Prüfstelle für Landmaschinen



REPORT on test in accordance with OECD STANDARD CODE 2 for the Official Testing of Agricultural Tractor Performance

OECD No. 2/2008
18th October 2002

Agricultural Tractor

John Deere 6320 NA PowrQuad Plus(4WD)

Manufacturer
DEERE & COMPANY, Moline, Illinois, USA

This is a report on a tractor test in accordance with OECD STANDARD CODE for the Official Testing of Agricultural Tractor Performance (C(2001)5(FINAL), "Blue Code", Code 2).

It does not contain an evaluation of the tractor on practical work.

Duration of tests: January tili March 2002

DLG-Testing Station for Agricultural Machinery, Max-Eyth-Weg 1,
D-64823 Gross-Umstadt

This report has been approved by the OECD Co-Ordinating Centre (CEMAGREF, France) as being in accordance with the OECD STANDARD CODE.

Date of approval: 18th October 2002 OECD No. 2/2008

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John Deere 6320 NA PowrQuad Plus(4WD) **DLG-Test No. 2002-060**

Tractor manufacturer's name and address:	DEERE & COMPANY, Moline, Illinois, USA
Location of tractor assembly:	JOHN DEERE Werke Mannheim, D-68163 Mannheim
Submitted for test by:	Manufacturer
Selected for test by:	Manufacturer with agreement by DLG
Place of running-in:	Mannheim and Gross-Umstadt
Duration of running-in:	Engine 20h, tractor 40h
Location of test:	DLG-Testing Station, D-64823 Gross-Umstadt

1 SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1	- Make:	JOHN DEERE
	- Model:	6320
	- Type:	4WD, full frame design
1.1.2	Numbers	
	- 1st serial No.:	316456 (1st September 2001)
	- Serial No.:	322373
1.1.3	Other specifications:	
	- Region version:	NA
	- Transmission version:	PowrQuad Plus, 30 km/h

1.2 Engine

	Make/Model/Type:	JOHN DEERE / 4045HL073 (DD16233) / water cooled 4-stroke Diesel-engine, direct injection, supercharged and intercooler, antivibration mounted
	Serial No.:	663513
1.2.1	Cylinders	
	Number/disposition:	4 / vertical in line
	Bore/stroke:	106.5 mm / 127mm
	Capacity:	4525 cm^3
	Compression ratio:	16.9 ± 0.5 : 1
	Arrangement of valves:	Overhead valves, 2 per cylinder
	Cylinder liners:	Wet

1.2.2 Supercharging

- Make / Model / Type:	CZECH / K27 37 (RE507544) / exhaust driven supercharger with SAMSUNG water cooled intercooler (by low temperature section of water cooler)
- Pressure	Max. 77 kPa

1.2.3 Fuel system

- Fuel feed system:	Electrical vane type fuel supply pump
- Fuel filter	
Make/Model:	JOHN DEERE / -
Type :	1 replaceable paper element filter
- Capacity of fuel tank:	185 dm^3
- Injection pump	
Make/Model:	LUCAS / L1 8923A920W (RE509071)
Type:	DP201 / 1243 distributor injection pump with timing device
Serial no.:	08138LUG
Manufacturer's production setting:	69 ± 3 mm^3/stroke at full load and rated speed;
Flow rate:	19.00 ± 0.8 dm^3/h at 2300 min^{-1} and full load
Timing:	Commencement of delivery: Static 0°, dynamic 5.5° before TDC
- Injectors	
Make/Model:	STANADYNE / -
Type :	Multi hole
Injection pressure:	24.5 ± 0.5 MPa

1.2.4 Governor

- Make/Model/Type:	LUCAS / - / centrifugal variable speed governor, with supercharge pressure compensating device
- Governed range of engine speed:	850 ± 50 to 2460 ± 50 min^{-1}
- Rated engine speed:	2300 min^{-1}

1.2.5	Air cleaner	
	- Pre-cleaner	
	Make/Model:	DONALDSON / 991220
	Type:	vacuum aspirated (cooling fan) cyclone type pre-cleaner integrated in front cover of main cleaner housing
	Location of air intake:	Above water cooler, below bonnet
	- Main cleaner	
	Make/Model:	DONALDSON / 991220 /
	Type:	Dry paper element filter with additional safety cartridge
	- Maintenance indicator:	Warning light on dashboard
1.2.6	Lubrication system	Pressure lubrication with engine oil/cooling water heat exchanger in engine block
	- Type of feed pump:	Gear pump
	- Type of filter:	Full flow, replaceable cartridge
	- Number of filters:	1
1.2.7	Cooling system	Water cooling (high temperature section of water cooler)
	- Type of coolant:	Water-anti-freeze mixture
	- Type of pump:	Impeller pump
	- Specification of fan	
	Number of fan blades:	8
	Fan diameter:	600 mm
	- Coolant capacity:	24 dm^3
	- Type of temperature control:	Thermostat and by-pass circuit, BEHR viscous drive fan, belt driven; variable fan speed controlled by air flow temperature
	- Superpressure system:	70 ± 20 kPa

