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Test 432: Universal Jeep Model CJ-3A

Nebraska Tractor Test Lab

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Department of Agricultural Engineering

Dates of test: October 25, to November 2, 1949

Manufacturer: WILLYS-OVERLAND MOTORS, INC. TOLEDO, OHIO

Manufacturer's rating: Not Rated.

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

NEBRASKA TRACTOR TEST NO. 432

UNIVERSAL JEEP CJ-3A

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 and TEST C—100% MAXIMUM LOAD—TWO HOURS								
28.43	1998	3.678	7.73	0.791	0.00	195	74	28.940
*TEST D—ONE HOUR								
25.46	2003	2.582	9.86	0.620	0.00	195	69	28.940
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
25.51	2001	2.600	9.81	0.623	- - -	190	67	-- ---
2.12	2251	1.187	1.79	3.425	- - -	149	67	-- ---
13.79	2046	1.844	7.48	0.818	- - -	164	66	-- ---
25.40	1741	3.071	8.27	0.739	- - -	179	64	-- ---
7.10	2216	1.472	4.82	1.268	- - -	155	64	-- ---
20.03	2099	2.227	8.99	0.680	- - -	174	64	-- ---
15.66	2059	2.067	7.58	0.807	0.00	168	65	28.955

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 and TEST G—100% MAXIMUM LOAD—											
24.32	2148	4.25	2002	5.46	Not Recorded				195	73	28.950
25.71	1220	7.90	2002	2.44	" "				190	70	28.950
25.94	909	10.70	2003	2.02	" "				185	70	28.950
25.50	775	12.34	2001	1.77	" "				176	48	28.800
48	454	19.39	1990	0.89	" "				176	48	28.810
*TEST H—TEN HOURS— 1st GEAR											
19.15	1676	4.28	2000	4.50	2.209	8.67	0.705	0.01	179	60	28.844
TEST J—OPERATING MAXIMUM LOAD— 1st GEAR											
21.40	2145	3.74	1995	16.80	Not Recorded				178	62	28.700

TIRES, WHEELS and WEIGHT

		Tests F, G & H		Test J
Rear Wheel: Type and Weight (each)	Liquid Ballast	Pressed Steel	Pressed Steel	
	Added Cast Iron	None	None	
		None	None	
Rear Tires: No., Size and Ply		2 7.00-15 4 ply	2 7.00-15 4 ply	
	Type of Tread	All Service	All Service	
	Make	Goodyear	Goodyear	
Front Wheel: Type and Weight (each)	Air Pressure	22 lb	20 lb	
		Pressed Steel	Pressed Steel	
	Liquid Ballast	None	None	
Front Tires: No., Size and Ply	Added Cast Iron	359 lb **	None	
		2 7.00-15 4 ply	2 7.00-15 4 ply	
	Type of Tread	All Service	All Service	
Height of Drawbar	Make	Goodyear	Goodyear	
	Air Pressure	22 lb	20 lb	
		13 1/2 inches	13 inches	
Static Weight: Rear End		1406 lb	1406 lb	
	Front End	1956 lb	1238 lb	
Total Weight as Tested (With operator)		3537 lb	2819 lb	

* Formerly called RATED LOAD, see horsepower summary.

** Weight added to front of frame.

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 20-20-W; to motor 0.965 gal; drained from motor 0.591 gal. Total time motor was operated 37 hours.

SPECIFICATIONS Type standard; Serial No. 108196; Drive enclosed gear, 4 wheel drive. Tread Width: Rear 48 1/4"; Front 48 1/4". Wheel Base 80 3/32". Hydraulic Lift Control yes. Advertised speeds, mph: First 4.6; Second 8.2; Third 11.2; Fourth 12.9; Fifth 20.2; Sixth 31.3; Reverse 3.4 and 8.2. Belt Pulley: Diam 8"; Face 8"; RPM 1714; Belt Speed 3599 fpm. Clutch: Make Atwood; Type dry, single plate; Operated by foot pedal. Seat upholstered automotive type seat. Brakes: Make Bendix; Type hydraulic, internal expanding; Location in each of 4 wheels; Gear Reduction (brake drum to wheels) 1 to 1: Operated by foot pedals; Locked by foot pedal cannot be locked, emergency brake can be locked by handle under dash. Equalization yes.

ENGINE Make own; Serial No. J226916; Type 4 cylinder vertical; Head L; Mounting crankshaft lengthwise; Lubrication pressure; Bore and Stroke 3 1/8" x 4 3/8"; Rated RPM 2000; Compression Ratio 6.48:1. Port Diameter Valves: Inlet 1.343"; Exhaust 1.281". Governor: Make Novi; Type centrifugal, variable speed. Carburetor: Make Carter; Model W-0-6365-A; Size 1". Starter Auto-Lite. Generator Auto-Lite. Distributor and Coil Auto-Lite. Battery Auto-Lite. Air Cleaner: Make Donaldson; Type oil washed wire screen. Oil Filter: Make Purolator; Type replaceable paper element. Cooling medium temperature control: Thermostat.

REPAIRS AND ADJUSTMENTS A small amount of oil leaked from transmission drive during test.

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 the same carburetor setting.

HORSEPOWER SUMMARY

	Draw- bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	25.45	29.79
2. Observed maximum horsepower (tests F & B)	24.32	28.43
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)	19.09	25.32

We, the undersigned, certify that this is a true and correct report of official tractor test No. 432.

L. F. Larsen
Engineer in Charge

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

821128

