Prüfstelle für Landmaschinen



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

OECD No. 2/2037
22nd January 2003

Agricultural Tractor

John Deere 6320 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(2002)17(FINAL) "Red Code", Code 2).

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

Duration of tests: April till July 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: 22nd January 2003 OECD No. 2/2037

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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 54h
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 (01.Sep 2001)
	- Serial No.:	321781
1.1.3	Other specifications	
	- Transmission version:	PowrQuad Plus, 40 km/h

1.2 Engine

	Make/Model/Type:	JOHN DEERE / 4045HL072 (DD16231) / water-cooled 4-stroke Diesel-engine, direct injection, supercharged and intercooler, antivibration mounted
	Serial No.:	666798
1.2.1	Cylinders	
	Number/disposition:	4 / vertical in line
	Bore/stroke:	106.5 mm / 127 mm
	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. 70 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 / 8923A860W (RE509069)
	Type :	DP201/1342 distributor injection pump with timing device
	Serial no.:	00294LUG
	Manufacturer's production setting*):	69 ± 3 mm^3/stroke at full load and rated speed
	Flow rate:	19.0 ± 0.8 dm^3/h at full load and rated speed
	Timing:	Commencement of delivery: Static 7° ± 0.5°, dynamic 6.5° 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 govenor
	- 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 / 45 - 90 A / 3-phase alternator
	Power:	1.68 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, 40km/h / mechanical, 40 km/h version
- Description: Speed change gear with 6 ranges (A, B, C, D, E, F; 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	6	6
Total	24	24

2 levers, 2 buttons and 1 rocker switch

- Available options (not fitted): PowrQuad (36/36) 40 km/h 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/ AS 2035 / 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; hydropneumatic suspension
- 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	450.59	1.58
	2	374.30	1.90
	3	312.56	2.27
	4	255.15	2.79
B	1	184.57	3.85
	2	153.32	4.64
	3	128.03	5.55
	4	104.52	6.80
C	1	113.21	6.28
	2	94.04	7.56
	3	78.53	9.05
	4	64.10	11.09
D	1	68.99	10.31
	2	57.31	12.41
	3	47.85	14.86
	4	39.06	18.20
E	1	42.45	16.75
	2	35.27	20.16
	3	29.45	24.15
	4	24.04	29.58
F	1	31.45	22.61
	2	26.12	27.22
	3	21.81	32.60
	4	17.81	39.93
Reverse Speeds			
A	1	431.67	1.65
	2	358.58	1.98
	3	299.43	2.37
	4	244.43	2.91
B	1	176.82	4.02
	2	146.89	4.84
	3	122.65	5.80
	4	100.13	7.10

*) Calculated with a dynamic radius index of 820 mm
(not in conformity with ISO 4251-1:1998)

C	1	108.45	6.56
	2	90.09	7.89
	3	75.23	9.45
	4	61.41	11.58
D	1	66.09	10.76
	2	54.90	12.95
	3	45.84	15.51
	4	37.42	19.00
E	1	40.67	17.48
	2	33.78	21.05
	3	28.21	25.20
	4	23.03	30.87
F	1	30.13	23.60
	2	25.03	28.41
	3	20.90	34.02
	4	17.06	41.68

- 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 shaft with two different stubs, speed shiftable by separate lever

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	2.2080	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

