OECD APPROVAL # 1330
(Restricted code)
Date of approval: 16 September 1991

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

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE FOR THE

OFFICIAL TESTING OF AGRICULTURAL TRACTOR PERFORMANCE

FORD 8730 POWERSHIFT (4WD)
WITH MECHANICAL FRONT WHEEL DRIVE



MANUFACTURED BY: Ford New Holland Inc
500 Diller Avenue
New Holland, PA. USA

NEBRASKA TEST NO. 1647

Test date: May 1991

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 September 1991

Ford 8730 Powershift with MFWD OECD # 1330

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SPECIFICATIONS OF TRACTOR.

Manufacturers name/address	: Ford New Holland Inc. 500 Diller Avenue New Holland, PA 17557
Submitted for test by	: The manufacturer
Selected for test by	: The manufacturer in agreement with the test station.
Place of running in	: Ford New Holland New Holland PA
Duration of running in	: 262 hours
Location of Test	: Tractor Testing Laboratory Lincoln, Nebraska, USA.

TRACTOR SPECIFICATIONS.

Make	Ford
Model	8730 Powershift
Type	Unit construction, mechanical front wheel drive (4WD)
Number of driving wheels	4
Serial Number	*A928989*
1st Serial number	*A925539*

ENGINE.

Make	Ford New Holland
Model	401
Type	Diesel,direct injection,turbocharged
Serial Number	*H294060*
Cylinders	
Number/Disposition	6, in-line, vertical
Bore/stroke	111.8 mm x 111.8 mm (4.4 in x 4.4 in)
Capacity	6572 ml (401 cu in)
Compression Ratio	15.6 - 1
Arrangement of valves	Overhead
Cylinder liners	parent bore
Super charging	
Make/Model/Type	Garrett/408665/ exhaust gas driven
Pressure	110-138 kPa (16-20 psi) at rated speed and load
Fuel System	
Feed system	Mechanical lift pump
Make/Type/Model of filters	Sediment bowl and paper element filter
Fuel tank capacity	379 liters (100 US gallons)

Make/Model/Type Injection Pump	Lucas/CAVP5637/1A/In line
Pump Serial number	AH0396806 298
Production setting of pump Flow Rate (Rated Eng.Spd & Full Load)	29.5 +/- 1.5 kg/hr 65.0 +/- 3.3 lb/hr
Make/Model/Type Injectors	Lucas/CAV/multi-hole
Injection pressure	22.2 - 22.6 MPa (3225 -3275 psi)
Timing	25 degrees before TDC
Governor	
Make/Model/Type	Lucas/CAV/mechanical
Governed engine speed range	From 700 to 2475 rev/min
Rated engine speed	2200 rev/min
High-idle speed range	2450 +/-25 rev/min
Air Cleaner.	
Pre-cleaner	
Make/Model/Type	United/Screened cap
Air intake location	Above hood
Primary Cleaner	
Make/Model/Type	Donaldson/aspirated/dual element/pleated paper
Maintenance indicator	Air restriction warning light
Lubrication system.	
Type of feed pump	Crankshaft driven gear pump
Type of filters	Full flow spin on
Number	one
Oil cooler	Heat exchanger with engine coolant
Cooling system.	
Type of coolant	Liquid
Type of pump	Centrifugal
Fan specification	Belt driven, thermal viscous
Number of fan blades	6
Fan diameter	559 mm (22.0 in)
Coolant system capacity	22 l (23 qt)
Type of temperature control	2 thermostats and variable speed fan
Superpressure system	69 kPa (10 psi)
Starting system.	
Make/Model/Type of starter	Magneti Marelli/M127/electro-mechanical engagement
Power Rating	2.7 kW (3.6 hp)
Cold starting aid	Ether spray in intake manifold and block heaters
Safety device	Transmission neutral and PTO off switches

Electrical system.	
Voltage & grounding.	12 Volt DC;negative ground
Generator	
Make/Model/Type	Bosch/K1-14V 20/belt driven
Power rating	95 Amp at 2200 engine rev/min.
Batteries	
Number & connection	1-12 V battery
Rating	128 Amp-hour at 20 hour rating 750 cold crank amps
Exhaust system.	
Make/Model/Type	Nelson Burgess/expansion chamber
Location	vertical above hood
TRANSMISSION.	
Clutch. (travel)	
Make/Model/Type	Funk Mfg/8100 series/full powershift/oil cooled
Number of plates	14
Plate diameter	148.6 mm (5.85 in)
Method of operation	Electro-Hydraulically actuated by foot pedal
Gear Box.	
Make/Model/Type	Funk Mfg/full powershift
Arrangement	Counter shaft design providing 18 forward and 9 reverse ratios. Ratios are selected by engaging various combinations of 3 groups of 3 (9) multi-disc electro-hydraulic clutches. One clutch from each group is engaged to provide a ratio. 9 forward ratios in front section and 2 forward, 1 reverse ratio in rear section.
Number of gears	18 forward and 9 reverse controlled by single hand lever
Oil cooler	Heat exchanger with air
Available options	creeper
Rear axle and final drives.	
Make/Model/Type	Ford New Holland/crown wheel and pinion, differential and inboard planetary reduction
Differential Lock	
Type	Hydraulic engaged wet discs
Method of engagement	Electrical switch on console
Method of disengagement	Electrical switch on console or actuation of either brake pedal

Front Axle and final drives.

Make/Model/Type	ZF, APL 365 spiral bevel with outboard planetary reduction
Differential lock	
Type	limited slip
Method of engagement	automatic
Method of disengagement	automatic

Gear ratios and travel speeds.

(Tire dynamic radius of 870 mm (34.2 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 2200 rev/min [km/h]	[mph]
1 fwd	350.0	2.06	1.28
2 fwd	296.2	2.44	1.51
3 fwd	253.1	2.85	1.77
4 fwd	221.0	3.27	2.03
5 fwd	187.0	3.86	2.40
6 fwd	159.8	4.52	2.81
7 fwd	135.7	5.32	3.30
8 fwd	114.9	6.28	3.90
9 fwd	98.2	7.35	4.57
10 fwd	84.3	8.56	5.32
11 fwd	71.3	10.11	6.28
12 fwd	61.0	11.84	7.35
13 fwd	53.2	13.56	8.42
14 fwd	45.0	16.02	9.96
15 fwd	38.5	18.75	11.65
16 fwd	32.7	22.07	13.71
17 fwd	27.7	26.09	16.21
18 fwd	23.6	30.53	18.97
4 rev	218.8	3.30	2.05
5 rev	185.1	3.90	2.42
6 rev	158.2	4.56	2.83
7 rev	138.1	5.22	3.25
8 rev	116.9	6.17	3.84
9 rev	99.9	7.23	4.49
10 rev	84.4	8.50	5.28
11 rev	71.8	10.05	6.25
12 rev	61.3	11.76	7.31

Number of front wheel revolutions for one rear wheel revolution. 1.39

CREEPER GEAR RATIOS
(Not on tested tractor)

Gear ratios and travel speeds.
(Tire dynamic radius of 870 mm (34.2 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 2200 rev/min [km/h]	[mph]
1 fwd creep	3713.2	0.19	0.12
2 fwd creep	3142.4	0.23	0.14
3 fwd creep	2685.1	0.27	0.17
4 fwd creep	2344.6	0.31	0.19
5 fwd creep	1983.9	0.36	0.23
6 fwd creep	1695.3	0.43	0.26
7 fwd creep	1439.6	0.50	0.31
8 fwd creep	1219.0	0.59	0.37
9 fwd creep	1041.8	0.69	0.43
10 fwd creep	894.3	0.81	0.50
11 fwd creep	756.4	0.95	0.59
12 fwd creep	647.1	1.12	0.69
13 fwd creep	564.4	1.28	0.79
14 fwd creep	477.4	1.51	0.94
15 fwd creep	408.4	1.77	1.10
16 fwd creep	346.9	2.08	1.29
17 fwd creep	293.9	2.46	1.53
18 fwd creep	250.4	2.88	1.79
4 rev creep	2321.2	0.31	0.19
5 rev creep	1963.7	0.37	0.23
6 rev creep	1678.3	0.43	0.27
7 rev creep	1465.1	0.49	0.31
8 rev creep	1240.2	0.58	0.36
9 rev creep	1059.8	0.68	0.42
10 rev creep	895.4	0.80	0.50
11 rev creep	761.7	0.95	0.59
12 rev creep	650.3	1.11	0.69

Number of front wheel revolutions
for one rear wheel revolution. 1.39

POWER - TAKE - OFF.

