2021

Test 2241: Kubota M8-251

Nebraska Tractor Test Lab

NEBRASKA OECD TRACTOR TEST 2241-SUMMARY 1201
KUBOTA M8-251 KVT DIESEL
CVT TRANSMISSION

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Diesel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	D.E.F. Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption Gal/hr *(l/h)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1081 rpm)						
224.19 *(167.18)*	2100	12.49 *(47.27)*	0.389 *(0.237)*	17.95 *(3.54)*	1.28 *(4.85)*	Fuel used during active exhaust regeneration-0.13 gal *(0.47 l)* (see note 1, p.2)
Standard Power Take-off Speed (1000 rpm)						
242.97 *(181.19)*	1943	13.13 *(49.69)*	0.377 *(0.229)*	18.51 *(3.65)*	1.35 *(5.13)*	
Maximum Power (1hour))						
242.97 *(181.19)*	1943	13.13 *(49.69)*	0.377 *(0.229)*	18.51 *(3.65)*	1.35 *(5.13)*	
VARYING POWER AND FUEL CONSUMPTION						
224.19 *(167.18)*	2100	12.49 *(47.27)*	0.389 *(0.237)*	17.95 *(3.54)*	1.28 *(4.85)*	Air temperature
191.84 *(143.06)*	2117	11.26 *(42.62)*	0.410 *(0.249)*	17.04 *(3.36)*	0.94 *(3.55)*	74°F *(23°C)*
144.61 *(107.83)*	2149	9.28 *(35.12)*	0.448 *(0.273)*	15.59 *(3.07)*	0.59 *(2.23)*	Relative humidity
97.63 *(72.80)*	2158	6.97 *(26.39)*	0.499 *(0.303)*	14.01 *(2.76)*	0.41 *(1.57)*	40%
48.90 *(36.47)*	2171	4.74 *(17.96)*	0.678 *(0.412)*	10.31 *(2.03)*	0.27 *(1.02)*	Barometer
1.09 *(0.82)*	2187	2.84 *(10.76)*	18.136 *(11.032)*	0.39 *(0.08)*	0.19 *(0.72)*	29.06" Hg *(98.40 kPa)*

Maximum torque - 726 lb.-ft. *(984 Nm)* at 1601 rpm
Maximum torque rise - 29.5%
Torque rise at 1681 engine rpm - 28%
Power increase at 1943 engine rpm - 8.4%

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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Power at Rated Engine Speed—5.6 mph *(9.0 km/h)*-Manual mode										
198.32 *(147.89)*	12768 *(56.79)*	5.83 *(9.37)*	2101	3.7	0.443 *(0.269)*	15.78 *(3.11)*	0.056 *(0.034)*	199 *(93)*	49 *(9)*	29.11 *(98.58)*
75% of Pull at Rated Engine Speed—5.6 mph *(9.0 km/h)*-Manual mode										
149.89 *(111.77)*	9610 *(42.75)*	5.85 *(9.41)*	2155	2.7	0.465 *(0.283)*	15.01 *(2.96)*	0.057 *(0.035)*	190 *(88)*	63 *(17)*	29.11 *(98.58)*
50% of Pull at Rated Engine Speed—5.6 mph *(9.0 km/h)*-Manual mode										
101.30 *(75.54)*	6401 *(28.47)*	5.93 *(9.54)*	2168	1.9	0.508 *(0.309)*	13.75 *(2.71)*	0.053 *(0.032)*	187 *(86)*	64 *(18)*	29.11 *(98.58)*
75%of Pull at Reduced Engine Speed—Auto mode										
149.22 *(111.27)*	9655 *(42.95)*	5.81 *(9.35)*	1444	2.8	0.431 *(0.262)*	16.19 *(3.19)*	0.058 *(0.035)*	205 *(96)*	65 *(18)*	29.10 *(98.54)*
50% of Pull at Reduced Engine Speed—Auto mode										
100.75 *(75.13)*	6426 *(28.58)*	5.89 *(9.48)*	1314	1.9	0.451 *(0.274)*	15.48 *(3.05)*	0.054 *(0.033)*	202 *(94)*	66 *(19)*	29.10 *(98.54)*

