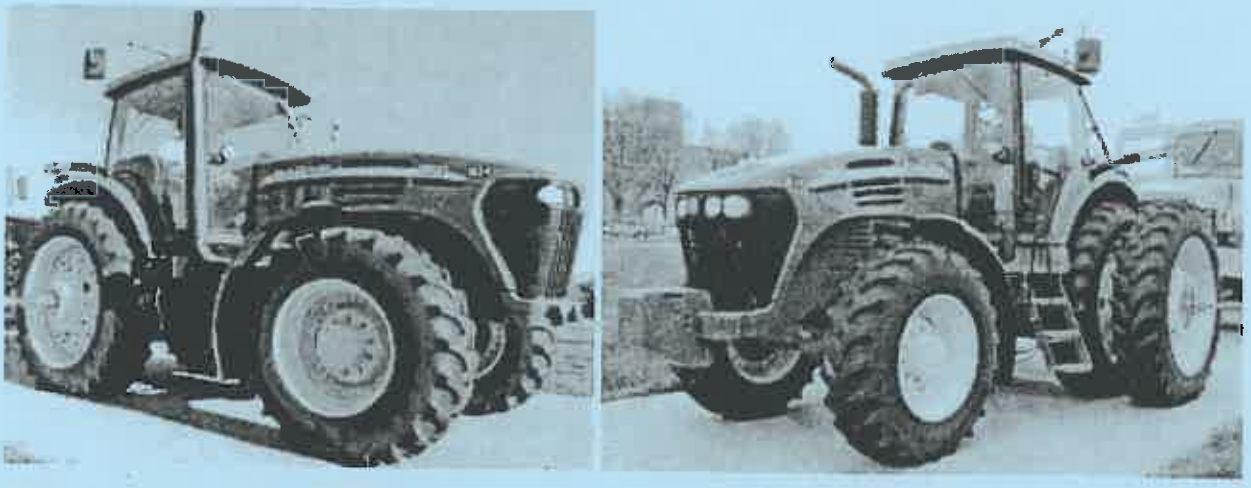
OECD APPROVAL NO. 2/2 170
CODE 2
DATE OF APPROVAL: 20 September 2004

NEBRASKA TRACTOR TEST LABORATORY
DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING
INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA - EAST CAMPUS
LINCOLN, NEBRASKA 68583-0832, USA

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



John Deere 7820 AutoQuad-Plus
Mechanical Front Wheel Drive (MFWD)

MANUFACTURED BY:	John Deere Tractor Works 3500 East Donald Street Waterloo, IA 50704-0270
NEBRASKA TEST NO.	1834
TEST DATES:	February 17-April 21, 2004

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 20 September 2004 for the John Deere 7820 AutoQuad-Plus, Mechanical Front Wheel Drive (MFWD) tractor with OECD Number 2/2 170.

No reproduction of this report or any part of it can be made without prior approval by the Nebraska Tractor Test Laboratory, Lincoln, Nebraska USA.

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Nebraska Tractor Test Laboratory and
Chair, Nebraska Tractor Test Board

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Date: OCT 19 2004

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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.

C[1]	- Tractors manufacturer's name and address:	John Deere Tractor Works 3500 East Donald St. P.O. Box 270 Waterloo, IA 50704-0270
D[1]	- Location of tractor assembly:	Same
D	- Submitted for test by:	The Manufacturer
C	- Selected for test by:	The Manufacturer in agreement with the Nebraska Tractor Test Laboratory
D	- Place of running-in:	John Deere Product Engineering Center, Waterloo, Iowa
D	- Duration of running-in (hours):	113 hours
C	- Location of test:	Nebraska Tractor Test Laboratory, Lincoln, Nebraska U.S.A.

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

C	1.1.1	- Make of tractor (*):	John Deere
C		- Model (trade name):	7820
C		- Type: • *2 WD or 4 WD; rubber or steel tracks (if applicable); articulated 4 WD or articulated 4WD with twin (dual) wheels (if applicable)*	2WD

(*) *Possibly different from tractor manufacturer's name*

	1.1.2	Numbers	
D		- 1st Serial No. or prototype:	CONFIDENTIAL
C		- Serial No.:	*RW7820A010736*
	1.1.3	Other specifications (if applicable)	
D		- Model(s) for other countries:	N/A
C		- Transmission type or gears x ranges:	20 speed AutoQuad Plus (4 gears x 5 ranges)
C		- Speed version: • *30, 40, or 50 km/h*	40 km/h
D		- Manufacturer identification or Technical type number:	N/A

1. The information opposite each item shall be validated by the Testing Station. An item marked "C" indicates to the test report user that the information declared by the manufacturer has been checked; an item marked "D" that the manufacturer's declaration has been endorsed. For example, the make of the supercharging device is declared by the manufacturer and checked "C" as consistent with the tractor by the testing station, while the pressure of the supercharging device is simply declared "D" by the manufacturer. Testing station's markings show compliance with article 8 of Appendix 3 to the Decision.

	1.2	Engine	
C		- Make / Model / Type:	John Deere / 6081HRW41 / Diesel; 4-stroke; turbocharged, direct injection, air to air intercooled
C		- Serial No.:	*RG6081H233734*
	1.2.1	Cylinders	
C		- Number / disposition:	6 / inline, vertical
D		- Bore / Stroke (mm / mm):	115.8 x 128.5
D		- Capacity (cm^3):	8134
D		- Compression ratio:	16.5 : 1
D		- Arrangement of valves:	Overhead; 2 valves per cylinder
D		- Cylinder liners (wet or dry):	Wet; replaceable
	1.2.2	Supercharging	
C		- Make / Model / Type:	Borg Warner / RE519924 / Exhaust gas driven
D		- Pressure (kPa):	135
	1.2.3	Fuel System	
C		- Fuel feed system:	Mechanical Transfer Pump
		- Make / Model / Type of fuel filter(s)	
C		. Primary:	Fleetguard / RE522687 / 2 micron multilayer water separating
C		. Secondary:	Fleetguard / RE522688 / 10 micron multilayer water separating
D		- Capacity of fuel tank (dm^3):	392; 358 w/RH door
C		- Make / Model / Type of injection pump:	Denso / HP0 ECD-U2 / HPCR; electronic
C		- Serial No.:	11E 8920
		- Manufacturer's production setting of injection pump	
C		. Flow rate (rated engine speed and full load) (dm^3/h):	37.0 +/- 2
D		. Timing:	Variable
D		- Make / Model / Type of injectors:	Denso / RE518723 / HPCR Injection
D		- Injection pressure (MPa):	102
C		- Make / Model / Type of carburetor:	N/A
	1.2.4	Governor	
C		- Make / Model / Type:	John Deere / FOCUS / Electronic Control
C		- Governed range of engine speed from ____ to ____ (min^{-1} (rev/min)):	875 to 2200
C		- Rated engine speed (min^{-1} (rev/min)):	2100

	1.2.5	Air Cleaner	
		- Pre-cleaner	
C		. Make / Model / Type:	Donaldson / RE196946 / Stratotube precleaner with fan aspirator
C		. Location of air intake:	Under hood, front of tractor
		- Main cleaner	
		. Make / Model / Type	
C		- Primary:	Donaldson / RE196945 / PowerCore pleated paper
C		- Secondary:	Donaldson / RE181915 / PowerCore pleated paper
C		. Location of air intake (in case of no pre-cleaner):	Under hood, front of tractor
C		- Maintenance indicator:	Console mounted warning light and audible signal
	1.2.6	Lubrication system	
D		- Type of feed pump:	Full pressure, positive displacement
C		- Type of filter(s):	Full Flow
C		- Number of filter(s):	1 top load
	1.2.7	Cooling system	
C		- Type of coolant:	Liquid
D		- Type of pump:	Centrifugal, belt driven
		- Specification of fan or blower	
C		. Number of fan blades:	8
C		. Fan diameter (mm):	660
D		- Coolant capacity (dm^3):	32
C		- Type of temperature control:	Two thermostats and variable speed fan
D		- Superpressure system (Kpa):	70 +/- 2
	1.2.8	Starting system	
C		- Make / Model / Type:	Denso / RE70957 / Solenoid engaged
D		- Starter motor power rating (kW):	4.0
C		- Cold starting aid:	Ether spray in intake manifold
C		- Safety device:	Electrical lockout on gearshift lever
	1.2.9	Electrical system	
C		- Voltage (V):	12
		- Generator	
C		. Make / Model / Type:	Denso / RE186320 / Belt driven alternator with built-in regulator
D		. Power (kW):	2.1
		- Battery of accumulators	
C		. Number:	Two; 950 CCA, RC 180
D		. Rating (Ah at ____ hours):	154 Ah at 20 hours

