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Test 1880: McCormick XTX 185/McCormick MTX 165 Diesel

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NEBRASKA OECD TRACTOR TEST 1880 - SUMMARY 537
McCORMICK XTX 185 DIESEL
ALSO McCORMICK MTX 165 DIESEL
32 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—1086 rpm)					
159.27 *(118.77)*	2200	9.57 *(36.21)*	0.420 *(0.255)*	16.65 *(3.28)*	
Standard Power Take-off Speed—(1000 rpm)					
174.20 *(129.90)*	2025	9.76 *(36.93)*	0.391 *(0.238)*	17.85 *(3.52)*	
Maximum Power (1 hour)					
178.02 *(132.75)*	1897	9.71 *(36.74)*	0.381 *(0.232)*	18.34 *(3.61)*	
VARYING POWER AND FUEL CONSUMPTION					
159.27 *(118.77)*	2200	9.57 *(36.21)*	0.420 *(0.255)*	16.65 *(3.28)*	Air temperature
141.67 *(105.65)*	2299	9.08 *(34.39)*	0.448 *(0.273)*	15.60 *(3.07)*	76°F *(25°C)*
105.98 *(79.03)*	2299	7.37 *(27.89)*	0.486 *(0.296)*	14.39 *(2.83)*	Relative humidity
70.84 *(52.82)*	2299	5.46 *(20.69)*	0.539 *(0.328)*	12.96 *(2.55)*	19%
35.09 *(26.17)*	2299	3.62 *(13.70)*	0.721 *(0.439)*	9.70 *(1.91)*	Barometer
1.68 *(1.25)*	2299	2.09 *(7.91)*	8.710 *(5.298)*	0.80 *(0.16)*	28.89" Hg *(97.83 kPa)*

Maximum torque - 548 lb.-ft. *(743 Nm)* at 1301 rpm
Maximum torque Rise - 44.0%
Torque rise at 1801 engine rpm - 33%

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—16th(3-2) Gear									
128.72 *(95.99)*	8764 *(38.98)*	5.51 *(8.86)*	2200	3.43	0.482 *(0.293)*	14.50 *(2.86)*	176 *(80)*	61 *(16)*	29.03 *(98.31)*
75% of Pull at Maximum Power—16th(3-2) Gear									
102.34 *(76.32)*	6591 *(29.32)*	5.82 *(9.37)*	2299	2.39	0.532 *(0.324)*	13.14 *(2.59)*	175 *(80)*	67 *(19)*	29.01 *(98.23)*
50% of Pull at Maximum Power—16th(3-2) Gear									
68.97 *(51.43)*	4407 *(19.60)*	5.87 *(9.45)*	2298	1.64	0.611 *(0.372)*	11.43 *(2.25)*	170 *(77)*	67 *(19)*	29.01 *(98.23)*
75% of Pull at Reduced Engine Speed—20th(3-4) Gear									
102.50 *(76.44)*	6568 *(29.21)*	5.85 *(9.42)*	1682	2.43	0.441 *(0.268)*	15.87 *(3.13)*	169 *(76)*	68 *(20)*	29.00 *(98.21)*
50% of Pull at Reduced Engine Speed—20th(3-4) Gear									
69.20 *(51.60)*	4400 *(19.57)*	5.90 *(9.49)*	1681	1.64	0.504 *(0.307)*	13.86 *(2.73)*	160 *(71)*	68 *(20)*	29.00 *(98.21)*

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

Dates of tests: May 11-16, 2006

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)*** 0.8395 **Fuel weight** 6.990 lbs/gal *(0.838 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** 25.0 hours

ENGINE: Make Iveco Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *J100*001913* **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: 65.0 - 68.9 lb/h *(23.9 - 26.4 kg/h)* **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 19.1 - 21.0 psi *(132 - 145 kPa)* as measured 20.2 psi *(139 kPa)*

