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January 2004

## Nebraska Summary 447: AGCO RT150 PowerMaxx Diesel

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1843 - SUMMARY 447

## AGCO RT150 POWERMAXX DIESEL

### CONTINUOUSLY VARIABLE TRANSMISSION

#### 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—1082 rpm)</b>					
152.75 (113.91)	2200	10.03 (37.95)	0.460 (0.280)	15.24 (3.00)	
<b>Standard Power Take-off Speed (1000 rpm)</b>					
155.20 (115.73)	2032	9.56 (36.20)	0.432 (0.263)	16.23 (3.20)	
<b>Maximum Power (2 Hours)</b>					
156.18 (116.46)	1949	9.37 (35.46)	0.421 (0.256)	16.67 (3.28)	

#### VARYING POWER AND FUEL CONSUMPTION

152.75 (113.91)	2200	10.03 (37.95)	0.460 (0.280)	15.24 (3.00)	Air temperature
136.74 (101.97)	2317	9.33 (35.31)	0.478 (0.291)	14.66 (2.89)	75°F(24°C)
103.73 (77.35)	2344	7.87 (29.80)	0.532 (0.324)	13.17 (2.60)	Relative humidity
69.39 (51.75)	2352	6.08 (23.00)	0.614 (0.373)	11.42 (2.25)	30%
35.15 (26.21)	2384	4.41 (16.68)	0.879 (0.535)	7.97 (1.57)	Barometer
1.19 (0.89)	2417	2.91 (11.01)	17.164 (10.441)	0.41 (0.08)	29.09" Hg(98.51 kPa)

Maximum Torque - 551 lb.-ft.(747 Nm) at 1200 rpm

Maximum Torque Rise - 50.8%

Torque rise at 1805 engine rpm - 24%

#### 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)
<b>Maximum Power—4.7 mph(7.5 km/h)</b>									
121.90 (90.90)	9746 (43.35)	4.69 (7.55)	2203	5.62	0.580 (0.353)	12.08 (2.38)	186 (85)	55 (13)	28.82 (97.60)
<b>75% of Pull at Maximum Power—4.7 mph(7.5 km/h)</b>									
98.43 (73.40)	7274 (32.36)	5.07 (8.17)	2337	4.10	0.626 (0.381)	11.20 (2.21)	185 (85)	56 (13)	28.81 (97.56)
<b>50% of Pull at Maximum Power—4.7 mph(7.5 km/h)</b>									
67.34 (50.22)	4846 (21.56)	5.21 (8.39)	2354	2.66	0.748 (0.455)	9.38 (1.85)	184 (84)	56 (13)	28.80 (97.53)
<b>75% of Pull at Reduced Engine Speed—6.2mph(10.0 km/h)</b>									
98.64 (73.55)	7281 (32.39)	5.08 (8.18)	1725	4.05	0.508 (0.309)	13.79 (2.72)	182 (83)	56 (13)	28.80 (97.53)
<b>50% of Pull at Reduced Engine Speed—6.2mph(10.0 km/h)</b>									
67.79 (50.55)	4836 (21.51)	5.26 (8.46)	1744	2.62	0.554 (0.337)	12.65 (2.49)	181 (83)	56 (13)	28.80 (97.53)

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

**Dates of Test:** October 11-27, 2004

**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) 0.8420 Fuel weight 7.011 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CE/CF-4 /CD-II Transmission and hydraulic lubricant AGCO Power Fluid 821 XL fluid Front axle lubricant AGCO Gear Lube 715 SAE 80W90 Total time engine was operated 32.5 hours

