OECD APPROVAL # 1329
(Restricted code)
Date of approval: 16 September 1991

NEBRASKA TRACTOR TESTING LABORATORY
DEPARTMENT OF AGRICULTURAL ENGINEERING
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 8630 POWERSHIFT (4WD)
WITH MECHANICAL FRONT WHEEL DRIVE





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

NEBRASKA TEST NO. 1646

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 8630 Powershift with MFWD OECD # 1329

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Table of Contents.

	Page
1. SPECIFICATIONS	1
2. TEST CONDITIONS	11
3. COMPULSORY TESTS	
Main Power Take-Off Performance	13
Power Lift and Hydr. Pump Perf.	16
Drawbar Performance	19
4. GRAPHS	21
5. OPTIONAL TESTS	
Drawbar Performance (Ballasted-2WD)	24
Drawbar Performance (Ballasted-4WD)	25

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

TRACTOR SPECIFICATIONS.

Make	Ford
Model	8630 Powershift
Type	Unit construction, mechanical front wheel drive (4WD)
Number of driving wheels	4
Serial Number	*A928884*
1st Serial number	*A925538*

ENGINE.

Make	Ford New Holland
Model	401
Type	Diesel,direct injection,turbocharged
Serial Number	*U293287*
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	103-131 kPa (15-19 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	220 liters (58 US gallons)

Make/Model/Type Injection Pump	Lucas/CAVP5636/2A/In line
Pump Serial number	KH02385C2
Production setting of pump Flow Rate (Rated Eng.Spd & Full Load)	24.9 +/- 1.2 kg/hr 54.9 +/- 2.7 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	Donaldson Cyclone
Air intake location	Above hood
Primary Cleaner	
Make/Model/Type	United Air Cleaner/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	Donaldson/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 820 mm (32.3 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 2200 rev/min [km/h]	[mph]
1 fwd	350.0	1.94	1.20
2 fwd	296.2	2.30	1.43
3 fwd	253.1	2.69	1.67
4 fwd	221.0	3.08	1.91
5 fwd	187.0	3.64	2.26
6 fwd	159.8	4.26	2.65
7 fwd	135.7	5.01	3.11
8 fwd	114.9	5.92	3.68
9 fwd	98.2	6.93	4.31
10 fwd	84.3	8.07	5.01
11 fwd	71.3	9.53	5.92
12 fwd	61.0	11.16	6.93
13 fwd	53.2	12.78	7.94
14 fwd	45.0	15.10	9.38
15 fwd	38.5	17.67	10.98
16 fwd	32.7	20.80	12.92
17 fwd	27.7	24.59	15.28
18 fwd	23.6	28.77	17.88
4 rev	218.8	3.11	1.93
5 rev	185.1	3.67	2.28
6 rev	158.2	4.30	2.67
7 rev	138.1	4.92	3.06
8 rev	116.9	5.82	3.62
9 rev	99.9	6.81	4.23
10 rev	84.4	8.02	4.98
11 rev	71.8	9.47	5.88
12 rev	61.3	11.09	6.89

Number of front wheel revolutions
for one rear wheel revolution. 1.329

CREEPER GEAR RATIOS
(Not on tested tractor)

Gear ratios and travel speeds.
(Tire dynamic radius of 820 mm (32.3 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 2200 rev/min [km/h]	[mph]
1 fwd creep	3713.2	0.18	0.11
2 fwd creep	3142.4	0.22	0.13
3 fwd creep	2685.1	0.25	0.16
4 fwd creep	2344.6	0.29	0.18
5 fwd creep	1983.9	0.34	0.21
6 fwd creep	1695.3	0.40	0.25
7 fwd creep	1439.6	0.47	0.29
8 fwd creep	1219.0	0.56	0.35
9 fwd creep	1041.8	0.65	0.41
10 fwd creep	894.3	0.76	0.47
11 fwd creep	756.4	0.90	0.56
12 fwd creep	647.1	1.05	0.65
13 fwd creep	564.4	1.20	0.75
14 fwd creep	477.4	1.42	0.88
15 fwd creep	408.4	1.67	1.04
16 fwd creep	346.9	1.96	1.22
17 fwd creep	293.9	2.32	1.44
18 fwd creep	250.4	2.71	1.69
4 rev creep	2321.2	0.29	0.18
5 rev creep	1963.7	0.35	0.22
6 rev creep	1678.3	0.41	0.25
7 rev creep	1465.1	0.46	0.29
8 rev creep	1240.2	0.55	0.34
9 rev creep	1059.8	0.64	0.40
10 rev creep	895.4	0.76	0.47
11 rev creep	761.7	0.89	0.55
12 rev creep	650.3	1.04	0.65

Number of front wheel revolutions
for one rear wheel revolution. 1.329

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	758 mm (29.8 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	758 mm (29.8 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.

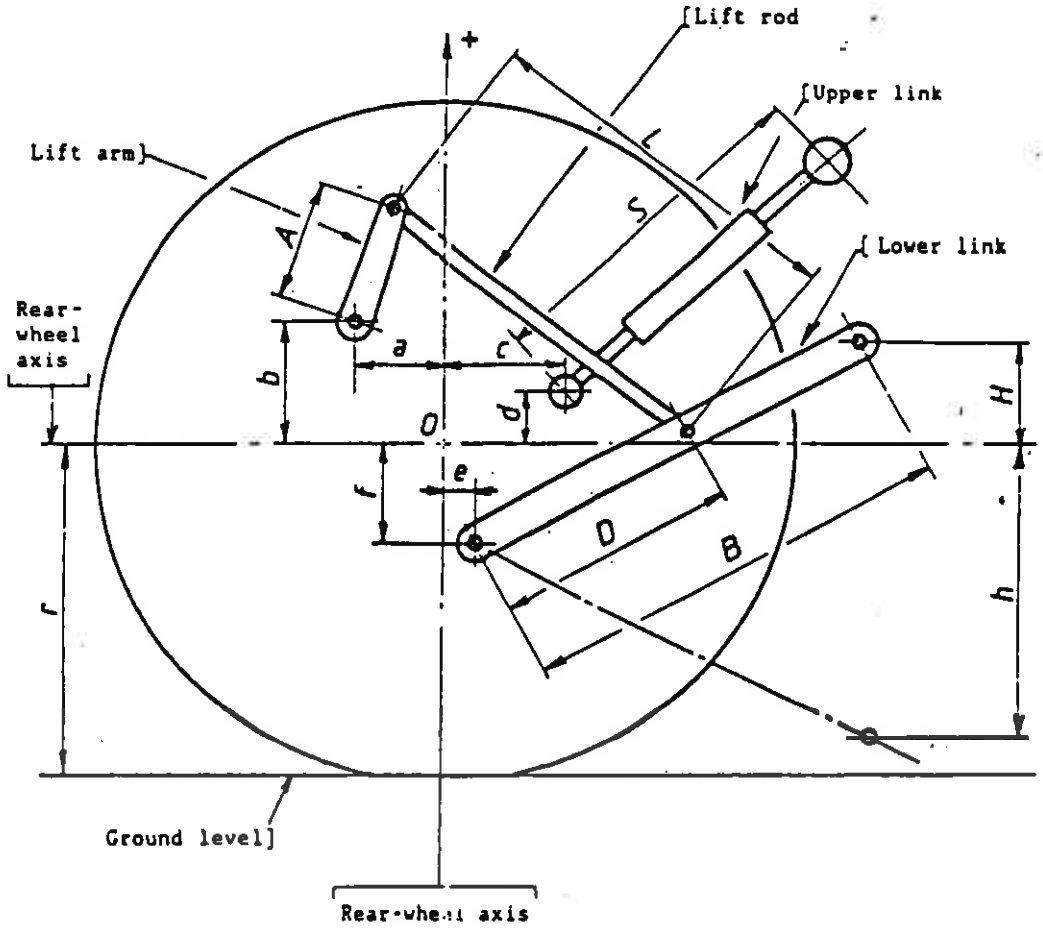
POWER LIFT.

