

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

---

January 2005

## Nebraska Summary 573: New Holland TN85DA Diesel 16-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

---

Nebraska Tractor Test Lab, "Nebraska Summary 573: New Holland TN85DA Diesel 16-Speed" (2005).  
*Nebraska Tractor Tests*. 2127.

<https://digitalcommons.unl.edu/tractormuseumlit/2127>

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 2349 and 2350—NEBRASKA SUMMARY 573

## NEW HOLLAND TN85DA 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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed—565 rpm)					
71.7 (53.5)	2302	4.82 (18.23)	0.470 (0.286)	14.87 (2.93)	
Maximum Power (2 hours)					
72.0 (53.7)	2262	4.78 (18.09)	0.464 (0.282)	15.08 (2.97)	
Standard Power Take-off speed (538 rpm)					
71.6 (53.4)	2192	4.76 (18.01)	0.465 (0.283)	15.05 (2.97)	
VARYING POWER AND FUEL CONSUMPTION					
71.7 (53.5)	2302	4.82 (18.23)	0.470 (0.286)	14.87 (2.93)	Air temperature
63.4 (47.3)	2392	4.30 (16.29)	0.475 (0.289)	14.74 (2.90)	77°F (25°C)
47.9 (35.7)	2408	3.56 (13.48)	0.520 (0.317)	13.44 (2.65)	Relative humidity
32.2 (24.0)	2433	2.81 (10.64)	0.612 (0.372)	11.44 (2.25)	53%
16.2 (12.1)	2453	2.28 (8.62)	0.982 (0.597)	7.12 (1.40)	Barometer
--	2478	1.58 (5.97)	--	--	30.2" Hg (102.1 kPa)
Maximum torque -218.4 lb.-ft. (296.1 Nm) at 1500 rpm					
Maximum torque rise -33.4%					
Torque rise at 1800 engine rpm -23%					

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

**Dates of tests:** July to October, 2005

**Manufacturer:** New Holland Italia S.p.A. Via Leona  
Xll-Zona Industriale Zipa 60035 Jesi-Italy

**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** CI-4 **Oil consumption for 10 hours** 0.04 lb (16 gm) **Transmission and hydraulic lubricant** Ambra Multi G 10W30 **Front axle lubricant** Ambra Multi G