1.2.10 Exhaust system

C - Make / Model / Type: Nelson / RE200884 / Expansion Chamber

C - Location: Vertical muffler, right front corner of cab

1.3 Transmission

1.3.1 Clutch (travel and power take-off / travel alone)

D - Make / Model / Type: John Deere / Multiple plate / Oil cooled

D - Number of plates: 4 forward / 4 reverse

D - Diameter of plates (mm): 225 forward; 295 reverse

C - Method of operation: Electro-Hydraulic; pedal actuated

1.3.2 Gear box

D - Make / Model / Type: John Deere / 40K AutoQuad Plus / Mechanical countershaft and planetary design

- Description: 5 manually synchronized ranges and a 4 speed planetary gear set with multiple wet disc clutches and brake units

	Forward	Reverse
C Number of ranges	5	5
C Number of gears	4	4
C Total of arrangements	20	20

D - Available options: 30K, 16 speed PowrQuad Plus
40K, 20 speed PowrQuad Plus
50K, 20 speed AutoQuad Plus- (specialty market)
40K, Infinitely Variable Transmission
50K, Infinitely Variable Transmission- (specialty market)

1.3.3 Rear axle and final drives

D - Make / Model / Type: John Deere / AR188112 / Spiral bevel with pinion differential and inboard planetary reduction

- Differential lock

D . Type: Wet multi-plate

C . Method of engagement: Electro-hydraulic foot operated switch

C . Method of disengagement: Self disengaging with brake pedal operation

1.3.4 Front axle and final drives

D - Make / Model / Type: John Deere / AR182213 / Spiral bevel and pinion, differential and outboard planetary reduction

- Differential lock

D . Type: Limited slip

C . Method of engagement: Self-engaging

C . Method of disengagement: Self-disengaging

1.3.5 Total ratios and traveling speeds

Gear No.	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine of 2100 min^{-1} (rev / min) km/h
1	A1	285.574	2.51
2	A2	237.165	3.02
3	A3	198.016	3.62
4	A4	161.646	4.43
5	B1	134.738	5.32
6	B2	111.898	6.40
7	B3	93.427	7.67
8	C1	84.664	8.46
9	B4	76.267	9.39
10	C2	70.312	10.19
11	C3	58.706	12.20
12	C4	47.923	14.95
13	D1	45.729	15.67
14	D2	37.977	18.87
15	D3	31.708	22.60
16	E1	30.867	23.21
17	D4	25.884	27.68
18	E2	25.635	27.95
19	E3	21.403	33.47
20	E4	17.472	41.01
Reverse			
1	A1	-273.675	-2.62
2	A2	-227.283	-3.15
3	A3	-189.765	-3.78
4	A4	-154.910	-4.63
5	B1	-129.124	-5.55
6	B2	-107.235	-6.68
7	B3	-89.534	-8.00
8	C1	-81.137	-8.83
9	B4	-73.089	-9.80
10	C2	-67.383	-10.63
11	C3	-56.260	-12.74
12	C4	-45.926	-15.60
13	D1	-43.824	-16.35
14	D2	-36.395	-19.69
15	D3	-30.387	-23.58
16	E1	-29.581	-24.22
17	D4	-24.806	-28.88
18	E2	-24.567	-29.16
19	E3	-20.511	-34.93
20	E4	-16.744	-42.79

(*) Calculated with a tyre dynamic radius index of 905 mm (pneumatic tyred tractors only) (ISO 4251-1:1998)

- Number of revolutions of front wheels for one revolution of rear-wheels (For 4WD tractors only): 1.3247

C	1.3.6	Enter optional transmission information (i.e. IVT speeds)	
	1.4	Power take-off (PTO)	
	1.4.1	Main power take-off	
C		- Type (independent, semi-independent or not independent):	Independent
C		- Method of engagement (if necessary describe the type of clutch):	Electro-hydraulically actuated multi-plate wet clutch operated by single hand switch
C		- Number of shafts:	One
C		- Method of changing power take-off shaft ends and speeds:	Reversible shaft; two (540/1000) or three speed lever optional (540/1000/1000E)
	1.4.1.1	Power take-off proportional to engine speed	
		Power take-off at 540 min^{-1} (rev / min)	
C		- Location:	Rear of tractor; center plane
C		- Diameter of power take-off shaft end (mm):	35
C		- Number of splines: (Conformity to ISO 500:1991)	6; conforms to ISO 500 / 1991
C		- Height above ground (mm):	785
C		- Distance from the median plane of the tractor (mm):	0
C		- Distance behind rear-wheel axis (mm):	687
C		- PTO speed at rated engine speed (min^{-1} (rev/min)):	582
C		- Engine speed at standard power take-off speed (min^{-1} (rev/min)):	1950
C		- Ratio of rotation speeds (engine speed / p.t.o. speed):	3.611 : 1
D		- Power restriction (kW):	None
D		- Maximum torque transmissible (Nm):	None
C		- Direction of rotation: (viewed from behind tractor)	Clockwise
		Power take-off at 1000 min^{-1} (rev / min)	
C		- Location:	Rear of tractor, center plane
C		- Diameter of power take-off shaft end (mm):	45
C		- Number of splines: (Conformity to ISO 500:1991)	20; conforms to ISO 500 / 1991
C		- Height above ground (mm):	785
C		- Distance from the median plane of the tractor (mm):	0
C		- Distance behind rear-wheel axis (mm):	585
C		- PTO speed at rated engine speed (min^{-1} (rev/min)):	1077

C		- Engine speed at standard power take-off speed (min^{-1} (rev/min)):	1950
C		- Ratio of rotation speeds (engine speed / p.t.o. speed):	1.950 : 1
D		- Power restriction (kW):	None
D		- Maximum torque transmissible (Nm):	None
C		- Direction of rotation: (viewed from behind tractor)	Clockwise
	1.4.1.2	Power take-off proportional to ground speed	Data Not Available
	1.4.2	Optional power take-off	
C		- Give the same description as for the main PTO:	Not Available
	1.5	Hydraulic power lift	
C		- Make / Model / Type:	John Deere / N/A / Electro-hydraulic lower link sensing; variable mix of draft and position control; adjustable rate of drop
C		- Type of hydraulic system:	Closed center; pressure and flow compensated
C		- Type and number of cylinders (single or double acting):	Two external, single acting (90 mm or 100 mm)
C		- Type of linkage lock for transport:	Electro-hydraulic
D		- Relief valve pressure setting (tolerance) (MPa):	20.3 +/- 0.3
D		- Opening pressure of cylinder safety valve (if fitted) (MPa):	23.2
D		- Lift pump type:	Closed center, load sensing pressure-flow compensated axial piston pump with full flow charge pump
D		- Transmission between pump and engine:	Gear driven; transmission front housing
C		- Type and number of filters:	Synthetic spin on filter; one
C		- Site of oil reservoir:	Differential case housing
C		- Type, number, and location of tapping points:	ISO standard breakaway couplers / 3 standard with 4th optional and power beyond optional; rear of tractor, 5th and 6th optional mid-mount valves
D		- Maximum volume of oil available to external cylinders (dm^3):	50