1.2.8	Starting system	
	- Make/Model/Type:	BOSCH / 12V / 0 001 230 003 (RE506589) IF electrical, solenoid pre-engaged drive starter motor
	- Starter motor power rating:	3 kW
	- Cold starting aid:	Heating spiral in air intake manifold
	- Safety device:	Forward / reverse lever in neutral position at engine shut off
1.2.9	Electrical system	
	- Voltage:	12 V
	- Generator:	
	Make/Model/Type:	BOSCH / 14 V / 70 - 115 A / 3-phase alternator
	Power:	1.6 kW
	- Battery:	1 lead acid battery, 12 V / 110 Ah (AL75854) at 20 hours rating
1.2.10	Exhaust system	
	- Make/Model/Type:	EBERSPÄCHER / AL82411 / single-chamber absorption type, oval 175 mm x 275 mm / 215 mm long
	- Location:	Under bonnet, vertical stack at right A-post of cab, mouth showing upward / forward
1.2.11	Operating hours meter:	Electronic, counts real hours when engine is running
1.3	**Transmission**	
1.3.1	Clutch	
	- Make/Model/Type:	JOHN DEERE / - / wet multi-plate
	- Number of plates:	4
	- Diameter of plates:	225 mm
	- Method of operation:	By pedal and reverse lever, hydraulically, by low pressure hydraulic circuit, operated by valve

1.3.2 Gear box

- Make/Model/Type: JOHN DEERE / PowrQuad Plus, 30 km/h / mechanical, 30 km/h version

- Description: Speed change gear with 4 ranges (A, B, C, D; synchronized),
4 step power shift (1, 2, 3, 4) with automatic power shifting, power shifted reversing gear

	Forward	Reverse
No. of gears	4	4
No. of ranges	4	4
Total	16	16

2 levers, 2 buttons and 1 rocker switch

- Available options (not fitted): PowrQuad (28/28) 30 km/h with creeper gear
PowrQuad (24/24) 40 km/h, 6 range gears without creeper gear
PowrQuad (36/36) 40 km/h, 6 range gears with creeper gear

- Lubrication: Forced-feed lubrication, oil cooler (ring cooler) at the rear end of engine block, (low temperature section of water cooler), 2 filters

1.3.3 Rear axle and final drives

- Make/Model/Type: JOHN DEERE / - / bevel gear drive with bevel gear differential and planetary final drives

- Differential lock:
  - Type: Wet multi-plate
  - Engagement: Electro-hydraulically by foot switch
  - Disengagement: By pedal of service brake

1.3.4 Front axle and final drives

- Make/Model/Type: ZF/ APL2035 / swing axle, driving and steering; axle driven through wet multi plate clutch, shaft in median plane of tractor, bevel gear;
clutch electro-hydraulically operated by rocker switch (two positions: engaged / engaged by service brake operation); planetary final drives

- Differential lock:
  - Type: Limited slip multi-plate type
  - Engagement: Automatic
  - Disengagement: Automatic

1.3.5 Total ratios and travelling speeds

Range	Gear	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed*) at rated engine speed of 2300 min^{-1} km/h
Forward Speeds			
A	1	278.59	2.55
	2	231.42	3.07
	3	193.25	3.68
	4	157.75	4.51
B	1	138.98	5.12
	2	115.45	6.16
	3	96.41	7.38
	4	78.70	9.03
C	1	84.51	8.41
	2	70.20	10.13
	3	58.62	12.13
	4	47.86	14.86
D	1	41.04	17.33
	2	34.09	20.86
	3	28.47	24.98
	4	23.24	30.60
Reverse Speeds			
A	1	266.89	2.66
	2	221.70	3.21
	3	185.13	3.84
	4	151.13	4.70
B	1	133.14	5.34
	2	110.60	6.43
	3	92.36	7.70
	4	75.39	9.43
C	1	80.96	8.78
	2	67.25	10.57
	3	56.16	12.66
	4	45.85	15.51
D	1	39.31	18.09
	2	32.66	21.77
	3	27.27	26.07
	4	22.26	31.94

*) Calculated with a dynamic radius index of 820 mm
(in conformity with ISO 4251-1:1998)

- Number of revolutions of front wheels for one revolution of rear wheels: 1.3481

1.4 Power take-off

1.4.1 Main power take-off

- Type:	Independent
- Method of engagement:	Driven by wet multi-plate clutch with 197 mm dia, electro-hydraulically operated by rotary switch through control valve; response of valve automatically controlled
- Number of shafts:	1
- Method of changing power take-off shaft ends and speeds:	Reversible stub giving two different standard speeds