**ENGINE: Make** Cummins Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** 21602778 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 410 cu in (6728 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 hydraulic and final drive oil, radiator for transmission 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:** 64.4 - 71.0 lb/h (29.2 - 32.2 kg/h) **High idle:** 2400-2500 rpm **Turbo boost:** nominal 16.2 - 19.9 psi (112 - 137 kPa) as measured 18.7 psi (129 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** N133003 **Tread width** rear 60.5" (1537 mm) to 120.0" (3048 mm) front 61.2"(1554 mm) to 89.2" (2265 mm) **Wheelbase** 113.8" (2891 mm) **Hydraulic control system** direct engine drive **Transmission** AGCO CVT. A combination of mechanical and hydrostatic sections allow an infinite speed adjustment within the ranges noted. The transmission has two mechanical ranges. **Nominal travel speeds mph (km/h)** forward: Low range 0-17 (0-28), high range 0-25 (0-40) reverse: Low range 0-10 (0-16), high range 0-24 (0-38) **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** wet multiple disc hydraulically actuated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2062 engine rpm or 1000 rpm at 2033 engine rpm **Unladen tractor mass** 16415 lb (7446 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**  
**MAXIMUM POWER AT SELECTED SPEEDS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Injection Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
110.05 (82.06)	14253 (63.40)	2.90 (4.66)	2267	14.69	0.646 (0.393)	10.86 (2.14)	186 (86)	52 (11)	28.87 (97.77)
119.31 (88.97)	12464 (55.44)	3.59 (5.78)	2184	9.66	0.590 (0.359)	11.88 (2.34)	186 (85)	52 (11)	28.87 (97.77)
122.19 (91.12)	11462 (50.99)	4.00 (6.43)	2091	8.19	0.563 (0.343)	12.44 (2.45)	185 (85)	52 (11)	28.87 (97.77)
123.39 (92.01)	11023 (49.03)	4.20 (6.76)	2005	7.17	0.545 (0.331)	12.87 (2.54)	185 (85)	55 (13)	28.82 (97.60)
123.00 (91.72)	10575 (47.04)	4.36 (7.02)	1953	6.69	0.539 (0.328)	13.01 (2.56)	186 (85)	65 (18)	28.71 (97.22)
124.73 (93.01)	9708 (43.18)	4.82 (7.75)	1942	5.48	0.524 (0.319)	13.38 (2.63)	185 (85)	51 (11)	28.71 (97.22)
123.66 (92.21)	8684 (38.63)	5.34 (8.59)	1953	4.85	0.535 (0.325)	13.11 (2.58)	185 (85)	59 (15)	28.71 (97.22)
122.97 (91.70)	7784 (34.63)	5.92 (9.53)	1950	4.25	0.547 (0.332)	12.83 (2.53)	185 (85)	60 (16)	28.71 (97.22)
121.48 (90.59)	6956 (30.94)	6.55 (10.54)	1953	3.84	0.541 (0.329)	12.96 (2.55)	185 (85)	61 (16)	28.71 (97.22)
121.02 (90.24)	6298 (28.02)	7.21 (11.60)	1944	3.38	0.539 (0.328)	13.00 (2.56)	186 (85)	62 (17)	28.71 (97.22)
120.28 (89.69)	5902 (26.26)	7.64 (12.30)	1950	3.10	0.548 (0.333)	12.80 (2.52)	185 (85)	62 (17)	28.71 (97.22)
118.87 (88.64)	5519 (24.55)	8.08 (13.00)	1953	2.86	0.554 (0.337)	12.66 (2.49)	186 (85)	64 (18)	28.71 (97.22)

**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 147°F (64°C). 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. **1843**, Nebraska Summary 447, February 4, 2005.

Leonard L. Bashford  
 Director

M.F. Kocher  
 V.I. Adamchuk  
 W.P. Campbell  
 Board of Tractor Test Engineers

**TIRES, BALLAST AND WEIGHT**

	<b>With Ballast</b>	<b>Without Ballast</b>
<b>Rear tires</b> - No., size, ply & psi(kPa)	Four 480/80R42; **,10 (85)	Two 480/80R42; **,16 (110)
Ballast - Duals(total)	1770 lb (803 kg)	None
- Test equip.(total)	130 lb (59 kg)	None
<b>Front tires</b> - No., size, ply & psi(kPa)	Two 380/85R30; **,19 (150)	Two 380/85R30; **,19 (130)
Ballast - Liquid(total)	None	None
- Cast Iron(total)	1390 lb (630 kg)	None
<b>Height of Drawbar</b>	20.0 in (510 mm)	18.0 in (455 mm)
<b>Static Weight with operator</b> -Rear	12030 lb (5457 kg)	10510 lb (4767 kg)
- Front	7850 lb (3560 kg)	6080 lb (2758 kg)
- Total	19880 lb (9017 kg)	16590 lb (7525 kg)

**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 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)
<b>Maximum Power—5.6 mph (9.0 km/h)</b>									
122.58 (91.41)	8269 (36.78)	5.56 (8.95)	2200	3.55	0.575 (0.350)	12.20 (2.40)	185 (85)	46 (8)	28.89 (97.83)
<b>75% of Pull at Maximum Power—5.6 mph (9.0 km/h)</b>									
98.62 (73.54)	6188 (27.53)	5.98 (9.62)	2329	2.64	0.643 (0.391)	10.91 (2.15)	185 (85)	64 (18)	28.81 (97.56)
<b>50% of Pull at Maximum Power—5.6 mph (9.0 km/h)</b>									
67.35 (50.23)	4138 (18.41)	6.10 (9.82)	2345	1.63	0.776 (0.472)	9.03 (1.78)	184 (84)	64 (18)	28.81 (97.56)
<b>75% of Pull at Reduced Engine Speed—7.5 mph (12.0 km/h)</b>									
98.54 (73.48)	6148 (27.35)	6.01 (9.67)	1731	2.63	0.519 (0.315)	13.52 (2.66)	183 (84)	65 (18)	28.81 (97.56)
<b>50% of Pull at Reduced Engine Speed—7.5 mph (12.0 km/h)</b>									
67.54 (50.37)	4134 (18.39)	6.13 (9.86)	1730	1.63	0.573 (0.348)	12.25 (2.41)	181 (83)	66 (19)	28.80 (97.53)

