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## Test 1600: Valmet 148 4WD Turbo Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1600—VALMET 148 4 × 4 TURBO DIESEL 12 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 — 1012 rpm)								
126.89 (94.62)	2300	7.561 (28.623)	0.418 (0.254)	16.78 (3.306)	183 (83.8)	64 (17.9)	75 (24.0)	28.85 (97.41)

Standard Power Take-off Speed (1000 rpm) — One Hour								
127.11 (94.79)	2273	7.514 (28.445)	0.415 (0.252)	16.92 (3.332)	183 (84.0)	65 (18.3)	75 (23.8)	28.84 (97.39)

### VARYING POWER AND FUEL CONSUMPTION — Two Hours

111.53 (83.16)	2379	6.970 (26.383)	0.438 (0.267)	16.00 (3.152)	180 (82.2)	66 (18.6)	75 (23.9)	.....
0.00 (0.00)	2506	2.151 (8.142)	.....	.....	173 (78.3)	65 (18.1)	75 (23.6)	.....
57.21 (42.66)	2440	4.421 (16.737)	0.542 (0.330)	12.94 (2.549)	175 (79.4)	65 (18.1)	74 (23.3)	.....
127.46 (95.05)	2300	7.560 (28.617)	0.416 (0.253)	16.86 (3.321)	184 (84.4)	66 (18.9)	75 (23.9)	.....
28.85 (21.52)	2462	3.267 (12.366)	0.794 (0.483)	8.83 (1.740)	172 (77.8)	65 (18.3)	75 (23.6)	.....
84.70 (63.16)	2408	5.687 (21.528)	0.471 (0.287)	14.89 (2.934)	178 (80.8)	66 (18.9)	76 (24.2)	.....
<b>Av 68.29</b> <b>Av (50.93)</b>	<b>2416</b>	<b>5.009</b> <b>(18.962)</b>	<b>0.515</b> <b>(0.313)</b>	<b>13.63</b> <b>(2.686)</b>	<b>177</b> <b>(80.5)</b>	<b>65</b> <b>(18.5)</b>	<b>75</b> <b>(23.8)</b>	<b>28.84</b> <b>(97.38)</b>

### DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

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 6th (M2) Gear											
108.36 (80.80)	8220 (36.56)	4.94 (7.96)	2300	6.11	7.583 (28.704)	0.491 (0.299)	14.29 (2.815)	186 (85.6)	71 (21.4)	80 (26.7)	28.65 (96.73)
75% of Pull at Maximum Power — Ten Hours 6th (M2) Gear											
88.05 (65.66)	6272 (27.90)	5.26 (8.47)	2406	4.34	6.626 (25.083)	0.528 (0.321)	13.29 (2.618)	181 (82.9)	63 (17.1)	71 (21.7)	28.78 (97.18)
50% of Pull at Maximum Power — Two Hours 6th (M2) Gear											
60.23 (44.92)	4182 (18.60)	5.40 (8.69)	2429	2.80	5.145 (19.477)	0.599 (0.365)	11.71 (2.306)	180 (82.2)	73 (22.8)	85 (29.2)	28.64 (96.70)
50% of Pull at Reduced Engine Speed — Two Hours 9th (M4) Gear											
60.38 (45.03)	4184 (18.61)	5.41 (8.71)	1539	3.12	3.820 (14.460)	0.444 (0.270)	15.81 (3.114)	179 (81.7)	66 (18.9)	75 (23.6)	28.90 (97.59)

### MAXIMUM POWER IN SELECTED GEARS

101.85 (75.95)	13574 (60.38)	2.81 (4.53)	2356	14.50	3rd (L3) Gear			179 (81.7)	60 (15.6)	65 (18.3)	28.88 (97.52)
106.40 (79.34)	11283 (50.19)	3.54 (5.69)	2300	9.68	4th (M1) Gear			184 (84.2)	69 (20.6)	75 (23.9)	28.66 (96.78)
107.63 (80.26)	10285 (45.75)	3.92 (6.32)	2298	8.00	5th (L4) Gear			183 (83.9)	69 (20.6)	75 (23.9)	28.66 (96.78)
110.09 (82.10)	8363 (37.20)	4.94 (7.94)	2298	6.18	6th (M2) Gear			188 (86.4)	71 (21.7)	82 (27.8)	28.64 (96.71)
109.46 (81.62)	6868 (30.55)	5.98 (9.62)	2299	4.75	7th (M3) Gear			185 (84.7)	70 (21.1)	77 (25.0)	28.66 (96.78)
109.34 (81.54)	5390 (23.97)	7.61 (12.24)	2298	3.67	8th (H1) Gear			185 (84.7)	70 (21.1)	76 (24.4)	28.66 (96.78)
108.81 (81.14)	5061 (22.51)	8.06 (12.98)	2301	3.43	9th (M4) Gear			185 (84.7)	70 (21.1)	76 (24.4)	28.66 (96.78)

