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January 1994

## Test 1683: Agco Allis 9670 Diesel 18-Speed

Nebraska Tractor Test Lab

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

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NEBRASKA OECD TRACTOR TEST 1683—SUMMARY 167

AGCO ALLIS 9670 DIESEL

18 SPEED

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

Dates of Test: October 6-21, 1994

Manufacturer: AGCO Corporation, Duluth,  
Georgia 30136

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane No. 50.6 Specific gravity converted to 60°/60° F (15°/15°C) 0.8367 Fuel weight 6.967 lbs/gal (0.835 kg/l) Oil SAE 15W-40 API service classification CDII/SG To motor 5.468 gal (20.698 l) Drained from motor 5.233 gal (19.811 l) Transmission and hydraulic lubricant AGCO Power Fluid 821XL Front axle lubricant AGCO Gear Lube 715 SAE 80W-90 Total time engine was operated 20.0 hours.

ENGINE: Make Klockner-Humboldt-Deutz Ag Diesel Type six cylinder vertical with turbocharger Serial No. 8123980 Crankshaft lengthwise Rated engine speed 2300 Bore and stroke (as specified) 4.921" × 5.118" (125.0 mm × 130 mm) Compression ratio 15.8 to 1 Displacement 584 cu in (9570 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements and aspirator Oil filter two full flow cartridges Oil cooler radiator for crankcase oil, radiator for hydraulic and final drive oil, radiator for transmission oil Fuel filter two paper elements Fuel cooler radiator for injection pump return fuel Muffler underhood Exhaust vertical Cooling medium temperature control air cooled with variable speed fan.

ENGINE OPERATING PARAMETERS: Fuel rate: 75.2-83.1 lb/h (34.1-37.7 kg/h) High idle: 2450-2500 rpm Turbo boost nominal 12.3 psi (85 kPa) as measured 14.0 psi (97 kPa)

CHASSIS: Type front wheel assist Serial No. 961039PA Tread width rear 65.0" (1651 mm) to 124.0" (3150 mm) front 62.6" (1590 mm) to 88.6" (2250 mm) Wheel base 117.0" (2972 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 1.74 (2.81) second 2.06 (3.32) third 2.41(3.88) fourth 2.76 (4.45) fifth 3.27 (5.26) sixth 3.82 (6.15) seventh 4.50 (7.24) eighth 5.32 (8.56) ninth 6.22 (10.02) tenth 7.23 (11.63) eleventh 8.54 (13.74) twelfth 9.99 (16.08) thirteenth 11.45 (18.42) fourteenth 13.53 (21.77) fifteenth 15.83 (25.48) sixteenth 18.63 (29.99) seventeenth 22.03 (35.45) eighteenth 25.78 (41.48) reverse 2.12 (3.40), 2.50 (4.02), 2.93(4.71), 3.35 (5.39), 3.96 (6.37), 4.64 (7.46), 5.46 (8.78), 6.45 (10.38), 7.55 (12.15) Clutch multiple wet disc electro hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically actuated by two foot pedals which can be locked together Steering hydrostatic Power take-off 1000 rpm at 2083 engine rpm Unladen tractor mass 19400 lb (8799 kg)

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—1103 rpm)					
175.19 (130.64)	2298	11.45 (43.35)	0.455 (0.277)	15.30 (3.01)	
Standard Power Take-off Speed (1001 rpm)					
181.12 (135.06)	2086	10.86 (41.10)	0.418 (0.254)	16.68 (3.29)	
Maximum Power (2 hours)					
181.12 (135.06)	2086	10.86 (41.10)	0.418 (0.254)	16.68 (3.29)	
VARYING POWER AND FUEL CONSUMPTION					
175.19 (130.64)	2298	11.45 (43.35)	0.455 (0.277)	15.30 (3.01)	Air temperature
151.57 (113.03)	2347	10.46 (39.61)	0.481 (0.293)	14.49 (2.85)	76°F (25°C)
115.65 (86.24)	2379	8.91 (33.74)	0.537 (0.327)	12.97 (2.56)	Relative humidity
77.95 (58.13)	2412	7.41 (28.04)	0.662 (0.403)	10.52 (2.07)	50%
39.60 (29.53)	2442	5.81 (22.01)	1.023 (0.622)	6.81 (1.34)	Barometer
1.41 (1.05)	2475	4.13 (15.65)	20.380 (12.397)	0.34 (0.07)	29.16"Hg (98.75 kPa)

Maximum Torque 550 lb.-ft. (746 Nm) at 1501 rpm  
Maximum Torque Rise 37.4%  
Torque rise at 1798 rpm 29%

