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## Test 1565: Versatile 276 Diesel Hydrostatic

Nebraska Tractor Test Lab

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

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# NEBRASKA TRACTOR TEST 1565—VERSATILE 276 DIESEL HYDROSTATIC

Department of Agricultural Engineering

Dates of Test: May 2 to 13, 1985

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

## 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—552 rpm)								
100.22 (74.73)	2500	6.184 (23.408)	0.431 (0.262)	16.21 (3.193)	188 (86.7)	62 (16.9)	75 (23.9)	28.95 (97.77)
Standard Power Take-off Speed (540 rpm) — One Hour								
102.14 (76.16)	2448	6.191 (23.435)	0.423 (0.257)	16.50 (3.250)	188 (86.5)	63 (16.9)	75 (23.8)	28.96 (97.79)

## VARYING POWER AND FUEL CONSUMPTION — Two Hours

88.20 (65.77)	2589	5.709 (21.612)	0.452 (0.275)	15.45 (3.043)	189 (86.9)	63 (17.2)	76 (24.4)	.....	
0.00 (0.00)	2718	1.965 (7.437)	.....	.....	181 (82.5)	63 (16.9)	76 (24.4)	.....	
44.89 (33.47)	2639	3.719 (14.077)	0.578 (0.352)	12.07 (2.378)	190 (87.5)	62 (16.7)	76 (24.2)	.....	
100.45 (74.91)	2500	6.182 (23.403)	0.429 (0.261)	16.25 (3.201)	188 (86.7)	63 (17.2)	77 (24.7)	.....	
22.74 (16.96)	2671	2.889 (10.936)	0.886 (0.539)	7.87 (1.551)	186 (85.3)	64 (17.8)	78 (25.6)	.....	
66.60 (49.66)	2604	4.643 (17.576)	0.486 (0.296)	14.34 (2.826)	195 (90.3)	64 (17.8)	78 (25.6)	.....	
<b>Av 53.81</b> <b>Av (40.13)</b>	<b>2620</b>	<b>4.185</b> <b>(15.840)</b>	<b>0.543</b> <b>(0.330)</b>	<b>12.86</b> <b>(2.533)</b>	<b>188</b> <b>(86.5)</b>	<b>63</b> <b>(17.3)</b>	<b>77</b> <b>(24.8)</b>	<b>28.95</b> <b>(97.76)</b>	

## 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 5.6 MPH 1st Range											
69.64 (51.93)	4658 (20.72)	5.61 (9.02)	2501	3.71	6.126 (23.191)	0.614 (0.373)	11.37 (2.239)	187 (86.1)	68 (19.7)	77 (25.0)	28.24 (95.35)
75% of Pull at Maximum Power — Ten Hours 5.6 MPH 1st Range											
56.19 (41.90)	3527 (15.69)	5.97 (9.61)	2595	2.78	5.480 (20.744)	0.681 (0.414)	10.25 (2.020)	190 (87.5)	64 (18.0)	71 (21.8)	28.60 (96.57)
50% of Pull at Maximum Power — Two Hours 5.6 MPH 1st Range											
38.73 (28.88)	2351 (10.46)	6.18 (9.94)	2610	1.78	4.486 (16.980)	0.808 (0.492)	8.63 (1.701)	195 (90.6)	71 (21.7)	83 (28.3)	28.82 (97.30)
50% of Pull at Reduced Engine Speed — Two Hours Speed Setting — 7.9 MPH 2nd Range at 2500 RPM											
38.74 (28.89)	2351 (10.46)	6.18 (9.95)	1901	1.75	3.497 (13.236)	0.630 (0.383)	11.08 (2.183)	188 (86.4)	71 (21.4)	83 (28.1)	28.77 (97.15)

**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** 2.880 gal (10.902 l) **Drained from motor** 2.232 gal (8.448 l) **Transmission and hydraulic lubricant** Versatile HyGear 23 **Final drive lubricant** SAE 85W90 **Hydrostatics fluid** Dexron-II ATF **Total time engine was operated** 41.5 hours.

