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January 1920

Test 016: Heider Model "C" 12-20

Tractor Museum

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UNIVERSITY OF NEBRASKA
 AGRICULTURAL ENGINEERING DEPARTMENT
 UNIVERSITY FARM, LINCOLN

Report of Official Tractor Test No. 16

Dates of test May 23. to June 8. 1920.

Name, model and rating of tractor Heider Model "C" 12-20

Serial No. Engine 50572 Serial No. Chassis C-5024

Manufacturer Rock Island Plow Co., Rock Island, Ill.

Tractor equipment used Dixie Model 46 Mag; Kingston Model L3 Carb.

Style and dimensions of wheel lugs Cone 3" 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												
20.18	902	120	Kero	2.96	6.51	0.21	0.08	0.19	199	77.5	40	28.8
			Belt Slippage	1.19%								
VARYING LOAD TEST												
20.13	910	10	Kero									
21.22	845	10	"									
1.38	885	10	"									
5.00	884.5	10	"									
9.855	873.5	10	"									
14.58	871.5	10	"									
12.03	885	60	Kero	2.45	4.93	0.35	0.06	0.41	179	79.	36	28.8
MAXIMUM LOAD TEST												
24.24	902	60	Kero	4.335	5.59	0.00	0.44	0.44	173	68	60	28.9
			Belt Slippage	0.57%								
HALF LOAD TEST												
10.10	897	60	Kero	2.38	4.24	0.10	0.00	0.10	150	67	60	28.9
			Belt Slippage	0.67%								

*Taken in discharge line from engine.

Remarks Kerosene used in this test weighed 6.74 lbs per gallon.
In the varying load test it was necessary to shut off the water feed to fuel mixture for 0, 1, 2 and 3 loads.
In the varying load test the governor hunted on 1, 2, and 3 loads. This may have been due to a loose set screw on the governor butterfly valve which was discovered after this test had been completed.

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 %	Baro. Pres. In. Mer.
					Ind of Fuel Used	Amount Used per Hour Gallons	Horse Power Hours per Gallon					
RATED LOAD TEST. TEN HOURS												
13.20	2135	2.32	906	15.6	Kero	3.04	4.35	0.95	199.5	86	65	28.
MAXIMUM LOAD TEST (1st run 143.5 ft; 2nd 140.8 ft.)												
13.43	2223	2.26	900	13.0	Kero	---Not	Recorded	----	160	68	52	28.
13.10	2180	2.25	860	14.6	"	"	"	"	180	70	52	28.

*Taken in discharge line from engine.

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

Oil Consumption:

During the complete test consisting of about 36 hours running the following oil was used:

For the engine, 2 1/2 gallons of Mobiloil BB

For the transmission, none added. gallons of _____

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 %	Baro. Pre. In. Mer.
					Ind of Fuel Used	Amount Used per Hour Gallons	Horse Power Hours per Gallon					
RATED LOAD TEST. TEN HOURS												
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Remarks ** For computing slippage, the circumference of the drive wheels was taken at points of lugs.

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Repairs and Adjustments. Endurance.

Set screw in governor butterfly valve worked loose and was tightened.

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

Brief Specifications Heider Model "C" 12-20 H.P. Tractor.

Engine: Four cylinder, vertical, L-head. Bore $4\frac{1}{2}$ " , stroke $6\frac{1}{4}$ " , rated speed 900 r.p.m.

Chassis: Four wheel. Rated speeds: 2.25, 2.5, 2.75, 3, 3.25, 3.5, 3.75 and 4 mi. per Hr.

Total Weight: 6200 lbs.

General Remarks:

In the advertising literature submitted with the application for test of this tractor we find the following statement regarding horse power capacity: "---- and it has, besides, plenty of reserve power for emergencies." We do not approve this statement for the reason that it is indefinite and therefore likely to be misleading.

We also find in this advertising literature 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 quoted from their catalog:

Page 3. "The Heider tractor ---- is equally efficient, equally economical, on either light or heavy work."

"It is a real all-purpose tractor ----. The man who owns one needs no other power."

Page 5. "Under all conditions and in all competitive tests it has proved its superiority beyond all question."

Page 9. "And when burning kerosene, the Heider burns it all."

Page 23. "Both of the Heider are equipped with the famous four cylinder, heavy duty Waukesha motor, which has proven to be the best power plant for tractor service."

We, the undersigned, certify that above is a true and correct report of official tractor test No. 16.

Claude K. Shedd
Engineer-in-Charge

Oscar W. Jorgensen
E. E. Brackett
Julius W. Haney
Board of Tractor Test Engineers.