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Test 1331: Versatile 555 Diesel 15-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1331 — VERSATILE 555 DIESEL 15 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—1068 rpm)									
182.25 (135.90)	2849	11.746 (44.464)	0.455 (0.277)	15.52 (3.057)	181 (83.0)	54 (12.1)	75 (23.8)	28.930 (97.692)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
184.35 (137.47)	2667	11.286 (42.724)	0.432 (0.263)	16.33 (3.218)	182 (83.3)	54 (12.5)	75 (24.1)	28.930 (97.692)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
164.79 (122.89)	3031	11.607 (43.938)	0.497 (0.302)	14.20 (2.797)	180 (82.5)	54 (12.2)	75 (23.9)	..... .....
0.00 (0.00)	3191	5.038 (19.072)	..... .....	..... .....	176 (80.0)	54 (12.2)	74 (23.3)	..... .....
84.87 (63.29)	3126	8.618 (32.623)	0.717 (0.436)	9.85 (1.940)	178 (81.1)	54 (12.5)	75 (23.9)	..... .....
183.43 (136.78)	2850	11.798 (44.662)	0.454 (0.276)	15.55 (3.063)	183 (83.9)	55 (12.8)	76 (24.2)	..... .....
42.83 (31.94)	3156	6.747 (25.542)	1.112 (0.676)	6.35 (1.250)	176 (80.3)	55 (12.8)	74 (23.6)	..... .....
125.89 (93.88)	3086	10.187 (38.562)	0.571 (0.347)	12.36 (2.434)	180 (81.9)	56 (13.1)	76 (24.2)	..... .....
Av Av	100.30 (74.79)	3073 (34.067)	8.999 (0.385)	0.633 (2.196)	11.15 (81.6)	179 (12.6)	55 (23.8)	75 (97.749)	28.947 (97.749)

DRAWBAR PERFORMANCE AT 2850 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 8th (M-3) Gear											
150.39 (112.14)	10331 (45.96)	5.46 (8.78)	2851	3.37	11.604 (43.924)	0.544 (0.331)	12.96 (2.553)	179 (81.4)	40 (4.2)	51 (10.3)	28.920 (97.659)
75% of Pull at Maximum Power—Ten Hours 8th (M-3) Gear											
125.48 (93.57)	7936 (35.30)	5.93 (9.54)	3074	2.58	11.239 (42.543)	0.632 (0.384)	11.17 (2.199)	178 (80.8)	40 (4.7)	42 (5.4)	28.943 (97.736)
50% of Pull at Maximum Power—Two Hours 8th (M-3) Gear											
86.05 (64.16)	5297 (23.56)	6.09 (9.80)	3127	1.60	9.743 (36.883)	0.799 (0.486)	8.83 (1.740)	181 (82.8)	33 (0.6)	36 (1.9)	29.100 (98.266)
50% of Pull at Reduced Engine Speed—Two Hours 11th (H-1) Gear											
85.87 (64.04)	5284 (23.50)	6.09 (9.81)	1832	1.64	5.952 (22.532)	0.489 (0.297)	14.43 (2.842)	184 (84.4)	40 (4.2)	47 (8.1)	29.095 (98.249)

MAXIMUM POWER IN SELECTED GEARS

128.39 (95.74)	23533 (104.68)	2.05 (3.29)	2987	14.98	2nd (L-2) Gear			179 (81.4)	29 (-1.6)	32 (0.0)	29.450 (99.448)
143.47 (106.98)	22467 (99.94)	2.39 (3.85)	2849	11.94	3rd (L-3) Gear			180 (82.2)	42 (5.6)	50 (10.0)	28.970 (97.827)
149.43 (111.43)	19758 (87.89)	2.84 (4.56)	2847	7.81	4th (L-4) Gear			180 (82.2)	42 (5.6)	51 (10.6)	28.970 (97.827)
150.66 (112.35)	16420 (73.04)	3.44 (5.54)	2849	5.83	5th (L-5) Gear			179 (81.7)	43 (6.1)	53 (11.7)	28.980 (97.861)
152.51 (113.73)	14519 (64.59)	3.94 (6.34)	2847	4.92	6th (M-1) Gear			179 (81.7)	43 (6.1)	53 (11.7)	28.980 (97.861)
154.20 (114.98)	12685 (56.42)	4.56 (7.34)	2849	4.15	7th (M-2) Gear			178 (81.1)	42 (5.6)	52 (11.1)	29.000 (97.929)
153.91 (114.77)	10579 (47.06)	5.46 (8.78)	2850	3.45	8th (M-3) Gear			179 (81.7)	42 (5.6)	50 (10.0)	29.040 (98.064)
152.64 (113.83)	9233 (41.07)	6.20 (9.98)	2848	2.81	9th (M-4) Gear			178 (81.1)	42 (5.6)	52 (11.1)	29.000 (97.929)
153.25 (114.28)	7762 (34.53)	7.40 (11.92)	2850	2.33	10th (M-5) Gear			179 (81.7)	42 (5.6)	52 (11.1)	28.990 (97.895)
149.21 (111.26)	5907 (26.27)	9.47 (15.25)	2849	1.51	11th (H-1) Gear			179 (81.7)	42 (5.6)	52 (11.1)	28.990 (97.895)