Main Power-Take-Off.	
Type	Independent
Method of engagement	Hydraulically actuated multi-plate wet clutch operated by hand lever, independent of main drive clutch.
Number of shafts	Two
Method of changing speeds	Separate shafts at fixed ratios
Standard PTO. 540 rev/min.	
Location	Rear of tractor, vertical center plane.
Diameter of shaft	35 mm (1.375 in)
Number of splines	6; conforms to ISO 500/1979.
Height above ground	808 mm (31.8 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	551 mm (21.7 in)
PTO Speed at rated engine spd	634 rev/min
Engine speed at Std. PTO spd	1873 rev/min
Engine speed/PTO speed ratio	3.469
Power restriction	48 kW (65 Hp)
Direction of rotation when viewed from shaft end	Clockwise.
Standard PTO. 1000 rev/min.	
Location	Rear of tractor, vertical center plane.
Diameter of shaft	35 mm (1.375 in)
Number of splines	21; conforms to ISO 500/1979.
Height above ground	808 mm (31.8 in)
Distance from median plane of tractor	0 mm
Distance behind rear axle	551 mm (21.7 in)
PTO Speed at rated engine spd	1147 rev/min
Engine speed at Std. PTO spd	1918 rev/min
Engine speed/PTO speed ratio	1.918
Direction of rotation when viewed from shaft end	Clockwise.

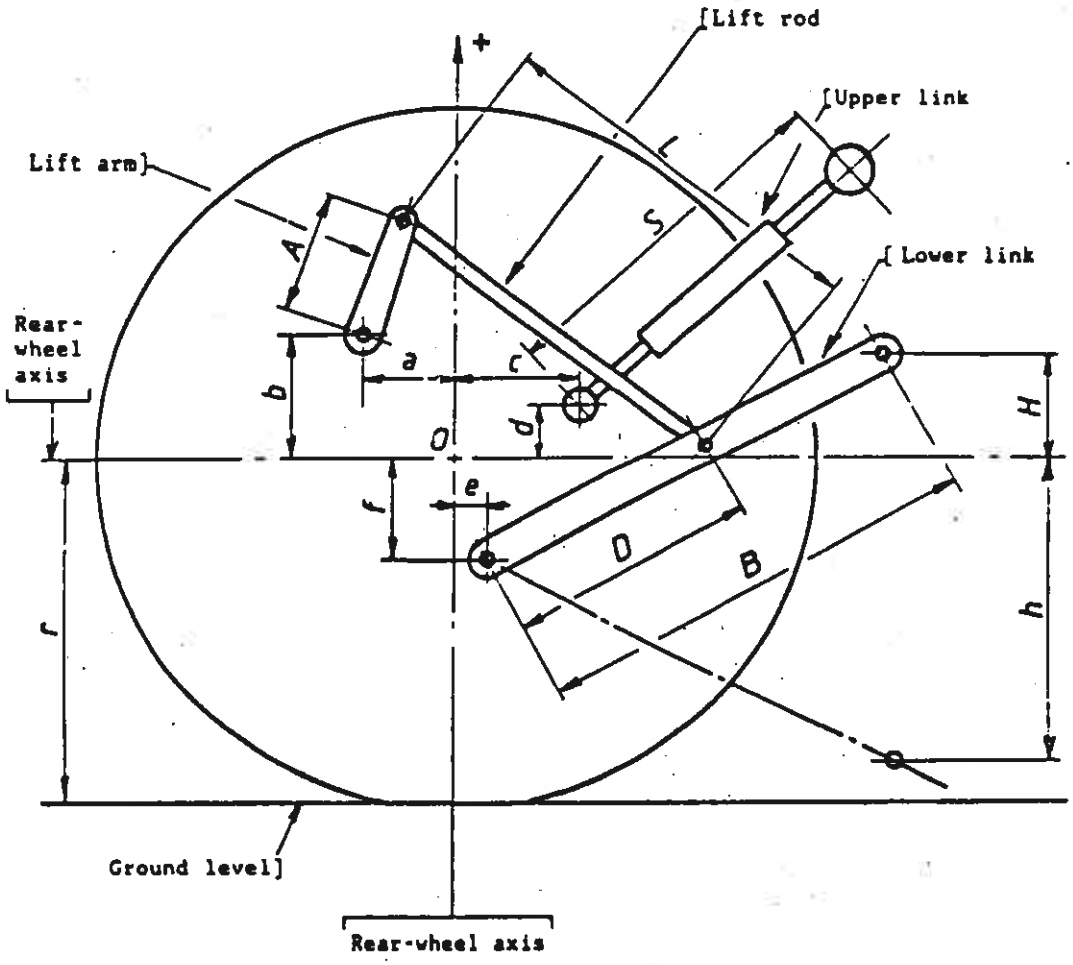
POWER LIFT.

Make	Ford New Holland
Type of hydraulic system	Open Center
Number/Type of cylinders	One internal with two optional external, all single acting
Type of linkage lock for transport	None
Relief valve setting	17.23 MPa (2500 psi)
Opening pressure of cylinder safety valve	19.3 MPa (2800 psi)
Lift pump type	Gear
Power transmission to pump	PTO drive
Type/Number of filters	Full flow/two
Location of oil reservoir	Transmission and rear axle housing
Number/Type/Location of tapping points.	2 pairs of ISO standard couplings at rear of tractor. (2 additional pairs are optionally available)
Max. oil volume available for external cylinders	32 l (34 qt)

THREE POINT LINKAGE.

- Category 2 or 3 in conformity with ISO 730/1-1977
- Category adaptor - None

THREE POINT LINKAGE



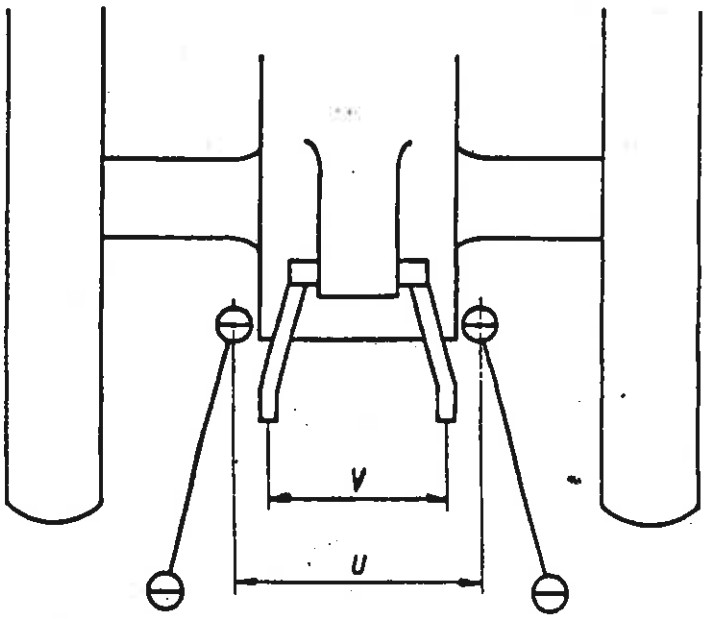


Table 1.1 -*Linkage geometry dimensions.

		Dimension or range [mm]	Dimension or range [in]	Settings used on test [mm]	Settings used on test [in]
Lift category		III			
Rear Tire - Radius Index	(r)	870	34.2		
Front Tire - Radius Index	(r')	670	26.4		
Length of lift arms	(A)	381	15.0	same	
Length of lower links	(B)	906	35.7	same	
Distance of lift arm pivot from: horizontal	(a)	121	4.8	same	
rear wheel axis: vertical	(b)	394	15.5	same	
Horizontal distance between the 2 lower link points	(u)	558	22.0	same	
Horizontal distance between the 2 lift arm end points	(v)	635	25.0	same	
Length of upper link	(S)	597	23.5		
	to	800	31.5	737	29.0
Distance of upper link pivot from: horizontal	(c)	442	17.4	same	
rear wheel axis: vertical	(d)	127	5.0		
	or	203	8.0	203	8.0
Distance of lower link pivot from: horizontal	(e)	229	9.0	same	
rear wheel axis: vertical	(f)	267	10.5	same	
Distance of lower link pivot points to lift rod pivot pts on lower links.	(D)	473	18.6		
	or	564	22.2	564	22.2
Length of lift rods	(L)	740	29.1		
	to	1000	39.4	886	34.9
Height of lower hitch points relative to rear wheel axis In low position	(h)	355	14.0		
	to	775	30.5	625	24.6
In high position	(H)	-140	-5.5		
	to	216	8.5	-3	-0.1
Height above ground of lower hitch points when locked in transport position.		729	28.7		
	to	1085	42.7	866	34.1

*Assuming (r) with a tire dynamic index of 870 mm (34.2 in)
ISO 4251/1-1984

SWINGING DRAWBAR.