1.4.1.1 Power take-off proportional to engine speed, 540 min^{-1} or 1000 min^{-1} p.t.o.

- Location:	At rear of tractor
- Diameter of p.t.o. shaft end:	35 mm
- Number of splines:	6 (540 min^{-1})in conformity with ISO 500:1991, type 1 21 (1000 min^{-1}) in conformity with ISO 500:1991, type 2
- Height above ground:	750 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear wheel axis:	530 mm

P.t.o. type	P.t.o. transmission ratio	P.t.o. speed min^{-1}	Engine speed min^{-1}	Power restriction kW	Max. torque transmissible Nm
540	3.9685	540 580	2143 2300	not specified	
1000	2.2082	1000 1042	2208 2300	not specified	

- Direction of rotation (viewed from behind tractor): Clockwise

1.4.1.2 Power take-off proportional to ground speed: None

1.4.2 Optional power take-off: Front p.t.o., independent, not fitted to tractor

1.5 Hydraulic power lift

- Make/Model/Type: JOHN DEERE / - / desintegrated, electronically controlled hydraulic power lift, lower link sensing
- Type of hydraulic system: Closed center, load sensing pressure and flow compensated system
- Type and number of cylinders: 2 external cylinders, single acting, 70 mm bore, 175 mm stroke,
- Type of linkage lock for transport: Hydraulic, lock of valve lever
- Relief valve pressure setting: 19.2 to 20.7 Mpa
- Opening pressure of cylinder safety valve: 23.5 MPa
- Lift pump:
  - Make: BRÜNINGHAUS HYDROMATIC
  - Model: A10VNO41
  - Type: 41 cm^3 axial-piston pump with 100 dm^3/min delivery at rated speed; optional: 25 cm^3 axial-piston pump with 60 dm^3/min delivery at rated speed

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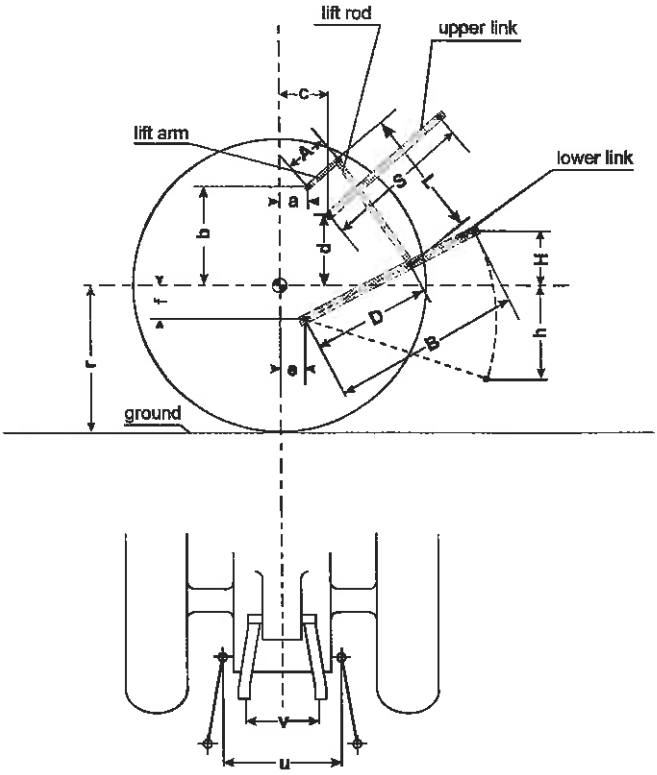
- Transmission between pump and engine:	Gear driven by transmission
- Type and number of filters:	2 filters, 1 in feeding line of hydraulic pump, 1 on transmission housing
- Site of oil reservoir:	Transmission housing
- Type, number and location of tapping points:	3 double acting, quick-action couplers at rear of tractor
- Maximum volume of oil available to external cylinders:	Stationary 25 dm^3, driving 15 dm^3
- Oil cooler:	Engine cooling water / transmission-hydraulic oil heat exchanger at the rear end of engine block

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1.6 Three-point linkage:

1.6.1 Three-point linkage at rear:

- Category: 2, in conformity with ISO 730-1/1994 + Cor. 1:1995 with extendable lower links
- Category adapter: None



Dimensions of rear implement linkage			Projected lengths in mm	
			Dimensions	Settings used in test-page 24
Rear tyres 18.4 - 38 Front tyres 16.9 - 24		(r) *) (r') *)	820 620	
Length of lift arms		(A)	305	
Length of lower links		(B)	945	
Distance of lift arm pivot points from rear wheel axis	horizontal vertical	(a) (b)	170 475	
Horizontal distance between the 2 lower link pivot points		(u)	480	
Horizontal distance between the 2 lift arm end points		(v)	535	
Length of upper link		(S)	from 550 to 730	660
Distance of upper link pivot point from rear wheel axis	horizontal vertical	(c) (d)	460 185	460 185
Distance of lower link pivot points from rear wheel axis	horizontal vertical	(e) (f)	135 225	
Distance of lower link pivot points from lift rod pivot points on lower links		(D)	505	
Length of lift rods		(L)	from 715 to 860	815

