OECD APPROVAL # 1509/1 and 2
(Restricted code)
Date of approval: 16 March 1994

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 8770 POWRSYNC (4WD)
JOHN DEERE 8770 SYNCRO (4WD)



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

NEBRASKA TEST NO. 1671
Test dates: October - November, 1993

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 - Annex II, Restricted Code.

This report has been approved by the OECD Coordinating Centre in Paris (CEMAGREF) on 16 March 1994

John Deere 8770 PowrSync (4WD) - Articulated OECD # 1509/1
John Deere 8770 Syncro (4WD) - Articulated OECD # 1509/2

The transmissions of the 8770 PowrSync and the 8770 Syncro are mechanically similar and thus tests were not repeated. The test results are valid for both models.

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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	147 hours
Location of Test	Tractor Testing Laboratory Lincoln, Nebraska,USA.

TRACTOR SPECIFICATIONS.

Make	John Deere
Model	8770 PowerSync
Type	Articulated frame, four-wheel drive
Number of driving wheels	8
Serial Number	*RW8770H001228*
1st Serial number	*RW8770H001001*

ENGINE.

Make	John Deere
Model	6101TRW11
Type	Diesel; 4-stroke; turbocharged aftercooled, direct injection,
Serial Number	*6101HRW11-500963*

Cylinders

Number/Disposition	6, in-line, vertical
Bore/stroke	130.0 mm x 127.0 mm
Capacity	10144 ml
Compression Ratio	15.75: 1
Arrangement of valves	Overhead
Cylinder liners	Wet; replaceable

Super charging

Make/Model/Type	Switzer/RE52313/Exh. driven
Pressure	142 - 162 kPa at rated speed

Fuel System	
Feed system	Transfer pump integral with injection pump
Make/Type/Model of filters	Stanadyne/paper element; RE57073 secondary filter; RE53729 primary filter
Fuel tank capacity	835 l
Fuel Cooler	None
Make/Model/Type Injection Pump	Bosch/RE42302/in line; also ECU/RE28320; electric shutoff
Pump Serial number	36514172
Production setting of pump Flow Rate (Rated Eng.Spd & Full Load)	50.0 +/- 1.5 kg/h
Make/Model/Type Injectors	Bosch/RE48358/21 mm; electronic
Injection pressure	29 MPa
Timing	17.5 degrees BTDC
Governor	
Make/Model/Type	Bosch/RE24/Electronic control
Governed engine speed range	From 900 to 2260 rev/min
Rated engine speed	2100 rev/min
High-idle speed range	2260 +/- 50 rpm
Air Cleaner.	
Pre-cleaner Make/Model/type	Donaldson/R116627/Strato-tube precleaner with aspirator
Air intake location	Top of air stack, right front corner of cab
Main Cleaner Make/Model/Type	Donaldson/AR95758/pleated paper
Location	Below pre-cleaner, right front
Secondary cleaner	Donaldson/RE95759/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, with bypass
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	8
Fan diameter	762 mm
Coolant system capacity	55 l
Type of temperature control	Two thermostats and variable speed fan
System pressure	103 kPa

Starting system.

Make/Model/Type of starter	Delco-Remy/RE38633/solenoid engaged
Power Rating	6.9 kW
Cold starting aid	Ether spray in intake manifold
Safety device	Electrical lockout on gearshift

Electrical system.

Voltage & grounding.	12 Volt DC; negative ground
Generator	
Make/Model/Type	Nippondenso/RE51921/Belt driven
Power rating	120 Amp at rated engine speed
Batteries	
Number & connection	Two; 12 Volt batteries in parallel.
Rating	925 cold cranking amps/battery 175 Ah/battery at 20 h. rating

Exhaust system.

Muffler Make/Model/Type	Nelson/RE52167/Expansion chamber
Location	Vertical, right front corner of cab
Exhaust stack location	Vertical; right front corner of cab

TRANSMISSION.

Clutch. (travel)

Make/Model/Type	John Deere/Multiple plate/oil cooled
Number of plates	7
Plate diameter	279 mm
Method of operation	Hydraulic; pedal actuated

Gear Box.

Make/Model/Type Arrangement	John Deere/Powrsync/Mechanical Countershaft and planetary design consisting of one 3 speed gearbox with 4 synchronized ranges and one two-speed planetary gearset with multiple wet disc and brake.
Number of gears (8770 PowrSync)	24 forward and 6 reverse operated by 2 levers
Available options (8770 Syncro)	12 forward, 3 reverse (same arrangement without the two speed planetary gearset)
Oil cooler	Heat exchanger with air

Rear axle and final drives.

Make/Model/Type	John Deere/Crown wheel and pinion, differential and inboard planetary reduction
Differential Lock (optional)	None

Front Axle and final drives.

Make/Model/Type	John Deere/1150/Crown wheel and pinion, differential and inboard planetary reduction
Differential lock (optional)	None

Gear ratios and travel speeds - PowrSync transmission.

(Tire dynamic radius of 870 mm, 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]
Forward		
A1	213.20	3.23
A2	177.66	3.88
A3	165.48	4.16
A4	138.07	4.99
A5	120.97	5.69
A6	100.86	6.83
B1	100.00	6.89
C1	90.71	7.59
B2	83.40	8.26
B3	77.69	8.87
C2	75.65	9.10
C3	70.47	9.77
B4	64.79	10.63
C4	58.77	11.72
B5	56.76	12.13
C5	51.48	13.38
B6	47.34	14.55
C6	42.94	16.04
D1	42.56	16.18
D2	35.50	19.40
D3	33.06	20.83
D4	27.57	24.98
D5	24.16	28.51
D6	20.15	34.18
Reverse		
A1	177.66	3.88
A2	148.20	4.65
B1	83.40	8.26
C1	75.65	9.10
B2	69.56	9.90
C2	63.08	10.92

Number of front wheel revolutions
for one rear wheel revolution: 1

Gear ratios and travel speeds - Syncro transmission.

(Tire dynamic radius of 870 mm, 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]
Forward		
A1	213.20	3.23
A2	165.48	4.16
A3	120.97	5.69
B1	100.00	6.89
C1	90.71	7.59
B2	77.69	8.87
C2	70.47	9.77
B3	56.76	12.13
C3	51.48	13.38
D1	42.56	16.18
D2	33.06	20.83
D3	24.16	28.51
Reverse		
A1	177.66	3.88
B1	83.40	8.26
C1	75.65	9.10

Number of front wheel revolutions
for one rear wheel revolution: 1

POWER - TAKE - OFF (Optional).

Main Power-Take-Off.

