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January 2005

## Test 1859: Challenger MT755B Diesel

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 1859 – SUMMARY 486

## CHALLENGER MT755B 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>					
245.61 (183.15)	2100	14.54 (55.03)	0.417 (0.254)	16.90 (3.33)	
<b>Standard Power Take-off Speed - (PTO speed - 1000 rpm)</b>					
277.64 (207.04)	1980	15.86 (60.04)	0.403 (0.245)	17.51 (3.45)	
<b>Maximum Power (1 hour)</b>					
315.96 (235.61)	1701	17.27 (65.38)	0.385 (0.234)	18.29 (3.60)	

#### VARYING POWER AND FUEL CONSUMPTION

245.61 (183.15)	2100	14.54 (55.03)	0.417 (0.254)	16.90 (3.33)	Air temperature
214.55 (159.99)	2166	13.69 (51.81)	0.450 (0.274)	15.68 (3.09)	75°F (24°C)
163.89 (121.21)	2199	11.73 (44.40)	0.505 (0.307)	13.97 (2.75)	Relative humidity
109.32 (81.52)	2199	9.40 (35.59)	0.606 (0.369)	11.63 (2.29)	51%
53.68 (40.03)	2199	6.37 (24.11)	0.836 (0.509)	8.43 (1.66)	Barometer
2.11 (1.58)	2199	3.47 (13.15)	11.593 (7.051)	0.61 (0.12)	29.05" Hg (98.37 kPa)

Maximum Torque - 1037 lb.-ft. (1405 Nm) at 1201 rpm

Maximum Torque Rise - 68.7%

Torque rise at 1700 engine rpm - 59%

#### 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	Temp. °C Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—6th Gear</b>									
213.58 (159.27)	18170 (80.82)	4.41 (7.09)	2102	2.54	0.476 (0.290)	14.80 (2.92)	173 (78)	62 (17)	29.06 (98.41)
<b>75% of Pull at Maximum Power—6th Gear</b>									
169.09 (126.09)	13607 (60.53)	4.66 (7.50)	2197	1.40	0.542 (0.330)	13.02 (2.56)	172 (78)	61 (16)	29.04 (98.34)
<b>50% of Pull at Maximum Power—6th Gear</b>									
113.39 (84.56)	9058 (40.29)	4.69 (7.56)	2195	0.60	0.667 (0.406)	10.57 (2.08)	171 (77)	61 (16)	29.03 (98.31)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
168.98 (126.01)	13600 (60.50)	4.66 (7.50)	1539	1.42	0.478 (0.291)	14.75 (2.91)	173 (78)	61 (16)	29.04 (98.34)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
113.97 (84.99)	9066 (40.33)	4.71 (7.59)	1544	0.58	0.548 (0.334)	12.86 (2.53)	171 (77)	62 (17)	29.03 (98.31)

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

**Dates of tests:** October 25 - November 2, 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:** 22.5 hours

**ENGINE:** Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** \*JLW00100\* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.409" x 5.866" (112.0 mm x 149.0 mm) **Compression ratio** 17.1 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 and variable speed fan

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 101.7 - 113.0 lb/h (46.1 - 51.3 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 22.5 - 26.8 psi (155 - 185 kPa) as measured 23.4 psi (161 kPa)

**CHASSIS:** **Type** tracklayer-rubber tracked **Serial No.** \*AGCMT755KALM60732\* **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** 30195 lb (13696 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)
3th Gear								
187.54 (139.85)	29422 (130.88)	2.39 (3.85)	2142	11.27	0.549 (0.334)	12.85 (2.53)	171 (77)	50 (10) (98.48)
4th Gear								
200.49 (149.50)	23360 (103.91)	3.22 (5.18)	2102	4.56	0.506 (0.308)	13.92 (2.74)	173 (78)	54 (12) (98.48)
5th Gear								
211.15 (157.45)	20403 (90.76)	3.88 (6.25)	2101	3.31	0.483 (0.294)	14.61 (2.88)	173 (78)	58 (14) (98.44)
6th Gear								
213.58 (159.27)	18170 (80.82)	4.41 (7.09)	2102	2.54	0.476 (0.290)	14.80 (2.92)	173 (78)	62 (17) (98.41)
7th Gear								
210.71 (157.13)	15814 (70.34)	5.00 (8.04)	2098	1.84	0.479 (0.291)	14.73 (2.90)	173 (78)	65 (18) (98.37)
8th Gear								
212.43 (158.41)	14084 (62.65)	5.66 (9.10)	2100	1.41	0.474 (0.288)	14.88 (2.93)	174 (79)	66 (19) (98.31)
9th Gear								
206.72 (154.15)	12184 (54.20)	6.36 (10.24)	2096	1.15	0.495 (0.301)	14.25 (2.81)	171 (77)	52 (11) (98.44)
10th Gear								
208.31 (155.34)	10851 (48.27)	7.20 (11.59)	2099	0.80	0.495 (0.301)	14.24 (2.81)	172 (78)	53 (12) (98.41)
11th Gear								
197.92 (147.59)	9132 (40.62)	8.13 (13.08)	2096	0.54	0.517 (0.314)	13.65 (2.69)	174 (79)	54 (12) (98.37)

