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## Test 1318: White 4-210 Field Boss Diesel 18-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1318 — WHITE 4-210 FIELD BOSS DIESEL ALSO WHITE FARM EQUIPMENT 4-210 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—1000 rpm)

182.44 (136.04)	2800	12.792 (48.423)	0.490 (0.298)	14.26 (2.809)	181 (82.8)	66 (18.8)	75 (23.8)	28.787 (97.208)
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## VARYING POWER AND FUEL CONSUMPTION—Two Hours

158.80 (118.42)	2869	11.065 (41.886)	0.487 (0.296)	14.35 (2.827)	178 (81.4)	66 (18.9)	75 (23.9)	.....
0.00 (0.00)	3014	4.482 (16.965)	.....	.....	174 (78.9)	66 (18.9)	75 (23.9)	.....
81.81 (61.01)	2952	7.514 (28.443)	0.642 (0.391)	10.89 (2.145)	177 (80.6)	66 (18.9)	76 (24.2)	.....
183.81 (137.07)	2801	12.755 (48.282)	0.485 (0.295)	14.41 (2.839)	182 (83.1)	66 (18.6)	73 (22.8)	.....
41.31 (30.81)	2981	5.927 (22.436)	1.004 (0.610)	6.97 (1.373)	175 (79.4)	66 (19.2)	76 (24.2)	.....
120.84 (90.11)	2912	9.135 (34.580)	0.529 (0.322)	13.23 (2.606)	178 (81.1)	67 (19.4)	76 (24.2)	.....
<b>Av 97.76</b> <b>Av (72.90)</b>	<b>2921</b>	<b>8.480</b> <b>(32.099)</b>	<b>0.607</b> <b>(0.369)</b>	<b>11.53</b> <b>(2.271)</b>	<b>177</b> <b>(80.7)</b>	<b>66</b> <b>(19.0)</b>	<b>75</b> <b>(23.8)</b>	<b>28.783</b> <b>(97.197)</b>

## 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											
158.77 (118.40)	10120 (45.02)	5.88 (9.47)	2799	3.06	12.866 (48.704)	0.567 (0.345)	12.34 (2.431)	190 (87.8)	74 (23.1)	82 (27.8)	28.740 (97.051)
75% of Pull at Maximum Power—Ten Hours 11th (4D) Gear											
126.70 (94.48)	7744 (34.45)	6.14 (9.87)	2896	2.31	10.472 (39.640)	0.578 (0.352)	12.10 (2.383)	183 (83.8)	72 (22.0)	82 (27.9)	28.554 (96.423)
50% of Pull at Maximum Power—Two Hours 11th (4D) Gear											
86.65 (64.61)	5179 (23.04)	6.27 (10.10)	2944	1.80	8.452 (31.996)	0.682 (0.415)	10.25 (2.019)	180 (82.2)	62 (16.4)	72 (22.2)	28.735 (97.034)
50% of Pull at Reduced Engine Speed—Two Hours 15th (5O) Gear											
86.28 (64.34)	5151 (22.91)	6.28 (10.11)	1680	1.63	6.040 (22.864)	0.490 (0.298)	14.28 (2.814)	181 (82.8)	65 (18.1)	79 (26.1)	28.775 (97.169)

## MAXIMUM POWER IN SELECTED GEARS

140.19 (104.54)	22934 (102.02)	2.29 (3.69)	2818	14.85	2nd (1D) Gear			183 (83.6)	59 (15.0)	69 (20.6)	28.710 (96.949)
145.79 (108.71)	21369 (95.05)	2.56 (4.12)	2798	11.33	3rd (2U) Gear			186 (85.6)	75 (23.9)	85 (29.4)	28.730 (97.017)
151.84 (113.22)	19316 (85.92)	2.95 (4.74)	2798	7.65	4th (1O) Gear			187 (86.1)	74 (23.3)	84 (28.9)	28.740 (97.051)
158.09 (117.89)	18184 (80.89)	3.26 (5.25)	2799	6.64	5th (2D) Gear			186 (85.6)	74 (23.3)	83 (28.3)	28.740 (97.051)
157.12 (117.17)	16219 (72.15)	3.63 (5.85)	2797	5.47	6th (3U) Gear			187 (85.8)	74 (23.3)	83 (28.3)	28.740 (97.051)
157.93 (117.77)	14933 (66.43)	3.97 (6.38)	2799	4.79	7th (2O) Gear			186 (85.6)	70 (21.1)	78 (25.6)	28.760 (97.118)
161.70 (120.58)	13615 (60.56)	4.45 (7.17)	2798	4.19	8th (3D) Gear			186 (85.6)	70 (21.1)	77 (25.0)	28.760 (97.118)
161.26 (120.25)	12521 (55.70)	4.83 (7.77)	2800	3.72	9th (4U) Gear			185 (85.0)	70 (21.1)	77 (25.0)	28.760 (97.118)
158.34 (118.08)	11050 (49.15)	5.37 (8.65)	2800	3.18	10th (3O) Gear			185 (85.0)	70 (21.1)	77 (25.0)	28.760 (97.118)
162.25 (120.99)	10333 (45.96)	5.89 (9.48)	2800	3.02	11th (4D) Gear			185 (84.7)	67 (19.4)	71 (21.7)	28.770 (97.152)
155.40 (115.88)	8235 (36.63)	7.08 (11.39)	2800	2.39	12th (4O) Gear			186 (85.6)	73 (22.8)	81 (27.2)	28.750 (97.084)
157.76 (117.64)	8220 (36.56)	7.20 (11.58)	2799	2.31	13th (5U) Gear			186 (85.6)	74 (23.3)	82 (27.8)	28.750 (97.084)
158.75 (118.38)	6807 (30.28)	8.75 (14.07)	2798	1.84	14th (5D) Gear			186 (85.6)	74 (23.3)	82 (27.8)	28.750 (97.084)