Department of Agricultural Engineering

Dates of Test: October 29 to November 15, 1979

MANUFACTURER: VERSATILE MANUFACTURING CO., 1260 Clarence Avenue, Winnipeg, Manitoba R3T 1T3

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 49.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8474 **Fuel weight** 7.056 lbs/gal (0.846 kg/l) **Oil SAE 30 API service classification** SB/SE-CA/CD **To motor** 6.523 gal (24.690 l) **Drained from motor** 6.007 gal (22.736 l) **Transmission and hydraulic lubricant** Esso Hydraul 56 or equivalent **Final drive lubricant** SAE 90 **Total time engine was operated** 53.0 hours

ENGINE Make Cummins **Dsl Type** Eight cylinder vee with turbocharger **Serial No.** 20201005 **Crankshaft** lengthwise **Rated rpm** 2550 to 2850 **Bore and stroke** 4.625" × 4.125" (117.5 mm × 104.8 mm) **Compression ratio** 17.0 to 1 **Displacement** 555 cu in (9097 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two cartridges **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type Four-wheel drive with duals **Serial No.** 555 80 131075 **Tread width** rear 60" (1524 mm) to 125" (3175 mm) front 60" (1524 mm) to 125" (3175 mm) **Wheel base** 120" (3048 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 72.0" (1829 mm) Vertical distance above roadway 41.0" (1041 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 2.0 (3.2) second 2.3 (3.7) third 2.7 (4.3) fourth 3.0 (4.8) fifth 3.6 (5.8) sixth 4.1 (6.6) seventh 4.7 (7.6) eighth 5.6 (9.0) ninth 6.3 (10.1) tenth 7.5 (12.1) eleventh 9.5 (15.3) twelfth 10.9 (17.5) thirteenth 13.0 (20.9) fourteenth 14.7 (23.7) fifteenth 17.4 (28.0) reverse 3.0 (4.8), 3.6 (5.8), 4.1 (6.6), 4.7 (7.6), 5.6 (9.0) **Clutch** multiple wet disc hydraulically operated by foot pedal **Brakes** dual caliper disc operated hydraulically by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 227.5" (5.77 m) left 227.5" (5.77 m) **Turning space diameter** (on concrete surface without brake) right 465" (11.79 m) left 465" (11.79 m) **Power take-off** 1000 rpm at 2667 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 8th (M-3) GEAR

Crankshaft Speed rpm	2850	2568	2283	1992	1710	1418	1140
Pull—lbs (kN)	10579 (47.06)	11965 (53.22)	13208 (58.75)	14256 (63.41)	14457 (64.31)	14502 (64.51)	14325 (63.72)
Increase in Pull %	0	13	25	35	37	37	35
Power—Hp (kW)	153.91 (114.77)	155.99 (116.32)	152.32 (113.59)	142.69 (106.40)	124.15 (92.58)	103.13 (76.91)	82.01 (61.15)
Speed—Mph (km/h)	5.46 (8.78)	4.89 (7.87)	4.32 (6.96)	3.75 (6.04)	3.22 (5.18)	2.67 (4.29)	2.15 (3.45)
Slip %	3.45	3.92	4.38	4.69	5.00	5.00	4.69

