

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

---

January 2004

## Test 2158 & 2159: New Holland TN60A Diesel

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



Part of the [Applied Mechanics Commons](#)

---

"Test 2158 & 2159: New Holland TN60A Diesel" (2004). *Nebraska Tractor Tests*. 295.  
<http://digitalcommons.unl.edu/tractormuseumlit/295>

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 TESTS 2158 and 2159—NEBRASKA SUMMARY 453 NEW HOLLAND TN60A DIESEL 16 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—565 rpm)</b>					
48.0 (35.8)	2300	3.00 (11.35)	0.436 (0.265)	16.02 (3.16)	
<b>Maximum Power (2 hours)</b>					
48.3 (36.0)	2243	2.96 (11.21)	0.429 (0.261)	16.30 (3.21)	
<b>Standard Power Take-off speed (540 rpm)</b>					
47.5 (35.5)	2198	2.95 (11.17)	0.435 (0.264)	16.10 (3.17)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
48.0 (35.8)	2299	3.00 (11.35)	0.436 (0.265)	16.02 (3.16)	Air temperature
42.5 (31.7)	2389	2.67 (10.10)	0.439 (0.267)	15.94 (3.14)	72°F (22°C)
32.0 (23.9)	2401	2.17 (8.23)	0.475 (0.289)	14.72 (2.90)	Relative humidity
21.6 (16.1)	2430	1.76 (6.66)	0.570 (0.347)	12.27 (2.42)	55%
10.9 (8.1)	2454	1.23 (4.65)	0.789 (0.480)	8.86 (1.75)	Barometer
--	2491	0.80 (3.01)	--	--	30.0" Hg (101.7 kPa)
Maximum Torque -146.3 lb.-ft. (198.4 Nm) at 1290 rpm Maximum Torque Rise -33.2% Torque rise at 1880 engine rpm -14%					

**Location of tests:** Alma Mater Studiorum, University Di Bologna, Via Gandolfi, 19-40057, Cadriano, Bologna, Italy

**Dates of tests:** March - April, 2004

**Manufacturer:** CNH America LLC, 700 State St. Racine, WI. 53404 USA

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.840 **Fuel weight** 6.99 lbs/gal (0.838 kg/l) **Oil SAE** 15W40 **API service classification** CF-4/SG **Oil consumption for 10 hours** 0.04 lb (16 gm) **Transmission and hydraulic lubricant** Ambra Multi G 15W40 **Front axle lubricant** Ambra Multi G

**ENGINE: Make** Iveco Diesel **Type** three cylinder vertical **Serial No.** 866640 **Crankshaft** lengthwise **Rated engine speed** 2300 **Bore and stroke** 4.094" x 4.528" (104.0 mm x 115.0 mm) **Compression ratio** 18.0 to 1 **Displacement** 179 cu in (2930 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 **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS: Type** 2WD and front wheel assist **Serial No.** HJE160347 **Tread width** rear 48.5" (1232 mm) to 76.7" (1949 mm) front: 2WD - 48.7" (1236 mm) to 76.6" (1945 mm), FWA - 48.7" (1236 mm) to 76.6" (1945 mm) **Wheelbase** 2WD - 81.5" (2070 mm) FWA - 81.3" (2065 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds (30 km/h transmission) mph (km/h)** first 0.39 (0.63) second 0.58 (0.93) third 0.85 (1.37) fourth 1.26 (2.03) fifth 1.63 (2.63) sixth 2.00 (3.22) seventh 2.43 (3.91) eighth 2.98 (4.79) ninth 3.57 (5.75) tenth 4.37 (7.04) eleventh 5.30 (8.53) twelfth 5.77 (9.28) thirteenth 6.49 (10.44) fourteenth 8.60 (13.84) fifteenth 12.64 (20.34) sixteenth 18.72 (30.13) reverse 0.38 (0.61), 0.56 (0.90), 0.83 (1.33), 1.22 (1.97), 1.58 (2.54), 1.93 (3.11), 2.36 (3.79), 2.88 (4.64), 3.46 (5.57), 4.24 (6.82), 5.13 (8.26), 5.59 (8.99), 6.28 (10.11), 8.33 (13.40), 12.24 (19.70), 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 **Power take-off** 540 rpm at 2196 engine rpm or 1000 rpm at 2260 engine rpm **Unladen tractor mass** 2WD - 5215 lb (2365 kg), FWA - 5785 lb (2625 kg)

