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January 2007

Test 1899: Case-IH Magnum 245 and MX 245 Diesel 19-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

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NEBRASKA OECD TRACTOR TEST 1899—SUMMARY 566

CASE IH MAGNUM 245 DIESEL

ALSO CASE IH MX 245 DIESEL

19 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—1109 rpm)					
203.97 (152.10)	2000	12.55 (47.50)	0.431 (0.262)	16.26 (3.20)	
Maximum Power (1 hour)					
242.84 (181.08)	1800	14.70 (55.65)	0.424 (0.258)	16.52 (3.25)	
Standard Power Take-off Speed (998 rpm)					
242.84 (181.08)	1800	14.70 (55.65)	0.424 (0.258)	16.52 (3.25)	

VARYING POWER AND FUEL CONSUMPTION

203.97 (152.10)	2000	12.55 (47.50)	0.431 (0.262)	16.26 (3.20)	Air temperature
179.81 (134.09)	2076	12.07 (45.68)	0.470 (0.286)	14.90 (2.94)	82°F (28°C)
137.76 (102.72)	2120	11.20 (42.38)	0.570 (0.347)	12.30 (2.42)	Relative humidity
93.25 (69.54)	2158	8.94 (33.85)	0.672 (0.409)	10.43 (2.05)	17%
47.52 (35.44)	2199	6.38 (24.13)	0.941 (0.572)	7.45 (1.47)	Barometer
1.60 (1.20)	2249	4.28 (16.20)	18.719 (11.386)	0.37 (0.07)	28.83" Hg (97.63 kPa)

Maximum torque - 820 lb.-ft. (1112 Nm) at 1349 rpm

Maximum torque rise - 53.2%

Torque rise at 1597 engine rpm - 45%

Power increase at 1800 engine rpm - 19.1%

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—7th Gear									
172.67 (128.76)	14919 (66.36)	4.34 (6.99)	1993	3.59	0.508 (0.309)	13.81 (2.72)	187 (86)	59 (15)	28.86 (97.73)
75% of Pull at Maximum Power—7th Gear									
137.91 (102.84)	11220 (49.91)	4.61 (7.42)	2090	2.32	0.590 (0.359)	11.89 (2.34)	187 (86)	68 (20)	28.85 (97.70)
50% of Pull at Maximum Power—7th Gear									
95.32 (71.08)	7474 (33.24)	4.78 (7.70)	2149	1.44	0.734 (0.447)	9.55 (1.88)	187 (86)	68 (20)	28.85 (97.70)
75% of Pull at Reduced Engine Speed—9th Gear									
137.90 (102.83)	11213 (49.88)	4.61 (7.42)	1580	2.28	0.533 (0.324)	13.14 (2.59)	185 (85)	69 (21)	28.85 (97.70)
50% of Pull at Reduced Engine Speed—9th Gear									
95.06 (70.89)	7473 (33.24)	4.77 (7.68)	1620	1.41	0.586 (0.357)	11.96 (2.36)	184 (84)	69 (21)	28.85 (97.70)

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

Dates of tests: May 1 - 18, 2007

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) 0.8432 Fuel weight 7.011 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CI-4 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 CNH Engine Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *46699186* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.488" x 5.315" (114.0 mm x 135.0 mm) **Compression ratio** 17.5 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: 83.6-91.9 lb/h (37.9 - 41.7 kg/h) **High idle:** 2220-2260 rpm **Turbo boost:** nominal 21.0 - 25.4 psi (145 - 175 kPa) as measured 22.1 psi (153 kPa)

CHASSIS: Type front wheel assist **Serial No.** *Z7RZ01445* **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 1.97 (3.17) second 2.26 (3.64) third 2.60 (4.19) fourth 2.99 (4.81) fifth 3.43 (5.52) sixth 3.93 (6.33) seventh 4.59 (7.38) eighth 5.26 (8.47) ninth 6.06 (9.77) tenth 6.96 (11.20) eleventh 7.98 (12.85) twelfth 9.16 (14.74) thirteenth 11.41 (18.37) fourteenth 13.09 (21.07) fifteenth 15.10 (24.30) sixteenth 17.32 (27.87) seventeenth 19.87 (31.97) eighteenth 22.79 (36.67) nineteenth 24.86 (40.00) (1750 engine rpm) reverse 2.83 (4.56), 3.26 (5.24), 6.61 (10.63), 7.57 (12.19) **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 1806 engine rpm or 1000 rpm at 1803 engine rpm **Unladen tractor mass** 21010 lb (9530 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
161.48 (120.42)	20129 (89.54)	3.01 (4.84)	1990	10.38	0.541 (0.329)	12.96 (2.55)	187 (86)	53 (12)	28.86 (97.73)
6th Gear									
177.96 (132.71)	19222 (85.50)	3.47 (5.59)	1934	7.26	0.526 (0.320)	13.34 (2.63)	188 (86)	55 (13)	28.86 (97.73)
7th Gear									
196.18 (146.29)	18691 (83.14)	3.94 (6.33)	1864	6.52	0.514 (0.313)	13.64 (2.69)	188 (87)	60 (16)	28.86 (97.73)
8th Gear									
203.30 (151.60)	17191 (76.47)	4.43 (7.14)	1800	4.88	0.504 (0.306)	13.92 (2.74)	187 (86)	62 (17)	28.86 (97.73)
9th Gear									
204.43 (152.44)	14724 (65.50)	5.21 (8.38)	1809	3.59	0.504 (0.307)	13.90 (2.74)	188 (87)	64 (18)	28.86 (97.73)
10th Gear									
206.69 (154.13)	12914 (57.44)	6.00 (9.66)	1803	2.85	0.498 (0.303)	14.07 (2.77)	188 (87)	65 (18)	28.86 (97.73)
11th Gear									
204.10 (152.20)	11047 (49.14)	6.93 (11.15)	1805	2.33	0.505 (0.307)	13.87 (2.73)	188 (87)	66 (19)	28.86 (97.73)
12th Gear									
203.55 (151.79)	9541 (42.44)	8.00 (12.88)	1810	1.93	0.507 (0.308)	13.83 (2.72)	188 (86)	67 (19)	28.85 (97.70)

