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January 2003

## Test 1823: Challenger MT 835 Diesel

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1823—SUMMARY 400

## CHALLENGER MT835 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—1061 rpm)					
305.16 (227.56)	2099	16.89 (63.92)	0.386 (0.235)	18.07 (3.56)	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
328.41 (244.89)	1979	17.35 (65.69)	0.369 (0.224)	18.92 (3.73)	
Maximum Power (2 hours)					
357.91 (266.90)	1700	18.03 (68.25)	0.352 (0.214)	19.85 (3.91)	

#### VARYING POWER AND FUEL CONSUMPTION

305.16 (227.56)	2099	16.89 (63.92)	0.386 (0.235)	18.07 (3.56)	Air temperature
271.58 (202.51)	2196	15.73 (59.53)	0.404 (0.246)	17.27 (3.40)	75°F (24°C)
203.42 (151.69)	2198	12.89 (48.80)	0.442 (0.269)	15.78 (3.11)	Relative humidity
135.79 (101.26)	2198	10.05 (38.06)	0.517 (0.314)	13.51 (2.66)	51%
67.63 (50.43)	2198	7.05 (26.67)	0.727 (0.443)	9.60 (1.89)	Barometer
2.11 (1.58)	2198	4.30 (16.27)	14.195 (8.634)	0.49 (0.10)	28.79 Hg (97.49 kPa)

Maximum Torque - 1183 lb.-ft. (1604 Nm) at 1301 rpm  
Maximum Torque Rise - 54.8%  
Torque rise at 1700 engine rpm - 44%

#### 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 cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—6th Gear									
263.26 (196.32)	21892 (97.38)	4.51 (7.26)	2098	1.54	0.451 (0.275)	15.47 (3.05)	187 (86)	60 (16)	28.64 (96.99)
75% of Pull at Maximum Power—6th Gear									
207.29 (154.57)	16353 (72.74)	4.75 (7.65)	2199	0.91	0.505 (0.307)	13.83 (2.72)	190 (88)	64 (18)	28.69 (97.16)
50% of Pull at Maximum Power—6th Gear									
138.74 (103.46)	10909 (48.53)	4.77 (7.68)	2199	0.59	0.588 (0.358)	11.87 (2.34)	189 (87)	60 (16)	28.68 (97.12)
75% of Pull at Reduced Engine Speed—9th Gear									
207.56 (154.78)	16380 (72.86)	4.75 (7.65)	1541	0.91	0.440 (0.268)	15.87 (3.13)	190 (88)	60 (16)	28.68 (97.12)
50% of Pull at Reduced Engine Speed—9th Gear									
138.66 (103.40)	10909 (48.52)	4.77 (7.67)	1541	0.59	0.490 (0.298)	14.25 (2.81)	190 (88)	59 (15)	28.68 (97.12)

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

**Dates of Test:** April 25-May 13, 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: 27.5 hours

**ENGINE: Make** Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** \*JAC00395\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.118" x 5.906" (130.0 mm x 150.0 mm) **Compression ratio** 16.0 to 1 **Displacement** 729 cu in (11946 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 water separator **Fuel cooler** radiator for returned fuel **Muffler** vertical **Cooling medium temperature control** 1 thermostat

**ENGINE OPERATING PARAMETERS: Fuel rate:** 110.7 - 120.4 lb/h (50.2 - 54.6 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.7 - 21.6 psi (129 - 149 kPa) as measured 20.6 psi (142 kPa)

