NEBRASKA OECD TRACTOR TEST 1764–SUMMARY 291
CASE IH MX 180 DIESEL
18 SPEED

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

Dates of Test: October 12 - 26, 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:** 38.5 hours

ENGINE: Make Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 45837752 **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.488" x 5.315" *(114.0 mm x 135.0 mm)* **Compression ratio** 16.5 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 **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 65.9 - 73.0 lb/h *(29.9 - 33.1 kg/h)* **High idle:** 2195 - 2285 rpm **Turbo boost:** nominal 18.0 - 22.3 psi *(124 - 144 kPa)* as measured 19.5 psi *(134 kPa)*

CHASSIS: Type front wheel assist **Serial No.***X1804C4JJA0101711* **Treadwidth** rear 60.0" *(1524 mm)* to 128.9" *(3275 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 1.84 *(2.96)* second 2.11 *(3.40)* third 2.43 *(3.92)* fourth 2.79 *(4.49)* fifth 3.20 *(5.15)* sixth 3.67 *(5.91)* seventh 4.29 *(6.90)* eighth 4.92 *(7.91)* ninth 5.67 *(9.12)* tenth 6.50 *(10.46)* eleventh 7.46 *(12.00)* twelfth 8.56 *(13.77)* thirteenth 10.66 *(17.16)* fourteenth 12.23 *(19.68)* fifteenth 14.10 *(22.69)* sixteenth 16.17 *(26.03)* seventeenth 18.55 *(29.85)* eighteenth 21.28 *(34.25)* reverse 2.65 *(4.26)*, 3.04 *(4.89)*, 6.17 *(9.93)*, 7.07 *(11.39)* **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** 540 rpm at 1982 engine rpm and 1000 rpm at 1974 engine rpm **Unladen tractor mass** 19220 lb *(8718 kg)*

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—1013 rpm)					
146.54 *(109.28)*	2000	9.59 *(36.31)*	0.464 *(0.282)*	15.28 *(3.01)*	
Standard Power Take-off Speed (1000 rpm)					
150.99 *(112.59)*	1973	9.74 *(36.88)*	0.457 *(0.278)*	15.50 *(3.05)*	
Maximum Power (2 hours)					
175.68 *(131.00)*	1750	10.57 *(40.01)*	0.426 *(0.259)*	16.62 *(3.27)*	
VARYING POWER AND FUEL CONSUMPTION					
146.54 *(109.28)*	2000	9.59 *(36.31)*	0.464 *(0.282)*	15.28 *(3.01)*	Air temperature
129.29 *(96.41)*	2077	8.89 *(33.65)*	0.413 *(0.251)*	14.54 *(2.87)*	83°F *(28°C)*
98.62 *(73.54)*	2108	7.45 *(28.20)*	0.535 *(0.325)*	13.24 *(2.61)*	Relative humidity
66.92 *(49.90)*	2150	6.01 *(22.75)*	0.637 *(0.387)*	11.13 *(2.19)*	43%
34.28 *(25.56)*	2186	4.61 *(17.47)*	0.954 *(0.580)*	7.43 *(1.46)*	Barometer
1.18 *(0.88)*	2220	3.26 *(12.34)*	19.608 *(11.927)*	0.36 *(0.07)*	29.15" Hg *(98.71 kPa)*

Maximum Torque - 558 lb.-ft. *(757 Nm)* at 1450 rpm
Maximum Torque Rise - 45.2%
Torque rise at 1600 engine rpm - 42%

