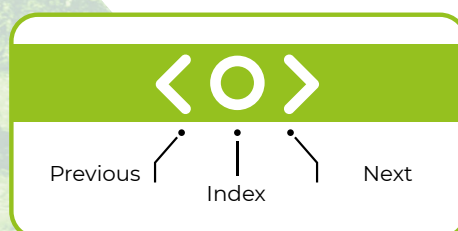

JALTEST AGV USE CASES



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Introduction

Over time the existence of multiple brands of **agricultural equipment** with a wide range of solutions is growing day by day. This variety reinforces the need for a multi-brand diagnostics tool with sufficient capacities to face all the daily challenges of a technician in a specialised workshop (advanced functionalities, technical information and troubleshooting guides, among many other tools).

Today, most vehicle systems are equipped with electronic control and a large number of cables, sensors, actuators and control units, which are present in them from end to end.

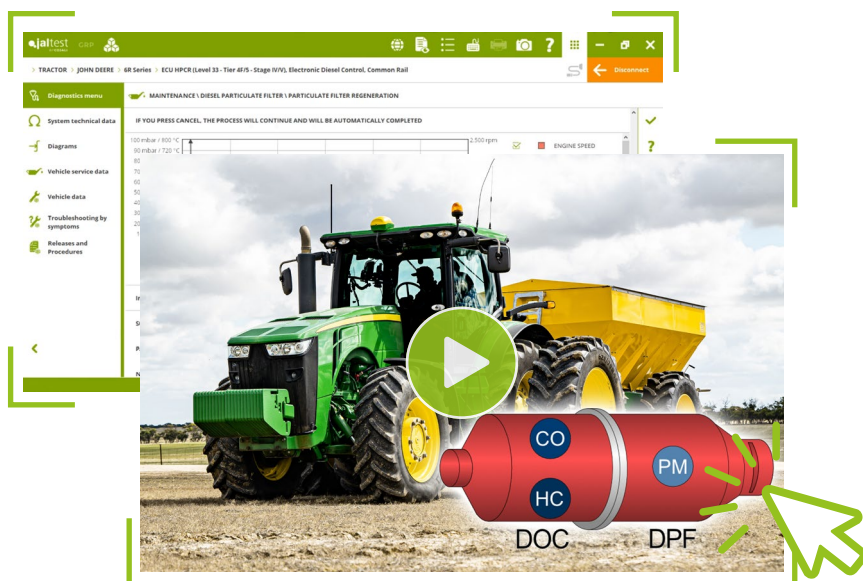
Furthermore, the anti-pollution regulations and the efficiency imposed on new vehicles do not allow control without the aforementioned electronic components. Therefore, it is essential to have diagnostics tools, such as Jaltest, which are capable of dealing with failures and facilitating the technician tasks.

The purpose of this document is to show the reader the latest technologies in **agricultural equipment** and how Jaltest makes its diagnostics and repair easier.

