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January 1938

## Test 311: M-M Twin City Model UTS (Distillate)

Tractor Museum

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT  
 AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 311

Dates of test: November 21 to 25, 1938.

Name and model of tractor: M-M TWIN CITY UTS (Distillate)

Manufacturer: Minneapolis-Moline Power Implement Company, Minneapolis, Minnesota.

Manufacturer's rating: NOT RATED.

BELT HORSEPOWER TESTS

H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used gal. per hr.	Cool- ing med.	Temp. Deg. F. Air	Baromete. Inches of Mercury
		Gal. per hr.	H. P. hr. per gal.	Lb. per H. P. hr.				
TEST B - 100% MAXIMUM LOAD - TWO HOURS								
36.48	1274	3.871	9.42	0.734	0.000	186	53	29.220
TEST C - OPERATING MAXIMUM LOAD - ONE HOUR								
35.19	1273	3.408	10.33	0.670	0.000	187	52	29.250
*TEST D - ONE HOUR								
31.47	1273	2.986	10.54	0.656	0.000	187	55	29.310
TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)								
31.73	1272	2.996	10.59	0.653	--	188	53	--
1.69	1325	1.296	1.30	5.308	--	178	54	--
16.19	1302	2.007	8.07	0.858	--	176	56	--
33.41	1229	3.117	10.72	0.646	--	186	55	--
8.06	1307	1.582	5.09	1.359	--	178	53	--
24.26	1303	2.514	9.65	0.717	--	184	53	--
19.22	1290	2.252	8.53	0.811	0.000	181	54	29.315

DRAWBAR HORSEPOWER TESTS

H. P.	Draw bar pull pounds	Speed miles per hr.	Crank shaft speed R.P.M.	Slip on drive wheels %	Fuel Consumption			Water used gal. per hr.	Temp. Deg. F. cool- ing med.	Barometer Inches of Air/Mercury
					Gal. per hr.	H. P. per gal.	Lb. per H.P. hr.			
TEST F - 100% MAXIMUM LOAD - THIRD - GEAR										
33.23	2781	4.42	1275	5.11	----- Not Recorded -----			185	22	29.310
TEST G - OPERATING MAXIMUM LOAD										
23.94	4773	2.27	1278	16.01	----- Not Recorded -----			185	26	29.235
31.67	3713	3.20	1275	8.14	----- " " -----			185	27	29.265
31.86	2647	4.51	1277	4.74	----- " " -----			185	18	29.350
31.13	1924	6.07	1275	3.43	----- " " -----			185	24	29.270

\*TEST H - TEN HOURS - THIRD - GEAR

24.51 | 2018 | 4.55 | 1275 | 3.68 | 2.669 | 9.13 | 0.754 | 0.072 | 180 | 24 | 29.365

\*Formerly called RATED LOAD; see RELATIONS 4, page 3.

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FUEL, OIL, AND TIME

Fuel Distillate Octane 38 Weight per gallon 6.92 pounds  
Oil: S.A.E. No. 20 To motor 2.199 Gal. Drained from motor 1.993 Gal  
Total time motor was operated 36 hours

BRIEF SPECIFICATIONS

Advertised speeds, miles per hour (rubber tires): First 2.7  
Second 3.5 Third 4.7 Fourth 6.2 Fifth 20.2 Reverse 1.3  
Belt pulley: Diameter 15 1/2" Face 7" R.P.M. 733  
Clutch: Make Twin Disc Type Single plate, dry Operated by hand  
Seat Pressed steel  
Total weight as tested (with operator) 7940 pounds

MOTOR:

Make Own Serial No. 540560C Type 4 cylinder, vertical  
Head I Mounting Crankshaft lengthwise Lubrication Pressure  
Bore and stroke 4 1/4" x 5" Rated R.P.M. 1275  
Port diameter valves: Inlet 1 1/2" Exhaust 1 3/8"  
Magneto: Make Fairbanks-Morse Model FM 4B  
Carburetor: Make Schebler Model TTX-17 Size 1"  
Governor: Make Own Type Variable speed, centrifugal  
Air Cleaner: Make Donaldson Type Oil-washed, wire screen

CHASSIS:

Type Standard Serial No. 310305 Drive Enclosed gear  
Tread width: Rear 60" Front 53"  
Rear tires: No. 2 Size 12.75" x 32" - 6 ply Air pressure 16 pounds  
Front tires: No. 2 Size 7.50" x 16" - 4 ply Air pressure 25 pounds  
Added weight: Per rear wheel: (Cast Iron 745 pounds  
(Water 400 pounds  
Per front wheel: Cast Iron 39 pounds

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REPAIRS AND ADJUSTMENTS

No repairs or adjustments.

REMARKS

1. 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 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, and I were made with an operating setting of the carburetor (selected by the manufacturer) of 96.5% of maximum belt horsepower.

	RUBBER TIRES	
	DRAWBAR	BELT
2. Observed maximum horsepower (tests F & B)	33.29	36.48
3. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	32.72	37.10
4. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly A.S.A.E. and S.A.E. ratings).	24.54	31.54

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 311.

Carlton I. Zink  
Engineer-in-charge

E. E. Brackett

C. W. Smith

L. J. Harlbut  
Board of Tractor Test Engineers