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

THREE POINT LINKAGE



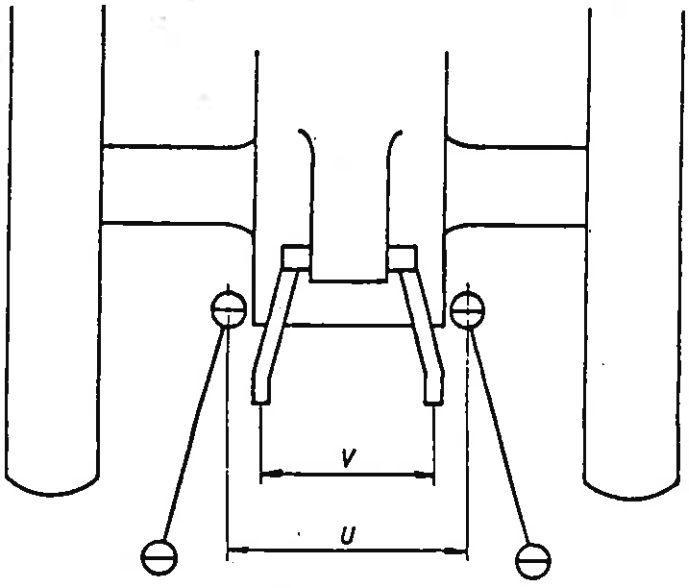


Table 1.1 -*Linkage geometry dimensions.

		Dimension or range [mm]	Dimension or range [in]	Settings used on test [mm]	Settings used on test [in]
Lift category		II			
Rear Tire - Radius Index	(r)	820	32.3		
Front Tire - Radius Index	(r')	640	25.2		
Length of lift arms	(A)	381	15.0	same	
Length of lower links	(B)	921	36.2	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	127	5.0
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)	480	18.9		
	or	573	22.6	573	22.6
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.		679	26.7		
	to	1035	40.7	816	32.1

*Assuming (r) with a tire dynamic index of 820 mm (32.3 in)
ISO 4251/1-1984

SWINGING DRAWBAR.

Type	Oscillating
Height above ground	465 mm (18.3)
Adjustments	None
Distance of hitch point from rear wheel axis,horizontal	853 mm (33.6) or 906 mm (35.6 in)
Distance of hitch point from PTO shaft end	
Vertical	232 mm (9.1 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	2667 mm (105.0 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 0174/19,20-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 outside edge to median plane of tractor. [mm]	Distance from outside edge to median plane of tractor. [in]
Headlights	1209	47.6	134 dia.	292	13.8
Rearlights	2760	108.7	133 x 84	635	25.0
Rear reflectors	1758	69.2	44 x 50	856	33.7
Cab Lights	2736	107.7	133 x 84	266/445	10.5/17.5

TEST CONDITIONS.

Overall dimensions.

Length		4554 mm (179.3 in)
Width	Minimum	2655 mm (104.5 in)
	Maximum(duals)	3520 mm (138.6 in)
Height -	Top of cab	2863 mm (112.7 in)
-	Top of exhaust	3083 mm (121.4 in)
Ground clearance. (unballasted)		394 mm (15.5 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	2127	4688	2137	4712
	Rear	4219	9302	4284	9444
	Total	6346	13990	6421	14156
Ballasted	Front	2623	5782	2633	5805
	Rear	4994	11010	5059	11154
	Total	7617	16792	7692	16959

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	776	1710		
Additional front frame	1	109	240		
+ weights	8	319	704		
test equipment		68	150		

Tire Specifications.

	Front Wheels	Rear Wheels
Make	Goodyear	Goodyear
Dimensions	14.9-28	18.4R38
Ply rating	8 ply	1 star (6/8 ply)
Type	Bias	Radial
Max.load (tire manufacturer)	1880 kg/tire (4140 lb/tire)	2760 kg/tire (6080 lb/tire)
Max.load(tractor manufacturer)	1890 kg/tire) (4145 lb/tire)	2715 kg/tire (5985 lb/tire)
Inflation pressure (tire mfr)	190 kPa(26 psi)	124 kPa(20 psi)
Dynamic Radius Index	640 mm(25.2 in)	820 mm (32.3 in)
Chosen track width - singles	1980 mm(78.0 in)	1758 mm (69.2 in)
- duals		3022 mm(119.0 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 SF/CD 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 : 14 May 1991
Location of tests : 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.i)	Specific energy kW.h/l (hp.h/gal)
1.1 Maximum Power- 2 hour test.						
90.80 (121.77)	2199	1147	29.30 (7.74)	24.55 (54.12)	0.270 (0.444)	3.10 (15.73)
1.2 Power at rated engine speed. (1 hour)						
90.80 (121.77)	2199	1147	29.30 (7.74)	24.55 (54.12)	0.270 (0.444)	3.10 (15.73)
1.3 Maximum power at standard PTO speed. (1000 rev/min)						
87.32 (117.10)	1916	1000	26.49 (7.00)	22.20 (48.94)	0.254 (0.418)	3.30 (16.73)

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.						
90.80 (121.77)	2199	1147	29.30 (7.74)	24.55 (54.12)	0.270 (0.444)	3.10 (15.73)
ii. 85% of the torque obtained in (i)						
83.28 (111.68)	2375	1239	28.91 (7.64)	24.22 (53.40)	0.291 (0.478)	2.88 (14.62)
iii. 75% of the torque defined in (ii)						
63.16 (84.69)	2402	1253	24.52 (6.48)	20.55 (45.30)	0.325 (0.535)	2.58 (13.07)
iv. 50% of the torque defined in (ii)						
42.58 (57.10)	2425	1265	19.81 (5.23)	16.60 (36.60)	0.390 (0.641)	2.15 (10.91)
v. 25% of the torque defined in (ii)						
21.29 (28.56)	2437	1271	14.78 (3.90)	12.38 (27.30)	0.582 (0.956)	1.44 (7.31)
vi. unloaded						
0.36 (0.49)	2455	1281	10.23 (2.70)	8.57 (18.90)	23.567 (38.744)	0.04 (0.18)

