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January 1999

## Tests 1914 & 1915: New Holland TL 90 Diesel

Nebraska Tractor Test Lab

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# SUMMARY OF OECD TESTS 1914 and 1915—NEBRASKA SUMMARY 349

## NEW HOLLAND TL 90 DIESEL

### 24 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 1050 rpm)					
78.2 (58.3)	2500	4.78 (18.11)	0.429 (0.261)	16.34 (3.22)	
Standard Power Take-off speed (1006 rpm)					
81.2 (60.6)	2395	4.77 (18.07)	0.412 (0.251)	17.00 (3.35)	
Maximum Power (2 hours)					
81.5 (60.8)	2198	4.62 (17.49)	0.397 (0.242)	17.64 (3.48)	
VARYING POWER AND FUEL CONSUMPTION					
78.2 (58.3)	2500	4.78 (18.11)	0.429 (0.261)	16.34 (3.22)	Air temperature
69.7 (51.9)	2619	4.61 (17.46)	0.464 (0.282)	15.10 (2.97)	68°F (20°C)
53.2 (39.7)	2662	3.81 (14.42)	0.502 (0.305)	13.96 (2.75)	Relative humidity
35.8 (26.7)	2671	2.92 (11.06)	0.573 (0.348)	12.24 (2.41)	45%
18.2 (13.6)	2710	2.22 (8.40)	0.855 (0.520)	8.20 (1.62)	Barometer
--	2733	1.55 (5.87)	--	--	29.2" Hg (99.0 kPa)
--			--	--	
Maximum Torque -215.6 lb.-ft. (292.3 Nm) at 1305 rpm					
Maximum Torque Rise -31.3%					
Torque rise at 2100 engine rpm -23%					

**Location of Test:** Istituto Per La Meccanizzazione Agricola (IMA) Strada delle Cacce, 73-10135 Torino, Italy

**Dates of Test:** July - December, 1999

**Manufacturer:** New Holland Italia S.p.A., Viale delle Nazioni, 55-41100, Modena, Italy and New Holland UK Limited, Cranes Farm Road Basildon, Essex, United Kingdom

**FUEL and OIL :** Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.842 **Fuel weight** 7.01 lbs/gal (0.840 kg/l) **Oil** SAE 15W40 **API service classification** CF-4 **Oil consumption for 10 hours** 0.02 lb (10 gm) **Transmission and hydraulic lubricant** Ambra Multi G **Front axle lubricant** Ambra Multi G

**ENGINE: Make** New Holland Diesel **Type** four cylinder vertical with turbocharger **Serial No.** 503-542221 **Crankshaft** lengthwise **Rated Engine speed** 2500 **Bore and stroke** 4.094" x 4.528" (104 mm x 115 mm) **Compression ratio** 16.5 to 1 **Displacement** 238 cu in (3908 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat

**CHASSIS: Type** 2WD and front wheel assist **Serial No.** 001170164 **Tread width** rear 60.2" (1530 mm) to 83.9" (2130 mm) front: 2WD - 55.6" (1413 mm) to 84.5" (2146 mm), FWA - 51.4" (1305 mm) to 79.3" (2014 mm) **Wheel base** 2WD - 92.2" (2342 mm) FWA - 91.1" (2314 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 0.98 (1.58) second 1.12 (1.80) third 1.43 (2.30) fourth 1.62 (2.61) fifth 2.06 (3.31) sixth 2.29 (3.69) seventh 2.34 (3.77) eighth 2.61 (4.20) ninth 2.95 (4.74) tenth 3.33 (5.36) eleventh 3.35 (5.40) twelfth 3.79 (6.11) thirteenth 4.80 (7.73) fourteenth 5.40 (8.69) fifteenth 5.47 (8.80) sixteenth 6.15 (9.89) seventeenth 6.88 (11.07) eighteenth 7.83 (12.60) nineteenth 7.84 (12.62) twentieth 8.93 (14.38) twenty-first 11.31 (18.20) twenty-second 12.88 (20.73) twenty-third 16.20 (26.07) twenty-fourth 18.45 (29.69) reverse 1.10 (1.77), 1.60 (2.57), 2.30 (3.71), 2.57 (4.13), 3.30 (5.31), 3.73 (6.00), 5.38 (8.66), 6.04 (9.73), 7.70 (12.40), 8.79 (14.14), 12.66 (20.38), 18.14 (29.19) **Clutch** dual dry disc operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic

# **DRAWBAR PERFORMANCE** **BALLASTED - 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.hr)	Hp.hr/gal (kW.l/l)	Temp.°F cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
<b>75% of Pull at Maximum Power Five Hours 13th (3M Lo) Gear</b>									
48.6 (36.3)	3695 (16.43)	4.93 (7.94)	2638	3.1	0.592 (0.360)	11.84 (2.33)	199 (93)	66 (19)	29.2 (99.0)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
<b>7th (3S Hi) Gear</b>									
51.5 (38.4)	9285 (41.30)	2.08 (3.35)	2607	15.1	0.638 (0.388)	10.99 (2.17)	195 (91)	57 (14)	29.2 (99.0)
<b>8th (1M Hi) Gear</b>									
58.5 (43.6)	9260 (41.20)	2.37 (3.81)	2500	9.8	0.556 (0.338)	12.60 (2.48)	195 (91)	57 (14)	29.2 (99.0)
<b>9th (4S Lo) Gear</b>									
60.3 (45.0)	8205 (36.49)	2.76 (4.44)	2500	6.9	0.550 (0.334)	12.76 (2.51)	196 (91)	57 (14)	29.2 (99.0)
<b>10th (2M Lo) Gear</b>									
60.2 (44.9)	7125 (31.69)	3.17 (5.10)	2500	5.4	0.555 (0.337)	12.64 (2.49)	197 (92)	57 (14)	29.2 (99.0)
<b>11th (4S Hi) Gear</b>									
61.2 (45.6)	7210 (32.08)	3.18 (5.12)	2500	5.6	0.543 (0.330)	12.91 (2.54)	198 (92)	57 (14)	29.2 (99.0)
<b>12th (2M Hi) Gear</b>									
61.0 (45.5)	6295 (28.01)	3.63 (5.85)	2500	4.5	0.534 (0.325)	13.14 (2.59)	198 (93)	57 (14)	29.2 (99.0)
<b>13th (3M Lo) Gear</b>									
61.0 (45.5)	4940 (21.97)	4.63 (7.45)	2500	3.7	0.548 (0.333)	12.79 (2.52)	199 (93)	57 (14)	29.2 (99.0)
<b>14th (1F Lo) Gear</b>									
62.5 (46.6)	4475 (19.91)	5.24 (8.43)	2500	3.4	0.535 (0.325)	13.11 (2.58)	194 (90)	57 (14)	29.2 (99.0)
<b>15th (3M Hi) Gear</b>									
60.5 (45.1)	4265 (18.98)	5.32 (8.55)	2500	3.3	0.546 (0.332)	12.84 (2.53)	194 (90)	57 (14)	29.2 (99.0)
<b>16th (1F Hi) Gear</b>									
61.4 (45.8)	3860 (17.17)	5.97 (9.61)	2500	3.2	0.539 (0.328)	12.99 (2.56)	195 (91)	57 (14)	29.2 (99.0)
<b>17th (4M Lo) Gear</b>									
60.7 (45.3)	3385 (15.06)	6.72 (10.82)	2500	2.8	0.548 (0.334)	12.78 (2.52)	195 (91)	57 (14)	29.2 (99.0)
<b>18th (2F Lo) Gear</b>									
60.7 (45.3)	2965 (13.19)	7.68 (12.36)	2500	2.7	0.546 (0.332)	12.84 (2.53)	196 (91)	57 (14)	29.2 (99.0)
<b>19th (4M Hi) Gear</b>									
58.5 (43.6)	2865 (12.75)	7.65 (12.31)	2500	2.6	0.573 (0.349)	12.23 (2.41)	197 (92)	57 (14)	29.2 (99.0)
<b>20th (2F Hi) Gear</b>									
59.3 (44.2)	2535 (11.28)	8.77 (14.11)	2500	2.4	0.564 (0.343)	12.44 (2.45)	198 (92)	57 (14)	29.2 (99.0)

