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Nebraska Tractor Tests

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Larsen

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January 1920

## Test 067: Twin City 20-35

Nebraska Tractor Test Lab

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

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**UNIVERSITY OF NEBRASKA**  
**AGRICULTURAL ENGINEERING DEPARTMENT**  
**UNIVERSITY FARM, LINCOLN**

Report of Official Tractor Test No. 67

Dates of test October 5 to October 9, 1920.

Name, model and rating of tractor Twin-City 20-35

Serial No. Engine 5110 Serial No. Chassis 3217

Manufacturer Minneapolis Steel & Machinery Co., Minneapolis, Minnesota.

Tractor equipment used Bosch Model DU Magneto; Holley Model 257 Carburetor.

Style and dimensions of wheel lugs Spade 3 1/2" high.

**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												
35.22	905	120	Kero	4.20	8.39	0.12	0.00	0.12	184	78	37	28.85
			Belt	Slippage 1.95%								
VARYING LOAD TEST												
35.40	911	10	Kero.									
35.20	899	"	"									
1.03	908	"	"									
8.64	878	"	"									
18.20	925	"	"									
27.10	919	"	"									
20.90	907	60	Kero	3.56	5.87	0.17	0.00	0.17	178	85	37	28.85
MAXIMUM LOAD TEST												
46.88	905	60	Kero	6.00	7.81	0.93	0.00	0.93	203	83	37	28.85
			Belt	Slippage 1.38%								
HALF LOAD TEST												
18.73	953	60	Kero	3.51	5.34	0.09	0.00	0.09	177	85	37	28.85
			Belt	Slippage 1.04%								

\*Taken in discharge line from engine.

Remarks Kerosene used for fuel in this test weighed 6.80# 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
					Kind of Fuel Used	Amount Used per Hour Gallons	Horse Power Hours per Gallon					
RATED LOAD TEST. TEN HOURS (10 Hr. 1 Min.)												
20.11	2591.91	2.91	977	5.09	Kero	4.42	4.55	0.35	174	75	57	28.85
MAXIMUM LOAD TEST (1st 131.5 ft; 2nd 129.7 ft.)												
33.31	4179	2.99	880	6.3	Kero	--- Not Recorded ---			180	76	37	28.7
34.12	5730	2.23	879	7.6	"	"	"		170	76	37	28.7

\*Taken in discharge line from engine.

Remarks \*\*For computing slippage, the circumference of the drive wheels was taken at points of lugs.

The tractor was operated in high gear for the rated and first maximum tests; in the second maximum the tractor was operated in low gear.

Oil Consumption:

During the complete test consisting of about 32 hours running the following oil was used:

For the engine, 8 1/2 gallons of Mobiloil A

For the transmission, none added gallons of

Report of Official Tractor Test No. 67

Repairs and Adjustments. Endurance:

After about 14 hours of running the hollow heat coil around carburetor was found to leak and was replaced.

During the rated drawbar test the clutch was adjusted once.

At the end of the test the tractor was apparently in good condition, and there were no indications of undue wear.

As the repairs reported above are of only minor importance, it is our opinion that they do not indicate any mechanical defect which might require early repair.

Brief Specifications:

Motor: 4 cylinder, own make, valve-in-head, 16 valves, vertical, Bore  $5\frac{1}{2}$ " and stroke  $6\frac{1}{4}$ ". Rated speed 900 r.p.m. Rated H.P. Belt 35, Drawbar 20.

Chassis: 4 wheel, disc clutch. Rated speeds, low 2.2, high 2.9 miles per hour.

Total weight: 8,100 #.

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 are excessive or unreasonable.

We, the undersigned, certify that above is a true and correct report of official tractor test No. 67.

Fred R. Mohavee.  
Engineer-in-Charge

Oscar W. Jorgensen  
E. E. Brackett.  
C. W. Smith  
Board of Tractor Test Engineers.