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

Full Code

OECD No. **1460**



Agricultural Tractor
JOHN DEERE 6100 (2WD)
30 km/h version

Manufacturer
John Deere Werke Mannheim
D-68008 Mannheim

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This is a report on a tractor test in accordance with OECD STANDARD CODE for the Official Testing of Agricultural Tractor Performance (C(87)53(Final), Code I) and amendments (C(90)79, C(92)52).

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

Duration of tests: October 1992 till March 1993

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: 29th June 1993

OECD No. 1460
Full Code

In this report all performance characteristics are given corresponding to the International System of Units.

The reference to the former used Technical System of Units is given by the following relations:

Forces	1 kN	=	1000 N	=	102 kp
Powers			1 kW	=	1,36 PS
Pressures	1 MPa	=	10 bar	=	10,2 kp/cm²
	100 kPa	=	1000 mbar	=	750,10 mm Hg

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Tractor manufacturer:	JOHN DEERE Werke Mannheim D-68008 Mannheim
Location of tractor assembly:	D-68008 Mannheim
Submitted for test by:	Manufacturer
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Mannheim and Groß-Umstadt
Duration of running-in:	Engine 50 hours, tractor 20 hours

SPECIFICATION OF TRACTOR

Tractor

Make:	JOHN DEERE
Trade name:	6100
Type:	Wheel tractor in full frame design, two wheel driven
Serial no.:	1000 36
1st serial no.:	100 001

Engine

Make:	JOHN DEERE
Model:	4045 DL 002
Type:	Watercooled 4-stroke Diesel-engine (antivibration mounted), direct injection, naturally aspirated
Serial no.:	CD 4045 D 111 246
Cylinders:	4, in line, bore 106,5 mm, stroke 127 mm, displacement 4525 cm^3; compression ratio 17,8 ± 0,5:1; replaceable, wet cylinder liners
Valves:	Overhead

Fuel system:	VDO electrical fuel supply pump; LUCAS-CAV distributor injection pump RE 46 123, serial no.: 13791 EKG; manufacturer's production setting 52,5 + 5 mm³/stroke at full load and rated speed; automatic injection timing device, injection timing 15 + 15 degrees before TDC; STANADYNE multihole injection nozzles 28485; injection pressure 24,5 MPa + 0,5 MPa; replaceable fuel filter; capacity of fuel tank 160 dm³
Governor:	LUCAS-CAV centrifugal variable speed governor, without supercharge pressure compensating device, governed range of engine speed 800 + 50 to 2460 ± 50 rev/min, rated engine speed 2300 rev/min
Air cleaner:	MANN dry paper element filter with incorporated cyclone type precleaner, replaceable cartridge; electric warning indicator lamp; air intake below bonnet
Exhaust silencer:	ROTH, AL 78007 multi-chamber absorption type, 129x269 mm oval, 370 mm long, on the left above the engine, below bonnet; vertical stack, on the right of corner post of cab, mouth showing upwards, forward, 2555 mm above ground
Lubrication system:	Pressure lubricated by gear pump; oil filter in full flow with replaceable cartridge, engine oil/cooling-water heat exchanger between oil filter and socket
Cooling system:	Water cooling with impeller pump, overpressure relief valve set to 70 + 20 kPa; thermostat and by-pass circuit; EATON model 610 viscous drive fan, belt driven, variable fan speed controlled by air flow temperature; 7 blades with 550 mm dia; water capacity 17,5 dm³
Starting system:	Electrical; BOSCH selenoid pre-engaged drive starter motor 3,0 kW; cold starting aid: BERU heating spiral in air intake manifold; safety device: range gear in neutral position
Electrical system:	12 Volt, negative earth; BOSCH 3-phase alternator K1-14V30/85A 1190 W; 1 lead acid battery, 110 Ah at 20 hours rating

Transmission	Universally-jointed propeller shaft between engine and gearbox
Clutch (travel alone):	JOHN DEERE, separate clutch case in front of gearbox; wet multi-plate, 225 mm dia, mechanically actuated by pedal, additionally assisted by low pressure hydraulic circuit
Gear box:	JOHN DEERE FST (12/4) 30 km/h synchromesh speed change gear with 3 forward speeds and 1 reverse speed, synchromesh 4 speed (A, B, C, D) range gear; total 12 forward and 4 reverse speeds, 2 control levers; forced-feed lubrication, oil cooler in front of engine's water cooler
	optionally available transmission versions:
	FST (15/5) 30 km/h identical with FST (12/4) 30 km/h, but 5 speed range gear
	FST (18/6) 40 km/h identical with FST (12/4) 30 km/h, but 6 speed range gear
	PPST (16/12) 30 km/h 4 speed power shift change gear, synchromesh 4 speed range gear and power shift reverser (range D is locked in reverse gear)
	PPST (20/16) 30 km/h identical with PPST (16/12) 30 km/h, but 5 speed range gear (range E is locked in reverse gear)
	PPST (24/16) 40 km/h identical with PPST (16/12) 30 km/h, but 6 speed range gear (ranges E and F are locked in reverse gear)
Rear axle and final drives:	JOHN DEERE bevel gear drive, bevel gear differential; multi-plate differential lock, under load engageable by foot switch and low pressure hydraulic circuit, disengagement by brake pedals; planetary final drives
Front axle:	JOHN DEERE not driven, telescopically adjustable

Total ratios and speeds:

Range	Gear	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed*) at rated engine speed 2300 rev/min km/h
Forward speeds			
A	1	272,04	2,37
	2	194,38	3,32
	3	147,24	4,39
B	1	135,48	4,77
	2	96,81	6,67
	3	73,33	8,81
C	1	83,10	7,77
	2	59,37	10,88
	3	44,97	14,36
D	1	38,65	16,71
	2	27,62	23,39
	3	20,92	30,88
Reverse speeds			
A	R	222,58	2,90
B	R	110,85	5,83
C	R	67,99	9,50
D	R	31,62	20,43

*) calculated with the radius index (ISO 4251/1-1984) 745 mm

Main p.t.o.: Independent;
driven by wet multi-plate clutch with
197 mm dia; electro-hydraulically operated
by rotary switch through control valve,
response of valve automatically controlled;
1 shaft at tractor's rear,
35 mm dia, 6 splines, ISO 500-1979 type 1

