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January 2002

## Test 2097: McCormick MTX 110 Diesel

Nebraska Tractor Test Lab

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# SUMMARY OF OECD TEST 2097-NEBRASKA SUMMARY 421

## McCORMICK MTX 110 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
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#### MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—(PTO speed—1000 rpm)					
101.8 (75.9)	2201	6.77 (25.61)	0.467 (0.284)	15.02 (2.96)	
Maximum Power (2 hours)					
102.6 (76.5)	2100	6.57 (24.87)	0.450 (0.274)	15.58 (3.07)	

#### VARYING POWER AND FUEL CONSUMPTION

101.8 (75.9)	2201	6.77 (25.61)	0.467 (0.284)	15.02 (2.96)	Air temperature
89.0 (66.4)	2265	6.35 (24.05)	0.501 (0.305)	14.01 (2.76)	77°F (25°C)
67.6 (50.4)	2291	5.53 (20.93)	0.574 (0.349)	12.23 (2.41)	Relative humidity
45.7 (34.1)	2317	4.41 (16.70)	0.678 (0.412)	10.36 (2.04)	41%
22.7 (16.9)	2335	3.24 (12.25)	1.002 (0.609)	7.00 (1.38)	Barometer
--	2353	2.11 (8.00)	--	--	29.0" Hg (98.3 kPa)

Maximum Torque - 313.1 lb.-ft. (424.5 Nm) at 1397 rpm

Maximum Torque Rise - 28.9%

Torque rise at 1800 engine rpm - 19%

#### 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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—9th(III-1) Gear									
88.0 (65.6)	4935 (21.9)	6.69 (10.76)	2198	2.3	0.538 (0.327)	13.05 (2.57)	190 (88)	64 (18)	29.6 (100.4)
75% of Pull at Maximum Power—9th(III-1) Gear									
68.9 (51.4)	3720 (16.5)	6.95 (11.19)	2274	1.7	0.613 (0.373)	11.46 (2.26)	190 (88)	64 (18)	29.6 (100.4)
50% of Pull at Maximum Power—9th(III-1) Gear									
46.7 (34.8)	2475 (11.0)	7.08 (11.40)	2304	1.3	0.763 (0.464)	9.20 (1.81)	189 (87)	64 (18)	29.6 (100.4)
75% of Pull at Reduced Engine Speed—10th(III-2) Gear									
68.7 (51.2)	3715 (16.5)	6.93 (11.16)	1883	1.8	0.516 (0.314)	13.60 (2.68)	187 (86)	64 (18)	29.6 (100.4)
50% of Pull at Reduced Engine Speed—10th(III-2) Gear									
46.7 (34.8)	2470 (11.0)	7.09 (11.41)	1914	1.3	0.618 (0.376)	11.36 (2.24)	187 (86)	64 (18)	29.6 (100.4)

**Location of tests:** Silsoe Research Institute, Wrester Park, Silsoe, MK45 4HS, United Kingdom

**Dates of tests:** May, 2002

**Manufacturer:** McCormick Tractors Intr. Ltd., Doncaster, South Yorkshire, DN2 4PG, England

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.843 **Fuel weight** 7.02 lbs/gal (0.841 kg/l) **Oil SAE** 15W40 **API service classification** CG-4 **Transmission and hydraulic lubricant** McCormick HTX fluid **Front axle lubricant** API GL5 SAE 85W140

