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1-1-1983

## Test 1495: Kubota M4050DT and M4050 Diesel 8-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1495 — KUBOTA M4050DT DIESEL ALSO KUBOTA M4050 DIESEL 8 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—640 rpm)									
45.74 (34.11)	2602	3.156 (11.947)	0.483 (0.294)	14.49 (2.855)	194 (90.3)	68 (20.2)	76 (24.2)	29.017 (97.985)	
Standard Power take-off Speed (540 rpm)—One Hour									
42.10 (31.39)	2196	2.796 (10.584)	0.465 (0.283)	15.06 (2.966)	197 (91.9)	70 (21.1)	78 (25.8)	28.985 (97.878)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
39.44 (29.41)	2636	2.749 (10.406)	0.488 (0.297)	14.35 (2.826)	193 (89.4)	70 (21.1)	80 (26.7)	..... .....	
0.00 (0.00)	2771	1.016 (3.846)	..... .....	..... .....	180 (82.5)	70 (21.1)	80 (26.9)	..... .....	
20.19 (15.06)	2701	1.883 (7.128)	0.652 (0.397)	10.73 (2.113)	186 (85.3)	70 (21.1)	81 (27.2)	..... .....	
45.17 (33.68)	2600	3.143 (11.898)	0.487 (0.296)	14.37 (2.831)	206 (96.9)	70 (20.8)	80 (26.9)	..... .....	
10.25 (7.64)	2740	1.415 (5.356)	0.966 (0.588)	7.25 (1.426)	178 (81.1)	70 (21.1)	81 (27.2)	..... .....	
29.89 (22.29)	2666	2.320 (8.782)	0.543 (0.330)	12.88 (2.538)	188 (86.4)	70 (21.1)	80 (26.9)	..... .....	
Av Av	24.16 (18.02)	2686 (7.904)	2.088 (0.368)	0.605 (0.368)	11.57 (2.280)	189 (86.9)	70 (21.1)	81 (27.0)	28.980 (97.611)

## 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	wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 6th (H-2) Gear											
36.02 (26.86)	2261 (10.06)	5.97 (9.62)	2600	7.32	3.087 (11.687)	0.600 (0.365)	11.67 (2.298)	193 (89.4)	65 (18.3)	78 (25.3)	28.875 (97.507)
75% of Pull at Maximum Power—Ten Hours 6th (H-2) Gear											
29.29 (21.84)	1767 (7.86)	6.22 (10.00)	2642	5.11	2.543 (9.626)	0.607 (0.369)	11.52 (2.269)	189 (87.3)	57 (13.7)	63 (16.9)	28.728 (97.010)
50% of Pull at Maximum Power—Two Hours 6th (H-2) Gear											
20.26 (15.10)	1178 (5.24)	6.45 (10.38)	2690	3.31	2.051 (7.765)	0.708 (0.431)	9.88 (1.945)	187 (85.8)	54 (11.9)	56 (13.1)	28.815 (97.304)
50% of Pull at Reduced Engine Speed—Two Hours 7th (H-3) Gear											
20.24 (15.09)	1178 (5.24)	6.44 (10.37)	1595	3.25	1.651 (6.250)	0.571 (0.347)	12.26 (2.415)	186 (85.3)	57 (13.9)	64 (17.5)	28.790 (97.220)
MAXIMUM POWER IN SELECTED GEARS											
28.58 (21.31)	4259 (18.94)	2.52 (4.05)	2642	14.70	3rd (L-3) Gear			191 (88.3)	56 (13.3)	59 (15.0)	28.810 (97.287)
36.61 (27.30)	3984 (17.72)	3.45 (5.55)	2599	13.08	4th (L-4) Gear			202 (94.4)	56 (13.3)	60 (15.6)	28.810 (97.287)
37.31 (27.83)	2969 (13.21)	4.71 (7.58)	2600	9.58	5th (H-1) Gear			191 (88.1)	62 (16.7)	73 (22.8)	28.860 (97.456)
37.61 (28.05)	2356 (10.48)	5.99 (9.64)	2598	7.05	6th (H-2) Gear			189 (87.2)	61 (16.1)	72 (22.2)	28.870 (97.490)
LUGGING ABILITY IN 6th (H-2) GEAR											
Crankshaft Speed rpm			2598	2342	2080	1819	1556	1299	1031		
Pull—lbs (kN)			2356 (10.48)	2428 (10.80)	2749 (12.23)	2901 (12.90)	2972 (13.22)	2993 (13.31)	2832 (12.60)		
Increase in Pull %			0	3	17	23	26	27	20		
Power—Hp (kW)			37.61 (28.05)	34.81 (25.96)	34.58 (25.78)	31.68 (23.63)	27.73 (20.68)	23.29 (17.36)	17.59 (13.12)		
Speed—Mph (km/h)			5.99 (9.64)	5.38 (8.65)	4.72 (7.59)	4.10 (6.59)	3.50 (5.63)	2.92 (4.70)	2.33 (3.75)		
Slip %			7.05	7.43	8.60	9.32	9.32	9.43	9.01		