1.6 Three point linkage

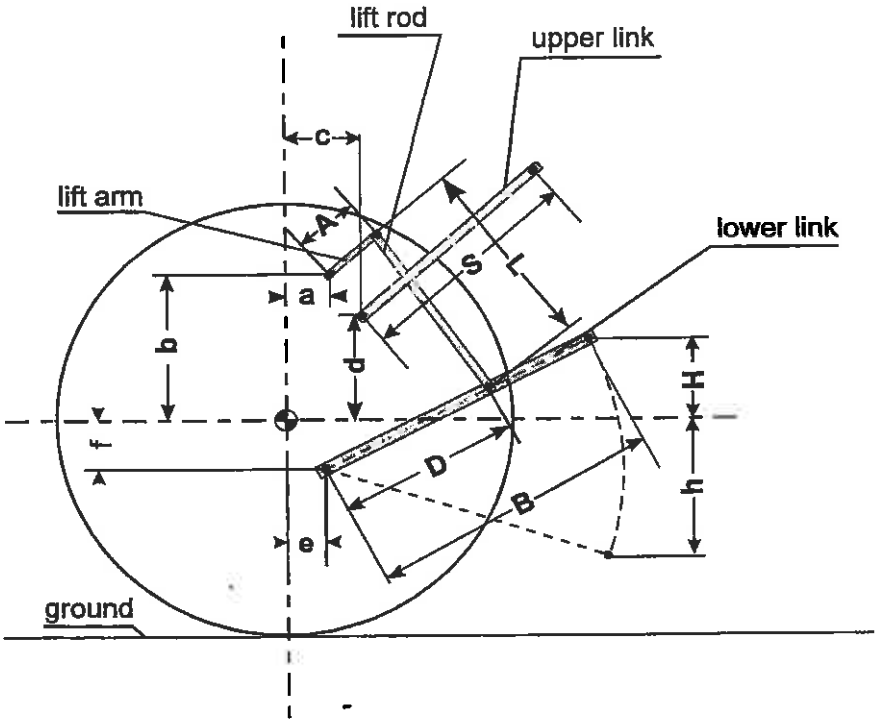


Figure 2.1
Lift Test – Linkage geometry

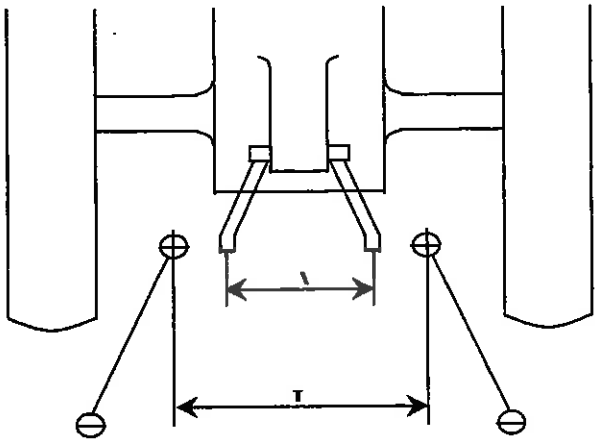


Figure 2.2
Lift Test – Linkage geometry

C	- Category:	3
	• *Conformity with categories 1, 2, 3, 4, 3N, or 4N of ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979*	Specific Market Version Standard Lift
C	- Category adapter:	None

			Dimension or range	Settings used in test(s)
			mm	mm
C	Length of arms:	(A)	425	Same
C	Length of lower links:	(B)	1120	Same
	Distance of lift arm pivot point from rear wheel axis			
C	- horizontally:	(a)	230	Same
C	- vertically:	(b)	608	Same
C	Horizontal distance between the 2 lower link points:	(u)	529	Same
C	Horizontal distance between the 2 lift arm end points:	(v)	680	Same
C	Length of upper arm link:	(S)	from 630 to 810	760
	Distance of upper link pivot point from rear wheel axis			
C	- horizontally:	(c)	532/527/530	530
C	- vertically:	(d)	201/283/353	353
	Distance of lower link pivot point from rear wheel axis			
C	- horizontally:	(e)	180	Same
C	- vertically:	(f)	315	Same
C	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	688	Same
C	Length of lift rods:	(L)	From 910 to 1050	975
	Height of lower hitch points relative to the rear wheel axis			
C	- in low position:	(h)	539 - 788	675
C	- in high position:	(H)	24 - 236	120
C	Height above ground of lower hitch points when locked in transport position (*):		929 - 1141	1025
	(*) Assuring r = 905 Tyre dynamic radius index of ISO 4251-1:1998 (pneumatic tyred tractors only)			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

C	- Category: • *Conformity with categories 1, 2, 3, 4, 3N, or 4N of ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979*	3 North American Version Standard Lift
C	- Category adapter:	3/3N

			Dimension or range	Settings used in test(s)
			mm	mm
C	Length of arms:	(A)	425	Same
C	Length of lower links:	(B)	1023.6	Same
	Distance of lift arm pivot point from rear wheel axis			
C	- horizontally:	(a)	230	Same
C	- vertically:	(b)	608	Same
C	Horizontal distance between the 2 lower link points:	(u)	529	Same
C	Horizontal distance between the 2 lift arm end points:	(v)	680	Same
C	Length of upper arm link:	(S)	625 to 770	700
	Distance of upper link pivot point from rear wheel axis			
C	- horizontally:	(c)	523/570	523
C	- vertically:	(d)	190/120	190
	Distance of lower link pivot point from rear wheel axis			
C	- horizontally:	(e)	180	Same
C	- vertically:	(f)	324	Same
C	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	617	Same
C	Length of lift rods:	(L)	910 to 1050	940
	Height of lower hitch points relative to the rear wheel axis			
C	- in low position:	(h)	559 to 809	640
C	- in high position:	(H)	15 to 252	154
C	Height above ground of lower hitch points when locked in transport position (*):		920 to 1157	1028
	(*) Assuring r = 905 Tyre dynamic radius index of ISO 4251-1:1998 (pneumatic tyred tractors only)			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

- Category: 3
  - *Conformity with categories 1, 2, 3, 4, 3N, or 4N of ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979* North American Version Optional High Lift
- Category adapter: 3/3N

		Dimension or range	Settings used in test(s)
		mm	mm
Length of arms:	(A)	425	Same
Length of lower links:	(B)	1024	Same
Distance of lift arm pivot point from rear wheel axis			
- horizontally:	(a)	230	Same
- vertically:	(b)	608	Same
Horizontal distance between the 2 lower link points:	(u)	529	Same
Horizontal distance between the 2 lift arm end points:	(v)	680	Same
Length of upper arm link:	(S)	660 to 825	670
Distance of upper link pivot point from rear wheel axis			
- horizontally:	(c)	523/520	523
- vertically:	(d)	190/120	190
Distance of lower link pivot point from rear wheel axis			
- horizontally:	(e)	180	Same
- vertically:	(f)	315	Same
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	688.5	Same
Length of lift rods:	(L)	910 to 1050	990
Height of lower hitch points relative to the rear wheel axis			
- in low position:	(h)	523 to 748	675
- in high position:	(H)	7 to 218	75
Height above ground of lower hitch points when locked in transport position (*):		912 to 1123	980
(*) Assuring r = 905 Tyre dynamic radius index of ISO 4251-1:1998 (pneumatic tyred tractors only)			