Heights (h, H, H') of lower link hitch points relative to rear wheel axis (situated 820 mm above ground), at different adjustments of L

These data are valid for unloaded power lift

Length of lift rods	(L)	815	715	860
Linkage distance of lift rods	(D)	505		
Lowest position	(h)	620	385	710
Highest position	(H)	30	220	-60
Transport position	(H')	30	220	-60

*) Assuming r resp. r' = tyre dynamic radius index (in conformity with ISO 4251-1:1998)

1.7 Swinging drawbar

- Type:	Adjustable in height and length	
- Height above ground	Maximum:	600 mm
	Minimum:	530 mm
- Type of adjustment:	Turning the drawbar	
- Distance of hitch point from rear wheel axis	Horizontal:	780 / 880 / 930 / 1080 mm
- Distance of hitch point from p.t.o. shaft end	Vertical:	150 / 220 mm
	Horizontal:	250 / 350 / 400 / 550 mm
- Lateral adjustment (centre of clevis)	Right/left hand side:	190 / 210 / 225 / 260 mm
- Distance of pivot point from rear-wheel axis, horizontally:		0 mm
- Diameter of drawbar pin hole:		33 mm
- Maximum permissible vertical load:		27 kN

1.8 Trailer hitch

None

1.9 Holed drawbar

Optional: short bar, category 2, not fitted

1.10 Steering

- Make/Model/Type:	JOHN DEERE and DANFOSS/ - / hydrostatic steering, acting on front wheels
- Method of operation	
Pump:	Steering system connected to main hydraulic circuit
Ram:	Integrated cylinder of symmetrical design, 224 mm stroke, 70 mm bore, 36 mm dia of piston rod
- Working pressure:	18.5 MPa

1.11 Brakes

1.11.1 Service brake

- Make/Model/ Type: JOHN DEERE / - / muscle power braking system with hydraulic transmission with additional power fill, oil-immersed disc brake with 2 acting faces on each differential half shaft, disc 313 mm dia
- Method of operation: Pedal operated, acting on rear wheels, front axle drive is automatically engaged when braking
- Trailer braking take-off: None

1.11.2 Parking brake

- Type: Parking lock of transmission
- Method of operation: Range gear lever in "P" position

1.12 Wheels

- Number

  Front: 2, driving and steering
  Rear: 2, driving

- Wheelbase: 2400 mm

- Track width adjustment:

	Minimum	Maximum	Adjustment method
Front	1516	2136	adjustable rims
Rear	1604	2004	adjustable rims

1.13 Protective structure

- Make/Model/Type: JOHN DEERE / SG068 / Cab
- Manufacturer's name and address: DEERE & COMPANY, Moline, Illinois, USA
- Protective device

  Cab: Welded and screwed profile steel tube construction, mounted on silent blocks, for service (repair) with separate device tiltable to the side

  Tiltable / not tiltbale: Not tiltable

- OECD approval

  Approval number: 4/0 694

  Date of approval: 11th October 2001

1.14 Seat

1.14.1	Driver's seat	Fitted to tractor
	- Make/Model:	Grammer / MSG 95 AL / 731
	- Type:	Air suspended upholstered seat with backrest and armrests
	- Seat and steering wheel reversible:	No
	- Type of suspension:	Pneumatic
	- Type of damping:	Hydraulic
	- Range of adjustment Longitudinal: Vertical:	 195 mm 380 to 565 mm
	- Safety belt:	Yes
1.14.2	Optional driver's seats	
	- Make/Model/Type:	Grammer/MSG 95A; MSG 93; MSG 85 / mechanical suspension or pneumatic suspension
1.14.3	Passenger seat:	Optional, not fitted to tractor tested

1.15 Lighting

Electrical, 12 Volt, according to US legislation

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1295	150 x 90	190
Sidelights	n.a.	n.a.	n.a.
Rearlights	1770	230 x 45	900
Reflectors	1730	160 x 25	865

2. TEST CONDITIONS

2.1 Overall dimensions

	Length mm	Width (track width as in 2.5) mm	Height at top of protective structure mm	Height at top of exhaust silencer pipe mm
Unballasted	4271	2300	2751	2712

2.2 Ground clearance

425 mm

- Clearance-limiting part: Bracket for sway blocks

2.3 Tractor mass

Unballasted (with cab)

