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NEBRASKA TRACTOR TEST LABORATORY
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INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
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LINCOLN, NEBRASKA 68583-0832, USA

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE 2 FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS





JOHN DEERE 7610 4WD
PowrQuad - MFWD
20 Forward Speeds - 40 km/h Version

MANUFACTURED BY:	John Deere Tractor Works 3500 East Donald Street, P.O. Box 270 Waterloo, Iowa 50704-0270
NEBRASKA TEST NO.	1787
TEST DATES:	October 26 - November 7, 2000

This test report provides the results of the tests conducted in accordance with the OECD Standard Test Code for the Official Testing of Agricultural Tractor Performance - C(87)53 Final, Code 2.

This report has been approved by the OECD Coordinating Centre in Paris on 19 June 2001 for the John Deere 7610 PowrQuad, MFWD, 40 km/h version, with OECD Number 2/1 961.

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Date: JUN 2 5 2001

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SPECIMEN TEST REPORT

Note: Units shown below, which appear in ISO 1000:1992, shall be stated and followed by national units in parentheses, if necessary.

- Tractor manufacturer's name and address:	John Deere Waterloo Works 3500 East Donald St. P.O. Box 270 Waterloo, Iowa U.S.A.
- Location of tractor assembly:	Same
- Submitted for test by:	The manufacturer
- Selected for test by:	The manufacturer in agreement with the test station.
- Place of running-in:	John Deere Product Engineering Center, Waterloo, Iowa U.S.A.
- Duration of running-in:	112 hours
- Location of test:	Nebraska Tractor Test Laboratory Lincoln, Nebraska, USA.

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

-Make/Model/Type:	John Deere/7610/4WD
-Number of driving wheels:	2 or 4
-Serial N:	*RW7610H037883*
-1st Serial N:	*RW7610R030002*

1.2 Engine

- Make/Model/Type:	John Deere/6068TRW72/Diesel;4-stroke; direct injection; turbocharged
- Serial N°:	*T06068T856754*

1.2.1 *Cylinders*

- Number/disposition:	6, in-line, vertical
- Bore/stroke:	106.5 mm x 127.0 mm
- Capacity:	6788 cm^3
- Compression ratio:	17.0:1
- Arrangement of valves:	Overhead
- Cylinder liners (wet or dry):	Wet; replaceable

1.2.2 *Supercharging*

- Make/Model/Type:	Garret/RE59883/Exhaust gas driven
- Pressure:	0.074 ± 0.015 MPa at rated speed and load

1.2.3 *Fuel system*

- Fuel feed system:	Mechanical transfer pump
- Make/Model/Type of fuel filter(s):	
• Primary:	Stanadyne/AR103220/fuel strainer
• Secondary:	Stanadyne/RE62419/paper element
- Capacity of fuel tank:	246 dm^3
- Fuel cooler:	Heat exchanger with air
- Make/Model/Type of injection pump:	Stanadyne/RE504068rotary; electric shutoff
- Serial N°:	DB4629-5655 9685074
- Manufacturer's production setting of injection pump	
. Flow rate (rated engine speed and full load):	27.0 ± 0.85 dm^3/hr
. Timing: Crankshaft	6.5 degrees ± 1 degree BTDC
- Make/Model/Type of injectors:	Stanadyne/44508/Pencil Type
- Injection pressure:	29.0 + 1.2/-0.0 MPa
-Make/Model/Type of carburettor:	Not Applicable

1.2.4 Governor

-Make/Model/Type:	Stanadyne/All speed/mechanical
- Governed range of engine speed:	From 850 to 2275 min^{-1} (rev/min)
- Rated engine speed:	2100 min^{-1} (rev/min)

1.2.5 *Air cleaner*

- Pre-cleaner	
.Make/Model/Type:	Donaldson/RE65789/Strato-tube precleaner with aspirator
.Location of air intake:	Under hood, front of tractor
- Main cleaner	
.Make/Model/Type:	Donaldson/RE67124/ Integrated; pleated paper
- Secondary Element	
.Make/Model/Type:	Donaldson/RE34963/ Pleated paper
- Maintenance indicator:	Dashed mounted warning light and audible signal

1.2.6 *Lubrication system*

- Type of feed pump:	Full pressure; positive displacement
- Type of filter(s):	Full flow
- Number of filters:	One; spin-on
- Oil cooler:	Stacked plate heat exchanger with engine coolant

1.2.7 *Cooling system*

- Type of coolant:	Liquid
- Type of pump:	Centrifugal, belt driven
- Specification of fan or blower:	Belt driven; Suction type; Variable speed
.Number of fan blades:	6
.Fan diameter:	582 mm
- Coolant capacity:	24 dm^3
- Type of temperature control:	Two thermostats and variable speed fan
- Superpressure system:	69 kPa

1.2.8 *Starting system*

- Make/Model/Type:	Nippondenso/RE59596/Solenoid Engaged
- Starter motor power rating:	4.0 kW
- Cold starting aid:	Electrical resistance preheater in air intake manifold
- Safety device:	Electrical lockout on gearshift

1.2.9 *Electrical system*

- Voltage &grounding:	12 Volt DC; negative ground
- Alternator	
.Make/Model/type:	Nippondenso/RE46608/Belt driven with built-in regulator
.Power Rating:	1.89 kW; 140 Amp at rated engine speed and 13.5 Volt at 25° C Ambient
- Batteries	
.Number & Connection:	Two: 12 Volt batteries in parallel; SAE tapered post
.Rating:	925 cold cranking amps/battery; 175 Ah/battery at 20 h rating

1.2.10 *Exhaust system*

- Make/Model/Type:	Nelson/RE65768/Expansion chamber
- Location:	Horizontal muffler; under hood
- Exhaust stack location:	Vertical; right front of cab

1.3 Transmission

1.3.1 *Clutch (Travel)*

- Make/Model/Type: John Deere/Multiple plate/Oil cooled
- Number of plates: 5 for forward; 5 for reverse
- Diameter of plates: 225 mm for forward; 295 mm for reverse
- Method of operation: Hydraulic; pedal actuated

1.3.2 *Gear box*

- Make/Model/Type: John Deere/PowrQuad™/Mechanical
- Arrangement: Countershaft and planetary design consisting of: One 4 or 5-speed gear box with 4 or 5 mechanically synchronized speeds and a 4-speed planetary gear set with multiple wet disk clutch and brake units
- Oil cooler: Heat exchanger with air

Version Tested:

20 Speed PowrQuad - 40 km/h

	Forward	Reverse
Number of gears	4	4
Number of ranges/groups	5	5
Total of arrangements	20	20

-

- Available options:

-

- 16 Speed PowrQuad - 30 km/h

	Forward	Reverse
Number of gears	4	4
Number of ranges/groups	4	4
Total of arrangements	16	16

- 16 Speed PowrQuad with Creeper - 30 km/h

	Forward	Reverse
Number of gears	4	4
Number of ranges/groups	3in Creeper 4 in Non-Creeper	4in Creeper 4 in Non-Creeper
Total of arrangements	28	28

- 20 Speed PowrQuad with Creeper - 40 km/h

	Forward	Reverse
Number of gears	4	4
Number of ranges/groups	3in Creeper 5 in Non-Creeper	4in Creeper 5 in Non-Creeper
Total of arrangements	32	32

1.3.3 *Rear axle and final drives*

- Make/Model/Type: John Deere/RE66320/Spiral bevel with pinion, differential and inboard planetary reduction

- Differential lock
  - .Type: Electro-Hydraulic
  - .Method of engagement: Pedal operated switch
  - .Method of disengagement: Self-disengaging with brake operation

1.3.4 *Front axle and final drives*

- Make/Model/Type: John Deere/MFWD RE66946/Spiral bevel and pinion, differential and outboard planetary reduction

- Differential lock
  - .Type: Limited slip
  - .Method of engagement: Self-engaging
  - .Method of disengagement: Self-disengaging

