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## Test 1557: Kubota M8950DT and M8950 Diesel 24-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA TRACTOR TEST 1557—KUBOTA M8950DT DIESEL ALSO KUBOTA M8950 DIESEL 24 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 —1005 rpm)									
85.63 (63.85)	2400	5.282 (19.994)	0.430 (0.262)	16.21 (3.194)	191 (88.6)	56 (13.2)	75 (23.8)	28.93 (97.68)	
VARYING POWER AND FUEL CONSUMPTION — Two Hours									
74.22 (55.35)	2445	4.766 (18.042)	0.448 (0.272)	15.57 (3.068)	186 (85.6)	56 (13.3)	75 (23.6)	..... .....	
0.00 (0.00)	2552	1.570 (5.944)	..... .....	..... .....	179 (81.4)	55 (12.8)	75 (23.6)	..... .....	
38.03 (28.36)	2508	3.157 (11.952)	0.579 (0.352)	12.04 (2.372)	182 (83.1)	56 (13.3)	75 (23.9)	..... .....	
84.82 (63.25)	2401	5.287 (20.013)	0.435 (0.264)	16.04 (3.160)	192 (88.9)	57 (13.9)	77 (25.0)	..... .....	
19.17 (14.29)	2530	2.383 (9.021)	0.867 (0.527)	8.04 (1.585)	180 (82.2)	55 (12.8)	74 (23.3)	..... .....	
56.38 (42.04)	2479	3.949 (14.948)	0.489 (0.297)	14.28 (2.812)	183 (83.9)	56 (13.3)	76 (24.2)	..... .....	
Av Av	45.43 (33.88)	2486	3.519 (13.320)	0.540 (0.329)	12.91 (2.544)	184 (84.2)	56 (13.2)	75 (23.9)	28.92 (97.67)

## 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 15th (B-4-L) Gear											
67.44 (50.29)	5561 (24.73)	4.55 (7.32)	2400	9.60	5.205 (19.703)	0.538 (0.327)	12.96 (2.553)	187 (85.8)	53 (11.4)	65 (18.1)	28.65 (96.75)
75% of Pull at Maximum Power — Ten Hours 15th (B-4-L) Gear											
55.06 (41.06)	4251 (18.91)	4.86 (7.82)	2471	6.32	4.449 (16.843)	0.564 (0.343)	12.37 (2.438)	185 (84.8)	42 (5.6)	46 (7.6)	28.39 (95.88)
50% of Pull at Maximum Power — Two Hours 15th (B-4-L) Gear											
38.04 (28.37)	2834 (12.61)	5.03 (8.10)	2505	4.24	3.671 (13.895)	0.673 (0.409)	10.36 (2.042)	183 (83.9)	39 (3.6)	44 (6.7)	28.56 (96.44)
50% of Pull at Reduced Engine Speed — Two Hours 19th (C-2-L) Gear											
38.04 (28.36)	2834 (12.60)	5.03 (8.10)	1583	4.13	2.638 (9.987)	0.484 (0.294)	14.42 (2.840)	183 (83.6)	39 (3.9)	48 (8.9)	28.55 (96.41)
MAXIMUM POWER IN SELECTED GEARS											
53.69 (40.03)	7974 (35.47)	2.52 (4.06)	2459	14.85	11th (B-2-L) Gear			184 (84.4)	39 (3.9)	45 (7.2)	28.54 (96.38)
66.25 (49.40)	7855 (34.94)	3.16 (5.09)	2400	14.26	12th (B-3-L) Gear			186 (85.3)	40 (4.4)	46 (7.8)	28.54 (96.38)
66.22 (49.38)	7326 (32.59)	3.39 (5.46)	2399	12.38	13th (B-2-H) Gear			186 (85.3)	40 (4.4)	46 (7.8)	28.54 (96.38)
68.12 (50.79)	5712 (25.41)	4.47 (7.20)	2399	9.30	14th (B-3-H) Gear			186 (85.3)	47 (8.3)	57 (13.9)	28.77 (97.15)
69.08 (51.51)	5668 (25.21)	4.57 (7.36)	2400	9.17	15th (B-4-L) Gear			186 (85.3)	52 (11.1)	63 (17.2)	28.70 (96.92)
70.97 (52.92)	4907 (21.83)	5.42 (8.73)	2399	7.67	16th (C-1-L) Gear			186 (85.3)	50 (10.0)	61 (16.1)	28.74 (97.05)
68.70 (51.23)	4076 (18.13)	6.32 (10.17)	2401	6.06	17th (B-4-H) Gear			185 (85.0)	49 (9.4)	59 (15.0)	28.77 (97.15)
69.86 (52.10)	3523 (15.67)	7.44 (11.97)	2397	5.34	18th (C-1-H) Gear			185 (85.0)	49 (9.4)	59 (15.0)	28.76 (97.12)
71.13 (53.04)	3541 (15.75)	7.53 (12.12)	2398	5.20	19th (C-2-L) Gear			185 (85.0)	50 (10.0)	60 (15.6)	28.75 (97.08)
68.27 (50.91)	2628 (11.69)	9.74 (15.68)	2399	3.87	20th (C-3-L) Gear			186 (85.3)	50 (10.0)	60 (15.6)	28.74 (97.05)