665 mm above ground, 530 mm behind rear wheel
centre, in tractor's median plane;
sense of rotation clockwise (seen from tractor's rear)

p.t.o. type	p.t.o. speed rev/min	engine speed rev/min	p.t.o. transmission ratio	Power restriction kW
540	540 624	1991 2300	3,6875	-

further p.t.o. options:
Interchangeable p.to.o shaft ends 540/1000
or
shiftable p.t.o. 540/540E/1000

Power lift

JOHN DEERE;
electronic-hydraulic power lift, with external lift cylinders;
draft-, position- and mixed control, floating position, raise limit,
fast raising, rate of drop control, electronic lower link sensing

Hydraulic system:

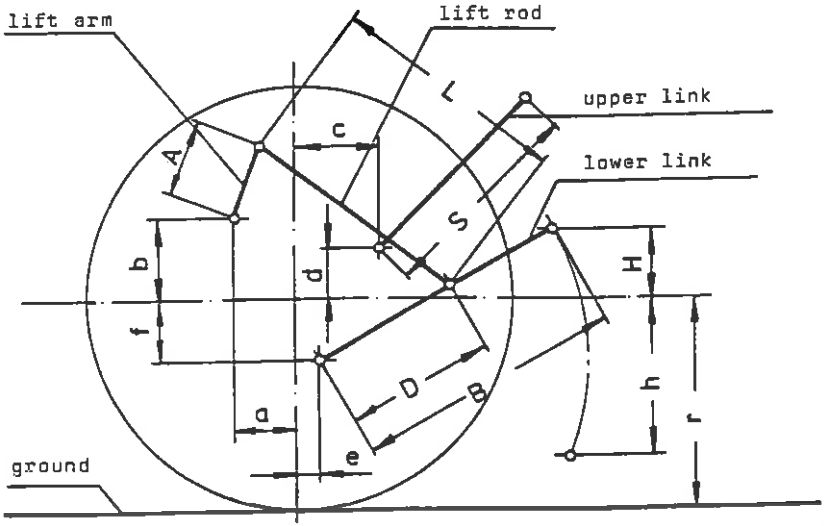
Load sensing, pressure and flow compensated system;
VICKERS variable displacement axial-piston pump,
driven by gear box, independent of travel clutch,
max. delivery 60 dm³/min at rated engine speed,
oil filter in feed line, cooler see page -6-, gear box;

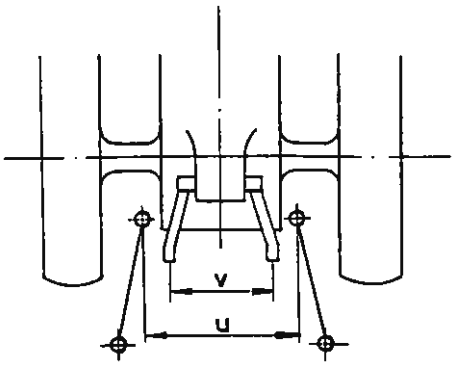
JOHN DEERE control valve,
no separate linkage lock for transport;
pressure limitating valve set to 20 ± 0,5 MPa;
2 single acting cylinders with 65 mm bore and
175 mm stroke, safety valve set to 21,5 ± 0,7 MPa;

2 double acting additional HUSCO de-luxe control valves,
4 oil couplings at rear of tractor;
maximum volume of oil, available to external cylinders :
20 dm³ stationary
10 dm³ during driving operation;
if required 10 dm³ oil may be added,
then max. available volume increases correspondingly
oil reservoir in common with gear box

the hydraulic system further delivers a high pressure circuit to
actuate steering and by a separate pump a low pressure circuit
for transmission lubrication and for actuating of:
Drive clutch, p.t.o. clutch and p.t.o. brake, power shift (if fitted)
and differential lock

Three-point linkage: Category 2 acc. to ISO 730/1-1990, with WALTERSCHEID quick couplers





Dimensions of rear implement linkage (projected lengths in mm, underlined dimensions are valid for power lift measurements p. 25)

Rear tyres 16.9 R 34 Front tyres 7.50 - 18	*) radius index static radius		(r) (r')	745 397
Length of lift arms			(A)	305
Length of lower links			(B)	945
Distance of lift arm pivot points from rear axle centre	horizontal vertical		(a) (b)	-170 475
Horizontal distance between lower link pivot points			(u)	478
Horizontal distance between lift arm end points			(v)	535
Length of upper link			(S)	530 to 725, <u>650</u>
Distance of upper link pivot point from rear wheel axis	horizontal vertical		(c) (d)	452, <u>442</u>, 432 173, <u>243</u>, 313
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)	<u>503</u>, 560
Length of lift rods			(L)	705 to 865, <u>770</u>

Height of lower link hitch points relative to rear wheel axis (situated 745 mm above ground), these data are valid for unloaded power lift:

Length of lift rods	(L)	705	<u>770</u>	865	800
Linkage distance of lift rods	(D)		503		560
Lowest position	(h)	398	545	727	545
Highest position	(H)	236	120	- 47	70
Transport position	(H')	236	120	- 47	70

*) Assuming r resp. r'= tyre dynamic radius index of ISO 4251/1-1984

Pull equipment

Swinging drawbar:	Longitudinally adjustable	
	height above ground	401 mm
	distance of hitch point from rear wheel axis, horizontally:	780, 880, 930, 1080 mm
	from p.t.o. shaft end vertically:	264 mm
	horizontally:	250, 350, 400,550 mm
	centre of clevis swingable to both sides,	
	with drawbar fully pushed in:	187 mm
	with drawbar fully drawn out:	259 mm
	distance of pivot point from rear wheel axis, horizontally	0 mm
	diameter of drawbar pin hole:	33 mm
	maximum vertical permissible load (drawbar fully pushed in):	2250 kg
Trailer hitch:	Optionally available, not fitted	
Holed drawbar:	Short bar;	
	length between ball guides	825 mm
	9 holes, 33 mm dia with 80 mm distance each,	
	thickness/width of the drawbar	25/80 mm
	height above ground: minimum	18 mm
	maximum	981 mm
	horizontal distance to p.t.o. shaft end (lower links in horizontal position)	550 mm
Towing hitch:	At front, height above ground	820 mm

