OECD APPROVAL NO. 2/1935
CODE 2
DATE OF APPROVAL: 3 November 2000

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 8310T POWERSHIFT
Rubber Tracked - 30 km/h Version

MANUFACTURED BY:	**John Deere Tractor Works** **3500 East Donald Street, P.O. Box 270** **Waterloo, Iowa 50704-0270**
NEBRASKA TEST NO.	**1776**
TEST DATES:	**April 17-May 12, 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 3 November 2000 for the John Deere 8310T Powershift, Rubber Tracked - 30 km/h version, 16-speed transmission with OECD Number 2/1935.

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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Date: DEC 0 1 2000

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- Manufacturers Name/Address	John Deere Tractor Works 3500 East Donald St. P.O. Box 270 Waterloo, Iowa 50704-0270
- Location of tractor assembly	Same
- Submitted for test by	The Manufacturer
- Selected for test by	The Manufacturer in agreement with the Nebraska Tractor Test Laboratory
- Place of running in	John Deere Product Engineering Center, Waterloo, Iowa
- Duration of running in	117 hr
- Location of test	Nebraska Tractor Test Laboratory, Lincoln, Nebraska U.S.A.

1. SPECIFICATIONS OF TRACTOR

1.1 IDENTIFICATION

- Make	John Deere
- Model	8310T Powershift
- Type	Unit Construction, rubber tracklaying tractor, Powershift, 30 km/h
- Number of driving wheels	2 tracks (rubber belts)
- Serial Number	*RW8310T901079*
- 1st Serial number	Confidential

1.2 ENGINE

- Make	John Deere
- Model	6081HWR16
- Type	4-stroke Diesel; turbocharged, air-to-air aftercooled, direct injection
- Serial Number	*RG6081H098909*

1.2.1 Cylinders

- Number and Disposition	6, in-line, vertical
- Bore x Stroke	115.8 mm x 128.5 mm
- Cubic Capacity	8134 cm^3
- Compression Ratio	16.5:1
- Arrangement of Valves	Overhead
- Cylinder Liner (wet or dry)	Wet; replaceable

1.2.2 Supercharging

- Make	Schwitzer
- Model	RE64765
- Type	Exhaust gas driven
- Pressure	0.144 ± 0.015 MPa (at rated engine speed and full load)

1.2.3 Fuel System

- Fuel Feed System	Transfer pump integral with injection pump
- Make/Model/Type of Filter(s)	
primary	Stanadyne/AR103220/Fuel Strainer
secondary	Stanadyne/AR86745/Paper element
- Fuel Tank Capacity	492 dm^3
- Fuel Cooler	Heat exchanger with air in fuel return line
- Make/Model/Type of Injection Pump	Bosch/RE501859/In-line; electric shut off
- Injection Pump Serial Number	9702500048
- Production setting of injection Pump	
· Flow Rate	44.8 ± 2.0 dm^3/h (at rated engine speed and full load)
· Fuel Density	0.847 g/cm^3
- Make/Model/Type of Injectors	Bosch/RE63073/P-type nozzle
- Injection Pressure	29.0 +1.2/-0.0 MPa
- Timing	18° ± 1° BTDC

1.2.4 Governor

- Make/Model/Type	John Deere Focus/Electronic Control
- Governed engine speed range	800 - 2400 rev/min
- Rated engine speed	2200 rev/min
- High idle speed range	2300 ± 25 rev/min

1.2.5 Air Cleaner

- Pre-cleaner	
· Make/Model/Type	Donaldson/RE164286/Strato-tube pre-cleaner with aspirator
· Air intake location	Under hood, front of tractor
- Main Cleaner	
· Make/Model/Type	Donaldson/RE51629/pleated paper
· Location	Under hood, engine compartment
- Secondary element	
· Make/Model/Type	Donaldson/RE51630/pleated paper
- Maintenance Indicator	Dash 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	Heat exchanger with engine coolant

1.2.7 Cooling System

- Type of coolant:	Liquid
- Type of pump	Centrifugal, gear driven
- Fan specification	Belt driven; suction type; variable speed
- Number of Fan Blades	8
- Fan Diameter	711 mm
- Coolant system capacity	34 dm^3
- Type of temperature control	Two thermostats and variable speed fan
- System pressure	69 ± 5 kPa

1.2.8 Starting System

- Make/Model/Type of starter	Nippondenso/RE69704/Solenoid engaged
- Power rating	4.0 kW
- Cold starting aid	Ether spray in intake manifold
- Safety device	Electrical lockout on gearshift lever

1.2.9 Electrical System

- Voltage and grounding	12 Volt DC; negative ground
- Alternator	
· Make/Model/Type	Nippondenso/RE46608/Belt driven
· Power rating	1.9 kW
- Batteries	
· Number and connection	Two; 12 Volt batteries in parallel; SAE tapered post
· Rating	925 Cold Cranking Amps/battery 175 Ah/battery at 20 hour rating

1.2.10 Exhaust System

- Muffler Make/Model/Type	Nelson/RE44716/Expansion Chamber
- Location	Vertical muffler
- Exhaust stack location	Vertical; right front corner of cab

1.3 TRANSMISSION

1.3.1 Clutch (travel alone)

- Make/Model/Type	John Deere/Multiple plate/Oil cooled
- Number of plates	7
- Plate diameter	232 mm
- Method of operation	Hydraulic; pedal actuated

1.3.2 Gear Box

- Make/Model/Type: John Deere/full powershift/mechanical
- Arrangement: Countershaft design consisting of 8 multidisc hydraulically cooled clutches and 1 multidisc hydraulically cooled planetary brake

	Forward	Reverse
Number of gears	16	4
Number of ranges/groups	1	1
Total of arrangements	16	4

- Oil cooler: Heat exchanger with air
- Available options: 16 x 5 (specialty market)

1.3.3 Rear axle and final drives

- Make/Model/Type: John Deere/spiral bevel gear and pinion, outboard planetary final drives with electronically controlled hydrostatic differential steering
- Differential lock: Not applicable

1.3.4 Front axle and final drives

Not applicable

1.3.5 Total ratios and traveling speeds

Gear Number	Number of engine revolutions for one revolution of the driving wheels	Nominal travel speed (*) at rated engine speed of 2200 rev/min (km/h)
Forward		
1	346.0220	1.87
2	270.8786	2.39
3	212.8132	3.04
4	166.5978	3.88
5	137.5825	4.70
6	121.9316	5.31
7	107.7045	6.01
8	95.4524	6.78
9	84.6171	7.65
10	74.9913	8.63
11	66.2413	9.77
12	58.7059	11.02
13	46.1282	14.02
14	36.1109	17.91
15	28.3701	22.80
16	22.2092	29.13
Reverse		
1	-396.6818	-1.63
2	-157.7254	-4.10
3 (**)	-139.7831	-4.63
4 (***)	-52.8817	-8.90
5 (****)	-52.8817	-12.23

(*) Calculated with a rear track dynamic radius index of 780 mm
(**) Engine speed is adjustable to 2400 RPM in the Reverse Gear Number 3
(***) Engine speed is limited to 1600 RPM in the Reverse Gear Number 4
(****) Available in Specialty Markets only

1.4 POWER-TAKE-OFF

1.4.1 Main Power-Take-Off

- Type	Independent
- Method of engagement	Electro-hydraulically actuated multi-plate wet clut operated by single hand control switch
- Number of shafts	1, Single Speed
- Method of changing speeds	None

1.4.1.1 Standard Single Speed PTO-1000 rev/min

- Location	Rear of tractor; center plane
- Diameter of PTO shaft end	44.5 mm
- Number of splines, in conformity with ISO 500/1991	20; conforms to ISO 500/1991
- Height above ground	772.4 mm
- Distance from median plane of tractor	0 mm
- Distance behind rear axle	583.6 mm
- PTO speed at rated engine speed (2200 rev/min)	1009 rev/min
- Engine speed at Standard PTO speed	2179 rev/min
- Ratio of Engine rev/min to PTO rev/min	2.179 : 1
- Power restriction	None
- Direction of rotation (viewed facing driving end)	Clockwise

