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## Test 1637: White 80 Diesel 18-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1637—WHITE 80 DIESEL 18 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 — 994 rpm)									
81.48 (60.76)	2200	4.841 (18.326)	0.415 (0.253)	16.83 (3.32)	188 (87)	57 (14)	76 (24)	28.92 (97.92)	
VARYING POWER AND FUEL CONSUMPTION — Two Hours									
71.87 (53.60)	2282	4.484 (16.975)	0.436 (0.265)	16.03 (3.16)	185 (85)	57 (14)	76 (24)	..... .....	
..... .....	2400	1.652 (6.254)	..... .....	..... .....	185 (85)	56 (13)	76 (24)	..... .....	
36.67 (27.34)	2332	2.914 (11.030)	0.556 (0.338)	12.58 (2.48)	180 (82)	56 (13)	76 (24)	..... .....	
82.06 (61.19)	2199	4.845 (18.340)	0.413 (0.251)	16.94 (3.34)	188 (86)	57 (14)	77 (25)	..... .....	
18.58 (13.86)	2359	2.287 (8.658)	0.861 (0.523)	8.12 (1.60)	178 (81)	57 (14)	77 (25)	..... .....	
54.28 (40.48)	2300	3.648 (13.807)	0.470 (0.286)	14.88 (2.93)	183 (84)	56 (13)	76 (24)	..... .....	
Av Av	44.20 (32.96)	2312	3.305 (12.511)	0.523 (0.318)	13.37 (2.63)	183 (84)	56 (13)	76 (24)	28.88 (97.81)

## 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	
<b>Maximum Available Power — Two Hours 7th (3B) Gear</b>											
68.16 (50.82)	5840 (25.98)	4.38 (7.04)	2199	4.61	4.856 (18.383)	0.498 (0.303)	14.04 (2.77)	195 (91)	65 (18)	81 (27)	28.60 (96.83)
<b>75% of Pull at Maximum Power — Ten Hours 7th (3B) Gear</b>											
55.91 (41.69)	4526 (20.13)	4.63 (7.46)	2297	3.36	4.253 (16.098)	0.532 (0.324)	13.15 (2.59)	185 (85)	51 (10)	55 (13)	28.75 (97.36)
<b>50% of Pull at Maximum Power — Two Hours 7th (3B) Gear</b>											
37.93 (28.28)	3018 (13.42)	4.71 (7.58)	2318	2.58	3.419 (12.941)	0.630 (0.383)	11.09 (2.19)	185 (85)	38 (3)	40 (4)	29.05 (98.36)
<b>50% of Pull at Reduced Engine Speed — Two Hours 12th (5A) Gear</b>											
37.90 (28.27)	3018 (13.42)	4.71 (7.58)	1499	2.54	2.725 (10.315)	0.503 (0.306)	13.91 (2.74)	179 (81)	39 (4)	40 (4)	28.92 (97.93)
<b>MAXIMUM POWER IN SELECTED GEARS</b>											
64.18 (47.86)	10091 (44.89)	2.38 (3.84)	2269	14.25	2nd (1B) Gear			188 (87)	34 (1)	40 (4)	29.15 (98.71)
66.63 (49.69)	8315 (36.99)	3.00 (4.84)	2198	7.04	3rd (1C) Gear			185 (85)	60 (16)	68 (20)	28.60 (96.85)
66.82 (49.83)	8004 (35.60)	3.13 (5.04)	2198	6.69	4th (2A) Gear			185 (85)	60 (16)	68 (20)	28.62 (96.92)
69.44 (51.78)	7233 (32.17)	3.60 (5.79)	2199	5.34	5th (3A) Gear			182 (83)	36 (2)	47 (8)	29.11 (98.58)
71.01 (52.95)	6946 (30.90)	3.83 (6.17)	2199	5.19	6th (2B) Gear			185 (85)	36 (2)	47 (8)	29.11 (98.58)
70.74 (52.75)	6035 (26.84)	4.40 (7.08)	2200	4.24	7th (3B) Gear			189 (87)	36 (2)	48 (9)	29.10 (98.54)
69.77 (52.03)	5620 (25.00)	4.66 (7.49)	2199	3.94	8th (2C) Gear			187 (86)	36 (2)	48 (9)	29.10 (98.54)
69.92 (52.14)	4933 (21.94)	5.32 (8.55)	2200	3.34	9th (3C) Gear			185 (85)	37 (3)	49 (9)	29.09 (98.51)
70.04 (52.23)	4757 (21.16)	5.52 (8.89)	2198	3.19	10th (4A) Gear			182 (83)	35 (2)	46 (8)	29.12 (98.61)
70.18 (52.34)	3932 (17.49)	6.69 (10.77)	2198	2.58	11th (4B) Gear			188 (87)	35 (2)	46 (8)	29.12 (98.61)
68.09 (50.77)	3692 (16.42)	6.92 (11.13)	2201	2.51	12th (5A) Gear			182 (83)	35 (2)	46 (8)	29.12 (98.61)
67.67 (50.46)	3144 (13.99)	8.07 (12.99)	2200	1.97	13th (4C) Gear			184 (85)	36 (2)	47 (8)	29.11 (98.58)