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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—8th Gear									
124.86 *(93.11)*	9523 *(42.36)*	4.92 *(7.91)*	1998	2.67	0.545 *(0.331)*	13.01 *(2.56)*	186 *(85)*	57 *(14)*	28.88 *(97.80)*
75% of Pull at Maximum Power—8th Gear									
98.85 *(73.71)*	7155 *(31.82)*	5.18 *(8.34)*	2092	2.06	0.598 *(0.364)*	11.86 *(2.34)*	185 *(85)*	61 *(16)*	28.88 *(97.80)*
50% of Pull at Maximum Power—8th Gear									
67.50 *(50.33)*	4770 *(21.22)*	5.31 *(8.54)*	2128	1.26	0.714 *(0.434)*	9.93 *(1.96)*	177 *(81)*	68 *(20)*	28.87 *(97.77)*
75% of Pull at Reduced Engine Speed—10th Gear									
98.72 *(73.62)*	7177 *(31.92)*	5.16 *(8.30)*	1574	2.06	0.513 *(0.312)*	13.81 *(2.72)*	180 *(82)*	66 *(19)*	28.87 *(97.77)*
50% of Pull at Reduced Engine Speed—10th Gear									
67.48 *(50.32)*	4778 *(21.25)*	5.30 *(8.52)*	1607	1.26	0.572 *(0.348)*	12.39 *(2.44)*	175 *(79)*	73 *(23)*	28.86 *(97.73)*

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)*
				3rd Gear					
113.70 *(84.79)*	19501 *(86.74)*	2.19 *(3.52)*	2008	12.97	0.598 *(0.364)*	11.85 *(2.33)*	177 *(81)*	54 *(12)*	29.10 *(98.54)*
				4th Gear					
125.65 *(93.69)*	18347 *(81.61)*	2.57 *(4.13)*	1960	8.53	0.558 *(0.339)*	12.70 *(2.50)*	185 *(85)*	59 *(15)*	29.08 *(98.48)*
				5th Gear					
136.55 *(101.82)*	18161 *(80.78)*	2.82 *(4.54)*	1871	8.46	0.541 *(0.329)*	13.11 *(2.58)*	185 *(85)*	62 *(17)*	29.08 *(98.48)*
				6th Gear					
143.91 *(107.32)*	17695 *(78.71)*	3.05 *(4.91)*	1753	7.84	0.523 *(0.318)*	13.56 *(2.67)*	186 *(86)*	64 *(18)*	29.07 *(98.44)*
				7th Gear					
149.75 *(111.67)*	15445 *(68.70)*	3.64 *(5.85)*	1750	5.69	0.503 *(0.306)*	14.10 *(2.78)*	187 *(86)*	65 *(18)*	29.06 *(98.41)*
				8th Gear					
150.95 *(112.56)*	13307 *(59.19)*	4.25 *(6.85)*	1751	3.87	0.497 *(0.302)*	14.26 *(2.81)*	187 *(86)*	55 *(13)*	28.89 *(97.83)*
				9th Gear					
149.08 *(111.17)*	11353 *(50.50)*	4.92 *(7.93)*	1752	3.61	0.504 *(0.307)*	14.06 *(2.77)*	188 *(86)*	66 *(19)*	29.05 *(98.37)*
				10th Gear					
148.68 *(110.87)*	9820 *(43.68)*	5.68 *(9.14)*	1751	3.02	0.506 *(0.308)*	14.00 *(2.76)*	189 *(87)*	69 *(21)*	29.04 *(98.34)*
				11th Gear					
148.06 *(110.41)*	8486 *(37.75)*	6.54 *(10.53)*	1749	2.50	0.506 *(0.308)*	14.00 *(2.76)*	189 *(87)*	70 *(21)*	29.04 *(98.34)*
				12th Gear					
146.72 *(109.41)*	7283 *(32.40)*	7.55 *(12.16)*	1754	1.97	0.511 *(0.311)*	13.87 *(2.73)*	189 *(87)*	71 *(22)*	29.04 *(98.34)*
				13th Gear					
142.24 *(106.07)*	5646 *(25.11)*	9.45 *(15.21)*	1751	1.71	0.526 *(0.320)*	13.47 *(2.65)*	189 *(87)*	72 *(22)*	29.04 *(98.34)*

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 125°F *(51°C)*. This tractor did not meet the manufacturer's claim of 44.0 GPM (*166 lpm)* hydraulic flow(high flow option) nor cab sound level of 72.0 dB(A). The pull in 2nd 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. **1764**, Nebraska Summary 291, December 13, 1999.

