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Test 1841: Kubota M120DT Diesel

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SUMMARY OF OECD TEST 1841—NEBRASKA SUMMARY 503

KUBOTA M120DT DIESEL

16 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—1086 rpm) | | | | | |
| 100.3 (74.8) | 2400 | 6.39 (24.17) | 0.455 (0.277) | 15.68 (3.09) | |
| Maximum Power (2 hours) | | | | | |
| 103.1 (76.9) | 2260 | 6.23 (23.61) | 0.432 (0.263) | 16.55 (3.26) | |
| Standard Power Take-off speed (1000 rpm) | | | | | |
| 102.3 (76.3) | 2211 | 6.11 (23.12) | 0.427 (0.260) | 16.74 (3.30) | |
| VARYING POWER AND FUEL CONSUMPTION | | | | | |
| 100.3 (74.8) | 2400 | 6.39 (24.17) | 0.455 (0.277) | 15.68 (3.09) | Air temperature |
| 86.6 (64.6) | 2439 | 5.78 (21.89) | 0.477 (0.290) | 14.97 (2.95) | 72°F (22°C) |
| 65.7 (49.0) | 2465 | 4.83 (18.28) | 0.525 (0.319) | 13.60 (2.68) | Relative humidity |
| 44.4 (33.1) | 2494 | 3.93 (14.86) | 0.631 (0.384) | 11.32 (2.23) | 82% |
| 22.5 (16.8) | 2528 | 3.08 (11.66) | 0.977 (0.594) | 7.31 (1.44) | Barometer |
| -- | 2565 | 2.13 (8.07) | -- | -- | 30.1" Hg (101.8 kPa) |
| Maximum Torque -307.3 lb.-ft. (416.7 Nm) at 1500 rpm Maximum Torque Rise -39.9% Torque rise at 1900 engine rpm -21% | | | | | |

Location of tests: Institute of Agricultural Machinery
Bio-oriented Technology Research Advancement
Institution (IAM-Brain) Omiya, Japan

Dates of tests: May, 1999
Operator sound level - December 23, 2005

Manufacturer: Kubota Corporation, 1-2-47
Shikitsu-higashi, Naniwa-ku, Osaka City, Osaka,
Japan

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.858
Fuel weight 7.14 lbs/gal (0.856 kg/l) **Oil** SAE 10W30
API service classification CD **Oil consumption for 10 hours** 0.08 lb (36 gm) **Transmission and hydraulic lubricant** SAE 75W/80 API GL-3 **Front axle lubricant** SAE 75W/80 API GL-3