Type	Independent
Method of engagement	Electro-hydraulically actuated multi-plate wet clutch operated by hand control lever
Number of shafts	One
Method of changing speeds	None

PTO Proportional to engine speed

Standard PTO-1000 rev/min.

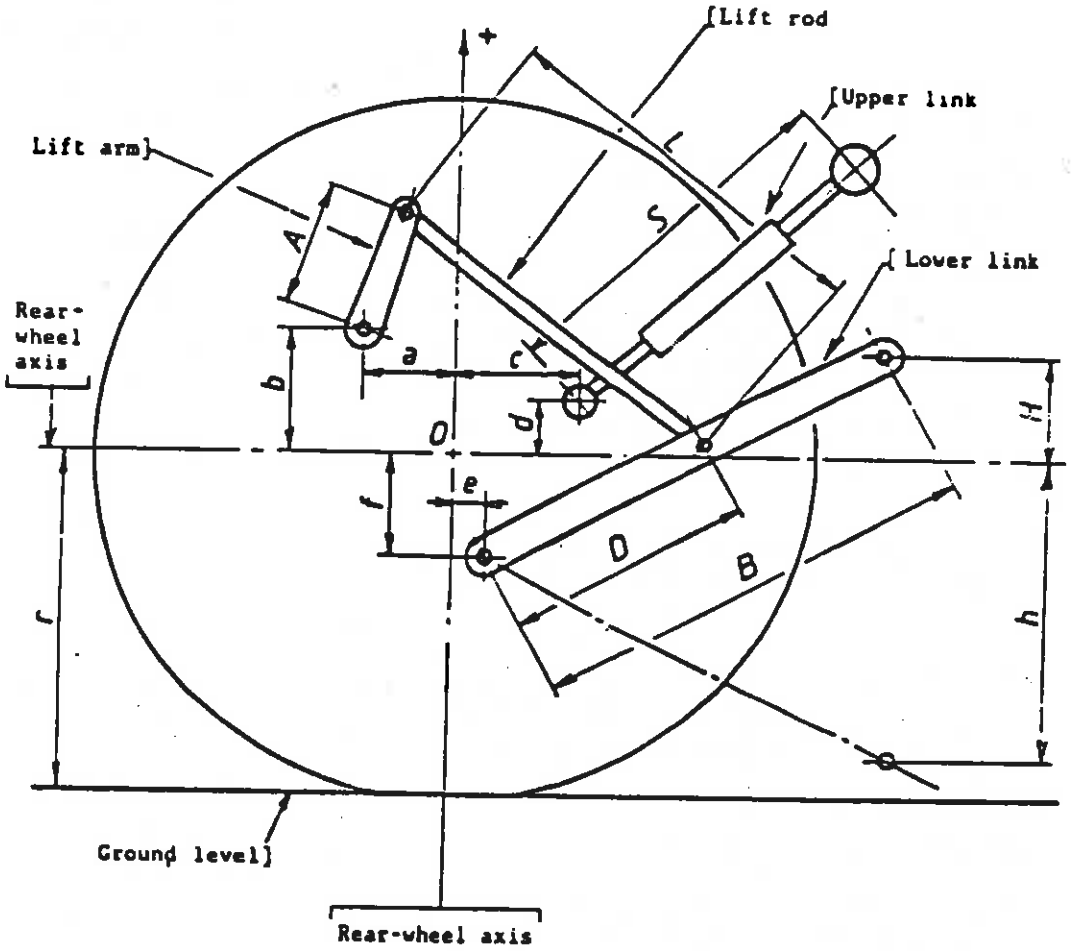
Location	Rear of tractor;center plane
Diameter of shaft	44.5 mm
Number of splines	20; conforms to ISO 500/1979.
Height above ground	764 mm
Distance from median plane of tractor	0 mm
Distance behind rear axle	760 mm
PTO Speed at rated engine spd	1108 rev/min
Engine speed at Std. PTO spd	1895 rev/min
Engine speed/PTO speed ratio	1.895:1
Power restriction	None
Direction of rotation when viewed from shaft end	Clockwise.

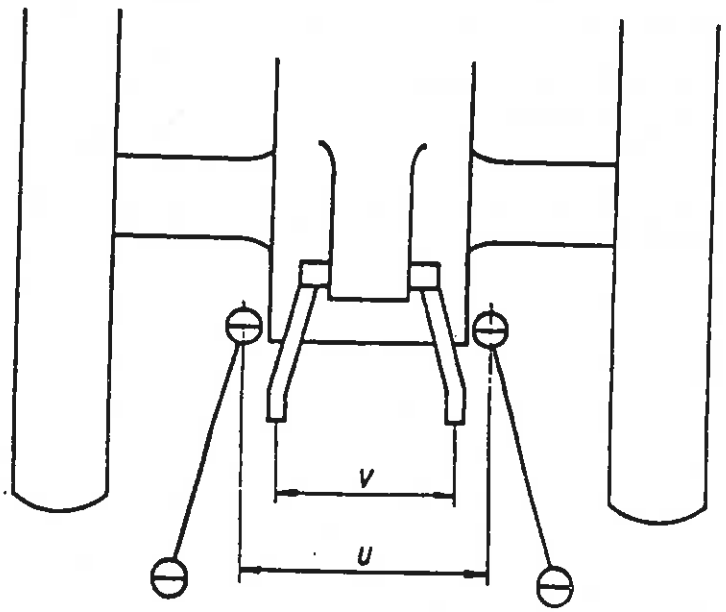
POWER LIFT - Optional.

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	Hydraulic
Relief valve pressure setting (pump diagnostic port)	172 - 178 bar
Opening pressure of cylinder safety valve	197 - 218 bar
Lift pump type	Radial piston, variable delivery and flow, constant pressure
Power transmission to pump	Direct drive
Type/Number of filters	Spin-on canister/one
Location of oil reservoir	Integral with right side fuel tank
Number/Type/Location of tapping points.	3 pairs of ISO standard couplings at rear of tractor; 4th and 5th coupler optional
Max. oil volume available for external cylinders.	19 liters regular; 32 liters with additional 13 liters allowable overfill

THREE POINT LINKAGE

- Category III in conformity with ISO 730/1-1990
- Category adaptor Quick attach





THREE POINT LINKAGE.

