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## Test 1829: New Holland TS90 Diesel

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# SUMMARY OF OECD TEST 1829 - NEBRASKA SUMMARY 294 NEW HOLLAND TS90 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—617 rpm)</b>					
77.2 (57.6)	2174	4.57 (17.29)	0.414 (0.252)	16.88 (3.33)	
<b>Standard Power Take-off Speed (540 rpm)</b>					
75.9 (56.6)	1902	4.39 (16.62)	0.404 (0.246)	17.29 (3.41)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
77.2 (57.6)	2174	4.57 (17.29)	0.414 (0.252)	16.88 (3.33)	Air temperature
68.1 (50.8)	2253	4.41 (15.69)	0.425 (0.259)	16.43 (3.24)	75°F (24°C)
51.5 (38.4)	2274	3.41 (12.92)	0.465 (0.283)	15.08 (2.97)	Relative humidity
34.6 (25.8)	2289	2.69 (10.17)	0.543 (0.331)	12.87 (2.54)	31%
17.3 (12.9)	2301	1.98 (7.48)	0.800 (0.487)	8.73 (1.72)	Barometer
--	2315	1.32 (4.99)	--	--	30.3" Hg (102.6 kPa)

Maximum Torque - 239.5 lb.-ft. (324.7 Nm) at 1304 rpm  
 Maximum Torque Rise - 28.3%  
 Torque rise at 1800 engine rpm - 15%

## 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)
<b>Maximum Power—11th(4LH) Gear</b>							
65.7 (49.0)	6735 (30.0)	3.66 (5.89)	2170	2.9	0.485 (0.295)	14.39 (2.83)	185 (85)
<b>75% of Pull at Maximum Power—11th(4LH) Gear</b>							
51.6 (38.5)	5050 (22.5)	3.83 (6.17)	2259	2.2	0.529 (0.322)	13.20 (2.60)	183 (84)
<b>50% of Pull at Maximum Power—11th(4LH) Gear</b>							
35.1 (26.2)	3375 (15.0)	3.90 (6.27)	2278	1.5	0.618 (0.376)	11.30 (2.23)	183 (84)
<b>75% of Pull at Reduced Engine Speed—12th(2MH) Gear</b>							
51.6 (38.5)	5060 (22.5)	3.83 (6.16)	1869	2.3	0.475 (0.289)	14.69 (2.89)	185 (85)
<b>50% of Pull at Reduced Engine Speed—12th(2MH) Gear</b>							
35.1 (26.2)	3375 (15.0)	3.90 (6.27)	1890	1.7	0.535 (0.326)	13.05 (2.57)	181 (83)

**Location of Test:** Silsoe Research Institute, Wrest Park, Silsoe, United Kingdom

**Dates of Test:** January - May, 1999

**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** CE/SF **Transmission and hydraulic lubricant** SAE 10W30 API GL4 **Front axle lubricant** SAE 10W30 API GL4

