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# Test 1882: McCormick XTX 215 Diesel

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# NEBRASKA OECD TRACTOR TEST 1882 - SUMMARY 539
# McCORMICK XTX 215 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—1087 rpm)** | | | | | |
| 189.53 *(141.33)* | 2201 | 11.03 *(41.76)* | 0.407 *(0.247)* | 17.18 *(3.38)* | |
| **Standard Power Take-off Speed—(1000 rpm)** | | | | | |
| 203.85 *(152.01)* | 2025 | 11.29 *(42.76)* | 0.387 *(0.236)* | 18.05 *(3.56)* | |
| **Maximum Power (1 hour)** | | | | | |
| 205.58 *(153.30)* | 2000 | 11.33 *(42.89)* | 0.385 *(0.234)* | 18.14 *(3.57)* | |
| **VARYING POWER AND FUEL CONSUMPTION** | | | | | |
| 189.53 *(141.33)* | 2201 | 11.03 *(41.76)* | 0.407 *(0.247)* | 17.18 *(3.38)* | Air temperature |
| 168.22 *(125.44)* | 2299 | 10.46 *(39.59)* | 0.435 *(0.264)* | 16.09 *(3.17)* | 77°F *(25°C)* |
| 125.99 *(93.95)* | 2299 | 8.30 *(31.41)* | 0.460 *(0.280)* | 15.18 *(2.99)* | Relative humidity |
| 84.19 *(62.78)* | 2299 | 6.09 *(23.07)* | 0.506 *(0.308)* | 13.81 *(2.72)* | 52% |
| 42.61 *(31.77)* | 2299 | 3.98 *(15.05)* | 0.652 *(0.397)* | 10.71 *(2.11)* | Barometer |
| 1.62 *(1.21)* | 2299 | 2.07 *(7.85)* | 8.938 *(5.437)* | 0.78 *(0.15)* | 28.98" Hg *(98.14 kPa)* |

Maximum Torque - 651 lb.-ft. *(883 Nm)* at 1400 rpm
Maximum Torque Rise - 43.9%
Torque rise at 1751 engine rpm - 34%

## 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** | | | | | | | | | |
| 155.27 *(115.78)* | 10673 *(47.48)* | 5.46 *(8.78)* | 2199 | 4.00 | 0.460 *(0.280)* | 15.18 *(2.99)* | 180 *(82)* | 63 *(17)* | 28.97 *(98.10)* |
| **75% of Pull at Maximum Power—16th(3-2) Gear** | | | | | | | | | |
| 123.06 *(91.77)* | 7991 *(35.55)* | 5.77 *(9.29)* | 2299 | 2.75 | 0.518 *(0.315)* | 13.49 *(2.66)* | 178 *(81)* | 64 *(18)* | 28.97 *(98.10)* |
| **50% of Pull at Maximum Power—16th(3-2) Gear** | | | | | | | | | |
| 82.92 *(61.84)* | 5328 *(23.70)* | 5.84 *(9.39)* | 2298 | 1.74 | 0.569 *(0.346)* | 12.29 *(2.42)* | 171 *(77)* | 65 *(18)* | 28.98 *(98.14)* |
| **75% of Pull at Reduced Engine Speed—20th(3-4) Gear** | | | | | | | | | |
| 123.11 *(91.80)* | 7954 *(35.38)* | 5.80 *(9.34)* | 1679 | 2.66 | 0.433 *(0.264)* | 16.13 *(3.18)* | 167 *(75)* | 66 *(19)* | 29.00 *(98.21)* |
| **50% of Pull at Reduced Engine Speed—20th(3-4) Gear** | | | | | | | | | |
| 83.01 *(61.90)* | 5311 *(23.62)* | 5.86 *(9.43)* | 1679 | 1.72 | 0.478 *(0.291)* | 14.62 *(2.88)* | 161 *(72)* | 65 *(18)* | 28.99 *(98.17)* |

