ZETOR CRYSTAL

CRYSTAL HD





ZETOR CRYSTAL HD

A TEAMMATE FOR HARD WORK

ZETOR CRYSTAL HD represents the most powerful and the best-equipped tractor in ZETOR portfolio.

The six-cylinder engine with 171 HP is predestined to work on medium and large-sized farms, for use in crop production, for aggregation with various farm machines, as well as for transport and other applications.

Powerful six-cylinder engine DEUTZ in Stage V emission standard with excellent traction from low speeds and with high torque

INNOVATIONS IN 2020 MODEL RANGE



Completely new air conditioning and heating system offers a significant improvement in their performance.



Lights controller allows convenient control of work lights and beacons.



Indented shape of the roof and newly shaped sunroof ensures better view on the front loader. FOPS (Falling-Object Protective Structures) protection is fitted as a standard.

latest Stage V emission

standards.



TOTAL COST OF OWNERSHIP

ZETOR will surprise you with its low fuel consumption.

The spare parts are reasonably priced. You can get quick and high quality service all over the world.

ENGINE

SIX CYLINDERS UNDER THE HOOD

Six-cylinder engines made by DEUTZ AG guarantee the high power of the CRYSTAL range. The engines deliver a maximum output of 171 horsepower.

All CRYSTAL engines come from the well-proven concept of six-cylinder diesel engines fitted with 24 valves and a Common Rail injection system. Electronic control of the high-pressure injection allows for the very precise dosing and dispersion of fuel and thus also its perfect combustion. This maximises the engine efficiency, lowers engine noise and vibrations and helps to achieve excellent performance parameters and low fuel consumption.

POWER	CRYSTAL HD 170
Rated power (HP)	163,6
Maximum power (HP)	171,0

TENACITY IN ANY CONDITIONS

High torque incline guarantees high engine tenacity.

The engine's great attribute is its excellent pull at low RPM and high torque. Working in difficult conditions while RPMs drops, the power remains almost the same while the torque increses. This ensures enough necessary strength at increasing driving resistance.

ENGINE CHARACTERISTICS

- diesel, water-cooled 6-cylinder inline engine
- turbocharged, charge air cooling and cooled external exhaust gas recirculation
- Common Rail injection system
- comply with the EU Stage V emissions standard
- best cold starting performance even under extreme conditions







You can find a transcript of the CRYSTAL review in the Profi magazine on our website!

Profi Magazine about engine

The CRYSTAL HD 170 delivers a maximum engine power of 120 kW/163 HP (to ECE-R 24, so with all of the ancillanes in place), according to the brochure spec sheet, which also states a pto output of 101,6 kW/136.2 HP. On the DLG dyno, the ZETOR mustered a maximum output of 107 kW/143.5 HP at the shaft with the motor hanging on at 1700 rpm. Excellent.

Output at a rated speed of 2100 rpm was exactly 94.1 kW/ 126.2 HP. This works out at nearly 14 % extra power and a constant power range of more than 35 %. These stats and a torque rise of almost 56 % as speed drops by almost 33 %, along with a 137 % drive-off torque, are all

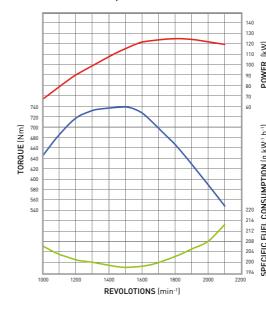
very good returns and gave us a new experience from a DEUTZ engine.

More praise goes to fuel economy, which at maximum pto output is a frugal 237g/kWh. This places the CRYSTAL in a leading position among low-consumption tractors.

Text: Hubert Wilmer | Profi 8-2019, Profi 4-2020.

ENGINE OUTPUT CHARACTERISTICS

TCD 6.1 L6 - 120,3 kW





The overhauled fuel tank with 300 l volume ensures sufficient fuel for an entire day in the field.



- high efficiency
- low fuel consumption
- high quality
- high durability
- minimum production of harmful emissions
- smooth operation without the need for a balance shaft
- low noise
- large fuel tank allowing for an entire day's work
 ease of starting at low temperatures

CLEAN AND ECOLOGICAL OPERATION

The engine meets the very strict emission limits according to the current EU Stage V standard. A diesel particulate filter (DPF) and SCR technology (urea) are used to clean the exhaust fumes. Thanks to these technologies, the engine not only decreases the amount of harmful substances released by the tractor, but also contributes to lower fuel consumption compared to engines of an older design. In other words, you not only protect your and your children's health, but also save on the costs of the tractor's operation.

