OECD APPROVAL # 1494
(Restricted code)
Date of approval: 24 November 1993

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

REPORT ON TEST IN ACCORDANCE WITH OECD RESTRICTED CODE (CODE II)

FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS

JOHN DEERE 7800 POWRQUAD MFWD 30 km/h (4WD)





MANUFACTURED BY: John Deere Waterloo Works Tractor Division
P.O.Box 270
Waterloo, Iowa 50704-0270

NEBRASKA TEST NO. 1668
Test dates: May-June 1993

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

This report has been approved by the OECD Coordinating Centre in Paris (CEMAGREF) on 24 November 1993

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SPECIFICATIONS OF TRACTOR.

Manufacturers name/address	John Deere Tractor Works P.O. Box 270 Waterloo, Iowa, USA
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 Eng. Ctr Waterloo, Iowa, USA
Duration of running in	132 hours
Location of Test	Tractor Testing Laboratory Lincoln, Nebraska,USA.

TRACTOR SPECIFICATIONS.

Make	John Deere
Model	7800H PowrQuad 30 km/h
Type	Unit construction, mechanical front wheel drive (MFWD)
Number of driving wheels	2 or 4
Serial Number	*RW7800H003219*
1st Serial number	*RW7800H001000*

ENGINE.

Make	John Deere
Model	6076TRW30
Type	Diesel; 4-stroke; turbocharged direct injection
Serial Number	*RG6076T510807*
Cylinders	
Number/Disposition	6, in-line, vertical
Bore/stroke	115.8 mm x 120.7 mm (4.56 in x 4.75 in)
Capacity	7627 ml (465.43 in^3)
Compression Ratio	15.5 - 1
Arrangement of valves	Overhead
Cylinder liners	Wet; replaceable
Super charging	
Make/Model/Type	Garret/RE42682/Exh. driven
(used on test)	Schwitzer/RE47828/Exh. driven
Pressure	104 kPa (15.1 psi)/Garrett 125 kPa (18.1 psi)/Schwitzer
Fuel System	
Feed system	Mechanical transfer pump
Make/Type/Model of filters	Stanadyne/paper element

Fuel tank capacity	344 l (91 gallon)
Fuel Cooler	Heat exchanger with air
Make/Model/Type Injection Pump	Bosch/A2000(RE41833)/Inline; electric shutoff
Pump Serial number	27239472
Production setting of pump Flow Rate (Rated Eng.Spd & Full Load)	27.8 +/- 0.9 kg/hr (61.3 +/- 2.0 lb/hr)
Make/Model/Type Injectors	Nippondenso/RE30083
Injection pressure	42 MPa (2896 psi)
Timing	27 degrees BTDC
Governor	
Make/Model/Type	Bosch/RSV/mechanical
Governed engine speed range	From 850 to 2275 rev/min
Rated engine speed	2100 rev/min
High-idle speed range	2275 +/- 50 rpm
Air Cleaner.	
Pre-cleaner Make/Model/type	Donaldson/RE34941/Strato-tube precleaner with aspirator
Air intake location	Under hood, front of tractor
Main Cleaner Make/Model/Type	Donaldson/RE34966/pleated paper
Location	Under hood
Secondary cleaner	Donaldson/RE34967/pleated paper
Maintenance indicator	Dash mounted warning light and audio signal
Lubrication system.	
Type of feed pump	Full pressure; positive displacement
Type of filters	Full flow
Number	One spin-on.
Oil cooler	Heat exchanger with engine coolant
Cooling system.	
Type of coolant	Liquid
Type of pump	Centrifugal, belt driven
Fan specification	Belt driven; Suction type; variable speed
Number of fan blades	6
Fan diameter	582 mm (22.9 in)
Coolant system capacity	25 l (25.8 US qt)
Type of temperature control	Two thermostats and variable speed fan
System pressure	69 kPa (10.0 psi)

Starting system.	
Make/Model/Type of starter	Nippondenso/RE43266/Solenoid engaged
Power Rating	4.0 kW (5.36 hp)
Cold starting aid	Electrical resistance plug in air intake
Safety device	Electrical lockout on gearshift
Electrical system.	
Voltage & grounding.	12 Volt DC;negative ground
Generator	
Make/Model/Type	Nippondenso/RE46608/Belt driven
Power rating	140 Amp at rated engine speed and 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 hr rating
Exhaust system.	
Muffler Make/Model/Type	Nelson/RE34315/Expansion chamber
Location	Horizontal muffler; under hood
Exhaust stack location	Vertical; right side of cab
TRANSMISSION.	
Clutch. (travel)	
Make/Model/Type	John Deere/Multiple plate/oil cooled
Number of plates	3, 5, or 8 depending on gear
Plate diameter	225 mm (8.86 in)
Method of operation	Hydraulic; pedal actuated
Gear Box.	
Make/Model/Type	John Deere/POWRQUAD
Arrangement, (tested)	Countershaft/planetary design consisting of a 4-speed gearbox with 4 mechanical synchronized ranges and 4-speed planetary gearset with multiple wet disc clutch and brake units
Specific Market (SM) option	Countershaft/planetary design consisting of a 5-speed gearbox with 5 mechanical synchronized ranges and 4-speed planetary gearset with multiple wet disc clutch and brake units

Number of gears	16 forward and 12 reverse operated by two levers (US version) 20 forward and 12 reverse operated by two levers (Specific market version)
Oil cooler	Heat exchanger with air
Available options	Creeper gear; MFWD
Rear axle and final drives.	
Make/Model/Type	John Deere/Crown wheel and pinion, differential and inboard planetary reduction
Differential Lock	
Type	Hydraulic
Method of engagement	Pedal operated switch
Method of disengagement	Self-disengaging with brake pedal operation
Front Axle and final drives.	
Make/Model/Type	John Deere/1150/Crown wheel and pinion, differential and inboard planetary reduction
Differential lock	
Type	Limited slip
Method of engagement	Self-engaging
Method of disengagement	Self-disengaging

Gear ratios and travel speeds. (US version)
(Tire dynamic radius of 870 mm (34.3 in) ISO 4251/1-1984)

Gear Number	Number of engine revolutions for one revolution of the driving wheels	Nominal travel speed at rated engine speed of 2100 rev/min [km/h]	[mph]
Forward			
A1	285.59	2.41	1.51
A2	237.02	2.91	1.82
A3	198.10	3.48	2.16
A4	161.65	4.26	2.66
B1	134.75	5.11	3.19
B2	111.83	6.16	3.85
B3	93.46	7.37	4.61
C1	84.67	8.13	5.08
B4	76.27	9.03	5.64
C2	70.27	9.80	6.13
C3	58.73	11.73	7.33
C4	47.92	14.37	8.98
D1	40.23	17.12	10.70
D2	33.39	20.63	12.90
D3	27.91	24.68	15.42
D4	22.77	30.25	18.90
Optional JDII version			
E1	30.87	22.31	13.94
E2	25.62	26.88	16.80
E3	21.41	32.17	20.11
E4	17.47	39.43	24.64
Reverse			
A1	240.90	2.86	1.79
A2	199.81	3.45	2.16
A3	166.99	4.12	2.58
A4	136.29	5.05	3.16
B1	113.66	6.06	3.79
B2	94.27	7.31	4.57
B3	78.79	8.74	5.46
C1	71.42	9.64	6.03
B4	64.34	10.71	6.69
C2	59.24	11.63	7.27
C3	49.51	13.91	8.69
C4	40.41	17.04	10.65

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

CREEPER GEAR

(Tire dynamic radius of 870 mm (34.3 in) ISO 4251/1-1984)

Gear Number	Number of engine revolutions for one revolution of the driving wheels	Nominal travel speed at rated engine speed of 2100 rev/min [km/h]	[mph]
Forward			
A1	2759.30	0.25	0.16
A2	2290.03	0.30	0.19
A3	1914.00	0.36	0.23
A4	1561.82	0.44	0.28
B1	1301.92	0.53	0.33
B2	1080.48	0.64	0.40
B3	902.99	0.75	0.47
C1	818.06	0.84	0.53
B4	736.90	0.93	0.58
C2	678.93	1.01	0.63
C3	567.44	1.21	0.76
C4	462.99	1.49	0.93
Reverse			
A1	2327.52	0.30	0.19
A2	1930.52	0.36	0.23
A3	1613.42	0.43	0.27
A4	1316.80	0.52	0.33
B1	1098.16	0.63	0.39
B2	910.81	0.76	0.47
B3	761.25	0.90	0.56
C1	690.04	1.00	0.62
B4	621.35	1.11	0.69
C2	572.36	1.20	0.75
C3	478.35	1.44	0.90
C4	390.43	1.76	1.10

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

POWER - TAKE - OFF.

