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## Test 1644: Ford 3930 (8x2) Diesel 8-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA OECD TRACTOR TEST 1644—SUMMARY 082

## FORD 3930 8 x 2 DIESEL

### 8 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
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#### MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—(PTO speed—600 rpm)					
45.85 (34.19)	1999	2.83 (10.70)	0.431 (0.262)	16.23 (3.20)	

Standard PTO Speed (PTO—540 RPM)					
43.65 (32.55)	1800	2.65 (10.03)	0.424 (0.255)	16.48 (3.25)	

#### VARYING POWER AND FUEL CONSUMPTION

45.85 (34.19)	1999	2.83 (10.70)	0.431 (0.262)	16.23 (3.20)	
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40.58 (30.26)	2085	2.57 (9.74)	0.444 (0.270)	15.76 (3.11)	
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30.85 (23.01)	2109	2.10 (7.96)	0.476 (0.290)	14.68 (2.89)	
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20.65 (15.40)	2127	1.63 (6.17)	0.552 (0.336)	12.67 (2.50)	
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10.42 (7.77)	2147	1.20 (4.55)	0.806 (0.490)	8.68 (1.71)	
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0.12 (0.09)	2169	0.82 (3.09)	45.985 (27.972)	0.15 (0.03)	
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Air temperature

76°F (24°C)

Relative humidity

44%

Barometer

28.63" Hg (96.95 kPa)

Maximum Torque 137 lb.-ft (186 Nm) at 1101 rpm

Maximum Torque Rise 14.0%

#### FUEL CONSUMPTION CHARACTERISTICS

#### DRAWBAR PERFORMANCE

##### (Front Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
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Maximum Power—5th (1H) Gear									
38.18 (28.47)	2412 (10.73)	5.94 (9.56)	2001	5.74	0.523 (0.318)	13.37 (2.63)	178 (81)	43 (6)	29.05 (98.37)

75% of Pull at Maximum Power—5th (1H) Gear									
30.30 (22.60)	1810 (8.05)	6.28 (10.11)	2084	4.35	0.557 (0.339)	12.56 (2.47)	173 (78)	48 (9)	29.06 (98.41)

50% of Pull at Maximum Power—5th (1H) Gear									
20.76 (15.48)	1208 (5.37)	6.45 (10.37)	2112	3.11	0.652 (0.397)	10.72 (2.11)	173 (78)	48 (9)	29.06 (98.41)

75% of Pull at Reduced Engine Speed—6th (2H) Gear									
30.20 (22.52)	1810 (8.05)	6.26 (10.07)	1662	4.24	0.516 (0.314)	13.54 (2.67)	173 (78)	48 (9)	29.06 (98.41)

50% of Pull at Reduced Engine Speed—6th (2H) Gear									
20.85 (15.55)	1213 (5.39)	6.45 (10.38)	1692	3.17	0.580 (0.353)	12.06 (2.38)	172 (78)	48 (9)	29.06 (98.41)

**Location of Test:** Tractor Testing Laboratory,  
University of Nebraska, Lincoln, Nebraska 68583-  
0832, U.S.A.

**Dates of Test:** April 8-25, 1991

**Manufacturer:** FORD NEW HOLLAND, 500  
Diller Avenue, New Holland, PA 17557

**FUEL OIL and TIME:** Fuel No. 2 Diesel Cetane  
No. 53.9 **Specific gravity converted to 60°/60°F**  
(15°/15°C) 0.8399 **Fuel weight** 6.993 lbs/gal (0.838  
kg/l) **Oil SAE 15W-40 API service classification**  
SG/CE **To motor** 1.199 gal (4.538 l) **Drained from**  
**motor** 1.098 gal (4.158 l) **Transmission and final**  
**drive lubricant** Ford M2C 134-D fluid **Front axle**  
**lubricant** Ford M2C 134-D fluid **Total time engine**  
**was operated** 23.0 hours.

**ENGINE:** Make Ford Diesel **Type** three cylin-  
der vertical **Serial No.** \*C293877\* **Crankshaft**  
lengthwise **Rated rpm** 2000 **Bore and stroke** (as  
specified) 4.4" × 4.4" (111.8 mm × 111.8 mm)  
**Compression ratio** 16.3 to 1 **Displacement** 201 cu  
in (3293 ml) **Starting system** 12 volt **Lubrication**  
pressure **Air cleaner** two paper elements **Oil filter**  
one full flow cartridge **Oil cooler** radiator for power  
steering fluid **Fuel filter** one paper element and  
sediment bowl **Muffler** vertical **Cooling medium**  
**temperature control** one thermostat.

