

January 2004

Test 2227: New Holland TS115A Diesel

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



Part of the [Applied Mechanics Commons](#)

"Test 2227: New Holland TS115A Diesel" (2004). *Nebraska Tractor Tests*. 305.
<http://digitalcommons.unl.edu/tractormuseumlit/305>

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 2227-NEBRASKA SUMMARY 498

NEW HOLLAND TS115A DIESEL

24 SPEED

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

Dates of tests: September to November, 2004.

Manufacturer: CNH U.K. Ltd., Basildon, Essex, SS14 3AD, England

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—1038 rpm)					
101.0 (75.3)	2200	6.73 (25.47)	0.470 (0.286)	15.01 (2.96)	
Standard Power Take-off Speed (999 rpm)					
103.7 (77.3)	2119	6.68 (25.29)	0.455 (0.277)	15.53 (3.06)	
Maximum Power (2 hours)					
104.7 (78.1)	1964	6.45 (24.40)	0.434 (0.264)	16.24 (3.20)	

VARYING POWER AND FUEL CONSUMPTION

101.0 (75.3)	2200	6.73 (25.47)	0.470 (0.286)	15.01 (2.96)	Air temperature
90.4 (67.4)	2316	6.39 (24.20)	0.499 (0.304)	14.14 (2.79)	73°F (23°C)
68.1 (50.8)	2330	5.52 (20.89)	0.572 (0.348)	12.33 (2.43)	Relative humidity
45.9 (34.2)	2354	4.32 (16.34)	0.663 (0.403)	10.64 (2.10)	54%
23.3 (17.4)	2382	3.26 (12.33)	0.983 (0.598)	7.17 (1.41)	Barometer
--	2423	2.27 (8.59)	--	--	30.0" Hg (102.2 kPa)

Maximum Torque - 381.4 lb.-ft. (517.1 Nm) at 1301 rpm
 Maximum Torque Rise - 58.1%
 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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cooling med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—12th (2 II Hi) Gear									
83.4 (62.2)	6945 (30.9)	4.50 (7.24)	2201	3.6	0.565 (0.344)	12.49 (2.46)	180 (82)	59 (15)	29.9 (101.2)
75% of Pull at Maximum Power—12th (2 II Hi) Gear									
66.5 (49.6)	5215 (23.2)	4.78 (7.70)	2323	2.9	0.637 (0.387)	11.08 (2.18)	181 (83)	66 (19)	29.8 (101.0)
50% of Pull at Maximum Power—12th (2 II Hi) Gear									
44.8 (33.4)	3450 (15.4)	4.87 (7.83)	2345	2.0	0.780 (0.474)	9.05 (1.78)	183 (84)	66 (19)	29.8 (101.0)
75% of Pull at Reduced Engine Speed—13th (3 II Lo) Gear									
66.6 (49.7)	5205 (23.2)	4.80 (7.73)	1997	2.9	0.556 (0.338)	12.69 (2.50)	181 (83)	66 (19)	29.8 (101.0)
50% of Pull at Reduced Engine Speed—13th (3 II Lo) Gear									
44.9 (33.5)	3450 (15.4)	4.88 (7.86)	2014	2.0	0.665 (0.404)	10.61 (2.09)	180 (82)	66 (19)	29.8 (101.0)

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.847 **Fuel weight** 7.04 lbs/gal (0.8453 kg/l) **Oil SAE 10W30 API service classification** CH-4 **Transmission and hydraulic lubricant** NH 410B fluid **Front axle lubricant** NH 410B fluid

