January 1920

Test 012: Huber Light Four 12-25

Nebraska Tractor Test Lab
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AGRICULTURAL ENGINEERING DEPARTMENT
UNIVERSITY FARM, LINCOLN

Report of Official Tractor Test No. 12

Dates of test May 18 to June 3, 1920

Name, model and rating of tractor Huber Light Four 12-25 (See Note 1)

Serial No. Engine 39654 Serial No. Chassis

Manufacturer Huber Mfg. Co., Marion, OH

Tractor equipment used Kingston Magneto; Kingston Model "L" Carburetor

Style and dimensions of wheel lugs Spade 3-3/4" x 3½" long

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 (See Note 2)												
	25.28	1003	120	Kero	4.16	6.08	.125	2.50	2.625	179.5	86	73	28.7
	Belt slippage 2.01%												
	VARYING LOAD TEST (See Note 3)												
	25.43	1009	10	Kero									
	25.36	998.5	10	"									
	1.99	1286	10	"									
	8.52	1055.5	10	"									
	13.99	1058	10	"									
	19.02	1007.5	10	"									
Aver.	16.08	1069	60	"	2.99	5.38	0.20	1.00	1.20	172	89	67	28.7
	MAXIMUM LOAD TEST (See Note 4)												
	25.70	1005	60	Kero	4.45	5.77	0.15	2.62	2.77	162	71	95	28.7
	Belt slippage 2.23%												
	HALF LOAD TEST (See Note 5)												
	12.74	998	60	Kero	1.745	7.30	0.07	none	0.07	163	71	95	28.7
	Belt slippage 1.54%												

*Taken in discharge line from engine.

Remarks The fuel used in these brake tests weighed 6.74 lbs per gallon. Note 1. This model of tractor, as sold in Nebr., is equipped with a needle valve adjustment on water feed to fuel mixture. Note 2. During the rated load test it was necessary to change adjustment of water feed to fuel mixture once. Note 3. In the varying load test it was necessary to change governor adjustment with changes in load. To hold the governor valve open enough to get rated HP, the governor spring was compressed so that it had very little control. Note 4. It was neeessary to readjust water feed to carburetor three times during the maximum test. Note 5. It was necessary to readjust the governor for the ½ load test.

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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.	XX 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												
15.06	1976	2.86	989	7.19	Kero	3.443	4.37	1.109	181	68	39	28.9
MAXIMUM LOAD TEST (1st 156.2' 2nd 165.9')												
16.70	2505	2.50	950	11.60	Kero	--- Not recorded ---			155	60	60	28.9

*Taken in discharge line from engine.

Remarks - **For computing slippage, the circumference of the drive wheels was taken at points of lugs. The kerosene used in the ten hour drawbar test weighed 6.80 lbs per gallon. The 10-hour test and the first maximum test were made with the tractor in low gear. The second maximum test was made with the tractor in high gear.

Oil Consumption:

During the complete test consisting of about 45 hours running the following oil was used:

For the engine, 8¼ gallons of Mobiloil "B"

For the transmission, ____ gallons of None added

Miscellaneous Tests: None.

Repairs and Adjustments. Endurance:

The magneto timing was advanced twice and retarded onceby the Huber operator. After 12 hours run the valves were all inspected and the valves ground on the third cylinder. After about 15 hours additional run the Huber operator re-ground all valves and adjusted tappet rods. One new priming cup and priming cup plug were put in to replace parts broken. A new carburetor was put on because the one which came with the tractor was thought by the Huber operator to be defective. This change made no difference in the tractor performance. The fan belt was replaced. A new water tank was put on to replace one which leaked. Pin in hand throttle butterfly valve sheared off and was replaced.

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.

It is our opinion that repairs and adjustments as reported above do not indicate any serious mechanical defect in the tractor.

Brief Specifications Huber Light Four 12-25 H.P. Tractor.

Engine: Four cylinder, vertical, L-head. Bore 4½", stroke 5-3/4". Rated speed: 1000 r.p.m.

Chassis: Four wheel. Rated speeds; Low gear, 2.70 mi. per hr., high gear 4.15 mi. per hr.

Total weight 5550 lbs.

General Remarks:

After the usual 12-hour limbering-up run when the tractor was put under test the manufacturer's representative was dissatisfied with the performance of the tractor and thought that the engine might still be stiff. Therefore the tractor was given an additional 8-hour limbering up run.

The governor on this tractor, if adjusted to give rated speed at rated load, allowed excessive engine speed at light loads. If the governor was adjusted to give rated speed at lighter loads then the tractor would not develop its rated horse power without changing the governor adjustment. It is our opinion that the tractor should not be disqualified because of this defect.

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. In our opinion none of these statements or claims are unreasonable or excessive except the following quoted from their catalog:

"The Huber is positively the last word in economical transmission of power".

"----practically every ounce of power generated in the motor is delivered direct to the load on either belt or traction."

We, the undersigned, certify that above is a true and correct report of official tractor test No. 12.

Claude K. Shedd
Engineer-in-Charge

Oscar W. Sjogren
E.E. Brackett
Giles W. Haney
Board of Tractor Test Engineers