TRACTOR SOUND LEVEL WITH CAB	2850 RPM	2550 RPM
	dB(A)	dB(A)
Maximum Available Power—Two Hours	82.5	79.0
75% of Pull at Maximum Power—Ten Hours	82.5	----
50% of Pull at Maximum Power—Two Hours	86.0	----
50% of Pull at Reduced Engine Speed—Two Hours	79.5	----
Bystander in 15th (H-5) gear	89.0	----

DRAWBAR PERFORMANCE AT 2550 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool- ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (M-3) Gear											
157.09 (117.15)	12124 (53.93)	4.86 (7.82)	2551	3.84	10.753 (40.705)	0.483 (0.294)	14.61 (2.878)	179 (81.4)	44 (6.4)	54 (11.9)	29.130 (98.368)

MAXIMUM POWER IN SELECTED GEARS

138.86 (103.55)	23883 (106.24)	2.18 (3.51)	2680	14.79	3rd (L-3) Gear	181 (82.5)	32 (0.0)	35 (1.7)	29.380 (99.212)
146.25 (109.06)	22515 (100.15)	2.44 (3.92)	2553	11.67	4th (L-4) Gear	180 (82.2)	42 (5.6)	50 (10.0)	28.970 (97.827)
152.08 (113.41)	18777 (83.52)	3.04 (4.89)	2550	7.09	5th (L-5) Gear	180 (82.2)	42 (5.6)	52 (11.1)	28.970 (97.827)
154.39 (115.13)	16600 (73.84)	3.49 (5.61)	2548	5.91	6th (M-1) Gear	179 (81.7)	43 (6.1)	53 (11.7)	28.980 (97.861)
157.30 (117.30)	14573 (64.82)	4.05 (6.51)	2552	4.85	7th (M-2) Gear	179 (81.4)	42 (5.6)	52 (11.1)	29.000 (97.929)
157.35 (117.33)	12162 (54.10)	4.85 (7.81)	2550	3.84	8th (M-3) Gear	178 (81.1)	42 (5.6)	51 (10.6)	29.020 (97.996)
156.43 (116.65)	10625 (47.26)	5.52 (8.89)	2549	3.21	9th (M-4) Gear	178 (81.1)	42 (5.6)	52 (11.1)	28.990 (97.895)
156.10 (116.40)	8872 (39.46)	6.60 (10.62)	2549	2.73	10th (M-5) Gear	179 (81.7)	42 (5.6)	52 (11.1)	28.990 (97.895)
153.66 (114.58)	6819 (30.33)	8.45 (13.60)	2549	1.84	11th (H-1) Gear	179 (81.7)	43 (6.1)	53 (11.7)	28.980 (97.861)

TIRES, BALLAST AND WEIGHT

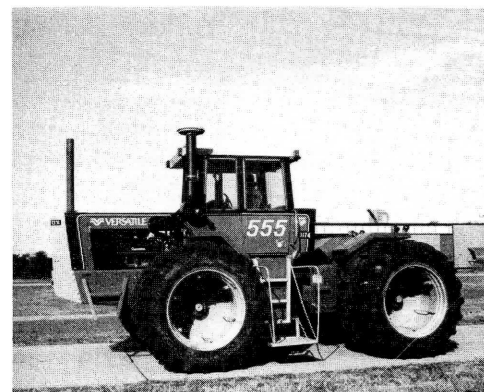
Rear Tires		—No., size, ply & psi (kPa)	With Ballast	Without Ballast
Ballast		—Liquid (each inner)	Four 18.4-38; 8; inner	Four 18.4-38; 8; inner
		—Cast Iron (each)	16 (110); outer 14 (95)	16 (110); outer 14 (95)
			1385 lb (628 kg)	None
			None	None
Front Tires		—No., size, ply & psi (kPa)	Four 18.4-38; 8; inner	Four 18.4-38; 8; inner
			16 (110); outer 14 (95)	16 (110); outer 14 (95)
			890 lb (404 kg)	None
			None	None
Height of drawbar			18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with Operator—Rear			10280 lb (4663 kg)	7510 lb (3406 kg)
		Front	15700 lb (7122 kg)	12140 lb (5507 kg)
		Total	25980 lb (11785 kg)	19650 lb (8913 kg)

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 160°F (71.1°C). Ten gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1331.

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers



Versatile 555 Diesel