Table 1.1

Dimensions of linkage geometry when connected to the standard frame

	1.7	Swinging drawbar	
C		- Type:	Oscillating
		- Height above ground	
C		. Minimum (mm):	489
C		. Maximum (mm):	553
C		- Type of adjustment:	Offset drawbar
		- Distance of hitch point from rear wheel axis	
C		. Horizontally (mm):	936, 1036, 1086
		- Distance of hitch point from power take-off shaft end	
C		. Horizontally (mm):	351, 451, 501
C		. Vertically (mm):	289.4
C		- Lateral adjustment (center of clevis)	
C		. Left hand (mm):	200
C		. Right hand (mm):	200
		- Distance of pivot point from rear wheel axis	
C		. Horizontally (mm):	14
C		- Diameter of drawbar pinhole (mm):	33
D		- Maximum vertical permissible load (kN):	14 kN PTO Position 22.2 kN Short Position
	1.8	**Trailer hitch**	Not Available
	1.9	**Holed drawbar**	Not Available
	1.10	Steering	
D		- Make / Model / Type:	Danfoss / RE186401 / Hydrostatic
		- Method of operation	
D		. Pump(s):	Same as main hydraulic pump
D		. Rams(s):	Integrated symmetrical design
D		- Working pressure (MPa):	17.5
	1.11	**Brakes**	
	1.11.1	Service brake	
D		- Make / Model / Type:	Vickers / RE221206 / John Deere Oil immersed
C		- Method of operation:	Hydraulic, operated by two pedals which can be locked together
C		- Trailer braking take-off (hydraulic or air brakes):	Optional air or hydraulic (not installed)
	1.11.2	Parking brake	
C		- Type:	Transmission lock
C		- Method of operation:	Gear selector lever

1.12 Wheels

- Number

C . Front (driving / steering): Two; driving and steering

C . Rear (driving / steering): Two; Driving

C - Wheelbase (mm): MFWD - 2860

- Track width adjustment:

		Minimum mm	Maximum mm	Adjustment method
D	Front	1524	2235	Reversing wheels and offset lug rims
D	Rear	1524	2984	Rack and pinion axle; reversing wheels and offset lug rims

1.13 Protective structure

C - Make / Model / Type: John Deere / SG093 / Cab

C - Manufacturer's name and address: John Deere Waterloo Works Waterloo, Iowa, USA

- Protective device

C . Cab / frame / rollguard / other: Cab

C . Tiltable / not tiltable: Not tiltable

- OECD approval

C . approval number: 4/0 784

C . Date of approval: 31 July 2003

C . Nos. of minor modification certificates, if any: None

1.14 Seat(s)

1.14.1 Driver's seat

C - Make / Model / Type: Sears Manufacturing / Comfort Command / air cushion suspension

C - Seat and steering wheel reversible: Yes / No: No

C - Type of suspension: Air ride

C - Type of damping: Adjustable viscous damping

- Range of adjustment

C . Longitudinally (mm): 178

C . Vertically (mm): 172

C - Safety belt: Yes

. Type: 2 point, fully retractable

1.14.2. Optional driver's seat(s)

1.14.2.1 Option 1

D - Make / Model / Type: John Deere/ Sears Manufacturing/ John Deere Active Seat

D - Type of suspension: Air/Hydraulic

D - Type of damping: Active position control

- Range of adjustment

D . Longitudinally (mm): 178

D . Vertically (mm): 172; (87 mm adjustment range)

	1.14.2.2	Option 2	
D		- Make / Model / Type	John Deere/ Sears Manufacturing/ John Deere Personal Posture™
D		- Type of suspension:	Air Ride
D		- Type of damping:	Adjustable, viscous damping
		- Range of adjustment	
D		. Longitudinally (mm):	200
D		. Vertically (mm):	140
	1.14.3	Passenger seat	
C		- Location:	Optional Instruction seat located left of driver's seat
C		- Capacity (number)	One

1.15 Lighting

		Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
		mm	mm	mm
C	Headlights			
C	Inner	1565	180 x 120	170
C	Outer	1565	160 x 115	330
C	Sidelights			
C	Midbody	2170	160 x 110	620
C	Rearlights			
C	Roof	2950	160 x 110	405
C	Fender	2170	160 x 110	843
C	Reflectors			
C	Front (Wrap around)	3040	82 x 240	770
C	Rear (Wraparound)	3050	82 x 240	770
C	Brake	1980	210 x 95	910
C	Extremity	2200	140 x 72	1792

2 TEST CONDITIONS

Separate tables may be added to report other test conditions or equipments.

2.1 Overall dimensions

	Length	Width		Height at top of:	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Ballasted	5664	2800	3656	3072	3090
Unballasted	5245	2800	3254	3072	3090

2.2 Ground clearance (unballasted tractor)

(mm): 390

- Clearance – limiting part: Hitch Sway Blocks

2.3 Tractor mass

- Mass (with or without frame / roll guard / cab / other:

	Unballasted		Ballasted	
	With driver	Without driver	With driver	Without driver
	kg	kg	kg	kg
Front	2876	2856	3488	3468
Rear	5019	4964	6273	6218
Total	7895	7820	9761	9686

Ballast Added	Number of Weights	Total Mass	Liquid
		kg	kg
Front (weights)	12	544	None
Front (weight support)	1	54	None
Rear (weights)	2	192	None
Rear (weights)	2	246	None
Rear (duals)	2	830	None

2.4 Track specifications

Not Applicable

2.5 Tyres and track specifications

	Front	Rear
Tyres		
- dimensions:	Goodyear 420/90R30	Goodyear 480/80R46
- ply rating:	142 A8	158 A8
- type:	Radial	Radial
- maximum load (tyre manufacturer's) (kN):	25.9 kN	41.6 kN
- maximum load (tractor manufacturer's) (kN):	Same	Same
- inflation pressure (tyre manufacturer's) (kPa):	From 60 to 160	From 60 to 160
- dynamic radius index (mm):	720	905
Chosen track width (mm):		
-unballasted	1842	1842
-ballasted (inner)	1842	1842
-ballasted (outer)	-	3200

2.6 Fuel

- Type: No. 2 diesel in conformity with national standard
- Density at 15° C: 0.841 g/cm^3

2.7 Oil and lubricants

2.7.1 Capacity and change interval

	Capacity	Oil Change	Filter change
	Dm^3	h	h
Engine	24	250 (500 with John Deere PLUS-50 and John Deere filter)	Same
Gear Box	108	1500	750
Front Axle	14.4	1500	Not applicable
Rear Axle	Common w/gearbox	1500	Common w/gearbox
Final Drive (front)	1.9	1500	Not Applicable
Final Drive (rear)	Common w/gearbox	1500	Common w/gearbox
Hydraulic System (*)	Common w/gearbox	1500	750
Other (steering, ___)	NA	NA	NA
(*) State if common with gear box and rear axle.			

2.7.2 Specifications (SAE, API, CCMC, ACEA, Mil.L, ISO)

	Recommended	Used during test
Engine oil		
. Type:	John Deere; Torq-Gard Supreme SAE 5W30: PLUS-50 SAE 15W40 or 0W40	John Deere; Torq-Gard Supreme SAE 15W40
. Viscosity:	12.5 - 16.3 cSt @ 100 C	12.5 - 16.3 cSt @ 100 C
. Classifications:	API CF-4; CH - 4; ACEA E2	Same
Transmission oils		
. Type:	John Deere HY-GARD; J20C SAE 10W-30	Same
. Viscosity:	58 cSt at 43 C	Same
. Classifications:	NA	NA
Hydraulic fluid		
. Type:	Same as transmission	Same
. Viscosity:		
. Classifications:		
Steering oil		
. Type:	Same as transmission	Same
. Viscosity:		
. Classifications:		

2.7.3 Grease

- Number of lubrication points: 19 (27 w/ TLS II)

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of tests: 31-Mar-04 Nebraska Tractor Test Laboratory, Lincoln, NE, USA
- Type of dynamometer bench: Eaton

