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Test 1498: Kubota M6950DT and M6950 Diesel 12-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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NEBRASKA TRACTOR TEST 1498 — KUBOTA M6950DT DIESEL ALSO KUBOTA M6950 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb	

MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—Two Hours (PTO Speed—637 rpm)								
66.44 (49.54)	2400	4.123 (15.607)	0.434 (0.264)	16.11 (3.174)	186 (85.4)	69 (20.6)	75 (23.8)	28.980 (97.861)

Standard Power take-off Speed (540 rpm)—One Hour								
63.96 (47.69)	2036	3.767 (14.260)	0.412 (0.251)	16.98 (3.344)	192 (88.7)	69 (20.4)	75 (23.7)	28.980 (97.861)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

57.37 (42.78)	2436	3.558 (13.468)	0.434 (0.264)	16.12 (3.176)	180 (82.2)	68 (20.3)	74 (23.6)	.....
0.00 (0.00)	2537	1.269 (4.804)	.....	.....	170 (76.7)	69 (20.6)	75 (23.9)	.....
29.30 (21.85)	2492	2.341 (8.862)	0.559 (0.340)	12.52 (2.466)	178 (80.8)	70 (20.8)	76 (24.4)	.....
66.19 (49.36)	2400	4.081 (15.448)	0.431 (0.263)	16.22 (3.195)	185 (85.0)	69 (20.6)	76 (24.2)	.....
14.79 (11.03)	2514	1.783 (6.749)	0.844 (0.513)	8.29 (1.634)	175 (79.4)	70 (20.8)	75 (23.9)	.....
43.56 (32.48)	2468	2.902 (10.985)	0.466 (0.284)	15.01 (2.957)	178 (81.1)	69 (20.6)	75 (23.9)	.....
Av 35.20 Av (26.25)	2474	2.656 (10.054)	0.528 (0.321)	13.26 (2.611)	178 (80.9)	69 (20.6)	75 (24.0)	28.980 (97.861)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 8th (C-2) Gear											
55.50 (41.39)	4154 (18.48)	5.01 (8.06)	2400	8.05	4.044 (15.308)	0.510 (0.310)	13.72 (2.704)	185 (84.7)	50 (9.7)	56 (13.1)	29.270 (98.840)
75% of Pull at Maximum Power—Ten Hours 8th (C-2) Gear											
44.55 (33.22)	3179 (14.14)	5.25 (8.46)	2450	5.56	3.355 (12.701)	0.527 (0.321)	13.28 (2.615)	183 (83.8)	59 (15.1)	63 (17.4)	28.862 (97.463)
50% of Pull at Maximum Power—Two Hours 8th (C-2) Gear											
30.67 (22.87)	2121 (9.43)	5.42 (8.73)	2480	3.68	2.708 (10.251)	0.618 (0.376)	11.33 (2.232)	178 (81.1)	50 (9.7)	55 (12.8)	28.815 (97.304)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D-1) Gear											
30.69 (22.88)	2121 (9.43)	5.43 (8.73)	1436	3.61	2.101 (7.952)	0.479 (0.291)	14.61 (2.878)	182 (83.3)	49 (9.2)	56 (13.3)	28.850 (97.422)

MAXIMUM POWER IN SELECTED GEARS

41.49 (30.94)	6517 (28.99)	2.39 (3.84)	2445	14.81	5th (B-2) Gear			183 (83.9)	53 (11.7)	57 (13.9)	28.780 (97.186)
51.97 (38.76)	5917 (26.32)	3.29 (5.30)	2398	12.27	6th (B-3) Gear			184 (84.4)	51 (10.6)	56 (13.3)	28.780 (97.186)
54.95 (40.97)	5435 (24.17)	3.79 (6.10)	2398	11.38	7th (C-1) Gear			184 (84.4)	49 (9.4)	54 (12.2)	29.320 (99.009)
56.74 (42.31)	4239 (18.86)	5.02 (8.08)	2399	7.90	8th (C-2) Gear			184 (84.4)	48 (8.9)	53 (11.7)	29.330 (99.043)
55.73 (41.56)	2977 (13.24)	7.02 (11.30)	2398	5.55	9th (C-3) Gear			184 (84.4)	49 (9.4)	55 (12.8)	29.300 (98.942)
55.41 (41.32)	2309 (10.27)	9.00 (14.48)	2399	4.27	10th (D-1) Gear			184 (84.2)	49 (9.4)	55 (12.8)	29.290 (98.908)

Department of Agricultural Engineering

Dates of Test: September 27 to October 13, 1983

Manufacturer: KUBOTA LTD, 2-47 Shikitsu higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 47.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8404 **Fuel weight** 6.998 lbs/gal (0.839 kg/l) **Oil** SAE 20-20W **API service classification** SE-SF, CC-CD **To motor** 2.654 gal (10.048 l) **Drained from motor** 2.481 gal (9.391 l) **Transmission and hydraulic lubricant** Shell Donax TD or equivalent **Front axle lubricant** SAE 80/90 gear oil **Total time engine was operated** 40.0 hours.

