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## Test 1497: Kubota M5950DT and M5950 Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1497 — KUBOTA M5950DT DIESEL ALSO KUBOTA M5950 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—643 rpm)									
58.00 (43.25)	2400	3.637 (13.768)	0.439 (0.267)	15.95 (3.141)	183 (83.7)	66 (19.2)	75 (24.0)	28.740 (97.051)	
Standard Power take-off Speed (540 rpm)—One Hour									
52.81 (39.38)	2017	3.092 (11.704)	0.410 (0.249)	17.08 (3.365)	181 (82.7)	66 (19.1)	75 (23.9)	28.730 (97.017)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
50.33 (37.53)	2451	3.074 (11.636)	0.427 (0.260)	16.37 (3.225)	178 (80.8)	66 (18.9)	75 (23.9)	..... .....	
0.00 (0.00)	2539	1.162 (4.399)	..... .....	..... .....	166 (74.7)	66 (18.9)	75 (23.9)	..... .....	
25.65 (19.13)	2497	1.938 (7.336)	0.529 (0.322)	13.23 (2.608)	170 (76.7)	66 (18.9)	75 (23.9)	..... .....	
58.00 (43.25)	2400	3.648 (13.809)	0.440 (0.268)	15.90 (3.132)	183 (83.9)	66 (18.9)	75 (23.9)	..... .....	
12.95 (9.66)	2522	1.492 (5.648)	0.806 (0.490)	8.68 (1.710)	168 (75.3)	66 (18.9)	75 (23.9)	..... .....	
38.09 (28.40)	2472	2.456 (9.297)	0.451 (0.275)	15.51 (3.055)	176 (79.7)	66 (18.9)	75 (23.9)	..... .....	
Av Av	30.84 (23.00)	2480	2.295 (8.688)	0.521 (0.317)	13.44 (2.647)	173 (78.5)	66 (18.9)	75 (23.9)	28.750 (97.084)

## 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											
48.15 (35.91)	3548 (15.78)	5.09 (8.19)	2400	7.23	3.530 (13.361)	0.513 (0.312)	13.64 (2.687)	182 (83.3)	59 (14.7)	71 (21.4)	28.999 (97.895)
75% of Pull at Maximum Power—Ten Hours 8th (C-2) Gear											
38.66 (28.83)	2721 (12.10)	5.33 (8.57)	2452	4.93	2.857 (10.813)	0.517 (0.315)	13.53 (2.666)	180 (82.1)	59 (14.8)	63 (17.4)	28.885 (97.540)
50% of Pull at Maximum Power—Two Hours 8th (C-2) Gear											
26.36 (19.66)	1814 (8.07)	5.45 (8.77)	2474	3.66	2.229 (8.438)	0.592 (0.360)	11.83 (2.330)	174 (78.9)	55 (12.8)	66 (18.9)	29.050 (98.097)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D-1) Gear											
26.37 (19.66)	1815 (8.07)	5.45 (8.77)	1431	3.50	1.793 (6.789)	0.476 (0.290)	14.70 (2.896)	179 (81.7)	59 (14.7)	74 (23.1)	28.985 (97.878)
MAXIMUM POWER IN SELECTED GEARS											
36.99 (27.59)	5749 (25.57)	2.41 (3.88)	2453	14.82	5th (B-2) Gear			173 (78.3)	45 (7.2)	49 (9.4)	29.260 (98.807)
47.99 (35.79)	5432 (24.16)	3.31 (5.33)	2401	12.50	6th (B-3) Gear			180 (82.2)	46 (7.8)	49 (9.4)	29.270 (98.840)
48.54 (36.20)	4726 (21.02)	3.85 (6.20)	2398	10.38	7th (C-1) Gear			181 (82.8)	55 (12.8)	63 (17.2)	28.970 (97.827)
49.29 (36.76)	3628 (16.14)	5.09 (8.20)	2400	7.11	8th (C-2) Gear			181 (82.8)	53 (11.7)	60 (15.6)	28.960 (97.794)
48.81 (36.40)	2569 (11.43)	7.12 (11.47)	2401	4.84	9th (C-3) Gear			181 (82.8)	57 (13.9)	66 (18.9)	28.970 (97.827)
47.80 (35.64)	1970 (8.76)	9.10 (14.65)	2397	3.72	10th (D-1) Gear			182 (83.3)	58 (14.4)	68 (20.0)	28.980 (97.861)

## Department of Agricultural Engineering

**Dates of Test:** September 26 to October 11, 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** 1.990 gal (7.535 l) **Drained from motor** 1.792 gal (6.785 l) **Transmission and hydraulic lubricant** Shell Donax TD or equivalent **Front axle lubricant** SAE 80/90 gear oil **Total time engine was operated** 45.0 hours.