	Speed			Fuel consumption			Specific
Power	Engine	PTO	Fan	Hourly		Specific	energy
kW	rev/min			kg/h	l/h	g/kWh	kW-h/l
3.1 MAXIMUM POWER - TWO HOUR TEST							
129.99	1850	949	1523	30.42	36.15	234	3.60
3.1.2 POWER AT RATED ENGINE SPEED							
116.74	2101	1077	1628	29.82	35.44	255	3.29
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)							
127.49	1950	1000	1583	30.55	36.32	240	3.51
3.1.4 PART LOADS							
3.1.4.1 the torque corresponding to maximum power at rated engine speed							
116.74	2101	1077	1628	29.82	35.44	255	3.29
3.1.4.2 85% of torque obtained in 3.1.4.1							
101.98	2155	1105	1650	27.62	32.83	271	3.11
3.1.4.3 75% of torque defined in 3.1.4.2							
76.83	2165	1110	1639	22.86	27.17	298	2.83
3.1.4.4 50% of torque defined in 3.1.4.2							
51.40	2172	1114	1596	18.37	21.84	357	2.35
3.1.4.5 25% of torque defined in 3.1.4.2							
25.84	2184	1120	1355	12.79	15.20	495	1.70
3.1.4.6 unloaded							
0.80	2193	1124	1290	8.03	9.54	10062	0.08
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							
127.49	1950	1000	1583	30.55	36.32	240	3.51
3.1.5.2 85% of torque obtained in 3.1.5.1							
111.18	2003	1027	1576	27.08	32.19	244	3.45
3.1.5.3 75% of torque defined in 3.1.5.2							
83.80	2011	1031	1562	22.72	27.01	271	3.10
3.1.5.4 50% of torque defined in 3.1.5.2							
56.32	2022	1037	1291	17.55	20.87	312	2.70
3.1.5.5 25% of torque defined in 3.1.5.2							
28.14	2035	1043	1333	12.11	14.40	430	1.95
3.1.5.6 unloaded							
0.74	2047	1049	1161	6.94	8.25	9319	0.09

- No load maximum engine speed: 2193 rev/min
- Torque (equivalent crankshaft) at rated speed:
  - At rated engine speed 531 Nm
  - At 2-hour test 671 Nm
- Maximum torque (equivalent crankshaft): 835 Nm
  (engine speed: 1099 rev/min)

Mean atmospheric conditions:		
Dry bulb	25	°C
Pressure	98.6	kPa
Relative Humidity	42	%
Maximum temperatures:		
Coolant	98	°C
Engine oil	112	°C
Fuel	40	°C
Engine air intake	33	°C

3. COMPULSORY TESTS RESULTS (OPTIONAL PTO PART LOAD TEST)

3.1 Main power take-off

- Date and location of tests: 31-Mar-04 Nebraska Tractor Test Laboratory, Lincoln, NE, USA
- Type of dynamometer bench: Eaton

Power	Speed			Fuel consumption			Specific energy
				Hourly		Specific	
kW	Engine	PTO	Fan	kg/h	l/h	g/kWh	kW-h/l
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 maximum power at rated engine speed							
116.74	2101	1077	1628	29.82	35.44	255	3.29
3.1.6.2 80% of power obtained in 3.1.6.1 at max speed setting							
93.47	2158	1106	1640	26.26	31.22	281	2.99
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
93.42	1888	968	1461	23.27	27.66	249	3.38
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
47.11	1888	968	1271	14.42	17.15	306	2.75
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
70.41	1262	647	1108	15.92	18.92	226	3.72
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
47.26	1262	647	1077	11.97	14.23	253	3.32

3.2 HYDRAULIC POWER AND LIFTING FORCE

3.2.1 Hydraulic Power Test

Date of Test: 9-Apr-04
Tractor Model: JD 7820
Location of Test-City-State: Tractor Test Lab, Lincoln, NE, USA
Tapping point used for test: Remote hydraulic outlets

3.2.1.1 Hydraulic Fluid Characteristics

Found in: **2.7.2 Specifications**

3.2.1.2 Compulsory Report(Test Results):

	Pressure	Reservoir oil Temperature	Engine Speed	Flow Rate	Power
	MPa	°C	rev/min^{-1}	l/min	kW
Rated Engine Speed: (Manufactures Specification)			2100		
Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	20.06	67	2197		
Flow rate corresponding to a hydraulic pressure equivalent to 90 percent of the actual relief valve pressure setting and corresponding hydraulic power through two coupler pairs:	18.08	64	2183	107.4	32.4
Maximum available flow from one coupler pair:	4.24	62	2189	125.9	8.9
Maximum available power from one coupler pair:	14.42	66	2180	121.4	29.2
Maximum available flow from coupler pairs operating simultaneously (flow through two or more coupler pairs if required):	1.74	60	2194	126.8	3.7
Maximum power from coupler pairs operating simultaneously (flow through two or more coupler pairs if required):	17.77	63	2180	118.8	35.2

3.2 POWER LIFT TEST Category III, S.M. lower links with lifting cylinders (2) x 90 mm dia..
Date of test: 17 Feb 2004.

	Hitch points	Frame
Lower hitch points above ground - down position:	230 mm	246 mm
Vertical movement - without load:	795 mm	836 mm
with load:	748 mm	781 mm
Maximum corrected force exerted through full range:	55.2 kN	60.6 kN
Corresponding pressure:	18.5 MPa	18.5 MPa
Moment about rear axle:	71.8 kNm	115.8 kNm
Maximum mast tilt angle	--	4.6 deg

Lifting height relative to horizontal position of lower links.

mm	-347	-331	-297	-200	-97	3	100	200	301	401	450
Corrected lift forces											
At the Hitch point kN	55.2	--	58.2	62.8	66.4	69.1	71.3	72.7	74.2	76.1	--
at the frame kN	--	61.9	62.9	64.7	65.6	65.9	65.7	64.6	62.9	61.4	60.6
Corresponding pressure 18.5 Mpa											

OECD Drawbar Data (SI)

Date of tests:	14,15-Apr-2004					**Fuel density:**	0.841 kg/l							
Type of track:	Concrete					**Test number:**	1834							
3.3.1 Maximum power in tested gears (unballasted, 4wd)							**Tire pressure:**	110 kPa, rear		76 kPa, front		**Drawbar Height:**	546 mm	
Gear Number and range	**Power**	**Drawbar pull**	**Speed**	**Engine speed**	**Slip of wheels and/or tracks**	**Fan speed**	**Fuel**		**Temperature**			**Atmospheric conditions**		
							Specific fuel consumption	**Specific energy**	**Fuel**	**Coolant**	**Oil**	**Temperature**	**Relative humidity**	**Pressure**
	kW	kN	km/h	min^{-1}	%	min^{-1}	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
*A3	67.61	74.78	3.26	2157	13.8	1283	0.361	2.33	36	83	102	15	64	96.8
*A4	87.68	75.89	4.16	2149	9.7	1462	0.329	2.56	36	83	102	16	60	96.7
B1	102.73	72.30	5.12	2138	7.0	1455	0.303	2.78	36	84	103	15	64	96.8
B2	111.56	69.14	5.81	1990	5.8	1161	0.277	3.03	35	85	104	11	58	97.9
B3	117.36	61.81	6.84	1924	4.2	1121	0.257	3.28	34	86	105	10	58	97.9
C1	118.78	59.01	7.25	1847	4.2	1120	0.252	3.33	35	86	104	11	59	97.9
B4	117.33	52.12	8.10	1844	3.3	1233	0.256	3.28	37	88	104	14	53	97.8
C2	118.19	48.21	8.83	1845	3.0	1259	0.253	3.32	37	88	106	12	56	97.9
C3	117.81	39.85	10.64	1845	2.2	1256	0.257	3.27	37	88	105	14	49	97.8
C4	115.47	31.75	13.09	1841	1.6	1347	0.262	3.21	38	89	107	15	50	97.8
* Note: Slip within operating limits of testing station.														
3.3.2 Fuel consumption														
3.3.2.1		In selected gear at maximum power at rated engine speed.												
C1	105.32	45.42	8.35	2097	2.7	1397	0.287	2.93	36	85	105	13	56	97.9
3.3.2.1.1		75% of pull at maximum power at rated engine speed												
C1	81.88	34.05	8.66	2153	1.8	1456	0.332	2.53	39	86	104	20	37	97.7
3.3.2.1.2		50% of pull at maximum power at rated engine speed												
C1	55.17	22.64	8.77	2164	1.0	1509	0.374	2.25	39	82	100	21	25	97.6
3.3.2.1.3		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1												
B4	81.64	34.04	8.64	1935	1.8		0.287	2.94	40	86	103	21	25	97.6
3.3.2.1.4		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2												
B4	55.09	22.62	8.77	1948	1.0	1195	0.332	2.54	39	84	100	21	25	97.6
3.3.2.1.5		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1												
C3	81.91	34.06	8.66	1493	1.8	1180	0.266	3.16	40	89	104	21	31	97.7
3.3.2.1.6		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2												
C3	55.07	22.66	8.75	1496	0.9	1123	0.291	2.89	39	84	99	21	25	97.6
3.3.2.2		In selected gear nearest to 7.5 km/h at rated engine speed.												
B3	107.02	51.13	7.54	2094	3.0	1338	0.282	2.98	33	83	104	9	62	97.9
3.3.2.2.1		75% of pull at maximum power at rated engine speed												
B3	83.23	38.26	7.83	2157	2.1	1422	0.329	2.56	37	84	103	16	51	97.8
3.3.2.2.2		50% of pull at maximum power at rated engine speed												
B3	56.19	25.49	7.93	2165	1.2	1457	0.368	2.29	38	82	101	18	50	97.8
3.3.2.2.3		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1												
C1	83.40	38.27	7.85	1958	2.1	1192	0.283	2.97	38	86	103	17	52	97.8
3.3.2.2.4		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2												
C1	56.10	25.49	7.92	1959	1.2	1181	0.326	2.58	38	84	102	19	48	97.7
3.3.2.2.5		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1												
C2	83.26	38.24	7.84	1624	2.1	1160	0.264	3.19	38	86	102	18	49	97.8
3.3.2.2.6		Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2												
C2	56.31	25.53	7.94	1630	1.2	1016	0.290	2.90	38	84	98	20	41	97.7

