profi Tractor Test

Deutz-Fahr 6160.4 TTV:

Beautifully done

With its new cabin, the 6160.4 TTV from Deutz-Fahr looks very stylish. However, not only its appearance counts; its “internal values” are also important. Together with the DLG (German Agriculture Association) test center, we thoroughly examined looks and performance.

Hubert Wilmer

Rims painted matt grey, chrome bands on the hood, LED daytime running lights - as far as the looks are concerned, the new, stepless infinitely variable TTV of the 6 series even goes one step further in comparison with the regular transmission tractors (profi 3/2014). The most important difference here - in addition to the infinitely variable transmission, of course - is the cabin “MaxiVisionCab” with the completely redesigned armrest control panel including multi-function handle. But one by one and from the start…

The “4” in the type designator signifies that under the stylish hood, the four-cylinder engine TCD 4.1 L04 4V with a displacement of 4l performs its job, not the six-cylinder engine (which is also available). Deutz-Fahr indicates a nominal capacity of 113kW/154bhp (according to 2000/25 EC) here. And thanks to the boost, this capacity is said to increase to a maximum of 122kW/166bhp during PTO drive tasks and road driving at speeds of more than 18km/h. Furthermore, due to SCR technology, the power unit fulfills the requirements for state IIIB exhaust emissions standards (Tier 4 i).
On the PTO shaft test bench of the DLG, with a nominal rotational speed of 2,100rpm, at least 95kW/129bhp made it to the PTO shaft stub in the rear. At 1,700rpm, it even reached a maximum of 102kW/139bhp. And with the boost, the engine actually even improves: 101kW/137 were reached at the nominal rotational speed, and even a maximum of 107kW/146bhp - good!
Good is also the right key word when it comes to the evaluation of the performance characteristics: 41 or 42% of torque increase with only a 29% reduction in rotational speed, 30% constant power range, and up to 118% starting torque - those are all great values!

And the diesel consumption? While 271 or 268g/kWh at nominal rotational speed are slightly above average, 236 or 237g/kWh at maximum performance of the PTO drive are absolutely all right.
However, it becomes exciting again here in terms of towing work: Tractive power (without boost) of almost 81kW/110bhp with a nominal rotational speed and 89kW/121bhp with maximum speed are fine - as is the fuel consumption of 314 or 277g/kWh. And the fact that the 6160.4 TTV scores well in the practical Powermix tests is mostly due to the economy PTO: 276g/kWh (+ 29.9g/kWh AdBlue) amounts to 6% less than the average of all tractors already tested!

The scores are not quite as good in the consumption tests on the road, which you can exclusively find in profi: At 50km/h (which the infinitely variable ZF Eccom 1.5 in the

TTV reaches at 1,790 revolutions), the consumption on the road course with 647g/kWh is no less than 8.5% above the current average. However, at 40km/h, the TTV looks better with its rotational speed reduced to 1,430 revolutions - with 631g/kWh, the consumption was only 3.3% above average. Nonetheless, the diesel tank could be a little bigger: 210l only last for a maximum of eight hours of hard work. 28l AdBlue are always enough provision for a diesel tank filling - despite the consumption of more than 10% of the diesel volume.
Plus points are awarded for the two engine speed presets that are easily adjustable. In order to activate them via the new joystick, it was necessary to save them into “ComfortTip”. And the cruise controls cannot be over-steered with the drive lever without immediately changing the stored value. However, this could easily be done with the practical rotary control on the new drive level. We must repeat the point of criticism that the shift reverse left and right can still not be alternately used. If one wants to change direction with the buttons on the right, the lever on the left must be set to ‘neutral’. In contrast, we really liked the fact that the switching behavior of the new TTV during directional changes is adjustable in five steps - independent of the setting of the acceleration.