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

Dates of tests: September 21 - 23, 2021

Manufacturer: Buhler Versatile, 1260 Clarence Ave Winnipeg, Manitoba, Canada R3T 1T2

CONSUMABLE FLUIDS, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8388 **Fuel weight** 6.984 lbs/gal *(0.837 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal *(1.087 kg/l)* **Oil SAE** 15W40 **API service classification** CK-4 **Transmission and hydraulic lubricant** Kubota Super UDT2 fluid **Front axle lubricant** Kubota Super UDT 2 fluid **Total time engine was operated:** 15.5 hours

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F.(diesel exhaust fluid) exhaust treatment **Serial No.***74721227* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.213" x 4.882" *(107.0 mm x 124.0 mm)* **Compression ratio** 17.3 to 1 **Displacement** 408 cu in *(6690 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **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 **Fuel cooler** radiator for pump return fuel **Exhaust** DOC (diesel oxidation catalyst), SCR (selective catalyst reduction) and regenerative DPF (diesel particulate filter) integrated within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 85.1 - 90.2 lb/h *(38.6 -40.9 kg/h)* **High idle:** 2160 - 2200 rpm **Turbo boost:** nominal 20.3 - 23.2 psi *(140 - 160 kPa)* as measured 21.8 psi *(150 kPa)*

CHASSIS: Type front wheel assist **Serial No.** *BVWFW250PMD580078* **Tread width** rear 75.0" *(1905 mm)* to 110.0" *(2800 mm)* front 73.0" *(1855 mm)* to 89.0" *(2260 mm)* **Wheelbase** 116.5" *(2960 mm)* **Hydraulic control system** direct engine drive **Transmission** Infinitely variable with four mechanical ranges and automatic shifting between ranges. **Nominal travel speeds mph *(km/h)*** forward - 0-31.0 mph *(0-50 km/h)*, reverse - 0-25.0 mph *(0-40 km/h)* **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** wet multiple disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 1943 engine rpm, Economy PTO 1000 rpm at 1606 engine rpm **Unladen tractor mass** 23310 lb *(10573 kg)*