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						
87.32 (117.10)	1916	1000	26.49 (7.00)	22.20 (48.94)	0.254 (0.418)	3.30 (16.73)
ii. 85% of the torque obtained in (i)						
79.39 (106.47)	2038	1063	25.17 (6.65)	21.09 (46.50)	0.266 (0.437)	3.15 (16.01)
iii. 75% of the torque defined in (ii)						
60.44 (81.05)	2084	1087	20.79 (5.49)	17.42 (38.40)	0.288 (0.474)	2.91 (14.76)
iv. 50% of the torque defined in (ii)						
41.25 (55.31)	2124	1108	16.89 (4.46)	14.15 (31.20)	0.343 (0.564)	2.44 (12.40)
v. 25% of the torque defined in (ii)						
20.89 (28.01)	2153	1123	12.18 (3.22)	10.21 (22.50)	0.489 (0.803)	1.71 (8.71)
vi. Unloaded						
0.32 (0.43)	2188	1141	7.96 (2.10)	6.67 (14.70)	20.579 (33.832)	0.04 (0.21)

No-load maximum engine speed	2455 rev/min
Equivalent engine torque:	
at rated engine speed	394 Nm (2199 rev/min)
at maximum power	394 Nm (2199 rev/min)
at maximum torque	471 Nm (1501 rev/min)
Mean atmospheric conditions:	
Temperature-dry bulb	23'C (74'F)
Relative humidity	69 %
Barometer	97.29 kPa (28.73 in Hg)

Maximum Temperatures :		
	Thermostat housing	90'C (194'F)
	Engine oil	108'C (227'F)
	Fuel at injection pump	80'C (175'F)
	Engine air intake	28'C (82'F)
	Trans./Hydr. Oil	79'C (174'F)
Turbocharger boost pressure		
	at rated engine speed	106 kPa (15.5 psi)
	at maximum power	106 kPa (15.5 psi)

2. HYDRAULIC POWER AND LIFTING FORCE.

Date of test: 14 May 1991
Location: TTL/UNL, Lincoln, Nebr.

2.1 HYDRAULIC POWER TEST - HYDRAULIC PUMP PERFORMANCE

Sustained pressure with pump stalled	17.72 MPa (2570 psi)
Pump delivery rate at minimum pressure & rated engine speed	107.1 l/m (28.3 gpm)

	Flow Rate l/min (gal/min)	Pressure MPa (psi)	Power kW (hp)
At 90% of relief valve setting	85.9 (22.7)	15.86 (2300)	22.7 (30.5)
At maximum hydraulic power.	94.3 (24.9)	14.82 (2150)	23.3 (31.2)

Tapping point(s)	Two hydraulic outlets combined
Hydraulic fluid temperature at flow meter	68'C (155'F)

2.2 POWER LIFT TEST.

	Hitch Points	Frame
Lower hitch points above ground - down position. [mm/in]	196/7.7	107/4.2
Vertical movement without load [mm/in]	622/24.5	806/31.8
Vertical movement with load [mm/in]	602/23.7	769/30.3
Maximum corrected force through full range [kN/lbf]	35.1/7902	28.0/6305
Corresponding pressure [kPa/psi]	16258/2358	
Moment about rear axle [kN.m/ft.lb]	39.9/29435	48.9/36093
Maximum mast tilt angle [degrees]	--	8.4

Lifting height relative to the horizontal position of lower links

[mm]	-434	-356	-300	-201	-99
[in]	-17.1	-14.0	-11.9	-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]	28.0	28.7	29.7	--	30.7
at frame [lb]	6305	6458	6687	--	6894

Lifting height relative to the horizontal position of lower links

[mm]	0	99	201	246	335
[in]	0	3.9	7.9	9.7	13.2
Corrected lift forces.					
hitch points [kN]	40.8	41.8	42.9	43.7	--
hitch points [lb]	9162	9392	9639	9819	--
at frame [kN]	30.9	30.8	--	30.4	29.6
at frame [lb]	6957	6921	--	6836	6660

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]	196/7.7	107/4.2
Vertical movement without load [mm/in]	622/24.5	806/31.8
Vertical movement with load [mm/in]	602/23.7	780/30.7
Maximum corrected force through full range [kN/lbf]	54.6/12276	40.0/8988
Corresponding pressure [kPa/psi]	16258/2358	
Moment about rear axle [kN.m/ft.lb]	62.0/45728	69.8/51457
Maximum mast tilt angle [degrees]	--	9.1

Lifting height relative to the horizontal position of lower links

[mm]	-437	-356	-300	-201	-99
[in]	-17.2	-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]	47.1	46.2	45.3	--	44.6
at frame [lb]	10593	10395	10179	--	10031

Lifting height relative to the horizontal position of lower links

[mm]	0	99	201	246	343
[in]	0	3.9	7.9	9.7	13.5
Corrected lift forces.					
hitch points [kN]	58.2	58.4	58.4	59.1	--
hitch points [lb]	13095	13127	13136	13282	--
at frame [kN]	43.7	42.3	--	40.4	40.0
at frame [lb]	9833	9504	--	9081	8988

DRAWBAR POWER AND FUEL CONSUMPTION (UNBALLASTED TRACTOR)

