5-22-1986

Test 1594: Kubota M4030DT and M4030 Diesel 8-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1594—KUBOTA M4030DT DIESEL
ALSO KUBOTA M4030 DIESEL
8 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 — 640 rpm)								
44.05 *(32.85)*	2600	2.650 *(10.033)*	0.422 *(0.257)*	16.62 *(3.274)*	183 *(83.8)*	68 *(19.9)*	75 *(23.8)*	28.82 *(97.32)*
Standard Power Take-off Speed (540 rpm) — One Hour								
44.08 *(32.87)*	2194	2.564 *(9.706)*	0.408 *(0.248)*	17.19 *(3.386)*	184 *(84.6)*	67 *(19.6)*	75 *(24.0)*	28.81 *(97.29)*
VARYING POWER AND FUEL CONSUMPTION — Two Hours								
37.69 *(28.11)*	2625	2.327 *(8.810)*	0.433 *(0.263)*	16.19 *(3.190)*	181 *(82.8)*	63 *(17.2)*	75 *(23.9)*	....
0.00 *(0.00)*	2732	0.830 *(3.142)*	....	....	160 *(71.1)*	63 *(16.9)*	75 *(23.6)*	....
19.09 *(14.24)*	2650	1.476 *(5.587)*	0.542 *(0.330)*	12.93 *(2.548)*	164 *(73.1)*	63 *(16.9)*	75 *(23.9)*	....
43.24 *(32.25)*	2600	2.576 *(9.750)*	0.418 *(0.254)*	16.79 *(3.307)*	183 *(83.9)*	63 *(16.9)*	75 *(23.9)*	....
9.66 *(7.21)*	2685	1.164 *(4.405)*	0.845 *(0.514)*	8.30 *(1.636)*	162 *(71.9)*	62 *(16.7)*	75 *(23.9)*	....
28.48 *(21.24)*	2637	1.874 *(7.094)*	0.461 *(0.281)*	15.20 *(2.994)*	170 *(76.7)*	62 *(16.4)*	75 *(23.9)*	....
Av 23.03 *Av (17.17)*	**2655**	**1.708** *(6.465)*	**0.520** *(0.316)*	**13.48** *(2.656)*	**170** *(76.6)*	**62** *(16.9)*	**75** *(23.8)*	**28.78** *(97.19)*

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 6th (H2) Gear											
35.93 *(26.79)*	2236 *(9.94)*	6.03 *(9.70)*	2599	7.49	2.603 *(9.852)*	0.508 *(0.309)*	13.80 *(2.719)*	186 *(85.3)*	66 *(18.9)*	78 *(25.3)*	28.68 *(96.83)*
75% of Pull at Maximum Power — Ten Hours 6th (H2) Gear											
28.54 *(21.29)*	1724 *(7.67)*	6.21 *(9.99)*	2631	5.86	2.209 *(8.362)*	0.543 *(0.330)*	12.92 *(2.545)*	179 *(81.6)*	60 *(15.4)*	61 *(16.2)*	28.79 *(97.21)*
50% of Pull at Maximum Power — Two Hours 6th (H2) Gear											
19.50 *(14.54)*	1150 *(5.12)*	6.36 *(10.23)*	2642	4.00	1.747 *(6.613)*	0.628 *(0.382)*	11.16 *(2.199)*	175 *(79.2)*	54 *(11.9)*	63 *(17.2)*	29.06 *(98.13)*
50% of Pull at Reduced Engine Speed — Two Hours 7th (H3) Gear											
19.48 *(14.53)*	1149 *(5.11)*	6.36 *(10.23)*	1563	3.62	1.455 *(5.506)*	0.524 *(0.319)*	13.39 *(2.638)*	178 *(81.1)*	55 *(12.8)*	69 *(20.6)*	29.02 *(98.00)*
MAXIMUM POWER IN SELECTED GEARS											
26.97 *(20.11)*	4005 *(17.82)*	2.53 *(4.06)*	2628	14.92	3rd (L3) Gear			168 *(75.3)*	49 *(9.4)*	55 *(12.8)*	29.05 *(98.10)*
34.97 *(26.08)*	3789 *(16.85)*	3.46 *(5.57)*	2600	13.66	4th (L4) Gear			171 *(76.9)*	51 *(10.6)*	58 *(14.4)*	29.06 *(98.13)*
36.53 *(27.24)*	2890 *(12.86)*	4.74 *(7.63)*	2596	9.86	5th (H1) Gear			185 *(85.0)*	65 *(18.3)*	75 *(23.9)*	28.66 *(96.78)*
36.91 *(27.52)*	2299 *(10.23)*	6.02 *(9.69)*	2599	7.59	6th (H2) Gear			185 *(85.0)*	67 *(19.4)*	78 *(25.6)*	28.67 *(96.81)*