	Without driver kg	With driver kg
Front	1770	1795
Rear	2780	2830
Total	4550	4625

2.4 Track specifications

Not applicable

2.5 Tyres and track widths specifications

	Front	Rear
Tyres:	GOODYEAR DynaTorque II	
- Dimensions	16.9 - 24	18.4 - 38
- Load index speed index	6 PR	8 PR
- Type	cross ply	cross ply
- Maximum load (tyre manufacturer's)	17.50 kN	27.25 kN
- Maximum load (tractor manufacturer's)	21.0 kN	32.50 kN
at travelling speed	30 km/h	30 km/h
at tyre inflation pressure	150 kPa	140 kPa
dynamic radius index	620 mm	820 mm
Chosen track width:	1820 mm	1810 mm

2.6 Fuel

- Type: ARAL-Diesel-fuel, in conformity with DIN 51601
- Density at 15°C: At p.t.o. tests 0.829 g/cm³
  at drawbar power tests 0.838 g/cm³

2.7 Oils and lubrication

2.7.1 Capacity and change interval

	Capacity dm³	Oil change h	Filter-change h
Engine	16	500	500
Gear box and rear axle	52	1500	750
Front axle	5	1500	-
Rear axle	in common with gearbox		
Final drives (front each)	0.8	1500	-
Final drives rear (each)	in common with gearbox		
Hydraulic system	in common with gearbox		
Steering	in common with gearbox		

2.7.2 Specifications:

	Recommended	Used during test
Engine oil: Used in engine		Fuchs Titan
Type	engine oil	engine oil
Viscosity	SAE 20W40, 15W40, 10W40, JD PLUS-50, JD TORQ-GARD SUPREME	SAE 15W40
Classification	API CG-4 or CF-4; ACEA - E2 or E3;	API CF-4
Transmission oil: Used in gear box, rear axle, hydraulic system and brake system	John Deere HY-GARD John Deere Low Viscosity HY-GARD, John Deere BIO-HY-GARD	John Deere HY-GARD
Type Viscosity Classification	transmission oil SAE 75 JDM J20C or J20D	transmission oil SAE 75 JDM J20C
Transmission oil: Used in front axle and front final drives	John Deere HY-GARD, John Deere BIO-HY-GARD or transmission oil	Fuchs
Type Viscosity Classification	transmission oil SAE 75 or SAE 80W90 JDM J20C	transmission oil SAE 80W90 JDM J20C

2.7.3 Grease Multi purpose grease GC-LB

- Number of lubrication points: 18

3 COMPULSORY TESTS RESULTS

3.1 Main power take off performance

Date of tests: 30th January 2002
Location of tests: DLG-Testing Station Gross-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed Engine min^{-1}	Speed P.t.o. min^{-1}	Fuel consumption Hourly kg/h	Fuel consumption Hourly dm^3/h	Fuel consumption Specific g/kWh	Specific energy kWh/dm^3

Maximum power

3.1.1 At 2-hour test						
65.7	2001	906	15.80	19.06	241	3.45

3.1.2 At rated speed						
62.3	2300	1042	16.40	19.78	263	3.15

3.1.3 At standard p.t.o. speed						
63.9	2208	1000	16.20	19.54	253	3.27

3.1.4 Part loads, the governor hand lever in the position corresponding to maximum power at full load (curve a)

3.1.4.1 The torque corresponding to maximum power at rated speed						
62.3	2300	1042	16.40	19.78	263	3.15

3.1.4.2 85% of the torque obtained in 3.1.4.1						
54.8	2386	1081	15.60	18.82	284	2.91

3.1.4.3 75% of the torque defined in 3.1.4.2						
41.5	2408	1091	13.10	15.80	317	2.63

3.1.4.4 50% of the torque defined in 3.1.4.2						
28.0	2426	1099	10.90	13.15	392	2.13

3.1.4.5 25% of the torque defined in 3.1.4.2						
14.0	2444	1107	8.50	10.25	607	1.37

3.1.4.6 Unloaded						
-	2468	1118	5.91	7.13	-	-

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Power kW	Speed Engine min^{-1}	Speed P.t.o. min^{-1}	Fuel consumption Hourly kg/h	Fuel consumption Hourly dm^3/h	Fuel consumption Specific g/kWh	Specific energy kWh/dm^3
3.1.5 Part loads, the governor hand lever in the position corresponding to standard p.t.o. speed at full load (curve b)						
3.1.5.1 The torque corresponding to maximum power						
63.9	2208	1000	16.20	19.54	253	3.27
3.1.5.2 85% of the torque obtained in 3.1.5.1						
55.4	2252	1020	14.80	17.85	267	3.10
3.1.5.3 75% of the torque defined in 3.1.5.2						
41.9	2276	1031	12.40	14.96	297	2.80
3.1.5.4 50% of the torque defined in 3.1.5.2						
28.3	2296	1040	10.30	12.42	364	2.28
3.1.5.5 25% of the torque defined in 3.1.5.2						
14.2	2313	1048	7.80	9.41	554	1.51
3.1.5.6 Unloaded						
-	2334	1057	5.23	6.31	-	-