ENGINE: Make CNH Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** 00093411 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.094" x 5.196" (104.0 mm x 132.0 mm) **Compression ratio** 17.0 to 1 **Displacement** 410 cu in (6728 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** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** 221208 **Tread width** rear 68.1" (1730 mm) to 83.9" (2130 mm) front 64.2" (1630 mm) to 81.9" (2080 mm) **Wheelbase** 104.4" (2652 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.02 (1.64) second 1.25 (2.01) third 1.49 (2.40) fourth 1.83 (2.94) fifth 2.13 (3.43) sixth 2.56 (4.12) seventh 2.61 (4.20) eighth 3.11 (5.00) ninth 3.13 (5.04) tenth 3.75 (6.04) eleventh 3.80 (6.11) twelfth 4.59 (7.39) thirteenth 5.36 (8.62) fourteenth 6.20 (9.98) fifteenth 6.56 (10.55) sixteenth 7.59 (12.21) seventeenth 7.80 (12.55) eighteenth 9.08 (14.62) nineteenth 9.54 (15.35) twentieth 11.11 (17.88) twenty-first 12.97 (20.88) twenty-second 15.87 (25.54) twenty-third 18.88 (30.38) twenty-fourth 23.09 (37.16) reverse 1.06 (1.70), 1.29 (2.08), 1.55 (2.49), 1.89 (3.04), 2.21 (3.55), 2.65 (4.26), 2.70 (4.34), 3.22 (5.17), 3.24 (5.21), 3.88 (6.24) 3.93 (6.32), 4.75 (7.64), 5.54 (8.92), 6.41 (10.32), 6.78 (10.91), 7.84 (12.62), 8.07 (12.98), 9.40 (15.12), 9.86 (15.87), 11.49 (18.49), 13.42 (21.59), 16.41 (26.41), 19.52 (31.41), 23.87 (38.42) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1969 engine rpm or 1000 rpm at 2120 engine rpm **Unladen tractor mass** 11840 lb (5370 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. ^o F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(1 I Lo) Gear									
32.2 (24.0)	12365 (55.0)	0.98 (1.57)	2379	13.0	0.913 (0.555)	7.73 (1.52)	181 (83)	63 (17)	29.9 (101.2)
2nd(1 I Hi) Gear									
39.2 (29.2)	12305 (54.7)	1.19 (1.92)	2366	12.6	0.828 (0.504)	8.52 (1.68)	183 (84)	63 (17)	29.9 (101.2)
3rd(2 I Lo) Gear									
46.7 (34.8)	12185 (54.2)	1.44 (2.31)	2351	11.6	0.788 (0.479)	8.95 (1.76)	185 (85)	63 (17)	29.9 (101.2)
4th(2 I Hi) Gear									
56.7 (42.3)	12180 (54.2)	1.75 (2.81)	2346	11.9	0.671 (0.408)	10.51 (2.07)	185 (85)	63 (17)	29.9 (101.2)
5th(3 I Lo) Gear									
66.1 (49.3)	12125 (53.9)	2.04 (3.29)	2335	11.2	0.649 (0.395)	10.86 (2.14)	181 (83)	63 (17)	29.9 (101.2)
6th(1 II Lo) Gear									
76.3 (56.9)	11980 (53.3)	2.39 (3.84)	2242	10.1	0.589 (0.358)	11.98 (2.36)	183 (84)	64 (18)	29.9 (101.1)
7th(3 I Hi) Gear									
75.6 (56.4)	11500 (51.2)	2.47 (3.97)	2246	9.0	0.615 (0.374)	11.47 (2.26)	183 (84)	63 (17)	29.9 (101.2)
8th(4 I Lo) Gear									
83.1 (61.9)	10760 (47.9)	2.90 (4.66)	2157	6.6	0.539 (0.328)	13.10 (2.58)	181 (83)	64 (18)	29.9 (101.2)
9th(1 II Hi) Gear									
82.6 (61.6)	10655 (47.4)	2.91 (4.68)	2153	6.8	0.551 (0.335)	12.79 (2.52)	181 (83)	64 (18)	29.9 (101.2)
10th(2 II Lo) Gear									
83.1 (62.0)	9485 (42.2)	3.29 (5.30)	2006	5.4	0.551 (0.335)	12.79 (2.52)	181 (83)	64 (18)	29.8 (101.0)
11th(4 II Hi) Gear									
86.4 (64.4)	9780 (43.5)	3.31 (5.33)	1996	5.5	0.526 (0.320)	13.40 (2.64)	181 (83)	64 (18)	29.9 (101.2)
12th(2 II Hi) Gear									
86.8 (64.7)	8160 (36.3)	3.99 (6.42)	1964	4.3	0.520 (0.317)	13.55 (2.67)	180 (82)	59 (15)	29.9 (101.2)
13th(3 II Lo) Gear									
85.0 (63.4)	6765 (30.1)	4.71 (7.58)	1972	3.6	0.533 (0.324)	13.24 (2.61)	180 (82)	61 (16)	29.9 (101.2)
14th(1 III Lo) Gear									
86.4 (64.4)	5890 (26.2)	5.50 (8.85)	1982	3.2	0.526 (0.320)	13.40 (2.64)	181 (83)	61 (16)	29.9 (101.2)
15th(3 II Hi) Gear									
86.0 (64.1)	5555 (24.7)	5.81 (9.35)	1978	3.0	0.530 (0.322)	13.31 (2.62)	180 (82)	63 (17)	29.9 (101.2)
16th(1 III Hi) Gear									
86.5 (64.5)	4880 (21.7)	6.65 (10.70)	1950	2.4	0.517 (0.314)	13.65 (2.69)	181 (83)	61 (16)	29.9 (101.2)
17th(4 II Lo) Gear									
85.2 (63.5)	4675 (20.8)	6.83 (10.99)	1947	2.6	0.524 (0.319)	13.45 (2.65)	183 (83)	59 (15)	29.9 (101.2)
18th(2 III Lo) Gear									
82.6 (61.6)	3845 (17.1)	8.06 (12.96)	1965	2.1	0.543 (0.330)	12.99 (2.56)	180 (82)	61 (16)	29.9 (101.2)
19th(4 II Hi) Gear									
84.9 (63.3)	3790 (16.9)	8.40 (13.52)	1950	2.2	0.522 (0.318)	13.50 (2.66)	181 (83)	61 (16)	29.9 (101.2)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: All results reported were for a tractor equipped with a cab unless noted otherwise.

