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January 1949

Test 431: Case Vac (Gasoline)

Nebraska Tractor Test Lab

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Department of Agricultural Engineering

Dates of test: October 17 to October 26, 1949

Manufacturer: J. I. CASE COMPANY, Racine, Wisconsin

Manufacturer's rating: Not rated

The Experiment Station
University of Nebraska College of Agriculture
W. V. Lambert, Director, Lincoln, Nebraska

NEBRASKA TRACTOR TEST NO. 431

CASE VAC GASOLINE

BELT HORSE POWER TESTS

H. P.	Crank shaft speed R. P. M.	Fuel Consumption			Water used Gal. per hour	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hour	H. P. hr. per gal.	Lb. per H. P. hour		Cooling med.	Air	
TEST B—100% MAXIMUM LOAD—TWO HOURS								
21.33	1425	2.063	10.34	0.592	0.01	159	69	28.865
TEST C—OPERATING MAXIMUM LOAD—ONE HOUR								
20.06	1425	1.867	10.74	0.569	0.01	154	70	28.865
*TEST D—ONE HOUR								
19.04	1425	1.787	10.65	0.574	0.01	154	72	28.870
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
19.08	1424	1.785	10.69	0.572	- - -	154	74	- - - -
1.02	1586	0.804	1.27	4.824	- - -	137	73	- - - -
10.16	1519	1.300	7.82	0.782	- - -	145	73	- - - -
19.49	1375	1.805	10.80	0.566	----	156	73	- - - -
5.21	1553	1.015	5.13	1.192	- - -	140	74	- - - -
14.62	1462	1.555	9.40	0.650	- - -	152	77	- - - -
11.60	1486	1.378	8.42	0.726	0.01	147	74	28.885

DRAWBAR HORSE POWER TESTS

H. P.	Draw bar pull Lbs.	Speed miles per hr.	Crank shaft speed R. P. M.	Slip of drive wheels %	Fuel Consumption			Water used Gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
					Gal. per hour	Hp.-hr. per Gal.	Lb. per Hp.-hr.		Cool- ing med.	Air	
TEST F—100% MAXIMUM LOAD— 3rd GEAR											
19.10	1828	3.92	1426	5.06	Not Recorded				162	69	28.960
TEST G—OPERATING MAXIMUM LOAD											
15.18	2768	2.06	1427	4.07	Not Recorded				146	55	29.040
18.01	2279	2.96	1424	6.75	" "				157	65	28.960
18.01	1719	3.93	1425	4.72	" "				157	65	28.955
14.93	665	8.42	1421	2.45	" "				146	63	29.055
*TEST H—TEN HOURS— 3rd GEAR											
15.00	1424	3.95	1425	4.20	1.663	9.02	0.678	0.00	142	44	29.314
TEST J—OPERATING MAXIMUM LOAD— 3rd GEAR											
16.00	1681	3.57	1425	4.84	Not Recorded				150	65	29.090

TIRES, WHEELS and WEIGHT

Tests F, G & H			Test J	
Rear Wheel: (each)	Type and Weight	Cast Iron Spoke	Cast Iron Spoke	
	Liquid Ballast	275 lb	None	
	Added Cast Iron	420 lb	None	
Rear Tires:	No., Size and Ply	2 10-28 4 ply	2 10-28 4 ply	
	Type of Tread	Champion Ground Grip	Sure-Grip	
	Make	Firestone	Goodyear	
	Air Pressure	14 lb	12 lb	
Front Wheel: (each)	Type and Weight	Cast Iron	Cast Iron	
	Liquid Ballast	None	None	
	Added Cast Iron	66 lb	None	
Front Tires:	No., Size and Ply	2 5.50-15 4 ply	2 5.50-15 4 ply	
	Type of Tread	Guide Grip	Guide Grip	
	Make	Firestone	Firestone	
	Air Pressure	28 lb	28 lb	
Height of Drawbar		12 1/2 inches	13 1/2 inches	
Static Weight: Rear End		3420 lb	2030 lb	
	Front End	1100 lb	968 lb	
Total Weight as Tested (With operator)		4695 lb	3173 lb	

* Formerly called RATED LOAD, see horsepower summary.

FUEL, OIL and TIME Fuel: Gasoline; octane 74 (octane rating taken from oil company's typical inspection data); weight per gallon 6.116 lb. Oil: SAE 20; to motor 0.987 gal; drained from motor 0.984 gal. Total time motor was operated 43 hours.

SPECIFICATIONS Type tricycle; Serial No. VAC 5258733; Drive enclosed gear. Tread Width: Rear 44" to 88"; Front 5 1/2" and 10 1/2". Wheel Base 83". Hydraulic Lift Control yes. Advertised speeds, mph: First 2.32; Second 3.08; Third 4.00; Fourth 8.40; Reverse 3.20. Belt Pulley: Diam 10 1/4"; Face 6"; RPM 969; Belt Speed 2600 fpm. Clutch: Make Atwood Vacuum; Type single dry plate; Operated by foot pedal. Seat pressed steel. Brakes: Make Auto Specialties; Type disc; Location differential; Gear Reduction (brake drum to rear wheel) 5.077:1; Operated by foot pedals; Locked by latch on tractor platform; Equalization none, brakes may be locked together.

ENGINE Make own; Serial No. 72D073112; Type 4 cylinder vertical; Head I; Mounting crankshaft lengthwise; Lubrication pressure; Bore and Stroke 3 1/4" x 3 3/4"; Rated RPM 1425; Compression Ratio 5.99:1. Port Diameter Valves: Inlet 1 3/16"; Exhaust 1 3/32". Governor: Make Novi; Type centrifugal, variable speed. Carburetor: Make Marvel-Schebler; Model TSX-114; Size 7/8". Starter Auto-Lite. Generator Auto-Lite. Distributor and Coil Auto-Lite. Battery Exide. Air Cleaner: Make Vortex; Type oil washed wire screen. Oil Filter: Make Duo-Flow Michiana; Type replaceable unit. Cooling medium temperature control: Thermostat.

REPAIRS AND ADJUSTMENTS During Test "A" the belt pulley was found defective and was replaced with a new one.

REMARKS All test results 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, H and J were made with an operating setting of the carburetor (selected by the manufacturer) of 94.1% of maximum belt horsepower.

HORSEPOWER SUMMARY

	Draw- bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	19.90	22.30
2. Observed maximum horsepower (tests F & B)	19.10	21.33
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	14.93	18.96

We, the undersigned, certify that this is a true and correct report of official tractor test No. 431.

L. F. Larsen
Engineer in Charge

C. W. Smith
F. D. Yung
L. W. Hurlbut
Board of Tractor
Test Engineers