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January 2000

Test 1781: White 8510 Diesel 18-Speed

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1781 - SUMMARY 333

WHITE 8510 DIESEL

18 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1052rpm)					
164.38 (122.58)	2200	10.66 (40.35)	0.456 (0.277)	15.42 (3.04)	
Standard Power Take-off Speed (1004rpm)					
168.30 (125.50)	2100	10.51 (39.78)	0.439 (0.267)	16.02 (3.16)	
Maximum Power (2 Hours)					
168.30 (125.50)	2100	10.51 (39.78)	0.439 (0.267)	16.02 (3.16)	

VARYING POWER AND FUEL CONSUMPTION

164.38 (122.58)	2200	10.66 (40.35)	0.456 (0.277)	15.42 (3.04)	Air temperature
144.36 (107.65)	2274	9.78 (37.00)	0.476 (0.289)	14.77 (2.91)	78°F (26°C)
109.93 (81.97)	2311	8.15 (30.86)	0.521 (0.317)	13.48 (2.66)	Relative humidity
74.78 (54.76)	2357	6.62 (25.05)	0.622 (0.378)	11.30 (2.23)	49%
38.18 (28.47)	2403	4.99 (18.91)	0.919 (0.559)	7.64 (1.51)	Barometer
1.67 (1.24)	2442	3.50 (13.25)	14.749 (8.972)	0.48 (0.09)	28.99" Hg (98.17 kPa)

Maximum Torque - 538 lb.-ft. (729 Nm) at 1251 rpm

Maximum Torque Rise - 36.8%

Torque rise at 1799 engine rpm - 22%

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—10th Gear									
142.58 (106.32)	9765 (43.44)	5.48 (8.81)	2192	2.87	0.511 (0.311)	13.75 (2.71)	187 (86)	65 (18)	28.85 (97.70)
75% of Pull at Maximum Power—10th Gear									
112.72 (84.06)	7334 (32.62)	5.76 (9.28)	2292	2.17	0.556 (0.338)	12.64 (2.49)	186 (86)	64 (18)	29.06 (98.41)
50% of Pull at Maximum Power—10th Gear									
77.49 (57.78)	4896 (21.78)	5.94 (9.55)	2345	1.55	0.651 (0.396)	10.79 (2.13)	186 (86)	69 (21)	29.07 (98.44)
75% of Pull at Reduced Engine Speed—12th Gear									
112.46 (83.86)	7340 (32.65)	5.75 (9.25)	1765	2.17	0.464 (0.282)	15.15 (2.98)	184 (84)	69 (21)	29.07 (98.44)
50% of Pull at Reduced Engine Speed—12th Gear									
77.37 (57.70)	4889 (21.75)	5.94 (9.55)	1812	1.46	0.514 (0.313)	13.66 (2.69)	184 (84)	71 (22)	29.08 (98.48)

Location of Test: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832

Dates of Test: September 7 - 27, 2000

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth, Georgia, 30096 USA.

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15°C) 0.8441 Fuel weight 7.028 lbs/gal (0.842 kg/l) Oil SAE 15W40 API service classification CE/CF-4 Transmission and hydraulic lubricant AGCO Power Fluid 821 XL fluid Front axle lubricant AGCO Gear Lube 715 Total time engine was operated 25.0 hours

ENGINE: Make Cummins **Diesel Type** six cylinder vertical with turbocharger **Serial No.** 45654516 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.488" x 5.315" (114.0 mm x 135.0 mm) **Compression ratio** 17.3 to 1 **Displacement** 505 cu in (8268 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 and hydraulic oil **Fuel filter** two paper elements and water separator **Muffler** vertical **Cooling medium temperature control** one thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 70.3 - 77.7 lb/h (31.9 - 35.2 kg/h) **High idle:** 2380 - 2480 rpm **Turbo boost:** nominal 16.0 - 20.0 psi (110 - 138 kPa) as measured 19.0 psi (131 kPa)

CHASSIS: Type front wheel assist **Serial No.** CG085001 **Tread width** rear 61.5" (1562 mm) to 126.0" (3200 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 121.0" (3073 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.36 (2.19) second 1.76 (2.83) third 2.27 (3.65) fourth 2.59 (4.17) fifth 2.92 (4.70) sixth 3.33 (5.36) seventh 3.78 (6.09) eighth 4.31 (6.94) ninth 4.88 (7.85) tenth 5.56 (8.95) eleventh 6.31 (10.16) twelfth 7.20 (11.58) thirteenth 8.13 (13.09) fourteenth 9.26 (14.91) fifteenth 10.53 (16.94) sixteenth 13.56 (21.82) seventeenth 17.54 (28.23) eighteenth 22.60 (36.37) reverse 1.36 (2.19), 2.27 (3.65), 2.59 (4.17), 3.78 (6.09), 4.31 (6.94), 6.31 (10.16) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** single wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1991 engine rpm or 1000 rpm at 2091 engine rpm **Unladen tractor mass** 19010 lb (8623 kg)