1.3.5 *Total ratios and traveling speeds*

20 Speed 40km/h PowrQuad

Gear No.	Group Or Range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
FWD			
1	A1	285.574	2.41
2	A2	237.165	2.90
3	A3	198.016	3.48
4	A4	161.646	4.26
5	B1	134.738	5.11
6	B2	111.898	6.16
7	B3	93.427	7.37
8	C1	84.664	8.14
9	B4	76.267	9.03
10	C2	70.312	9.80
11	C3	58.706	11.73
12	C4	47.923	14.37
13	D1	45.729	15.06
14	D2	37.977	18.14
15	D3	31.708	21.72
16	E1	30.867	22.31
17	D4	25.884	26.61
18	E2	25.635	26.87
19	E3	21.403	32.18
20	E4	17.472	39.42
REV			
1	A1	240.778	2.86
2	A2	199.962	3.44
3	A3	166.955	4.13
4	A4	136.290	5.05
5	B1	113.602	6.06
6	B2	94.345	7.30
7	B3	78.772	8.74
8	C1	71.384	9.65
9	B4	64.303	10.71
10	C2	59.283	11.62
11	C3	49.497	13.92
12	C4	40.406	17.05
13	D1	38.556	17.86
14	D2	32.020	21.51
15	D3	26.735	25.76
16	E1	26.025	26.47
17	D4	21.824	31.56
18	E2	21.614	31.87
19	E3	18.046	38.17
20	E4	14.731	46.76

Number of front wheel revolutions for one rear wheel revolution: 1.3188

* Calculated with a tire dynamic radius index of 870 mm (not in conformity with ISO 4251-1/1998)

16 Speed 30km/h PowrQuad

Gear No.	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
FWD			
1	A1	285.574	2.41
2	A2	237.165	2.90
3	A3	198.016	3.48
4	A4	161.646	4.26
5	B1	134.738	5.11
6	B2	111.898	6.16
7	B3	93.427	7.37
8	C1	84.664	8.14
9	B4	76.267	9.03
10	C2	70.312	9.80
11	C3	58.706	11.73
12	C4	47.923	14.37
13	D1	40.830	16.87
14	D2	33.908	20.31
15	D3	28.311	24.33
16	D4	23.111	29.80
REV			
1	A1	240.778	2.86
2	A2	199.962	3.44
3	A3	166.955	4.13
4	A4	136.290	5.05
5	B1	113.602	6.06
6	B2	94.345	7.30
7	B3	78.772	8.74
8	C1	71.384	9.65
9	B4	64.303	10.71
10	C2	59.283	11.62
11	C3	49.497	13.92
12	C4	40.406	17.05
13	D1	34.425	20.01
14	D2	28.589	24.09
15	D3	23.870	28.85
16	D4	19.486	35.35
Number of front wheel revolutions for one rear wheel revolution: 1.3188			

* Calculated with a tire dynamic radius index of 870 mm (not in conformity with ISO 4251-1/1998)

16 Speed 30km/h PowrQuad with Creeper

Gear No.	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
FWD			
1	A1 CRP	2759.150	0.25
2	A2 CRP	2291.428	0.30
3	A3 CRP	1913.184	0.36
4	A4 CRP	1561.783	0.44
5	B1 CRP	1301.805	0.53
6	B2 CRP	1081.127	0.64
7	B3 CRP	902.666	0.76
8	C1 CRP	818.007	0.84
9	B4 CRP	736.871	0.93
10	C2 CRP	679.341	1.01
11	C3 CRP	567.203	1.21
12	C4 CRP	463.023	1.49
13	A1	285.574	2.41
14	A2	237.165	2.90
15	A3	198.016	3.48
16	A4	161.646	4.26
17	B1	134.738	5.11
18	B2	111.898	6.16
19	B3	93.427	7.37
20	B4	84.664	8.14
21	C1	76.267	9.03
22	C2	70.312	9.80
23	C3	58.706	11.73
24	C4	47.923	14.37
25	D1	40.830	16.87
26	D2	33.908	20.31
27	D3	28.311	24.33
28	D4	23.111	29.80
REV			
1	A1 CRP	2326.342	0.30
2	A2 CRP	1931.989	0.36
3	A3 CRP	1613.077	0.43
4	A4 CRP	1316.797	0.52
5	B1 CRP	1097.600	0.63
6	B2 CRP	911.539	0.76
7	B3 CRP	761.072	0.90
8	C1 CRP	689.692	1.00
9	B4 CRP	621.283	1.11
10	C2 CRP	572.778	1.20
11	C3 CRP	478.230	1.44
12	C4 CRP	390.392	1.76

13	A1	240.778	2.86
14	A2	199.962	3.44
15	A3	166.955	4.13
16	A4	136.290	5.05
17	B1	113.602	6.06
18	B2	94.345	7.30
19	B3	78.772	8.74
20	B4	71.384	9.65
21	C1	64.303	10.71
22	C2	59.283	11.62
23	C3	49.497	13.92
24	C4	40.406	17.05
25	D1	34.425	20.01
26	D2	28.589	24.09
27	D3	23.870	28.85
28	D4	19.486	35.35
Number of front wheel revolutions for one rear wheel revolution: 1.3188			

* Calculated with a tire dynamic radius index of 870 mm (not in conformity with ISO 4251-1/1998)

20 Speed 40km/h PowrQuad with Creeper

Gear No.	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
FWD			
1	A1 CRP	2759.150	0.25
2	A2 CRP	2291.428	0.30
3	A3 CRP	1913.184	0.36
4	A4 CRP	1561.783	0.44
5	B1 CRP	1301.805	0.53
6	B2 CRP	1081.127	0.64
7	B3 CRP	902.666	0.76
8	C1 CRP	818.007	0.84
9	B4 CRP	736.871	0.93
10	C2 CRP	679.341	1.01
11	C3 CRP	567.203	1.21
12	C4 CRP	463.023	1.49
13	A1	285.574	2.41
14	A2	237.165	2.90
15	A3	198.016	3.48
16	A4	161.646	4.26
17	B1	134.738	5.11
18	B2	111.898	6.16
19	B3	93.427	7.37
20	C1	84.664	8.14
21	B4	76.267	9.03

22	C2	70.312	9.80
23	C3	58.706	11.73
24	C4	47.923	14.37
25	D1	45.729	15.06
26	D2	37.977	18.14
27	D3	31.708	21.72
28	E1	30.867	22.31
29	D4	25.884	26.61
30	E2	25.635	26.87
31	E3	21.403	32.18
32	E4	17.472	39.42
REV			
1	A1 CRP	2326.342	0.30
2	A2 CRP	1931.989	0.36
3	A3 CRP	1613.077	0.43
4	A4 CRP	1316.797	0.52
5	B1 CRP	1097.600	0.63
6	B2 CRP	911.539	0.76
7	B3 CRP	761.072	0.90
8	C1 CRP	689.692	1.00
9	B4 CRP	621.283	1.11
10	C2 CRP	572.778	1.20
11	C3 CRP	478.230	1.44
12	C4 CRP	390.392	1.76
13	A1	240.778	2.86
14	A2	199.962	3.44
15	A3	166.955	4.13
16	A4	136.290	5.05
17	B1	113.602	6.06
18	B2	94.345	7.30
19	B3	78.772	8.74
20	C1	71.384	9.65
21	B4	64.303	10.71
22	C2	59.283	11.62
23	C3	49.497	13.92
24	C4	40.406	17.05
25	D1	38.556	17.86
26	D2	32.020	21.51
27	D3	26.735	25.76
28	E1	26.025	26.47
29	D4	21.824	31.56
30	E2	21.614	31.87
31	E3	18.046	38.17
32	E4	14.731	46.76
Number of front wheel revolutions for one rear wheel revolution: 1.3188			

* Calculated with a tire dynamic radius index of 870 mm (not in conformity with ISO 4251-1/1998)

1.4 Power take-off

1.4.1 *Main power take-off*

- Type (independent, semi-independent or not independent):	Independent
- Method of engagement (if necessary describe the type of clutch):	Electro-Hydraulically actuated multi-plate wet clutch operated by single hand control switch
- Number of shafts:	One
- Method of changing power take-off shaft ends and speeds:	Reversible Shaft
SM – Option	Reversible shaft with 2 speeds selectable by hand lever

1.4.1.1 Power take-off proportional to engine speed
Reversible shaft (tested version)

Power take-off at 540 min^{-1} (rev/min)