Brent T. Sampson
Test Engineer

L.L. Bashford
M.F. Kocher
R.D. Grisso Jr.
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	**dB(A)**
At 75% load in 8th gear	73.3
Bystander	--

TIRES, BALLAST AND WEIGHT	**With Ballast**	**Without Ballast**
Rear Tires - No., size, ply & psi(*kPa)*	Four 18.4R42;**;10(*70)*	Two 18.4R42;**;20(*135)*
Ballast - Duals (total)	1545 lb *(701 kg)*	None
- Test Equip. (total)	45 lb *(20 kg)*	None
Front Tires - No., size, ply & psi(*kPa)*	Two 14.9R30;***;22(*150)*	Two 14.9R30;***;22(*150)*
Ballast - Liquid (total)	None	None
- Cast Iron(total)	None	None
Height of Drawbar	16.5 in (*420 mm)*	16.5 in (*420 mm)*
Static Weight with operator - Rear	13540 lb *(6142 kg)*	11950 lb(*5421 kg)*
- Front	7450 lb (*3379 kg)*	7450 lb(*3379 kg)*
- Total	20990 lb (*9521 kg)*	19400 lb(*8800 kg)*

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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					2nd Gear				
111.10 *(82.84)*	21702 *(96.54)*	1.92 *(3.09)*	2032	12.47	0.602 *(0.366)*	11.77 *(2.32)*	183 *(84)*	52 *(11)*	29.04 *(98.34)*
					3rd Gear				
126.81 *(94.56)*	21011 *(93.46)*	2.26 *(3.64)*	1972	7.85	0.551 *(0.335)*	12.86 *(2.53)*	183 *(84)*	54 *(12)*	29.04 *(98.34)*
					4th Gear				
138.01 *(102.91)*	20459 *(91.01)*	2.53 *(4.07)*	1896	6.51	0.526 *(0.320)*	13.46 *(2.65)*	184 *(84)*	56 *(13)*	29.04 *(98.34)*
					5th Gear				
147.29 *(109.84)*	20159 *(89.67)*	2.74 *(4.41)*	1782	6.03	0.511 *(0.311)*	13.88 *(2.73)*	187 *(86)*	59 *(15)*	29.04 *(98.34)*
					6th Gear				
148.59 *(110.80)*	17672 *(78.61)*	3.15 *(5.07)*	1748	3.98	0.504 *(0.307)*	14.06 *(2.77)*	187 *(86)*	60 *(16)*	29.04 *(98.34)*
					7th Gear				
153.59 *(114.53)*	15525 *(69.06)*	3.71 *(5.97)*	1750	3.22	0.490 *(0.298)*	14.47 *(2.85)*	188 *(86)*	61 *(16)*	29.03 *(98.31)*
					8th Gear				
152.76 *(113.92)*	13365 *(59.45)*	4.29 *(6.90)*	1751	2.62	0.492 *(0.299)*	14.41 *(2.84)*	188 *(87)*	61 *(16)*	29.03 *(98.31)*
					9th Gear				
151.79 *(113.19)*	11472 *(51.03)*	4.96 *(7.99)*	1751	2.10	0.495 *(0.301)*	14.31 *(2.82)*	187 *(86)*	61 *(16)*	29.03 *(98.31)*
					10th Gear				
150.97 *(112.58)*	9926 *(44.15)*	5.70 *(9.18)*	1751	2.01	0.499 *(0.303)*	14.21 *(2.80)*	189 *(87)*	60 *(16)*	29.03 *(98.31)*
					11th Gear				
149.18 *(111.25)*	8516 *(37.88)*	6.57 *(10.57)*	1752	1.75	0.502 *(0.306)*	14.11 *(2.78)*	189 *(87)*	59 *(15)*	29.03 *(98.31)*
					12th Gear				
145.75 *(108.68)*	7255 *(32.27)*	7.53 *(12.12)*	1748	1.48	0.516 *(0.314)*	13.74 *(2.71)*	189 *(87)*	58 *(14)*	29.02 *(98.27)*
					13th Gear				
142.30 *(106.11)*	5649 *(25.13)*	9.45 *(15.20)*	1753	1.22	0.529 *(0.322)*	13.39 *(2.64)*	189 *(87)*	57 *(14)*	29.02 *(98.27)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III		
Quick Attach: No		
Maximum Force Exerted Through Whole Range:	10645 lbs *(47.4 kN)*	
i) Opening pressure of relief valve:	NA	NA
		High flow option
Sustained pressure at compensator cutoff:	2970 psi *(205 bar)*	2970 psi *(205 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	31.5 GPM*(119.2 l/min)*	43.3 GPM *(163.9 l/min)*
iii)Pump delivery rate at maximum hydraulic power:	29.4 GPM*(111.3 l/min)*	40.3 GPM *(152.6 l/min)*
Delivery pressure:	2770 psi *(191 bar)*	2700 psi *(186 bar)*
Power:	47.5 HP *(34.3 kW)*	63.5 HP *(47.3 kW)*