Main Power-Take-Off.

Type	Independent
Method of engagement	Electro-hydraulically actuated multi-plate wet clutch operated by hand control knob
Number of shafts	One
Method of changing speeds	
JDP1 option	Reversible shaft
JDP2 option	Reversible shaft with 2 speeds selectable by hand lever

PTO Proportional to engine speed - Reversible shaft

Standard PTO-540 rev/min.

Location	Rear of tractor; center plane
Diameter of shaft	34.9 mm (1.375 in)
Number of splines	6; conforms to ISO 500/1979.
Height above ground	765 mm (30.1 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	620 mm (24.41 in)
PTO Speed at rated engine spd	547 rev/min
Engine speed at Std. PTO spd	2072 rev/min
Engine speed/PTO speed ratio	3.837:1
Power restriction	56 kW (75 hp)
Direction of rotation when viewed from shaft end	Clockwise.

Standard PTO-1000 rev/min.

Location	Rear of tractor; center plane
Diameter of shaft	34.9 mm (1.375 in)
Number of splines	21; conforms to ISO 500/1979.
Height above ground	765 mm (30.1 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	620 mm (24.41 in)
PTO Speed at rated engine spd	1007 rev/min
Engine speed at Std. PTO spd	2086 rev/min
Engine speed/PTO speed ratio	2.086:1
Power restriction	None
Direction of rotation when viewed from shaft end	Clockwise.

PTO Proportional to engine speed - Reversible shaft with two speeds

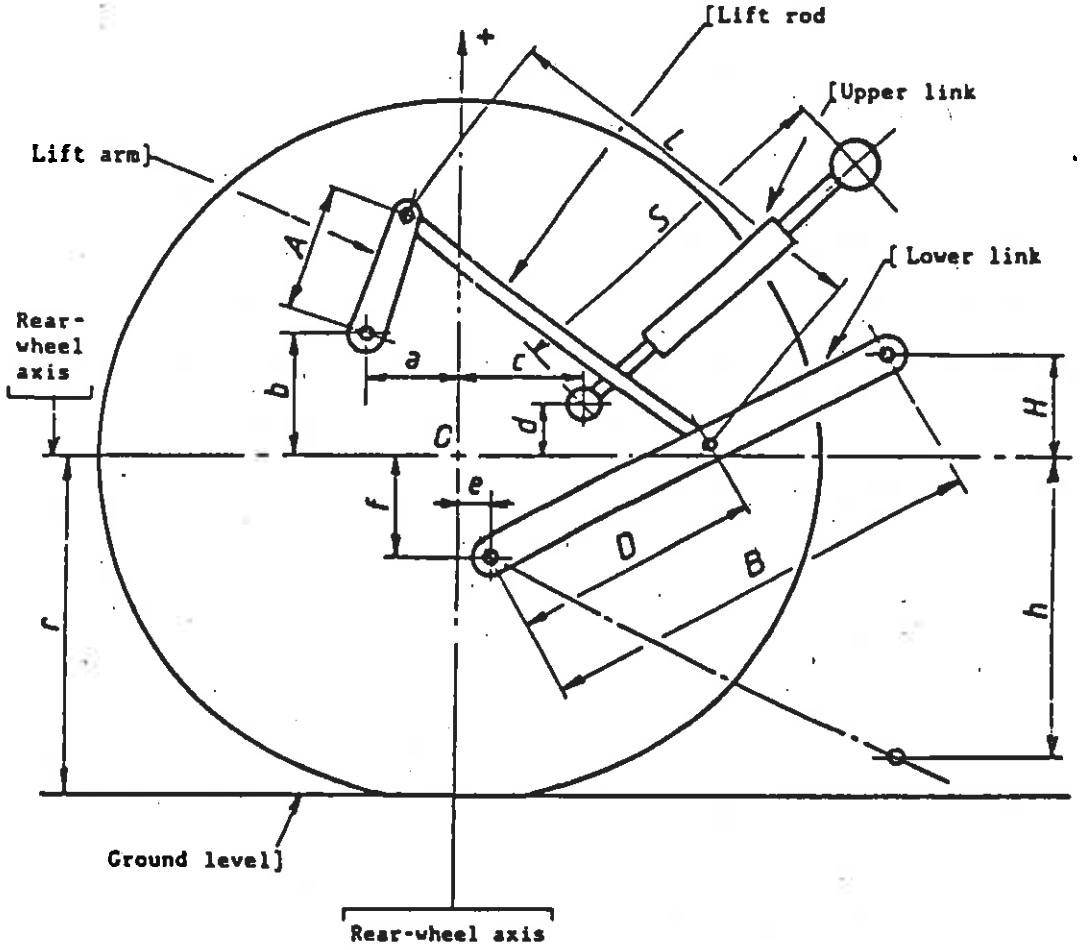
Standard PTO-540 rev/min.	
Location	Rear of tractor;center plane
Diameter of shaft	34.9 mm (1.375 in)
Number of splines	6 or 21; conforms to ISO 500/1979.
Height above ground	765 mm (30.1 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	620 mm (24.41 in)
PTO Speed at rated engine spd	656 rev/min
Engine speed at Std. PTO spd	1730 rev/min
Engine speed/PTO speed ratio	3.204:1
Power restriction	56 kW (75 hp)
Direction of rotation when viewed from shaft end	Clockwise.
Standard PTO-1000 rev/min.	
Location	Rear of tractor;center plane
Diameter of shaft	35 mm (1.375 in)
Number of splines	6 or 21; conforms to ISO 500/1979.
Height above ground	765 mm (30.1 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	620 mm (24.41 in)
PTO Speed at rated engine spd	1064 rev/min
Engine speed at Std. PTO spd	1973 rev/min
Engine speed/PTO speed ratio	1.973:1
Power restriction	None
Direction of rotation when viewed from shaft end	Clockwise.

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
Number/Type of cylinders	Two external, single acting
Type of linkage lock for transport	
Relief valve pressure setting	197-207 bar (2858-3003 psi)
Opening pressure of cylinder safety valve	240+/-10 bar (3483+/-146 psi)
Lift pump type	Axial piston, variable delivery and flow, pressure and flow compensated
Power transmission to pump	Spiral bevel gear drive
Type/Number of filters	Synthetic media ,screw-on canister/one
Location of oil reservoir	Differential case housing
Number/Type/Location of tapping points.	Up to 4 pairs of ISO standard couplings at rear of tractor.
Max. oil volume available for external cylinders.	19 liters (5.0 gal) regular; additional 11 liters (2.90 gallon) allowable overfill for total of 30 liters (7.9 gallons)

THREE POINT LINKAGE.

