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Nebraska Summary 333: AGCO DT160 Diesel

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NEBRASKA OECD TRACTOR TEST 1781 - SUMMARY 333

WHITE 8510 DIESEL

ALSO AGCO ALLIS 9755 DIESEL(CUMMINS ENGINE)

ALSO AGCO DT160 DIESEL

18 SPEED

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 1052 rpm) | | | | | |
| 164.38 (122.58) | 2200 | 10.66 (40.35) | 0.456 (0.277) | 15.42 (3.04) | |
| Standard Power Take-off Speed (1004 rpm) | | | | | |
| 168.30 (125.50) | 2100 | 10.51 (39.78) | 0.439 (0.267) | 16.02 (3.16) | |
| Maximum Power (2 Hours) | | | | | |
| 168.30 (125.50) | 2100 | 10.51 (39.78) | 0.439 (0.267) | 16.02 (3.16) | |

VARYING POWER AND FUEL CONSUMPTION

| | | | | | |
|--------------------|------|------------------|-------------------|-----------------|-----------------------|
| 164.38 (122.58) | 2200 | 10.66 (40.35) | 0.456 (0.277) | 15.42 (3.04) | Air temperature |
| 144.36 (107.65) | 2274 | 9.78 (37.00) | 0.476 (0.289) | 14.77 (2.91) | 78°F (26°C) |
| 109.93 (81.97) | 2311 | 8.15 (30.86) | 0.521 (0.317) | 13.48 (2.66) | Relative humidity |
| 74.78 (54.76) | 2357 | 6.62 (25.05) | 0.622 (0.378) | 11.30 (2.23) | 49% |
| 38.18 (28.47) | 2403 | 4.99 (18.91) | 0.919 (0.559) | 7.64 (1.51) | Barometer |
| 1.67 (1.24) | 2442 | 3.50 (13.25) | 14.749 (8.972) | 0.48 (0.09) | 28.99" Hg (98.17 kPa) |

Maximum Torque - 538 lb.-ft. (729 Nm) at 1251 rpm

Maximum Torque Rise - 36.8%

Torque rise at 1799 engine rpm - 22%

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 10th Gear | | | | | | | | | |
| 142.58 (106.32) | 9765 (43.44) | 5.48 (8.81) | 2192 | 2.87 | 0.511 (0.311) | 13.75 (2.71) | 187 (86) | 65 (18) | 28.85 (97.70) |
| 75% of Pull at Maximum Power 10th Gear | | | | | | | | | |
| 112.72 (84.06) | 7334 (32.62) | 5.76 (9.28) | 2292 | 2.17 | 0.556 (0.338) | 12.64 (2.49) | 186 (86) | 64 (18) | 29.06 (98.41) |
| 50% of Pull at Maximum Power 10th Gear | | | | | | | | | |
| 77.49 (57.78) | 4896 (21.78) | 5.94 (9.55) | 2345 | 1.55 | 0.651 (0.396) | 10.79 (2.13) | 186 (86) | 69 (21) | 29.07 (98.44) |
| 75% of Pull at Reduced Engine Speed 12th Gear | | | | | | | | | |
| 112.46 (83.86) | 7340 (32.65) | 5.75 (9.25) | 1765 | 2.17 | 0.464 (0.282) | 15.15 (2.98) | 184 (84) | 69 (21) | 29.07 (98.44) |
| 50% of Pull at Reduced Engine Speed 12th Gear | | | | | | | | | |
| 77.37 (57.70) | 4889 (21.75) | 5.94 (9.55) | 1812 | 1.46 | 0.514 (0.313) | 13.66 (2.69) | 184 (84) | 71 (22) | 29.08 (98.48) |

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

Dates of Test: September 7 - 27, 2000

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) 0.8441 Fuel weight 7.028 lbs/gal (0.842 kg/l) Oil SAE 15W40 API service classification CE/CF-4 Transmission and hydraulic lubricant AGCO Power Fluid 821 XL fluid Front axle lubricant AGCO Gear Lube 715 Total time engine was operated 25.0 hours

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 45654516 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.488" x 5.315" (114.0 mm x 135.0 mm) **Compression ratio** 17.3 to 1 **Displacement** 505 cu in (8268 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 transmission and hydraulic 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: 70.3 - 77.7 lb/h (31.9 - 35.2 kg/h) **High idle:** 2380 - 2480 rpm **Turbo boost:** nominal 16.0 - 20.0 psi (110 - 138 kPa) as measured 19.0 psi (131 kPa)

