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## Test 2144: New Holland TM 190 Diesel

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# SUMMARY OF OECD TEST 2144—NEBRASKA SUMMARY 438

## NEW HOLLAND TM190 DIESEL

### 19 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—1021 rpm)</b>					
163.6 (122.0)	2199	10.12 (38.32)	0.435 (0.264)	16.16 (3.18)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
167.4 (124.8)	2153	10.20 (38.60)	0.427 (0.260)	16.41 (3.23)	
<b>Maximum Power (2 hours)</b>					
172.1 (128.3)	1790	9.66 (36.57)	0.394 (0.240)	17.82 (3.51)	

#### VARYING POWER AND FUEL CONSUMPTION

163.6 (122.0)	2199	10.12 (38.32)	0.435 (0.264)	16.16 (3.18)	Air temperature
143.9 (107.3)	2277	9.19 (34.77)	0.448 (0.273)	15.66 (3.09)	73°F (23°C)
109.0 (81.3)	2303	7.42 (28.10)	0.478 (0.291)	14.67 (2.89)	Relative humidity
73.5 (54.8)	2325	5.71 (21.62)	0.546 (0.332)	12.87 (2.53)	33%
37.0 (27.6)	2345	4.03 (15.25)	0.766 (0.466)	9.19 (1.81)	Barometer
--	2367	2.45 (9.29)	--	--	29.6" Hg (100.2 kPa)

Maximum Torque - 553.7 lb.-ft. (750.7 Nm) at 1505 rpm  
 Maximum Torque Rise - 41.7%  
 Torque rise at 1790 engine rpm - 29%

#### 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) cool- ing med	Barom. inch Hg (kPa)
<b>Maximum Power—9th Gear</b>								
137.6 (102.6)	10635 (47.3)	4.85 (7.80)	2205	3.2	0.532 (0.324)	13.25 (2.61)	208 (98)	61 (16)
<b>75% of Pull at Maximum Power—9th Gear</b>								
108.5 (80.9)	7990 (35.5)	5.09 (8.19)	2289	2.1	0.569 (0.346)	12.39 (2.44)	199 (93)	61 (16)
<b>50% of Pull at Maximum Power—9th Gear</b>								
73.5 (54.8)	5330 (23.7)	5.17 (8.32)	2312	1.5	0.668 (0.407)	10.55 (2.08)	194 (90)	61 (16)
<b>75% of Pull at Reduced Engine Speed—10th Gear</b>								
108.9 (81.2)	7980 (35.5)	5.12 (8.24)	1908	1.7	0.520 (0.316)	13.55 (2.67)	208 (98)	61 (16)
<b>50% of Pull at Reduced Engine Speed—10th Gear</b>								
74.0 (55.2)	5340 (23.7)	5.20 (8.37)	1922	0.9	0.553 (0.337)	12.74 (2.51)	207 (97)	59 (15)

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

**Dates of Test:** November 2003 to April 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. 963806 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. 171080B Tread width rear 60.2" (1530 mm) to 87.8" (2230 mm) front 61.4" (1560 mm) to 89.0" (2260 mm) Wheelbase 110.9" (2818 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio with full range operator controlled powershift Nominal travel speeds mph (km/h) first 1.18 (1.90) second 1.42 (2.28) third 1.70 (2.74) fourth 2.04 (3.29) fifth 2.46 (3.96) sixth 2.96 (4.76) seventh 3.42 (5.50) eighth 4.11 (6.62) ninth 4.94 (7.95) tenth 5.94 (9.56) eleventh 7.14 (11.49) twelfth 8.59 (13.82) thirteenth 9.86 (15.87) fourteenth 11.87 (19.10) fifteenth 14.26 (22.95) sixteenth 17.15 (27.60) seventeenth 20.62 (33.19) eighteenth 24.80 (39.91) nineteenth 28.45 (45.80) reverse 2.61 (4.20), 3.14 (5.05), 3.77 (6.06), 4.53 (7.29), 5.45 (8.77), 6.55 (10.54) 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 1000 rpm at 2154 engine rpm Unladen tractor mass 17470 lb (7925 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)
2nd Gear									
61.7 (46.0)	17465 (77.7)	1.32 (2.13)	2318	12.0	0.676 (0.411)	10.43 (2.05)	207 (97)	61 (16)	30.1 (101.9)
3rd Gear									
74.8 (55.8)	17355 (77.2)	1.62 (2.60)	2309	10.4	0.658 (0.400)	10.71 (2.11)	208 (98)	57 (14)	30.1 (101.9)
4th Gear									
87.6 (65.3)	16860 (75.0)	1.95 (3.13)	2299	10.0	0.609 (0.371)	11.57 (2.28)	198 (92)	59 (15)	30.1 (101.9)
5th Gear									
104.6 (78.0)	16795 (74.7)	2.34 (3.76)	2284	9.6	0.620 (0.377)	11.37 (2.24)	196 (91)	61 (16)	30.1 (101.9)
6th Gear									
125.7 (93.7)	16705 (74.3)	2.82 (4.54)	2254	7.9	0.534 (0.325)	13.20 (2.60)	196 (91)	61 (16)	30.1 (101.9)
7th Gear									
137.7 (102.7)	16455 (73.2)	3.14 (5.05)	2169	7.9	0.526 (0.320)	13.40 (2.64)	194 (90)	61 (16)	30.1 (101.9)
8th Gear									
150.2 (112.0)	15940 (70.9)	3.53 (5.69)	1999	6.5	0.496 (0.302)	14.27 (2.80)	201 (94)	62 (17)	30.1 (101.9)
9th Gear									
151.3 (112.8)	13735 (61.1)	4.13 (6.65)	1898	4.1	0.453 (0.276)	15.56 (3.07)	205 (96)	61 (16)	30.1 (101.9)
10th Gear									
149.4 (111.4)	11240 (50.0)	4.98 (8.02)	1879	2.8	0.488 (0.297)	14.46 (2.85)	205 (96)	61 (16)	30.1 (101.9)
11th Gear									
149.8 (111.7)	9325 (41.5)	6.02 (9.70)	1873	2.0	0.489 (0.298)	14.41 (2.84)	205 (96)	61 (16)	30.1 (102.0)
12th Gear									
146.8 (109.5)	7430 (33.1)	7.41 (11.93)	1908	1.7	0.500 (0.304)	14.11 (2.78)	203 (95)	62 (17)	30.1 (101.9)
13th Gear									
149.5 (111.5)	6605 (29.4)	8.49 (13.66)	1897	1.4	0.491 (0.299)	14.37 (2.83)	199 (93)	61 (16)	30.1 (101.9)