**ENGINE:** Make Perkins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** U763982C **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 3.937" x 5.00" (100.0 mm x 127.0 mm) **Compression ratio** 17.2 to 1 **Displacement** 365 cu in (5985 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 **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS:** **Type** front wheel assist **Serial No.** ZT10AC4JJJE3330001 **Tread width** rear 60.2" (1530 mm) to 87.8" (2230 mm) front 60.2" (1530 mm) to 87.8" (2230 mm) **Wheelbase** 106.3" (2700 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.78 (2.87) second 2.15 (3.46) third 2.66 (4.28) fourth 3.29 (5.30) fifth 3.34 (5.38) sixth 4.03 (6.48) seventh 4.98 (8.01) eighth 6.16 (9.91) ninth 6.69 (10.77) tenth 8.06 (12.97) eleventh 9.96 (16.03) twelfth 12.33 (19.85) thirteenth 13.01 (20.93) fourteenth 15.67 (25.22) fifteenth 19.37 (31.17) sixteenth 23.99 (38.61) reverse 2.06 (3.32), 2.49 (4.00), 3.08 (4.95), 3.81 (6.13), 3.87 (6.23), 4.66 (7.50), 5.76 (9.27), 7.13 (11.48), 7.74 (12.45), 9.32 (15.00), 11.52 (18.54), 14.27 (22.97) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1877 engine rpm or 1000 rpm at 2200 engine rpm **Unladen tractor mass** 13255 lb (6013 kg)

## DRAWBAR PERFORMANCE

### (Unballasted - Front Drive Engaged) 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st(I-1) Gear									
61.8 (46.1)	14455 (64.3)	1.60 (2.58)	2276	15.0	0.682 (0.415)	10.29 (2.03)	189 (87)	64 (18)	29.6 (100.4)
2nd(I-2) Gear									
73.9 (55.1)	13985 (62.2)	1.98 (3.19)	2255	12.2	0.613 (0.373)	11.46 (2.26)	189 (87)	64 (18)	29.6 (100.4)
3rd(I-3) Gear									
84.9 (63.3)	13060 (58.1)	2.44 (3.92)	2154	8.7	0.552 (0.336)	12.72 (2.51)	190 (88)	64 (18)	29.6 (100.4)
4th(I-4) Gear									
86.9 (64.8)	10745 (47.8)	3.03 (4.88)	2101	5.8	0.528 (0.321)	13.30 (2.62)	189 (87)	64 (18)	29.6 (100.4)
5th(II-1) Gear									
88.1 (65.7)	10680 (47.5)	3.09 (4.98)	2100	5.3	0.523 (0.318)	13.40 (2.64)	189 (87)	63 (17)	29.7 (100.5)
6th(II-2) Gear									
88.5 (66.0)	8790 (39.1)	3.77 (6.07)	2101	4.2	0.519 (0.316)	13.50 (2.66)	189 (87)	63 (17)	29.7 (100.5)
7th(II-3) Gear									
87.8 (65.5)	7015 (31.2)	4.70 (7.56)	2095	3.2	0.523 (0.318)	13.40 (2.64)	190 (88)	61 (16)	29.7 (100.5)
8th(II-4) Gear									
87.8 (65.5)	5620 (25.0)	5.86 (9.43)	2097	2.6	0.522 (0.318)	13.48 (2.65)	189 (87)	63 (17)	29.7 (100.5)
9th(III-1) Gear									
88.9 (66.3)	5230 (23.3)	6.38 (10.27)	2100	2.5	0.519 (0.316)	13.50 (2.66)	189 (87)	63 (17)	29.7 (100.5)
10th(III-2) Gear									
88.1 (65.7)	4295 (19.1)	7.69 (12.37)	2093	2.1	0.522 (0.317)	13.45 (2.65)	190 (88)	63 (17)	29.7 (100.5)
11th(III-3) Gear									
84.8 (63.2)	3335 (14.8)	9.53 (15.33)	2091	1.8	0.540 (0.328)	13.00 (2.56)	189 (87)	63 (17)	29.7 (100.5)

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

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's 3 point lift claims of 11234 lbs (5096 kg) (optionally 13137 lbs (5959 kg)) at the hitch points with either the category II or category IIN hitch. This tractor also did not meet the manufacturer's 3 point lift claims of 8201 lbs (3720 kg)(optionally 10183 lbs (4619 kg)) at the frame with the category IIN hitch. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2097** Nebraska Summary 421, October 26, 2005.