**ENGINE OPERATING PARAMETERS:** **Fuel**  
**rate** 19.0-21.5 lb/hr (8.6-9.8 kg/hr) **High idle** 2150-  
2200 rpm.

**CHASSIS:** **Type** front wheel assist **Serial No.**  
\*BC76440\* **Tread width** rear 56.0" (1423 mm) to  
79.8" (2026 mm) front 55.0" (1396 mm) to 73.0"  
(1855 mm) **Wheel base** 84.1" (2136 mm) **Hydraulic**  
**control system** direct engine drive **Transmission**  
selective gear fixed ratio **Nominal travel speeds**  
**mph (km/h)** first 1.73 (2.79) second 2.16 (3.48) third  
3.79 (6.10) fourth 5.16 (8.30) fifth 6.18 (9.94) sixth  
7.71 (12.41) seventh 13.52 (21.76) eighth 18.49  
(29.75) reverse 2.49 (4.00), 8.89 (14.30) **Clutch**  
single dry disc operated by foot pedal **Brakes** wet  
multiple disc operated by two foot pedals which  
can be locked together **Steering** hydrostatic **Power**  
**take-off** 540 rpm at 1800 engine rpm **Unladen**  
**tractor mass** 5426 lb (2461 kg).

**DRAWBAR PERFORMANCE  
MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
2nd (2L) Gear									
25.21 (18.80)	4807 (21.38)	1.97 (3.17)	2092	14.55	0.605 (0.368)	11.55 (2.28)	176 (80)	55 (13)	28.90 (97.87)
3rd (3L) Gear									
36.80 (27.44)	3988 (17.74)	3.46 (5.57)	2000	10.23	0.545 (0.331)	12.84 (2.53)	181 (83)	51 (11)	29.05 (98.37)
4th (4L) Gear									
37.47 (27.94)	2874 (12.78)	4.89 (7.87)	2001	7.14	0.537 (0.327)	13.03 (2.57)	179 (82)	48 (9)	28.90 (97.87)
5th (1H) Gear									
38.18 (28.47)	2412 (10.73)	5.94 (9.56)	2001	5.74	0.523 (0.318)	13.37 (2.63)	178 (81)	43 (6)	29.05 (98.37)
6th (2H) Gear									
37.24 (27.77)	1856 (8.25)	7.53 (12.11)	2004	4.41	0.539 (0.328)	12.98 (2.56)	179 (81)	44 (7)	29.06 (98.41)

**DRAWBAR PERFORMANCE  
FUEL CONSUMPTION CHARACTERISTICS  
(Front Drive Disengaged)**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—5th (1H) Gear									
38.08 (28.40)	2511 (11.17)	5.69 (9.15)	1998	8.21	0.528 (0.321)	13.26 (2.61)	179 (82)	48 (9)	28.95 (98.04)
75% of Pull at Maximum Power—5th (1H) Gear									
30.62 (22.84)	1884 (8.38)	6.10 (9.81)	2084	5.87	0.554 (0.337)	12.63 (2.49)	172 (78)	56 (13)	28.94 (98.00)
50% of Pull at Maximum Power—5th (1H) Gear									
21.08 (15.72)	1256 (5.59)	6.29 (10.13)	2110	3.93	0.635 (0.386)	11.01 (2.17)	172 (78)	56 (13)	28.94 (98.00)
75% of Pull at Reduced Engine Speed—6th (2H) Gear									
30.60 (22.82)	1885 (8.38)	6.09 (9.80)	1671	5.92	0.513 (0.312)	13.64 (2.69)	175 (79)	56 (13)	28.94 (98.00)
50% of Pull at Reduced Engine Speed—6th (2H) Gear									
20.99 (15.66)	1254 (5.58)	6.28 (10.10)	1687	3.87	0.567 (0.345)	12.34 (2.43)	171 (77)	56 (13)	28.94 (98.00)

