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January 2005

## Test 1861: Challenger MT845B Diesel

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1861 – SUMMARY 488

## CHALLENGER MT845B 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1061 rpm)</b>					
359.53 (268.10)	2100	23.26 (88.05)	0.456 (0.277)	15.46 (3.04)	
<b>Standard Power Take-off Speed - (PTO speed - 1000 rpm)</b>					
387.05 (288.62)	1979	23.76 (89.93)	0.433 (0.263)	16.29 (3.21)	
<b>Maximum Power (1 hour)</b>					
402.32 (300.01)	1800	23.46 (88.81)	0.411 (0.250)	17.15 (3.38)	

#### VARYING POWER AND FUEL CONSUMPTION

359.53 (268.10)	2100	23.26 (88.05)	0.456 (0.277)	15.46 (3.04)	Air temperature
321.00 (239.37)	2199	21.81 (82.57)	0.479 (0.291)	14.72 (2.90)	75°F (24°C)
240.57 (179.39)	2199	18.28 (69.20)	0.536 (0.326)	13.16 (2.59)	Relative humidity
159.66 (119.05)	2199	14.22 (53.85)	0.628 (0.382)	11.22 (2.21)	44%
79.33 (59.15)	2199	9.90 (31.66)	0.880 (0.535)	8.01 (1.58)	Barometer
2.12 (1.58)	2199	6.30 (23.84)	20.990 (12.767)	0.34 (0.07)	29.04" Hg (98.34 kPa)

Maximum Torque - 1423 lb.-ft. (1929 Nm) at 1300 rpm  
Maximum Torque Rise - 58.2%  
Torque rise at 1700 engine rpm - 38%

#### 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)
<b>Maximum Power—6th Gear</b>									
313.27 (233.61)	26013 (115.71)	4.52 (7.27)	2105	2.03	0.530 (0.322)	13.30 (2.62)	190 (88)	54 (12)	28.85 (97.70)
<b>75% of Pull at Maximum Power—6th Gear</b>									
249.58 (186.11)	19614 (87.25)	4.77 (7.68)	2199	0.93	0.575 (0.350)	12.26 (2.42)	189 (87)	54 (12)	28.85 (97.70)
<b>50% of Pull at Maximum Power—6th Gear</b>									
167.37 (124.80)	13094 (58.25)	4.79 (7.71)	2196	0.35	0.690 (0.420)	10.22 (2.01)	189 (87)	54 (12)	28.85 (97.70)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
249.52 (186.07)	19717 (87.71)	4.75 (7.64)	1533	0.96	0.459 (0.279)	15.36 (3.03)	190 (88)	54 (12)	28.85 (97.70)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
167.17 (124.66)	13082 (58.19)	4.79 (7.71)	1538	0.33	0.529 (0.321)	13.34 (2.63)	188 (87)	55 (13)	28.84 (97.66)

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

**Dates of test:** October 4 - 26, 2005

**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)** 0.8468  
**Fuel weight** 7.051 lbs/gal (0.845 kg/l) **Oil SAE** 10W-30 **API service classification** CI-4  
**Transmission and hydraulic lubricant** AGCO Trandraulic 821 XL fluid **Total time engine was operated:** 50.5 hours

**ENGINE: Make** Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** \*JAS00105\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.402" x 6.752" (137.2 mm x 171.5 mm) **Compression ratio** 16.5 to 1 **Displacement** 928 cu in (15213 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** 2 thermostats

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 159.0 - 168.0 lb/h (72.1 - 76.2 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 23.2 - 27.6 psi (160 - 190 kPa) as measured 25.8 psi (178 kPa)

