

# NEBRASKA OECD TRACTOR TEST 1858 - SUMMARY 485

## McCORMICK MTX 150 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—996 rpm)					
132.81 (99.04)	2200	7.77 (29.42)	0.413 (0.251)	17.09 (3.37)	
Maximum Power (1 hour)					
133.92 (99.86)	2100	7.60 (28.77)	0.400 (0.244)	17.62 (3.47)	

#### VARYING POWER AND FUEL CONSUMPTION

132.81 (99.04)	2200	7.77 (29.42)	0.413 (0.251)	17.09 (3.37)	Air temperature
117.71 (87.77)	2296	7.20 (27.26)	0.432 (0.263)	16.35 (3.22)	81°F(27°C)
87.95 (65.58)	2295	5.81 (22.00)	0.466 (0.284)	15.13 (2.98)	Relative humidity
59.37 (44.27)	2317	4.44 (16.79)	0.527 (0.321)	13.38 (2.64)	51%
30.02 (22.38)	2323	3.22 (12.18)	0.756 (0.460)	9.33 (1.84)	Barometer
1.62 (1.21)	2351	2.07 (7.83)	9.009 (5.480)	0.78 (0.15)	28.73" Hg(97.29 kPa)

Maximum Torque - 402 lb.-ft. (545 Nm) at 1551 rpm

Maximum Torque Rise - 26.7%

Torque rise at 1799 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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—7th(II-3) Gear									
116.76 (87.07)	8974 (39.92)	4.88 (7.85)	2199	4.15	0.473 (0.287)	14.93 (2.94)	187 (86)	62 (17)	28.91 (97.90)
75% of Pull at Maximum Power—7th(II-3) Gear									
92.87 (69.25)	6764 (30.09)	5.15 (8.29)	2293	3.05	0.518 (0.315)	13.61 (2.68)	188 (87)	76 (24)	28.90 (97.87)
50% of Pull at Maximum Power—7th(II-3) Gear									
63.08 (47.04)	4511 (20.07)	5.24 (8.44)	2307	1.83	0.584 (0.355)	12.08 (2.38)	188 (86)	77 (25)	28.90 (97.87)
75% of Pull at Reduced Engine Speed—9th(III-1) Gear									
92.81 (69.21)	6806 (30.27)	5.11 (8.23)	1696	3.04	0.431 (0.262)	16.38 (3.23)	184 (84)	77 (25)	28.90 (97.87)
50% of Pull at Reduced Engine Speed—9th(III-1) Gear									
62.99 (46.98)	4513 (20.07)	5.23 (8.42)	1713	1.85	0.465 (0.283)	15.16 (2.99)	183 (84)	78 (26)	28.90 (97.87)

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

**Dates of tests:** September 13-16, 2005

**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)** 0.8473 **Fuel weight** 7.055 lbs/gal (0.846 kg/l) **Oil SAE 15W40 API service classification** CG-4 **Transmission and hydraulic lubricant** McCormick HTX fluid **Front axle lubricant** API GL5 SAE 85W140 **Total time engine was operated** 18.0 hours

**ENGINE:** Make Iveco Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** 00208919 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 410 cu in (6728 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** two full flow cartridges **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

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 52.7 - 58.2 lb/h (23.9 - 26.4 kg/h) **High idle:** 2325 - 2375 rpm **Turbo boost:** nominal 13.8 - 16.7 psi (95 - 115 kPa) as measured 15.0 psi (104 kPa)

**CHASSIS:** **Type** front wheel assist **Serial No.** ZT50AC4JJJE3335672 **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)

## 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
5th(II-1) Gear									
109.04 (81.31)	13124 (58.38)	3.12 (5.01)	2237	10.42	0.507 (0.309)	13.91 (2.74)	188 (87)	58 (14)	28.91 (97.90)
6th(II-2) Gear									
116.17 (86.63)	11817 (52.57)	3.69 (5.93)	2103	6.43	0.466 (0.284)	15.13 (2.98)	187 (86)	59 (15)	28.91 (97.90)
7th(II-3) Gear									
117.45 (87.59)	9482 (42.18)	4.65 (7.48)	2102	4.49	0.458 (0.278)	15.42 (3.04)	187 (86)	63 (17)	28.91 (97.90)
8th(II-4) Gear									
116.54 (86.90)	7518 (33.44)	5.81 (9.35)	2098	3.39	0.456 (0.277)	15.47 (3.05)	188 (86)	66 (19)	28.91 (97.90)
9th(III-1) Gear									
116.11 (86.58)	6882 (30.61)	6.33 (10.18)	2098	3.00	0.461 (0.280)	15.30 (3.01)	188 (86)	67 (19)	28.91 (97.90)
10th(III-2) Gear									
114.94 (85.71)	5600 (24.91)	7.70 (12.39)	2103	2.33	0.464 (0.282)	15.22 (3.00)	188 (87)	70 (21)	28.91 (97.90)
11th(III-3) Gear									
114.00 (85.01)	4483 (19.94)	9.54 (15.35)	2096	1.81	0.473 (0.287)	14.93 (2.94)	186 (86)	71 (22)	28.91 (97.90)

**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 2209 engine rpm **Unladen tractor mass** 12760 lb (5787 kg)

**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 claim of 13137 lbs (5959 kg) at the hitch points with either the category II or category IIIN hitch. This tractor also did not meet the manufacturer's 3 point lift claim of 10183 lbs (4619 kg) at the frame with the category IIIN hitch. The pull in 5th(II-1) gear was limited to avoid excessive tractor bouncing. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 146°F(63°C). 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 and correct report of official tractor Test No. **1858**, Nebraska Summary 485, November 21, 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 7th(II-3) gear	73.5	74.2
Bystander in 16th(IV-4)	80.9	--