- Category 3N/2 or 2 in conformity with ISO 730/1-1990
- Category adaptor None



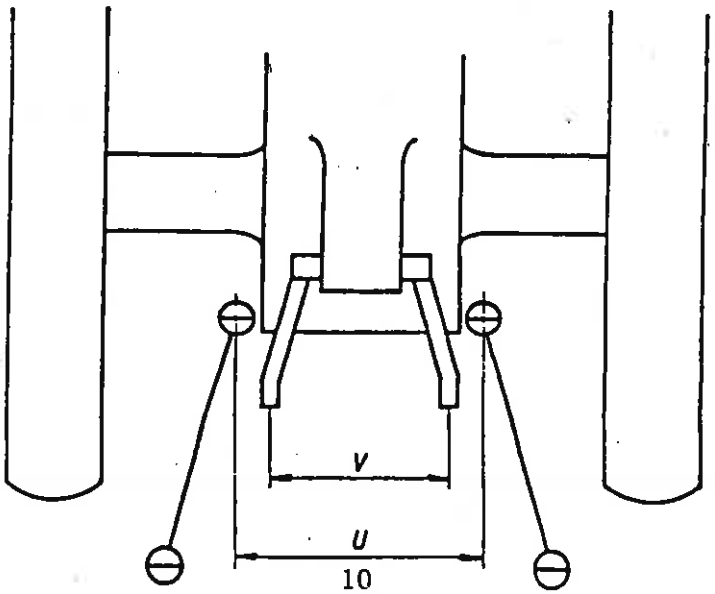


Table 1.1 - Linkage geometry dimensions *.
ISO Category III Hook Type Draft Link Ends

		Dimension or range [mm]	[in]	Settings used [mm]	[in]
Lift category		III		III	
Rear Tire - Radius Index	(r)	870	34.3	905	35.6
Front Tire - Radius Index	(r')	665	26.2	695	27.4
Length of lift arms	(A)	375	14.8	same	
Length of lower links	(B)	1011	39.8	same	
Distance of lift arm pivot from: horizontal	(a)	205	8.1	same	
rear wheel axis: vertical	(b)	588	23.1	same	
Horizontal distance between the 2 lower link points	(U)	520	20.5	same	
Horizontal distance between the 2 lift arm end points	(V)	680	26.8	same	
Length of upper link	(S)	609	24.0	692	27.3
	to	808	31.8		
Distance of upper link pivot point from rear wheel axis Top hole - horizontal	(c)	504	19.8	same	
- vertical	(d)	353	13.9	283	11.1
	and	283	11.1		
	and	200	7.9		
Distance of lower link pivot from: horizontal	(e)	195	7.7	same	
rear wheel axis: vertical	(f)	275	10.8	same	
Distance of lower link pivot points to lift rod pivot pts on lower links.	(D)	612	24.1	612	24.1
	or	688	27.1		
Length of lift rods	(L)	842	33.1	968	38.1
	to	1051	41.4		
Height of lower hitch points relative to rear wheel axis In low position	(h)	409	16.1	648	25.4
	to	802	31.6		
In high position	(H)	281	11.1	79	3.2
	to	49	1.9		
Height above ground of lower hitch points when locked in transport position.		792	31.2	984	38.8
	to	1123	44.2		

*Tire dynamic index of 905 mm (35.6 inch) - ISO 4251/1-1984

SWINGING DRAWBAR.

Type	Oscillating
Height above ground - maximum	579 mm (22.8 in)
- minimum	515 mm (20.3 in)
Adjustments	Invert drawbar; reposition clevis
Distance of hitch point from rear wheel axis-horizontal	920, 970, 1020 mm (36.2, 38.2, 40.2 in)
Distance of hitch point from PTO shaft end: Vertical	250 mm (9.8 in)
Horizontal	250-350-400 mm (9.8-13.8-15.7 in)
Lateral adjustment-Right side	190 mm (7.5 in)
Left side	190 mm (7.5 in)
Distance of pivot point from rear wheel axis-horizontal	27 mm (1.1 in)
Diameter of drawbar pin hole	33 mm (1.3 in)
Maximum vertical static permissible load	28 kN (6300 lb)-short position 21 kN (4725 lb)-intermediate 14 kN (3150 lb)-extended

STEERING.

Make/Model/Type	Eaton/RE34138/Hydrostatic
Method of operation	Steering wheel
Pump(s)	Power mode-same as main pump Manual mode-ground driven hydraulic pump
Ram(s)	Two external; double acting
Working pressure	170+/-5 bar (2466+/-72 psi)

BRAKE SYSTEM.

<u>Service brake.</u>	
Make/Model/Type	Vickers/RE29826/John Deere oil immersed disc
Method of operation	Hydraulic; operated by two pedals which can be locked together.
<u>Parking brake.</u>	
Type	Transmission lock.
Method of operation	Gear selector lever
<u>Trailer Brake</u>	None

WHEELS.

Number.	
Front	Two; Driving and steering
Rear	Two or four; Driving
Wheel base	2800 mm (110.3 in)

Track width adjustment

	Minimum [mm]	Minimum [in]	Maximum [mm]	Maximum [in]	Adjustment method
Front	1524	60.0	2235	80.0	Reversing wheels and offset lug rims
Rear	1518	59.8	2752	108.3	Reversing wheels and offset lug rims

PROTECTIVE STRUCTURE.

Make/Model/Type	John Deere/SG-050/ComfortGard
Manufacturer's name/address	John Deere Tractor Works Waterloo, Iowa, USA
Protective device	Cab; not tiltable
OECD approval number	CSS 0217/5

DRIVER'S SEAT.

Make/Model/Type	Sears/FS92-01/Air suspension; Personal posture cushioning
Type of suspension	Air
Type of damping	Air
Range of adjustment	
Longitudinal	167 mm (6.6 in)
Vertical	80 mm (3.1 in)

LIGHTING.

	Height above ground of center [mm]	Height above ground of center [in]	Size [mm]	Distance from outside edge to median plane of tractor. [mm]	Distance from outside edge to median plane of tractor. [in]
Head lights	1165	45.9	162x102	232	9.1
Side lights	1165	45.9	152x102	277	10.9
Rear lights	1980	78.0	127x76	892	35.1
Rear reflectors					
outside	1980	78.0	43x70	934	36.8
inside			43x80	807	31.8

TEST CONDITIONS.

Overall dimensions.

Length	Overall		4755 mm (187.2 in)
Width		Minimum	Maximum (singles) (duals)
	Short axle	2438/96.0	2645/104.1 NA
	Medium axle	2808/110.6	3015/118.7 3581/141.0
	Long axle	3012/118.6	3219/126.7 3785/149.0
Height - Top protective structure			3023 mm (119.0 in)
- Top of exhaust			2968 mm (116.9 in)
Ground clearance			515 mm (20.3 in)
Clearance-limiting part			Drawbar

Tractor Mass (with cab,full fuel tank).

		without driver [kg]	without driver [lb]	with driver [kg]	with driver [lb]
Unballasted	Front	2383	5354	2398	5287
	Rear	4467	9848	4527	9980
	Total	6850	15102	6925	15267
Ballasted	Front	2375	5236	2390	5269
	Rear	6127	13508	6187	13640
	Total	8502	18744	8577	18909

Max. permissible axle load-front 4800 kg (10582 lb)
-rear 10000 kg (22046 lb)

Ballast.

	Number of weights	Mass (total) [kg]	Mass (total) [lb]	Water [kg]	Water [lb]
Front	--	----	----	----	----
Rear	4	902	1989	----	----
Duals	2	750	1653	----	----

Tire Specifications.

	Front Wheels	Rear Wheels
Make	Goodyear	Goodyear
Dimensions	14.9R30	18.4R42
Number/Ply rating	2/3 star	2 or 4/2 star
Type	Radial	Radial
Max.load (tire mfg - 40 km/h)	2120 kg/tire (4675 lb/tire)	3150 kg/tire (6945 lb/tire)
(tire mfg - 30 km/h)	2270 kg/tire (5010 lb/tire)	3375 kg/tire (7440 lb/tire)
Inflation pressure(tire mfr)-max	210 kPa (30 psi)	170 kPa (24 psi)
-min	40 kPa (6 psi)	40 kPa (6 psi)
Dynamic Radius Index	665 mm/66.2 in	870 mm/34.3 in
Chosen track width-singles	1625 mm/64.0 in	1650 mm/65.0 in
-duals		3150 mm/120.1 in

Oils and Lubrication.