CHASSIS: Type front wheel assist **Serial No.** *XT85AC4JJE3500599* **Tread width** rear 64.2" *(1630 mm)* to 125.0" *(3175 mm)* front 60.2" *(1530 mm)* to 87.8" *(2230 mm)* **Wheelbase** 113.1" *(2873 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (8) range operator controlled powershift **Nominal travel speeds mph *(km/h)*** first 1.12 *(1.80)* second 1.32 *(2.12)* third 1.54 *(2.48)* fourth 1.81 *(2.91)* fifth 2.14 *(3.44)* sixth 2.40 *(3.87)* seventh 2.51 *(4.04)* eighth 2.82 *(4.54)* ninth 2.95 *(4.74)* tenth 3.31 *(5.32)* eleventh 3.45 *(5.55)* twelfth 3.87 *(6.23)* thirteenth 4.59 *(7.38)* fourteenth 4.81 *(7.74)* fifteenth 5.38 *(8.66)* sixteenth 5.64 *(9.08)* seventeenth 6.31 *(10.16)* eighteenth 6.61 *(10.64)* nineteenth 7.39 *(11.90)* twentieth 7.75 *(12.47)* twenty-first 9.18 *(14.77)* twenty-second 10.07 *(16.20)* twenty-third 10.77 *(17.33)* twenty-fourth 11.81 *(19.01)* twenty-fifth 12.63 *(20.32)* twenty-sixth 13.85 *(22.29)* twenty-seventh 14.80 *(23.81)*

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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				9th(1-7) Gear					
114.11 *(85.09)*	15586 *(69.33)*	2.75 *(4.42)*	2282	11.20	0.548 *(0.333)*	12.76 *(2.51)*	168 *(76)*	54 *(12)*	28.96 *(98.07)*
				10th(2-3) Gear					
122.13 *(91.08)*	14984 *(66.65)*	3.06 *(4.92)*	2217	9.40	0.509 *(0.310)*	13.74 *(2.71)*	170 *(77)*	56 *(13)*	28.96 *(98.07)*
				11th(1-8) Gear					
124.26 *(92.66)*	14806 *(65.86)*	3.15 *(5.06)*	2166	8.53	0.503 *(0.306)*	13.89 *(2.74)*	170 *(77)*	55 *(13)*	28.96 *(98.07)*
				12th(2-4) Gear					
132.61 *(98.89)*	14301 *(63.62)*	3.48 *(5.60)*	2115	7.77	0.473 *(0.287)*	14.79 *(2.91)*	172 *(78)*	58 *(14)*	28.96 *(98.07)*
				13th(2-5) Gear					
138.14 *(103.01)*	13456 *(59.85)*	3.85 *(6.20)*	1956	6.72	0.451 *(0.274)*	15.51 *(3.06)*	176 *(80)*	60 *(16)*	29.04 *(98.34)*
				14th(3-1) Gear					
139.25 *(103.84)*	12892 *(57.35)*	4.05 *(6.52)*	1953	6.17	0.441 *(0.268)*	15.85 *(3.12)*	177 *(80)*	60 *(16)*	29.04 *(98.34)*
				15th(2-6) Gear					
139.70 *(104.17)*	11315 *(50.33)*	4.63 *(7.45)*	1957	4.73	0.445 *(0.270)*	15.72 *(3.10)*	174 *(79)*	57 *(14)*	29.04 *(98.34)*
				16th(3-2) Gear					
141.31 *(105.37)*	11000 *(48.93)*	4.82 *(7.75)*	1949	4.41	0.443 *(0.270)*	15.77 *(3.11)*	176 *(80)*	61 *(16)*	29.04 *(98.34)*
				17th(2-7) Gear					
140.07 *(104.45)*	9633 *(42.85)*	5.45 *(8.77)*	1948	3.69	0.442 *(0.269)*	15.81 *(3.11)*	174 *(79)*	58 *(14)*	29.04 *(98.34)*
				18th(3-3) Gear					
141.11 *(105.23)*	9240 *(41.10)*	5.73 *(9.22)*	1953	3.59	0.446 *(0.271)*	15.68 *(3.09)*	173 *(78)*	52 *(11)*	28.80 *(97.53)*
				19th(2-8) Gear					
139.54 *(104.05)*	8140 *(36.21)*	6.43 *(10.35)*	1947	3.05	0.453 *(0.275)*	15.44 *(3.04)*	175 *(80)*	58 *(14)*	29.04 *(98.34)*
				20th(3-4) Gear					
140.95 *(105.11)*	7845 *(34.90)*	6.74 *(10.84)*	1948	2.99	0.442 *(0.269)*	15.81 *(3.11)*	177 *(81)*	62 *(17)*	29.03 *(98.31)*
				21st(3-5) Gear					
139.14 *(103.76)*	6492 *(28.88)*	8.04 *(12.93)*	1950	2.39	0.448 *(0.273)*	15.59 *(3.07)*	177 *(81)*	63 *(17)*	29.03 *(98.31)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Disengaged dB(A)	Engaged dB(A)
At no load in 13th (2-5) gear	71.8	71.9
Bystander	---	---

