

January 2005

Nebraska Summary 542: DT220A Diesel

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SUMMARY OF OECD TEST 2323-NEBRASKA SUMMARY 542

AGCO DT 220A DIESEL POWERMAXX 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 |
|---|--------------------------------|------------------|-----------------------|-----------------------|--------------------------------|
| MAXIMUM POWER AND FUEL CONSUMPTION | | | | | |
| Rated Engine Speed—(PTO speed—1082 rpm) | | | | | |
| 228.5 (170.4) | 2201 | 14.23 (53.88) | 0.433 (0.263) | 16.05 (3.16) | |
| Standard Power Take-off Speed(1000rpm) | | | | | |
| 247.9 (184.1) | 2034 | 14.00 (53.00) | 0.395 (0.240) | 17.61 (3.47) | |
| Maximum Power (2 hours) | | | | | |
| 249.3 (185.9) | 2001 | 14.18 (53.67) | 0.395 (0.240) | 17.58 (3.46) | |
| VARYING POWER AND FUEL CONSUMPTION | | | | | |
| 228.5 (170.4) | 2201 | 14.23 (53.88) | 0.433 (0.263) | 16.05 (3.16) | Air temperature |
| 203.4 (151.7) | 2305 | 13.63 (51.61) | 0.465 (0.283) | 14.92 (2.94) | 66°F(19°C) |
| 153.5 (114.5) | 2319 | 10.41 (39.41) | 0.471 (0.287) | 14.75 (2.91) | Relative humidity |
| 102.9 (76.7) | 2329 | 7.65 (28.97) | 0.517 (0.315) | 13.44 (2.65) | 30% |
| 51.6 (38.5) | 2339 | 5.34 (20.22) | 0.719 (0.437) | 9.66 (1.90) | Barometer |
| -- | 2350 | 3.04 (11.49) | -- | -- | 29.6" Hg(100.1 kPa) |
| Maximum Torque - 763 lb.-ft.(1035 Nm) at 1499 rpm | | | | | |
| Maximum Torque Rise - 40.0% | | | | | |
| Torque rise at 1800 engine 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—Turtle | | | | | | | | | |
| 200.5 (149.5) | 11720 (52.14) | 6.42 (10.33) | 2203 | 3.7 | 0.502 (0.306) | 13.84 (2.73) | 189 (87) | 62 (17) | 29.6 (100.3) |
| 75% of Pull at Maximum Power—Turtle | | | | | | | | | |
| 158.9 (118.5) | 8715 (38.77) | 6.84 (11.00) | 2306 | 2.5 | 0.530 (0.323) | 13.10 (2.58) | 190 (88) | 62 (17) | 29.6 (100.3) |
| 50% of Pull at Maximum Power—Turtle | | | | | | | | | |
| 108.5 (80.9) | 5825 (25.92) | 6.98 (11.23) | 2319 | 1.6 | 0.581 (0.354) | 11.95 (2.36) | 190 (88) | 62 (17) | 29.6 (100.3) |
| 75% of Pull at Reduced Engine Speed—Turtle | | | | | | | | | |
| 160.1 (119.4) | 8760 (38.97) | 6.85 (11.03) | 2032 | 2.6 | 0.467 (0.284) | 14.87 (2.93) | 192 (89) | 62 (17) | 29.6 (100.3) |
| 50% of Pull at Reduced Engine Speed—Turtle | | | | | | | | | |
| 108.4 (80.8) | 5820 (25.89) | 6.98 (11.24) | 2044 | 1.5 | 0.511 (0.311) | 13.60 (2.68) | 190 (88) | 62 (17) | 29.6 (100.3) |

Location of tests: DLG - Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

Dates of tests: May - July, 2005

Manufacturer: AGCO S.A. BP 60307, Avenue Blaise Pascal, 60026 Beauvais, France

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.835 **Fuel weight** 6.95 lbs/gal (0.8328 kg/l) **Oil SAE 10W40 API service classification** CH4 **Transmission and hydraulic lubricant** BP STOU 10W/40 **Front axle lubricant** SAE 85W90 API GL5