DRAWBAR PERFORMANCE

UNBALLASTED - FRONT DRIVE ENGAGED - 2100 ENGINE RPM
MAXIMUM POWER AT SELECTED TRAVEL SPEEDS

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)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				2.5 mph *(4.0 km/h)*						
139.44 *(103.98)*	22141 *(98.49)*	2.37 *(3.81)*	2153	10.1	0.502 *(0.305)*	13.92 *(2.74)*	0.062 *(0.037)*	191 *(88)*	48 *(9)*	28.84 *(97.66)*
				3.1 mph *(5.0 km/h)*						
168.53 *(125.67)*	21336 *(94.91)*	2.97 *(4.77)*	2145	8.8	0.497 *(0.302)*	14.06 *(2.77)*	0.062 *(0.038)*	193 *(89)*	57 *(14)*	28.84 *(97.66)*
				3.7 mph *(6.0 km/h)*						
180.18 *(134.36)*	18281 *(81.32)*	3.70 *(5.95)*	2098	6.0	0.478 *(0.291)*	14.60 *(2.88)*	0.063 *(0.038)*	194 *(90)*	60 *(16)*	28.83 *(97.63)*
				4.3 mph *(7.0 km/h)*						
183.72 *(137.00)*	15498 *(68.94)*	4.45 *(7.15)*	2100	4.7	0.471 *(0.286)*	14.84 *(2.92)*	0.060 *(0.037)*	194 *(90)*	65 *(18)*	28.82 *(97.60)*
				4.7 mph *(7.5 km/h)*						
189.57 *(141.36)*	15014 *(66.79)*	4.74 *(7.62)*	2100	4.3	0.460 *(0.280)*	15.20 *(2.99)*	0.057 *(0.035)*	199 *(93)*	47 *(8)*	29.11 *(98.58)*
				5.0 mph *(8.0 km/h)*						
193.94 *(144.62)*	14168 *(63.02)*	5.13 *(8.26)*	2100	4.0	0.451 *(0.275)*	15.47 *(3.05)*	0.058 *(0.035)*	199 *(93)*	48 *(9)*	29.12 *(98.61)*
				5.6 mph *(9.0 km/h)*						
198.32 *(147.89)*	12768 *(56.79)*	5.83 *(9.37)*	2101	3.7	0.443 *(0.269)*	15.78 *(3.11)*	0.056 *(0.034)*	199 *(93)*	49 *(9)*	29.11 *(98.58)*
				6.2 mph *(10.0 km/h)*						
200.80 *(149.74)*	11708 *(52.08)*	6.43 *(10.35)*	2101	3.3	0.432 *(0.263)*	16.17 *(3.19)*	0.055 *(0.033)*	197 *(91)*	53 *(11)*	29.11 *(98.58)*
				6.8 mph *(11.0 km/h)*						
197.88 *(147.56)*	10414 *(46.32)*	7.13 *(11.47)*	2101	3.0	0.435 *(0.265)*	16.04 *(3.16)*	0.055 *(0.033)*	197 *(92)*	55 *(13)*	29.11 *(98.58)*
				7.5 mph *(12.0 km/h)*						
197.03 *(146.92)*	9723 *(43.25)*	7.60 *(12.23)*	2100	2.7	0.441 *(0.269)*	15.82 *(3.12)*	0.058 *(0.035)*	196 *(91)*	59 *(15)*	29.11 *(98.58)*
				8.1 mph *(13.0 km/h)*						
191.56 *(142.84)*	8548 *(38.02)*	8.40 *(13.52)*	2100	2.4	0.457 *(0.278)*	15.27 *(3.01)*	0.058 *(0.035)*	197 *(92)*	63 *(17)*	29.12 *(98.61)*

NOTE 1: The manufacturer declares that the average time between active regenerations is 50 hours. No power change was observed during the active regeneration.

NOTE 2: The Kubota M8-251 KVT T.E.C.U. (Tractor Electronic Control Unit) is compliant with ISOBUS 11783.

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. The manufacturer's remote hydraulic flow claim of 32.0 GPM *(120 l/min)* with standard pump (45 cc) was not verified. The manufacturer's 3 point lift claim of 15763 lb *(7150 kg)* with 4.02" *(102 mm)* lift cylinders was not verified. The performance figures on this report were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2241**, Nebraska Summary 1201, March 7, 2022.

Roger M. Hoy
Director

P.J. Jasa
J.D. Luck
S. Pitla
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Disengaged dB(A)
At no load at 4.7 mph *(7.5 km/h)* engine speed - 2190 rpm	69.9	68.9
At no load at 4.7 mph *(7.5 km/h)* engine speed - 1275 rpm	67.2	66.3
Bystander		80.2

Horizontal distances of drawbar hitch point behind rear wheel axis - 38.2"*(970 mm)*, 40.7"*(1034 mm)*, 44.1" *(1119 mm)*

TIRES AND WEIGHT	Tested Without Ballast
Rear Tires - No., size, ply & psi*(kPa)*	Two 710/70R42;***;12*(85)*
Front Tires - No., size, ply & psi*(kPa)*	Two 600/70R30;***;12*(85)*
Height of Drawbar	22.0 in *(560 mm)*
Static Weight with operator - Rear	14480 lb *(6568 kg)*
- Front	9005 lb *(4085 kg)*
- Total	23485 lb *(10653 kg)*

DRAWBAR PERFORMANCE
UNBALLASTED - FRONT DRIVE ENGAGED
MANUAL MODE - 1943 ENGINE RPM
MAXIMUM POWER AT SELECTED TRAVEL SPEED SETTINGS