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

**Dates of tests:** June 8 - 15, 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** 23.0 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:** 74.9 - 79.4 lb/h *(34.0 - 36.0 kg/h)* **High idle:** 2275 - 2325 rpm **Turbo boost:** nominal 21.6 - 23.6 psi *(149 - 163 kPa)* as measured 22.7 psi *(157 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)* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 11th(1-8) Gear | | | | |
| 132.83 *(99.05)* | 15648 *(69.60)* | 3.18 *(5.12)* | 2296 | 12.52 | 0.533 *(0.324)* | 13.12 *(2.58)* | 171 *(77)* | 61 *(16)* | 28.97 *(98.10)* |
| | | | | | 12th(2-4) Gear | | | | |
| 145.18 *(108.26)* | 14688 *(65.34)* | 3.71 *(5.96)* | 2266 | 8.07 | 0.491 *(0.299)* | 14.24 *(2.81)* | 174 *(79)* | 61 *(16)* | 28.97 *(98.10)* |
| | | | | | 13th(2-5) Gear | | | | |
| 150.52 *(112.25)* | 13894 *(61.80)* | 4.06 *(6.54)* | 2090 | 7.67 | 0.479 *(0.291)* | 14.60 *(2.88)* | 180 *(82)* | 77 *(25)* | 28.78 *(97.46)* |
| | | | | | 14th(3-1) Gear | | | | |
| 153.14 *(114.20)* | 13642 *(60.68)* | 4.21 *(6.77)* | 2065 | 7.43 | 0.475 *(0.289)* | 14.72 *(2.90)* | 179 *(82)* | 79 *(26)* | 28.77 *(97.43)* |
| | | | | | 15th(2-6) Gear | | | | |
| 160.22 *(119.48)* | 13523 *(60.16)* | 4.44 *(7.15)* | 1940 | 7.08 | 0.463 *(0.282)* | 15.10 *(2.98)* | 182 *(83)* | 78 *(26)* | 28.77 *(97.43)* |
| | | | | | 16th(3-2) Gear | | | | |
| 163.91 *(122.23)* | 13391 *(59.56)* | 4.59 *(7.39)* | 1912 | 7.04 | 0.456 *(0.277)* | 15.33 *(3.02)* | 183 *(84)* | 80 *(27)* | 28.76 *(97.39)* |
| | | | | | 17th(2-7) Gear | | | | |
| 165.62 *(123.50)* | 11928 *(53.06)* | 5.21 *(8.38)* | 1900 | 5.24 | 0.452 *(0.275)* | 15.46 *(3.05)* | 184 *(85)* | 79 *(26)* | 28.77 *(97.43)* |
| | | | | | 18th(3-3) Gear | | | | |
| 166.72 *(124.32)* | 11420 *(50.80)* | 5.47 *(8.81)* | 1902 | 5.01 | 0.449 *(0.273)* | 15.56 *(3.07)* | 185 *(85)* | 80 *(27)* | 28.76 *(97.39)* |
| | | | | | 19th(2-8) Gear | | | | |
| 167.89 *(125.19)* | 10217 *(45.45)* | 6.16 *(9.92)* | 1897 | 4.13 | 0.446 *(0.271)* | 15.66 *(3.09)* | 186 *(85)* | 82 *(28)* | 28.75 *(97.36)* |
| | | | | | 20th(3-4) Gear | | | | |
| 168.18 *(125.41)* | 9720 *(43.24)* | 6.49 *(10.44)* | 1901 | 3.85 | 0.448 *(0.273)* | 15.59 *(3.07)* | 187 *(86)* | 81 *(27)* | 28.75 *(97.36)* |
| | | | | | 21st(3-5) Gear | | | | |
| 169.13 *(126.12)* | 8190 *(36.43)* | 7.74 *(12.46)* | 1898 | 2.94 | 0.445 *(0.271)* | 15.71 *(3.09)* | 187 *(86)* | 81 *(27)* | 28.75 *(97.36)* |
| | | | | | 22nd(4-1) Gear | | | | |
| 165.94 *(123.74)* | 7305 *(32.49)* | 8.52 *(13.71)* | 1901 | 2.57 | 0.450 *(0.274)* | 15.53 *(3.06)* | 188 *(87)* | 83 *(28)* | 28.74 *(97.33)* |