ENGINE: Make Kubota Diesel **Type** four cylinder vertical **Serial No.** V4000-2A-20060 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.13" × 4.53" (105 mm × 115 mm) **Compression ratio** 17 to 1 **Displacement** 243 cu in (3983 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper element and water separator **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** M6950DTF-U50093 **Tread width** rear 59.8" (1520 mm) to 79.5" (2020 mm) front 60.6" (1540 mm) to 68.5" (1740 mm) **Wheel base** 89.0" (2260 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 38.0" (965 mm) Vertical distance above roadway 39.4" (1002 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 1.0 (1.6) second 1.3 (2.1) third 1.8 (2.8) fourth 2.2 (3.6) fifth 2.8 (4.5) sixth 3.8 (6.2) seventh 4.4 (7.0) eighth 5.6 (9.0) ninth 7.6 (12.2) tenth 9.6 (15.5) eleventh 12.2 (19.7) twelfth 16.7 (26.9) reverse 0.7 (1.2), 1.6 (2.6), 3.2 (5.1), 7.0 (11.2) **Clutch** single plate dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145" (3.7 m) left 145" (3.7 m) (on concrete surface without brake) right 185" (4.7 m) left 185" (4.7 m) **Turning space diameter** (on concrete surface with brake applied) right 307" (7.8 m) left 307" (7.8 m) (on concrete surface without brake) right 386" (9.8 m) left 386" (9.8 m) **Power take-off** 540 rpm at 2036 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 8th (C-2) GEAR

Crankshaft Speed rpm	2399	2166	1913	1681	1432	1196	955
Pull—lbs (kN)	4239 (18.86)	4700 (20.91)	4995 (22.22)	5143 (22.88)	5216 (23.20)	5232 (23.27)	5054 (22.48)
Increase in Pull %	0	11	18	21	23	23	19
Power—Hp (kW)	56.74 (42.31)	56.15 (41.87)	52.22 (38.94)	46.95 (35.01)	40.49 (30.19)	33.88 (25.26)	26.27 (19.59)
Speed—Mph (km/h)	5.02 (8.08)	4.48 (7.21)	3.92 (6.31)	3.42 (5.51)	2.91 (4.68)	2.43 (3.91)	1.95 (3.14)
Slip %	7.90	8.97	9.79	10.25	10.48	10.71	10.14

TRACTOR SOUND LEVEL WITHOUT CAB		Front Wheel Drive dB(A) Disengaged dB(A)
Maximum Available Power—Two Hours		96.5
75% of Pull at Maximum Power—Ten Hours		96.0
50% of Pull at Maximum Power—Two Hours		94.0
50% of Pull at Reduced Engine Speed—Two Hours		88.5
Bystander in 12th (D-3) gear		87.0

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	air wet bulb	dry bulb	
Maximum Available Power—Two Hours 8th (C-2) Gear											
55.16 (41.14)	3966 (17.64)	5.22 (8.40)	2400	5.76	4.044 (15.308)	0.513 (0.312)	13.64 (2.687)	184 (84.4)	50 (10.0)	56 (13.3)	29.260 (98.807)

MAXIMUM POWER IN SELECTED GEARS

42.80 (31.92)	8465 (37.65)	1.90 (3.05)	2440	14.96	4th (B-1) Gear	183 (83.9)	55 (12.8)	57 (13.9)	28.770 (97.152)
56.41 (42.06)	4063 (18.07)	5.21 (8.38)	2398	5.89	8th (C-2) Gear	184 (84.4)	48 (8.9)	53 (11.7)	29.310 (98.975)

TIRES, BALLAST AND WEIGHT

Rear Tires			With Ballast	Without Ballast
Ballast	—No., size, ply & psi (kPa)		Two 18.4-28; 6; 16 (110)	Two 18.4-28; 6; 16 (110)
	—Liquid (each)		598 lb (271 kg)	None
	—Cast Iron (each)		392 lb (178 kg)	None
Front Tires			With Ballast	Without Ballast
Ballast	—No., size, ply & psi (kPa)		Two 11.2-24; 6; 26 (180)	Two 11.2-24; 6; 26 (180)
	—Liquid (each)		195 lb (89 kg)	None
	—Cast Iron (each)		80 lb (36 kg)	None
Height of Drawbar			16 in (405 mm)	16 in (405 mm)
Static Weight with Operator—Rear			6070 lb (2753 kg)	4090 lb (1855 kg)
—Front			3505 lb (1590 kg)	2955 lb (1340 kg)
—Total			9575 lb (4343 kg)	7045 lb (3195 kg)



Kubota M6950DT Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Irwin T. Omtvedt, Dean and Director

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 145°F (62.8°C). Six gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1498.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers