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9-29-1950

Test 451: Oliver 99

Nebraska Tractor Test Lab

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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: September 29 to October 9, 1950.
Manufacturer: THE OLIVER CORPORATION, CHARLES CITY, IOWA
Manufacturer's rating: Not rated.

NEBRASKA TRACTOR TEST NO. 451

OLIVER 99

BELT HORSEPOWER TESTS

Hp	Crank shaft speed rpm	Fuel Consumption			Water used gal per hour	Temp Deg F		Barometer in Hg
		Gal per hour	Hp-hr per gal	Lb per hp-hour		Cooling med	Air	
TEST B—100% MAXIMUM LOAD—TWO HOURS								
62.28	1125	6.252	9.96	0.616	0.00	174	63	29.260
TEST C—OPERATING MAXIMUM LOAD—ONE HOUR								
58.98	1126	5.024	11.74	0.523	0.00	174	64	29.250
TEST D—RATED LOAD—ONE HOUR								
54.52	1126	4.744	11.49	0.534	0.00	171	62	29.250
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
54.48	1126	4.739	11.50	0.534	...	171	61
1.52	1172	1.695	0.90	6.849	...	158	61
27.58	1133	3.161	8.73	0.704	...	166	65
57.83	1100	4.871	11.87	0.517	...	181	65
13.97	1141	2.409	5.80	1.059	...	185	63
40.53	1113	3.875	10.46	0.587	...	182	66
32.65	1130	3.458	9.44	0.650	0.00	174	63	29.250

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 in Hg
					Gal per hour	Hp-hr per gal	Lb per hp-hr		Cooling med	Air	
TEST F—100% MAXIMUM LOAD—2nd GEAR											
52.05	5293	3.69	1126	9.52	Not Recorded				177	67	28.730
TEST G—OPERATING MAXIMUM LOAD											
46.46	7594	2.29	1124	16.58	Not Recorded				177	67	28.730
49.94	5034	3.72	1126	8.72	" "				178	66	28.730
50.56	3781	5.01	1124	6.11	" "				177	66	28.730
42.06	1116	14.13	1124	1.58	" "				177	68	28.730
TEST H—RATED LOAD—TEN HOURS—2nd GEAR											
41.18	4036	3.83	1125	6.03	4.229	9.74	0.631	0.00	181	71	28.499
TEST J—OPERATING MAXIMUM LOAD—2nd GEAR											
38.98	4198	3.48	1126	15.40	Not Recorded				172	63	28.920
TEST K—OPERATING MAXIMUM LOAD—2nd GEAR											
30.82	3539	3.27	1125	16.77	Not Recorded				172	65	28.920

TIRES, WHEELS and WEIGHT

	Tests F, G, & H	Test J	Test K
Rear wheels			
Type	Cast iron	Cast iron	Cast iron
Liquid ballast	812 lb each	None	None
Added cast iron	2100 lb each	None	None
Rear tires			
No. and size	Two 15-30	Two 15-30	Two 14-30
Ply	8	8	6
Air pressure	20 lb	14 lb	12 lb
Front wheels			
Type	Cast iron	Cast iron	Cast iron
Liquid ballast	None	None	None
Added cast iron	None	None	None
Front tires			
No. and size	Two 7.50-18	Two 7.50-18	Two 7.50-18
Ply	6	6	6
Air pressure	28 lb	28 lb	28 lb
Height of drawbar	23½ inches	25 inches	23 inches
Static weight			
Rear end	10280 lb	4457 lb	4250 lb
Front end	2645 lb	2639 lb	2638 lb
Total weight as tested with operator	13110 lb	7281 lb	7073 lb

FUEL, OIL and TIME Gasoline octane No ASTM 76 Research 82 (rating taken from oil company's typical inspection data); weight per gallon 6.140 lb Oil SAE 20; to motor 2.974 gal; drained from motor 2.328 gal Total time motor was operated 44½ hours.

CHASSIS Type standard Serial No 516060-C66 Tread width rear 53" or 57" front 53¼" Wheel Base 80" Hydraulic control system none available Advertised speeds mph first 2½ second 3¾ third 5.0 fourth 13½ reverse 3¾ Belt pulley diam 16¾" face 8¼" rpm 596 Belt speed 2614 fpm Clutch dry disc clutch operated by right foot pedal Seat upholstered with back rest Brake one wet external contracting band on differential operated by single hand lever Equalized yes operates on differential Power take-off standard type.

ENGINE Make Oliver Type 4 cylinder vertical Serial No 9864 Crankshaft mounted lengthwise Head I Lubrication pressure Bore and Stroke 4¾"x6¼" Rated rpm 1125 Compression ratio 5.5 to 1 Displacement 443 cu in Port Diameter Valves inlet 1 15/16" exhaust 1¾" Governor variable speed centrifugal Carburetor Size 1¼" Ignition System 6 volt battery Air Cleaner oil washed wire mesh Muffler was used Oil Filter replaceable waste packed Cooling medium temperature control thermostat and curtain.

REPAIRS and ADJUSTMENTS No repairs or adjustments.

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 B and F, respectively. Tests C, D, E, G, H, J and K were made with an operating setting of the carburetor (selected by the manufacturer) of 94.8% of maximum belt horsepower.

HORSEPOWER SUMMARY

	Draw-bar	Belt
1. Sea level (calculated maximum horsepower (based on 60° F and 29.92" Hg)	54.57	63.87
2. Observed maximum horsepower (tests F and B)	52.05	62.28
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)	40.93	54.29

We, the undersigned, certify that this is a true and correct report of official tractor test No. 451.

L. F. Larsen
Engineer in Charge

C. W. Smith
L. W. Hurlbut
F. D. Yung
Board of Tractor
Test Engineers