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2008

## Test 1936: Case-IH Magnum 335 Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# NEBRASKA OECD TRACTOR TEST 1936—SUMMARY 611

## CASE IH MAGNUM 335 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—1164 rpm)					
277.67 (207.05)	2102	16.89 (63.93)	0.426 (0.259)	16.44 (3.24)	
Maximum Power (1 hour)					
314.96 (234.87)	1900	18.54 (70.17)	0.412 (0.251)	16.99 (3.35)	
Standard Power Take-off Speed (1000 rpm)					
305.50 (227.81)	1804	17.88 (67.67)	0.410 (0.249)	17.09 (3.37)	

#### VARYING POWER AND FUEL CONSUMPTION

277.67 (207.05)	2102	16.89 (63.93)	0.426 (0.259)	16.44 (3.24)	Air temperature
245.57 (183.12)	2185	16.44 (62.23)	0.469 (0.285)	14.94 (2.94)	83°F (29°C)
187.58 (139.88)	2224	15.27 (57.80)	0.570 (0.347)	12.28 (2.42)	Relative humidity
127.12 (94.80)	2264	11.57 (43.81)	0.638 (0.388)	10.98 (2.16)	36%
64.37 (48.00)	2293	7.48 (28.30)	0.814 (0.495)	8.61 (1.70)	Barometer
1.96 (1.46)	2324	4.08 (15.43)	14.562 (8.858)	0.48 (0.09)	29.03" Hg (98.31 kPa)

Maximum torque - 1034 lb.-ft. (1402 Nm) at 1499 rpm

Maximum torque rise - 49.2%

Torque rise at 1699 engine rpm - 38%

Power increase at 1900 engine rpm - 13.4%

#### 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									
243.25 (181.39)	20083 (89.33)	4.54 (7.31)	2098	3.5	0.483 (0.294)	14.50 (2.86)	195 (90)	67 (19)	28.97 (98.10)
75% of Pull at Maximum Power—7th Gear									
193.56 (144.34)	15039 (66.89)	4.83 (7.77)	2201	2.1	0.579 (0.352)	12.10 (2.38)	194 (90)	71 (22)	28.97 (98.10)
50% of Pull at Maximum Power—7th Gear									
132.74 (98.98)	10050 (44.70)	4.95 (7.97)	2241	1.3	0.701 (0.427)	9.99 (1.97)	186 (86)	74 (23)	28.98 (98.14)
*75% of Pull at Reduced Engine Speed—10th Gear									
193.22 (144.08)	15017 (66.80)	4.83 (7.77)	1450	2.1	0.479 (0.291)	14.64 (2.88)	194 (90)	72 (22)	28.98 (98.14)
*50% of Pull at Reduced Engine Speed—10th Gear									
132.46 (98.78)	9979 (44.39)	4.98 (8.01)	1483	1.2	0.540 (0.328)	12.98 (2.56)	188 (86)	76 (24)	28.98 (98.14)

\*Auto Field mode engaged - APM

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

**Dates of tests:** September 17 - 26, 2008

**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) 0.8416 Fuel weight 7.007 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: 29.0 hours

**ENGINE: Make** CNH Engine Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** \*46913146\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.488" x 5.689" (114.0 mm x 144.5 mm) **Compression ratio** 17.6 to 1 **Displacement** 540 cu in (8849 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:** 117.1-129.2 lb/h (53.1 - 58.6 kg/h) **High idle:** 2300-2340 rpm **Turbo boost:** nominal 21.0 - 25.4 psi (145 - 175 kPa) as measured 24.1 psi (166 kPa)

**CHASSIS: Type** front wheel assist with duals **Serial No.** \*Z8RZ04624\* **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 2.06 (3.32) second 2.37 (3.81) third 2.73 (4.39) fourth 3.13 (5.04) fifth 3.59 (5.78) sixth 4.12 (6.63) seventh 4.81 (7.74) eighth 5.51 (8.87) ninth 6.36 (10.23) tenth 7.30 (11.74) eleventh 8.36 (13.46) twelfth 9.59 (15.44) thirteenth 11.96 (19.24) fourteenth 13.71 (22.07) fifteenth 15.81 (25.45) sixteenth 18.14 (29.20) seventeenth 20.81 (33.49) eighteenth 23.87 (38.42) nineteenth 24.86 (40.00) (1750 engine rpm) reverse 2.97 (4.78), 3.41 (5.49), 6.92 (11.14), 7.94 (12.77) **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 1808 engine rpm or 1000 rpm at 1803 engine rpm **Unladen tractor mass** 24510 lb (11117 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	Air dry bulb	Barom. inch Hg (kPa)	
5th Gear									
220.58 (164.49)	25709 (114.36)	3.22 (5.18)	2109	10.4	0.531 (0.323)	13.20 (2.60)	193 (89)	63 (17)	28.97 (98.10)
6th Gear									
239.14 (178.33)	24871 (110.63)	3.61 (5.80)	2020	7.5	0.507 (0.308)	13.82 (2.72)	194 (90)	65 (18)	28.97 (98.10)
7th Gear									
265.53 (198.00)	24594 (109.40)	4.05 (6.52)	1926	6.6	0.477 (0.290)	14.68 (2.89)	196 (91)	68 (20)	28.97 (98.10)
8th Gear									
275.38 (205.35)	22066 (98.15)	4.68 (7.53)	1903	4.2	0.463 (0.282)	15.13 (2.98)	196 (91)	69 (21)	28.97 (98.10)
9th Gear									
276.25 (206.00)	18914 (84.13)	5.48 (8.81)	1903	2.8	0.463 (0.281)	15.14 (2.98)	197 (91)	70 (21)	28.97 (98.10)
10th Gear									
271.46 (202.42)	16144 (71.81)	6.31 (10.15)	1898	2.3	0.471 (0.286)	14.88 (2.93)	198 (92)	76 (24)	29.02 (98.27)
11th Gear									
266.89 (199.02)	13723 (61.04)	7.29 (11.74)	1905	1.8	0.479 (0.291)	14.63 (2.88)	196 (91)	78 (26)	29.02 (98.27)
12th Gear									
268.76 (200.42)	12057 (53.63)	8.36 (13.45)	1898	1.5	0.476 (0.290)	14.71 (2.90)	196 (91)	79 (26)	29.01 (98.24)

**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 106°F (41°C). The manufacturer's claims of 62 GPM(236 lpm) and 78 GPM(297 lpm) remote hydraulic flow were not verified. 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. **1936**, Nebraska Summary 611, December 23, 2008.

