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## Test 1826: Case IH MX 230 Diesel

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# NEBRASKA OECD TRACTOR TEST 1826—SUMMARY 414

## CASE IH MX 230 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1003 rpm)</b>					
192.02 (143.19)	2001	12.42 (47.03)	0.455 (0.277)	15.46 (3.04)	
<b>Maximum Power (2 hours)</b>					
216.55 (161.48)	1700	12.58 (47.61)	0.408 (0.248)	17.22 (3.39)	

VARYING POWER AND FUEL CONSUMPTION					
192.02 (143.19)	2001	12.42 (47.03)	0.455 (0.277)	15.46 (3.04)	Air temperature
169.47 (126.37)	2075	11.26 (42.63)	0.467 (0.284)	15.05 (2.96)	81°F (27°C)
128.84 (96.08)	2111	9.00 (34.07)	0.491 (0.299)	14.32 (2.82)	Relative humidity
87.69 (65.39)	2149	7.08 (26.80)	0.568 (0.345)	12.38 (2.44)	50%
44.30 (33.04)	2184	5.08 (19.22)	0.806 (0.490)	8.73 (1.72)	Barometer
1.59 (1.18)	2213	3.33 (12.59)	14.763 (8.980)	0.48 (0.09)	28.75" Hg (97.36 kPa)

Maximum Torque - 778 lb.-ft. (1055 Nm) at 1301 rpm  
 Maximum Torque Rise - 54.5%  
 Torque rise at 1600 engine rpm - 39%

#### 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)
<b>Maximum Power—7th Gear</b>									
165.17 (123.17)	14163 (63.00)	4.37 (7.04)	2001	3.96	0.529 (0.322)	13.30 (2.62)	192 (89)	53 (12)	29.07 (98.44)
<b>75% of Pull at Maximum Power—7th Gear</b>									
130.94 (97.64)	10647 (47.36)	4.61 (7.42)	2079	2.57	0.573 (0.349)	12.27 (2.42)	190 (88)	60 (16)	29.02 (98.27)
<b>50% of Pull at Maximum Power—7th Gear</b>									
89.63 (66.84)	7093 (31.55)	4.74 (7.63)	2116	1.60	0.640 (0.389)	11.00 (2.17)	187 (86)	61 (16)	29.00 (98.21)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
131.05 (97.73)	10649 (47.37)	4.61 (7.43)	1573	2.58	0.467 (0.284)	15.06 (2.97)	187 (86)	61 (16)	29.01 (98.24)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
90.04 (67.14)	7088 (31.53)	4.76 (7.67)	1608	1.62	0.509 (0.310)	13.83 (2.72)	184 (85)	62 (17)	28.99 (98.17)

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

**Dates of Test:** October 9 -27 , 2003

**Manufacturer:** CNH America LLC, 700 State St. Racine, Wi. 53404 USA

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8447 Fuel weight 7.033 lbs/gal (0.843 kg/l) Oil SAE 15W40 API service classification SF/CD/CE Transmission and hydraulic lubricant Case IH Hy-Tran Ultra fluid Front axle lubricant SAE 85W-140 API GL-5 Total time engine was operated: 23.5 hours

**ENGINE: Make** Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** \*46274093\* **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: 82.4-90.7 lb/h (37.4 - 41.1 kg/h) High idle: 2200-2280 rpm Turbo boost: nominal 21.8 - 26.1 psi (150 - 180 kPa) as measured 22.6 psi (156 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*JAZ126436\* **Tread width** rear 64.0" (1626 mm) to 129.0" (3277 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 118.3" (3005 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.96 (3.15) second 2.24 (3.61) third 2.58 (4.16) fourth 2.96 (4.77) fifth 3.41 (5.48) sixth 3.90 (6.28) seventh 4.55 (7.33) eighth 5.23 (8.41) ninth 6.02 (9.69) tenth 6.91 (11.12) eleventh 7.92 (12.75) twelfth 9.09 (14.63) thirteenth 11.33 (18.23) fourteenth 12.99 (20.91) fifteenth 14.98 (24.11) sixteenth 17.19 (27.66) seventeenth 19.72 (31.73) eighteenth 22.61 (36.39) reverse 2.81 (4.53), 3.23 (5.20), 6.56 (10.55), 7.52 (12.10) **Clutch** multiple wet disc electrohydraulically operated 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 2000 engine rpm or 1000 rpm at 1994 engine rpm **Unladen tractor mass** 20100 lb (9117 kg)