Department of Agricultural Engineering

Dates of Test: September 26 to October 7, 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°) 0.8403 Fuel weight 6.996 lbs/gal (0.838 kg/l) Oil SAE 20-20W API service classification SE-SF, CC-CD To motor 2.609 gal (9.875 l) Drained from motor 2.231 gal (8.445 l) Transmission and hydraulic lubricant Shell Donax TD or equivalent Front axle lubricant SAE 80/90 gear oil Total time engine was operated 46.5 hours.

**ENGINE:** Make Kubota Diesel Type six cylinder vertical Serial No. S2600-AL-20262 Crankshaft lengthwise Rated rpm 2600 Bore and stroke 3.23" × 3.23" (82 mm × 82 mm) Compression ratio 21 to 1 Displacement 158.5 cu in (2598 ml) Starting system 12 volt Lubrication pressure Air cleaner one paper element Oil filter one full flow paper cartridge Fuel filter one paper cartridge Muffler vertical Cooling medium temperature control one thermostat.

**CHASSIS:** Type front wheel assist Serial No. M4050DT-50355 Tread width rear 59.1" (1500 mm) to 74.8" (1900 mm) front 58.3" (1480 mm) Wheel base 79.5" (2020 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 32.6" (829 mm) Vertical distance above roadway 35.0" (890 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 1.4 (2.2) second 1.7 (2.8) third 2.9 (4.7) fourth 4.0 (6.4) fifth 5.2 (8.4) sixth 6.5 (10.4) seventh 10.9 (17.5) eighth 14.9 (23.9) reverse 1.9 (3.0), 7.0 (11.2) Clutch single plate 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 129" (3.3 m) left 129" (3.3 m) (on concrete surface without brake) right 165" (4.2 m) left 165" (4.2 m) Turning space diameter (on concrete surface with brake applied) right 280" (7.1 m) left 280" (7.1 m) (on concrete surface without brake) right 343" (8.7 m) left 343" (8.7 m) Power take-off 540 rpm at 2196 engine rpm.

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

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	93.0	92.5
75% of Pull at Maximum Power—Ten Hours		93.0
50% of Pull at Maximum Power—Two Hours		93.0
50% of Pull at Reduced Engine Speed—Two Hours		88.5
Bystander in 8th (H-4) gear		80.5

### 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	
Maximum Available Power—Two Hours 6th (H-2) Gear											
36.20 (26.99)	2195 (9.76)	6.19 (9.95)	2600	4.47	3.016 (11.417)	0.583 (0.355)	12.00 (2.364)	199 (92.5)	68 (20.0)	83 (28.1)	28.820 (97.321)

### MAXIMUM POWER IN SELECTED GEARS

24.45 (18.23)	6070 (27.00)	1.51 (2.43)	2667	14.93	2nd (L-2) Gear			192 (88.9)	55 (12.8)	58 (14.4)	28.820 (97.321)
37.74 (28.14)	2871 (12.77)	4.93 (7.93)	2600	5.74	5th (H-1) Gear			190 (87.5)	59 (15.0)	67 (19.4)	28.860 (97.456)
38.02 (28.35)	2310 (10.27)	6.17 (9.94)	2597	4.61	6th (H-2) Gear			190 (87.5)	61 (16.1)	72 (22.2)	28.870 (97.490)

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Two 13.6-28; 6; 22 (150)	Two 13.6-28; 6; 22 (150)
	—Liquid (each)	260 lb (118 kg)	None
	—Cast Iron (each)	400 lb (181 kg)	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 8.3-20; 6; 34 (235)	Two 8.3-20; 6; 34 (235)
	—Liquid (each)	108 lb (49 kg)	None
	—Cast Iron (each)	370 lb (168 kg)	None
<b>Height of Drawbar</b>		14.5 in (370 mm)	14.5 in (370 mm)
<b>Static Weight with Operator</b> —Rear		4280 lb (1942 kg)	2960 lb (1343 kg)
	—Front	2935 lb (1331 kg)	1980 lb (898 kg)
	—Total	7215 lb (3273 kg)	4940 lb (2241 kg)



**Kubota M4050DT Diesel**

**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 136°F (57.9°C). Four 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. 1495.

LOUIS I. LEVITICUS  
Engineer-in-Charge

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