TRANSMISSION

INNOVATED DESIGN

The transmission for CRYSTAL HD is developed and manufactured directly by ZETOR, which allows us to guarantee the quality of design.

The transmission has undergone a number of improvements resulting in more comfortable gear shifting and economical operation at high speeds.

The five-gear fully synchronized transmission has two driving speed ranges (standard and reduced) and a three-stage PowerShift. There are a total of 30 gears and 30 reverse gears.

The driving direction is changed by a hydraulic reverser lever (PowerShuttle) without the need to press the clutch pedal (reversing under load).

FUEL EFFIENCY

The innovated ECO 40 transmission allows users to reach top speeds (40 km/h) at lower RPMs (1800 RPM). This optimisation results in fuel savings of up to 20% and decreases the noise and engine wear.

IMPROVED ERGONOMICS

The innovated transmission of CRYSTAL HD also features an overhauled mechanism for gear changing, where due to the utilisation of bowden cables, the force necessary to shift gears has been substantially decreased and the shifting tracks have been shortened. New shifting mechanism ergonomy is significantly better in comparison to previous generation.

- in-house development and production
- long lifetime
- innovated EC040 transmission with substantially lower fuel consumption at higher speeds
- improved ergonomics of gear shifting
- 13 gears available in the working range (4-12 km/h)







com

TRACTOR OPERATIONS MADE SIMPLE

PowerShift

Three-stage torque multiplier



The multiplier gears can be changed by buttons on the gear lever. When the automatic function is selected, the multiplier gears are shifted automatically without any input from the driver.

PowerClutch

Clutch button



When shifting the driving gear, one may use the clutch button on the gear lever instead of pressing the clutch pedal. Using this button eliminates wear of the driving clutch.

PowerShuttle

Electro-hydraulic reverser



The driving direction of the tractor is changed by moving the reversion selector without the need to press the clutch pedal. The protective "cradle" under the reverser prevents the accidental move of the reverser.

AUTOMATIC POWERSHIFT

Automatic powershift shifting works depending on the engine RPMs according to pre-stored RPM values. The advantage of this mode is that it allows the engine RPMs to be kept in the range required by the driver without any input from him/her.



The new and innovated transmission for ZETOR tractors undergoes thorough testing, first at the company's testing centre and then in prototype machines at maximum load in real-life conditions in the field.

CABIN

MORE COMFORT

Driving in the new ZETOR CRYSTAL HD is comfortable. The suspended cabin along with suspended front axle delivers a comfortable driving experience. The position of the cabin in the new CRYSTAL HD has been elevated by 10 cm, resulting in a better view for the the driver.

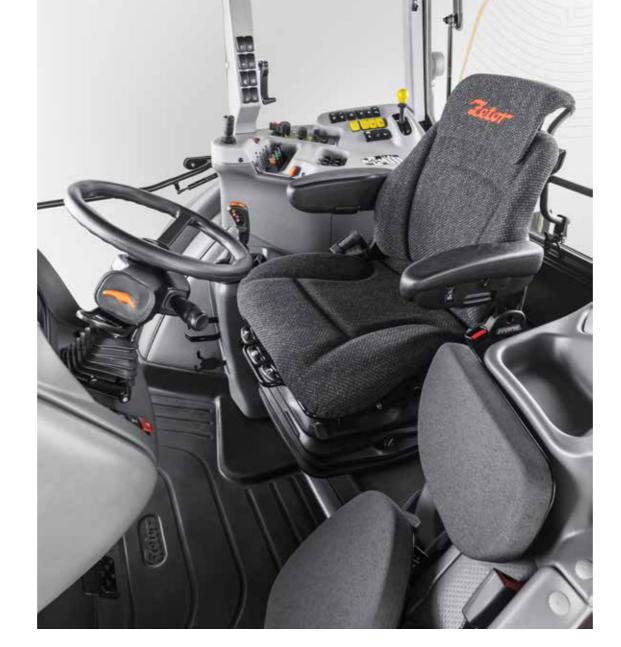
The cabin is spacious and comfortable. The quiet engine operation will literally surprise you. All controls are placed so as to provide the driver with good access – on the right panel or steering column.