Leonard L. Bashford  
Director

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

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Disengaged dB(A)	Engaged dB(A)
At no load in 6th (II-2) gear	70.0	70.0
Bystander	--	--

## 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 650/65R38; \*\*,13 (90)

Two 540/65R28; \*\*,13 (90)

14.8 in (375 mm)

7820 lb (3548 kg)

5600 lb (2540 kg)

13420 lb (6088 kg)

## THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II, IIIN

Quick Attach: None

Maximum force exerted

through whole range:

Cat II

w/lift assist cylinder

7398 lbs (32.9 kN) 9000 lbs (40.0 kN) (at the frame)  
8919 lbs (39.7 kN) 10881 lbs (48.4 kN) (at the hitch points)

Cat IIIN

w/lift assist cylinder

7038 lbs (31.3 kN) 8586 lbs (38.2 kN) (at the frame)  
9000 lbs (40.0 kN) 11079 lbs (49.3 kN) (at the hitch points)

i) Opening pressure of relief valve:

NA

Sustained pressure of the open relief valve:

2875 psi (198 bar)

ii) Pump delivery rate at minimum pressure:

25.1 GPM (95.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

23.7 GPM (89.8 l/min)

Delivery pressure:

2320 psi (160 bar)

Power:

32.1 HP (23.9 kW)

## THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi.(bar)

2980(205)

Location:

lift cylinder

Hydraulic oil temperature: °F(°C)

158(70)

Location:

hydraulic sump

Category:

II, IIIN

Quick attach:

none

Cat II

SAE Static Test—System pressure 2565 psi (177 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

11250 11165 10530 9432 8901

" " " " " " (kN)

(50.0) (49.7) (46.8) (42.0) (39.6)

Cat II w/assist cylinder

SAE Static Test—System pressure 2565 psi (177 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

13878 13464 12789 11529 10949

" " " " " " (kN)

(61.7) (59.9) (56.9) (51.3) (48.7)

Cat IIIN

SAE Static Test—System pressure 2565 psi (177 Bar)

Hitch point distance to ground level in. (mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb

9149 10076 9437 8159 8078

" " " " " " (kN)

(40.7) (44.8) (42.0) (36.3) (35.9)

Cat IIIN w/assist cylinder

SAE Static Test—System pressure 2565 psi (177 Bar)

Hitch point distance to ground level in. (mm) 8.0(203) 16.0(406) 24.0(610) 32.0(813) 40.0(1016)

Lift force on frame lb

10197 11556 10967 9630 9072

" " " " " " (kN)

(45.4) (51.4) (48.8) (42.8) (40.4)

## HITCH DIMENSIONS AS TESTED—NOLOAD

Category II

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	29.4	746	30.0	762
B	9.1	230	9.1	230
C	11.9	303	11.9	303
D	6.8	173	6.8	173
E	11.2	284	11.2	284
F	10.0	253	10.0	253
G	33.7	855	33.7	855
H	4.1	105	4.1	105
I	13.5	342	13.5	342
J	23.7	602	23.7	602
K	21.8	554	21.8	554
L	43.9	1114	43.9	1114
M	24.2	614	24.2	614
N	35.1	891	35.1	891
O	8.0	203	8.0	203
P	42.7	1085	47.7	1212
Q	36.7	932	36.7	932
R	25.7	654	25.7	654

## HITCH DIMENSIONS AS TESTED—NOLOAD

Category IIIN

	SAE Test		OECD Test	
	inch	mm	inch	mm
A	28.8	730	29.8	756
B	9.1	230	9.1	230
C	11.9	303	11.9	303
D	6.8	173	6.8	173
E	11.2	284	11.2	284
F	10.0	253	10.0	253
G	33.7	855	33.7	855
H	4.1	105	4.1	105
I	13.5	342	13.5	342
J	23.7	602	23.7	602
K	21.8	554	21.8	554
L	43.9	1114	43.9	1114
M	24.2	614	24.2	614
N	35.1	891	35.1	891
O	8.0	203	9.0	229
P	45.7	1160	50.7	1287
Q	36.7	932	37.5	951
R	25.7	654	25.3	641

