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Nebraska Tractor Tests

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11-19-1951

## NTTL Engine Test 2 Petter AV2 Diesel Engine

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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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: November 19 to November 28, 1951  
Manufacturer: PETTERS LTD., DIVISION BRUSH  
ABOE, LONDON, ENGLAND  
Manufacturer's rating: 12 hp at 1800 rpm.

NEBRASKA ENGINE TEST NO. 2

PETTER AV2 DIESEL ENGINE

BELT HORSEPOWER TESTS—WITH FAN AND RADIATOR

Hp	Crank shaft speed rpm	Fuel Consumption			Water used gal per hr	Temp Deg F		Barometer inches of mercury
		Gal per hr	Hp-hr per gal	Lb per hp-hour		Cooling med	Air	
TESTS B and C—100% MAXIMUM LOAD—TWO HOURS								
9.96	1500	0.683	14.58	0.481	0.00	169	68	28.975
TEST D—RATED LOAD—ONE HOUR								
8.81	1502	0.586	15.03	0.467	0.00	165	70	28.950
TEST E—VARYING LOAD—TWO HOURS (20 minute runs; last line average)								
8.82	1503	0.599	14.72	0.476	...	167	71	.....
2.55	1635	0.291	8.76	0.800	...	142	72	.....
4.74	1603	0.381	12.44	0.563	...	145	71	.....
9.46	1425	0.650	14.55	0.482	...	171	71	.....
2.54	1628	0.287	8.85	0.791	...	141	70	.....
6.92	1550	0.496	13.95	0.503	...	152	70	.....
5.84	1557	0.451	12.95	0.541	0.00	153	71	28.950

DIRECT CONNECTED BRAKE HORSEPOWER TESTS—NO FAN OR RADIATOR USED

Hp	Crank shaft speed rpm	Torque lb-ft.	Fuel used lb per bhp-hr	Temperature Degrees F					Barometer inches of mercury
				Exhaust	Oil	Cooling water		Air	
						In	Out		
PEAK HORSEPOWER (for temporary overload condition only) 5 min run each speed									
8.93	1000	46.93	0.457	...	...	66	180	66	28.700
10.56	1200	46.22	0.432	...	...	67	190	66	28.700
12.50	1500	43.78	0.461	...	...	66	176	70	28.700
14.40	1800	42.02	0.483	...	..	66	180	69	28.700
INTERMITTENT HORSEPOWER (power available not exceeding one hr) 10 min run each speed									
7.53	995	39.75	0.446	825	142	70	186	68	28.700
9.21	1201	40.27	0.436	870	140	70	186	72	28.700
11.00	1500	38.52	0.442	903	142	70	189	72	28.700
12.41	1799	36.24	0.464	910	150	70	190	72	28.750
CONTINUOUS HORSEPOWER (Recommended for continuous service) 10 min run each speed									
6.65	998	35.02	0.433	760	133	70	187	68	28.700
8.06	1209	35.02	0.432	820	135	68	189	68	28.700
9.93	1490	35.02	0.441	860	135	70	184	70	28.700
11.79	1768	35.02	0.458	940	135	70	180	70	28.700

**FUEL, OIL and TIME** Diesel fuel cetane No 47 (rating taken from oil company's typical inspection data); weight per gallon 7.011 lb Oil SAE 20; to motor 1.747 gal; drained from motor 1.540 gal Total time motor was operated 30 hours.

**ENGINE** Make Petter Type 2 cylinder vertical Diesel Serial No 721570 Head 1 Lubrication pressure Bore and Stroke 3.15" x 4.33" Rated rpm 1000-1800 Compression ratio 16.5 to 1 Displacement 67.6 cu in Port Diameter Valves inlet 1 1/4" exhaust 1 1/4" Governor variable speed centrifugal Starting System hand crank Air Cleaner oil bath Muffler not used Oil Filter by-pass replaceable element Cooling medium (water) temperature control thermosyphon.

**REMARKS** All test results shown are from observed data. Test B was made with the fuel pump set by the manufacturer to develop the engine's normal industrial intermittent rating. Data from this test were used to determine the belt horsepower to be developed in tests D and E.

HORSEPOWER SUMMARY AT 1500 RPM

Belt Tests

1. Sea level (calculated) maximum belt horsepower (based on 60° F and 29.92" Hg) 10.36
2. Observed maximum belt horsepower (test B) 9.96
3. Eighty-five per cent of calculated maximum belt horsepower 8.81

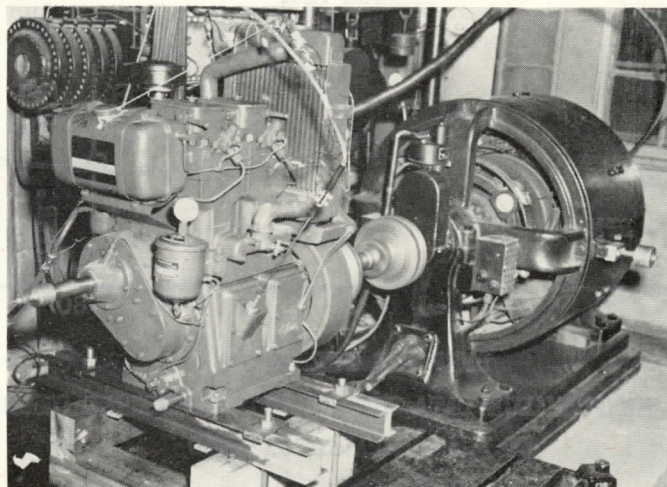
Direct Connected Test

1. Observed industrial continuous horsepower less radiator and fan 9.93

We, the undersigned, certify that this is a true and correct report of official engine test No. 2.