| 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, BALLAST AND WEIGHT | With Ballast | Without Ballast |
|---|---|---|
| **Rear tires -** No.,size, ply & psi*(kPa)* | Four 18.4R46; ***;10 *(70)* | Two 18.4R46;***;17*(115)* |
| Ballast - Duals(total) | 1985 lb *(900 kg)* | None |
| - Test equip (total) | 175 lb *(79 kg)* | None |
| **Front tires** - No.,size, ply & psi*(kPa)* | Two 16.9R30; ***;18 *(125)* | Two 16.9R30;***;17*(115)* |
| Ballast - Liquid(total) | None | None |
| - Cast Iron(total) | 1900 lb *(862 kg)* | None |
| **Height of Drawbar** | 19.5 in *(495 mm)* | 19.0 in *(485 mm)* |
| **Static Weight with operator-** Rear | 12040 lb *(5460 kg)* | 10460 lb *(4745 kg)* |
| - Front | 8205 lb *(3722 kg)* | 5725 lb *(2597 kg)* |
| - Total | 20245 lb *(9182 kg)* | 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** 540 rpm at 1860 engine rpm or 1000 rpm at 2025 engine rpm **Unladen tractor mass** 16010 lb *(7262 kg)*

**NOTE 1:** The engine of the McCormick XTX 215 is electronically controlled to provide two power levels. A "boosted" power level is available when the PTO is engaged, under load.

**NOTE 2:** The performance figures on this report are the result of replacing the electronic engine control module of the McCormick XTX185 with the XTX215 module.

**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 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. **1882,** Nebraska Summary 539,September 30, 2006.

