

University of Nebraska Agricultural Engineering Department, Agricultural College, Lincoln

Copy of Report of Official Tractor Test No. 439

Dates of test: May 17 to May 24, 1950

Name and model of tractor: Allis-Chalmers B (Gasoline).

Manufacturer: ALLIS-CHALMERS MANUFACTURING COMPANY, MILWAUKEE, WISCONSIN

Manufacturer's rating: Not rated.

**BELT HORSE POWER TESTS**

H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used Gal. per hour	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hour	H.P. hr. per gal.	Lb. per H.P. hour		Cooling med.	Air	
<b>TEST B—100% MAXIMUM LOAD—TWO HOURS</b>								
22.25	1500	2.094	10.63	0.572	0.00	172	52	28.886
<b>TEST C—OPERATING MAXIMUM LOAD—ONE HOUR</b>								
21.17	1500	1.849	11.45	0.531	0.00	175	51	28.900
<b>TEST D - RATED LOAD - ONE HOUR</b>								
19.46	1500	1.735	11.22	0.542	0.00	177	57	28.900
<b>TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)</b>								
19.46	1502	1.732	11.24	0.541	---	179	60	---
1.30	1653	0.770	1.69	3.600	---	185	60	---
10.37	1595	1.219	8.51	0.715	---	180	62	---
19.52	1380	1.683	11.60	0.524	---	173	63	---
5.29	1625	0.962	5.50	1.106	---	181	63	---
15.14	1553	1.456	10.40	0.585	---	183	65	---
11.85	1551	1.304	9.09	0.669	0.00	180	62	28.878

**DRAWBAR HORSE POWER TESTS**

H.P.	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 hour	Hp.-hr. per Gal.	Lb. per Hp.-hr.		Cooling med.	Air	
<b>TEST F—100% MAXIMUM LOAD— Second GEAR</b>											
19.51	1742	4.20	1502	7.01	Not Recorded			170	77	28.800	
<b>TEST G—OPERATING MAXIMUM LOAD</b>											
17.22	2667	2.42	1501	14.57	Not Recorded			170	80	28.795	
18.57	1650	4.22	1502	6.01	" "			175	75	28.795	
17.19	762	8.46	1501	2.69	" "			180	80	28.790	
<b>TEST H - RATED LOAD - TEN HOURS - Second GEAR</b>											
15.66	1373	4.28	1500	4.65	1.588	9.86	0.617	0.00	182	82	28.670
<b>TEST J—OPERATING MAXIMUM LOAD --SECOND GEAR</b>											
15.22	1442	3.96	1501	15.00	Not Recorded			182	76	28.650	
<b>TEST K—OPERATING MAXIMUM LOAD --SECOND GEAR</b>											
12.94	1311	3.70	1502	15.53	Not Recorded			180	80	28.650	

**TIRES, WHEELS and WEIGHT**

		Tests F, G & H		Test J	Test K
Rear Wheel: (each)	Type	Cast iron		Cast iron	Cast iron
	Liquid Ballast	200 lb each *		none *	none *
	Added Cast Iron	675 lb each		none	none
Rear Tires:	No., Size and Ply	two 10-24 - 4		two 10-24 - 4	two 9-24 - 4
	Type of Tread				
	Make				
	Air Pressure	14 lb		12 lb	12 lb
Front Wheel: (each)	Type	Pressed steel		Pressed steel	Pressed steel
	Liquid Ballast	25 lb each		none	none
	Added Cast Iron	71 lb each		none	none
Front Tires:	No., Size	two 4.00-15		two 4.00-15	two 4.00-15
	Ply	4		4	4
	Make				
	Air Pressure	28 lb		28 lb	28 lb
Height of Drawbar		18 inches		20 inches	18-1/2 inches
Static Weight; Rear End		3100 lb		1350 lb	1304 lb
		Front End		908 lb	
Total Weight as Tested (With operator)		4195 lb		2251 lb	2199 lb

\* Note: Tractors are shipped from factory with calcium chloride solution in rear tires.

**Nebraska Test No. 439 Allis-Chalmers B Gasoline**

**FUEL, OIL and TIME**—Fuel: Gasoline, Octane No. ASTM 76, Research 82 (rating taken from oil company's typical inspection data); weight per gallon 6.079 lbs. Oil: SAE 20; to motor 0.996 gal.; drained from motor 0.954 gal. Total time motor was operated 43½ hours.

**CHASSIS** — Type — standard, Serial No B73430. Tread width: rear 40½" to 52½"; front 43" and 47". Wheelbase: 73 13/32". Hydraulic control system: Driven by power take-off. Advertised speeds, mph: First 2½, second 4, third 7½; reverse 3. Belt pulley: Diam. 8"; face 5½"; rpm 1130. Belt speed: 2370 fpm. Clutch: Single dry disc operated by foot pedal. Seat: Upholstered seat with back rest. Brakes: Contracting band operated by two foot pedals. Equalized: No. Power Take-off: Standard type.

**ENGINE**—Make—Allis-Chalmers. Type— 4 cylinder vertical; Serial No. CE128908G. Crankshaft mounted lengthwise; head—I; lubrication—pressure. Bore and stroke: 3¼" x 3¼"; rated rpm 1500. Compression ratio 5.75-1; displacement 125.3". Port diameter valves: Inlet 1.20"; exhaust 1.03". Governor: Centrifugal variable speed. Carburetor: Size 7/8". Ignition system: Magneto. Starter: 6 volt. Air Cleaner: Oil washed wire screen. Muffler: Used. Oil Filter: Replaceable element. Cooling medium temperature control: Thermostat and shutters.

**REPAIRS AND ADJUSTMENTS**—No repairs or adjustments.

**REMARKS**—All test results 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 95% of maximum belt horsepower.

**HORSEPOWER SUMMARY**

	Draw-bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60" F. and 29.92" Hg.).....	20.60	22.87
2. Observed maximum horsepower (tests F and B).....	19.51	22.25
3. Seventy-five percent of calculated maximum drawbar horsepower and eighty-five percent of calculated maximum belt horsepower (formerly ASAE and SAE ratings) .....	15.45	19.44

We, the undersigned, certify that this is a true and correct report of official tractor test No. 439.

L. F. Larsen  
Engineer-in-Charge

C. W. Smith  
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Board of Tractor  
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