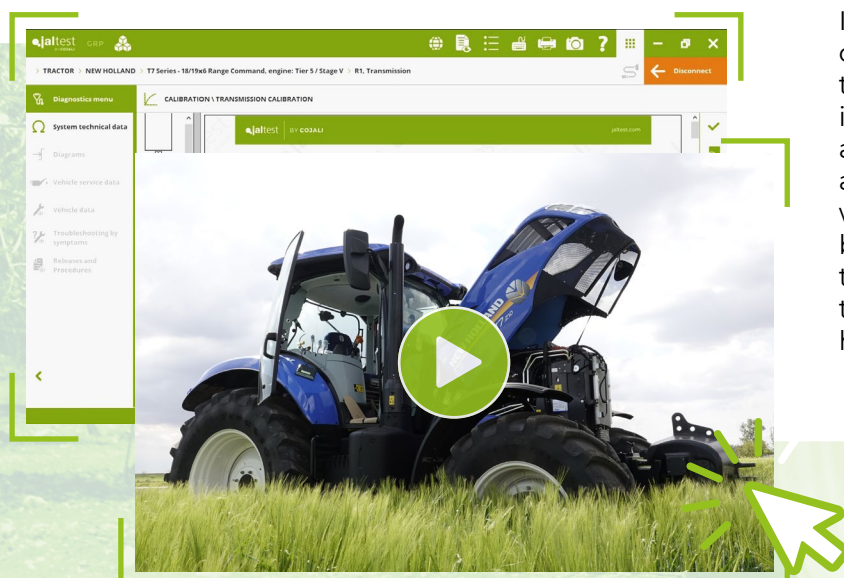


1 - Service regeneration in John Deere engines

John Deere engines with particulate filter use control systems of Level 21, 22, 23, 32, 33 and 34. The amount of soot in the DPF is divided by levels, from the lowest, level 0, which indicates that no regeneration is needed, to the highest, level 5, which indicates maximum soot load and vehicle in service mode. When the soot load reaches this level, the engine power is completely limited. In order to restore the engine power, it is necessary to perform the "Regeneration in service mode" for 3 hours.



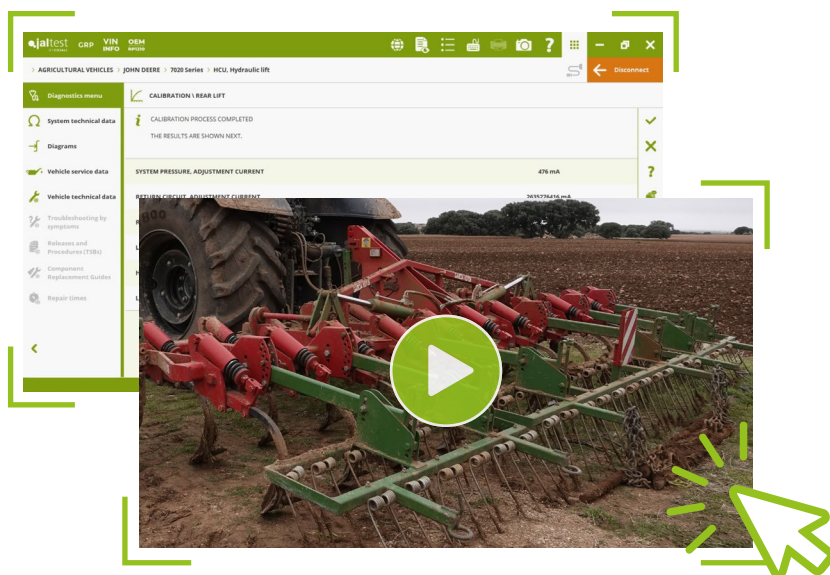
2 - Transmission calibration in a New Holland T7 Power Command tractor



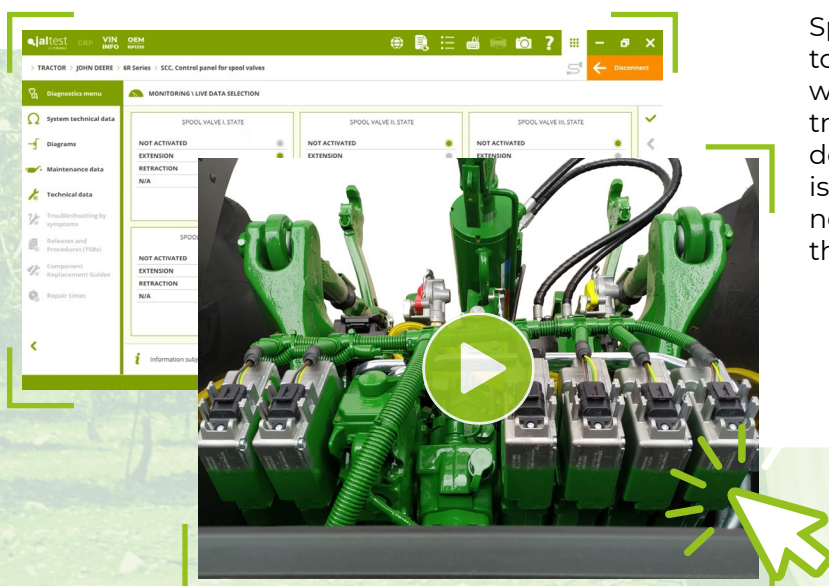
In tractors, the transmission system is in charge of transferring power from the engine to the wheels. In this case, Power Command is a powershift that enables changing ranges and gears without pressing the clutch pedal at any time. When the system suffers from wear or a component is replaced, it might behave roughly, causing jerks and discomfort to the operator when in use. To solve this, the transmission must be calibrated to achieve higher comfort and performance in any task.