The handbrake - operated with an electric spindle motor - is also well done. One rarely needs the button for it, which is located in the control panel armrest, because it automatically applies itself when the tractor stands for a longer period of time, or when the engine is turned off. And - even better - it also releases automatically when one chooses a driving direction. It could not be any simpler!
In contrast, it becomes more complicated during the switching of driving modes (manual, automatic, PTO), the selection between Eco and Power, and the setting of the acceleration. For one, the buttons are located under the cover in the armrest. But the missing function of the foot throttle when the PTO is turned on bothered us more. It is also important to know that the starting speeds are freely adjustable, at least when switching between “Automatic” and “PTO”.

[Caption under picture, page 14]:
The four-cylinder exhibits respectable performance and economical consumption (not least due to the boost). Photographs: Tovornik, Wilmer

[Graphics page 14]:
Consumption during work in the fields

Traction/towing work	Diesel average 276g/kWh and 9.83l/ha	AdBlue 27.3g/kWh and 0.73l/ha
1 Heavy (100% load)	Plow Cultivator	
1 Moderately heavy (60% load)	Plow Cultivator	
PTO work	Diesel average 271g/kWh and 3.96l/ha	AdBlue 31.7g/kWh and 0.34l/ha
3 Heavy (100% load)	Rotary harrow Mower	
4 Moderately heavy (70% load)	Rotary harrow Mower	
5 Light	Rotary harrow	

(40% load)	Mower	
Mixed work	Diesel average 294g/kWh and 4.15l/ha	AdBlue 29.5g/kWh and 0.32l/ha
6 Manure spreader 7 Compactor		
Powermix 276g/kWh		29.9g/kWh

The Powermix value in g/kWh as an average of all 7 measured cycles is given in the lower left corner. The average values in the areas of 'traction/towing work', 'PTO work', and 'mixed work' are listed in the table in red with the fuel consumption in grams per kilowatt and hours and in liters per hectare. The graphic on the right shows the consumption of AdBlue (which is not a propellant, but rather a fuel).
The bars are narrower because AdBlue is cheaper than Diesel; the average values are displayed in blue. The yellow baseline of the left graphic marks the average of all Powermix candidates that have been measured until now. The length of the bars shows the percentage of the tractor's superiority in the respective cycle (green) or inferiority (red) as compared to the average of all Powermix candidates already tested. The average for Powermix currently lies in the average of all measured test candidates at 295g/kWh.
In the Powermix, the Deutz-Fahr 6160.4 comes in below the average values in terms of diesel consumption for almost all work. The overall Powermix value for Diesel is more than 6% better than the average of all candidates already tested. The additional AdBlue consumption was 7.2 liters per 100 liters diesel on average.

Consumption on the road

On a level surface (40%)		**AdBlue consumption**
At 40km/h		
At 50km/h		
At 60km/h		
On a mountain (50%)		
Maximum incline under load		
In neutral (10%)		
In the idling position		
Transport mix total consumption		
At 40km/h	631g/kWh	74.0g/kWh
At 50km/h	647g/kWh	75.0g/kWh
At 60km/h	-	-

The DLG transport test is currently conducted on the road. The test candidate drives on a round course with a trailer (adequately weighted with ballast corresponding to the measured PTO performance); the measurements are repeated three times each. The total result is calculated on the basis of the weighted individual results of the drive on the mountain (50%), on a level surface (40%), and in neutral (10%).
The yellow baseline in the graphic marks the respective average value of all tractors that have been tested in road transport until now. The length of the bars shows the percentage of the test candidate's superiority (green) or inferiority (red) as compared to the average. The average for the transport test on the road is currently 611g/kWh at 40km/h, and 596g/kWh at 50km/h.

At 40km/h, the Deutz-Fahr 6160.4 achieved consumption values below average on a level surface; at 50km/h and on the mountain, the consumption was above average. With 631g/kWh at 40km/h, the total consumption was 3.3% higher than average, and with 647g/kWh at 50km/h, it was 8.5% higher than average.