David L. Morgan
Assistant Director

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

# DRAWBAR PERFORMANCE

## BALLASTED - 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)* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 8th(2-2) Gear | | | | |
| 145.15 *(108.24)* | 20124 *(89.52)* | 2.70 *(4.35)* | 2277 | 7.88 | 0.494 *(0.301)* | 14.15 *(2.79)* | 171 *(77)* | 61 *(16)* | 29.00 *(98.21)* |
| | | | | | 9th(1-7) Gear | | | | |
| 144.24 *(107.56)* | 19095 *(84.94)* | 2.83 *(4.56)* | 2271 | 7.37 | 0.501 *(0.305)* | 13.95 *(2.75)* | 178 *(81)* | 66 *(19)* | 29.00 *(98.21)* |
| | | | | | 10th(2-3) Gear | | | | |
| 153.71 *(114.62)* | 19025 *(84.63)* | 3.03 *(4.88)* | 2154 | 6.95 | 0.470 *(0.286)* | 14.88 *(2.93)* | 178 *(81)* | 63 *(17)* | 29.00 *(98.21)* |
| | | | | | 11th(1-8) Gear | | | | |
| 153.46 *(114.43)* | 18334 *(81.56)* | 3.14 *(5.05)* | 2134 | 6.80 | 0.470 *(0.286)* | 14.88 *(2.93)* | 179 *(82)* | 67 *(19)* | 29.00 *(98.21)* |
| | | | | | 12th(2-4) Gear | | | | |
| 163.29 *(121.77)* | 18107 *(80.54)* | 3.38 *(5.44)* | 2027 | 5.81 | 0.451 *(0.274)* | 15.51 *(3.05)* | 177 *(81)* | 65 *(18)* | 29.00 *(98.21)* |
| | | | | | 13th(2-5) Gear | | | | |
| 172.62 *(128.72)* | 17075 *(75.95)* | 3.79 *(6.10)* | 1901 | 4.93 | 0.434 *(0.264)* | 16.10 *(3.17)* | 181 *(83)* | 66 *(19)* | 29.00 *(98.21)* |
| | | | | | 14th(3-1) Gear | | | | |
| 171.58 *(127.95)* | 16185 *(72.00)* | 3.98 *(6.40)* | 1900 | 4.75 | 0.438 *(0.267)* | 15.95 *(3.14)* | 179 *(82)* | 68 *(20)* | 29.00 *(98.21)* |
| | | | | | 15th(2-6) Gear | | | | |
| 171.57 *(127.94)* | 14311 *(63.66)* | 4.50 *(7.24)* | 1901 | 3.96 | 0.437 *(0.266)* | 15.98 *(3.15)* | 180 *(82)* | 69 *(21)* | 29.00 *(98.21)* |
| | | | | | 16th(3-2) Gear | | | | |
| 173.03 *(129.03)* | 13749 *(61.16)* | 4.72 *(7.59)* | 1898 | 3.58 | 0.434 *(0.264)* | 16.11 *(3.17)* | 181 *(83)* | 68 *(20)* | 29.00 *(98.21)* |
| | | | | | 17th(2-7) Gear | | | | |
| 170.72 *(127.31)* | 12056 *(53.63)* | 5.31 *(8.55)* | 1898 | 3.15 | 0.442 *(0.269)* | 15.81 *(3.11)* | 183 *(84)* | 69 *(21)* | 29.00 *(98.21)* |
| | | | | | 18th(3-3) Gear | | | | |
| 172.74 *(128.81)* | 11602 *(51.61)* | 5.58 *(8.99)* | 1900 | 2.83 | 0.437 *(0.266)* | 15.98 *(3.15)* | 181 *(83)* | 68 *(20)* | 29.00 *(98.21)* |
| | | | | | 19th(2-8) Gear | | | | |
| 171.47 *(127.86)* | 10224 *(45.48)* | 6.29 *(10.12)* | 1905 | 2.54 | 0.440 *(0.267)* | 15.90 *(3.13)* | 181 *(83)* | 70 *(21)* | 29.00 *(98.21)* |
| | | | | | 20th(3-4) Gear | | | | |
| 172.05 *(128.30)* | 9790 *(43.55)* | 6.59 *(10.61)* | 1902 | 2.30 | 0.435 *(0.265)* | 16.07 *(3.16)* | 183 *(84)* | 70 *(21)* | 29.00 *(98.21)* |
| | | | | | 21st(3-5) Gear | | | | |
| 170.42 *(127.08)* | 8155 *(36.28)* | 7.84 *(12.61)* | 1901 | 1.83 | 0.442 *(0.269)* | 15.82 *(3.12)* | 183 *(84)* | 71 *(22)* | 29.01 *(98.24)* |
| | | | | | 22nd(4-1) Gear | | | | |
| 168.21 *(125.43)* | 7336 *(32.63)* | 8.60 *(13.84)* | 1902 | 1.59 | 0.449 *(0.273)* | 15.58 *(3.07)* | 184 *(85)* | 76 *(24)* | 29.01 *(98.24)* |

| | | |
|---|---|---|
| CATEGORY: III | | |
| Quick Attach: None | 100 mm lift cylinders | |
| Maximum force exerted through whole range: | 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

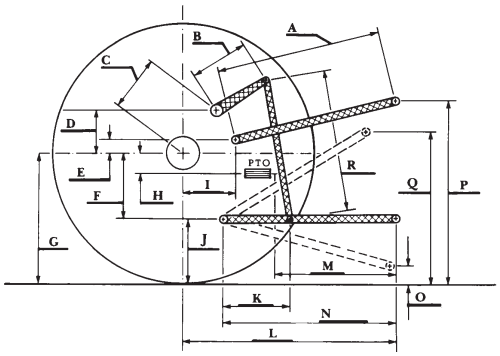
| | |
|---|---|
| Observed Maximum Pressure psi. *(bar)* | 2880 *(198)* |
| Location: | lift cylinder |
| Hydraulic oil temperature: °F *(°C)* | 145 *(63)* |
| Location: | hydraulic sump |
| Category: | III |
| Quick attach: | none |

**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**
**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 215 Diesel**

**Institute of Agriculture and Natural Resources**
**University of Nebraska–Lincoln**