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January 1994

## Test 1684: Agco Allis 9690 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 1684—SUMMARY 168

## AGCO ALLIS 9690 DIESEL

### 18 SPEED

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

**Dates of Test:** October 4-19, 1994

**Manufacturer:** AGCO Corporation, Duluth,  
Georgia 30136

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1104 rpm)</b>					
195.63 (145.88)	2300	12.42 (47.00)	0.442 (0.269)	15.76 (3.10)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
205.49 (153.23)	2085	11.96 (45.26)	0.405 (0.247)	17.19 (3.39)	
<b>Maximum Power (2 hours)</b>					
205.49 (153.23)	2085	11.96 (45.26)	0.405 (0.247)	17.19 (3.39)	
<b>VARYING POWER AND FUEL CONSUMPTION</b>					
195.63 (145.88)	2300	12.42 (47.00)	0.442 (0.269)	15.76 (3.10)	Air temperature
169.15 (126.14)	2342	11.24 (42.54)	0.463 (0.282)	15.05 (2.96)	75°F (24°C)
128.52 (95.84)	2376	9.39 (35.53)	0.509 (0.310)	13.69 (2.70)	Relative humidity
86.61 (64.59)	2409	7.62 (28.85)	0.613 (0.373)	11.36 (2.24)	56%
43.85 (32.70)	2440	5.81 (22.01)	0.924 (0.562)	7.54 (1.49)	Barometer
1.41 (1.05)	2475	4.18 (15.81)	20.593 (12.526)	0.34 (0.07)	28.89"Hg (97.82 kPa)

Maximum Torque 588 lb.-ft. (798 Nm) at 1599 rpm

Maximum Torque Rise 32.0%

Torque rise at 1800 rpm 28%

#### 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. inches Hg (kPa)
<b>Maximum Power—7th Gear</b>									
170.56 (127.19)	15137 (67.33)	4.23 (6.80)	2297	5.28	0.511 (0.311)	13.62 (2.68)	air cld	64 (18)	28.99 (98.17)
<b>75% of Pull at Maximum Power—7th Gear</b>									
133.61 (99.64)	11327 (50.38)	4.42 (7.12)	2357	3.24	0.551 (0.335)	12.65 (2.49)	air cld	70 (21)	28.94 (98.00)
<b>50% of Pull at Maximum Power—7th Gear</b>									
91.78 (68.44)	7552 (33.59)	4.56 (7.34)	2398	2.05	0.645 (0.392)	10.80 (2.13)	air cld	70 (21)	28.94 (98.00)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
133.78 (99.76)	11289 (50.21)	4.44 (7.15)	1712	3.24	0.451 (0.274)	15.46 (3.04)	air cld	70 (21)	28.94 (98.00)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
91.84 (68.48)	7547 (33.57)	4.56 (7.34)	1735	2.15	0.491 (0.298)	14.20 (2.80)	air cld	70 (21)	28.94 (98.00)

**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 5.698 gal (21.568 l) Drained from motor 4.721 gal (17.871 l) Transmission and hydraulic lubricant AGCO Power Fluid 821XL Front axle lubricant AGCO Gear Lube 715 SAE 80W-90 Total time engine was operated 21.5 hours.

**ENGINE: Make** Klockner-Humboldt-Deutz Ag Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 8049766 **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:** 82.7-91.3 lb/h (37.5-41.4 kg/h) **High idle:** 2450-2500 rpm **Turbo boost** nominal 13.8 psi (95 kPa) as measured 17.0 psi (117 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** 981058PA **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** 19405 lb (8802 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)
5th Gear									
152.02 (113.36)	19050 (84.74)	2.99 (4.82)	2327	8.69	0.554 (0.337)	12.58 (2.48)	air cld	58 (14)	28.90 (97.87)
6th Gear									
165.64 (123.52)	17919 (79.71)	3.47 (5.58)	2288	8.21	0.533 (0.324)	13.08 (2.58)	air cld	63 (17)	28.99 (98.17)
7th Gear									
175.61 (130.95)	17132 (76.21)	3.84 (6.19)	2130	7.06	0.489 (0.297)	14.25 (2.81)	air cld	63 (17)	28.99 (98.17)
8th Gear									
178.18 (132.87)	14685 (65.32)	4.55 (7.32)	2086	4.93	0.475 (0.289)	14.68 (2.89)	air cld	64 (18)	28.98 (98.14)
9th Gear									
178.94 (133.43)	12452 (55.39)	5.39 (8.67)	2087	3.69	0.471 (0.286)	14.80 (2.92)	air cld	65 (18)	28.97 (98.10)
10th Gear									
180.04 (134.25)	10724 (47.70)	6.30 (10.13)	2084	3.06	0.467 (0.284)	14.91 (2.94)	air cld	66 (19)	28.96 (98.07)
11th Gear									
181.24 (135.15)	9054 (40.27)	7.51 (12.08)	2091	2.52	0.464 (0.282)	15.03 (2.96)	air cld	67 (19)	28.95 (98.04)
12th Gear									
179.03 (133.51)	7619 (33.89)	8.81 (14.18)	2087	2.05	0.473 (0.288)	14.73 (2.90)	air cld	69 (21)	28.94 (98.00)

