

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

2000

Nebraska Summary: S359 New Holland TN70D

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, 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: S359 New Holland TN70D" (2000). *Nebraska Tractor Tests*. 2822.

<https://digitalcommons.unl.edu/tractormuseumlit/2822>

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 1946 and 1947—NEBRASKA SUMMARY 359

NEW HOLLAND TN 70D DIESEL

ALSO NEW HOLLAND TN 70S DIESEL

ALSO NEW HOLLAND TN 70 DIESEL

8 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)					
60.1 (44.8)	2300	3.52 (13.31)	0.410 (0.250)	17.08 (3.37)	
Standard Power Take-off speed (540 rpm)					
59.8 (44.6)	2199	3.42 (12.95)	0.401 (0.244)	17.46 (3.44)	
VARYING POWER AND FUEL CONSUMPTION					
60.1 (44.8)	2300	3.52 (13.31)	0.410 (0.250)	17.08 (3.37)	Air temperature
54.3 (40.5)	2431	3.36 (12.73)	0.434 (0.264)	16.14 (3.18)	75°F (24°C)
41.3 (30.8)	2447	2.71 (10.26)	0.460 (0.280)	15.23 (3.00)	Relative humidity
27.8 (20.7)	2492	2.11 (7.99)	0.533 (0.324)	13.15 (2.59)	60%
14.1 (10.5)	2496	1.49 (5.65)	0.746 (0.454)	9.39 (1.85)	Barometer
--	2512	0.96 (3.64)	--	--	28.8" Hg (97.4 kPa)

Maximum Torque -179.2 lb.-ft. (242.9 Nm) at 1413 rpm
 Maximum Torque Rise -30.6%
 Torque rise at 1800 engine rpm -19%

DRAWBAR PERFORMANCE

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		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
75% of Pull at Maximum Power Five Hours 4th (4S) Gear									
40.5 (30.2)	3170 (14.1)	4.79 (7.71)	2380	3.0	0.508 (0.309)	13.80 (2.72)	178 (81)	39 (4)	29.0 (98.1)
MAXIMUM POWER IN SELECTED GEARS									
2nd (2S) Gear									
38.2 (28.5)	7375 (32.8)	1.94 (3.12)	2360	15.1	0.532 (0.324)	13.18 (2.60)	176 (80)	49 (9)	29.1 (98.5)
3rd (3S) Gear									
50.2 (37.4)	6345 (28.2)	2.96 (4.77)	2300	8.2	0.484 (0.294)	14.48 (2.85)	178 (81)	45 (7)	29.1 (98.5)
4th (4S) Gear									
51.6 (38.5)	4235 (18.8)	4.57 (7.36)	2300	4.3	0.478 (0.291)	14.67 (2.89)	178 (81)	45 (7)	29.1 (98.5)
5th (1F) Gear									
53.3 (39.8)	3560 (15.8)	5.61 (9.02)	2300	2.6	0.460 (0.280)	15.23 (3.00)	176 (80)	43 (6)	29.1 (98.5)
6th (2F) Gear									
43.7 (32.6)	1960 (8.7)	8.36 (13.46)	2300	2.0	0.562 (0.342)	12.48 (2.46)	178 (81)	43 (6)	29.1 (98.5)

Location of Test: Istituto Per La Meccanizzazione Agricola (IMA) Strada delle Cacce, 73-10135 Torino, Italy

Dates of Test: November - December, 2000

Manufacturer: New Holland Italia S.p.A., Viale delle Nazioni, 55-41100, Modena, Italy

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.842 **Fuel weight** 7.01 lbs/gal (0.840 kg/l) **Oil** SAE 15W40 **API service classification** SE/CD **Oil consumption for 10 hours** 0.02 lb (7.5 gm) **Transmission and hydraulic lubricant** SAE 80W90 GL-4 **Front axle lubricant** SAE 80W90 GL-4

ENGINE: Make New Holland **Diesel Type** three cylinder vertical with turbocharger **Serial No.** 663654 **Crankshaft** lengthwise **Rated Engine speed** 2300 **Bore and stroke** 4.094" x 4.528" (104.0 mm x 115.0 mm) **Compression ratio** 18 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** vertical **Cooling medium temperature control** thermostat

CHASSIS: Type 2WD and front wheel assist **Serial No.** 001203572 **Tread width** rear 48.1" (1240 mm) to 75.9" (1920 mm) front: 2WD - 53.4" (1357 mm) to 77.0" (1957 mm), FWA - 54.4" (1382 mm) to 71.3" (1812 mm) **Wheel base** 2WD - 83.9" (2130 mm) FWA - 81.3" (2065 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph (km/h)** first 1.47 (2.37) second 2.19 (3.53) third 3.23 (5.19) fourth 4.78 (7.69) fifth 5.77 (9.28) sixth 8.59 (13.83) seventh 12.63 (20.33) eighth 18.72 (30.12) reverse 1.42 (2.29), 2.13 (3.42), 3.13 (5.03), 4.63 (7.45), 5.59 (8.99), 8.33 (13.40), 12.24 (19.69), 18.12 (29.17) **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 2198 engine rpm or 1000 rpm at 2125 engine rpm **Unladen tractor mass** 2WD - 4850 lb (2200 kg), FWA - 5665 lb (2570 kg)