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[Captions under photographs:]
Almost 76dB(A) are a lot for a newly developed cabin. Furthermore, the light upholstery material is easily soiled and could be more robust. Unfortunately, the seat with control panel armrest cannot be swiveled sideways for a better view towards the rear.

The instrument panel pivots together with the steering wheel. However, the locking mechanism should be backlash-free.

The new joystick has a lot of buttons with the same shape, but in different colors and lit from underneath. And, one can control two (proportional!) valves.

[Graphic:]
Gear speeds
Due to the ZF Eccom transmission, one can select any speed. Unfortunately though, the reversing lever on the left and the pushbutton on the right cannot alternately be used.

R←N→D

Stepless forward and backward
Speed (km/h)

Stepless from 4 to 12km/h
Speed (km/h)

[Continuation of the article:]
Full Program: The 6160.4 TTV offers four PTO rotational speeds!
Although one has to shift them with two levers, all four transmissions are fully useable; there is a practical automatic headland function and an external control on both sides - this is how it should be! However, Deutz-Fahr can still improve the engine-transmission coordination. For example, jolting sometimes occurs when assuming control from the cruise control with the accelerator pedal. And in order to keep the cruise control speeds exactly constant, one has to pay attention to the proper setting of the engine load (e.g. 200 r/min).

With a lifting power of more than 7t, the Deutz sets the standard in the four-cylinder class - no machine remains standing there. The same applies to the hydraulics (with separate oil supply!): With the 160-l axial piston pump, which is available upon request (700 Euros), the DLG measured a maximum output of 164l/min and a hydraulic performance of almost 46kW - very good!

What remains is the criticism of the front loader, whose lower link arms should be capable of being lowered more. And the splint of the upper link arms was of course also quickly warped. Deutz-Fahr should also turn around the little wheel for the depth regulator, which intuitively functions in the “wrong” direction.

All hydraulic valves have timing and flow control, and two of them can be operated on the joystick (even proportionally!). Unfortunately, there is no proportional control when the timing control is activated. And changing the allocation of operating levers/valves in predetermined schemes is complex - especially since the marking of the oil connections with colors and numbers is not immediately clear to everyone.
However, there is a freely configurable external control on the right and on the left, as well as the option to even block the floating position of individual valves - nice! Due to the many setting options, however, we missed a clear depiction on the basic screen of the “iMonitor”.

[Page 16]

[Graphic:]

Lifting power and lifting power requirement

Deutz-Fahr 6160.4: *The red graph shows the lifting power (90% of the maximum value) as continuous lifting power at the coupling points of the lower link arms. The yellow graph shows the lifting power with shortened lifting struts - less lifting power and less lifting range! Due to the lifting power directed upwards, the tractor can easily lift anything that it can tow.*

Lifting power (daN)

Cultivation combination 3,758kg
Plow 1,574kg

Lift range (cm)

Front loader: continuously 2,403daN, lift range 75.8cm
Lifting struts long: continuously 6,948daN, lift range 72.4cm
Lifting struts short: continuously 6,894daN, lift range 72.0cm

[Caption:]
With 7t and more, the lifting power is very good! The arrangement of the electrical system above the hydraulics is well thought-through.

[Box on the bottom of page 16:]

Further details from our practical experience:

Not a summary of the overall evaluation, but rather a list of positive and negative practical details.

+ Positive
+ Electrical rearview mirrors with wide angle
+ Small work light in the rear
+ Comfortable passenger seat with large cooling compartment
+ Many storage trays, some of which are closed
+ Adequate tool box (unfortunately on the right)

Very practical: The main switch for the battery and the ascent lighting.

Nicely automatic: The temperature is now also regulated via the automatic air conditioning system.

Clearly arranged: Everyone understands how to switch the headlights on and off, but the button for the running lights is better placed in the instrument panel.

- Negative
- Indicator light interrupter takes getting used to
- Glass roof shading rattles
- Control panel armrest is loose

Not practical: The passenger door does not remain open, and the door is difficult to close from the passenger seat.