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—7th Gear									
152.23 (113.52)	13342 (59.35)	4.28 (6.89)	2299	4.28	0.528 (0.321)	13.19 (2.60)	air cld	65 (18)	29.04 (98.34)
75% of Pull at Maximum Power—7th Gear									
118.81 (88.59)	10010 (44.52)	4.45 (7.16)	2358	2.75	0.586 (0.356)	11.90 (2.34)	air cld	68 (20)	28.99 (98.17)
50% of Pull at Maximum Power—7th Gear									
81.12 (60.49)	6650 (29.58)	4.58 (7.36)	2397	1.73	0.700 (0.426)	9.96 (1.96)	air cld	68 (20)	28.99 (98.17)
75% of Pull at Reduced Engine Speed—9th Gear									
118.93 (88.69)	10006 (44.51)	4.46 (7.17)	1707	2.93	0.473 (0.288)	14.73 (2.90)	air cld	68 (20)	28.99 (98.17)
50% of Pull at Reduced Engine Speed—9th Gear									
81.24 (60.58)	6645 (29.56)	4.58 (7.38)	1736	1.83	0.527 (0.321)	13.21 (2.60)	air cld	68 (20)	28.99 (98.17)

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)
4th Gear									
127.41 (95.01)	18749 (83.40)	2.55 (4.10)	2343	8.74	0.598 (0.364)	11.66 (2.30)	air cld	59 (15)	29.01 (98.24)
5th Gear									
142.21 (106.05)	17886 (79.56)	2.98 (4.80)	2312	8.58	0.562 (0.342)	12.39 (2.44)	air cld	63 (17)	29.04 (98.34)
6th Gear									
150.14 (111.96)	16682 (74.20)	3.38 (5.43)	2194	6.77	0.522 (0.318)	13.34 (2.63)	air cld	64 (18)	29.04 (98.34)
7th Gear									
154.48 (115.20)	15100 (67.17)	3.84 (6.17)	2085	5.06	0.490 (0.298)	14.21 (2.80)	air cld	66 (19)	29.04 (98.34)
8th Gear									
154.25 (115.03)	12577 (55.94)	4.60 (7.40)	2084	3.92	0.491 (0.299)	14.18 (2.79)	air cld	66 (19)	29.03 (98.31)
9th Gear									
154.22 (115.00)	10631 (47.29)	5.44 (8.76)	2089	3.11	0.492 (0.299)	14.17 (2.79)	air cld	66 (19)	29.02 (98.27)
10th Gear									
157.16 (117.20)	9279 (41.27)	6.35 (10.22)	2089	2.57	0.484 (0.295)	14.38 (2.83)	air cld	67 (19)	29.01 (98.24)
11th Gear									
157.51 (117.46)	7864 (34.98)	7.51 (12.09)	2081	2.20	0.478 (0.291)	14.56 (2.87)	air cld	67 (19)	29.00 (98.21)
12th Gear									
155.07 (115.64)	6570 (29.22)	8.85 (14.25)	2087	1.83	0.488 (0.297)	14.27 (2.81)	air cld	67 (19)	29.00 (98.21)

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 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)
3rd Gear									
139.69 (104.17)	23724 (105.53)	2.21 (3.55)	2326	9.13	0.574 (0.349)	12.13 (2.39)	air cld	53 (12)	29.08 (98.48)
4th Gear									
147.37 (109.89)	21951 (97.64)	2.52 (4.05)	2258	6.84	0.539 (0.328)	12.92 (2.54)	air cld	56 (13)	29.08 (98.48)
5th Gear									
152.16 (113.47)	20231 (89.99)	2.82 (4.54)	2118	5.90	0.502 (0.305)	13.88 (2.73)	air cld	57 (14)	29.09 (98.51)
6th Gear									
154.43 (115.16)	17581 (78.20)	3.29 (5.30)	2084	4.69	0.491 (0.299)	14.19 (2.80)	air cld	60 (16)	29.10 (98.54)
7th Gear									
156.61 (116.78)	14989 (66.67)	3.92 (6.31)	2085	3.44	0.483 (0.294)	14.41 (2.84)	air cld	63 (17)	29.10 (98.54)
8th Gear									
155.44 (115.91)	12517 (55.68)	4.66 (7.49)	2080	2.90	0.487 (0.296)	14.30 (2.82)	air cld	65 (18)	29.10 (98.54)
9th Gear									
153.89 (114.75)	10511 (46.76)	5.49 (8.84)	2085	2.25	0.490 (0.298)	14.22 (2.80)	air cld	66 (19)	29.10 (98.54)
10th Gear									
156.63 (116.80)	9178 (40.82)	6.40 (10.30)	2086	2.07	0.483 (0.294)	14.42 (2.84)	air cld	67 (19)	29.10 (98.54)
11th Gear									
157.01 (117.08)	7723 (34.35)	7.62 (12.27)	2095	1.79	0.482 (0.293)	14.45 (2.85)	air cld	68 (20)	29.09 (98.51)
12th Gear									
154.30 (115.06)	6499 (28.91)	8.90 (14.33)	2086	1.42	0.494 (0.300)	14.11 (2.78)	air cld	68 (20)	29.09 (98.51)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