ENGINE: Make Sisu Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** P08256 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.370" x 5.709" (111.0 mm x 145.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 513 cu in (8419 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** N167999 **Tread width** rear 66.9" (1699 mm) to 91.6" (2326 mm) front 72.5" (1692 mm) to 78.6" (2116 mm) **Wheelbase** 121.1" (3075 mm) **Hydraulic control system** direct engine drive **Transmission** AGCO CVT. A combination of mechanical and hydrostatic sections are electronically controlled to give the travel speeds shown. 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 - 11 (0 - 18), high range 0 - 12 (0 - 19) **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1588 engine rpm or 1000 rpm at 2033 engine rpm **Unladen tractor mass** 20370 lb (9240 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 lb/hp.hr (kg/kW.h) | Consumption Hp.hr/gal (kW.h/l) | Temp. ^o F(°C) cool- ing med | Air dry bulb | Barom. inch Hg (kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|-------------------------------|--------------------------------------|---|--------------------|-------------------------------|
| 193.9 (144.6) | 20105 (89.44) | 3.62 (5.82) | 2016 | 15.0 | Turtle 0.517 (0.314) | 13.45 (2.65) | 192 (89) | 54 (12) | 29.6 (100.4) |
| 207.1 (154.4) | 17945 (79.82) | 4.33 (6.97) | 2002 | 8.7 | Turtle 0.480 (0.292) | 14.47 (2.85) | 192 (89) | 68 (20) | 29.8 (100.9) |
| 210.1 (156.7) | 15600 (69.39) | 5.05 (8.13) | 2001 | 6.3 | Turtle 0.470 (0.286) | 14.77 (2.91) | 192 (89) | 68 (20) | 29.8 (100.9) |
| 215.8 (160.9) | 13720 (61.04) | 5.90 (9.49) | 2001 | 4.5 | Turtle 0.461 (0.280) | 15.08 (2.97) | 183 (84) | 55 (13) | 29.7 (100.5) |
| 214.6 (160.0) | 12100 (53.82) | 6.65 (10.71) | 2002 | 3.8 | Turtle 0.463 (0.282) | 15.01 (2.96) | 185 (85) | 52 (11) | 29.6 (100.4) |
| 214.6 (160.0) | 10770 (47.90) | 7.47 (12.02) | 2002 | 3.3 | Turtle 0.464 (0.282) | 14.97 (2.95) | 187 (86) | 52 (11) | 29.6 (100.4) |
| 211.9 (158.0) | 9490 (42.21) | 8.37 (13.48) | 2000 | 2.9 | Turtle 0.469 (0.285) | 14.82 (2.92) | 189 (87) | 52 (11) | 29.6 (100.4) |
| 193.0 (143.9) | 18005 (80.08) | 4.02 (6.47) | 2003 | 8.7 | Rabbit 0.515 (0.313) | 13.50 (2.66) | 190 (88) | 68 (20) | 29.8 (100.9) |
| 203.3 (151.6) | 16020 (71.27) | 4.76 (7.66) | 2002 | 6.3 | Rabbit 0.489 (0.298) | 14.21 (2.80) | 189 (87) | 68 (20) | 29.8 (100.9) |
| 203.2 (151.5) | 14340 (63.79) | 5.31 (8.55) | 2001 | 4.7 | Rabbit 0.483 (0.294) | 14.40 (2.84) | 181 (83) | 68 (20) | 29.9 (101.4) |
| 204.2 (152.3) | 13310 (59.20) | 5.75 (9.26) | 2002 | 4.2 | Rabbit 0.480 (0.292) | 14.47 (2.85) | 187 (86) | 68 (20) | 29.9 (101.4) |
| 206.9 (154.3) | 12075 (53.71) | 6.43 (10.34) | 2001 | 3.7 | Rabbit 0.473 (0.288) | 14.67 (2.89) | 189 (87) | 68 (20) | 29.9 (101.4) |
| 208.1 (155.2) | 10520 (46.79) | 7.42 (11.94) | 2003 | 2.8 | Rabbit 0.472 (0.287) | 14.72 (2.90) | 192 (89) | 68 (20) | 29.9 (101.4) |
| 212.3 (158.3) | 9645 (42.91) | 8.25 (13.28) | 2002 | 2.7 | Rabbit 0.466 (0.284) | 14.91 (2.94) | 189 (87) | 66 (19) | 29.8 (100.9) |
| 211.3 (157.6) | 8515 (37.87) | 9.31 (14.99) | 2005 | 2.4 | Rabbit 0.469 (0.286) | 14.80 (2.92) | 190 (88) | 66 (19) | 29.8 (100.9) |

NOTE 1: The data on this summary was obtained from OECD report 2323 conducted on the Massey Ferguson 8470 Diesel.

NOTE 2: The performance figures on this report are the result of replacing the electronic engine control module of the Massey Ferguson 8480 with the Massey Ferguson 8470 module.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claim of 39.0 GPM (147 lpm) flow at the remote outlets. 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 summary of data from OECD Report No. **2323**, Nebraska Summary 542, June 16, 2006.