Not useable: With folded-up link arms, the trailer coupling is hardly useable. And the splint of the upper link arms is often in the wrong hole and bends.

Not detachable: The brackets of the air filter can only be opened when the radiators are swiveled.

[Continuation of the article on page 16:]

Which already brings us to the new "MaxiVisionCab" with pneumatic suspension. At first sight, it appears very modern and friendly due to the light-colored paneling - even though it still has six posts and is probably not the quietest one with almost 76dB(A) under load. However, more disillusionment takes over when one notices that the driver's seat with the large armrest cannot be swiveled sideways. Nonetheless, when the seat is deflected, the control panel armrest can touch the side console and damage the light-colored cover fabric. This fabric is not only sensitive to being soiled, but could also be more robust.

The new multi-functional handle "MaxCom" is a highlight: with multiple functions, and well lit from beneath just like the entire armrest. And the new touch screen monitor with its diameter of 30cm is impressive. Deutz-Fahr can still improve the mounting system, and also the menu structure. Even though there is an additional display in post A, we would like to see a clearly structured basic screen that summarizes the most important information about the engine, transmission, loader, hydraulics, etc. The additional key control system is good; however, it would be optimal if it were located on the armrest instead of on the console.

A few other details could also be improved, such as the stylish air vents that cannot be tightly closed, the wiping area of the windshield wipers that is too small, the installation shaft for the radio far in the front of the roof, or the sun visor under the roof hatch that rattles when it is only partially closed. The automatic air conditioning and the switch for the work light in post B are great, but the switch for the running lights should better be placed on the instrument panel.

Keyword instrument panel: The displays are good. We credit the fact that the console with the pivoting steering wheel has too much play to the early (serial) stage of the test tractor. Furthermore, we also noticed a lot of nice details: starting with the LED lighting in the ascent to the new headland management system - with freely programmable triggers for the individual functions!

The steer angles for the “drive train management” of the all-wheel drive and the differential locking mechanism are also freely programmable - good! The soft front axle suspension is also great when the tractor is empty; however, with ballast, it could be adjusted a little harder. Nonetheless, one does not need ballast any time soon; the 6160.4 had a proud weight of 7,575kg in the test configuration! With a total admissible weight of 10.5t, only just under 3t of useable load remain! With a track of 1.92m (front tires 540/65 R 28), we measured a turning radius of 12m - slightly above the average of this class. The performance of the brakes is average: The DLG measured a deceleration of 4.2m/s^2.

The only thing missing now are the prices: According to the list, the 6160.4 TTV in basic configuration costs 108,800 Euros (all prices including value-added tax). The 50km/h version with compressor unit and suspended front axle for 114,150 Euros is recommendable. The cabin with pneumatic suspension is listed for 1,200 Euros, the front loader for 3,900 Euros. Overall, the test tractor thus comes out at a list price of 128,650 Euros - that is okay.
The tractor is optionally also available as a six-cylinder with the same axles, loader, hydraulics, etc. - with otherwise comparable equipment it costs approximately 4,000 Euros more.

Beautifully done - There is no doubt that the 6160.4 TTV from Deutz-Fahr receives top scores for its appearance. However, we were more preoccupied with the measured data and the practical use of the new infinitely variable tractor from Lauingen.
And in terms of this, the range extends from good grades in terms of performance and consumption to a rather mediocre evaluation by the testers in terms of comfort and handling. Especially in the cabin, there is potential for improvement in a lot of places. At the same time, there are a lot of details that are not only beautiful, but also practical.

[Box on top of page 17:]

Carthorse for the grubber

Last fall, our farming community chose the 6150.4 TTV from Deutz-Fahr. It was clearly cheaper than a comparable Fendt, and we even got a Stoll FZ front loader with it. In addition to a lot of transport work during the spring, the TTV is intended to replace a Claas Arion with a gearbox in front of the potato grubber.
Other than the infinitely variable transmission, we were especially convinced by the agility and the overview of the tractor. After more than 300 hours of use - predominantly for transport work - we appreciate the suspension comfort; however, the accelerator pedal still reacts too “nervously”, and the hand throttle is rather “sluggish”. In comparison with our two Agrotron TTV 620, it also scores plus points for the control panel armrest with the new drive lever and the large iMonitor. So far, the air-conditioning system was broken once.

