January 1920

# Test 044: Avery 40-80

Tractor Museum
*University of Nebraska-Lincoln*, TractorMuseumArchives@unl.edu

**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 ZB 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: Kind of Fuel | Fuel Consumption: Amount Used per Hour Gallons | Fuel Consumption: Horse Power Hours per Gallon | Water Consumption Gallons per Hour: In Radiator | Water Consumption Gallons per Hour: In Fuel Mixture | Water Consumption Gallons per Hour: Total | Temperature *Cooling Fluid Deg. F. | Temperature of Atmosphere Deg. F. | Humidity % | Barometric Pressure Inches Mercury |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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 | " | | | | | | | | | |
| Aver. | 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 | 7.2 | 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 7¾", 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. Gogren
E. E. Brackett
Fred R. Mohave
Board of Tractor Test Engineers.