



John Deere 8400R e23

Datasheet DLG PowerMix

Applicant

John Deere GmbH & Co.KG
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Germany
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Test performed by

DLG e.V.
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Test No.

2016-00253



October 2016
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Specifications

Engine			
Manufacturer	John Deere		
Stage of emission	IV		
Exhaust aftertreatment device			
Nitrous gaseous emission*	-		
Particulate matter emission	Active regenerating Diesel particulate filter (DPF)		
Time for regeneration DPF (average)	-	min	
Time between regeneration:			
- maximum*	-	h	
- under PowerMix conditions*	-	h	
- checked	-		
Exhaust gas recuperation			
	Extern, cooled		
Number of cylinders*			
	6		
Bore*			
	118	mm	
Stroke*			
	136	mm	
Displacement*			
	8984	cm ³	
Rated speed			
	2100	min ⁻¹	
Power by			
97/68 EC	standard	boost	
Rated power	294 kW	320 kW	
Maximum power	318 kW	330 kW	
at engine speed	1900 min ⁻¹	1900 min ⁻¹	
Loss of power during regeneration	-		
Main fan			
Diameter	812	mm	
Number of fan blades	8		
Transmission			
Manufacturer	Deere & Co.		
Type of construction	PowerShift e23		
Ranges			
	-		
Powershift gear			
	-		
Forward	23		
Reverse	11		
Design speed			
	50	km/h	

Power take off				
Profile	Form 2: 21 tooth (1 3/8")			
Transmission ratio*				
Standard pto speed	540	540E	1000	1000E
Engine speed [min ⁻¹]	-	-	1995	1589
Chassis				
Front axle				
Manufacturer	John Deere			
Type	Independent suspension			
Tires				
	front		rear	
Manufacturer	Michelin AxioBib		Michelin AxioBib	
Tire size	600/70 R30		900/60 R42	
Axle load				
	front		rear	
Permissible*	8000 kg		11500 kg	
Empty weight	6701 kg		6255 kg	
	front		total	
Permissible*	8000 kg		18000 kg	
Empty weight	6701 kg		12956 kg	
Hydraulic				
System*	Load Sensing PFC (Pressure and Flow Compensated)			
Supply of oil	Common with transmission oil			
Fluid type*	John Deere HY-GARD			
Capacity*	165		l	
Extractable*	40, optional 90		l	
Auxiliary valves				
Number	4			
Max. flowrate*	227		l/min	
Max. pressure*	204		bar	
Fitted options				
Free return flow	No			
Air condition	Yes			
Air compressor	Yes			
Front hydraulic power lift	Yes			
Front pto (disengageable)	No			
	-			
	-			

Test conditions

Axle load	front	rear
With ballast	6965 kg	6995 kg
Ballast		
on frame	- kg	950 kg
on axle	- kg	- kg
Axle load distribution		
	50 %	50 %
Tire pressure		
	front	rear
Field work	1,2 bar	1,2 bar
Transporttest	1,6 bar	1,6 bar

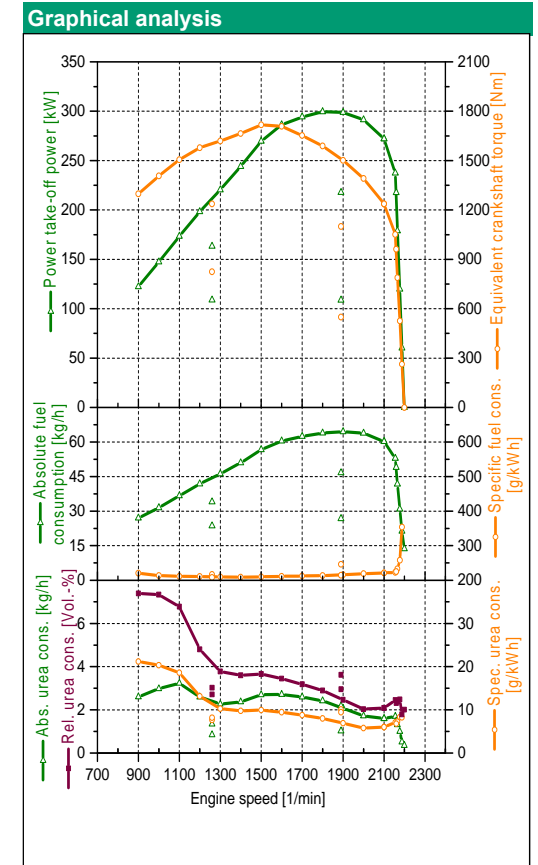
Remarks
Independent link suspension (ILS) at the front axle

