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January 1997

Test 1736: Case IH 8940 18-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1736—SUMMARY 236

CASE IH 8940 DIESEL

18 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1002 rpm)					
206.81 (154.22)	2200	12.43 (47.05)	0.424 (0.258)	16.64 (3.28)	
Maximum Power (2 hours)					
230.83 (172.13)	1850	12.46 (47.16)	0.380 (0.231)	18.53 (3.65)	
VARYING POWER AND FUEL CONSUMPTION					
206.81 (154.22)	2200	12.43 (47.05)	0.424 (0.258)	16.64 (3.28)	Air temperature
184.48 (137.56)	2307	11.66 (44.15)	0.446 (0.271)	15.82 (3.12)	76°F (25°C)
139.89 (104.32)	2329	9.49 (35.93)	0.478 (0.291)	14.74 (2.90)	Relative humidity
93.63 (69.82)	2348	7.32 (27.71)	0.551 (0.335)	12.79 (2.52)	44%
47.60 (35.50)	2387	5.28 (19.98)	0.761 (0.475)	9.02 (1.78)	Barometer
1.05 (0.78)	2426	3.32 (12.57)	22.244 (13.531)	0.32 (0.06)	28.92" Hg (97.93 kPa)

Maximum Torque 725 lb.-ft. (983 Nm) at 1299 rpm

Maximum Torque Rise 46.9%

Torque rise at 1800 engine rpm 34%

DRAWBAR PERFORMANCE (UNBALLASTED—FRONT DRIVE ENGAGED) FUEL CONSUMPTION CHARACTERISTICS

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—7th Gear									
176.35 (131.51)	15411 (68.55)	4.29 (6.91)	2202	6.31	0.497 (0.302)	14.17 (2.79)	189 (87)	74 (23)	28.86 (97.73)
75% of Pull at Maximum Power—7th Gear									
142.34 (106.14)	11549 (51.37)	4.62 (7.44)	2305	3.47	0.525 (0.319)	13.43 (2.65)	189 (87)	79 (26)	28.85 (97.70)
50% of Pull at Maximum Power—7th Gear									
97.82 (72.94)	7711 (34.30)	4.76 (7.66)	2340	2.21	0.596 (0.362)	11.83 (2.33)	186 (86)	82 (28)	28.86 (97.73)
75% of Pull at Reduced Engine Speed—9th Gear									
142.67 (106.39)	11538 (51.32)	4.64 (7.46)	1749	3.47	0.441 (0.268)	15.98 (3.15)	186 (86)	80 (27)	28.85 (97.70)
50% of Pull at Reduced Engine Speed—9th Gear									
97.95 (73.04)	7708 (34.28)	4.77 (7.67)	1772	2.12	0.475 (0.289)	14.83 (2.92)	183 (84)	83 (28)	28.85 (97.70)

Location of Test: Tractor Testing Laboratory,
University of Nebraska, Lincoln, Nebraska 68583-
0832

Dates of Test: September 16-29, 1997

Manufacturer: Case Corporation, 700 State Street,
Racine, Wisconsin 53404

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane
No. 50.6 Specific gravity converted to 60°/60°
F (15°/15°C) 0.8464 Fuel weight 7.048 lbs/gal
(0.845 kg/l) Oil SAE 15W-40 API service
classification CG-4, CF, CF-4 To motor 3.865 gal
(14.630 l) Drained from motor 3.352 gal (12.688 l)
Transmission and hydraulic lubricant Case IH
Hytran Plus fluid **Front axle lubricant** Case IH 135
HEP Gear Lube SAE 85W140 **Total time engine
was operated** 22.5 hours.

ENGINE: Make Consolidated Diesel Corporation
Diesel **Type** six cylinder vertical with turbocharger
and intercooler **Serial No.** *45481220* **Crankshaft**
lengthwise **Rated engine speed** 2200 **Bore and
stroke** (as specified) 4.488" × 5.315" (114.0 mm ×
135.0 mm) **Compression ratio** 16.5 to 1
Displacement 505 cu in (8268 ml) **Starting system**
12 volt **Lubrication** pressure **Air cleaner** two paper
elements and aspirator **Oil filter** one full flow cartridge
Oil cooler engine coolant heat exchanger for crankcase
oil, radiator for hydraulic and transmission oil **Fuel
filter** two paper elements and prefilter **Fuel cooler**
radiator for return fuel **Muffler** vertical **Cooling
medium temperature control** two thermostats
and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel
rate: 83.8-93.0 lb/h (38.0-42.2 kg/h) **High idle:**
2370-2530 rpm **Turbo boost** nominal 20.6-26.4 psi
(142-182 kPa) as measured 22.3 psi (154 kPa)