**ENGINE:** Make CNH Diesel **Type** four cylinder vertical **Serial No.** 176542 **Crankshaft** lengthwise  
**Rated engine speed** 2300 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 274 cu in (4485 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, 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** 2WD and front wheel assist **Serial No.** HJE029100 **Tread width** rear 48.5" (1232 mm) to 76.7" (1949 mm) front: 2WD - 56.7" (1439 mm) to 63.3" (1607 mm), FWA - 48.7" (1236 mm) to 76.6" (1945 mm) **Wheel base** 2WD - 89.1" (2262 mm) FWA - 86.0" (2185 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 (0.94) third 0.86 (1.38) fourth 1.27 (2.04) fifth 1.65 (2.65) sixth 2.01 (3.24) seventh 2.45 (3.94) eighth 3.00 (4.83) ninth 3.60 (5.80) tenth 4.41 (7.10) eleventh 5.34 (8.59) twelfth 5.81 (9.35) thirteenth 6.53 (10.51) fourteenth 8.66 (13.94) fifteenth 12.73 (20.49) sixteenth 18.86 (30.35) reverse 0.38 (0.61), 0.57 (0.91), 0.83 (1.34), 1.23 (1.98), 1.59 (2.56), 1.95 (3.14), 2.37 (3.82), 2.91 (4.68), 3.49 (5.61), 4.27 (6.87), 5.17 (8.32), 5.63 (9.06), 6.33 (10.18), 8.39 (13.50), 12.33 (19.85), 18.27 (29.40) **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 - 6230 lb (2825 kg), FWA - 6770 lb (3070 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 (3M Hi) Gear</b>									
54.4 (40.6)	3735 (16.61)	5.46 (8.79)	2381	5.5	0.488 (0.297)	14.31 (2.82)	187 (86)	64 (18)	30.1 (102.0)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
7th (2M Lo) Gear									
49.9 (37.2)	6775 (30.14)	2.76 (4.44)	2411	15.0	0.569 (0.346)	12.28 (2.42)	189 (87)	63 (17)	30.3 (102.6)
8th (2M Hi) Gear									
56.6 (42.2)	6200 (27.57)	3.42 (5.51)	2389	13.3	0.547 (0.333)	12.79 (2.52)	189 (87)	61 (16)	30.3 (102.6)
9th (3M Lo) Gear									
61.0 (45.5)	5445 (24.22)	4.20 (6.76)	2355	9.4	0.540 (0.328)	12.95 (2.55)	187 (86)	63 (17)	30.3 (102.6)
10th (3M Hi) Gear									
62.2 (46.4)	4535 (20.17)	5.15 (8.28)	2262	6.4	0.524 (0.319)	13.35 (2.63)	187 (86)	61 (16)	30.3 (102.6)
11th (4M Lo) Gear									
62.1 (46.3)	3645 (16.21)	6.39 (10.29)	2289	4.9	0.532 (0.324)	13.15 (2.59)	190 (88)	63 (17)	30.3 (102.6)
12th (1 Hi) Gear									
61.4 (45.8)	3275 (14.58)	7.03 (11.31)	2287	4.2	0.532 (0.324)	13.15 (2.59)	192 (89)	63 (17)	30.3 (102.6)
13th (4 M Hi) Gear									
61.3 (45.7)	2930 (13.04)	7.84 (12.62)	2268	4.0	0.536 (0.326)	13.05 (2.57)	190 (88)	61 (16)	30.3 (102.6)
14th (2 Hi) Gear									
60.5 (45.1)	2165 (9.64)	10.47 (16.84)	2255	3.1	0.539 (0.328)	12.98 (2.56)	189 (87)	63 (17)	30.3 (102.6)

**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 remote hydraulic flow claim of 15.0 GPM (56.9 lpm). 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. **2349** and **2350**, Nebraska Summary 573, July 10, 2007.

Roger M. Hoy  
Director

M.F. Kocher  
R.E. Yoder  
V.I. Adamchuk  
Board of Tractor Test Engineers

**TN85DA- FWA(40 km/h transmission)**

<b>TIRES, BALLAST AND WEIGHT</b>		<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b>	-No., size, ply & psi (kPa)	Two 16.9R30; **,20 (135)	Two 16.9R30; **,20 (135)
<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 11.2R24; **,17 (120)	Two 11.2R24; **,17 (120)
<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</b>	- Rear	4585 lb (2080 kg)	4300 lb (1950 kg)
	- Front	3430 lb (1555 kg)	2635 lb (1195 kg)
	- Total	8015 lb (3635 kg)	6935 lb (3145 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 cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
<b>75% of Pull at Maximum Power—Five Hours 11th (4 M Lo) Gear</b>									
53.2 (39.7)	3840 (17.08)	5.20 (8.37)	2380	7.1	0.499 (0.304)	14.01 (2.76)	183 (84)	50 (10)	30.2 (102.3)