Steering

DANFOSS, OSPC 125 LS
hydrostatic steering, connected to hydraulic circuit;
2 WEBER rams, single acting,
215 mm stroke, 50 mm bore,
acting on steering levers, working pressure 18,5 MPa

Brakes

Service brake:	JOHN DEERE self-adjusting pedal operated muscle power brake, hydraulically actuated with transmission oil, acting on rear wheels; oil-immersed disc brake with 1 ring-piston on each differential half shaft, disc diameter 313 mm; hydraulic trailer braking take-off optional, not fitted
Parking brake:	Mechanically operated oil-immersed band type brake, acting on rear wheels, fitted to differential housing; 1 drum, 317 mm dia, 40 mm width, operated by lever with ratchet; additional park lock, operated by range shift lever
Steering brake:	Divided pedal of service brake, for normal use locked together

Wheels

Front:	Steering, 2 pneumatics
Rear:	Driving, 2 pneumatics
Wheelbase:	2400 mm
Track width:	At front adjustable by extending the axle from 1491 to 2001 mm, in steps of 102 mm each and after turning the wheels adjustable from 1531 to 2041 mm at rear from 1612 up to 1912 mm adjustable in steps of 100 mm by adjustable gauge bowl wheels; with spacers adjustable to 2012 mm

Possible combinations of tyres sizes rear/front

Type of tyres: Diagonal-ply = (D)
radial-ply = (R)

Rear		Front
16.9 - 30	(D/R)	7.50 - 18
18.4 - 30	(D/R)	7.50 - 18 10.00 - 16
23.1 - 26	(D)	10.00 - 16
13.6 - 38	(D/R)	7.50 - 18 10.00 - 16 7.50 - 20
15.5 - 38	(D/R)	7.50 - 18 10.00 - 16 7.50 - 20
16.9 - 34	(D/R)	7.50 - 18 10.00 - 16
480/70R34	(R)	7.50 - 18 10.00 - 16

This is the list of the most popular tyres combinations.
More combinations are available.

Protective structure

JOHN DEERE, cab model SG 048;
OECD-tested safety cab with integrated safety frame RG 017, by separate device tiltable to the side; mounted by antivibration silent-blocks on tractor;
OECD approval no. CSS 0201/12

2 doors and 2 steps each,
steps 500 and 800 mm,
driver's platform 1060 mm above ground, front window rear window and side windows to open, roof hatch;

combined heating/ventilation system with 4-step blower and cooling-water heat exchanger below cab's floor;
air intake at left and right above side windows,
2 dry air filters;

air outlet jets and defroster louvers in the steering console,
2 recirculation louvers behind the seat

air conditioner optionally available, not fitted

Noise reduction materials:

Roof,		
head liner	foam with perforated vinyl-coating plus self-supporting foam substrate	23 mm
hatch	foam with perforated vinyl-coating	50 mm
Mudguards and uprights	foam with vinyl-coating plus substrate	6 mm
Floor	molded rubber mat	30 mm
Seat support	molded rubber mat	8 mm
Rear wall (pump cover)	composite material and sound barrier	9 mm

Driver's seat

GRAMMER DS 85 H1/90 A
upholstered seat with back rest extension and arm rests, mechanical weight adjustment, hydraulic shock absorber, horizontal suspension, seat rotatable to both sides up to 20°, additionally turnable to the left hand side about 180°;

height of unloaded seat above platform adjustable in 3 steps from 400 to 480 mm,
horizontal adjustment 180 mm

Operating hours meter

Electronic, counts real operating hours when engine is running

Lighting

Electrical, 12 Volt, as per GERMAN legislation

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headlights	1220	162x101	225
Sidelights	1600	110x35	870
Rearlights	1600	210x48	900
Reflectors 1st pair 2nd pair	 1600 780	 210x48 72 dia	 900 515

TEST CONDITIONS

Overall dimensions

	Length mm	Width mm	Height at top of protective structure mm	Height at top of exhaust silencer pipe mm
Unballasted	4150	2200	2643	2610
Ballasted	4565	2720		

Ground clearance (unballasted tractor): 401 mm
Clearance-limiting part: Swinging drawbar

Tractor mass (with cab)

	Unballasted		Ballasted	
	without driver kg	with driver kg	without driver kg	with driver kg
front	1385	1395	2040	2050
rear	2505	2570	4685	4750
total	3890	3965	6725	6800

Ballast

	Weigths		Water
	Number	Total mass kg	kg
front	16	850	-
rear	17	1525	460

Tyres and track widths specifications

	Front	Rear
Tyres:	PIRELLI TD 300	KLEBER SUPER 9
dimensions	7.50 - 18	16.9 R 34
ply rating	10	-
load index speed index	-	139 A8
type	diagonal-ply	radial-ply
maximum load (tyre manufacturer's) 40 km/h	8,52 kN	24,30 kN
maximum load (tyre manufacturer's) 30 km/h	10,65 kN	26,0kN
inflation pressure	420 kPa	160 kPa
radius	static 397 mm	index 745 mm
Chosen track width:	1593 mm	1712 mm
Rims:	5.50Fx18	DW 15LAx34
Technically permissible axle load	20,5 kN	53,0 kN
Technically permissible total weight:	68,0 kN	

Oils and lubrication

Capacity and change interval:

	Capacity dm³	Oil change h	Filter-change h
Engine	12	250	
Gear box, rear axle and final drives, hydraulic system, steering, brake system	47	1500	750

Specification:

	Recommended	Used during test
Engine oil: Type Viscosity Winter Summer Tropics Classification	Engine oil SAE 10W/40 SAE 15W/40 SAE 20W/40 API CD-SE or MIL-L-2104 C	FUCHS TITAN SAE 10W/40 API CD-SE MIL-L-2104 C
Transmission oil: Used in gearbox, rear axle and rear final drives, hydraulic system, steering, brake system Type Viscosity Classification	 Transmission oil SAE 75 JD spezif. J 20 C	 JOHN DEERE HY-GARD SAE 75 JD spezif. J 20 C