Capacity and change interval:

	Capacity liter	Capacity quart	Oil change hours	Filter change hours
Engine (w/o filter)	17.0	18.0	250	250
Front axle	8.5	9.0	1500	
Transmission, final drive, rear axle and hydraulics	102.3	108.2	1500	Annually or as required
Final drive, front	1.9	2.0	1500	

Oil and Lubricant specifications:

	Recommended	Used during test
Engine oil		
Type	John Deere, Torq-Gard Supreme Plus 50; SAE 15W-40	same
Viscosity	12.8 cSt at 100°C	
Classification	API CE or CD; CCMD specification D5 or D6	
Transmission		
Type	John Deere Hy-Gard; J20C SAE 10W-30	same
Viscosity	58 cSt at 40°C	
Classification	NA	
Hydraulic fluid	Same as transmission	same
Front axle and hubs		
Type	John Deere EXTREME-GARD SAE 80W-90	same
Viscosity	13.5 cSt at 100°C	
Classification	API GL-5	
Steering system	Same as transmission	same
Grease	John Deere MOLY HIGH TEMPERATURE EP GREASE	same
Number of lube points	24	

Fuel

Type/grade	Premier; Grade 2-D, in conformity with the national standard
Density (Pto test)	0.834 kg/l at 15° C
(Drawbar test)	same as Pto test.
Cetane number	53.9
Viscosity	2.31 cSt at 37.8° C

COMPULSORY TESTS

1. MAIN POWER TAKE-OFF

Date: 19-May-93 Location: UNL Tractor Test Lab, Lincoln, NE, U.S.A.

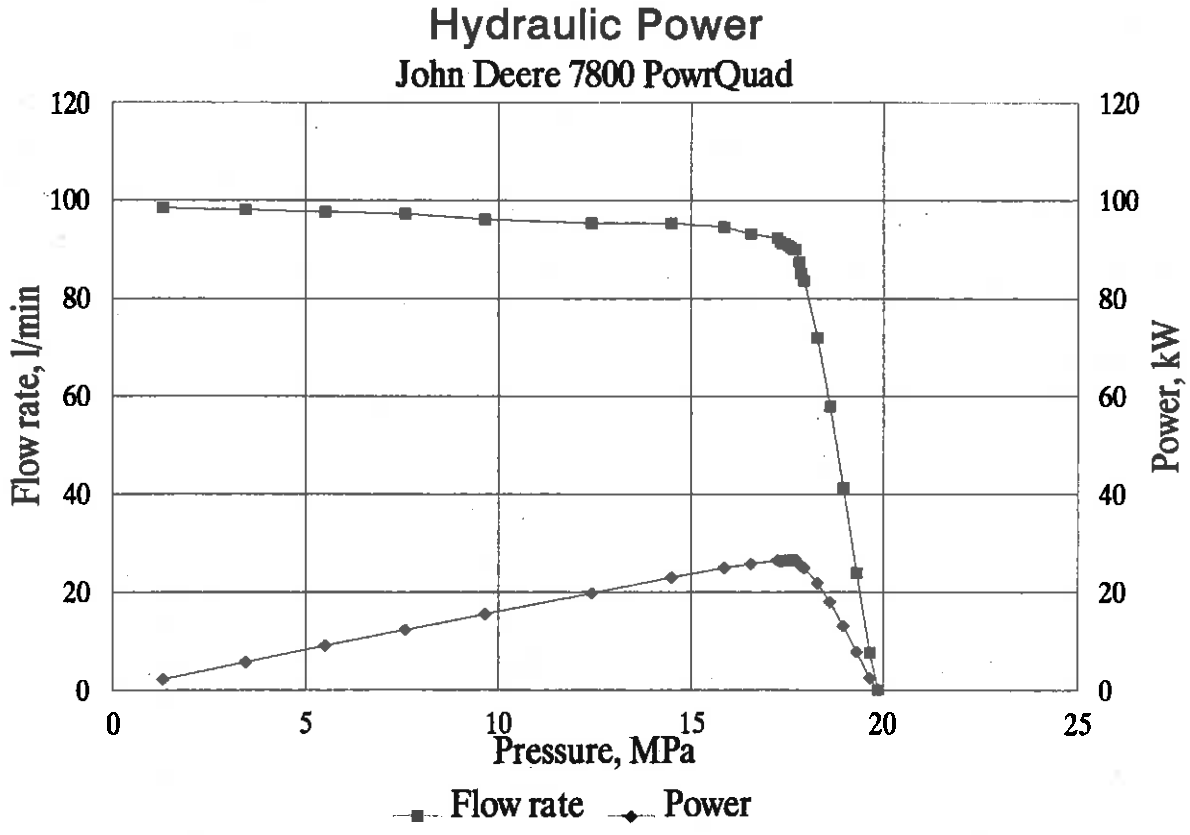
Type of dynamometer: Eddy current, Eaton Fuel density: 6.958 lb/gal

Power kW *hp*	Eng rev/min	PTO rev/min	l/h *gal/h*	kg/h *lb/h*	kg/kW-h. *lb/hp-h*	kW-h /l *hp-h /gal*
1.1 Maximum Power – 2 hours						
118.44	1696	813	34.17	28.49	0.241	3.47
158.83			*9.03*	*62.80*	*0.395*	*17.60*
1.2 Power at Rated Engine Speed – 1 hour						
109.68	2101	1007	33.20	27.68	0.252	3.30
147.08			*8.77*	*61.03*	*0.415*	*16.77*
1.3 Power at Standard Power Take-Off Speed – 1 hour						
109.68	2101	1007	33.20	27.68	0.252	3.30
147.08			*8.77*	*61.03*	*0.415*	*16.77*
1.4 Part Loads						
1.4.1 Torque at maximum power at rated engine speed						
109.68	2101	1007	33.20	27.68	0.252	3.30
147.08			8.77	61.03	0.415	16.77
1.4.2 85% of torque obtained in 1.4.1						
96.19	2166	1038	29.70	24.77	0.257	3.24
128.99			*7.85*	*54.60*	*0.423*	*16.44*
1.4.3 75% of torque defined in 1.4.2						
73.64	2207	1059	25.13	20.96	0.285	2.93
98.75			*6.64*	*46.20*	*0.468*	*14.87*
1.4.4 50% of torque defined in 1.4.2						
50.13	2248	1078	20.24	16.87	0.337	2.48
67.22			*5.35*	*37.20*	*0.553*	*12.57*
1.4.5 25% of torque defined in 1.4.2						
25.00	2260	1084	14.69	12.25	0.490	1.70
33.53			*3.88*	*27.00*	*0.805*	*8.64*
1.4.6 unloaded						
0.78	2296	1101	9.79	8.16	10.448	0.08
1.05			*2.59*	*18.00*	*17.176*	*0.41*
1.5 Part Loads at Standard Power Take-off Speed						
1.5.1 Torque at maximum power						
109.68	2101	1007	33.20	27.68	0.252	3.30
147.08			*8.77*	*61.03*	*0.415*	*16.77*
1.5.2 85% of torque obtained in 1.5.1						
96.19	2166	1038	29.70	24.77	0.257	3.24
128.99			*7.85*	*54.60*	*0.423*	*16.44*
1.5.3 75% of torque defined in 1.5.2						
73.64	2207	1059	25.13	20.96	0.285	2.93
98.75			*6.64*	*46.20*	*0.468*	*14.87*
1.5.4 50% of torque defined in 1.5.2						
50.13	2248	1078	20.24	16.87	0.337	2.48
67.22			*5.35*	*37.20*	*0.553*	*12.57*
1.5.5 25% of torque defined in 1.5.2						
25.00	2260	1084	14.69	12.25	0.490	1.70
33.53			*3.88*	*27.00*	*0.805*	*8.64*
1.5.6 unloaded						
0.78	2296	1101	9.79	8.16	10.448	0.08
1.05			*2.59*	*18.00*	*17.176*	*0.41*

No load maximum engine speed:	2296 rev/min	
Equivalent torque at rated speed:	499 N-m	*368 lb-ft*
Equivalent torque at maximum power:	667 N-m	*492 lb-ft*
(engine speed:	1696 rev/min)	
Maximum equivalent crankshaft torque:	699 N-m	*515 lb-ft*
(engine speed:	**1299 rev/min)**	
Mean Dry bulb:	25 deg C	*76 deg F*
Wet bulb:	18 deg C	*64 deg F*
Relative humidity:	50 %	
Pressure:	98.04 kPa	*28.95 in Hg*
Maximum Coolant:	103 deg C	*218 deg F*
Engine oil:	115 deg C	*239 deg F*
Fuel:	48 deg C	*118 deg F*
Air intake:	28 deg C	*83 deg F*
Transmission/hydraulic oil:	58 deg C	*136 deg F*
Intake manifold pressure at rated speed:	103 kPa	*15.0 psig*
Intake manifold pressure at maximum power:	107 kPa	*15.5 psig*