Department of Biological Systems Engineering

Dates of Test: April 3-26, 1990

Manufacturer: WHITE NEW IDEA FARM EQUIPMENT Co., 123 West Sycamore Street, Coldwater, Ohio 45828

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 53.9 (rating taken from oil company's inspection data) Specific gravity converted to 60/60°F (15/15°C) 0.8396 Fuel weight 6.991 lbs/gal (0.838 kg/l) Oil SAE 15W40 API service classification CE, CD-II, SG To motor 2.398 gal (9.078 l) Drained from motor 2.140 gal (8.102 l) Transmission and powershift lubricant White Universal Fluid Front axle lubricant SAE 80-90 M.P. Gear Lubricant API GL-5 Total time engine was operated 43.5 hours.

**ENGINE:** Make Consolidated Diesel Corporation-Cummins Diesel Type four cylinder vertical with turbocharger Serial No. 44317342B Crankshaft lengthwise Rated rpm 2200 Bore and stroke (as specified) 4.02" × 4.72" (102 mm × 120 mm) Compression ratio 17.5 to 1 Displacement 239 cu in (3900 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, separate radiators for transmission and powershift oils Fuel filter two paper elements and water separator Muffler vertical Cooling medium temperature control one thermostat.

**ENGINE OPERATING PARAMETERS:** Fuel rate 33.3-34.7 lb/h (15.1-15.7 kg/h) High idle 2325-2425 rpm Turbo boost nominal 8.0-10.0 psi (55-69 kPa) as measured 9.0 psi (62 kPa).

**CHASSIS:** Type front wheel assist Serial No. \*402660-80F\* Tread width rear 61" (1549 mm) to 89.5" (2273 mm) front 60.5" (1540 mm) to 66.5" (1690 mm) Wheel base 95" (2413 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 32.3" (820 mm) Vertical distance above roadway 28.0" (710 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 with partial (3) range operator controlled powershift Advertised speeds mph (km/h) first 2.1 (3.5) second 2.6 (4.2) third 3.1 (5.0) fourth 3.3 (5.2) fifth 3.7 (5.9) sixth 3.9 (6.2) seventh 4.4 (7.1) eighth 4.6 (7.5) ninth 5.3 (8.5) tenth 5.5 (8.8) eleventh 6.6 (10.6) twelfth 6.8 (10.9) thirteenth 7.9 (12.7) fourteenth 8.2 (13.2) fifteenth 9.8 (15.8) sixteenth 11.6 (18.6) seventeenth 13.9 (22.4) eighteenth 16.7 (26.8) reverse 2.5 (4.0), 3.0 (4.8), 3.6 (5.8), 4.2 (6.8), 5.1 (8.2), 6.1 (9.8) Clutch single dry disc operated by foot pedal Brakes dry disc

### LUGGING ABILITY IN 7th (3B) GEAR

Crankshaft Speed rpm	2200	1978	1768	1549	1309	1098
Pull—lbs (kN)	6035 (26.84)	6694 (29.78)	7212 (32.08)	7478 (33.26)	7484 (33.29)	7280 (32.38)
Increase in Pull %	0	11	20	24	24	21
Power—Hp (kW)	70.74 (52.75)	70.10 (52.27)	67.08 (50.02)	60.76 (45.30)	51.35 (38.29)	41.97 (31.30)
Speed—Mph (km/h)	4.40 (7.08)	3.93 (6.32)	3.49 (5.61)	3.05 (4.90)	2.57 (4.14)	2.16 (3.48)
Slip %	4.24	4.68	5.26	5.84	5.84	5.55

### Front Wheel Drive Disengaged dB(A)

### TRACTOR SOUND LEVEL WITH OUT CAB

Maximum Available Power—Two Hours	94.0	94.0
75% of Pull at Maximum Power—Ten Hours		94.0
50% of Pull at Maximum Power—Two Hours		93.0
50% of Pull at Reduced Engine Speed—Two Hours		88.0
Bystander in 18th (6C) gear	85.5	

### DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

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)
<b>Maximum Available Power — Two hours 7th (3B) Gear</b>											
65.27 (48.67)	5676 (25.25)	4.31 (6.94)	2199	6.09	4.742 (17.950)	0.508 (0.309)	13.76 (2.71)	188 (87)	63 (17)	75 (24)	28.62 (96.92)

### MAXIMUM POWER IN SELECTED GEARS

61.41 (45.80)	7723 (34.35)	2.98 (4.80)	2267	13.93	4th (2A) Gear			181 (83)	35 (2)	42 (6)	29.14 (98.68)
69.52 (51.84)	6964 (30.98)	3.74 (6.02)	2200	7.57	6th (2B) Gear			185 (85)	35 (2)	43 (6)	29.14 (98.68)
69.48 (51.81)	6028 (26.82)	4.32 (6.95)	2199	5.95	7th (3B) Gear			186 (86)	36 (2)	48 (9)	29.09 (98.51)