Type	Oscillating
Height above ground	513 mm (20.2 in)
Adjustments	None
Distance of hitch point from rear wheel axis,horizontal	853 mm (33.6 in) or 906 mm (35.6 in)
Distance of hitch point from PTO shaft end	
Vertical	251 mm (9.9 in)
Horizontal	353 mm (14.0 in) and 406 mm (16.0 in)
Lateral adjustment; Right hand	259 mm (10.2 in)
Left hand	259 mm (10.2 in)
Distance of pivot point from rear wheel axis; horizontal	51 mm (2.0 in) forward.
Diameter of drawbar pin hole	30 mm (1.2 in)
Maximum vertical static permissible load	extended - 17.4 kN (3900 lb) retracted - 20.0 kN (4500 lb)

STEERING.

Make/Model/Type	TRW Ross Gear/HGA/Hydrostatic
Method of operation	Steering wheel
Pump	Gear pump,engine mounted
Ram(s)	One double acting cylinder integral with front wheel assist
Working pressure	13.4 to 14.1 MPa (1950 - 2050 psi)

BRAKES.

Service brake.

Make/Model/Type	Lucas Girling/Servoboosted hydraulic
Method of operation	Hydraulically boosted for two master cylinders;operated by two pedals which can be locked together.

Parking brake.

Type	Wet disc in front wheel drive transfer case
Method of operation	Cable operated by hand lever

Trailer Brake

Type	None

WHEELS.

Number.	
Front	Two; Driving and steering
Rear	Two or four; Driving
Wheel base	2814 mm (110.8 in)

Track width adjustment

	Minimum [mm]	Minimum [in]	Maximum [mm]	Maximum [in]	Adjustment method
Front	1520	59.8	1625	84.0	Reversing wheels and offset lug rims
Rear	1625	64.0	3048	120.0	Adjustable clamping wedges on bar axle with manual adjust rims

PROTECTIVE STRUCTURE.

Make/Model/Type	Ford New Holland/ integral with cab
Manufacturer's name/address	Ford New Holland New Holland, Penn.
Protective device	Cab, not tiltable.
OECD approval number	CSD 0174/15,16-a(C)

DRIVER'S SEAT.

Make/Model/Type	Grammar/LS-95/suspended
Type of suspension	Air suspension, electrically controlled
Range of adjustment	
Longitudinal	150 mm (5.9 in)
Vertical	60 mm (2.4 in)

LIGHTING.

	Height above ground of center [mm]	Height above ground of center [in]	Size [mm]	Distance from out - side edge to median plane of tractor. [mm]	Distance from out - side edge to median plane of tractor. [in]
Headlights	1306	51.4	134 dia.	292	11.5
Rearlights	2812	110.7	133 x 84	635	25.0
Rear reflectors	1808	71.2	44 x 50	856	33.7
Cab lights	2786	109.7	133 x 84	266/445	10.5/17.5

TEST CONDITIONS.

Overall dimensions.

Length		4913 mm (193.4 in)
Width	Minimum	2655 mm (104.5 in)
	Maximum(duals)	3490 mm (137.4 in)
Height -	Top of cab	2946 mm (116.0 in)
-	Top of exhaust	3175 mm (125.0 in)
Ground clearance. (unballasted)		462 mm (18.2 in)
Clearance-limiting part		drawbar support

Tractor Mass (with cab,full fuel tank).

		without driver [kg]	without driver [lb]	with driver [kg]	with driver [lb]
Unballasted	Front	2617	5770	2627	5792
	Rear	4299	9478	4364	9620
	Total	6916	15248	6991	15412
Ballasted	Front	2851	6286	2861	6308
	Rear	5208	11482	5273	11624
	Total	8059	17768	8134	17932

Ballast.

	Number of weights	Mass (total) [kg]	Mass (total) [lb]	Water [kg]	Water [lb]
Front	none	none	none	none	
Rear	none	none	none	none	
Duals (rear)	2	853	1880		
Additional front weights	5	227	500		
test equipment		63	140		

Tire Specifications.

	Front Wheels	Rear Wheels
Make	Goodyear	Goodyear
Dimensions	16.9-28	18.4R42
Ply rating	8 ply	2 star (10 ply)
Type	Bias	Radial
Max.load (tire manufacturer)	2175 kg/tire (4800 lb/tire)	3375 kg/tire (7440 lb/tire)
Max.load(tractor manufacturer)	2175 kg/tire) (4795 lb/tire)	3375 kg/tire (7440 lb/tire)
Inflation pressure (tire mfr)	160 kPa(24 psi)	160 kPa(24 psi)
Dynamic Radius Index	670 mm(26.4 in)	870 mm (34.3 in)
Chosen track width - singles	1980 mm(78.0 in)	1715 mm (67.5 in)
- duals		2997 mm(118.1 in)

Oils and Lubrication.

Capacity and change interval:

	Capacity liter	Capacity quart	Oil change hours	Filter change hours
Engine (w/o filter)	17	18	200	200
Gear Box (includes rear axle and rear final drive)	96	102	1200	300
Front axle housing	9	9.5	1200	---
Final drive, front	1.8	1.9	1200	---
Hydraulic system	common with gear box			

Oil and Lubricant specifications:

	Recommended	Used during test
Engine oil		
Type	Ford M2C121-C	same
Viscosity	SAE 15W-40	
Classification	API SG/CE Mil-L-2104D	
Transmission		
Type	Ford M2C134-D	same
Viscosity	15W30	
Classification	Rear axle oil	
Hydraulic fluid	same as transmission oil	same
Steering oil	same as transmission oil	same
Front axle and hubs		
Type	Ford M2C134-D	same
Viscosity	15W30	
Classification	Rear axle oil	
Grease	Ford M1C137-B	
Number of lubrication points	21	

Fuel

Type/grade	Grade 2-D, in conformity with the national standard
Density (Pto test)	0.838 g/cubic-cm (6.993 lb/gallon) at 15'C (59'F)
(Drawbar test)	same as Pto test.
Cetane number	53.9
Viscosity	2.31 cSt at 38'C (100'F)

Remarks: This tractor is equipped with a variable speed cooling fan. Since engine power is influenced by fan speed, all power tests were conducted at approximately the same ambient air temperatures.

COMPULSORY TESTS.

(1) MAIN POWER TAKE-OFF PERFORMANCE (1000 rev/min).

Date of tests : 23 May 1991
Location of tests : Nebraska Tractor Testing Laboratory
University of Nebraska, Lincoln, Nebraska.
Type of Dynamometer: Eaton Dynamatic 2025 D.G.

Power kW (hp)	Speeds engine rev/min	Speeds PTO rev/min	Fuel Consumption hourly l/h (gal/h)	Fuel Consumption hourly kg/h (lb/h)	Fuel Consumption specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
1.1 Maximum Power- 2 hour test.						
104.97 (140.76)	2199	1147	34.25 (9.05)	28.70 (63.27)	0.273 (0.449)	3.07 (15.56)
1.2 Power at rated engine speed. (1 hour)						
104.97 (140.76)	2199	1147	34.24 (9.05)	28.70 (63.27)	0.273 (0.449)	3.07 (15.56)
1.3 Maximum power at standard PTO speed. (1000 rev/min)						
99.22 (133.06)	1917	1000	30.49 (8.05)	25.55 (56.32)	0.257 (0.423)	3.25 (16.52)

1.4 Part Loads - governor hand lever set for maximum power at rated engine speed

Power kW (hp)	Speeds engine rev/min	Speeds PTO rev/min	Fuel Consumption hourly l/h (gal/h)	Fuel Consumption hourly kg/h (lb/h)	Fuel Consumption specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
i. Torque corresponding to maximum power at rated engine speed.						
104.97 (140.76)	2199	1147	34.25 (9.05)	28.70 (63.27)	0.273 (0.449)	3.07 (15.56)
ii. 85% of the torque obtained in (i)						
94.94 (127.31)	2338	1220	32.97 (8.71)	27.62 (60.90)	0.291 (0.478)	2.88 (14.62)
iii. 75% of the torque defined in (ii)						
72.24 (96.88)	2374	1238	27.44 (7.25)	23.00 (50.70)	0.318 (0.523)	2.63 (13.36)
iv. 50% of the torque defined in (ii)						
48.51 (65.06)	2399	1251	21.92 (5.79)	18.37 (40.50)	0.379 (0.623)	2.21 (11.23)
v. 25% of the torque defined in (ii)						
24.69 (33.12)	2424	1264	15.59 (4.12)	13.06 (28.80)	0.529 (0.870)	1.58 (8.04)
vi. unloaded						
0.36 (0.49)	2452	1279	10.72 (2.93)	8.98 (19.80)	24.728 (40.653)	0.03 (0.17)