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 134° F (57°C). This tractor did not meet manufacturers claim of 23 GPM (87 l/m) hydraulic flow or 3 point lift capacity of 8500 lbs (3856 kg) (optionally-9900 lbs (4490 kg). The pull in 3rd gear (ballasted-front drive engaged) and 4th (unballasted) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Restricted Standard Test Code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1683**, Summary 167, December 15, 1994.

LOUIS I. LEVITICUS  
Engineer-in-Charge

R.D. GRISSO  
M.F. KOCHER  
K. VON BARGEN  
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE  
(BALLASTED—FRONT DRIVE DISENGAGED)  
FUEL CONSUMPTION CHARACTERISTICS

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)
					lb./hp.hr (kg/kW.h)	Hp./gal (kW.h/l)	cool- ing med	Air dry bulb	
Maximum Power—8th Gear									
147.15 (109.73)	10742 (47.78)	5.14 (8.27)	2299	3.25	0.540 (0.329)	12.90 (2.54)	air cld	66 (19)	29.09 (98.51)
75% of Pull at Maximum Power—8th Gear									
114.39 (85.30)	8061 (35.85)	5.32 (8.56)	2359	2.51	0.604 (0.368)	11.53 (2.27)	air cld	69 (21)	29.05 (98.37)
50% of Pull at Maximum Power—8th Gear									
78.27 (58.37)	5381 (23.93)	5.46 (8.78)	2399	1.68	0.729 (0.443)	9.56 (1.88)	air cld	69 (21)	29.05 (98.37)
75% of Pull at Reduced Engine Speed—10th Gear									
114.07 (85.06)	8042 (35.77)	5.32 (8.56)	1735	2.42	0.470 (0.286)	14.82 (2.92)	air cld	69 (21)	29.05 (98.37)
50% of Pull at Reduced Engine Speed—10th Gear									
78.11 (58.25)	5387 (23.96)	5.44 (8.75)	1760	1.68	0.533 (0.324)	13.07 (2.58)	air cld	69 (21)	29.05 (98.37)

MAXIMUM POWER IN SELECTED GEARS

4th Gear									
117.55 (87.65)	17801 (79.18)	2.48 (3.99)	2354	12.54	0.628 (0.382)	11.09 (2.18)	air cld	56 (13)	29.08 (98.48)
5th Gear									
137.26 (102.35)	16802 (74.74)	3.06 (4.93)	2333	7.51	0.570 (0.347)	12.21 (2.41)	air cld	59 (15)	29.10 (98.54)
6th Gear									
148.80 (110.96)	16552 (73.62)	3.37 (5.43)	2191	7.42	0.528 (0.321)	13.21 (2.60)	air cld	62 (17)	29.10 (98.54)
7th Gear									
153.28 (114.30)	14684 (65.32)	3.91 (6.30)	2116	5.47	0.500 (0.304)	13.93 (2.74)	air cld	64 (18)	29.10 (98.54)
8th Gear									
153.35 (114.35)	12432 (55.30)	4.63 (7.44)	2085	3.97	0.494 (0.300)	14.11 (2.78)	air cld	66 (19)	29.09 (98.51)
9th Gear									
152.43 (113.67)	10480 (46.62)	5.45 (8.78)	2083	3.25	0.495 (0.301)	14.07 (2.77)	air cld	66 (19)	29.10 (98.54)
10th Gear									
155.00 (115.59)	9105 (40.50)	6.38 (10.27)	2089	2.88	0.487 (0.296)	14.30 (2.82)	air cld	67 (19)	29.10 (98.54)
11th Gear									
155.26 (115.78)	7665 (34.10)	7.60 (12.22)	2094	2.42	0.486 (0.295)	14.35 (2.83)	air cld	68 (20)	29.09 (98.51)
12th Gear									
153.00 (114.09)	6462 (28.74)	8.88 (14.29)	2084	1.86	0.496 (0.302)	14.03 (2.76)	air cld	68 (20)	29.09 (98.51)