- Category 3 in conformity with ISO 730/1-1990
- Category adaptor Quick-attach

Linkage geometry dimensions *.
ISO Category III

		Dimension or range [mm] [in]	Settings used [mm] [in]
Lift category		III	III
Rear Tire - Radius Index	(r)	870	892
Front Tire - Radius Index	(r')	870	892
Length of lift arms	(A)	472	same
Length of lower links	(B)	1117	same
Distance of lift arm pivot from: horizontal	(a)	244	same
rear wheel axis: vertical	(b)	620	same
Horizontal distance between the 2 lower link points	(U)	640	same
Horizontal distance between the 2 lift arm end points	(V)	750	same
Length of upper link	(S)	705 to 825	800
Distance of upper link pivot point from rear wheel axis - horizontal	(c)	577	same
- vertical	(d)	288	same
Distance of lower link pivot from: horizontal	(e)	288	same
rear wheel axis: vertical	(f)	350	same
Distance of lower link pivot points to lift rod pivot pts on lower links.	(D)	731	same
Length of lift rods	(L)	1030 to 1150	1121
Height of lower hitch points relative to rear wheel axis In low position	(h)	521 to 724	667
In high position	(H)	89 to 284	120
Height above ground of lower hitch points when locked in transport position.		980 to 1176	1022

* Tire dynamic index of 892 mm - ISO 4251/1-1984

SWINGING DRAWBAR.

Type	Oscillating
Height above ground to top - maximum	464 mm
- minimum	439 mm
Adjustments	Invert drawbar; removable clevis
Distance of hitch point from rear wheel axis-horizontal	1118 or 1268 mm
Distance of hitch point from PTO shaft end: Vertical	300 mm
Horizontal	358 or 508 mm
Lateral adjustment-Right side	200 mm
Left side	200 mm
Distance of pivot point from rear wheel axis-horizontal	435 or 585 mm
Diameter of drawbar pin hole	52.5 mm
Maximum vertical static permissible load	18.3 kN - both positions

STEERING.

Make/Model/Type	John Deere/Hydrostatic
Method of operation	Steering wheel
Pump(s)	Same as main hydraulic pump
Ram(s)	Two external; double acting; with feedback
Working pressure	175 +/- 3 bar

BRAKE SYSTEM.

Service brake.

Make/Model/Type	John Deere/oil immersed disc
Method of operation	Hydraulic actuated by main system; operated by one pedal

Parking brake.

Type	Transmission lock.
Method of operation	Gear selector lever

Trailer Brake — None

WHEELS.

Number.	
Front	Four; Driving and steering
Rear	Four; Driving and steering
Wheel base	3400 mm

Track width adjustment

	Minimum [mm]	Maximum [mm]	Adjustment method
Inner wheels	1524	1910	Rack axle, reversing wheels and offset rims
Outer wheels	2891	3348	Same as inner wheels

PROTECTIVE STRUCTURE.

Make/Model/Type	John Deere/SG-041/Sound-Gard body
Manufacturer's name/address	John Deere Tractor Works Waterloo, Iowa, USA
Protective device	Cab; tiltable with tool
OECD approval number	
8770 PowrSync	CSS 0141/17
8770 Syncro	CSS 0141/16

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	150 mm
Vertical	64 mm
Rotation	20 degrees left and right

LIGHTING.

	Height above ground of center [mm]	Size [mm]	Distance from outside edge to median plane of tractor. [mm]
Head lights	1990	100 diam.	483
Rear lights	1945	100 diam.	845
Reflectors			
front	3485	50 x 197	533
rear	3485	50 x 197	554

TEST CONDITIONS.

Overall dimenensions

Length	7266 mm
Width	
minimum	3360 mm
maximum	3825 mm
Height - Top protective structure	3480 mm
- Top of exhaust	4100 mm
Ground clearance	353 mm
Clearance-limiting part	Drawbar rear support

Tractor Mass (with cab,full fuel tank).

		without driver [kg]	with driver [kg]
Unballasted	Front	8302	8339
	Rear	6648	6686
	Total	14950	15025

Tire Specifications.

	Front Wheels	Rear Wheels
Make	Goodyear	Goodyear
Dimensions	18.4R42	18.4R42
Number/Ply rating	2 star	2 star
Type	Radial	Radial
Max.load (tire mfg)	2970 kg/tire	2970 kg/tire
Inflation pressure(tire mfr)-max	165 kPa	165 kPa
- as tested	103 kPa	103 kPa
Dynamic Radius Index	870 mm	870 mm
Chosen track width-inners	1908 mm	1908 mm
-outers	3375 mm	3375 mm

Oils and Lubrication.

Capacity and change interval:

	Capacity liter	Oil change hours	Filter change hours
Engine (w/o filter)	32.0	250	250
Transmission	37.8	1500	1500
Hydraulic system combined with Rear axle, Front axle and Steering system	144.0	1500	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 D4	
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
Steering system	Same as transmission	same
Grease	John Deere MOLY HIGH TEMPERATURE EP GREASE	same
Number of lube points	22	

Fuel

Type/grade	Premier; Grade 2-D, in conformity with the national standard
Density (Pto test)	0.838 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-Oct-93 Location: UNL Tractor Test Lab, Lincoln, NE, U.S.A.

Type of dynamometer: Eddy current, Eaton Fuel density: 6.994 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						
213.50	1900	1003	60.73	50.89	0.238	3.52
286.31			*16.04*	*112.20*	*0.392*	*17.85*
1.2 Power at Rated Engine Speed – 1 hour						
193.36	2100	1108	58.77	49.26	0.255	3.29
259.31			*15.53*	*108.59*	*0.419*	*16.70*
1.3 Power at Standard Power Take-Off Speed – 1 hour						
213.50	1900	1003	60.73	50.89	0.238	3.52
286.31			*16.04*	*112.20*	*0.392*	*17.85*
1.4 Part Loads						
1.4.1 Torque at maximum power at rated engine speed						
193.36	2100	1108	58.77	49.26	0.255	3.29
259.31			15.53	108.59	0.419	16.70
1.4.2 85% of torque obtained in 1.4.1						
169.77	2168	1144	54.23	45.45	0.268	3.13
227.66			*14.33*	*100.20*	*0.440*	*15.89*
1.4.3 75% of torque defined in 1.4.2						
129.06	2194	1158	43.19	36.20	0.280	2.99
173.08			*11.41*	*79.80*	*0.461*	*15.17*
1.4.4 50% of torque defined in 1.4.2						
86.91	2219	1172	33.45	28.03	0.323	2.60
116.55			*8.84*	*61.80*	*0.530*	*13.19*
1.4.5 25% of torque defined in 1.4.2						
43.88	2241	1183	21.27	17.83	0.406	2.06
58.84			*5.62*	*39.30*	*0.668*	*10.47*
1.4.6 unloaded						
0.85	2261	1194	14.29	11.97	14.131	0.06
1.14			*3.77*	*26.40*	*23.231*	*0.30*
1.5 Part Loads at Standard Power Take-off Speed						
1.5.1 Torque at maximum power						
213.50	1900	1003	60.73	50.89	0.238	3.52
286.31			*16.04*	*112.20*	*0.392*	*17.85*
1.5.2 85% of torque obtained in 1.5.1						
186.22	1952	1031	53.26	44.63	0.240	3.50
249.72			*14.07*	*98.40*	*0.394*	*17.75*
1.5.3 75% of torque defined in 1.5.2						
141.48	1982	1046	42.70	35.79	0.253	3.31
189.73			*11.28*	*78.90*	*0.416*	*16.82*
1.5.4 50% of torque defined in 1.5.2						
95.91	2012	1062	32.15	26.94	0.281	2.98
128.62			*8.49*	*59.40*	*0.462*	*15.14*
1.5.5 25% of torque defined in 1.5.2						
48.50	2038	1076	21.92	18.37	0.379	2.21
65.05			*5.79*	*40.50*	*0.623*	*11.23*
1.5.6 unloaded						
0.77	2062	1089	11.69	9.80	12.677	0.07
1.04			*3.09*	*21.60*	*20.841*	*0.34*