- Location:	Rear of tractor; center plane
- Diameter of power take-off shaft end:	35 mm
- Number of splines: ....., in conformity with ISO 500:1991	6; conforms to ISO 500/1991
- Height above ground:	765 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	620 mm
- PTO speed at rated engine speed (2100 rev/min):	547 min^{-1} (rev/min)
- Engine speed at standard power take-off speed:	2072 min^{-1} (rev/min)
- Ratio of rotation speeds (engine speed/p.t.o. speed):	3.837: 1
- Power restriction:	56 kW
- Maximum torque transmissible:	1000 Nm
- Direction of rotation (viewed from shaft end):	Clockwise

Power take-off at 1000 min^{-1} (rev/min)

- Location:	Rear of tractor; center plane
- Diameter of shaft:	35 mm
- Number of splines:	21; conforms to ISO 500/1991
- Height above ground:	765 mm
- Distance from the median plane of the tractor:	0 mm
- Distance from behind rear axle:	620 mm
- PTO speed at rated engine speed (2100 rev/min):	1007 min^{-1} (rev/min)
- Engine speed at standard power take-off speed:	2086 min^{-1} (rev/min)
- Engine speed/PTO speed ration:	2.086:1
- Power restriction:	None
- Direction of rotation (viewed from shaft end):	Clockwise

1.4.1.2 Power take-off proportional to ground speed — Not Available

1.4.2 *Optional power take-off*

SM Option - Reversible two-speed shaft

Power take-off at 540 min^{-1} (rev/min)

- Location:	Rear of tractor; center plane
- Diameter of power take-off shaft end:	35 mm
- Number of splines: ....., in conformity with ISO 500:1991	6 or 21; conforms to ISO 500/1991
- Height above ground:	765 mm
- Distance from the median plane of the tractor:	0 mm
- Distance behind rear-wheel axis:	620 mm
- PTO speed at rated engine speed (2100 rev/min):	656 min^{-1} (rev/min)
- Engine speed at standard power take-off speed:	1730 min^{-1} (rev/min)
- Ratio of rotation speeds (engine speed/p.t.o. speed):	3.204: 1
- Power restriction:	56 kW
- Maximum torque transmissible:	1000 Nm
- Direction of rotation (viewed from shaft end):	Clockwise

Power take-off at 1000 min^{-1} (rev/min)

- Location:	Rear of tractor; center plane
- Diameter of shaft:	35 mm
- Number of splines:	6 or 21; conforms to ISO 500/1991
- Height above ground:	765 mm
- Distance from the median plane of the tractor:	0 mm
- Distance from behind rear axle:	620 mm
- PTO speed at rated engine speed (2100 rev/min):	1064 min^{-1} (rev/min)
- Engine speed at standard power take-off speed:	1973 min^{-1} (rev/min)
- Engine speed/PTO speed ration:	1.973:1
- Power restriction:	None
- Direction of rotation (viewed from shaft end):	Clockwise

1.5 Hydraulic Power Lift

- Make/Model/Type:	John Deere/ /Electronic lower link sensing; variable mix of draft and position control; adjustable rate of drop
- Type of hydraulic system:	Closed center; pressure and flow compensated
- Type and number of cylinders (single or double-acting):	Two external, single acting, 80 mm diameter
- Type of linkage lock for transport:	Electro-hydraulic
- Relief valve pressure setting (tolerance):	20.3 + 0.4/-0.6 MPa
- Opening pressure of cylinder safety valve (if fitted):	24.0 ± 1.0 MPa
- Lift pump type:	Axial piston, variable delivery and flow, pressure and flow compensated
- Transmission between pump and engine:	Spiral bevel gear drive
- Type and number of filters:	Synthetic media, spin-on canister/one
- Site of oil reservoir:	Differential case housing
- Type, number and location of tapping points:	ISO Standard breakaway couplers/2 standard with 3rd, 4th, and 5th. and additional inlet/outlet pair for externally controlled implements optional/rear of tractor
- Maximum volume of oil available to external cylinders:	19 dm^3; additional 11 dm^3 allowable overfill for total of 30 dm^3

1.6 Three point linkage

- Category: 2 in conformity with ISO 730/1-1994 + Cor. 1:1995 and ISO 730-2:1979
- Category adapter: None

