

## Upgrades of the T-7000 series

- **Substantial fuel savings with powershift transmissions**
- **Additional automatic functions providing enhanced operating comfort**

**The T-7000 series is setting new standards with its product improvements. All products of the ZF powershift transmission family have now been adapted for operation with reduced engine speed. Technical innovations of the operating automation are enabling comfortable operation in the field.**

The transmissions of the T-7000 series fully comply with the requirements of the new exhaust emission guidelines with a reduced transmission input speed of 2100 1/min. This enabled fuel savings of up to 10 % with constant maximum travel speeds.

Thanks to its expanded performance the T-7200 series enables supreme operation in the field. With 133 kW transmission input performance and 750 Nm input torque it was possible to increase performance by approx. 13 % and to raise torque by 10 %. As a result of this the T-7232 with its enhanced performance presents the new flagship of the T-7200 series.

Also, the fact that the PTO control has been improved has made handling easier. With the regulated proportional valve control the driver experiences a smoother start-up. The interaction with the new software development for the transmission control unit enables a smooth start-up with the proportional valve technology for each implement inertia. Sudden start-off with low inertia or engine stalling with high inertia implements have become a thing of the past.

The T-7200 transmissions have now been in series with the smooth PTO start-up since April 2009. As of October this equipment will also be available for T-7100 and will be followed by the transmissions of the T-7300 series in spring 2010.

The CAN-communication of the transmission control unit with the engine and vehicle control enables different power boost functions



as well as the integration into a head land management. Thanks to the head land management the driver only has to concentrate on reversing, as engagement and disengagement of the PTO (at the right time) can now be pre-programmed.

Another novelty involves the optimum equipment of the T-7230 and T-7232 with the electro hydraulic PTO gear selection (fig. 12). Previously the different PTO speeds had to be selected with lever or Bowden cable, whereas now each speed level can be conveniently selected by pushing a button. In addition to this incorrect operation can be avoided thanks to a new safety package.

With the APS-3, a new automatic power shift generation is used with T-7200. Depending on driving situation or operation type, the automatic power shift calls specific shifting strategies. This leads to considerable time savings and at the same time increases the comfort for the driver. Further essential advantages for the operator include the increased transport performance and the fuel savings by shifting at low speeds.

The new software feature, slippage monitoring for powershift transmissions T-7300 prevents clutch damage, e.g. as a result of incorrect operation (e.g. excessive clutch slippage, foot resting on the clutch pedal).

In this context the specific friction work of the clutch is monitored by an innovative software concept. When the maximum permitted friction work is reached, the driver will be warned to avoid any damage and expensive repairs.

If the clutch is closed, the new slippage monitoring ensures that even extreme overload does not cause any damage. The slippage monitoring increases the simple and safe operation of the tractor and ensures reliable and constant application safety in professional environments.



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Fig:

12.) T-7200 Upgrade: Smooth PTO start-up and electro hydraulic gear select.

Picture: ZF

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The ZF Division Off-Road Driveline Technology and Axle Systems specializes in the development and production of transmissions and axles for agricultural and construction machines as well as axle systems for buses and trucks. With 7,500 employees the division generated a turnover of 1.9 billion euros in 2008.

ZF is a leading worldwide automotive supplier for driveline and chassis technology with approx. 60,000 employees at 119 locations in 25 countries. In 2008 the Group generated a turnover of 12.5 billion euros. ZF is among the top fifteen companies on the ranking list of the largest automotive suppliers worldwide.