No load maximum engine speed:	2261 rev/min	
Equivalent torque at rated speed:	879 N·m	*649 lb-ft*
Equivalent torque at maximum power:	1073 N·m	*791 lb-ft*
(engine speed:	1900 rev/min)	
Maximum equivalent crankshaft torque:	1304 N·m	*962 lb-ft*
(engine speed:	1402 rev/min)	
Mean Dry bulb:	24 deg C	*75 deg F*
Wet bulb:	17 deg C	*63 deg F*
Relative humidity:	49 %	
Pressure:	98.33 kPa	*29.04 in Hg*
Maximum Coolant:	85 deg C	*185 deg F*
Engine oil:	104 deg C	*219 deg F*
Fuel:	63 deg C	*145 deg F*
Air intake:	39 deg C	*102 deg F*
Transmission/hydraulic oil:	67 deg C	*152 deg F*
Intake manifold pressure at rated speed:	155 kPa	*22.5 psig*
Intake manifold pressure at maximum power:	165 kPa	*24.0 psig*

Hydraulic Power Test

Date of test: 29-OCT-1993
Location of test–City–State: Tractor Test Lab, Lincoln, NE, USA
Tapping point used for test: Remote hydraulic outlets

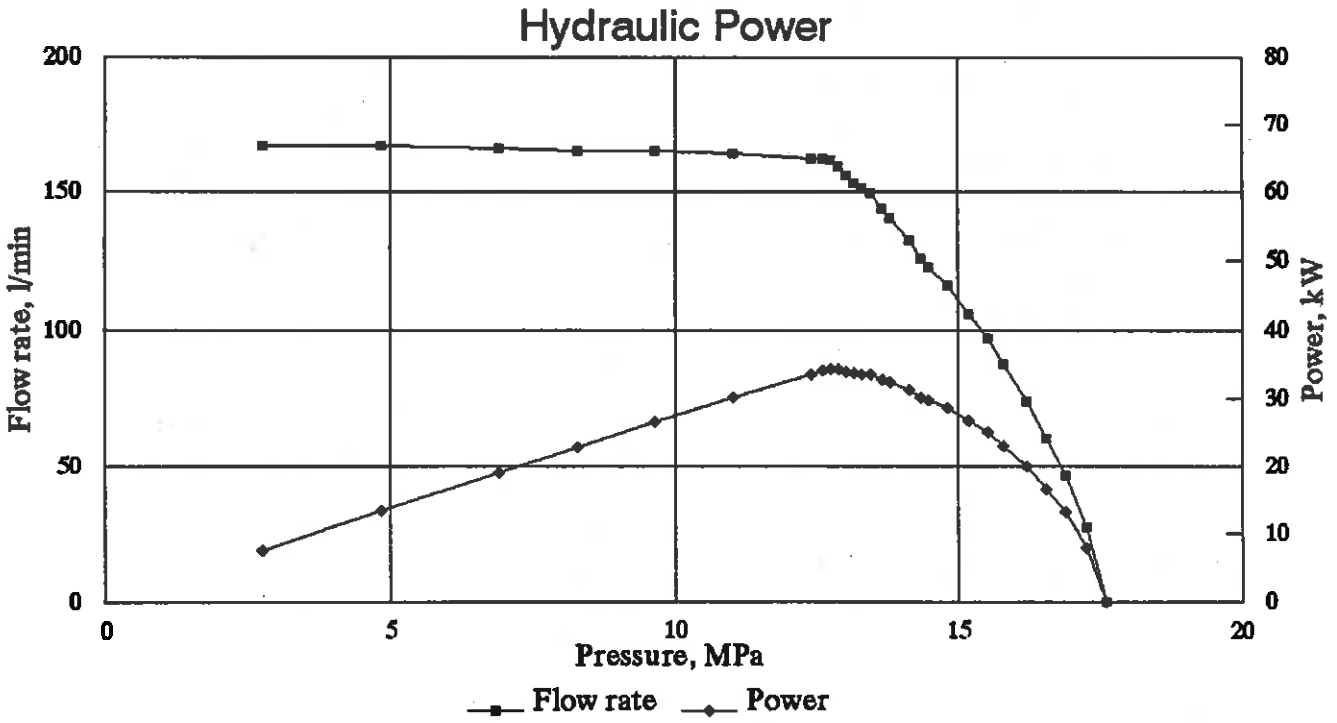
I. Sustained pressure with pump stalled:
17.58 MPa
2550 psi

II. Pump delivery rate at minimum pressure and rated engine speed:
166.9 l/min
44.1 gpm

III. Flow rate, pressure, power:

90% of relief valve setting:					
87.4	l/min	15.79	MPa	23.01	kW
23.1	*gpm*	*2290*	*psi*	*30.86*	*hp*
Maximum hydraulic power:					
161.6	l/min	12.76	MPa	34.37	kW
42.7	*gpm*	*1850*	*psi*	*46.09*	*hp*

IV. Hydraulic fluid temperature at flow meter:
66 C
151 F



2.2 POWER LIFT TEST. Cat III, quick attach, 100 mm cylinders
(for settings see p. 9)
Date of test: 1 June 1989

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	225/8.9	215/8.5
Vertical movement: without load:	[mm/in]	823/32.4	895/35.3
Vertical movement: with load:	[mm/in]	749/29.5	828/32.6
Maximum corrected force through full range:	[kN/lb]	64.3/14459	62.5/14040
Corresponding pressure:	[kPa/psi]	15840/2297	
Moment about rear axle:	[kN.m/lb.ft]	98.8/72834	134.0/98802
Maximum mast tilt angle:	[deg]	--	6.5

Lifting height relative to horizontal position of lower links.