## **TL 90- FWA**

<b>TIRES, BALLAST AND WEIGHT</b>		
<b>Rear Tires</b>	-No., size, ply & psi (kPa)	Two 480/70R34; **,13 (90)
<b>Ballast</b>	-Liquid (total)	None
	-Cast Iron (total)	440 lb (200 kg)
<b>Front Tires</b>	-No., size, ply & psi (kPa)	Two 380/70R24; **,23 (160)
<b>Ballast</b>	-Liquid (total)	None
	-Cast Iron (total)	1050 lb (475 kg)
<b>Height of Drawbar</b>		18.9 in (480 mm)
<b>Static Weight with Operator</b>	- Rear	5465 lb (2480 kg)
	- Front	4610 lb (2090 kg)
	- Total	10075 lb (4570 kg)

**Power take-off** 540 rpm at 2198 engine rpm or 1000 rpm at 2381 engine rpm **Unladen tractor mass** 2WD - 7825 lb (3550 kg), FWA - 8420 lb (3820 kg)

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

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance results on this summary were taken from OECD tests conducted under the Code I Test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **1914** and **1915**, Nebraska Summary 349, January 10, 2001.

Brent T. Sampson  
Test Engineer

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

# DRAWBAR PERFORMANCE

## BALLASTED - 2WD

### FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)	Barom.	
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	inch Hg (kPa)
<b>75% of Pull at Maximum Power    Five Hours 13th (3M Lo) Gear</b>									
50.7 (37.8)	3905 (17.36)	4.87 (7.83)	2643	3.9	0.616 (0.375)	11.37 (2.24)	199 (93)	52 (11)	29.2 (99.0)

### MAXIMUM POWER IN SELECTED GEARS

10th (2M Lo) Gear									
56.7 (42.3)	7565 (33.65)	2.81 (4.53)	2500	15.1	0.575 (0.350)	12.18 (2.40)	196 (91)	52 (11)	29.2 (99.0)
11th (4S Hi) Gear									
58.8 (43.8)	7510 (33.40)	2.94 (4.73)	2500	12.2	0.550 (0.335)	12.74 (2.51)	196 (91)	52 (11)	29.2 (99.0)
12th (2M Hi) Gear									
62.5 (46.6)	6660 (29.63)	3.52 (5.67)	2500	7.1	0.535 (0.325)	13.11 (2.58)	198 (92)	52 (11)	29.2 (99.0)
13th (3M Lo) Gear									
63.7 (47.5)	5225 (23.25)	4.57 (7.35)	2500	4.8	0.519 (0.315)	13.52 (2.66)	200 (94)	52 (11)	29.2 (99.0)
14th (1F Lo) Gear									
64.6 (48.2)	4705 (20.94)	5.15 (8.29)	2500	4.3	0.508 (0.309)	13.81 (2.72)	199 (93)	52 (11)	29.2 (99.0)
15th (3M Hi) Gear									
61.6 (45.9)	4400 (19.57)	5.25 (8.44)	2500	4.2	0.535 (0.326)	13.10 (2.58)	196 (91)	52 (11)	29.2 (99.0)
16th (1F Hi) Gear									
62.8 (46.8)	4005 (17.81)	5.88 (9.47)	2500	4.2	0.525 (0.319)	13.35 (2.63)	195 (91)	52 (11)	29.2 (99.0)
17th (4M Lo) Gear									
62.0 (46.2)	3510 (15.60)	6.62 (10.66)	2500	3.7	0.538 (0.327)	13.05 (2.57)	195 (90)	52 (11)	29.2 (99.0)
18th (2F Lo) Gear									
61.8 (46.1)	3055 (13.59)	7.59 (12.21)	2500	3.3	0.537 (0.327)	13.05 (2.57)	194 (90)	52 (11)	29.2 (99.0)
19th (4M Hi) Gear									
60.0 (44.8)	2975 (13.24)	7.56 (12.17)	2500	3.3	0.546 (0.332)	12.84 (2.53)	196 (91)	52 (11)	29.2 (99.0)
20th (4F Hi) Gear									
60.3 (45.0)	2610 (11.62)	8.66 (13.94)	2500	2.9	0.552 (0.336)	12.69 (2.50)	196 (91)	52 (11)	29.2 (99.0)