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 claims of 63% PTO torque rise, 26.5 GPM (100 lpm) hydraulic flow with a variable displacement pump nor 3 point lift claims of 8250 lbs (3742 kg) with one 50 mm boost cylinder nor 9285 lbs (4212 kg) with two 50 mm boost cylinders with mechanical lower links. 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. **2227** Nebraska Summary 498, December 15, 2005.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
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 600/65R38; **,10 (70)
Two 480/65R28; **,10 (70)
18.5 in (470 mm)
7365 lb (3341 kg)
4640 lb (2104 kg)
12005 lb (5445 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—12th(2II Hi) Gear									
84.4 (62.9)	7150 (31.8)	4.43 (7.13)	2202	4.1	0.560 (0.341)	12.59 (2.48)	180 (82)	57 (14)	29.9 (101.2)
75% of Pull at Maximum Power—12th(2II Hi) Gear									
67.9 (50.6)	5350 (23.8)	4.76 (7.67)	2340	2.9	0.632 (0.384)	11.17 (2.20)	181 (83)	57 (14)	29.9 (101.2)
50% of Pull at Maximum Power—12th(2II Hi) Gear									
46.1 (34.4)	3570 (15.9)	4.85 (7.80)	2361	2.0	0.755 (0.459)	9.34 (1.84)	181 (83)	57 (14)	29.9 (101.2)
75% of Pull at Reduced Engine Speed—13th(3II Lo) Gear									
67.9 (50.6)	5350 (23.8)	4.76 (7.66)	2005	3.1	0.559 (0.340)	12.63 (2.49)	176 (80)	63 (17)	29.9 (101.3)
50% of Pull at Reduced Engine Speed—13th(3II Lo) Gear									
46.1 (34.4)	3560 (15.8)	4.86 (7.82)	2027	1.9	0.635 (0.387)	11.10 (2.19)	180 (82)	63 (17)	29.9 (101.3)
MAXIMUM POWER IN SELECTED GEARS									
7th(3 I Hi) Gear									
60.5 (45.1)	9305 (41.4)	2.44 (3.93)	2289	10.6	0.668 (0.406)	10.56 (2.08)	183 (84)	61 (16)	29.9 (101.2)
8th(4 I Lo) Gear									
71.5 (53.3)	9195 (40.9)	2.92 (4.70)	2266	9.1	0.609 (0.370)	11.58 (2.28)	181 (83)	61 (16)	29.9 (101.3)
9th(1 II Hi) Gear									
71.7 (53.5)	9215 (41.0)	2.92 (4.70)	2252	9.4	0.604 (0.367)	11.68 (2.30)	181 (83)	61 (16)	29.9 (101.3)
10th(2 II Lo) Gear									
79.7 (59.4)	8745 (38.9)	3.42 (5.51)	2158	7.6	0.570 (0.347)	12.38 (2.44)	181 (83)	61 (16)	29.9 (101.3)
11th(4 I Hi) Gear									
81.0 (60.4)	8745 (38.9)	3.47 (5.59)	2164	7.6	0.563 (0.343)	12.53 (2.47)	181 (83)	63 (17)	29.9 (101.3)
12th(2 II Hi) Gear									
86.2 (64.3)	8090 (36.0)	4.00 (6.43)	2017	5.6	0.526 (0.320)	13.40 (2.64)	180 (82)	57 (14)	29.9 (101.2)
13th(3 II Lo) Gear									
85.3 (63.6)	6870 (30.6)	4.66 (7.50)	1981	4.0	0.524 (0.319)	13.45 (2.65)	180 (82)	59 (15)	29.9 (101.2)
14th(1 III Lo) Gear									
86.9 (64.8)	6015 (26.8)	5.42 (8.72)	1977	3.4	0.513 (0.312)	13.76 (2.71)	180 (82)	59 (15)	29.9 (101.2)
15th(2 II Hi) Gear									
87.3 (65.1)	5755 (25.6)	5.69 (9.15)	1962	3.1	0.511 (0.311)	13.81 (2.72)	180 (82)	59 (15)	29.9 (101.2)
16th(1 III Hi) Gear									
87.7 (65.4)	4900 (21.8)	6.71 (10.80)	1991	2.7	0.509 (0.310)	13.86 (2.73)	181 (83)	59 (15)	29.9 (101.2)
17th(4 II Lo) Gear									
86.2 (64.3)	4705 (20.9)	6.87 (11.06)	1981	2.6	0.517 (0.315)	13.64 (2.69)	180 (82)	59 (15)	29.9 (101.2)
18th(2 III Lo) Gear									
84.5 (63.0)	3975 (17.7)	7.97 (12.83)	1966	2.2	0.526 (0.320)	13.40 (2.64)	181 (83)	59 (15)	29.9 (101.2)
19th(4 II Hi) Gear									
86.7 (64.7)	3875 (17.2)	8.39 (13.50)	1971	2.2	0.517 (0.315)	13.64 (2.69)	180 (82)	59 (15)	29.9 (101.2)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load in 12th (2 II Hi) gear	74.0	75.0
Bystander	--	--

