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January 1935

Test 237: Allis-Chalmers Model U

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 237

Dates of test: July 15 to August 5, 1935.

Name and model of tractor: ALLIS-CHALMERS "U"

Manufacturer: Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin.

Manufacturer's rating: NOT RATED.

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

H. P.	:Crank : :shaft :	Fuel Consumption :Gals. : H. P. :Lbs.per:	Water Consumption : per hour gallons :	Temp. : Deg. F. :	:Barometer
:speed :	:R.P.M. :	:hrs. per:	:Cool- : In :	:Cool-:	:Inches of
:	: hour :	: Gal. : hour :	: ing : fuel : Total :	: ing : Air :	:Mercury
:	:	:	:	:med. :	:

TEST B 100% MAXIMUM LOAD. TWO HOURS

34.12 : 1200 : 4.063 : 8.40 : 0.824 : 0.000 : 0.000 : 0.000 : 193 : 95 : 28.955

TEST C OPERATING MAXIMUM LOAD. ONE HOUR

33.18 : 1199 : 3.338 : 9.94 : 0.696 : 0.000 : 0.000 : 0.000 : 202 : 98 : 28.950

TEST D RATED LOAD. ONE HOUR

31.07 : 1199 : 3.251 : 9.56 : 0.724 : 0.000 : 0.000 : 0.000 : 195 : 100 : 28.950

TEST E *VARYING LOAD, TWO HOURS

30.99 : 1194 : 3.238 : 9.57 : 0.723 : -- : -- : -- : 195 : 101 : --

0.83 : 1433 : 1.374 : 0.60 : 1.458 : -- : -- : -- : 191 : 101 : --

17.60 : 1367 : 2.299 : 8.38 : 0.904 : -- : -- : -- : 188 : 100 : --

31.32 : 1172 : 3.282 : 9.54 : 0.725 : -- : -- : -- : 195 : 100 : --

8.94 : 1402 : 1.873 : 4.75 : 1.456 : -- : -- : -- : 188 : 99 : --

25.37 : 1324 : 2.610 : 9.72 : 0.712 : -- : -- : -- : 188 : 100 : --

20.41 : 1315 : 2.446 : 8.34 : 0.829 : 0.000 : 0.000 : 0.000 : 191 : 100 : 28.940

*20 minute runs. Last line is average for two hours.

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

STEEL WHEELS

H. P.	: Draw	: Speed	: Crank	: Slip	: Fuel Consumption	: Water	: Temp.	:
:	: bar	: miles	: shaft	: on	: H. P. : Lbs.	: used	:	: Barometer
:	: pull	: per	: speed	: drive	: Gal. : hour	: per	: Gal. : Cool-	: Inches of
:	: pounds	: hour	: R.P.M.	: wheels	: per : per	: H.P. : per	: ing	: Air: Mercury
:	:	:	:	: %	: hour: gal.	: hour	: hour : mod.	:

TEST F 100% MAXIMUM LOAD. Second GEAR.

23.83 : 2502 : 3.57 : 1201 : 14.82:-----Not Recorded-----: 186 : 94: 28.700

TEST G OPERATING MAXIMUM LOAD.

23.78 : 3428 : 2.60 : 1197 : 19.62:-----Not Recorded-----: 205 : 100: 28.860

23.06 : 2415 : 3.58 : 1201 : 14.57:-----Not Recorded-----: 191 : 89: 28.700

19.58 : 1333 : 5.51 : 1199 : 12.86:-----Not Recorded-----: 205 : 103: 28.670

TEST H RATED LOAD. TEN HOURS. Second GEAR.

19.35 : 1891 : 3.84 : 1202 : 3.29:2.825: 6.85 : 1.039:0.053: 192 : 91: 28.860

FUEL ECONOMY TEST. Four HOURS. Third GEAR.

16.86 : 1087 : 5.83 : 1202 : 5.05:2.746: 6.14 : 1.127:0.000: 194 : 98: 28.780

RUBBER TIRES

H. P.	: Draw	: Speed	: Crank	: Slip	: Fuel Consumption	: Water	: Temp.	:
:	: bar	: miles	: shaft	: on	: H. P. : Lbs.	: used	:	: Barometer
:	: pull	: per	: speed	: drive	: Gal. : hour	: per	: Gal. : Cool-	: Air: Inches of
:	: pounds	: hour	: R.P.M.	: wheels	: per : per	: H.P. : per	: ing	: Mercury
:	:	:	:	: %	: hour: gal.	: hour	: hour : mod.	:

TEST G OPERATING MAXIMUM LOAD,

13.40 : 2389 : 2.11 : 1215 : 20.72:-----Not Recorded-----: 188 : 83: 28.635

20.49 : 2452 : 3.13 : 1197 : 15.07:-----Not Recorded-----: 190 : 83: 28.650

26.64 : 2179 : 4.59 : 1203 : 18.31:-----Not Recorded-----: 182 : 88: 28.635

30.07 : 1037 : 10.87 : 1201 : 2.84:-----Not Recorded-----: 185 : 83: 28.670

FUEL ECONOMY TEST. Four HOURS. Second GEAR.