**ENGINE: Make** New Holland Diesel **Type** four cylinder vertical **Serial No.** NE736234 **Crankshaft** lengthwise **Rated engine speed** 2170 **Bore and stroke** 4.40" x 5.00" (111.8 mm x 127.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 304 cu in (4987 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements and centrifugal precleaner **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.** 085739B **Tread width** rear 60.0" (1525 mm) to 79.8" (2028 mm) front 55.3" (1404 mm) to 83.3" (2115 mm) **Wheelbase** 93.0" (2362 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 0.99 (1.59) second 1.21 (1.94) third 1.45 (2.33) fourth 1.76 (2.84) fifth 2.06 (3.32) sixth 2.48 (3.99) seventh 2.52 (4.06) eighth 3.00 (4.83) ninth 3.03 (4.88) tenth 3.63 (5.84) eleventh 3.67 (5.91) twelfth 4.44 (7.14) thirteenth 5.18 (8.34) fourteenth 6.00 (9.65) fifteenth 6.34 (10.20) sixteenth 7.34 (11.81) seventeenth 7.54 (12.14) eighteenth 8.79 (14.14) nineteenth 9.22 (14.84) twentieth 10.75 (17.30) twenty-first 12.55 (20.19) twenty-second 15.35 (24.71) twenty-third 18.27 (29.40) twenty-fourth 22.34 (35.95) reverse 1.02 (1.64), 1.25 (2.01), 1.49 (2.40), 1.83 (2.94), 2.13 (3.43), 2.56 (4.12), 2.61 (4.20), 3.11 (5.00), 3.13 (5.04), 3.75 (6.04), 3.80 (6.11), 4.59 (7.39), 5.36 (8.63), 6.20 (9.98), 6.56 (10.55), 7.58 (12.21), 7.80 (12.55), 9.09 (14.63), 9.54 (15.35), 11.12 (17.89), 12.98 (20.89), 15.87 (25.54), 18.88 (30.39), 23.09 (37.16) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1902 engine rpm and 1000 rpm at 2103 engine rpm **Unladen tractor mass** 9510 lb (4313 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 Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. <sup>o</sup> F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(1LL) Gear									
24.9 (18.6)	10330 (46.0)	0.91 (1.46)	2285	14.9	0.750 (0.456)	9.31 (1.83)	184 (84)	63 (17)	29.6 (100.2)
2nd(1LH) Gear									
31.1 (23.2)	10185 (45.3)	1.15 (1.84)	2279	12.0	0.663 (0.403)	10.54 (2.08)	184 (84)	63 (17)	29.6 (100.3)
3rd(2LL) Gear									
37.1 (27.7)	10125 (45.0)	1.37 (2.21)	2274	11.4	0.610 (0.371)	11.45 (2.26)	184 (84)	61 (16)	29.6 (100.3)
4th(2LH) Gear									
45.5 (33.9)	9980 (44.4)	1.71 (2.75)	2268	9.7	0.555 (0.338)	12.58 (2.48)	185 (85)	61 (16)	29.6 (100.3)
5th(3LL) Gear									
52.8 (39.4)	10005 (44.5)	1.98 (3.19)	2252	9.7	0.538 (0.327)	12.99 (2.56)	185 (85)	59 (15)	29.6 (100.3)
6th(1ML) Gear									
62.3 (46.4)	9770 (43.5)	2.39 (3.85)	2206	7.4	0.512 (0.311)	13.65 (2.69)	185 (85)	59 (15)	29.6 (100.3)
7th(3LH) Gear									
63.7 (47.5)	9815 (43.7)	2.43 (3.92)	2202	7.3	0.503 (0.306)	13.89 (2.74)	187 (86)	59 (15)	29.6 (100.3)
8th(4LL) Gear									
65.4 (48.8)	8315 (37.0)	2.95 (4.75)	2171	4.0	0.491 (0.299)	14.23 (2.80)	185 (85)	61 (16)	29.6 (100.3)
9th(1MH) Gear									
65.3 (48.7)	8240 (36.6)	2.97 (4.78)	2164	4.0	0.482 (0.293)	14.49 (2.85)	185 (85)	59 (15)	29.6 (100.3)
10th(2ML) Gear									
65.2 (48.6)	6755 (30.1)	3.62 (5.82)	2177	3.1	0.492 (0.299)	14.21 (2.80)	187 (86)	61 (16)	29.6 (100.2)
11th(4LH) Gear									
65.7 (49.0)	6735 (30.0)	3.66 (5.89)	2170	2.9	0.486 (0.295)	14.39 (2.83)	185 (85)	57 (14)	29.6 (100.3)
12th(2MH) Gear									
65.3 (48.7)	5530 (24.6)	4.43 (7.13)	2166	2.5	0.486 (0.296)	14.37 (2.83)	187 (86)	61 (16)	29.6 (100.2)
13th(3ML) Gear									
64.0 (47.7)	4625 (20.6)	5.19 (8.35)	2165	2.2	0.498 (0.303)	14.04 (2.77)	185 (85)	61 (16)	29.6 (100.2)
14th(1HL) Gear									
64.2 (47.9)	3995 (17.8)	6.03 (9.71)	2166	1.8	0.500 (0.304)	14.06 (2.75)	185 (85)	55 (13)	29.6 (100.3)
15th(3HM) Gear									
63.4 (47.3)	3730 (16.6)	6.38 (10.26)	2166	1.7	0.506 (0.308)	13.81 (2.72)	185 (85)	57 (14)	29.6 (100.3)
16th(1HH) Gear									
63.2 (47.1)	3200 (14.2)	7.40 (11.91)	2167	1.5	0.510 (0.310)	13.71 (2.70)	187 (86)	55 (13)	29.6 (100.3)
17th(4ML) Gear									
62.1 (46.3)	3060 (13.6)	7.61 (12.24)	2166	1.5	0.513 (0.312)	13.60 (2.68)	185 (85)	55 (13)	29.6 (100.3)
18th(2HL) Gear									
60.6 (45.2)	2550 (11.3)	8.91 (14.34)	2175	1.3	0.527 (0.321)	13.25 (2.61)	185 (85)	57 (14)	29.6 (100.3)
19th(4MH) Gear									
59.7 (44.5)	2395 (10.7)	9.35 (15.04)	2170	1.3	0.533 (0.324)	13.10 (2.58)	185 (85)	57 (14)	29.6 (100.3)