Grease:	Admissible are greases NLGI-class 2 on mineral oil base and on rape-seed oil base	
	number of lubrication points 23	

Fuel

Type:	ARAL-Diesel-fuel, in conformity with DIN 51601	
Density at 15°C:	At p.t.o.	0,835 g/cm³
	at drawbar power test	0,823 g/cm³
	at engine test	0,824 g/cm³

COMPULSORY TESTS

1. MAIN POWER TAKE OFF PERFORMANCE (540 rev/min)

Date of tests: 30th Oktober 1992
Location of tests: DLG-Testing Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed Engine rev/min	Speed P.t.o. rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
Maximum power						
1.1 At 2-hour test						
51,3	2100	569	14,82	12,37	241	3,47
1.2 At rated speed						
49,4	2300	624	14,76	12,32	250	3,34
1.3 At standard p.t.o. speed						
50,8	1990	540	14,51	12,11	239	3,50
1.4 Part loads, the governor hand lever in the position corresponding to maximum power at full load (curve a)						
1.4.1 the torque corresponding to maximum power at rated speed						
49,4	2300	624	14,76	12,32	250	3,34
1.4.2 85% of the torque obtained in 1.4.1						
44,0	2410	654	13,57	11,34	258	3,24
1.4.3 75% of the torque defined in 1.4.2						
33,1	2422	657	11,80	9,85	297	2,81
1.4.4 50% of the torque defined in 1.4.2						
22,3	2440	662	9,65	8,05	362	2,31
1.4.5 25% of the torque defined in 1.4.2						
11,2	2457	666	7,38	6,16	550	1,52
1.4.6 unloaded						
-	2474	671	5,24	4,37	-	-

Power kW	Speed Engine rev/min	Speed P.t.o. rev/min	Fuel consumption hourly l/h	Fuel consumption hourly kg/h	Fuel consumption specific g/kWh	Specific energy kWh/l
1.5 Part loads, the governor hand lever in the position corresponding to the standard p.t.o. speed at full load (curve b)						
1.5.1 the torque corresponding to maximum power						
50,8	1990	540	14,51	12,11	239	3,50
1.5.2 85% of the torque obtained in 1.5.1						
45,8	2112	573	13,31	11,11	242	3,44
1.5.3 75% of the torque defined in 1.5.2						
34,7	2133	578	10,94	9,13	263	3,17
1.5.4 50% of the torque defined in 1.5.2						
23,4	2161	586	8,77	7,33	313	2,67
1.5.5 25% of the torque defined in 1.5.2						
11,8	2182	592	6,50	5,43	459	1,82
1.5.6 unloaded						
-	2210	599	4,34	3,62	-	-

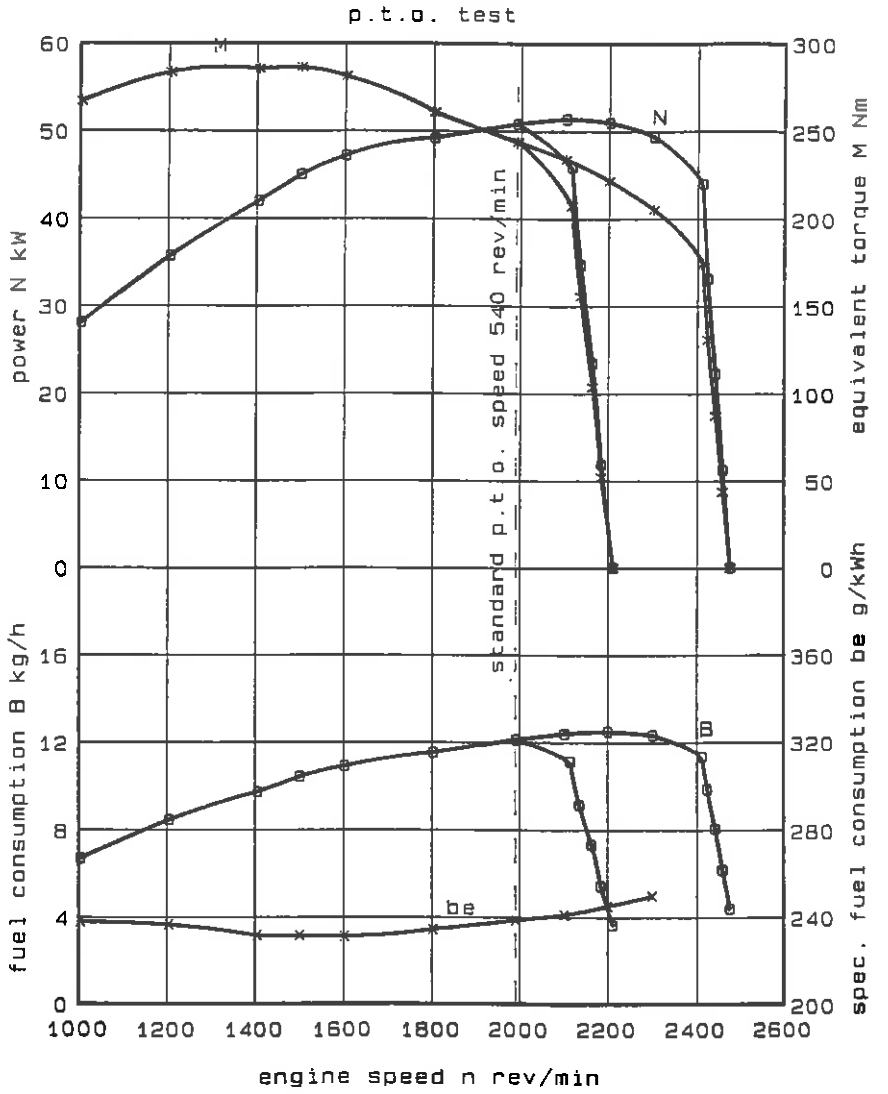
No load maximum engine speed: 2474 rev/min
Equivalent flywheel torque at rated engine speed: 205 Nm
Equivalent flywheel torque at 2-hour test: 233 Nm
Maximum equivalent flywheel torque: 286 Nm at 1501 rev/min of the engine