Hydraulic Power Test

Date of test: 28–May–93					
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 psi					
II. Pump delivery rate at minimum pressure and rated engine speed:					
98.4 l/min					
26.0 gpm					
III. Flow rate, pressure, power:					
90% of relief valve setting:					
	85.2 l/min		17.86 MPa	25.35 kW	
	22.5 gpm		*2590 psi*	*34.00 hp*	
Maximum hydraulic power:					
	90.1 l/min		17.72 MPa	26.61 kW	
	23.8 gpm		*2570 psi*	*35.69 hp*	
IV. Hydraulic fluid temperature at flow meter:					
65 C					
150 F					



2.2 POWER LIFT TEST. Test A-Upper link in middle hole on tractor (for settings see p.1)

Date of test: 15 June 1993

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	257/10.1	206/8.1
Vertical movement: without load:	[mm/in]	757/29.8	889/35.0
Vertical movement: with load:	[mm/in]	729/28.7	878/34.6
Maximum corrected force through full range:	[kN/lb]	49.4/11111	45.2/10161
Corresponding pressure:	[kPa/psi]	17871/2592	
Moment about rear axle:	[kN.m/lb.ft]	59.6/43979	82.1/60543
Maximum mast tilt angle:	[deg]	--	6.9

Lifting height relative to horizontal position of lower links.

[mm]	-424	-373	-300	-201	-99
[in]	-16.7	-14.7	-11.8	-7.9	-3.9
Corrected lift forces					
Hitch point. [kN]	--	49.4	52.8	56.5	59.0
Hitch point. [lb]	--	11111	11867	12704	13253
at frame [kN]	48.6	--	49.8	51.5	52.4
at frame [lb]	10935	--	11196	11583	11772

Lifting height relative to horizontal position of lower links.

[mm]	0	99	200	290	356	454
[in]	0	3.9	7.9	11.4	14.0	17.9
Corrected lift forces						
Hitch point [kN]	61.4	62.9	64.8	66.8	67.7	--
Hitch point [lb]	13793	14144	14558	15026	15215	--
at frame [kN]	52.4	51.7	50.4	49.8	48.7	45.2
at frame [lb]	11772	11619	11340	11196	10944	10161

OECD Drawbar Data (SI)

Date of tests: 25-May-93 Fuel density: 0.834 kg/l
Type of track: Concrete Test number: 1668

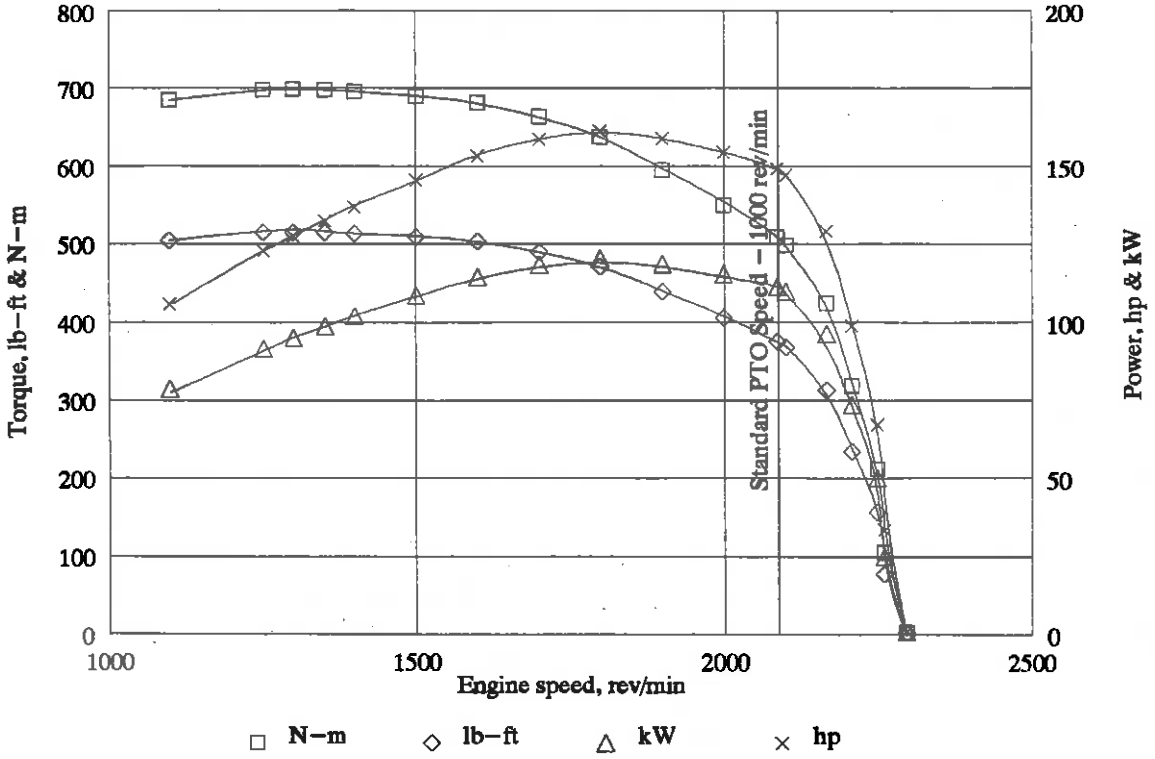
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg C					Rel humidity	Pressure
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (unballasted, fwa at 1700 rev/min)					Tire pressure:		110 kPa, rear		159 kPa, front		Drawbar height:		546 mm	
A4	68.55	64.41	3.83	2174	14.74%	0.343	2.43	44	86	102	17	13	64%	98.71
B1	83.31	65.63	4.57	2151	14.34%	0.322	2.59	43	88	99	17	12	55%	98.71
B2	96.81	62.44	5.58	2048	8.79%	0.288	2.89	45	92	107	17	12	55%	98.71
B3	103.16	58.64	6.34	1909	7.24%	0.274	3.04	45	95	110	17	13	64%	98.71
C1	104.81	55.10	6.85	1845	5.89%	0.269	3.10	45	96	109	18	13	57%	98.78
B4	105.42	51.53	7.37	1775	5.16%	0.268	3.11	45	98	111	18	13	57%	98.78
C2	106.44	49.74	7.70	1706	4.75%	0.265	3.15	44	97	111	18	13	57%	98.78
C3	106.21	40.99	9.33	1701	3.58%	0.267	3.13	43	96	111	18	13	57%	98.78
C4	105.30	32.89	11.52	1699	2.81%	0.270	3.08	42	98	111	19	14	58%	98.75
D1	103.84	27.51	13.59	1698	2.29%	0.273	3.06	44	98	111	19	14	58%	98.75
II. Part loads (unballasted, fwa)														
II.1 in selected gear at maximum power														
C2	97.41	36.25	9.67	2100	3.24%	0.282	2.95	45	94	110	19	14	58%	98.75
II.1.1 75% of pull at maximum power at rated speed														
C2	76.26	27.18	10.10	2173	2.29%	0.302	2.76	46	90	104	21	14	46%	98.75
II.1.2 50% of pull at maximum power at rated speed														
C2	52.30	18.17	10.36	2214	1.50%	0.353	2.36	45	87	102	21	14	46%	98.75
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
C4	76.19	27.21	10.08	1478	2.12%	0.282	2.95	43	86	102	21	14	46%	98.75
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
C4	52.30	18.13	10.38	1512	1.41%	0.299	2.79	44	88	95	21	14	46%	98.75
II.2 in selected gear nearest to 7.5 km/h														
B3	98.43	49.48	7.16	2098	4.50%	0.280	2.97	45	91	105	17	13	64%	98.71
II.2.1 75% of pull at maximum power at rated speed														
B3	77.50	37.03	7.53	2175	3.07%	0.298	2.79	45	90	104	19	14	58%	98.75
II.2.2 50% of pull at maximum power at rated speed														
B3	53.27	24.69	7.77	2216	2.03%	0.344	2.42	45	87	101	19	14	58%	98.75
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
C2	77.50	37.02	7.54	1637	3.15%	0.271	3.07	43	92	104	19	14	58%	98.75
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
C2	53.27	24.71	7.76	1667	2.03%	0.297	2.81	42	84	98	21	14	46%	98.75