[mm]	-327	-317	-233	-131	1
[in]	-12.9	-12.5	-9.2	-5.2	0
Corrected lift forces					
Hitch point. [kN]	--	64.3	67.0	69.7	72.6
Hitch point. [lb]	--	14459	15071	15665	16322
at frame [kN]	66.0	--	66.5	67.1	67.6
at frame [lb]	14832	--	14949	15093	15192

Lifting height relative to horizontal position of lower links.

[mm]	128	229	331	432	501
[in]	5.0	9.0	13.0	17.0	19.7
Corrected lift forces					
Hitch point [kN]	74.8	76.3	77.5	78.0	--
Hitch point [lb]	16817	17150	17420	17537	--
at frame [kN]	67.4	66.4	64.9	--	62.5
at frame [lb]	15147	14931	14598	--	14040

OECD Drawbar Data (SI)

Date of tests:	28-OCT,3-NOV-93	Fuel density:	0.838 kg/l
Type of track:	Concrete	Test number:	1671

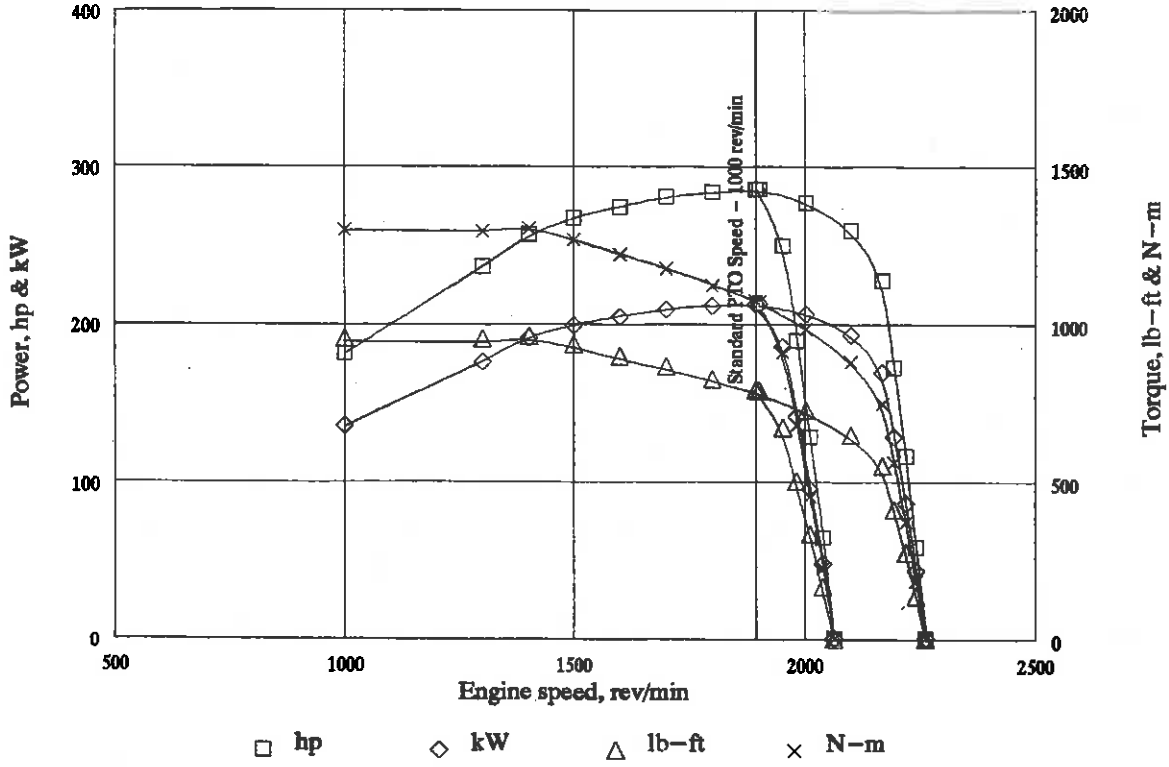
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg C					Rel humidity	Pressure
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
I. Maximum Power (unballasted, 4wd at 2100 rev/min						Tire pressure:		103 kPa, rear		103 kPa, front		Drawbar height:		470 mm
A3 *	164.09	148.86	3.97	2156	9.03%	0.302	2.78	63	80	97	11	7	56%	97.36
A4	172.08	128.95	4.80	2095	5.58%	0.289	2.90	63	82	97	17	9	32%	97.29
A5	175.65	113.65	5.56	2100	4.34%	0.283	2.96	63	83	98	17	9	32%	97.29
A6	175.36	93.52	6.75	2101	3.41%	0.283	2.96	62	83	98	17	9	32%	97.29
B1	180.32	95.06	6.83	2102	3.06%	0.277	3.02	63	82	98	12	7	48%	96.88
C1	180.85	86.26	7.55	2099	2.72%	0.276	3.03	62	83	98	12	7	48%	96.88
B2	179.30	78.48	8.23	2098	2.37%	0.277	3.02	62	82	97	14	9	51%	96.88
B3	180.51	73.43	8.85	2098	2.28%	0.275	3.05	63	83	98	12	7	48%	96.88
C2	177.77	70.41	9.09	2096	2.20%	0.280	2.99	64	83	99	12	7	48%	96.95
C3	179.26	65.88	9.80	2101	2.02%	0.278	3.01	63	83	99	12	7	48%	96.95
B4	176.31	59.48	10.67	2101	1.85%	0.283	2.96	63	83	99	12	7	48%	96.95
C4	175.89	53.77	11.78	2100	1.67%	0.283	2.96	63	83	98	12	7	48%	96.95
B5	176.87	52.19	12.20	2099	1.67%	0.282	2.97	63	83	99	12	7	48%	96.95
C5	175.72	47.04	13.45	2096	1.31%	0.282	2.97	64	83	99	12	7	48%	96.95
* Pull limited to avoid excessive tractor bounce.														
II. Part loads (unballasted, 4wd)														
II.1 in selected gear at maximum power														
B3	180.51	73.43	8.85	2098	2.28%	0.275	3.05	63	83	98	12	7	48%	96.88
II.1.1 75% of pull at maximum power at rated speed														
B3	141.16	55.03	9.23	2180	1.76%	0.293	2.86	60	83	99	11	7	56%	96.99
II.1.2 50% of pull at maximum power at rated speed														
B3	95.99	36.72	9.41	2209	1.23%	0.330	2.54	58	79	96	18	9	27%	96.99
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
B5	141.17	55.18	9.21	1589	1.85%	0.249	3.37	57	83	98	18	9	27%	96.99
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
B5	96.75	37.06	9.40	1612	1.23%	0.272	3.08	56	80	94	18	9	27%	96.99
II.2 in selected gear nearest to 7.5 km/h														
C1	180.85	86.26	7.55	2099	2.72%	0.276	3.03	62	83	98	12	7	48%	96.88
II.2.1 75% of pull at maximum power at rated speed														
C1	141.65	64.64	7.89	2181	1.93%	0.290	2.89	60	83	98	18	9	27%	96.85
II.2.2 50% of pull at maximum power at rated speed														
C1	96.60	43.20	8.05	2210	1.49%	0.325	2.58	58	79	96	18	9	27%	96.85
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
B4	141.14	64.68	7.86	1553	2.02%	0.248	3.38	57	83	98	18	9	27%	96.85
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
B4	96.27	43.15	8.03	1578	1.40%	0.264	3.17	55	81	94	18	9	27%	96.75