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>	Two 18.4R34; *, 16 (110)	Two 18.4R34; *, 16 (110)
Ballast	None	None
—No., size, ply & psi (kPa)	390 lb (177 kg)	None
—Liquid (each)		
—Cast Iron (each)		
<b>Front Tires</b>	Two 13.6-24; 8; 14 (95)	Two 13.6-24; 8; 14 (95)
Ballast	None	None
—No., size, ply & psi (kPa)	605 lb (274 kg)	None
—Liquid (each)		
—Cast Iron (each)		
<b>Height of Drawbar</b>	19.0 in (485 mm)	19.0 in (485 mm)
<b>Static Weight with Operator—Rear</b>	7015 lb (3182 kg)	6235 lb (2828 kg)
—Front	4325 lb (1962 kg)	3115 lb (1413 kg)
—Total	11340 lb (5144 kg)	9350 lb (4241 kg)

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	*2400 (16550)
Location	remote outlet
Hydraulic oil temperature °F (°C)	162 (72)
Location	pump inlet
	<b>Maximum Lift Capacity</b>
<b>QUICK ATTACH</b>	No
<b>CATEGORY</b>	II
<b>LOAD lbs (kg)</b>	5020 (2277)
<b>TIME sec</b>	5.02
<b>HITCH POINT MOVEMENT in (mm)</b>	
Lowest position	13.6 (345)
Top of timed range	**36.0 (914)
Highest position	36.0 (914)
<b>LOAD CG MOVEMENT in (mm)</b>	
Lowest position	14.8 (376)
Top of timed range	35.1 (892)
Highest position	35.1 (892)

\* The observed system pressure, 2400 psi (16550 kPa) exceeds manufacturers maximum pressure of 2275 psi (15685 kPa).

\*\* The observed power range 22.4" (569 mm) does not meet the minimum power range 24.0" (610 mm) as specified by ASAE Standard S217.10.

operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 147" (3.73 m) left 146" (3.71 m)(on concrete surface without brake) right 162" (4.11 m) left 162" (4.11 m) **Turning space diameter** (on concrete surface with brake applied) right 301" (7.64 m) left 298" (7.57 m)(on concrete surface without brake) right 330" (8.38 m) left 331" (8.41 m) **Power take-off** 540 rpm at 2160 engine rpm and 1000 rpm at 2217 engine rpm **Unladen tractor mass** 9170 lb (4159 kg).

**REPAIRS AND ADJUSTMENTS:** The right brake return spring was found broken following the drawbar tests.

**REMARKS:** All test results were determined from observed data obtained in accordance with official SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump was maintained at 160 °F (71°C). Twelve 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. 1637, July, 30, 1990.

LOUIS I. LEVITICUS

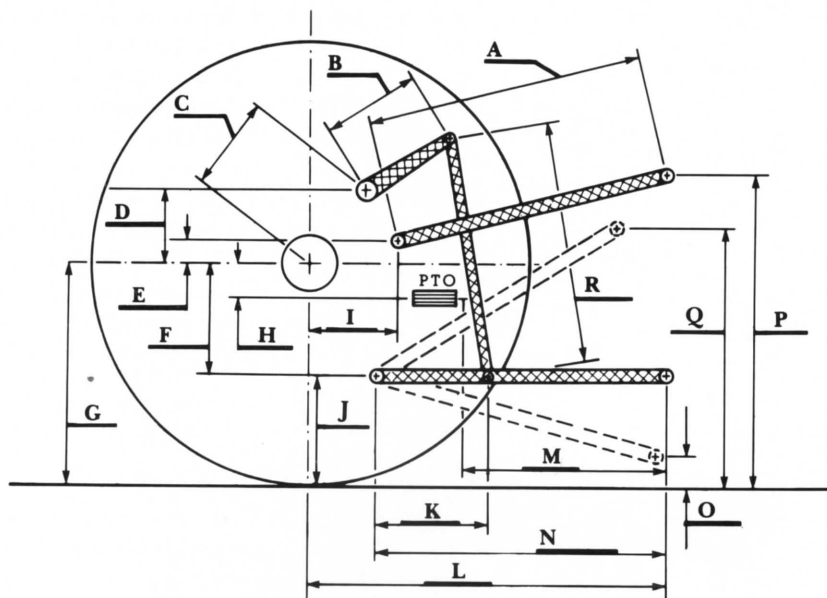
Engineer-in-Charge

K. VON BARGEN

R.D. GRISSO

G.J. HOFFMAN

Board of Tractor Test Engineers



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	27.9	708
B	13.2	336
C	13.0	330
D	12.6	320
E	11.6	294
F	9.8	248
G	29.9	759
H	2.2	55
I	8.9	227
J	20.1	511
K	20.0	508
L	39.8	1010
M	20.1	511
N	32.5	826
O	8.0	203
P	39.1	993
Q	31.4	797
R	32.1	816



White 80 Diesel