

Tractor Test and Power Museum, The Lester F. Larsen

UNL Larsen Tractor Museum Archives

University of Nebraska - Lincoln

Year 2007

Test 1902: AGCO LT90A Diesel
16-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1902

AGCO LT90A DIESEL

16 SPEED

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

Dates of tests: May 24 - 30, 2007

Manufacturer: AGCO Corporation, Duluth Georgia 30096

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)					
91.75 (68.42)	2200	5.79 (21.90)	0.441 (0.268)	15.86 (3.12)	
Standard Power Take-off Speed - (1001 rpm)					
93.74 (69.90)	2000	5.45 (20.62)	0.407 (0.247)	17.21 (3.39)	
Maximum Power (1 hour)					
93.74 (69.90)	2000	5.45 (20.62)	0.407 (0.247)	17.21 (3.39)	

VARYING POWER AND FUEL CONSUMPTION

91.75 (68.42)	2200	5.79 (21.90)	0.441 (0.268)	15.86 (3.12)	Air temperature
81.19 (60.54)	2288	5.46 (20.66)	0.470 (0.286)	14.88 (2.93)	76°F (25°C)
61.25 (45.67)	2304	4.67 (17.68)	0.534 (0.325)	13.11 (2.58)	Relative humidity
40.70 (30.35)	2330	3.59 (13.57)	0.617 (0.375)	11.35 (2.24)	34%
20.58 (15.35)	2377	2.60 (9.84)	0.884 (0.538)	7.92 (1.56)	Barometer
1.72 (1.28)	2410	1.83 (6.92)	7.439 (4.525)	0.94 (0.19)	29.21" Hg (98.92 kPa)

Maximum torque - 291 lb.-ft. (394 Nm) at 1198 rpm
 Maximum torque rise - 32.6%
 Torque rise at 1803 rpm - 16%
 Power increase at 2000 rpm - 2.2%

TRACTOR SOUND LEVEL WITH CAB

	Front wheel drive Engaged	Disengaged
	dB(A)	dB(A)
At no load in 7th(2C) gear	76.7	76.4
Bystander in 16th (4D) gear	--	83.1

TIRES AND WEIGHT

Rear Tires—No., size, ply & psi (kPa)
Front Tires—No., size, ply & psi (kPa)
Height of Drawbar
Static Weight with operator—Rear
 — Front
 — Total

Tested without ballast

Two 18.4R38; **, 10 (70)
 Two 14.9R28; **, 10 (70)
 21.0 in (535 mm)
 6250 lb (2835 kg)
 4250 lb (1928 kg)
 10500 lb (4763 kg)

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15°C) 0.8407 Fuel weight 7.000 lbs/gal (0.839 kg/l) Oil SAE 10W40 API service classification CH-4 Transmission and hydraulic lubricant AGCO Power Fluid 821 XL fluid Front axle lubricant AGCO 715 gear lube Total time engine was operated 12.0 hours

ENGINE: Make Sisu Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.** S08729 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.252" x 4.724" (108.0 mm x 120.0 mm) **Compression ratio** 18.5 to 1 **Displacement** 268 cu in (4397 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element and one polyester felt element **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** one paper element and water separator **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 39.7 - 42.1 lb/h (18.0 - 19.1 kg/h) **High idle:** 2350 - 2450 rpm **Turbo boost:** nominal 16.8 - 19.6 psi (115- 135 kPa) as measured 18.1 psi (125 kPa)

CHASSIS: Type front wheel assist **Serial No.** R156012 **Tread width** rear 56.4" (1432 mm) to 84.1" (2136 mm) front 61.7" (1566 mm) to 80.9" (2054 mm) **Wheelbase** 105.3" (2674 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 1.21 (1.95) second 1.49 (2.40) third 1.82 (2.93) fourth 2.23 (3.60) fifth 2.88 (4.63) sixth 3.54 (5.70) seventh 4.32 (6.95) eighth 5.31 (8.54) ninth 5.85 (9.41) tenth 7.19 (11.57) eleventh 8.77 (14.11) twelfth 10.78 (17.35), thirteenth 13.48 (21.69) fourteenth 16.58 (26.68) fifteenth 20.22 (32.54) sixteenth 24.87 (40.03) reverse 1.21 (1.95), 1.49 (2.40), 1.82 (2.93), 2.23, (3.60), 2.88 (4.63), 3.54 (5.70), 4.32 (6.95), 5.31 (8.54), 5.85 (9.41), 7.19 (11.57), 8.77 (14.11), 10.78 (17.35), 13.48 (21.69), 16.58 (26.68), 20.22 (32.54), 24.87 (40.03) **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 1980 engine rpm or 1000 rpm at 2000 or 1550 engine rpm **Unladen tractor mass** 10325 lb (4683 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range:	7817 lbs (34.8 kN)(66 mm lift cylinders)		9189 lbs (40.9 kN)(75 mm lift cylinders)	
	<u>standard pump</u>		<u>optional pump</u>	
i) Sustained pressure of the open relief valve:	3136 psi (216 bar)		2879 psi (190 bar)	
ii) Pump delivery rate at minimum pressure and rated engine speed:	24.1 GPM (91.2 l/min)		14.5 GPM (54.9 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	22.4 GPM (84.8 l/min)		13.5 GPM (51.1 l/min)	
Delivery pressure:	2338 psi (161 bar)		2505 psi (173 bar)	
Power:	30.6 HP (22.8 kW)		19.7 Hp (14.7 kW)	