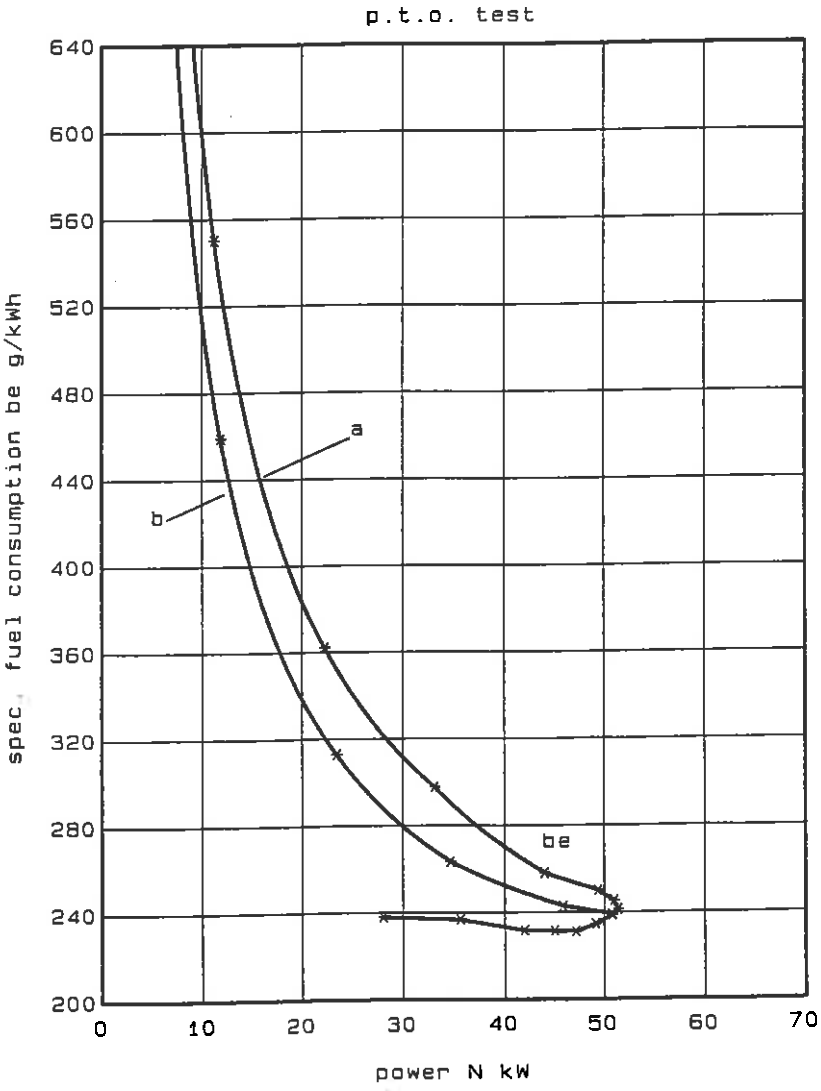
Mean atmospheric conditions

temperature	20 °C
pressure	99 kPa
rel. humidity	30 %

Maximum temperatures

coolant	87 °C
oil	116 °C
fuel	26 °C
air intake	25 °C


p.t.o. test
power N kW
equivalent torque M Nm
standard p.t.o. speed 540 rev/min
fuel consumption B kg/h
spec. fuel consumption be g/kWh
engine speed n rev/min
M
N
B
be
60
50
40
30
20
10
0
16
12
8
4
0
300
250
200
150
100
50
0
360
320
280
240
200
1000
1200
1400
1600
1800
2000
2200
2400
2600


p.t.o. test
spec. fuel consumption be g/kWh
640
600
560
520
480
440
400
360
320
280
240
200
0
10
20
30
40
50
60
70
power N kW
a
b
be

2 HYDRAULIC POWER AND LIFTING FORCE

Date of tests: 5th January 1993

2.1 Hydraulic power test

Sustained pressure with relief valve open 19,8 MPa
Pump delivery rate at minimum pressure 69,2 l/min

	Hydraulic power kW	Flow rate l/min	Pressure MPa	Oil temperature °C
At 90% of the actual relief valve setting	15,9	53,5	17,8	65
Maximum	18,3	66,5	16,5	65

Tapping point used for test: at rear of tractor, connected with additional control valve no.2

2.2 Power lift test

	At the hitch points	On the frame
Height of lower hitch points above ground in down position	200 mm	
Vertical movement without lifting forces	665 mm	830 mm
with lifting forces	656 mm	810 mm
Max. corrected force exerted through full range	21,8 kN	20,7 kN
Corresponding pressure	17,8 MPa	
Moment about rear axle	-	35,0 kNm
Max. tilt angle of mast from vertical		11°

Lifting heights relative to horizontal lower links

mm	-380	-320	-300	-200	-100	0	+100	+200	+300	+336	+400	+ 430
Lifting forces at hitch points, corrected to 17,8 MPa												
kN		21,8	22,5	25,7	28,1	30,2	32,0	34,0	35,3	35,8		
Lifting forces at standard frame, corrected to 17,8 MPa												
kN	20,7		22,7	24,3	25,0	25,4	25,7	25,2	25,0		23,9	23,0

JOHN DEERE 6100 (2 WD)

3 DRAWBAR PERFORMANCE

Date of test: 8th till 12th March 1993
Type of track:: Concrete

Gear and range	Speed km/h	Drawbar pull kN	Power kW	Engine speed rev/min	Slip of wheels %
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)					
3 A	3,70	34,42	35,4	2330	15,0
1 B	3,88	34,38	37,1	2249	15,0
2 B	5,47	27,53	41,8	2102	7,8
1 C	6,55	23,62	43,0	2102	5,8
3 B	7,47	20,80	43,2	2098	4,7
2 C	9,37	16,53	43,0	2100	3,5
3 C	12,46	12,22	42,3	2100	2,4
3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)					
1 A	2,12	52,98	31,1	2408	15,0
2 A	2,69	52,62	39,3	2190	15,0
3 A	3,64	42,13	42,6	2099	9,0
1 B	4,00	38,80	43,1	2102	8,0
2 B	5,78	27,03	43,4	2104	5,0
1 C	6,78	22,95	43,2	2096	3,9
3 B	7,73	20,50	44,0	2101	3,4
2 C	9,59	16,38	43,6	2096	2,6
3 C	12,78	12,05	42,8	2102	1,9
3.3.1 FIVE-HOUR-TEST at 75% of pull at maximum power (at rated engine speed)					
1 C	7,93	15,11 *)	33,3	2416	2,40
*) drawbar pull at maximum power measured at rated engine speed: 20,14 kN					
3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheel slip					
2 A	2,64	52,80	38,7	2187	-

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2 : 20 g/h

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
Unballasted	725 mm	250 kPa	80 kPa
Ballasted	616 mm	400 kPa	150 kPa

Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Tempe-rature °C	Relative humidity %	Pressure kPa
337	2,44	18	81	95	6	72	100,8
329	2,50	18	80	95	6	60	100,8
294	2,80	18	81	95	3	82	100,6
287	2,87	18	81	95	3	82	100,6
286	2,88	18	81	95	3	82	100,6
287	2,87	12	81	95	3	82	100,6
291	2,83	12	81	95	6	74	100,8
349	2,36	25	85	95	16	70	100,8
314	2,62	26	85	95	16	70	100,8
288	2,85	26	85	95	16	68	100,8
286	2,87	26	85	95	16	66	100,8
283	2,90	25	85	95	10	66	100,8
285	2,89	22	83	95	16	67	100,8
281	2,93	26	85	98	16	68	100,8
283	2,91	22	85	96	16	68	100,8
288	2,86	23	85	95	16	68	100,8
in 1 C gear							
318	2,59	22	83	90	14	70	101,0
with additional ballast: 400 kg							
-	-	20	84	90	10	75	100,8

Those figures not quoted are irrelevant due to the additional ballast.

4 TURNING AREA AND TURNING CIRCLE

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning area	4,03	3,93	4,48	4,38
Radius of turning circle	3,78	3,68	4,23	4,13

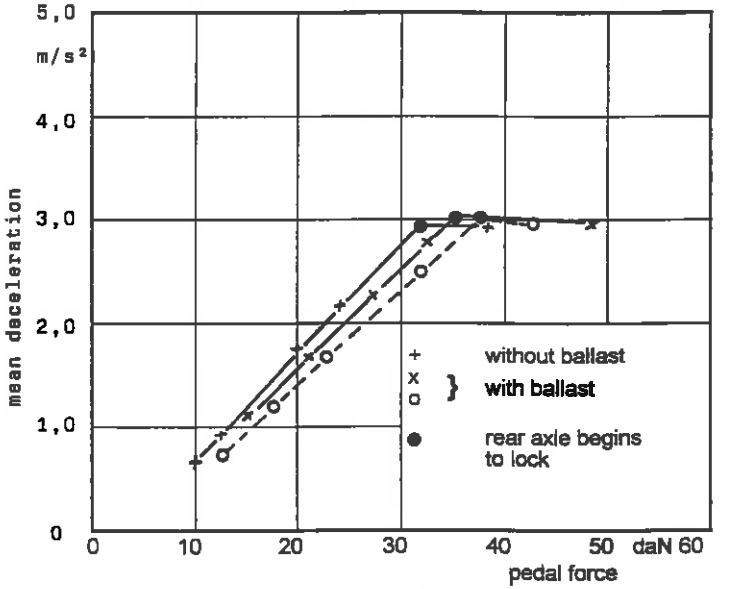
5 LOCATION OF CENTRE OF GRAVITY

Height above ground	953 mm
Distance forward from rear axle centre	844 mm
Distance from tractor's median plane	0 mm

6 BRAKING (front wheel drive disengaged)
Date of tests: 9th and 18th March 1993

	Tractor mass (with driver) front kg	rear kg	total kg	Speed before application of brakes km/h
Without ballast	1395	2570	3965	33,0
With ballast	2050	4750	6800	32,5

6.1 Type-O-test (cold brakes) ——— 6.2 Type-I-(fade)test - - - - -



No significant deviation of tractor from original course and no abnormal vibrations

Brakes-heating: Actuating of brake for 1 km with pedal force corresponding to 1 m/s²

6.3 Parking brake

	Ballasted tractor on 18%-slope up	down
Braking device control force daN	37	30

7 MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test:	18th February 1993
Type of track:	Concrete
Type of sound level meter:	BRÜEL & KJAER model 2233

Results of test

Gear number:	3 D
Travelling speed before acceleration:	24,8 km/h
Sound level:	82,5 dB(A)

8 REPAIRS AND REMARKS None

OPTIONAL TEST

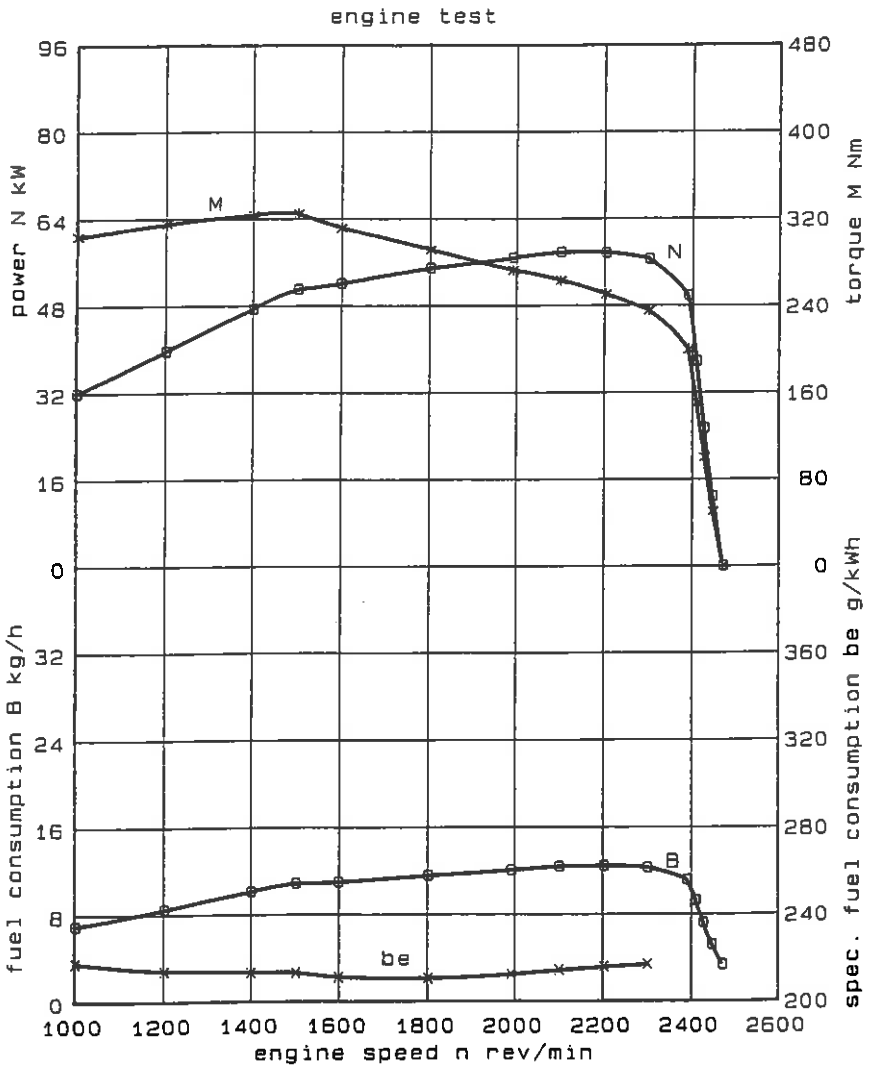
9. ENGINE PERFORMANCE

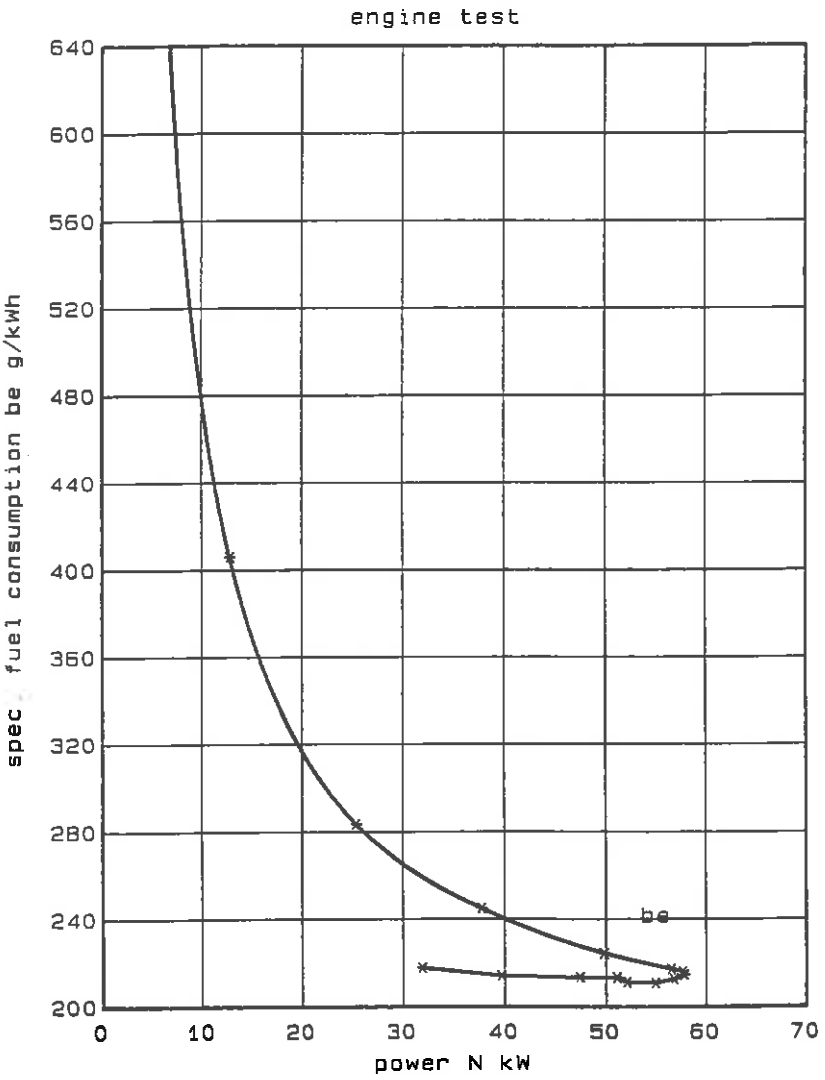
Date of tests: 22nd October 1992
Location of tests: DLG-Testing-Station Groß-Umstadt
Type of dynamometer: SCHENCK eddy-current-dynamometer W 150