Date of tests: 15-May-91 Fuel density: 0.838 kg/l

15-May-91 Test # 1646

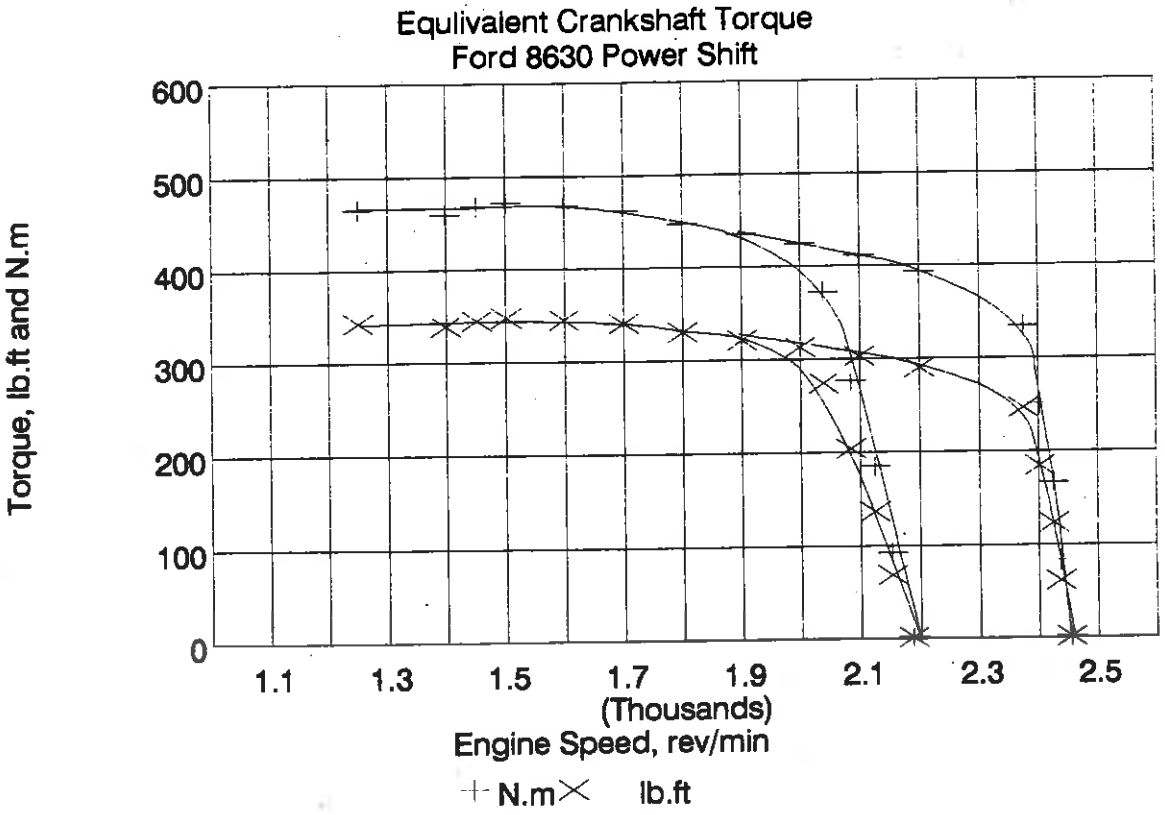
Type of track: Concrete

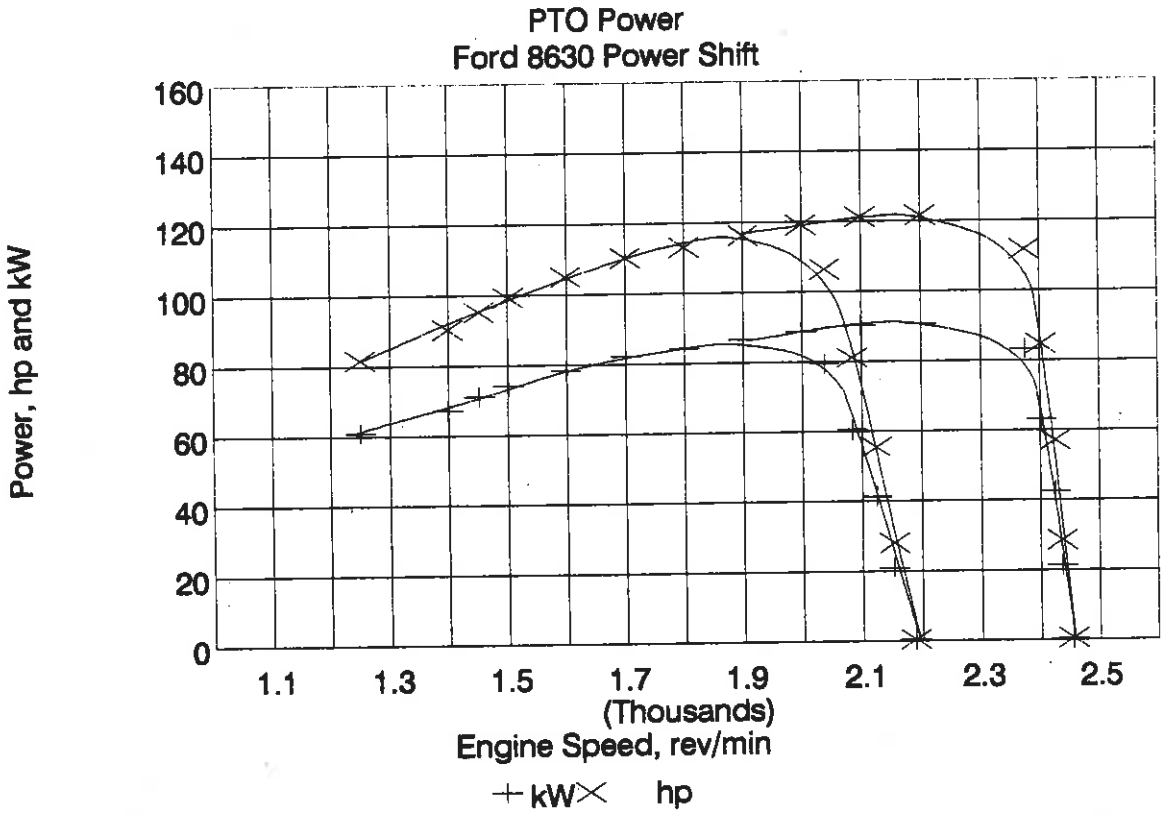
Gear	Power kW	Pull kN	Speed km/h	Engine Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
I. Maximum Power (unballasted, fwa 2200 rev/min) Tire pressure: 97 kPa, rear 110 kPa, front Drawbar height: 457 mm														
4	49.13	60.56	2.92	2411	14.83%	0.425	1.97	76	85	103	22	18	68%	97.32
5	58.44	61.36	3.43	2403	14.83%	0.401	2.09	77	84	102	21	18	75%	97.29
6	67.95	57.23	4.27	2378	6.68%	0.364	2.30	77	86	105	22	19	76%	97.32
7	73.65	54.04	4.91	2275	6.92%	0.336	2.49	76	86	105	22	19	76%	97.36
8	74.82	47.02	5.73	2200	5.02%	0.326	2.57	77	87	103	22	19	76%	97.36
9	75.01	39.80	6.78	2201	3.85%	0.323	2.59	76	88	104	22	20	83%	97.36
10	77.55	35.15	7.94	2198	3.21%	0.314	2.67	77	88	104	23	20	76%	97.36
11	76.75	29.19	9.47	2201	2.48%	0.316	2.65	76	88	105	23	21	84%	97.32
12	75.52	24.45	11.12	2199	2.15%	0.320	2.62	76	87	104	24	21	76%	97.32
13	74.21	20.92	12.77	2198	1.82%	0.328	2.56	77	88	104	24	21	84%	97.32
14	72.45	17.21	15.16	2202	1.48%	0.330	2.54	77	88	103	24	21	76%	97.32
II. Part Loads (unballasted, fwa 2200 rev/min) Tire pressure: 97 kPa, rear 110 kPa, front Drawbar height: 457 mm														
II.1 In selected gear at maximum power														
10	77.55	35.15	7.94	2198	3.21%	0.314	2.67	77	88	104	23	20	76%	97.36
II.1.1 75% of pull at maximum power at rated speed														
10	63.98	26.37	8.74	2395	2.31%	0.357	2.35	75	86	100	24	21	77%	97.32
II.1.2 50% of pull at maximum power at rated speed														
10	43.60	17.60	8.92	2427	1.57%	0.432	1.94	76	85	101	24	21	77%	97.32
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
11	63.92	26.36	8.73	2024	2.31%	0.314	2.67	74	85	100	24	21	77%	97.32
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
11	43.54	17.59	8.91	2051	1.57%	0.362	2.32	74	85	100	24	21	77%	97.32
II.2 In selected gear nearest to 7.5 km/h														
10	77.55	35.15	7.94	2198	3.21%	0.314	2.67	77	88	104	23	20	76%	97.36
II.2.1 75% of pull at maximum power at rated speed														
10	63.98	26.37	8.74	2395	2.31%	0.357	2.35	75	86	100	24	21	77%	97.32
II.2.2 50% of pull at maximum power at rated speed														
10	43.60	17.60	8.92	2427	1.57%	0.432	1.94	76	85	101	24	21	77%	97.32
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
11	63.92	26.36	8.73	2024	2.31%	0.314	2.67	74	85	74	24	21	77%	97.32
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
11	43.54	17.59	8.91	2051	1.57%	0.362	2.32	74	85	100	24	21	77%	97.32