1.5 Part Loads - governor hand lever set for maximum power at standard pto speed

Power kW (hp)	Speeds engine rev/min	Speeds PTO rev/min	Fuel Consumption hourly l/h (gal/h)	Fuel Consumption hourly kg/h (lb/h)	Fuel Consumption specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
i. Torque corresponding standard PTO rpm						
99.22 (133.06)	1917	1000	30.49 (8.05)	25.55 (56.32)	0.257 (0.423)	3.25 (16.52)
ii. 85% of the torque obtained in (i)						
88.18 (118.25)	1999	1043	27.61 (7.29)	23.13 (51.00)	0.262 (0.431)	3.19 (16.21)
iii. 75% of the torque defined in (ii)						
68.01 (91.20)	2060	1074	23.06 (6.09)	19.32 (42.60)	0.284 (0.467)	2.95 (14.97)
iv. 50% of the torque defined in (ii)						
46.05 (61.75)	2094	1092	17.86 (4.72)	14.97 (33.00)	0.325 (0.534)	2.58 (13.09)
v. 25% of the torque defined in (ii)						
23.47 (31.47)	2127	1110	12.99 (3.43)	10.89 (24.00)	0.464 (0.763)	1.81 (9.17)
vi. Unloaded						
0.32 (0.43)	2176	1135	8.12 (2.15)	6.80 (15.00)	21.110 (34.705)	0.04 (0.20)

No-load maximum engine speed	2452 rev/min
Equivalent engine torque:	
at rated engine speed	456 Nm (2199 rev/min)
at maximum power	456 Nm (2199 rev/min)
at maximum torque	525 Nm (1649 rev/min)
Mean atmospheric conditions:	
Temperature-dry bulb	23'C (74'F)
Relative humidity	69 %
Barometer	96.87 kPa (28.61 in Hg)

Maximum Temperatures :		
	Thermostat housing	91'C (195'F)
	Engine oil	118'C (244'F)
	Fuel at injection pump	70/C (158'F)
	Engine air intake	27'C (80'F)
	Trans./Hydr. Oil	78'C (172'F)
Turbocharger boost pressure		
	at rated engine speed	135 kPa (19.5 psi)
	at maximum power	135 kPa (19.5 psi)

2. HYDRAULIC POWER AND LIFTING FORCE.

Date of test: 7 May 1991
Location: TTL/UNL, Lincoln, Nebr.

2.1 HYDRAULIC POWER TEST - HYDRAULIC PUMP PERFORMANCE

Sustained pressure with pump stalled	18.20 MPa (2640 psi)
Pump delivery rate at minimum pressure and rated engine speed	107.9 l/m (28.5 gpm)

	Flow Rate l/min (gal/min)	Pressure MPa (psi)	Power kW (hp)
At 90% of relief valve setting	89.3 (23.6)	16.41 (2380)	24.4 (32.8)
At maximum hydraulic power.	96.5 (25.5)	15.51 (2250)	25.0 (33.5)

Tapping point(s)	Two hydraulic outlets combined
Hydraulic fluid temperature at flow meter	65'C (149'F)

2.2 POWER LIFT TEST.

	Hitch Points	Frame
Lower hitch points above ground - down position. [mm/in]	244/9.6	142/5.6
Vertical movement without load [mm/in]	622/24.5	791/31.1
Vertical movement with load [mm/in]	602/23.7	755/29.7
Maximum corrected force through full range [kN/lbf]	35.1/7902	30.2/6791
Corresponding pressure [kPa/psi]	16258/2358	
Moment about rear axle [kN.m/ft.lb]	39.9/29435	52.7/38876
Maximum mast tilt angle [degrees]	--	7.7

Lifting height relative to the horizontal position of lower links

[mm]	-427	-356	-300	-201	-99
[in]	-16.8	-14.0	-11.8	-7.9	-3.9
Corrected lift forces.					
hitch points [kN]	--	35.1	35.7	37.7	39.2
hitch points [lb]	--	7902	8033	8469	8820
at frame [kN]	30.2	30.5	--	31.5	32.1
at frame [lb]	6791	6863	--	7079	7210

Lifting height relative to the horizontal position of lower links

[mm]	0	99	201	246	328
[in]	0	3.9	7.9	8.7	12.9
Corrected lift forces.					
hitch points [kN]	40.8	41.8	42.9	44.0	--
hitch points [lb]	9162	9392	9639	9895	--
at frame [kN]	32.4	32.0	--	31.5	31.1
at frame [lb]	7283	7201	--	7079	6997

THREE POINT LIFT PERFORMANCE
(With lift assist cylinders)
(for settings used see p.8)

	Hitch Points	Frame
Lower hitch points above ground - down position. [mm/in]	244/9.6	142/5.6
Vertical movement without load [mm/in]	622/24.5	791/31.1
Vertical movement with load [mm/in]	602/23.7	760/29.9
Maximum corrected force through full range [kN/lbf]	54.6/12276	41.4/9306
Corresponding pressure [kPa/psi]	16258/2358	
Moment about rear axle [kN.m/ft.lb]	62.0/45728	72.2/53277
Maximum mast tilt angle [degrees]	--	7.7

Lifting height relative to the horizontal position of lower links

[mm]	-432	-356	-300	-201	-99
[in]	-17.0	-14.0	-11.8	-7.9	-3.9
Corrected lift forces.					
hitch points [kN]	--	54.6	54.6	55.8	57.1
hitch points [lb]	--	12276	12281	12546	12848
at frame [kN]	48.5	46.7	--	46.1	45.8
at frame [lb]	10899	10494	--	10368	10296

Lifting height relative to the horizontal position of lower links

[mm]	0	99	201	246	328
[in]	0	3.9	7.9	9.7	12.9
Corrected lift forces.					
hitch points [kN]	58.2	58.4	58.4	59.1	--
hitch points [lb]	13095	13127	13136	13282	--
at frame [kN]	45.3	44.1	--	42.4	41.4
at frame [lb]	10175	9909	--	9540	9306

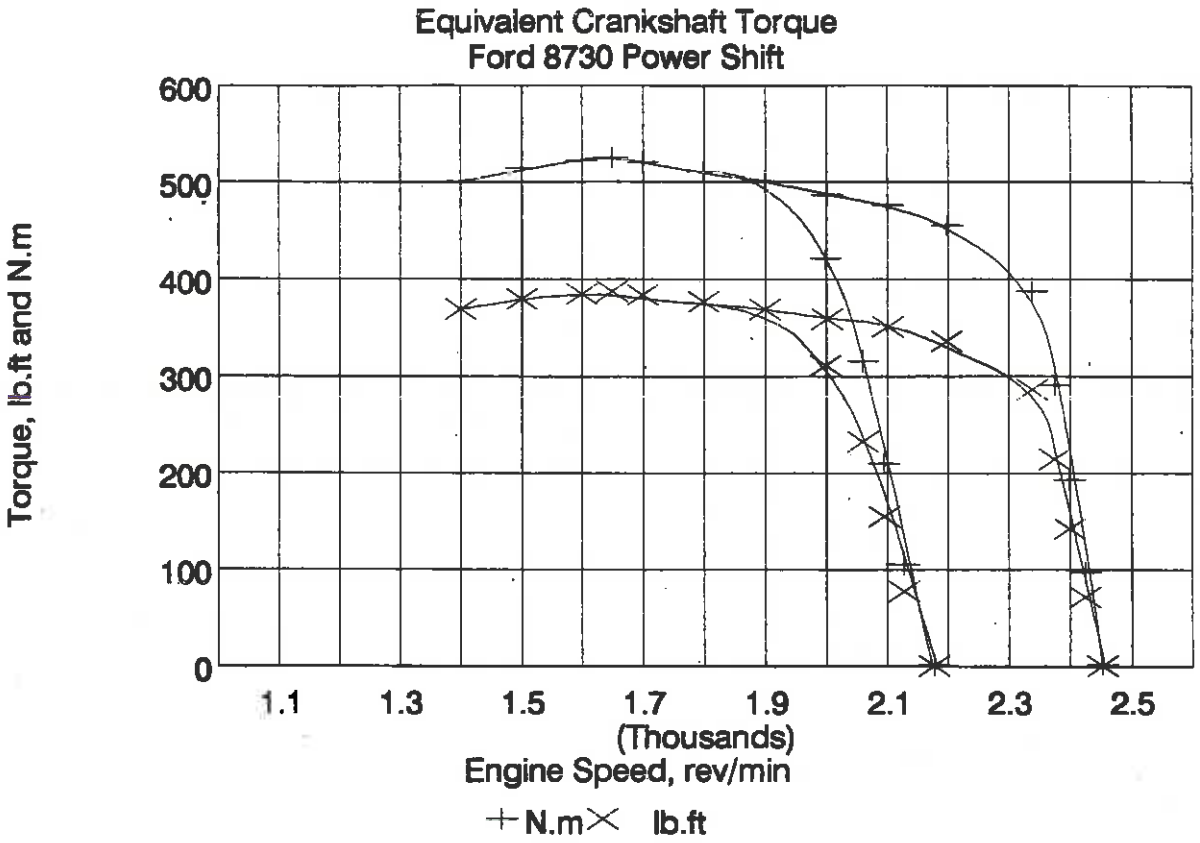
DRAWBAR PERFORMANCE AND FUEL ECONOMY (UNBALLASTED TRACTOR)

