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## Test 1614: White 100 Diesel 18-Speed

Nebraska Tractor Test Lab

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

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# NEBRASKA TRACTOR TEST 1614—WHITE 100 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 — 1021 rpm)								
94.36 (70.37)	2400	6.389 (24.183)	0.468 (0.285)	14.77 (2.910)	188 (86.9)	67 (19.4)	75 (24.0)	28.78 (97.19)
Standard Power Take-off Speed (1000 rpm) — One Hour								
93.48 (69.71)	2350	6.243 (23.633)	0.461 (0.281)	14.97 (2.950)	188 (86.7)	67 (19.4)	75 (23.9)	28.77 (97.15)
VARYING POWER AND FUEL CONSUMPTION — Two Hours								
82.23 (61.32)	2460	5.761 (21.809)	0.484 (0.294)	14.27 (2.812)	189 (86.9)	66 (18.9)	75 (23.9)	..... .....
1.51 (1.13)	2535	2.136 (8.086)	..... .....	0.71 (0.139)	183 (83.6)	66 (18.9)	75 (23.6)	..... .....
41.43 (30.89)	2478	3.708 (14.035)	0.618 (0.376)	11.17 (2.201)	187 (86.1)	66 (18.9)	75 (23.6)	..... .....
96.19 (71.73)	2400	6.425 (24.323)	0.462 (0.281)	14.97 (2.949)	189 (86.9)	66 (18.9)	75 (23.9)	..... .....
21.07 (15.71)	2518	2.996 (11.340)	0.982 (0.598)	7.03 (1.386)	193 (89.4)	67 (19.2)	75 (23.9)	..... .....
62.05 (46.27)	2474	4.654 (17.618)	0.518 (0.315)	13.33 (2.626)	182 (83.1)	66 (18.9)	76 (24.2)	..... .....
Av Av	50.75 (37.84)	2477 (16.202)	4.280 (0.355)	0.583 (2.336)	11.86 (86.0)	187 (18.9)	66 (23.8)	75 28.76 (97.11)

### 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 11th (4D) Gear											
79.38 (59.19)	4987 (22.18)	5.97 (9.61)	2399	2.09	6.216 (23.529)	0.541 (0.329)	12.77 (2.516)	190 (87.8)	51 (10.3)	58 (14.4)	29.18 (98.54)
75% of Pull at Maximum Power — Ten Hours 11th (4D) Gear											
64.09 (47.79)	3890 (17.30)	6.18 (9.94)	2471	1.61	5.395 (20.423)	0.582 (0.354)	11.88 (2.340)	182 (83.4)	56 (13.2)	61 (16.1)	28.96 (97.81)
50% of Pull at Maximum Power — Two Hours 11th (4D) Gear											
43.41 (32.37)	2594 (11.54)	6.27 (10.10)	2498	1.14	4.276 (16.188)	0.681 (0.414)	10.15 (1.999)	188 (86.4)	54 (12.2)	66 (18.9)	29.16 (98.45)
50% of Pull at Reduced Engine Speed — Two Hours 15th (50) Gear											
43.39 (32.35)	2594 (11.54)	6.27 (10.09)	1517	1.06	3.213 (12.162)	0.512 (0.311)	13.50 (2.660)	183 (83.9)	56 (13.3)	70 (21.1)	29.10 (98.27)
MAXIMUM POWER IN SELECTED GEARS											
71.29 (53.16)	13629 (60.62)	1.96 (3.16)	2422	11.59	3rd (1O) Gear			186 (85.6)	44 (6.7)	46 (7.8)	29.16 (98.47)
80.56 (60.08)	11076 (49.27)	2.73 (4.39)	2400	5.22	4th (2U) Gear			190 (87.8)	57 (13.9)	61 (16.1)	28.90 (97.59)
82.10 (61.22)	9232 (41.07)	3.33 (5.37)	2401	3.98	5th (2D) Gear			191 (88.3)	58 (14.4)	62 (16.7)	28.91 (97.62)
81.05 (60.44)	8576 (38.15)	3.54 (5.70)	2401	3.51	6th (3U) Gear			182 (83.3)	57 (13.9)	61 (16.1)	28.89 (97.56)
81.59 (60.84)	7589 (33.76)	4.03 (6.49)	2399	3.03	7th (2O) Gear			183 (83.6)	57 (13.9)	61 (16.1)	28.89 (97.56)
81.93 (61.09)	7150 (31.80)	4.30 (6.92)	2400	2.79	8th (3D) Gear			192 (88.9)	57 (13.9)	60 (15.6)	28.90 (97.59)
81.56 (60.82)	6199 (27.57)	4.93 (7.94)	2399	2.46	9th (4U) Gear			188 (86.7)	58 (14.4)	63 (17.2)	28.91 (97.62)
79.70 (59.43)	5771 (25.67)	5.18 (8.33)	2399	2.38	10th (3O) Gear			184 (84.2)	58 (14.4)	63 (17.2)	28.91 (97.62)
82.57 (61.57)	5187 (23.07)	5.97 (9.61)	2399	2.05	11th (4D) Gear			187 (85.8)	58 (14.4)	62 (16.7)	28.91 (97.62)
79.34 (59.16)	4361 (19.40)	6.82 (10.98)	2399	1.72	12th (5U) Gear			187 (86.1)	58 (14.4)	62 (16.7)	28.90 (97.59)
78.83 (58.79)	4114 (18.30)	7.19 (11.57)	2399	1.64	13th (4O) Gear			191 (88.1)	58 (14.4)	62 (16.7)	28.90 (97.59)
79.86 (59.55)	3632 (16.15)	8.25 (13.27)	2399	1.56	14th (5D) Gear			183 (83.9)	58 (14.4)	63 (17.2)	28.90 (97.59)

