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Test 1482: Versatile 835 Series 3 Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1482
VERSATILE 835 SERIES 3 DIESEL
12 SPEED

(SERIAL NUMBERS 835 83 036769 and HIGHER)

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—1009 rpm)								
200.30 (149.36)	2100	12.665 (47.942)	0.443 (0.270)	15.82 (3.115)	183 (83.8)	62 (16.7)	75 (23.9)	28.783 (97.197)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
177.47 (132.34)	2190	12.085 (45.747)	0.477 (0.290)	14.69 (2.893)	181 (82.8)	62 (16.9)	78 (25.8)	..... .....
0.00 (0.00)	2306	4.225 (15.993)	..... .....	..... .....	176 (79.7)	62 (16.9)	74 (23.6)	..... .....
91.54 (68.26)	2256	8.724 (33.024)	0.668 (0.406)	10.49 (2.067)	178 (81.1)	61 (16.1)	72 (22.5)	..... .....
200.42 (149.45)	2099	12.783 (48.389)	0.447 (0.272)	15.68 (3.089)	182 (83.6)	61 (16.1)	74 (23.1)	..... .....
46.05 (34.34)	2276	6.507 (24.632)	0.990 (0.602)	7.08 (1.394)	176 (80.3)	59 (15.0)	72 (22.5)	..... .....
135.74 (101.22)	2232	10.569 (40.008)	0.546 (0.332)	12.84 (2.530)	180 (81.9)	62 (16.9)	78 (25.8)	..... .....
Av Av	108.54 (80.94)	2226 (34.633)	9.149 (0.359)	0.591 (2.337)	11.86 (81.6)	179 (16.3)	61 (23.9)	75 (97.163)

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											
178.82 (133.35)	10829 (48.17)	6.19 (9.97)	2100	2.97	12.379 (46.859)	0.485 (0.295)	14.45 (2.846)	185 (84.7)	64 (17.5)	74 (23.3)	28.670 (96.814)
75% of Pull at Maximum Power—Ten Hours 7th (2-3) Gear											
144.06 (107.42)	8195 (36.45)	6.59 (10.61)	2217	2.13	11.309 (42.807)	0.550 (0.335)	12.74 (2.509)	184 (84.4)	62 (16.9)	77 (24.8)	28.815 (97.304)
50% of Pull at Maximum Power—Two Hours 7th (2-3) Gear											
98.40 (73.38)	5464 (24.31)	6.75 (10.87)	2261	1.78	9.418 (35.650)	0.671 (0.408)	10.45 (2.058)	183 (83.9)	56 (13.3)	66 (18.9)	28.970 (97.827)
50% of Pull at Reduced Engine Speed—Two Hours 11th (3-3) Gear											
98.44 (73.40)	5464 (24.31)	6.76 (10.87)	1162	1.62	6.154 (23.294)	0.438 (0.266)	16.00 (3.151)	184 (84.4)	60 (15.6)	72 (22.2)	28.925 (97.675)
MAXIMUM POWER IN SELECTED GEARS											
155.98 (116.32)	25687 (114.26)	2.28 (3.66)	2137	14.96	1st (1-1) Gear			182 (83.1)	50 (10.0)	55 (12.8)	28.960 (97.794)
167.03 (124.55)	22809 (101.46)	2.75 (4.42)	2099	10.14	2nd (1-2) Gear			183 (83.9)	52 (11.1)	59 (15.0)	28.970 (97.827)
172.76 (128.83)	19980 (88.88)	3.24 (5.22)	2098	7.66	3rd (1-3) Gear			186 (85.6)	63 (17.2)	81 (27.2)	28.760 (97.118)
177.14 (132.09)	17235 (76.66)	3.85 (6.20)	2099	5.63	4th (1-4) Gear			187 (85.8)	63 (17.2)	80 (26.7)	28.760 (97.118)
180.74 (134.78)	14859 (66.09)	4.56 (7.34)	2098	4.28	5th (2-1) Gear			185 (85.0)	62 (16.7)	78 (25.6)	28.770 (97.152)
181.14 (135.08)	12710 (56.53)	5.34 (8.60)	2098	3.51	6th (2-2) Gear			186 (85.6)	62 (16.7)	77 (25.0)	28.770 (97.152)
180.50 (134.60)	10927 (48.60)	6.19 (9.97)	2099	2.89	7th (2-3) Gear			185 (85.0)	64 (17.8)	74 (23.3)	28.650 (96.747)
177.53 (132.38)	9203 (40.94)	7.23 (11.64)	2098	2.42	8th (2-4) Gear			185 (85.0)	64 (17.8)	74 (23.3)	28.640 (96.713)
174.50 (130.12)	7171 (31.90)	9.13 (14.69)	2100	1.62	9th (3-1) Gear			184 (84.4)	65 (18.3)	73 (22.8)	28.630 (96.679)