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load in 12th(2 II Hi) gear	86.0	86.0
Bystander	--	--

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: No

Maximum Force Exerted Through Whole Range: 5485 lbs (24.4 kN) 1 x 50 mm boost cylinder
 7330 lbs (32.6 kN) 2 x 50 mm boost cylinders
 7825 lbs (34.8 kN) 2 x 80 mm external cylinders

i) Opening pressure of relief valve:	NA	NA
	fixed disp. pump	variable disp. pump
Sustained pressure at compensator cutoff:	2975 psi (205 bar)	3105 psi (214 bar)
ii) Pump delivery rate at minimum pressure:	22.2 GPM(84.0 l/min)	26.2 GPM(99.0 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	19.0 GPM(71.9 l/min)	25.0 GPM(94.5 l/min)
Delivery pressure:	2465 psi (170 bar)	2610 psi (180 bar)
Power:	27.3 HP (20.4 kW)	38.0 HP (28.3 kW)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)	2975(205)
Location:	lift cylinder
Hydraulic oil temperature: °F(°C)	150(65)
Location:	hydraulic sump
Category:	II
Quick attach:	none

HITCH DIMENSIONS AS TESTED—NO LOAD

	Mechanical lower link				
	SAE Static Test—System pressure 2625 psi (181 Bar) (one 50 mm boost cylinder)				
Hitch point distance to ground level in. (mm)	7.9(200)	16.3(415)	23.0(585)	28.3(720)	34.8(885)
Lift force on frame lb	10160	9620	9530	8990	7735
" " " " " " (kN)	(45.2)	(42.8)	(42.4)	(40.0)	(34.4)
	Mechanical lower link				
	SAE Static Test—System pressure 2625 psi (181 Bar) (two 50 mm boost cylinders)				
Hitch point distance to ground level in. (mm)	7.9(200)	16.3(415)	23.0(585)	28.5(723)	34.4(875)
Lift force on frame lb	13330	12565	11355	10185	8950
" " " " " " (kN)	(59.3)	(55.9)	(50.5)	(45.3)	(39.8)
	Electronic draft control				
	SAE Static Test—System pressure 2815 psi (194 Bar) (two 80 mm external cylinders)				
Hitch point distance to ground level in. (mm)	7.9(200)	15.7(400)	23.0(585)	30.3(770)	35.8(910)
Lift force on frame lb	12700	11575	11105	10520	9755
" " " " " " (kN)	(56.5)	(51.5)	(49.4)	(46.8)	(43.4)

	OECD test		SAE test	
	inch	mm	inch	mm
A	27.6	700	28.0	710
B	12.2	310	12.2	310
C	15.6	395	15.6	395
D	14.6	370	14.6	370
E	8.2	208	10.8	275
F	9.3	235	9.3	235
G	32.3	820	32.3	820
H	1.1	28	1.1	28
I	17.9	455	16.9	430
J	23.0	585	23.0	585
K	19.8	505	23.0	585
L	44.0	1118	44.0	1118
M	22.2	563	22.2	563
N	37.4	950	37.4	950
O	7.7	196	7.9	200
P	47.0	1195	42.0	1068
Q	32.3	820	32.3	820
R	30.1	764	32.1	815