1.4.1.2 Power-Take-Off Proportional to Ground Speed

Not available

1.5 POWER LIFT

- Make/Model/Type	John Deere/Electro-hydraulic lower link sensing; variable mix of draft and position control(optior slip control); adjustable rate of drop
- Type of hydraulic system	Closed center; pressure and flow compensated
- Number/Type of cylinders	Two external/Single acting, 2-100 mm diameter
- Type of linkage lock for transport	Electro-hydraulic (with locking notch for hand leve control)
- Relief valve pressure setting	20.3 ± 0.3 Mpa (pump stall pressure)
- Opening pressure of cylinder safety valve	23.25 ± 0.5 MPa
- Lift Pump type	Axial piston, variable pressure and flow, pressure and flow compensated, (45 cm^3 & optional 57 cm^3 displacement)
- Transmission between pump and engine	Direct spur gear drive
- Type/Number of filters	Synthetic media, screw-on canister/one
- Location of oil reservoir	Differential case housing
- Type/Number/Location of tapping points	ISO standard breakaway couplers/3 standard with 4th, 5th and additional inlet/outlet pair for externally controlled implements/rear of tractor
- Maximum oil volume available for external cylinders	20 dm^3; additional 10 dm^3 allowable overfill for tot of 30 dm^3.

1.6 Three point linkage

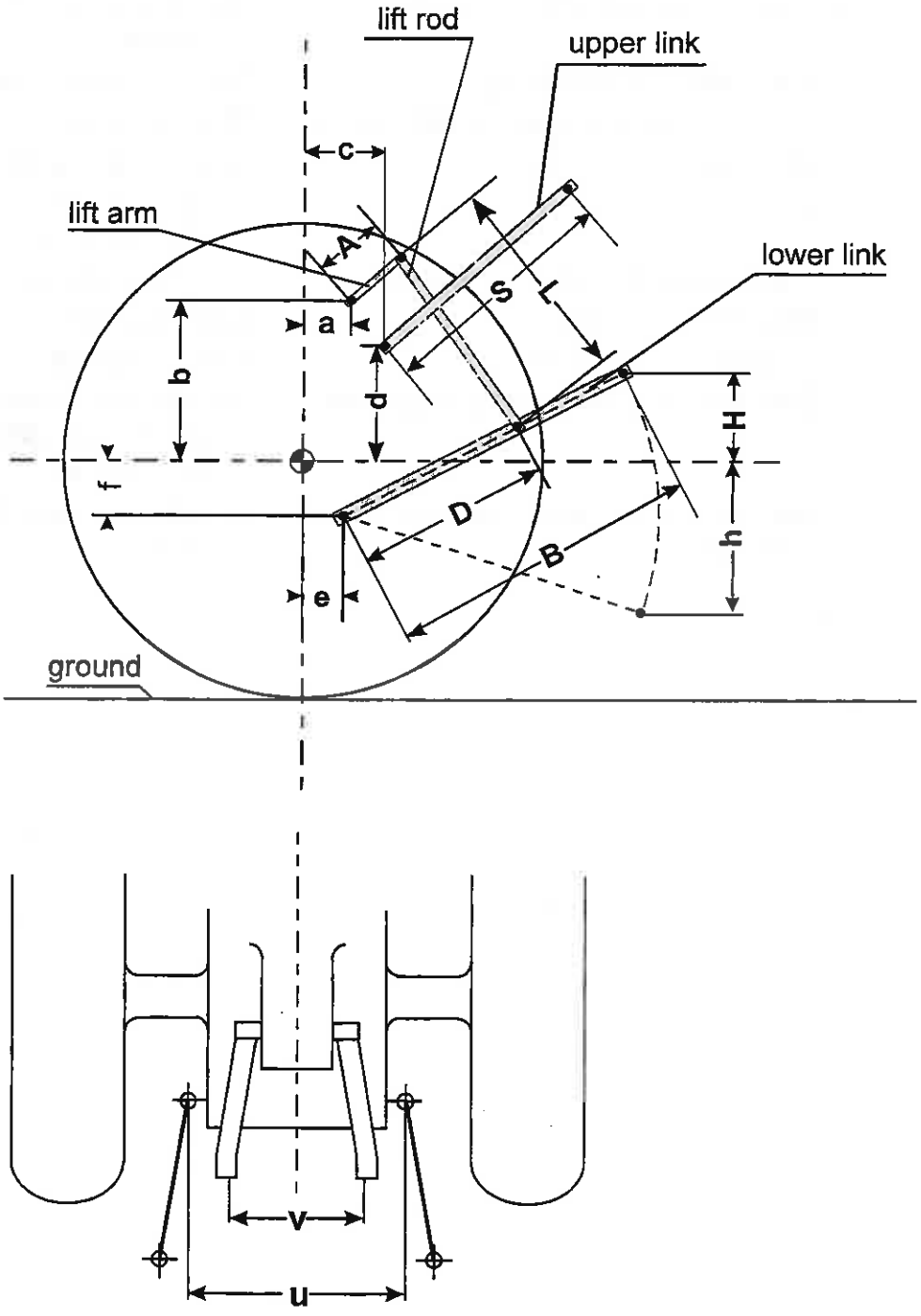


Table 1.6.1 - Linkage Geometry Dimensions - SM version

- Category 3 in conformity with ISO 730-1:1994 and ISO 730-2:1979
- Category Adapter Convertible to Category - None

Category adapter: Walterscheid lower links		Dimension or range (mm)	Setting used on test (mm)
Lift category		III	III
Length of lift arms	(A)	495	same
Length of lower links	(B)	1065	same
Distance of lift arm pivot point from rear-wheel axis: horizontally vertically	 (a) (b)	 -140 565	 same same
Horizontal distance between the two lower link points	(U)	600	same
Horizontal distance between the two lift arm ends points	(V)	750	same
Length of upper link	(S)	729 to 900	822
Distance of upper link pivot point from rear-wheel axis: horizontally vertically	 (c) (d)	 395, 395, 424 192.5, 259.5, 321.1	 424 321
Distance of lower link pivot point from rear-wheel axis: horizontally vertically	 (e) (f)	 175 280	 same same
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	720	same
Length of lift rods	(L)	968 to 1072	1072
Height of lower hitch points relative to rear wheel axis: In low position In high position	 (h) (H)	 500 to 650 206 to 339	 650 206
Height above ground of lower hitch points when locked in transport position		1059 to 1191	1059

Rear track static radius index of 852.55 mm

Table 1.6.2 - Linkage Geometry Dimensions - North American version

- Category 3 in conformity with ISO 730-1:1994 and ISO 730-2:1979
- Category Adapter Convertible to Category - None

Category adapter: Quick Attach linkage		Dimension or range (mm)	Setting used on test (mm)
Lift category		III	III
Length of lift arms	(A)	495	same
Length of lower links	(B)	1065	same
Distance of lift arm pivot point from rear-wheel axis: horizontally vertically	 (a) (b)	 -140 565	 same same
Horizontal distance between the two lower link points	(U)	600	same
Horizontal distance between the two lift arm ends points	(V)	750	same
Length of upper link	(S)	694 to 865	733
Distance of upper link pivot point from rear-wheel axis: horizontally vertically	 (c) (d)	 395 192.5, 259.5	 same 259.5
Distance of lower link pivot point from rear-wheel axis: horizontally vertically	 (e) (f)	 175 280	 same same
Distance of lower link pivot points to lift rod pivot points on lower links	(D)	720	same
Length of lift rods	(L)	968 to 1089	1089
Height of lower hitch points relative to rear wheel axis: In low position In high position	 (h) (H)	 482 to 650 140 to 299	 650 140
Height above ground of lower hitch points when locked in transport position		993 to 1161	993