Department of Agricultural Engineering

Dates of Test: June 12 — 20, 1979

Manufacturer: WHITE FARM EQUIPMENT  
CO., 2625 Butterfield Road, Oakbrook, Illinois  
60521

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel  
Cetane No. 49.0 (rating taken from oil company's  
typical inspection data) **Specific gravity converted**  
**to 60°/60° (15°/15°) 0.8401 Fuel weight 6.995 lbs/**  
**gal (0.838 kg/l) Oil SAE 10W-30 API service**  
**classification SD-SE/CC-CD To motor 4.359 gal**  
**(16.499 l) Drained from motor 1.867 gal (7.067 l)**  
**Transmission and final drive lubricant Universal**  
**Tractor Hydraulic-Transmission Fluid Total time**  
**engine was operated 36.0 hours**

**ENGINE:** Make Caterpillar Diesel Type Eight  
cylinder vee **Serial No.** 90N36922 **Crankshaft**  
lengthwise **Rated rpm** 2800 **Bore and stroke** 4.5"  
x 5.0" (114.3 mm x 127 mm) **Compression ratio** 16.5  
to 1 **Displacement** 636 cu in (10424 ml) **Cranking**  
**system** 12 volt **Lubrication pressure** **Air cleaner**  
two paper elements with aspirator **Oil filter** two  
full flow cartridges **Oil cooler** engine coolant heat  
exchanger for crankcase oil, radiator for hydraulic  
and transmission oil **Fuel filter** one paper car-  
tridge **Muffler** underhood **Exhaust vertical**  
**Cooling medium temperature control** two ther-  
mostats.

**CHASSIS:** Type Four wheel drive with duals  
**Serial No.** 275804-418 **Tread width** rear 63" (1600  
mm) to 126" (3200 mm) front 63" (1600 mm) to 126"  
(3200 mm) **Wheel base** 117.8" (2991 mm) **Center of**  
**gravity** (without operator or ballast, with  
minimum tread, with fuel tank filled and tractor  
serviced for operation) Horizontal distance for-  
ward from center-line of rear wheels 72.4" (1839  
mm) Vertical distance above roadway 43.7" (1110  
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 power shift **Advertised speeds mph**  
**(km/h)** first 2.2 (3.5) second 2.6 (4.2) third 2.8 (4.5)  
fourth 3.2 (5.1) fifth 3.4 (5.5) sixth 3.8 (6.1) seventh  
4.1 (6.6) eighth 4.6 (7.4) ninth 5.0 (8.0) tenth 5.5  
(8.8) eleventh 6.0 (9.6) twelfth 7.2 (11.6) thirteenth  
7.3 (11.7) fourteenth 8.8 (14.2) fifteenth 10.5 (16.9)  
sixteenth 12.7 (20.4) seventeenth 15.2 (24.5)  
eighteenth 18.3 (29.4) reverse 2.5 (4.0), 3.1 (5.0),  
3.7 (5.9), 4.4 (7.1), 5.3 (8.5), 6.4 (10.3) **Clutch** dual  
dry disc operated by foot pedal **Brakes** single wet  
disc hydraulically power actuated and operated by  
foot pedal **Steering** hydrostatic and articulated  
**Turning radius** (on concrete surface without  
brake) right 210" (5.33 m) left 210" (5.33 m)  
**Turning space diameter** (on concrete surface  
without brake) right 450" (11.43 m) left 450"  
(11.43 m) **Power take-off** 1000 rpm at 2800 en-  
gine rpm.

**REPAIRS and ADJUSTMENTS:** No repairs or  
adjustments

# LUGGING ABILITY IN 11th (4D) GEAR

Crankshaft Speed rpm	2800	2526	2248	1963	1680	1395	1113
Pull—lbs (kN)	10333 (45.96)	11357 (50.52)	12234 (54.42)	12831 (57.08)	13449 (59.83)	13932 (61.97)	13695 (60.92)
Increase in Pull %	0	10	18	24	30	35	33
Power—Hp (kW)	162.25 (120.99)	160.34 (119.56)	153.26 (114.28)	139.95 (104.36)	125.29 (93.43)	107.49 (80.16)	84.38 (62.92)
Speed—Mph (km/h)	5.89 (9.48)	5.29 (8.52)	4.70 (7.56)	4.09 (6.58)	3.49 (5.62)	2.89 (4.66)	2.31 (3.72)
Slip, %	3.02	3.34	3.64	3.96	4.11	4.26	4.26

# TRACTOR SOUND LEVEL WITH CAB dB(A)

Maximum Available Power—Two Hours	78.5
75% of Pull at Maximum Power—Ten Hours	81.0
50% of Pull at Maximum Power—Two Hours	81.5
50% of Pull at Reduced Engine Speed—Two Hours	79.5
Bystander in 18th (6O) gear	93.0

# TIRES, BALLAST AND WEIGHT

**Rear Tires** —No., size, ply & psi (kPa)  
**Ballast** —Liquid (each)  
—Cast Iron (each)

**Front Tires** —No., size, ply & psi (kPa)  
**Ballast** —Liquid (each)  
—Cast iron (each)

# Height of Drawbar

**Static Weight with Operator**—Rear  
Front  
Total

# Tested Without Ballast

Four 18.4-38; 8; 12 (85)

None

None

Four 18.4-38; 8; 12 (85)

None

None

22 in (560 mm)

9660 lb (4382 kg)

14075 lb (6384 kg)

23735 lb (10766 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 162°F (72.1° C). Thirteen 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 1318.

LOUIS I. LEVITICUS

Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

K. VON BARGEN

Board of Tractor Test Engineers



White 4-210 Field Boss Diesel