Department of Agricultural Engineering

Dates of Test: September 26 to October 4, 1988

**Manufacturer:** WHITE-NEW IDEA FARM EQUIPMENT COMPANY, Division of Allied Products, 123 West Sycamore Street, Coldwater, Ohio 45828

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 51.2 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F (15/15°C)** 0.8299 Fuel weight 6.910 lbs/gal (0.828 kg/l) Oil SAE 15W-40 API service classification CC, CD/SD, SE, SF To motor 3.762 gal (14.240 l) Drained from motor 3.194 gal (12.090 l) Transmission and final drive lubricant White Farm Equipment Universal Fluid Total time engine was operated 34.0 hours.

**ENGINE:** Make Consolidated Diesel Corporation-Cummins Diesel Type six cylinder vertical Serial No. 44225450 Crankshaft lengthwise Rated rpm 2400 Bore and stroke 4.02" × 4.72" (102 mm × 120 mm) Compression ratio 17.0 to 1 Displacement 359 cu in (5880 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, separate radiators for transmission and powershift oils Fuel filter one paper cartridge and prestrainer Muffler underhood Exhaust vertical Cooling medium temperature control one thermostat.

**ENGINE OPERATING PARAMETERS:** Maximum fuel rate 47.06 lb/hr (21.34 kg/hr) High idle 2525-2625 rpm

**CHASSIS:** Type standard with duals Serial No. \*401236-100T\* Tread width rear 62" (1570 mm) to 124" (3150 mm) front 60" (1524 mm) to 84" (2135 mm) Wheel base 111.5" (2830 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 26.2" (666 mm) Vertical distance above roadway 41.8" (1061 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 1.5 (2.4) second 1.8 (2.9) third 2.2 (3.5) fourth 2.9 (4.6) fifth 3.5 (5.6) sixth 3.7 (5.9) seventh 4.2 (6.7) eighth 4.4 (7.1) ninth 5.0 (8.1) tenth 5.3 (8.5) eleventh 6.1 (9.8) twelfth 6.9 (11.1) thirteenth 7.3 (11.7) fourteenth 8.3 (13.4) fifteenth 10.0 (16.1) sixteenth 12.2 (19.6) seventeenth 14.7 (23.6) eighteenth 17.6 (28.3) reverse 1.8 (2.9), 2.2 (3.6), 2.7 (4.3), 4.4 (7.1), 5.3 (8.6), 6.4 (10.3) Clutch single dry disc operated by foot pedal Brakes single wet disc hydraulically power actuated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 137" (3.49 m) left 137" (3.49 m) (on concrete surface

### LUGGING ABILITY IN 11th (4D) GEAR

Crankshaft Speed rpm	2399	2162	1913	1684	1428	1191	961
Pull—lbs (kN)	5187 (23.07)	5535 (24.62)	5756 (25.60)	5807 (25.83)	5996 (26.67)	6135 (27.29)	5672 (25.23)
Increase in Pull %	0	7	11	12	16	18	9
Power—Hp (kW)	82.57 (61.57)	79.26 (59.11)	72.87 (54.34)	64.73 (48.27)	56.64 (42.24)	48.28 (36.00)	36.07 (26.90)
Speed—Mph (kmh)	5.97 (9.61)	5.37 (8.64)	4.75 (7.64)	4.18 (6.73)	3.54 (5.70)	2.95 (4.75)	2.38 (3.84)
Slip %	2.05	2.22	2.38	2.38	2.38	2.38	2.22

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	76.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	75.5
50% of Pull at Reduced Engine Speed—Two Hours	73.5
Bystander in 18th (6O) gear	89.5