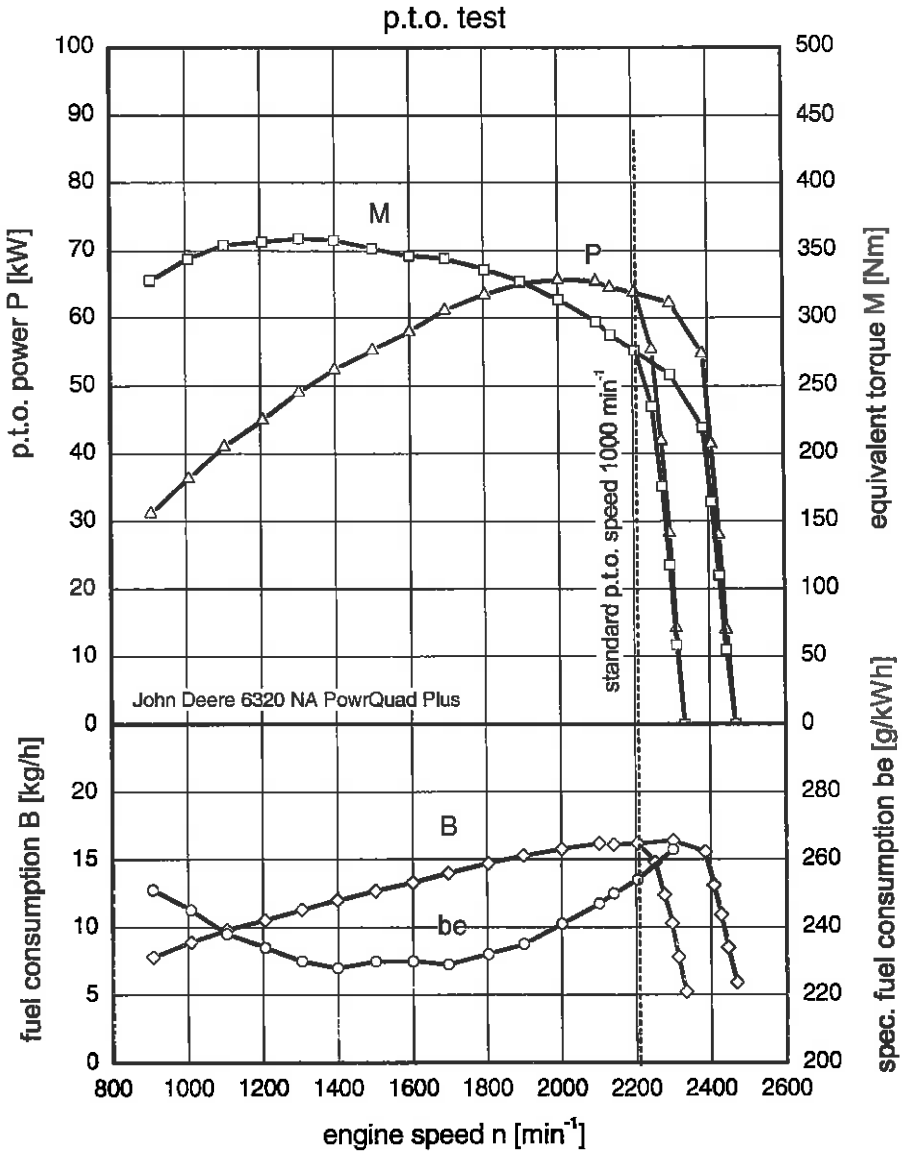
No load maximum engine speed:	2468 min^{-1}
Equivalent flywheel torque at rated engine speed:	258 Nm
Equivalent flywheel torque at 2-hour test:	314 Nm
At engine speed:	2001 min^{-1}
Maximum equivalent flywheel torque:	359 Nm
At engine speed:	1304 min^{-1}

