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Test 1570: Versatile 936 Manual Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1570—VERSATILE 936 MANUAL DIESEL 12 SPEED

DRAWBAR PERFORMANCE AT 2100 RPM

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 7th (2-3) Gear											
254.42 (189.72)	14067 (62.57)	6.78 (10.91)	2100	3.29	16.445 (62.249)	0.451 (0.274)	15.47 (3.048)	183 (83.6)	57 (13.6)	67 (19.4)	28.98 (97.86)
75% of Pull at Maximum Power — Ten Hours 7th (2-3) Gear											
210.28 (156.80)	10806 (48.07)	7.30 (11.74)	2234	2.29	14.979 (56.700)	0.497 (0.302)	14.04 (2.765)	183 (83.9)	59 (15.0)	71 (21.7)	28.83 (97.36)
50% of Pull at Maximum Power — Two Hours 7th (2-3) Gear											
144.46 (107.73)	7204 (32.04)	7.52 (12.10)	2283	1.45	11.952 (45.243)	0.577 (0.351)	12.09 (2.381)	181 (82.8)	58 (14.4)	72 (22.2)	28.96 (97.78)
50% of Pull at Reduced Engine Speed — Two Hours 10th (3-2) Gear											
144.61 (107.84)	7203 (32.04)	7.53 (12.12)	1352	1.37	8.978 (33.986)	0.433 (0.264)	16.11 (3.173)	183 (83.6)	58 (14.2)	73 (22.5)	28.92 (97.66)

MAXIMUM POWER IN SELECTED GEARS

227.74 (169.83)	29495 (131.20)	2.90 (4.66)	2129	14.96	2nd (1-2) Gear			182 (83.1)	60 (15.6)	62 (16.7)	28.75 (97.08)
244.93 (182.65)	26218 (116.62)	3.50 (5.64)	2099	9.48	3rd (1-3) Gear			183 (83.6)	59 (15.0)	71 (21.7)	28.96 (97.79)
252.58 (188.35)	22594 (100.50)	4.19 (6.75)	2098	6.43	4th (1-4) Gear			183 (83.6)	59 (15.0)	71 (21.7)	28.96 (97.79)
258.58 (192.82)	19465 (86.58)	4.98 (8.02)	2099	5.06	5th (2-1) Gear			183 (83.9)	59 (15.0)	71 (21.7)	28.96 (97.79)
259.01 (193.15)	16603 (73.85)	5.85 (9.41)	2099	4.12	6th (2-2) Gear			183 (83.9)	59 (15.0)	71 (21.7)	28.96 (97.79)
260.45 (194.22)	14408 (64.09)	6.78 (10.91)	2097	3.33	7th (2-3) Gear			183 (83.9)	58 (14.4)	69 (20.6)	28.97 (97.83)
258.24 (192.57)	12213 (54.32)	7.93 (12.76)	2100	2.68	8th (2-4) Gear			183 (83.9)	59 (15.0)	70 (21.1)	28.96 (97.79)
251.42 (187.48)	9427 (41.93)	10.00 (16.10)	2098	1.95	9th (3-1) Gear			183 (83.9)	59 (15.0)	70 (21.1)	28.96 (97.79)

LUGGING ABILITY IN 7th (2-3) GEAR

Crankshaft Speed rpm	2097	1887	1676	1460	1255	1043
Pull—lbs (kN)	14408 (64.09)	16366 (72.80)	18302 (81.41)	20085 (89.34)	19483 (86.66)	17656 (78.54)
Increase in Pull %	0	14	27	39	35	23
Power—Hp (kW)	260.45 (194.22)	264.21 (197.02)	260.87 (194.53)	247.36 (184.46)	206.81 (154.22)	156.70 (116.85)
Speed—Mph (km/h)	6.78 (10.91)	6.05 (9.74)	5.35 (8.60)	4.62 (7.43)	3.98 (6.41)	3.33 (5.36)
Slip %	3.33	3.97	4.60	5.37	5.06	4.44

