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January 1940

Test 358: Caterpillar Model D-7 (Diesel)

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. 358

Dates of test; October 2 to 11, 1940.

Name and model of tractor; CATERPILLAR DIESEL D-7

Manufacturer; Caterpillar Tractor Company, Peoria, Illinois.

Manufacturer's rating: 80.00 Drawbar horsepower maximum in second gear (standard conditions)

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

H. P.	Crank shaft speed R.P.M.	Fuel Consumption			Water used gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
		Gal. per hr.	H. P. hr. per gal.	Lb. per H. P. hr.		Cool- ing med.	Air	

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

89.10	1000	5.994	14.86	0.471	0.000	174	68	28.940
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*TEST D - ONE HOUR

78.96	1000	5.330	14.81	0.473	0.000	171	72	28.925
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

78.98	999	5.319	14.85	0.471	--	171	72	--
1.88	1072	1.864	1.01	6.941	--	162	72	--
40.96	1039	3.484	11.76	0.595	--	166	72	--
87.21	989	5.799	15.04	0.465	--	175	73	--
20.86	1055	2.619	7.96	0.879	--	165	75	--
60.44	1021	4.294	14.09	0.497	--	168	75	--
48.39	1029	3.896	12.42	0.564	0.000	168	73	28.925

D R A W B A R H O R S E P O W E R T E S T S

H. P.	Draw bar pull pounds	Speed miles per hr.	Crank shaft speed R.P.M.	Slip on drive wheels %	Fuel Consumption			Water used gal. per hr.	Temp. Deg. F.		Barometer Inches of Mercury
					Gal. per hr.	H.P. per gal.	Lb. per H.P. hr.		Cool- ing med.	Air	

TESTS F AND G - 100% MAXIMUM LOAD

75.83	21351	1.33	1001	4.80	-----	Not Recorded	-----	-----	174	74	28.980
78.48	13454	2.19	998	1.98	-----	"	"	-----	172	60	29.185
76.99	9090	3.18	1001	0.71	-----	"	"	-----	173	62	29.115
73.16	5994	4.58	999	0.48	-----	"	"	-----	176	71	28.920
72.57	4550	5.98	1001	0.46	-----	"	"	-----	174	72	28.905

*TEST H - TEN HOURS - Second - GEAR

60.63	10335	2.20	1000	1.63	4.734	12.81	0.547	0.000	171	68	28.895
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*Formerly called RATED LOAD; see REMARKS 4, page 3.

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FUEL, OIL, AND TIME

Fuel Commercial diesel fuel Weight per gallon 7.00 pounds
Oil: S.A.E No. 20 To motor 5.435 gal. Drained from motor 3.713 gal.
Total time motor was operated 42 hours

BRIEF SPECIFICATIONS

Advertised speeds, miles per hour: First 1.4 Second 2.2
Third 3.2 Fourth 4.6 Fifth 6.0 Reverse 1.6 - 2.6 - 3.8 - 5.4
Belt pulley: Diam. 17-5/8" Face 15" R.P.M. 692 Belt speed 3197 f.p.m.
Clutch: Make Own Type Single plate Operated by hand
Seat Upholstered

Total weight as tested (with operator) 24,790 Pounds

MOTOR

Make Own Serial No. 729 Type 4 cylinder, vertical, diesel
Head I Mounting Crankshaft lengthwise Lubrication Pressure
Bore and stroke 5-3/4" x 8" Rated R.P.M. 1000
Port diameter valves: Inlet 2-1/16" Exhaust 2-1/16"
Fuel Injection System: Own Serial No. 16P739
Governor: Make Own Type Variable speed, centrifugal
Oil-washed wire screen filter
Air Cleaner: Make Donaldson Type with collector pre-cleaner
Oil Filter: Combination Purolator full flow metal element and own by-pass re-
newable cotton yarn type element

Cooling medium temperature control: Fulton thermostat

CHASSIS

Type Tracklayer Serial No. 7M715SP Drive Enclosed gear
Tread width: 74" Measured length of track 24.0021'
Cleats: Type Integral with shoes No. per track 36
Size 2-1/4" high x 24" long

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REPAIRS AND ADJUSTMENTS

No repairs or adjustments.

REMARKS

1. All results shown on page 1 of this report were determined from observed data and without allowances, additions, or deductions. Tests B and F were made with fuel pumps set to develop approximately 80.00 drawbar horsepower maximum in second gear under standard conditions 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.
2. Observed maximum horsepower (tests F & B)

	<u>DRAWBAR</u>	<u>BELT</u>
	78.48	89.10
3. Sea level (calculated) maximum horsepower
(based on 60° F. and 29.92" Hg.)

	80.44	92.84
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4. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly A.S.A.E. and S.A.E. ratings)

	60.33	78.91
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We, the undersigned certify that the above is a true and correct report of official tractor test No. 358.

Carlton L. Zink
Engineer-in-charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut
Board of Tractor Test Engineers