DRAWBAR POWER AND FUEL CONSUMPTION (UNBALLASTED TRACTOR)

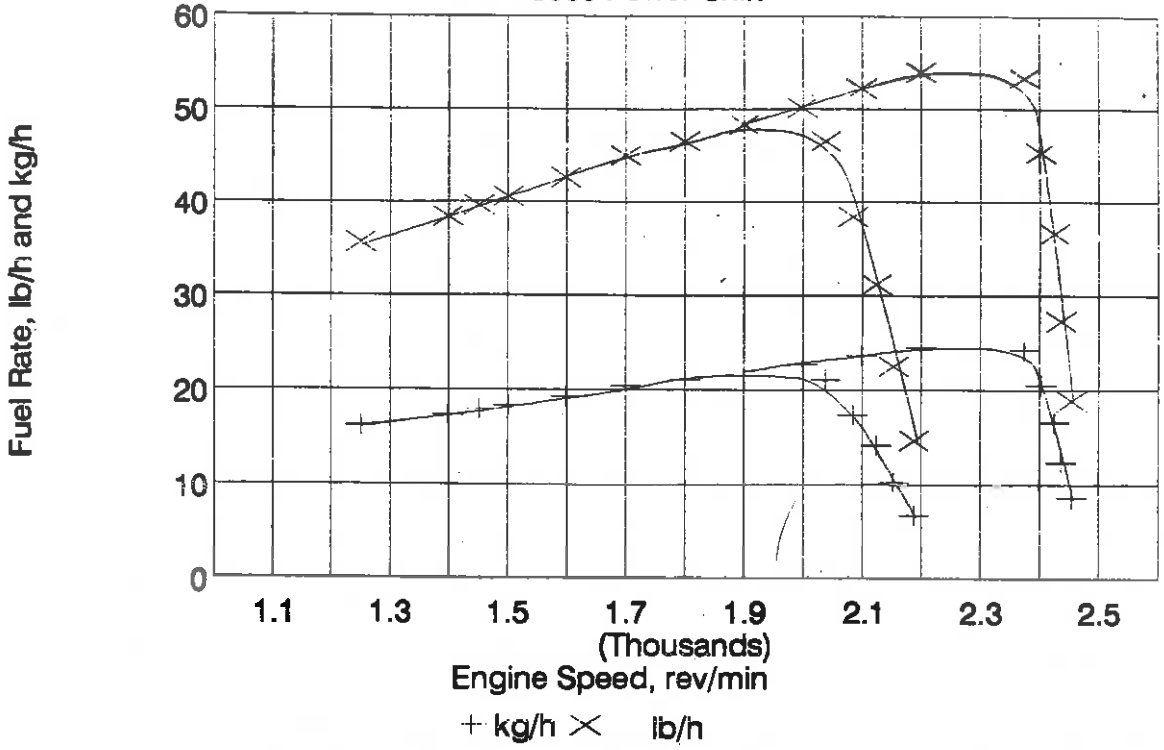
Date of tests: 15-May-91 Fuel density: 6.993 lb/gal
15-May-91 Test # 1646
Type of track: Concrete Engine

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:		18 in									
4	65.89	13615	1.81	2411	14.83%	0.698	10.02	170	186	217	71	65	68%	28.74
5	78.37	13794	2.13	2403	14.83%	0.659	10.61	170	184	215	70	65	75%	28.73
6	91.12	12866	2.66	2378	8.68%	0.599	11.68	170	186	222	72	66	76%	28.74
7	98.77	12149	3.05	2275	6.92%	0.552	12.66	168	187	221	72	66	76%	28.75
8	100.34	10571	3.56	2200	5.02%	0.536	13.05	170	189	218	72	67	76%	28.75
9	100.59	8948	4.22	2201	3.85%	0.531	13.17	170	191	220	72	68	83%	28.75
10	104.00	7903	4.93	2198	3.21%	0.516	13.55	171	190	219	73	68	76%	28.75
11	102.93	6562	5.88	2201	2.48%	0.519	13.47	170	190	221	74	69	84%	28.74
12	101.27	5497	6.91	2199	2.15%	0.526	13.30	169	189	219	75	69	76%	28.74
13	99.51	4704	7.93	2198	1.82%	0.539	12.98	170	190	219	75	69	84%	28.74
14	97.15	3868	9.42	2202	1.48%	0.543	12.89	170	190	218	76	70	76%	28.74
II. Part Loads (unballasted, fwa 2200 rev/min)						Tire pressure:		14 psi, rear			16 psi, front			
			Drawbar height:		18 in									
II.1 In selected gear at maximum power														
10	104.00	7903	4.93	2198	3.21%	0.516	13.55	171	190	219	73	68	76%	28.75
II.1.1 75% of pull at maximum power at rated speed														
10	85.80	5928	5.43	2395	2.31%	0.587	11.91	167	186	212	76	70	77%	28.74
II.1.2 50% of pull at maximum power at rated speed														
10	58.47	3957	5.54	2427	1.57%	0.710	9.85	168	185	215	76	70	77%	28.74
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
11	85.71	5927	5.42	2024	2.31%	0.516	13.56	165	186	212	76	70	77%	28.74
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
11	58.39	3955	5.54	2051	1.57%	0.594	11.77	165	185	212	76	70	77%	28.74
II.2 In selected gear nearest to 4.6 mph														
10	104.00	7903	4.93	2198	3.21%	0.516	13.55	171	190	219	73	68	76%	28.75
II.2.1 75% of pull at maximum power at rated speed														
10	85.80	5928	5.43	2395	2.31%	0.587	11.91	167	186	212	76	70	77%	28.74
II.2.2 50% of pull at maximum power at rated speed														
10	58.47	3957	5.54	2427	1.57%	0.710	9.85	168	185	215	76	70	77%	28.74
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
11	85.71	5927	5.42	2024	2.31%	0.516	13.56	165	186	166	76	70	77%	28.74
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
11	58.39	3955	5.54	2051	1.57%	0.594	11.77	165	185	212	76	70	77%	28.74