* Manufacturer's data

Results of measurement at pto dynamometer – standard

Full load	
Rated speed*	
Pto power	272,0 kW
Absolute fuel consumption	60,2 kg/h
Specific fuel consumption	221 g/kWh
Specific urea consumption	6,0 g/kWh
Ratio urea to fuel	2,1 Vol-%
Maximum power*	
Engine speed	1800 min ⁻¹
Pto power	299,6 kW
Absolute fuel consumption	63,9 kg/h
Specific fuel consumption	213 g/kWh
Specific urea consumption	8,0 g/kWh
Ratio urea to fuel	2,9 Vol-%
Maximum torque*	
Engine speed	1500 min ⁻¹
Pto power	269,7 kW
Absolute fuel consumption	56,6 kg/h
Specific fuel consumption	210 g/kWh
Specific urea consumption	10,0 g/kWh
Ratio urea to fuel	3,7 Vol-%
1000 rpm at pto	
Engine speed	1995 min ⁻¹
Pto power	292,2 kW
Absolute fuel consumption	64,1 kg/h
Specific fuel consumption	219 g/kWh
Specific urea consumption	5,9 g/kWh
Ratio urea to fuel	2,1 Vol-%

Part load	
Full throttle, 80 % of power at rated speed	
Absolute fuel consumption	49,0 kg/h
Specific fuel consumption	225 g/kWh
Specific urea consumption	6,8 g/kWh
Ratio urea to fuel	2,3 Vol-%
90 % of rated speed, 80 % of power at rated speed	
Absolute fuel consumption	46,7 kg/h
Specific fuel consumption	214 g/kWh
Specific urea consumption	10,1 g/kWh
Ratio urea to fuel	3,6 Vol-%
90 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	26,7 kg/h
Specific fuel consumption	246 g/kWh
Specific urea consumption	9,5 g/kWh
Ratio urea to fuel	3,0 Vol-%
60 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	23,6 kg/h
Specific fuel consumption	216 g/kWh
Specific urea consumption	7,6 g/kWh
Ratio urea to fuel	2,7 Vol-%
60 % of rated speed, 60 % of power at rated speed	
Absolute fuel consumption	34,0 kg/h
Specific fuel consumption	208 g/kWh
Specific urea consumption	8,2 g/kWh
Ratio urea to fuel	3,0 Vol-%



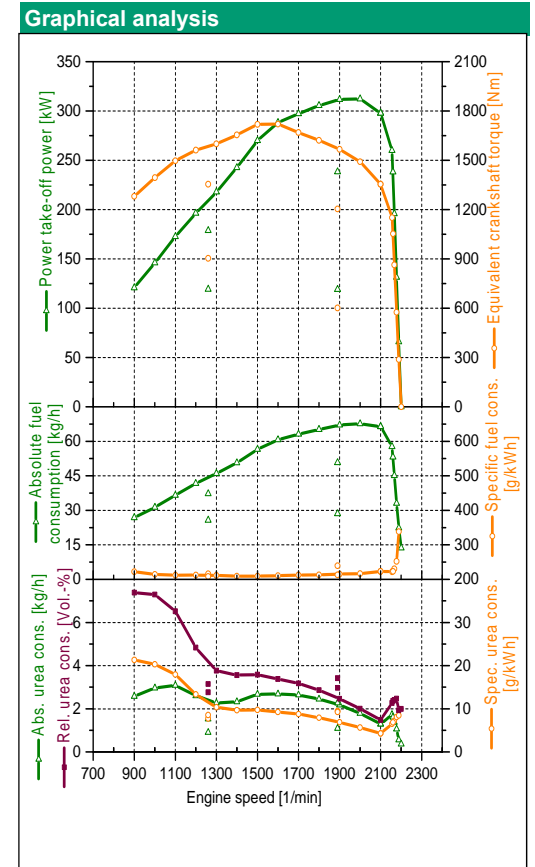
Torque rise	39 %
Engine speed drop	29 %
Pulling off torque	114 %

* Results approved by the DLG board of examiners.

Results of measurement at pto dynamometer – boost

Full load	
Rated speed*	
Pto power	297,8 kW
Absolute fuel consumption	66,4 kg/h
Specific fuel consumption	223 g/kWh
Specific urea consumption	4,3 g/kWh
Ratio urea to fuel	1,5 Vol-%
Maximum power*	
Engine speed	2000 min ⁻¹
Pto power	312,3 kW
Absolute fuel consumption	67,6 kg/h
Spec. Fuel consumption	217 g/kWh
Spec. urea consumption	5,6 g/kWh
Ratio urea to fuel	2,0 Vol-%
Maximum torque*	
Engine speed	1600 min ⁻¹
Pto power	288,3 kW
Absolute fuel consumption	60,7 kg/h
Spec. Fuel consumption	211 g/kWh
Spec. urea consumption	9,2 g/kWh
Ratio urea to fuel	3,4 Vol-%
1000 rpm at pto	
Engine speed	1995 min ⁻¹
Pto power	312,1 kW
Absolute fuel consumption	67,8 kg/h
Spec. Fuel consumption	217 g/kWh
Spec. urea consumption	5,7 g/kWh
Ratio urea to fuel	2,0 Vol-%

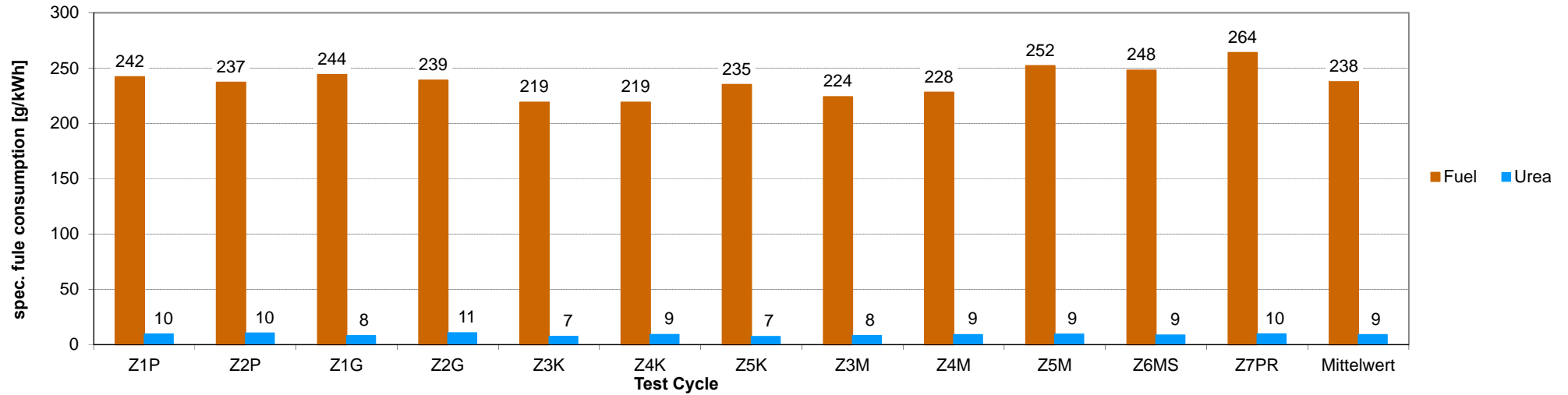
Part load	
Full throttle, 80 % of power at rated speed	
Absolute fuel consumption	53,2 kg/h
Spec. Fuel consumption	223,0 g/kWh
Spec. urea consumption	6,8 g/kWh
Ratio urea to fuel	2,4 Vol-%
90 % of rated speed, 80 % of power at rated speed	
Absolute fuel consumption	50,7 kg/h
Spec. Fuel consumption	213,0 g/kWh
Spec. urea consumption	9,5 g/kWh
Ratio urea to fuel	3,4 Vol-%
90 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	28,5 kg/h
Spec. Fuel consumption	240,0 g/kWh
Spec. urea consumption	9,2 g/kWh
Ratio urea to fuel	3,0 Vol-%
60 % of rated speed, 40 % of power at rated speed	
Absolute fuel consumption	25,7 kg/h
Spec. Fuel consumption	216,0 g/kWh
Spec. urea consumption	7,8 g/kWh
Ratio urea to fuel	2,8 Vol-%
60 % of rated speed, 60 % of power at rated speed	
Absolute fuel consumption	37,2 kg/h
Spec. Fuel consumption	208,0 g/kWh
Spec. urea consumption	8,5 g/kWh
Ratio urea to fuel	3,1 Vol-%