SMART STORAGE

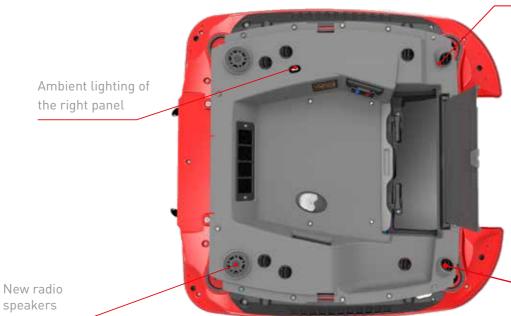
There is also plenty of storage space in the cabin, where the driver may store his/her belongings – 2 storage shelves on the left side of the cabin, 2 bottle holders, document bag on the driver's seat, storage space for small items (mobile phone and keys, etc.).

WE AT ZETOR THINK ABOUT YOUR SAFETY

- The driver's seat and passenger's seat are equipped with a self-winding safety belt as a standard.
- The OPS sensor is built in the driver's seat, which automatically stops the PTO when the driver leaves the seat to prevent injury from attached machinery.
- The rear view mirrors are newly panoramic the driver has perfect overview of what's going on around the machine. An inside rear view mirror was added to the cabin.
- The automatic PTO stop function means that after the rear three-point hitch arms are raised, the output shaft automatically stops. After the subsequent lowering of the TPH arms and take-off, the PTO starts spinning again.







ALL WITHIN AN ARM'S REACH

The multifunctional panel on the right side of the cabin contains controls for controlling important functions of the tractor. As such all of the tractor's important controls are in one place.

- simple and intuitive control of the tractor without complicated settings
- low noise level in the cabin
- opening sunroof
- right multifunctional panel with joystick
- a lot of storage space
- elevated cabin for better



- Control of the lights and wipers, heating of the rear window and rear view mirrors
- Joystick for controlling two hydraulic sections, three point hitch or front loader
- 3. Hydraulic circuit controls
- 4. Hand-held accelerator
- Shut-down timer for hydraulic circuits
- 6. Settings for oil flow in the hydraulic circuit

- 7. Selector for the RPM mode of the PTO
- 8. Electro-hydraulic control of the rear TPH
- . Controls for:
- PTO on/off
- Differential locks
- Setting of the height position of the front suspended axle
- Torque multiplier pre-set settings

Illumination of the drivers seat



All INFORMATION IN ON PLACE

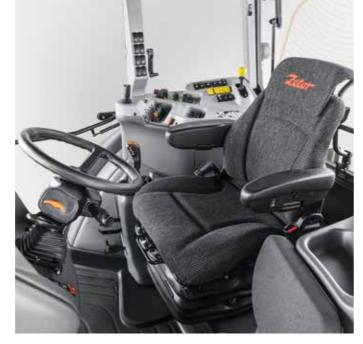
ZETOR CRYSTAL HD received a new dashboard. The dashboard excels in its lucidity, simple control, large coloured display and good readability in daylight and at night.

The dashboard displays a number of basic and more advanced information.



FRONT LOADER OR THE NIGHT SKY?

The cabin roof features an openable sunroof, which may be used for ventilation and it also provides good views when working with a front loader. If the sun is shining through, there is nothing easier than pulling down the non-transparent plastic sun shield.



COMFORT WITHOUT COMPROMISE

Working hard the whole day, the driver deserves a high degree of comfort. The answer to these demands is the new PROFI seat, which is fitted as a standard in all CRYSTAL tractors. You do not need to think about whether to pay extra for a better seat, as CRYSTAL features it in the price of the basic model.

- Pneumatically suspended seat
- 20° turning
- Heated seat
- Horizontal suspension
- Lumbar back support
- Adjustable head supportAdjustable elbow rests
- Self-winding seat belt
- Bag for documents
- Adjustable length and incline



WARM OR COLD AS YOU WANT

ZETOR CRYSTAL HD is equipped as a standard not only with heating, but also air conditioning. For model 2020 range, a new A/C unit was used, which offers a higher cooling effect.



PERFECT VIEW

Panoramic rear view mirrors and the inside mirror provide excellent views of the machine surroundings, attached machinery and terrain conditions. As such they make work easier while increasing safety.



HEAVY-METAL OR COUNTRY MUSIC?

To make the work more pleasant, the tractor is fitted with a radio with a standard FM and AM tuner. It can also play music from a CD or USB.