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)	2770(191)
Location:	lift cylinder
Hydraulic oil temperature: °F(°C)	152(67)
Location:	hydraulic valve
Category:	II
Quick attach:	none

66 mm lift cylinders

SAE Static Test—System pressure 2490 psi (172 Bar)

Hitch point distance to ground level in. (mm)	9.9(251)	15.0(381)	22.0(559)	29.0(737)	36.0(914)
Lift force on frame lb	15561	12897	11745	10314	9126
" " " " " " (kN)	(69.2)	(57.4)	(51.0)	(45.9)	(40.6)

75 mm lift cylinders

SAE Static Test—System pressure 2490 psi (172 Bar)

Hitch point distance to ground level in. (mm)	10.2(259)	15.0(381)	22.0(559)	29.0(737)	36.0(914)
Lift force on frame lb	18747	15849	14310	12789	11421
" " " " " " (kN)	(83.4)	(70.5)	(63.7)	(56.9)	(50.8)

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. This tractor did not meet the manufacturer's claims of 26 GPM (100 lpm) (standard pump) nor 15 GPM (57 lpm)(optional pump) hydraulic flow at the remote outlets. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 152°F (67°C).

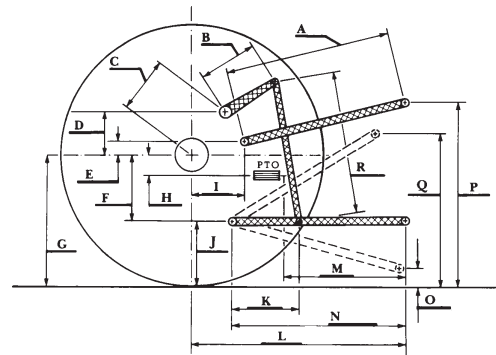
We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1902**, July 30, 2007.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

SAE test OECD test

	inch	mm	inch	mm
A	24.8	629	24.8	629
B	11.6	295	11.6	295
C	13.9	353	13.9	353
D	13.0	330	13.0	330
E	7.9	200	7.9	200
F	10.2	260	10.2	260
G	30.3	770	30.3	770
H	1.4	35	1.4	35
I	16.2	413	16.2	413
J	20.1	510	20.1	510
K	24.2	615	24.2	615
L	41.2	1046	41.2	1046
M	23.5	596	23.5	596
N	37.2	946	37.2	946
O	8.0	203	8.0	203
P	40.2	1020	44.1	1120
Q	33.5	850	33.5	850
R	29.0	737	29.0	737



HITCH DIMENSIONS AS TESTED - NO LOAD

Shiftable PTO Performance

Economy mode

1000 PTO rpm @ 1550 engine rpm

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)
43.74 (32.62)	1548	2.83 (10.71)	0.453 (0.275)	15.47 (3.05)
32.78 (24.45)	1550	2.27 (8.60)	0.485 (0.295)	14.43 (2.84)
21.94 (16.36)	1549	1.73 (6.54)	0.551 (0.335)	12.69 (2.50)
10.87 (8.11)	1552	1.21 (4.60)	0.782 (0.475)	8.96 (1.76)
1.29 (0.96)	1554	0.83 (3.14)	4.495 (2.734)	1.56 (0.31)

Normal mode

1000 PTO rpm @ 2000 engine rpm

43.79 (32.66)	2000	3.31 (12.55)	0.530 (0.322)	13.21 (2.60)
32.92 (24.55)	2002	2.57 (9.73)	0.547 (0.333)	12.80 (2.52)
21.99 (16.40)	2001	2.09 (7.90)	0.664 (0.404)	10.54 (2.08)
10.76 (8.03)	2010	1.60 (6.06)	1.041 (0.633)	6.73 (1.33)
1.29 (0.96)	2008	1.20 (4.54)	6.510 (3.960)	1.08 (0.21)



AGCO LT 90A Diesel