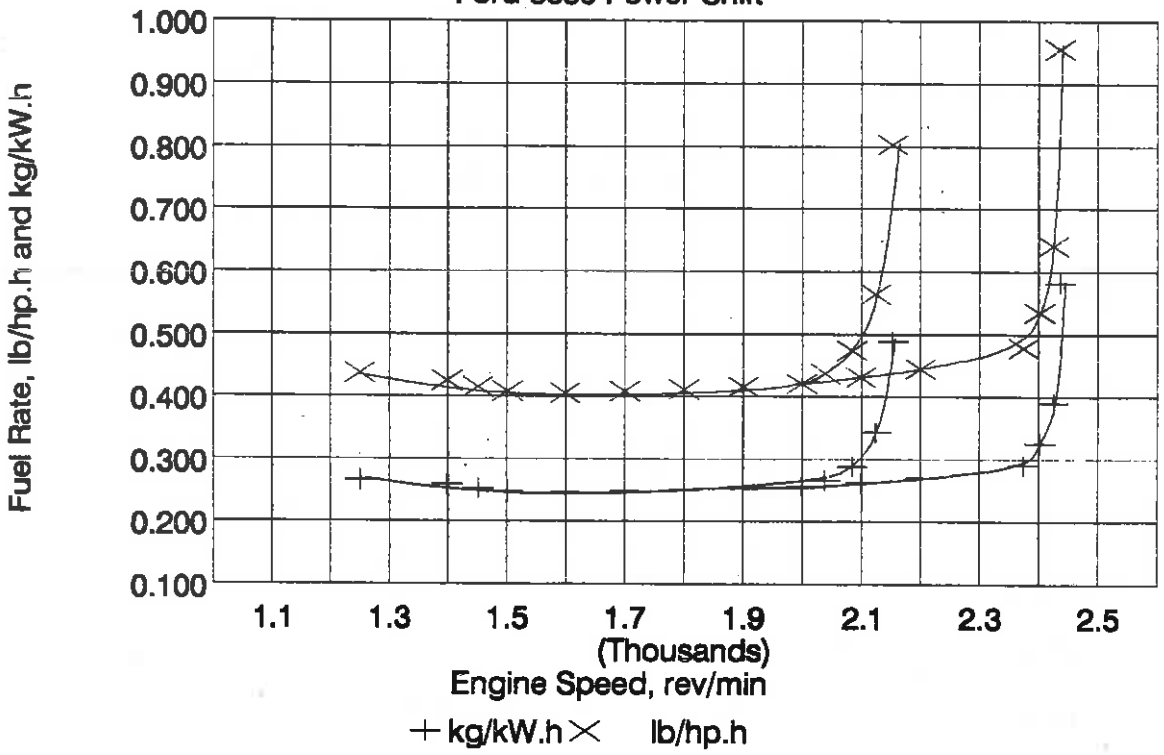

Equlivalent Crankshaft Torque
Ford 8630 Power Shift
Torque, lb.ft and N.m
600
500
400
300
200
100
0
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
N.m
lb.ft

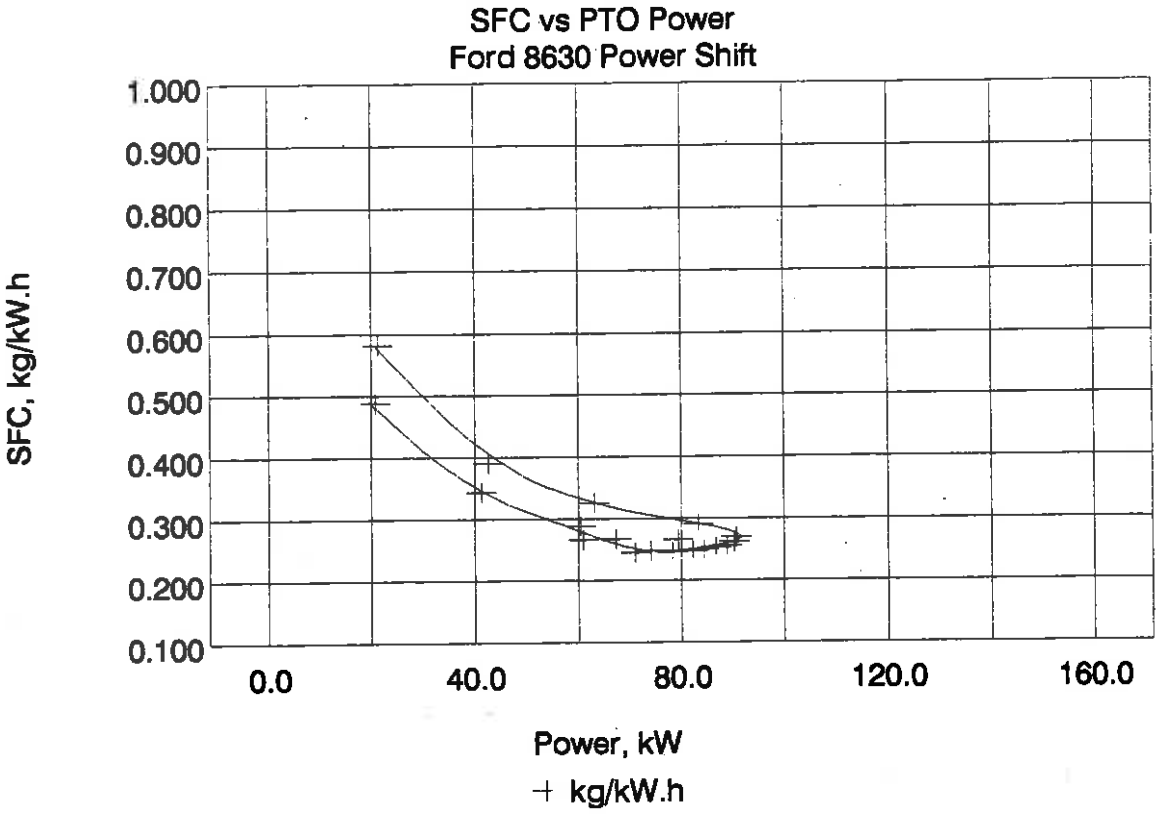

PTO Power
Ford 8630 Power Shift
Power, hp and kW
160
140
120
100
80
60
40
20
0
1.1
1.3
1.5
1.7
1.9
2.1
2.3
2.5
(Thousands)
Engine Speed, rev/min
kW
hp