LUGGING ABILITY IN 7th (2-3) GEAR

Crankshaft Speed rpm	2099	1888	1679	1472	1256	1042
Pull—lbs (kN)	10927 (48.60)	12863 (57.22)	14668 (65.25)	16259 (72.32)	16190 (72.02)	15271 (67.93)
Increase in Pull %	0	18	34	49	48	40
Power—Hp (kW)	180.50 (134.60)	189.89 (141.60)	191.21 (142.59)	184.63 (137.68)	156.77 (116.90)	123.06 (91.77)
Speed—Mph (km/h)	6.19 (9.97)	5.54 (8.91)	4.89 (7.87)	4.26 (6.85)	3.63 (5.84)	3.02 (4.86)
Slip %	2.89	3.51	4.13	4.73	4.88	4.58

	1750 RPM	1900 RPM	2100 RPM
TRACTOR SOUND LEVEL WITH CAB	dB(A)	dB(A)	dB(A)
Maximum Available Power—Two Hours	80.0	82.0	82.5
75% of Pull at Maximum Power—Ten Hours			82.5
50% of Pull at Maximum Power—Two Hours			83.0
50% of Pull at Reduced Engine Speed—Two Hours			81.0
Bystander in 12th (3-4) gear			88.5

Department of Agricultural Engineering

Dates of Test: May 31 to June 9, 1983

Manufacturer: VERSATILE FARM EQUIP-
MENT COMPANY, 1260 Clarence Avenue,
Winnipeg, Manitoba, Canada R3T 1T3

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 47.0 (rating taken from oil company's
inspection data) Specific gravity converted to 60°/
60° (15°/15°) 0.8417 Fuel weight 7.008 lbs/gal
(0.840 kg/l) Oil SAE 15W-40 API service classi-
fication SE-SF, CC-CD To motor 7.297 gal
(27.623 l) Drained from motor 6.794 gal
(25.716 l) Transmission and hydraulic lubricant
Versatile HyGear 23 or equivalent Final drive
lubricant SAE 85W140 Total time engine was
operated 47.0 hours.

ENGINE: Make Cummins Diesel Type six
cylinder vertical with turbocharger Serial No.
11080966 Crankshaft lengthwise Rated rpm
1750 to 2100 Bore and stroke 5.5" × 6.0" (139.7
mm × 152.4 mm) Compression ratio 14.1 to 1
Displacement 855 cu in (14013 ml) Starting sys-
tem 12 volt Lubrication pressure Air cleaner two
paper elements with aspirator Oil filter one full
flow cartridge and one bypass cartridge Oil cool-
er 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 ther-
mostat.

CHASSIS: Type four wheel drive with duals
Serial No. 835 83 036769 Tread width rear 72"
(1829 mm) to 118" (3000 mm) front 72" (1829 mm)
to 118" (3000 mm) Wheel base 130" (3302 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 78" (1980
mm) Vertical distance above roadway 42" (1067
mm) Horizontal distance from center of rear wheel
tread 0" (0 mm) to the right/left Hydraulic control
system direct engine drive Transmission selec-
tive gear fixed ratio Advertised speeds mph (km/
h) first 2.6 (4.2) second 3.0 (4.8) third 3.5 (5.7)
fourth 4.1 (6.6) fifth 4.7 (7.6) sixth 5.5 (8.9)
seventh 6.3 (10.1) eighth 7.3 (11.7) ninth 9.2
(14.8) tenth 10.7 (17.2) eleventh 12.3 (19.8)
twelfth 14.3 (23.0) reverse 3.4 (5.5), 3.9 (6.2), 4.5
(7.2), 5.2 (8.4) Clutch dual dry disc operated by
foot pedal Brakes dual caliper disc hydraulically
operated by foot pedal and mechanically by hand
lever Steering hydrostatic and articulated Turn-
ing radius (on concrete surface without brake)
right 236" (5.99 m) left 236" (5.99 m) Turning
space diameter (on concrete surface without
brake) right 490" (12.45 m) left 490" (12.45 m)
Power take-off 1009 rpm at 2100 engine rpm.