TIRES AND WEIGHT	Tested without ballast
Rear tires - No.,size, ply & psi(*kPa*)	Two 18.4R46; ***;17 (*115*)
Front tires - No.,size, ply & psi(*kPa*)	Two 16.9R30; ***;17 (*115*)
Height of Drawbar	19.0 in *(485 mm)*
Static Weight with operator- Rear	10460 lb (*4745 kg*)
- Front	5725 lb (*2597 kg*)
- Total	16185 lb (*7342 kg*)

twenty-eighth 16.23 *(26.12)* twenty-ninth 19.22 *(30.93)* thirtieth 22.55 *(36.29)* thirty-first 25.84 *(41.58)* thirty-second 25.91 *(41.70)*(1900 RPM) reverse 1.35 *(2.17)*, 1.58 *(2.55)*, 1.86 *(2.99)*, 2.17 *(3.50)*, 2.58 *(4.15)*, 2.90 *(4.66)*, 3.03 *(4.87)*, 3.39 *(5.46)*, 3.55 *(5.71)*, 3.98 *(6.41)*, 4.16 *(6.69)*, 4.67 *(7.51)* 5.52 *(8.89)*, 5.79 *(9.32)*, 6.48 *(10.43)*, 6.79 *(10.93)*, 7.60 *(12.23)*, 7.97 *(12.82)*, 8.90 *(14.33)*, 9.33 *(15.02)*, 11.05 *(17.78)*, 12.96 *(20.86)*, 15.21 *(24.47)*, 17.82 *(28.67)* **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** XTX 185 - 540 rpm at 1860 engine rpm or 1000 rpm at 2025 engine rpm, STX 165 - 540 rpm at 1877 engine rpm or 1000 rpm at 2209 engine rpm engine **Unladen tractor mass** 16010 lb *(7262 kg)*

NOTE: The engine of the McCormick XTX 185 is electronically controlled to provide two power levels. A "boosted" power level is available when the PTO is engaged, under load, or when the tractor is operated in 4th range.

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 46% torque rise, 34 GPM *(129 lpm)* hydraulic flow nor 3 point lift claim of 15287 lbs *(6934 kg)* at 24"*(610 mm)* behind the hitch points with the 89 mm lift cylinders. The manufacturer's claim of 43 GPM *(163 lpm)* remote flow with optional pump was not verified. For the maximum power tests, the fuel temperature at the injection pump was maintained at 170°F *(77°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. **1880,** Nebraska Summary 537, August 23, 2006.

Leonard L. Bashford
Director

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

PTO performance in the "unboosted" mode

This vehicle is equipped with an electronically controlled engine Power management system that monitors and boosts engine power output in certain circumstances. This is achieved by electronically changing the characteristics of the engine power-speed curve. The engine Power management function ("boosted" power level) becomes active in the higher transmission gears (4th range). The system is also activated when power transfer through the PTO exceeds a preset level. An overide system was provided to enable PTO operations at the "unboosted" power level while the vehicle was stationary for test purposes. The results of of this PTO output test are presented below.

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—1087 rpm)					
145.95 *(108.84)*	2200	8.89 *(33.65)*	0.426 *(0.259)*	16.42 *(3.23)*	
Maximum Power (1 hour)					
160.97 *(120.04)*	1950	8.96 *(33.91)*	0.389 *(0.237)*	17.97 *(3.54)*	
VARYING POWER AND FUEL CONSUMPTION					
145.95 *(108.84)*	2200	8.89 *(33.65)*	0.426 *(0.259)*	16.42 *(3.23)*	Air temperature
129.72 *(93.73)*	2300	8.60 *(32.55)*	0.463 *(0.282)*	15.09 *(2.97)*	76°F *(25°C)*
97.33 *(72.58)*	2300	6.92 *(26.21)*	0.497 *(0.302)*	14.06 *(2.77)*	Relative humidity
64.89 *(48.39)*	2300	5.14 *(16.28)*	0.553 *(0.337)*	12.63 *(2.49)*	25%
32.39 *(24.15)*	2300	3.51 *(13.27)*	0.756 *(0.460)*	9.24 *(1.82)*	Barometer
1.73 *(1.29)*	2300	2.13 *(8.07)*	8.611 *(5.238)*	0.81 *(0.16)*	28.78" Hg *(97.46 kPa)*

