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10-31-1950

Test 453: Allis-Chalmers CA

Nebraska Tractor Test Lab

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The Experiment Station
University of Nebraska College of Agriculture
W. V. Lambert, Director, Lincoln, Nebraska

Department of Agricultural Engineering

Dates of test: October 31 to November 9, 1950.

Manufacturer: THE ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE, WISCONSIN

Manufacturer's rating: Not rated.

NEBRASKA TRACTOR TEST NO. 453

ALLIS-CHALMERS CA

BELT HORSEPOWER TESTS

Hp	Crank shaft speed rpm	Fuel Consumption			Water used gal per hour	Temp Deg F		Barometer in Hg
		Gal per hour	Hp-hr per gal	Lb per hp-hour		Cooling med	Air	
TEST B—100% MAXIMUM LOAD—TWO HOURS								
25.96	1650	2.366	10.97	0.560	0.00	161	52	28.957
TEST C—OPERATING MAXIMUM LOAD—ONE HOUR								
24.79	1650	2.103	11.79	0.521	0.00	163	53	28.950
TEST D—RATED LOAD—ONE HOUR								
22.69	1650	1.946	11.66	0.527	0.00	176	53	28.950
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
22.66	1649	1.940	11.68	0.526	...	178	56
1.47	1859	0.801	1.84	3.347	...	183	56
12.24	1771	1.363	8.98	0.684	...	185	55
23.40	1547	1.989	11.76	0.522	...	160	51
6.26	1813	1.050	5.96	1.030	...	190	54
17.51	1693	1.642	10.66	0.576	...	190	56
13.92	1722	1.464	9.51	0.646	0.00	181	55	28.950

DRAWBAR HORSEPOWER TESTS

Hp	Draw bar pull lb	Speed miles per hr	Crank shaft speed rpm	Slip of drive wheels %	Fuel Consumption			Water used gal per hour	Temp Deg F		Barometer in Hg
					Gal per hour	Hp-hr per gal	Lb per hp-hr		Cool- ing med	Air	
TEST F—100% MAXIMUM LOAD—2nd GEAR											
22.97	2735	3.15	1651	8.82	Not Recorded				160	52	28.960
TEST G—OPERATING MAXIMUM LOAD											
16.09	3557	1.70	1654	13.71	Not Recorded				170	49	28.960
21.78	2573	3.17	1652	8.29	" "				165	53	28.960
22.04	1992	4.15	1650	6.00	" "				160	50	28.960
18.64	641	10.91	1649	1.96	" "				160	49	28.960
TEST H—RATED LOAD—TEN HOURS—2nd GEAR											
17.83	2073	3.23	1650	6.66	1.732	10.29	0.596	0.00	194	55	28.949
TEST J—OPERATING MAXIMUM LOAD—2nd GEAR											
14.51	1874	2.90	1652	17.18	Not Recorded				175	27	29.160
TEST K—OPERATING MAXIMUM LOAD—2nd GEAR											
14.82	1886	2.95	1654	15.73	Not Recorded				170	28	29.160

TIRES, WHEELS and WEIGHT

	Tests F, G, & H	Test J	Test K
Rear wheels Type	Pressed steel	Pressed steel	Pressed steel
Liquid ballast	219 lb each*	None*	None*
Added cast iron	829 lb each	None	None
Rear tires No. and size	Two 10-24	Two 10-24	Two 10-24
Ply	6	6	4
Air pressure	20 lb	12 lb	12 lb
Front wheels Type	Pressed steel	Pressed steel	Pressed steel
Liquid ballast	22 lb each	None	None
Added cast iron	71 lb each	None	None
Front tires No. and size	Two 4.00-15	Two 4.00-15	Two 4.00-15
Ply	4	4	4
Air pressure	28 lb	28 lb	28 lb
Height of drawbar	21 inches	21½ inches	21 inches
Static weight Rear end	3876 lb	1780 lb	1751 lb
Front end	984 lb	798 lb	800 lb
Total weight as tested with operator	5045 lb	2763 lb	2736 lb

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

FUEL, OIL and TIME Gasoline octane No. ASTM 76 Research 82 (rating taken from oil company's typical inspection data): weight per gallon 6.140 lb Oil SAE 20; to motor 0.994 gal; drained from motor 0.858 gal Total time motor was operated 47 hours.

CHASSIS Type tricycle Serial No CA-12 Tread width rear 52" to 80" front 6¼" to 13" Wheel Base 81½" Hydraulic control system driven by power take-off Advertised speeds mph first 2 second 3½ third 4½ fourth 11¼ reverse 3½ Belt pulley diam 8" face 5½" rpm 1220 Belt speed 2555 fpm Engine clutch single dry disc operated by foot pedal Final drive clutch single dry plate operated by hand lever Seat pressed steel on coil spring with hydraulic shock absorber Brakes contracting band operated by two foot pedals Equalized no Power take-off direct engine drive when hand clutch is used.

