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January 1941

Test 370: McCormick-Deering Model WD-9 (Diesel)

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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Copy of Report of Official Tractor Test No. 370

Dates of test: May 21 to June 18, 1941

Name and model of tractor: McCORMICK-DEERING WD-9 (Diesel)

Manufacturer: International Harvester Company, Chicago, Illinois

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	

TESTS B and C - 100% MAXIMUM LOAD - TWO HOURS

46.43	1500	3.158	14.70	0.476	0.000	195	78	28.735
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* TEST D - ONE HOUR

41.84	1501	2.866	14.60	0.479	0.000	196	83	28.740
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

41.79	1500	2.867	14.58	0.480	---	195	82	---
1.34	1603	1.046	1.28	5.463	---	196	79	---
21.82	1563	1.860	11.73	0.597	---	193	77	---
46.01	1481	3.120	14.75	0.475	---	194	76	---
11.07	1583	1.419	7.80	0.897	---	200	75	---
32.07	1533	2.357	13.61	0.514	---	191	76	---
25.68	1544	2.111	12.16	0.576	0.000	195	77	28.755

* 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.		Cooling Med.	Air	

Rear wheels, tires and added weight used in Tests F, G and H: Cast iron wheels; 14.00-32--13.50-32, 6 ply tires and 1815 lbs. added weight per wheel.

TESTS F and G - 100% MAXIMUM LOAD

33.55	6367	1.98	1503	15.64	----- Not Recorded -----			196	79	28.850
40.42	5389	2.81	1502	10.84	" "			195	75	28.870
42.57	3853	4.14	1500	6.54	" "			191	75	28.850
41.62	3049	5.12	1499	5.18	" "			196	75	28.845

* TEST H - TEN HOURS - Third GEAR

34.43	3073	4.20	1500	5.25	2.662	12.93	0.541	0.000	193	78	28.930
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TEST J - 100% 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.

41.93	3887	4.05	1501	10.67	----- Not Recorded -----			194	80	28.615
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TEST K - 100% MAXIMUM LOAD

Rear wheels, tires and added weight used: Cast iron wheels; 13.00-32--12.75-32, 6 ply tires and no added weight per wheel (** Combination No. 2). Third gear.

36.46	3745	3.65	1504	17.14	----- Not Recorded -----			177	65	28.850
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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 Commercial diesel fuel Weight per gallon 7.00 pounds

Oil: S.A.E. No. 20 To motor 2.456 gal. Drained from motor 2.072 gal.

Total time motor was operated 57 hours.

TIRES, WHEELS and WEIGHT

		Tests F, G & H	Test J	Test K
Rear Wheel: (each)	Type and Weight	Cast Iron, 268 lbs	Cast Iron, 268 lbs	Cast Iron, 268 lbs
	Liquid Ballast	420 lbs	None	None
	Added Cast Iron	1395 lbs	None	None
Rear Tires:	No., Size & Ply	2, 14.00-32-- 13.50-32, 6 ply	2, 14.00-32-- 13.50-32, 6 ply	2, 13.00-32 12.75-32, 6 ply
	Type of Tread	All Weather	All Weather	All Weather
	Make	Goodyear	Goodyear	Goodyear
	Air Pressure	16 lbs	16 lbs	16 lbs
	Front Wheel: Type and Weight (each)	Cast Iron, 60 lbs	Cast Iron, 60 lbs	Cast Iron, 60 lbs
	Liquid Ballast	None	None	None
	Added Cast Iron	None	None	None
Front Tires:	No., Size & Ply	2, 7.50-18, 4 ply	2, 7.50-18, 4 ply	2, 7.50-18, 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	18"	20"	18 1/2"	
Static Weight: Rear End		7650 lbs	4000 lbs	3970 lbs
	Front End	2430 lbs	2470 lbs	2450 lbs
Total Weight as Tested (With operator)		10260 lbs	6650 lbs	6500 lbs

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CHASSIS

Type Standard Serial No. WDCB735 Drive Enclosed gear
 Tread width: Rear 53" Front 52 1/4"
 Advertised speeds, miles per hour: First 2 3/8 Second 3 1/8 Third 4 3/8
 Fourth 5 3/8 Fifth 15 3/8 Reverse 2 7/8
 Belt pulley: Diameter 14" Face 8 1/2" R.P.M. 707 Bolt speed 2593 f.p.m.
 Clutch: Make Own Type Dry disc Operated by Foot
 Seat Pressed steel with canvas covered felt pad
 Brakes: Make Own Type External contracting bands
 Location Ends of differential shafts
 Gear reduction (brake drum to rear wheel) 5.667 to 1
 Operated by Right foot on adjacent pedals, either independently or interlocked
 Locked by Pawl and ratchet on right pedal
 Equalization By springs when pedals are locked together

MOTOR

Make Own Serial No. WDCBM839 Type 4 cylinder, vertical diesel
 Head I Mounting Crankshaft lengthwise Lubrication Pressure
 Bore and stroke 4.4" x 5.5" Rated R.P.M. 1500
 Port diameter valves: Inlet 1.656" Exhaust 1.469"
 Magneto: (For starting only) Make Own Model H-4
 Carburetor: (For starting only) Make Own Model F Size 3/4"
 Governor: Make Bosch Type Variable speed, centrifugal
 Fuel Injection System: Make Bosch Serial No. 86-184 Model APELA 80N320 S511
 Air Cleaner: Make Donaldson Type Oil-washed wire screen filter
 Oil Filter: Make Motor Improvements, Inc. Type Partial flow with replaceable
bakelite impregnated paper element.
 Cooling medium temperature control Bishop & Babcock thermostat and Defiance
radiator shutters

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REPAIRS AND ADJUSTMENTS

No repairs or adjustments.

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 fuel pumps set to develop approximately 46.5 observed belt horsepower (selected by the manufacturer) 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 the same setting.

	<u>DRAWBAR</u>	<u>BELT</u>
2. Observed maximum horsepower (tests F & B)	42.57	46.43
3. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	44.78	49.17
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)	33.59	41.79

We, the undersigned, certify that the above is a true and correct report of official tractor test No. 370.

Carlton L. Zink
 Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut
 Board of Tractor Test Engineers