OECD Drawbar Data (US)

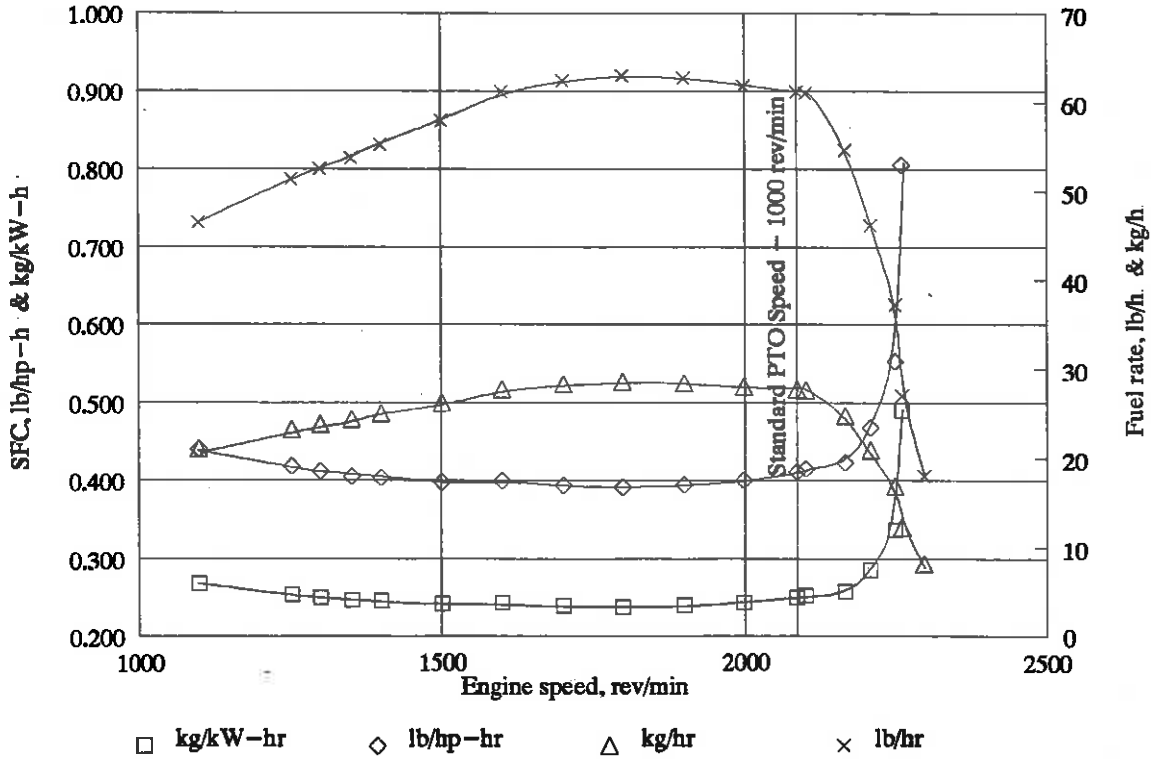
Date of tests: 25-May-93 Fuel density: 6.958 lb/gal
Type of track: Concrete Test number: 1668

Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg F					Rel humidity	Pressure
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		in Hg
I. Maximum Power (unballasted, fwa at 1700 rev/min)					Tire pressure:		16 psig, rear		23 psig, front		Drawbar height:		21.5 in	
A4	91.93	14480	2.38	2174	14.74%	0.563	12.35	112	186	216	63	55	64%	29.15
B1	111.72	14755	2.84	2151	14.34%	0.529	13.16	110	190	211	62	54	55%	29.15
B2	129.82	14037	3.47	2048	8.79%	0.474	14.68	114	198	224	62	54	55%	29.15
B3	138.34	13183	3.94	1909	7.24%	0.451	15.44	114	204	231	63	55	64%	29.15
C1	140.56	12386	4.26	1845	5.89%	0.443	15.71	113	204	229	64	55	57%	29.17
B4	141.37	11586	4.58	1775	5.16%	0.441	15.78	113	208	232	64	55	57%	29.17
C2	142.73	11183	4.79	1706	4.75%	0.436	15.98	111	207	232	64	55	57%	29.17
C3	142.43	9215	5.80	1701	3.58%	0.438	15.87	110	204	233	64	55	57%	29.17
C4	141.21	7395	7.16	1699	2.81%	0.445	15.65	108	209	233	67	57	58%	29.16
D1	139.25	6185	8.44	1698	2.29%	0.448	15.52	111	208	231	67	57	58%	29.16
II. Part loads (unballasted, fwa)														
II.1 in selected gear at maximum power														
C2	130.63	8149	6.01	2100	3.24%	0.464	14.99	112	201	230	67	57	58%	29.16
II.1.1 75% of pull at maximum power at rated speed														
C2	102.27	6110	6.28	2173	2.29%	0.497	14.01	114	195	219	69	58	46%	29.16
II.1.2 50% of pull at maximum power at rated speed														
C2	70.14	4084	6.44	2214	1.50%	0.581	11.98	113	188	215	69	58	46%	29.16
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
C4	102.18	6118	6.26	1478	2.12%	0.464	14.99	109	188	215	69	58	46%	29.16
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
C4	70.13	4077	6.45	1512	1.41%	0.492	14.14	111	191	203	69	58	46%	29.16
II.2 in selected gear nearest to 4.6 mph														
B3	131.99	11124	4.45	2098	4.50%	0.461	15.09	113	196	221	63	55	64%	29.15
II.2.1 75% of pull at maximum power at rated speed														
B3	103.93	8325	4.68	2175	3.07%	0.490	14.19	113	195	220	67	57	58%	29.16
II.2.2 50% of pull at maximum power at rated speed														
B3	71.44	5551	4.83	2216	2.03%	0.565	12.31	114	189	215	67	57	58%	29.16
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
C2	103.93	8323	4.68	1637	3.15%	0.446	15.61	110	198	219	67	57	58%	29.16
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
C2	71.44	5555	4.82	1667	2.03%	0.488	14.27	108	184	209	69	58	46%	29.16

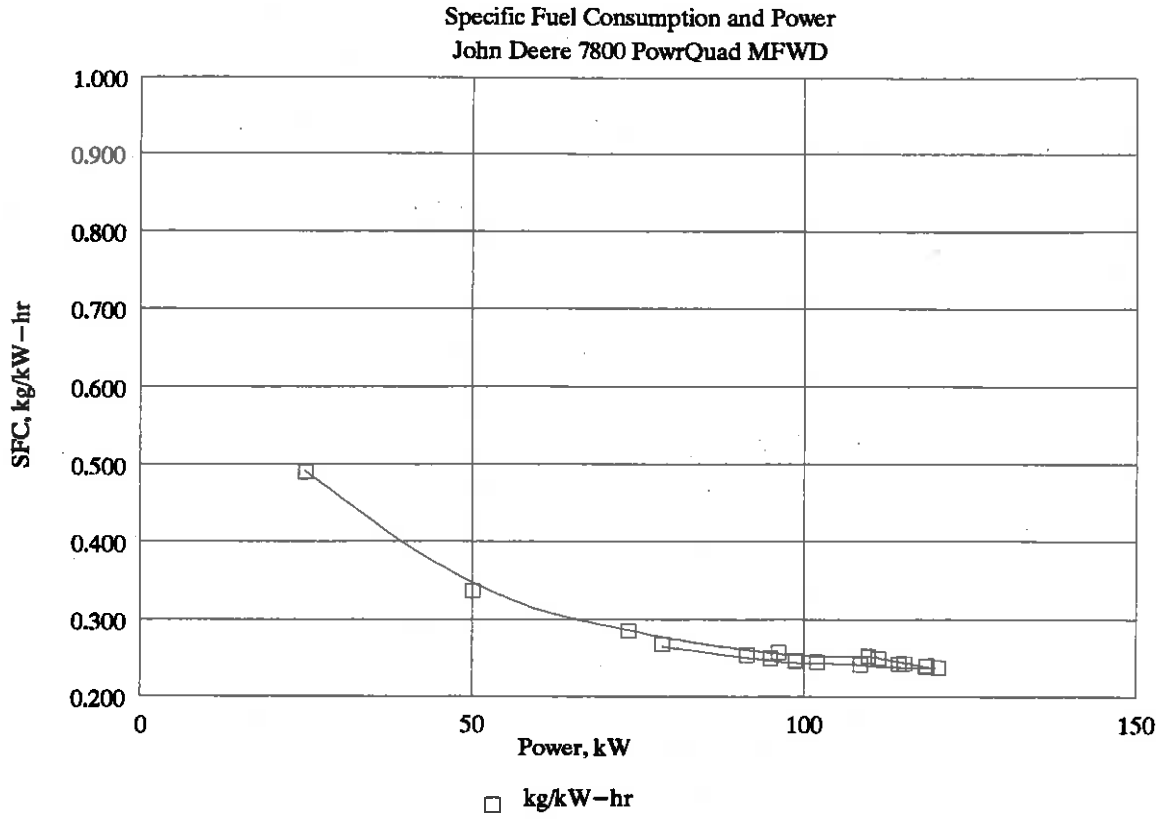
Power and Equivalent Crankshaft Torque
John Deere 7800 PowrQuad MFWD



Specific Fuel Consumption and Fuel Rate
John Deere 7800 PowrQuad MFWD



1668


Specific Fuel Consumption and Power
John Deere 7800 PowrQuad MFWD
SFC, kg/kW−hr
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0
50
100
150
Power, kW
kg/kW−hr

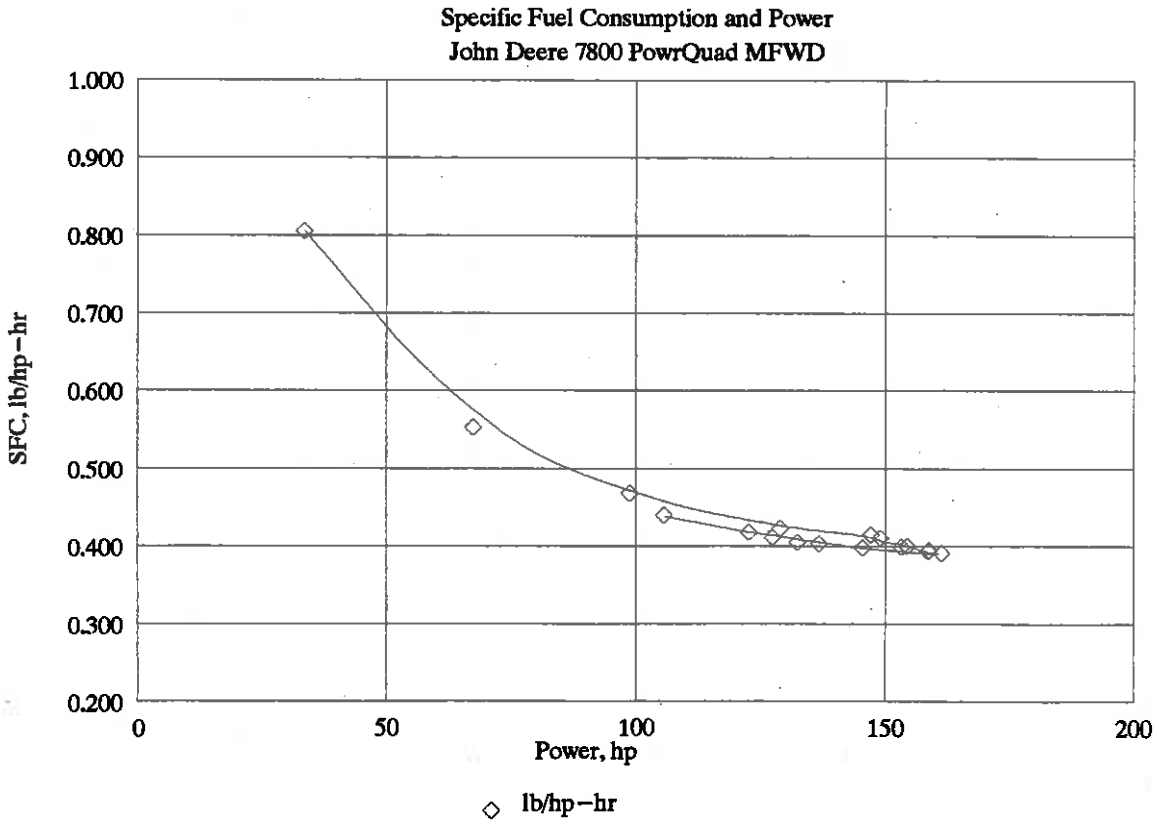

Specific Fuel Consumption and Power
John Deere 7800 PowrQuad MFWD
SFC, lb/hp−hr
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0
50
100
150
200
Power, hp
lb/hp−hr

Table 1.2 - Linkage geometry dimensions *.
ISO Category III Hook Type Draft Link Ends

		Dimension or range [mm]	[in]	Settings used [mm]	[in]
Lift category		III		III	
Rear Tire - Radius Index	(r)	870	34.3	905	35.6
Front Tire - Radius Index	(r')	665	26.2	695	27.4
Length of lift arms	(A)	375	14.8	same	
Length of lower links	(B)	1011	39.8	same	
Distance of lift arm pivot from: horizontal	(a)	205	8.1	same	
rear wheel axis: vertical	(b)	588	23.1	same	
Horizontal distance between the 2 lower link points	(U)	520	20.5	same	
Horizontal distance between the 2 lift arm end points	(V)	680	26.8	same	
Length of upper link	(S)	609	24.0	670	26.4
	to	808	31.8		
Distance of upper link pivot point from rear wheel axis					
Top hole - horizontal	(c)	504	19.8	same	
- vertical	(d)	353	13.9	353	13.9
	and	283	11.1		
	and	200	7.9		
Distance of lower link pivot from: horizontal	(e)	195	7.7	same	
rear wheel axis: vertical	(f)	275	10.8	same	
Distance of lower link pivot points to lift rod pivot pts on lower links.	(D)	612	24.1	688	27.1
	or	688	27.1		
Length of lift rods	(L)	842	33.1	1022	40.3
	to	1051	41.4		
Height of lower hitch points relative to rear wheel axis					
In low position	(h)	420	16.5	646	25.4
	to	745	29.3		
In high position	(H)	270	10.6	17	0.7
	to	37	1.5		
Height above ground of lower hitch points when locked in transport position.		784	30.9	920	36.3
	to	1111	43.7		

*Tire dynamic index of 905 mm (35.6 inch) - ISO 4251/1-1984

2.2 POWER LIFT TEST. Test B - Upper link in top hole on tractor
(for settings see p. 23)

Date of test: 15 June 1993

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	259/10.2	261/10.3
Vertical movement: without load:	[mm/in]	692/27.3	740/29.1
Vertical movement: with load:	[mm/in]	671/26.4	712/28.0
Maximum corrected force through full range:	[kN/lb]	55.5/12488	57.4/12915
Corresponding pressure:	[kPa/psi]	17871/2592	
Moment about rear axle:	[kN.m/lb.ft]	67.0/49430	104.3/76952
Maximum mast tilt angle:	[deg]	--	5.0

Lifting height relative to horizontal position of lower links.

	[mm]	-371	-369	-300	-201	-99
	[in]	-14.6	-14.5	-11.8	-7.9	-3.9
Corrected lift forces						
Hitch point.	[kN]	55.5	--	59.2	63.0	65.4
	[lb]	12488	--	13316	14162	14702
at frame	[kN]	--	63.3	63.0	63.5	63.4
	[lb]	--	14229	14153	14270	14256

Lifting height relative to horizontal position of lower links.