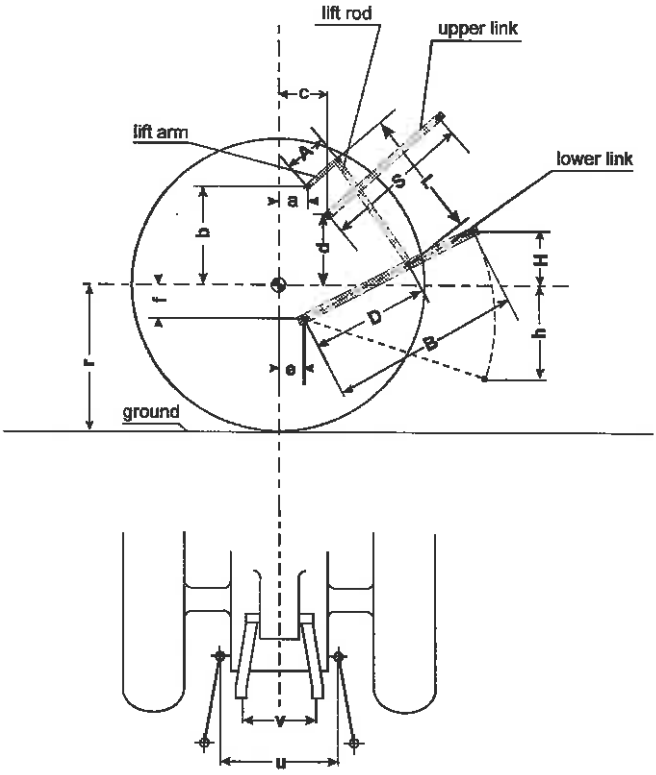
1.5 Hydraulic power lift

- 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, 80 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:	A10VNO25
- Type:	25 cm^3 axial-piston pump with 60 dm^3/min delivery at rated speed; optional: 41 cm^3 axial-piston pump with 100 dm^3/min delivery at rated speed
- 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:	2 double acting, quick-action coupler-pairs 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

1.6 Three-point linkage:

1.6.1 Three-point linkage at rear:

- Category: 2, in conformity with ISO 730-1/1994 + Corr. 1:1995
  WALTERSCHEID quick couplers
- Category adapter: None



Dimensions of rear implement linkage			Projected lengths in mm	
			Dimensions	Settings used in test-page 25
Rear tyres 600/65 R 38 Front tyres 540/65 R 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)	530	
Length of upper link		(S)	from 550 to 730	650
Distance of upper link pivot point from rear wheel axis	horizontal vertical	(c) (d)	432, 442, 452 320, 250, 180	432 320
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 and 555	505
Length of lift rods		(L)	from 715 to 860	805

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

These data are valid for unloaded power lift

Length of lift rods	(L)	715		860		805
Linkage distance of lift rods	(D)	505	555	505	555	505
Lowest position	(h)	385	340	710	630	620
Highest position	(H)	220	210	-60	-30	40
Transport position	(H')	220	210	-60	-30	40

*) Assuming r resp. r' = tyre dynamic radius index (not in conformity with ISO 4251-1:1998)

1.7 Swinging drawbar

- Type:	Longitudinally adjustable	
- Height above ground:		530 mm
- Type of height adjustment:	None	
- Distance of hitch point from rear-wheel axle, horizontally:		780, 880, 930, 1080 mm
- Distance of hitch point from power take-off shaft end		
Vertically:		220 mm
Horizontally:		250, 350, 400, 550 mm
- Lateral adjustment (centre of clevis)		
Right hand:		190, 210, 225, 260 mm
Left hand:		190, 210, 225, 260 mm
- Distance of pivot point from rear-wheel axle, horizontally:		0 mm
- Diameter of drawbar pin hole:		33 mm
- Maximum vertical permissible load (drawbar fully pushed in):		19.0 kN

1.8 Trailer hitch

- Make/Model/Type:	ROCKINGER/860 D 01/automatic, remote control	
- Pin diameter:		38 mm
- Height above ground:	Centre of clevis adjustable in 9 steps to	455, 500, 550, 605, 665, 785, 840, 895, 955 mm
- Distance of hitch point from rear wheel axis, horizontally:		720 mm
- Distance of hitch point from power take-off shaft end		
vertically:	below	295, 250, 200, 145, 85 mm
	above	35, 90, 145, 205 mm
horizontally:		190 mm
- Maximum permissible vertical load:		20.0 kN

1.9 Holed drawbar

None, available

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 317 mm diameter
- 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 and mechanical separate band brake in gear box, acting on rear axle drive shaft
- Method of operation: Range gear lever in "P" position, resp. hand lever with ratchet

1.12 Wheels

- Number
  - Front: 2, driving and steering
  - Rear: 2, driving
- Wheelbase: 2400 mm
- Track width adjustment:

	Minimum	Maximum	Adjustment method
Front	1820	1820	not adjustable
Rear	1824	1824	not adjustable