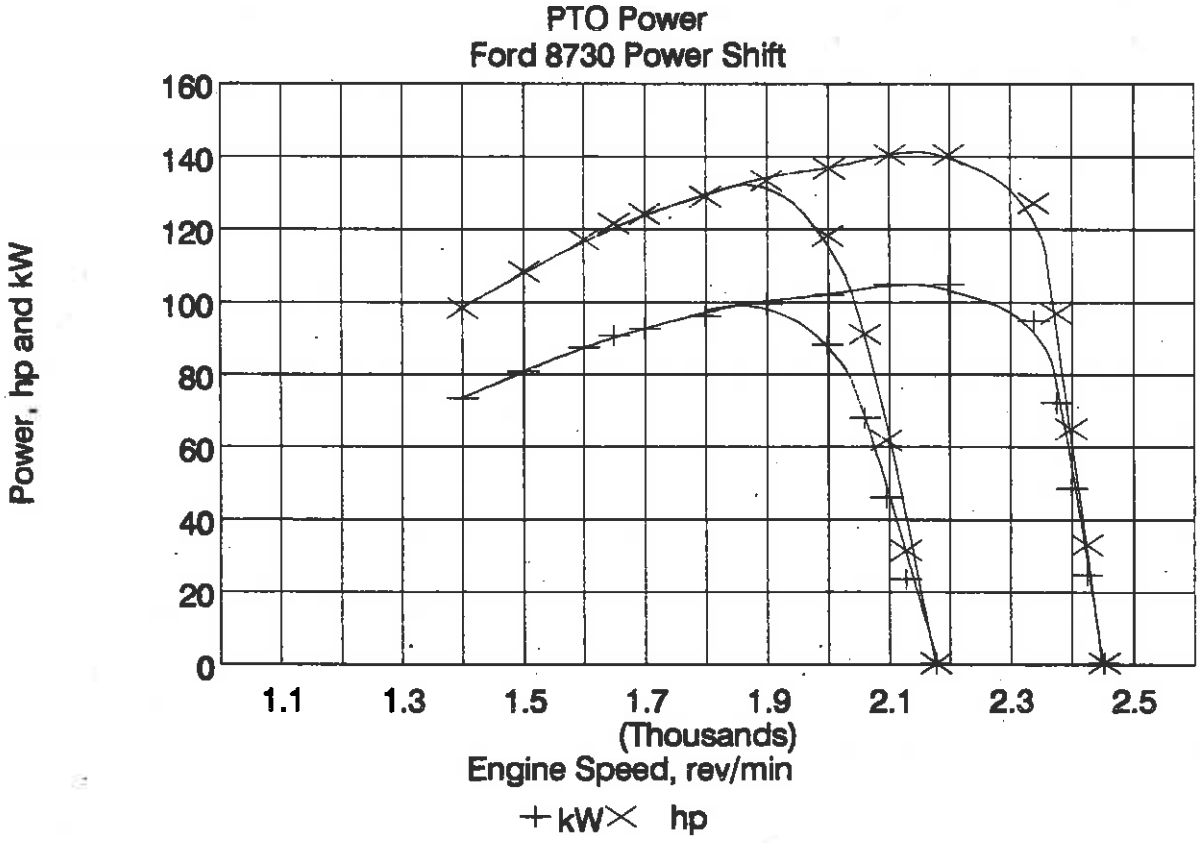
Date of tests: 07–May–91 Fuel density: 0.838 kg/l
07–May–91 Test # 1647
Type of track: Concrete Engine

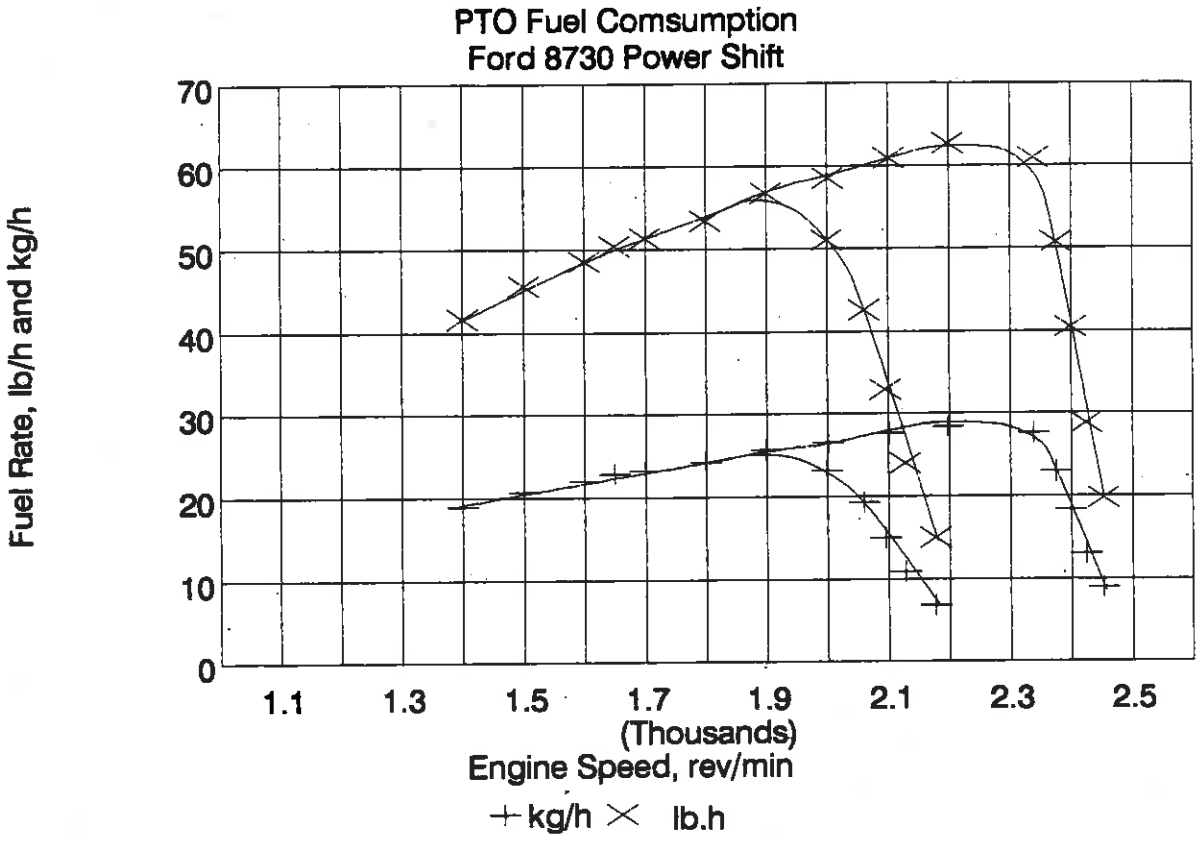
Gear	Power kW	Pull kN	Speed km/h	Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
I. Maximum Power (unballasted, fwa			2200 rev/min)			Tire pressure:		97 kPa, rear			110 kPa, front			
			Drawbar height:		508 mm									
5	67.62	67.64	3.60	2358	14.53%	0.385	2.18	70	84	110	11	7	56%	98.21
6	77.76	68.68	4.08	2301	15.00%	0.370	2.27	69	85	108	10	7	66%	98.21
7	86.90	63.07	4.96	2214	8.77%	0.329	2.55	68	85	109	11	7	56%	98.21
8	89.45	52.93	6.08	2202	4.98%	0.318	2.64	69	85	110	14	9	42%	98.14
9	89.18	44.56	7.21	2201	3.73%	0.316	2.65	70	86	110	12	8	58%	98.14
10	91.46	38.98	8.45	2200	2.96%	0.309	2.71	69	86	111	13	9	59%	98.14
11	92.15	33.10	10.02	2199	2.62%	0.306	2.74	69	85	110	12	8	58%	98.17
12	90.00	27.45	11.81	2205	2.18%	0.314	2.67	68	86	109	11	7	56%	98.21
13	88.92	23.62	13.55	2201	1.74%	0.318	2.64	69	86	111	12	8	58%	98.14
II. Part Loads (unballasted, fwa			2200 rev/min)			Tire pressure:		97 kPa, rear			110 kPa, front			
			Drawbar height:		508 mm									
II.1 in selected gear at maximum power														
11	92.15	33.10	10.02	2199	2.62%	0.306	2.74	69	85	110	12	8	58%	98.17
II.1.1 75% of pull at maximum power at rated speed														
11	74.29	24.83	10.77	2344	2.01%	0.345	2.43	68	85	108	17	12	55%	98.00
II.1.2 50% of pull at maximum power at rated speed														
11	50.54	16.55	10.99	2380	1.21%	0.408	2.05	68	84	111	17	12	55%	98.00
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	74.38	24.82	10.79	2005	1.74%	0.304	2.75	67	86	107	17	12	55%	98.00
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	50.58	16.55	11.00	2034	1.39%	0.350	2.40	66	84	106	17	12	55%	98.00
II.2 in selected gear nearest to 7.5 km/h														
9	89.18	44.56	7.21	2201	3.73%	0.316	2.65	70	86	110	12	8	56%	98.14
II.2.1 75% of pull at maximum power at rated speed														
9	72.22	33.42	7.78	2346	2.62%	0.354	2.37	68	85	108	14	11	70%	98.04
II.2.2 50% of pull at maximum power at rated speed														
9	49.23	22.27	7.96	2379	1.83%	0.416	2.01	68	84	108	14	11	70%	101.42
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
10	71.99	33.42	7.76	2010	2.53%	0.305	2.75	67	84	108	14	11	70%	98.04
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
10	49.16	22.27	7.95	2041	1.65%	0.342	2.45	67	84	105	14	11	70%	98.04