EASY ACCESS

The newly overhauled entry steps facilitate entry to the tractor cabin. The stepping surface has serrated anti-slip treatment that prevents slippage. The lowest step is placed ona rubber attachment so that it is not torn away in case of collision with an obstacle.



LED CONTROLLER

New LED controller for light and beacon control offers a number of advanced functions such as automatic activation of work lights according to the selected driving direction or a memory function.



PERFECT VISION EVEN AT NIGHT

CRYSTAL HD serves day and night. For night work it is fitted with 4 roof lights and 2 spotlights as standard. Upon request the combination of 8 LED roof lights and 2 LED spotlights is possible.

SUSPENDED **AXLE**

EXPERIENCE HIGH DRIVING COMFORT

The CRYSTAL HD includes a suspended front axle in the basic configuration.

UNIQUE DESIGN

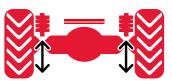
The axle consists of two separate and individually suspended semi-axles. It is characterised by its exceptional rigidity and large reserve against long-term straining. The suspension of the wheels is executed with a pair of trapezoid arms and is mutually independent. Both wheels are suspended individually. The trapezoid mechanism of the axle suspension is patented and technically very close to multi-link automobile wheel suspension.

100% DIFFERENTIAL LOCK

The front driving axle is fitted with a 100% lamellar and hydraulic-controlled differential lock. The 100% differential lock improves the traction properties of the tractor in adverse conditions. It allows up to a 100% transfer of traction power to one wheel.

EFFECTIVE SHOCK ELIMINATION

The independent suspension of both CRYSTAL HD wheels provides better shock elimination during the ride and thus brings much more comfort than is possible in the case of the central suspension of the whole axle used in other tractors.







Central suspension of the



HEADLAND SEMI-AUTOMATICS

CRYSTAL HD is equipped with a 100% differential lock and headland semi-automatic system. The headland semi-automatic system decreases the number of actions in every instance of turning on a headland, thus simplifying the machine operation and ensuring better manoeuvrability. This system consists of a combination of the automatic control of the 4WD forward driving axle, 100% differential lock on both axles, rear three-point hitch and rear output shaft.

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HYDRAULICS

POWER AND ACCURACY IN ONE PACKAGE

ELECTRONIC CONTROL OF OUTSIDE HYDRAULICS

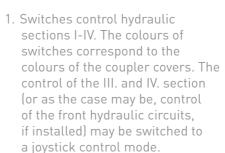
The three-point hitch is controlled via the Bosch electro-hydraulic system (EHR) with HitchTronic function, which allows the automatic regulation of the rear three point hitch.

Two auxiliary hydraulic cylinders ensure an even load distribution of the tractor and maximum lifting force of up to 85 kN.

CRYSTAL HD is equipped with a 4-section hydraulic distributor with electro-hydraulic control. Category III hitches are compatible with a broad variety of attachments.

HYDRAULICS CHARACTERISTICS

- Category III three point hitch
- BOSCH electro-hydraulic system with HitchTronic function
- 4-section distributor (8 couplers +1 return circuit)
- Hydraulic pump output of 85 l/min
- Electronic regulation of hydraulic oil flow through couplers



- 2. A time interval may be set for the controller, after which the oil flow to the coupler is closed.
- 3. A flow-through capacity may be set for the controller (10%-100%).







HITCHTRONIC

HitchTronic is a unique system for the automatic regulation of the rear three point hitch. When using this system it is not necessary to adjust the types of regulation and their required sensitivity. The only parameter to set is the working depth of the plough. When the plough attached to the rear three point hitch reaches the set depth, the regulation system will measure the soil resistance and this value is used as the basis for the automatic regulation of the rear three point hitch.



- HitchTronic increases work productivity and decreases fuel consumption per unit of processed area by approximately 5-7%
- HitchTronic simplifies EHR settings, it brings comfort and simplifies work by optimally setting the mixed regulation according to the current conditions
- 1. Lift control lever (4 positions)
- 2. TPH suspension
- 3. Depth setting
- 4. Limitation of the top position
- 5. Continuous setting (mixing) of power-based and position-based regulation ratio
- 6. Lowering speed

PTO

POWER FOR YOUR MACHINES

The rear PTO is offered with an independent rotation speed, meaning that the number of revolutions of the rear output shaft is only dependent on the engine's RPM. The tractor is equipped with a combination of the rear PTO speeds of 540/540E/1000/1000E.