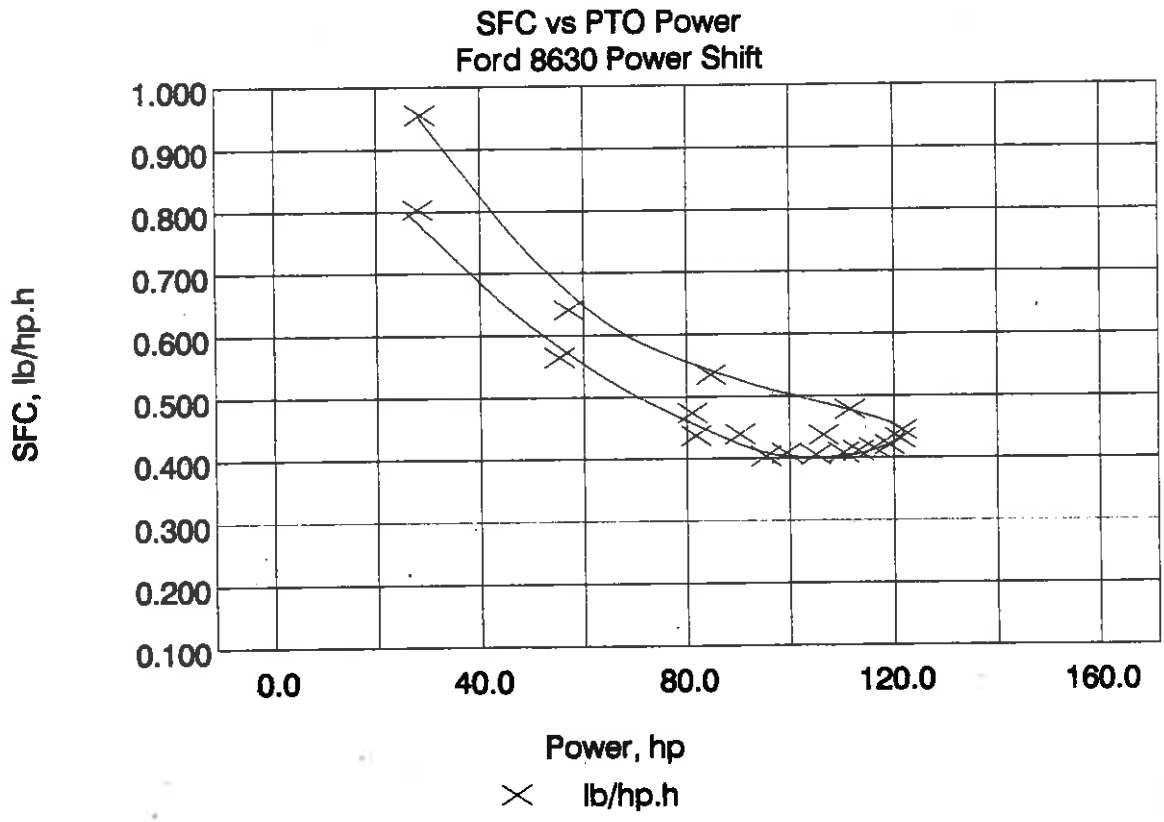
PTO Fuel Consumption
Ford 8630 Power Shift



PTO Specific Fuel Consumption
Ford 8630 Power Shift




SFC vs PTO Power
Ford 8630 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
0.0
40.0
80.0
120.0
160.0
Power, kW
+ kg/kW.h


SFC vs PTO Power
Ford 8630 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
0.0
40.0
80.0
120.0
160.0
Power, hp
× lb/hp.h

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

Date of tests:	16-May-91		Fuel density:	0.838 kg/l										
	16-May-91	Test #	1646											
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, 2wd			2200 rev/min)			Tire pressure:		97 kPa, rear (inner)			110 kPa, front			
			Drawbar height:		495 mm			97 kPa, rear (outer)						
6	67.42	61.49	3.95	2320	13.78%	0.372	2.25	77	86	105	22	19	76%	97.32
7	74.48	56.89	4.71	2198	7.62%	0.327	2.56	76	87	105	23	20	76%	97.32
8	74.97	46.98	5.74	2200	4.75%	0.326	2.57	76	88	105	24	19	62%	97.36
9	75.61	40.06	6.79	2201	3.72%	0.321	2.61	76	88	105	24	19	62%	97.36
10	77.66	35.08	7.97	2203	3.08%	0.315	2.66	75	88	105	25	19	57%	97.36
11	76.71	29.15	9.47	2202	2.67%	0.318	2.64	77	88	105	25	20	63%	97.36
12	75.16	24.30	11.14	2203	2.10%	0.322	2.60	76	89	104	26	20	58%	97.36
13	74.34	20.93	12.79	2202	1.85%	0.328	2.56	76	88	105	26	21	65%	97.39
14	72.71	17.28	15.15	2202	1.60%	0.335	2.50	76	89	105	26	21	64%	97.39
II. Part Loads (ballasted, 2wd		2200 rev/min)				Tire pressure:		97 kPa, rear (inner)			110 kPa, front			
			Drawbar height:		495 mm			97 kPa, rear (outer)						
II.1 in selected gear at maximum power														
10	77.66	35.08	7.97	2203	3.08%	0.315	2.66	75	88	105	25	19	57%	97.36
II.1.1 75% of pull at maximum power at rated speed														
10	63.85	26.30	8.74	2395	2.43%	0.361	2.32	75	87	100	27	21	58%	97.32
II.1.2 50% of pull at maximum power at rated speed														
10	43.46	17.54	8.92	2426	1.69%	0.438	1.91	76	85	102	27	21	58%	97.32
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
11	63.95	26.30	8.75	2029	2.10%	0.317	2.65	74	86	101	27	21	58%	97.32
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
11	43.40	17.51	8.92	2053	1.52%	0.366	2.29	73	85	99	27	21	58%	97.32
II.2 in selected gear nearest to 7.5 km/h														
10	77.66	35.08	7.97	2203	3.08%	0.315	2.66	75	88	105	25	19	57%	97.36
II.2.1 75% of pull at maximum power at rated speed														
10	63.85	26.30	8.74	2395	2.43%	0.361	2.32	75	87	100	27	21	58%	97.32
II.2.2 50% of pull at maximum power at rated speed														
10	43.46	17.54	8.92	2426	1.69%	0.438	1.91	76	85	102	27	21	58%	97.32
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
11	63.95	26.30	8.75	2029	2.10%	0.317	2.65	74	86	101	27	21	58%	97.32
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
11	43.40	17.51	8.92	2053	1.52%	0.366	2.29	73	85	99	27	21	58%	97.32

