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## Test 1417: Long 610 Diesel 8-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1417 — LONG 610 DIESEL

## 8 SPEED

### POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)	
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)									
64.33 (47.97)	2400	4.192 (15.868)	0.449 (0.273)	15.34 (3.023)	232 (110.8)	62 (16.6)	75 (23.9)	28.810 (97.287)	
Standard Power Take-off Speed (540 rpm)—One Hour									
60.57 (45.17)	2160	3.803 (14.396)	0.433 (0.263)	15.93 (3.138)	231 (110.6)	61 (16.3)	75 (23.7)	28.815 (97.304)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
56.84 (42.39)	2492	3.546 (13.423)	0.430 (0.262)	16.03 (3.158)	214 (100.8)	62 (16.4)	75 (23.9)	..... .....	
0.00 (0.00)	2566	1.075 (4.069)	..... .....	..... .....	167 (74.7)	62 (16.4)	75 (23.9)	..... .....	
28.75 (21.44)	2524	2.158 (8.169)	0.518 (0.315)	13.32 (2.625)	174 (78.9)	61 (16.1)	75 (23.6)	..... .....	
65.50 (48.84)	2400	4.290 (16.239)	0.452 (0.275)	15.27 (3.008)	221 (104.7)	61 (16.1)	75 (23.9)	..... .....	
14.50 (10.81)	2543	1.566 (5.928)	0.745 (0.453)	9.26 (1.824)	174 (78.6)	61 (16.1)	75 (23.6)	..... .....	
42.80 (31.92)	2504	2.850 (10.788)	0.459 (0.279)	15.02 (2.959)	185 (85.0)	61 (16.1)	75 (23.6)	..... .....	
Av Av	34.73 (25.90)	2505	2.581 (9.770)	0.512 (0.312)	13.46 (2.651)	189 (87.1)	61 (16.2)	75 (23.8)	28.820 (97.321)

### DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 5th Gear											
56.12 (41.85)	3922 (17.45)	5.37 (8.64)	2401	6.66	4.133 (15.647)	0.508 (0.309)	13.58 (2.675)	193 (89.2)	47 (8.1)	53 (11.7)	29.090 (98.233)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
45.52 (33.94)	3013 (13.40)	5.67 (9.12)	2485	4.90	3.368 (12.751)	0.510 (0.310)	13.51 (2.662)	171 (77.2)	42 (5.6)	52 (11.0)	29.135 (98.385)
50% of Pull at Maximum Power—Two Hours 5th Gear											
31.33 (23.36)	2023 (9.00)	5.81 (9.35)	2509	3.46	2.629 (9.951)	0.579 (0.352)	11.92 (2.348)	169 (75.8)	45 (6.9)	55 (12.5)	29.105 (98.283)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
31.30 (23.34)	2019 (8.98)	5.81 (9.36)	1668	3.43	2.175 (8.235)	0.479 (0.291)	14.39 (2.835)	167 (75.0)	43 (6.1)	53 (11.4)	29.110 (98.300)
MAXIMUM POWER IN SELECTED GEARS											
39.90 (29.75)	7018 (31.22)	2.13 (3.43)	2491	14.58	2nd Gear			152 (66.7)	38 (3.3)	41 (5.0)	28.930 (97.692)
53.30 (39.75)	6620 (29.45)	3.02 (4.86)	2401	14.28	3rd Gear			180 (81.9)	46 (7.8)	50 (10.0)	29.070 (98.165)
55.99 (41.75)	5065 (22.53)	4.15 (6.67)	2401	8.90	4th Gear			186 (85.6)	46 (7.8)	49 (9.4)	29.060 (98.131)
57.48 (42.86)	4015 (17.86)	5.37 (8.64)	2397	6.45	5th Gear			187 (85.8)	45 (7.2)	47 (8.3)	29.040 (98.064)
56.32 (42.00)	2549 (11.34)	8.29 (13.34)	2399	4.19	6th Gear			187 (85.8)	47 (8.3)	51 (10.6)	29.080 (98.199)

### LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2397	2163	1917	1685	1438	1195	955
Pull—lbs (kN)	4015 (17.86)	4161 (18.51)	4317 (19.20)	4468 (19.87)	4594 (20.44)	4672 (20.78)	4495 (19.99)
Increase in Pull %	0	4	8	11	14	16	12
Power—Hp (kW)	57.48 (42.86)	53.57 (39.95)	49.04 (36.57)	44.49 (33.18)	38.93 (29.03)	32.83 (24.48)	25.32 (18.88)
Speed—Mph (km/h)	5.37 (8.64)	4.83 (7.77)	4.26 (6.86)	3.73 (6.01)	3.18 (5.11)	2.64 (4.24)	2.11 (3.40)
Slip %	6.45	6.99	7.34	7.57	7.81	8.15	7.81

### Department of Agricultural Engineering

**Dates of Test:** October 27 to November 10, 1981

**Manufacturer:** UNIVERSAL TRACTOR BRA-SOV (UTB) Brasov, Romania

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8281 **Fuel weight** 6.895 lbs/gal (0.826 kg/l) **Oil** Long engine oil SAE 15W-40 **API service classification** SF-CD **To motor** 3.358 gal (12.710 l) **Drained from motor** 2.120 gal (8.024 l) **Transmission lubricant** Exxon torque fluid 56 or equiv. **Final drive lubricant** SAE 90 gearlube **Total time engine was operated** 40.0 hours

**ENGINE:** Make UTB diesel **Type** four cylinder vertical **Serial No.** D-121.050\*004844\* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.02" × 4.33" (102 mm × 110 mm) **Compression ratio** 17 to 1 **Displacement** 219 cu in (3595 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

**CHASSIS:** **Type** standard **Serial No.** 660679 **Tread width** rear 56.3" (1430 mm) to 79" (2007 mm) front 52" (1320 mm) to 79" (2007 mm) **Wheel base** 81.5" (2070 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 30.8" (783 mm) Vertical distance above roadway 29.8" (756 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.6 (2.5) second 2.3 (3.8) third 3.4 (5.5) fourth 4.4 (7.1) fifth 5.6 (9.0) sixth 8.4 (13.5) seventh 12.3 (19.8) eighth 15.9 (25.6) reverse 2.2 (3.6), 8.0 (12.9) **Clutch** dual plate dry disc operated by foot pedal **Brakes** contracting band operated by two foot pedals which can be locked together and hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 119" (3.02 m) left 119" (3.02 m) (on concrete surface without brake) right 131" (3.33 m) left 131" (3.33 m) **Turning space diameter** (on concrete surface with brake applied) right 248" (6.3 m) left 248" (6.3 m) (on concrete surface without brake) right 272" (6.91 m) left 272" (6.91 m) **Power take-off** 540 rpm at 2160 engine rpm.

**REPAIRS and ADJUSTMENTS:** The fuel filters were replaced during preliminary PTO tests.

**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 171°F (77.3°C). Five gears were chosen between tire tangential pull limit and 10 mph (16.1 km/h). Oil leaked from the crankshaft rear

# TRACTOR SOUND LEVEL WITHOUT CAB

	dB(A)
Maximum Available Power—Two Hours	98.5
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	96.0
50% of Pull at Reduced Engine Speed—Two Hours	92.5
Bystander in 8th gear	88.5

## TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>		
—No., size, ply & psi (kPa)	Two 16.9-28; 6; 18 (125)	Two 16.9-28; 6; 18 (125)
—Liquid (each)	895 lb (406 kg)	None
—Cast Iron (each)	838 lb (380 kg)	None
<b>Front Tires</b>		
—No., size, ply & psi (kPa)	Two 7.50-16SL; 6; 32 (220)	Two 7.50-16SL; 6; 32 (220)
—Liquid (each)	None	None
—Cast Iron (each)	413 lb (187 kg)	None
<b>Height of Drawbar</b>	21 in (535 mm)	21 in (535 mm)
<b>Static Weight with Operator—Rear</b>	6430 lb (2917 kg)	2965 lb (1345 kg)
—Front	2555 lb (1159 kg)	1730 lb (785 kg)
—Total	8985 lb (4076 kg)	4695 lb (2130 kg)

main oil seal during test. During final inspection, number three cylinder was found to be scratched.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1417.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
W. E. SPLINTER  
L. L. BASHFORD  
Board of Tractor Test Engineers



Long 610 Diesel

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