The clutch of the rear output shaft is fitted with a feedback-controlled start. This achieves an easy, comfortable start and higher life time of the clutch.

POWER AT THE REAR PTO AT 2,100 RPM

MODEL	CRYSTAL HD 170
PTO Power (kW / HP)	102 / 139



Just as the three point hitch arms, the PTO may be controlled directly by buttons on the rear fender of the tractor.

CRYSTAL HD may be fitted with a front PTO in a clockwise or counter-clockwise mode of movement upon request.

WHAT THE PRESS WROTE ABOUT CRYSTAL

"WE DRIVE ZETOR BECAUSE WE BET ON SIMPLE MACHINES."

Hans-Ruedi Schneeberger from Welchenrohr, a small city south of Basel, manages a farm with roughly 30 cows, 6 000 hens and 25 hectares of pastures. In addition to that, he often does a rental work, e.g. snow plowing in winter months. Hans bought his CRYSTAL HD 170 last year in March and has been working with the tractor ever since – mainly for transport. Thanks to the suspended

front axle and the cabin, he particularly praises driving comfort. Owner bought the tractor from his brother, who is a dealer of the ZETOR brand: "We already have PROXIMA, FORTERRA CL and FORTERRA HSX," adds

Profi | Germany | Thomas, Rolf a Hans-Ruedi Schneebergerovi



In our test with a six-blade semi-carried plough, the machine had to prove its worth – and it indeed surprised us: even from the low range RPM, the motor had not trouble climbing to 38% of the torque incline!

Profi | Germany | Lucas Colsman, Sechs Zylinder für Jederman

We praise the automatic transmission control. Thanks to the PowerClutch system and hydraulic reversion we seldom had to use the clutch pedal, practically only during headland manoeuvring. Gear shifting is comfortable. The multipliers shift quickly and without any abrupt jerking. The tractor designers deserve a compliment for the good turnaround radius. Manoeuvring a 6-metre unit in the field was trouble-free.

AgroMechanika | Poland | Jacek Skudlarski, Nowy traktor Zetora



CRYSTAL has good driving comfort due to the luxurious independently suspended Carraro front axle and mechanically suspended cabin. It dampens shocks effectively, as was evidenced when driving at top speed on an uneven cobble road. The cabin of the vehicle is pleasantly quiet.

Trekker | Holland | Martijn Knuivers, Zetors Groe Diamant

The operator's area is generally one of ZETOR's virtues. The CRYSTAL's cabin with six columns provides comfort thanks to the mechanical suspension. "The cabin is spacious and well silenced. It comfortably accommodates two people and they can talk without having to raise their voices. The passenger's seat with a safety belt is really ideal for me, because I regularly bring along four-year old Clovis", summarises Jean-Noël Drouet.

Material Agricole | France | David Laisney, Plusieurs cordes à son arc

ZETOR ORIGINAL SPARE PARTS

ZETOR TRACTORS a.s. secures the world-wide sale of original ZETOR spare parts for the warranty and post-warranty service of ZETOR tractors through its distribution network. The quality of spare parts is continually checked during production and is identical to the quality of the parts used in the assembly of new products.

The original parts include all improvements and innovations ensuring the full restoration of the operational and utility characteristics of the repaired machine. The authenticity of the supplied spare parts is secured by packing in original packing with a unique identification number.

- ZETOR spare parts attain high quality for reasonable prices.
- In order to maintain the high lifetime of the tractor, we recommend using only original ZETOR spare parts.







ZETOR original spare parts are available only through ZETOR authorised dealers. For more information, visit www.zetor.com/sales-and-service-network

ZETOR ORIGINAL OILS

For ZETOR tractors we recommend original oils, which are identical to the oils the tractors are filled with from the factory.

ZETOR Oils may be purchased through our sales and service network.

- Engine oils
- Transmission oils
- Front axle oil
- Hydraulic oil

Extend the lifetime of your tractor by using ZETOR original oils.





DEVELOPED AND MANUFACTURATED IN THE HEART OF EUROPE

MORE THAN ONE MILLION CUSTOMERS CANNOT BE WRONG

PRODUCTION

The manufacturing base of ZETOR tractors, engines and transmission is concentrated in the Czech Republic. The background of our own development and manufacturing centre contributes to the ultimate quality of the offered products and enables the effective management of innovation development and application. ZETOR TRACTORS a.s. is a corporately responsible company that emphasises the quality of its products, ecology and protection of the environment. These principles are guaranteed by the ISO 9001 quality certificate, which the company has acquired.