CHASSIS: Type front wheel assist **Serial No.** CG085001 **Tread width** rear 61.5" (1562 mm) to 126.0" (3200 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 121.0" (3073 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 1.36 (2.19) second 1.76 (2.83) third 2.27 (3.65) fourth 2.59 (4.17) fifth 2.92 (4.70) sixth 3.33 (5.36) seventh 3.78 (6.09) eighth 4.31 (6.94) ninth 4.88 (7.85) tenth 5.56 (8.95) eleventh 6.31 (10.16) twelfth 7.20 (11.58) thirteenth 8.13 (13.09) fourteenth 9.26 (14.91) fifteenth 10.53 (16.94) sixteenth 13.56 (21.82) seventeenth 17.54 (28.23) eighteenth 22.60 (36.37) reverse 1.36 (2.19), 2.27 (3.65), 2.59 (4.17), 3.78 (6.09), 4.31 (6.94), 6.31 (10.16) **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 1991 engine rpm or 1000 rpm at 2091 engine rpm **Unladen tractor mass** 19010 lb (8623 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) | Consumption Hp.hr/gal (kW.h/l) | Temp.°F(°C) cool- ing med | Air dry bulb | Barom. inch Hg (kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|--|--------------------------------------|------------------------------------|--------------------|-------------------------------|
| 5th Gear | | | | | | | | | |
| 124.82 (93.08) | 17894 (79.60) | 2.62 (4.21) | 2245 | 14.02 | 0.580 (0.353) | 12.12 (2.39) | 187 (86) | 61 (16) | 28.86 (97.73) |
| 6th Gear | | | | | | | | | |
| 141.31 (105.37) | 17098 (76.06) | 3.10 (4.99) | 2172 | 7.42 | 0.516 (0.314) | 13.61 (2.68) | 186 (86) | 64 (18) | 28.85 (97.70) |
| 7th Gear | | | | | | | | | |
| 146.66 (109.37) | 15869 (70.59) | 3.47 (5.58) | 2101 | 5.73 | 0.500 (0.304) | 14.05 (2.77) | 187 (86) | 65 (18) | 28.86 (97.73) |
| 8th Gear | | | | | | | | | |
| 148.97 (111.08) | 13896 (61.81) | 4.02 (6.47) | 2103 | 4.24 | 0.492 (0.299) | 14.30 (2.82) | 187 (86) | 65 (18) | 28.86 (97.73) |
| 9th Gear | | | | | | | | | |
| 147.77 (110.19) | 12109 (53.86) | 4.58 (7.37) | 2104 | 3.73 | 0.497 (0.302) | 14.14 (2.79) | 187 (86) | 65 (18) | 28.86 (97.73) |
| 10th Gear | | | | | | | | | |
| 149.44 (111.44) | 10722 (47.69) | 5.23 (8.41) | 2098 | 3.21 | 0.489 (0.298) | 14.36 (2.83) | 187 (86) | 65 (18) | 28.86 (97.73) |
| 11th Gear | | | | | | | | | |
| 147.32 (109.86) | 9254 (41.16) | 5.97 (9.61) | 2102 | 2.78 | 0.499 (0.303) | 14.10 (2.78) | 186 (86) | 67 (19) | 28.85 (97.70) |
| 12th Gear | | | | | | | | | |
| 147.84 (110.25) | 8122 (36.13) | 6.83 (10.99) | 2102 | 2.25 | 0.495 (0.301) | 14.20 (2.80) | 187 (86) | 68 (20) | 28.85 (97.70) |
| 13th Gear | | | | | | | | | |
| 146.58 (109.30) | 7086 (31.52) | 7.76 (12.48) | 2107 | 2.08 | 0.503 (0.306) | 13.97 (2.75) | 186 (86) | 69 (21) | 28.86 (97.73) |
| 14th Gear | | | | | | | | | |
| 142.54 (106.29) | 6088 (27.08) | 8.78 (14.13) | 2108 | 2.11 | 0.514 (0.313) | 13.68 (2.69) | 185 (85) | 69 (21) | 28.86 (97.73) |

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The front drive axle on this model automatically disengages at travel speeds above 8.7 mph (14.0 kph).

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 138°F (59°C). The pull in 3rd gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance figures on this Summary were taken from a test conducted under the OECD Code II test procedure.