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

**NOTE:** The test results on this Summary were obtained from tests carried out on the Case IH MXM190 Diesel.

**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 35 hp increase with power boost, 31.7 gpm (120 lpm) remote hydraulic flow nor 3 point lift capacity of 17581 lbs (7975 kg). 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. **2144** Nebraska Summary 438, November 29, 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 9th gear	76.0	76.0
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 650/65R42; \*\*, 12 (85)  
 Two 540/65R30; \*\*, 12 (85)  
 22.0 in (560 mm)  
 10380 lb (4709 kg)  
 7255 lb (3291 kg)  
 17635 lb (8000 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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—9th Gear</b>								
131.4 (98.0)	10590 (47.1)	4.65 (7.48)	2198	6.7	0.545 (0.331)	12.94 (2.55)	208 (98)	52 (11) (100.4)
<b>75% of Pull at Maximum Power—9th Gear</b>								
105.0 (78.3)	7935 (35.3)	4.96 (7.98)	2291	4.6	0.530 (0.322)	13.31 (2.62)	207 (97)	54 (12) (100.4)
<b>50% of Pull at Maximum Power—9th Gear</b>								
71.9 (53.6)	5315 (23.6)	5.07 (8.16)	2312	3.4	0.688 (0.418)	10.25 (2.02)	210 (99)	54 (12) (100.4)
<b>75% of Pull at Reduced Engine Speed—10th Gear</b>								
105.3 (78.5)	7935 (35.3)	4.98 (8.01)	1911	4.6	0.498 (0.303)	14.16 (2.79)	205 (96)	52 (11) (100.5)
<b>50% of Pull at Reduced Engine Speed—10th Gear</b>								
71.6 (53.4)	5285 (23.5)	5.08 (8.17)	1922	3.2	0.551 (0.335)	12.79 (2.52)	205 (96)	52 (11) (100.5)
<b>MAXIMUM POWER IN SELECTED GEARS</b>								
1st Gear								
36.6 (27.3)	12390 (55.1)	1.11 (1.78)	2339	12.6	0.919 (0.559)	7.67 (1.51)	205 (96)	52 (11) (100.4)
2nd Gear								
44.0 (32.8)	12320 (54.8)	1.34 (2.15)	2334	12.1	0.834 (0.508)	8.45 (1.66)	203 (95)	50 (10) (100.4)
3rd Gear								
52.6 (39.2)	12230 (54.4)	1.61 (2.59)	2326	11.5	0.768 (0.467)	9.19 (1.81)	205 (96)	50 (10) (100.4)
4th Gear								
62.0 (46.2)	12095 (53.8)	1.92 (3.09)	2317	11.7	0.743 (0.452)	9.49 (1.87)	194 (90)	52 (11) (100.4)
5th Gear								
74.8 (55.8)	11960 (53.2)	2.35 (3.77)	2310	10.1	0.625 (0.380)	11.29 (2.23)	198 (92)	52 (11) (100.4)
6th Gear								
87.6 (65.3)	11670 (51.9)	2.81 (4.53)	2301	10.0	0.646 (0.393)	10.91 (2.15)	194 (90)	50 (10) (100.4)
7th Gear								
102.3 (76.3)	11735 (52.2)	3.27 (5.26)	2290	9.2	0.585 (0.356)	12.06 (2.38)	205 (96)	50 (10) (100.5)
8th Gear								
122.7 (91.5)	11745 (52.2)	3.92 (6.30)	2270	8.7	0.551 (0.335)	12.79 (2.52)	208 (98)	50 (10) (100.5)
9th Gear								
137.2 (102.3)	11465 (51.0)	4.49 (7.22)	2158	8.4	0.515 (0.314)	13.69 (2.70)	194 (90)	54 (12) (100.4)
10th Gear								
146.7 (109.4)	10790 (48.0)	5.10 (8.21)	2001	6.6	0.513 (0.312)	13.76 (2.71)	205 (96)	50 (10) (100.4)
11th Gear								
146.8 (109.5)	9125 (40.6)	6.03 (9.70)	1940	5.4	0.508 (0.309)	13.88 (2.74)	210 (99)	50 (10) (100.4)
12th Gear								
142.4 (106.2)	7360 (32.7)	7.26 (11.68)	1922	4.4	0.515 (0.314)	13.68 (2.70)	203 (95)	50 (10) (100.4)
13th Gear								
148.2 (110.5)	6630 (29.5)	8.38 (13.48)	1924	4.0	0.494 (0.301)	14.26 (2.81)	207 (97)	52 (11) (100.4)

