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January 1924

Test 101: Bear Model B 25-35

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA AGRICULTURAL ENGINEERING DEPARTMENT

AGRICULTURAL COLLEGE, LINCOLN

Report of

Copy of/Official Tractor Test No. 101

Dates of test: April 1st to April 8th, 1924.

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

Serial No. Engine: 719

Serial No. Chassis 10143

Manufacturer: Bear Tractors Inc., New York City

Tractor equipment used: Bosch AT41CV2 - No. 3453161 Magneto; Wheeler Schebler Carburetor Model A - 1-3/4"

Style and dimensions of wheel lugs: Angle 1-1/2 inches high, bent V shape

BRAKE HORSE POWER TESTS

H. P.		Fuel Consumption		Water Consumption		Temperature:		Humidity	Height of Barometer
Dev.	Shaft	of	Kind	Gals.	H. P.	Cool-	In		
: Speed	: Test	: of	: @	: Hrs.	: ing	: Fuel	: Cool-	: Air	: Height of
: R.P.M.	: Min.	: Fuel	: Hour	: Gal.	: C	: Gal.	: ing	: Fluid	: Barometer
:	:	:	:	:	:	:	:	:	: Inches

Rated Load Test

36.53:	1293	:	120:	Gas:	4.533	:	8.06	:	0.179	:	0.00	:	0.179	:	180	:	75	:	50	:	28.72
Belt Slippage 0.84%																					

VARYING LOAD TEST ***

37.50:	1294.5:	10	:	Gas	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
38.30:	1286.0:	10	:	"	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
1.72:	1399.0:	10	:	"	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
10.10:	1369.5:	10	:	"	:	Average Belt Slippage 0.66%										:	:	:	:	:	:	:	:	:
19.63:	1333.0:	10	:	"	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
28.98:	1313.5:	10	:	"	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
23.16:	1333.0:	60	:	"	:	3.587	:	6.46	:	0.00	:	0.00	:	0.00	:	171	:	76	:	50	:			

MAXIMUM LOAD TEST

55.56:	1295	:	60:	Gas:	8.426	:	6.59	:	0.00	:	0.00	:	0.00	:	180	:	68	:	80	:	28.77
Belt Slippage 1.08%																					

HALF LOAD TEST

18.86:	1299	:	60	:	Gas:	3.381	:	5.58	:	0.00	:	0.00	:	0.00	:	182	:	76	:	80	:
Belt Slippage 0.62%																					

* 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 6.20 pounds per gallon.

Copy of Report of Official Tractor Test No. 101

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	Temp. Deg. F.		Average Humidity %	Height of Barometer In Inches
						Kind	Amt.	H.P.		Cooling	Air		
						Used	Per Hour	Per Hour		*			
						Gals.	Gal.	Gals.					

RATED LOAD TEST. TEN HOURS

27.79	2835	3.68	1285	2.91	Gasol	4.896	5.49	.0635	165	61	49	28.44
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MAXIMUM LOAD TEST

31.55	6805	1.74	1292	27.03	Gasol	---	NOT RECORDED	---	178	80	40	28.64
44.64	4853	3.44	1277	9.13	"	"	"	"	192	76	40	28.64
41.28	2708	5.72	1224	3.22	"	"	"	"	180	75	40	28.64

* Taken in discharge line from engine.

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

The distance advanced by the tractor without load on level earth for one complete revolution of the tracks, was used as a basis for computing track slippage.

OIL CONSUMPTION:

During the complete test consisting of about 40 hours running the following oil was used:
 For the engine, 9-1/2 gallons of Mobiloil "B" of which 6 gallons were used to fill crank case. 3-1/2 gallons were added.
 For the transmission, 600 W. None added.

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REPAIRS AND ADJUSTMENTS

- April 3. Before any official data were taken it was found that the governor would not control the engine from rated load to no load with the carburetor set for best fuel economy. To correct this, the slot in the governor plunger was lengthened $3/32$ inch, this change being made standard for Nebraska.
- April 7. During the maximum drawbar test, the end was found broken from the grounded point of spark plug in cylinder number 4. The points were readjusted, plug replaced and operated satisfactorily during the remaining 12 hours of the test.

At the end of the test the tractor was in good running order and there were no indications of undue wear nor of any weakness, which might require early repair.

BRIEF SPECIFICATIONS

Bear Model "B" 25-35

Motor: Stearns, 4 cylinder, vertical, valve-in-head. Bore $4-3/4$ ", stroke - $6-1/2$ ". Rated speed 1290 r.p.m.
Governor: Duplex (Simplex Governor Co.)
Air Cleaner: Pomona (Vortex Mfg. Co.)
Pistons: Dow Metal (magnesium alloy)
Connecting Rods: Lynite (aluminum alloy)
Chassis: Track type, disc clutch. Rated speeds as advertised: Low - 2.35 miles per hour, 2nd - 3.80 miles per hour, high - 6.15 miles per hour.

Total Weight - 7000 lbs.

REMARKS

In the advertising literature submitted with the specifications and application for test of this tractor, we find some claims and statements 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: Exhibit I, page 19, column 1, first paragraph, second sentence, "Bear tractors are operating 10 hours per day under full drawbar load (which is greater than rated load of tractor) on 2.8 gallons of gasoline per hour."

We, the undersigned, certify that above is a true and correct report of official tractor test No. 101.

E. E. Brackett
Engineer in Charge

Oscar W. Sjogren

C. W. Smith

Fred R. Nohavec

Board of Tractor Test Engineers