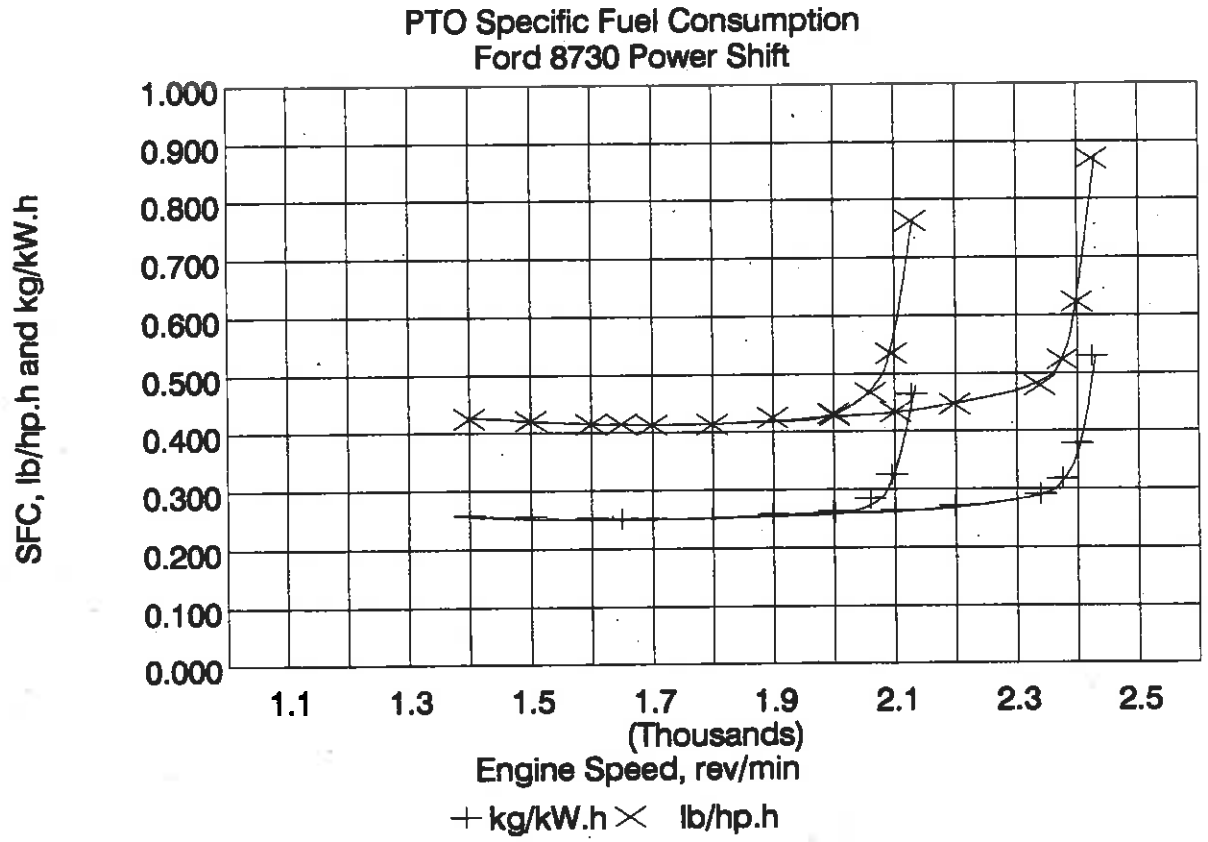
Date of tests: 07–May–91 Fuel density: 6.993 lb/gal
07–May–91 Test # 1647
Type of track: Concrete Engine