SUPPLEMENTARY TESTS
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)			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											
187.46 (139.79)	12618 (56.13)	5.57 (8.97)	1900	3.47	12.075 (45.711)	0.451 (0.275)	15.52 (3.058)	184 (84.2)	60 (15.3)	68 (20.0)	28.730 (97.017)
MAXIMUM POWER IN SELECTED GEARS											
165.79 (123.63)	25139 (111.82)	2.47 (3.98)	1994	14.72			2nd (1-2) Gear	183 (83.6)	51 (10.6)	57 (13.9)	28.960 (97.794)
175.17 (130.63)	23112 (102.81)	2.84 (4.57)	1898	10.54			3rd (1-3) Gear	183 (83.9)	54 (12.2)	64 (17.8)	28.980 (97.861)
179.89 (134.14)	19704 (87.65)	3.42 (5.51)	1901	7.37			4th (1-4) Gear	187 (86.1)	63 (17.2)	80 (26.7)	28.760 (97.118)
185.99 (138.69)	17106 (76.09)	4.08 (6.56)	1898	5.56			5th (2-1) Gear	186 (85.6)	63 (17.2)	79 (26.1)	28.770 (97.152)
189.32 (141.17)	14794 (65.80)	4.80 (7.72)	1899	4.36			6th (2-2) Gear	187 (86.1)	62 (16.7)	77 (25.0)	28.770 (97.152)
189.04 (140.97)	12733 (56.64)	5.57 (8.96)	1898	3.51			7th (2-3) Gear	185 (85.0)	64 (17.8)	74 (23.3)	28.650 (96.747)
187.32 (139.69)	10790 (47.99)	6.51 (10.48)	1899	2.81			8th (2-4) Gear	185 (85.0)	64 (17.8)	74 (23.3)	28.640 (96.713)
186.05 (138.74)	8491 (37.77)	8.22 (13.22)	1899	1.94			9th (3-1) Gear	185 (84.7)	65 (18.3)	73 (22.8)	28.630 (96.679)

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)			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											
188.51 (140.57)	13844 (61.58)	5.11 (8.22)	1750	3.94	11.701 (44.293)	0.435 (0.265)	16.11 (3.174)	185 (85.0)	63 (16.9)	76 (24.4)	28.760 (97.118)
MAXIMUM POWER IN SELECTED GEARS											
169.95 (126.73)	25120 (111.74)	2.54 (4.08)	1779	14.84			3rd (1-3) Gear	184 (84.2)	53 (11.7)	61 (16.1)	28.970 (97.827)
176.81 (131.85)	21513 (95.69)	3.08 (4.96)	1750	9.53			4th (1-4) Gear	188 (86.7)	63 (17.2)	81 (27.2)	28.760 (97.118)
186.10 (138.78)	18747 (83.39)	3.72 (5.99)	1750	6.51			5th (2-1) Gear	188 (86.4)	63 (17.2)	79 (26.1)	28.760 (97.118)
189.82 (141.55)	16188 (72.01)	4.40 (7.08)	1752	5.03			6th (2-2) Gear	187 (86.1)	62 (16.7)	78 (25.6)	28.770 (97.152)
190.67 (142.18)	14006 (62.30)	5.11 (8.22)	1749	4.05			7th (2-3) Gear	186 (85.3)	64 (17.8)	74 (23.3)	28.650 (96.747)
190.49 (142.05)	11945 (53.13)	5.98 (9.62)	1750	3.20			8th (2-4) Gear	186 (85.6)	65 (18.3)	73 (22.8)	28.640 (96.713)
188.93 (140.89)	9386 (41.75)	7.55 (12.15)	1748	2.26			9th (3-1) Gear	185 (85.0)	65 (18.3)	73 (22.8)	28.630 (96.679)
186.77 (139.28)	7956 (35.39)	8.80 (14.17)	1748	1.78			10th (3-2) Gear	185 (85.0)	65 (18.3)	73 (22.8)	28.630 (96.679)

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)			14 (95) outer 12 (85)			14 (95) outer 12 (85)		
						985 lb (447 kg)			None		
Front Tires			—No., size, ply & psi (kPa)			Four 18.4-38; 8; inner			Four 18.4-38; 8; inner		
			—Liquid (each inner)			14 (95) outer 12 (85)			14 (95) outer 12 (85)		
			—Cast Iron (each)			813 lb (369 kg)			None		
						None			None		
Height of Drawbar						17 in (430 mm)			17 in (430 mm)		
Static Weight with Operator—Rear						11830 lb (5366 kg)			9860 lb (4472 kg)		
			—Front			16150 lb (7326 kg)			14525 lb (6589 kg)		
			—Total			27980 lb (12692 kg)			24385 lb (11061 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 or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 141°F (60.8°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h). The performance figures on this report apply to tractor chassis Serial No. 835 83 036769 and higher.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1482.

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Versatile 835 Series 3 Diesel

The Agricultural Experiment Station
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