3 - Calibration of the rear lift

Tractors have a control system in charge of the rear lift. In this case, the wear or replacement of any lift component requires calibrating the lift, since it might not reach its maximum and minimum positions, or it might reach its mechanical limit, but the system continues trying to reach the limit position. This could cause problems with implement hitches and early wear, as well as a reduction in the useful life of the component and worsening of the quality of the operator work conditions.



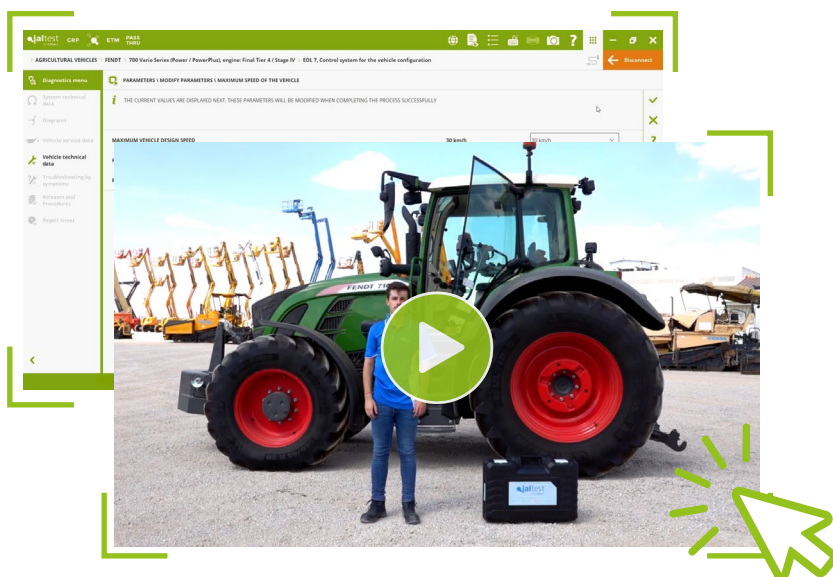
4 - Coding of electronic spool valves



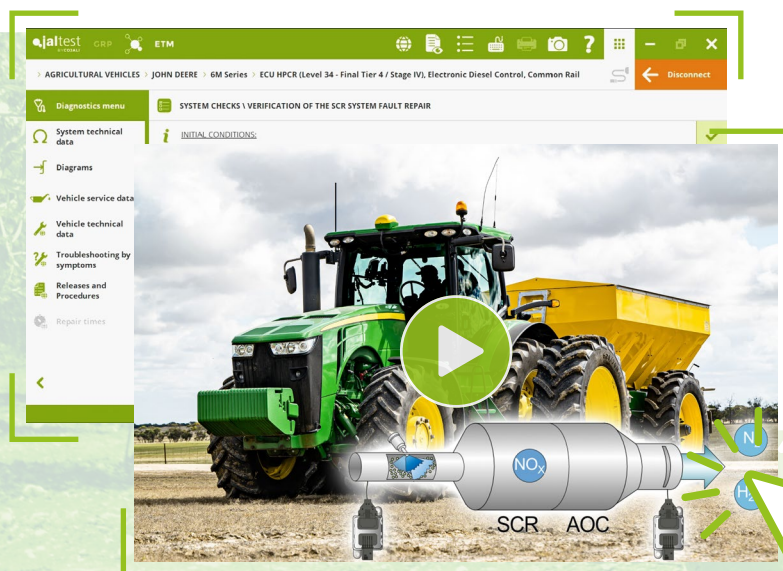
Spool valves are used to transfer hydraulic power to the implement from the tractor. Spool valves with electronic control are managed from the tractor with control levers whose assignment depends on their position. Once a spool valve is replaced with a new or an used one, it is necessary to assign it the position of the one that has been replaced.

5 - Parameter setting of the equipment in a Fendt 900 Vario Final Tier 4/ Stage IV

Tractors can be bought with more or less equipment depending on the purchasing needs and, after that, it might be necessary to add equipment to the tractor, for instance a front lift. However, the implement does not work after assembly and installation. Therefore, it is required to indicate to the control units that the equipment is available with the EOL system.