	1750 RPM dB(A)	1900 RPM dB(A)	2100 RPM dB(A)
TRACTOR SOUND LEVEL WITH CAB			
Maximum Available Power—Two Hours	79.5	80.5	80.0
75% of Pull at Maximum Power—Ten Hours			81.5
50% of Pull at Maximum Power—Two Hours			81.5
50% of Pull at Reduced Engine Speed—Two Hours			76.5
Bystander in 12th (3-4) gear			93.0

Department of Agricultural Engineering

Dates of Test: May 13 to 20, 1985

Manufacturer: VERSATILE FARM EQUIPMENT COMPANY, 1260 Clarence Avenue, Winnipeg, Manitoba, Canada R3T 1T3

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 48.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F (15/15°C)** 0.8381 **Fuel weight** 6.978 lbs/gal (0.836 kg/l) **Oil** SAE 15W-40 **API service classification** SE, SF, CC, CD **To motor** 8.853 gal (33.511 l) **Drained from motor** 8.198 gal (31.034 l) **Transmission and hydraulic lubricant** Versatile HyGear 23 or equivalent **Final drive lubricant** SAE 85W140 **Total time engine was operated** 45.0 hours.

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 11229178 **Crankshaft** lengthwise **Rated rpm** 1750 to 2100 **Bore and stroke** 5.5" × 6.0" (139.7 mm × 152.4 mm) **Compression ratio** 14.5 to 1 **Displacement** 855 cu in (14013 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** four wheel drive with duals **Serial No.** 936 85 227111 **Tread width** rear 72" (1830 mm) to 134" (3404 mm) front 72" (1830 mm) to 134" (3404 mm) **Wheel base** 129.9" (3300 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 77.4" (1965 mm) Vertical distance above roadway 42" (1068 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 2.7 (4.3) second 3.2 (5.1) third 3.7 (5.9) fourth 4.3 (6.9) fifth 5.0 (8.0) sixth 5.8 (9.3) seventh 6.7 (10.7) eighth 7.7 (12.3) ninth 9.8 (15.7) tenth 11.3 (18.2) eleventh 13.0 (21.0) twelfth 15.2 (24.5) reverse 3.6 (5.8), 4.1 (6.6), 4.8 (7.7), 5.5 (8.9) **Clutch** dual dry disc operated by foot pedal **Brakes** caliper disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 239" (6.07 m) left 239" (6.07 m) **Turning space diameter** (on concrete surface without brake) right 490" (12.45 m) left 490" (12.45 m) **Power take-off** none **Unladen tractor mass** 26950 lb (12225 kg).

DRAWBAR PERFORMANCE AT 1900 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			
					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	Barom. inch Hg (kPa)
Maximum Available Power — Two Hours 7th (2-3) Gear											
259.95 (193.85)	15988 (71.12)	6.10 (9.81)	1900	4.01	16.000 (60.568)	0.430 (0.261)	16.25 (3.200)	182 (83.1)	55 (12.5)	62 (16.4)	29.03 (98.01)
MAXIMUM POWER IN SELECTED GEAR											
264.63 (197.33)	16270 (72.37)	6.10 (9.82)	1900	3.97	7th (2-3) Gear			183 (83.9)	58 (14.4)	69 (20.6)	28.97 (97.83)

DRAWBAR PERFORMANCE AT 1750 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			
					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	Barom. inch Hg (kPa)
Maximum Available Power — Two Hours 7th (2-3) Gear											
258.76 (192.96)	17372 (77.27)	5.59 (8.99)	1750	4.44	15.499 (58.669)	0.418 (0.254)	16.70 (3.289)	184 (84.2)	58 (14.2)	68 (20.0)	29.00 (97.91)
MAXIMUM POWER IN SELECTED GEAR											
263.25 (196.30)	17660 (78.55)	5.59 (9.00)	1750	4.44	7th (2-3) Gear			183 (83.9)	59 (15.0)	70 (21.1)	28.97 (97.83)