**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	Barom. inch Hg (kPa)		
4th Gear									
140.90 (105.07)	19628 (87.31)	2.69 (4.33)	2063	12.00	0.602 (0.366)	11.69 (2.30)	188 (87)	46 (8)	28.76 (97.39)
5th Gear									
156.52 (116.72)	18264 (81.24)	3.21 (5.17)	2037	7.28	0.560 (0.341)	12.56 (2.47)	188 (87)	48 (9)	29.07 (98.44)
6th Gear									
166.98 (124.52)	17887 (79.57)	3.50 (5.63)	1926	6.84	0.538 (0.328)	13.06 (2.57)	189 (87)	49 (9)	29.07 (98.44)
7th Gear									
181.02 (134.98)	17540 (78.02)	3.87 (6.23)	1814	6.30	0.499 (0.304)	14.09 (2.78)	191 (88)	51 (11)	29.07 (98.44)
8th Gear									
185.92 (138.64)	16545 (73.60)	4.21 (6.78)	1704	5.28	0.480 (0.292)	14.65 (2.89)	194 (90)	54 (12)	29.06 (98.41)
9th Gear									
186.44 (139.03)	14206 (63.19)	4.92 (7.92)	1702	3.94	0.474 (0.289)	14.83 (2.92)	194 (90)	56 (13)	29.04 (98.34)
10th Gear									
185.49 (138.32)	12254 (54.51)	5.68 (9.14)	1693	2.90	0.483 (0.294)	14.56 (2.87)	196 (91)	58 (14)	29.03 (98.31)
11th Gear									
182.17 (135.84)	10444 (46.46)	6.54 (10.53)	1694	2.60	0.490 (0.298)	14.36 (2.83)	196 (91)	59 (15)	29.03 (98.3)
12th Gear									
181.67 (135.47)	9018 (40.12)	7.55 (12.16)	1698	2.12	0.488 (0.297)	14.42 (2.84)	197 (92)	59 (15)	29.03 (98.31)
13th Gear									
180.02 (134.24)	7172 (31.90)	9.41 (15.15)	1689	1.57	0.501 (0.305)	14.10 (2.78)	197 (92)	59 (15)	29.02 (98.27)

**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 inlet was maintained at 109°F (43°C). This tractor did not meet the manufacturer's claim of 53.1 GPM (201 lpm) optional hydraulic flow. The pull in 3<sup>rd</sup> gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code Procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1826**, Nebraska Summary 414, January 15, 2004.

Leonard L. Bashford  
Director

M.F. Kocher  
V.I. Adamchuk  
W.P. Campbell  
Board of Tractor Test Engineers

**TRACTOR SOUND LEVEL WITH CAB**

**dB(A)**

At 75% load in 9th gear	71.3
Bystander in 18th gear	85.2

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Rear Tires</b> - No., size, ply & psi (kPa)	Four 520/85R42;**,10(70)	Two 520/85R42;**,15(105)
<b>Ballast</b> - Duals (total)	1950 lb (885 kg)	None
- Cast Iron (total)	2105 lb (954 kg)	None
<b>Front Tires</b> - No., size, ply & psi (kPa)	Two 420/90R30;**,17(115)	Two 420/90R30;**,13(90)
<b>Ballast</b> - Liquid (total)	None	None
- Cast Iron (total)	700 lb (318 kg)	None
<b>Height of Drawbar</b>	17.5 in (445 mm)	17.0 in (430 mm)
<b>Static Weight with operator</b> - Rear	16370 lb (7425 kg)	12635 lb (5731 kg)
- Front	8660 lb (3928 kg)	7640 lb (3465 kg)
- Total	25030 lb (11553 kg)	20275 lb (9196 kg)