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
124.82 (93.08)	17894 (79.60)	2.62 (4.21)	2245	14.02	5th Gear 0.580 (0.353)	12.12 (2.39)	187 (86)	61 (16)	28.86 (97.73)
141.31 (105.37)	17098 (76.06)	3.10 (4.99)	2172	7.42	6th Gear 0.516 (0.314)	13.61 (2.68)	186 (86)	64 (18)	28.85 (97.70)
146.66 (109.37)	15869 (70.59)	3.47 (5.58)	2101	5.73	7th Gear 0.500 (0.304)	14.05 (2.77)	187 (86)	65 (18)	28.86 (97.73)
148.97 (111.08)	13896 (61.81)	4.02 (6.47)	2103	4.24	8th Gear 0.492 (0.299)	14.30 (2.82)	187 (86)	65 (18)	28.86 (97.73)
147.77 (110.19)	12109 (53.86)	4.58 (7.37)	2104	3.73	9th Gear 0.497 (0.302)	14.14 (2.79)	187 (86)	65 (18)	28.86 (97.73)
149.44 (111.44)	10722 (47.69)	5.23 (8.41)	2098	3.21	10th Gear 0.489 (0.298)	14.36 (2.83)	187 (86)	65 (18)	28.86 (97.73)
147.32 (109.86)	9254 (41.16)	5.97 (9.61)	2102	2.78	11th Gear 0.499 (0.303)	14.10 (2.78)	186 (86)	67 (19)	28.85 (97.70)
147.84 (110.25)	8122 (36.13)	6.83 (10.99)	2102	2.25	12th Gear 0.495 (0.301)	14.20 (2.80)	187 (86)	68 (20)	28.85 (97.70)
146.58 (109.30)	7086 (31.52)	7.76 (12.48)	2107	2.08	13th Gear 0.503 (0.306)	13.97 (2.75)	186 (86)	69 (21)	28.86 (97.73)
142.54 (106.29)	6088 (27.08)	8.78 (14.13)	2108	2.11	14th Gear 0.514 (0.313)	13.68 (2.69)	185 (85)	69 (21)	28.86 (97.73)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The front drive axle on this model automatically disengages at travel speeds above 8.7 mph (14.0 kph).

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 138°F (59°C). The pull in 3rd gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance figures on this Summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1781**, Nebraska Summary 333, December 15, 2000.

Brent T. Sampson
Test Engineer

L.L. Bashford
M.F. Kocher
R.D. Grisso, Jr.
Board of Tractor Test Engineers

TIRES, BALLAST AND WEIGHT

Rear tires - No., size, ply & psi (kPa)

Ballast - Duals (total)

- Cast Iron (total)

Front tires - No., size, ply & psi (kPa)

Ballast - Liquid (total)

- Cast Iron (total)

Height of Drawbar

Static Weight with operator - Rear

- Front

- Total

With Ballast

Four 18.4R42; **, 16 (110)

1710 lb (776 kg)

None

Two 14.9R30; ***, 28 (195)

None

1480 lb (671 kg)

16.5 in (420 mm)

13715 lb (6221 kg)

8660 lb (3928 kg)

22375 lb (10149 kg)

Without Ballast

Two 18.4R42; **, 22 (150)

None

None

Two 14.9R30; ***, 24 (165)

None

None

16.5 in (420 mm)

12260 lb (5561 kg)

6925 lb (3141 kg)

19185 lb (8702 kg)