OECD Drawbar Data (US)

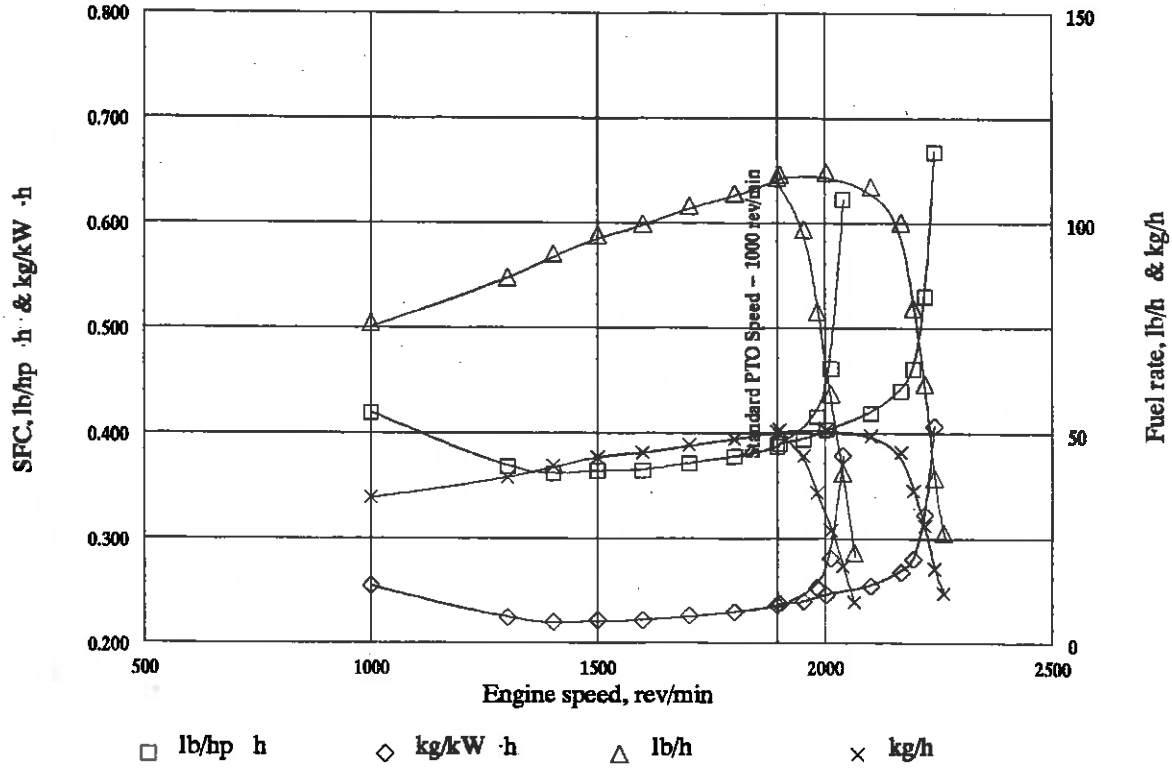
Date of tests:	28-OCT,3-NOV-93	Fuel density:	6.994 lb/gal
Type of track:	Concrete	Test number:	1671