**DRAWBAR PERFORMANCE  
MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd (3L) Gear									
32.95 (24.57)	3692 (16.42)	3.35 (5.39)	2063	14.72	0.566 (0.345)	12.35 (2.43)	175 (79)	52 (11)	29.05 (98.37)
4th (4L) Gear									
36.82 (27.46)	2983 (13.27)	4.63 (7.45)	2005	10.84	0.545 (0.332)	12.83 (2.53)	180 (82)	51 (11)	28.90 (97.87)
5th (1H) Gear									
38.08 (28.40)	2511 (11.17)	5.69 (9.15)	1998	8.21	0.528 (0.321)	13.26 (2.61)	179 (82)	48 (9)	28.95 (98.04)
6th (2H) Gear									
37.89 (28.25)	1950 (8.67)	7.29 (11.73)	2001	6.09	0.533 (0.324)	13.12 (2.58)	180 (82)	52 (11)	28.95 (98.04)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump was maintained at 140° F (60° C). The performance figures on this summary were taken from a test conducted under the OECD Code II restricted standard test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1644**, Summary 082, July 15, 1991.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
R. D. GRISSO  
G. J. HOFFMAN  
Board of Tractor Test Engineers

**TIRES AND WEIGHT**

Rear Tires—No., size, ply & psi (kPa)  
Front Tires—No., size, ply & psi (kPa)

**Height of Drawbar**

Static Weight with Operator—Rear  
—Front  
—Total

**Tested Without Ballast**

Two 13.6-28; 6; 14 (95)  
Two 8.3-24; 4; 16 (110)  
14.5 in (370 mm)  
3358 lb (1523 kg)  
2234 lb (1013 kg)  
5592 lb (2536 kg)

### THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi. (bar)	2600 (179)					
Location	remote outlet					
Hydraulic oil temperature °F(°C)	169 (76)					
Location	rear axle sump					
Category	I					
Quick attach	none					
Hitch point distance to ground level in. (mm)	8.3 (211)	13.0 (330)	17.7 (450)	22.4 (569)	27.2 (691)	32.1 (815)
Lift force on frame lb.	3271	3589	3772	3791	3676	3473
" " " " " " (kN)	(14.5)	(16.0)	(16.8)	(16.9)	(16.3)	(15.4)

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: I

Quick Attach: none

Maximum Force Exerted Through Whole Range:

3056 lbs (13.6 kN)

i) Opening pressure of relief valve:

NA

Sustained pressure of the open relief valve

2660 psi (183 bar)

ii) Pump delivery rate at minimum pressure:

7.9 GPM (29.9 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

6.8 GPM (25.7 l/min)

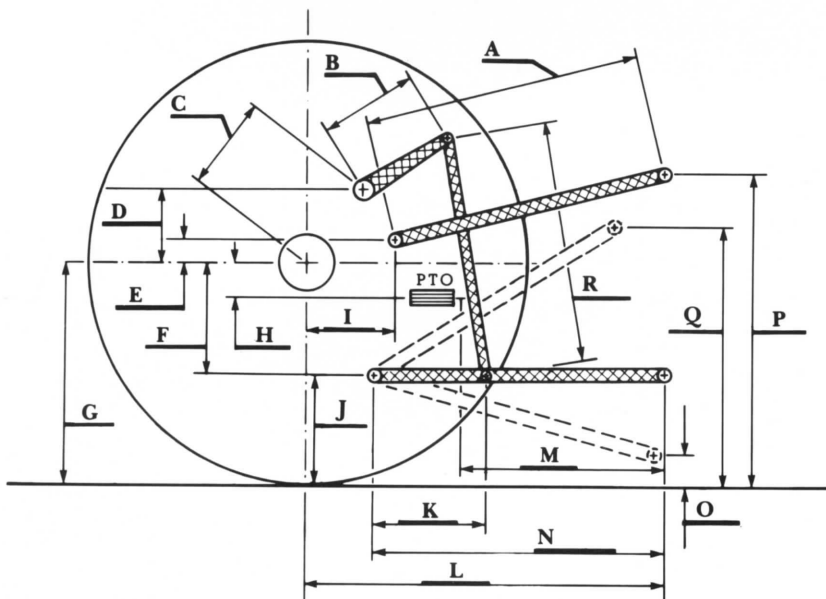
Delivery pressure:

2250 psi (155 bar)

Power:

8.9 HP (6.7 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	28.3	719
B	10.0	254
C	12.9	327
D	10.1	257
E	7.5	191
F	8.0	203
G	24.0	610
H	4.7	120
I	8.7	222
J	16.0	407
K	18.9	481
L	36.7	931
M	20.9	530
N	34.0	864
O	8.0	203
P	34.1	867
Q	33.1	841
R	29.1	740



Ford 3930 8 x 2 Diesel

Agricultural Research Division  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln  
Darrell Nelson, Dean and Director