Rear track static radius index of 852.55 mm

1.7 SWINGING DRAWBAR

	NA Option Tested Version	SM Option Not Tested
- Type	Oscillating	same
- Height above ground · Maximum (offset flipped up) · Minimum (offset flipped down)	 565.4 mm 467.4 mm	 same same
- Type of adjustment	Invert drawbar and reposition clevis	same
- Distance of hitch point from rear wheel axis, horizontally	1040.7, 1091.5 mm	1090, 1178 mm
- Distance of hitch point from PTO shaft end		
· Vertically · Horizontally (shaft diameter)	305, 207 mm 457, 508 mm	same 506, 595 mm
- Lateral adjustment:		
· Right side · Left side	203.75, 211.4 mm 203.75, 211.4 mm	212, 225.5 mm 212, 225.5 mm
- Distance of pivot point from rear wheel axis, horizontally	290.5 mm (forward)	same
- Diameter of drawbar pin hole	40 mm	33 mm
- Maximum vertical static permissible load:		
· Short position · Extended position	17.35 kN 17.35 kN	23.58 kN 16.24 kN

1.8 TRAILER HITCH

Not available

1.9 HOLED DRAWBAR

Not available

1.10 STEERING

- Make/Model/Type: John Deere Hydrostatic Differential Steering/Pump and motor/Electro-Hydraulic Differential steering controlled by steering wheel
- Method of operation: Steering wheel angle determines difference in speed between the 2 rubber track drive wheels
- Pump(s): Axial Piston Variable Displacement Pump and Axial Piston Fixed Displacement Motor
- Ram(s): None
- Working pressure: Up to 45.0 MPa +0.5/+2.5 MPa
- Filter Make/Model/Type: Donaldson/RE69054/Paper Element

1.11 BRAKE SYSTEM

1.11.1 Service Brakes

- Make/Model/Type: Vickers-John Deere/ Load sensing power with manua backup
- Method of operation: Hydraulically actuated oil immersed disc operated by one pedal
- Trailer Brake type: Not available

1.11.2 Parking Brake

- Type: Spring applied, hydraulically released multi-disc
- Method of operation: Gear selector lever

1.12 WHEELS

- Number
  - · Front: None
  - · Rear: Two; Driving and steering
- Wheelbase: Not applicable
- Track width adjustment

	Minimum mm	Maximum mm	Adjustment method
Rear	2235*	3035	8 positions available by adjusting track frame and rear wheel: 2235, 2435, 2485*, 2535, 2635, 2735, 2835, and 3035

* Requires exchange of right and left track frames

1.13 PROTECTIVE STRUCTURE

- Make/Model/Type: John Deere/SG-058/ Cab
- Seat and steering wheel reversible: No
- Manufactures Name/Address: John Deere Waterloo Works Waterloo, Iowa, USA
- Protective device
  - · Cab/frame/rollguard/other: Cab
  - · Tiltable/not tiltable: Not Tiltable
- OECD Approval Number: 4/0 547 (Certified to SAE-J2194 and CSA-B352.0, includi OSHA #1928.51)
- Date of Approval: 2 September 1998
- Nos. of Minor Modification Certificates, if any: MOD 1: 1, 24 August 1999

1.14.1 DRIVER'S SEAT

- Make/Model/Type	Sears Mfg/RE68579 (SM: RE152546)/Air cushion suspension (Comfort Command™)
- Type of suspension	Air
- Type of damping	Adjustable, viscous damping
- Range of adjustment	
· Longitudinal	178 mm
· Vertical	172 travel, 106 adjustable range
· Right Rotation	20°
· Left Rotation	15°
- Safety Belt	Yes

1.14.2 OPTIONAL DRIVER'S SEAT

Not available

1.14.3 PASSENGER SEAT

Not available

1.15 LIGHTING

	Height above ground of center (mm)	Size (mm)	Distance from outside edge to median plane of tractor (mm)
Headlights			
Hood inner	1800	70 x 127	200
outer	1800	71 x 127	335
Roof inner	3040	51 x 127	350
outer	3040	51 x 127	500
Upper mid body	2150	70 x 127	725
Lower mid body			
left	1380	70 x 127	1400
right	1300	70 x 127	1010
Rearlights			
roof	3050	70 x 127	640
fender	2100	70 x 127	890
Tail lights	1920	89 x 210	870
Reflectors			
roof front	3040	82 x 240 (*)	770
roof rear	3050	82 x 240 (*)	790

(*) 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	5487	3404	3650	3135	3245
Ballasted	6012	3404	3650	3135	3245

2.2 GROUND CLEARANCE 360 mm

Clearance-limiting part: Drawbar rear support (Rear hitch frame)

2.3 TRACTOR MASS With cab, full fuel tank

	Unballasted		Ballasted	
	Without driver (kg)	With driver (kg)	Without driver (kg)	With driver (kg)
Total	11780	11855	12777	12852

Note: Maximum tractor dry weight must be less than 31500 lb (14288 kg)

Ballast Added

	Number of weights	Total mass (kg)	Liquid (kg)
Front Weight Support	1	130	0
Front Weights	20	867	0

Note: Maximum front tractor weight must be less than 2200 lb (998 kg), or 20 weights w/ support.

2.4 TRACK SPECIFICATIONS

Make	Goodyear (Trackman™)
Track Materials	Rubber with steel reinforcement
Track width and base	609.6 mm and 2261 mm
Dynamic rolling radius under drive wheel	780 mm
Static distance of rear axle to ground	852.55 mm
Track support system	Oscillating front idler & three mid-rollers supported by midframe and rear wheel attached to drive axle
Treadbars Total per track Number per meter Bar length at top Bar width at top Bar width at center Bar height	 54 6.56 per meter 282 mm 40 mm 53 mm 50.8 mm
Track length	8230 mm
Track ground contact length	2261 mm

2.5 TIRE AND TRACK WIDTH SPECIFICATIONS

Track Width 2845 mm

2.6 FUEL

- Type/grade: Grade 2-D, in conformity with the national standard
- Density at 15 °C:
  - (PTO tests): 0.847 g/cm^3
  - (Drawbar tests): same as PTO tests

2.7 OILS AND LUBRICATION

2.7.1 Capacity and change interval

	Capacity	Oil Change	Filter(s) Change
	dm^3	hours	hours
Engine (with filter)	25.0	250 (375 with John Deere PLUS-50™ oil and John Deere filter)	Same as Oil Change
Transmission, rear axle, Hydraulics and Steering	246	1500	As required or 750
Wheel Hubs	50	1500	No filter

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

Engine oil:	Recommended	Used during test
Type	John Deere, Torq-Gard Supreme Plus 50; SAE 15W-40 or 10W-40	John Deere; Torq-Gard Supreme, PLUS-50; SAE 15W-40
Viscosity	12.8 cSt at 100° C	
Classification	API CF-4; ACEA E-2	
Transmission oils		
Type	John Deere, HY-GARD (J20C); SAE 10W-30	Same
Viscosity	58 cSt at 40° C	
Classification	JDM J20C	
Hydraulic Fluid		
Type	Same as transmission	Same
Viscosity		
Classification		
Steering oil		
Type	Same as transmission	Same
Viscosity		
Classification		
Grease	John Deere Moly High Temperature EP Grease	Same