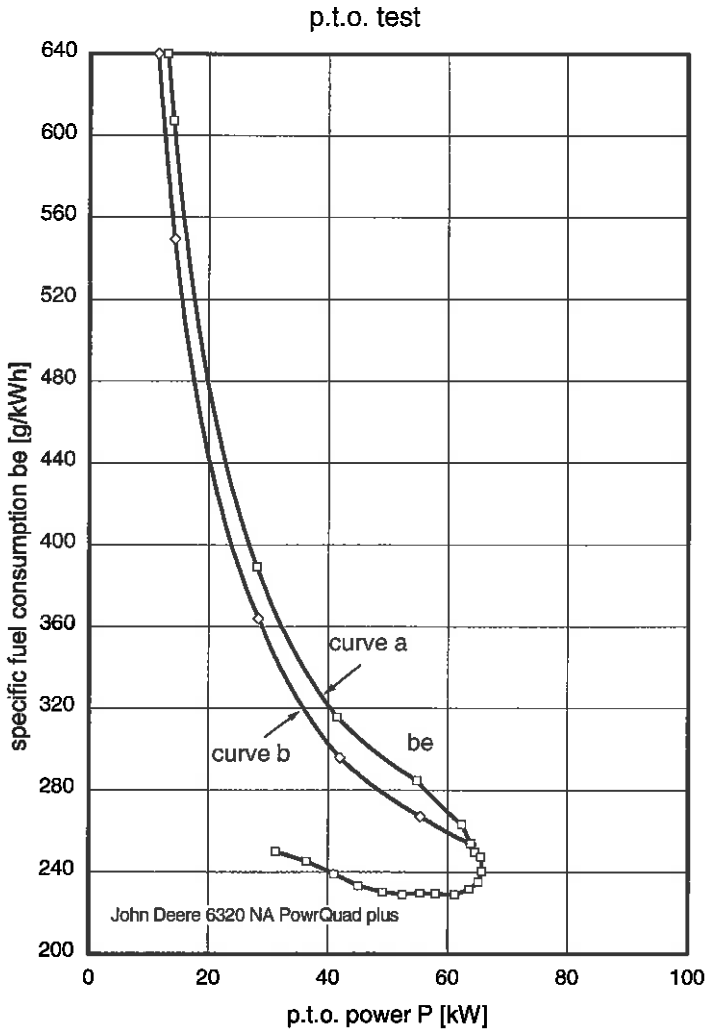
Mean atmospheric conditions

Temperature:	22 °C
Pressure:	100.4 kPa
Relative humidity:	33 %

Maximum temperatures

Coolant:	67 °C
Oil:	108 °C
Fuel:	32 °C
Air intake:	24 °C


p.t.o. test
p.t.o. power P [kW]
equivalent torque M [Nm]
M
P
standard p.t.o. speed 1000 min-1
John Deere 6320 NA PowrQuad Plus
fuel consumption B [kg/h]
spec. fuel consumption be [g/kWh]
B
be
engine speed n [min-1]


p.t.o. test
specific fuel consumption be [g/kWh]
640
600
560
520
480
440
400
360
320
280
240
200
0
20
40
60
80
100
p.t.o. power P [kW]
curve a
curve b
be
John Deere 6320 NA PowrQuad plus

John Deere 6320 NA PowrQuad Plus(4WD) **DLG-Test No. 2002-060**

3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 7th March 2002

3.2.1 Hydraulic power test

- Sustained pressure with relief valve open 20.5 MPa
- Pump stalled: No
- Pump delivery rate at minimum pressure 114.5 dm³/min [1]
  116.9 dm³/min [2]

	Flow rate dm³/min	Pressure MPa	Hydraulic power kW	Oil Temperature °C
At 90% of the actual relief valve setting [1]	94.0	18.5	29.0	65
[2]	102.7	18.5	31.7	
Maximum [1]	103.6	18.0	31.1	65
[2]	102.7	18.5	31.7	

- Tapping point used for test: At rear of tractor,
  [1] 1 double acting control valve
  [2] 2 double acting control valves parallel connection
- Opening/closing pressure of unloading valve: Not applicable

3.2.2 Power lift test at rear power lift

	At the hitch points	On the frame
Height of lower hitch points above ground in down position	200 mm	
Vertical movement without lifting forces	660 mm	830 mm
with lifting forces	615 mm	805 mm
Max. corrected force exerted through full range	25.65 kN	22.50 kN
Corresponding pressure	18.5 MPa	
Moment about rear axle	-	38.03 kNm
Max. tilt angle of mast from vertical		10 °

Lifting heights relative to horizontal lower links											
mm	-470	-400	-300	-200	-100	0	+100	+200	+216	+300	+336
Lifting forces at hitch points, corrected to 18.5 MPa											
kN		25.65	29.50	32.40	34.65	36.90	38.80	40.50	40.75		
Lifting forces at standard frame, corrected to 18.5 MPa											
kN	22.50	24.10	25.90	26.80	27.45	27.80	27.70	27.45		27.00	26.10