**ENGINE:** Make Consolidated Diesel Corporation-Cummins Diesel **Type** four cylinder vertical with turbocharger and intercooler **Serial No.** 44119313 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 4.02" × 4.72" (102 mm × 120 mm) **Compression ratio** 16.5 to 1 **Displacement** 239 cu in (3921 ml) **Starting system** 12 volt **Lubrication pressure** Air cleaner two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydrostatics oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

**CHASSIS:** **Type** four wheel drive **Serial No.** 276 85 241141 **Tread width** rear 63.4" (1610 mm) to 95.2" (2418 mm) front 63.4" (1610 mm) to 95.2" (2418 mm) **Wheel base** 86" (2184 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 47.6" (1210 mm) Vertical distance above roadway 37" (940 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** direct engine drive **Transmission** infinitely variable hydrostatic using a variable displacement pump and fixed displacement motor, plus a 3 speed manual transmission **Advertised speeds mph (km/h)** forward 0-5.9 (0-9.5), 0-8.2 (0-13.3), 0-19.1 (0-30.8) reverse 0-5.9 (0-9.5), 0-8.2 (0-13.3), 0-19.1 (0-30.8) **Clutch** none **Brakes** caliper disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 173.8" (4.41 m) left 173.8" (4.41 m) **Turning space diameter** (on concrete surface without brake) right 362.8" (9.21 m) left 362.8" (9.21 m) **Power take-off** 540 rpm at 2448 engine rpm **Unladen tractor mass** 9020 lb (4091 kg).

# MAXIMUM POWER AT SELECTED SPEEDS

The infinitely variable drive control was set to give the travel speeds shown

55.89 (41.68)	7892 (35.10)	2.66 (4.27)	2504	7.85	1st Range	188 (86.7)	68 (20.0)	73 (22.8)	28.27 (95.46)
65.84 (49.09)	7692 (34.21)	3.21 (5.17)	2500	7.38	1st Range	190 (87.5)	68 (20.0)	73 (22.8)	28.26 (95.43)
67.01 (49.97)	7192 (31.99)	3.49 (5.62)	2498	7.03	1st Range	190 (87.8)	67 (19.4)	77 (25.0)	28.86 (97.46)
68.59 (51.14)	6473 (28.79)	3.97 (6.39)	2499	5.96	1st Range	190 (87.8)	67 (19.4)	76 (24.4)	28.86 (97.46)
69.59 (51.89)	5832 (25.94)	4.47 (7.20)	2500	5.29	1st Range	190 (87.8)	67 (19.4)	76 (24.4)	28.87 (97.49)
70.70 (52.72)	5185 (23.06)	5.11 (8.23)	2498	4.25	1st Range	188 (86.7)	64 (17.8)	78 (25.6)	28.26 (95.43)
70.91 (52.88)	4742 (21.09)	5.61 (9.02)	2501	3.81	1st Range	188 (86.7)	65 (18.3)	79 (26.1)	28.25 (95.40)
69.71 (51.99)	4368 (19.43)	5.99 (9.63)	2500	3.49	2nd Range	190 (87.8)	67 (19.4)	77 (25.0)	28.85 (97.42)
69.85 (52.09)	4014 (17.85)	6.53 (10.50)	2500	3.30	2nd Range	190 (87.8)	68 (20.0)	78 (25.6)	28.85 (97.42)
70.38 (52.48)	3732 (16.60)	7.07 (11.38)	2499	3.05	2nd Range	189 (87.2)	68 (20.0)	78 (25.6)	28.84 (97.39)
69.33 (51.70)	3468 (15.42)	7.50 (12.07)	2500	2.79	2nd Range	190 (87.8)	68 (20.0)	79 (26.1)	28.84 (97.39)
68.42 (51.02)	3234 (14.39)	7.93 (12.77)	2501	2.53	2nd Range	190 (87.8)	68 (20.0)	79 (26.1)	28.83 (97.35)

## LUGGING ABILITY FROM SPEED SETTING 5.6 MPH 1ST RANGE

Crankshaft Speed rpm	2501	2250	2001	1749	1500	1248
Pull—lbs (kN)	4742 (21.09)	5380 (23.93)	5897 (26.23)	6180 (27.49)	6317 (28.10)	5689 (25.31)
Increase in Pull %	0	13	24	30	33	20
Power—Hp (kW)	70.91 (52.88)	70.41 (52.50)	66.99 (49.95)	60.72 (45.28)	53.03 (39.54)	40.37 (30.11)
Speed—Mph (km/h)	5.61 (9.02)	4.91 (7.90)	4.26 (6.86)	3.68 (5.93)	3.15 (5.07)	2.66 (4.28)
Slip %	3.81	4.56	5.17	5.54	5.78	5.05

## TRACTOR SOUND LEVEL WITH CAB

dB(A)