2.7.3 Grease

- Number of lubrication points: 17

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of tests: 17-18 Apr 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						
175.33	1999	917	40.16	47.42	229	3.70
3.1.2 POWER AT RATED ENGINE SPEED						
153.86	2200	1009	37.91	44.77	246	3.44
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
153.86	2200	1009	37.91	44.77	246	3.44
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
153.86	2200	1009	37.91	44.77	246	3.44
3.1.4.2 85% of torque obtained in 3.1.4.1						
133.67	2254	1034	34.29	40.49	257	3.30
3.1.4.3 75% of torque defined in 3.1.4.2						
100.53	2265	1039	27.90	32.94	277	3.05
3.1.4.4 50% of torque defined in 3.1.4.2						
67.34	2274	1043	21.36	25.23	317	2.67
3.1.4.5 25% of torque defined in 3.1.4.2						
33.48	2286	1048	14.97	17.68	447	1.89
3.1.4.6 unloaded						
1.87	2293	1052	9.53	11.25	5102	0.17
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						
153.86	2200	1009	37.91	44.77	246	3.44
3.1.5.2 85% of torque obtained in 3.1.5.1						
133.67	2254	1034	34.29	40.49	257	3.30
3.1.5.3 75% of torque defined in 3.1.5.2						
100.53	2265	1039	27.90	32.94	277	3.05
3.1.5.4 50% of torque defined in 3.1.5.2						
67.34	2274	1043	21.36	25.23	317	2.67
3.1.5.5 25% of torque defined in 3.1.5.2						
33.48	2286	1048	14.97	17.68	447	1.89
3.1.5.6 unloaded						
1.87	2293	1052	9.53	11.25	5102	0.17

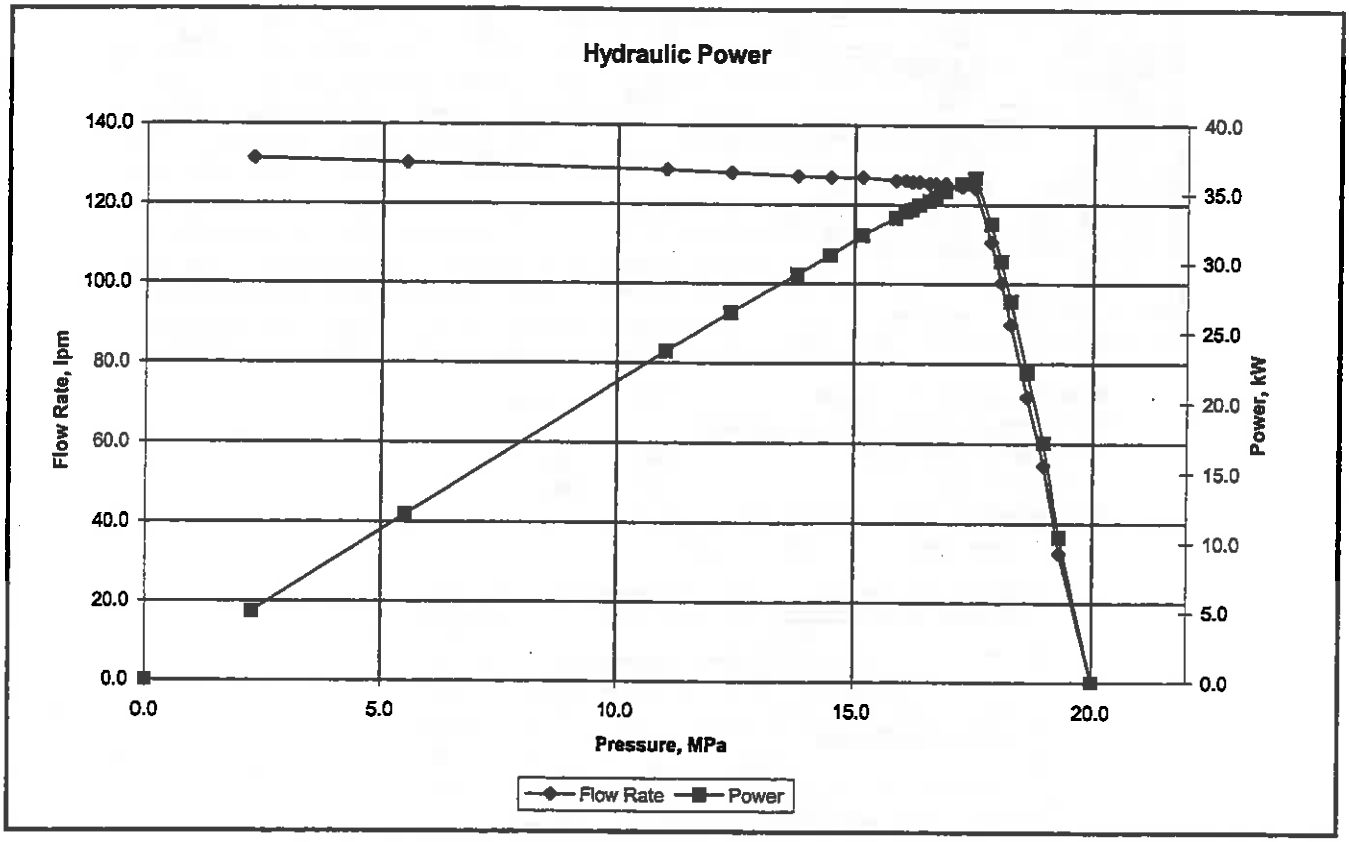
- No load maximum engine speed: 2293 rev/min
- Torque (equivalent crankshaft) at rated speed:
  - At rated engine speed 668 Nm
  - At 2-hour test 837 Nm
- Maximum torque (equivalent crankshaft): 988 Nm
  (engine speed: 1202 rev/min)

Mean atmospheric conditions:		
Dry bulb	24	°C
Pressure	98.3	kPa
Relative Humidity	47	%
Maximum temperatures:		
Coolant	98	°C
Engine oil	108	°C
Fuel	44	°C
Engine air intake	31	°C

3.2.1 Hydraulic Power Test - standard pump, 2 outlets

Date of Test:	5-May-00	John Deere 8310T	
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:		
	19.99 MPa		
	2900 psig		
II.	Pump delivery rate at minimum pressure at rated engine speed:		
	131.4 l/min		
	34.7 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	100.3 l/min	18.06 MPa	30.2 kW
	26.5 gpm	*2620 psig*	*40.5 hp*
	Maximum hydraulic power:		
	124.2 l/min	17.51 MPa	36.2 kW
	32.8 gpm	*2540 psig*	*48.6 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	56.9 °C		
	134 °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.
Date of test: 17 March 1998. Tests results extracted from OECD test 2/1792 on the John Deere 8300T, which is mechanically equivalent.

	Hitch points	Frame
Lower hitch points above ground - down position:	199 mm	185 mm
Vertical movement - without load:	856 mm	953 mm
with load:	841 mm	917 mm
Maximum corrected force exerted through full range:	56.7 kN	55.8 kN
Corresponding pressure:	18.0 MPa	18.0 MPa
Moment about rear axle:	70.5 kNm	103.2 kNm
Maximum mast tilt angle		6.1 degrees

Lifting height relative to horizontal position of lower links.

mm		-385	-373	-296	-198	-98	1	100	201	301	402	469	532
Corrected lift forces													
At the Hitch point	kN	--	56.7	59.7	64.0	67.7	71.2	74.3	77.1	80.5	84.0	86.3	--
at the frame	kN	55.8	57.7	--	60.3	62.6	64.1	65.2	65.8	66.1	--	65.5	64.6
Corresponding pressure	18.0 Mpa												

OECD Drawbar Data (SI)