## TL 90-2WD

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
<b>Rear Tires</b>	-No., size, ply & psi (kPa)	Two 480/70R34; **, 13 (90)	Two 480/70R34; **, 13 (90)
	-Liquid (total)	None	None
	-Cast Iron (total)	440 lb (200 kg)	None
<b>Front Tires</b>	-No., size, ply & psi (kPa)	Two 7.50-18; 8; 36 (250)	Two 7.50-18; 8; 36 (250)
	-Liquid (total)	None	None
	-Cast Iron (total)	1045 lb (475 kg)	None
<b>Height of Drawbar</b>		27.2 in (690 mm)	27.6 in (700 mm)
<b>Static Weight with Operator</b>			
- Rear		5315 lb (2410 kg)	4875 lb (2210 kg)
- Front		4165 lb (1890 kg)	3120 lb (1415 kg)
- Total		9480 lb (4300 kg)	7995 lb (3625 kg)

TRACTOR SOUND LEVEL WITH CAB	FWA dB(A)	2WD dB(A)
At no load in 13th(3M Lo) gear	78.0	78.0
Bystander in 24th (4F Hi) gear	84.9	86.8

#### CENTER OF GRAVITY - 2WD

Horizontal distance forward from centerline of rear wheels	35.4" (900 mm)
Vertical distance above roadway	35.2" (895 mm)
Horizontal distance from center of rear wheel tread	0" (0 mm) to the left/right

#### CENTER OF GRAVITY - FWA

Horizontal distance forward from centerline of rear wheels	38.0" (965 mm)
Vertical distance above roadway	33.5" (850 mm)
Horizontal distance from center of rear wheel tread	0.3" (8 mm) to the left

#### TURNING ON A CONCRETE SURFACE (2WD)

Turning radius	with brake applied right 138" (3.50 m) left 138" (3.50 m)
	without brake right 152" (3.85 m) left 150" (3.80 m)
Turning space radius	with brake applied right 144" (3.65 m) left 142" (3.60 m)
	without brake right 156" (3.95 m) left 154" (3.90 m)

#### TURNING ON A CONCRETE SURFACE (FWA)

Turning radius	with brake applied right 179" (4.55 m) left 187" (4.75 m)
	without brake right 215" (5.45 m) left 220" (5.60 m)
Turning space radius	with brake applied right 189" (4.80 m) left 193" (4.90 m)
	without brake right 222" (5.65 m) left 228" (5.80 m)

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

CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range:	4070 lbs (18.1 kN)
i) Opening pressure of relief valve:	NA
Sustained pressure with relief valve open:	2900 psi (200 bar)
ii) Pump delivery rate at minimum pressure:	14.8 GPM (56.0 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	10.6 GPM (40.2 l/min)
Delivery pressure:	2525 psi (174 bar)
Power:	15.6 HP (11.6 kW)

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

Observed Maximum Pressure psi.(bar)	2970 (205)
Location:	hydraulic pump
Hydraulic oil temperature: °F (°C)	144 (62)
Location:	hydraulic sump
Category:	II
Quick attach:	none

System pressure 2675 psi (184 Bar)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	8442	7817	7371	7313	6597
" " " " " (kN)	(37.5)	(34.8)	(32.8)	(32.5)	(29.3)

#### SAE TEST

inch mm

	inch	mm	OECD TEST	inch	mm
A	27.0	686	28.1	715	
B	10.0	255	10.0	255	
C	13.0	329	13.0	329	
D	11.8	300	11.8	300	
E	13.2	335	10.0	255	
F	8.1	205	8.1	205	
G	29.3	745	29.3	745	
H	0.6	15	0.6	15	
I	15.7	400	15.7	400	
J	21.2	540	21.2	540	
K	21.2	540	18.3	465	
L	43.3	1100	43.3	1100	
M	21.7	550	21.7	550	
N	38.0	965	38.0	965	
O	8.0	203	7.9	200	
P	40.2	1021	45.3	1150	
Q	34.2	870	36.2	920	
R	25.8	654	24.4	590	

#### HITCH DIMENSIONS AS TESTED NO LOAD

