

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

2000

Nebraska Summary: S344 New Holland TM135

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and [the United States History Commons](#)

Laboratory, Nebraska Tractor Test, "Nebraska Summary: S344 New Holland TM135" (2000). *Nebraska Tractor Tests*. 2834.

<https://digitalcommons.unl.edu/tractormuseumlit/2834>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TEST 1919 - NEBRASKA SUMMARY 344

NEW HOLLAND TM135 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 1039 rpm)					
114.9 (85.7)	2202	7.40 (28.01)	0.450 (0.274)	15.52 (3.06)	
Standard Power Take-off Speed (1000 rpm)					
118.0 (88.0)	2119	7.28 (27.57)	0.431 (0.262)	16.19 (3.19)	
Maximum Power (2 hours)					
118.7 (88.5)	2061	7.19 (27.23)	0.423 (0.257)	16.51 (3.25)	

VARYING POWER AND FUEL CONSUMPTION

114.9 (85.7)	2202	7.40 (28.01)	0.450 (0.274)	15.53 (3.06)	Air temperature
102.2 (76.2)	2304	6.97 (26.38)	0.476 (0.290)	14.67 (2.89)	82°F (28°C)
77.2 (57.6)	2318	5.77 (21.83)	0.521 (0.317)	13.40 (2.64)	Relative humidity
51.6 (38.4)	2334	4.65 (17.39)	0.629 (0.383)	11.10 (2.19)	29%
26.3 (19.6)	2354	3.54 (13.39)	0.942 (0.573)	7.41 (1.46)	Barometer
--	2365	2.50 (9.46)	--	--	30.0" Hg (101.7 kPa)

Maximum Torque - 392.8 lb.-ft. (532.6 Nm) at 1400 rpm
 Maximum Torque Rise - 43.2%
 Torque rise at 1800 engine rpm - 25%

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)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)
Maximum Power 8th(2B) Gear							
98.2 (73.2)	8840 (39.3)	4.16 (6.70)	2204	3.9	0.519 (0.316)	13.45 (2.65)	185 (85)
75% of Pull at Maximum Power 8th(2B) Gear							
77.9 (58.1)	6630 (29.5)	4.41 (7.09)	2307	3.0	0.585 (0.356)	11.92 (2.35)	185 (85)
50% of Pull at Maximum Power 8th(2B) Gear							
53.0 (39.5)	4435 (19.7)	4.48 (7.21)	2325	2.1	0.688 (0.419)	10.15 (2.00)	181 (83)
75% of Pull at Reduced Engine Speed 9th(3B) Gear							
77.8 (58.0)	6630 (29.5)	4.40 (7.08)	1917	3.0	0.496 (0.302)	14.06 (2.77)	181 (83)
50% of Pull at Reduced Engine Speed 9th(3B) Gear							
52.9 (39.4)	4420 (19.7)	4.49 (7.22)	1937	2.0	0.571 (0.348)	12.22 (2.41)	180 (82)

Location of Test: Silsoe Research Institute, Wrest Park, Silsoe, MK45 4HS, United Kingdom

Dates of Test: March- June, 2000

Manufacturer: New Holland UK Ltd., Basildon, Essex, United Kingdom

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.839 **Fuel weight** 6.98 lbs/gal (0.837 kg/l) **Oil SAE 10W30 API service classification** CF-4 **Transmission and hydraulic lubricant** SAE 10W30 API GL4 **Front axle lubricant** SAE 10W30 API GL4