**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 18.4R34; \*\*, 12(83)  
 Two 14.9R24; \*\*, 15(103)  
 19.5 in (495 mm)  
 5815 lb (2638 kg)  
 3860 lb (1750 kg)  
 9675 lb (4388 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 figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1829**, Nebraska Summary 294, January 13, 2000.

David L. Morgan  
 Assistant Director

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

**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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
<b>Maximum Power—12th(2MH) Gear</b>									
64.8 (48.3)	5555 (24.7)	4.37 (7.04)	2170	3.0	0.496 (0.302)	14.06 (2.77)	185 (85)	52 (11)	30.0 (101.5)
<b>75% of Pull at Maximum Power—12th(2MH) Gear</b>									
51.0 (38.0)	4160 (18.5)	4.59 (7.39)	2257	2.2	0.540 (0.328)	12.94 (2.55)	184 (84)	54 (12)	30.0 (101.5)
<b>50% of Pull at Maximum Power—12th(2MH) Gear</b>									
34.3 (25.6)	2755 (12.3)	4.67 (7.51)	2277	1.5	0.632 (0.385)	11.05 (2.18)	184 (84)	54 (12)	30.0 (101.5)
<b>75% of Pull at Reduced Engine Speed—13th(3ML) Gear</b>									
50.8 (37.9)	4150 (18.5)	4.59 (7.39)	1935	2.2	0.493 (0.300)	14.16 (2.79)	184 (84)	57 (14)	30.0 (101.5)
<b>50% of Pull at Reduced Engine Speed—13th(3ML) Gear</b>									
34.3 (25.6)	2765 (12.3)	4.65 (7.49)	1948	1.5	0.557 (0.339)	12.54 (2.47)	184 (84)	57 (14)	30.0 (101.5)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
5th(3LL) Gear									
42.1 (31.4)	8150 (36.3)	1.94 (3.12)	2266	11.5	0.596 (0.362)	11.73 (2.31)	185 (85)	59 (15)	29.9 (101.4)
6th(1ML) Gear									
50.3 (37.5)	8025 (35.7)	2.35 (3.78)	2251	10.0	0.551 (0.335)	12.69 (2.50)	184 (84)	55 (13)	30.0 (101.5)
7th(3LH) Gear									
50.0 (37.3)	7830 (34.8)	2.39 (3.85)	2252	10.0	0.557 (0.339)	12.54 (2.47)	185 (85)	55 (13)	30.0 (101.5)
8th(4LL) Gear									
60.1 (44.8)	7845 (34.9)	2.87 (4.62)	2222	8.1	0.521 (0.317)	13.40 (2.64)	185 (85)	54 (12)	30.0 (101.5)
9th(1MH) Gear									
60.5 (45.1)	7780 (34.6)	2.92 (4.69)	2227	7.7	0.515 (0.313)	13.55 (2.67)	185 (85)	55 (13)	30.0 (101.5)
10th(2ML) Gear									
64.2 (47.9)	6860 (30.5)	3.51 (5.65)	2164	4.6	0.500 (0.304)	13.96 (2.75)	185 (85)	57 (14)	29.9 (101.4)
11th(4LH) Gear									
64.5 (48.1)	6780 (30.2)	3.57 (5.74)	2165	4.0	0.499 (0.303)	14.01 (2.76)	185 (85)	54 (12)	30.0 (101.5)
12th(2MH) Gear									
64.8 (48.3)	5555 (24.7)	4.37 (7.04)	2170	3.0	0.496 (0.302)	14.06 (2.77)	185 (85)	52 (11)	30.0 (101.5)
13th(3ML) Gear									
63.6 (47.4)	4645 (20.7)	5.13 (8.26)	2166	2.4	0.506 (0.308)	13.81 (2.72)	185 (85)	54 (12)	30.0 (101.5)
14th(1HL) Gear									
64.5 (48.1)	4050 (18.0)	5.97 (9.60)	2169	2.0	0.503 (0.306)	13.89 (2.74)	187 (86)	54 (12)	30.0 (101.5)
15th(3MH) Gear									
64.1 (47.8)	3810 (16.9)	6.31 (10.16)	2170	2.0	0.503 (0.306)	13.89 (2.74)	185 (85)	54 (12)	30.0 (101.5)
16th(1HH) Gear									
63.4 (47.3)	3260 (14.5)	7.30 (11.75)	2163	1.8	0.504 (0.307)	13.86 (2.73)	185 (85)	54 (12)	30.0 (101.5)
17th(4ML) Gear									
61.8 (46.1)	3070 (13.7)	7.55 (12.16)	2175	1.7	0.517 (0.315)	13.50 (2.66)	185 (85)	55 (13)	30.0 (101.5)
18th(4HL) Gear									
60.6 (45.2)	2575 (11.5)	8.83 (14.21)	2178	1.6	0.531 (0.323)	13.15 (2.59)	185 (85)	54 (12)	30.0 (101.5)
19th(4MH) Gear									
59.3 (44.2)	2410 (10.7)	9.23 (14.85)	2166	1.4	0.534 (0.325)	13.08 (2.58)	185 (85)	54 (12)	30.0 (101.5)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
Maximum Sound level in 12th(2MH) Gear	78.0	78.0
Bystander in 24th(4HH) Gear	85.0	--

