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January 1935

Test 247: Twin City M-M Model KTA

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. 247

Dates of test: October 2 to 9, 1935

Name and model of tractor: M-M TWIN CITY "KTA"

Manufacturer: Minneapolis-Moline Power Implement Co., Minneapolis, Minn.

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 : Inches of : Mercury
:speed :	: R.P.M. :	: per : hrs. per : H.P. :	: Cool- : In : : ing : fuel : Total :	: Cool- : : ing : Air : med. :	
: : hour :	: Gal. : hour :				

TEST B 100% MAXIMUM LOAD. TWO HOURS

33.65 : 1150 : 4.107 : 8.19 : 0.843 : 0.000 : 0.000 : 0.000 : 173 : 68 : 28.710

TEST C OPERATING MAXIMUM LOAD. ONE HOUR

32.30 : 1150 : 3.198 : 10.10 : 0.684 : 0.000 : 0.000 : 0.000 : 175 : 61 : 28.700

TEST D RATED LOAD. ONE HOUR

30.27 : 1148 : 2.952 : 10.25 : 0.674 : 0.000 : 0.000 : 0.000 : 170 : 61 : 28.715

TEST E *VARYING LOAD. TWO HOURS

30.65	: 1152	: 2.874	: 10.66	: 0.648	: --	: --	: --	: 184	: 64	: --
1.00	: 1254	: 1.098	: 0.91	: 7.590	: --	: --	: --	: 192	: 61	: --
16.07	: 1217	: 1.845	: 8.71	: 0.793	: --	: --	: --	: 207	: 65	: --
31.92	: 1113	: 3.000	: 10.64	: 0.649	: --	: --	: --	: 191	: 65	: --
8.31	: 1224	: 1.493	: 5.57	: 1.242	: --	: --	: --	: 189	: 65	: --
23.60	: 1187	: 2.310	: 10.22	: 0.676	: --	: --	: --	: 192	: 60	: --
18.59	: 1191	: 2.088	: 8.90	: 0.776	: 0.000	: 0.000	: 0.000	: 192	: 63	: 28.725

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

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

TEST F 100% MAXIMUM LOAD. Second GEAR.

24.80 : 2718 : 3.42 : 1153 : 4.87 : -----Not Recorded----- : 177 : 63 : 28.800

TEST G OPERATING MAXIMUM LOAD

23.51	: 3931	: 2.24	: 1152	: 9.12	: -----Not Recorded-----	: 182	: 66	: 28.710
24.08	: 2646	: 3.41	: 1148	: 4.74	: ----- " " -----	: 183	: 57	: 28.825
21.02	: 1738	: 4.54	: 1153	: 4.53	: ----- " " -----	: 183	: 68	: 28.725

TEST H RATED LOAD. TEN HOURS. Second GEAR.

19.29 : 2169 : 3.34 : 1150 : 7.01 : 2.649 : 7.25 : 0.953 : 0.076 : 185 : 58 : 28.850

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BRIEF SPECIFICATIONS

MOTOR: Make Own Serial No. 526720 Type 4 cylinder vertical
Head I Mounting Crankshaft lengthwise
Bore and stroke: 4 1/4" x 5" Rated R.P.M. 1150
Port Diam. Valves: Inlet 1 1/2" Exhaust 1 3/8"
Belt pulley: Diam. 14" Face 7" R.P.M. 822
Magneto: American Bosch Model U 4
Carburetor Schebler Model TTX 15 Size 1"
Governor: Own Type Centrifugal
Air Cleaner: Donaldson Type Combination oil and centrifugal wire
screen labyrinth
Lubrication: Pressure

CHASSIS: Type 4 wheels, 2 drivers Serial No. 303351 Drive enclosed gear
Clutch: Twin Disc Type Single plate Operated by hand
Advertised speeds, miles per hour: First 2.1 Second 3.1
Third 4.1 Reverse 1.8
Drive wheels: Diam. 42" Face 10"
Lugs: Type Spade No. per wheel 20 Size 4" high x 2" face
Extension rims: Width 6" Lugs. No. per rim 10
Size 4" high x 2" face
Seat Pressed Steel

FUEL AND OIL: Total weight as tested (with operator) 5135 pounds.
Fuel: Distillate Weight per gallon 6.91 pounds.

Oil: S.A.E. No. 30

Total oil to motor 2.240 gallons

Total drained from motor 1.957 gallons

Total time motor was operated 42 hours.

The oil was
drained once -
at the end of
the test.

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REPAIRS AND ADJUSTMENTS

After the belt tests were begun it was observed that the pulley shaft housing and bearing were cracked. A new pulley unit was installed and all data shown in this report were taken after the replacement was made.

The Air Cleaner stack broke off during the preliminary drawbar tests. This was repaired by welding. The right hand tie rod bolt started to work out during the rated load drawbar test. The cotter key which normally holds the bolt in place was lost. The bolt was put into proper position and keyed.

REMARKS

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 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 96.1% of maximum horsepower.

Observed maximum horsepower (tests B & F) Drawbar 24.80 Belt 33.65

Sea level (calculated) maximum horsepower Drawbar 25.84 Belt 35.33
 (Based on 60° F. and 29.92" Hg.)

Highest permissible horsepower ratings Drawbar 19.38 Belt 30.03
 (As recommended by A.S.A.E. and S.A.E. codes)

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. 247.

Carlton L. Zink
 Engineer-in-charge

E. E. Brackett

C. W. Smith

E. B. Lewis

Board of Tractor Test Engineers