CHASSIS: **Type** front wheel assist **Serial No.**
JJA0075231 **Tread width** rear 64.0" (1626 mm) to
136.0" (3454 mm) front 60.0" (1524 mm) to 88.0" (2235
mm) **Wheel base** 118.3" (3006 mm) **Hydraulic
control system** direct engine drive **Transmission**
selective gear fixed ratio with full range operator
controlled powershift **Nominal travel speeds mph
(km/h)** first 1.92 (3.09) second 2.20 (3.54) third 2.54
(4.08) fourth 2.91 (4.68) fifth 3.34 (5.37) sixth 3.83
(6.16) seventh 4.47 (7.19) eighth 5.12 (8.24) ninth 5.90
(9.50) tenth 6.77 (10.90) eleventh 7.78 (12.50) twelfth
8.91 (14.34) thirteenth 10.20 (16.41) fourteenth 11.69
(18.82) fifteenth 13.49 (21.71) sixteenth 15.47 (24.90)
seventeenth 17.75 (28.56) eighteenth 20.36 (32.76)
reverse 2.76 (4.44), 3.16 (5.09), 6.43 (10.34), 7.37
(11.86) **Clutch** multiple wet disc hydraulically actuated
by foot pedal **Brakes** wet multiple disc hydraulically

DRAWBAR PERFORMANCE
(UNBALLASTED—FRONT DRIVE ENGAGED)
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)
5th Gear									
147.82 (110.23)	18061 (80.34)	3.07 (4.94)	2295	13.85	0.571 (0.347)	12.34 (2.43)	188 (86)	56 (13)	28.85 (97.70)
6th Gear									
159.61 (119.02)	16924 (75.28)	3.54 (5.69)	2246	11.52	0.549 (0.334)	12.84 (2.53)	188 (87)	62 (17)	28.85 (97.70)
7th Gear									
177.52 (132.38)	16336 (72.66)	4.08 (6.56)	2137	8.20	0.497 (0.302)	14.18 (2.79)	190 (88)	76 (24)	28.86 (97.73)
8th Gear									
184.55 (137.62)	15612 (69.44)	4.43 (7.13)	2000	6.98	0.474 (0.289)	14.86 (2.93)	194 (90)	77 (25)	28.85 (97.70)
9th Gear									
192.94 (143.88)	15053 (66.96)	4.81 (7.74)	1858	5.90	0.451 (0.274)	15.62 (3.08)	191 (88)	69 (21)	28.87 (97.77)
10th Gear									
195.97 (146.13)	13111 (58.32)	5.61 (9.02)	1853	4.00	0.442 (0.269)	15.93 (3.14)	193 (89)	71 (22)	28.86 (97.73)
11th Gear									
195.01 (145.42)	11270 (50.13)	6.49 (10.44)	1854	3.20	0.446 (0.271)	15.79 (3.11)	191 (88)	67 (19)	28.87 (97.77)
12th Gear									
193.36 (144.19)	9711 (43.20)	7.47 (12.02)	1849	2.57	0.451 (0.274)	15.64 (3.08)	191 (88)	68 (20)	28.87 (97.77)
13th Gear									
191.40 (142.73)	8374 (37.25)	8.57 (13.80)	1848	2.39	0.456 (0.278)	15.44 (3.04)	189 (87)	69 (21)	28.87 (97.77)

actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 2193 **Unladen tractor mass** 18170 lb (8242 kg)

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 return was maintained at 133° F (56°C). The pull in 4th gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Restricted Standard Test Code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1736**, Summary 236, October 22, 1997.

LOUIS I. LEVITICUS
Engineer-in-Charge

L.L. BASHFORD
R.D. GRISSO
M.F. KOCHER

Board of Tractor Test Engineers

**DRAWBAR PERFORMANCE
(BALLASTED TRACTOR)
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)
4th Gear									
170.53 (127.16)	24013 (106.82)	2.66 (4.29)	2166	9.52	0.517 (0.314)	13.63 (2.69)	188 (87)	66 (19)	29.00 (98.21)
5th Gear									
181.03 (134.99)	23139 (102.93)	2.93 (4.72)	2040	7.60	0.489 (0.297)	14.42 (2.84)	187 (86)	66 (19)	29.00 (98.21)
6th Gear									
185.21 (138.11)	22470 (99.95)	3.09 (4.97)	1865	7.28	0.470 (0.286)	15.01 (2.96)	191 (88)	67 (19)	28.99 (98.17)
7th Gear									
194.58 (145.10)	19894 (88.49)	3.67 (5.90)	1849	5.00	0.449 (0.273)	15.70 (3.09)	193 (89)	69 (21)	28.98 (98.14)
8th Gear									
198.37 (147.92)	17374 (77.28)	4.28 (6.89)	1850	3.24	0.441 (0.268)	15.98 (3.15)	198 (92)	60 (16)	28.97 (98.10)
9th Gear									
199.15 (148.50)	15058 (66.98)	4.96 (7.98)	1849	2.79	0.442 (0.269)	15.95 (3.14)	190 (88)	60 (16)	28.98 (98.14)
10th Gear									
198.54 (148.05)	13041 (58.01)	5.71 (9.19)	1849	2.25	0.443 (0.270)	15.90 (3.13)	188 (87)	60 (16)	28.98 (98.14)
11th Gear									
196.47 (146.51)	11184 (49.75)	6.59 (10.60)	1853	2.15	0.446 (0.271)	15.80 (3.11)	190 (88)	60 (16)	28.96 (98.07)
12th Gear									
192.45 (143.51)	9568 (42.56)	7.54 (12.14)	1846	1.79	0.449 (0.273)	15.69 (3.09)	187 (86)	60 (16)	28.97 (98.10)
13th Gear									
188.41 (140.50)	8170 (36.34)	8.65 (13.92)	1845	1.61	0.458 (0.279)	15.39 (3.03)	193 (89)	60 (16)	28.97 (98.10)

