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2000

Test 1780: White 6810 also AGCO 8785 (Cummins Engine)

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1780 - SUMMARY 314
WHITE 6810 DIESEL
ALSO AGCO ALLIS 8785 DIESEL(CUMMINS ENGINE)
32 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—1100 rpm)					
111.12 *(82.86)*	2201	7.02 *(26.57)*	0.446 *(0.272)*	15.83 *(3.12)*	
Standard Power Take-off Speed(1000 rpm)					
117.83 *(87.87)*	2000	6.92 *(26.19)*	0.415 *(0.252)*	17.03 *(3.35)*	
Maximum Power (2 Hours)					
119.87 *(89.38)*	1900	6.88 *(26.03)*	0.405 *(0.247)*	17.43 *(3.43)*	
VARYING POWER AND FUEL CONSUMPTION					
111.12 *(82.86)*	2201	7.02 *(26.57)*	0.446 *(0.272)*	15.83 *(3.12)*	Air temperature
98.27 *(73.28)*	2295	6.62 *(25.07)*	0.476 *(0.290)*	14.84 *(2.92)*	76°F *(22°C)*
74.99 *(55.92)*	2335	5.52 *(20.89)*	0.520 *(0.316)*	13.59 *(2.68)*	Relative humidity
50.77 *(37.86)*	2371	4.37 *(16.55)*	0.609 *(0.370)*	11.61 *(2.29)*	51%
25.77 *(19.22)*	2406	3.23 *(12.21)*	0.885 *(0.538)*	7.99 *(1.57)*	Barometer
1.16 *(0.86)*	2433	2.16 *(8.20)*	13.217 *(8.039)*	0.53 *(0.11)*	28.74" Hg *(97.33 kPa)*

Maximum Torque - 367 lb.-ft. *(498 Nm)* at 1500 rpm
Maximum Torque Rise - 38.4%
Torque rise at 1800 engine rpm - 30%

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—17th(1HB) Gear									
95.93 *(71.54)*	6504 *(28.93)*	5.53 *(8.90)*	2199	3.86	0.518 *(0.315)*	13.66 *(2.69)*	193 *(89)*	76 *(24)*	28.80 *(97.53)*
75% of Pull at Maximum Power—17th(1HB) Gear									
76.52 *(57.06)*	4885 *(21.73)*	5.87 *(9.45)*	2310	3.09	0.564 *(0.343)*	12.53 *(2.47)*	186 *(85)*	70 *(21)*	28.86 *(97.73)*
50% of Pull at Maximum Power—17th(1HB) Gear									
52.40 *(39.07)*	3255 *(14.48)*	6.04 *(9.72)*	2354	2.26	0.654 *(0.398)*	10.81 *(2.13)*	183 *(84)*	72 *(22)*	28.84 *(97.66)*
75% of Pull at Reduced Engine Speed—20th(1HD) Gear									
76.13 *(56.77)*	4881 *(21.71)*	5.85 *(9.41)*	1665	3.09	0.463 *(0.282)*	15.27 *(3.01)*	185 *(85)*	71 *(22)*	28.85 *(97.70)*
50% of Pull at Reduced Engine Speed—20th(1HD) Gear									
52.54 *(39.18)*	3247 *(14.44)*	6.07 *(9.76)*	1712	2.18	0.517 *(0.315)*	13.67 *(2.69)*	182 *(83)*	73 *(23)*	28.83 *(97.63)*

Location of Test: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832
Dates of Test: June 14 - 19, 2000

Manufacturer: AGCO Corporation, Duluth Georgia 30096

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F** *(15°/15°C)* 0.8487 **Fuel weight** 7.067 lbs/gal *(0.847 kg/l)* **Oil SAE** 10W-30 **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** 28.0 hours