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1.13 Protective structure

- Make/Model/Type:	JOHN DEERE / SG068 / Cab Option 1 (unsuspended)
- 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 tiltable:	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:	195
	Vertical:	380 to 565 mm
	- Safety belt:	No
1.14.2	Optional driver's seats	
	- Make/Model/Type:	Grammer / MSG 95A; MSG 93; MSG 85, MSG83, MSG 44 / mechanical suspension or pneumatic suspension
1.14.3	Passenger seat:	Optional, fitted to tractor tested, with mechanical suspension
	- Location:	At left mudguard
	- Capacity:	1

1.15 Lighting Electrical, 12 Volt, according to German 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
Side Lights	1695	105 x 35	855
Rearlights	1770	230 x 45	900
Reflectors	875	ø 80	515

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	4300	2390	2755	2710

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	2080	2105
Rear	3190	3240
Total	5270	5345

2.4 Track specifications Not applicable

2.5 Tyres and track widths specifications

	Front	Rear
Tyres:	PIRELLI TM 800	PIRELLI TM 800
- Dimensions	540/65 R 24	600/65 R 38
- Load index speed index	140 A8	153 A8
- Type	radial ply	radial ply
- Maximum load (tyre manufacturer's)	23.30 kN	34.10 kN
- Maximum load (tractor manufacturer's)	20.00 kN	32.50 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	140 kPa	140 kPa
dynamic radius index	620 mm	820 mm
Chosen track width:	1820 mm	1824 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	55	1500	750
Front axle	6	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: 21

3 COMPULSORY TESTS

3.1 Main power take off performance

Date of tests: 18th April 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						
69.4	1801	816	15.62	18.84	225	3.68
3.1.2 At rated speed						
66.3	2300	1042	16.50	19.90	249	3.33
3.1.3 At standard p.t.o. speed						
66.3	2205	999	16.21	19.55	244	3.39
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						
66.3	2300	1042	16.50	19.90	249	3.33
3.1.4.2 85% of the torque obtained in 3.1.4.1						
59.5	2426	1099	15.75	19.00	265	3.13
3.1.4.3 75% of the torque defined in 3.1.4.2						
45.1	2453	1111	13.30	16.04	295	2.81
3.1.4.4 50% of the torque defined in 3.1.4.2						
30.4	2464	1116	10.88	13.12	358	2.32
3.1.4.5 25% of the torque defined in 3.1.4.2						
15.2	2479	1123	8.25	9.95	544	1.53
3.1.4.6 Unloaded						
-	2493	1129	5.48	6.62	-	-

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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						
66.3	2205	999	16.21	19.55	244	3.39
3.1.5.2 85% of the torque obtained in 3.1.5.1						
57.9	2256	1022	14.75	17.79	255	3.25
3.1.5.3 75% of the torque defined in 3.1.5.2						
43.8	2283	1034	12.42	14.98	283	2.92
3.1.5.4 50% of the torque defined in 3.1.5.2						
29.5	2300	1042	9.96	12.01	337	2.46
3.1.5.5 25% of the torque defined in 3.1.5.2						
14.9	2318	1050	7.37	8.89	496	1.68
3.1.5.6 Unloaded						
-	2336	1058	4.91	5.92	-	-

