5-13-1980

Test 1349: Kubota M7500DT and M7500 Diesel 16-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1349 — KUBOTA M7500DT DIESEL
ALSO KUBOTA M7500 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—643 rpm)								
72.34 (53.95)	2400	4.342 (16.437)	0.424 (0.258)	16.66 (3.282)	215 (101.8)	58 (14.5)	76 (24.3)	28.943 (97.737)
Standard Power Take-Off Speed (540 rpm)—One Hour								
66.54 (49.62)	2015	3.731 (14.124)	0.396 (0.241)	17.83 (3.513)	215 (101.6)	57 (14.0)	76 (24.7)	28.950 (97.760)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
63.40 (47.28)	2474	3.730 (14.119)	0.415 (0.253)	17.00 (3.349)	201 (93.9)	58 (14.4)	77 (25.0)	....
0.00 (0.00)	2584	1.219 (4.615)	....	....	179 (81.7)	58 (14.4)	77 (25.0)	....
32.55 (24.27)	2542	2.375 (8.989)	0.515 (0.313)	13.71 (2.700)	184 (84.4)	58 (14.4)	78 (25.6)	....
73.54 (54.84)	2400	4.435 (16.788)	0.426 (0.259)	16.58 (3.266)	210 (98.9)	58 (14.4)	78 (25.3)	....
16.41 (12.23)	2562	1.793 (6.786)	0.772 (0.469)	9.15 (1.803)	182 (83.3)	58 (14.4)	77 (25.0)	....
48.35 (36.05)	2516	3.003 (11.369)	0.439 (0.267)	16.10 (3.171)	185 (85.0)	58 (14.4)	77 (25.0)	....
Av 39.04	**2513**	**2.759**	**0.499**	**14.15**	**190**	**58**	**77**	**28.920**
Av (29.11)		***(10.444)***	***(0.304)***	***(2.787)***	***(87.9)***	***(14.4)***	***(25.1)***	***(97.659)***

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 13th (HH-1) Gear											
58.92 (43.94)	4093 (18.20)	5.40 (8.69)	2399	9.35	4.230 (16.014)	0.507 (0.308)	13.93 (2.744)	211 (99.4)	61 (16.1)	77 (25.0)	28.945 (97.743)
75% of Pull at Maximum Power—Ten Hours 13th (HH-1) Gear											
48.97 (36.51)	3178 (14.14)	5.78 (9.30)	2490	6.63	3.448 (13.052)	0.497 (0.302)	14.20 (2.798)	188 (86.7)	60 (15.6)	74 (23.1)	28.737 (97.041)
50% of Pull at Maximum Power—Two Hours 13th (HH-1) Gear											
34.02 (25.37)	2124 (9.45)	6.01 (9.67)	2532	4.50	2.744 (10.385)	0.569 (0.346)	12.40 (2.443)	183 (83.9)	63 (16.9)	68 (19.7)	28.705 (96.932)
50% of Pull at Reduced Engine Speed—Two Hours 14th (HH-2) Gear											
34.00 (25.36)	2120 (9.43)	6.02 (9.68)	2106	4.24	2.443 (9.246)	0.507 (0.309)	13.92 (2.742)	184 (84.2)	66 (18.6)	82 (27.5)	28.660 (96.781)
MAXIMUM POWER IN SELECTED GEARS											
47.61 (35.51)	6327 (28.14)	2.82 (4.54)	2471	14.92	11th (HL-3) Gear			184 (84.2)	58 (14.4)	60 (15.6)	28.700 (96.916)
58.06 (43.30)	5708 (25.39)	3.81 (6.14)	2400	13.28	12th (HL-4) Gear			196 (90.8)	60 (15.6)	63 (17.2)	28.700 (96.916)
61.18 (45.62)	4236 (18.84)	5.42 (8.72)	2400	9.12	13th (HH-1) Gear			198 (91.9)	60 (15.6)	66 (18.9)	28.960 (97.794)
61.29 (45.70)	3457 (15.38)	6.65 (10.70)	2400	7.07	14th (HH-2) Gear			202 (94.4)	62 (16.7)	72 (22.2)	28.960 (97.794)

LUGGING ABILITY IN 13th (HH-1) GEAR

Crankshaft Speed rpm	2400	2163	1916	1676	1440	1196	959
Pull—lbs (kN)	4236 (18.84)	4553 (20.25)	4709 (20.94)	4874 (21.68)	4914 (21.86)	4948 (22.01)	4833 (21.50)
Increase in Pull %	0	7	11	15	16	17	14
Power—Hp (kW)	61.18 (45.62)	58.75 (43.81)	53.55 (39.93)	48.19 (35.93)	41.53 (30.97)	34.71 (25.88)	27.28 (20.34)
Speed—Mph (km/h)	5.42 (8.72)	4.84 (7.79)	4.26 (6.86)	3.71 (5.97)	3.17 (5.10)	2.63 (4.23)	2.12 (3.41)
Slip %	9.12	10.05	10.51	10.97	11.42	11.42	11.31

Department of Agricultural Engineering

Dates of Test: May 13—27, 1980

Manufacturer: KUBOTA LTD., 22 Funade-cho, 2-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 47.9 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8482 **Fuel weight** 7.062 lbs/gal *(0.846 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 2.789 gal *(10.556 l)* **Drained from motor** 2.575 gal *(9.746 l)* **Tranmission and hydraulic lubricant** SAE 80 or tractor hydraulic fluid **Front axle lubricant** SAE 80/90 **Total time engine was operated** 39.0 hours.

