

Cat[®] Machine Drive Power (MDP)

Compaction Measurement for Cat Compaction Control



Wider Application Range

- MDP works well on all soil types: fines, granular and cohesive
- MDP works on smooth drums, padfoot drums or smooth drums equipped with padfoot shell kits
- MDP works with the vibe system on or off, allowing operators to measure during working passes and shut the vibe system off for proofing passes
- System is scalable to meet your requirements

More Confidence in the Measurement

- MDP measures what matters, closer to the depth that the machine is able to compact, closer to the thickness of the lift
- MDP measurements are more easily correlated to portable measuring devices that testing personnel utilize (plate load test, for example)
- MDP is simpler:
 - Materials that are less stiff require more energy to propel through
 - Materials that are more stiff require less energy to propel through
 - Accelerometer-based measurement is "theoretical"
- MDP measurements are less affected by the dampening effect of cohesive soils; you can trust the measurement
- Less variability compared to other compaction measurement technologies available on the market makes measurement more trustworthy



Cat Compaction Control - MDP

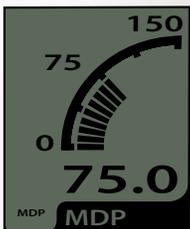
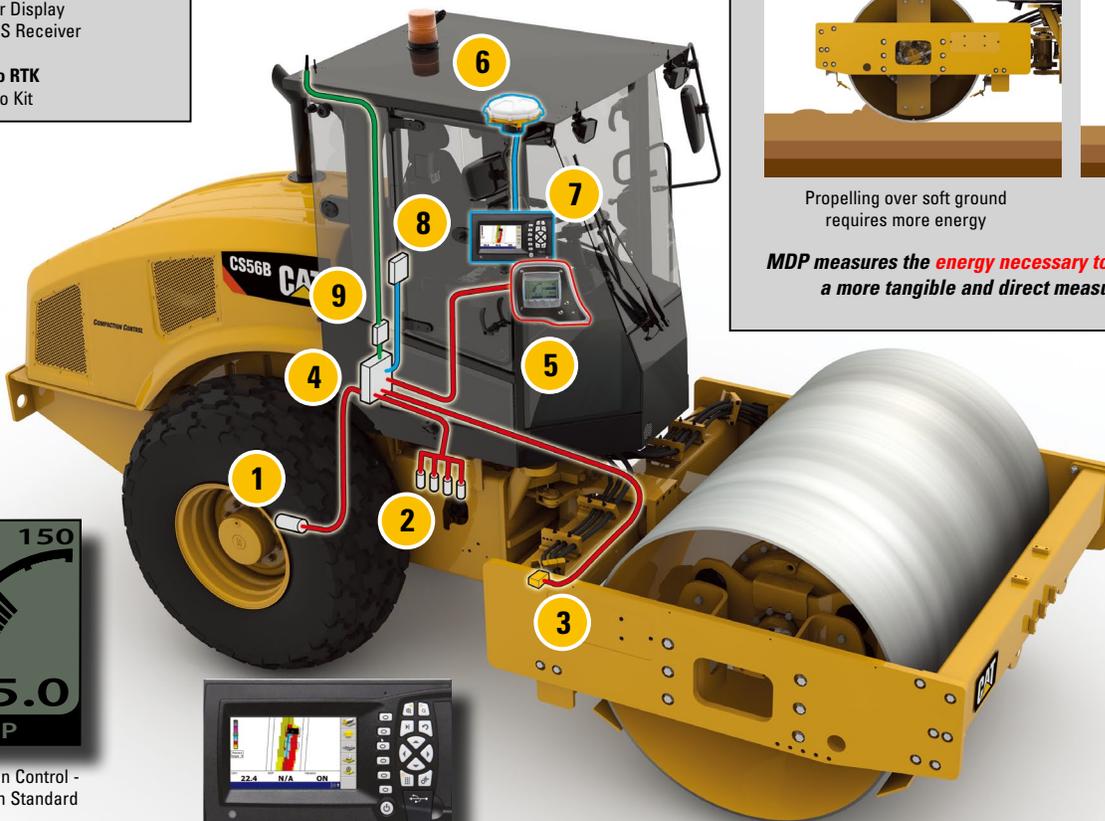
- 1. Speed Sensor
- 2. Pressure Sensors
- 3. Angle Sensor
- 4. Controller
- 5. LCD Display

Mapping, SBAS

- 6. GNSS Antenna
- 7. Color Display
- 8. GNSS Receiver

Upgrade to RTK

- 9. Radio Kit

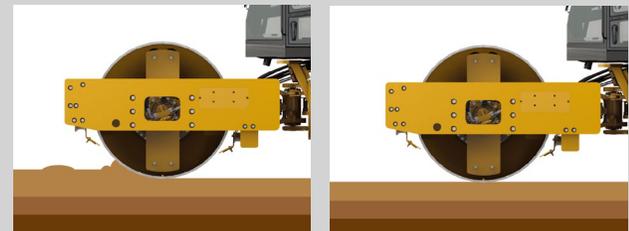


Cat Compaction Control - MDP Gauge on Standard LCD Display



Mapping Color Display

MDP - How does it work?



Propelling over soft ground requires more energy

Propelling over stiff ground requires less energy

MDP measures the energy necessary to overcome rolling resistance, a more tangible and direct measurement of soil stiffness



Cat® Compaction Control Overview

CAT COMPACTION CONTROL

Optional Cat Compaction Control provides information about the state of compaction to operators. The system comes with a choice of two different measurement technologies, Compaction Meter Value (CMV) and Machine Drive Power (MDP). CMV is an accelerometer-based technology that is similar to other accelerometer-based measurement systems on the market. MDP is a new, innovative, energy-based technology available only from Caterpillar.

COMPACTION METER VALUE (CMV)

CMV technology utilizes a drum-mounted accelerometer to measure G-forces of the vibrating drum, utilizing the data in a formula to calculate an indication of soil stiffness. This technology is employed by many competitive manufacturers as well, while one manufacturer also attempts to calculate drum displacement and incorporate that into the formula. The system essentially measures the soil reaction to being struck by the drum. This means that the vibe system must be active in order to measure. While there are certain applications where this technology excels, the vibratory requirement can create some problems and limitations. CMV is very inconsistent in cohesive soils, which makes it unsuitable for use on padfoot drums or shell kits.

CAT MACHINE DRIVE POWER (MDP)

Machine Drive Power (MDP) is a new, innovative, compaction measurement technology available only from Caterpillar. MDP utilizes a completely different principle, measuring the amount of energy required to propel through the soil, which provides a more direct indication of soil stiffness. Because it does not rely upon vibration energy on the soil, MDP can make measurements whether the vibe system is on or off, and is not subject to the restrictions that affect accelerometer-based technologies. MDP produces a more reliable measurement on more soil types, at a depth that is comparable to typical lift thickness, and it works on smooth drum or padfoot machines.

MAPPING

Cat Compaction Control can be augmented with satellite mapping capability. The system utilizes available Global Navigation Satellite Systems (GNSS), such as GPS or GLONASS, to provide the coordinates to correlate measurements with a ground location. The maps are useful for providing visual documentation of compaction quality or processes. The standard SBAS system does not require a base station, while the RTK option allows you to utilize existing base-station infrastructure.

Cat Compaction Control Comparison - MDP and CMV

Feature	Machine Drive Power (MDP)	Compaction Meter Value (CMV)	Comment
Measurement Depth*	30-60 cm (12-24 in)	1-1.2 m (3.3 - 4 ft)	Systems measure different depths, volumes
Correlates w/portable measurement devices	✓		Gives you confidence to move on
Usable on smooth drum, padfoot, or padfoot shell	✓		MDP is only technology for padfoot
Usable on granular or cohesive material	✓		CMV is unreliable on cohesive
Requires active vibe system to measure		✓	MDP can measure with less soil disturbance
Exclusive Cat technology	✓		MDP only available from Caterpillar

* Dependent on soil type, moisture and other factors.

The Cat Advantage - Single Source Provider

	Cat Dealer	Competitive Dealer	Comment
Convenient worldwide dealer locations	✓		More than our 5 largest competitors combined
Engine service	✓		Cat machines feature Cat engines
Machine service	✓	✓	
Service technician trained for paving equipment	✓		Cat technicians trained on Cat machines
24/7/365 parts availability on most service parts	✓		Long lead times for competitive OEM parts
New OEM parts	✓		Competition offers inferior aftermarket parts
Reconditioned OEM parts	✓		Rebuilt to OEM spec by Cat Reman
Available financing options	✓		Available through Cat Financial
Application expertise	✓		Personnel understand the paving business
Machine rental	✓		Keeps your capital expense low
Products with high resale value	✓		Durable Cat machines built to last

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

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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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