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)*	D.E.F. Consumption lb/hp.hr *(kg/kW.h)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				2.5 mph *(4.0 km/h)*						
137.80 *(102.75)*	22113 *(98.36)*	2.34 *(3.77)*	2153	11.1	0.508 *(0.309)*	13.76 *(2.71)*	0.062 *(0.038)*	191 *(88)*	49 *(9)*	28.84 *(97.66)*
				3.1 mph *(5.0 km/h)*						
168.95 *(125.98)*	21538 *(95.80)*	2.95 *(4.74)*	2140	9.4	0.498 *(0.303)*	14.01 *(2.76)*	0.062 *(0.037)*	192 *(89)*	59 *(15)*	28.83 *(97.63)*
				3.7 mph *(6.0 km/h)*						
184.50 *(137.58)*	19341 *(86.03)*	3.58 *(5.76)*	1981	6.7	0.476 *(0.290)*	14.66 *(2.89)*	0.064 *(0.039)*	195 *(91)*	62 *(17)*	28.83 *(97.63)*
				4.3 mph *(7.0 km/h)*						
195.02 *(145.43)*	16425 *(73.06)*	4.45 *(7.16)*	1943	5.2	0.451 *(0.275)*	15.48 *(3.05)*	0.062 *(0.038)*	198 *(92)*	67 *(19)*	28.82 *(97.60)*
				4.7 mph *(7.5 km/h)*						
198.85 *(148.28)*	15456 *(68.75)*	4.83 *(7.77)*	1943	4.8	0.449 *(0.273)*	15.56 *(3.07)*	0.060 *(0.036)*	198 *(92)*	67 *(19)*	28.82 *(97.60)*
				5.0 mph *(8.0 km/h)*						
201.58 *(150.32)*	14664 *(65.23)*	5.16 *(8.30)*	1942	4.4	0.442 *(0.269)*	15.80 *(3.11)*	0.060 *(0.037)*	199 *(93)*	68 *(20)*	28.82 *(97.60)*
				5.6 mph *(9.0 km/h)*						
208.08 *(155.16)*	13679 *(60.85)*	5.71 *(9.18)*	1942	3.9	0.430 *(0.262)*	16.24 *(3.20)*	0.057 *(0.035)*	201 *(94)*	50 *(10)*	29.11 *(98.58)*
				6.2 mph *(10.0 km/h)*						
206.99 *(154.35)*	12181 *(54.18)*	6.38 *(10.27)*	1941	3.5	0.427 *(0.260)*	16.37 *(3.22)*	0.058 *(0.035)*	200 *(93)*	54 *(12)*	29.11 *(98.58)*
				6.8 mph *(11.0 km/h)*						
204.86 *(152.76)*	10921 *(48.58)*	7.04 *(11.32)*	1943	3.1	0.433 *(0.263)*	16.13 *(3.18)*	0.058 *(0.035)*	201 *(94)*	56 *(13)*	29.11 *(98.58)*
				7.5 mph *(12.0 km/h)*						
202.33 *(150.88)*	9897 *(44.02)*	7.67 *(12.34)*	1942	2.8	0.443 *(0.269)*	15.78 *(3.11)*	0.059 *(0.036)*	201 *(94)*	62 *(17)*	29.12 *(98.61)*
				8.1 mph *(13.0 km/h)*						
198.62 *(148.11)*	8941 *(39.77)*	8.33 *(13.41)*	1941	2.5	0.448 *(0.273)*	15.59 *(3.07)*	0.059 *(0.036)*	201 *(94)*	63 *(17)*	29.12 *(98.61)*