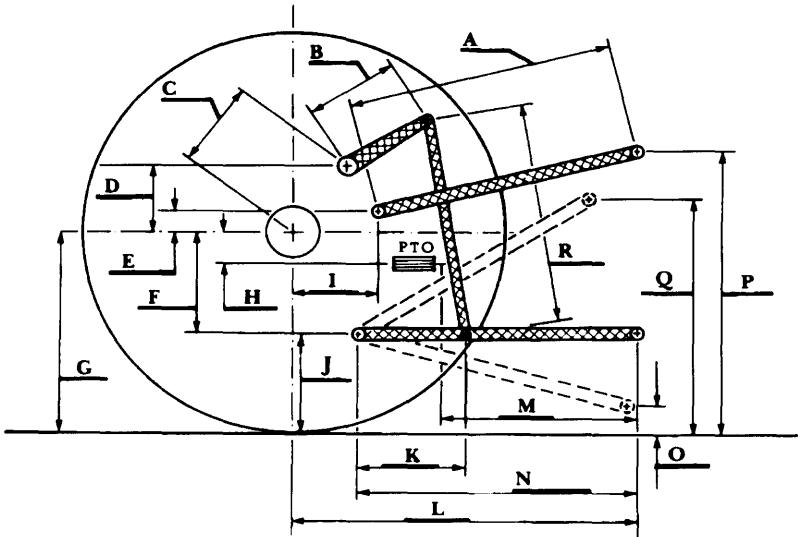
TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At 75% load in 8th gear	77.5	77.5
Bystander	—	—

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires—No., size, ply & psi (kPa)	Four 18.4R46; ***, 16 (110)	Two 18.4R46; ***, 24 (165)
Ballast—Duals (total)	2436 lb (1105 kg)	None
—Cast Iron (total)	None	None
Front Tires—No., size, ply & psi (kPa)	Two 16.9R30; **, 22 (150)	Two 16.9R30; **, 16 (110)
Ballast—Liquid (total)	256 lb (116 kg)	None
—Cast Iron (total)	1038 lb (471 kg)	None
Height of Drawbar	17.0 in (430 mm)	16.5 in (420 mm)
Static Weight with Operator—Rear	14374 lb (6520 kg)	11976 lb (5432 kg)
—Front	8920 lb (4046 kg)	7588 lb (3442 kg)
—Total	23294 lb (10566 kg)	19564 lb (8874 kg)

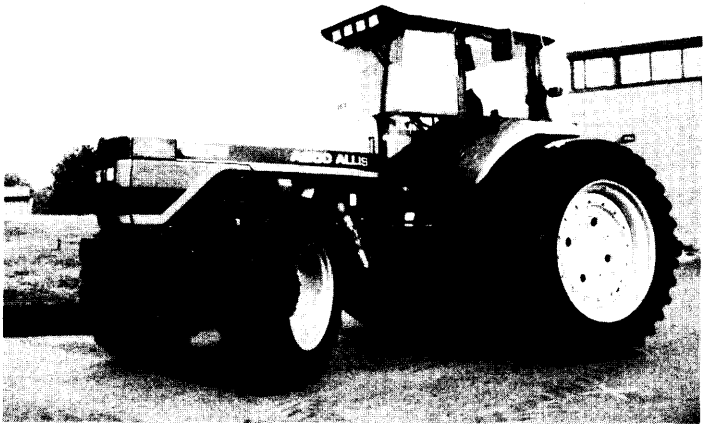
THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III			
Quick Attach: None			
Maximum Force Exerted Through Whole Range:			
	6620 lbs	(29.4 kN)	
	8172 lbs	(36.4 kN) with lift assist cylinder	
i) Opening pressure of relief valve:	NA		
Sustained pressure with pump stalled:	2540 psi	(175 bar)	
ii) Pump delivery rate at minimum pressure and rated engine speed:	19.5 GPM	(73.8 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	17.4 GPM	(65.9 l/min)	
Delivery pressure:	2250 psi	(155 bar)	
Power:	22.8 HP	(17.0 kW)	

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	25.3	641
B	16.0	406
C	19.8	502
D	18.2	461
E	9.1	230
F	10.2	259
G	35.0	889
H	1.9	48
I	20.1	508
J	24.8	630
K	21.4	543
L	45.3	1150
M	22.4	568
N	34.8	884
O	9.0	229
P	51.8	1316
Q	38.3	972
R	38.7	983



AGCO ALLIS 9670 DIESEL