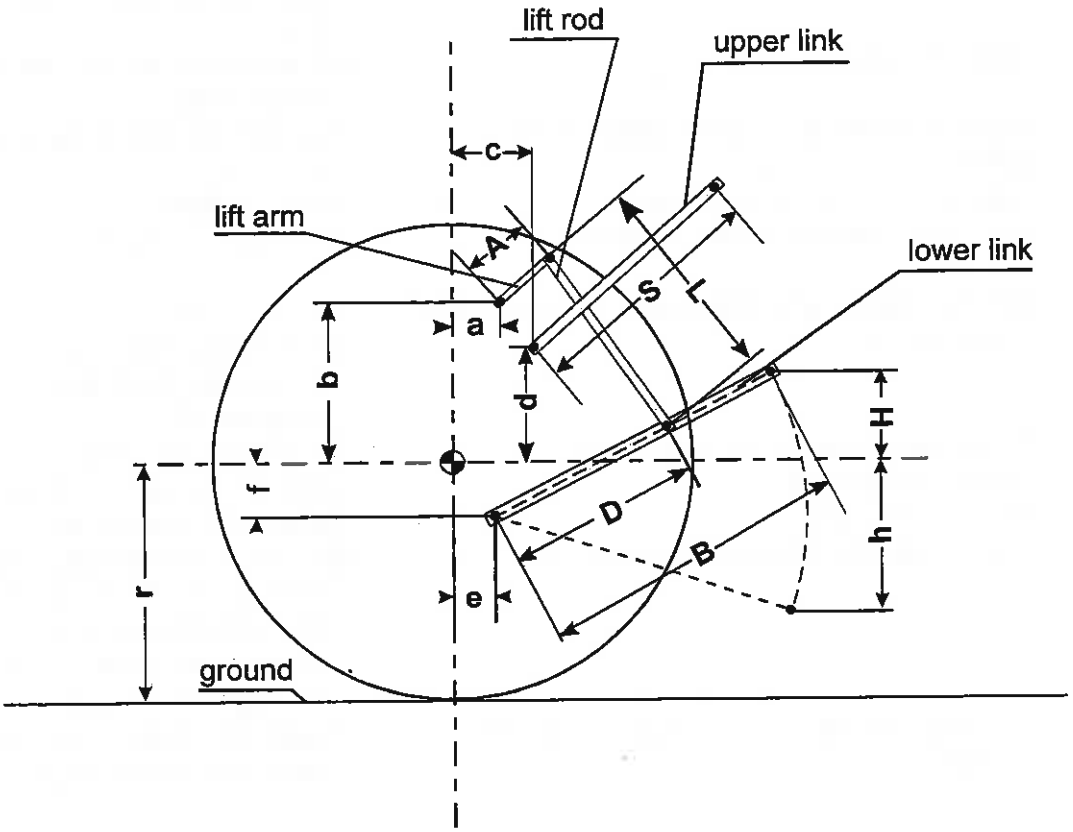


Figure 2.1
Lift test - Linkage Geometry

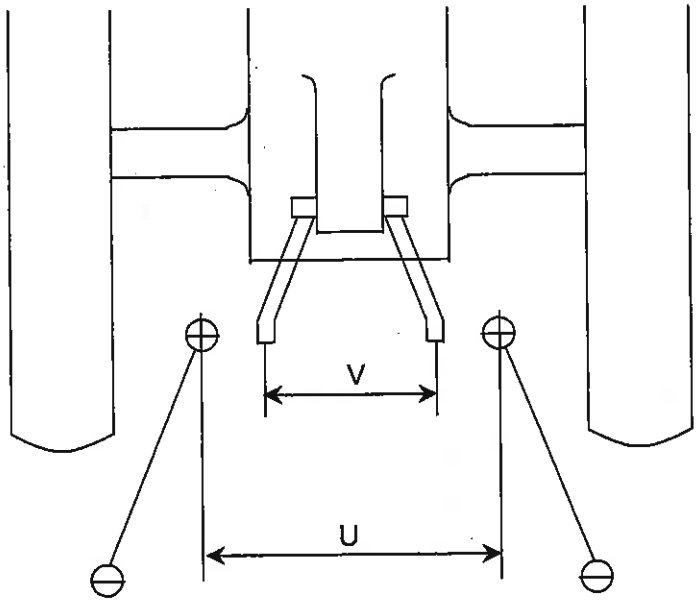


Figure 2.2
Lift test - Linkage Geometry

ISO Category III hook type draft link ends

		Dimension or range	Settings Used in test
		mm	mm
Lift category:		III	III
Rear Tire – Radius Index:	(r)	870	905*
Front Tire – Radius Index:	(r')	665	695*
Length of lift arms:	(A)	375	same
Length of lower links:	(B)	1011	same
Distance of lift arm pivot point from rear-wheel axis:			
- horizontally	(a)	205	same
- vertically	(b)	588	same
Horizontal distance between the 2 lower link points:	(U)	520	same
Horizontal distance between the 2 lift arm end points:	(V)	680	same
Length of upper link:	(S)	609 to 808	692
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	504	same
- vertically	(d)	353, 283, 200	283
Distance of lower link pivot point from rear wheel axis:			
- horizontally	(e)	195	same
- vertically	(f)	275	same
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	612, 688	612
Length of lift rods:	(L)	842 to 1051	968
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	409 to 802	654
- in high position	(H)	281 to 49	103
Height above ground of lower hitch points when locked in transport position (*)		888 to 1123	1008

*Rear tire size 710/70R38, Front tire size 600/65R28

Alternative setting – top link in top hole
ISO Category III hook type draft link ends

		Dimension or range	Settings Used in test
		mm	mm
Lift category:		III	III
Rear Tire – Radius Index:	(r)	870	905*
Front Tire – Radius Index:	(r')	665	695*
Length of lift arms:	(A)	375	same
Length of lower links:	(B)	1011	same
Distance of lift arm pivot point from rear-wheel axis:			
- horizontally	(a)	205	same
- vertically	(b)	588	same
Horizontal distance between the 2 lower link points:	(U)	520	same
Horizontal distance between the 2 lift arm end points:	(V)	680	same
Length of upper link:	(S)	609 to 808	670
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	504	same
- vertically	(d)	353, 283, 200	353
Distance of lower link pivot point from rear wheel axis:			
- horizontally	(e)	195	same
- vertically	(f)	275	same
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	612, 688	688
Length of lift rods:	(L)	842 to 1051	1022
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	409 to 802	651
- in high position	(H)	281 to 49	41
Height above ground of lower hitch points when locked in transport position (*)		888 to 1123	946

*Rear tire size 710/70R38, Front tire size 600/65R28

1.7 Swinging drawbar

- Type:	Oscillating
- Height above ground	
. Maximum (offset up):	551 mm
. Minimum (offset down):	487 mm
- Type of adjustment:	Invert drawbar and reposition clevis
- Distance of hitch point from rear-wheel axis, horizontally:	920, 970, 1020 mm
- Distance of hitch point from power take-off shaft end	
. Vertically:	250 mm
. Horizontally:	250, 350, 400 mm
- Lateral adjustment (centre of clevis)	
. Right hand:	190 mm
. Left hand:	190 mm
- Distance of pivot point from rear-wheel axis, horizontally:	27 mm
- Diameter of drawbar pin hole:	33 mm
- Maximum vertical permissible load:	28 kN – short position 21 kN – intermediate position 14 kN - extended position

1.8 Trailer hitch

Not applicable

1.9 Holed drawbar

Not applicable

1.10 Steering

- Make/Model/Type:	Eaton/RE66714/Hydrostatic
- Method of operation	Steering wheel
. Pump(s):	Same as main hydraulic pump
. Ram(s):	One internal: double acting
- Working pressure:	17.0 ±0.5 MPa

1.11 Brake System

1.11.1 *Service brake*

- Make/Model/Type:	Vickers/RE159288/John Deere oil immersed disc
- Method of operation:	Hydraulic; operated by two pedals which can be locked together

1.11.2 *Parking brake*

- Type:	Transmission lock
- Method of operation:	Gear selector lever

1.11.3 *Trailer Brake*

None

1.12 Wheels

- Number
  - .Front: Two; Driving and steering
  - .Rear: Two; Driving
- Wheelbase: 2800 mm

Track Width Adjustment

	Minimum	Maximum	Adjustment
	mm	mm	Method
Front	1524	2235	Reversing wheels and offset lug rims
Rear	1524	2752	Rack and pinion axle Reversing wheels and offset lug rims

1.13 Protective structure

- Make/Model/Type: John Deere/ Sound Gard SG-060/Cab, not tiltable
- Manufacturer's name and address: John Deere Tractor Works, Waterloo, Iowa, USA
- Protective device: Cab; not tiltable
- OECD approval: CSS 0394/63
- Date of Approval: 11 December 1996

1.14 Seat

1.14.1 *Driver's Seat*

- Make/Model/Type: Sears/RE163040/Air suspension; personal posture cushioning
- Seat and steering wheel reversible: Yes/No: No
- Type of suspension: Air
- Type of damping: Three-position viscous damping
- Range of adjustment
  - .Longitudinally: 167 mm
  - .Vertically: 80 mm
  - Rotation: 20 degrees left and right
- Safety belt Yes/No: Yes

1.14.2 *Optional driver's seat(s)* Not Available

1.14.3 *Passenger seat* Not applicable

1.15 Lighting

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headlights			
Grille inner	1740	162 x 102	232
Grille side	1740	152 x 102	277
Roof inner	2950	51 x 127	350
outer	2950	51 x 127	500
Upper mid-body	2030	70 x 127	630
Rearlights			
roof	2880	70 x 127	483
fender	2110	70 x 127	910
Tail lights	1980	89 x 210	934
Hazard lights			
Roof front	2990	82 x 240[a]	770
Roof rear	2880	76 x 120	635
Extremity Lights			
Narrow	2160	106.7 dia.	1750

[a] Wrap-around lights

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Unballasted	4755	3012	3219	3023	2958
Ballasted	4902	3277	3785	3023	2958

2.2 Ground clearance (unballasted tractor): 515 mm

- Clearance-limiting part: Drawbar

2.3 Tractor mass

Mass (with cab, full fuel tank):

	Without driver	With driver
	kg	kg
Unballasted		
Front	2253	2263
Rear	4346	4411
Total	6599	6674
Ballasted		
Front	2526	2536
Rear	5031	5096
Total	7557	7632

Ballast Added	Number of Weights	Total Mass	Liquid
		kg	kg
Front	4	195	0
Front weight support	1	51	
Rear (duals)	0	712	0

2.4 Track specifications

Not applicable

2.5 Tires and track width specifications

	Front	Rear
Tires:	Goodyear	Goodyear
- dimensions	14.9R30	18.4R42
- ply rating	Three Star	Two Star
- type	Radial	Radial
- maximum load (tire manufacturer's)	20.82 kN/tire	30.92 kN/tire
- maximum load (tractor manufacturer's)	same	same
- inflation pressure (tractor manufacturer's)		
maximum	210 kPa	160 kPa
minimum	69 kPa	97 kPa
- dynamic radius index	665 mm	870 mm
Chosen track width: inner	1829 mm	1588 mm
outer		3150 mm

2.6 Fuel

- Type/grade: Premier: Grade 2-D, in conformity with national standard
- Density (PTO test): 0.841 g/cm^3 at 15° C
- (Drawbar test): Same as PTO test

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity	Oil change	Filter change
	liter	hours	hours
Engine (with filter)	19.0	250 (375 with John Deere PLUS-50® oil and John Deere filter)	same
Front axle	14.4	1500	Not applicable
Transmission, final drive, rear axle and hydraulics	98.3	1500	Annually or as required
Final drive, front	1.9 each	1500	Not applicable