ENGINE: Make Kubota Diesel **Type** five cylinder vertical with turbocharger **Serial No.** F5802-XC5451
Crankshaft lengthwise **Rated engine speed** 2400
Bore and stroke 4.291" x 4.922" (109.0 mm x 125.0 mm) **Compression ratio** 19.0 to 1 **Displacement** 356 cu in (5832 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 **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: **Type** front wheel assist **Serial No.** M12-50207 **Tread width** rear 59.4" (1510 mm) to 78.3" (1990 mm) front 64.6" (1640 mm) to 68.5" (1740 mm) **Wheel base** 105.9" (2690 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (8) range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.24 (1.99) second 1.53 (2.47) third 1.92 (3.09) fourth 2.41 (3.88) fifth 3.02 (4.86) sixth 3.76 (6.05) seventh 4.31 (6.94) eighth 4.70 (7.57) ninth 5.37 (8.64) tenth 5.91 (9.51) eleventh 6.72 (10.81) twelfth 8.43 (13.57) thirteenth 10.55 (16.98) fourteenth 13.14 (21.15) fifteenth 16.44 (26.45) sixteenth 20.64 (33.22) reverse 1.24 (2.00), 1.55 (2.49), 1.94 (3.12), 2.44 (3.92), 3.04 (4.90), 3.80 (6.11), 4.35 (7.00), 4.75 (7.64), 5.42, (8.72), 5.96 (9.59), 6.77 (10.90), 8.51, (13.69), 10.64 (17.13), 13.25 (21.33), 16.59 (26.68), 20.82 (33.51) **Clutch** multiple wet disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2035 engine rpm or 1000 rpm at 2211 engine rpm **Unladen tractor mass** 9175 lb (4163 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) | Hp.hr/gal (kW.h/l) | Temp. ^o F (°C) cool- ing med | Air dry bulb | Barom. inch Hg (kPa) |
|--|--------------------------------|------------------------|---------------------------------|-----------|---|-----------------------|--|--------------------|-------------------------------|
| 75% of Pull at Maximum Power—Five Hours 7th (1H) Gear | | | | | | | | | |
| 73.2 (54.6) | 6505 (28.9) | 4.22 (6.80) | 2444 | 4.2 | 0.570 (0.347) | 12.54 (2.47) | 185 (85) | 90 (32) | 29.8 (101.0) |
| MAXIMUM POWER IN SELECTED GEARS | | | | | | | | | |
| 3rd (3L) Gear | | | | | | | | | |
| 57.7 (43.0) | 12565 (55.9) | 1.72 (2.77) | 2441 | 12.8 | 0.637 (0.388) | 11.21 (2.21) | 187 (86) | 79 (26) | 29.8 (100.9) |
| 4th (4L) Gear | | | | | | | | | |
| 70.4 (52.5) | 12185 (54.2) | 2.17 (3.49) | 2423 | 11.8 | 0.591 (0.360) | 12.08 (2.38) | 187 (86) | 79 (26) | 29.8 (100.9) |
| 5th (5L) Gear | | | | | | | | | |
| 84.4 (62.9) | 11780 (52.4) | 2.69 (4.32) | 2361 | 10.3 | 0.539 (0.328) | 13.25 (2.61) | 187 (86) | 79 (26) | 29.8 (100.9) |
| 6th (6L) Gear | | | | | | | | | |
| 85.8 (64.0) | 9395 (41.8) | 3.42 (5.51) | 2324 | 6.5 | 0.527 (0.321) | 13.55 (2.67) | 189 (87) | 77 (25) | 29.8 (100.9) |
| 7th (1H) Gear | | | | | | | | | |
| 88.4 (65.9) | 8655 (38.5) | 3.83 (6.16) | 2245 | 5.9 | 0.497 (0.303) | 14.35 (2.83) | 189 (87) | 77 (25) | 29.8 (100.9) |
| 8th (7L) Gear | | | | | | | | | |
| 89.3 (66.6) | 8140 (36.2) | 4.11 (6.62) | 2206 | 5.3 | 0.490 (0.298) | 14.57 (2.87) | 187 (86) | 77 (25) | 29.8 (101.0) |
| 9th (2H) Gear | | | | | | | | | |
| 88.9 (66.3) | 6990 (31.1) | 4.77 (7.67) | 2213 | 4.5 | 0.493 (0.300) | 14.47 (2.85) | 187 (86) | 77 (25) | 29.8 (101.0) |
| 10th (8L) Gear | | | | | | | | | |
| 86.6 (64.6) | 6315 (28.1) | 5.14 (8.28) | 2158 | 3.7 | 0.496 (0.302) | 14.41 (2.84) | 187 (86) | 77 (25) | 29.8 (100.9) |
| 11th (3H) Gear | | | | | | | | | |
| 87.6 (65.3) | 5710 (25.4) | 5.75 (9.25) | 2114 | 3.2 | 0.487 (0.296) | 14.67 (2.89) | 187 (86) | 77 (25) | 29.8 (100.9) |

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 claims of: 45% PTO torque rise, 72 dB(A) cab sound level, 20.6 GPM (78 l/min) hydraulic flow, nor 3 point lift capacities of 5200 lbs (2360 kg), 6570 lbs (2980 kg) with one external cylinder nor 7940 lbs (3600 kg) with two external cylinders. The performance results on this summary were taken from OECD tests conducted under the Code I Test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1841**, Nebraska Summary 503, January 27, 2006.