**CHASSIS: Type** tracklayer-rubber tracked **Serial No.** \*AGCMT845EBBP60473\* **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** 42900 lb (19459 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)	
3rd Gear									
277.87 (207.21)	42532 (189.19)	2.45 (3.94)	2116	9.13	0.596 (0.362)	11.84 (2.33)	189 (87)	43 (6)	28.96 (98.07)
4th Gear									
297.55 (221.88)	33856 (150.60)	3.30 (5.30)	2099	3.83	0.559 (0.340)	12.61 (2.48)	189 (87)	44 (7)	28.97 (98.10)
5th Gear									
311.33 (232.16)	29366 (130.63)	3.98 (6.40)	2099	2.68	0.536 (0.326)	13.15 (2.59)	189 (87)	48 (9)	28.99 (98.17)
6th Gear									
313.27 (233.61)	26013 (115.71)	4.52 (7.27)	2105	2.03	0.530 (0.322)	13.30 (2.62)	190 (88)	54 (12)	28.85 (97.70)
7th Gear									
310.01 (231.17)	22744 (101.17)	5.11 (8.23)	2098	1.40	0.538 (0.327)	13.12 (2.58)	190 (88)	50 (10)	28.87 (97.77)
8th Gear									
309.20 (230.57)	20076 (89.30)	5.78 (9.29)	2097	0.98	0.538 (0.327)	13.11 (2.58)	190 (88)	50 (10)	28.87 (97.77)
9th Gear									
302.44 (225.53)	17392 (77.36)	6.52 (10.50)	2101	0.70	0.545 (0.332)	12.94 (2.55)	190 (88)	52 (11)	28.86 (97.73)
10th Gear									
303.50 (226.32)	15479 (68.85)	7.35 (11.83)	2099	0.49	0.541 (0.329)	13.04 (2.57)	190 (88)	53 (12)	28.86 (97.73)
11th Gear									
292.67 (218.24)	13218 (58.79)	8.30 (13.36)	2099	0.32	0.564 (0.343)	12.50 (2.46)	191 (88)	54 (12)	28.86 (97.73)

**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 118°F(48°C). The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1861**, Nebraska Summary 488, January 27, 2006.

Leonard L. Bashford  
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 6th gear	74.0
Bystander	--

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
Track width	30.0 in (760 mm)	30.0 in (760 mm)
Ballast - Cast iron(front end)	4280 lb (1941 kg)	None
- Cast iron(front idlers)	2645 lb (1200 kg)	None
Height of Drawbar	20.0 in (510 mm)	19.5 in (495 mm)
Static Weight with operator	50000 lb(22679 kg)	43075 lb(19538 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted at 1800 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)
3rd Gear									
277.50 (206.93)	42490 (189.00)	2.45 (3.94)	2116	9.31	0.596 (0.363)	11.83 (2.33)	189 (87)	43 (6)	28.96 (98.07)
4th Gear									
308.38 (229.96)	38095 (169.45)	3.04 (4.89)	2011	7.95	0.552 (0.336)	12.78 (2.52)	190 (88)	60 (16)	29.00 (98.21)
5th Gear									
338.71 (252.58)	36345 (161.67)	3.49 (5.62)	1896	5.69	0.507 (0.308)	13.91 (2.74)	190 (88)	50 (10)	28.99 (98.17)
6th Gear									
346.26 (258.20)	34480 (153.38)	3.77 (6.06)	1800	4.50	0.484 (0.294)	14.57 (2.87)	191 (88)	52 (11)	29.00 (98.21)
7th Gear									
346.82 (258.63)	30160 (134.16)	4.31 (6.94)	1799	2.94	0.483 (0.294)	14.60 (2.88)	191 (88)	51 (11)	28.87 (97.77)
8th Gear									
350.76 (261.56)	26818 (119.29)	4.90 (7.89)	1800	2.13	0.476 (0.290)	14.81 (2.92)	191 (88)	50 (10)	28.87 (97.77)
9th Gear									
348.35 (259.77)	23572 (104.85)	5.54 (8.92)	1800	1.54	0.479 (0.291)	14.72 (2.90)	191 (88)	53 (12)	28.86 (97.73)
10th Gear									
350.80 (261.59)	20989 (93.36)	6.27 (10.09)	1800	1.10	0.475 (0.289)	14.83 (2.92)	191 (88)	54 (12)	28.86 (97.73)
11th Gear									
344.15 (256.63)	18152 (80.74)	7.11 (11.44)	1805	0.77	0.485 (0.295)	14.54 (2.87)	191 (88)	54 (12)	28.85 (97.70)
12th Gear									
342.91 (255.71)	16037 (71.34)	8.02 (12.90)	1804	0.55	0.483 (0.294)	14.58 (2.87)	191 (88)	54 (12)	28.85 (97.70)

