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University of Nebraska - Lincoln

Year 1962

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Test 820: Farmall 504 (LPG)

Tractor Museum

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

# NEBRASKA TRACTOR TEST 820 - FARMALL 504 LPG

The University of Nebraska Agricultural Experiment Station

E. F. Frolik, Dean; H. H. Kramer, Director, Lincoln, Nebraska

## POWER TAKE-OFF PERFORMANCE

Hp	Crankshaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>								
<b>Rated Engine Speed—Two Hours</b>								
44.36	2200	4.933	0.473	8.99	202	65	75	28.893
<b>Standard Power Take-off Speed (540 rpm)—One Hour</b>								
41.21	1969	4.381	0.452	9.41	199	65	75	28.948
<b>VARYING POWER AND FUEL CONSUMPTION—TWO HOURS</b>								
39.21	2287	4.327	0.469	9.06	192	66	76	.....
0.00	2401	1.574	.....	.....	172	66	77	.....
19.89	2320	2.831	0.605	7.03	178	66	77	.....
45.27	2200	5.026	0.472	9.01	194	65	75	.....
10.26	2396	2.153	0.892	4.77	172	65	75	.....
29.50	2297	3.508	0.505	8.41	180	65	75	.....
Av 24.02	2317	3.236	0.573	7.42	181	66	76	28.960

## DRAWBAR PERFORMANCE

Hp	Drawbar pull lbs	Speed miles per hr	Crankshaft speed rpm	Slip of drivers %	Fuel Consumption		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	
<b>VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST</b>											
<b>Maximum Available Power—Two Hours—3rd Gear</b>											
40.17	2793	5.39	2200	5.05	5.000	0.529	8.03	182	53	58	29.070
<b>75% of Pull at Maximum Power—Ten Hours—3rd Gear</b>											
32.91	2164	5.70	2279	3.00	4.141	0.535	7.95	184	67	75	28.842
<b>50% of Pull at Maximum Power—Two Hours—3rd Gear</b>											
22.25	1444	5.78	2293	2.37	3.235	0.618	6.88	173	55	62	29.033
<b>MAXIMUM POWER WITH BALLAST</b>											
28.57	6178	1.73	2266	14.68	1st Gear	.....	175	51	56	29.085	
40.92	3921	3.91	2204	7.26	2nd Gear	.....	179	51	56	29.110	
41.32	2883	5.38	2197	5.22	3rd Gear	.....	179	52	56	29.115	
41.23	1992	7.76	2206	3.78	4th Gear	.....	179	52	56	29.115	
37.96	5704	2.50	2201	12.15	2nd Gear Torq. Amp.	179	51	56	29.085		
39.68	4212	3.53	2203	7.84	3rd Gear Torq. Amp.	179	51	56	29.110		
41.21	3008	5.14	2202	5.42	4th Gear Torq. Amp.	177	52	56	29.115		
40.08	1283	11.71	2204	2.23	5th Gear Torq. Amp.	178	52	53	29.100		
<b>MAXIMUM POWER WITHOUT BALLAST</b>											
39.55	2746	5.40	2202	6.81	3rd Gear	.....	188	71	79	28.800	
<b>VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—3rd Gear</b>											
Pounds pull	2883	3017	2993	2902	2962	2826					
Horsepower	41.32	39.00	34.41	29.08	25.27	20.22					
Miles per hour	5.38	4.85	4.31	3.76	3.20	2.68					
Slip of drivers, %	5.22	5.35	5.49	5.22	5.35	5.22					

## TIRES, BALLAST and WEIGHT

		With Ballast	Without Ballast
Rear tires	—No, size, ply & psi	Two 13.6-38; 6; 16	Two 13.6-38; 6; 14
Ballast	—Liquid	770 lb each	None
	—Cast iron	290 lb each	None
	—None	195 lb each	None
Front tires	—No, size, ply & psi	Two 6.00-16; 4; 28	Two 6.00-16; 4; 28
Ballast	—Liquid	None	None
	—Cast iron	195 lb each	None
Height of drawbar		19½ inches	21 inches
Static weight	—Rear	5940 lb	3820 lb
	—Front	1780 lb	1390 lb
Total weight with operator		7895 lb	5385 lb

## Department of Agricultural Engineering

Dates of Test: May 17 to June 9, 1962

Manufacturer: INTERNATIONAL HARVESTER COMPANY, CHICAGO, ILLINOIS

Manufacturer's Power Rating: Not Rated

**FUEL, OIL and TIME** Fuel Commercial propane Specific gravity converted to 60°/60° 0.5103 Weight per gallon 4.25 lb Oil SAE 10W-30 API service classification MS To motor 1.467 gal Drained from motor 0.948 gal Transmission and final-drive lubricant IH Hy-Tran fluid Total time engine was operated 43½ hours.

**ENGINE** Make International LPG Type 4 cylinder vertical Serial No 2146 C Crankshaft mounted lengthwise Rated rpm 2200 Bore and stroke 3¾" x 4¼" Compression ratio 8.0 to 1 Displacement 152.1 cu. in. Carburetor size 1¼" Ignition system battery Cranking system 12 volt electric Lubrication pressure Air cleaner oil washed wire mesh Oil filter replaceable treated paper element Oil cooler radiator for hydraulic and transmission oil Fuel filter felt pack in strainer Muffler was used Cooling medium temperature control thermostat.

**CHASSIS** Type tricycle Serial No 1309 S-Y Tread width rear 52" to 84" front 8" and 14" Wheel base 89" Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 23.1" Vertical distance above roadway 32.5" Horizontal distance from center of rear wheel tread 0.0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio plus partial range operator controlled power shifting Advertised speeds mph first 1.96 second 4.18 third 5.64 fourth 7.99 fifth 17.64 reverse 2.42 (Using T.A.) first 1.32 second 2.82 third 3.81 fourth 5.39 fifth 11.90 reverse 1.64 Clutch single plate dry disc operated by foot pedal Brakes disc brakes operated by two foot pedals that can be locked together Steering power assisted Turning radius (on concrete surface with brake applied) right 98.5" left 98.5" (on concrete surface without brake) right 100" left 100" Turning space diameter (on concrete surface with brake applied) right 206" left 206" (on concrete surface without brake) right 209.5" left 209.5" Belt pulley 1168 rpm at 2200 engine rpm diam 11" face 7.5" Belt speed 3363 fpm Power take-off 548 rpm at 2000 engine rpm.

**REPAIRS and ADJUSTMENTS** No repairs or adjustments.

**REMARKS** All test results were determined from observed data obtained in accordance with the SAE and ASAE test code.

First gear torque-amplifier was not run as it was necessary to limit the pull in first gear direct drive to avoid excessive wheel slippage.

Fifth gear direct drive was not run as it exceeded 15 mph.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 820.

L. F. LARSEN  
Engineer-in-Charge

L. W. HURLBUT  
G. W. STEINBRUEGGE  
J. J. SULEK  
Board of Tractor Test Engineers