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 21369965 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.016" x 4.72" *(102.0 mm x 120.0 mm)* **Compression ratio** 17.4 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 and hydraulic oil **Fuel filter** two paper elements and water separator **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 47.5 - 52.5 lb/h *(21.5 -23.8 kg/h)* **High idle:** 2425 - 2485 rpm **Turbo boost:** nominal 15.2 - 19.0 psi *(105 - 130 kPa)* as measured 17.1 psi *(118 kPa)*

CHASSIS: Type front wheel assist **Serial No.** G119032 **Tread width** rear 60.0" *(1524 mm)* to 118.1" *(3000 mm)* front 61.7" *(1567 mm)* to 80.8" *(2053 mm)* **Wheelbase** 112.6" *(2860 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Nominal travel speeds mph** ***(km/h)*** first 1.27 *(2.04)* second 1.49 *(2.40)* third 1.76 *(2.83)* fourth 2.06 *(3.31)* fifth 2.16 *(3.47)* sixth 2.53 *(4.07)* seventh 2.84 *(4.57)* eighth 2.98 *(4.80)* ninth 3.32 *(5.35)* tenth 3.49 *(5.62)* eleventh 3.85 *(6.19)* twelfth 3.93 *(6.32)* thirteenth 4.50 *(7.24)* fourteenth 4.59 *(7.39)* fifteenth 4.76 *(7.66)* sixteenth 5.31 *(8.55)* seventeenth 5.58 *(8.98)* eighteenth 6.22 *(10.01)* nineteenth 6.58 *(10.59)* twentieth 7.71 *(12.40)* twenty-first 8.09 *(13.02)* twenty-second 9.48 *(15.25)* twenty-third 10.66 *(17.15)* twenty-fourth 11.18 *(17.99)* twenty-fifth 12.47 *(20.06)* twenty-sixth 13.09 *(21.06)* twenty-seventh 14.42 *(23.20)* twenty-eighth 14.72 *(23.69)* twenty-ninth 16.87

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Disengaged)

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—20th(1HD) Gear									
91.35 *(68.12)*	4504 *(20.03)*	7.61 *(12.24)*	2195	4.18	0.545 *(0.332)*	12.96 *(2.55)*	192 *(89)*	76 *(24)*	28.80 *(97.53)*
75% of Pull at Maximum Power—20th(1HD) Gear									
72.94 *(54.39)*	3377 *(15.02)*	8.10 *(13.04)*	2313	3.42	0.586 *(0.356)*	12.06 *(2.38)*	186 *(86)*	74 *(23)*	28.83 *(97.63)*
50% of Pull at Maximum Power—20th(1HD) Gear									
49.82 *(37.15)*	2252 *(10.02)*	8.30 *(13.35)*	2353	2.68	0.696 *(0.423)*	10.16 *(2.00)*	185 *(85)*	77 *(25)*	28.82 *(97.60)*
75% of Pull at Reduced Engine Speed—22nd(2HB) Gear									
72.81 *(54.29)*	3370 *(14.99)*	8.10 *(13.04)*	1882	3.42	0.508 *(0.309)*	13.91 *(2.74)*	185 *(85)*	76 *(24)*	28.83 *(97.63)*
50% of Pull at Reduced Engine Speed—22nd(2HB) Gear									
49.71 *(37.07)*	2247 *(9.99)*	8.30 *(13.35)*	1912	2.76	0.583 *(0.354)*	12.13 *(2.39)*	182 *(83)*	79 *(26)*	28.82 *(97.60)*