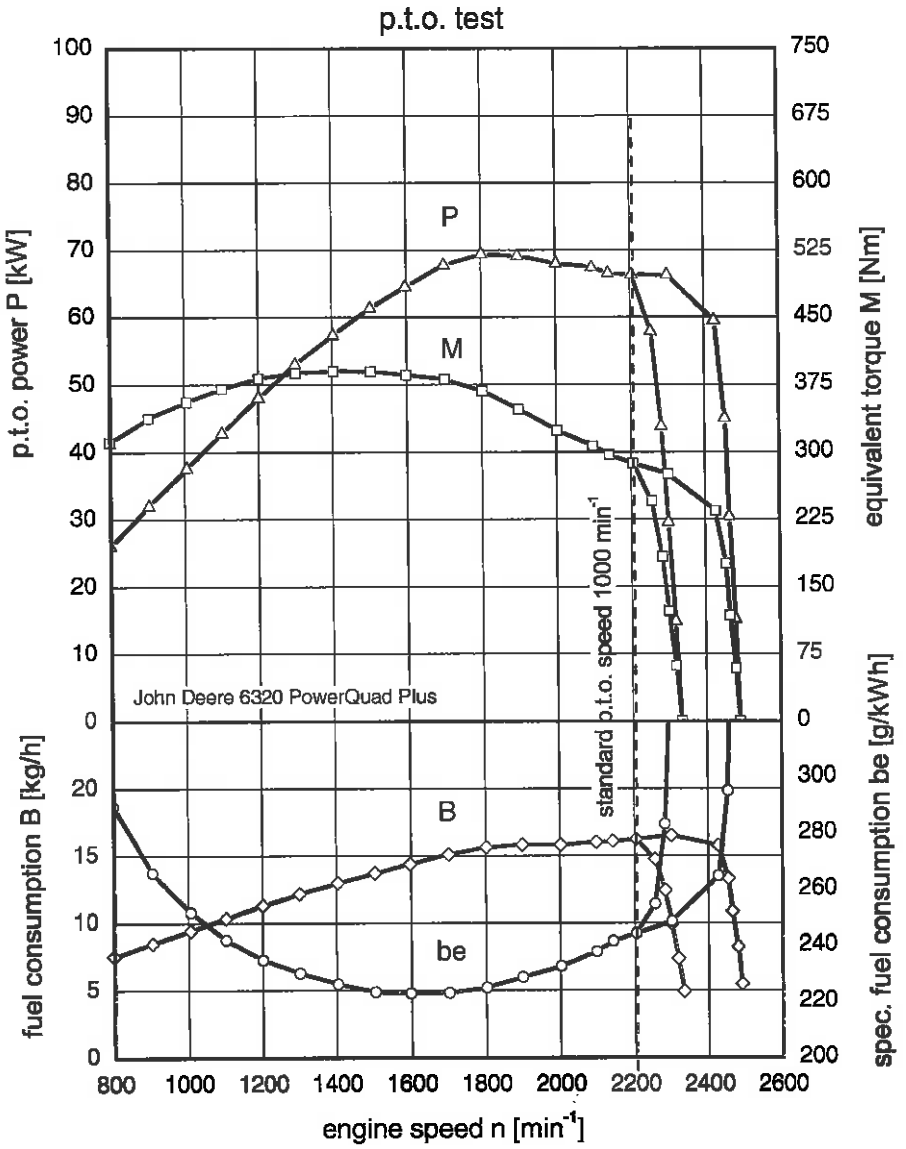
No load maximum engine speed:	2493 min^{-1}
Equivalent flywheel torque at rated engine speed:	275 Nm
Equivalent flywheel torque at 2-hour test:	368 Nm
At engine speed:	1801 min^{-1}
Maximum equivalent flywheel torque:	390 Nm
At engine speed:	1404 min^{-1}