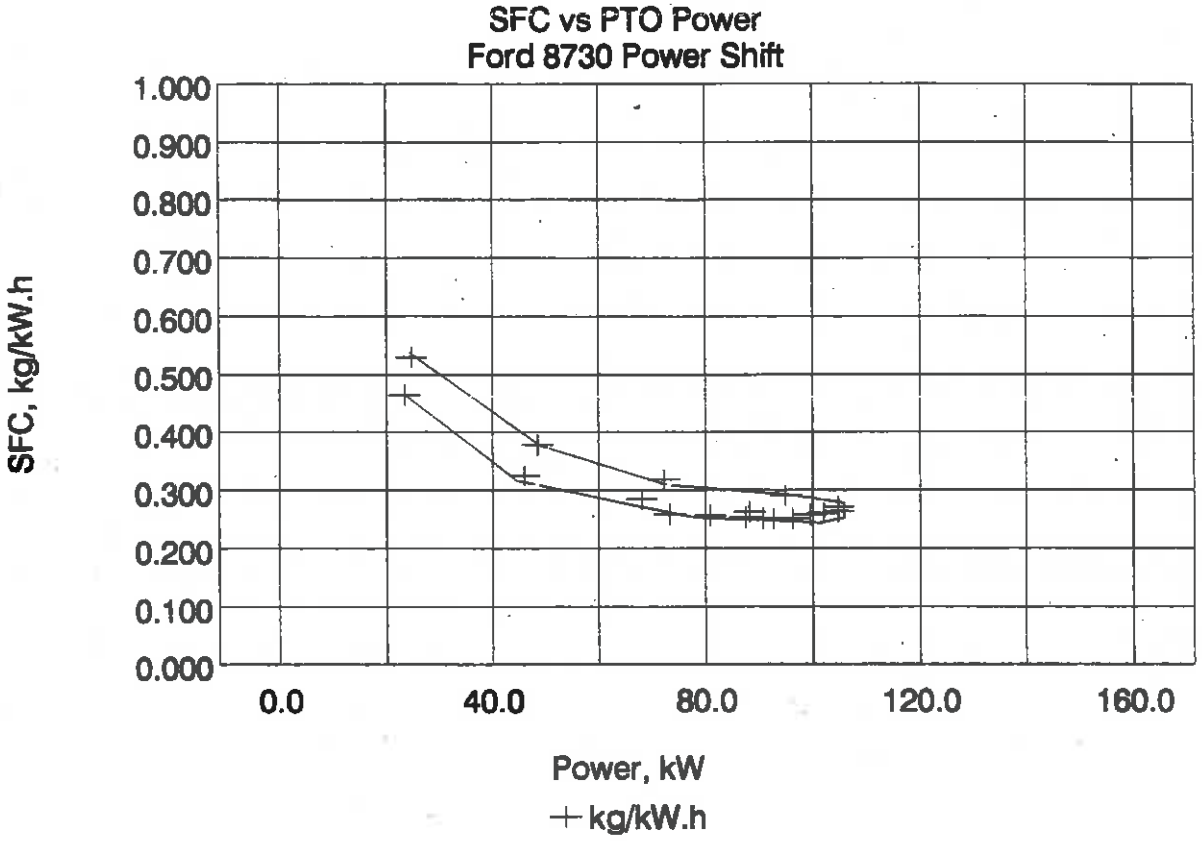
Gear	Power hp	Pull lb	Speed mph	Speed rpm	Slip	SFC lb/hp.h	SFE hp.h/gal	Temperature, deg F Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure in Hg
I. Maximum Power (unballasted, fwa			2200 rev/min)			Tire pressure:		14 psi, rear			16 psi, front			
			Drawbar height:		20 in									
5	90.68	15207	2.24	2358	14.53%	0.633	11.05	158	184	231	51	45	56%	29.00
6	104.28	15441	2.53	2301	15.00%	0.606	11.50	157	185	227	50	44	66%	29.00
7	116.54	14179	3.08	2214	8.77%	0.540	12.94	155	186	229	52	45	56%	29.00
8	119.95	11899	3.78	2202	4.98%	0.523	13.38	157	185	230	57	49	42%	28.98
9	119.59	10017	4.48	2201	3.73%	0.520	13.45	158	187	230	54	47	58%	28.98
10	122.65	8764	5.25	2200	2.96%	0.508	13.76	156	187	233	55	48	59%	28.98
11	123.57	7441	6.23	2199	2.62%	0.503	13.90	156	186	230	53	46	58%	28.99
12	120.70	6170	7.34	2205	2.18%	0.517	13.53	155	186	228	52	45	56%	29.00
13	119.24	5310	8.42	2201	1.74%	0.522	13.40	157	187	233	54	47	58%	28.98
II. Part Loads (unballasted, fwa			2200 rev/min)			Tire pressure:		14 psi, rear			16 psi, front			
			Drawbar height:		20 in									
II.1 in selected gear at maximum power														
11	123.57	7441	6.23	2199	2.62%	0.503	13.90	156	186	230	53	46	58%	28.99
II.1.1 75% of pull at maximum power at rated speed														
11	99.62	5583	6.69	2344	2.01%	0.587	12.32	154	185	226	63	54	55%	28.94
II.1.2 50% of pull at maximum power at rated speed														
11	67.78	3721	6.83	2380	1.21%	0.670	10.43	155	184	231	63	54	55%	28.94
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	99.75	5581	6.70	2005	1.74%	0.500	13.98	152	186	225	63	54	55%	28.94
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	67.83	3722	6.84	2034	1.39%	0.575	12.17	152	184	222	63	54	55%	28.94
II.2 in selected gear nearest to 4.6 mph														
9	119.59	10017	4.48	2201	3.73%	0.520	13.45	158	187	230	54	47	56%	28.98
II.2.1 75% of pull at maximum power at rated speed														
9	96.85	7514	4.83	2346	2.62%	0.582	12.01	154	185	227	58	51	70%	28.95
II.2.2 50% of pull at maximum power at rated speed														
9	66.01	5007	4.94	2379	1.83%	0.684	10.22	155	184	227	58	51	70%	29.95
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
10	96.54	7512	4.82	2010	2.53%	0.501	13.96	153	184	226	58	51	70%	28.95
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
10	65.92	5006	4.94	2041	1.65%	0.562	12.45	152	183	221	58	51	70%	28.95

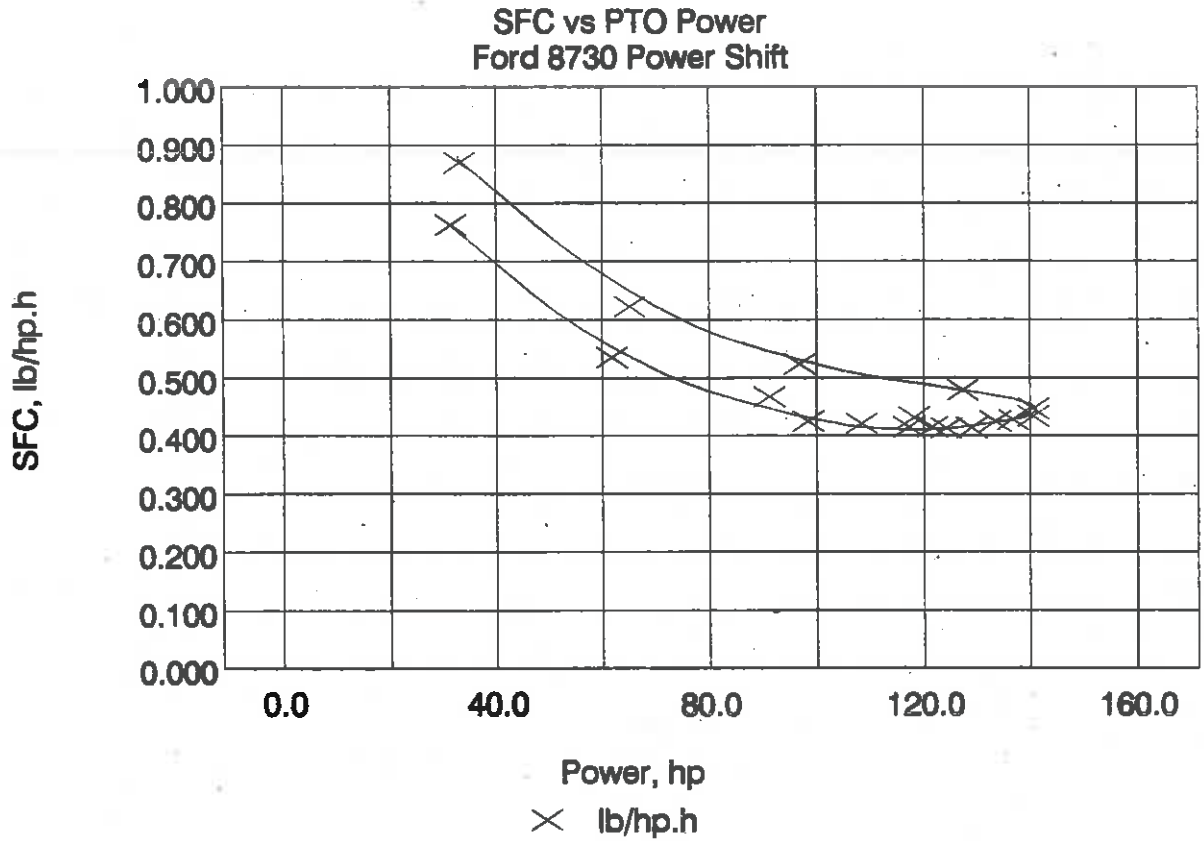

Equivalent Crankshaft Torque
Ford 8730 Power Shift
Torque, lb.ft and N.m
600
500
400
300
200
100
0
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
+ N.m × lb.ft


PTO Power
Ford 8730 Power Shift
Power, hp and kW
160
140
120
100
80
60
40
20
0
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
+ kW × hp


PTO Fuel Comsumption
Ford 8730 Power Shift
Fuel Rate, lb/h and kg/h
70
60
50
40
30
20
10
0
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
+ kg/h × lb.h


PTO Specific Fuel Consumption
Ford 8730 Power Shift
SFC, lb/hp.h and kg/kW.h
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
+ kg/kW.h × lb/hp.h


SFC vs PTO Power
Ford 8730 Power Shift
SFC, kg/kW.h
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.0
40.0
80.0
120.0
160.0
Power, kW
kg/kW.h


SFC vs PTO Power
Ford 8730 Power Shift
SFC, lb/hp.h
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.0
40.0
80.0
120.0
160.0
Power, hp
lb/hp.h

