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2013

Test 2064: Kubota M135GX

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NEBRASKA OECD TRACTOR TEST 2064–SUMMARY 883
KUBOTA M135GX DIESEL
24 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—596 rpm)					
119.60 *(89.18)*	2201	7.58 *(28.69)*	0.444 *(0.270)*	15.78 *(3.11)*	Fuel used during active exhaust regeneration - 0.05 gal *(0.17 l)* (see note 1 p.2)
Maximum Power (1 hour)					
122.04 *(91.01)*	2101	7.46 *(28.24)*	0.428 *(0.261)*	16.36 *(3.22)*	
Standard Power Take-off Speed (541 rpm)					
120.14 *(89.59)*	1994	7.13 *(26.98)*	0.416 *(0.253)*	16.86 *(3.32)*	
VARYING POWER AND FUEL CONSUMPTION					
119.60 *(89.18)*	2201	7.58 *(28.69)*	0.444 *(0.270)*	15.78 *(3.11)*	Air temperature
104.11 *(77.64)*	2255	6.80 *(25.72)*	0.457 *(0.278)*	15.32 *(3.02)*	75°F *(24°C)*
79.15 *(59.02)*	2284	5.82 *(22.05)*	0.516 *(0.314)*	13.59 *(2.68)*	Relative humidity
53.48 *(39.88)*	2312	4.61 *(17.44)*	0.604 *(0.367)*	11.61 *(2.29)*	39%
27.01 *(20.14)*	2340	3.42 *(12.95)*	0.887 *(0.540)*	7.90 *(1.56)*	Barometer
1.95 *(1.46)*	2371	2.30 *(8.71)*	8.260 *(5.024)*	0.85 *(0.17)*	28.74 Hg *(97.33 kPa)*

Maximum torque - 383 lb.-ft. *(520 Nm)* at 1300 rpm
Maximum torque rise - 34.2%
Torque rise at 1761 engine rpm - 20%

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F cool-ing med	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—15th (H1) Gear									
101.08 *(75.38)*	6450 *(28.69)*	5.88 *(9.46)*	2200	3.1	0.527 *(0.321)*	13.30 *(2.62)*	208 *(98)*	74 *(23)*	28.51 *(96.55)*
75% of Pull at Maximum Power—15th(H1) Gear									
78.15 *(58.28)*	4834 *(21.50)*	6.07 *(9.76)*	2259	2.6	0.583 *(0.355)*	12.02 *(2.37)*	206 *(96)*	79 *(26)*	28.49 *(96.48)*
50% of Pull at Maximum Power—15th (H1) Gear									
53.21 *(39.67)*	3217 *(14.31)*	6.20 *(9.98)*	2295	1.9	0.731 *(0.444)*	9.59 *(1.89)*	197 *(91)*	81 *(27)*	28.49 *(96.48)*
75% of Pull at Reduced Engine Speed—17th(H2) Gear									
77.61 *(57.87)*	4811 *(21.40)*	6.05 *(9.74)*	1853	2.5	0.508 *(0.309)*	13.78 *(2.72)*	196 *(91)*	81 *(27)*	28.50 *(96.51)*
50% of Pull at Reduced Engine Speed—17th(H2) Gear									
53.52 *(39.91)*	3213 *(14.29)*	6.25 *(10.05)*	1900	1.8	0.607 *(0.369)*	11.55 *(2.28)*	192 *(89)*	81 *(27)*	28.49 *(96.48)*

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: June 4 - 13 , 2013

Manufacturer: Kubota Corporation, Sakai Plant, 64, Ishizu-Kitamachi, Sakai-ku, Sakai-City, Osaka, Japan

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8416 **Fuel weight** 7.007 lbs/gal *(0.840 kg/l)* **Oil SAE** 15W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** Kubota Super UDT 2 fluid **Front axle lubricant** Kubota Super UDT 2 fluid **Total time engine was operated:** 36.5 hours

ENGINE: Make Kubota Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.*** 3DC0018* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.646 x 5.512" *(118.0 mm x 140.0 mm)* **Compression ratio** 17.5 to 1 **Displacement** 374 cu in *(6124 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 hydraulic and transmission oil **Fuel filter** one paper element and prestrainer **Exhaust** regenerative particulate filter integrated within an underhood muffler with a vertical outlet **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 50.0 - 53.6 lb/h *(22.7 -24.3 kg/h)* **High idle:** 2350 - 2400 rpm **Turbo boost:** nominal 10.2 -11.6 psi *(70-80 kPa)* as measured 11.0 psi *(76 kPa)*

