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January 1940

Test 352: M-M Twin City Model ZTU

Tractor Museum

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Copy of Report of Official Tractor Test No. 352

Dates of test: September 3 to 7, 1940.

Name and model of tractor: M-M TWIN CITY ZTU

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

Manufacturer's rating: NOT RATED.

B E L T H O R S E P O W E R T E S T S

H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hr.	H. P. hr. per gal.	Lb. per H. P. hr.		Cooling med.	Air	
TEST B - 100% MAXIMUM LOAD - TWO HOURS								
31.14	1500	2.909	10.70	0.578	0.000	189	83	28.965
TEST C - OPERATING MAXIMUM LOAD - ONE HOUR								
30.55	1500	2.792	10.94	0.566	0.000	184	81	28.995
*TEST D - ONE HOUR								
27.94	1499	2.777	10.06	0.615	0.000	184	87	29.000
TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)								
27.96	1499	2.777	10.07	0.615	--	181	85	--
1.51	1590	1.241	1.22	5.086	--	152	83	--
14.43	1542	1.943	7.43	0.834	--	159	83	--
29.53	1460	2.738	10.79	0.574	--	192	84	--
7.34	1568	1.522	4.82	1.283	--	155	82	--
21.22	1513	2.389	8.88	0.697	--	169	82	--
17.00	1529	2.102	8.09	0.765	0.000	168	83	28.980

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 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.		Barometer Inches of Mercury
					Gal. per hr.	H.P. per gal.	Lb. per H.P. hr.		Cooling med.	Air	
TEST F - 100% MAXIMUM LOAD - Fourth - GEAR											
26.39	2258	4.38	1500	8.94	----- Not Recorded -----			205	88	28.990	
TEST G - OPERATING MAXIMUM LOAD											
16.16	3254	1.86	1499	18.47	----- Not Recorded -----			183	89	28.990	
19.18	3168	2.27	1501	17.40	----- " " -----			179	79	28.990	
25.78	2869	3.37	1501	11.97	----- " " -----			190	77	29.015	
26.10	2233	4.38	1500	8.89	----- " " -----			202	87	28.995	
*TEST H - TEN HOURS - Fourth - GEAR											
21.04	1748	4.51	1500	4.05	2.467	8.53	0.726	0.000	192	92	28.995

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

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FUEL, OIL, AND TIME

Fuel Gasoline Octane 73 Weight per gallon 6.19 pounds
 Oil: S.A.E. No. 30 To motor 1.702 gal. Drained from motor 1.615 gal.
 Total time motor was operated 56 hours

BRIEF SPECIFICATIONS

Advertised speeds miles per hour: First 2.2 Second 2.7
 Third 3.7 Fourth 4.7 Fifth 14.6 Reverse 1.1
 Belt pulley: Diam. 14" Face 6-3/4" R.P.M. 786 Belt Speed 2880 f.p.m.
 Clutch: Make Twin Disc Type Single plate Operated by hand
 Seat Pressed steel

Total Weight as tested (with operator) 5025 pounds

MOTOR

Make Own Serial No. 53543 Type 4 cylinder, vertical
 Head I Mounting Crankshaft lengthwise Lubrication Pressure
 Bore and stroke 3-5/8" x 4-1/2" Rated R.P.M. 1500
 Port diameter valves: Inlet 1-1/4" Exhaust 1-1/4"
 Magneto: Make Fairbanks-Morse Model FMK4B
 Carburetor: Make Schebler Model TRX12 Size 1"
 Governor: Make Own Type Variable speed, centrifugal
 Air Cleaner: Make United Type Oil-washed, crimped wire
 Oil Filter: Make H-W Type Renewable waste element
 Cooling medium temperature control: Dole thermostat

CHASSIS

Type Tricycle Serial No. 567884 Drive Enclosed gear
 Tread width: Rear 54" - 84" Front: Top 14" Bottom 7"
 Rear tires: No. 2 Size 9 x 38 - 4 ply Air pressure 16 pounds
 Front tires: No. 2 Size 5.50 x 16 - 4 ply Air pressure 28 pounds
 Added weight: Per rear wheel (Cast Iron 452 pounds
 (Water 153 pounds
 Per front wheel (Cast Iron 56 pounds
 (Water -- pounds

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REPAIRS AND ADJUSTMENTS

Because the engine side covers were not readily removable, they were raised during the belt tests to facilitate cooling.

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 H were made with an operating setting of the carburetor (selected by the manufacturer) of 97.8% of maximum belt horsepower.

	<u>DRAWBAR</u>	<u>BELT</u>
2. Observed maximum horsepower (tests F & B)	26.39	31.14
3. Sea level (calculated) maximum horsepower (based on 60° F. and 29.52" Hg.)	27.97	32.88
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)	20.98	27.95

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 352.

Carlton L. Zink
Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut
Board of Tractor Test Engineers