Shiftable PTO Performance

Economy mode
1000 PTO rpm @1606 engine rpm

Power HP *(kW)*	Crank shaft speed rpm	Diesel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption Gal/hr *(l/h)*
221.71 *(165.33)*	1606	11.57 *(43.79)*	0.364 *(0.222)*	19.17 *(3.78)*	1.28 *(4.86)*
166.30 *(124.01)*	1607	9.15 *(34.62)*	0.384 *(0.234)*	18.18 *(3.58)*	0.85 *(3.21)*
110.95 *(82.74)*	1612	6.75 *(25.53)*	0.425 *(0.258)*	16.45 *(3.24)*	0.42 *(1.60)*
55.46 *(41.35)*	1620	4.09 *(15.50)*	0.516 *(0.314)*	13.55 *(2.67)*	0.23 *(0.88)*
0.98 *(0.73)*	1603	1.54 *(5.85)*	11.010 *(6.697)*	0.63 *(0.12)*	0.14 *(0.54)*

Normal mode
1000 PTO rpm @1943 engine rpm

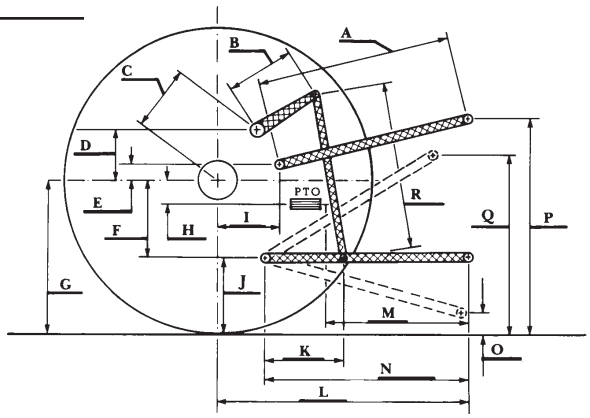
Power HP *(kW)*	Crank shaft speed rpm	Diesel Consumption Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	D.E.F. Consumption Gal/hr *(l/h)*
221.74 *(165.35)*	1934	12.13 *(45.91)*	0.382 *(0.232)*	18.28 *(3.60)*	1.24 *(4.68)*
166.37 *(124.06)*	1932	9.88 *(37.39)*	0.415 *(0.252)*	16.84 *(3.32)*	0.75 *(2.85)*
110.99 *(82.76)*	1939	7.28 *(27.57)*	0.458 *(0.279)*	15.24 *(3.00)*	0.39 *(1.46)*
55.52 *(41.40)*	1944	4.44 *(16.81)*	0.559 *(0.340)*	12.50 *(2.46)*	0.27 *(1.04)*
0.93 *(0.69)*	1948	2.09 *(7.93)*	15.697 *(9.548)*	0.44 *(0.09)*	0.15 *(0.58)*

HYDRAULIC PERFORMANCE

CATEGORY: 3	
Quick Attach: None	
OECD Static test	lift cylinders
Maximum force exerted through whole range:	23216 lbs *(103.3 kN)* 2 x 115 mm
	73 cc pump
i) Maximum observed pressure:	3062 psi *(211 bar)*
	three outlet sets combined
ii) Pump delivery rate at minimum pressure and rated engine speed:	49.2 GPM *(186.4 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	47.1 GPM *(178.3 l/min)*
Delivery pressure:	2938 psi *(203 bar)*
Power:	80.8 HP *(60.2 kW)*
	single outlet set
ii) Pump delivery rate at minimum pressure and rated engine speed:	32.9 GPM *(124.7 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	32.3 GPM *(122.4 l/min)*
Delivery pressure:	2724 psi *(188 bar)*
Power:	51.4 HP *(38.3 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	*mm*
A	28.7	*730*
B	12.9	*328*
C	21.2	*538*
D	17.5	*445*
E	11.5	*293*
F	11.9	*301*
G	38.8	*985*
H	2.4	*60*
I	20.9	*530*
J	26.9	*684*
K	20.4	*519*
L	50.2	*1274*
M	25.6	*650*
N	37.0	*941*
O	9.1	*230*
P	53.9	*1369*
Q	37.6	*955*
R	36.6	*930*



RECOMMENDED CITATION FORMAT:

NTTL.(2022). Nebraska OECD tractor test 2241 for Kubota M8-251 KVT Diesel. Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from http://tractortestlab.unl.edu

KUBOTA M8-251 KVT DIESEL

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