MAXIMUM POWER IN SELECTED GEARS

11th(4LA) Gear									
84.52 *(63.02)*	9152 *(40.71)*	3.46 *(5.57)*	2244	14.76	0.584 *(0.355)*	12.10 *(2.38)*	184 *(84)*	67 *(19)*	28.67 *(97.09)*
12th(3LC) Gear									
84.70 *(63.16)*	8826 *(39.26)*	3.60 *(5.79)*	2235	12.82	0.585 *(0.356)*	12.07 *(2.38)*	185 *(85)*	67 *(19)*	28.69 *(97.16)*
13th(4LB) Gear									
92.84 *(69.23)*	8625 *(38.37)*	4.04 *(6.50)*	2133	10.65	0.537 *(0.327)*	13.16 *(2.59)*	186 *(85)*	69 *(21)*	28.68 *(97.12)*
14th(3LD) Gear									
92.24 *(68.78)*	8502 *(37.82)*	4.07 *(6.55)*	2116	10.79	0.540 *(0.329)*	13.08 *(2.58)*	187 *(86)*	65 *(18)*	28.70 *(97.19)*
15th(1HA) Gear									
92.03 *(68.63)*	8023 *(35.69)*	4.30 *(6.92)*	2158	10.65	0.538 *(0.327)*	13.14 *(2.59)*	189 *(87)*	72 *(22)*	28.79 *(97.49)*
16th(4LC) Gear									
94.13 *(70.19)*	7785 *(34.63)*	4.53 *(7.30)*	2015	9.74	0.524 *(0.319)*	13.49 *(2.66)*	191 *(88)*	74 *(23)*	28.79 *(97.49)*
17th(1HB) Gear									
97.35 *(72.59)*	7734 *(34.40)*	4.72 *(7.60)*	1988	9.10	0.507 *(0.308)*	13.94 *(2.75)*	196 *(91)*	73 *(23)*	28.79 *(97.49)*
18th(4LD) Gear									
98.50 *(73.45)*	7104 *(31.60)*	5.20 *(8.37)*	1898	6.05	0.496 *(0.302)*	14.24 *(2.81)*	190 *(88)*	71 *(22)*	28.75 *(97.36)*
19th(1HC) Gear									
98.19 *(73.22)*	6723 *(29.91)*	5.48 *(8.81)*	1903	6.58	0.498 *(0.303)*	14.20 *(2.80)*	196 *(91)*	75 *(24)*	28.80 *(97.53)*
20th(1HD) Gear									
100.03 *(74.59)*	5779 *(25.71)*	6.49 *(10.45)*	1899	5.28	0.487 *(0.296)*	14.53 *(2.86)*	198 *(92)*	76 *(24)*	28.80 *(97.53)*
21st(2HA) Gear									
101.25 *(75.50)*	5532 *(24.61)*	6.86 *(11.05)*	1904	4.97	0.483 *(0.294)*	14.63 *(2.88)*	192 *(89)*	76 *(24)*	28.80 *(97.53)*
22nd(2HB) Gear									
100.48 *(74.93)*	4650 *(20.68)*	8.10 *(13.04)*	1902	4.10	0.485 *(0.295)*	14.56 *(2.87)*	197 *(92)*	76 *(24)*	28.80 *(97.53)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load in 14th(3LD) gear	74.4	74.0
Bystander	--	--