Report reissued: Supplemental sales permits for AGCO Allis 9755 Diesel (Cummins engine) and AGCO DT160 Diesel, October, 2001.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1781**, Nebraska Summary 333, October 31, 2001.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
G.J. Hoffman
Board of Tractor Test Engineers

TIRES, BALLAST AND WEIGHT

| | With Ballast | Without Ballast |
|---|---------------------------|---------------------------|
| Rear tires - No., size, ply & psi (kPa) | Four 18.4R42; **,16 (110) | Two 18.4R42; **,22 (150) |
| Ballast - Duals (total) | 1710 lb (776 kg) | None |
| - Cast Iron (total) | None | None |
| Front tires - No., size, ply & psi (kPa) | Two 14.9R30; ***,28 (195) | Two 14.9R30; ***,24 (165) |
| Ballast - Liquid (total) | None | None |
| - Cast Iron (total) | 1480 lb (671 kg) | None |
| Height of Drawbar | 16.5 in (420 mm) | 16.5 in (420 mm) |
| Static Weight with operator - Rear | 13715 lb (6221 kg) | 12260 lb (5561 kg) |
| - Front | 8660 lb (3928 kg) | 6925 lb (3141 kg) |
| - Total | 22375 lb (10149 kg) | 19185 lb (8702 kg) |

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) | Consumption Hp.hr/gal (kW.h/l) | Temp.°F (°C) cool- ing med | Air dry bulb | Barom. inch Hg (kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|-------------------------------------|--------------------|-------------------------------|
| 3rd Gear | | | | | | | | | |
| 123.40 (92.02) | 20868 (92.82) | 2.22 (3.57) | 2284 | 7.77 | 0.555 (0.338) | 12.66 (2.49) | 187 (86) | 65 (18) | 28.94 (98.00) |
| 4th Gear | | | | | | | | | |
| 137.52 (102.55) | 20489 (91.14) | 2.52 (4.05) | 2254 | 6.98 | 0.536 (0.326) | 13.10 (2.58) | 187 (86) | 68 (20) | 28.94 (98.00) |
| 5th Gear | | | | | | | | | |
| 145.41 (108.43) | 20588 (91.58) | 2.65 (4.26) | 2100 | 7.14 | 0.508 (0.309) | 13.84 (2.73) | 187 (86) | 70 (21) | 28.94 (98.00) |
| 6th Gear | | | | | | | | | |
| 148.96 (111.08) | 18121 (80.60) | 3.08 (4.96) | 2100 | 5.11 | 0.497 (0.302) | 14.14 (2.78) | 186 (86) | 73 (23) | 28.94 (98.00) |
| 7th Gear | | | | | | | | | |
| 149.34 (111.36) | 15886 (70.66) | 3.53 (5.67) | 2095 | 4.27 | 0.495 (0.301) | 14.20 (2.80) | 186 (86) | 76 (24) | 28.94 (98.00) |
| 8th Gear | | | | | | | | | |
| 147.78 (110.20) | 13660 (60.76) | 4.06 (6.53) | 2102 | 3.50 | 0.496 (0.302) | 14.18 (2.79) | 186 (86) | 76 (24) | 28.93 (97.97) |
| 9th Gear | | | | | | | | | |
| 145.76 (108.69) | 11862 (52.76) | 4.61 (7.42) | 2101 | 3.07 | 0.504 (0.307) | 13.94 (2.75) | 186 (86) | 77 (25) | 28.93 (97.97) |
| 10th Gear | | | | | | | | | |
| 146.07 (108.93) | 10414 (46.32) | 5.26 (8.47) | 2098 | 2.72 | 0.502 (0.305) | 14.00 (2.76) | 186 (86) | 78 (26) | 28.93 (97.97) |
| 11th Gear | | | | | | | | | |
| 145.45 (108.46) | 9081 (40.39) | 6.01 (9.67) | 2102 | 2.46 | 0.506 (0.308) | 13.89 (2.74) | 186 (85) | 80 (27) | 28.93 (97.97) |
| 12th Gear | | | | | | | | | |
| 144.72 (107.92) | 7916 (35.21) | 6.86 (11.03) | 2101 | 2.10 | 0.508 (0.309) | 13.84 (2.73) | 185 (85) | 81 (27) | 28.93 (97.97) |
| 13th Gear | | | | | | | | | |
| 143.83 (107.25) | 6933 (30.84) | 7.78 (12.52) | 2103 | 1.84 | 0.508 (0.309) | 13.83 (2.72) | 185 (85) | 82 (28) | 28.93 (97.97) |
| 14th Gear | | | | | | | | | |
| 138.99 (103.64) | 5901 (26.25) | 8.83 (14.22) | 2105 | 1.55 | 0.527 (0.320) | 13.34 (2.63) | 186 (86) | 83 (28) | 28.93 (97.97) |

| TRACTOR SOUND LEVEL WITH CAB | Front Wheel Drive | |
|------------------------------|-------------------|---------------------|
| | Engaged dB(A) | Disengaged dB(A) |
| At no load in 9th gear | 75.8 | 74.7 |
| Bystander | -- | -- |

