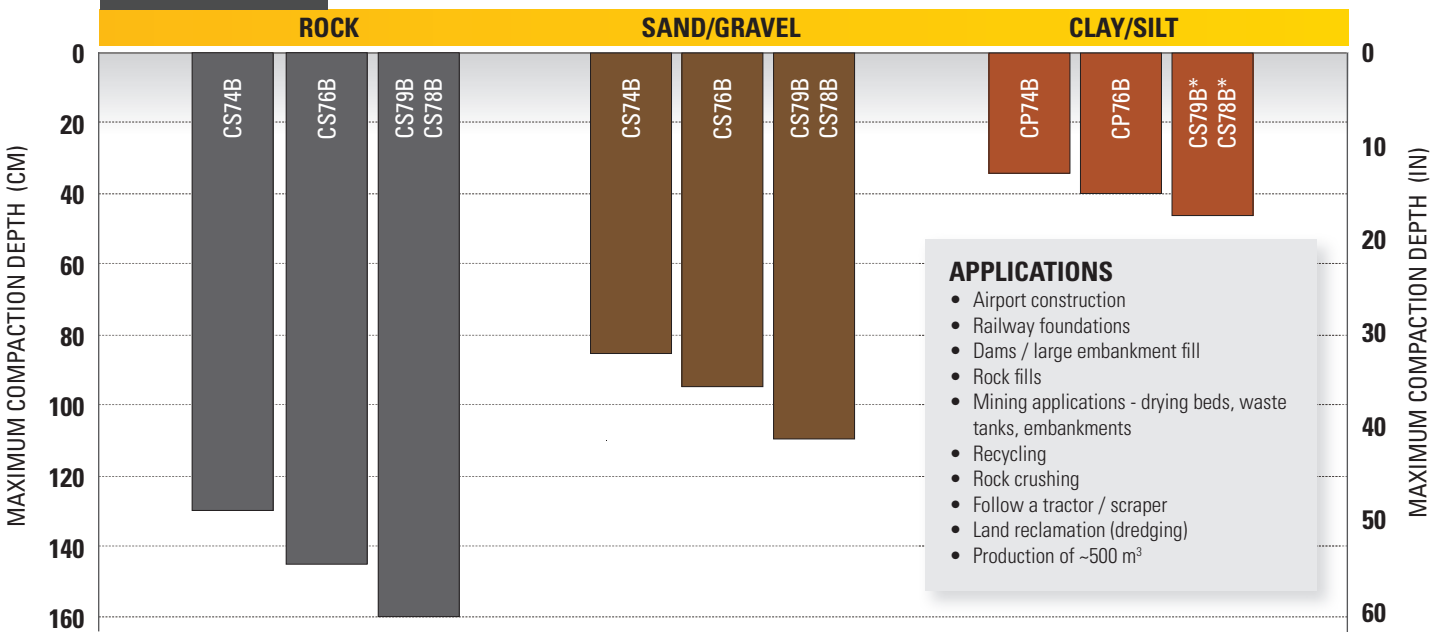
	Standard	Optional
OPERATOR ENVIRONMENT		
ROPS/FOPS Cab with Climate Control, External Rear View Mirrors	✓	
Cloth Adjustable Pivoting Seat with Integrated Console and LCD Display	✓	
Adjustable Tilting Steering Column with Integrated Cup Holders	✓	
Rear Vision Camera with Color Touchscreen Display	✓	
Seat Belt	✓	
12-volt Power Outlet	✓	
Horn, Backup Alarm	✓	
Internal Rear View Mirrors		✓
Sun Visor		✓
Cab Internal Roll-down Sun Screen		✓
VIBRATORY SYSTEM		
Smooth Drum	✓	
Dual Amplitude, Single Frequency	✓	
Dual Pod-Style Eccentric Weight Housings	✓	
Auto-vibe Function	✓	
Front Adjustable Steel Scraper	✓	
Padfoot Shell Kit (oval or square pads available)		✓
Leveling Blade		✓
Dual Adjustable Steel Scrapers		✓
Dual Adjustable Polyurethane Scrapers		✓

	Standard	Optional
POWERTRAIN		
Cat® C4.4 Diesel Engine	✓	
Air Cleaner, Dual Element	✓	
Three-Speed Throttle Switch, Eco-mode and Automatic Speed Control	✓	
Dual Propel Pumps; One for Drum Drive, One for Rear Axle	✓	
Fuel Filter, Water Separator, Priming Pump, Water Indicator	✓	
Tilting Radiator/Hydraulic Oil Cooler	✓	
Dual Braking System	✓	
Two-speed Hydrostatic Transmission	✓	
Transmission Guard		✓
TECHNOLOGY		
Measure - Machine Drive Power and/or CMV		✓
Map - SBAS GNSS Mapping		✓
Connect - Cloud and Machine Connectivity		✓
Command for Compaction		✓
ELECTRICAL		
24 volt Electrical System	✓	
100 ampere Alternator	✓	
750 Cold-cranking Amps Battery Capacity	✓	
OTHER		
Product Link™	✓	
Sight Gauges Hydraulic Oil Level and Radiator Coolant Level	✓	
S•O•S℠ Sampling Valves: Engine Oil, Hydraulic Oil and Coolant	✓	
Factory Filled Bio Hydraulic Oil		✓
Upgraded Halogen Light Package		✓
Amber Rotating Beacon		✓
Fuel Fill Access Door		✓

Vibratory Soil Compactor Selection Guide

16 - 20 T

Assumes density specification is 95% of Standard Proctor and can vary substantially due to different soil conditions.



APPLICATIONS

- Airport construction
- Railway foundations
- Dams / large embankment fill
- Rock fills
- Mining applications - drying beds, waste tanks, embankments
- Recycling
- Rock crushing
- Follow a tractor / scraper
- Land reclamation (dredging)
- Production of ~500 m^3

Rock
Smooth drum, high amplitude moving to low amplitude when approaching compaction, 4-8 passes

Size: Less than 50 mm (2 in) diameter

Sand/Gravel
Smooth drum, high amplitude moving to low amplitude when approaching compaction, 4-6 passes

Clay/Silt
Padfoot and smooth drum application (for smoothing), 4-10 passes. Compaction in cohesive soils strongly depends on moisture content.

* Smooth drum model equipped with padfoot shell kit

Cat® CS78B Smooth Drum Vibratory Soil Compactor

Technical Specifications

Engine - Powertrain		
Emissions	U.S. EPA Tier 4 Final EU Stage IV	
Gross Power SAE J1995:2014	131.0 kW	175.7 hp
Net Power SAE J1349:2011*	108.3 kW	145.2 hp
Stroke	127 mm	5 in
Max. Travel Speed (Forward or Reverse)	11.4 km/h	7 mph

Vibratory System Specifications		
Standard	28 Hz	1680 vpm
Optional Variable Frequency	23.3-28 Hz	1400-1680 vpm
High	2.1 mm	0.083 in
Centrifugal Force @ 30.5 Hz (1830 vpm)		
Minimum	156 kN	35,163 lb
w/ ROPS/FOPS cab	49.7 kg/cm	278.7 lbs/in

Weights***		
Operating Weight w/ ROPS/FOPS cab	18 888 kg	41,641 lb
w/ Oval Padfoot Shell Kit	19 178 kg	42,280 lb
w/ Square Padfoot Shell Kit	19 337 kg	42,631 lb
Weight at Drum w/ ROPS/FOPS cab	13 443 kg	29,637 lb
w/ Oval Padfoot Shell Kit	13 127 kg	28,940 lb
w/ Square Padfoot Shell Kit	13 286 kg	29,291 lb

Service Refill Capacities		
Fuel Tank, total capacity	332 L	88 gal
Diesel Exhaust Fluid refill capacity	19 L	5 gal
Cooling System	28.2 L	7.5 gal
Engine Oil w/ Filter	11.6 L	3.1 gal
Eccentric Weight Housings (Combined)	26 L	6.9 gal
Axle and Final Drives	18 L	4.8 gal
Hydraulic Tank (service refill)	50 L	13.2 gal

* Net power advertised is the power available at the engine flywheel when equipped with a fan at maximum speed, air cleaner, clean emissions module, and alternator.

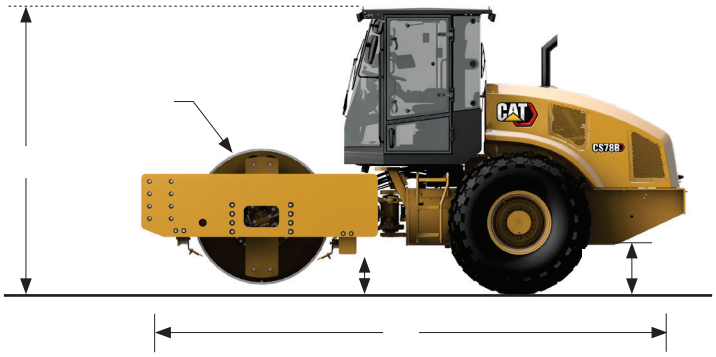
** Actual gradeability may vary based on site conditions and machine configuration. Refer to the Operation and Maintenance Manual for more information.

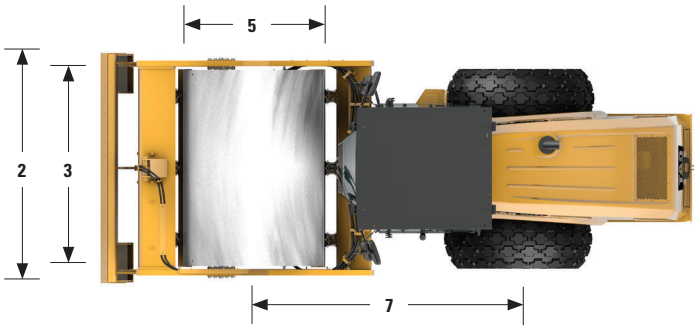
*** Standard operating weight considers full fuel tank, 75 kg operator, traction tires, oval pad drum, and cab with A/C.

Technical Specifications

	Dimensions		
2	Overall Width	2.5 m	8.1 ft
4	Drum Shell Thickness	40 mm	1.6 in
6	Overall Height	3.1 m	10.2 ft
8	Ground Clearance	434 mm	17.1 in
	Inside Turning Radius	3.7 m	12.1 ft
	Hitch Oscillation Angle	15°	

Optional Padfoot Shell Kit Specifications		
Number of Pads	120	
Pad Height, oval pads	89.8 mm	3.5 in
Pad Face Area, oval pads	63.5 cm^2	9.8 in^2
Pad Height, optional square pads	89.8 mm	3.5 in
Pad Face Area, optional square pads	105.7 cm^2	16.4 in^2
Number of Chevrons	16	





Environmental Declaration

The following information applies to the machine at the time of final manufacture as configured for sale in the regions covered in this document. The content of this declaration is valid as of the date issued; however, content related to machine features and specifications are subject to change without notice. For additional information, please see the machine's Operation and Maintenance Manual.

For more information on sustainability in action and our progress, please visit www.caterpillar.com/en/company/sustainability.html.

ENGINE

- The Cat C4.4 is available in configurations that meet U.S. EPA Tier 4 Final and EU Stage IV emission standards.
- Cat diesel engines are required to use ULSD (ultra-low sulfur diesel fuel with 15 ppm of sulfur or less) or ULSD blended with the following lower-carbon intensity fuels up to:
  - ✓ 20% biodiesel FAME (fatty acid methyl ester)*
  - ✓ 100% renewable diesel, HVO (hydrogenated vegetable oil) and GTL (gas-to-liquid) fuels

Refer to guidelines for successful application. Please consult your Cat dealer or "Caterpillar Machine Fluids Recommendations" (SEBU6250) for details.

**Engines with no aftertreatment devices can use higher blends, up to 20% biodiesel.*

AIR CONDITIONING SYSTEM

The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a (Global Warming Potential = 1430). The system contains 0.8 kg (1.8 lb) of refrigerant, which has a CO_2 equivalent of 1.144 metric tonnes (1.261 tons).

PAINT

- Based on best available knowledge, the maximum allowable concentration, measured in parts per million (PPM), of the following heavy metals in paint are:
  - Barium < 0.01%
  - Cadmium < 0.01%
  - Chromium < 0.01%
  - Lead < 0.01%

SOUND PERFORMANCE

With cooling fan speed at maximum value:
Exterior Sound Power Level (ISO 6395:2008) – 108 dB(A)
With cooling fan speed at 70% of maximum value:
Operator Sound Pressure Level (ISO 6396:2008) – 79 dB(A)

- When properly installed and maintained, the cab offered by Caterpillar, when tested with doors and windows closed according to ANSI/SAE J1166 OCT98, meets OSHA and MSHA requirements for operator sound exposure limits in effect at time of manufacture.
- 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.

OILS AND FLUIDS

- Caterpillar factory fills with ethylene glycol coolants. Cat Diesel Engine Antifreeze/Coolant (DEAC) and Cat Extended Life Coolant (ELC) can be recycled. Consult your Cat dealer for more information.
- Cat BIO HYDO™ Advanced is an EU Ecolabel approved biodegradable hydraulic oil.
- Additional fluids are likely to be present, please consult the Operations and Maintenance Manual or the Application and Installation guide for complete fluid recommendations and maintenance intervals.

FEATURES AND TECHNOLOGY

- The following features and technology may contribute to fuel savings and/or carbon reduction. Features may vary. Consult your Cat dealer for details.
  - Standard Eco-mode limits engine RPM, lowering overall fuel consumption compared to high idle
  - Optional compaction control reduces unnecessary passes, contributing to lower overall fuel consumption
  - Extended maintenance intervals reduce fluid and filter consumption
  - Auto idle shutdown reduces unproductive hours and fuel burned
  - Hydraulic on demand fan changes speed with temperature

Cat® CS78B Smooth Drum Vibratory Soil Compactor

For more 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 Cat dealer for available options.

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