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)*
				8th(2LC)Gear					
84.41 *(62.95)*	11925 *(53.05)*	2.65 *(4.27)*	2208	14.39	0.584 *(0.356)*	12.09 *(2.38)*	185 *(85)*	67 *(19)*	28.61 *(96.88)*
				9th(3LB)Gear					
90.25 *(67.30)*	11461 *(50.98)*	2.95 *(4.75)*	2153	12.42	0.551 *(0.335)*	12.82 *(2.53)*	188 *(86)*	72 *(22)*	28.59 *(96.82)*
				10th(2LD)Gear					
93.53 *(69.74)*	11399 *(50.71)*	3.08 *(4.95)*	2103	10.92	0.533 *(0.324)*	13.25 *(2.61)*	190 *(88)*	68 *(20)*	28.60 *(96.85)*
				11th(4LA)Gear					
94.38 *(70.38)*	10851 *(48.27)*	3.26 *(5.25)*	2028	11.07	0.520 *(0.316)*	13.59 *(2.68)*	202 *(94)*	83 *(28)*	28.52 *(96.58)*
				12th(3LC)Gear					
94.43 *(70.41)*	10751 *(47.82)*	3.29 *(5.30)*	1973	9.66	0.519 *(0.316)*	13.61 *(2.68)*	197 *(92)*	75 *(24)*	28.58 *(96.78)*
				13th(4LB)Gear					
97.38 *(72.62)*	9842 *(43.78)*	3.71 *(5.97)*	1898	7.70	0.499 *(0.303)*	14.16 *(2.79)*	203 *(95)*	79 *(26)*	28.55 *(96.68)*
				14th(3LD)Gear					
99.77 *(74.40)*	9852 *(43.82)*	3.80 *(6.11)*	1901	7.35	0.490 *(0.298)*	14.41 *(2.84)*	195 *(91)*	73 *(23)*	28.78 *(97.46)*
				15th(1HA)Gear					
100.59 *(75.01)*	9544 *(42.45)*	3.95 *(6.36)*	1905	7.12	0.483 *(0.294)*	14.62 *(2.88)*	196 *(91)*	72 *(22)*	28.79 *(97.49)*
				16th(4LC)Gear					
99.50 *(74.20)*	8335 *(37.07)*	4.48 *(7.21)*	1900	5.36	0.492 *(0.299)*	14.37 *(2.83)*	196 *(91)*	74 *(23)*	28.79 *(97.49)*
				17th(1HB)Gear					
102.00 *(76.06)*	8132 *(36.17)*	4.70 *(7.57)*	1899	5.28	0.477 *(0.290)*	14.81 *(2.92)*	197 *(92)*	73 *(23)*	28.79 *(97.49)*
				18th(4LD)Gear					
100.28 *(74.78)*	7067 *(31.44)*	5.32 *(8.56)*	1899	3.94	0.482 *(0.293)*	14.66 *(2.89)*	194 *(90)*	71 *(22)*	28.76 *(97.39)*
				19th(1HC)Gear					
100.81 *(75.18)*	6733 *(29.95)*	5.61 *(9.04)*	1896	3.86	0.482 *(0.293)*	14.65 *(2.90)*	198 *(92)*	75 *(24)*	28.80 *(97.53)*
				20th(1HD)Gear					
101.55 *(75.72)*	5732 *(25.50)*	6.64 *(10.69)*	1902	3.21	0.480 *(0.292)*	14.72 *(2.90)*	198 *(92)*	75 *(24)*	28.80 *(97.53)*
				21st(2HA)Gear					
102.49 *(76.43)*	5506 *(24.49)*	6.98 *(11.23)*	1899	3.13	0.478 *(0.291)*	14.77 *(2.91)*	196 *(91)*	76 *(24)*	28.80 *(97.53)*
				22nd(2HB)Gear					
101.03 *(75.34)*	4597 *(20.45)*	8.24 *(13.26)*	1905	2.55	0.482 *(0.293)*	14.65 *(2.89)*	198 *(92)*	76 *(24)*	28.80 *(97.53)*

TIRES AND WEIGHT

	Tested Without Ballast
Rear tires - No.,size, ply & psi(*kPa*)	Two 18.4R38; ***;16 (*110*)
Front tires - No.,size, ply & psi(*kPa*)	Two 14.9R28; ***;24 (*165*)
Height of Drawbar	19.0 in *(485 mm)*
Static Weight with operator- Rear	8230 lb (*3733 kg*)
- Front	4670 lb (*2118 kg*)
- Total	12900 lb (*5851 kg*)