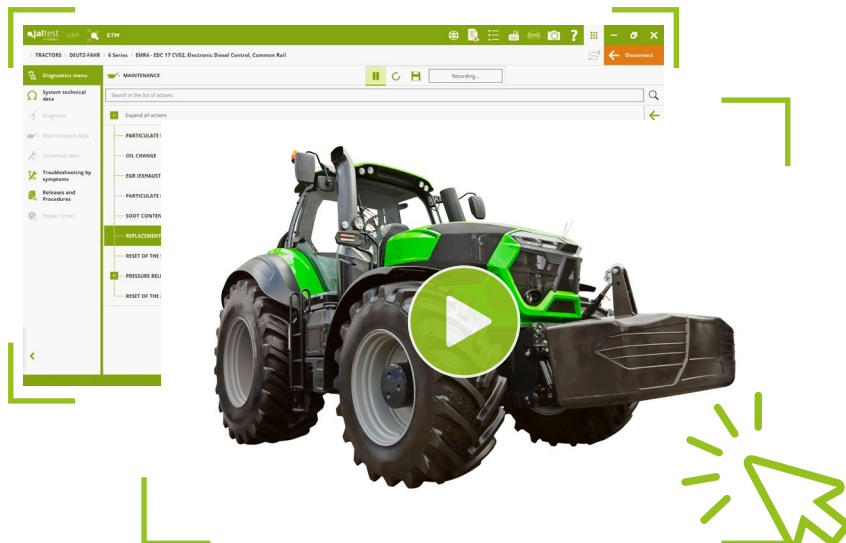
6 - Verification of the SCR system in John Deere engines



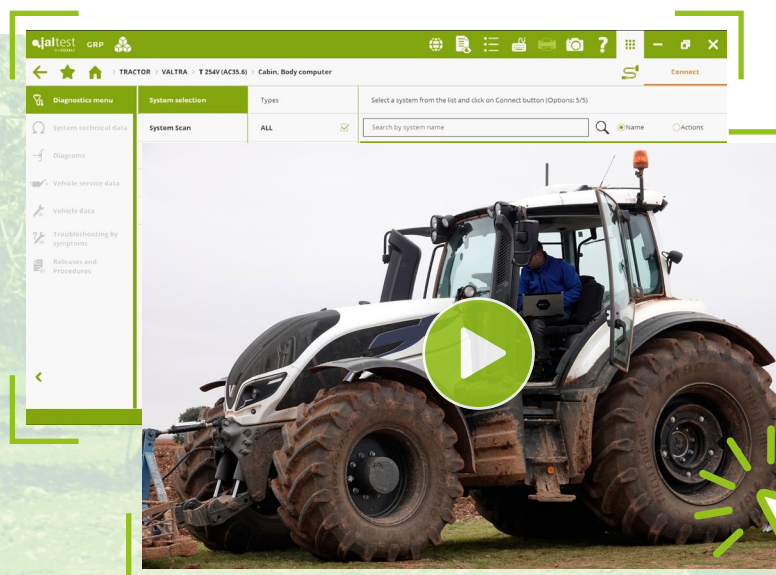
When the power is limited due to NOx conversion errors, the errors 4364.01, 4364.17 and 4364.18 appear. With these active errors, the tractor is limited electronically. Once the errors related to the gas aftertreatment system are solved, it is necessary to start the SCR system verification check, which is similar to a regeneration. However, its function is to verify the efficiency of the SCR catalytic converter under controlled temperature conditions. If the check is completed correctly, the errors become inactive and it is possible to work without further trouble.

7 - Reset of the stop request due to crystallisation in a Deutz EMR4 – EDC 17 CV52 engine with SCR or SCRT technology

Deutz engines with anti-pollution system SCR and SCRT Final Tier 4 / Stage IV can limit their power due to AdBlue crystallisation. Once the control unit detects this, it limits the engine power. After cleaning all the crystallisation, the power limitation is still present until it is performed the reset of the stop request due to crystallisation and at that point the engine power is recovered.