Department of Agricultural Engineering

Dates of Test: June 3 to 12, 1986

Manufacturer: VALMET DO BRASIL S.A., Rua Capitao Francisco de Almeida, 695 Mogi das Cruzes-08700-SP-Brazil

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.9 (rating taken from oil company's inspection data) Specific gravity converted to 60/60°F (15/15°C) 0.8426 Fuel weight 7.016 lbs/gal (0.841 kg/l) Oil SAE 30 API service classification CD-CC-SF-SE To motor 3.142 gal (11.892 l) Drained from motor 2.904 gal (10.993 l) Transmission and front axle lubricant SAE 90 API GL-5 gear lubricant Total time engine was operated 40.5 hours.

**ENGINE:** Make MWM-Motors Diesel Type six cylinder vertical with turbocharger Serial No. 0.229.06.34610 Crankshaft lengthwise Rated rpm 2300 Bore and stroke 4.01" × 4.72" (102 mm × 120 mm) Compression ratio 15.9 to 1 Displacement 359 cu in (5883 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements and aspirator Oil filter one full flow cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission oil Fuel filter two cotton elements and water separator Muffler none Cooling medium temperature control one thermostat.

**CHASSIS:** Type front wheel assist Serial No. 148.407.00003 Tread width rear 63" (1600 mm) to 82.7" (2100 mm) front 69.3" (1760 mm) to 83.5" (2120 mm) Wheel base 105.1" (2670 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 39.5" (1004 mm) Vertical distance above roadway 40.4" (1025 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 2.1 (3.3) second 2.7 (4.4) third 3.3 (5.3) fourth 4.0 (6.5) fifth 4.4 (7.1) sixth 5.4 (8.7) seventh 6.5 (10.4) eighth 8.1 (13.1) ninth 8.6 (13.8) tenth 11.0 (17.7) eleventh 13.1 (21.1) twelfth 17.4 (28.0) reverse 3.5 (5.6), 4.7 (7.6), 5.6 (9.0), 7.5 (12.0) Clutch single dry disc operated by foot pedal Brakes dry disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 220" (5.6 m) left 197" (5.0 m) (on concrete surface without brake) right 256" (6.5 m) left 272"

### LUGGING ABILITY IN 6th (M2) GEAR

Crankshaft Speed rpm	2298	2077	1839	1616	1382	1157
Pull—lbs (kN)	8363 (37.20)	9062 (40.31)	9800 (43.59)	9895 (44.02)	9694 (43.12)	9253 (41.16)
Increase in Pull %	0	8	17	18	16	11
Power—Hp (kW)	110.09 (82.10)	107.06 (79.83)	101.64 (75.79)	89.98 (67.10)	75.52 (56.32)	60.61 (45.20)
Speed—Mph (km/h)	4.94 (7.94)	4.43 (7.13)	3.89 (6.26)	3.41 (5.49)	2.92 (4.70)	2.46 (3.95)
Slip %	6.18	6.70	7.57	7.71	7.57	7.14

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
Maximum Available Power—Two Hours		97.5
75% of Pull at Maximum Power—Ten Hours		97.5
50% of Pull at Maximum Power—Two Hours		97.5
50% of Pull at Reduced Engine Speed—Two Hours		92.0
Bystander in 12th (H4) gear	96.5	