(27.15) thirtieth 17.23 *(27.73)* thirty-first 19.92 *(32.05)* thirty-second 23.31 *(37.52)* reverse 1.16 *(1.86)*, 1.35 *(2.18)*, 1.60 *(2.57)*, 1.87 *(3.01)*, 1.96 *(3.16)*, 2.30 *(3.70)*, 2.58 *(4.16)*, 2.72 *(4.37)*, 3.03 *(4.87)*, 3.18 *(5.12)*, 3.50 *(5.64)*, 3.57 *(5.75)*, 4.10 *(6.60)*, 4.18 *(6.73)*, 4.34 *(6.98)*, 4.84 *(7.79)*, 5.08 *(8.17)*, 5.66 *(9.11)*, 6.00 *(9.65)*, 7.02 *(11.29)*, 7.37 *(11.86)*, 8.63 *(13.89)*, 9.70 *(15.61)*, 10.18 *(16.39)*, 11.36 *(18.28)*, 11.92 *(19.18)*, 13.13 *(21.13)*, 13.40 *(21.57)*, 15.37 *(24.73)*, 15.69 *(25.25)*, 18.14 *(29.19)*, 21.23 *(34.17)* **Clutch** multiple wet disc 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 1997 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 12725 lb *(5772 kg)*

REPAIRS AND ADJUSTMENTS: During drawbar tests, front drive disengaged, the tube in the right rear tire failed. It was replaced and testing continued.

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 155°F *(68°C)*. The performance figures on this Summary were taken from a test conducted under the OECD Code II test procedure.

Report reissued: Supplemental sales permit for AGCO Allis 8785 Diesel, October, 2001.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1780**, Nebraska Summary 314, November 6, 2001.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
G.J. Hoffman
Board of Tractor Test Engineers

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II
Quick Attach: None
Maximum Force Exerted
Through Whole Range: 9414 lbs *(41.9 kN)*

i) Opening pressure of relief valve: NA
Sustained pressure of the open relief valve: 2890 psi *(199 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed: 28.6 GPM *(108.3 l/min)*
iii) Pump delivery rate at maximum hydraulic power: 24.6 GPM *(93.1 l/min)*
Delivery pressure: 2750 psi *(190 bar)*
Power: 39.5 HP *(29.4 kW)*

THREE POINT HITCH PERFORMANCE

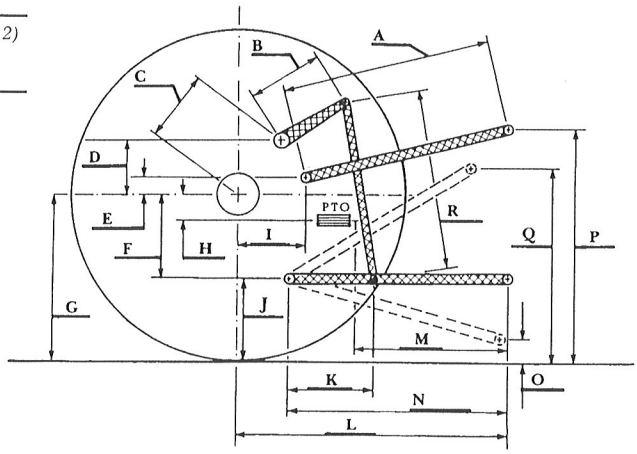
Observed Maximum Pressure psi.*(bar)*	2850*(196)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	149*(65)*
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2558 psi *(176 Bar)*

Hitch point distance to ground level in. *(mm)*	7.9*(201)*	14.9*(378)*	21.9*(556)*	28.9*(734)*	35.9*(912)*
Lift force on frame lb	13338	12708	12222	11412	10431
" " " " " " *(kN)*	*(59.3)*	*(56.5)*	*(54.4)*	*(52.3)*	*(46.4)*

HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	*mm*
A	26.9	*683*
B	11.6	*295*
C	13.9	*354*
D	13.0	*330*
E	7.9	*200*
F	10.2	*260*
G	32.3	*820*
H	1.7	*43*
I	15.0	*382*
J	22.1	*560*
K	21.7	*550*
L	40.9	*1040*
M	23.2	*590*
N	37.0	*940*
O	7.9	*200*
P	46.1	*1170*
Q	36.1	*918*
R	28.3	*719*





White 6810 Diesel

Agricultural Research Division
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University of Nebraska–Lincoln
Darrell Nelson, Dean and Director