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January 2004

Test 2120: New Holland TM155 Diesel

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SUMMARY OF OECD TEST 2120–NEBRASKA SUMMARY 434

NEW HOLLAND TM155 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—1038 rpm)					
131.6 (98.1)	2200	8.36 (31.65)	0.446 (0.271)	15.74 (3.10)	
Standard Power Take-off Speed (1000 rpm)					
133.6 (99.6)	2121	8.22 (31.12)	0.432 (0.263)	16.24 (3.20)	
Maximum Power (2 hours)					
133.8 (99.8)	2101	8.18 (30.98)	0.429 (0.261)	16.34 (3.22)	

VARYING POWER AND FUEL CONSUMPTION

131.6 (98.1)	2200	8.36 (31.65)	0.446 (0.271)	15.74 (3.10)	Air temperature
117.1 (87.3)	2301	7.99 (30.26)	0.480 (0.292)	14.62 (2.88)	73°F (23°C)
88.1 (65.7)	2309	6.53 (24.72)	0.521 (0.317)	13.48 (2.66)	Relative humidity
59.3 (44.2)	2333	4.99 (18.89)	0.591 (0.359)	11.88 (2.34)	47%
29.9 (22.3)	2353	3.58 (13.56)	0.840 (0.511)	8.36 (1.65)	Barometer
--	2380	2.34 (8.86)	--	--	29.8" Hg (100.8 kPa)

Maximum Torque - 462.5 lb.-ft. (627.1 Nm) at 1251 rpm
 Maximum Torque Rise - 47.2%
 Torque rise at 1800 engine rpm - 23%

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							
108.5 (80.9)	9935 (44.2)	4.09 (6.59)	2201	5.7	0.540 (0.329)	12.99 (2.56)	198 (92)
75% of Pull at Maximum Power—8th(2B) Gear							
86.4 (64.4)	7435 (33.1)	4.36 (7.01)	2305	4.3	0.615 (0.374)	11.42 (2.25)	196 (91)
50% of Pull at Maximum Power—8th(2B) Gear							
58.5 (43.6)	4960 (22.1)	4.42 (7.11)	2310	3.1	0.688 (0.419)	10.20 (2.01)	194 (90)
75% of Pull at Reduced Engine Speed—9th(3B) Gear							
86.4 (64.4)	7440 (33.1)	4.35 (7.00)	1918	4.4	0.540 (0.329)	12.99 (2.56)	198 (92)
50% of Pull at Reduced Engine Speed—9th(3B) Gear							
58.7 (43.8)	4970 (22.1)	4.43 (7.13)	1929	3.1	0.593 (0.361)	11.83 (2.33)	192 (89)

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

Dates of Test: October 2003 to February 2004.

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

FUEL and OIL: Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.843 Fuel weight 7.02 lbs/gal (0.8413 kg/l) Oil SAE 10W30 API service classification CG-4 Transmission and hydraulic lubricant New Holland 134D fluid Front axle lubricant New Holland 134D fluid

ENGINE: Make CNH Diesel Type six cylinder vertical with turbocharger and air to air intercooler Serial No. 958431 Crankshaft lengthwise Rated engine speed 2200 Bore and stroke 4.40" x 5.00" (111.8 mm x 127.0 mm) Compression ratio 17.0 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 one paper element Muffler underhood Exhaust vertical Cooling medium temperature control thermostat and variable speed fan

