

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

2012

Test 2052: New Holland TS6.120

Nebraska Tractor Test Laboratory

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](#)

Laboratory, Nebraska Tractor Test, "Test 2052: New Holland TS6.120" (2012). *Nebraska Tractor Tests*. 2470.

<https://digitalcommons.unl.edu/tractormuseumlit/2470>

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.

NEBRASKA OECD TRACTOR TEST 2052—SUMMARY 865

NEW HOLLAND TS6.120 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—1074 rpm)					
97.27 (72.53)	2200	7.15 (27.07)	0.515 (0.313)	13.60 (2.68)	
Standard Power Take-off Speed (1000 rpm)					
101.23 (75.49)	2049	6.93 (26.22)	0.480 (0.292)	14.61 (2.88)	
Maximum Power (1 hour)					
104.48 (77.91)	1651	6.34 (23.99)	0.425 (0.259)	16.49 (3.25)	

VARYING POWER AND FUEL CONSUMPTION

97.27 (72.53)	2200	7.15 (27.07)	0.515 (0.313)	13.60 (2.68)	Air temperature
87.70 (65.40)	2338	6.77 (25.61)	0.541 (0.329)	12.96 (2.55)	73°F (23°C)
66.40 (49.51)	2353	5.26 (19.89)	0.555 (0.337)	12.63 (2.49)	Relative humidity
44.60 (33.26)	2373	3.81 (14.43)	0.599 (0.364)	11.70 (2.31)	33%
22.50 (16.78)	2390	2.84 (10.77)	0.886 (0.539)	7.91 (1.56)	Barometer
1.40 (1.04)	2429	2.02 (7.66)	10.136 (6.165)	0.69 (0.14)	28.51 Hg (96.54 kPa)

Maximum torque - 414 lb.-ft. (561 Nm) at 1149 rpm
 Maximum torque rise - 78.1%
 Torque rise at 1760 engine rpm - 33%
 Power increase at 1651 engine rpm - 7.4%

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	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—5th (H1) Gear									
86.67 (64.63)	5650 (25.13)	5.75 (9.25)	2201	8.9	0.583 (0.355)	12.01 (2.37)	184 (84)	48 (9)	29.00 (98.21)
75% of Pull at Maximum Power—5th (H1) Gear									
71.69 (53.46)	4230 (18.82)	6.36 (10.23)	2366	6.5	0.625 (0.380)	11.22 (2.21)	185 (85)	62 (17)	28.95 (98.04)
50% of Pull at Maximum Power—5th (H1) Gear									
48.50 (36.16)	2803 (12.47)	6.49 (10.44)	2363	4.4	0.640 (0.389)	10.95 (2.16)	184 (84)	62 (17)	28.95 (98.04)
75% of Pull at Reduced Engine Speed—6th (H2) Gear									
71.85 (53.58)	4192 (18.65)	6.43 (10.35)	1551	6.3	0.456 (0.277)	15.40 (3.03)	181 (83)	62 (17)	28.95 (98.04)
50% of Pull at Reduced Engine Speed—6th (H2) Gear									
48.94 (36.49)	2783 (12.38)	6.59 (10.61)	1560	4.3	0.493 (0.300)	14.24 (2.80)	180 (82)	62 (17)	28.95 (98.04)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832

Dates of tests: December 3-6, 2012

Manufacturer: CNH De Mexico, Queretaro Mexico

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15° C) 0.8417 Fuel weight 7.008 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CI-4 Transmission and hydraulic lubricant New Holland M2C134D fluid Front axle lubricant New Holland M2C134D fluid Total time engine was operated 14.0 hours

ENGINE: Make F.P.T NEF series Diesel Type four cylinder vertical with turbocharger and air to air intercooler Serial No. 979333 Crankshaft lengthwise Rated engine speed 2200 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 vertical Cooling medium temperature control one thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 47.2 - 50.2 lb/h (21.4 - 22.8 kg/h) High idle: 2350 - 2450 rpm Turbo boost: nominal 12.3- 15.2 psi (85 - 105 kPa) as measured 18.1 psi (125 kPa)

CHASSIS: Type front wheel assist Serial No. NH000454M Tread width rear 64.0" (1626 mm) to 80.0" (2032 mm) front 64.0" (1626 mm) to 80.0" (2032 mm) Wheelbase 99.2" (2520 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.67 (2.68) second 2.56 (4.12) third 3.48 (5.60) fourth 4.83 (7.77) fifth 6.14 (9.88) sixth 9.45 (15.21) seventh 12.83 (20.65) eighth 17.82 (28.68) reverse 1.72 (2.77), 2.65 (4.26), 3.60 (5.79), 5.00 (8.04), 6.35 (10.22), 9.77 (15.73), 13.27 (21.36), 18.43 (29.66) Clutch single dry disc operated by foot pedal Brakes single wet disc operated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 1890 engine rpm or 1000 rpm at 2049 engine rpm Unladen tractor mass 9740 lb (4418 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd(L3)Gear									
67.10 (50.03)	7698 (34.24)	3.27 (5.26)	2361	14.9	0.695 (0.423)	10.09 (1.99)	185 (85)	56 (13)	28.97 (98.10)
4th(L4)Gear									
81.73 (60.95)	7057 (31.39)	4.34 (6.98)	2200	12.7	0.615 (0.374)	11.39 (2.24)	184 (84)	53 (12)	28.98 (98.14)
5th(H1)Gear									
86.67 (64.63)	5650 (25.13)	5.75 (9.25)	2201	8.9	0.583 (0.355)	12.01 (2.37)	184 (84)	48 (9)	29.00 (98.21)
6th(H2)Gear									
87.14 (64.98)	3540 (15.74)	9.23 (14.85)	2200	5.2	0.580 (0.353)	12.09 (2.38)	183 (84)	51 (11)	28.99 (98.17)