#### TIRES AND WEIGHT

<b>Rear tires</b> - No., size, ply & psi(kPa)	Two 20.8R38; **, 16 (110)
<b>Front tires</b> - No., size, ply & psi(kPa)	Two 16.9R28; **, 14 (95)
<b>Height of Drawbar</b>	18.5 in (470 mm)
<b>Static Weight with operator</b> - Rear	7705 lb (3495 kg)
- Front	5230 lb (2372 kg)
- Total	12935 lb (5867 kg)

#### Tested Without Ballast

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE DISENGAGED**  
**FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp.°F (°C)	Barom. inch Hg (kPa)	
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
<b>Maximum Power—8th(II-4)Gear</b>									
114.18 (85.14)	7201 (32.03)	5.95 (9.57)	2200	5.04	0.481 (0.293)	14.65 (2.89)	188 (87)	65 (18)	28.91 (97.90)
<b>75% of Pull at Maximum Power—8th(II-4) Gear</b>									
91.27 (68.06)	5426 (24.14)	6.31 (10.15)	2294	3.47	0.526 (0.320)	13.41 (2.64)	188 (86)	73 (23)	28.91 (97.90)
<b>50% of Pull at Maximum Power—8th(II-4)Gear</b>									
61.96 (46.20)	3629 (16.14)	6.40 (10.30)	2300	2.27	0.601 (0.365)	11.74 (2.31)	188 (86)	74 (23)	28.91 (97.90)
<b>75% of Pull at Reduced Engine Speed—10th(III-2) Gear</b>									
91.38 (68.14)	5445 (24.22)	6.29 (10.13)	1752	3.48	0.448 (0.272)	15.75 (3.10)	184 (85)	75 (24)	28.91 (97.90)
<b>50% of Pull at Reduced Engine Speed—10th(III-2) Gear</b>									
61.55 (45.90)	3608 (16.05)	6.40 (10.29)	1757	2.18	0.483 (0.294)	14.60 (2.88)	184 (85)	75 (24)	28.90 (97.87)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
6th(II-2)Gear									
95.84 (71.47)	9279 (41.28)	3.87 (6.23)	2297	9.28	0.527 (0.321)	13.38 (2.63)	189 (87)	60 (16)	28.91 (97.90)
7th(II-3)Gear									
110.10 (82.10)	8874 (39.47)	4.65 (7.49)	2227	9.21	0.503 (0.306)	14.04 (2.77)	187 (86)	64 (18)	28.91 (97.90)
8th(II-4)Gear									
114.18 (85.14)	7201 (32.03)	5.95 (9.57)	2200	5.04	0.481 (0.293)	14.65 (2.89)	188 (87)	65 (18)	28.91 (97.90)
9th(III-1)Gear									
109.55 (81.69)	6301 (28.03)	6.52 (10.49)	2201	4.23	0.485 (0.295)	14.55 (2.87)	187 (86)	68 (20)	28.91 (97.90)
10th(III-2)Gear									
107.50 (80.16)	5093 (22.65)	7.92 (12.74)	2196	3.19	0.483 (0.294)	14.61 (2.88)	187 (86)	69 (21)	28.91 (97.90)
11th(III-4)Gear									
104.34 (77.80)	3948 (17.56)	9.91 (15.95)	2205	2.34	0.492 (0.299)	14.33 (2.82)	186 (86)	72 (22)	28.91 (97.90)

CATEGORY: II, I1IN

Quick Attach: None

Maximum force exerted  
through whole range:

Cat II w/assist cylinder

9000 lbs (40.0 kN) (at the frame)  
10881 lbs (48.4 kN) (at the hitch points)

Cat I1IN w/assist cylinder

8586 lbs (38.2 kN) (at the frame)  
11079 lbs (49.3 kN) (at the hitch points)

i) Opening pressure of relief valve:

NA

one outlet set      two outlet sets combined

Sustained pressure of the open relief valve: 2922 psi (202 bar)      2926 psi (202 bar)

ii) Pump delivery rate at minimum pressure  
and rated engine speed:

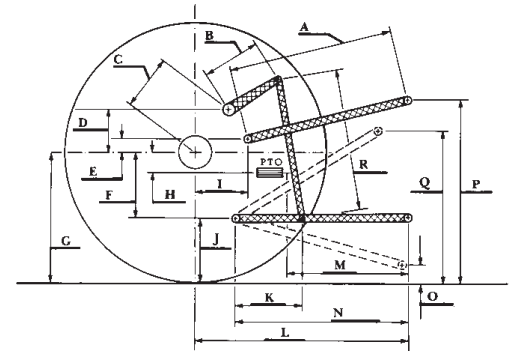
28.5 GPM (107.9 l/min)      28.9 GPM (109.4 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 28.2 GPM (106.7 l/min)      28.1 GPM (106.4 l/min)

Delivery pressure: 2304 psi (159 bar)      2622 psi (181 bar)

Power: 37.9 hp (28.3 kW)      43.0 HP (32.1 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, I1IN				
Quick attach:	none				

**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 I1IN 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—NO LOAD**

**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—NO LOAD**

**Category I1IN**

	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



**McCormick MTX 150 Diesel**

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