OECD Drawbar Data (SI)

Date of tests:	19-Apr-04					**Fuel density:**	0.841 kg/l							
Type of track:	Concrete					**Test number:**	1834							
4.1 Maximum power (ballasted, front drive disengaged)							**Tire pressure:**	62 kPa, rear	110 kPa, front			**Drawbar Height:**	546 mm	
Gear Number and range	**Power**	**Drawbar pull**	**Speed**	**Engine speed**	**Slip of wheels and/or tracks**	**Fan speed**	**Fuel**		**Temperature**			**Atmospheric conditions**		
							Specific fuel consumption	**Specific energy**	**Fuel**	**Coolant**	**Oil**	**Temperature**	**Relative humidity**	**Pressure**
	kW	kN	km/h	min^{-1}	%	min^{-1}	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
*A4	89.75	79.85	4.05	2147	11.3	1380	0.331	2.54	34	83	104	11	76	98.2
B1	103.75	74.43	5.02	2099	6.2	1252	0.295	2.86	35	84	103	11	76	98.3
B2	105.87	61.27	6.22	2099	3.5	1370	0.290	2.91	36	84	103	12	71	98.4
B3	105.95	50.70	7.52	2100	2.6	1365	0.289	2.91	35	84	103	12	71	98.4
C1	106.03	45.83	8.33	2101	2.3	1322	0.290	2.90	35	84	103	12	72	98.5
B4	103.34	40.06	9.29	2103	2.0	1477	0.296	2.85	35	83	103	13	72	98.5
C2	103.77	37.05	10.08	2102	1.8	1444	0.291	2.89	35	83	104	12	72	98.5
C3	102.15	30.32	12.13	2104	1.5	1444	0.302	2.78	35	83	103	13	73	98.5
C4	98.69	23.87	14.89	2099	1.1	1450	0.308	2.73	35	84	104	13	73	98.5
* Note: Slip within operating limits of testing station.														
3.3.2 Fuel consumption														
3.3.2.1	In selected gear at maximum power at rated engine speed.													
B3	105.95	50.70	7.52	2100	2.6	1365	0.289	2.91	35	84	103	12	71	98.4
3.3.2.1.1	75% of pull at maximum power at rated engine speed													
B3	81.82	37.96	7.76	2150	1.8	1424	0.324	2.60	36	82	102	13	67	98.5
3.3.2.1.2	50% of pull at maximum power at rated engine speed													
B3	55.25	25.31	7.86	2163	1.2	1414	0.383	2.20	35	80	101	13	67	98.5
3.3.2.1.3	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1													
C1	81.77	37.98	7.75	1946	1.9		0.285	2.95	36	85	103	13	67	98.5
3.3.2.1.4	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2													
C1	55.22	25.32	7.85	1958	1.2	1173	0.328	2.56	36	81	99	13	67	98.5
3.3.2.1.5	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1													
C2	81.88	38.00	7.76	1617	1.9	1109	0.264	3.19	36	85	101	13	67	98.5
3.3.2.1.6	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2													
C2	55.32	25.31	7.87	1629	1.2	1084	0.296	2.84	35	81	98	13	67	98.5

OECD Drawbar Data (SI)

Date of tests:	19-Apr-04					**Fuel density:**	0.841 kg/l							
Type of track:	Concrete					**Test number:**	1834							
4.2 Maximum power in tested gears (ballasted, 4wd)							**Tire pressure:**	62 kPa, rear	110 kPa, front			**Drawbar Height:**	546 mm	
Gear Number and range	**Power**	**Drawbar pull**	**Speed**	**Engine speed**	**Slip of wheels and/or tracks**	**Fan speed**	**Fuel**		**Temperature**			**Atmospheric conditions**		
							Specific fuel consumption	**Specific energy**	**Fuel**	**Coolant**	**Oil**	**Temperature**	**Relative humidity**	**Pressure**
	kW	kN	km/h	min^{-1}	%	min^{-1}	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
*A3	91.57	96.23	3.43	2147	8.7	1365	0.317	2.66	33	82	102	11	82	98.1
A4	104.95	92.67	4.08	2043	6.7	1191	0.289	2.91	35	85	104	11	76	98.3
B1	115.16	88.92	4.66	1922	5.6	1239	0.271	3.11	36	86	104	11	76	98.3
B2	118.89	77.83	5.50	1850	3.9	1219	0.256	3.29	36	87	104	12	71	98.4
B3	119.33	64.55	6.66	1852	2.9	1220	0.257	3.27	36	86	104	12	72	98.5
C1	118.46	57.84	7.37	1851	2.5	1251	0.259	3.24	36	87	105	12	72	98.5
B4	117.86	51.68	8.21	1851	2.2	1256	0.259	3.24	36	87	105	13	72	98.5
C2	117.21	47.34	8.91	1849	2.1	1269	0.258	3.26	36	86	104	12	72	98.5
C3	116.70	39.18	10.72	1850	1.7	1234	0.264	3.18	37	88	105	13	73	98.5
C4	113.43	30.85	13.24	1858	1.3	1270	0.268	3.14	36	88	106	13	67	98.5

*** Note: Slip limited to avoid excessive bouncing.**

4.3 POWER LIFT TEST Category III, S.M. lower links with lifting cylinders (2) x 100 mm dia..
Date of test: 17 Feb 2004.

	Hitch points	Frame
Lower hitch points above ground - down position:	230 mm	236 mm
Vertical movement - without load:	795 mm	847 mm
with load:	748 mm	781 mm
Maximum corrected force exerted through full range:	69.6 kN	75.1 kN
Corresponding pressure:	18.5 MPa	18.5 MPa
Moment about rear axle:	90.5 kNm	143.3 kNm
Maximum mast tilt angle	--	3.7 deg

Lifting height relative to horizontal position of lower links.

mm	-347	-341	-298	-199	-99	3	101	202	302	401	440
Corrected lift forces											
At the Hitch point kN	69.6	--	72.9	78.5	82.5	86.0	88.5	90.8	92.6	94.6	--
at the frame kN	--	77.7	78.9	80.8	81.8	82.1	81.7	80.1	78.1	75.8	75.1

Corresponding pressure 18.5 Mpa

4.4 POWER LIFT TEST Category III, Quick attaching coupler and lifting cylinders (2) x 90 mm dia..
Date of test: 17 Feb 2004.

