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January 1974

## Test 1163: Long 900 and 910 Diesel

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1163 – LONG 900 DIESEL ALSO LONG 910 DIESEL

## POWER TAKE-OFF PERFORMANCE

Hp	Crank- shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>								
<b>Rated Engine Speed—Two Hours (PTO Speed—1012 rpm)</b>								
72.88	2200	5.639	0.535	12.92	180	60	75	29.290
<b>Standard Power Take-Off Speed (1000 rpm)—One Hour</b>								
72.86	2175	5.581	0.526	13.06	179	60	75	29.335
<b>VARYING POWER AND FUEL CONSUMPTION—Two Hours</b>								
67.32	2392	4.622	0.475	14.57	165	59	74	.....
0.00	2518	1.419	.....	.....	129	59	74	.....
34.55	2454	2.803	0.561	12.33	142	59	75	.....
73.18	2200	5.598	0.529	13.07	178	60	75	.....
17.60	2500	2.083	0.818	8.45	130	60	74	.....
51.11	2420	3.537	0.478	14.45	147	59	74	.....
Av 40.63	2414	3.341	0.569	12.15	148	59	74	29.333

## DRAWBAR PERFORMANCE

Hp	Draw- bar pull lbs	Speed miles per hr	Crank- shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool- ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
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### VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST

<b>Maximum Available Power—Two Hours—10th Gear (2-Hi TA)</b>											
59.90	4703	4.78	2200	8.46	5.461	0.630	10.97	191	49	68	29.000
<b>75% of Pull at Maximum Power—Ten Hours—10th Gear (2-Hi TA)</b>											
52.38	3679	5.34	2403	6.35	4.029	0.532	13.00	184	59	67	29.069
<b>50% of Pull at Maximum Power—Two Hours—10th Gear (2-Hi TA)</b>											
36.63	2473	5.55	2455	4.60	3.219	0.607	11.38	166	48	53	29.110
<b>50% of Pull at Reduced Engine Speed—Two Hours—12th Gear (2-Hi DD)</b>											
36.99	2496	5.56	1834	4.31	2.058	0.497	13.91	188	66	70	29.010

### MAXIMUM POWER WITH BALLAST

60.00	7843	2.87	2239	14.86	6th Gear (1-Hi TA)		174	52	64	29.200
60.16	6341	3.56	2198	11.77	8th Gear (4-Lo TA)		184	48	63	29.140
62.31	4912	4.76	2200	8.72	10th Gear (2-Hi TA)		184	47	63	29.130
61.56	4654	4.96	2200	8.19	11th Gear (4-Lo DD)		183	48	63	29.110
62.50	3587	6.53	2201	6.29	12th Gear (2-Hi DD)		186	48	65	29.110
62.29	2976	7.85	2201	5.17	13th Gear (3-Hi TA)		181	47	65	29.110

### VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST 10th Gear (2-Hi TA)

Pounds Pull	4912	5168	5222	5092	5077	4927
Horsepower	62.31	58.75	52.50	45.35	38.37	31.19
Crankshaft Speed rpm	2200	1982	1755	1552	1317	1100
Miles Per Hour	4.76	4.26	3.77	3.34	2.83	2.37
Slip of Drivers %	8.72	9.24	9.50	9.24	9.24	8.98

### TRACTOR SOUND LEVEL WITHOUT CAB db (A)

Maximum Available Power 2 Hours	100.0
75% of Pull at Max. Power 10 Hours	100.0
50% of Pull at Max. Power 2 Hours	98.5
50% of Pull at Reduced Engine Speed 2 Hours	95.5
Bystander (15th Gear 4-Hi TC)	90.0

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi	Two 18.1-34;6;16	Two 18.4-34;6;15
<b>Ballast</b>	—Liquid	1140 lb each	None
	Cast Iron	870 lb each	None
<b>Front tires</b>	—No., size, ply & psi	Two 9.5L-15;6;32	Two 9.5L-15;6;32
<b>Ballast</b>	—Liquid	178 lb each	None
	Cast Iron	None	None
<b>Height of drawbar</b>		19 inches	19 inches
<b>Static weight with operator—rear</b>		9230 lb	5210 lb
<b>front</b>		3345 lb	2990 lb
<b>total</b>		12575 lb	8200 lb

### Department of Agricultural Engineering

Dates of Test: October 2 to 18, 1974

Manufacturer: LONG MFG. COMPANY, N.

