

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

1-1-1983

Test 1500: Ford 1510 (12x4) Manual Diesel 12-Speed

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, "Test 1500: Ford 1510 (12x4) Manual Diesel 12-Speed" (1983). *Nebraska Tractor Tests*. 1811.

<https://digitalcommons.unl.edu/tractormuseumlit/1811>

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 TRACTOR TEST 1500—FORD 1510 (12 x 4) MANUAL DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)	
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—624 rpm)									
19.72 (14.71)	2800	1.474 (5.580)	0.523 (0.318)	13.38 (2.636)	202 (94.2)	67 (19.4)	75 (23.8)	29.000 (97.929)	
Standard Power Take-off Speed (540 rpm)—One Hour									
20.45 (15.25)	2422	1.548 (5.860)	0.529 (0.322)	13.21 (2.602)	217 (102.6)	67 (19.4)	75 (23.7)	28.950 (97.760)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
17.01 (12.68)	2840	1.308 (4.951)	0.538 (0.327)	13.01 (2.561)	196 (91.4)	67 (19.4)	77 (25.0)	..... .....
0.00 (0.00)	2996	0.553 (2.093)	..... .....	..... .....	166 (74.4)	67 (19.4)	75 (23.9)	..... .....
8.74 (6.52)	2918	0.926 (3.505)	0.741 (0.451)	9.44 (1.860)	174 (78.9)	67 (19.4)	76 (24.7)	..... .....
20.00 (14.91)	2803	1.483 (5.614)	0.519 (0.316)	13.48 (2.656)	203 (95.0)	67 (19.4)	76 (24.2)	..... .....
4.42 (3.30)	2956	0.737 (2.790)	1.166 (0.710)	6.00 (1.183)	168 (75.6)	67 (19.4)	75 (23.9)	..... .....
12.92 (9.63)	2876	1.106 (4.187)	0.599 (0.364)	11.68 (2.300)	186 (85.3)	67 (19.4)	76 (24.4)	..... .....
Av Av	10.52 (7.84)	2898	1.019 (3.857)	0.678 (0.412)	10.32 (2.033)	182 (83.4)	67 (19.4)	76 (24.3)	28.930 (97.692)

DRAWBAR PERFORMANCE

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)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb		
Maximum Available Power—Two Hours 9th (3-3) Gear												
16.15 (12.05)	1090 (4.85)	5.56 (8.94)	2800	8.11	1.451 (5.491)	0.628 (0.382)	11.14 (2.194)	182 (83.1)	49 (9.4)	50 (10.0)	28.965 (97.810)	
75% of Pull at Maximum Power—Ten Hours 9th (3-3) Gear												
12.92 (9.63)	844 (3.75)	5.74 (9.24)	2861	7.09	1.259 (4.766)	0.682 (0.415)	10.26 (2.021)	173 (78.5)	46 (7.5)	47 (8.1)	29.026 (98.010)	
50% of Pull at Maximum Power—Two Hours 9th (3-3) Gear												
8.97 (6.69)	563 (2.50)	5.97 (9.62)	2904	4.73	1.055 (3.995)	0.823 (0.501)	8.50 (1.674)	172 (77.5)	47 (8.3)	48 (8.6)	29.010 (97.962)	
50% of Pull at Reduced Engine Speed—Two Hours 11th (4-2) Gear												
8.97 (6.69)	563 (2.50)	5.97 (9.61)	1851	4.54	0.802 (3.038)	0.626 (0.381)	11.18 (2.202)	170 (76.7)	48 (8.9)	50 (10.0)	29.015 (97.979)	
MAXIMUM POWER IN SELECTED GEARS												
12.42 (9.26)	1952 (8.68)	2.39 (3.84)	2852	14.94	6th (2-3) Gear			175 (79.2)	48 (8.9)	50 (10.0)	29.000 (97.929)	
15.78 (11.76)	1886 (8.39)	3.14 (5.05)	2799	14.49	7th (3-1) Gear			184 (84.4)	48 (8.9)	50 (10.0)	28.990 (97.895)	
16.21 (12.09)	1453 (6.46)	4.18 (6.73)	2799	10.56	8th (3-2) Gear			182 (83.1)	48 (8.9)	50 (10.0)	28.990 (97.895)	
16.63 (12.40)	1124 (5.00)	5.55 (8.94)	2799	8.14	9th (3-3) Gear			180 (82.2)	49 (9.4)	50 (10.0)	28.970 (97.827)	
16.99 (12.67)	921 (4.09)	6.92 (11.14)	2799	6.70	10th (4-1) Gear			180 (82.2)	49 (9.4)	51 (10.6)	28.970 (97.827)	
16.78 (12.51)	702 (3.12)	8.97 (14.43)	2800	5.26	11th (4-2) Gear			181 (82.8)	49 (9.4)	51 (10.6)	28.960 (97.794)	

Department of Agricultural Engineering

Dates of Test: October 17-25, 1983

Manufacturer: ISHIKAWAJIMA-SHIBAURA
MACHINERY COMPANY LTD. Tokyo, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 47.0 (rating taken from oil company's
inspection data) Specific gravity converted to 60°/
60° (15°/15°) 0.8404 Fuel weight 6.997 lbs/gal
(0.839 kg/l) Oil SAE 15W-40 API service classi-
fication SE-SF, CC-CD To motor 1.190 gal
(4.503 l) Drained from motor 0.915 gal (3.462 l)
Transmission and final drive lubricant Ford
M2C-134-B fluid Total time engine was operated
35.5 hours.