**CHASSIS: Type** tracklayer-rubber tracked **Serial No.** \*AGCMT835JBAM30346\* **Track width** 100.0" (2540 mm) to 120.0 (3048 mm) **Length of track on ground** 124.3" (3157 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 1.67 (2.69) second 2.13 (3.43) third 2.68 (4.31) fourth 3.41 (5.48) fifth 4.06 (6.54) sixth 4.58 (7.37) seventh 5.16 (8.31) eighth 5.80 (9.34) ninth 6.53 (10.51) tenth 7.34 (11.82) eleventh 8.29 (13.34) twelfth 9.33 (15.02) thirteenth 11.10 (17.87) fourteenth 14.11 (22.71) fifteenth 17.86 (28.75) sixteenth 24.86 (40.00) at 2300 rpm, reverse 1.34 (2.16), 3.24 (5.22), 3.66 (5.89), 8.89 (14.30) **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** 41205 lb (18690 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
2nd Gear									
202.62 (151.09)	38429 (170.94)	1.98 (3.18)	2199	11.16	0.542 (0.329)	12.89 (2.54)	180 (82)	52 (11)	28.80 (97.53)
3th Gear									
236.08 (176.05)	35792 (159.21)	2.47 (3.98)	2126	9.14	0.507 (0.308)	13.78 (2.71)	185 (85)	59 (15)	28.64 (96.99)
4th Gear									
248.48 (185.29)	28224 (125.55)	3.30 (5.31)	2101	3.31	0.478 (0.291)	14.61 (2.88)	190 (88)	61 (16)	28.67 (97.09)
5th Gear									
261.03 (194.65)	24613 (109.48)	3.98 (6.40)	2098	2.17	0.454 (0.276)	15.39 (3.03)	190 (88)	62 (17)	28.65 (97.02)
6th Gear									
263.26 (196.32)	21892 (97.38)	4.51 (7.26)	2098	1.54	0.451 (0.275)	15.47 (3.05)	187 (86)	60 (16)	28.64 (96.99)
7th Gear									
258.93 (193.08)	19054 (84.75)	5.10 (8.20)	2095	1.15	0.455 (0.277)	15.34 (3.02)	189 (87)	68 (20)	28.44 (96.31)
8th Gear									
258.77 (192.97)	16845 (74.93)	5.76 (9.27)	2098	0.91	0.457 (0.278)	15.27 (3.01)	189 (87)	66 (19)	28.44 (96.31)
9th Gear									
252.54 (188.32)	14571 (64.82)	6.50 (10.46)	2102	0.75	0.470 (0.286)	14.85 (2.93)	189 (87)	64 (18)	28.44 (96.31)
10th Gear									
250.01 (186.43)	12840 (57.11)	7.30 (11.75)	2095	0.59	0.472 (0.287)	14.80 (2.91)	189 (87)	61 (16)	28.43 (96.28)
11th Gear									
241.26 (179.91)	10945 (48.69)	8.27 (13.30)	2102	0.59	0.490 (0.298)	14.24 (2.81)	189 (87)	63 (17)	28.44 (96.31)

**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 97°F(36°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. **1823**, Nebraska Summary 400, June 12, 2003.

Leonard I. 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	75.2
Bystander	--

#### TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
<b>Track width</b>	27.5 in (700 mm)	27.5 in (700 mm)
<b>Ballast</b> - Cast iron(front end)	3495 lb (1585 kg)	None
- Cast iron(front idlers)	4600 lb (2086 kg)	None
<b>Height of Drawbar</b>	22.5 in (570 mm)	21.5 in (545 mm)
<b>Static Weight with operator</b>	49475 lb(22441 kg)	41380 lb(18770 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
204.42 (152.44)	38653 (171.93)	1.98 (3.19)	2201	10.97	2nd Gear 0.541 (0.329)	12.91 (2.54)	191 (88)	52 (11)	28.80 (97.53)
236.59 (176.43)	35861 (159.52)	2.47 (3.98)	2128	9.07	3rd Gear 0.506 (0.308)	13.80 (2.72)	190 (88)	59 (15)	28.64 (96.99)
264.37 (197.14)	34742 (154.54)	2.85 (4.59)	1906	8.06	4th Gear 0.459 (0.279)	15.20 (2.99)	190 (88)	62 (17)	28.68 (97.12)
282.41 (210.60)	33084 (147.16)	3.20 (5.15)	1792	7.71	5th Gear 0.437 (0.266)	15.96 (3.14)	190 (88)	63 (17)	28.68 (97.12)
299.21 (223.12)	31864 (141.74)	3.52 (5.67)	1706	5.31	6th Gear 0.418 (0.254)	16.70 (3.29)	191 (88)	62 (17)	28.67 (97.08)
301.73 (225.00)	27862 (123.93)	4.06 (6.54)	1705	3.16	7th Gear 0.413 (0.251)	16.91 (3.33)	191 (88)	62 (17)	28.65 (97.02)
305.48 (227.79)	24866 (110.61)	4.61 (7.41)	1699	2.17	8th Gear 0.408 (0.248)	17.09 (3.37)	190 (88)	61 (16)	28.65 (97.02)
302.77 (225.77)	21812 (97.02)	5.21 (8.38)	1699	1.78	9th Gear 0.412 (0.251)	16.94 (3.34)	190 (88)	68 (20)	28.44 (96.31)
303.94 (226.65)	19326 (85.97)	5.90 (9.49)	1702	1.07	10th Gear 0.414 (0.252)	16.87 (3.32)	190 (88)	67 (19)	28.44 (96.31)
297.49 (221.84)	16712 (74.34)	6.68 (10.74)	1702	0.91	11th Gear 0.422 (0.257)	16.55 (3.26)	190 (88)	65 (18)	28.44 (96.31)
295.85 (220.62)	14781 (65.75)	7.51 (12.08)	1698	0.67	12th Gear 0.426 (0.259)	16.39 (3.23)	190 (88)	62 (17)	28.44 (96.31)
293.13 (218.58)	12269 (54.57)	8.96 (14.42)	1701	0.59	13th Gear 0.428 (0.260)	16.33 (3.22)	190 (88)	63 (17)	28.44 (96.31)