ENGINE: Make New Holland Diesel **Type** six cylinder vertical with turbocharger **Serial No.** WT827876 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.40" x 5.00" (111.8 mm x 127.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 456 cu in (7480 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 **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: **Type** front wheel assist **Serial No.** 122118B **Tread width** rear 60.2" (1530 mm) to 87.9" (2232 mm) front 61.2" (1554 mm) to 89.0" (2260 mm) **Wheelbase** 93.0" (2323 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.53 (2.46) second 1.84 (2.96) third 2.21 (3.56) fourth 2.66 (4.28) fifth 3.20 (5.15) sixth 3.55 (5.72) seventh 3.85 (6.19) eighth 4.28 (6.88) ninth 5.14 (8.27) tenth 6.18 (9.94) eleventh 7.43 (11.96) twelfth 8.94 (14.38) thirteenth 10.09 (16.24) fourteenth 12.14 (19.53) fifteenth 14.57 (23.45) sixteenth 17.52 (28.20) seventeenth 21.08 (33.92) eighteenth 25.35 (40.79) reverse 2.99 (4.81), 3.59 (5.78), 4.32 (6.95), 5.19 (8.35), 6.24 (10.05), 7.51 (12.08) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1971 engine rpm or 1000 rpm at 2121 engine rpm **Unladen tractor mass** 13515 lb (6131 kg)

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 lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(1A) Gear									
49.6 (37.0)	13375 (59.5)	1.39 (2.24)	2322	15.1	0.723 (0.440)	9.66 (1.90)	181 (83)	72 (22)	30.0 (101.7)
2nd(2A) Gear									
60.1 (44.8)	13140 (58.5)	1.72 (2.76)	2310	12.5	0.678 (0.413)	10.29 (2.03)	179 (82)	75 (24)	30.0 (101.7)
3rd(3A) Gear									
70.8 (52.8)	12870 (57.2)	2.06 (3.32)	2305	11.9	0.614 (0.374)	11.37 (2.24)	181 (83)	75 (24)	30.0 (101.7)
4th(4A) Gear									
83.4 (62.2)	12500 (55.6)	2.50 (4.03)	2283	10.4	0.599 (0.365)	11.65 (2.30)	185 (85)	73 (23)	30.0 (101.7)
5th(5A) Gear									
93.1 (69.4)	11940 (53.1)	2.92 (4.70)	2164	8.4	0.546 (0.332)	12.79 (2.52)	183 (84)	73 (23)	30.0 (101.7)
6th(1B) Gear									
99.4 (74.1)	11310 (50.3)	3.30 (5.31)	2145	6.0	0.506 (0.308)	13.81 (2.72)	183 (84)	73 (23)	30.0 (101.7)
7th(6A) Gear									
96.7 (72.1)	10455 (46.5)	3.47 (5.58)	2063	5.0	0.517 (0.315)	13.50 (2.66)	183 (84)	72 (22)	30.0 (101.7)
8th(2B) Gear									
99.8 (74.4)	9665 (43.0)	3.87 (6.23)	2059	4.5	0.505 (0.307)	13.82 (2.72)	185 (85)	66 (19)	30.0 (101.7)
9th(3B) Gear									
100.2 (74.7)	8000 (35.6)	4.70 (7.56)	2061	3.5	0.499 (0.303)	14.01 (2.76)	185 (85)	66 (19)	30.0 (101.7)
10th(4B) Gear									
97.0 (72.3)	6395 (28.5)	5.69 (9.15)	2058	2.8	0.513 (0.312)	13.60 (2.68)	187 (86)	68 (20)	30.0 (101.7)
11th(5B) Gear									
95.6 (71.3)	5195 (23.1)	6.90 (11.10)	2065	2.3	0.521 (0.317)	13.40 (2.64)	185 (85)	70 (21)	30.0 (101.7)
12th(6B) Gear									
93.2 (69.5)	4215 (18.8)	8.29 (13.34)	2056	1.9	0.533 (0.324)	13.10 (2.58)	185 (85)	72 (22)	30.0 (101.7)
13th(1C) Gear									
97.6 (72.8)	3895 (17.3)	9.40 (15.12)	2062	1.9	0.508 (0.309)	13.76 (2.71)	185 (85)	70 (21)	30.0 (101.7)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's 3 point lift capacity claim of 12190 lbs (5530 kg) with 1 lift assist cylinder. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1919**, Nebraska Summary 344, January 4, 2001.