[Photograph:] *Together with three colleagues, Niels Kynast cultivates 600ha in the area of 31311 Uetze-Schwüblingsen. In addition to 70ha of potatoes and 100ha turnips, they cultivate silage maize, onions, and grain.*

Great on the road

In January, we got a 6150.4 TTV from Deutz-Fahr with Stoll loader for our agricultural and forestry operation because of the attractive price-performance ratio. So far, it ran approximately 180 hours in front of a firewood harvester (Bindenberger SSP 520). Since

we have a large area of operation from Stuttgart to Günzburg, we especially appreciate the excellent driving comfort. Unfortunately, it is not possible to keep the speed constant with the accelerator pedal, and the steering wheel should be further extendable.
With 8l/h during transport and 2.3l/h during crane operation, the diesel consumption is fine. We do not have an iMonitor, and we want to upgrade the tractor with a pivoting seat for the crane. However, in order to have more space, the steering wheel console should swivel further towards the front. Also, we would like to see a more stable armrest, and a darker, more robust interior paneling.

[Photograph:]
Peter Vitek from 89081 Ulm predominantly uses his tractor for firewood harvesting and silage transport.

Technical data, measurement values, test results

Width: 252cm; length: 479cm (with front loader); height: 304cm (cabin)

Deutz-Fahr 6160.4 TTV

Technical Data

Engine: 113kW/154bhp (according to 2000/25 EC) at 2,100 min^{-1}; water-cooled four-cylinder engine Deutz TCD 4.1 L4, emission level IIIB (Tier 4 i) with SCR catalytic converter and AdBlue, turbo loader and intercooling system; 4,038cm^3 displacement; 210l fuel and 28l AdBlue tank

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Transmission: stepless infinitely variable ZF Eccom transmission 1.5 with four automatically activated driving modes; power shift transmission, cruise control, 0.02-50km/h (at 1,790min^{-1})

Brakes: wet disk brakes in the rear with all-wheel activation; handbrake with electrical control, compressed air as standard

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Electronics: 12V, battery 143Ah, generator 150A, ignition 3.0kW/4.0bhp

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Hoisting unit: cat. II/III; electrohydraulic hitch control with lower link control and vibration dampening, front power loader and front PTO shaft option

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Hydraulics: axial piston pump with 160l/min (standard 120l/min), 200bar, up to 7 control units (5 in the back/2 in the front) with timing and volume control; separate oil source, 40l extractable

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PTO shaft: 540/540E/1000/1000E with shift stub, 1 3/8 inch, 6 or 21 wedges, electro-hydraulically shifted

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Axles and chassis: flange axle with multi-disk differential lock, electro-hydraulically shifted just like front drive; test tires 540/65 R 28 in the front, 650/65 R 38 in the rear

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Care and maintenance: motor oil 10l (oil change every 500h); transmission oil 67l and hydraulic oil 60l (every 1,000h); cooling system 29l

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Price: Basic equipment €108,800 (prices without value-added tax); 50km/h version with suspended front axle, compressor unit, etc. €114,150; front hoisting unit (front loader) €3,900, front PTO shaft €3,000; test configuration €128,650

Performance and torque
Performance (kW) Torque (Nm)
Engine speed (min^{-1})

Fuel consumption
Absolute (l/h) Relative (g/kWh)
Engine speed (min^{-1})

[Second column]

Measurement values DLG Test Center

PTO shaft performance (with/without boost)
Maximum (1,700min^{-1}) 102.1/107.0kW
At nominal rotational speed 95.0/101.0kW

