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Test 418: Caterpillar Model D-2

Nebraska Tractor Test Lab

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Department of Agricultural Engineering

Dates of test: July 11 to July 26, 1949

Manufacturer: CATERPILLAR TRACTOR COMPANY, PEORIA, ILLINOIS

Manufacturer's rating: 32 Drawbar H. P. in second gear corrected. Belt not rated.

NEBRASKA TRACTOR TEST NO. 418

CATERPILLAR D-2

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	
TEST B and C—100% MAXIMUM LOAD—TWO HOURS								
36.02	1526	2.637	13.66	0.508	0.00	177	93	28.787
*TEST D—ONE HOUR								
32.85	1525	2.411	13.63	0.509	0.00	169	82	28.800
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
32.85	1526	2.422	13.56	0.511	- -	169	81	-- ---
1.54	1650	1.017	1.51	4.578	- -	167	79	-- ---
17.38	1606	1.704	10.20	0.680	- -	167	79	-- ---
35.22	1454	2.531	13.92	0.498	- -	167	78	-- ---
8.89	1641	1.345	6.61	1.049	- -	167	78	-- ---
25.79	1592	2.102	12.27	0.565	- -	168	78	-- ---
20.28	1578	1.854	10.94	0.634	0.00	168	79	28.800

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.		Cool- ing med.	Air	
TEST F and TEST G—100% MAXIMUM LOAD—											
26.99	6778	1.49	1526	11.39	Not Recorded				162	90	28.830
30.31	4786	2.37	1523	4.24	" "				166	80	28.830
29.98	3863	2.91	1527	2.48	" "				165	91	28.830
29.90	3201	3.50	1527	1.88	" "				163	93	28.830
28.68	2129	5.05	1525	0.90	" "				165	94	28.830
					" "						
*TEST H—TEN HOURS— 2nd GEAR											
24.13	3778	2.40	1525	3.52	2.239	10.78	0.643	0.00	169	82	28.812

* Formerly called RATED LOAD, see horsepower summary.

FUEL, OIL and TIME Fuel: Diesel fuel, cetane 47 (cetane rating taken from oil company's typical inspection data); weight per gallon 6.935 lbs. Oil: SAE 30; to motor 3.888 gals; drained from motor 3.380 gals. Total time motor was operated 34 hours.

SPECIFICATIONS Type Tracklayer; Serial No. 5U2826; Drive enclosed gear; Tread Width: 50"; Measured Length of Track 15.90 ft. Cleats: Type integral with shoe; No. per track 31; Size 1 7/8" x 12". Advertised speeds, mph: First 1.7; Second 2.5; Third 3.0; Fourth 3.6; Fifth 5.1; Reverse 2.1. Belt Pulley: Diam 12"; Face 7 1/2"; RPM 850; Belt Speed 2670 fpm. Clutch: Make own; Type dry metallic friction disc; Operated by hand lever. Seat upholstered. Brakes: Make own; Type contracting bands; Location steering clutch drums; Gear Reduction (brake drum to sprocket) 5.333:1; Operated by foot pedals; Locked by latch on tractor frame. Steering hand levers controlling multiple disc clutches.

ENGINE Make own; Serial No. 5U2826; Type 4 cylinder vertical; Head I; Mounting crankshaft lengthwise; Lubrication pressure; Bore and Stroke 4" x 5"; Rated RPM 1525; Compression Ratio 19.0:1. Port Diameter Valves: Inlet 1.437"; Exhaust 1.437". Governor: Make own; Type centrifugal, variable speed. Fuel Injection System own. Air Cleaner: Make Donaldson; Type oil washed wire screen with precleaner. Oil Filter: Make Purolator; Type permanent metal full flow and replaceable by-pass element. Fuel Filter: Make own; Type four replaceable cotton yarn wound elements. Cooling medium temperature control: Thermostat.

STARTING ENGINE Make own; Type 2 cylinder horizontal opposed; Mounting behind diesel engine; Mfg. Rating 10 hp at 3000 rpm; Bore and Stroke 2 3/4" x 3"; Magneto Bosch; Carburetor Zenith; Air Cleaner Donaldson; Starter hand rope.

TOTAL WEIGHT AS TESTED (with operator) 7255 lbs.

REPAIRS AND ADJUSTMENTS No repairs or adjustments.

REMARKS All test results were determined from observed data and without allowances, additions or deductions. Test F was made with a fuel pump setting, selected by the manufacturer, to develop approximately 32 (corrected) drawbar horsepower in second gear and data from this test were used in determining the horsepower to be developed in tests D and H, respectively. Tests B, C, D, E, G and H were made with the same setting.

HORSEPOWER SUMMARY

	Draw- bar	Belt
1. Sea level (calculated) maximum horsepower (based on 60° F. and 29.92" Hg.)	32.06	38.50
2. Observed maximum horsepower (tests F & B)	30.31	36.02
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)	24.05	32.73

We, the undersigned, certify that this is a true and correct report of official tractor test No. 418

L. F. Larsen
Engineer in Charge

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