3.3 DRAWBAR POWER TEST (unballasted tractor)

Date of test: 15th February till 21st February 2002
Type of track: Concrete

Gear number and range	Power kW	Drawbar pull kN	Speed km/h	Engine speed min^{-1}	Slip of wheels %
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)					
A 4	44.2	42.17	3.77	2231	15.1
B 1	47.4	42.04	4.06	2104	15.0
B 2	50.1	37.72	4.78	2000	12.6
B 3	51.9	31.73	5.88	2001	9.8
C 1	52.0	27.15	6.88	2002	7.7
B 4	51.6	24.98	7.43	1996	6.8
C 2	54.1	22.96	8.47	2001	5.2
C 3	53.2	18.62	10.29	2001	4.0
C 4	51.7	14.58	12.77	2002	3.2
FUEL CONSUMPTION					
3.3.2.1 In selected gear, at maximum power at rated speed					
C 2	47.5	17.22	9.95	2297	3.5
3.3.2.1.1 75 % of pull at maximum power at rated speed					
C 2	37.2	12.79	10.48	2398	2.5
3.3.2.1.2 50 % of pull at maximum power at rated speed					
C 2	25.2	8.50	10.67	2418	1.6
3.3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1					
C 3	37.4	12.80	10.51	2005	2.8
3.3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2					
C 3	25.5	8.55	10.75	2034	1.9
3.3.2.2 In selected gear nearest to 7.50 km/h at rated speed					
B 3	47.1	23.97	7.08	2301	6.0
3.3.2.2.1 75 % of pull at maximum power at rated speed					
B 2	37.8	18.06	7.52	2400	4.2
3.3.2.2.2 50 % of pull at maximum power at rated speed					
B 3	26.0	12.14	7.71	2420	2.7
3.3.2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1					
C 1	37.8	18.03	7.55	2110	4.0
3.3.2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2					
C 1	25.9	12.06	7.72	2129	2.6

John Deere 6320 NA PowrQuad Plus(4WD) **DLG-Test No. 2002-060**

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
Unballasted	530 mm	80 kPa	80 kPa

Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
		Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
g/kWh	kWh/dm³	°C	°C	°C	°C	%	kPa
364	2.30	38	63	91	9	51	100.3
338	2.48	40	59	92	6	51	100.3
317	2.65	41	62	93	6	51	100.3
308	2.72	38	57	93	4	51	100.3
305	2.75	37	60	91	6	51	100.3
312	2.70	38	58	92	4	51	100.3
294	2.85	39	60	94	7	51	100.3
298	2.81	39	61	93	7	51	100.3
308	2.72	40	66	94	8	60	100.5
338	2.48	43	63	92	7	60	100.5
396	2.12	44	66	92	7	60	100.5
491	1.71	45	64	91	7	60	100.5
341	2.46	42	62	90	8	51	100.3
411	2.04	42	61	88	8	50	100.3
343	2.44	43	65	96	9	51	100.3
384	2.18	46	65	96	9	51	100.3
467	1.80	46	65	92	9	51	100.3
350	2.39	34	57	86	8	51	100.3
422	1.99	39	60	89	7	51	100.5

4 ADDITIONAL TESTS under the responsibility of the DLG Testing Station

4.1 Measurement of noise at the driving position carried out in accordance with OECD CODE 5

Results of sound level test - "Under load" procedure
Date of test: 22nd and 27th February 2002
Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233

Gear number and range	Drawbar pull	Engine speed	Measured travelling speed	Number of driving wheels	Sound level
	kN	min^{-1}	km/h		dB(A)
4.1.1	Test with the drawbar pull for which the tractor gives the maximum sound level (gear ratio giving the nearest nominal forward speed to 7.5 km/h and also in any speed settings with a sound level increase of at least 1 dB(A))				
4.1.1.1	All openings closed				
B 3	25.01	2304	7.10	4	74.0
C 1	21.65	2306	8.16	4	75.0
C 3	14.31	2308	12.09	4	75.0
C 4	10.57	2298	14.91	4	75.0
B 3	25.41	2311	6.80	2	74.5
4.1.1.2	All openings open*)				
B 3	23.64	2308	7.10	4	81.0
A 3	41.47	2402	3.43	4	82.0
B 1	36.95	2306	4.64	4	82.0
B 4	21.28	2304	8.77	4	82.0
C 3	13.44	2296	11.89	4	82.0
C 4	10.45	2302	14.66	4	82.0
B 3	25.63	2307	6.75	2	81.0
C 3	13.44	2304	11.69	2	82.0
C 4	10.16	2310	14.56	2	82.0

4.1.2	Unloaded test in the gear ratio giving the forward speed nearest to 7.5 km/h				
4.1.2.1	All openings closed				
B 3	0	2460	8.11	4	73.0
B 3	0	2454	8.06	2	72.5
4.1.2.2.	All openings open *)				
B 3	0	2446	7.91	4	80.5
B 3	0	2450	7.86	2	80.0
4.1.3	Unloaded test in the gear ratio giving the maximum forward speed				
4.1.3.1	All openings closed				
D 4	0	2460	30.0	2	74.5
4.1.3.2	All openings open *)				
D 4	0	2460	30.0	2	82.0

*) Openings: 2 side windows, rear window

5 REPAIRS **None**

6 REMARKS **None**

Head of Vehicle Technology/
Safety Division

Test carried out by

Dipl.-Ing. Winfried Gramatte

Dipl.-Landw. Friedrich Uhlig

Date: 28th January 2003



Wir setzen Maßstäbe

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