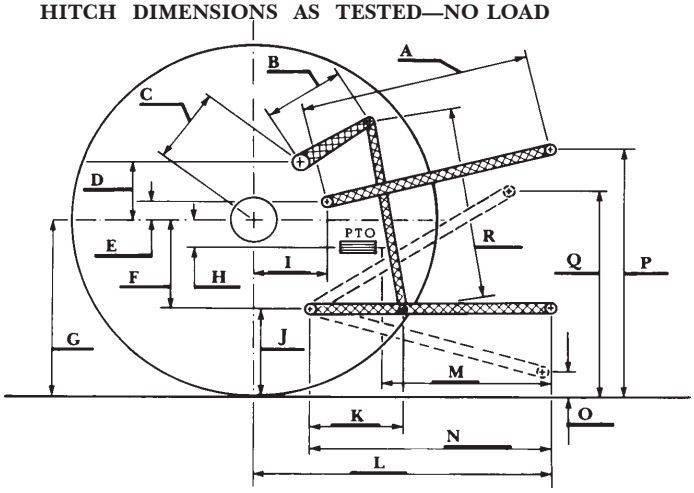
THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. *(bar)*	2990 *(206)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	149 *(65)*
Location:	hydraulic sump
Category:	III
Quick attach:	none

SAE Static Test—System pressure 2690 psi *(186 Bar)*

Hitch point distance to ground level in. *(mm)*	8.2 *(207)*	16.0 *(406)*	24.0 *(610)*	32.0 *(813)*	40.0 *(1016)*
Lift force on frame lb	18839	16047	14955	14084	12729
" " " " " " " " *(kN)*	*(83.8)*	*(71.4)*	*(66.5)*	*(62.7)*	*(56.6)*

HITCH DIMENSIONS AS TESTED—NO LOAD



	OECD test inch	OECD test *mm*	SAE test inch	SAE test *mm*
A	28.3	*720*	28.3	*720*
B	20.5	*520*	20.5	*520*
C	22.9	*581*	22.9	*581*
D	20.7	*525*	20.7	*525*
E	8.7	*220*	8.7	*220*
F	15.7	*400*	15.7	*400*
G	37.6	*955*	37.6	*955*
H	3.5	*90*	3.5	*90*
I	20.9	*531*	20.9	531
J	21.9	*555*	21.9	*555*
K	30.3	*770*	30.3	*770*
L	50.2	*1276*	50.2	*1276*
M	24.3	*617*	24.3	*617*
N	42.4	*1076*	42.4	*1076*
O	8.1	*205*	8.1	*205*
P	48.8	*1240*	43.9	*1115*
Q	41.0	*1042*	40.6	*1030*
R	39.8	*1010*	39.8	*1010*

CASE IH MX 180 DIESEL

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