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January 2003

Test 1821: Challenger MT735 Diesel

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1821—SUMMARY 398

CHALLENGER MT735 DIESEL

16 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—1060 rpm)					
186.71 (139.23)	2100	11.20 (42.39)	0.419 (0.255)	16.67 (3.28)	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
200.65 (149.63)	1980	11.33 (42.88)	0.394 (0.240)	17.71 (3.49)	
Maximum Power (2 hours)					
215.68 (160.83)	1700	11.46 (43.39)	0.371 (0.226)	18.82 (3.71)	

VARYING POWER AND FUEL CONSUMPTION

186.71 (139.23)	2100	11.20 (42.39)	0.419 (0.255)	16.67 (3.28)	Air temperature
164.93 (122.99)	2178	10.61 (40.17)	0.449 (0.273)	15.54 (3.06)	
124.59 (92.90)	2199	9.07 (34.32)	0.508 (0.309)	13.74 (2.71)	Relative humidity
82.42 (61.46)	2199	7.35 (27.81)	0.622 (0.379)	11.22 (2.21)	42%
41.74 (31.13)	2199	5.37 (20.33)	0.898 (0.546)	7.77 (1.53)	Barometer
2.11 (1.58)	2199	3.65 (13.83)	12.066 (7.339)	0.58 (0.11)	28.97" Hg (98.10 kPa)

Maximum Torque - 720 lb.-ft. (976 Nm) at 1453 rpm
Maximum Torque Rise - 54.1%
Torque rise at 1700 engine rpm - 43%

DRAWBAR PERFORMANCE (Unballasted)

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—6th Gear									
160.36 (119.58)	13627 (60.61)	4.41 (7.10)	2095	2.04	0.490 (0.298)	14.26 (2.81)	181 (83)	57 (14)	28.83 (97.63)
75% of Pull at Maximum Power—6th Gear									
127.24 (94.88)	10210 (45.42)	4.67 (7.52)	2200	1.34	0.564 (0.343)	12.37 (2.44)	180 (82)	62 (17)	28.73 (97.29)
50% of Pull at Maximum Power—6th Gear									
85.36 (63.65)	6806 (30.27)	4.70 (7.57)	2200	0.71	0.681 (0.414)	10.26 (2.02)	180 (82)	65 (18)	28.72 (97.26)
75% of Pull at Reduced Engine Speed—9th Gear									
127.19 (94.85)	10212 (45.42)	4.67 (7.52)	1540	1.34	0.477 (0.290)	14.64 (2.88)	181 (83)	63 (17)	28.73 (97.29)
50% of Pull at Reduced Engine Speed—9th Gear									
85.28 (63.59)	6806 (30.27)	4.70 (7.56)	1539	0.86	0.532 (0.324)	13.11 (2.58)	180 (82)	65 (18)	28.76 (97.39)

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

Dates of Test: April 21-May 19, 2003

Manufacturer: AGCO Corp, 4205 River Green Parkway, Duluth Ga 30096

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8386 Fuel weight 6.982 lbs/gal (0.837 kg/l) Oil SAE 10W-30 API service classification CH-4 Transmission and hydraulic lubricant Caterpillar MTO fluid Total time engine was operated: 35.0 hours

ENGINE: Make Caterpillar Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.*4ZF04255* Crankshaft lengthwise Rated engine speed 2100 Bore and stroke 4.409" x 5.866" (112.0 mm x 149.0 mm) Compression ratio 16.0 to 1 Displacement 537 cu in (8810 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 one paper element and water separator Muffler vertical Cooling medium temperature control 1 thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 73.3 - 81.6 lb/h (33.2 - 37.0 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal : 14.9 - 17.3 psi (103 - 119 kPa) as measured 15.3 psi (106 kPa)

CHASSIS: Type tracklayer-rubber tracked Serial No.*AGCMT735CAKN30189* Track width 88.0" (2235 mm) to 119.5 (3035 mm) Length of track on ground 102.4" (2600 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 1.66 (2.67) second 2.11 (3.40) third 2.66 (4.28) fourth 3.38 (5.44) fifth 4.03 (6.49) sixth 4.54 (7.31) seventh 5.12 (8.24) eighth 5.76 (9.27) ninth 6.48 (10.43) tenth 7.29 (11.73) eleventh 8.22 (13.23) twelfth 9.26 (14.90) thirteenth 11.02 (17.73) fourteenth 14.00 (22.53) fifteenth 17.72 (28.52) sixteenth 24.64 (39.65) at 2300 rpm, reverse 1.33 (2.14), 3.22 (5.18), 3.63 (5.84), 8.82 (14.19) Clutch wet multiple disc hydraulically actuated by foot pedal Brakes wet multiple disc hydraulically actuated foot pedal Steering electro-hydraulic differential steering controlled by steering wheel Power take-off 1000 rpm at 1980 engine rpm Unladen tractor mass 28010 lb (12705 kg)