2.7.2 *Oil and Lubricant specifications:*

	Recommended	Used during test
Engine oil . Type: . Viscosity: . Classification:	John Deere; Torq-Gard Supreme®, PLUS-50®; SAE 15W-40 or 0W40 12.8 mm^2/s (cSt) at 100°C API CG-4 or CF-4; ACEA E-2 or E-3	John Deere; Torq-Gard Supreme®, PLUS-50®; SAE 15W-40
Transmission . Type: . Viscosity: . Classification:	John Deere HY-GARD®; (J20C) SAE 10W-30 58 mm^2/s (cSt) at 40°C JDM J20C	same
Front axle differential. . Type: . Viscosity: . Classification:	John Deere HY-GARD®; (J20C) SAE 10W-30 58 mm^2/s (cSt) at 40°C JDM J20C	same
Final Drive oil (front) . Type: . Viscosity: . Classification:	John Deere GL-5 Gear Lubricant or John Deere Extreme-Gard® SAE 85W-140 JDM J11 (API GL-5)	same

Hydraulic Fluid . Type: . Viscosity: . Classification:	Same as transmission	same
Steering system . Type: . Viscosity: . Classification:	Same as transmission	same
Grease	John Deere MOLY High Temperature EP Grease	same

2.7.3 *Grease*

- Number of lubrication points: 19

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of tests: 26-Oct-00 Nebraska Tractor Test Laboratory, Lincoln, NE, USA
- Type of dynamometer bench: Eaton

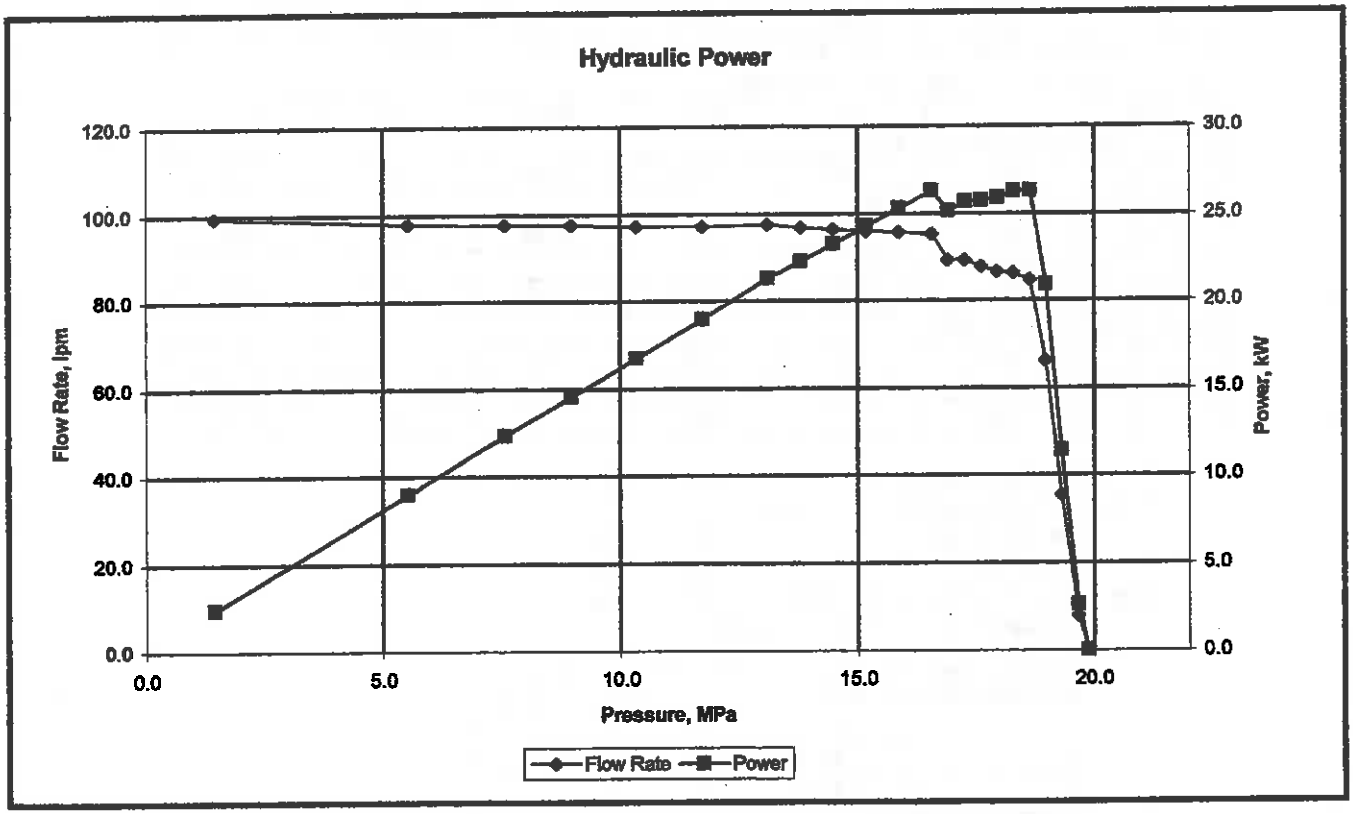
	Speed		Fuel consumption			Specific
Power	Engine	PTO	Hourly		Specific	energy
kW	rev/min		kg/h	l/h	g/kWh	kW-h/l
3.1 MAXIMUM POWER - TWO HOUR TEST						
94.58	1850	886	22.33	26.56	236	3.56
3.1.2 POWER AT RATED ENGINE SPEED						
89.95	2101	1007	22.62	26.90	251	3.34
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
89.95	2101	1007	22.62	26.90	251	3.34
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
89.95	2101	1007	22.62	26.90	251	3.34
3.1.4.2 85% of torque obtained in 3.1.4.1						
78.20	2150	1030	20.68	24.60	264	3.18
3.1.4.3 75% of torque defined in 3.1.4.2						
59.78	2184	1046	17.55	20.88	294	2.86
3.1.4.4 50% of torque defined in 3.1.4.2						
40.18	2212	1060	14.29	16.99	356	2.36
3.1.4.5 25% of torque defined in 3.1.4.2						
20.28	2250	1078	9.66	11.49	476	1.76
3.1.4.6 unloaded						
1.16	2277	1091	6.67	7.93	5739	0.15
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
3.1.5.1 the torque corresponding to maximum power						
89.95	2101	1007	22.62	26.90	251	3.34
3.1.5.2 85% of torque obtained in 3.1.5.1						
78.20	2150	1030	20.68	24.60	264	3.18
3.1.5.3 75% of torque defined in 3.1.5.2						
59.78	2184	1046	17.55	20.88	294	2.86
3.1.5.4 50% of torque defined in 3.1.5.2						
40.18	2212	1060	14.29	16.99	356	2.36
3.1.5.5 25% of torque defined in 3.1.5.2						
20.28	2250	1078	9.66	11.49	476	1.76
3.1.5.6 unloaded						
1.16	2277	1091	6.67	7.93	5739	0.15

- No load maximum engine speed: 2277 rev/min
- Torque (equivalent crankshaft) at rated speed:
  - At rated engine speed 409 Nm
  - At 2-hour test 488 Nm
- Maximum torque (equivalent crankshaft): 569 Nm
  (engine speed: 1303 rev/min)

Mean atmospheric conditions:		
Dry bulb	25	°C
Pressure	97.6	kPa
Relative Humidity	55	%
Maximum temperatures:		
Coolant	97	°C
Engine oil	121	°C
Fuel	51	°C
Engine air intake	27	°C

3.2 Hydraulic power and lifting forces

Date of Test:	1-Nov-00	John Deere 7610 PQ	
Location of Test-City-State:		Tractor Test Lab, Lincoln, NE, USA	
Tapping point used for test:		Remote hydraulic outlets	
I.	Sustained pressure with pump stalled:		
	19.86 MPa		
	2880 psig		
II.	Pump delivery rate at minimum pressure at rated engine speed:		
	99.6 l/min		
	26.3 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	86.7 l/min	17.93 MPa	25.9 kW
	22.9 gpm	*2600 psig*	*34.7 hp*
	Maximum hydraulic power:		
	95.4 l/min	16.55 MPa	26.3 kW
	25.2 gpm	*2400 psig*	*35.3 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	61 °C		
	141 ° F		
	This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



3.2.2 POWER LIFT TEST Category III, Walterscheid lower links with lifting cylinders (2) x 80 mm dia.
Date of test: 15 June 1993. Tests results extracted from OECD test 2/1709 on John Deere 7710 - MFWD, which is mechanically equivalent.