Date of tests:	26-Apr-00					Fuel density:	0.847 kg/l							
Type of track:	Concrete					Test number:	1776							
3.3.1 Maximum power in tested gears (unballasted, Crwl)						Tire pressure:	trk kPa, rear		trk kPa, front			Drawbar Height:	470 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
2	2	65.87	113.57	2.09	2259	15	0.387	2.19	56	83	104	15	69	98.2
3	3	84.99	115.29	2.65	2249	15	0.355	2.38	57	84	104	14	78	98.2
4	4	98.93	106.60	3.34	2120	11	0.318	2.66	58	85	105	16	65	98.2
5	5	118.83	105.77	4.04	2103	10	0.300	2.82	59	88	106	16	65	98.2
6	6	133.22	105.88	4.53	2095	10	0.297	2.85	59	86	107	17	61	98.2
7	7	141.21	102.65	4.95	1999	9	0.284	2.98	59	86	109	17	62	98.2
8	8	147.15	91.33	5.80	1998	6	0.272	3.11	58	87	110	17	62	98.2
9	9	149.45	80.44	6.69	2003	4	0.268	3.16	58	86	108	19	59	98.2
10	10	150.55	71.21	7.61	2000	3	0.266	3.19	59	88	110	19	59	98.2
11	11	150.22	62.19	8.70	2002	2	0.267	3.17	60	89	109	19	59	98.1
12	12	149.60	54.60	9.86	2002	2	0.267	3.17	59	90	111	19	59	98.1
13	13	147.66	42.11	12.62	2001	1	0.271	3.13	60	91	111	19	59	98.1
3.3.2 Fuel consumption														
3.3.2.1	In selected gear at maximum power at rated engine speed.													
10	10	131.89	56.11	8.46	2197	1.82	0.287	2.95	59	86	109	19	59	98.1
3.3.2.1.1	75% of pull at maximum power at rated engine speed													
10	10	102.54	42.12	8.76	2258	0.96	0.313	2.71	58	84	106	21	56	98.1
3.3.2.1.2	50% of pull at maximum power at rated engine speed													
10	10	68.88	28.06	8.84	2269	0.65	0.367	2.31	56	85	105	20	60	98.0
3.3.2.1.3	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1													
11	11	102.44	42.12	8.76	1992	1.04	0.287	2.95	57	88	107	21	56	98.1
3.3.2.1.4	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2													
11	11	68.78	28.10	8.81	1998	0.81	0.330	2.57	55	85	104	20	60	98.0
3.3.2.1.5	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1													
12	12	102.73	42.08	8.79	1772	0.96	0.272	3.11	57	89	107	21	56	98.1
3.3.2.1.6	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2													
12	12	68.87	28.01	8.85	1779	0.65	0.308	2.75	54	85	103	20	60	98.0
3.3.2.2	In selected gear nearest to 7.5 km/h at rated engine speed.													
9	9	132.31	63.76	7.47	2198	2.05	0.287	2.95	59	88	108	18	58	98.2
3.3.2.2.1	75% of pull at maximum power at rated engine speed													
9	9	102.04	47.39	7.75	2258	1.28	0.312	2.71	58	84	107	20	56	98.1
3.3.2.2.2	50% of pull at maximum power at rated engine speed													
9	9	68.79	31.63	7.83	2270	0.81	0.362	2.34	57	83	105	21	56	98.1
3.3.2.2.3	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1													
10	10	101.92	47.38	7.74	1999	1.36	0.284	2.98	57	86	106	21	56	98.1
3.3.2.2.4	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2													
10	10	68.69	31.58	7.83	2011	0.81	0.326	2.60	55	85	104	21	56	98.0
3.3.2.2.5	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1													
11	11	101.81	47.51	7.71	1759	1.36	0.270	3.14	57	90	106	21	56	98.1
3.3.2.2.6	Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2													
11	11	68.66	31.65	7.81	1772	0.81	0.305	2.78	54		103	21	56	98.0

4.1 Drawbar Power: Ballasted - 2200 rev/min

OECD Drawbar Data (SI)

Date of tests: 27-Apr-00					**Fuel density:** 0.847 kg/l									
Type of track: Concrete					**Test number:** 1776									
Maximum power in tested gears (ballasted, Crwl)					**Tire pressure:** trk kPa, rear trk kPa, front							**Drawbar Height:** 470 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**
2	2	75.73	129.58	2.10	2255	14	0.366	2.31	55	83	102	13	72	97.7
3	3	93.02	121.60	2.75	2202	10	0.327	2.59	56	84	103	13	73	97.7
4	4	98.81	95.37	3.73	2199	4	0.310	2.74	57	85	104	15	64	97.7
5	5	116.06	92.32	4.53	2199	4	0.293	2.89	57	84	104	15	64	97.8
6	6	132.68	93.34	5.12	2202	4	0.286	2.96	58	85	105	16	60	97.8
7	7	132.57	81.72	5.84	2199	3	0.286	2.96	58	85	107	16	65	97.9
8	8	132.58	71.84	6.64	2199	2	0.286	2.96	59	86	106	16	65	97.9
9	9	132.87	63.52	7.53	2199	2	0.285	2.97	58	86	107	16	70	97.9
10	10	131.22	55.36	8.53	2200	1	0.288	2.94	59	87	107	16	69	97.9
11	11	129.65	48.30	9.66	2197	1	0.292	2.90	59	87	108	16	69	97.9
12	12	128.48	42.32	10.93	2198	1	0.294	2.88	59	88	108	16	69	97.9
13	13	124.25	32.07	13.95	2201	1	0.306	2.77	59	88	108	16	74	97.9

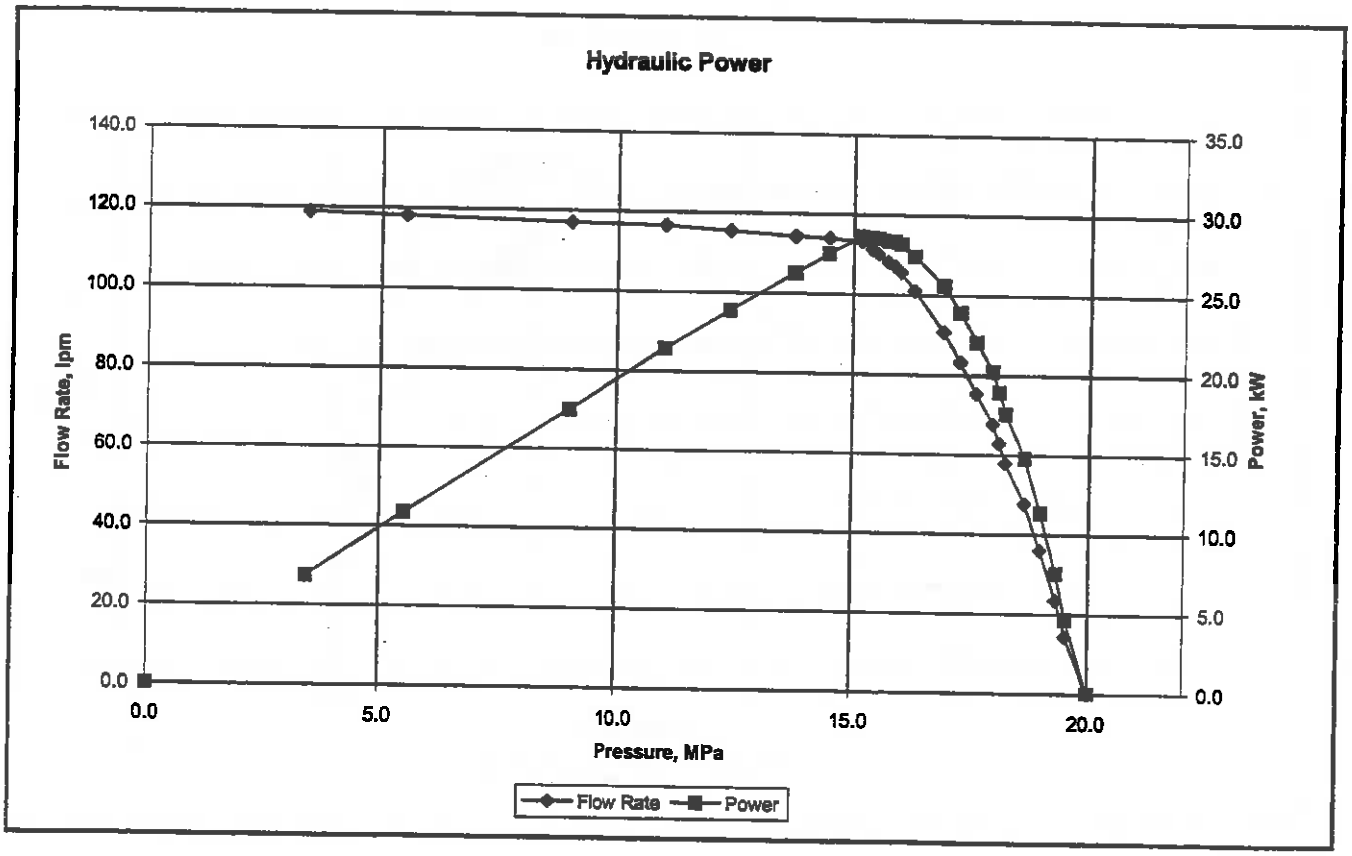
4.2 Drawbar Power: Ballasted - 2000 rev/min