Torque rise	27 %
Engine speed drop	24 %

* Results approved by the DLG board of examiners.

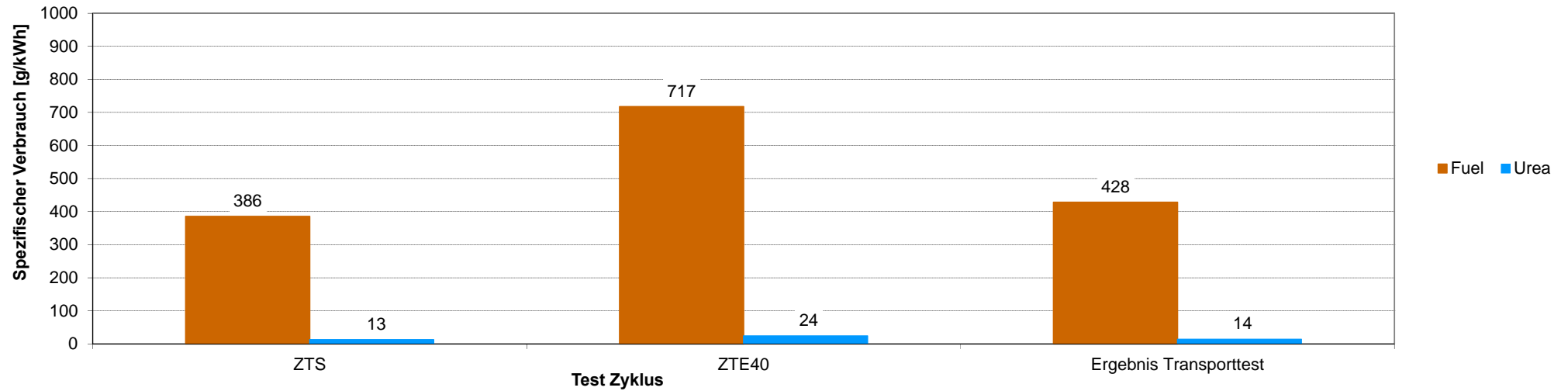
Results at DLG PowerMix - Field work



Load type	Test cycle		Average values									
			Engine speed	Driving speed	Total power	Absolute fuel consumption		Specific fuel consumption	Spec. urea cons.	Ratio urea to fuel	Relative additional fuel for DPF regeneration*	Calculated spec. Fuel cons. with DPF regeneration
			[min ⁻¹]	[km/h]	[kW]	[kg/h]	[l/h]	[g/kWh]	[g/kWh]	[Vol-%]	[%]	[g/kWh]
Drawbar work	Plough 100 %	Z1P	1679	8,1	243	58,7	70,3	242	10	3,0	-	-
	Plough 60 %	Z2P	1279	8,6	158	37,4	45,0	237	10	3,4	-	-
	Cultivator 100 %	Z1G	1811	9,7	246	59,9	72,1	244	8	2,6	-	-
	Cultivator 60%	Z2G	1293	11,0	172	40,9	49,3	239	11	3,4	-	-
Drawbar + PTO work	Rotary harrow 100 %	Z3K	1779	5,8	261	56,2	68,2	219	7	2,6	-	-
	Rotary harrow 70 %	Z4K	1429	5,4	184	39,6	48,1	219	9	3,1	-	-
	Rotary harrow 40 %	Z5K	1430	5,4	105	24,2	29,4	235	7	2,4	-	-
	Mower 100 %	Z3M	1757	14,9	265	59,5	71,6	224	8	2,8	-	-
	Mower 70 %	Z4M	1428	14,9	190	43,3	52,2	228	9	3,0	-	-
	Mower 40 %	Z5M	1430	15,0	109	27,3	32,9	252	9	2,8	-	-
Drawbar- + PTO + Hydraulic work	Manure spreader	Z6MS	1987	6,5	207	50,6	61,2	248	9	2,6	-	-
	Baler	Z7PR	1996	8,8	172	43,2	52,4	264	10	2,7	-	-
Total average DLG PowerMix								238	9	2,9	-	-

* Ratio of additional fuel for regeneration to total fuel consumption during two regenerations; calculated with maximum operating hours during regeneration (see Specification-Engine)

Results at DLG-PowerMix - Transport test