**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)
4th Gear									
158.75 (118.38)	23940 (106.49)	2.49 (4.00)	2317	10.01	0.551 (0.335)	12.65 (2.49)	air cld	58 (14)	28.72 (97.26)
5th Gear									
171.53 (127.91)	22272 (99.07)	2.89 (4.65)	2199	6.86	0.512 (0.311)	13.61 (2.68)	air cld	59 (15)	28.74 (97.32)
6th Gear									
175.18 (130.63)	20169 (89.71)	3.26 (5.24)	2085	5.24	0.487 (0.296)	14.31 (2.82)	air cld	60 (16)	28.80 (97.53)
7th Gear									
179.61 (133.93)	17340 (77.13)	3.88 (6.25)	2086	4.10	0.474 (0.288)	14.70 (2.90)	air cld	60 (16)	28.80 (97.53)
8th Gear									
180.16 (134.35)	14594 (64.92)	4.63 (7.45)	2084	3.30	0.471 (0.286)	14.80 (2.92)	air cld	60 (16)	28.80 (97.53)
9th Gear									
181.75 (135.53)	12487 (55.54)	5.46 (8.78)	2088	2.57	0.466 (0.284)	14.95 (2.94)	air cld	61 (16)	28.79 (97.49)
10th Gear									
182.88 (136.37)	10793 (48.01)	6.35 (10.23)	2085	2.20	0.464 (0.282)	15.01 (2.96)	air cld	61 (16)	28.81 (97.56)
11th Gear									
182.69 (136.23)	9080 (40.39)	7.55 (12.14)	2087	2.02	0.462 (0.281)	15.07 (2.97)	air cld	61 (16)	28.81 (97.56)
12th Gear									
179.06 (133.53)	7567 (33.66)	8.87 (14.28)	2089	1.65	0.471 (0.287)	14.79 (2.91)	air cld	61 (16)	28.81 (97.56)

**REPAIRS AND ADJUSTMENTS:** The engine high idle speed was adjusted during the drawbar tests.

**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 9900 lbs (4490 kg). The pull in 4th gear (ballasted) and 5th (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. **1684**, Summary 168, December 15, 1994.

LOUIS I. LEVITICUS  
Engineer-in-Charge

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

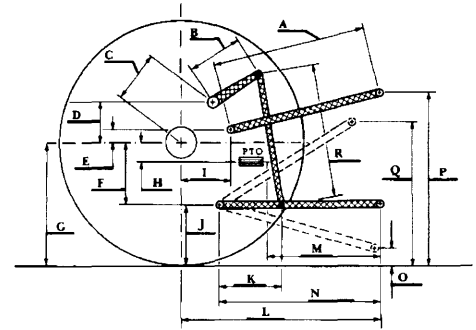
**TRACTOR SOUND LEVEL WITH CAB**

**dB(A)**

At 75% load in 8th gear	77.0
Bystander	—

**TIRES, BALLAST AND WEIGHT**

	<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear Tires</b> —No., size, ply & psi (kPa)	Four 18.4R46; ***; 16 (110)	Two 18.4R46; ***; 24 (165)
<b>Ballast</b> —Duals (total)	2436 lb (1105 kg)	None
—Liquid (total)	438 lb (199 kg)	None
<b>Front Tires</b> —No., size, ply & psi (kPa)	Two 16.9R30; **; 22 (150)	Two 16.9R30; **; 16 (110)
<b>Ballast</b> —Liquid (total)	None	None
—Cast Iron (total)	1038 lb (471 kg)	None
<b>Height of Drawbar</b>	16.5 in (420 mm)	16.5 in (420 mm)
<b>Static Weight with Operator</b> —Rear	14588 lb (6617 kg)	12014 lb (5449 kg)
—Front	8894 lb (4034 kg)	7556 lb (3427 kg)
—Total	23482 lb (10651 kg)	19570 lb (8877 kg)



**THREE POINT HITCH PERFORMANCE (OECD Static Test)**

CATEGORY: III

Quick Attach: None

Maximum Force Exerted Through Whole Range:

8172 lbs (36.4 kN)

i) Opening pressure of relief valve:

NA

Sustained pressure with pump stalled:

2550 psi (176 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed:

21.8 GPM (82.5 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

19.5 GPM (73.8 l/min)

Delivery pressure:

2330 psi (161 bar)

Power:

26.5 HP (19.8 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 9690 DIESEL**

Agricultural Research Division  
 Institute of Agriculture and Natural Resources  
 University of Nebraska—Lincoln  
 Darrell Nelson, Dean and Director