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At 75% load in 8th Gear	73.0
Bystander in 18th Gear	87.2

TIRES, BALLAST AND WEIGHT

With Ballast

Without Ballast

Rear Tires —No., size, ply & psi (kPa)	Four 20.8R42; **, 12 (85)	Two 20.8R42; **, 14 (95)
Ballast —Duals (total)	1684 lb (764 kg)	None
—Cast Iron (total)	1544 lb (700 kg)	None
Front Tires —No., size, ply & psi (kPa)	Two 16.9R30; **, 18 (125)	Two 16.9R30; **, 12 (85)
Ballast —Liquid (total)	None	None
—Cast Iron (total)	2160 lb (980 kg)	None
Height of Drawbar	17.0 in (430 mm)	16.5 in (420 mm)
Static Weight with Operator —Rear	15290 lb (6935 kg)	12756 lb (5786 kg)
—Front	8434 lb (3826 kg)	5580 lb (2531 kg)
—Total	23724 lb (10761 kg)	18336 lb (8317 kg)

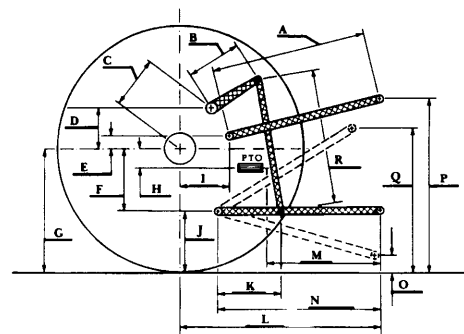
THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: Yes

Maximum Force Exerted Through Whole Range: 12758 lbs (56.7 kN) (1.75" lift cylinders)
14400 lbs (64.1 kN) (2.25" lift cylinders)

i) Opening pressure of relief valve:	NA			
Sustained pressure at	2650 psi System		2800 psi System	
Compensator cutoff:	2620 psi (181 bar)		2780 psi (192 bar)	
ii) Pump delivery rate at minimum pressure and rated engine speed:	29.7 GPM (112.4 l/min)		29.7 GPM (112.4 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	26.9 GPM (101.8 l/min)		26.7 GPM (101.1 l/min)	
Delivery pressure:	2150 psi (148 bar)		2320 psi (160 bar)	
Power:	33.7 HP (25.2 kW)		36.1 HP (26.9 kW)	



HITCH DIMENSIONS AS TESTED—NO LOAD

THREE POINT HITCH PERFORMANCE (SAE Dynamic Test)

Observed Maximum Pressure psi. (bar)	2800 (193)	
Location	Remote outlet	
Hydraulic oil temperature °F (°C)	141 (61)	
Location	Transmission sump	

Maximum Lift Capacity

QUICK ATTACH	Ycs			
CATEGORY:	III			
LOAD lbs (kg)	13864	(6289)	*16204	(7350)
TIME sec	4.39		4.93	
HITCH MOVEMENT in (mm)				
Lowest position	14.0	(356)	14.0	(356)
Top of timed range	40.0	(1016)	40.0	(1016)
Highest position	41.3	(1049)	41.3	(1049)
LOAD CG MOVEMENT in (mm)				
Lowest position	15.8	(401)	15.8	(401)
Top of timed range	42.3	(1074)	42.3	(1074)
Highest position	43.1	(1095)	43.8	(1113)

* with 2.25" lift assist cylinders

	OECD test		SAE test	
	inch	mm	inch	mm
A	25.0	635	25.4	645
B	15.0	381	15.0	381
C	21.9	557	21.9	557
D	16.6	422	16.6	422
E	9.8	250	9.8	250
F	13.1	332	13.1	332
G	35.6	905	35.6	905
H	3.5	90	3.5	90
I	24.7	627	24.7	627
J	22.5	573	22.5	573
K	21.3	540	21.3	540
L	50.5	1282	50.5	1282
L'	55.5	1409	55.5	1409
M	19.1	486	19.1	486
N	33.0	837	33.0	837
O	9.0	229	8.0	203
P	44.5	1132	44.5	1132
Q	37.3	946	36.9	937
R	32.6	829	33.1	841

L' to Quick attach ends



CASE IH 8940 DIESEL

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