Leonard L. Bashford
Director

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

TIRES, BALLAST AND WEIGHT

Rear tires - No., size, ply & psi(kPa)

Ballast - Duals(total)
- Cast iron(total)

Front tires - No., size, ply & psi(kPa)

Ballast - Liquid(total)
- Cast Iron(total)

Height of Drawbar

Static Weight with operator- Rear
- Front
- Total

With Ballast

Four 520/85R46; **,9 (60)

2390 lb (1084 kg)
3260 lb (1479 kg)

Two 480/70R34; **,23 (160)

None
2990 lb (1357 kg)
20.5 in (520 mm)

17680 lb (8020 kg)
11495 lb (5215 kg)
29175 lb(13235 kg)

Without Ballast

Two 650/85R38;***,12(80)

None
None

Two 600/70R28;***,12(80)

None
None
20.5 in (520 mm)

12630 lb (5730 kg)
7905 lb (3585 kg)
20535 lb (9315 kg)

DRAWBAR PERFORMANCE
(Ballasted - 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) | Temp. °F cool- ing med | Temp. °C Air dry bulb | Barom. inch Hg (kPa) |
|---|--------------------------------|------------------------|---------------------------------|-----------|---|---------------------------------|--------------------------------|-------------------------------|
| Maximum Power—Turtle | | | | | | | | |
| 193.1 (144.0) | 12955 (57.63) | 5.59 (8.99) | 2201 | 3.6 | 0.521 (0.317) | 13.35 (2.63) | 189 (87) | 75 (24) 29.3 (99.1) |
| 75% of Pull at Maximum Power—Turtle | | | | | | | | |
| 156.0 (116.3) | 9725 (43.25) | 6.02 (9.68) | 2313 | 2.6 | 0.545 (0.331) | 12.76 (2.51) | 187 (86) | 70 (21) 29.3 (99.1) |
| 50% of Pull at Maximum Power—Turtle | | | | | | | | |
| 105.5 (78.7) | 6445 (28.68) | 6.14 (9.88) | 2324 | 1.7 | 0.619 (0.377) | 11.22 (2.21) | 189 (87) | 66 (19) 29.2 (99.0) |
| 75% of Pull at Reduced Engine Speed—Turtle | | | | | | | | |
| 156.6 (116.8) | 9710 (43.20) | 6.05 (9.73) | 2021 | 2.6 | 0.484 (0.294) | 14.37 (2.83) | 190 (88) | 68 (20) 29.2 (99.0) |
| 50% of Pull at Reduced Engine Speed—Turtle | | | | | | | | |
| 106.1 (79.1) | 6445 (28.66) | 6.17 (9.93) | 2030 | 1.7 | 0.527 (0.320) | 13.20 (2.60) | 190 (88) | 66 (19) 29.2 (99.0) |