	[mm]	0	99	201	299	343
	[in]	0	3.9	7.9	11.8	13.5
Corrected lift forces						
Hitch point	[kN]	68.0	69.3	70.8	68.5	--
	[lb]	15278	15575	15908	15395	--
at frame	[kN]	62.9	61.8	60.1	58.6	57.4
	[lb]	14148	13887	13509	13176	12915

OPTIONAL TEST - Ballasted, Front Drive Disengaged

OECD Drawbar Data (SI)

Date of tests:	03-Jun-93	Fuel density:	0.834 kg/l
Type of track:	Concrete	Test number:	1668

Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SPE	Temperature, deg C					Rel hum-idity	Pressure
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (ballasted, 2wd at 2100 rev/min)					Tire pressure:		83 kPa, rear		159 kPa, fron		Drawbar height:		572 mm	
A4	79.51	75.70	3.78	2144	14.40%	0.326	2.56	45	87	99	16	13	71%	97.39
B1	96.25	71.19	4.87	2100	6.16%	0.287	2.91	46	91	103	16	13	71%	97.39
B2	98.13	58.84	6.00	2099	3.86%	0.280	2.98	46	95	104	16	13	71%	97.39
B3	100.11	49.52	7.28	2100	2.76%	0.277	3.01	45	93	96	14	12	79%	97.36
C1	98.99	44.23	8.06	2099	2.41%	0.280	2.98	46	93	102	13	11	79%	97.49
B4	97.62	39.20	8.97	2100	2.15%	0.283	2.95	46	95	99	14	13	90%	97.39
C2	98.26	36.26	9.76	2102	1.89%	0.281	2.97	45	94	110	13	11	79%	97.49
C3	97.76	30.09	11.70	2098	1.54%	0.283	2.95	45	92	108	14	11	70%	97.49
C4	94.19	23.55	14.40	2101	1.36%	0.291	2.86	46	94	109	13	11	79%	97.49
II. Part loads (ballasted, 2wd)														
II.1 in selected gear at maximum power														
B3	100.11	49.52	7.28	2100	2.76%	0.277	3.01	45	93	96	14	12	79%	97.36
II.1.1 75% of pull at maximum power at rated speed														
B3	77.99	37.09	7.57	2170	2.07%	0.298	2.80	45	89	100	17	14	64%	97.36
II.1.2 50% of pull at maximum power at rated speed														
B3	53.42	24.75	7.77	2213	1.45%	0.346	2.41	44	86	100	16	14	81%	97.36
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
C2	78.00	37.01	7.59	1637	2.15%	0.270	3.08	43	90	101	16	14	81%	97.36
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
C2	53.39	24.75	7.76	1664	1.54%	0.297	2.81	41	86	98	16	14	81%	97.36

OECD Drawbar Data (US)

Date of tests:	03-Jun-93	Fuel density:	6.958 lb/gal
Type of track:	Concrete	Test number:	1668

Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SPE	Temperature, deg F					Rel hum-idity	Pressure
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		in Hg
I. Maximum Power (ballasted, 2wd at 2100 rev/min)					Tire pressure:		12 psig, rear		23 psig, fron		Drawbar height:		22.5 in	
A4	106.63	17019	2.35	2144	14.40%	0.536	12.97	114	189	210	60	56	71%	28.76
B1	129.08	16004	3.02	2100	6.16%	0.471	14.76	115	196	218	60	56	71%	28.76
B2	131.59	13228	3.73	2099	3.86%	0.460	15.14	115	204	220	60	56	71%	28.76
B3	134.25	11133	4.52	2100	2.76%	0.455	15.28	114	200	205	58	54	79%	28.75
C1	132.75	9943	5.01	2099	2.41%	0.460	15.13	114	199	216	55	52	79%	28.79
B4	130.91	8812	5.57	2100	2.15%	0.465	14.96	116	203	210	58	55	90%	28.76
C2	131.76	8152	6.06	2102	1.89%	0.462	15.08	114	201	230	55	52	79%	28.79
C3	131.10	6765	7.27	2098	1.54%	0.465	14.95	114	198	227	58	52	70%	28.79
C4	126.32	5295	8.95	2101	1.36%	0.479	14.54	115	201	229	55	52	79%	28.79
II. Part loads (ballasted, 2wd)														
II.1 in selected gear at maximum power														
B3	134.25	11133	4.52	2100	2.76%	0.455	15.28	114	200	205	58	54	79%	28.75
II.1.1 75% of pull at maximum power at rated speed														
B3	104.59	8339	4.70	2170	2.07%	0.490	14.19	113	193	212	62	57	64%	28.75
II.1.2 50% of pull at maximum power at rated speed														
B3	71.64	5563	4.83	2213	1.45%	0.568	12.24	111	187	212	61	57	81%	28.75
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
C2	104.59	8320	4.71	1637	2.15%	0.444	15.66	109	195	214	61	57	81%	28.75
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
C2	71.60	5565	4.82	1664	1.54%	0.488	14.26	107	187	209	61	57	81%	28.75

OPTIONAL TEST - Ballasted,Front Drive Engaged

OECD Drawbar Data (SI)

Date of tests:		03-Jun-93		Fuel density:		0.834 kg/l								
Type of track:		Concrete		Test number:		1668								
Gear	**Power**	**Pull**	**Speed**	**Engine speed**	**Slip**	**SFC**	**SFE**	**Temperature, deg C**					**Rel hum-idity**	**Pressure**
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (ballasted, fwa at 1700 rev/min)					Tire pressure:		83 kPa, rear		159 kPa, fron		Drawbar height:		572 mm	
A4	87.60	84.75	3.72	2103	14.19%	0.315	2.64	46	91	97	14	13	90%	97.39
B1	100.57	79.54	4.55	1976	7.00%	0.280	2.98	46	92	104	16	13	71%	97.39
B2	104.97	76.18	4.96	1768	6.05%	0.271	3.08	45	98	106	16	13	71%	97.39
B3	107.24	66.11	5.84	1699	3.83%	0.265	3.15	45	97	98	14	12	79%	97.36
C1	107.84	59.78	6.49	1701	3.06%	0.264	3.16	46	97	104	13	11	79%	97.49
B4	107.57	53.55	7.23	1701	2.89%	0.265	3.14	45	97	97	14	13	90%	97.39
C2	107.29	49.21	7.85	1696	2.63%	0.265	3.15	45	96	110	13	11	79%	97.49
C3	107.44	40.85	9.47	1701	2.03%	0.265	3.15	45	97	109	13	12	89%	97.49
C4	105.71	32.69	11.64	1700	1.59%	0.269	3.10	45	96	107	13	12	89%	97.49
D1	103.55	27.21	13.70	1700	1.41%	0.276	3.03	45	98	108	14	12	79%	97.36

OECD Drawbar Data (US)

Date of tests:		03-Jun-93		Fuel density:		6.958 lb/gal								
Type of track:		Concrete		Test number:		1668								
Gear	**Power**	**Pull**	**Speed**	**Engine speed**	**Slip**	**SFC**	**SFE**	**Temperature, deg F**					**Rel hum-idity**	**Pressure**
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		in Hg
I. Maximum Power (ballasted, fwa at 1700 rev/min)					Tire pressure:		12 psig, rear		23 psig, fror		Drawbar height:		22.5 in	
A4	117.47	19052	2.31	2103	14.19%	0.519	13.42	115	195	207	58	55	90%	28.76
B1	134.87	17881	2.83	1976	7.00%	0.461	15.11	114	198	220	60	56	71%	28.76
B2	140.76	17126	3.08	1768	6.05%	0.445	15.63	113	208	222	60	56	71%	28.76
B3	143.81	14863	3.63	1699	3.83%	0.436	15.97	114	207	209	58	54	79%	28.75
C1	144.61	13438	4.04	1701	3.06%	0.433	16.06	114	207	220	55	52	79%	28.79
B4	144.25	12038	4.49	1701	2.89%	0.436	15.96	114	207	207	58	55	90%	28.76
C2	143.87	11064	4.88	1696	2.63%	0.435	16.00	113	206	230	55	52	79%	28.79
C3	144.08	9184	5.88	1701	2.03%	0.436	15.98	113	207	228	56	53	89%	28.79
C4	141.76	7350	7.23	1700	1.59%	0.442	15.75	113	204	225	56	53	89%	28.79
D1	138.87	6118	8.51	1700	1.41%	0.453	15.36	113	208	227	58	54	79%	28.75

Repairs: None
Remarks: None