University of Nebraska Tractor Test Laboratory

DRAWBAR PERFORMANCE AND FUEL CONSUMPTION (BALLASTED TRACTOR) Optional test 2WD

Date of tests: 07–May–91, 08–May–91 | Fuel density: 0.838 kg/l

Type of track: 8688 | Test # 1647

Gear	Power kW	Pull kN	Speed km/h	Engine Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C: Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
Ia. Maximum Power (ballasted, 2wd, 2200 rev/min)								Tire pressure: 97 kPa, rear (inner) 97 kPa, rear (outer)			110 kPa, front			
								Drawbar height: 533 mm						
6	78.39	68.62	4.11	2294	14.07%	0.365	2.30	69	86	111	21	16	60%	98.21
7	87.60	63.24	4.99	2199	7.64%	0.322	2.60	69	86	113	22	16	54%	98.14
8	89.45	52.92	6.09	2201	4.76%	0.316	2.65	68	88	113	22	16	54%	98.14
9	89.50	44.55	7.23	2201	3.16%	0.316	2.65	68	87	109	19	14	58%	98.07
10	90.71	38.65	8.45	2198	2.74%	0.315	2.66	68	88	113	20	15	59%	98.07
11	90.83	32.51	10.06	2202	2.30%	0.313	2.68	68	86	113	21	16	60%	98.04
12	89.27	27.20	11.82	2201	1.87%	0.319	2.63	68	88	114	21	16	60%	98.04
13	88.43	23.50	13.55	2197	1.52%	0.324	2.59	68	89	114	22	17	61%	98.04
II. Part Loads (ballasted, 2wd, 2200 rev/min)								Tire pressure: 97 kPa, rear (inner) 97 kPa, rear (outer)			110 kPa, front			
								Drawbar height: 533 mm						
II.1 in selected gear at maximum power														
11	90.83	32.51	10.06	2202	2.30%	0.313	2.68	68	86	113	21	16	60%	98.04
II.1.1 75% of pull at maximum power at rated speed														
11	72.93	24.40	10.76	2343	1.78%	0.351	2.39	67	87	109	24	17	49%	98.00
II.1.2 50% of pull at maximum power at rated speed														
11	49.77	16.28	11.01	2383	1.25%	0.421	1.99	67	85	109	24	17	49%	98.00
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	72.87	24.39	10.76	2002	1.60%	0.310	2.71	67	86	108	24	17	49%	98.00
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	49.88	16.24	11.06	2045	1.16%	0.356	2.35	66	84	106	24	17	49%	98.00

Date of tests: 07–May–91, 08–May–91 | Fuel density: 6.993 lb/gal

Type of track: Concrete | Test # 1647

Gear	Power hp	Pull lb	Speed mph	Engine Speed rpm	Slip	SFC lb/hp.h	SFE hp.h/gal	Temperature, deg F: Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure
Ia. Maximum Power (ballasted, 2wd, 2200 rev/min)								Tire pressure: 14 psi, rear (inner) 14 psi, rear (outer)			16 psi, front			
								Drawbar height: 21 in						
6	105.13	15427	2.56	2294	14.07%	0.599	11.67	156	186	232	70	61	60%	29.00
7	117.48	14217	3.10	2199	7.64%	0.529	13.21	156	188	235	71	61	54%	28.98
8	119.95	11897	3.78	2201	4.76%	0.519	13.47	155	191	236	72	61	54%	28.98
9	120.02	10015	4.49	2201	3.16%	0.520	13.45	154	189	229	67	58	58%	28.96
10	121.64	8688	5.25	2198	2.74%	0.517	13.52	154	190	236	68	59	59%	28.96
11	121.80	7310	6.25	2202	2.30%	0.515	13.59	155	188	236	69	60	60%	28.95
12	119.71	6114	7.34	2201	1.87%	0.525	13.33	155	191	237	69	61	60%	28.9
13	118.59	5282	8.42	2197	1.52%	0.532	13.14	154	192	238	71	62	61%	28.95
II. Part Loads (ballasted, 2wd, 2200 rev/min)								Tire pressure: 14 psi, rear (inner) 14 psi, rear (outer)			16 psi, front			
								Drawbar height: 21 in						
II.1 in selected gear at maximum power														
11	121.80	7310	6.25	2202	2.30%	0.515	13.59	155	188	236	69	60	60%	28.95
II.1.1 75% of pull at maximum power at rated speed														
11	97.80	5485	6.69	2343	1.78%	0.578	12.11	153	188	229	75	63	49%	28.94
II.1.2 50% of pull at maximum power at rated speed														
11	66.74	3660	6.84	2383	1.25%	0.693	10.10	153	185	228	75	63	49%	28.94
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
12	97.72	5482	6.68	2002	1.60%	0.509	13.73	152	188	226	75	63	49%	28.94
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
12	66.89	3652	6.87	2045	1.16%	0.586	11.94	151	184	223	75	63	49%	28.94

University of Nebraska Tractor Test Laboratory

DRAWBAR PERFORMANCE AND FUEL CONSUMPTION (BALLASTED TRACTOR) Optional test 4 WD

Date of tests: 07–May–91 08–May–91 Test # 1647 Fuel density: 0.838 kg/l

Type of track: Concrete Engine

Gear	Power kW	Pull kN	Speed km/h	Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
I. Maximum Power (ballasted, fwa 2200 rev/min)						Tire pressure:		97 kPa, rear (inner)			110 kPa, front			
Drawbar height: 533 mm								97 kPa, rear (outer)						
3	60.95	81.00	2.71	2367	13.23%	0.396	2.12	69	85	109	22	16	54%	98.17
4	69.42	82.23	3.04	2345	14.25%	0.380	2.21	68	85	110	22	16	54%	98.17
5	85.05	81.99	3.73	2272	7.91%	0.338	2.48	69	86	110	21	16	60%	98.21
6	88.66	73.48	4.34	2201	5.53%	0.320	2.62	68	86	111	21	16	60%	98.21
7	90.78	63.27	5.17	2199	4.54%	0.312	2.68	68	86	111	22	16	54%	98.17
8	90.13	52.58	6.17	2198	3.45%	0.312	2.69	69	89	113	22	16	54%	98.14
9	89.49	44.12	7.30	2202	2.68%	0.317	2.64	68	88	113	18	14	65%	98.04
10	90.63	38.24	8.53	2202	2.07%	0.314	2.67	69	88	114	20	15	59%	98.08
11	90.98	32.44	10.10	2196	1.81%	0.312	2.68	67	87	114	21	15	53%	98.04
12	89.37	27.09	11.88	2200	1.54%	0.318	2.63	66	86	114	21	16	60%	98.04
13	88.45	23.38	13.62	2197	1.37%	0.321	2.61	67	88	113	21	17	67%	98.04

University of Nebraska Tractor Test Laboratory

Date of tests: 07–May–91 08–May–91 Test # 1647 Fuel density: 6.993 lb/gal

Type of track: Concrete Engine

Gear	Power hp	Pull lb	Speed mph	Speed rpm	Slip	SFC lb/hp.h	SFE hp.h/gal	Temperature, deg F Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure in Hg
I. Maximum Power (ballasted, fwa 2200 rev/min)						Tire pressure:		14 psi, rear (inner)			16 psi, front			
Drawbar height: 21 in								14 psi, rear (outer)						
3	81.74	18210	1.68	2367	13.23%	0.651	10.74	156	186	229	71	61	54%	28.99
4	93.09	18486	1.89	2345	14.25%	0.624	11.20	155	186	230	71	61	54%	28.99
5	114.05	18433	2.32	2272	7.91%	0.556	12.57	157	186	230	70	61	60%	29.00
6	118.89	16518	2.70	2201	5.53%	0.526	13.29	154	186	233	69	60	60%	29.00
7	121.74	14223	3.21	2199	4.54%	0.514	13.61	154	187	231	71	61	54%	28.99
8	120.86	11821	3.83	2198	3.45%	0.513	13.64	156	192	235	72	61	54%	28.98
9	120.01	9919	4.54	2202	2.68%	0.521	13.42	155	190	236	65	57	65%	28.95
10	121.54	8597	5.30	2202	2.07%	0.516	13.55	156	191	237	68	59	59%	28.96
11	121.98	7292	6.27	2196	1.81%	0.513	13.63	153	188	237	69	59	53%	28.95
12	119.85	6091	7.38	2200	1.54%	0.523	13.36	155	190	238	69	61	60%	28.95
13	118.61	5257	8.46	2197	1.37%	0.527	13.26	153	191	235	70	62	67%	28.95

Repairs: None
Remarks: None