	Hitch points	Frame
Lower hitch points above ground - down position:	230 mm	216 mm
Vertical movement - without load:	824 mm	960 mm
with load:	762 mm	875 mm
Maximum corrected force exerted through full range:	53.1 kN	48.9 kN
Corresponding pressure:	18.4 MPa	18.4 MPa
Moment about rear axle:	68.7 kNm	93.0 kNm
Maximum mast tilt angle	--	9.3 deg

Lifting height relative to horizontal position of lower links.

mm	-361	-347	-301	-199	-103	-2	98	199	298	415	514
Corrected lift forces											
At the Hitch point kN	--	53.1	55.5	59.8	62.6	65.0	66.8	67.9	68.6	69.7	--
at the frame kN	57.5	–	57.8	58.4	58.5	58.1	57.0	55.0	52.1	–	48.9
Corresponding pressure 18.4 Mpa											

4.5 POWER LIFT TEST Category III, Quick attaching coupler and lifting cylinders (2) x 100 mm dia..
Date of test: 17 Feb 2004.

	Hitch points	Frame
Lower hitch points above ground - down position:	229 mm	219 mm
Vertical movement - without load:	750 mm	853 mm
with load:	686 mm	767 mm
Maximum corrected force exerted through full range:	75.2 kN	69.3 kN
Corresponding pressure:	18.5 MPa	18.5 MPa
Moment about rear axle:	97.2 kNm	131.8 kNm
Maximum mast tilt angle	--	6.7 deg

Lifting height relative to horizontal position of lower links.

mm	-358	-348	-302	-202	-102	-3	98	198	298	338	409
Corrected lift forces											
At the Hitch point kN	--	75.2	78.6	84.4	88.0	91.1	93.1	94.1	95.0	95.1	--
at the frame kN	80.4	–	81.0	81.9	81.4	80.2	78.2	74.7	–	71.3	69.3

Corresponding pressure 18.5 Mpa

4.6 Measurement of External Noise Level – John Deere 7820

-- Date of Test	April 1, 2004
-- 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	32.6 km/h
-- Noise Level	87.7 dB(A)

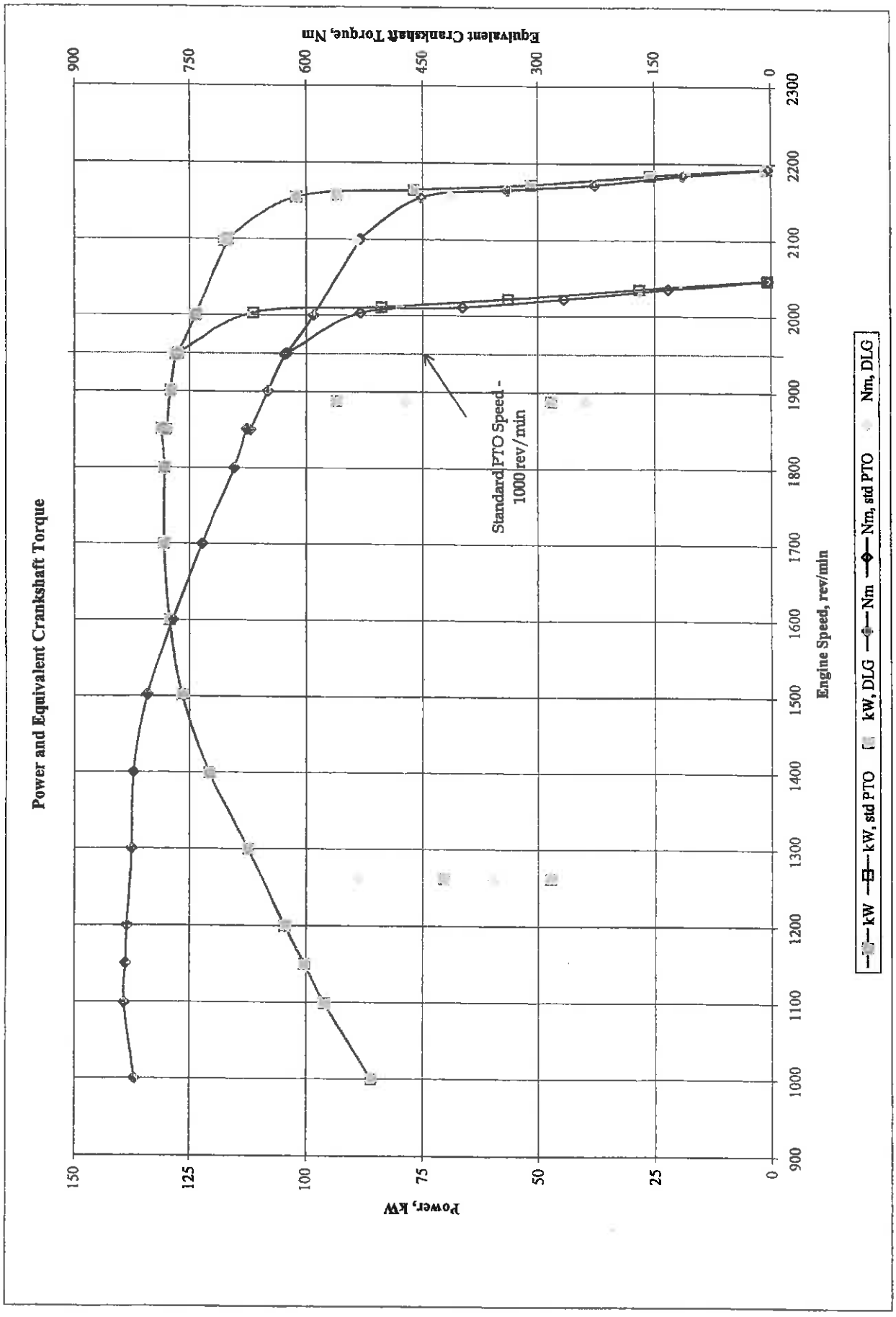
4.7 Measurement of Noise Level at Operator's Ear*