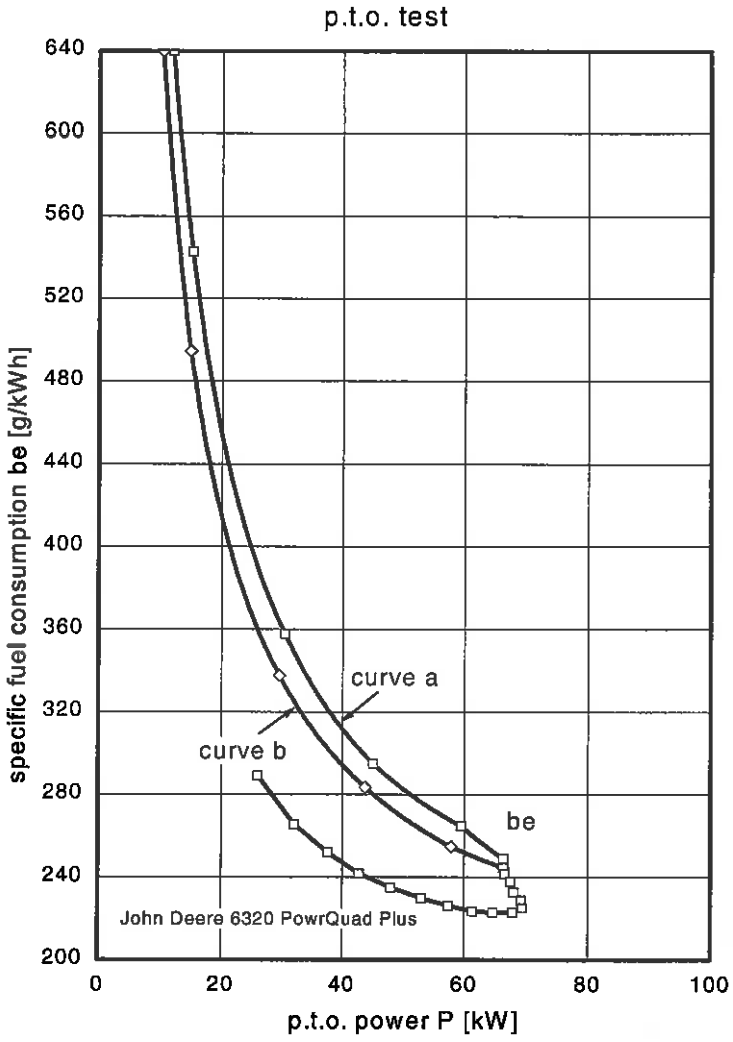
Mean atmospheric conditions

Temperature:	25 °C
Pressure:	99.8 kPa
Relative humidity:	33 %

Maximum temperatures

Coolant:	66 °C
Oil:	107 °C
Fuel:	42 °C
Air intake:	24 °C


p.t.o. test
p.t.o. power P [kW]
equivalent torque M [Nm]
fuel consumption B [kg/h]
spec. fuel consumption be [g/kWh]
engine speed n [min-1]
standard p.t.o. speed 1000 min-1
P
M
B
be
John Deere 6320 PowerQuad Plus
100
90
80
70
60
50
40
30
20
10
0
750
675
600
525
450
375
300
225
150
75
0
300
280
260
240
220
200
20
15
10
5
0
800
1000
1200
1400
1600
1800
2000
2200
2400
2600


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 PowrQuad Plus

3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 10th June 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 71.4 dm³/min [1]
  72.0 dm³/min [2]

	Flow rate dm³/min	Pressure MPa	Hydraulic power kW	Oil Temperature °C
At 90% of the actual relief valve setting [1]	64.5	18.5	19.9	65
[2]	62.1	18.5	19.2	
Maximum [1]	64.5	18.5	19.9	65
[2]	68.5	18.0	20.5	

- 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	860 mm
with lifting forces	635 mm	815 mm
Max. corrected force exerted through full range	33.75 kN	31.50 kN
Corresponding pressure	18.5 MPa	
Moment about rear axle	36.45 kNm	53.24 kNm
Max. tilt angle of mast from vertical	-	10

Lifting heights relative to horizontal lower links

mm	-495	-400	-395	-300	-200	-100	0	+100	+200	+240	+300	+320
Lifting forces at hitch points, corrected to 18.5 MPa												
kN			33.75	40.05	43.65	46.35	49.05	51.75	53.35	53.55		
Lifting forces at standard frame, corrected to 18.5 MPa												
kN	31.50	33.75		35.55	36.45	36.90	37.35	36.90	36.00		35.10	34.20

3.3 DRAWBAR POWER TEST (unballasted tractor)

Date of test: 13th and 14th May 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)					
B1	49.4	51.41	3.46	2392	15.0
B2	52.5	51.92	3.64	2086	15.1
B3	54.3	49.80	3.93	1802	11.2
C1	56.2	43.89	4.62	1794	7.4
B4	57.6	40.94	5.07	1794	6.1
C2	58.7	37.20	5.68	1790	4.9
C3	59.2	30.82	6.91	1800	3.8
D1	58.2	26.48	7.91	1798	3.2
C4	58.2	24.31	8.62	1815	2.8
D2	57.6	21.58	9.61	1801	2.3
D3	57.0	17.84	11.50	1795	1.9
E1	56.5	15.66	12.99	1798	1.8
D4	56.3	14.39	14.09	1787	1.8
FUEL CONSUMPTION					
3.3.2.1 In selected gear, at maximum power at rated speed					
C3	56.0	22.53	8.94	2304	2.8
3.3.2.1.1 75 % of pull at maximum power at rated speed					
C3	44.6	16.90	9.50	2432	2.1
3.3.2.1.2 50 % of pull at maximum power at rated speed					
C3	30.2	11.26	9.66	2456	1.5
3.3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1					
C4	44.8	16.92	9.53	1989	2.1
3.3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2					
C4	30.6	11.27	9.77	2025	1.4
3.3.2.2 In selected gear nearest to 7.50 km/h at rated speed					
C2	56.7	27.55	7.42	2303	3.5
3.3.2.2.1 75 % of pull at maximum power at rated speed					
C2	45.3	20.68	7.90	2429	2.6
3.3.2.2.2 50 % of pull at maximum power at rated speed					
C2	30.8	13.78	8.04	2453	1.8
3.3.2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1					
C3	45.7	20.68	7.95	2046	2.7
3.3.2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2					
C3	30.9	13.79	8.08	2061	1.8

John Deere 6320 PowrQuad Plus (4WD) **DLG-Test No. 2002-093**

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
Unballasted	510 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
341	2.46	61	63	111	23	47	100.2
313	2.68	62	66	111	23	47	100.2
285	2.95	61	65	110	24	47	100.2
275	3.05	62	67	109	23	47	100.2
269	3.11	58	57	107	21	79	100.2
262	3.19	55	55	104	20	79	100.2
260	3.22	55	56	107	17	79	100.2
267	3.15	54	53	106	17	79	100.2
265	3.16	54	53	105	18	79	100.2
269	3.12	54	54	106	18	79	100.2
271	3.09	53	51	104	19	79	100.2
272	3.09	50	53	107	15	53	100.2
273	3.07	55	56	107	20	79	100.2
294	2.85	51	51	102	16	53	100.2
329	2.55	52	54	105	18	53	100.2
402	2.09	52	52	101	18	53	100.2
299	2.80	52	51	100	18	53	100.2
337	2.49	52	52	101	18	53	100.2
292	2.88	54	56	108	18	53	100.2
324	2.59	55	56	107	19	53	100.2
401	2.09	54	56	106	19	53	100.2
291	2.88	53	53	103	20	53	100.2
338	2.48	52	52	99	19	53	100.2

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

Tractor fitted with John Deere / SG068 / Cab Option 1 (unsuspended)

Results of sound level test - "Under load" procedure

Date of test: 16th May 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)
4.2.1	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))				
4.2.1.1	All openings closed				
C2	27.99	2300	7.41	4	73.5
C2	28.86	2310	7.21	2	73.0
B2	37.41	2422	4.08	2	74.0
B3	36.61	2397	4.54	2	74.5
4.2.1.2	All openings open *)				
C2	28.48	2298	7.36	4	82.5
E1	11.81	2304	16.98	4	83.5
D4	11.32	2301	18.34	4	83.5
C2	28.74	2306	7.21	2	82.5
D3	13.70	2306	15.09	2	83.5
D4	11.45	2296	17.84	2	83.5

Gear number and range	Drawbar pull	Engine speed	Measured travelling speed	Number of driving wheels	Sound level
	kN	min^{-1}	km/h		dB(A)
4.2.2 Unloaded test in the gear ratio giving the forward speed nearest to 7.5 km/h					
4.2.2.1 All openings closed					
C2	0	2488	8.26	4	71.5
C2	0	2489	8.26	2	72.0
4.2.2.2. All openings open *)					
C2	0	2478	8.26	4	79.5
C2	0	2480	8.26	2	79.5
4.2.3 Unloaded test in the gear ratio giving the maximum forward speed					
4.2.3.1 All openings closed					
F4	0	high idle	43.5	2	74.5
4.2.3.2 All openings open *)					
F4	0	high idle	43.5	2	83.5

*) Openings: 2 side windows, rear window, roof hatch

5	**REPAIRS**	**None**
6	**REMARKS**	**None**

Head of Vehicle Technology / Safety Division

Dipl.-Ing. Winfried Gramatte

Test carried out by

Dipl.-Ing. (FH) Thomas Feuerstein

Date: 10th February 2003



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