**DRAWBAR PERFORMANCE**  
**(Ballasted at 1800 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)
2nd Gear									
258.06 (192.43)	48440 (215.47)	2.00 (3.22)	2179	9.89	0.619 (0.377)	11.39 (2.24)	189 (87)	50 (10)	29.16 (98.75)
3rd Gear									
295.86 (220.62)	45327 (201.63)	2.45 (3.94)	2073	8.00	0.566 (0.344)	12.46 (2.45)	189 (87)	50 (10)	29.16 (98.75)
4th Gear									
332.82 (248.19)	43215 (192.23)	2.89 (4.65)	1882	6.26	0.515 (0.313)	13.69 (2.70)	190 (88)	50 (10)	29.15 (98.71)
5th Gear									
348.34 (259.76)	39008 (173.52)	3.35 (5.39)	1799	4.71	0.481 (0.293)	14.66 (2.89)	190 (88)	51 (11)	29.14 (98.68)
6th Gear									
353.69 (263.75)	34672 (154.23)	3.83 (6.16)	1801	3.08	0.474 (0.289)	14.86 (2.93)	191 (88)	52 (11)	29.13 (98.64)
7th Gear									
352.80 (263.08)	30374 (135.11)	4.36 (7.01)	1801	2.19	0.473 (0.288)	14.91 (2.94)	191 (88)	52 (11)	29.12 (98.61)
8th Gear									
355.32 (264.97)	27037 (120.27)	4.93 (7.93)	1800	1.59	0.467 (0.284)	15.11 (2.98)	191 (90)	53 (12)	29.12 (98.61)
9th Gear									
350.02 (261.01)	23567 (104.83)	5.57 (8.96)	1800	1.09	0.475 (0.289)	14.84 (2.92)	191 (88)	54 (12)	29.11 (98.58)
10th Gear									
350.16 (261.11)	20900 (92.97)	6.28 (10.11)	1798	0.80	0.475 (0.289)	14.84 (2.92)	191 (88)	55 (13)	29.10 (98.54)
11th Gear									
341.68 (254.79)	18019 (80.15)	7.11 (11.44)	1800	0.58	0.486 (0.296)	14.50 (2.86)	191 (88)	55 (13)	29.10 (98.54)
12th Gear									
340.09 (253.61)	15909 (70.77)	8.02 (12.90)	1799	0.45	0.486 (0.295)	14.52 (2.86)	191 (88)	56 (13)	29.09 (98.51)

### 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: 2943 psi (203 bar)

#### High flow option

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

44.5 GPM (168.5 l/min) 59.0 GPM (223.3 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

43.0 GPM (162.8 l/min) 57.1 GPM (216.1 l/min)

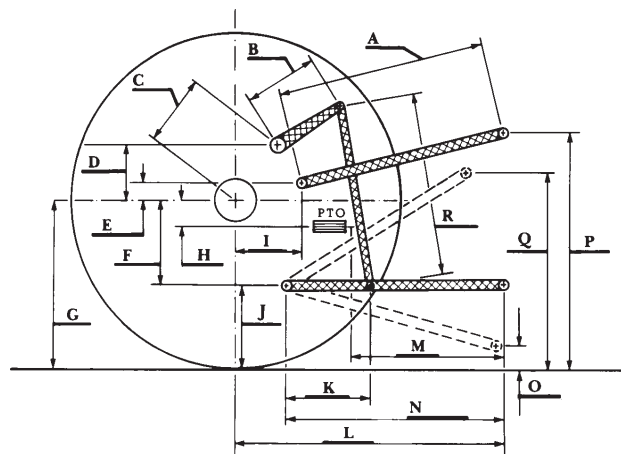
Delivery pressure:

2692 psi (186 bar) 2479 psi (171 bar)

Power:

67.5 HP (50.4 kW) 82.6 HP (61.6 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 MT845B DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln