

Torque Converter Stall Speed Test

This [MEVAS](#) article is about: How and why to perform a so-called Stall Test.

A so-called Stall Speed Test can be performed for all machines (cars & trucks) with a torque converter. While testing an earth-moving machine with a Stall Test we can gain information about engine performance, torque converter condition, transmission condition and even about brake condition. For safety reasons we strongly recommend to ensure machine is standing on even ground with some meter distance to other machines or people. The whole Stall Test procedure should not be performed longer than 30 seconds to avoid transmission and torque converter overheating!

We will explain the procedure as an example for a Caterpillar® 966G wheel loader. The RPM values given below are just examples. The correct values for your specific machine are available from factory or machine supplier.



Now it is time to run the test.

- Warm up engine and transmission to at least 60°C
- Switch in Neutral gear position to manual 4th gear
- Wheel loaders must be switched to “Neutralizer Override”
- Check if park brake is disengaged
- press the RHS brake pedal (LHS is inch brake and would disengage torque converter)
- accelerate to 2100 RPM
- engage the 4th forward gear and watch the RPM gauge



The RPM should go back from 2100 to approximately 1700. RPM and recover within one second up to 1950-1980 RPM. The machine should of course not move. As mentioned above these values are valid only for CAT® 966G. But most wheel loaders have more or less similar values. What does it mean if the values are different? If the RPM goes lower than 1700 or if it remains lower than 1950 after one second there might be a problem with transmission or torque converter. Reason can be dirty transmission filter, wrong adjustments, hot oil or worn converter. It can even be an engine problem with lack of engine power. If RPM goes back to 2100 RPM or if there is no change at all it is supposed there is a torque converter problem.

To extend this test you can now switch the gears manually down. Wheel loaders and bulldozer-brakes should be able to hold the machine in position down to second gear. In first gear the engine and torque converter should be able to override the brakes. Do not override the brakes more than some inches to avoid extended wear and overheating. Some machines like Caterpillar® D8R, D9R or D10R will not override the brakes. The converter system is programmed in a way to avoid this - to protect the machine.

The Stall Test will not work with any machine with a hydrostatic drive. (Tracked Loaders, Liebherr Wheel Loaders). Some articulated haulers can't be switched to manual gear. For that reason, a Stall Test can only be performed with specific electronic equipment.



ZF Torque converter
(picture: wikipedia.org)

If you are not sure if you will be able to perform the above test it would be an option to call an MEVAS inspector to perform a full machine inspection. Our inspectors are experienced with various kinds of machines and have a very good feeling for equipment performance. Please ask your machine supplier for the values of your specific machine and for the the procedure how to perform a stall speed test. This may differ from machine to machine.



Call Mevas for your heavy machinery inspection needs today. Our technicians are available in more than 25 countries for heavy machinery approval, inspection and PSI. We support Caterpillar TA-2 level inspections.

MEVAS - The Heavy Equipment Inspectors

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