Brent T. Sampson
Test Engineer

L.L. Bashford
M.F. Kocher
R.D. Grisso, Jr.
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
Maximum Sound level in 6th (1B) gear	78.0	78.0
At no load in 8th (2B) gear	73.0	73.0
Bystander in 18th (6C) gear	--	82.0

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 20.8R38; **,12(83)
 Two 16.9R28; **,12(83)
 18.5 in (470 mm)
 8810 lb (3997 kg)
 4870 lb (2209 kg)
 13680 lb (6206 kg)

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Disengaged)
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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power 9th(3B) Gear									
97.4 (72.6)	7355 (32.7)	4.96 (7.99)	2202	3.9	0.521 (0.317)	13.40 (2.64)	185 (85)	64 (18)	30.0 (101.6)
75% of Pull at Maximum Power 9th(3B) Gear									
77.1 (57.5)	5510 (24.5)	5.25 (8.45)	2306	2.9	0.590 (0.359)	11.82 (2.33)	185 (85)	66 (19)	30.0 (101.5)
50% of Pull at Maximum Power 9th(3B) Gear									
52.6 (39.2)	3690 (16.4)	5.34 (8.60)	2326	2.0	0.694 (0.422)	10.07 (1.98)	181 (83)	66 (19)	30.0 (101.5)
75% of Pull at Reduced Engine Speed 10th(4B) Gear									
76.8 (57.3)	5500 (24.5)	5.24 (8.43)	1916	3.1	0.513 (0.312)	13.60 (2.68)	181 (83)	68 (20)	30.0 (101.5)
50% of Pull at Reduced Engine Speed 10th(4B) Gear									
52.4 (39.1)	3685 (16.4)	5.33 (8.58)	1931	2.0	0.585 (0.356)	11.93 (2.35)	180 (82)	68 (20)	30.0 (101.5)
MAXIMUM POWER IN SELECTED GEARS									
1st(1A) Gear									
37.1 (27.7)	10050 (44.7)	1.39 (2.23)	2332	14.8	0.860 (0.523)	8.12 (1.60)	180 (82)	61 (22)	30.0 (101.5)
2nd(2A) Gear									
45.2 (33.7)	9995 (44.5)	1.70 (2.73)	2330	13.5	0.779 (0.474)	8.96 (1.77)	183 (84)	61 (20)	30.0 (101.5)
3rd(3A) Gear									
54.4 (40.6)	9980 (44.4)	2.04 (3.29)	2320	12.8	0.705 (0.429)	9.90 (1.95)	181 (83)	61 (20)	30.0 (101.5)
4th(4A) Gear									
65.6 (48.9)	9915 (44.1)	2.48 (3.99)	2308	11.5	0.659 (0.401)	10.59 (2.09)	181 (83)	61 (21)	30.0 (101.5)
5th(5A) Gear									
77.9 (58.1)	9800 (43.6)	2.98 (4.79)	2300	11.4	0.617 (0.375)	11.32 (2.23)	183 (84)	61 (21)	30.0 (101.5)
6th(1B) Gear									
86.8 (64.7)	9785 (43.5)	3.33 (5.35)	2288	10.6	0.583 (0.355)	11.98 (2.36)	183 (84)	61 (20)	30.0 (101.5)
7th(6A) Gear									
90.7 (67.6)	9575 (42.6)	3.55 (5.72)	2202	8.2	0.569 (0.346)	12.28 (2.42)	183 (84)	55 (21)	30.0 (101.5)
8th(2B) Gear									
96.2 (71.7)	9285 (41.3)	3.88 (6.25)	2146	7.3	0.529 (0.322)	13.20 (2.60)	185 (85)	63 (21)	30.0 (101.5)
9th(3B) Gear									
99.5 (74.2)	8070 (35.9)	4.62 (7.43)	2061	4.5	0.501 (0.305)	13.95 (2.75)	185 (85)	54 (18)	30.0 (101.6)
10th(4B) Gear									
97.8 (72.9)	6520 (29.0)	5.62 (9.05)	2064	3.4	0.508 (0.309)	13.76 (2.71)	185 (85)	54 (17)	30.0 (101.6)
11th(5B) Gear									
97.0 (72.3)	5355 (23.8)	6.79 (10.93)	2061	2.8	0.511 (0.311)	13.65 (2.69)	185 (85)	54 (18)	30.0 (101.5)
12th(6B) Gear									
93.1 (69.4)	4265 (19.0)	8.12 (13.18)	2055	2.3	0.542 (0.330)	12.89 (2.54)	183 (84)	54 (18)	30.0 (101.5)
13th(1C) Gear									
97.1 (72.4)	3930 (17.5)	9.26 (14.90)	2055	2.2	0.515 (0.313)	13.55 (2.67)	183 (84)	54 (18)	30.0 (101.5)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range: 7125 lbs (31.7 kN)(with 1 lift assist cylinder)
 8320 lbs (37.0 kN)(with 2 lift assist cylinders)