Maximum torque - 525 lb.-ft. *(712 Nm)* at 1251 rpm
Maximum torque rise - 50.6%
Torque rise at 1799 engine rpm - 32%

	89 mm lift cylinders	100 mm lift cylinders
CATEGORY: III		
Quick Attach: None		
Maximum force exerted through whole range:	12385 lbs *(55.1 kN)*	16317 lbs *(72.6 kN)*
i) Opening pressure of relief valve:	NA	
	one outlet set	two outlet sets combined
Sustained pressure of the open relief valve:	2874 psi *(198 bar)*	2878 psi *(198 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	28.9 GPM *(109.4 l/min)*	32.4 GPM *(122.6 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	27.3 GPM *(103.3 l/min)*	30.5 GPM *(115.5 l/min)*
Delivery pressure:	2243 psi *(155 bar)*	2487 psi *(171 bar)*
Power:	35.7 hp *(26.6 kW)*	44.3 hp *(33.0 kW)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. *(bar)*	2880 *(198)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	145 *(63)*
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test (100 mm cylinders) - System pressure 2586 psi *(178 Bar)*

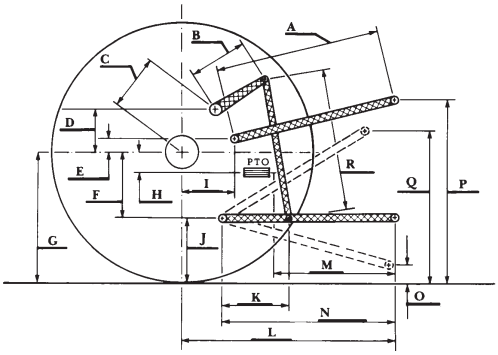
Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	16.0 *(406)*	24.0 *(610)*	32.0 *(813)*	40.0 *(1016)*
Lift force on frame lb	21494	20242	20202	19804	19906
" " " " " " *(kN)*	*(95.6)*	*(90.0)*	*(89.9)*	*(88.1)*	*(88.5)*

HITCH DIMENSIONS AS TESTED—NO LOAD
89 mm lift cylinders

	inch	*mm*
A	32.0	*814*
B	16.1	*410*
C	18.1	*461*
D	17.7	*450*
E	7.9	*200*
F	13.8	*350*
G	35.6	*905*
H	8.1	*205*
I	17.7	*450*
J	21.8	*555*
K	26.6	*675*
L	49.3	*1253*
M	25.7	*653*
N	39.5	*1003*
O	9.1	*230*
P	48.8	*1240*
Q	38.2	*970*
R	41.9	*1063*

HITCH DIMENSIONS AS TESTED—NO LOAD
100 mm lift cylinders

	OECD test		SAE test	
	inch	*mm*	inch	*mm*
A	30.8	*781*	30.8	*781*
B	16.1	*410*	16.1	*410*
C	18.1	*461*	18.1	*461*
D	17.7	*450*	17.7	*450*
E	12.2	*310*	12.2	*310*
F	13.8	*350*	13.8	*350*
G	36.2	*920*	36.2	*920*
H	8.1	*205*	8.1	*205*
I	17.7	*450*	17.7	*450*
J	22.4	*570*	22.4	*570*
K	26.6	*675*	26.6	*675*
L	49.3	*1253*	49.3	*1253*
M	25.7	*653*	25.7	*653*
N	39.5	*1003*	39.5	*1003*
O	9.0	*228*	8.0	*203*
P	49.4	*1255*	44.4	*1128*
Q	39.1	*994*	38.1	*968*
R	41.4	*1053*	42.2	*1071*



McCormick XTX 185 Diesel

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