This vehicle is equipped with an electronically controlled engine Power management system that monitors and boosts engine power output in certain circumstances. This is achieved by electronically changing the characteristics of the engine power-speed curve. The engine Power management function ("boosted" power level) becomes active in the higher transmission gears (16th and above) and for road transport applications. The system is also activated when power transfer through the PTO exceeds a preset level (and forward speed exceeds 0.5 km/h), for mobile PTO driven implement applications. An override system is provided to enable PTO operations at the "boosted" power level while the vehicle is stationary for test purposes. The results of of this PTO output test are presented below.

### 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—1022 rpm)</b>					
191.8 (143.0)	2200	11.72 (44.37)	0.429 (0.261)	16.36 (3.22)	
<b>Standard Power Take-off Speed - (1000 rpm)</b>					
197.3 (147.1)	2154	11.86 (44.88)	0.422 (0.257)	16.64 (3.28)	
<b>Maximum Power (2 hours)</b>					
206.7 (154.1)	2000	12.60 (47.69)	0.427 (0.260)	16.40 (3.23)	

### VARYING POWER AND FUEL CONSUMPTION

191.8 (143.0)	2200	11.72 (44.37)	0.429 (0.261)	16.36 (3.22)	Air temperature
167.6 (125.0)	2263	10.51 (39.79)	0.441 (0.268)	15.94 (3.14)	73°F (23°C)
127.3 (94.9)	2293	8.33 (31.53)	0.459 (0.279)	15.28 (3.01)	Relative humidity
85.8 (64.0)	2315	6.41 (24.26)	0.524 (0.319)	13.40 (2.64)	36%
43.4 (32.4)	2343	4.28 (16.19)	0.691 (0.420)	10.16 (2.00)	Barometer
--	2368	2.44 (9.24)	--	--	29.7"Hg (100.6 kPa)

Maximum Torque 629.4 lb.-ft. (853.3 Nm) at 1606 rpm  
 Maximum Torque Rise - 37.5%  
 Torque rise at 1800 rpm - 29%

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

CATEGORY: II

Quick Attach: No

Maximum Force Exerted Through Whole Range: 11285 lbs (50.2 kN)

i) Opening pressure of relief valve:

NA NA

Sustained pressure at compensator cutoff:

one outlet set 3120 psi (215 bar) two outlet sets combined 3120 psi (215 bar)

ii) Pump delivery rate at minimum pressure:

25.1 GPM (95.0 l/min) 30.9 GPM (117.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 25.0 GPM (94.5 l/min) 26.9 GPM (102.0 l/min)

Delivery pressure: 2540 psi (175 bar) 2815 psi (194 bar)

Power: 36.9 HP (27.5 kW) 44.2 HP (33.0 kW)

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (bar)	3120 (215)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	150 (65)
Location:	hydraulic sump
Category:	II
Quick attach:	none

#### SAE Static Test—System pressure 2685 psi (185 Bar) (two boost cylinders)

Hitch point distance to ground level in. (mm)	10.6 (270)	18.1 (460)	25.0 (635)	36.2 (920)	42.0 (1068)
Lift force on frame lb	18455	18165	17175	14790	13690
" " " " " " (kN)	(82.1)	(80.8)	(76.4)	(65.8)	(60.9)

### HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	mm	inch	mm
A	29.1	740	31.1	790
B	17.7	450	17.7	450
C	15.1	383	15.1	383
D	14.6	372	14.6	372
E	8.5	217	10.9	277
F	10.6	270	10.6	270
G	35.6	905	35.6	905
H	1.2	30	1.2	30
I	19.7	500	17.3	440
J	25.0	635	25.0	635
K	24.1	612	26.9	682
L	48.2	1224	48.2	1224
M	23.1	587	23.1	587
N	38.3	974	38.3	974
O	7.9	200	10.6	270
P	49.0	1245	45.1	1145
Q	38.8	985	38.9	988
R	38.5	978	39.0	990