**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									
237.74 (177.29)	48885 (217.45)	1.82 (2.94)	2085	13.73	0.506 (0.308)	13.79 (2.72)	185 (85)	48 (9)	28.96 (98.07)
3rd Gear									
269.36 (200.86)	44025 (195.83)	2.29 (3.69)	1942	7.95	0.452 (0.275)	15.45 (3.04)	184 (84)	50 (10)	28.96 (98.07)
4th Gear									
290.95 (216.96)	41541 (184.78)	2.63 (4.23)	1726	6.69	0.433 (0.263)	16.13 (3.18)	189 (87)	51 (11)	28.97 (98.10)
5th Gear									
306.59 (228.62)	36326 (161.58)	3.17 (5.09)	1704	4.23	0.409 (0.249)	17.06 (3.36)	190 (88)	53 (12)	28.97 (98.10)
6th Gear									
311.48 (232.27)	32470 (144.43)	3.60 (5.79)	1697	3.03	0.403 (0.245)	17.32 (3.41)	191 (88)	55 (13)	28.97 (98.10)
7th Gear									
310.16 (231.28)	28363 (126.16)	4.10 (6.60)	1699	2.03	0.404 (0.246)	17.27 (3.40)	190 (88)	58 (14)	28.98 (98.13)
8th Gear									
311.18 (232.05)	25130 (111.78)	4.64 (7.47)	1700	1.48	0.403 (0.245)	17.34 (3.42)	190 (88)	60 (16)	28.98 (98.13)
9th Gear									
307.46 (229.28)	22068 (98.16)	5.22 (8.41)	1699	1.40	0.409 (0.249)	17.07 (3.36)	190 (88)	61 (16)	28.98 (98.13)
10th Gear									
308.39 (229.96)	19613 (87.24)	5.90 (9.49)	1698	1.09	0.409 (0.249)	17.08 (3.36)	190 (88)	62 (17)	28.98 (98.13)
11th Gear									
301.66 (224.95)	16961 (75.44)	6.67 (10.73)	1700	0.85	0.419 (0.255)	16.66 (3.28)	189 (87)	63 (17)	28.98 (98.13)
12th Gear									
299.97 (223.69)	14957 (66.53)	7.52 (12.10)	1699	0.77	0.421 (0.256)	16.58 (3.27)	190 (88)	64 (18)	28.99 (98.17)
13th Gear									
299.24 (223.14)	12533 (55.75)	8.95 (14.41)	1697	0.69	0.422 (0.257)	16.55 (3.26)	190 (88)	64 (18)	29.00 (98.21)

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

CATEGORY: IVN

Quick Attach: yes

Maximum Force Exerted Through Whole Range: 20936 lbs (93.1 kN)

i) Opening pressure of relief valve: NA

Sustained pressure at compensator cutoff: 2880 psi (198 bar)

#### High flow option

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

44.3 GPM (167.7 l/min) 58.8 GPM (222.5 l/min)

at 2200 engine rpm:

46.3 GPM (175.3 l/min) 60.9 GPM (230.5 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

43.5 GPM (164.7 l/min) 54.6 GPM (206.8 l/min)

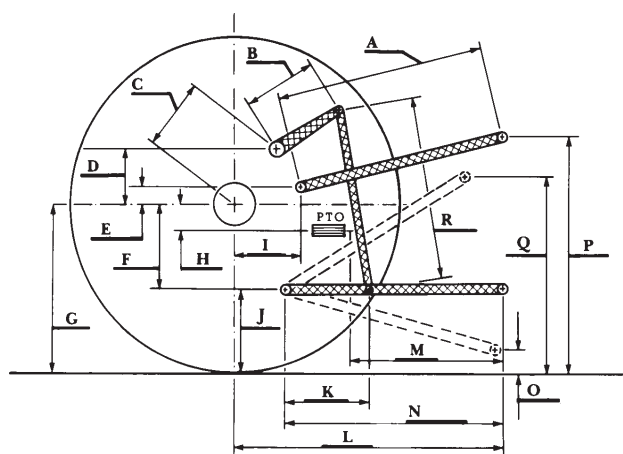
Delivery pressure:

2605 psi (180 bar) 2674 psi (184 bar)

Power:

66.1 HP (49.3 kW) 85.2 HP (63.5 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	mm
A	30.2	768
B	21.7	550
C	41.4	1051
D	39.4	1000
E	12.4	315
F	11.8	300
G	35.0	890
H	0.4	10
I	23.0	585
J	23.2	590
K	29.0	737
L	53.9	1369
*L'	60.4	1534
M	26.6	676
N	36.6	929
O	9.0	230
P	50.2	1275
Q	46.5	1181
R	55.9	1421

\*L' to Quick Attach ends



CHALLENGER MT835 DIESEL

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