ENGINE: Make Shibaura Diesel Type three
cylinder vertical Serial No. *K773-00368*
Crankshaft lengthwise Rated rpm 2800 Bore
and stroke 3.03" x 3.15" (77 mm x 80 mm) Com-
pression ratio 23.5 to 1 Displacement 68.2 cu in
(1117 ml) Starting system 12 volt Lubrication
pressure Air cleaner one paper element Oil fil-
ter one full flow cartridge Fuel filter one paper
element Muffler vertical Cooling medium
temperature control one thermostat.

CHASSIS: Type standard Serial No.
*1510*UH00345* Tread width rear 41.3" (1050
mm) to 47.3" (1200 mm) front 39.4" (1000 mm) to
52" (1320 mm) Wheel base 63" (1600 mm) Center
of gravity (without operator or ballast, with mini-
mum tread, with fuel tank filled and tractor serv-
iced for operation) Horizontal distance forward
from center-line of rear wheels 22.5" (572 mm)
Vertical distance above roadway 29.9" (760 mm)
Horizontal distance from center of rear wheel
tread 0" (0 mm) to the right/left Hydraulic control
system direct engine drive Transmission selec-
tive gear fixed ratio Advertised speeds mph (km/
h) first 0.8 (1.2) second 1.0 (1.5) third 1.3 (2.0)
fourth 1.7 (2.8) fifth 2.2 (3.5) sixth 2.8 (4.5)
seventh 3.8 (6.0) eighth 4.8 (7.7) ninth 6.2 (10.0)
tenth 7.6 (12.2) eleventh 9.7 (15.6) twelfth 12.5
(20.1) reverse 0.9 (1.4), 2.0 (3.2), 4.3 (7.0), 8.7
(14.0) Clutch single dry disc operated by foot
pedal Brakes drum and shoe operated by two
foot pedals which can be locked together Steering
mechanical Turning radius (on concrete surface
with brake applied) right 92.5" (2.35 m) left 92.5"
(2.35 m) (on concrete surface without brake) right
100.4" (2.55 m) left 100.4" (2.55 m) Turning space
diameter (on concrete surface with brake applied)
right 193" (4.90 m) left 193" (4.90 m) (on concrete
surface without brake) right 209" (5.30 m) left 209"
(5.30 m) Power take-off 540 rpm at 2422 engine
rpm.

REPAIRS and ADJUSTMENTS: No repairs or
adjustments.

LUGGING ABILITY IN 9th (3-3) GEAR

Crankshaft Speed rpm	2799	2527	2250	1964	1686	1394
Pull—lbs (kN)	1124 (5.00)	1427 (6.35)	1472 (6.55)	1479 (6.58)	1457 (6.48)	1422 (6.33)
Increase in Pull %	0	27	31	32	30	27
Power—Hp (kW)	16.63 (12.40)	18.66 (13.91)	17.06 (12.72)	14.90 (11.11)	12.62 (9.41)	10.23 (7.63)
Speed—Mph (km/h)	5.55 (8.94)	4.90 (7.89)	4.35 (6.99)	3.78 (6.08)	3.25 (5.23)	2.70 (4.34)
Slip %	8.14	10.15	10.56	10.89	10.81	10.40

TRACTOR SOUND LEVEL WITHOUT CAB

dB(A)

Maximum Available Power—Two Hours	91.0
75% of Pull at Maximum Power—Ten Hours	91.0
50% of Pull at Maximum Power—Two Hours	90.5
50% of Pull at Reduced Engine Speed—Two Hours	86.0
Bystander in 12th (4-3) gear	80.5

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 9.5-24; 4; 16 (110)	Two 9.5-24; 4; 16 (110)
Ballast	—Liquid (each)	185 lb (84 kg)	None
	—Cast Iron (each)	255 lb (116 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 4.00-15; 4; 28 (195)	Two 4.00-15; 4; 28 (195)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	48 lb (22 kg)	None
Height of Drawbar		12.5 in (320 mm)	12.5 in (320 mm)
Static Weight with Operator—Rear		2355 lb (1068 kg)	1475 lb (669 kg)
—Front		850 lb (386 kg)	755 lb (342 kg)
—Total		3205 lb (1454 kg)	2230 lb (1011 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 130°F (54.4°C). Six gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1500.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD

Board of Tractor Test Engineers



Ford 1510 (12 x 4) Manual Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Irvin T. Omtvedt, Dean and Director