



“HYDROKEY advanced” hydraulic suspension

“Key-frame”, “Wedge-lock”, “Oil-gear” 3 keywords which show the evolution of the hydraulic suspensions “HYDROKEY advanced” – the second generation.

The first ADR hydraulic suspensions were born in 2003: six years of experience in the fields and contacts with the vehicle manufacturers are summarized in three “keywords”

Key-frame: a big Key gives great stability to this suspension. Farming and public work machines need to bear transverse forces which are much higher than those of the industrial vehicles. They have very big tyres, with high friction on the ground and they often need to deal with difficult roads: the big Key, with its tip facing down towards the ground creates a three-dimensional link which compensates the rolling and the transverse reactions on curved roads.

Wedge-lock: A particular locking system between the suspension axle and arms takes the best advantages of the Black Bull axle characteristics, forming a rugged and elastic structure where the axle tubular body acts as a rolling stabilizer.

The parabolic arm is linked to the axle by means of a new wedge system which eliminates all the clearances and firmly connects all the main mechanical components of the suspension to ensure the perfect alignment between the axle and the vehicle frame and keeping it for a long time even after strong stresses.

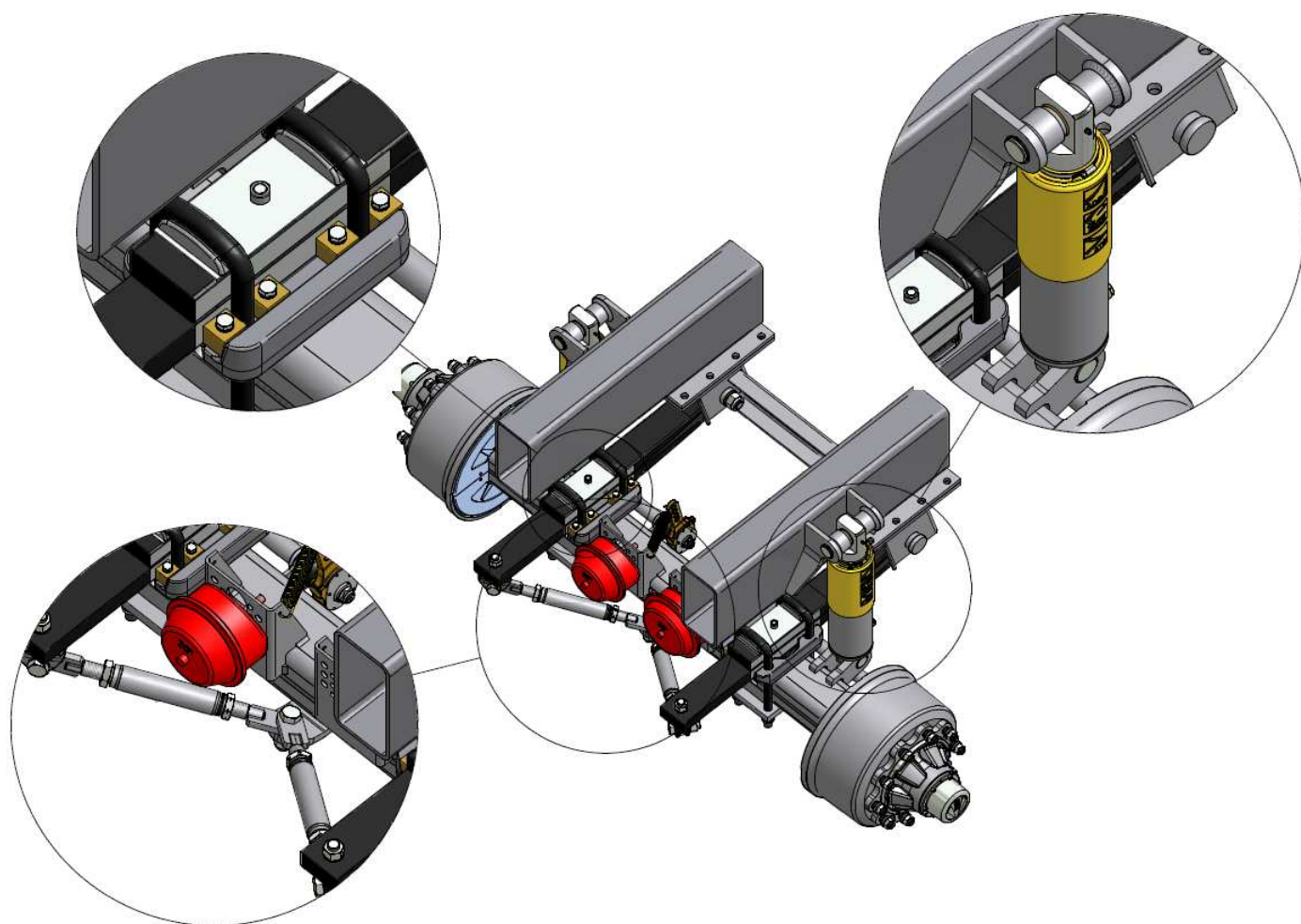
These structural features, together with the original solutions adopted for the control hydraulic system make *Hydrokey advanced* a reliable and versatile hydraulic suspension for farming machines.

Oil-gear: it summarizes the new design of the cylinders which have been completely redesigned. The suspension height has been greatly reduced increasing the useful volume of the trailers, especially for the tank cars.

The cylinder is more compact but its stroke has remained the same and the axle travel has increased by 30 per cent approximately thanks to the new suspension structure: this offers great advantages for the machine working on uneven grounds and for the trim change when the machine is used in different working conditions.

This system is highly reliable: the new construction with the rod connected to the frame and the cylinder body in lower position, improves shock protection and it ensures an effective protection against mud and other aggressive agents.

Thanks to the use of high-precision components, big-sized mechanical parts and integrated control systems, the vehicle manufacturer is saved the trouble of assembling the most delicate parts of the hydraulic system, reducing the maintenance costs.



HydroKey advanced – improved components

Other less evident details make Hydrokey advanced more complete:

- The suspension components are compatible with the whole Black Bull series: standard axles, self-steering axles or commanded steering axles.

ADR technical news



- The cylinder size and supports have been studied so that it is possible to assemble the suspension unit even on standard axles which have to be used with different suspensions such as tandem or bogie: in detail, the standard position of the brake cam is compatible with the hydraulic suspension too. In this way, the customer can freely choose the suspension for the trailer without considering special axle requirements, with the advantage of standardizing the stock.
- The spring fixing to the axle body has been completely redesigned to minimize stress concentration near the welded joints; this makes the axle body and the suspension elements work together perfectly, considering the increased travel of the working axle.
- The geometry and size of the parabolic arm have been changed to optimize the suspension performances even under heavy-duty conditions.

HydroKey advanced has maintained its well-established advantages,

- Rolling hydraulic compensation to always keep the vehicle perfectly stable even in the most difficult situations
- Possibility to adjust rigidity and trim separately
- Possibility to have the self-levelling device
- Possibility to lift one or more axles