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January 1941

Test 376: Massey-Harris Model 81-R

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT
 AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 376

Dates of Test: September 29 to October 20, 1941
 Name and model of tractor: MASSEY-HARRIS 81 R
 Manufacturer: The Massey-Harris Company, Racine, 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

Hp.	Crank- shaft Speed R.P.M.	Fuel Consumption			Water Used Gal. per Hr.	Temperature Deg. F.		Barometer Inches of Mercury
		Gal. per Hr.	Hp.-hr. per Gal.	Lb. per Hp.-hr.		Cool- ing Medium	Air	

TEST B - 100% MAXIMUM LOAD - TWO HOURS

27.07	1799	2.474	10.94	0.557	0.000	176	69	28.825
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TEST C - OPERATING MAXIMUM LOAD - ONE HOUR

26.08	1801	2.289	11.39	0.535	0.000	171	67	28.820
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* TEST D - ONE HOUR

24.17	1799	2.215	10.91	0.558	0.000	163	64	28.820
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

24.19	1801	2.202	10.99	0.554	- - -	162	64	- - -
1.22	1887	0.892	1.37	4.451	- - -	145	63	- - -
12.31	1832	1.468	8.39	0.726	- - -	146	63	- - -
25.12	1725	2.222	11.31	0.539	- - -	164	63	- - -
6.22	1848	1.148	5.42	1.124	- - -	144	63	- - -
18.57	1829	1.847	10.05	0.606	- - -	155	62	- - -
14.61	1820	1.630	8.96	0.679	0.000	153	63	28.790

* Formerly called RATED LOAD; see REMARKS 4, page 5.

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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

Hp.	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 Hr.	Hp.-hr. per Gal	Lb. per Hp.-hr.		Cool- ing Med.	Air	

Rear wheels, tires and added weight used in Tests F, G and H: Pressed steel wheels; 9-32, 4 ply tires and 757 lbs. added weight per wheel.

TEST F - 100% MAXIMUM LOAD - Third GEAR

20.79	1699	4.59	1500	5.86	-----	Not Recorded	-----	181	67	28.980
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TEST G - OPERATING MAXIMUM LOAD

16.92	2898	2.19	1500	15.37	-----	Not Recorded	-----	156	58	28.980
19.70	2153	3.43	1501	7.58	"	"	"	166	63	28.980
20.03	1630	4.61	1500	5.48	"	"	"	172	64	28.960

* TEST H - TEN HOURS - Third GEAR

16.41	1330	4.63	1500	4.51	1.710	9.60	0.635	0.000	164	68	29.115
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TEST J - OPERATING MAXIMUM LOAD

Same wheels and tires as used in Tests F, G and H. All added weight removed from tractor (liquid, cast iron or any other added forms). Third gear.

18.69	1588	4.41	1499	10.02	-----	Not Recorded	-----	168	64	28.940
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TEST K - OPERATING MAXIMUM LOAD

Rear wheels, tires and added weight used: Pressed steel wheels; 8-32, 4 ply tires and 143 lbs. added weight per wheel (** Combination No. 1). Third gear.

18.03	1655	4.09	1502	13.88	-----	Not Recorded	-----	181	76	28.915
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* Formerly called RATED LOAD; see REMARKS 4, page 5.

** Combination No. 1: Includes wheels, tires and added weight recommended in the manufacturer's published specifications,

Combination No. 2: When the manufacturer does not make a specific recommendation, then the tires used are the smallest size and ply and the wheels are the lightest listed in published specifications or the application for test.

See Page 3 for specifications on wheels, tires and weight.

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FUEL, OIL and TIME

Fuel Gasoline Octane 73 Weight per gallon 6.09 pounds

Oil: S.A.E. No. 10 To motor 1.028 gal. Drained from motor 0.996 gal.

