

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

January 1920

Test 066: Square Turn 18-35

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Nebraska Tractor Test Lab, "Test 066: Square Turn 18-35" (1920). *Nebraska Tractor Tests*. 685.
<https://digitalcommons.unl.edu/tractormuseumlit/685>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

UNIVERSITY OF NEBRASKA
AGRICULTURAL ENGINEERING DEPARTMENT
UNIVERSITY FARM, LINCOLN

Report of Official Tractor Test No. 66

Dates of test September 27, to October 7, 1920.

Name, model and rating of tractor Square Turn, 18-35

Serial No. Engine K 1733 Serial No. Chassis T 406 A

Manufacturer Square Turn Tractor Co., Norfolk, Nebraska.

Tractor equipment used Dixie Model 46 Mag.; Stromberg Model M Carb.

Style and dimensions of wheel lugs Angles 3/8 x 2 x 2 1/2".

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												
30.35	854	120	Kero.	4.747	6.39	0.74	0.00	0.74	206	84	42	29.1
			Belt slippage 0.41%.									
VARYING LOAD TEST												
30.40	854	10	Kero.									
31.20	844	"	"									
1.24	1020	"	"									
9.10	1012	5 "	"									
16.90	1002	"	"									
26.3	981	5 "	"									
20.24	952	60	Kero.	3.85	5.27	0.594	0.00	0.594	175	77	40	29.2
MAXIMUM LOAD TEST												
32.19	848	60	Kero.	5.345	6.02	0.29	0.00	0.29	205	85	40	29.2
30.69	846	60	Kero.	5.33	5.75	0.00	0.00	0.00	195	83	40	29.2
36.68	851	60	Gasol.	4.98	7.35	0.04	0.00	0.04	198	80	40	29.2
HALF LOAD TEST												
17.44	975	60	Kero.	3.09	5.64	0.127	0.00	0.127	169	81	40	29.2

*Taken in discharge line from engine.

Remarks The kerosene used in these tests weighed 6.78# per gallon.

The gasoline used in these tests weighed 6.20# per gallon.

High compression head was used in all tests except the second maximum test on kerosene.

Report of Official Tractor Test No. 66

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												
19.13	2904	2.47	913	7.41	Kero.	4.897	3.91	0.165	190	75	35	29.5
MAXIMUM LOAD TEST												
23.45	3090	2.85	1000	6.24	Kero.	Not	Recorded		160	73	35	29.0

*Taken in discharge line from engine.

Remarks ** For computing slippage the circumference of the wheel was taken at the points of the lugs.

Oil Consumption:

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

For the engine, 5 gallons of Mobiloil B

For the transmission, 1/2 gallons of Mobiloil C

Report of Official Tractor Test No. 66.

Repairs and Adjustments: Endurance:

See Remarks.*

After 14 hours of running valves were ground, and put on high compression head which is standard equipment.

During the preliminary run to the rated brake test, the motor blew out five spark-plugs.

There were no other repairs or adjustments necessary.

It is our opinion that these repairs are of minor importance and do not indicate mechanical defects so serious as to disqualify the tractor.

Brief Specifications:

Motor: Climax, L head, vertical, 4 cylinder, Bore 5", Stroke 6½". Rated speed 850 r.p.m. Rated H.P. belt 35, drawbar 18.

Chassis: 3 wheel, friction drive. Rated speeds 2 to 3 miles per hour.

Total weight: 7,800#.

General Remarks:

*In the first tractor submitted for test the motor was found defective, and the company was allowed to substitute another tractor.

**During the rated drawbar test one half of track was sprinkled but tractor was hard to control with one wheel on slightly damp soil, so sprinkling was discontinued.

In the advertising literature submitted with 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 except the following:

Plenty of Power, page 18: "In the Square Turn we use the well-known Climax engine. Because of its superior design ---- it has earned the reputation of being practically 'Trouble-proof'.

page 19: "First you have -- -, but turning three 14-inch furrows 10 inches deep under practical all soil conditions."

Page 22- Transmissions: "It will always transmit the power of the motor without loss and without slippage."

Page 23- Soft going. See remarks above.**

We, the undersigned, certify that above is a true and correct report of official tractor test No. 66.

Fred R. Mohave
Engineer-in-Charge

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