UNBALLASTED - FRONT DRIVE ENGAGED-1650 RPM

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)
3rd(L3)Gear									
67.38 (50.24)	7720 (34.34)	3.28 (5.27)	2362	14.9	0.691 (0.420)	10.15 (2.00)	185 (85)	55 (13)	28.97 (98.10)
4th(L4)Gear									
81.88 (61.05)	7073 (31.46)	4.34 (6.98)	2200	12.7	0.617 (0.375)	11.37 (2.24)	184 (84)	53 (12)	28.98 (98.13)
5th(H1)Gear									
87.47 (65.23)	6948 (30.90)	4.73 (7.60)	1875	12.3	0.538 (0.327)	13.03 (2.57)	182 (83)	50 (10)	28.99 (98.17)
6th(H2)Gear									
93.04 (69.38)	5195 (23.11)	6.72 (10.81)	1650	8.0	0.487 (0.296)	14.40 (2.84)	180 (82)	52 (11)	28.98 (98.13)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's implement flow claim of 22 GPM (83 L/min). For the maximum power tests the fuel temperature at the fuel pump return was maintained at 158°F (70°C). The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2052**, Nebraska Summary 865, December 21, 2012.

Roger M. Hoy
 Director

M.R. Riley
 P.J. Jasa
 J.D. Luck
 Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 4th (4L) gear	80.3	80.3
Bystander in 8th (4H) gear		88.3

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 18.4-34;8;16(110)
 Two 14.9-24;8;16(110)
 24.0 in (610 mm)
 5900 lb (2676 kg)
 4015 lb (1821 kg)
 9915 lb (4497 kg)

HYDRAULIC PERFORMANCE

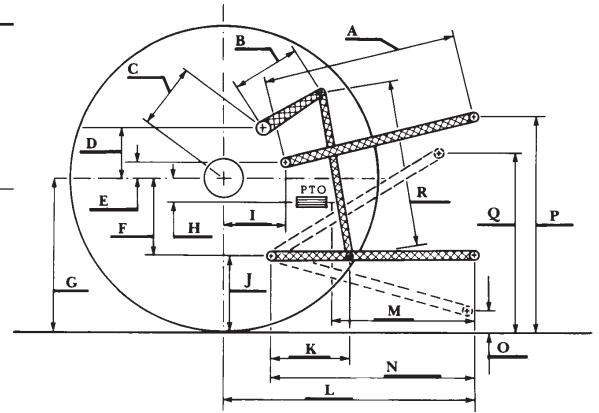
CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range:
 3096 lbs (13.77 kN)
 4608 lbs (20.50 kN)(1 external lift cylinder)
 6174 lbs (27.46 kN)(2 external lift cylinders)

	Single pump system	Two pump system
	two outlet sets combined	
i) Sustained pressure of the open relief valve:	2674 psi (184 bar)	2413 psi (166 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	13.6 GPM (51.4 l/min)	20.2 GPM (76.5 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	12.6 GPM (47.8 l/min)	17.4 GPM (65.9 l/min)
Delivery pressure:	2222 psi (153 bar)	1725 psi (119 bar)
Power:	16.4 HP (12.2 kW)	17.5 HP (13.1 kW)
	single outlet set	
i) Sustained pressure of the open relief valve:	2649 psi (183 bar)	2431 psi (168 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	13.4 GPM (50.6 l/min)	16.4 GPM (61.9 l/min)
iii) Pump delivery rate at maximum		
hydraulic power:	12.3 GPM (46.5 l/min)	15.5 GPM (58.7 l/min)
Delivery pressure:	2200 psi (152 bar)	1773 psi (122 bar)
Power:	15.8 HP (11.8 kW)	16.0 HP (12.0 kW)



HITCH DIMENSIONS AS TESTED—NO LOAD

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	27.7	705	28.5	724
B	9.8	250	9.8	250
C	14.1	357	14.1	357
D	13.5	342	13.5	342
E	8.1	205	8.1	205
F	9.0	229	9.0	229
G	30.3	770	30.3	770
H	0.4	10	0.4	10
I	12.7	323	12.7	323
J	21.3	541	21.3	541
K	18.1	460	18.1	460
L	40.8	1037	40.8	1037
M	22.9	581	22.9	581
N	36.6	930	36.6	930
O	8.0	203	8.0	203
P	40.3	1024	45.3	1151
Q	34.0	864	34.0	864
R	32.5	826	32.5	826

THREE POINT HITCH PERFORMANCE(SAE Static test)

Observed maximum pressure psi. (bar)	2480 (171)				
Location:	lift cylinder				
Hydraulic oil temperature: °F (°C)	145 (63)				
Location:	pump inlet				
Category:	II				
Quick attach:	none				
System pressure 2210 psi (152 Bar)					
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	4374	4244	4127	4257	3735
" " " " " " (kN)	(19.5)	(18.9)	(18.4)	(18.9)	(16.6)
One external lift cylinder					
System pressure 2210 psi (152 Bar)					
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	6764	6444	6174	6300	5499
" " " " " " (kN)	(30.1)	(28.7)	(27.5)	(28.0)	(24.5)
Two external lift cylinders					
System pressure 2210 psi (152 Bar)					
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	9270	8622	8199	8361	7326
" " " " " " (kN)	(41.2)	(38.4)	(36.5)	(37.2)	(32.6)



NEW HOLLAND TS6.120 DIESEL

Institute of Agriculture and Natural Resources
 University of Nebraska-Lincoln