**MAXIMUM POWER AT SELECTED SPEEDS**

112.47 (83.87)	13290 (59.12)	3.17 (5.11)	2219	3.4 mph (5.5 km/h) 12.29 0.629 (0.383)	11.15 (2.20)	186 (86)	56 (13)	29.03 (98.31)
119.17 (88.87)	12213 (54.33)	3.66 (5.89)	2202	3.7 mph (6.0 km/h) 7.58 0.595 (0.362)	11.78 (2.32)	186 (86)	57 (14)	29.03 (98.31)
120.57 (89.91)	10597 (47.14)	4.27 (6.87)	2202	4.3 mph (7.0 km/h) 5.54 0.594 (0.361)	11.80 (2.32)	186 (86)	63 (17)	28.79 (97.50)
120.66 (89.98)	9929 (44.17)	4.56 (7.33)	2201	4.6 mph (7.5 km/h) 4.75 0.585 (0.356)	11.98 (2.36)	186 (86)	61 (16)	28.82 (97.60)
121.09 (90.30)	9169 (40.79)	4.95 (7.97)	2197	5.0 mph (8.0 km/h) 4.27 0.586 (0.356)	11.97 (2.36)	186 (86)	62 (17)	28.81 (97.56)
122.58 (91.41)	8269 (36.78)	5.56 (8.95)	2200	5.6 mph (9.0 km/h) 3.55 0.575 (0.350)	12.20 (2.40)	185 (85)	46 (8)	28.89 (97.83)
121.49 (90.60)	7407 (32.95)	6.15 (9.90)	2197	6.2 mph (10.0 km/h) 3.17 0.581 (0.353)	12.08 (2.38)	186 (85)	47 (8)	28.87 (97.77)
119.71 (89.27)	6589 (29.31)	6.81 (10.96)	2201	6.8 mph (11.0 km/h) 2.82 0.591 (0.360)	11.86 (2.34)	185 (85)	50 (10)	28.86 (97.73)
118.68 (88.50)	5946 (26.45)	7.49 (12.05)	2196	7.5 mph (12.0 km/h) 2.50 0.592 (0.360)	11.84 (2.33)	185 (85)	51 (11)	28.86 (97.73)
118.16 (88.11)	5493 (24.43)	8.07 (12.98)	2201	8.1 mph (13.0 km/h) 2.31 0.590 (0.359)	11.89 (2.34)	184 (85)	53 (12)	28.85 (97.70)

<b>TRACTOR SOUND LEVEL WITH CAB</b>	<b>Front Wheel Drive</b>	
	<b>Engaged dB(A)</b>	<b>Disengaged dB(A)</b>
At no load - 4.6 mph (7.5 km/h) (engine - 2410 rpm)	73.8	73.7
At no load - 4.6 mph (7.5 km/h) (engine - 1400 rpm)	66.8	66.7
Bystander	--	--

**DRAWBAR PERFORMANCE**  
**BALLASTED - FRONT DRIVE ENGAGED**  
**MAXIMUM POWER AT SELECTED SPEEDS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
111.65 (83.26)	18224 (81.06)	2.30 (3.70)	2269	11.26	0.637 (0.387)	11.01 (2.17)	186 (86)	56 (13)	29.03 (98.31)
120.65 (89.97)	16132 (71.76)	2.80 (4.51)	2042	7.58	0.569 (0.346)	12.33 (2.43)	186 (86)	62 (17)	28.78 (97.46)
123.89 (92.39)	13936 (61.99)	3.33 (5.37)	2015	5.88	0.550 (0.334)	12.76 (2.51)	186 (86)	62 (17)	28.78 (97.46)
124.18 (92.60)	11934 (53.08)	3.90 (6.28)	1985	4.80	0.541 (0.329)	12.95 (2.55)	186 (86)	63 (17)	28.79 (97.49)
124.51 (92.85)	11405 (50.73)	4.09 (6.59)	1948	4.42	0.534 (0.325)	13.13 (2.59)	186 (86)	62 (17)	28.82 (97.60)
124.36 (92.74)	10445 (46.46)	4.47 (7.19)	1954	4.01	0.535 (0.325)	13.11 (2.58)	186 (85)	63 (17)	28.81 (97.56)
124.22 (92.63)	9307 (41.40)	5.00 (8.05)	1954	3.56	0.528 (0.321)	13.27 (2.61)	185 (85)	46 (8)	28.88 (97.80)
123.05 (91.75)	8382 (37.28)	5.50 (8.86)	1950	3.21	0.537 (0.327)	13.06 (2.57)	185 (85)	48 (9)	28.87 (97.77)
121.23 (90.40)	7409 (32.96)	6.14 (9.87)	1956	2.81	0.549 (0.334)	12.78 (2.52)	185 (85)	51 (11)	28.86 (97.73)
119.96 (89.45)	6699 (29.80)	6.72 (10.81)	1959	2.53	0.549 (0.334)	12.76 (2.51)	185 (85)	52 (11)	28.85 (97.70)
118.93 (88.69)	6158 (27.39)	7.24 (11.66)	1950	2.30	0.552 (0.336)	12.70 (2.50)	185 (85)	54 (12)	28.84 (97.66)
117.33 (87.49)	5787 (25.74)	7.60 (12.24)	1949	2.15	0.563 (0.342)	12.46 (2.45)	185 (85)	56 (13)	28.83 (97.63)
116.26 (86.69)	5374 (23.91)	8.11 (13.06)	1952	1.98	0.563 (0.342)	12.46 (2.45)	185 (85)	57 (14)	28.83 (97.63)