DRAWBAR PERFORMANCE

Unballasted at 2100 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)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
2nd Gear									
129.01 (96.20)	26200 (116.54)	1.85 (2.97)	2162	14.56	0.592 (0.360)	11.78 (2.32)	180 (82)	53 (12)	28.68 (97.12)
3rd Gear									
150.22 (112.02)	23183 (103.12)	2.43 (3.91)	2097	8.32	0.526 (0.320)	13.27 (2.61)	180 (82)	55 (13)	28.48 (96.44)
4th Gear									
152.76 (113.91)	17702 (78.74)	3.24 (5.21)	2096	3.78	0.511 (0.311)	13.66 (2.69)	181 (83)	55 (13)	28.48 (96.44)
5th Gear									
158.38 (118.10)	15209 (67.65)	3.91 (6.28)	2099	2.73	0.495 (0.301)	14.11 (2.78)	181 (83)	61 (16)	28.73 (97.29)
6th Gear									
160.36 (119.58)	13627 (60.61)	4.41 (7.10)	2095	2.04	0.490 (0.298)	14.26 (2.81)	181 (83)	57 (14)	28.83 (97.63)
7th Gear									
157.20 (117.22)	11765 (52.33)	5.01 (8.06)	2098	1.73	0.500 (0.304)	13.97 (2.75)	181 (83)	56 (13)	28.82 (97.60)
8th Gear									
158.15 (117.93)	10488 (46.65)	5.65 (9.10)	2097	1.26	0.498 (0.303)	14.01 (2.76)	181 (83)	54 (12)	28.80 (97.53)
9th Gear									
152.00 (113.35)	8927 (39.71)	6.39 (10.28)	2099	0.94	0.515 (0.313)	13.57 (2.67)	181 (83)	58 (14)	28.81 (97.56)
10th Gear									
152.80 (113.95)	7973 (35.46)	7.19 (11.57)	2095	0.79	0.512 (0.311)	13.65 (2.69)	181 (83)	59 (15)	28.78 (97.46)
11th Gear									
144.51 (107.76)	6651 (29.58)	8.15 (13.11)	2102	0.71	0.539 (0.328)	12.96 (2.55)	181 (83)	60 (16)	28.74 (97.33)

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 112°F (45°C). 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. **1821**, Nebraska Summary 398, June 12, 2003.

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 no load in 6th gear	74.4
Bystander	--

TIRES, BALLAST AND WEIGHT

Track width

Ballast - Cast iron(front)

- Cast iron(front idlers)

Height of Drawbar

Static Weight with operator

With Ballast

18.0 in (370 mm)

670 lb (304 kg)

1645 lb (746 kg)

20.5 in (520 mm)

30500 lb(13835 kg)

Without Ballast

18.0 in (370 mm)

None

None

20.5 in (520 mm)

28185 lb(12785 kg)

DRAWBAR PERFORMANCE
(Unballasted at 1700 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									
129.99 (96.93)	26602 (118.33)	1.83 (2.95)	2152	14.79	0.590 (0.359)	11.83 (2.33)	180 (82)	53 (12)	28.68 (97.12)
3rd Gear									
151.11 (112.68)	23793 (105.84)	2.38 (3.83)	2075	9.26	0.524 (0.319)	13.32 (2.62)	180 (82)	55 (13)	28.48 (96.44)
4th Gear									
168.27 (125.48)	22520 (100.17)	2.80 (4.51)	1886	7.50	0.480 (0.292)	14.54 (2.87)	181 (83)	54 (12)	28.49 (96.48)
5th Gear									
178.86 (133.37)	21206 (94.33)	3.16 (5.09)	1762	6.11	0.451 (0.274)	15.48 (3.05)	181 (83)	54 (12)	28.49 (96.48)
6th Gear									
183.42 (136.77)	19789 (88.03)	3.48 (5.59)	1701	5.10	0.438 (0.267)	15.93 (3.14)	182 (83)	54 (12)	28.50 (96.51)
7th Gear									
183.62 (136.93)	17217 (76.59)	4.00 (6.44)	1706	3.48	0.439 (0.267)	15.89 (3.13)	182 (83)	57 (14)	28.82 (97.60)
8th Gear									
186.46 (139.05)	15483 (68.87)	4.52 (7.27)	1698	2.80	0.434 (0.264)	16.11 (3.17)	182 (83)	56 (13)	28.82 (97.60)
9th Gear									
184.59 (137.65)	13528 (60.17)	5.12 (8.23)	1701	2.19	0.438 (0.266)	15.95 (3.14)	182 (83)	55 (13)	28.81 (97.56)
10th Gear									
184.67 (137.71)	11977 (53.28)	5.78 (9.31)	1699	1.65	0.436 (0.265)	16.00 (3.15)	182 (83)	58 (14)	28.80 (97.53)
11th Gear									
178.67 (133.23)	10228 (45.50)	6.55 (10.54)	1699	1.34	0.447 (0.272)	15.61 (3.08)	182 (83)	59 (15)	28.77 (97.43)
12th Gear									
178.31 (132.97)	9033 (40.18)	7.40 (11.91)	1703	1.02	0.449 (0.273)	15.54 (3.06)	182 (83)	60 (16)	28.76 (97.39)
13th Gear									
177.13 (132.09)	7509 (33.40)	8.85 (14.24)	1704	0.79	0.456 (0.277)	15.30 (3.01)	182 (83)	61 (16)	28.73 (97.29)