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>		
Ballast	Two 18.4-38; 8; 20 (140)	Two 18.4-38; 8; 20 (140)
—No., size, ply & psi (kPa)	715 lb (324 kg)	None
—Liquid (each)	925 lb (420 kg)	None
—Cast Iron (each)		
<b>Front Tires</b>		
Ballast	Two 14.9-28; 6; 20 (140)	Two 14.9-28; 6; 20 (140)
—No., size, ply & psi (kPa)	420 lb (191 kg)	None
—Liquid (each)	900 lb (408 kg)	None
—Cast Iron (each)		
<b>Height of Drawbar</b>	22 in (560 mm)	22 in (560 mm)
<b>Static Weight with Operator—Rear</b>	10070 lb (4568 kg)	6790 lb (3080 kg)
—Front	6760 lb (3066 kg)	4120 lb (1869 kg)
—Total	16830 lb (7634 kg)	10910 lb (4949 kg)

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2850 (19650)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	176 (80)	
Location	pump inlet	
	<b>Maximum Lift Capacity</b>	<b>Lift Capacity for Transport</b>
QUICK ATTACH	no	
CATEGORY	2	*not measured
LOAD lbs (kg)	8704 (3948)	
TIME sec	7.36	
<b>HITCH POINT MOVEMENT in (mm)</b>		
Lowest position	12.0 (305)	
Top of timed range	36.0 (914)	
Highest position	36.0 (914)	
<b>LOAD CG MOVEMENT in (mm)</b>		
Lowest position	12.1 (307)	
Top of timed range	38.0 (965)	
Highest position	37.9 (963)	

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

(6.9 m) **Turning space diameter** (on concrete surface with brake applied) right 459" (11.65 m) left 412" (10.45 m)(on concrete surface without brake) right 530" (13.45 m) left 561" (14.25 m) **Power take-off** 540 rpm at 1747 engine rpm and 1000 rpm at 2273 engine rpm. **Unladen tractor mass** 10735 lb (4869 kg).

**REPAIRS AND ADJUSTMENTS:** During the preliminary PTO tests, the PTO gears disengaged. After adjustment of the levers, the test was continued.

**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 return was maintained at 140°F (59.9°C). Seven 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. 1600, July 8, 1986.

LOUIS I. LEVITICUS

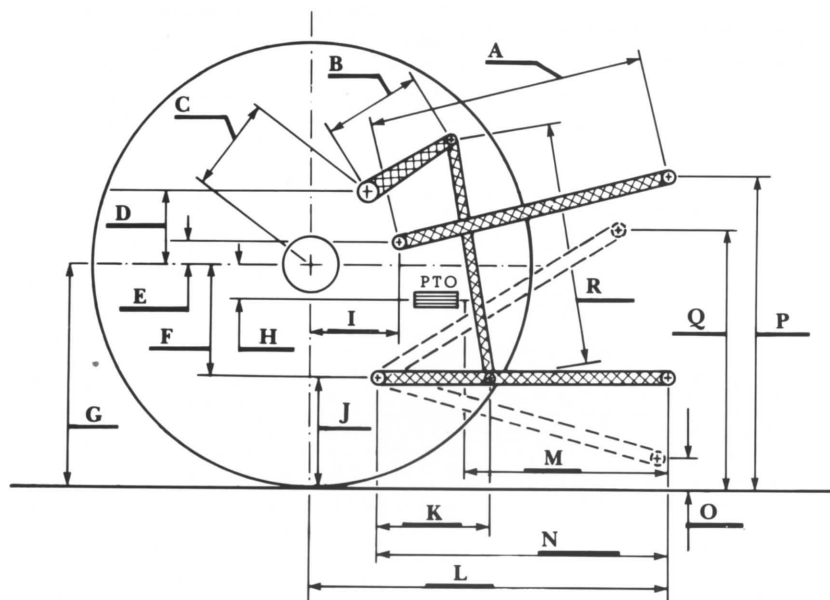
Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers



	inch	mm
A	24.8	629
B	10.8	275
C	17.1	435
D	16.9	429
E	8.1	205
F	9.8	248
G	31.3	794
H	-0.2	-5
I	15.9	405
J	21.5	546
K	23.2	590
L	40.8	1036
M	21.7	550
N	36.6	930
O	8.0	203
P	40.5	1029
Q	34.1	867
R	38.3	972

Hitch Dimensions as Tested — No Load



Valmet 148 4 × 4 Turbo Diesel