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January 1948

Test 399: Allis-Chalmers "WD"

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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Copy of Report of Official Tractor Test No. 399

Dates of test: July 16 to July 30, 1948
 Name and model of tractor: ALLIS-CHALMERS WD
 Manufacturer: ALLIS-CHALMERS MANUFACTURING COMPANY, Milwaukee, Wisconsin
 Manufacturer's rating: None

HORSEPOWER SUMMARY

	DRAWBAR	BELT
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	25.59	27.60
2. Observed maximum horsepower (tests F & B)	24.31	26.14
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	19.19	23.46

REMARKS

No repairs or adjustments.

Tractor was tested without hydraulic pump which is listed among items as special equipment.

FUEL, OIL, and TIME

Fuel Tractor Fuel Octane 41.5* Weight per gallon 6.713 pounds
Oil SAE No. 30 To motor 1.708 gal. Drained from motor 1.779 gal.
Total time motor was operated 46 1/2 hours

* Octane rating taken from oil company's typical inspection data.

We, the undersigned, certify that this is a true and correct report of official tractor test No. 399.

L. J. Larsen
 Engineer in Charge

C. H. Smith
F. D. Young
L. W. Schubert
 BOARD OF TRACTOR TEST ENGINEERS

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All results shown on pages 2 and 3 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 and J were made with an operating setting of the carburetor (selected by the manufacturer) of 95.8% of maximum belt horsepower

BELT HORSEPOWER TESTS

Horsepower	Crank shaft speed rpm	Fuel Consumption			Water used gal per hr	Temperature		Barometer Inches of Mercury
		gal per hr	hp-hr per gal	lb per hp-hr		Cooling med °F	Air °F	

TEST B - 100% MAXIMUM LOAD - TWO HOURS

26.14	1404	2.663	9.82	0.684	0.00	168	75	28.740
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TEST C - OPERATING MAXIMUM LOAD - ONE HOUR

25.08	1403	2.385	10.52	0.638	0.00	172	75	28.803
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*TEST D - ONE HOUR

23.54	1401	2.269	10.37	0.647	0.00	173	76	28.825
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

		2.275						
23.60	1401	2.238	10.37	0.647	--	174	77	--
1.82	1642	1.233	1.48	4.549	--	191	77	--
13.17	1566	1.743	7.56	0.888	--	193	78	--
24.83	1328	2.275	10.91	0.615	--	173	78	--
6.81	1614	1.460	4.66	1.439	--	192	77	--
18.63	1476	1.966	9.48	0.709	--	192	78	--
14.81	1504	1.826	8.11	0.828	0.00	186	77	28.855 28.865

* Formerly called RATED LOAD, see HORSEPOWER SUMMARY 3, page 1.

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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

Horse- power	Draw bar pull lb	Speed mph	Crank shaft speed rpm	Slip on drive wheels %	Fuel Consumption			Water used gal per hr	Temperature		Barometer Inches of Mercury
					gal per hr	hp-hr per gal	lb per hp-hr		Cool- ing med °F	Air °F	

Rear wheels, tires and added weight used in Tests F, G, and H: Pressed Steel wheels; 11-28, 4 ply tires and 697 lb added weight per wheel.

TEST F - 100° MAXIMUM LOAD - 2nd GEAR

24.31	2536	3.59	1403	6.87 6.28	-----Not Recorded-----			170	74	28.805
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TEST G - OPERATING MAXIMUM LOAD

21.03	3429	2.30	1403	13.21	-----Not Recorded-----			161	76	28.800
22.93	2376	3.62	1407	6.45	" "			166	74	28.805
22.56	1738	4.87	1399	4.62	" "			165	74	28.803
20.83	811	9.63	1407	2.21	" "			167	76	28.807

*TEST H - TEN HOURS - 2nd GEAR

19.34	1989	3.65	1402	5.37	2.048	9.44	0.711	0.00	189	93	28.791
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TEST J - OPERATING MAXIMUM LOAD - 2nd GEAR

19.17	2164	3.32	1408	15.74	-----Not Recorded-----			164	⁷⁴ 73	29.203
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* Formerly called RATED LOAD; see HORSEPOWER SUMMARY 3, page 1.

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		Tests F, G, & H	Test J
Rear Wheel: Type*	(each)	Pressed Steel	Pressed Steel
	Liquid Ballast	307 lb	None
	Added Cast Iron	390 lb	None
Rear Tires: No. Size & Ply		2 11-28 4 ply	2 11-28 4 ply
	Type of Tread	Champion Ground Grip	Champion Ground Grip
	Make	Firestone	Firestone
	Air Pressure	12 lb	12 lb
Front Wheel: Type	(each)	Pressed Steel	Pressed Steel
	Liquid Ballast	38 lb	None
	Added Cast Iron	90 lb	None
Front Tires: No. Size & Ply		2 5.50-16 4 ply	2 5.50-16 4 ply
	Type of Tread	Guide Grip	Guide Grip
	Make	Firestone	Firestone
	Air Pressure	28 lb	28 lb
Height of Drawbar		26 inches	27 inches
Static Weight: Rear End		3582 lb	2186 lb
	Front End	1276 lb	1018 lb
Total Weight as Tested (with Operator)		5042 lb	3388 lb

* This tractor is equipped with power adjustable rear ^{Wheel Tread.} wheels.

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SPECIFICATIONS

Type Tricycle Serial No. WD-21 Drive Enclosed gear

Tread width; Rear 56 in to 90 in Front 8 7/8 in

Advertised speeds, miles per hour: First 2 1/2 Second 3 3/4 Third 5
Fourth 9 3/4 Reverse 2 1/4

Belt pulley; Diam. 9 in Face 6 1/2 in RPM 1260 Belt speed 2969 fpm

Clutch; Make Rockford Type Dry disc Operated by Foot pedal

Seat Pressed steel seat on coil spring with hydraulic shock absorber

Brakes; Make Own Type External contracting shoe

Location Final drive pinion shaft

Gear reduction (brake drum to rear wheel) 5.467 to 1

Operated by Foot pedal.

Locked by Cam

Equalization None

<u>Engine:</u>	<u>Make</u> Own	<u>Serial No.</u> WD 196529K	<u>Type</u> 4 cylinder vertical
<u>Head</u>	I	<u>Mounting</u> Lengthwise	<u>Lubrication</u> Pressure
<u>Bore and stroke</u>	4 in x 4 in		<u>Rated rpm</u> 1400
<u>Port diameter valves:</u>	<u>Inlet</u> 1.50 in		<u>Exhaust</u> 1.32 in
<u>Magneto:</u>	<u>Make</u> Fairbanks Morse		<u>Model</u> FMI 4B3
<u>Battery</u>	Exide		

Generator: Make Auto-Lite

Carburetor: Make Marvel-Schebler Model TSX-159 Size 1 in

Starter: Make Delco-Remy

Governor:	Make	Own	Type	Variable speed centrifugal

Air Cleaner: Make United Type Oil washed wire screen

<u>Oil Filter:</u>	<u>Make</u>	<u>Own</u>	<u>Type</u>	<u>Replaceable element</u>

Cooling medium temperature control Shutter and thermostat