**ENGINE:** Make Kubota Diesel Type three cylinder vertical **Serial No.** D3200-A-19386 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.29" × 4.53" (109 mm × 115 mm) **Compression ratio** 17 to 1 **Displacement** 196 cu in (3219 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.** M5950DTF-U50039 **Tread width** rear 55.9" (1420 mm) to 79.5" (2020 mm) front 55.9" (1420 mm) to 63.8" (1620 mm) **Wheel base** 83.3" (2115 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 36.3" (921 mm) Vertical distance above roadway 36.8" (935 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 (2.9) fourth 2.3 (3.6) fifth 2.9 (4.6) sixth 3.9 (6.3) seventh 4.5 (7.2) eighth 5.7 (9.2) ninth 7.8 (12.5) tenth 9.8 (15.8) eleventh 12.5 (20.1) twelfth 17.1 (27.5) reverse 0.8 (1.2), 1.6 (2.6), 3.3 (5.2), 7.1 (11.5) **Clutch** single plate dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 130" (3.3 m) left 130" (3.3 m) (on concrete surface without brake) right 158" (4.0 m) left 158" (4.0 m) **Turning space diameter** (on concrete surface with brake applied) right 276" (7.0 m) left 276" (7.0 m) (on concrete surface without brake) right 331" (8.4 m) left 331" (8.4 m) **Power take-off** 540 rpm at 2017 engine rpm.

**REPAIRS and ADJUSTMENTS:** No repairs or adjustments.

### LUGGING ABILITY IN 8th (C-2) GEAR

Crankshaft Speed rpm	2400	2163	1914	1684	1436	1198
Pull—lbs (kN)	3628 (16.14)	3808 (16.94)	4090 (18.19)	4330 (19.26)	4512 (20.07)	4509 (20.06)
Increase in Pull %	0	5	13	19	24	24
Power—Hp (kW)	49.29 (36.76)	46.39 (34.60)	43.76 (32.63)	40.43 (30.15)	35.71 (26.63)	29.78 (22.21)
Speed—Mph (km/h)	5.09 (8.20)	4.57 (7.35)	4.01 (6.46)	3.50 (5.63)	2.97 (4.78)	2.48 (3.99)
Slip %	7.11	7.63	8.21	9.11	9.44	9.56

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	97.5	97.5
75% of Pull at Maximum Power—Ten Hours		97.0
50% of Pull at Maximum Power—Two Hours		96.5
50% of Pull at Reduced Engine Speed—Two Hours		91.0
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	wet bulb	Air dry bulb	
<b>Maximum Available Power—Two Hours 8th (C-2) Gear</b>											
47.51 (35.43)	3340 (14.86)	5.33 (8.58)	2400	4.68	3.494 (13.226)	0.515 (0.313)	13.60 (2.679)	183 (83.6)	59 (14.7)	74 (23.3)	28.975 (97.844)

### MAXIMUM POWER IN SELECTED GEARS

42.66 (31.81)	8350 (37.14)	1.92 (3.08)	2434	14.90	4th (B-1) Gear			175 (79.4)	45 (7.2)	48 (8.9)	29.240 (98.739)
49.13 (36.63)	3457 (15.38)	5.33 (8.58)	2400	4.65	8th (C-2) Gear			181 (82.8)	52 (11.1)	56 (13.3)	28.950 (97.760)

### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Rear Tires</b>		
—No., size, ply & psi (kPa)	Two 16.9-28; 6; 16 (110)	Two 16.9-28; 6; 16 (110)
Ballast	432 lb (196 kg)	None
—Liquid (each)	360 lb (163 kg)	None
—Cast Iron (each)		
<b>Front Tires</b>		
—No., size, ply & psi (kPa)	Two 9.5-24; 6; 30 (205)	Two 9.5-24; 6; 30 (205)
Ballast	173 lb (79 kg)	None
—Liquid (each)	585 lb (265 kg)	None
—Cast Iron (each)		
<b>Height of Drawbar</b>	15.5 in (395 mm)	15.5 in (395 mm)
<b>Static Weight with Operator—Rear</b>	5110 lb (2318 kg)	3525 lb (1599 kg)
—Front	4110 lb (1864 kg)	2595 lb (1177 kg)
—Total	9220 lb (4182 kg)	6120 lb (2776 kg)

**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). During inspection it was found that the exhaust valves of cylinders 1 and 2 were pitted.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1497.

LOUIS I. LEVITICUS  
Engineer-in-Charge

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



**Kubota M5950DT Diesel**

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