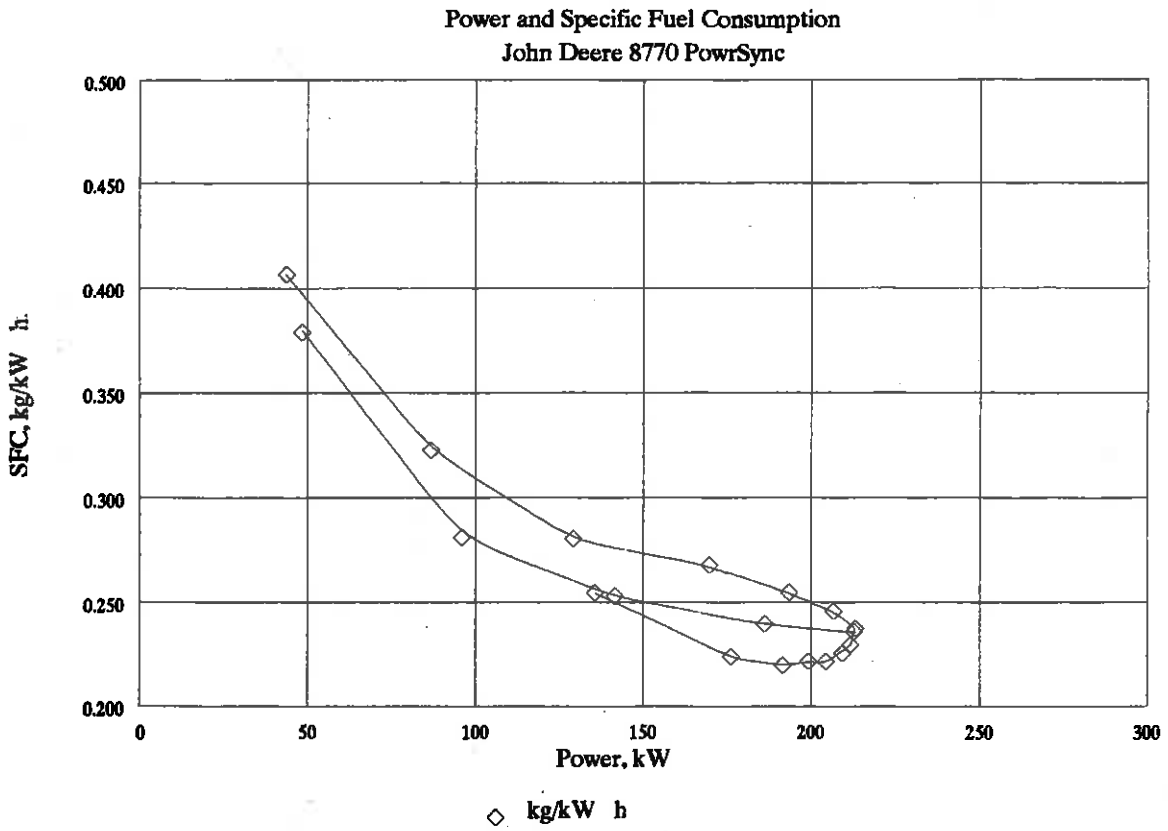
Gear	Power	Pull	Speed	Engine speed	Slip	SFC	SFE	Temperature, deg F					Rel humidity	Pressure
	hp	lb	mph	rev/min		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		in Hg
I. Maximum Power (unballasted, 4wd at 2100 rev/min						Tire pressure:		15 psig, rear		15 psig, front		Drawbar height:		18.5 in
A3 *	220.05	33464	2.47	2156	9.03%	0.496	14.09	146	177	206	52	45	56%	28.75
A4	230.77	28988	2.99	2095	5.58%	0.475	14.73	145	179	207	62	48	32%	28.73
A5	235.55	25550	3.46	2100	4.34%	0.465	15.04	146	182	209	62	48	32%	28.73
A6	235.17	21025	4.19	2101	3.41%	0.465	15.03	144	181	209	62	48	32%	28.73
B1	241.81	21370	4.24	2102	3.06%	0.456	15.34	145	180	209	54	44	48%	28.61
C1	242.52	19392	4.69	2099	2.72%	0.454	15.39	143	181	209	54	44	48%	28.61
B2	240.44	17642	5.11	2098	2.37%	0.456	15.35	144	180	207	58	48	51%	28.61
B3	242.07	16508	5.50	2098	2.28%	0.452	15.47	146	181	209	54	45	48%	28.61
C2	238.39	15828	5.65	2096	2.20%	0.460	15.19	148	182	210	54	44	48%	28.63
C3	240.40	14810	6.09	2101	2.02%	0.457	15.30	145	182	210	54	44	48%	28.63
B4	236.43	13373	6.63	2101	1.85%	0.465	15.04	145	181	210	54	44	48%	28.63
C4	235.87	12088	7.32	2100	1.67%	0.465	15.03	146	182	209	54	44	48%	28.63
B5	237.18	11733	7.58	2099	1.67%	0.464	15.07	146	181	210	54	44	48%	28.63
C5	235.65	10574	8.36	2096	1.31%	0.464	15.06	147	182	211	54	44	48%	28.63
* Pull limited to avoid excessive tractor bounce.														
II. Part loads (unballasted, 4wd)														
II.1 in selected gear at maximum power														
B3	242.07	16508	5.50	2098	2.28%	0.452	15.47	146	181	209	54	45	48%	28.61
II.1.1 75% of pull at maximum power at rated speed														
B3	189.29	12371	5.74	2180	1.76%	0.482	14.52	141	181	210	52	45	56%	28.64
II.1.2 50% of pull at maximum power at rated speed														
B3	128.72	8254	5.85	2209	1.23%	0.542	12.90	136	175	205	64	49	27%	28.64
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
B5	189.31	12405	5.72	1589	1.85%	0.409	17.12	135	182	209	64	49	27%	28.64
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
B5	129.75	8331	5.84	1612	1.23%	0.447	15.65	133	176	202	64	49	27%	28.64
II.2 in selected gear nearest to 4.6 mph														
C1	242.52	19392	4.69	2099	2.72%	0.454	15.39	143	181	209	54	44	48%	28.61
II.2.1 75% of pull at maximum power at rated speed														
C1	189.96	14531	4.90	2181	1.93%	0.477	14.67	140	181	208	65	49	27%	28.60
II.2.2 50% of pull at maximum power at rated speed														
C1	129.54	9712	5.00	2210	1.49%	0.534	13.09	136	175	205	65	49	27%	28.60
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
B4	189.27	14540	4.88	1553	2.02%	0.407	17.18	135	182	209	65	49	27%	28.60
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
B4	129.10	9700	4.99	1578	1.40%	0.435	16.09	131	178	202	64	49	27%	28.57