Maximum Available Power—Two Hours	80.5
75% of Pull at Maximum Power—Ten Hours	81.0
50% of Pull at Maximum Power—Two Hours	79.5
50% of Pull at Reduced Engine Speed—Two Hours	80.0
Bystander in 3rd range	90.0

## TIRES, BALLAST AND WEIGHT

<b>Rear Tires</b>	—No., size, ply & psi (kPa)
<b>Ballast</b>	—Liquid (each)
	—Cast Iron (each)
<b>Front Tires</b>	—No., size, ply & psi (kPa)
<b>Ballast</b>	—Liquid (each)
	—Cast Iron (each)

## With Ballast

Two 16.9-28; 6; 18 (125)
200 lb (91 kg)
None
Two 16.9-28; 6; 18 (125)
455 lb (206 kg)
None
18 in (455 mm)
4600 lb (2086 kg)
5910 lb (2681 kg)
10510 lb (4767 kg)

## Without Ballast

Two 16.9-28; 6; 18 (125)
None
None
Two 16.9-28; 6; 18 (125)
None
None
18 in (455 mm)
4200 lb (1905 kg)
5000 lb (2268 kg)
9200 lb (4173 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 was maintained at 133°F (56.4°C). Twelve travel speeds were chosen up to 10 mph (16.1 km/h). The pull in the 1st range was limited by the setting of the hydrostatic transmission pressure relief valve.

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. 1565, June 21, 1985.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

L. L. BASHFORD

T. L. THOMPSON

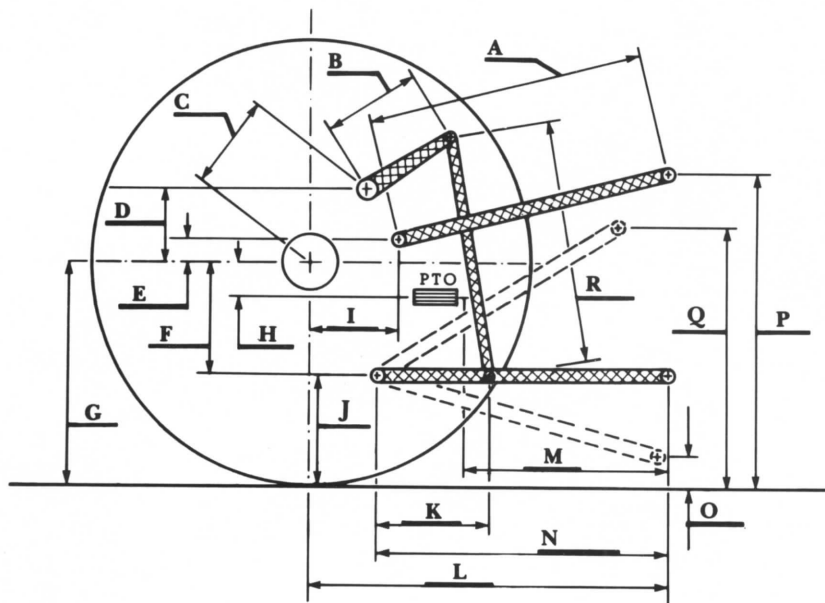
Board of Tractor Test Engineers

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	** 3000	(20680)	
Location	remote outlet		
Hydraulic oil temperature °F (°C)	121	(49)	
Location	pump outlet		
	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	no		
CATEGORY	II		*not measured
LOAD lbs (kg)	4408	(1999)	
TIME sec	0.81		
HITCH POINT MOVEMENT in (mm)			
Lowest position	9.8	(249)	
Top of timed range	33.9	(861)	
Highest position	36.8	(935)	
LOAD CG MOVEMENT in (mm)			
Lowest position	11.8	(300)	
Top of timed range	35.0	(889)	
Highest position	39.0	(991)	

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

\*\* The observed maximum pressure was outside the range specified by the manufacturer, 2700-2900 psi (18620-20000 kPa).



Hitch Dimensions as Tested — No Load

	inch	mm
A	21.9	556
B	12.4	315
C	20.4	519
D	19.7	500
E	17.4	441
F	0.0	0
G	25.5	648
H	4.7	119
I	15.8	401
J	25.5	648
K	21.7	550
L	37.4	950
M	20.9	531
N	37.4	950
O	8.0	203
P	44.5	1130
Q	36.6	930
R	22.0	559



Versatile 276 Diesel