CHASSIS: Type front wheel assist **Serial No.** M135GX51163 **Tread width** rear 62.6" *(1590 mm)* to 82.1" *(2085 mm)* front 69.9" *(1775 mm)* to 73.8" *(1875 mm)* **Wheelbase** 105.9" *(2690 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (8) range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 0.52 *(0.84)* second 0.63 *(1.02)* third 0.77 *(1.24)* fourth 0.94 *(1.51)* fifth 1.08 *(1.74)* sixth 1.32 *(2.12)* seventh 1.60 *(2.57)* eighth 1.94 *(3.13)* ninth 2.21 *(3.55)* tenth 2.68 *(4.31)* eleventh 3.26 *(5.24)* twelfth 3.96 *(6.38)* thirteenth 4.59 *(7.39)* fourteenth 5.57 *(8.97)* fifteenth 6.10 *(9.81)* sixteenth 6.77 *(10.89)* seventeenth 7.40 *(11.91)* eighteenth 8.25 *(13.28)* nineteenth 8.98 *(14.46)* twentieth 10.96 *(17.63)* twenty-first 12.68 *(20.40)* twenty-second 15.40 *(24.78)* twenty-third 18.70 *(30.09)* twenty-fourth 22.79 *(36.67)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 2200 ENGINE RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				11th(M3) Gear					
87.54 *(65.28)*	11331 *(50.40)*	2.90 *(4.67)*	2242	12.4	0.586 *(0.357)*	11.95 *(2.35)*	212 *(100)*	81 *(27)*	28.48 *(96.44)*
				12th(M4) Gear					
97.97 *(73.06)*	9961 *(44.31)*	3.69 *(5.94)*	2200	7.1	0.543 *(0.330)*	12.90 *(2.54)*	217 *(103)*	81 *(27)*	28.48 *(96.44)*
				13th(M5) Gear					
100.42 *(74.88)*	8605 *(38.27)*	4.38 *(7.05)*	2200	4.2	0.531 *(0.323)*	13.19 *(2.60)*	207 *(97)*	74 *(23)*	28.49 *(96.48)*
				14th(M6) Gear					
98.85 *(73.71)*	6912 *(30.75)*	5.36 *(8.63)*	2200	3.4	0.537 *(0.327)*	13.04 *(2.57)*	208 *(98)*	73 *(23)*	28.49 *(96.48)*
				15th(H1) Gear					
101.08 *(75.38)*	6450 *(28.69)*	5.88 *(9.46)*	2200	3.1	0.527 *(0.321)*	13.30 *(2.62)*	208 *(98)*	74 *(23)*	28.51 *(96.55)*
				16th (M7) Gear					
96.02 *(71.60)*	5500 *(24.47)*	6.55 *(10.53)*	2199	2.8	0.553 *(0.336)*	12.67 *(2.50)*	218 *(103)*	74 *(23)*	28.43 *(96.28)*
				17th(H2) Gear					
95.68 *(71.35)*	5000 *(22.24)*	7.18 *(11.56)*	2200	2.5	0.547 *(0.333)*	12.80 *(2.52)*	221 *(105)*	76 *(25)*	28.44 *(96.31)*
				18th(M8) Gear					
92.01 *(68.61)*	4304 *(19.14)*	8.02 *(12.91)*	2200	2.2	0.575 *(0.350)*	12.18 *(2.40)*	218 *(103)*	75 *(24)*	28.44 *(96.31)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 2100 ENGINE RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				11th(M3) Gear					
88.73 *(66.16)*	11390 *(50.66)*	2.92 *(4.70)*	2239	11.6	0.578 *(0.352)*	12.12 *(2.39)*	205 *(96)*	80 *(27)*	28.48 *(96.44)*
				12th(M4) Gear					
97.36 *(72.60)*	10535 *(46.86)*	3.47 *(5.58)*	2102	8.5	0.535 *(0.325)*	13.10 *(2.58)*	221 *(105)*	82 *(28)*	28.48 *(96.44)*
				13th(M5) Gear					
102.27 *(76.26)*	9229 *(41.05)*	4.16 *(6.69)*	2100	4.9	0.513 *(0.312)*	13.67 *(2.69)*	204 *(95)*	74 *(24)*	28.50 *(96.51)*
				14th(M6) Gear					
101.41 *(75.62)*	7447 *(33.12)*	5.11 *(8.22)*	2100	3.6	0.518 *(0.315)*	13.53 *(2.66)*	209 *(98)*	74 *(23)*	28.50 *(96.51)*
				15th(H1) Gear					
102.36 *(76.33)*	6855 *(30.49)*	5.60 *(9.01)*	2100	3.3	0.511 *(0.311)*	13.71 *(2.70)*	217 *(103)*	74 *(24)*	28.50 *(96.51)*
				16th (M7) Gear					
98.80 *(73.68)*	5936 *(26.40)*	6.24 *(10.04)*	2100	2.9	0.530 *(0.323)*	13.21 *(2.60)*	220 *(104)*	75 *(24)*	28.44 *(96.31)*
				17th(H2) Gear					
98.74 *(73.63)*	5413 *(24.08)*	6.84 *(11.01)*	2100	2.7	0.527 *(0.320)*	13.30 *(2.62)*	222 *(106)*	77 *(25)*	28.44 *(96.31)*
				18th(M8) Gear					
94.92 *(70.78)*	4655 *(20.70)*	7.65 *(12.30)*	2100	2.4	0.549 *(0.334)*	12.77 *(2.51)*	221 *(105)*	76 *(24)*	28.45 *(96.34)*
				19th(H3) Gear					
95.72 *(71.38)*	4304 *(19.14)*	8.34 *(13.42)*	2099	2.2	0.542 *(0.330)*	12.93 *(2.55)*	222 *(106)*	78 *(26)*	28.44 *(96.31)*