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

CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range: 4745 lbs (21.1 kN) (with lift assist cylinder)

i) Opening pressure of relief valve: NA

Sustained pressure of the open relief valve: 2670 psi (184 bar)

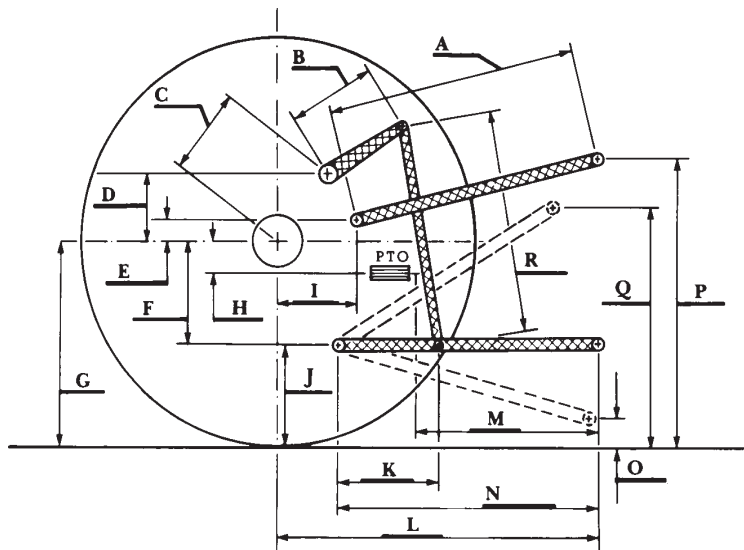
ii) Pump delivery rate at minimum pressure: 19.2 GPM (72.7 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 15.7 GPM (59.6 l/min)

Delivery pressure: 2440 psi (168 bar)

Power: 22.4 HP (16.69 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	28.1	715
B	10.0	254
C	14.0	356
D	13.4	341
E	5.9	149
F	9.0	229
G	30.3	770
H	1.9	47
I	12.8	325
J	21.3	541
K	18.3	466
L	40.0	1017
M	22.0	560
N	36.0	915
O	7.6	193
P	45.3	1151
Q	32.8	834
R	31.9	810