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January 1939

## Test 320: Caterpillar Model R-2 (Gasoline)

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT  
AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 320

Dates of test: July 17 to August 3, 1939.  
Name and model of tractor: CATERPILLAR R-2 (Gasoline)  
Manufacturer: Caterpillar Tractor Company, Peoria, Illinois.  
Manufacturer's rating: NOT RATED.

B E L T H O R S E P O W E R T E S T S

H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hr.	H. P. hr. per gal.	Lb. per H. P. hr.		Cool- ing med.	Air	
TEST B - 100% MAXIMUM LOAD - TWO HOURS								
29.31	1525	3.559	8.24	0.752	0.000	182	86	28.925
TEST C - OPERATING MAXIMUM LOAD - ONE HOUR								
28.95	1525	3.359	8.62	0.718	0.000	195	95	28.875
*TEST D - ONE HOUR								
26.49	1526	3.181	8.33	0.743	0.000	185	87	28.865
TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)								
26.49	1530	3.170	8.36	0.741	--	184	86	--
1.28	1619	1.677	0.76	8.109	--	161	87	--
13.94	1592	2.447	5.70	1.087	--	169	87	--
27.72	1439	3.092	8.97	0.690	--	187	86	--
7.01	1608	2.040	3.44	1.802	--	165	85	--
20.52	1569	2.927	7.01	0.883	--	172	83	--
16.16	1560	2.559	6.31	0.980	0.000	173	86	28.875

D R A W B A R H O R S E P O W E R T E S T S

H. P.	Draw	Speed	Crank	Slip	Fuel Consumption			Water	Temp.		Barometer
	bar	miles	shaft	on		H. P.	Lb.	used	Deg. F.		
	pull	per	speed	drive	Gal.	hr.	per	gal.	Cool-	Air	Inches of
	pounds	hr.	R.P.M.	wheels	per	per	H.P.	per	ing		Mercury
				%	hr.	gal.	hr.	hr.	med.		
TEST F - 100% MAXIMUM LOAD - Second - GEAR											
23.46	3655	2.41	1523	3.23	-----Not Recorded-----				180	90	28.810
TEST G - OPERATING MAXIMUM LOAD											
23.84	5676	1.58	1525	6.59	-----Not Recorded-----				161	72	28.930
22.70	3544	2.40	1525	3.51	-----" "-----				186	89	28.870
22.49	2891	2.92	1524	2.31	-----" "-----				190	93	28.840
22.23	2401	3.47	1526	2.87	-----" "-----				185	87	28.850
20.22	1506	5.04	1523	1.34	-----" "-----				181	86	28.865
*TEST H - TEN HOURS - Second - GEAR											
18.86	2922	2.42	1525	2.76	2.971	6.35	0.975	0.033	182	89	28.775

\*Formerly called RATED LOAD; see REMARKS 4, page 3.

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FUEL, OIL, AND TIME

Fuel Gasoline Octane 56 Weight per gallon 6.19 pounds  
Oil: S.A.E. No. 30 To motor 3.041 gal. Drained from motor 2.897 gal.  
Total time motor was operated 50 hours

BRIEF SPECIFICATIONS

Advertised speeds, miles per hour: First 1.7 Second 2.5  
Third 3.0 Fourth 3.6 Fifth 5.1 Reverse 2.1  
Belt pulley: Diameter 12" Face 7 1/2" R.P.M. 850  
Belt speed 2670 f.p.m.  
Clutch: Make Own Type Dry disc Operated by hand  
Seat Upholstered  
Total weight as tested (with operator) 6835 pounds  
MOTOR: Make Own Serial No. 6J203 Type 4 cylinder, vertical  
Head I Mounting Crankshaft lengthwise Lubrication Pressure  
Bore and stroke 3 3/4" x 5" Rated R.P.M. 1525  
Port diameter valves: Inlet 1 5/8" Exhaust 1 7/16"  
Magneto: Make Eisemann Model CM-4  
Carburetor: Make Zenith Model K-5A Size 1 1/4"  
Governor: Make Own Type Variable-speed, centrifugal  
Air cleaner: Make Donaldson Type Oil-washed, wire screen filter and  
collector pre-cleaner  
Oil filter: None  
Cooling Medium temperature control: Fulton thermostat  
CHASSIS: Type Tracklayer Serial No. 6J203 Drive Enclosed gear  
Tread width: 50" Measured length of track 15.4158'  
Cleats: Type Integral with shoes No. per track 30  
Size 1 7/8" high x 12" long

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REPAIRS AND ADJUSTMENTS

No repairs or adjustments.

REMARKS

1. All results shown on page 1 of this report were determined from observed data and without allowances, additions, or deductions. Tests B and F were made with carburetor set for 100% maximum belt horsepower and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, D, E, G, and H were made with an operating setting of the carburetor (selected by the manufacturer) of 99.7% of maximum belt horsepower.
2. Observed maximum horsepower (tests F & B)

DRAWBAR	BELT
23.46	29.31
3. Sea level (calculated) maximum horsepower  
(Based on 60° F. and 29.92" Hg.)

25.06	31.07
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4. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly A.S.A.E. and S.A.E. ratings)

18.80	26.41
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We, the undersigned, certify that the above is a true and correct report of official tractor test No. 320.

Carlton L. Zink  
Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut  
Board of Tractor Test Engineers