reverse 0.53 *(0.85)*, 0.64 *(1.03)*, 0.78 *(1.25)*, 0.94 *(1.52)*, 1.09 *(1.76)*, 1.32 *(2.13)*, 1.61 *(2.59)*, 1.96 *(3.16)*, 2.22 *(3.58)*, 2.70 *(4.35)*, 3.28 *(5.28)*, 4.00 *(6.44)*, 4.63 *(7.45)*, 5.62 *(9.05)*, 6.14 *(9.89)* 6.83 *(10.99)*, 7.46 *(12.01)*, 8.32 *(13.39)*, 9.07 *(14.59)*, 11.05 *(17.78)*, 12.79 *(20.58)*, 15.53 *(24.99)*, 18.86 *(30.35)* 22.99 *(36.99)* **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1994 engine rpm or 1000 rpm at 2050 engine rpm **Unladen tractor mass** 11000 lb *(4989 kg)*

NOTE 1: The manufacturer declares that the average time between active regenerations is 13 hours, while operated in Auto Filter Cleaning Mode, at rated speed, full load, under steady state conditions. A 3% power loss was observed during the active regeneration.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor did not meet the manufacturer's 3 point lift of claims of 6834 lbs *(3100 kg)* with 2 x 70 mm lift cylinders nor 9447 lbs *(4285 kg)* with 2 x 80 mm lift cylinders. For the maximum power tests the fuel temperature at the fuel pump inlet was maintained at 132°F *(56°C)*. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2064**, Nebraska Summary 883, June 28, 2013.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE

BALLASTED - FRONT DRIVE ENGAGED - 2100 RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				10th(M2) Gear					
93.05	14680	2.38	2224	13.2	0.568	12.34	195	58	28.60
(69.39)	*(65.30)*	*(3.83)*			*(0.345)*	*(2.43)*	*(91)*	*(14)*	*(96.85)*
				11th(M3) Gear					
101.75	13226	2.89	2100	7.0	0.517	13.57	196	60	28.61
(75.87)	*(58.83)*	*(4.64)*			*(0.314)*	*(2.67)*	*(91)*	*(15)*	*(96.88)*
				12th(M4) Gear					
104.06	10843	3.60	2100	5.0	0.509	13.75	196	61	28.61
(77.59)	*(48.23)*	*(5.79)*			*(0.310)*	*(2.71)*	*(91)*	*(16)*	*(96.88)*
				13th(M5) Gear					
106.37	9495	4.20	2101	4.0	0.497	14.10	202	63	28.62
(79.32)	*(42.23)*	*(6.76)*			*(0.302)*	*(2.78)*	*(94)*	*(17)*	*(96.92)*
				14th(M6) Gear					
103.33	7534	5.14	2100	2.8	0.516	13.58	202	63	28.62
(77.05)	*(33.51)*	*(8.27)*			*(0.314)*	*(2.68)*	*(94)*	*(17)*	*(96.92)*
				15th(H1) Gear					
106.74	7105	5.63	2100	2.6	0.499	14.03	206	67	28.61
(79.60)	*(31.60)*	*(9.06)*			*(0.304)*	*(2.76)*	*(96)*	*(19)*	*(96.88)*
				16th(M7) Gear					
101.64	6069	6.28	2100	2.3	0.526	13.33	205	66	28.62
(75.79)	*(26.99)*	*(10.11)*			*(0.320)*	*(2.63)*	*(96)*	*(19)*	*(96.88)*
				17th (H2) Gear					
101.75	5545	6.88	2100	2.0	0.520	13.48	207	67	28.62
(75.87)	*(24.66)*	*(11.07)*			*(0.316)*	*(2.65)*	*(97)*	*(20)*	*(96.92)*
				18th(M8) Gear					
98.03	4780	7.69	2101	1.8	0.544	12.88	206	68	28.63
(73.10)	*(21.26)*	*(12.38)*			*(0.331)*	*(2.54)*	*(97)*	*(20)*	*(96.95)*
				19th(H3) Gear					
98.05	4386	8.38	2098	1.6	0.541	12.95	210	69	28.63
(73.12)	*(19.51)*	*(13.49)*			*(0.329)*	*(2.55)*	*(99)*	*(20)*	*(96.95)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load in 13th (7M) gear	72.0	72.0
Bystander in 24th (8H) gear		85.9

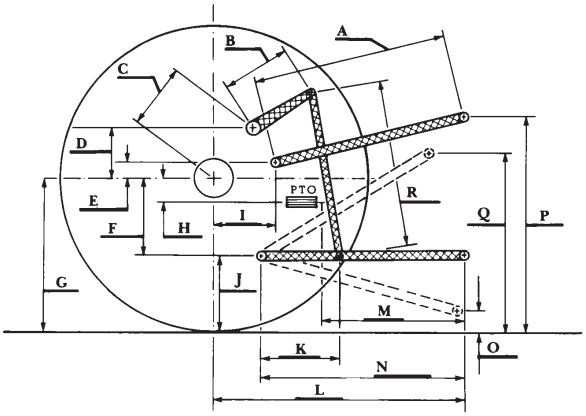
TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Two 520/70R38;***;18*(125)*	Two 520/70R38;***;12*(85)*
Ballast - Liquid (total)	1885 lb *(855 kg)*	None
- Cast Iron (total)	700 lb *(318 kg)*	None
Front Tires - No., size, ply & psi*(kPa)*	Two 420/70R24;***;20*(140)*	Two 420/70R24;***;12*(85)*
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1350 lb *(612 kg)*	None
Height of Drawbar	23.5 in *(595 mm)*	23.5 in *(595 mm)*
Static Weight with operator - Rear	9120 lb *(4137 kg)*	6815 lb *(3091 kg)*
- Front	5990 lb *(2717 kg)*	4360 lb *(1978 kg)*
- Total	15110 lb *(6854 kg)*	11175 lb *(5069 kg)*

HYDRAULIC PERFORMANCE

CATEGORY: II		
Quick attach: None		
OECD Static test		lift cylinders
Maximum force exerted through whole range:	6734 lbs *(30.0 kN)*	(2 x 70 mm)
	8613 lbs *(38.3 kN)*	(2 x 80 mm)
i) Sustained pressure of the open relief valve:	2748 psi	*(190 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	20.7 GPM	*(78.4 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	20.3 GPM	*(76.7 l/min)*
Delivery pressure:	2367 psi	*(163 bar)*
Power:	28.0 HP	*(20.9 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	29.7	*755*
B	11.8	*300*
C	17.1	*434*
D	16.7	*425*
E	13.6	*346*
F	6.9	*176*
G	30.3	*770*
H	1.0	*25*
I	10.7	*273*
J	23.4	*594*
K	18.4	*468*
L	40.0	*1015*
M	23.4	*594*
N	35.4	*900*
O	9.1	*230*
P	49.4	*1254*
Q	34.6	*880*
R	28.9	*735*



KUBOTA M135GX DIESEL

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