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1-1-1953

## Test 494: Ford NAA

Tractor Museum

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The Experiment Station  
University of Nebraska College of Agriculture  
W. V. Lambert, Director, Lincoln, Nebraska

Department of Agricultural Engineering  
Dates of test: May 22 to June 1, 1953.  
Manufacturer: FORD MOTOR COMPANY, DEARBORN, MICHIGAN.  
Manufacturer's rating: Not Rated.

NEBRASKA TRACTOR TEST NO. 494

FORD NAA

BELT HORSEPOWER TESTS

Hp	Crank shaft speed rpm	Fuel Consumption			Water used gal per hour	Temp Deg F		Barometer inches of mercury
		Gal per hour	Hp-hr per gal	Lb per hp-hour		Cooling med	Air	
TEST B—100% MAXIMUM LOAD—TWO HOURS								
31.14	2000	2.867	10.86	0.564	0.00	190	66	28.910
TEST C—OPERATING MAXIMUM LOAD—ONE HOUR								
30.15	2000	2.683	11.24	0.545	0.00	183	64	28.923
TEST D—RATED LOAD—ONE HOUR								
27.61	2000	2.616	10.55	0.581	0.00	181	66	28.950
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
27.50	1994	2.600	10.58	0.579	...	189	74	.....
1.65	2108	1.165	1.42	4.327	...	157	75	.....
14.17	2053	1.836	7.72	0.794	...	168	76	.....
28.76	1918	2.595	11.08	0.553	...	195	76	.....
7.27	2099	1.435	5.07	1.209	...	160	76	.....
20.72	2001	2.189	9.47	0.647	...	178	77	.....
16.68	2029	1.970	8.47	0.724	0.00	174	76	28.975

TORQUE (At Dynamometer)

Eng RPM	1997	1873	1754	1623	1501	1370	1256	1124	994	862
Lb.-ft.	173.6	177.6	181.8	184.5	186.4	186.6	188.5	191.3	190.8	185.5

DRAWBAR HORSEPOWER TESTS

Hp	Draw bar pull lb	Speed miles per hr	Crank shaft speed rpm	Slip of drive wheels %	Fuel Consumption			Water used gal per hour	Temp Deg F		Barometer inches of mercury
					Gal per hour	Hp-hr per gal	Lb per hp-hr		Cooling med	Air	
TEST F—100% MAXIMUM LOAD—2nd Gear											
25.30	2632	3.60	1748	8.34	.....	Not Recorded	.....	202	84	28.870	
TEST G—OPERATING MAXIMUM LOAD											
22.96	3232	2.66	1747	12.88	.....	Not Recorded	.....	194	80	28.890	
23.97	2476	3.63	1749	7.77	.....	Not Recorded	.....	196	86	28.870	
24.76	1811	5.13	1746	5.20	.....	Not Recorded	.....	194	84	28.860	
23.49	796	11.06	1752	2.27	.....	Not Recorded	.....	192	85	28.860	
TEST H—RATED LOAD—TEN HOURS—2nd Gear											
20.21	2055	3.69	1752	6.46	2.004	10.08	0.608	0.00	186	85	28.630
TEST J—OPERATING MAXIMUM LOAD—2nd Gear											
17.14	1915	3.36	1747	16.14	.....	Not Recorded	.....	184	85	28.835	

TIRES, WHEELS and WEIGHT

	Tests F, G, & H	Test J
Rear wheels		
Type	Pressed steel	Pressed steel
Liquid ballast	None	None
Added cast iron	774 lb each	None
Rear tires		
No. and size	Two 10-28	Two 10-28
Ply	4	4
Air pressure	12 lb	12 lb
Front wheels		
Type	Pressed steel	Pressed steel
Liquid ballast	None	None
Added cast iron	None	None
Front tires		
No. and size	Two 5.50-16	Two 5.50-16
Ply	4	4
Air pressure	28 lbs	28 lbs
Height of drawbar	23 inches	24½ inches
Static weight		
Rear end	3154 lb	1606 lb
Front end	1063 lb	1060 lb
Total weight as tested with operator	4392 lb	2841 lb

HORSEPOWER SUMMARY

	Draw-bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60°F and 29.92" HG)	26.82	32.41
2. Observed maximum horsepower (tests F & B)	25.30	31.14
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	20.12	27.55

We, the undersigned, certify that this is a true and correct report of official tractor test No. 494.

L. F. LARSEN  
Engineer in Charge

C. W. SMITH  
L. W. HURLBUT  
F. D. YUNG  
Board of Tractor  
Test Engineers

FUEL, OIL and TIME Gasoline octane No ASTM 76 Research 82 (rating taken from oil company's typical inspection data); weight per gallon 6.127 lb Oil SAE 20; to motor 1.231 gal; drained from motor 0.935 gal Total time motor was operated 55 hours.

CHASSIS Type Standard Serial No NAA 37790 Tread width rear 48" to 76" front 48" to 80" Wheel Base 73.88" Hydraulic control system direct engine drive Advertised speeds mph first 3.13 second 4.02 third 5.54 fourth 11.55 reverse 3.64 Belt Pulley diam 9" face 6" rpm 1358 Belt speed 3200 fpm Clutch single plate clutch operated by foot pedal Seat pressed steel Brakes internal expanding shoes operated by two foot pedals located on right hand side of tractor Equalized by foot action only Power take-off standard type.

ENGINE Make Ford Type 4 cylinder vertical Serial No NAA 37790 Crankshaft mounted lengthwise Head I Lubrication Pressure Bore and Stroke 3.4375" x 3.60" Rated rpm belt 2000 drawbar 1750 Compression ratio 6.6 to 1 Displacement 134 cu in Port Diameter Valves Inlet 1.46" Exhaust 1.26" Governor variable speed centrifugal fly ball Carburetor size ¾" Ignition System battery Starting System 6 volt battery Air Cleaner Oil washed wire mesh Muffler was used Oil filter Full flow with replaceable paper element Cooling medium temperature control Thermostat.

REPAIRS AND ADJUSTMENTS During Test H a loss in power occurred; by loosening the gas tank cap the power returned.

REMARKS All test results were determined from observed data and without allowances, additions or deductions. Tests B and F were made with carburetor set for 100% maximum belt horsepower and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, D, E, G, H, & J were made with an operating setting of the carburetor (selected by the manufacturer) of 96.6% of maximum belt horsepower.