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# Test 1760: Case IH MX 240 Diesel

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# NEBRASKA OECD TRACTOR TEST 1760–SUMMARY 274
# CASE IH MX 240 DIESEL
# 18 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—1012 rpm)** | | | | | |
| 206.72 *(154.15)* | 1997 | 11.60 *(43.90)* | 0.398 *(0.242)* | 17.83 *(3.51)* | |
| **Standard Power Take-off Speed (1000 rpm)** | | | | | |
| 213.36 *(159.10)* | 1973 | 11.80 *(44.66)* | 0.392 *(0.238)* | 18.08 *(3.56)* | |
| **Maximum Power (2 hours)** | | | | | |
| 235.15 *(175.35)* | 1800 | 12.67 *(47.97)* | 0.382 *(0.232)* | 18.56 *(3.66)* | |
| **VARYING POWER AND FUEL CONSUMPTION** | | | | | |
| 206.72 *(154.15)* | 1997 | 11.60 *(43.90)* | 0.398 *(0.242)* | 17.83 *(3.51)* | Air temperature |
| 178.24 *(132.89)* | 2025 | 10.50 *(39.74)* | 0.411 *(0.254)* | 16.98 *(3.34)* | 75°F *(24°C)* |
| 134.01 *(99.93)* | 2031 | 8.42 *(31.89)* | 0.445 *(0.271)* | 15.91 *(3.13)* | Relative humidity |
| 89.51 *(66.75)* | 2035 | 6.35 *(24.04)* | 0.503 *(0.306)* | 14.10 *(2.78)* | 58% |
| 44.85 *(33.44)* | 2037 | 4.32 *(16.34)* | 0.682 *(0.415)* | 10.39 *(2.05)* | Barometer |
| 0.98 *(0.73)* | 2040 | 2.33 *(8.81)* | 16.762 *(10.196)* | 0.42 *(0.08)* | 28.88" Hg *(97.80 kPa)* |

Maximum Torque - 810 lb.-ft. *(1098 Nm)* at 1102 rpm
Maximum Torque Rise - 48.8%
Torque rise at 1600 engine rpm - 36%

## 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 cool-ing med | *(°C)* Air dry bulb | Barom. inch Hg *(kPa)* |
|---|---|---|---|---|---|---|---|---|---|
| **Maximum Power—7th Gear** | | | | | | | | | |
| 178.57 *(133.16)* | 15180 *(67.52)* | 4.41 *(7.10)* | 1996 | 4.06 | 0.462 *(0.281)* | 15.35 *(3.02)* | 188 *(87)* | 64 *(18)* | 28.42 *(96.24)* |
| **75% of Pull at Maximum Power—7th Gear** | | | | | | | | | |
| 138.22 *(103.07)* | 11408 *(50.74)* | 4.54 *(7.31)* | 2028 | 2.73 | 0.493 *(0.300)* | 14.38 *(2.83)* | 185 *(85)* | 65 *(18)* | 28.38 *(96.11)* |
| **50% of Pull at Maximum Power—7th Gear** | | | | | | | | | |
| 93.15 *(69.47)* | 7598 *(33.80)* | 4.60 *(7.40)* | 2031 | 1.73 | 0.560 *(0.341)* | 12.65 *(2.49)* | 182 *(83)* | 66 *(19)* | 28.38 *(96.11)* |
| **75% of Pull at Reduced Engine Speed—9th Gear** | | | | | | | | | |
| 138.16 *(103.02)* | 11399 *(50.70)* | 4.55 *(7.31)* | 1534 | 2.82 | 0.450 *(0.274)* | 15.75 *(3.10)* | 185 *(85)* | 65 *(18)* | 28.38 *(96.11)* |
| **50% of Pull at Reduced Engine Speed—9th Gear** | | | | | | | | | |
| 93.22 *(69.52)* | 7582 *(33.73)* | 4.61 *(7.42)* | 1539 | 1.73 | 0.499 *(0.303)* | 14.21 *(2.80)* | 182 *(83)* | 67 *(19)* | 28.37 *(96.07)* |

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

**Dates of Test:** April 13 - 24, 1999

**Manufacturer:** Case Corporation, 700 State St. Racine WI, USA

**FUEL, OIL and TIME: Fuel** No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8512 **Fuel weight** 7.087 lbs/gal *(0.849 kg/l)* **Oil SAE** 15W-40 **API service classification** SF/CD/CE **Transmission and hydraulic lubricant** Case IH Hy-Tran Plus fluid **Front axle lubricant** SAE 85W-140 API GL-5 **Total time engine was operated:** 24.5 hours