16.47 : 1845 : 3.35 : 1201 : 9.61:2.079: 7.92 : 0.882 : 0.000: 193 : 92: 28.630

FUEL ECONOMY TEST. Four HOURS. Third GEAR.

22.72 : 1680 : 5.07 : 1200 : 9.10:2.650: 8.57 : 0.815 : 0.000: 184 : 87: 28.830

Copy of Report of Official Tractor Test No. 237

BRIEF SPECIFICATIONS

MOTOR: Make Own Serial No. UM2632 Type 4 cylinder, vertical
Head I Mounting Crankshaft lengthwise
Bore and stroke: 4 3/8" x 5" Rated R.P.M. 1200
Port Diam. Valves: Inlet 1 3/4" Exhaust 1 1/2"
Belt pulley: Diam. 10" Face 7 1/2" R. P. M. 1094
Magneto: Scintilla-Bendix Model C-4
Carburetor Zenith Model K-5 Size 1 1/4"
Governor: Own No. None Type Centrifugal
Air Cleaner: Vortex Type Oil washed wire filter
Lubrication: Pressure

CHASSIS: Type 4 wheels, 2 drivers Serial No. U8263 Drive Enclosed gear
Clutch: Rockford Type Single plate Operated by foot
Advertised speeds, miles per hour: First 2.33 Second 3.33
Third 5.0 *Fourth 10.0 Reverse 2.67

Steel: Drive wheels: Diameter 42" Face 11 1/8"
Lugs: Type Spade No. per wheel 20 Size 5" high x 3 1/2" face
Extension rims: Width 6" Lugs per rim 10 Size 5" high x 3 1/2" face

Rubber: Drive wheel tires 12.75" x 24" Air pressure 16 pounds
Front wheel tires 6.00" x 16" Air pressure 24 pounds
Weights per drive wheel 3 Average total weight 422 pounds

Seat: Pressed stool

Total weight as tested (with operator) Stool 5030 pounds
Rubber 5140 pounds

FUEL AND OIL: Fuel: Distillate Weight per gallon Stool 6.92 pounds
Rubber 6.99 pounds

Oil: S.A.E. No. 40

Total oil to motor 4.660 gallons

Total drained from motor 4.488 gallons

Total time motor was operated 82 hours

*Not recommended for steel wheels.

After approximately each 10 hours of operation, the oil was drained down to the crankcase petcock and 1 qt. of new oil added. The crankcase was completely drained after 47 hrs., and again at the end of the test

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REPAIRS AND ADJUSTMENTS

On the limber-up run, it was found that of the two bolts which hold the left fender to the supporting saddle on the axle housing, one was lost and the other loose and worn. Both bolts were replaced. On the maximum drawbar tests (steel) of the same two bolts on the right fender, one was broken and the other loose. One was replaced and the other tightened.

On the maximum drawbar tests (steel) it was observed that the brazed connection between the exhaust pipe and exhaust pipe flange was broken.

REMARKS

All results shown on pages 1 and 2 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 horsepower and these figures were used in determining the ratings recommended by the A.S.A.E. and S.A.E. tractor rating codes. Tests C, D, E, G, and H were made with an operating setting of the carburetor (selected by the manufacturer) of 97.2% of maximum horsepower.

Observed maximum horsepower (tests B & F) Drawbar 23.83 Belt 34.12

Sea level (calculated) maximum horsepower Drawbar 25.64 Belt 36.44
(Based on 60° F. and 29.92" Hg.)

Highest permissible horsepower ratings *Drawbar 19.23 Belt 30.97
(as recommended by A.S.A.E. and S.A.E.
codes)

*Drawbar rating based on results of tests using steel wheels.

The 100% maximum belt and drawbar tests were not included in reports issued from 1928 to 1934 inclusive, except in those cases where the 100% maximum setting was used throughout the complete test.

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 237.

Carlton L. Zink
Engineer-in-charge

E. E. Brackett

C. W. Smith

E. B. Lewis
Board of Tractor Test Engineers