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January 1948

Test 396: Allis-Chalmers Model HD5B

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT
 AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 396

Dates of test: July 1 to July 16, 1948

Name and model of tractor: ALLIS-CHALMERS HD⁵B

Manufacturer: ALLIS-CHALMERS MANUFACTURING COMPANY, Milwaukee, Wisconsin

Manufacturer's rating: Not rated. (Manufacturers claim 37.5 drawbar and 45.1 belt maximum horsepower corrected.)

HORSEPOWER SUMMARY

	DRAWBAR	BELT
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	40.26	50.25
2. Observed maximum horsepower (tests F & B)	38.24	47.85
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)	30.20	42.71

REMARKS

No repairs or adjustments.

FUEL, OIL, and TIME

Fuel Diesel Fuel Cetane 44* Weight per gallon 7.023 pounds
Oil SAE No. 30 To motor 2.026 gal. Drained from motor 1.411 gal.
Total time motor was operated 38 hours

* Cetane 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. 396.

L. F. Larsen
 Engineer in Charge

C. W. Smith
S. W. Burkett
F. D. Young
 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 fuel pumps as set 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, and H were made with the same setting.

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

Horse- power	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		Cool- ing med °F	Air °F	

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

47.85	1801	3.770	12.69	0.553	0.00	178	77	28.950
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*TEST D - ONE HOUR

42.71	1801	3.430	12.45	0.564	0.00	179	88	28.950
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

42.66	1799	3.447	12.38	0.568	- --	180	90	-- --
1.50	1874	1.521	0.99	7.120	- --	169	90	-- --
21.94	1841	2.337	9.39	0.748	- --	174	91	-- --
45.84	1738	3.528	12.88	0.545	- --	187	93	-- --
11.12	1857	1.974	5.65	1.243	- --	170	93	-- --
32.23	1816	2.862	11.26	0.624	- --	177	94	-- --
22.39	1820	2.617	9.89	0.710	0.00	176	92	28.950

* 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		Cooling med °F	Air °F	

TESTS F and G - 100% MAXIMUM LOAD

37.95	10059	1.41	1809	4.33	-----Not Recorded-----				170	89	28.950
38.24	5969	2.40	1807	2.40	"	"			174	78	28.910
37.44	4269	3.29	1804	1.33	"	"			174	78	28.925
37.03	3313	3.96	1804	1.11	"	"			174	80	28.937
32.14	2205	5.47	1804	0.83	"	"			174	80	28.937

TEST H - TEN HOURS - 2nd GEAR

30.22	4682	2.42	1798	1.15	3.139	9.63	0.730	0.00	172	87	28.967
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* Formerly called RATED LOAD; see HORSEPOWER SUMMARY 3, page 1.

Type Tracklayer Serial No. HD⁵B2104 Drive Enclosed gear
Tread width; Rear 60 in Measured length of track 18.97 feet
Cleats; Type Integral with shoes No. per track 33 Size 2 1/8 in x 16 in
Advertised speeds, miles per hour; First 1.46 Second 2.44 Third 3.30
Fourth 3.96 Fifth 5.47 Reverse 2.00
Belt pulley; Diam. 12 in Face 8 3/4 in RPM 963 Belt speed 3029 fpm
Clutch; Make Auburn Type Single Plate Operated by Hand
Seat Upholstered
Brakes; Make Allis-Chalmers Type Contracting band Operated by Foot pedal
Location Steering clutch housing Locked by Latches
Gear reduction (brake drum to sprocket) 5.610 to 1
Steering Hand lever controlling multiple disc clutches
Engine; Make General Motors Serial No. 2-71 14439 Type 2 cylinder, vertical
2 cycle diesel
Head I Mounting Crankshaft lengthwise Lubrication Pressure
Bore and stroke 4 1/4 in x 5 in Rated rpm 1800
Port diameter valves; Inlet Multiple ports Exhaust 1 1/4 in
Starting System; Make Delco-Remy 12 volt Batteries Auto Lite
Generator; Make Delco-Remy 12 volt
Fuel Injection System; Make General Motors
Governor; Make King Seeley Type Centrifugal, variable speed
Air Cleaner; Make United Type Oil washed, crimped wire
filter with United pre-cleaner
Oil Filter; Make AC Type Partial flow renewable absorption type element
Fuel Filter; Make AC Type Full flow renewable absorption type elements
in both primary and secondary filters
Cooling medium temperature control; Thermostat
Total weight as tested (with operator) 11,815 pounds