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January 1923

Test 100: Bear Model B 25-35

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA AGRICULTURAL ENGINEERING DEPARTMENT

AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 100

Dates of test: October 4th to October 18th, 1923.

Name, model and rating of tractor: Bear 25-35 Model "B"

Serial No. Engine: Stearns A R 424

Serial No. Chassis: 10048

Manufacturer: Bear Tractors Incorporated, New York City.

Tractor equipment used: Bosch AT4-16V2 Magneto, Schebler A Carburetor.

Style and dimensions of wheel lugs: Bent Angle Cleats 1-1/2" high.

BRAKE HORSE POWER TESTS

Fuel Consumption				Water Consump.			Temp.		Humidity %	Height of Barometer Inches
H. P. : Crank	: Time	: Kind	: Gals. : H.P.	: Cool-	: In	: Total	: Deg. F.	: *		
: Shaft	: of	: of	: @	: Hrs. @	: ing	: Fuel	: Cool-	: Air		
: Speed	: Test	: of	: Hour	: Gal.			: ing			
: R.P.M.	: Min.	: Fuel					: Fluid			

RATED LOAD TEST

35.46:1191 : 120 : Gaso : 4.152 : 8.54 : 0.00 : 0.00 : 0.00 : 182 : 59 : 42 : 29.06
Belt Slippage 0.49%

***VARYING LOAD TEST

35.31:1186	: 10	: Gaso	:	:	:	:	:	:	:	:
35.84:1188.5	: 10	: "	:	:	:	:	:	:	:	:
1.34:1299	: 10	: "	:	:	:	:	:	:	:	:
9.45:1261.5	: 10	: "	:	Average Belt Slippage 0.28%				:	:	:
18.41:1234.5	: 10	: "	:	:	:	:	:	:	:	:
27.13:1213	: 10	: "	:	:	:	:	:	:	:	:
21.72:1230	: 60	: Gaso	: 3.308	: 6.56	: 0.00	: 0.00	: 0.00	: 173	: 60	: 92 : 28.63

MAXIMUM LOAD TEST

49.99:1195 : 60 : Gaso : 7.093 : 7.05 : 0.00 : 0.00 : 0.00 : 178 : 50 : 31 : 29.08
Belt Slippage 0.67%

HALF LOAD TEST

18.68:1252 : 60 : Gaso : 3.071 : 6.08 : 0.00 : 0.00 : 0.00 : 181 : 63 : 92 : 28.60
Belt Slippage 0.35%

* Taken in discharge line from engine.

***The last line is an average for the hour.

REMARKS: The gasoline used as fuel in this test weighed 6.24 pounds per gallon.

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DRAWBAR HORSE POWER TESTS

H. P. Dev.	Draw Bar	Speed Miles Per Hour	Crank Shaft Speed R.P.M.	Slip On Drive Wheels %	Fuel Consumption			Water Used Per Hour Gals.	Temp. Deg. F.		Average Humidity %	Height of Barometer In Inches
					Kind	Amt.	H.P.		Cooling	Air		
					Used	Per	Hrs.		Fluid			
						Hour	Per		*			

RATED LOAD TEST 8 HOURS - 10 MINUTES **

25.11	2758	3.415	1208	2.79	Gasol	4.086	6.15	0.00	165	69	50	28.38
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MAXIMUM LOAD TEST

27.46	5545	1.86	1297	20.74	Gasol	-- NOT RECORDED --			160	56	97	28.47
35.68	4323	3.10	1212	11.23	"	"	"	"	160	56	97	28.47
33.36	2692	4.65	996	6.04	"	"	"	"	160	56	97	28.47

REMARKS: The first maximum load test was run in low gear. The second maximum load and rated load tests were run in second gear. The third maximum load test was run in high gear.

* Taken in discharge line from engine.

** The tractor was withdrawn from the test by the manufacturer's representative after the rated load drawbar test had continued 8 hours and 10 minutes. All other tests had been completed and there was no breakage requiring that the test be stopped nor was there any indication of impending failure of the tractor. Under date of November 1, 1923 application was made for the test of a second tractor which arrived December 4, 1923, too late for test this season and the manufacturer has requested submission of a report on the test already run. The second tractor is being held in our Tractor Testing plant pending test.

*** Due to interruption of the test, this fuel record may be slightly inaccurate.

OIL CONSUMPTION:

During the complete test consisting of about 50 hours running the following oil was used:
For the engine, 17 gallons of Mobiloil "B". Crank case drained and filled twice. 5 gallons were added.
For the transmission, none.

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REPAIRS AND ADJUSTMENTS

- October 4. Before the 12 hour limber-up run all push rods were adjusted.
October 8. After the limber-up run all push rods were again adjusted: also replaced both sets of pressed steel track rollers with rollers of cast steel. One of the original rollers had broken during the limber-up run. Replaced two broken track lugs with new ones.
October 10. Piston #2 showed a defect and was replaced by a new one. A projection on cylinder block which was causing connecting rod #2 to strike, was cut off. Washed crank case.
October 11. One fan shaft ball bearing and fan drive silent chain broke and were replaced by new ones.

Although not required by breakages or defects, the following additional changes and adjustments were made at the request of the manufacturer's representative in an unsuccessful attempt to increase the engine power output:

- October 8. Cleaned carburetor - cleaned, dressed and adjusted magneto points - adjusted spark plug points.
October 10. Put on new carburetor of the same make - put on new cylinder head complete with valves and valve springs.
October 11. Put in all new spark plugs.
October 12. Changed valve timing 4°.

All of the changes adjustments and repairs listed above were made before any of the data for this report were recorded.

BRIEF SPECIFICATIONS

Bear 25-35 Model "B"

Motor: Stearns, 4 cylinder, vertical, valve-in-head. Bore 4-3/4", Stroke - 6-1/2". Rated speed 1190 r.p.m. Simplex governor.
Chassis: Track type, disc clutch. Rated speeds: 1st - 2.17 miles per hour, 2nd - 3.50 miles per hour, 3rd - 5.67 miles per hour.
Total weight: 6400 lbs.

REMARKS

In the revised 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. 100.

E. E. Brackett
Engineer in Charge

Oscar W. Sjogren

C. W. Smith

Fred R. Nohavec

Board of Tractor Test Engineers