OECD Drawbar Data (SI)

Date of tests: 27-Apr-00					**Fuel density:** 0.847 kg/l									
Type of track: Concrete					**Test number:** 1776									
Maximum power in tested gears (ballasted, Crwl)									**Tire pressure:** trk kPa, rear trk kPa, front			**Drawbar Height:** 470 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**
2	2	77.11	132.33	2.10	2255	14	0.365	2.32	56	83	102	13	72	97.7
3	3	91.16	123.18	2.66	2189	12	0.335	2.53	56	84	103	14	64	97.7
4	4	107.40	114.92	3.36	2063	8	0.297	2.85	57	85	103	15	66	97.8
5	5	126.34	115.68	3.93	2001	8	0.285	2.97	58	86	104	15	64	97.8
6	6	143.31	115.86	4.45	2001	8	0.280	3.02	59	88	106	16	65	97.8
7	7	147.56	102.83	5.17	1999	6	0.272	3.11	59	88	108	16	65	97.8
8	8	150.95	91.48	5.94	1998	4	0.266	3.18	59	87	107	16	65	97.9
9	9	151.67	80.49	6.78	2001	3	0.264	3.20	59	88	108	17	66	97.9
10	10	152.68	71.45	7.69	1998	2	0.262	3.23	59	88	109	16	69	97.9
11	11	151.21	62.17	8.75	1999	2	0.265	3.20	59	89	109	16	69	97.9
12	12	149.94	54.49	9.91	1999	1	0.266	3.18	59	90	108	16	69	97.9
13	13	146.73	41.66	12.68	2004	1	0.274	3.09	58	90	108	16	74	97.9

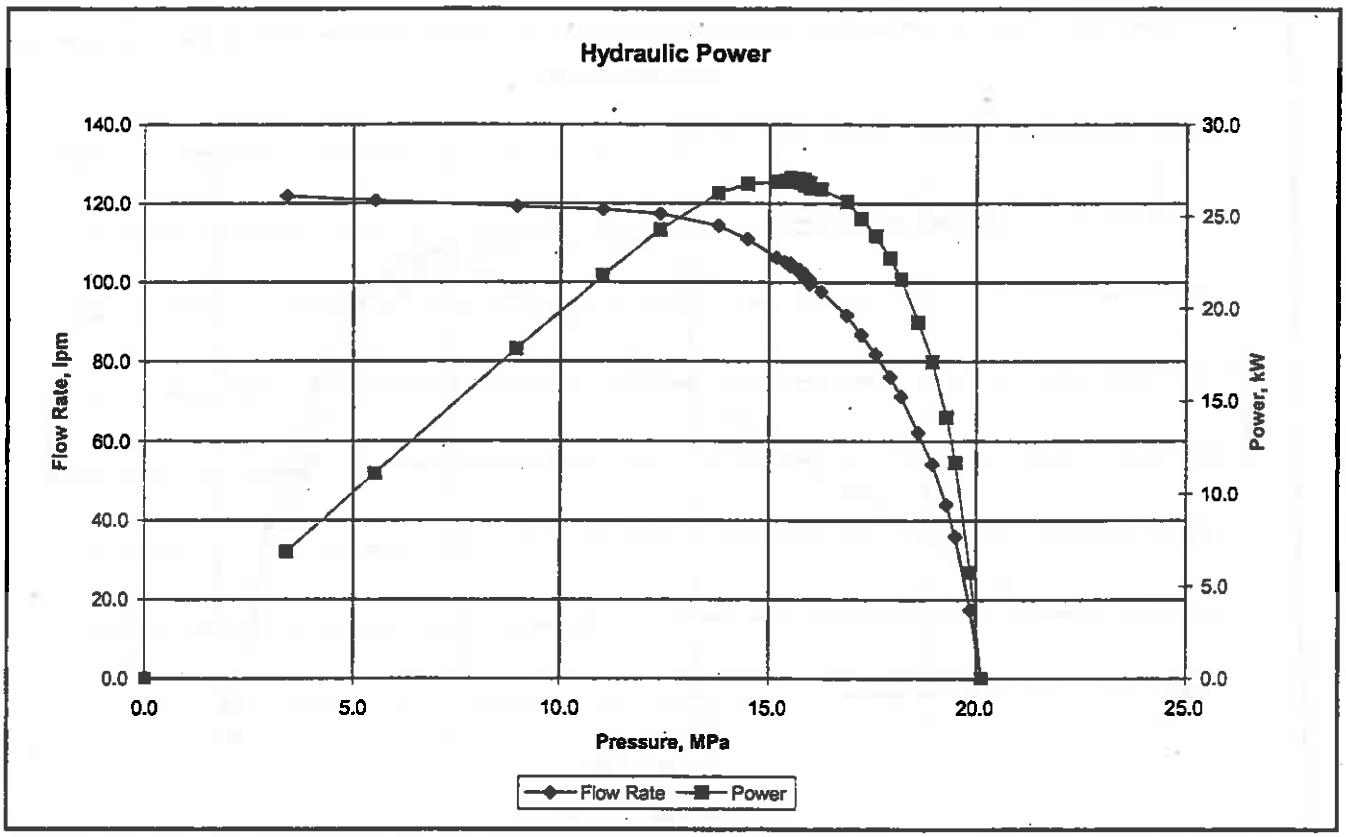
4.3 Hydraulic Power: Standard pump – one outlet

Date of Test:	5-May-00	John Deere 8310T	
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:		
	19.99 MPa		
	2900 psig		
II.	Pump delivery rate at minimum pressure at rated engine speed:		
	118.9 l/min		
	31.4 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	67.8 l/min	17.93 MPa	20.2 kW
	17.9 gpm	*2600 psig*	*27.2 hp*
	Maximum hydraulic power:		
	113.2 l/min	15.17 MPa	28.6 kW
	29.9 gpm	*2200 psig*	*38.4 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	68.7 °C		
	156 °F		
	This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