Diesel / AdBlue consumption (with/without boost)
At maximum performance 236+25.6/237+24.1g/kWh
At nominal rotational speed 271+25.0/268+23.3gkWh
Absolute 25.6/30.6 and/or 27.8/32.2l/h

Torque (with/without boost)
Maximum 607/651Nm (1,500min^{-1})
Torque increase 40.6/41.9%
Rotational speed drop 29%
Starting torque 118/110%

Transmission
Number of gears between 4 and 12km/h stepless

Lifting force rear (90% maximum oil pressure, corr.)
Bottom/middle/top 6,948/7,794/8,649daN
Lifting range under load 72.4cm (23 to 95.4cm)

Lifting force front (90% maximum oil pressure)
Bottom/middle/top 2,403/2,835/3,492daN
Lifting range under load 75.8cm (27.8 to 103.6cm)

Towing capacity
Maximum 88.9kW at 1,700min^{-1} 277g/kWh
At nominal rotational speed 80.6kW 314g/kWh

Sound volume (under load, at the ear of the driver)
Cabin closed/open 75.7/80.2dB(A)

Deceleration
Maximum median deceleration 4.2m/s^2
Pedal force 36.2daN

Turning radius
Without front-wheel drive 12.00m

Test weight

Front axle	3,055kg
Rear axle	4,520kg
Empty weight	7,575kg
Admissible total weight	10,500kg
Useful load	2,925kg
Power/weight ratio	62kg/kW
Wheelbase	242cm
Track width front/rear	192/185cm
Ground clearance	45.0cm

Fuel consumption in the characteristic diagram

Work areas	Performance	Rotational speed	g/kWh	l/h
Standard PTO shaft 540	100%	1,995	253	31.4
Economy PTO shaft 540E	100%	1,610	241	29.7
Standard PTO shaft 1000	100%	1,995	253	31.4
Economy PTO shaft 1000E	100%	1,610	241	29.7
Engine in throttle-down area	80%	maximum	280	26.9
High performance	80%	90%	249	23.9
Transport work	40%	90%	297	14.2
Low performance, ½ rotational speed	40%	60%	248	11.9
High performance, ½ rotational speed	60%	60%	225	16.2

Test results

Engine +/++

Performance characteristics	1.8
Fuel consumption	2.0
Towing capacity/PTO shaft performance	2.5

Good performance values and characteristics, fuel consumption good, but additional AdBlue necessary; towing capacity fine

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Transmission +/++

Gear spacing/functions	1.7
Switching capacity	1.2
Clutch, gas	1.6
PTO shaft	1.3

Stepless infinitely variable transmission with 50km/h at only 1,790rpm and four PTO shaft speeds, engine-transmission coordination still needs to be optimized

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Chassis ++/O

Steering	1.6
Four-wheel and differential lock	1.1
Hand and foot brake	2.0
Suspension front axle/cabin	1.4
Weight and useful load	3.5

Agile and steers well, high driving comfort and good brakes, but significant empty weight and

low useful load

Lifting/hoisting gear/hydraulics ++	
Lifting power and lifting range	1.1
Handling	2.0
Hydraulics performance	1.1
Control devices	1.9
Connections	1.5

Lifting power and hydraulic performance very good, control valves with timing and volume control good, handling and adjustment should in part still be improved

Cabin +	
Space and comfort	1.3
Visibility	1.4
Heating and air-conditioning	2.0
Sound volume	2.5
Electrical systems	2.0
Fabrication/workmanship	3.0
Maintenance	2.0

Space, comfort, and visibility are good; sound volume under load is average, workmanship in the test tractor should be improved in many details

Suitability profile

Basic requirements
Moderate requirements
High requirements
Field work
Grassland work
Transport work
Front loader work

Price	**Low**	**High**
€95,700 to €99,800		

without value-added tax in basic configuration;
information from profi Tractor Catalogue 2014

Evaluation:
++ very good, + good, O average, - below average, - - inadequate

The individual grades as extracts do not necessarily mathematically provide an overall grade.