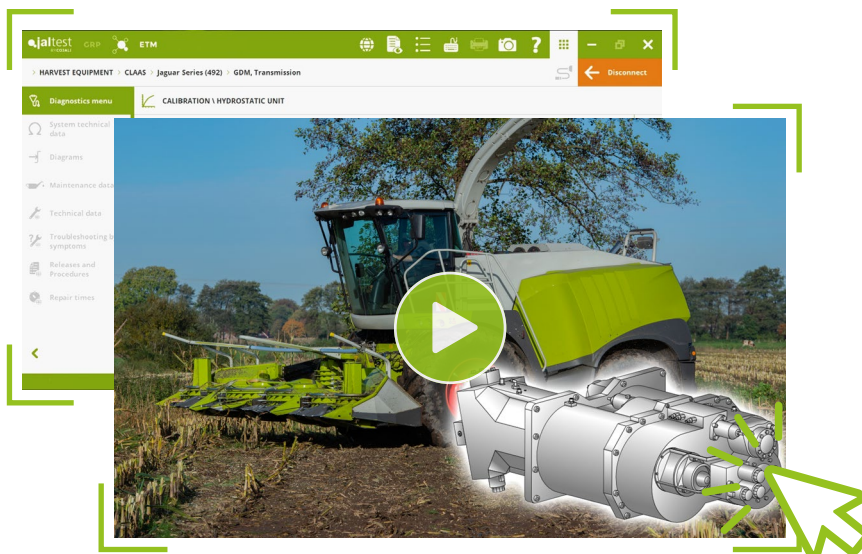
8 - Calibration of the steering system in a Valtra T254V (AC35.6)



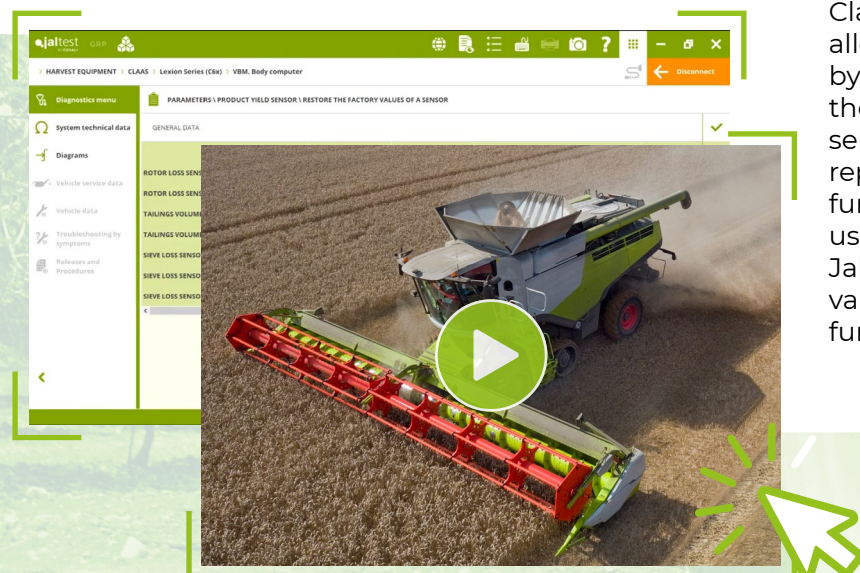
Valtra tractors with auto-guidance system include a steering system in charge of measuring the turning angle of wheels and controlling the steering solenoid valve. If the system is uncalibrated, the auto-guidance system stops working correctly, since the position data do not match the values sent to the steering. For this reason, it is necessary to perform steering system calibrations.

9 - GDM transmission calibration in a Claas Jaguar

Claas forage harvesters with GDM hydrostatic transmission must be calibrated due to different factors, such as wear or replacement of component. These factors might derive in calibration errors, as well as jerks and poor performance of the forage harvester. By performing the calibration, the new values are stored in the control unit, allowing a smooth performance in all its work range.



10 - Change of a product yield sensor in a Claas Lexion C6x



Claas harvesters are equipped with sensors that allow monitoring of the machine performance by recording the losses in different points of the machine, such as sieve loss sensors. These sensors work inside a LIN network and, when replaced, it is necessary to assign them the function to be performed. Claas only allows using new sensors not programmed, but Jaltest, exclusively, allows restoring the default values of a sensor already programmed with a function to assign it another one.



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