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January 1920

Test 044: Avery 40-80

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA
AGRICULTURAL ENGINEERING DEPARTMENT
UNIVERSITY FARM, LINCOLN

Report of Official Tractor Test No. 44

Dates of test July 26 to August 3, 1920

Name, model and rating of tractor Avery 40-80

Serial No. Engine ZE 1073 Serial No. Chassis 25259

Manufacturer The Avery Co., Peoria, Ill.

Tractor equipment used KW Model HK Mag; Kingston Dual Carb.

Style and dimensions of wheel lugs Universal 3½" high, 12" extension rims.

Brake Horse Power Tests

Horse Power Developed	Crank Shaft Speed R. P. M.	Length of Test Min.	Fuel Consumption			Water Consumption Gallons per Hour			Temperature *Cooling Fluid Deg. F.	Temperature of Atmosphere Deg. F.	Humidity %	Barometric Pressure Inches Mercury
			Kind of Fuel	Amount Used per Hour Gallons	Horse Power Hours per Gallon	In Radiator	In Fuel Mixture	Total				
RATED LOAD TEST												
65.73	612	120	Kero	9.06	7.26	14.00	3.00	17.00	212	88	78	28.8
Belt Slippage 2.72%												
VARYING LOAD TEST												
65.65	614.5	10	Kero									
66.25	615.5	10	"									
2.92	678.5	10	"									
18.01	678.5	10	"									
36.35	677.5	10	"									
54.59	672.5	10	"									
41.63	656	60	Kero	7.05	5.91	20.00	0.00	20.00	212	106	42	28.8
MAXIMUM LOAD TEST												
69.23	597	60	Kero	8.23	8.41	15.00	3.75	18.75	216	90	64	28.8
Belt Slippage 1.22%												
HALF LOAD TEST												
36.56	679	60	Kero	7.48	4.89	15.00	0.00	15.00	216	107	40	28.8
Belt Slippage 2.47%												

*Taken in discharge line from engine.

Remarks Kerosene used for fuel in these brake tests weighed 6.75 pounds per gallon.

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Drawbar Horse Power Tests

Horse Power Developed	Draw Bar Pull Pounds	Speed Miles per Hour	Crank Shaft Speed R. P. M.	** Slippage of Drive Wheels %	Fuel Consumption			Water Used per Hour Gallons	*Temperature of Cooling Fluid Deg. F.	Temperature of Atmosphere Deg. F.	Average Humidity %	Barometric Pressure Inches Mercury
					ind of Fuel Used	Amount Used per Hour Gallons	Horse Power Hours per Gallon					
RATED LOAD TEST. TEN HOURS												
46.93	7812	2.25	634	5.0	Kero	11.85	3.96	11.37	210.5	81.5	58	28.8
MAXIMUM LOAD TEST (1st 114.8 ft; 2nd 119.8 ft.)												
49.97	8475	2.21	640	7.29	Kero	--- Not Recorded ---			200	83	44	28.9
43.39	5020	3.24	600	3.15	"	"	"		212	83	44	28.9

*Taken in discharge line from engine.

Remarks **For computing slippage, circumference of drive wheels was taken at points of lugs.
Kerosene used for fuel in these drawbar tests weighed 6.74 lbs per gallon.
During the ten hour test and first maximum test the tractor was operated in low gear; during
the second maximum test the tractor was operated in high gear.

Oil Consumption:

During the complete test consisting of about 39 hours running the following oil was used:

For the engine, 12 gallons of Mobiloil "B"

For the transmission, 3 gallons of 600W

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Repairs and Adjustments. Endurance:

Changed all spark plugs once.

At the end of the test the tractor was apparently in good condition. There was no indication of undue wear in any part nor of any weakness which might require early repairs.

Brief Specifications Avery 40-80 H.P. Tractor.

Engine: Four cylinder, horizontal, opposed, valve-in-head.
Bore $7\frac{3}{4}$ ", stroke 8", rated speed 500 to 600 r.p.m.
Chassis: Four wheel. Rated speeds: Low gear 2 mi. per hr;
high gear 3 mi. per hour.
Total weight 22000 lbs.

General Remarks:

In the advertising literature submitted with the application for test of this tractor we find some statements and claims which cannot be directly compared with the results of this test as reported above. It is our opinion that none of these statements or claims are unreasonable or excessive except the following:

"Avery tractors have--- motors---with---patented gasifiers that turn kerosene or distillate into gas and burn it all."

"---Avery---is the most "direct drive" transmission system built."

"Avery---is the---most efficient belt and drawbar transmission system built."

"---a larger percentage of the power developed by the motor in the Avery tractor is delivered to the belt wheel and to the drawbar than in any other tractor built."

"---Avery opposed motors are superior to any tractor motor built."

"The opposed type of motor---is much better adapted for use in tractor work."

"The fuel system used on the Avery tractors from the 8-16 H.P. to the 40-80 H.P. size burns kerosene, distillate or any other low grade fuel more successfully than it has ever been done before."

"---Avery tractors are the simplest tractors built."

"Averys are the best all-around drawbar and belt tractors built."

We do not approve the comparisons with other tractors quoted above for the reason that proof is lacking.

We, the undersigned, certify that above is a true and correct report of official tractor test No. 44.

Claude K. Shedd
Engineer-in-Charge

Oscar W. Sjogren
E. E. Brackett
Fred R. Mohavee
Board of Tractor Test Engineers.