**ENGINE: Make** Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *45783518* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.488" x 5.315" *(114.0 mm x 135.0 mm)* **Compression ratio** 17.0 to 1 **Displacement** 505 cu in *(8268 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** two paper elements and prefilter **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 75.2 - 84.7 lb/h *(34.1 - 38.4 kg/h)* **High idle:** 2025 - 2065 rpm **Turbo boost:** nominal 21.5 - 24.4 psi *(148 - 168 kPa)* as measured 22.0 psi *(152 kPa)*

**CHASSIS: Type** front wheel assist **Serial No.** *X2404C4JJA0099643* **Treadwidth** rear 64.0" *(1626 mm)* to 130.9" *(3325 mm)* front 60.0" *(1524 mm)* to 88.0" *(2235 mm)* **Wheelbase** 118.3" *(3006 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 1.94 *(3.12)* second 2.22 *(3.57)* third 2.56 *(4.12)* fourth 2.94 *(4.73)* fifth 3.37 *(5.42)* sixth 3.87 *(6.22)* seventh 4.51 *(7.26)* eighth 5.17 *(8.32)* ninth 5.97 *(9.60)* tenth 6.84 *(11.01)* eleventh 7.85 *(12.63)* twelfth 9.00 *(14.48)* thirteenth 11.22 *(18.05)* fourteenth 12.86 *(20.70)* fifteenth 14.84 *(23.88)* sixteenth 17.02 *(27.39)* seventeenth 19.52 *(31.41)* eighteenth 22.39 *(36.04)* reverse 2.79 *(4.49)*, 3.19 *(5.14)*, 6.49 *(10.44)*, 7.44 *(11.98)* **Clutch** multiple wet disc electrohydraulically actuated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 1000 rpm at 1974 engine rpm **Unladen tractor mass** 20745 lb *(9410 kg)*

## DRAWBAR PERFORMANCE (UNBALLASTED)
## 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)* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 5th Gear | | | | |
| 167.71 *(125.06)* | 20928 *(93.09)* | 3.01 *(4.84)* | 1960 | 10.97 | 0.498 *(0.303)* | 14.24 *(2.81)* | 184 *(84)* | 62 *(17)* | 28.45 *(96.34)* |
| | | | | | 6th Gear | | | | |
| 180.91 *(134.90)* | 20115 *(89.47)* | 3.37 *(5.43)* | 1865 | 8.40 | 0.478 *(0.291)* | 14.81 *(2.92)* | 189 *(87)* | 63 *(17)* | 28.43 *(96.28)* |
| | | | | | 7th Gear | | | | |
| 195.77 *(145.99)* | 19005 *(84.54)* | 3.86 *(6.22)* | 1799 | 6.78 | 0.457 *(0.278)* | 15.50 *(3.05)* | 191 *(88)* | 65 *(18)* | 28.41 *(96.21)* |
| | | | | | 8th Gear | | | | |
| 199.06 *(148.44)* | 16504 *(73.41)* | 4.52 *(7.28)* | 1797 | 4.67 | 0.449 *(0.273)* | 15.79 *(3.11)* | 191 *(88)* | 65 *(18)* | 28.41 *(96.21)* |
| | | | | | 9th Gear | | | | |
| 200.56 *(149.56)* | 14219 *(63.25)* | 5.29 *(8.51)* | 1802 | 3.71 | 0.446 *(0.271)* | 15.90 *(3.13)* | 191 *(88)* | 65 *(18)* | 28.41 *(96.21)* |
| | | | | | 10th Gear | | | | |
| 199.47 *(148.74)* | 12236 *(54.43)* | 6.11 *(9.84)* | 1803 | 3.00 | 0.448 *(0.273)* | 15.81 *(3.11)* | 193 *(89)* | 65 *(18)* | 28.40 *(96.17)* |
| | | | | | 11th Gear | | | | |
| 197.93 *(147.60)* | 10554 *(46.94)* | 7.03 *(11.32)* | 1799 | 2.46 | 0.450 *(0.274)* | 15.74 *(3.10)* | 193 *(89)* | 65 *(18)* | 28.39 *(96.14)* |
| | | | | | 12th Gear | | | | |
| 195.44 *(145.74)* | 9060 *(40.30)* | 8.09 *(13.02)* | 1797 | 2.00 | 0.459 *(0.279)* | 15.44 *(3.04)* | 194 *(90)* | 65 *(18)* | 28.38 *(96.11)* |