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: None

Maximum Force Exerted

Through Whole Range: 16101 lbs (71.6 kN)

| | | <u>High flow option</u> |
|--|------------------------|-------------------------|
| i) Opening pressure of relief valve: | NA | NA |
| Sustained pressure of the open relief valve: | 2870 psi (198 bar) | 2850 psi (196 bar) |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 30.8 GPM (116.6 l/min) | 39.3 GPM (148.8 l/min) |
| iii) Pump delivery rate at maximum hydraulic power: | 25.9 GPM (98.0 l/min) | 35.9 GPM (135.9 l/min) |
| Delivery pressure: | 2620 psi (181 bar) | 2490 psi (172 bar) |
| Power: | 39.6 HP (29.5 kW) | 52.2 HP (38.9 kW) |

THREE POINT HITCH PERFORMANCE

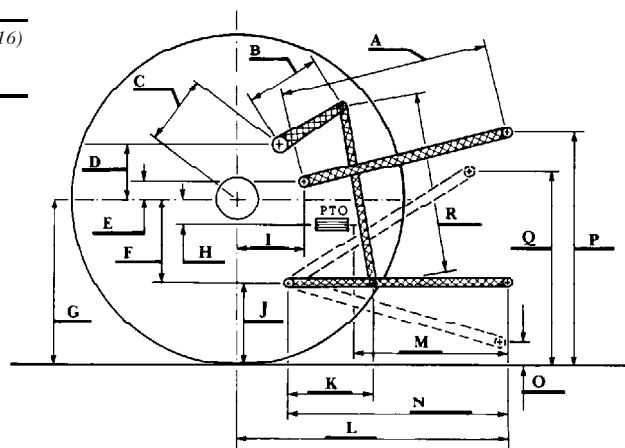
| | |
|--------------------------------------|----------------|
| Observed Maximum Pressure psi. (bar) | 3015 (208) |
| Location: | lift cylinder |
| Hydraulic oil temperature: °F (°C) | 153 (67) |
| Location: | hydraulic sump |
| Category: | III |
| Quick attach: | none |

SAE Static Test System pressure 2715 psi (187 Bar)

| | | | | | |
|---|-----------|------------|------------|------------|-------------|
| Hitch point distance to ground level in. (mm) | 9.7 (246) | 16.0 (406) | 24.0 (610) | 32.0 (813) | 40.0 (1016) |
| Lift force on frame lb | 18963 | 18432 | 18441 | 18054 | 16965 |
| " " " " " " (kN) | (84.4) | (82.0) | (82.0) | (80.3) | (75.5) |

HITCH DIMENSIONS AS TESTED - NO LOAD

| | SAE TEST | | OECD TEST | |
|---|----------|------|-----------|------|
| | inch | mm | inch | mm |
| A | 28.8 | 732 | 29.8 | 756 |
| B | 15.0 | 380 | 15.0 | 380 |
| C | 19.4 | 492 | 19.4 | 492 |
| D | 17.6 | 447 | 17.6 | 447 |
| E | 11.0 | 280 | 11.0 | 280 |
| F | 13.0 | 330 | 13.0 | 330 |
| G | 34.3 | 870 | 34.3 | 870 |
| H | 3.9 | 100 | 3.9 | 100 |
| I | 17.6 | 447 | 17.6 | 447 |
| J | 21.3 | 540 | 21.3 | 540 |
| K | 21.3 | 540 | 23.2 | 590 |
| L | 48.2 | 1225 | 48.2 | 1225 |
| M | 23.1 | 588 | 23.1 | 588 |
| N | 38.4 | 975 | 38.4 | 975 |
| O | 9.6 | 245 | 9.3 | 235 |
| P | 43.3 | 1100 | 48.2 | 1225 |
| Q | 39.5 | 1004 | 37.4 | 949 |
| R | 34.0 | 864 | 35.1 | 892 |



White 8510 Diesel

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