**DRAWBAR PERFORMANCE**  
**BALLASTED - 1700 ENGINE RPM**  
**MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
155.58 (116.01)	24409 (108.58)	2.39 (3.85)	2020	7.85	0.571 (0.347)	12.31 (2.43)	190 (88)	60 (16)	28.73 (97.29)
4th Gear									
166.42 (124.10)	23590 (104.94)	2.65 (4.26)	1922	6.54	0.538 (0.327)	13.07 (2.57)	191 (88)	62 (17)	28.75 (97.36)
5th Gear									
175.93 (131.19)	22987 (102.25)	2.87 (4.62)	1807	5.96	0.517 (0.315)	13.60 (2.68)	192 (89)	64 (18)	28.76 (97.39)
6th Gear									
180.08 (134.29)	21536 (95.80)	3.14 (5.05)	1699	4.72	0.500 (0.304)	14.06 (2.77)	194 (90)	65 (18)	28.77 (97.43)
7th Gear									
184.47 (137.56)	18718 (83.26)	3.70 (5.95)	1696	3.57	0.487 (0.296)	14.45 (2.85)	196 (91)	66 (19)	28.78 (97.46)
8th Gear									
185.22 (138.12)	16260 (72.33)	4.27 (6.87)	1696	2.84	0.484 (0.294)	14.53 (2.86)	196 (91)	67 (19)	28.79 (97.49)
9th Gear									
183.92 (137.15)	13921 (61.93)	4.95 (7.97)	1699	2.48	0.486 (0.296)	14.46 (2.85)	197 (91)	68 (20)	28.79 (97.49)
10th Gear									
181.45 (135.30)	11926 (53.05)	5.71 (9.18)	1698	2.04	0.495 (0.301)	14.20 (2.80)	197 (92)	69 (21)	28.79 (97.49)
11th Gear									
177.39 (132.28)	10129 (45.06)	6.57 (10.57)	1698	1.68	0.497 (0.302)	14.17 (2.79)	198 (92)	70 (21)	28.79 (97.49)
12th Gear									
175.38 (130.78)	8690 (38.66)	7.57 (12.18)	1699	0.96	0.502 (0.305)	14.02 (2.76)	198 (92)	74 (23)	28.80 (97.53)
13th Gear									
173.27 (129.21)	6897 (30.68)	9.42 (15.16)	1691	0.47	0.510 (0.310)	13.79 (2.72)	198 (92)	76 (24)	28.80 (97.53)

### THREE POINT HITCH PERFORMANCE(OECD Static Test)

CATEGORY: III

Quick Attach: Yes

Maximum force exerted through whole range: 14070 lb (62.6 kN) High Lift Option  
 16375 lb (72.8 kN)

i) Opening pressure of relief valve: NA NA

High Flow Option

Sustained pressure at compensator cutoff: 3050 psi (210 bar) 3060 psi (211 bar)

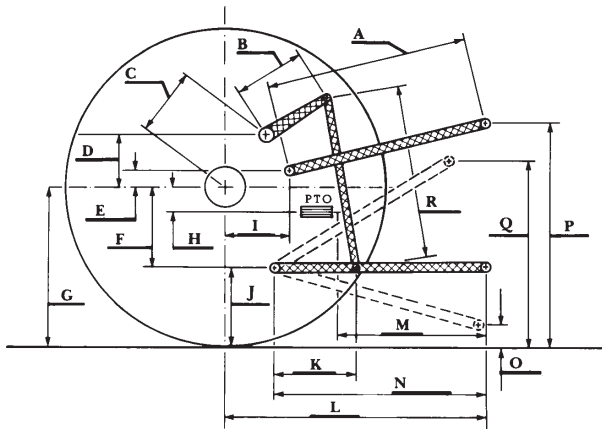
ii) Pump delivery rate at minimum pressure and rated engine speed: 38.6 GPM (146.1 l/min) 52.4 GPM (198.3 l/min)

iii) Pump delivery rate at maximum hydraulic power: 38.2 GPM (144.6 l/min) 46.6 GPM (176.5 l/min)

Delivery pressure: 2800 psi (193 bar) 2760 psi (190 bar)

Power: 62.5 HP (46.6 kW) 75.1 Hp (56.0 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	28.2	718
B	20.5	520
C	22.9	581
D	20.7	525
E	10.5	266
F	15.7	400
G	36.4	925
H	3.5	90
I	20.9	530
J	20.7	525
K	30.2	768
L	46.1	1170
*L'	50.7	1287
M	20.1	511
N	38.2	970
O	9.0	230
P	47.6	1210
Q	40.7	1035
R	39.2	995

\*L' to Quick Attach ends



**CASE IH MX 230 DIESEL**

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