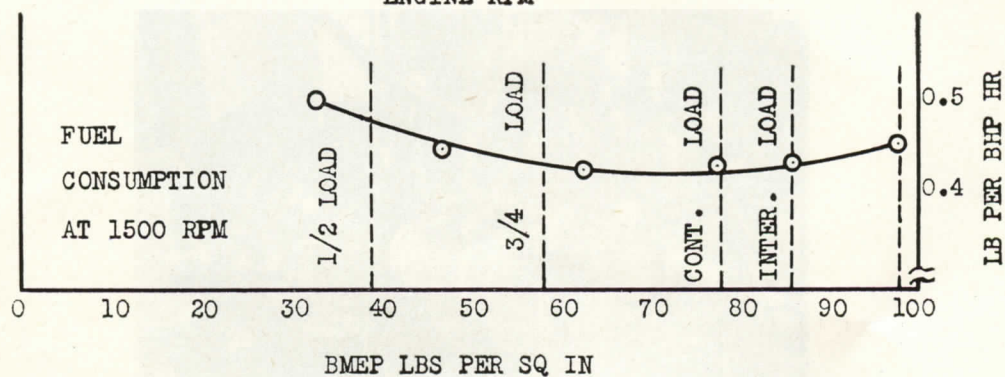
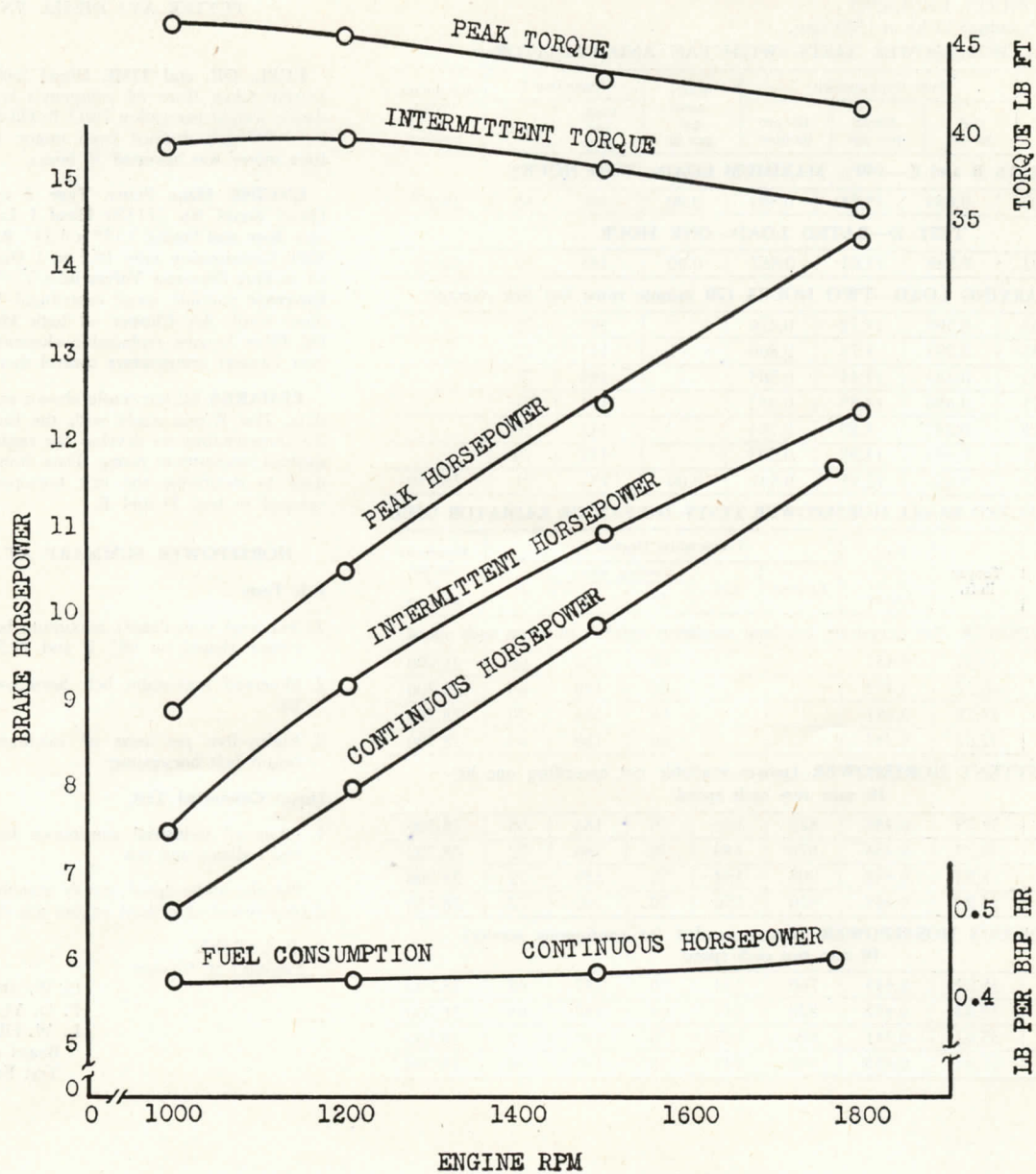
L. F. LARSEN  
Engineer in Charge

C. W. SMITH  
F. D. YUNG  
L. W. HURLBUT  
Board of Tractor  
Test Engineers



Direct connected brake horsepower test.

# PETTER MODEL AV2 DIESEL ENGINE



OBSERVED PERFORMANCE DATA WITH DIRECT CONNECTED DYNAMOMETER  
NO FAN OR RADIATOR USED