Department of Agricultural Engineering

Dates of Test: March 26 to April 8, 1985

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

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 48.3 (rating taken from oil company's inspection data) Specific gravity converted to 60/60°F (15/15°C) 0.8376 Fuel weight 6.974 lbs/gal (0.836 kg/l) Oil SAE 20W API service classification CC, CD, SE To motor 3.427 gal (12.971 l) Drained from motor 2.765 gal (10.467 l) Transmission and hydraulic lubricant Shell Donax TD or equivalent Front axle lubricant SAE 80/90 gear oil Total time engine was operated 44.5 hours.

**ENGINE:** Make Kubota Diesel Type four cylinder vertical with turbocharger Serial No. V4300-TA-32599 Crankshaft lengthwise Rated rpm 2400 Bore and stroke 4.29" × 4.53" (109 mm × 115 mm) Compression ratio 17 to 1 Displacement 262 cu in (4292 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, radiator for transmission and hydraulic oil Fuel filter one paper cartridge Muffler vertical Cooling medium temperature control one thermostat.

**CHASSIS:** Type front wheel assist Serial No. U50425 Tread width rear 59.8" (1520 mm) to 79.5" (2020 mm) front 60.6" (1540 mm) to 68.5" (1740 mm) Wheel base 97.2" (2470 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" (895 mm) Vertical distance above roadway 46.7" (1185 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 with partial (2) range operator controlled powershift Advertised speeds mph (km/h) first 0.7 (1.1) second 0.9 (1.4) third 0.9 (1.5) fourth 1.2 (1.9) fifth 1.2 (1.9) sixth 1.5 (2.5) seventh 1.6 (2.5) eighth 2.1 (3.4) ninth 2.1 (3.4) tenth 2.9 (4.6) eleventh 2.9 (4.7) twelfth 3.7 (5.9) thirteenth 3.9 (6.2) fourteenth 4.9 (7.9) fifteenth 5.0 (8.1) sixteenth 5.9 (9.5) seventeenth 6.7 (10.8) eighteenth 7.9 (12.6) nineteenth 8.0 (12.8) twentieth 10.1 (16.3) twenty-first 10.6 (17.1) twenty-second 13.6 (21.8) twenty-third 13.8 (22.3) twenty-fourth 18.5 (29.8) reverse 2.2 (3.5), 2.9 (4.7), 3.0 (4.8), 3.8 (6.1), 4.0 (6.4), 5.1 (8.2), 5.2 (8.3), 6.9 (11.1), Clutch single dry disc operated by foot pedal Brakes multiple wet disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turn-in radius (on concrete surface with brake ap-

# LUGGING ABILITY IN 15th (B-4-L) GEAR

Crankshaft Speed rpm	2400	2163	1913	1682	1440	1188
Pull—lbs (kN)	5668 (25.21)	6197 (27.57)	6786 (30.19)	7048 (31.35)	7244 (32.22)	7051 (31.36)
Increase in Pull %	0	9	20	24	28	24
Power—Hp (kW)	69.08 (51.51)	67.08 (50.02)	63.74 (47.53)	57.54 (42.91)	50.02 (37.30)	40.43 (30.15)
Speed—Mph (km/h)	4.57 (7.36)	4.06 (6.53)	3.52 (5.67)	3.06 (4.93)	2.59 (4.17)	2.15 (3.46)
Slip %	9.17	10.48	12.26	13.12	14.20	13.73

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	79.5	78.0
75% of Pull at Maximum Power—Ten Hours		79.5
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		75.5
Bystander in 24th (C-4-H) gear		86.5

# DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption 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 15th (B-4-L) Gear											
68.92 (51.39)	5452 (24.25)	4.74 (7.63)	2400	6.65	5.219 (19.758)	0.528 (0.321)	13.20 (2.601)	187 (86.1)	54 (11.9)	67 (19.2)	28.57 (96.48)

# MAXIMUM POWER IN SELECTED GEARS

52.12 (38.86)	10364 (46.10)	1.89 (3.03)	2465	14.73	9th (B-1-L) Gear		184 (84.4)	39 (3.9)	45 (7.2)	28.54 (96.38)
68.29 (50.93)	5514 (24.53)	4.64 (7.47)	2400	6.62	14th (B-3-H) Gear		186 (85.3)	48 (8.9)	58 (14.4)	28.77 (97.15)
70.35 (52.46)	5562 (24.74)	4.74 (7.63)	2400	6.54	15th (B-4-L) Gear		188 (86.4)	53 (11.7)	66 (18.9)	28.55 (96.41)
70.89 (52.86)	4748 (21.12)	5.60 (9.01)	2399	5.54	16th (C-1-L) Gear		186 (85.3)	51 (10.6)	62 (16.7)	28.73 (97.02)