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 24.5-32; 10; inner 14 (95) outer 12 (85)	Four 24.5-32; 10; inner 14 (95) outer 12 (85)
Ballast	—Liquid (each inner) —Cast Iron (each)	1430 lb (649 kg) None	None None
Front Tires	—No., size, ply & psi (kPa)	Four 24.5-32; 10; inner 14 (95) outer 12 (85)	Four 24.5-32; 10; inner 14 (95) outer 12 (85)
Ballast	—Liquid (each inner) —Cast Iron (each)	1200 lb (544 kg) None	None None
Height of Drawbar		18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with Operator—Rear		13825 lb (6271 kg)	10965 lb (4974 kg)
—Front		18560 lb (8419 kg)	16160 lb (7330 kg)
—Total		32385 lb (14690 kg)	27125 lb (12304 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2475 (17060)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	129 (54)	
Location	pump inlet	
	Maximum Lift Capacity	Lift Capacity for Transport
QUICK ATTACH	yes	
CATEGORY	IV	*not measured
LOAD lbs (kg)	** 13028 (5909)	
TIME sec	3.91	
HITCH POINT MOVEMENT in (mm)		
Lowest position	13.8 (350)	
Top of timed range	43.8 (1112)	
Highest position	44.7 (1135)	
LOAD CG MOVEMENT in (mm)		
Lowest position	13.2 (335)	
Top of timed range	49.2 (1250)	
Highest position	50.4 (1280)	

*Implement load capacity for transport purposes not specified by manufacturer.

**The manufacturer's claimed capacity was 21700 lbs (9840 kg).

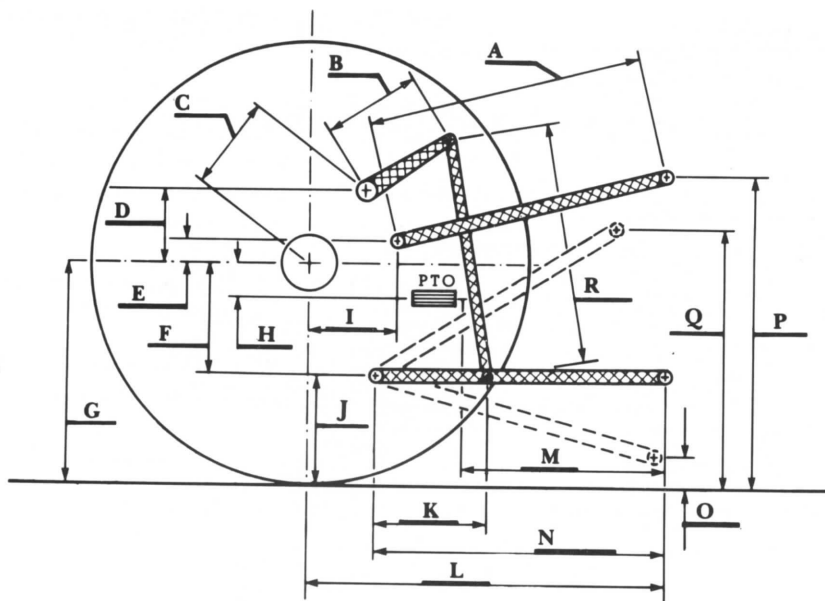
REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 120°F (48.9°C). Eight gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. 1570, June 21, 1985.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
L. L. BASHFORD
T. L. THOMPSON
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	29.3	743
B	18.6	472
C	20.3	516
D	19.0	483
E	12.6	319
F	10.4	263
G	32.0	813
H	NA	NA
I	24.3	617
J	21.6	549
K	25.0	635
L	53.4	1356
L'	59.9	1521
M	NA	NA
N	43.0	1092
O	7.9	200
P	48.6	1235
Q	41.5	1054
R	32.8	832
L' to end of quick attach		



Versatile 936 Manual Diesel