Load type	Test cycle	Engine speed [min ⁻¹]	Driving speed [km/h]	Total power [kW]	Average values		Spec. urea cons. [g/kWh]	Ratio urea to fuel [Vol-%]	Relative additional fuel for DPF regeneration** [%]	Calculated spec. Fuel cons. with DPF regeneration** [g/kWh]	
					Absolute fuel consumption [kg/h]	Specific fuel consumption [g/kWh]					
Transportwork	only hill section ZTS	1729	41,3	153	59,1	71,0	386	13	2,7	-	-
	flat section 40 km/h ZTE40	1329	40,1	24	17,5	21,0	717	24	2,7	-	-
Idle***	ZLL	896	-	-	3,1	3,7	-	-	-	-	-
Result DLG-PowerMix - Transporttest flat section with 40 km/h (50 % ZTS : 40 % ZTE40 : 10 % ZLL)***							428	14	2,6	-	-

Optional tests (e.g. ZTS with reduced (-R) engine speed, flat section with additional speed settings (-50, -60))

Transportwork	only hill section ZTSR	-	-	-	-	-	-	-	-	-	-
	flat section 50 km/h ZTE50	1697	51	34	24,5	29,4	715	21	2,5	-	-
	flat section 60 km/h ZTE60	-	-	-	-	-	-	-	-	-	-
Optional results based on	hill section with reduced engine speed ZTSR (50 % ZTSR : 40 % ZTE40 : 10 % ZLL)***						-	-	-	-	-
	flat section with 50 km/h ZTE50 (50 % ZTS : 40 % ZTE50 : 10 % ZLL)***						431	14	2,6	-	-
	flat section with 60 km/h ZTE60 (50 % ZTS : 40 % ZTE60 : 10 % ZLL)***						-	-	-	-	-

* 70 % in parking position w/o driver, 30 % w/ inserted drive position and w/ driver, e.g. waiting at traffic lights

** Relation of additional fuel consumption caused by regeneration to conventional fuel consumption within two regeneration cycles; calculated for the maximum regeneration interval (see technical data - engine)

*** Results are calculated for a distance of 10 km. The fuel consumption in cycle ZLL is taken into the final result by a calculation based on the real measured fuel consumption during the test.