PTO Power and Crankshaft Torque
John Deere 8770 PowrSync

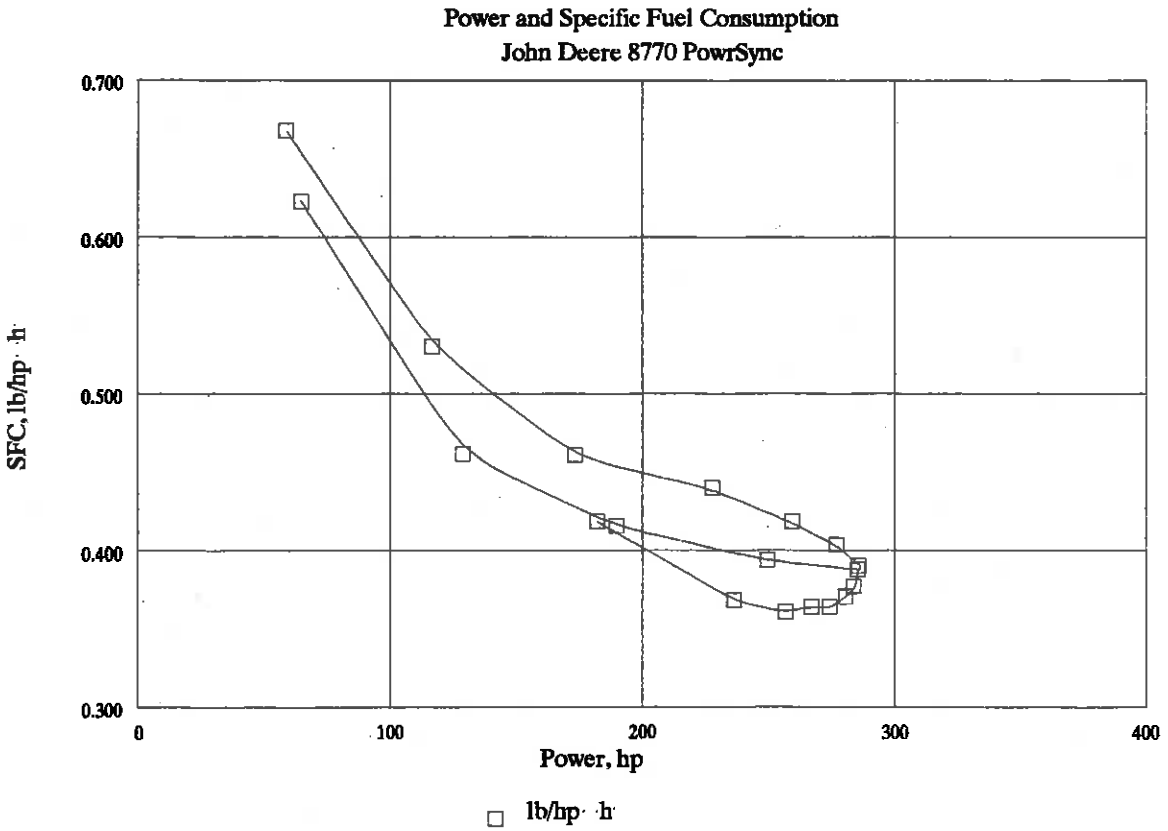


Specific Fuel Consumption and Fuel Rate
John Deere 8770 PowrSync




Power and Specific Fuel Consumption
John Deere 8770 PowrSync
SFC, kg/kW h
0.500
0.450
0.400
0.350
0.300
0.250
0.200
0
50
100
150
200
250
300
Power, kW
kg/kW h

Test 1671


Power and Specific Fuel Consumption
John Deere 8770 PowrSync
SFC, lb/hp·h
0.700
0.600
0.500
0.400
0.300
0
100
200
300
400
Power, hp
lb/hp·h

OPTIONAL TESTS - Drawbar performance at 1900 Engine RPM

OECD Drawbar Data (SI)

Date of tests:	28-OCT,3-NOV-93	Fuel density:	0.838 kg/l
Type of track:	Concrete	Test number:	1671

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, 4wd at 1900 rev/min)					Tire pressure:		103 kPa, rear		103 kPa, fron		Drawbar height:		470 mm	
A2 *	148.80	144.53	3.71	2166	9.26%	0.311	2.70	63	81	97	17	9	32%	97.29
A3 *	165.30	147.86	4.02	2157	7.88%	0.299	2.81	62	80	96	11	7	56%	97.36
A4	177.10	141.60	4.50	2011	7.80%	0.286	2.93	63	81	98	17	9	32%	97.29
A5	187.08	135.03	4.99	1921	6.30%	0.271	3.09	63	82	100	17	9	32%	97.29
A6	189.30	112.79	6.04	1901	4.42%	0.267	3.13	62	83	101	17	9	32%	96.99
B1	194.06	114.62	6.09	1896	4.25%	0.263	3.19	63	83	98	12	7	48%	96.88
C1	195.56	104.01	6.77	1897	3.58%	0.261	3.22	61	83	99	12	7	48%	96.88
B2	194.37	94.54	7.40	1900	3.06%	0.261	3.21	62	83	99	12	7	48%	96.88
B3	195.93	88.49	7.97	1901	2.72%	0.259	3.24	62	82	98	14	9	51%	96.88
C2	193.23	84.88	8.20	1900	2.72%	0.263	3.19	64	84	100	11	6	46%	97.09
C3	195.64	80.01	8.80	1897	2.55%	0.260	3.22	62	83	99	12	7	48%	96.95
B4	193.96	72.89	9.58	1894	2.37%	0.262	3.20	63	84	99	12	7	48%	96.95
C4	192.58	65.30	10.62	1899	2.02%	0.263	3.19	64	83	98	12	7	48%	96.95
B5	194.71	63.90	10.97	1893	2.02%	0.260	3.22	63	83	99	12	7	48%	96.95
C5	193.89	57.29	12.18	1904	1.85%	0.262	3.20	63	84	98	12	7	48%	96.95
B6	190.19	51.73	13.23	1899	1.67%	0.266	3.15	64	83	98	12	7	48%	96.95

* Pull limited to avoid excessive tractor bounce.

OECD Drawbar Data (US)

Date of tests:	28-OCT,3-NOV-93	Fuel density:	6.994 lb/gal
Type of track:	Concrete	Test number:	1671

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, 4wd at 1900 rev/min)					Tire pressure:		15 psig, rear		15 psig, fror		Drawbar height:		18.5 in	
A2 *	199.54	32492	2.30	2166	9.26%	0.511	13.70	146	178	207	62	48	32%	28.73
A3 *	221.67	33240	2.50	2157	7.88%	0.491	14.25	144	176	204	52	45	56%	28.75
A4	237.49	31833	2.80	2011	7.80%	0.471	14.85	146	178	209	62	48	32%	28.73
A5	250.87	30357	3.10	1921	6.30%	0.446	15.68	145	180	212	62	48	32%	28.73
A6	253.85	25356	3.75	1901	4.42%	0.440	15.91	144	182	214	62	48	32%	28.64
B1	260.24	25768	3.79	1896	4.25%	0.432	16.20	145	181	209	54	44	48%	28.61
C1	262.25	23383	4.21	1897	3.58%	0.428	16.32	142	181	210	54	44	48%	28.61
B2	260.66	21253	4.60	1900	3.06%	0.429	16.28	144	182	210	54	44	48%	28.61
B3	262.75	19894	4.95	1901	2.72%	0.425	16.46	144	180	209	58	48	51%	28.61
C2	259.13	19082	5.09	1900	2.72%	0.432	16.20	148	183	212	51	42	46%	28.67
C3	262.36	17988	5.47	1897	2.55%	0.428	16.33	144	182	211	54	44	48%	28.63
B4	260.11	16387	5.95	1894	2.37%	0.430	16.26	145	183	211	54	44	48%	28.63
C4	258.25	14680	6.60	1899	2.02%	0.432	16.20	148	182	209	54	44	48%	28.63
B5	261.11	14366	6.82	1893	2.02%	0.427	16.37	146	182	211	54	44	48%	28.63
C5	260.01	12880	7.57	1904	1.85%	0.430	16.25	145	183	209	54	44	48%	28.63
B6	255.04	11630	8.22	1899	1.67%	0.438	15.99	147	182	209	54	44	48%	28.63

* Pull limited to avoid excessive tractor bounce.

MEASUREMENT OF EXTERNAL NOISE LEVEL

Date of test	27 October 1993
Sound level meter Make/Model/Type	Bruel and Kjaer 2203
Type of track	Concrete Oval
Gear number	24th (D-6)
Travel speed before acceleration	27.5 km/h
Sound level	85.0 dB(A)

Repairs: None
Remarks: None