#### MAXIMUM POWER IN SELECTED GEARS

9th (3M Lo) Gear									
45.5 (33.9)	5280 (23.48)	3.23 (5.20)	2415	15.1	0.536 (0.326)	13.05 (2.57)	180 (82)	50 (10)	30.1 (102.0)
10th (3M Hi) Gear									
54.2 (40.4)	5180 (23.05)	3.92 (6.31)	2375	14.7	0.526 (0.320)	13.30 (2.62)	178 (81)	50 (10)	30.1 (102.0)
11th (4 M Lo) Gear									
59.7 (44.5)	4750 (21.13)	4.71 (7.58)	2294	12.1	0.530 (0.323)	13.19 (2.60)	180 (82)	48 (9)	30.1 (102.0)
12th (1 Hi) Gear									
60.7 (45.3)	4375 (19.47)	5.20 (8.38)	2281	10.3	0.545 (0.331)	12.84 (2.53)	180 (82)	50 (10)	30.1 (102.0)
13th (4M Hi) Gear									
61.2 (45.6)	3810 (16.95)	6.02 (9.68)	2285	7.7	0.539 (0.328)	12.98 (2.56)	178 (81)	50 (10)	30.1 (102.0)
14th (2 Hi) Gear									
60.5 (45.1)	2770 (12.31)	8.19 (13.18)	2273	4.5	0.534 (0.325)	13.10 (2.58)	181 (83)	48 (9)	30.1 (102.0)

## TN85DA-2WD (30 km/h transmission)

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear Tires</b>	-No., size, ply & psi (kPa)	Two 16.9R30; **, 20 (135)	Two 16.9R30; **, 20 (135)
<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)	26.4 in (670 mm)
<b>Static Weight with Operator</b>	-Rear	4620 lb (2095 kg)	4335 lb (1965 kg)
	-Front	2855 lb (1295 kg)	2060 lb (935 kg)
	-Total	7475 lb (3390 kg)	6395 lb (2900 kg)

TRACTOR SOUND LEVEL WITH CAB	FWA dB(A)	2WD dB(A)
At no load in 9th (3M Lo) gear	78.2	77.9
Bystander in 16th (4 Hi) gear	82.1	82.4

TRACTOR SOUND LEVEL WITHOUT CAB	FWA dB(A)	2WD dB(A)
At no load in 9th (3M Lo) gear	86.0	85.7
Bystander in 16th (4 Hi) gear	82.2	82.3

CENTER OF GRAVITY - 2WD		
Horizontal distance forward from centerline of rear wheels	29.0" (737 mm)	
Vertical distance above roadway	37.4" (950 mm)	
Horizontal distance from center of rear wheel tread	0.1" (3 mm) to the left	

CENTER OF GRAVITY - FWA		
Horizontal distance forward from centerline of rear wheels	33.1" (840 mm)	
Vertical distance above roadway	36.7" (933 mm)	
Horizontal distance from center of rear wheel tread	0.3" (8 mm) to the left	

TURNING ON A CONCRETE SURFACE (2WD)		
Turning radius—without brake right 144" (3.66 m) left 145" (3.68 m)		
Turning space radius—without brake right 148" (3.76 m) left 149" (3.78 m)		

TURNING ON A CONCRETE SURFACE (FWA)		
Turning radius—without brake right 151" (3.83 m) left 151" (3.84 m)		
Turning space radius—without brake right 156" (3.97 m) left 157" (3.98 m)		

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

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range: 4145 lbs (18.45 kN)

i) Sustained pressure with relief valve open: 2890 psi (199 bar)

ii) Pump delivery rate at minimum pressure: 12.9 GPM (49.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 11.4 GPM (43.3 l/min)

Delivery pressure: 2600 psi (179 bar)

Power: 17.3 hp (12.9 kW)

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

Observed maximum pressure psi. (bar) 2980 (205)

Location: remote outlets

Hydraulic oil temperature: °F (°C) 113 (45)

Location: hydraulic sump

Category: II

Quick attach: none

System pressure 2680 psi (185 Bar)

Hitch point distance to ground level in. (mm) 17.7 (449) 21.9 (555) 26.2 (665) 30.1 (764) 34.5 (877) 38.7 (984)

Lift force on frame lb 6135 6385 6160 5845 5505 5215

" " " " " " (kN) (27.3) (28.4) (27.4) (26.0) (24.5) (23.2)

### 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	27.6	700	27.6	700
H	1.4	35	1.4	35
I	13.4	340	13.6	345
J	20.1	511	20.1	511
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	17.7	449	14.8	376
P	40.2	1021	44.1	1121
Q	38.7	984	40.0	1016
R	22.4	570	22.5	572