DEVELOPMENT

The technical section forms the long-term and stable research, development and testing background of ZETOR TRACTORS a.s. It represents the high professional level of the research staff team, which uses their extensive knowledge base and experience in the field, supported by cutting-edge technologies. It secures the comprehensive and systematic research and development of the manufacturing programme – from concept, design, assembly, and the production of functional samples and prototypes all the way to lab tests and operation tests of the tractors and engines.





ZETOR CRYSTAL HD

MODEL	UNITS	CRYSTAL HD 170		
		ENGINE		
Engine Type	•	TCD 6.1 L6		
Emisní stupeň	•	Stage V		
Max. Power (ECE R120)	kW/HP	125.7/171.0		
Rated Power (ECE R120)	kW/HP	120.3/163.6		
Rated Speed	rpm	2 100		
No. of Cylinders / Valves	•	6 / 24		
Aspiration	•	Turbocharged		
Fuel Injection System	•	Common Rail		
Cooling	•	Viscous fan clutch		
Dsiplacement	cm ³	6 057		
Bore / Stroke	mm	101 / 126		
Max. Torque	Nm	739		
Torque Rise	%	36		
TRANSMISSION				
Туре	•	ECO 40 transmission Reversing 5-stage with automatic 3-stage PowerShift		
Number of Gears (F/R)	•	30/30		
Shifting	•	Fully synchronized		
Reverser	•	Electro-Hydraulic (PowerShuttle)		
Multiplier	•	3-stage (PowerShift)		
Clutch Button	•	Clutch button located on the shift lever (PowerClutch)		
Max. Speed	km/h	40		
		PTO PTO		
Туре	•	Multi-plate PTO clutch with feedback controlled starting		
Rear PTO				
— PTO Speeds	rpm	Independet (540/540E/1,000/1,000E)		
Front PTO OPT				
— Front PTO Speeds ^{OPT}	rpm	1 000		
— End piece	•	CW/21 or CCW/6		
		HYDRAULICS		
Туре	•	Bosch electro-hydraulics with HitchTronic function, 2 auxiliary cylinders		
Rear Three-Point Hitch				
— Туре	•	Categoriy III		
— Max. Lifting Capacity	kN	85		
— Lifting Capacity in full range	kN	78		
Front Three-Point Hitch OPT				
— Туре	•	In set with front 7 and 3 pole socket		
Pump Capacity	l/min	85 (gear)		
External hydraulic circuits control	•	Electrohydraulically controlled sections (flow & timing)		
Hydraulic remotes (Quickcouplers)	•	8+1		
Front Hydraulic remotes (Quickcouplers) OPT	•	2+1		

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MODEL	UNITS	CRYSTAL HD 170		
		CAB		
Suspension	•	Suspended cab		
Roof	•	FOPS protection with sunroof		
Seat	•	Comfort seat pneumatic suspension, heating, backrest and seat belt		
Passenger Seat	•	Standard (with safety belt)		
Controls	•	Multifunctional panel with joystick		
Heating	•	Standard		
Air-Conditioning	•	Standard		
Heated Mirrors and Rear Defroster	•	Standard		
Radio	•	Standard		
Steering Wheel	•	Titable and telescopic		
UNDERCARRIAGE				
Drive System	•	4WD		
Front driven axle	•	Suspended with independent suspension of half-axles		
Operating brakes	•	Rear brakes: Independent pneumatically controlled brakes Front brakes: hydraulically controlled brakes		
Trailer brakes OPT	•	Pneumatic 2+1 hoses or hydraulic & pneumatic 2+0 hoses		
Fuel tank / Urea tank	l	300 / 32		
Front Mudguards	•	Pivoting		
		OTHER SPECIFICATION		
Operating Weight*	kg	5,760-6,500		
Max. Technically Permissible Weight	kg	10,000		
Max. Front Ballast	kg	1,200		
Max. Rear Wheel Ballast	kg	472		
Max. Lenght	mm	5,410		
Max. Width	mm	2,550		
Max. Height	mm	3,045		
Ground clearance	•	400-522		
Wheelbase	mm	2,850		
TIRES				
Front and Rear wheels combinations	•	480/65 R28 X 600/65 R38, DW18 540/65 R28 X 650/65 R38		

^{*} Without front and rear ballast

OPT Optional equipment





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