| TRACTOR SOUND LEVEL WITH CAB | dB(A) |
|---|---|
| At 75% load in 9th gear | 71.7 |
| Bystander | -- |

| TIRES, BALLAST AND WEIGHT | With Ballast | Without Ballast |
|---|---|---|
| **Rear Tires** - No., size, ply & psi(*kPa*) | Four 20.8R42;**;12(*85*) | Two 20.8R42;**;18(*125*) |
| **Ballast** - Duals (total) | 1890 lb (*857 kg*) | None |
| - Cast Iron (total) | 2960 lb (*1343 kg*) | None |
| **Front Tires** - No., size, ply & psi(*kPa*) | Two 16.9R30;***;24(*165*) | Two 16.9R30;***;18(*125*) |
| **Ballast** - Liquid (total) | None | None |
| - Cast Iron (total) | 1130 lb (*513 kg*) | None |
| **Height of Drawbar** | 15.5 in (*395 mm*) | 15.5 in (*395 mm*) |
| **Static Weight with operator** - Rear | 17180 lb (*7793 kg*) | 12640 lb(*5733 kg*) |
| - Front | 9720 lb (*4409 kg*) | 8280 lb(*3756 kg*) |
| - Total | 26900 lb(*12202 kg*) | 20920 lb(*9489 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. For the maximum power tests the fuel temperature at the injection pump return was maintained at 188°F*(87°C)*.This tractor did not meet the manufacturer's claim of 44.0 GPM (*166 lpm)* hydraulic flow. The pull in 3rd gear(ballasted tractor) was limited to avoid excessive tractor bouncing. The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1760**, Nebraska Summary 274, May 10, 1999.