LUGGING ABILITY IN 6th (H2) GEAR

Crankshaft Speed rpm	2599	2342	2079	1817	1553	1300
Pull—lbs *(kN)*	2299 *(10.23)*	2578 *(11.47)*	2778 *(12.36)*	2847 *(12.66)*	2857 *(12.71)*	2837 *(12.62)*
Increase in Pull %	0	12	21	24	24	23
Power—Hp *(kW)*	36.91 *(27.52)*	36.79 *(27.44)*	34.89 *(26.02)*	31.11 *(23.20)*	26.59 *(19.83)*	22.20 *(16.55)*
Speed—Mph *(km/h)*	6.02 *(9.69)*	5.35 *(8.61)*	4.71 *(7.58)*	4.10 *(6.59)*	3.49 *(5.62)*	2.93 *(4.72)*
Slip %	7.59	8.77	9.50	10.12	10.22	10.12

Department of Agricultural Engineering

Dates of Test: May 12 to 22, 1986

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

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.9 (rating taken from oil company's inspection data) **Specific gravity converted to 60/60°F *(15/15°C)*** 0.8422 **Fuel weight** 7.012 lbs/gal *(0.840 kg/l)* **Oil SAE** 10W-30 **API service classification** SF-SE-CC **To motor** 2.942 gal *(11.136 l)* **Drained from motor** 2.812 gal *(10.644 l)* **Transmission and final drive lubricant** Shell Donax TD or equivalent **Front axle lubricant** SAE 80/90 gear oil **Total time engine was operated** 39.5 hours.

ENGINE: Make Kubota Diesel **Type** six cylinder vertical **Serial No.** S2602-DI-A-40696 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.23″ × 3.23″ *(82 mm × 82 mm)* **Compression ratio** 19 to 1 **Displacement** 158.5 cu in *(2598 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **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.** M4030DT-50021 **Tread width** rear 59.3″ *(1506 mm)* to 74.8″ *(1900 mm)* front 55.1″ *(1400 mm)* **Wheel base** 79.1″ *(2010 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 32.5″ *(826 mm)* Vertical distance above roadway 32.8″ *(833 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 16.3 *(26.3)* reverse 1.9 *(3.0)*, 7.0 *(11.2)* **Clutch** single 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 126″ *(3.2 m)* left 126″ *(3.2 m)*(on concrete surface without brake) right 150″ *(3.8 m)* left 150″ *(3.8 m)* **Turning space diameter** (on concrete surface with brake applied) right 268″ *(6.8 m)* left 268″ *(6.8 m)*(on concrete surface without brake) right 311″ *(7.9 m)* left 311″ *(7.9 m)* **Power take-off** 540 rpm at 2194 engine rpm **Unladen tractor mass** 4785 lb *(2170 kg)*.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	94.0	94.0
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		90.5
Bystander in 8th (H4) gear		85.5