ENGINE Make Allis-Chalmers Type 4 cylinder vertical Serial No CE 138073GA Crankshaft mounted lengthwise Head I Lubrication pressure Bore and Stroke 3⅜"x3½" Rated rpm 1650 Compression ratio 6.25-1 Displacement 125 cu in Port Diameter Valves inlet 1.20" exhaust 1.03" Governor centrifugal variable speed Carburetor Size ⅝" Ignition System Magneto Starter 6 volt Air Cleaner oil washed wire screen Muffler was used Oil Filter replaceable waste element Cooling medium temperature control thermostat and shutter.

REPAIRS and ADJUSTMENTS No repair 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 95.6% of maximum belt horsepower.

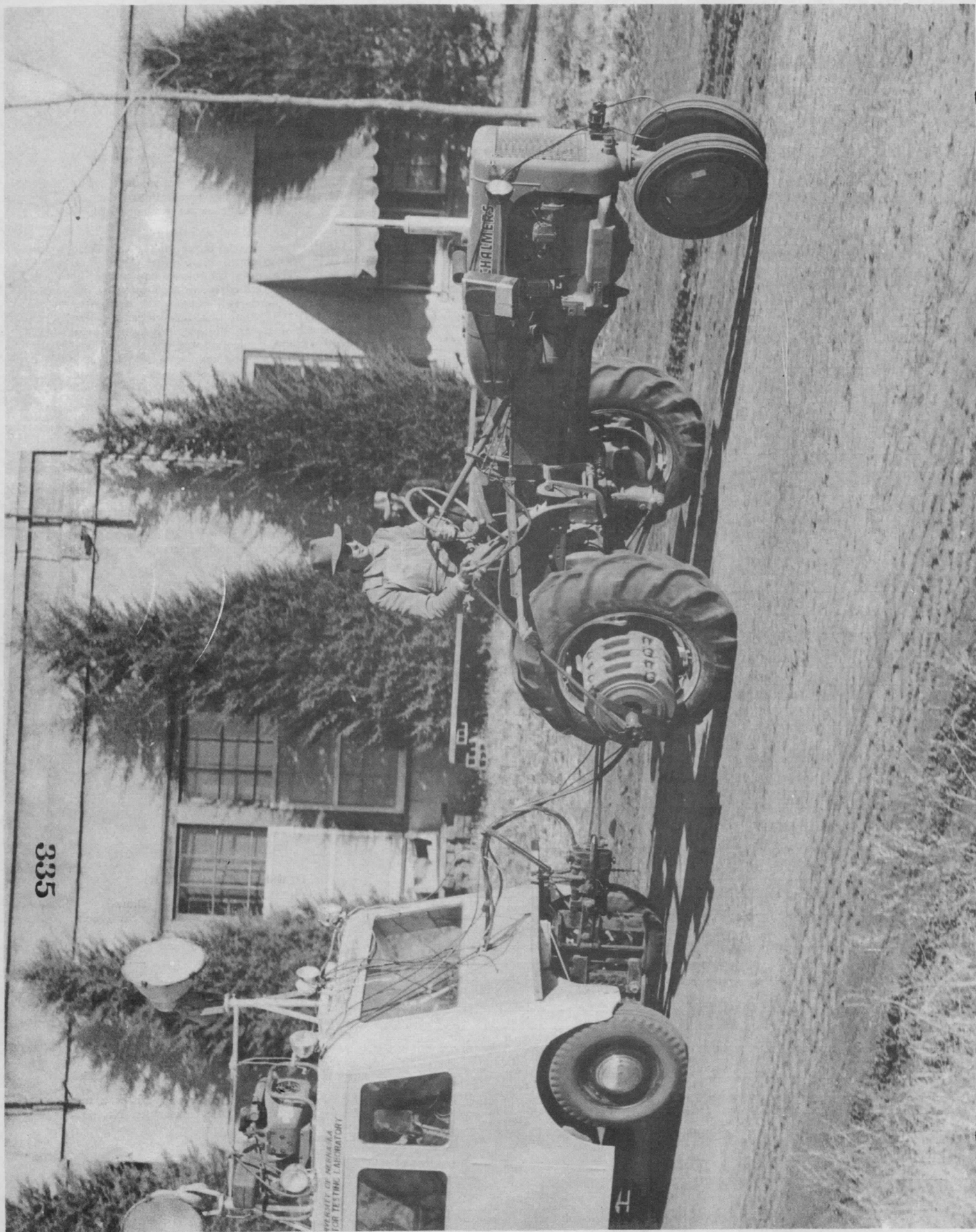
HORSEPOWER SUMMARY

	Draw-bar	belt
1. Sea level (calculated) maximum horsepower (based on 60° F and 29.92" Hg)	23.55	26.62
2. Observed maximum horsepower (tests F & B)	22.97	25.96
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)	17.66	22.63

We, the undersigned, certify that this is a true and correct report of official tractor test No. 453.

L. F. Larsen
Engineer in Charge

C. W. Smith
F. D. Yung
L. W. Hurlbut
Board of Tractor
Test Engineers



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