MAXIMUM POWER IN SELECTED GEARS

| | | | | | | | | |
|------------------|-------------------|-----------------|------|------|----------------------------|-----------------|-------------|------------------------------|
| 184.1 (137.3) | 27190 (120.94) | 2.54 (4.09) | 2071 | 15.0 | Turtle 0.547 (0.333) | 12.69 (2.50) | 187 (86) | 70 (21) 29.3 (99.2) |
| 198.3 (147.9) | 25310 (112.59) | 2.94 (4.73) | 2001 | 10.6 | Turtle 0.501 (0.305) | 13.86 (2.73) | 187 (86) | 70 (21) 29.3 (99.2) |
| 199.8 (149.0) | 22855 (101.67) | 3.28 (5.28) | 2001 | 9.1 | Turtle 0.496 (0.302) | 14.01 (2.76) | 192 (89) | 77 (25) 29.4 (99.5) |
| 206.4 (153.9) | 20550 (91.42) | 3.77 (6.06) | 2001 | 6.8 | Turtle 0.479 (0.292) | 14.50 (2.86) | 191 (88) | 77 (25) 29.4 (99.5) |
| 209.2 (156.0) | 17530 (77.98) | 4.48 (7.20) | 2000 | 5.3 | Turtle 0.475 (0.289) | 14.62 (2.88) | 191 (88) | 72 (22) 29.4 (99.5) |
| 210.0 (156.6) | 15355 (68.30) | 5.13 (8.25) | 2001 | 4.3 | Turtle 0.472 (0.287) | 14.72 (2.90) | 192 (89) | 73 (23) 29.4 (99.6) |
| 209.6 (156.3) | 13615 (60.55) | 5.77 (9.29) | 2000 | 3.7 | Turtle 0.473 (0.288) | 14.67 (2.89) | 192 (89) | 75 (24) 29.4 (99.6) |
| 207.7 (154.9) | 11610 (51.64) | 6.71 (10.80) | 2002 | 3.0 | Turtle 0.477 (0.290) | 14.57 (2.87) | 189 (87) | 73 (23) 29.4 (99.6) |
| 206.2 (153.8) | 10260 (45.65) | 7.54 (12.13) | 2001 | 2.6 | Turtle 0.482 (0.293) | 14.42 (2.84) | 191 (88) | 72 (22) 29.4 (99.6) |
| 204.0 (152.1) | 8905 (39.60) | 8.59 (13.82) | 2000 | 2.2 | Turtle 0.489 (0.297) | 14.21 (2.80) | 191 (88) | 72 (22) 29.4 (99.6) |
| 197.1 (147.0) | 17430 (77.52) | 4.24 (6.82) | 2001 | 5.0 | Rabbit 0.503 (0.306) | 13.81 (2.72) | 191 (88) | 70 (21) 29.4 (99.5) |
| 201.2 (150.0) | 16525 (73.51) | 4.57 (7.35) | 2002 | 4.7 | Rabbit 0.492 (0.299) | 14.12 (2.78) | 191 (88) | 72 (22) 29.4 (99.5) |
| 206.0 (153.6) | 14625 (65.05) | 5.28 (8.50) | 2001 | 3.8 | Rabbit 0.482 (0.293) | 14.42 (2.84) | 183 (84) | 66 (19) 29.4 (99.6) |
| 208.3 (155.3) | 13060 (58.10) | 5.98 (9.62) | 2002 | 3.5 | Rabbit 0.477 (0.290) | 14.57 (2.87) | 187 (86) | 64 (18) 29.4 (99.6) |
| 209.3 (156.1) | 11915 (53.01) | 6.59 (10.60) | 2001 | 3.1 | Rabbit 0.473 (0.288) | 14.67 (2.89) | 191 (88) | 64 (18) 29.4 (99.6) |
| 209.5 (156.2) | 10565 (47.00) | 7.43 (11.96) | 2002 | 2.7 | Rabbit 0.473 (0.288) | 14.67 (2.89) | 192 (89) | 64 (18) 29.4 (99.6) |
| 208.4 (155.4) | 9335 (41.52) | 8.37 (13.48) | 2002 | 2.4 | Rabbit 0.477 (0.290) | 14.57 (2.87) | 192 (89) | 64 (18) 29.4 (99.6) |
| 207.3 (154.6) | 8370 (37.23) | 9.29 (14.95) | 2002 | 2.0 | Rabbit 0.479 (0.292) | 14.50 (2.86) | 192 (89) | 62 (17) 29.4 (99.6) |

TRACTOR SOUND LEVEL WITH CAB

dB(A)

| | |
|--|------|
| At no load in Turtle-4.6 mph (7.5 km/h)- no load | 70.0 |
| Bystander | --- |

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: None

Maximum force exerted through whole range: 14648 lbs (65.2 kN)

i) Opening pressure of relief valve: NA

Sustained pressure of the open relief valve: 2875 psi (192 bar)

ii) Pump delivery rate at minimum pressure: 36.9 GPM (139.8 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 35.0 GPM (132.5 l/min)

Delivery pressure: 2335 psi (161 bar)

Power: 47.7 HP (35.6 kW)

| | OECD test | SAE test |
|---|-----------|----------|
| | inch | mm |
| A | 31.9 | 809 |
| B | 14.2 | 360 |
| C | 17.7 | 449 |
| D | 15.4 | 390 |
| E | 11.8 | 300 |
| F | 13.0 | 330 |
| G | 36.2 | 920 |
| H | 3.4 | 85 |
| I | 15.7 | 400 |
| J | 23.2 | 590 |
| K | 26.8 | 680 |
| L | 50.4 | 1281 |
| M | 27.9 | 709 |
| N | 41.1 | 1045 |
| O | 9.0 | 230 |
| P | 50.2 | 1275 |
| Q | 39.3 | 999 |
| R | 34.3 | 872 |

THREE POINT HITCH PERFORMANCE SAE Test

| | |
|--------------------------------------|----------------|
| Observed Maximum Pressure psi. (bar) | 2800 (193) |
| Location: | lift cylinder |
| Hydraulic oil temperature: °F (°C) | 150 (66) |
| Location: | hydraulic sump |
| Category: | III |
| Quick attach: | None |

SAE Static Test—System pressure 2520 psi (174 Bar)

| | | | | | |
|---|-----------|------------|------------|------------|-------------|
| Hitch point distance to ground level in. (mm) | 8.2 (208) | 16.1 (409) | 24.1 (612) | 32.1 (815) | 40.0 (1016) |
| Lift force on frame lb | 16994 | 18242 | 18320 | 18191 | 16921 |
| " " " " " (kN) | (75.6) | (81.1) | (81.5) | (80.9) | (75.3) |

