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2008

## Test 1944: Kubota M108S

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1944

## KUBOTA M108S DIESEL

### 16 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—637 rpm)					
101.74 (75.87)	2601	6.27 (23.75)	0.430 (0.262)	16.22 (3.19)	
Maximum Power(1 hour)					
103.17 (76.93)	2499	6.22 (23.54)	0.421 (0.256)	16.59 (3.27)	
Standard Power Take-off Speed(540 rpm)					
99.27 (74.03)	2205	5.79 (21.90)	0.407 (0.247)	17.16 (3.38)	

#### VARYING POWER AND FUEL CONSUMPTION

101.74 (75.87)	2601	6.27 (23.75)	0.430 (0.262)	16.22 (3.19)	Air temperature
87.84 (65.50)	2643	5.58 (21.11)	0.443 (0.269)	15.75 (3.10)	77°F (25°C)
66.93 (49.91)	2682	4.57 (17.31)	0.477 (0.290)	14.64 (2.88)	Relative humidity
45.20 (33.71)	2717	3.45 (13.08)	0.533 (0.324)	13.09 (2.58)	15%
22.81 (17.01)	2747	2.38 (9.01)	0.728 (0.443)	9.59 (1.89)	Barometer
1.17 (0.87)	2781	1.39 (5.26)	8.312 (5.056)	0.84 (0.17)	29.17"Hg (98.78 kPa)

Maximum torque - 250 lb.-ft. (339 Nm) at 1649 rpm

Maximum torque rise - 21.6%

Torque rise at 2099 rpm - 16%

#### TRACTOR SOUND LEVEL WITH CAB

	Front Wheel Drive Disengaged dB(A)	Engaged dB(A)
At no load in 7th(1HL) gear	78.8	78.9
Bystander in 16th(4HH) gear	84.8	--

#### TIRES AND WEIGHT

**Rear Tires**—No., size, ply & psi (kPa)  
**Front Tires**—No., size, ply & psi (kPa)  
**Height of Drawbar**  
**Static Weight with operator**—Rear  
     — Front  
     — Total

#### Tested without ballast

Two 18.4-34; 8; 16 (110)  
 Two 13.6-24; 8; 16 (110)  
 18.5 in (470 mm)  
 5630 lb (2554 kg)  
 3150 lb (1429 kg)  
 8780 lb (3983 kg)

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

**Dates of tests:** November 18 - 21, 2008

**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) 0.8380 Fuel weight 6.977 lbs/gal (0.836 kg/l) Oil SAE 10W30 API service classification CF Transmission and hydraulic lubricant Kubota UDT 2 fluid Front axle lubricant SAE 90 gear oil Total time engine was operated 13.0 hours

**ENGINE:** Make Kubota Diesel Type four cylinder vertical with turbocharger and air to air intercooler Serial No. 8S3679 Crankshaft lengthwise Rated engine speed 2600 Bore and stroke 3.937" x 4.724" (100.0 mm x 120.0 mm) Compression ratio 17.5 to 1 Displacement 230 cu in (3769 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 Muffler underhood Exhaust vertical Cooling medium temperature control one thermostat

**ENGINE OPERATING PARAMETERS:** Fuel rate: 42.1 - 45.1 lb/h (19.1 - 20.5 kg/h) High idle: 2700 - 2800 rpm Turbo boost: nominal 9.7-11.1 psi (67 - 77 kPa) as measured 10.8 psi (74 kPa)

**CHASSIS:** Type front wheel assist Serial No. 70086 Tread width rear 68.1" (1730 mm) to 80.1" (2035 mm) front 62.2" (1580 mm) to 66.1" (1680 mm) Wheelbase 95.9" (2435 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.28 (2.06) second 1.63 (2.62) third 2.00 (3.23) fourth 2.46 (3.96) fifth 3.15 (5.07) sixth 4.01 (6.45) seventh 4.46 (7.19) eighth 4.94 (7.95) ninth 5.69 (9.16) tenth 6.05 (9.74) eleventh 7.02 (11.29) twelfth 8.60 (13.84) thirteenth 11.00 (17.70) fourteenth 14.01 (22.55) fifteenth 17.26 (27.77) sixteenth 21.15 (34.04) reverse 1.29 (2.08), 1.65 (2.65), 2.03 (3.26), 2.48 (3.99), 3.18 (5.11), 4.04 (6.51), 4.51 (7.26), 4.98 (8.02), 5.74 (9.24), 6.11 (9.83), 7.07 (11.38), 8.67 (13.95), 11.10 (17.86), 14.13 (22.74), 17.41 (28.01), 21.34 (34.34) Clutch multiple wet disc operated by foot pedal Brakes multiple wet disc operated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 2205 engine rpm Unladen tractor mass 8605 lb (3903 kg)

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick attach: None

OECD Static test

Maximum force exerted through whole range: 3906 lbs (17.4 kN)  
5765 lbs (25.6 kN) (with 2 assist cylinders)

i) Sustained pressure of the open relief valve: 2812 psi (194 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 16.0 GPM (60.6 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 14.0 GPM (53.0 l/min)

Delivery pressure: 2412 psi (166 bar)

Power: 19.7 HP (14.7 kW)

## THREE POINT HITCH PERFORMANCE(SAE Static test)

Observed maximum pressure psi. (bar) 2800 (185)

Location: lift cylinder

Hydraulic oil temperature: °F (°C) 150 (65)

Location: hydraulic sump

Category: II

Quick attach: none

### SAE Static Test—System pressure 2520 psi (174 Bar)

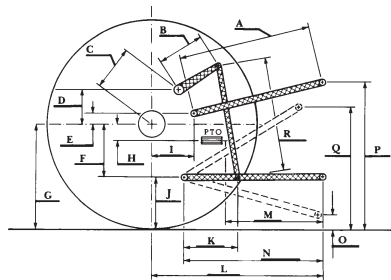
Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (914)
Lift force on frame lb	6953	5733	5351	5346	4680
" " " " " (kN)	(30.9)	(25.5)	(21.3)	(23.8)	(20.8)

### SAE Static Test—System pressure 2520 psi (174 Bar) (2 assist cylinders)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.0 (381)	22.0 (559)	29.0 (737)	36.0 (913)
Lift force on frame lb	11871	9450	8451	8280	7007
" " " " " (kN)	(52.8)	(42.0)	(37.6)	(36.8)	(31.2)

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	28.3	718	28.5	724
B	9.8	250	9.8	250
C	12.2	311	12.2	311
D	11.9	303	11.9	303
E	12.6	321	12.6	321
F	6.9	176	6.9	176
G	30.3	770	30.3	770
H	0.4	10	0.4	10
I	12.3	312	12.3	312
J	23.4	594	23.4	594
K	18.7	474	18.7	474
L	40.0	1015	40.0	1015
M	24.0	610	24.0	610
N	35.4	900	35.4	900
O	8.0	203	8.0	203
P	42.4	1077	47.4	1204
Q	34.8	883	34.8	883
R	24.5	622	24.5	622

## HITCH DIMENSIONS AS TESTED - NO LOAD



Kubota M108S Diesel

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln

**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 claims of 17.2 GPM (65.0 lpm) hydraulic flow nor 3 point lift of 7490 lbs (3400 kg) with optional 2 assist cylinders. For the maximum power tests, the fuel temperature at the fuel filter was maintained at 120°F (49°C).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1944**, February 5, 2009.

Roger M. Hoy  
Director

M.F. Kocher  
J.A. Smith  
V.I. Adamchuk  
Board of Tractor Test Engineers