i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2960 psi	(204 bar)
ii) Pump delivery rate at minimum pressure:	31.3 GPM	(118.5 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	27.6 GPM	(104.3 l/min)
Delivery pressure:	2465 psi	(170 bar)
Power:	39.6 HP	(29.6 kW)

SAE Static Test System pressure 2440 psi (168 Bar)
 (with (1) lift assist cylinder)

Hitch point distance to ground level in. (mm)	8.0(203)	15.9(405)	23.8(605)	31.7(805)	36.5(928)
Lift force on frame lb	11960	11575	11410	11150	10500
" " " " " " (kN)	(53.2)	(51.5)	(50.7)	(49.6)	(46.7)

SAE Static Test System pressure 2440 psi (168 Bar)
 (with (2) lift assist cylinders)

Hitch point distance to ground level in. (mm)	8.0(203)	15.9(405)	23.8(605)	31.7(805)	36.9(937)
Lift force on frame lb	15065	14380	14520	14600	14075
" " " " " " (kN)	(67.0)	(64.0)	(64.6)	(64.9)	(62.6)

ASAE Static Test System pressure 2715 psi (187 Bar)
 (with (1) lift assist cylinder)

Hitch point distance to ground level in. (mm)	8.0(203)	15.9(405)	23.8(605)	31.7(805)	36.5(928)
Lift force on frame lb	13310	12880	12700	12410	11690
" " " " " " (kN)	(59.2)	(57.3)	(56.5)	(55.2)	(52.0)

ASAE Static Test System pressure 2715 psi (187 Bar)
 (with (2) lift assist cylinders)

Hitch point distance to ground level in. (mm)	8.0(203)	15.9(405)	23.8(605)	31.7(805)	36.9(937)
Lift force on frame lb	16770	16005	16165	16255	15670
" " " " " " (kN)	(74.6)	(71.2)	(71.9)	(72.3)	(69.7)

HITCH DIMENSIONS AS TESTED NO LOAD
 OECD test SAE test

	inch	mm	inch	mm
A	29.7	754	30.2	768
B	9.1	230	9.1	230
C	15.6	395	15.6	395
D	14.3	363	14.3	363
E	8.2	208	10.8	275
F	9.8	250	9.8	250
G	33.6	855	33.6	855
H	0.7	17	0.7	17
I	17.9	455	16.9	430
J	23.8	605	23.8	605
K	17.1	435	17.1	435
L	47.0	1194	47.0	1194
M	23.3	592	23.3	592
N	38.3	974	38.3	974
O	7.8	198	8.0	203
P	47.8	1215	42.8	1088
Q	35.4	900	34.3	870
R	29.3	745	30.5	775