C. INC., TARBORO, NORTH CAROLINA

**FUEL, OIL AND TIME** Fuel No 2 Diesel

Cetane No 51.9 (rating taken from oil com-

pany's typical inspection data) **Specific gravity**

converted to 60°/60° 0.8303 **Weight per gal-**

lon 6.913 lb **Oil SAE 30 API service classifi-**

cation SB/SE—CA/CD **To motor 2.501 gal**

**Drained from motor 2.083 gal Transmission**

**and final drive lubricant SAE 80-90 Total time**

**engine was operated 64½ hours**

**ENGINE Make Zetor Diesel Type 4 cylin-**

**der vertical Serial No 027345 Crankshaft**

**mounted lengthwise Rated rpm 2200 Bore**

**and stroke 4.33" x 4.72" Compression ratio 17**

**to 1 Displacement 278 cu in Cranking system**

**12 volt electric Lubrication pressure Air**

**cleaner paper cartridge Oil filter centrifugal**

**type Oil cooler Heat exchanger in crankcase**

**pan Fuel filter Sediment bowl and screen,**

**double filter with replaceable felt cartridge and**

**replaceable paper cartridge Muffler vertical**

**Cooling medium temperature control thermo-**

**stat**

**CHASSIS Type standard Serial No 9837**

**Tread width rear 64" to 88" front 64" to 88"**

**Wheel base 92.5" Center of gravity (without**

**operator or ballast, with minimum tread, with**

**fuel tank filled and tractor serviced for opera-**

**tion) Horizontal distance forward from center-**

**line of rear wheels 37.8" Vertical distance above**

**roadway 33" Horizontal distance from center of**

**rear wheel tread 0" to the right / left Hy-**

**draulic control system direct engine drive**

**Transmission selective gear fixed ratio with**

**partial (2) range operator controlled power shift**

**Advised speeds mph first 1.1 second 1.5 third**

**1.7 fourth 2.3 fifth 2.8 sixth 3.2 seventh 3.3**

**eighth 4.0 ninth 4.3 tenth 5.1 eleventh 5.3**

**twelfth 6.8 thirteenth 8.1 fourteenth 10.8 fif-**

**teenth 11.5 sixteenth 15.4 reverse 1.5, 2.0, 2.4,**

**3.2, 3.8, 5.1, 5.4 and 7.2 Clutch single disc**

**operated by foot pedal Brakes wet disc oper-**

**ated hydraulically by hand lever and two foot**

**pedals that can be locked together Steering**

**power assist Turning radius (on concrete sur-**

**face with brake applied) right 129" left 129"**

**(on concrete surface without brake) right 139"**

**left 139" Turning space diameter (on concrete**

**surface with brake applied) right 258" left 258"**

**(on concrete surface without brake) right 278"**

**left 278" Power take-off 540 rpm at 2200**

**engine rpm and 1000 at 2175 engine rpm**

**REPAIRS AND ADJUSTMENTS Before**

**starting PTO run two new "O" rings were**

**installed in power take-off assembly. During**

**ten hour run it was necessary to install a new**

**injection fuel line for No 2 cylinder.**

**The 540 PTO drive was not used because it**

**would not remain engaged.**

**REMARKS: All test results were determined**

**from observed data obtained in accordance with**

**SAE and ASAE test code or official Nebraska**

**test procedure.**

**First, second, third, fourth and fifth gears**

**were not run as it was necessary to limit the**

**pull in sixth gear due to excessive slippage.**

**Seventh, ninth, fourteenth, fifteenth, and six-**

**teenth gears were not run as test procedure**

**requires only six travel speeds.**

**We, the undersigned, certify that this is a true**

**and correct report of official Tractor Test 1163.**

**L. F. LARSEN**

**Engineer-in-Charge**

**G. W. STEINBRUEGGE, Chairman**

**W. E. SPLINTER**

**KENNETH VON BARGEN**

**Board of Tractor Test Engineers**