ENGINE Make Kubota Dsl **Type** four cylinder vertical **Serial No.** V4000-A-1709 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.134″ × 4.528″ *(105 mm × 115 mm)* **Compression ratio** 17.0 to 1 **Displacement** 243 cu in *(3983 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat

CHASSIS: Type front wheel assist **Serial No.** M7500DT-10536 **Tread width** rear 59.1″ *(1500 mm)* to 74.8″ *(1900 mm)* front 59.1″ *(1500 mm)* **Wheel base** 85.63″ *(2175 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 35.2″ *(893 mm)* Vertical distance above roadway 41.3″ *(1050 mm)* Horizontal distance from center of rear wheel tread 0″ *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** Selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 0.3 *(0.4)* second 0.3 *(0.6)* third 0.6 *(0.9)* fourth 0.8 *(1.2)* fifth 1.0 *(1.7)* sixth 1.3 *(2.0)* seventh 1.6 *(2.6)* eighth 2.0 *(3.2)* ninth 2.1 *(3.4)* tenth 2.9 *(4.7)* eleventh 3.3 *(5.3)* twelfth 4.5 *(7.3)* thirteenth 6.0 *(9.7)* fourteenth 7.4 *(11.9)* fifteenth 12.4 *(20.0)* sixteenth 17.0 *(27.3)* reverse 0.4 *(0.6)*, 1.4 *(2.2)*, 2.1 *(3.4)*, 8.0 *(12.8)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 133″ *(3.38 m)* left 133″ *(3.38 m)* (on concrete surface without brake) right 177.2″ *(4.50 m)* left 177.2″ *(4.50 m)* **Turning space diameter** (on concrete surface with brake applied) right 275.5″ *(7.00 m)* left 275.5″ *(7.00 m)* (on concrete surface without brake) right 370″ *(9.40 m)* left 370″ *(9.40 m)* **Power take-off** 540 rpm at 2015 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 165°F *(73.8°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	97.0	96.0
75% of Pull at Maximum Power—Ten Hours	–	95.5
50% of Pull at Maximum Power—Two Hours	–	94.0
50% of Pull at Reduced Engine Speed—Two Hours	–	90.0
Bystander in 16th (HH-4) gear	–	89.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 13th (HH-1) Gear											
59.05 *(44.04)*	3913 *(17.40)*	5.66 *(9.11)*	2398	6.10	4.230 *(16.014)*	0.506 *(0.308)*	13.96 *(2.750)*	218 *(103.1)*	65 *(18.1)*	78 *(25.6)*	28.705 *(96.932)*
MAXIMUM POWER IN SELECTED GEARS											
51.68 *(38.54)*	7820 *(34.78)*	2.48 *(3.99)*	2445	14.96	10th (LH-4) Gear			185 *(85.0)*	59 *(15.0)*	62 *(16.7)*	28.700 *(96.916)*
61.69 *(46.01)*	4087 *(18.18)*	5.66 *(9.11)*	2401	6.20	13th (HH-1) Gear			198 *(92.2)*	62 *(16.7)*	70 *(21.1)*	28.960 *(97.794)*
61.17 *(45.62)*	3335 *(14.83)*	6.88 *(11.07)*	2399	5.04	14th (HH-2) Gear			202 *(94.2)*	62 *(16.7)*	70 *(21.1)*	28.960 *(97.794)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-28; 6; 16 *(110)*	Two 18.4-28; 6; 16 *(110)*
Ballast	—Liquid (each)	803 lb *(364 kg)*	None
	—Cast Iron (each)	480 lb *(218 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.2-24; 6; 18 *(125)*	Two 11.2-24; 6; 18 *(125)*
Ballast	—Liquid (each)	242 lb *(110 kg)*	None
	—Cast Iron (each)	240 lb *(109 kg)*	None
Height of Drawbar		21 in *(535 mm)*	21 in *(535 mm)*
Static Weight with Operator	—Rear	6100 lb *(2767 kg)*	3535 lb *(1603 kg)*
	—Front	3410 lb *(1547 kg)*	2445 lb *(1109 kg)*
	—Total	9510 lb *(4314 kg)*	5980 lb *(2712 kg)*

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1349.**

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Kubota M7500DT Diesel

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