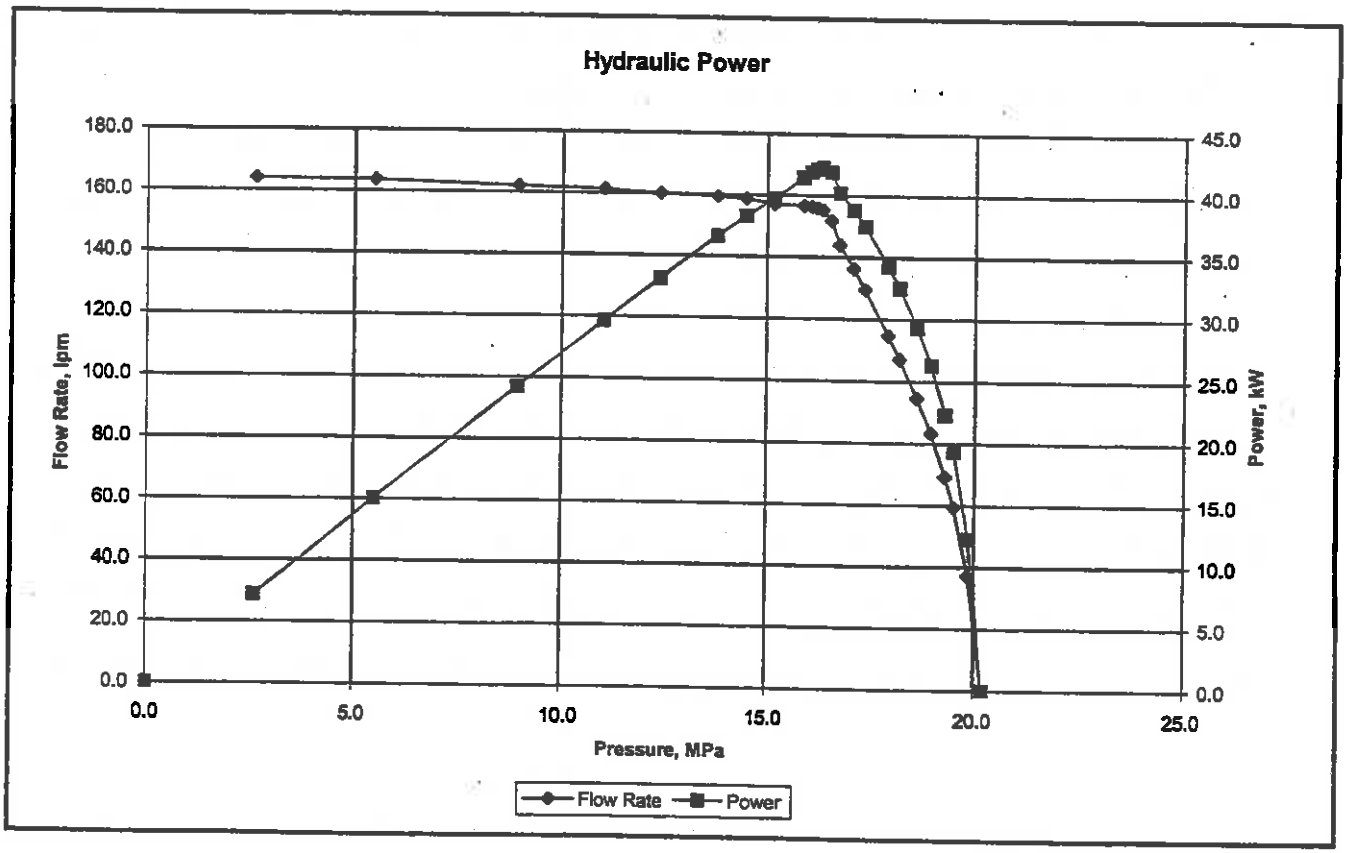
4.4 Hydraulic Power: High flow pump - one outlet

Date of Test:	14-Apr-00		
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:		
	20.13 MPa		
	2920 psig		
II.	Pump delivery rate at minimum pressure at rated engine speed:		
	121.9 l/min		
	32.2 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	71.2 l/min	18.20 MPa	21.6 kW
	18.8 gpm	*2640 psig*	*29.0 hp*
	Maximum hydraulic power:		
	104.9 l/min	15.51 MPa	27.1 kW
	27.7 gpm	*2250 psig*	*36.4 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	68.0 °C		
	154 °F		
	This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



4.5 Hydraulic Power: High flow pump - two outlets

Date of Test:	14-Apr-00		
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:		
	20.20 MPa		
	2930 psig		
II.	Pump delivery rate at minimum pressure at rated engine speed:		
	163.9 l/min		
	43.3 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	107.1 l/min	18.20 MPa	32.5 kW
	28.3 gpm	*2640 psig*	*43.6 hp*
	Maximum hydraulic power:		
	155.2 l/min	16.34 MPa	42.3 kW
	41.0 gpm	*2370 psig*	*56.7 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	64.5 °C		
	148 °F		
	This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



4.6 POWER LIFT TEST Category III, N.A. Quick attach linkage.
Date of test: 18 March 1998. Tests results extracted from OECD test 2/1792 on the John Deere 8300T, which is mechanically equivalent.

	Hitch points	Frame
Lower hitch points above ground - down position:	203 mm	220 mm
Vertical movement - without load:	826 mm	820 mm
with load:	813 mm	801 mm
Maximum corrected force exerted through full range:	61.9 kN	70.1 kN
Corresponding pressure:	17.8 MPa	17.8 MPa
Moment about rear axle:	76.2 kNm	129.0 kNm
Maximum mast tilt angle		4.0 degrees

Lifting height relative to horizontal position of lower links.

mm	-369	-352	-299	-201	-98	1	99	201	300	382	407	449
Corrected lift forces												
At the Hitch point kN	61.9	--	64.6	68.9	72.7	76.1	78.8	81.6	84.5	86.9	87.5	--
at the frame kN	--	71.0	70.0	70.9	71.7	72.4	72.7	72.7	--	72.1	70.8	70.1
Corresponding pressure 17.8 Mpa												

4.7.1 Results presentation according to OECD standard code (Annex 1)

Gear Number	Drawbar Pull	Measured Traveling Speed	Engine Speed	Number of Driving Wheels	Sound Level		
	kN	km/h	rev/min		dB(A)		
4.7.1.1 Unloaded test in the gear giving the forward speed nearest to 7.5 km/h							
9	0	7.93	2290	Track	74.2		
4.7.1.2 Unloaded test in the gear giving the maximum forward speed							
16	0	29.9	2280	Track	77.7		
4.7.1.3 Tests with a drawbar pull for which the tractor gives the maximum sound level [combination of gear giving the nearest nominal forward speed to 7.5 km/h and also in any gear with a sound level increase of at least 1 dB(A)]							
9	62.1	7.54	2214	Track	76.4		

4.7.2 Results presentation (without load) according to OECD standard code (Annex 2)

Gear Number	Drawbar Pull	Measured Traveling Speed	Engine Speed	Number of Driving Wheels	Sound Level		
	kN	km/h	rev/min		dB(A)		
4.7.2.1 Unloaded test in the gear giving the forward speed nearest to 7.5 km/h							
9	0	7.93	2290	Track	74.2		

4.8 Measurement of External Noise Level

Date of Test	April 18, 2000
Location of Test	Nebraska Tractor Test Laboratory
Sound Level Meter	Bruel and Kjaer 2236
Type of Track	Concrete Oval
Gear Number	16
Speed Prior to Acceleration	22.9 km / h
Noise Level	89.7 dB(A)