# TIRES, BALLAST AND WEIGHT

**Rear Tires** —No., size, ply & psi (kPa)  
**Ballast** —Liquid (each)  
—Cast Iron (each)

**Front Tires** —No., size, ply & psi (kPa)  
**Ballast** —Liquid (each)  
—Cast Iron (each)

**Height of Drawbar**

**Static Weight with Operator**—Rear  
—Front  
—Total

# With Ballast

Two 18.4-34; 6; 16 (110)  
780 lb (354 kg)  
None

Two 12.4-24; 8; 32 (220)  
None  
490 lb (222 kg)

22 in (560 mm)

7820 lb (3547 kg)  
4450 lb (2018 kg)  
12270 lb (5565 kg)

# Without Ballast

Two 18.4-34; 6; 16 (110)  
None  
None

Two 12.4-24; 8; 32 (220)  
None  
None

22 in (560 mm)

6260 lb (2839 kg)  
3470 lb (1574 kg)  
9730 lb (4413 kg)

plied) right 146" (3.7 m) left 146" (3.7 m)(on concrete surface without brake) right 177" (4.5 m) left 177" (4.5 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 370" (9.4 m) left 370" (9.4 m) **Power take-off** 540 rpm at 2035 engine rpm and 1005 rpm at 2400 engine rpm **Unladen tractor mass** 9555 lb (4334 kg).

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

**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 149°F (64.9°C). Ten gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. 1557, June 12, 1985.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

L. L. BASHFORD

T. L. THOMPSON

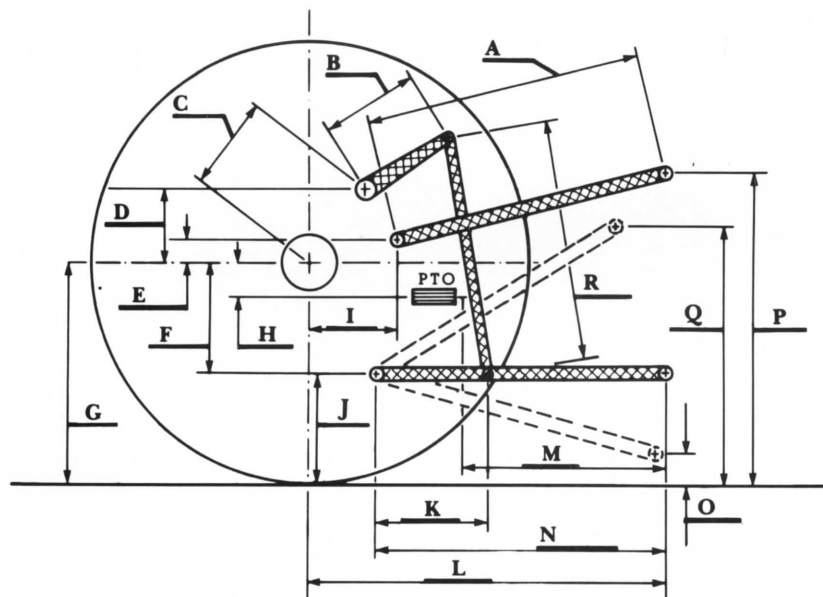
Board of Tractor Test Engineers

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2550	(17580)
Location	remote outlet	
Hydraulic oil temperature °F (°C)	164	(73)
Location	filter inlet	
	Maximum Lift Capacity	Lift Capacity for Transport
QUICK ATTACH	no	
CATEGORY	II	*not measured
LOAD lbs (kg)	4478	(2031)
TIME sec	1.74	
HITCH POINT MOVEMENT in (mm)		
Lowest position	13.2	(335)
Top of timed range	35.2	(894)
Highest position	** 36.1	(917)
LOAD CG MOVEMENT in (mm)		
Lowest position	12.9	(328)
Top of timed range	35.6	(904)
Highest position	36.6	(930)

\*Implement load capacity for transport purposes not specified by manufacturer.

\*\* The observed power range, 22.9 in. (582 mm) is less than the minimum power range for Cat II, 24 in. (610 mm) specified by ASAE Standard S217.10



Hitch Dimensions as Tested — No Load

	inch	mm
A	30.3	770
B	9.8	250
C	12.2	311
D	11.9	303
E	11.2	286
F	6.9	176
G	30.3	770
H	0.8	21
I	10.8	273
J	23.4	594
K	20.9	530
L	40.0	1015
M	23.4	594
N	35.4	900
O	8.0	203
P	42.4	1077
Q	33.4	848
R	27.9	709



Kubota M8950DT Diesel