	Hitch points	Frame
Lower hitch points above ground - down position:	251 mm	201 mm
Vertical movement - without load:	756 mm	889 mm
with load:	729 mm	879 mm
Maximum corrected force exerted through full range:	49.4 kN	45.2 kN
Corresponding pressure:	18.0 MPa	18.0 MPa
Moment about rear axle:	59.6 kNm	82.1 kNm
Maximum mast tilt angle		9.4 degrees

Lifting height relative to horizontal position of lower links.

mm	-424	-373	-300	-201	-99	0	99	201	290	356	455

Corrected lift forces

At the Hitch point kN	--	49.4	52.8	56.5	59.0	61.4	62.9	64.8	66.8	67.7	--
at the frame kN	48.6	--	49.8	51.5	52.4	52.4	51.7	50.4	49.8	48.7	45.2

Corresponding pressure 18.0 Mpa

3.3 Drawbar performance- Unballasted, 4WD

OECD Drawbar Data (SI)

Date of tests: 31-Oct-00, 03-Nov-00							**Fuel density:**	0.841 kg/l						
Type of track: Concrete							**Test number:**	1787						
3.3.1 Maximum power in tested gears (unballasted, 4wd)							**Tire pressure:**	110 kPa, rear		110 kPa, front		**Drawbar Height:**	559 mm	
Gear	**Gear Designation**	**Power**	**Drawbar pull**	**Speed**	**Engine speed**	**Slip**	**Fuel**		**Temperature**			**Atmospheric conditions**		
							SFC	**SFE**	**Fuel**	**Coolant**	**Oil**	**Temperature**	**Relative humidity**	**Pressure**
		kW	**kN**	**km/h**	**rev/min**	**%**	**kg/kW.h**	**kW.h/l**	**°C**	**°C**	**°C**	**°C**	**%**	**kPa**
3	A3	57.05	66.01	3.11	2166	15	0.340	2.47	45	84	109	12	54	99.0
4	A4	69.69	66.42	3.78	2129	14	0.319	2.63	44	85	110	11	58	99.0
5	B1	80.34	62.62	4.62	2040	9	0.283	2.97	44	87	111	12	55	99.0
6	B2	83.17	58.33	5.13	1847	7	0.270	3.11	52	94	119	24	75	97.6
7	B3	85.02	48.41	6.32	1850	4	0.263	3.19	50	95	120	24	75	97.6
8	C1	84.86	43.50	7.02	1850	4	0.264	3.19	50	93	116	23	74	97.7
9	B4	84.30	38.62	7.86	1853	3	0.266	3.16	50	94	119	23	74	97.6
10	C2	84.62	35.68	8.54	1850	3	0.266	3.16	49	94	119	22	78	97.6
11	C3	84.32	29.66	10.23	1844	2	0.265	3.17	50	94	118	24	75	97.6
12	C4	82.29	23.54	12.59	1840	2	0.273	3.08	50	96	121	24	71	97.6
13	D1	82.34	22.33	13.28	1850	2	0.274	3.07	50	95	119	24	71	97.6
3.3.2 Fuel consumption														
3.3.2.1			In selected gear at maximum power at rated engine speed.											
7	B3	80.88	40.11	7.26	2102	3	0.281	3.00	49	93	118	24	75	97.6
3.3.2.1.1			75% of pull at maximum power at rated engine speed											
7	B3	63.12	30.05	7.56	2167	2	0.306	2.75	50	91	115	25	68	97.6
3.3.2.1.2			50% of pull at maximum power at rated engine speed											
7	B3	43.19	20.05	7.76	2204	2	0.362	2.32	49	87	109	25	71	97.5
3.3.2.1.3			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
8	C1	63.21	29.99	7.59	1971	2	0.289	2.91	49	89	113	25	71	97.6
3.3.2.1.4			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
8	C1	43.10	19.94	7.78	2005	2	0.334	2.52	48	86	108	25	71	97.5
3.3.2.1.5			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
10	C2	63.18	30.01	7.58	1637	2	0.269	3.13	49	88	113	25	71	97.5
3.3.2.1.6			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
10	C2	43.20	20.01	7.77	1663	2	0.298	2.82	48	83	104	25	71	97.5
3.3.2.2			In selected gear nearest to 7.5 km/h at rated engine speed.											
7	B3	80.88	40.11	7.26	2102	3	0.281	3.00	49	93	118	24	75	97.6
3.3.2.2.1			75% of pull at maximum power at rated engine speed											
7	B3	63.12	30.05	7.56	2167	2	0.306	2.75	50	91	115	25	68	97.6
3.3.2.2.2			50% of pull at maximum power at rated engine speed											
7	B3	43.19	20.05	7.76	2204	2	0.362	2.32	49	87	109	25	71	97.5
3.3.2.2.3			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1											
8	C1	63.21	29.99	7.59	1971	2	0.289	2.91	49	89	113	25	71	97.6
3.3.2.2.4			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2											
8	C1	43.10	19.94	7.78	2005	2	0.334	2.52	48	86	108	25	71	97.5
3.3.2.2.5			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1											
10	C2	63.18	30.01	7.58	1637	2	0.269	3.13	49	88	113	25	71	97.5
3.3.2.2.6			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2											
10	C2	43.20	20.01	7.77	1663	2	0.298	2.82	48	83	104	25	71	97.5

4.1 Drawbar performance - Ballasted, Front Drive disengaged

OECD Drawbar Data (SI)

Date of tests: 03, 04-Nov-00							**Fuel density:**	0.841 kg/l						
Type of track: Concrete							**Test number:**	1787						
3.3.1 Maximum power in tested gears (ballasted, 2wd)							**Tire pressure:**	55 kPa, rear		124 kPa, front		**Drawbar height:**	597 mm	
Gear	**Gear Designation**	**Power**	**Drawbar pull**	**Speed**	**Engine speed**	**Slip**	**Fuel**		**Temperature**			**Atmospheric conditions**		
							SFC	**SFE**	**Fuel**	**Coolant**	**Oil**	**Temperature**	**Relative humidity**	**Pressure**
		kW	**kN**	**km/h**	**rev/min**	**%**	**kg/kW.h**	**kW.h/l**	**°C**	**°C**	**°C**	**°C**	**%**	**kPa**
*4	A4	71.43	69.90	3.68	2095	14	0.317	2.66	46	89	115	10	69	98.4
5	B1	81.18	58.96	4.96	2100	4	0.279	3.01	46	90	116	11	59	98.7
6	B2	81.81	48.76	6.04	2098	3	0.277	3.04	47	92	117	12	55	98.7
7	B3	81.44	40.29	7.28	2098	2	0.278	3.03	47	92	118	13	47	98.7
8	C1	81.18	36.29	8.05	2099	2	0.279	3.01	46	91	116	14	44	98.7
9	B4	79.68	32.03	8.96	2097	2	0.284	2.96	47	92	117	14	48	98.8
10	C2	79.66	29.48	9.73	2098	2	0.284	2.97	46	91	115	15	50	98.7
11	C3	78.54	24.21	11.68	2095	2	0.288	2.92	46	92	117	14	49	98.7
12	C4	74.98	18.78	14.37	2097	1	0.302	2.78	46	92	118	14	49	98.7
* Note:		Slip within operating procedures of testing station.												
3.3.2 Fuel consumption														
3.3.2.1			In selected gear nearest to 7.5 km/h at rated engine speed.											
7	B3	81.44	40.29	7.28	2098	2	0.278	3.03	47	92	118	13	47	98.7
3.3.2.1.1			75% of pull at maximum power at rated engine speed											
7	B3	63.29	30.19	7.55	2165	2	0.306	2.75	46	88	111	17	53	98.1
3.3.2.1.2			50% of pull at maximum power at rated engine speed											
7	B3	43.01	20.11	7.70	2197	1	0.366	2.30	46	86	108	17	40	98.0
3.3.2.1.3			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
8	C1	63.19	30.21	7.53	1957	2	0.289	2.91	47	88	112	17	53	98.1
3.3.2.1.4			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
8	C1	43.06	20.12	7.70	1991	2	0.337	2.49	45	85	109	18	33	98.0
3.3.2.1.5			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
10	C2	63.13	30.18	7.53	1626	2	0.270	3.12	46	86	111	17	49	98.0
3.3.2.1.6			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
10	C2	43.00	20.12	7.69	1651	1	0.301	2.79	45	82	104	18	50	97.9