DRAWBAR PERFORMANCE
(Ballasted at 1700 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
2nd Gear									
138.07 (102.96)	28067 (124.85)	1.84 (2.97)	2121	12.82	0.562 (0.342)	12.42 (2.45)	180 (82)	53 (12)	28.76 (97.39)
3rd Gear									
153.06 (114.14)	25087 (111.59)	2.29 (3.68)	2016	10.18	0.520 (0.316)	13.42 (2.64)	180 (82)	59 (15)	28.76 (97.39)
4th Gear									
167.49 (124.90)	22710 (101.02)	2.77 (4.45)	1857	7.23	0.482 (0.293)	14.48 (2.85)	181 (83)	59 (15)	28.76 (97.39)
5th Gear									
176.72 (131.78)	21836 (97.13)	3.04 (4.88)	1697	6.32	0.453 (0.276)	15.40 (3.03)	181 (83)	60 (16)	28.76 (97.39)
6th Gear									
182.36 (135.99)	19618 (87.27)	3.49 (5.61)	1701	4.67	0.440 (0.268)	15.87 (3.13)	182 (83)	60 (16)	28.76 (97.39)
7th Gear									
182.15 (135.83)	17164 (76.35)	3.98 (6.40)	1700	3.49	0.442 (0.269)	15.80 (3.11)	181 (83)	61 (16)	28.76 (97.39)
8th Gear									
184.75 (137.77)	15318 (68.14)	4.52 (7.28)	1702	2.74	0.437 (0.266)	15.98 (3.15)	181 (83)	62 (17)	28.76 (97.39)
9th Gear									
181.98 (135.70)	13341 (59.34)	5.12 (8.23)	1702	2.12	0.442 (0.269)	15.79 (3.11)	181 (83)	63 (17)	28.77 (97.43)
10th Gear									
182.03 (135.74)	11821 (52.58)	5.77 (9.29)	1699	1.66	0.441 (0.268)	15.85 (3.12)	182 (83)	64 (18)	28.78 (97.46)
11th Gear									
176.76 (131.81)	10137 (45.09)	6.54 (10.52)	1699	1.27	0.453 (0.276)	15.41 (3.04)	181 (83)	64 (18)	28.78 (97.46)
12th Gear									
176.66 (131.74)	8948 (39.80)	7.40 (11.92)	1704	1.03	0.454 (0.276)	15.39 (3.03)	181 (83)	65 (18)	28.78 (97.46)
13th Gear									
174.74 (130.31)	7430 (33.05)	8.82 (14.19)	1700	0.95	0.461 (0.280)	15.14 (2.98)	182 (83)	66 (19)	28.79 (97.49)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: yes

Maximum Force Exerted Through Whole Range: 17263 lbs (76.8 kN)

i) Opening pressure of relief valve: NA

Sustained pressure at compensator cutoff: 2890 psi (199 bar)

ii) Pump delivery rate at minimum pressure
and rated engine speed:

44.5 GPM (168.5 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

42.9 GPM (162.4 l/min)

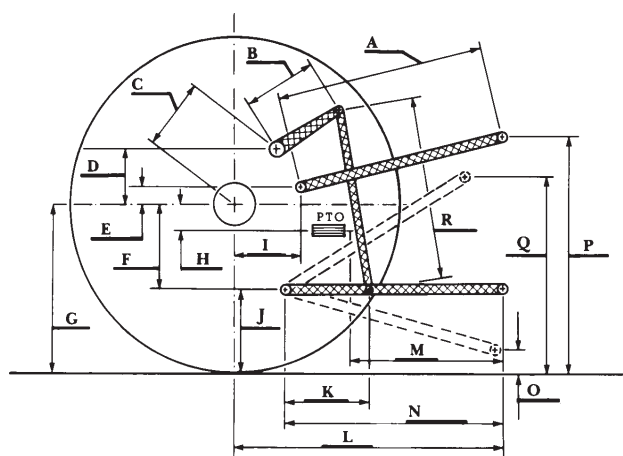
Delivery pressure:

2650 psi (183 bar)

Power:

66.3 HP (49.4 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	27.6	702
B	21.7	550
C	23.5	596
D	23.0	583
E	11.4	290
F	11.8	300
G	33.4	849
H	1.3	34
I	16.7	425
J	21.6	549
K	27.1	688
L	48.4	1230
*L'	52.2	1325
M	27.9	709
N	39.6	1005
O	9.0	230
P	48.6	1234
Q	40.2	1022
R	42.5	1079

*L' to Quick Attach ends



CHALLENGER MT735 DIESEL

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