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>	Four 18.4R38; *, 12 (85)	Four 18.4R38; *, 12 (85)
Ballast	None	None
—No., size, ply & psi (kPa)	49 lb (22 kg)	None
—Liquid (each)		
—Test equip. (each)		
<b>Front Tires</b>	Two 9.5L-15; 6; 36 (250)	Two 9.5L-15; 6; 36 (250)
Ballast	None	None
—No., size, ply & psi (kPa)	175 lb (79 kg)	None
—Liquid (each)		
—Cast Iron (each)		
<b>Height of Drawbar</b>	21.5 in (545 mm)	21.5 in (545 mm)
<b>Static Weight with Operator</b> —Rear	11200 lb (5080 kg)	11005 lb (4992 kg)
—Front	3285 lb (1490 kg)	2935 lb (1331 kg)
—Total	14485 lb (6570 kg)	13940 lb (6323 kg)

### THREE POINT HITCH PERFORMANCE (With external lift cylinder)

Observed Maximum Pressure psi (kPa)	2275 (15690)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	159 (71)	
Location	pump inlet	
	<b>Maximum Lift Capacity</b>	<b>Lift Capacity for Transport</b>
QUICK ATTACH	no	
CATEGORY	III	*not measured
LOAD lbs (kg)	7190 (3261)	
TIME sec	5.29	
HITCH POINT MOVEMENT in (mm)		
Lowest position	14.1 (358)	
Top of timed range	40.1 (1018)	
Highest position	40.1 (1018)	
LOAD CG MOVEMENT in (mm)		
Lowest position	13.6 (345)	
Top of timed range	46.1 (1171)	
Highest position	46.1 (1171)	

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

without brake) right 171" (4.33 m) left 171" (4.33 m) **Turning space diameter** (on concrete surface with brake applied) right 286" (7.27 m) left 286" (7.27 m)(on concrete surface without brake) right 353" (8.97 m) left 353" (8.97 m) **Power take-off** 540 rpm at 2378 engine rpm and 1000 rpm at 2350 engine rpm **Unladen tractor mass** 12440 lb (5643 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 148 °F (64.5°C). Twelve gears were chosen between 15% slip and 10 mph (16.1 km/h). Manufacturer specifications for engine bore, stroke, displacement and compression ratio were not verified. This tractor did not meet manufacturers claim of 8000 lbs (3628 kg) lift capacity with optional external lift cylinder.

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. **1614**, February 2, 1989.

LOUIS I. LEVITICUS

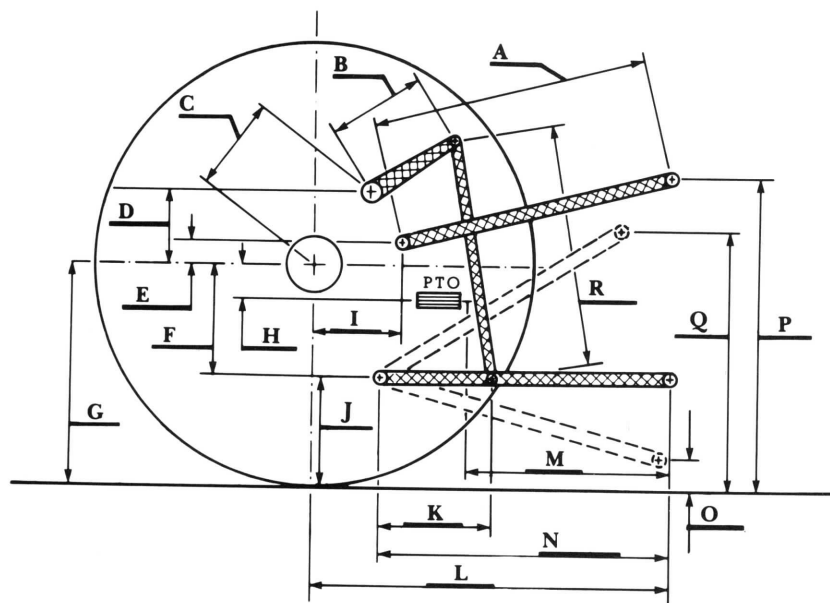
Engineer-in-Charge

K. VON BARGEN

R. D. GRISSO

T. L. THOMPSON

Board of Tractor Test Engineers



	inch	mm
A	25.0	635
B	16.0	406
C	20.1	511
D	18.6	472
E	10.4	263
F	10.2	260
G	31.2	793
H	1.9	48
I	19.9	506
J	21.0	533
K	22.3	566
L	45.3	1151
M	22.4	568
N	34.8	884
O	6.8	172
P	43.0	1092
Q	36.3	921
R	39.0	991

Hitch Dimensions as Tested — No Load



White 100 Diesel