Date of tests:	16-May-91		Fuel density:	6.993 lb/gal										
	16-May-91	Test #	1646											
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, 2wd			2200 rev/min)			Tire pressure:		14 psi, rear (inner)			16 psi, front			
			Drawbar height:		19.5 in			14 psi, rear (outer)						
6	90.41	13824	2.45	2320	13.78%	0.612	11.43	170	186	221	71	66	76%	28.74
7	99.88	12789	2.93	2198	7.62%	0.537	13.02	169	188	222	74	68	76%	28.74
8	100.54	10562	3.57	2200	4.75%	0.536	13.04	169	191	221	75	67	62%	28.75
9	101.39	9006	4.22	2201	3.72%	0.528	13.25	169	191	222	76	67	62%	28.75
10	104.14	7887	4.95	2203	3.08%	0.517	13.52	168	191	221	77	67	57%	28.75
11	102.87	6553	5.89	2202	2.67%	0.523	13.38	171	190	221	77	68	63%	28.75
12	100.79	5462	6.92	2203	2.10%	0.529	13.21	169	192	220	78	68	58%	28.75
13	99.70	4705	7.95	2202	1.85%	0.539	12.98	169	191	222	79	69	65%	28.76
14	97.50	3884	9.41	2202	1.60%	0.551	12.70	169	192	221	79	70	64%	28.76
II. Part Loads (ballasted, 2wd		2200 rev/min)				Tire pressure:		14 psi, rear (inner)			16 psi, front (inner)			
			Drawbar height:		19.5 in			14 psi, rear (outer)						
II.1 in selected gear at maximum power														
10	104.14	7887	4.95	2203	3.08%	0.517	13.52	168	191	221	77	67	57%	28.75
II.1.1 75% of pull at maximum power at rated speed														
10	85.62	5913	5.43	2395	2.43%	0.593	11.79	166	189	212	80	70	58%	28.74
II.1.2 50% of pull at maximum power at rated speed														
10	58.28	3944	5.54	2426	1.69%	0.720	9.71	169	185	216	80	70	58%	28.74
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
11	85.76	5913	5.44	2029	2.10%	0.521	13.43	166	187	215	80	70	58%	28.74
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
11	58.20	3938	5.54	2053	1.52%	0.601	11.63	163	185	210	80	70	58%	28.74
II.2 in selected gear nearest to 4.6 mph														
10	104.14	7887	4.95	2203	3.08%	0.517	13.52	168	191	221	77	67	57%	28.75
II.1.1 75% of pull at maximum power at rated speed														
10	85.62	5913	5.43	2395	2.43%	0.593	11.79	166	189	212	80	70	58%	28.74
II.1.2 50% of pull at maximum power at rated speed														
10	58.28	3944	5.54	2426	1.69%	0.720	9.71	169	185	216	80	70	58%	28.74
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
11	85.76	5913	5.44	2029	2.10%	0.521	13.43	166	187	215	80	70	58%	28.74
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
11	58.20	3938	5.54	2053	1.52%	0.601	11.63	163	185	210	80	70	58%	28.74

University of Nebraska Tractor Test Laboratory

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

Date of tests:	16-May-91		Fuel density:	0.838 kg/l										
	16-May-91	Test #	1646											
Type of track:	Concrete		Engine											
Gear	Power	Pull	Speed	Speed	Slip	SFC	SFE	Temperature, deg C					Relative	Barometric
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet	humidity	Pressure kPa
I. Maximum Power (ballasted, fwa	2200 rev/min)					Tire pressure:		97 kPa, rear			110 kPa, front			
	Drawbar height:		495 mm											
3	54.16	76.64	2.54	2395	14.86%	0.408	2.05	76	85	102	21	18	75%	97.36
4	62.81	77.59	2.91	2383	14.29%	0.387	2.17	77	86	102	19	17	82%	97.39
5	72.13	70.72	3.67	2353	7.23%	0.348	2.40	76	85	105	21	19	83%	97.32
6	74.77	65.97	4.08	2199	6.18%	0.326	2.57	76	85	103	22	19	76%	97.32
7	76.34	56.51	4.86	2200	5.03%	0.319	2.62	76	86	105	23	19	69%	97.36
8	75.48	46.62	5.83	2201	3.69%	0.324	2.59	76	86	103	23	19	69%	97.36
9	75.88	39.82	6.86	2201	3.04%	0.320	2.62	76	89	105	24	19	62%	97.36
10	77.87	34.98	8.01	2197	2.63%	0.314	2.67	76	88	104	25	19	57%	97.36
11	77.30	29.23	9.52	2198	2.22%	0.313	2.67	76	88	105	25	19	57%	97.36
12	75.47	24.26	11.20	2202	1.98%	0.325	2.58	75	88	104	26	20	58%	97.36
13	73.79	20.66	12.86	2201	1.64%	0.327	2.57	77	88	105	26	21	64%	97.39
14	71.92	17.01	15.22	2201	1.31%	0.337	2.49	61	88	97	26	21	64%	97.39

University of Nebraska Tractor Test Laboratory

Date of tests:	16-May-91		Fuel density:	6.993 lb/gal										
	16-May-91	Test #	1646											
Type of track:	Concrete		Engine											
Gear	Power	Pull	Speed	Speed	Slip	SFC	SFE	Temperature, deg F					Relative	Barometric
	hp	lb	mph	rpm		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet	humidity	Pressure in Hg
I. Maximum Power (ballasted, fwa	2200 rev/min)					Tire pressure:		14 psi, rear			16 psi, front			
	Drawbar height:		19.5 in											
3	72.63	17229	1.58	2395	14.86%	0.671	10.42	169	185	216	69	65	75%	28.75
4	84.23	17444	1.81	2383	14.29%	0.636	11.00	171	186	215	67	63	82%	28.76
5	96.73	15900	2.28	2353	7.23%	0.573	12.21	169	186	221	70	66	83%	28.74
6	100.27	14831	2.54	2199	6.18%	0.535	13.06	169	186	217	71	66	76%	28.74
7	102.38	12705	3.02	2200	5.03%	0.525	13.32	169	190	221	73	66	69%	28.75
8	101.21	10480	3.62	2201	3.69%	0.533	13.13	168	190	218	74	67	69%	28.75
9	101.76	8953	4.26	2201	3.04%	0.526	13.29	169	192	221	76	67	62%	28.75
10	104.43	7865	4.98	2197	2.63%	0.516	13.55	168	191	220	77	67	57%	28.75
11	103.67	6572	5.92	2198	2.22%	0.515	13.57	168	191	221	77	67	57%	28.75
12	101.21	5454	6.96	2202	1.98%	0.534	13.10	167	191	219	78	68	58%	28.75
13	98.96	4646	7.99	2201	1.64%	0.537	13.02	171	191	221	79	69	64%	28.76
14	96.45	3824	9.46	2201	1.31%	0.554	12.62	142	191	206	79	70	64%	28.76

Repairs: None
Remarks: None