4.2 Drawbar performance Ballasted, 1850 rpm, 4WD

Date of tests: 03, 04-NOV-00							Fuel density: 0.841 kg/l							
Type of track: Concrete							Test number: 1787							
Maximum power in tested gears (ballasted, 4wd)							Tire pressure: 69 kPa, rear 138 kPa, front					Drawbar Height: 610 mm		
Gear	Gear Designation	Power	Drawbar pull	Speed	Engine speed	Slip	Fuel		Temperature			Atmospheric conditions		
							SFC	SFE	Fuel	Coolant	Oil	Temperature	Relative humidity	Pressure
		kW	kN	km/h	rev/min	%	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
*3	A3	70.78	78.90	3.23	2132	10	0.303	2.77	46	85	110	8	79	98.4
4	A4	80.44	75.30	3.85	2014	7	0.282	2.98	47	89	115	9	74	98.4
5	B1	85.26	71.17	4.31	1850	6	0.265	3.17	47	90	115	13	62	98.3
6	B2	86.40	58.63	5.31	1850	4	0.260	3.23	47	93	119	13	57	98.3
7	B3	86.97	48.88	6.41	1849	3	0.259	3.25	47	93	117	14	58	98.3
8	C1	86.17	43.75	7.09	1849	2	0.261	3.22	47	94	119	14	59	98.3
9	B4	85.06	38.70	7.91	1854	2	0.263	3.20	47	93	118	15	59	98.2
10	C2	85.48	35.87	8.58	1850	2	0.263	3.20	47	94	119	15	59	98.2
11	C3	84.83	29.65	10.30	1847	2	0.264	3.19	47	93	119	16	55	98.2
12	C4	81.59	23.15	12.69	1851	1	0.275	3.05	47	93	118	16	51	98.2
13	D1	81.63	22.13	13.28	1848	1	0.276	3.05	48	93	119	17	52	98.1
* Note:		Pull limited to avoid excessive tractor bounce												

4.3 POWER LIFT TEST Category III, Walterscheid lower links with lifting cylinders (2) x 80 mm dia.. Upper link in top hole on tractor. For dimensions see p.16. Date of test: 15 June 1993. Tests results extracted from OECD test 2/1709 on John Deere 7710 - MFWD, which is mechanically equivalent.

	Hitch points	Frame
Lower hitch points above ground - down position:	254 mm	257 mm
Vertical movement - without load:	692 mm	740 mm
with load:	666 mm	714 mm
Maximum corrected force exerted through full range:	55.5 kN	57.4 kN
Corresponding pressure:	18.0 MPa	18.0 MPa
Moment about rear axle:	67.0 kNm	104.3 kNm
Maximum mast tilt angle		4.3 degrees

Lifting height relative to horizontal position of lower links.

mm	-371	-300	-201	-99	0	99	201	295	343

Corrected lift forces

At the Hitch point kN	55.5	59.2	63.0	65.4	68.0	69.3	70.8	72.0	--
at the frame kN	63.3	63.0	63.5	63.4	62.9	61.8	60.1	58.6	57.4

Corresponding pressure 18.0 Mpa

4.4 Measurement of External Noise Level - John Deere 7610

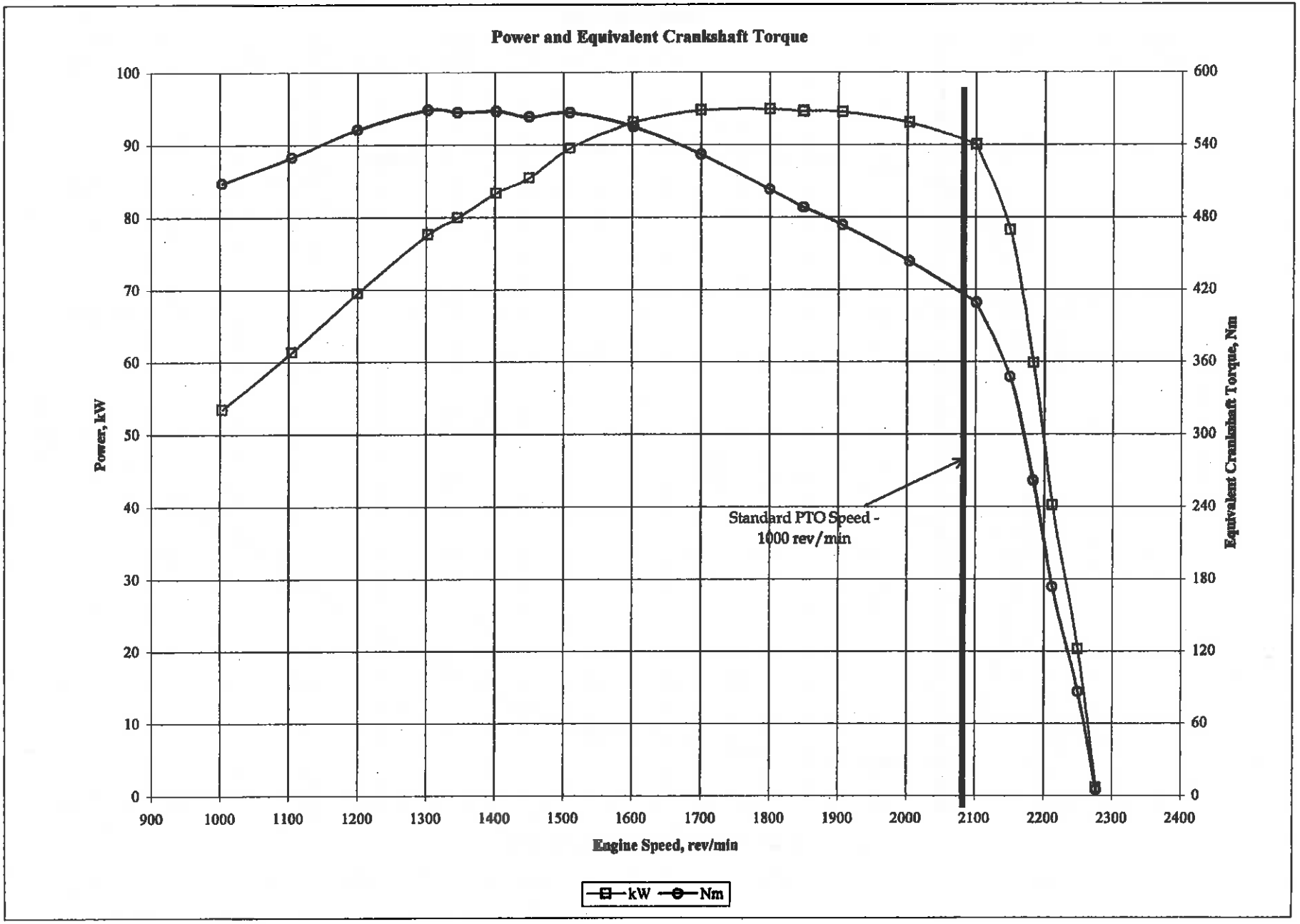
-- Date of Test	October 27, 2000
-- Location of Test	Nebraska Tractor Test Laboratory
-- Sound Level Meter	Bruel and Kjaer 2236
-- Type of Track	Concrete Oval
-- Gear Number	20 (E4)
-- Speed Prior to Acceleration	31.7 km/h
-- Noise Level	82.7 dB(A)