## DRAWBAR PERFORMANCE(40 km/h trans.)

### 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.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>75% of Pull at Maximum Power—Five Hours 10th (3MHi) Gear</b>									
29.9 (22.3)	2025 (9.02)	5.54 (8.91)	2375	3.9	0.604 (0.368)	11.42 (2.28)	189 (87)	59 (15)	30.1 (101.8)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
5th(1M Lo) Gear									
29.9 (22.3)	6135 (27.29)	1.83 (2.94)	2378	15.0	0.599 (0.364)	11.67 (2.30)	183 (84)	61 (16)	29.9 (101.2)
6th (1M Hi) Gear									
35.3 (26.3)	6005 (26.72)	2.20 (3.55)	2320	14.2	0.552 (0.336)	12.68 (2.50)	185 (85)	59 (15)	29.9 (101.2)
7th (2M Lo) Gear									
37.1 (27.7)	5080 (22.60)	2.74 (4.41)	2244	9.0	0.553 (0.336)	12.65 (2.49)	183 (84)	61 (16)	29.9 (101.2)
8th(2M Hi) Gear									
38.4 (28.6)	4155 (18.48)	3.47 (5.58)	2244	6.4	0.518 (0.315)	13.50 (2.66)	185 (85)	59 (15)	29.9 (101.2)
9th (3M Lo) Gear									
38.5 (28.7)	3395 (15.11)	4.25 (6.84)	2252	4.8	0.528 (0.321)	13.25 (2.61)	183 (84)	61 (16)	29.9 (101.2)
10th (3M Hi) Gear									
38.2 (28.5)	2695 (12.00)	5.31 (8.54)	2270	4.1	0.528 (0.321)	13.25 (2.61)	183 (84)	61 (16)	29.9 (101.2)
11th(4M Lo) Gear									
36.9 (27.5)	2155 (9.59)	6.42 (10.32)	2254	3.3	0.549 (0.334)	12.74 (2.51)	181 (83)	59 (15)	29.9 (101.2)
12th (1 Hi) Gear									
36.9 (27.5)	1970 (8.77)	7.02 (11.30)	2258	3.0	0.551 (0.335)	12.69 (2.50)	181 (83)	59 (15)	29.9 (101.2)
13th (4 M Hi) Gear									
36.0 (26.8)	1700 (7.57)	7.94 (12.77)	2263	2.3	0.567 (0.345)	12.33 (2.43)	181 (83)	59 (15)	29.9 (101.2)
14th (2 Hi) Gear									
33.5 (25.0)	1195 (5.31)	10.53 (16.94)	2247	1.9	0.615 (0.374)	11.37 (2.24)	183 (84)	61 (16)	29.9 (101.2)

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

**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 claim of 5258 lbs (2385 kg) 3 point lift capacity. 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. **2158** and **2159**, Nebraska Summary 453, August 19, 2005.

Leonard L. Bashford  
Director

M.F. Kocher  
J.A. Smith  
W.P. Campbell  
Board of Tractor Test Engineers

## TN60A-FWA(40 km/h transmission)

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>	-No., size, ply & psi (kPa) Two 16.9R30; **,19 (130)	Two 16.9R30; **,19 (130)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 465 lb (210 kg)	None
<b>Front Tires</b>	-No., size, ply & psi (kPa) Two 11.2R24; **,20 (135)	Two 11.2R24; **,20 (135)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 640 lb (290 kg)	None
<b>Height of Drawbar</b>	20.1 in (510 mm)	20.1 in (510 mm)
<b>Static Weight with Operator - Rear</b>	3915 lb (1775 kg)	3635 lb (1650 kg)
- Front	3140 lb (1425 kg)	2315 lb (1050 kg)
- Total	7055 lb (3200 kg)	5950 lb (2700 kg)

## DRAWBAR PERFORMANCE(30 km/h trans.)

### BALLASTED - 2WD

#### 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)
<b>75% of Pull at Maximum Power—Five Hours 10th (3 MHi) Gear</b>									
31.4 (23.4)	2745 (12.21)	4.28 (6.89)	2392	6.9	0.706 (0.429)	9.91 (1.95)	185 (85)	66 (19)	30.1 (101.8)

#### MAXIMUM POWER IN SELECTED GEARS

7th (2 MLo) Gear									
27.9 (20.8)	4795 (21.33)	2.18 (3.51)	2400	15.0	0.506 (0.308)	13.81 (2.72)	180 (82)	48 (9)	29.9 (101.2)
8th (2 MHi) Gear									
33.2 (24.8)	4735 (21.06)	2.63 (4.23)	2356	14.9	0.565 (0.344)	12.38 (2.44)	178 (81)	50 (10)	29.9 (101.2)
9th (3 M Lo) Gear									
36.7 (27.4)	4330 (19.26)	3.18 (5.12)	2315	13.3	0.530 (0.322)	13.20 (2.60)	178 (81)	50 (10)	29.9 (101.2)
10th (3 M Hi) Gear									
38.0 (28.3)	3650 (16.23)	3.90 (6.27)	2240	10.2	0.532 (0.324)	13.15 (2.59)	178 (81)	48 (9)	29.9 (101.2)
11th (4 MLo) Gear									
37.7 (28.1)	2925 (13.01)	4.83 (7.78)	2251	7.7	0.530 (0.322)	13.20 (2.60)	178 (81)	48 (9)	29.9 (101.2)
12th (1 Hi) Gear									
38.8 (28.9)	2730 (12.14)	5.33 (8.58)	2256	6.9	0.526 (0.320)	13.30 (2.62)	178 (81)	48 (9)	29.9 (101.2)
13th (4 M Hi) Gear									
38.5 (28.7)	2365 (10.53)	6.10 (9.81)	2266	5.6	0.522 (0.318)	13.39 (2.64)	178 (81)	48 (9)	29.9 (101.2)
14th (2 Hi) Gear									
37.3 (27.8)	1730 (7.69)	8.08 (13.00)	2233	4.2	0.542 (0.330)	12.89 (2.54)	178 (81)	48 (9)	29.9 (101.2)