DRAWBAR PERFORMANCE

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)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
75% of Pull at Maximum Power Five Hours 4th (4S) Gear									
40.0 (29.8)	3175 (14.1)	4.72 (7.59)	2400	3.3	0.510 (0.310)	13.76 (2.71)	174 (79)	41 (5)	29.0 (98.1)
MAXIMUM POWER IN SELECTED GEARS									
3rd (3S) Gear									
43.7 (32.6)	5990 (26.6)	2.73 (4.40)	2350	15.2	0.545 (0.332)	12.84 (2.53)	178 (81)	46 (8)	29.0 (98.2)
4th (4S) Gear									
50.3 (37.5)	4225 (18.8)	4.46 (7.17)	2300	5.1	0.478 (0.291)	14.66 (2.89)	178 (81)	45 (7)	29.0 (98.2)
5th (1F) Gear									
51.1 (38.1)	3535 (15.7)	5.42 (8.73)	2300	4.0	0.479 (0.291)	14.63 (2.88)	178 (81)	43 (6)	29.0 (98.2)
6th (2F) Gear									
46.0 (34.3)	2100 (9.3)	8.22 (13.23)	2300	2.3	0.505 (0.307)	13.87 (2.73)	176 (80)	41 (5)	29.0 (98.2)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. 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. **1946** and **1947**, Nebraska Summary 359, November 8, 2001.

Brent T. Sampson
Test Engineer

L.L. Bashford
M.F. Kocher
V.I. Adamchuk
Board of Tractor Test Engineers

TN 70D-2WD

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires	-No., size, ply & psi (kPa) Two 480/70R30; **,14 (98)	Two 480/70R30; **,14 (98)
Ballast	-Liquid (total) None	None
	-Cast Iron (total) 440 lb (200 kg)	None
Front Tires	-No., size, ply & psi (kPa) Two 7.50-16;8;54 (370)	Two 7.50-16;8;54 (370)
Ballast	-Liquid (total) None	None
	-Cast Iron (total) 685 lb (310 kg)	None
Height of Drawbar	27.4 in (695 mm)	27.6 in (700 mm)
Static Weight with Operator	-Rear 3585 lb (1625 kg)	3140 lb (1425 kg)
	-Front 2555 lb (1160 kg)	1875 lb (850 kg)
	-Total 6140 lb (2785 kg)	5015 lb (2275 kg)

TN 70D-FWA

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires	-No., size, ply & psi (kPa) Two 480/70R30; **,14 (98)	Two 480/70R30; **,14 (98)
Ballast	-Liquid (total) None	None
	-Cast Iron (total) 440 lb (200 kg)	None
Front Tires	-No., size, ply & psi (kPa) Two 320/70R24; **,21 (145)	Two 320/70R24; **,21 (145)
Ballast	-Liquid (total) None	None
	-Cast Iron (total) 685 lb (310 kg)	None
Height of Drawbar	17.9 in (455 mm)	18.1 in (460 mm)
Static Weight with Operator	-Rear 4100 lb (1820 kg)	3570 lb (1620 kg)
	-Front 2945 lb (1335 kg)	2260 lb (1025 kg)
	-Total 6955 lb (3155 kg)	5830 lb (2645 kg)

TRACTOR SOUND LEVEL WITHOUT CAB	FWA dB(A)	2WD dB(A)
At no load in 4th(4S) gear	92.8	91.9
Bystander in 8th(4F) gear	85.0	84.7

CENTER OF GRAVITY - 2WD

Horizontal distance forward from centerline of rear wheels	31.5 in (800 mm)
Vertical distance above roadway	30.7 in (780 mm)
Horizontal distance from center of rear wheel tread	0.2 in (5 mm) to the left

CENTER OF GRAVITY - FWA

Horizontal distance forward from centerline of rear wheels	31.7 in (805 mm)
Vertical distance above roadway	29.5 in (750 mm)
Horizontal distance from center of rear wheel tread	0.2 in (5 mm) to the left

TURNING ON A CONCRETE SURFACE (2WD)

Turning radius with brake applied right 122" (3.10 m) left 124" (3.15 m)	
without brake right 142" (3.60 m) left 146" (3.70 m)	
Turning space radius with brake applied right 126" (3.20 m) left 128" (3.25 m)	
without brake right 140" (3.55 m) left 146" (3.70 m)	

TURNING ON A CONCRETE SURFACE (FWA)

Turning radius with brake applied right 140" (3.55 m) left 140" (3.55 m)	
without brake right 163" (4.15 m) left 163" (4.15 m)	
Turning space radius with brake applied right 146" (3.70 m) left 146" (3.70 m)	
without brake right 169" (4.30 m) left 169" (4.30 m)	

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range:

4045 lbs (18.0 kN) (at the frame)
4405 lbs (19.6 kN) (at lower link ends)

i) Opening pressure of relief valve:	NA	<u>High Flow Option</u>
Sustained pressure with relief valve open:	3020 psi (208 bar)	3020 psi (208 bar)
ii) Pump delivery rate at minimum pressure:	12.8 GPM (48.1 l/min)	17.1 GPM (64.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	11.3 GPM (42.8 l/min)	14.5 GPM (55.0 l/min)
Delivery pressure:	2540 psi (175 bar)	2410 psi (166 bar)
Power:	16.7 HP (12.5 kW)	20.4 HP (15.2 kW)

HITCH DIMENSIONS AS TESTED NO LOAD