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

CATEGORY: III

Quick Attach: None

Maximum Force Exerted	PowerMaxx CVT	Quadrashift transmission
Through Whole Range:	14283 lbs (63.5 kN)	15240 lbs (67.8 kN)
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2916 psi (201 bar)	
ii) Pump delivery rate at minimum pressure and rated engine speed:	30.0 GPM (113.6 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	29.5 GPM (111.7 l/min)	
Delivery pressure:	2730 psi (188 bar)	
Power:	47.0 HP (35.0 kW)	

### THREE POINT HITCH PERFORMANCE (Powermaxx transmission)

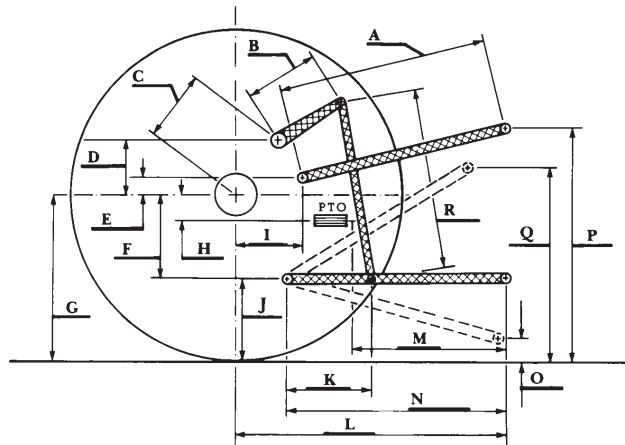
Observed Maximum Pressure psi. (bar)	2850 (197)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	148 (64)
Location:	hydraulic sump
Category:	III
Quick attach:	None

SAE Static Test—System pressure 2665 psi (177 Bar)

Hitch point distance to ground level in. (mm)	8.2(208)	14.4(366)	20.8(528)	27.2(691)	33.6(853)	40.0(1016)
Lift force on frame lb	19719	17748	17721	18009	17874	16992
" " " " " " (kN)	(87.7)	(78.9)	(78.8)	(79.5)	(79.5)	(75.6)

### HITCH DIMENSIONS AS TESTED - NO LOAD POWERMAXX CVT

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	30.3	768	29.7	754
B	14.0	355	14.0	355
C	13.7	347	13.7	347
D	12.0	305	12.0	305
E	12.6	321	12.6	321
F	10.0	255	10.0	255
G	34.2	870	34.2	870
H	2.4	60	2.4	60
I	18.7	476	18.7	476
J	24.2	615	24.2	615
K	27.2	690	27.2	690
L	46.3	1175	46.3	1175
M	26.2	665	26.2	665
N	40.6	1030	40.6	1030
O	8.0	203	9.0	230
P	46.2	1173	51.2	1300
Q	37.3	947	39.5	1003
R	29.9	759	29.3	744



### HITCH DIMENSIONS AS TESTED—NO LOAD QUADRASHIFT TRANSMISSION

	inch	mm
A	31.5	800
B	15.7	400
C	21.0	534
D	19.5	495
E	8.3	210
F	12.2	310
G	35.6	905
H	2.0	50
I	17.7	450
J	23.4	595
K	25.0	635
L	47.2	1198
M	23.5	598
N	37.0	940
O	10.2	258
P	47.4	1205
Q	40.2	1022
R	36.3	923



AGCO RT 150 Diesel