4.5 Measurement of Noise Level at Operator's Ear

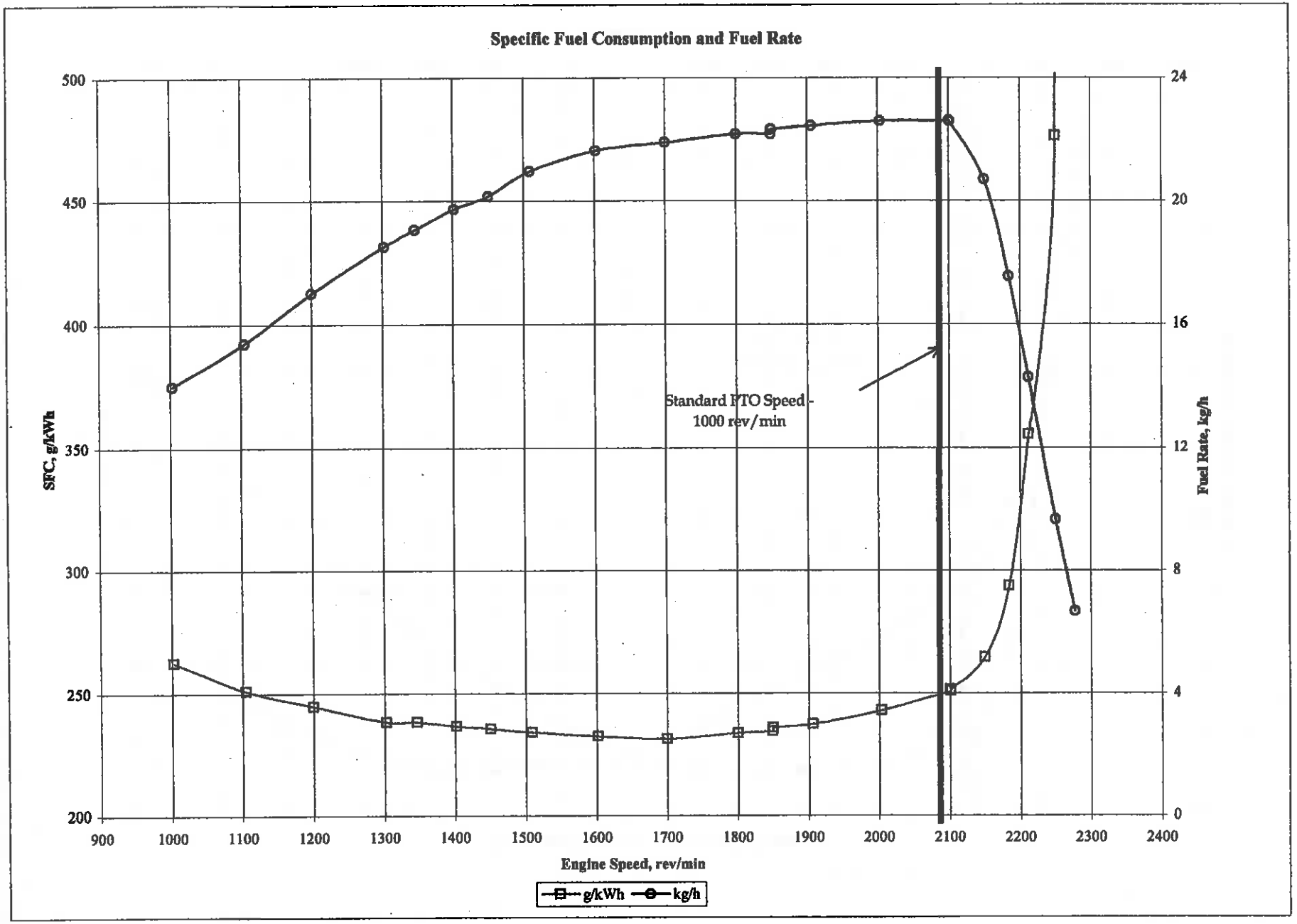
-- Date of Test	November 1, 2000
-- Location of Test	Nebraska Tractor Test Laboratory
-- Sound Level Meter	Bruel and Kjaer 2236
-- Type of Track	Concrete Oval
-- Gear Number	7 (B3)
-- Drawbar Load	None
-- Noise at operator ear (no load)	71.4 dB(A)

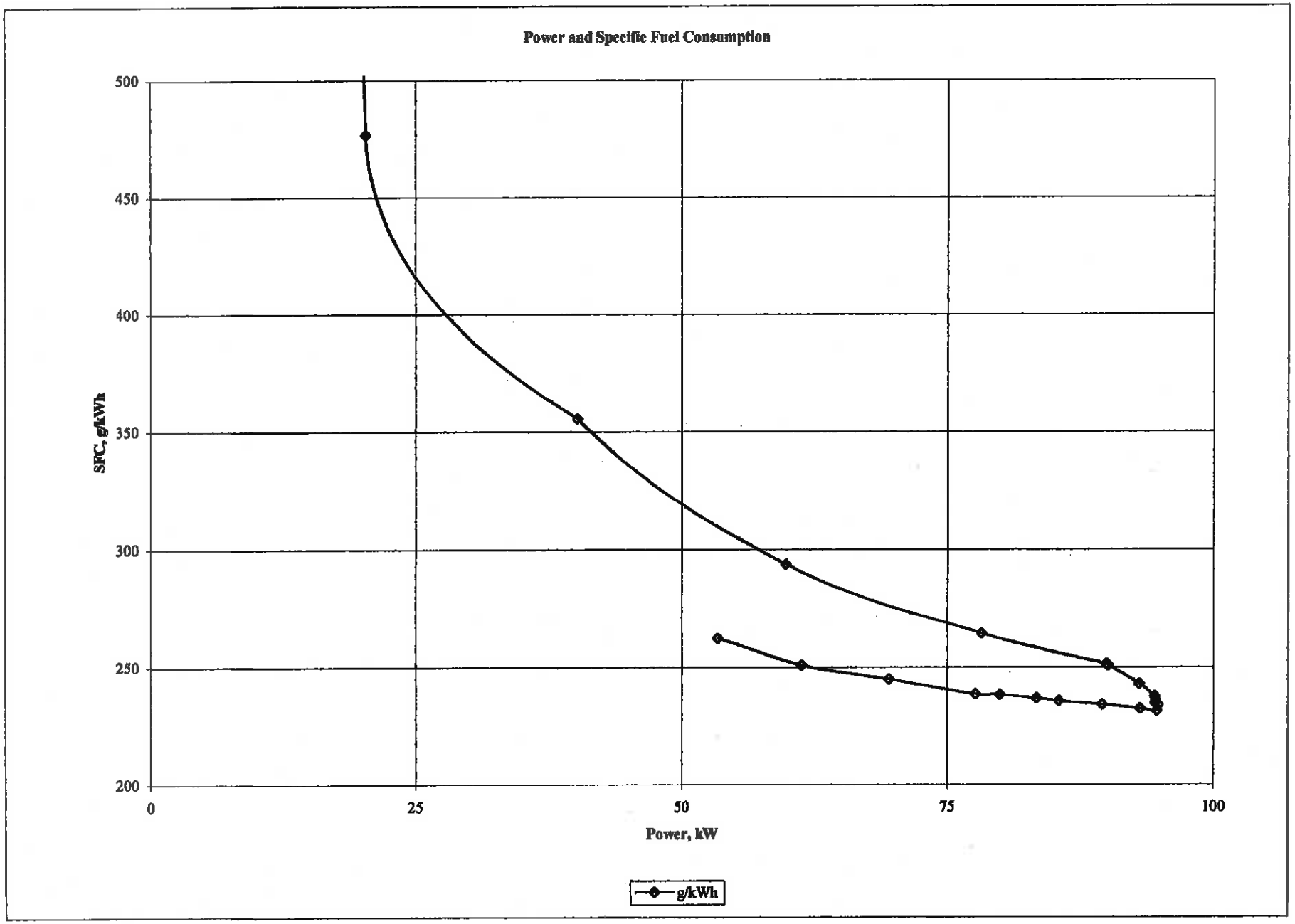
* Note: Nebraska tractor test station guidelines

5. Repairs	None
6. Remarks	The performance figures on this report apply to John Deere 7000 ten series tractors with chassis serial numbers 30000 and higher.


Power and Equivalent Crankshaft Torque
Power, kW
Equivalent Crankshaft Torque, Nm
Engine Speed, rev/min
Standard PTO Speed - 1000 rev/min
kW
Nm
100
90
80
70
60
50
40
30
20
10
0
600
540
480
420
360
300
240
180
120
60
0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400

John Deere 7610




Power and Specific Fuel Consumption
500
450
400
350
300
250
200
SFC, g/kWh
0
25
50
75
100
Power, kW
g/kWh