CHASSIS: Type front wheel assist Serial No. 170899B Tread width rear 60.2" (1530 mm) to 87.8" (2230 mm) front 61.4" (1560 mm) to 89.0" (2260 mm) Wheelbase 107.2" (2723 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 12.13 (19.53) fifteenth 14.57 (23.45) sixteenth 17.52 (28.20) seventeenth 21.08 (33.92) eighteenth 25.35 (40.79) reverse 2.98 (4.80), 3.59 (5.78), 4.32 (6.95), 5.18 (8.34), 6.24 (10.05), 7.51 (12.08) 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 12920 lb (5860 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. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(1A) Gear									
51.9 (38.7)	13915 (61.9)	1.40 (2.25)	2314	14.5	0.744 (0.453)	9.43 (1.86)	194 (90)	43 (6)	30.2 (102.2)
2nd(2A) Gear									
61.8 (46.1)	13805 (61.4)	1.68 (2.70)	2306	14.3	0.733 (0.446)	9.57 (1.89)	196 (91)	43 (6)	30.2 (102.3)
3rd(3A) Gear									
75.2 (56.1)	13780 (61.3)	2.05 (3.30)	2302	12.9	0.662 (0.403)	10.61 (2.09)	192 (89)	45 (7)	30.2 (102.2)
4th(4A) Gear									
89.7 (66.9)	13625 (60.6)	2.47 (3.98)	2285	11.9	0.640 (0.389)	10.96 (2.16)	194 (90)	43 (6)	30.2 (102.1)
5th(5A) Gear									
100.3 (74.8)	13060 (58.1)	2.88 (4.64)	2171	10.0	0.565 (0.343)	12.44 (2.45)	194 (90)	43 (6)	30.2 (102.2)
6th(1B) Gear									
107.4 (80.1)	12385 (55.1)	3.25 (5.24)	2175	8.9	0.528 (0.321)	13.30 (2.62)	194 (90)	41 (5)	30.2 (102.3)
7th(6A) Gear									
106.7 (79.6)	11670 (51.9)	3.43 (5.52)	2098	7.9	0.534 (0.325)	13.15 (2.59)	194 (90)	41 (5)	30.2 (102.3)
8th(2B) Gear									
109.4 (81.6)	10565 (47.0)	3.88 (6.25)	2099	6.3	0.522 (0.317)	13.45 (2.65)	197 (92)	41 (5)	30.2 (102.3)
9th(3B) Gear									
109.8 (81.9)	8715 (38.8)	4.73 (7.61)	2098	5.0	0.514 (0.313)	13.65 (2.69)	196 (91)	43 (6)	30.2 (102.4)
10th(4B) Gear									
108.5 (80.9)	7050 (31.4)	5.77 (9.29)	2108	4.0	0.530 (0.322)	13.25 (2.61)	197 (92)	45 (7)	30.2 (102.4)
11th(5B) Gear									
107.8 (80.4)	5795 (25.8)	6.98 (11.23)	2105	3.4	0.524 (0.319)	13.40 (2.64)	197 (92)	43 (6)	30.2 (102.4)
12th(6B) Gear									
103.8 (77.4)	4640 (20.6)	8.39 (13.51)	2093	2.8	0.553 (0.337)	12.69 (2.50)	197 (92)	43 (6)	30.2 (102.4)
13th(1C) Gear									
105.4 (78.6)	4150 (18.5)	9.52 (15.33)	2104	2.8	0.545 (0.332)	12.88 (2.54)	199 (93)	45 (7)	30.2 (102.1)

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 procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2120** Nebraska Summary 434, September 17, 2004.

Leonard L. Bashford
 Director

M.F. Kocher
 V.I. Adamchuk
 W.P. Campbell
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load in 8th (2B) gear	76.0	75.0
Bystander	--	--

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; **,13 (90)
 Two 16.9R28; **,13 (90)
 21.3 in (540 mm)
 7925 lb (3595 kg)
 5160 lb (2340 kg)
 13085 lb (5935 kg)