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	69.0
Bystander in 18th gear	88.3

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Rear Tires</b> -No., size, ply & psi (kPa)	Six 520/85R42;**,10(70)	Four 520/85R42;**,9(60)
<b>Ballast</b> - Triples (total)	2020 lb (916 kg)	None
- Cast Iron (total)	6245 lb (2832 kg)	None
<b>Front Tires</b> -No., size, ply & psi (kPa)	Four 420/90R30;**,15(105)	Two 420/90R30;**,17(120)
<b>Ballast</b> - Duals (total)	1040 lb (472 kg)	None
- Cast Iron (total)	2985 lb (1354 kg)	None
<b>Height of Drawbar</b>	17.5 in (445 mm)	17.5 in (445 mm)
<b>Static Weight with operator</b> - Rear	22420 lb(10169 kg)	15570 lb (7062 kg)
- Front	14555 lb (6602 kg)	9115 lb (4135 kg)
- Total	36975 lb(16771 kg)	24685 lb(11197 kg)

**DRAWBAR PERFORMANCE**  
**BALLASTED - 1900 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									
214.52 (159.97)	38024 (169.14)	2.12 (3.40)	2122	10.6	0.541 (0.329)	12.95 (2.55)	194 (90)	70 (21)	28.93 (97.97)
3rd Gear									
238.01 (177.48)	37311 (165.97)	2.39 (3.85)	2024	8.6	0.507 (0.308)	13.83 (2.72)	195 (91)	71 (22)	28.93 (97.97)
4th Gear									
256.93 (191.60)	36147 (160.79)	2.67 (4.29)	1942	6.4	0.491 (0.299)	14.28 (2.81)	196 (91)	72 (22)	28.93 (97.97)
5th Gear									
265.62 (198.07)	32812 (145.95)	3.04 (4.89)	1898	5.5	0.482 (0.293)	14.53 (2.86)	196 (91)	73 (23)	28.93 (97.97)
6th Gear									
267.65 (199.59)	28390 (126.28)	3.54 (5.69)	1900	4.1	0.479 (0.291)	14.62 (2.88)	197 (91)	74 (23)	28.93 (97.97)
7th Gear									
279.12 (208.14)	25216 (112.16)	4.15 (6.68)	1901	3.6	0.459 (0.279)	15.25 (3.00)	196 (91)	62 (17)	29.09 (98.51)
8th Gear									
278.85 (207.94)	21846 (97.18)	4.79 (7.70)	1901	2.3	0.460 (0.280)	15.25 (3.00)	196 (91)	61 (16)	29.09 (98.51)
9th Gear									
277.31 (206.79)	18752 (83.41)	5.55 (8.92)	1903	2.1	0.461 (0.281)	15.19 (2.99)	196 (91)	61 (16)	29.08 (98.48)
10th Gear									
275.07 (205.12)	16210 (72.10)	6.36 (10.24)	1899	1.6	0.465 (0.283)	15.06 (2.97)	197 (92)	61 (16)	29.08 (98.48)
11th Gear									
272.25 (203.02)	13924 (61.94)	7.33 (11.80)	1903	1.3	0.471 (0.286)	14.89 (2.93)	196 (91)	66 (19)	29.10 (98.54)
12th Gear									
268.56 (200.27)	11952 (53.16)	8.43 (13.56)	1902	1.2	0.479 (0.291)	14.63 (2.88)	196 (91)	69 (21)	29.10 (98.54)

## HYDRAULIC PERFORMANCE

CATEGORY: IVN

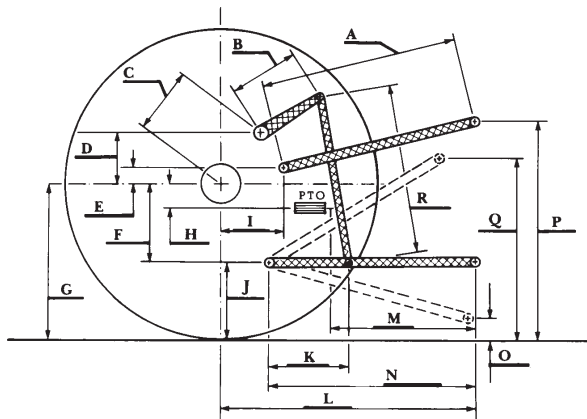
Quick Attach: Yes

OECD Static test

Maximum force exerted through whole range: 19795 lb (88.1 kN)

	<u>46.0 GPM pump</u>
i) Sustained pressure at compensator cutoff:	3126 psi (216 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	46.0 GPM (174.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	44.8 GPM (169.5 l/min)
Delivery pressure:	2901 psi (200 bar)
Power:	75.8 Hp (56.5 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	24.6	625
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'	53.3	1354
M	20.1	511
N	38.2	970
O	9.0	230
P	48.2	1225
Q	37.9	962
R	39.7	1008

\*L' to Quick Attach ends



CASE IH MAGNUM 335 DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska–Lincoln