Leonard L. Bashford
Director

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

TIRES, BALLAST AND WEIGHT

| | With Ballast | Without Ballast |
|------------------------------------|--|---------------------------|
| Rear Tires | Two 18.4R38; **; 20 (140) | Two 18.4R38; **; 20 (140) |
| Ballast | -Liquid (total) 1610 lb (731 kg) | None |
| | -Cast Iron (total) 690 lb (312 kg) | None |
| Front Tires | Two 14.9R24; **; 20 (140) | Two 14.9R24; **; 20 (140) |
| Ballast | -Liquid (total) None | None |
| | -Cast Iron (total) 1340 lb (609 kg) | None |
| Height of Drawbar | 21.0 in (533 mm) | 21.5 in (546 mm) |
| Static Weight with Operator | - Rear 7685 lb (3486 kg) | 5760 lb (2613 kg) |
| | - Front 5300 lb (2404 kg) | 3585 lb (1625 kg) |
| | - Total 12985 lb (5890 kg) | 9345 lb (4238 kg) |

TRACTOR SOUND LEVEL WITH CAB

dB(A)

| | |
|-----------------------------|------|
| At no load in 7th (1H) gear | 73.9 |
| Bystander in 16th (8H) gear | 86.0 |

CENTER OF GRAVITY

| | |
|--|--------------------------|
| Horizontal distance forward from centerline of rear wheels | 40.6" (1030 mm) |
| Vertical distance above roadway | 39.4" (1002 mm) |
| Horizontal distance from center of rear wheel tread | 0.1" (1 mm) to the right |

TURNING ON A CONCRETE SURFACE - front drive engaged

| | |
|--|----------------------------------|
| Turning radius—with brake right | 156" (3.95 m) left 155" (3.93 m) |
| Turning radius—without brake right | 204" (5.17 m) left 199" (5.15 m) |
| Turning space radius—with brake right | 168" (4.26 m) left 167" (4.24 m) |
| Turning space radius—without brake right | 217" (5.52 m) left 216" (5.50 m) |

TURNING ON A CONCRETE SURFACE - Bi-speed switch on

| | |
|--|----------------------------------|
| Turning radius—with brake right | 166" (4.22 m) left 165" (4.18 m) |
| Turning radius—without brake right | 171" (4.28 m) left 169" (4.27 m) |
| Turning space radius—with brake right | 178" (4.51 m) left 176" (4.47 m) |
| Turning space radius—without brake right | 177" (4.50 m) left 176" (4.49 m) |

THREE POINT HITCH PERFORMANCE (OECD Static Test)

| | |
|---|---|
| CATEGORY: II | |
| Quick Attach: None | |
| Maximum force exerted through whole range: | 3280 lbs (14.6 kN) |
| | 4165 lbs (18.5 kN) (one external boost cylinder) |
| | 5085 lbs (22.6 kN) (two external boost cylinders) |
| i) Opening pressure of relief valve: | NA |
| Sustained pressure with relief valve open: | 2915 psi (201 bar) |
| ii) Pump delivery rate at minimum pressure: | 20.1 GPM (76.0 l/min) |
| iii) Pump delivery rate at maximum | |
| hydraulic power: | 18.6 GPM (70.3 l/min) |
| Delivery pressure: | 1960 psi (135 bar) |
| Power: | 21.3 HP (15.9 kW) |

HITCH DIMENSIONS AS TESTED—NO LOAD

| | inch | mm |
|---|------|------|
| A | 29.5 | 750 |
| B | 9.8 | 250 |
| C | 12.2 | 311 |
| D | 11.5 | 303 |
| E | 11.9 | 221 |
| F | 6.9 | 176 |
| G | 32.2 | 817 |
| H | 0.9 | 23 |
| I | 11.4 | 290 |
| J | 25.3 | 641 |
| K | 17.9 | 455 |
| L | 40.0 | 1015 |
| M | 23.4 | 594 |
| N | 35.4 | 900 |
| O | 7.8 | 195 |
| P | 49.2 | 1251 |
| Q | 35.7 | 908 |
| R | 26.1 | 664 |