Total time motor was operated 48 hours

TIRES, WHEELS and WEIGHT		Tests F, G & H	Test J	Test K
Rear Wheel: (each)	Type and Weight	Pressed steel 123 lbs	Pressed steel 123 lbs	Pressed steel 118 lbs
	Liquid Ballast	184 lbs	None	None
	Added Cast Iron	573 lbs	None	143 lbs
Rear Tires:	No., Size & Ply	2, 9-32, 4 ply	2, 9-32, 4 ply	2, 8-32, 4 ply
	Type of Tread	Ground Grip	Ground Grip	Ground Grip
	Make	Firestone	Firestone	Firestone
	Air Pressure	16 lbs	16 lbs	16 lbs
Front Wheel: (each)	Type and Weight	Pressed steel 24 lbs	Pressed steel 24 lbs	Pressed steel 24 lbs
	Liquid Ballast	None	None	None
	Added Cast Iron	None	None	None
Front Tires:	No., Size & Ply	2, 4.00-15, 4 ply	2, 4.00-15, 4 ply	2, 4.00-15, 4 ply
	Type of Tread	Guide Grip	Guide Grip	Guide Grip
	Make	Firestone	Firestone	Firestone
	Air Pressure	28 lbs	28 lbs	28 lbs
Height of Drawbar		14 1/2"	15 1/4"	13 1/2"
Static Weight: Rear End		3348 lbs	1820 lbs	2060 lbs
Front End		880 lbs	895 lbs	880 lbs
Total Weight as Tested (With operator)		4408 lbs	2895 lbs	3120 lbs

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CHASSIS

Type Tricycle Serial No. 400475 Drive Enclosed gear
 Tread width: Rear 48" to 88" Front: Top 11 3/4" and 17 1/4"
 Bottom 7 5/8" and 13 1/4"
 Advertised speeds, miles per hour: First 2.5 Second 3.6 Third 4.7
 Fourth (1800 r.p.m.) 16.0 Reverse 2.5
 Belt pulley: Diam. 9 1/2" Face 6 1/4" R.P.M. 1224 Belt speed 3040 f.p.m.
 Clutch: Make Borg and Beck Type Dry disc Operated by Foot pedal
 Seat Pressed steel
 Brakes: Make Auto Specialties Company Type Disc
 Location On rear axle
 Gear reduction (Brake drum to rear wheel) None
 Operated by Right foot on adjacent pedals, either independently or interlocked
 Locked by Ratch and pin
 Equalization None

MOTOR

Make Continental Serial No. MFB-124G-9405 Type 4 cylinder, vertical
 Head L Mounting Crankshaft lengthwise Lubrication Pressure
 Bore and Stroke 3" x 4 3/8" Rated R.P.M. (Drawbar 1500
 (Belt 1800)
 Port diameter valves: Inlet 1 3/8" Exhaust 1 1/8"
 Ignition: Type Battery Make Auto-Lite Distributor: Model IGW-4139-A
 Generator: Make Auto-Lite Model GBM-4804B-5
 Starter: Make Auto-Lite Model MZ-4072
 Carburetor: Make Marvel-Schebler Model TSX-28 Size 7/8"
 Governor: Make Pierce Type Variable speed, centrifugal
 Air Cleaner: Make Donaldson Type Oil-washed, wire screen filter
 Oil Filter: Make Purolator Products, Inc. Type Renewable waste-packed element
 Cooling medium temperature control: Harrison Thermostat

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REPAIRS AND ADJUSTMENTS

During the rated load drawbar test, the cooling medium temperature indicator became inoperative.

REMARKS

1. 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 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, J and K were made with an operating setting of the carburetor (selected by the manufacturer) of 96.2% of maximum belt horsepower.

	<u>DRAWBAR</u>	<u>BELT</u>
2. Observed maximum horsepower (tests F & B)	20.79	27.07
3. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	21.60	28.34
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)	16.20	24.09

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 376.

Carlton L. Zink
 Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut
 Board of Tractor Test Engineers