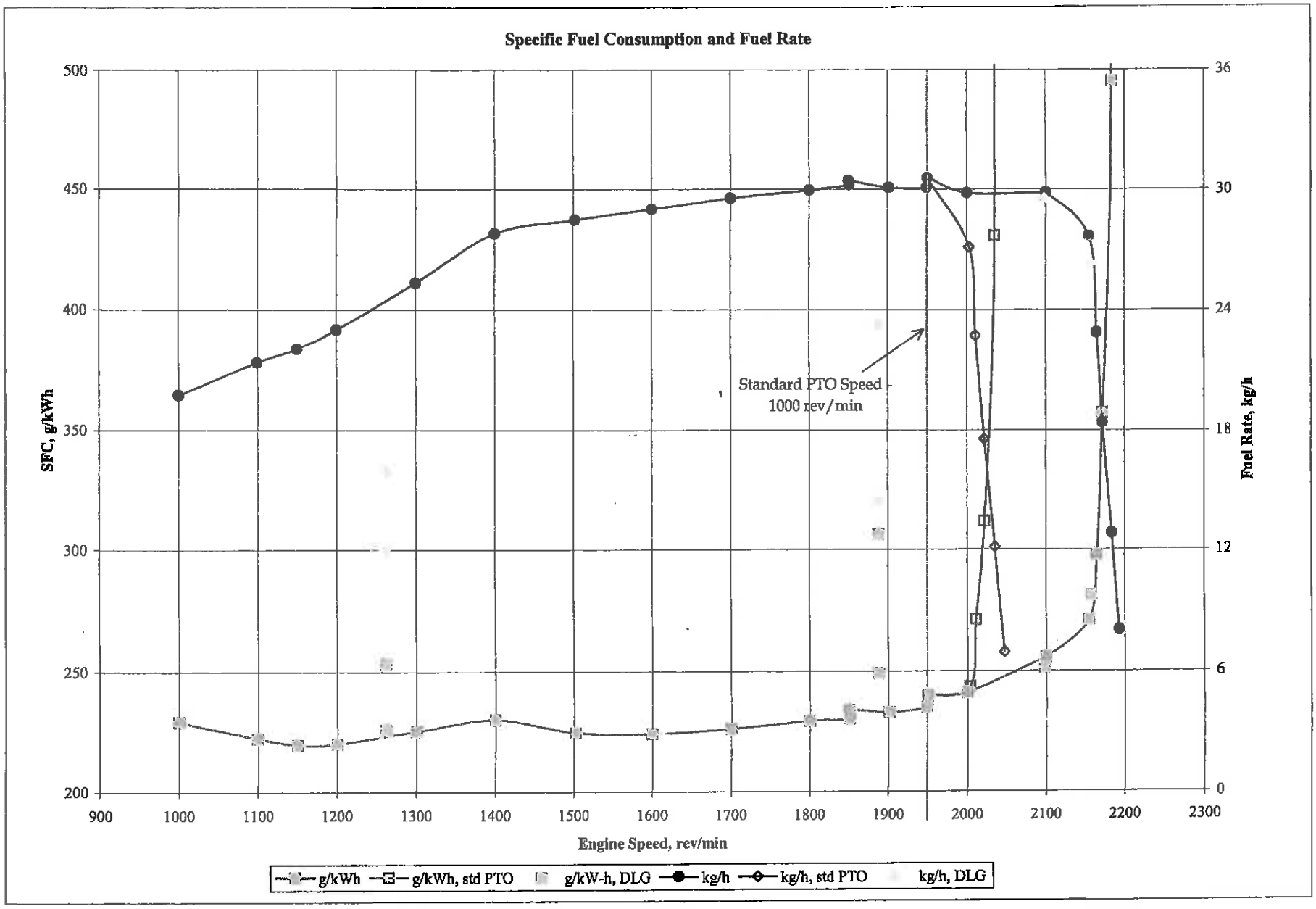
-- Date of Test	April 1, 2004
-- Location of Test	Nebraska Tractor Test Laboratory
-- Sound Level Meter	Bruel and Kjaer 2236
-- Type of Track	Concrete Oval
-- Gear Number	7 (B3)
-- Drawbar Load	None
-- Noise at Operator Ear	72.6 dB(A) – front wheel drive engaged 72.0 dB(A) – front wheel drive disengaged

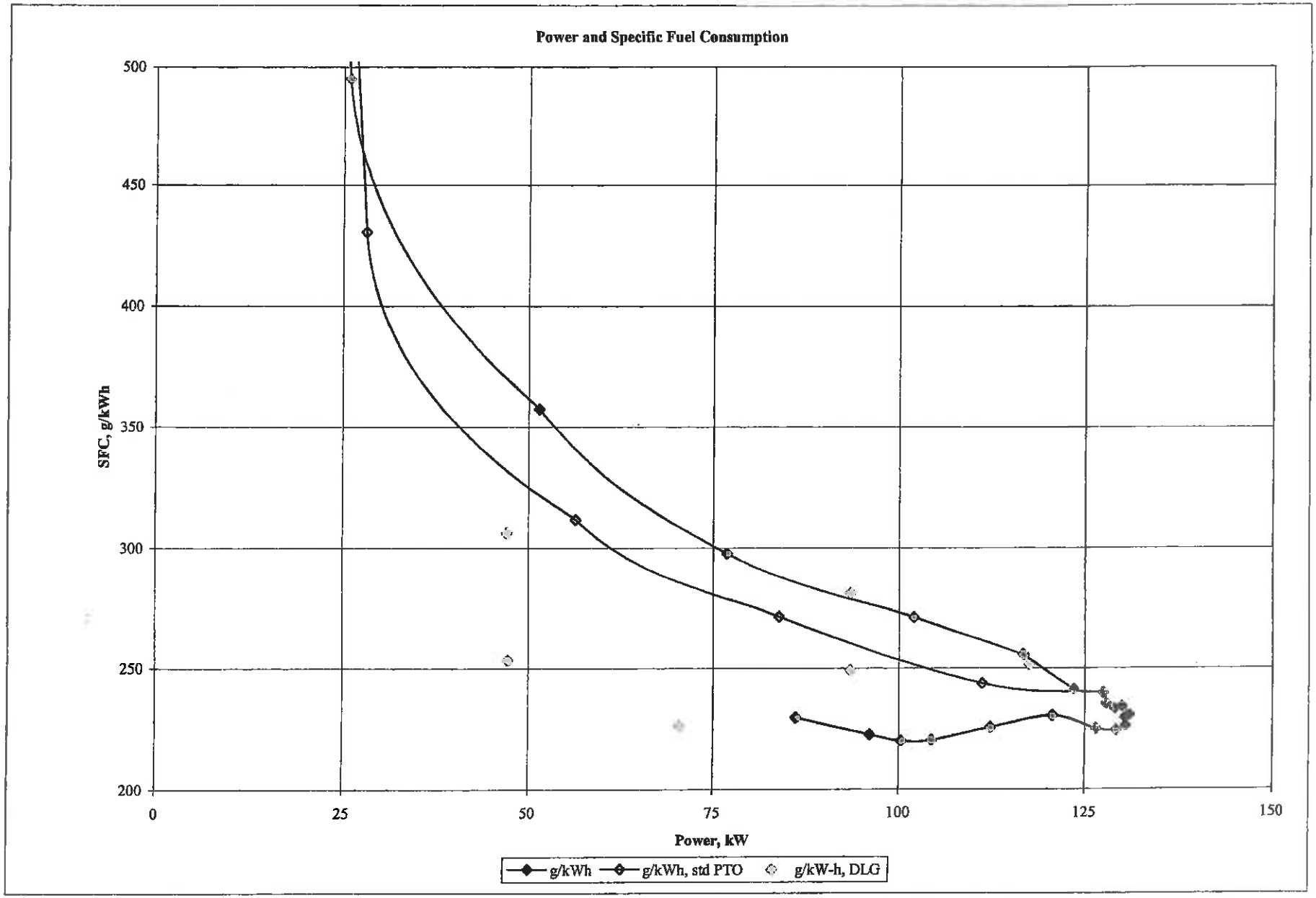
* Note: Nebraska tractor test station guidelines.

5. Repairs and Adjustments: None

6. Remarks: None


Power and Equivalent Crankshaft Torque
Power, kW
Equivalent Crankshaft Torque, Nm
Engine Speed, rev/min
Standard PTO Speed - 1000 rev/min
kW
kW, std PTO
kW, DLG
Nm
Nm, std PTO
Nm, DLG
150
125
100
75
50
25
0
900
750
600
450
300
150
0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300


Specific Fuel Consumption and Fuel Rate
SFC, g/kWh
Fuel Rate, kg/h
Engine Speed, rev/min
Standard PTO Speed
1000 rev/min
500
450
400
350
300
250
200
36
30
24
18
12
6
0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
g/kWh
g/kWh, std PTO
g/kW-h, DLG
kg/h
kg/h, std PTO
kg/h, DLG


Power and Specific Fuel Consumption
SFC, g/kWh
500
450
400
350
300
250
200
0
25
50
75
100
125
150
Power, kW
g/kWh
g/kWh, std PTO
g/kW-h, DLG