Leonard L. Bashford
Director

M.F. Kocher
R.D. Grisso
G.J. Hoffman
Board of Tractor Test Engineers

## DRAWBAR PERFORMANCE (BALLASTED)

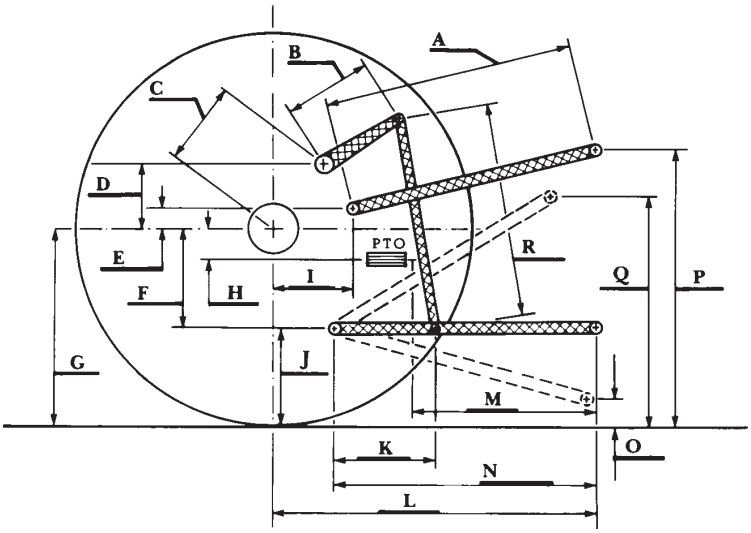
### MAXIMUM POWER IN SELECTED GEARS

| Power Hp *(kW)* | Drawbar pull lbs *(kN)* | Speed mph *(km/h)* | Crank-shaft speed rpm | Slip % | Fuel Consumption lb/hp.hr *(kg/kW.h)* | Fuel Consumption Hp.hr/gal *(kW.h/l)* | Temp.°F(°C) cool-ing med | Temp.°F(°C) Air dry bulb | Barom. inch Hg *(kPa)* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 3rd Gear | | | | | |
| 169.68 *(126.53)* | 26914 *(119.72)* | 2.36 *(3.80)* | 1979 | 8.86 | 0.486 *(0.295)* | 14.60 *(2.88)* | 184 *(84)* | 65 *(18)* | 28.94 *(98.00)* |
| | | | | 4th Gear | | | | | |
| 181.14 *(135.08)* | 25787 *(114.71)* | 2.63 *(4.24)* | 1893 | 7.18 | 0.473 *(0.288)* | 14.98 *(2.95)* | 186 *(86)* | 66 *(19)* | 28.94 *(98.00)* |
| | | | | 5th Gear | | | | | |
| 193.71 *(144.45)* | 24728 *(109.99)* | 2.94 *(4.73)* | 1817 | 5.85 | 0.461 *(0.281)* | 15.37 *(3.03)* | 186 *(85)* | 66 *(19)* | 28.94 *(98.00)* |
| | | | | 6th Gear | | | | | |
| 196.56 *(146.58)* | 21685 *(96.46)* | 3.40 *(5.47)* | 1799 | 4.14 | 0.455 *(0.277)* | 15.59 *(3.07)* | 191 *(88)* | 66 *(19)* | 28.94 *(98.00)* |
| | | | | 7th Gear | | | | | |
| 203.94 *(152.08)* | 19096 *(84.94)* | 4.01 *(6.45)* | 1800 | 3.26 | 0.439 *(0.267)* | 16.16 *(3.18)* | 191 *(88)* | 66 *(19)* | 28.93 *(97.97)* |
| | | | | 8th Gear | | | | | |
| 202.70 *(151.15)* | 16455 *(73.20)* | 4.62 *(7.43)* | 1800 | 2.63 | 0.442 *(0.269)* | 16.05 *(3.16)* | 194 *(90)* | 68 *(20)* | 28.93 *(97.97)* |
| | | | | 9th Gear | | | | | |
| 202.12 *(150.72)* | 14158 *(62.98)* | 5.35 *(8.62)* | 1800 | 2.27 | 0.443 *(0.270)* | 15.99 *(3.15)* | 193 *(89)* | 69 *(21)* | 28.94 *(98.00)* |
| | | | | 10th Gear | | | | | |
| 200.81 *(149.75)* | 12215 *(54.33)* | 6.17 *(9.92)* | 1800 | 2.00 | 0.444 *(0.270)* | 15.96 *(3.14)* | 194 *(90)* | 69 *(21)* | 28.93 *(97.97)* |
| | | | | 11th Gear | | | | | |
| 200.27 *(149.34)* | 10650 *(47.37)* | 7.05 *(11.35)* | 1790 | 1.72 | 0.446 *(0.271)* | 15.88 *(3.13)* | 194 *(90)* | 69 *(21)* | 28.93 *(97.97)* |
| | | | | 12th Gear | | | | | |
| 196.72 *(146.70)* | 9043 *(40.23)* | 8.16 *(13.13)* | 1800 | 1.36 | 0.455 *(0.277)* | 15.56 *(3.07)* | 194 *(90)* | 70 *(21)* | 28.94 *(98.00)* |

## THREE POINT HITCH PERFORMANCE (OECD Static Test)

| | | |
|---|---|---|
| CATEGORY: III | | |
| Quick Attach: Yes | | High lift option |
| Maximum Force Exerted Through Whole Range: | 13113 lbs *(58.3 kN)* | 16229 lb *(72.2 kN)* |
| i) Opening pressure of relief valve: | NA | NA |
| | | High flow option |
| Sustained pressure at compensator cutoff: | 2920 psi *(201 bar)* | 2970 psi *(205 bar)* |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 31.1 GPM*(117.7 l/min)* | 43.3 GPM *(163.9 l/min)* |
| iii)Pump delivery rate at maximum hydraulic power: | 28.7 GPM*(108.6 l/min)* | 40.3 GPM *(152.6 l/min)* |
| Delivery pressure: | 2750 psi *(190 bar)* | 2700 psi *(186 bar)* |
| Power: | 46.0 HP *(34.3 kW)* | 63.5 HP *(47.3 kW)* |

**HITCH DIMENSIONS AS TESTED—NO LOAD**




| | inch | *mm* |
|---|---|---|
| A | 25.2 | *640* |
| B | 20.5 | *520* |
| C | 22.9 | *581* |
| D | 20.7 | *525* |
| E | 8.7 | *220* |
| F | 15.7 | *400* |
| G | 37.6 | *955* |
| H | 3.5 | *90* |
| I | 20.9 | *531* |
| J | 21.9 | *555* |
| K | 30.3 | *770* |
| L | 46.1 | *1170* |
| *L' | 50.7 | *1287* |
| M | 20.0 | *507* |
| N | 38.2 | *970* |
| O | 8.0 | *203* |
| P | 48.8 | *1240* |
| Q | 37.6 | *955* |
| R | 41.3 | *1050* |

*L' to Quick Attack ends

**CASE IH MX 240 DIESEL**

**Agricultural Research Division**
**Institute of Agriculture and Natural Resources**
**University of Nebraska–Lincoln**
**Darrell Nelson, Dean and Director**