

University of Nebraska Agricultural Engineering Department, Agricultural College, Lincoln
Copy of Report of Official Tractor Test No. 432

Dates of test: October 25 to November 2, 1949
Name and model of tractor: UNIVERSAL JEEP CJ-3A
Manufacturer: WILLYS-OVERLAND MOTORS, INC., Toledo, Ohio
Manufacturer's rating: Not Rated

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 C AND TEST B—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. | | Cooling med. | Air | |
| TEST G AND TEST F—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 | |
| 23.48 | 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 |
| <small>*Formerly called Rated Load, see Horsepower Summary.</small> | | | | | | | | | | | |
| TEST I—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 | Test K |
|---|-----------------|-----------------|--------|
| Rear Wheel: Type and Weight (each) | Pressed Steel | Pressed Steel | |
| Liquid Ballast | None | None | |
| Added Cast Iron | 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 | |
| Air Pressure | 22 lb | 20 lb | |
| Front Wheel: Type and Weight (each) | Pressed Steel | Pressed Steel | |
| Liquid Ballast | None | None | |
| Added Cast Iron | 359 lb * | None | |
| Front 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 | |
| Air Pressure | 22 lb | 20 lb | |
| Height of Drawbar | 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 | |

* Weight added to front of frame

**Nebraska Test No. 432
Universal Jeep CJ-3A**

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: 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 in.; front 48 1/4 in.; wheel base 80-3/32 in. Advertised speeds, miles per hour: 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 in.; face 8 in.; rpm 1714; belt speed 3599 fpm. Clutch: Make—Atwood; type—dry, single plate; operated by foot pedals. Seat: Upholstered automotive type seat. Hydraulic lift control: Yes. 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 pedal. Locked by: Foot pedal cannot be locked. Emergency brake can be locked by handle under dash; equalization—yes.

ENGINE—Make—own; Serial No. J226-916; type—4 cylinder vertical. Head—L. Mounting—crankshaft lengthwise. Lubrication—pressure. Bore and stroke: 3 1/8 in. x 4 3/8 in.; rated rpm 2000; compression ratio 6.48 to 1. Port diameter valves: Inlet 1.343 in.; exhaust 1.281 in. Distributor and coil: Make—Auto-Lite; battery—Auto-Lite. Starter: Auto-Lite. Generator: Auto-Lite. Carburetor: Make—Carter; Model W-O-6365-A; size 1 in. Governor: Make—Novi; type—centrifugal, variable speed. 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 results shown on pages 2 and 3 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, H and J were made with the same carburetor setting.

HORSEPOWER SUMMARY

| | Drawbar | 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 percent of calculated maximum drawbar horsepower and eighty-five percent 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
L. W. Hurlbut
F. D. Yung
Board of Tractor
Test Engineers