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 primary fuel filter was maintained at 104°F (40°C). The pull in 2nd 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. **1899**, Nebraska Summary 566, August 20, 2007.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 7th gear	68.3
Bystander in 18th gear	86.6

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires -No., size, ply & psi (kPa)	Four 520/85R42;**,11(75)	Two 520/85R42;**,16(110)
Ballast - Duals (total)	1950 lb (885 kg)	None
- Cast Iron (total)	3185 lb (1445 kg)	None
Front Tires -No., size, ply & psi (kPa)	Two 420/90R30;**,19(130)	Two 420/90R30;**,15(105)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1100 lb (499 kg)	None
Height of Drawbar	18.0 in (455 mm)	17.5 in (445 mm)
Static Weight with operator - Rear	17540 lb (7956 kg)	12985 lb (5890 kg)
- Front	9880 lb (4481 kg)	8200 lb (3719 kg)
- Total	27420 lb (12437 kg)	21185 lb (9609 kg)

DRAWBAR PERFORMANCE
BALLASTED - 1800 ENGINE RPM
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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
2nd Gear									
146.91 (109.55)	26492 (117.84)	2.08 (3.35)	2058	8.88	0.576 (0.351)	12.16 (2.40)	188 (86)	56 (13)	28.93 (97.97)
3rd Gear									
161.30 (120.28)	25473 (113.31)	2.37 (3.82)	2001	7.20	0.537 (0.327)	13.05 (2.57)	188 (87)	71 (22)	28.64 (96.99)
4th Gear									
175.67 (130.99)	24741 (110.05)	2.66 (4.29)	1940	6.44	0.536 (0.326)	13.07 (2.58)	188 (87)	71 (22)	28.63 (96.95)
5th Gear									
190.90 (142.35)	24243 (107.84)	2.95 (4.75)	1869	6.11	0.532 (0.323)	13.19 (2.60)	189 (87)	71 (22)	28.62 (96.92)
6th Gear									
200.05 (149.18)	22583 (100.46)	3.32 (5.35)	1800	4.39	0.516 (0.314)	13.60 (2.68)	189 (87)	72 (22)	28.61 (96.88)
7th Gear									
208.28 (155.32)	19899 (88.51)	3.93 (6.32)	1798	3.05	0.497 (0.302)	14.11 (2.78)	188 (87)	72 (22)	28.61 (96.88)
8th Gear									
210.37 (156.87)	17375 (77.29)	4.54 (7.31)	1802	2.42	0.492 (0.299)	14.26 (2.81)	188 (87)	73 (23)	28.60 (96.85)
9th Gear									
208.84 (155.73)	14892 (66.24)	5.26 (8.46)	1801	1.92	0.495 (0.301)	14.16 (2.79)	188 (87)	73 (23)	28.60 (96.85)
10th Gear									
207.20 (154.51)	12814 (57.00)	6.06 (9.76)	1804	1.58	0.499 (0.304)	14.04 (2.77)	188 (87)	73 (23)	28.60 (96.85)
11th Gear									
203.47 (151.73)	10931 (48.62)	6.98 (11.23)	1806	1.31	0.508 (0.309)	13.81 (2.72)	188 (87)	74 (23)	28.59 (96.82)
12th Gear									
201.22 (150.05)	9424 (41.92)	8.01 (12.89)	1800	0.99	0.511 (0.311)	13.71 (2.70)	188 (87)	75 (24)	28.58 (96.78)

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) Sustained pressure at compensator cutoff:	3128 psi (216 bar)	<u>Twinflow pump</u> 2982 psi (206 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	39.2 GPM(148.4 l/min)	30.0 GPM(113.6 l/min)
Combined flow:	69.2 GPM (262.0 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	38.3 GPM (145.0 l/min)	32.1 GPM(121.5 l/min)
Delivery pressure:	2853 psi (197 bar)	2757 psi (190 bar)
Power:	63.8 HP (47.5 kW)	51.6 Hp (38.5 kW)

three outlet sets combined

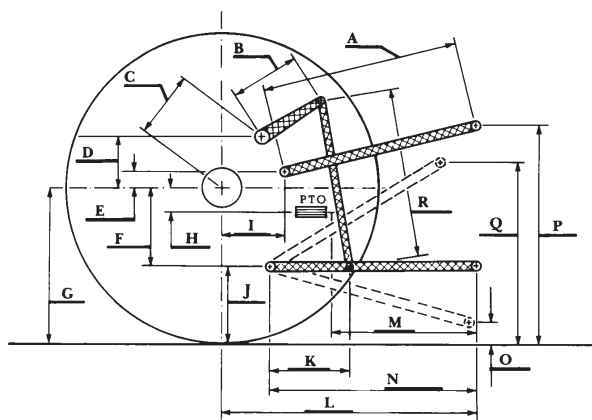
High Flow Option

i) Sustained pressure at compensator cutoff:	3106 psi (214 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	58.1 GPM (219.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	57.0 GPM(215.8 l/min)
Delivery pressure:	2710 psi (187 bar)
Power:	90.1 Hp (67.2 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 MAGNUM 245 DIESEL