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Disengaged)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Temp. °F (°C) cool- ing med	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th (2B) Gear								
103.3 (77.0)	9825 (43.7)	3.94 (6.34)	2204	8.3	0.565 (0.344)	12.43 (2.45)	205 (96)	43 (102.5)
75% of Pull at Maximum Power—8th (2B) Gear								
83.4 (62.2)	7375 (32.8)	4.24 (6.83)	2302	5.5	0.569 (0.346)	12.33 (2.43)	201 (94)	46 (8)
50% of Pull at Maximum Power—8th (2B) Gear								
57.1 (42.6)	4915 (21.9)	4.36 (7.02)	2319	3.6	0.713 (0.434)	9.85 (1.94)	203 (95)	46 (8)
75% of Pull at Reduced Engine Speed—9th (3B) Gear								
83.1 (62.0)	7375 (32.8)	4.23 (6.81)	1911	5.5	0.536 (0.326)	13.10 (2.58)	196 (91)	48 (9)
50% of Pull at Reduced Engine Speed—9th (3B) Gear								
57.0 (42.5)	4915 (21.9)	4.35 (7.00)	1925	3.6	0.581 (0.353)	12.09 (2.38)	192 (89)	48 (9)
MAXIMUM POWER IN SELECTED GEARS								
1st(1A) Gear								
40.4 (30.2)	10780 (47.9)	1.41 (2.26)	2339	13.8	0.828 (0.477)	8.95 (1.76)	203 (95)	50 (10)
2nd(2A) Gear								
48.1 (35.9)	10540 (46.9)	1.71 (2.76)	2328	12.4	0.758 (0.461)	9.26 (1.82)	205 (96)	50 (10)
3rd(3A) Gear								
57.5 (42.9)	10430 (46.4)	2.07 (3.33)	2309	11.1	0.679 (0.413)	10.34 (2.04)	203 (95)	50 (10)
4th(4A) Gear								
68.0 (50.7)	10230 (45.5)	2.49 (4.01)	2306	10.8	0.671 (0.408)	10.46 (2.06)	201 (94)	46 (8)
5th(5A) Gear								
81.7 (60.9)	10130 (45.1)	3.02 (4.87)	2303	10.0	0.635 (0.386)	11.07 (2.18)	207 (97)	50 (10)
6th(1B) Gear								
89.7 (66.9)	10025 (44.6)	3.36 (5.40)	2304	10.2	0.612 (0.372)	11.47 (2.26)	199 (93)	46 (8)
7th(6A) Gear								
95.2 (71.0)	9890 (44.0)	3.61 (5.81)	2281	9.8	0.604 (0.368)	11.61 (2.29)	199 (93)	46 (8)
8th(2B) Gear								
103.3 (77.0)	9825 (43.7)	3.94 (6.34)	2204	8.3	0.565 (0.344)	12.43 (2.45)	205 (96)	43 (6)
9th(3B) Gear								
108.2 (80.7)	8880 (39.5)	4.57 (7.35)	2098	7.0	0.526 (0.320)	13.35 (2.63)	203 (95)	50 (10)
10th(4B) Gear								
107.7 (80.3)	7180 (31.9)	5.62 (9.05)	2106	5.3	0.542 (0.329)	12.96 (2.55)	203 (95)	50 (10)
11th(5B) Gear								
107.8 (80.4)	5905 (26.3)	6.85 (11.02)	2106	4.1	0.534 (0.325)	13.15 (2.59)	201 (94)	41 (5)
12th(6B) Gear								
104.1 (77.6)	4700 (20.9)	8.30 (13.36)	2110	3.3	0.551 (0.335)	12.74 (2.51)	201 (94)	41 (5)
13th(1C) Gear								
108.9 (81.2)	4365 (19.4)	9.36 (15.06)	2104	3.3	0.522 (0.317)	13.45 (2.65)	201 (94)	43 (6)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum Force Exerted

Through Whole Range: 7485 lbs (33.3 kN) (one boost cylinder)
9035 lbs (40.2 kN) (two boost cylinders)

- i) Opening pressure of relief valve: NA
- Sustained pressure of the open relief valve: 3020 psi (208 bar)
- ii) Pump delivery rate at minimum pressure: 32.1 GPM (121.7 l/min)
- iii) Pump delivery rate at maximum
 - hydraulic power: 27.9 GPM (105.7 l/min)
 - Delivery pressure: 2540 psi (175 bar)
 - Power: 41.3 HP (30.8 kW)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)	2960 (204)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	150 (65)
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2610 psi (180 Bar) (one boost cylinder)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.7 (400)	22.4 (570)	29.7 (755)	37.0 (940)
Lift force on frame lb	13490	14075	14095	13890	12295
" " " " " (kN)	(60.0)	(62.6)	(62.7)	(61.8)	(54.7)

SAE Static Test—System pressure 2610 psi (180 Bar) (two boost cylinders)

Hitch point distance to ground level in. (mm)	9.5 (240)	15.4 (390)	23.8 (605)	31.5 (800)	39.6 (1005)
Lift force on frame lb	16525	17285	17760	17420	16545
" " " " " (kN)	(73.5)	(76.9)	(79.0)	(77.5)	(73.6)

HITCH DIMENSIONS AS TESTED—NO LOAD (2 boost cylinders)

	OECD test		SAE test	
	inch	mm	inch	mm
A	29.7	754	29.9	760
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	19.8	504
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	9.4	240
P	47.8	1215	43.9	1115
Q	36.3	923	35.0	890
R	29.5	750	31.0	787