## TN60A-2WD (30km/h transmission)

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
<b>Rear Tires</b>	-No., size, ply & psi (kPa) Two 16.9R30;**,19 (130)	Two 16.9R30;**,19 (130)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 440 lb (200 kg)	None
<b>Front Tires</b>	-No., size, ply & psi (kPa) Two 7.50-16; 8; 36 (250)	Two 7.50-16; 8; 36 (250)
<b>Ballast</b>	-Liquid (total) None	None
	-Cast Iron (total) 640 lb (290 kg)	None
<b>Height of Drawbar</b>	26.4 in (670 mm)	24.4 in (620 mm)
<b>Static Weight with Operator</b>	-Rear 4025 lb (1825 kg)	3750 lb (1700 kg)
	-Front 2435 lb (1105 kg)	1630 lb (740 kg)
	-Total 6460 lb (2930 kg)	5380 lb (2440 kg)

TRACTOR SOUND LEVEL WITHOUT CAB	FWA dB(A)	2WD dB(A)
At no load in 9th (3M Lo) gear	84.9	84.6
Bystander in 16th (4 Hi) gear	82.0	82.8

**CENTER OF GRAVITY - 2WD**

Horizontal distance forward from centerline of rear wheels	24.7" (628 mm)
Vertical distance above roadway	31.4" (798 mm)
Horizontal distance from center of rear wheel tread	0.5" (13 mm) to the left

**CENTER OF GRAVITY - FWA**

Horizontal distance forward from centerline of rear wheels	31.6" (803 mm)
Vertical distance above roadway	31.3" (794 mm)
Horizontal distance from center of rear wheel tread	0.3" (7 mm) to the left

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

Turning radius—without brake right 141" (3.58 m) left 139" (3.53 m)
Turning space radius—without brake right 145" (3.68 m) left 143" (3.63 m)

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

Turning radius—without brake right 142" (3.61 m) left 142" (3.61 m)
Turning space radius—without brake right 148" (3.75 m) left 148" (3.75 m)

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

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range:	3955 lbs (17.6 kN)	
i) Opening pressure of relief valve:	NA	
		<u>High flow option</u>
Sustained pressure with relief valve open:	3010 psi (208 bar)	2975 psi (205 bar)
ii) Pump delivery rate at minimum pressure:	13.7 GPM (51.7 l/min)	17.1 GPM (64.9 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	9.5 GPM (36.1 l/min)	15.5 GPM (58.9 l/min)
Delivery pressure:	2875 psi (198 bar)	2380 psi (164 bar)
Power:	15.9 HP (11.9 kW)	21.6 HP (16.1 kW)

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

Observed maximum pressure psi.(bar)	3010 (207)
Location:	hydraulic pump
Hydraulic oil temperature: °F(°C)	114 (45)
Location:	hydraulic sump
Category:	II
Quick attach:	none

System pressure 2710 psi (187 Bar)

Hitch point distance to ground level in.(mm)	14.6 (370)	19.4 (493)	24.1 (613)	29.0 (737)	33.8 (859)	38.6 (980)
Lift force on frame lb	4775	5245	5220	4990	4695	4350
" " " " " " (kN)	(21.2)	(23.3)	(23.2)	(22.2)	(20.9)	(19.3)

**HITCH DIMENSIONS AS TESTED—NO LOAD**

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	27.2	690	27.4	697
B	10.0	255	10.0	255
C	12.3	312	12.3	312
D	10.9	276	10.9	276
E	14.2	361	12.1	308
F	7.5	189	7.5	189
G	27.2	690	27.4	695
H	1.2	30	1.2	30
I	13.4	340	13.6	345
J	19.7	501	19.9	506
K	20.6	523	20.6	523
L	40.7	1035	40.7	1035
M	21.7	550	21.7	550
N	34.6	880	34.6	880
O	14.6	370	14.6	372
P	38.7	984	43.9	1116
Q	39.8	1010	39.9	1013
R	22.4	570	22.5	572