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 6th (H2) Gear											
36.53 *(27.24)*	2178 *(9.69)*	6.29 *(10.12)*	2598	4.78	2.617 *(9.906)*	0.502 *(0.306)*	13.96 *(2.750)*	186 *(85.6)*	66 *(18.9)*	79 *(26.1)*	28.69 *(96.88)*
MAXIMUM POWER IN SELECTED GEARS											
23.10 *(17.23)*	5673 *(25.23)*	1.53 *(2.46)*	2640	14.93	2nd (L2) Gear			164 *(73.1)*	47 *(8.3)*	52 *(11.1)*	29.05 *(98.10)*
36.74 *(27.40)*	2752 *(12.24)*	5.01 *(8.06)*	2598	6.21	5th (H1) Gear			185 *(85.0)*	65 *(18.3)*	74 *(23.3)*	28.66 *(96.78)*
36.86 *(27.49)*	2201 *(9.79)*	6.28 *(10.11)*	2598	4.95	6th (H2) Gear			185 *(85.0)*	66 *(18.9)*	76 *(24.4)*	28.67 *(96.81)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 6; 22 *(150)*	Two 13.6-28; 6; 22 *(150)*
Ballast	—Liquid (each)	343 lb *(155 kg)*	None
	—Cast Iron (each)	390 lb *(177 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5-20; 6; 29 *(200)*	Two 9.5-20; 6; 29 *(200)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	475 lb *(215 kg)*	None
Height of Drawbar		14.5 in *(370 mm)*	14.5 in *(370 mm)*
Static Weight with Operator	—Rear	4440 lb *(2014 kg)*	2975 lb *(1350 kg)*
	—Front	2935 lb *(1331 kg)*	1985 lb *(900 kg)*
	—Total	7375 lb *(3345 kg)*	4960 lb *(2250 kg)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi *(kPa)*	2625 *(18100)*	
Location	remote outlet	
Hydraulic oil temperature °F *(°C)*	184 *(84)*	
Location	pump inlet	
	Maximum Lift Capacity	**Lift Capacity for Transport**
QUICK ATTACH	no	
CATEGORY	1	*not measured
LOAD lbs *(kg)*	3318 *(1505)*	
TIME sec	1.34	
HITCH POINT MOVEMENT in *(mm)*		
Lowest position	9.4 *(239)*	
Top of timed range	31.4 *(798)*	
Highest position	32.5 *(826)*	
LOAD CG MOVEMENT in *(mm)*		
Lowest position	11.2 *(284)*	
Top of timed range	32.2 *(818)*	
Highest position	33.4 *(848)*	

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

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 was maintained at 114°F *(45.6°C)*. Four 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. **1594,** July 8, 1986.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
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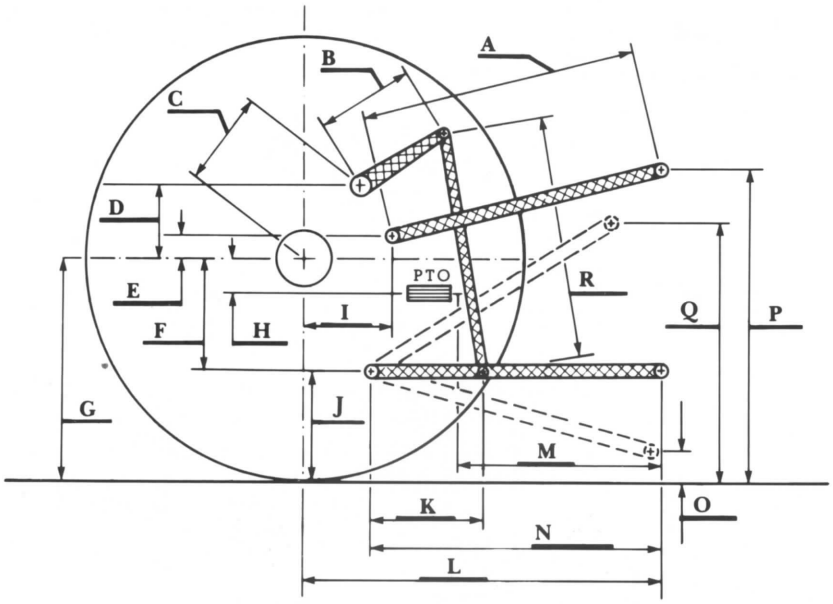
Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	*mm*
A	25.1	*638*
B	9.0	*230*
C	12.2	*311*
D	11.9	*303*
E	12.6	*321*
F	6.9	*176*
G	23.9	*608*
H	0.8	*21*
I	12.3	*313*
J	17.0	*432*
K	16.4	*416*
L	37.9	*962*
M	22.2	*564*
N	33.3	*845*
O	8.0	*203*
P	35.0	*889*
Q	32.8	*832*
R	20.5	*521*

Kubota M4030DT Diesel

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