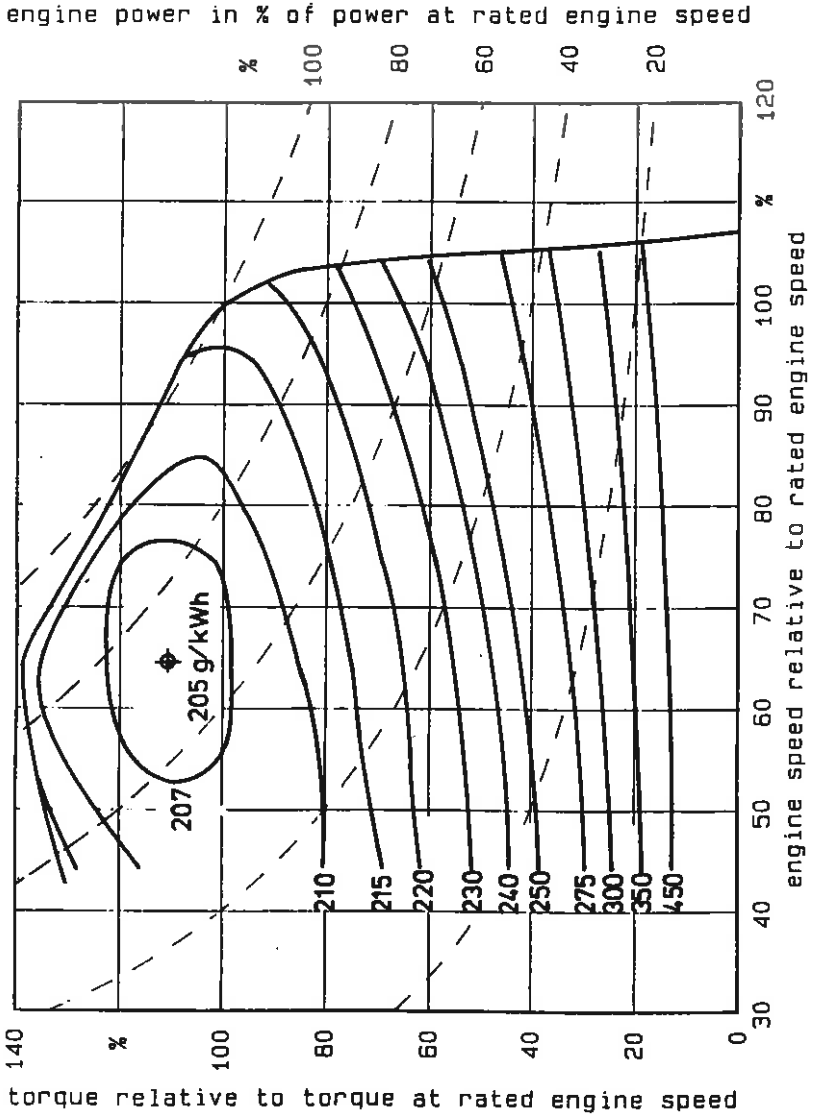
	Power kW	Engine speed rev/min	Fuel consumption hourly l/h	hourly kg/h	specific g/kWh	Specific energy kWh/l
	Maximum power					
9.1	At 2-hour test					
	57,8	2100	15,04	12,40	214	3,84
9.2	At rated engine speed					
	56,5	2300	14,88	12,26	217	3,80
9.3	At standard p.t.o. speed (540 rev/min)					
	56,8	1991	14,64	12,06	212	3,88
9.4	Part loads					
9.4.1	the torque corresponding to maximum power at rated speed					
	56,5	2300	14,88	12,26	217	3,80
9.4.2	85% of the torque obtained in 8.4.1					
	49,8	2390	13,53	11,15	224	3,68
9.4.3	75% of the torque obtained in 8.4.2					
	37,7	2411	11,20	9,23	245	3,37
9.4.4	50% of the torque obtained in 8.4.2					
	25,3	2428	8,71	7,18	283	2,91
9.4.5	25% of the torque obtained in 8.4.2					
	12,8	2448	6,29	5,19	406	2,03
9.4.6	unloaded					
	-	2472	4,05	3,34	-	-

Optimum fuel consumption: 205 g/kWh at 56,6 kW and 1495 rev/min
No load maximum engine speed: 2472 rev/min
Torque at rated engine speed: 235 Nm
Torque at maximum power: 263 Nm
Maximum torque: 325 Nm at 1502 rev/min of the engine

Mean atmospheric conditions	temperature	21 °C
	pressure	99 kPa
	relative humidity	35 %
Maximum temperatures	coolant	83 °C
	oil	105 °C
	fuel	24 °C
	engine air intake	24 °C


engine test
power N kW
torque M Nm
fuel consumption B kg/h
spec. fuel consumption be g/kWh
engine speed n rev/min
M
N
B
be
96
80
64
48
32
16
0
480
400
320
240
160
80
0
32
24
16
8
0
360
320
280
240
200
1000
1200
1400
1600
1800
2000
2200
2400
2600


engine test
spec. fuel consumption be g/kWh
640
600
560
520
480
440
400
360
320
280
240
200
0
10
20
30
40
50
60
70
power N kW
be


engine power in % of power at rated engine speed
%
100
80
60
40
20
120
%
100
90
80
70
60
50
40
30
engine speed relative to rated engine speed
205 g/kWh
207
210
215
220
230
240
250
275
300
350
450
140
%
100
80
60
40
20
0
torque relative to torque at rated engine speed

ADDITIONAL TESTS UNDER THE RESPONSIBILITY OF THE DLG-TESTING-STATION

10 MEASUREMENTS OF NOISE IN THE SAFETY CAB

Type of track: Concrete
Type of sound level meter: BRÜEL & KJAER model 2233
Date of test: 26. April 1993

According to OECD CODE V

Gear number	Drawbar pull kN	Measured travelling speed km/h	Sound level dB(A)
Unloaded test in the gear giving the speed nearest to 7,5 km/h			
1 C	-	8,27	72,0
Unloaded test in the gear giving the maximum speed			
3 D	-	32,2	73,0
Tests with the drawbar pull for which the tractor gives the maximum sound level (combination of gear giving the nominal speed nearest to 7,5 km/h and also in any gear with a sound level increase of at least 1 dB(A))			
1 C	19,86	7,35	75,0

11 LIFTING FORCE (with modified 3-point linkage setting)

Date of tests: 6th and 11th January 1993

Length of lift rods	(L)	800 mm
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	560 mm
Distance of upper link pivot point from rear wheel axis, horizontal	(c)	432 mm
vertical	(d)	313 mm
Length of upper link	(S)	652 mm

see on pages 10 and 11 for more information

	At the hitch-point	On the frame
Height of lower hitch points above ground in down position	200 mm	
Vertical movement without lifting forces	615 mm	680 mm
with lifting forces	605 mm	655 mm
Max. corrected force exerted through full range	24,3 kN	25,7 kN
Corresponding pressure	17,8 MPa	
Moment about rear axle	-	43,3 kNm
Max. tilt angle of mast from vertical		5°

Lifting heights relative to horizontal lower links											
mm	-345	-320	-300	-200	-100	0	+100	+200	+285	+300	+310
Lifting forces at hitch points, corrected to 17,8 MPa											
kN		24,3	25,2	28,8	31,5	33,3	35,1	36,5	37,8		
Lifting forces at standard frame, corrected to 17,8 MPa											
kN	25,7		27,0	29,3	30,2	30,6	30,8	30,6		29,0	28,8

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