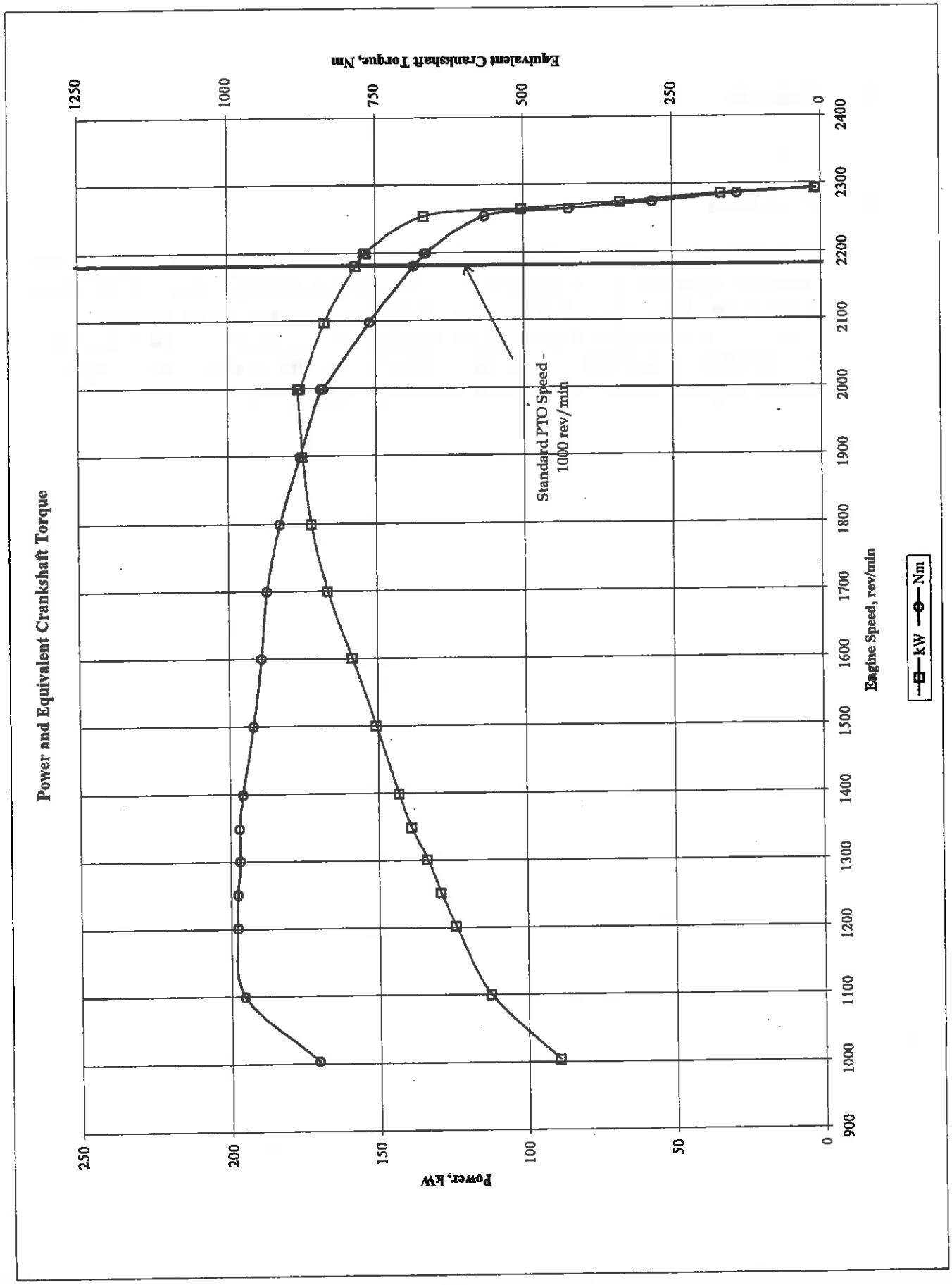
5. REPAIRS

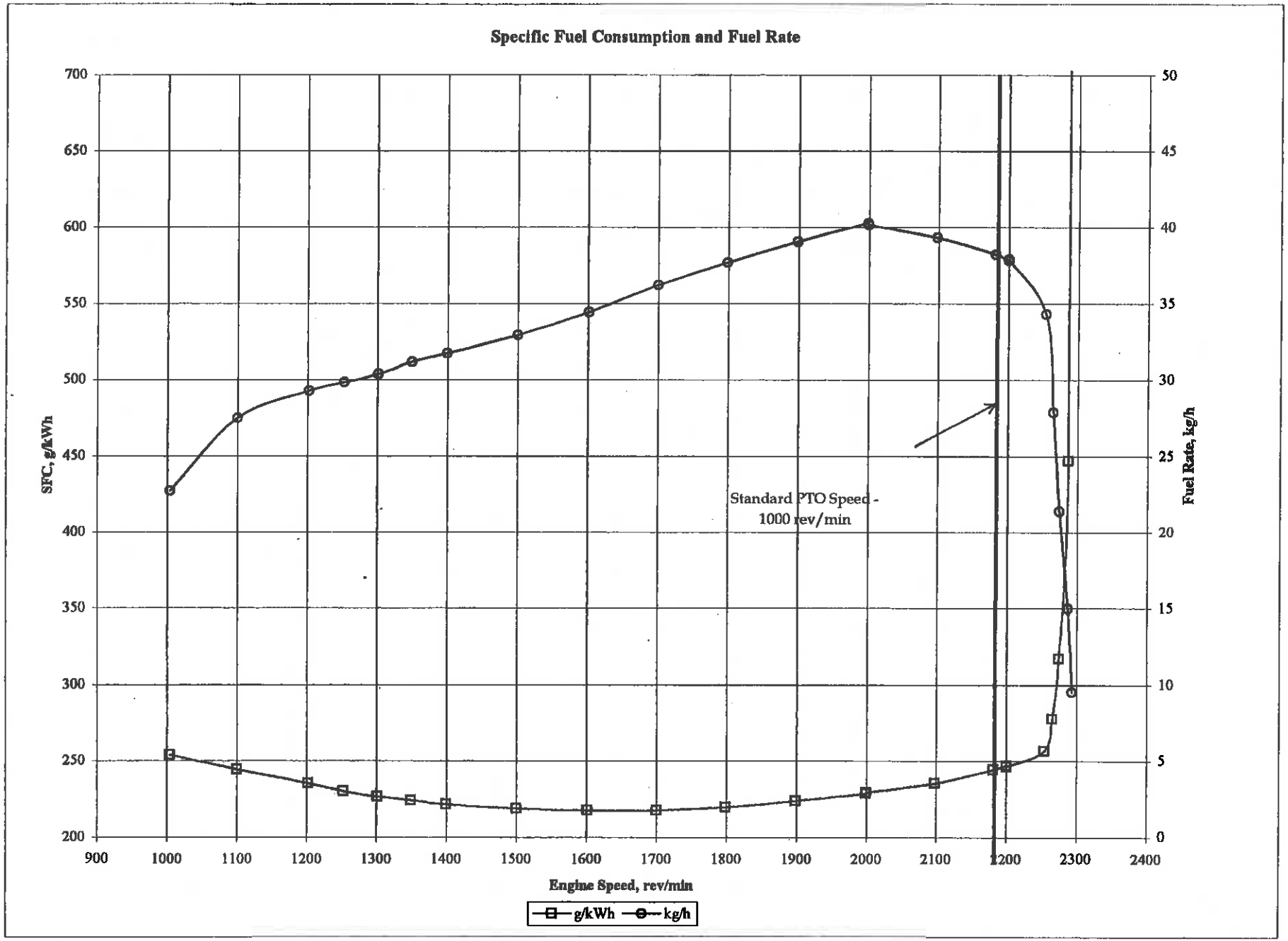
None

6. REMARKS

The 8310T engine has an electronic control system which provides a vehicle protection system to avoid overloading the drive train. This system provides three different engine power levels. The engine produces up to 165 PTO hp when the transmission is in forward gears 1 through 4 and the PTO is not engaged. The engine produces up to 185 PTO hp when the transmission is in the 5th forward gear and the PTO is not engaged. The engine produces up to 205 PTO hp in all other applications.

John Deere 8310T




Specific Fuel Consumption and Fuel Rate
SFC, g/kWh
Fuel Rate, kg/h
Engine Speed, rev/min
Standard PTO Speed - 1000 rev/min
g/kWh
kg/h
700
650
600
550
500
450
400
350
300
250
200
50
45
40
35
30
25
20
15
10
5
0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400

John Deere 8310T