DRAWBAR PERFORMANCE
BALLASTED - FRONT DRIVE ENGAGED
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
123.40 (92.02)	20868 (92.82)	2.22 (3.57)	2284	7.77	0.555 (0.338)	12.66 (2.49)	187 (86)	65 (18)	28.94 (98.00)
4th Gear									
137.52 (102.55)	20489 (91.14)	2.52 (4.05)	2254	6.98	0.536 (0.326)	13.10 (2.58)	187 (86)	68 (20)	28.94 (98.00)
5th Gear									
145.41 (108.43)	20588 (91.58)	2.65 (4.26)	2100	7.14	0.508 (0.309)	13.84 (2.73)	187 (86)	70 (21)	28.94 (98.00)
6th Gear									
148.96 (111.08)	18121 (80.60)	3.08 (4.96)	2100	5.11	0.497 (0.302)	14.14 (2.78)	186 (86)	73 (23)	28.94 (98.00)
7th Gear									
149.34 (111.36)	15886 (70.66)	3.53 (5.67)	2095	4.27	0.495 (0.301)	14.20 (2.80)	186 (86)	76 (24)	28.94 (98.00)
8th Gear									
147.78 (110.20)	13660 (60.76)	4.06 (6.53)	2102	3.50	0.496 (0.302)	14.18 (2.79)	186 (86)	76 (24)	28.93 (97.97)
9th Gear									
145.76 (108.69)	11862 (52.76)	4.61 (7.42)	2101	3.07	0.504 (0.307)	13.94 (2.75)	186 (86)	77 (25)	28.93 (97.97)
10th Gear									
146.07 (108.93)	10414 (46.32)	5.26 (8.47)	2098	2.72	0.502 (0.305)	14.00 (2.76)	186 (86)	78 (26)	28.93 (97.97)
11th Gear									
145.45 (108.46)	9081 (40.39)	6.01 (9.67)	2102	2.46	0.506 (0.308)	13.89 (2.74)	186 (85)	80 (27)	28.93 (97.97)
12th Gear									
144.72 (107.92)	7916 (35.21)	6.86 (11.03)	2101	2.10	0.508 (0.309)	13.84 (2.73)	185 (85)	81 (27)	28.93 (97.97)
13th Gear									
143.83 (107.25)	6933 (30.84)	7.78 (12.52)	2103	1.84	0.508 (0.309)	13.83 (2.72)	185 (85)	82 (28)	28.93 (97.97)
14th Gear									
138.99 (103.64)	5901 (26.25)	8.83 (14.22)	2105	1.55	0.527 (0.320)	13.34 (2.63)	186 (86)	83 (28)	28.93 (97.97)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
At no load in 9th gear	75.8	74.7
Bystander	--	--

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: None

Maximum Force Exerted

Through Whole Range: 16101 lbs (71.6 kN)

i) Opening pressure of relief valve:	NA	High flow option NA
Sustained pressure of the open relief valve:	2870 psi (198 bar)	2850 psi (196 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	30.8 GPM (116.6 l/min)	39.3 GPM (148.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	25.9 GPM (98.0 l/min)	35.9 GPM (135.9 l/min)
Delivery pressure:	2620 psi (181 bar)	2490 psi (172 bar)
Power:	39.6 HP (29.5 kW)	52.2 HP (38.9 kW)

THREE POINT HITCH PERFORMANCE

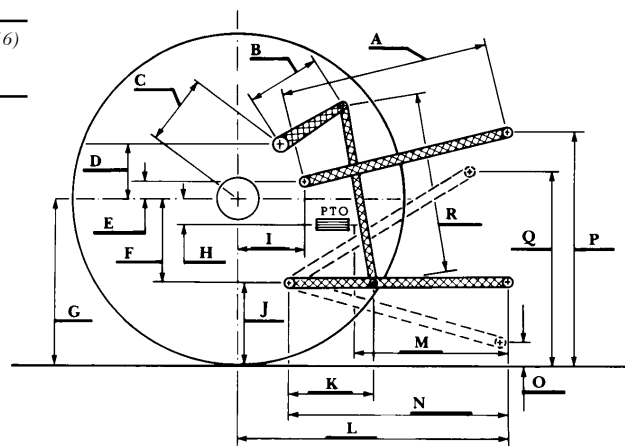
Observed Maximum Pressure psi. (bar)	3015 (208)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	153 (67)
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test—System pressure 2715 psi (187 Bar)

Hitch point distance to ground level in. (mm)	9.7 (246)	16.0 (406)	24.0 (610)	32.0 (813)	40.0 (1016)
Lift force on frame lb	18963	18432	18441	18054	16965
" " " " " " (kN)	(84.4)	(82.0)	(82.0)	(80.3)	(75.5)

HITCH DIMENSIONS AS TESTED - NO LOAD

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	28.8	732	29.8	756
B	15.0	380	15.0	380
C	19.4	492	19.4	492
D	17.6	447	17.6	447
E	11.0	280	11.0	280
F	13.0	330	13.0	330
G	34.3	870	34.3	870
H	3.9	100	3.9	100
I	17.6	447	17.6	447
J	21.3	540	21.3	540
K	21.3	540	23.2	590
L	48.2	1225	48.2	1225
M	23.1	588	23.1	588
N	38.4	975	38.4	975
O	9.6	245	9.3	235
P	43.3	1100	48.2	1225
Q	39.5	1004	37.4	949
R	34.0	864	35.1	892



White 8510 Diesel

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