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 111°F (44°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. **1859**, Nebraska Summary 486, 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	75.7
Bystander	--

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	25.0 in(635 mm)	25.0 in (635 mm)
Ballast - Cast iron(front end)	None	None
- Cast iron(front idlers)	630 lb (286 kg)	None
Height of Drawbar	18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with operator	31000 lb(14061 kg)	30370 lb(13776 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)
3th Gear									
187.32 (139.69)	29381 (130.69)	2.39 (3.85)	2142	11.28	0.548 (0.333)	12.86 (2.53)	170 (77)	50 (10)	29.08 (98.48)
4th Gear									
213.84 (159.46)	26668 (118.62)	3.01 (4.84)	2020	7.16	0.503 (0.306)	14.00 (2.76)	174 (79)	55 (13)	29.08 (98.48)
5th Gear									
235.55 (175.65)	25420 (113.07)	3.47 (5.59)	1943	6.30	0.476 (0.290)	14.81 (2.92)	174 (79)	60 (16)	29.07 (98.44)
6th Gear									
247.05 (184.23)	24982 (111.13)	3.71 (5.97)	1836	5.88	0.465 (0.283)	15.17 (2.99)	174 (79)	64 (18)	29.05 (98.37)
7th Gear									
255.12 (190.24)	23555 (104.78)	4.06 (6.54)	1764	4.96	0.458 (0.278)	15.40 (3.03)	175 (79)	65 (18)	29.04 (98.34)
8th Gear									
260.52 (194.27)	21934 (97.57)	4.45 (7.17)	1701	4.06	0.450 (0.274)	15.68 (3.09)	175 (79)	67 (19)	29.02 (98.27)
9th Gear									
262.36 (195.64)	19423 (86.40)	5.07 (8.15)	1702	3.01	0.453 (0.276)	15.57 (3.07)	173 (78)	53 (12)	29.06 (98.41)
10th Gear									
266.29 (198.57)	17440 (77.58)	5.73 (9.21)	1699	2.48	0.441 (0.268)	16.00 (3.15)	174 (79)	54 (12)	29.05 (98.37)
11th Gear									
260.51 (194.27)	14964 (66.56)	6.53 (10.51)	1702	1.60	0.450 (0.274)	15.67 (3.09)	175 (80)	55 (13)	29.05 (98.37)
12th Gear									
262.59 (195.81)	13361 (59.43)	7.37 (11.86)	1703	1.32	0.453 (0.275)	15.58 (3.07)	176 (80)	57 (14)	29.04 (98.34)
13th Gear									
262.98 (196.10)	11208 (49.85)	8.80 (14.16)	1697	0.84	0.450 (0.274)	15.67 (3.09)	177 (80)	59 (15)	29.04 (98.34)

**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)	
3rd Gear									
188.48 (140.55)	30267 (134.63)	2.34 (3.76)	2108	12.35	0.543 (0.330)	12.99 (2.56)	171 (77)	48 (9)	28.86 (97.73)
4th Gear									
215.48 (160.69)	28418 (126.41)	2.84 (4.58)	1967	10.25	0.513 (0.312)	13.75 (2.71)	171 (77)	50 (10)	28.86 (97.73)
5th Gear									
238.49 (177.84)	26713 (118.83)	3.35 (5.39)	1899	7.94	0.476 (0.290)	14.81 (2.92)	173 (78)	52 (11)	28.87 (97.77)
6th Gear									
248.32 (185.17)	25641 (114.06)	3.63 (5.84)	1811	6.91	0.467 (0.284)	15.11 (2.98)	173 (78)	54 (12)	28.87 (97.77)
7th Gear									
256.04 (190.93)	24057 (107.01)	3.99 (6.42)	1740	5.62	0.462 (0.281)	15.26 (3.01)	173 (78)	60 (16)	28.88 (97.80)
8th Gear									
262.03 (195.40)	22011 (97.91)	4.46 (7.18)	1710	4.42	0.448 (0.272)	15.74 (3.10)	174 (79)	61 (16)	28.88 (97.80)
9th Gear									
261.34 (194.88)	19323 (85.95)	5.07 (8.16)	1703	3.10	0.450 (0.274)	15.67 (3.09)	175 (80)	63 (17)	28.88 (97.80)
10th Gear									
265.63 (198.08)	17354 (77.19)	5.74 (9.24)	1701	2.36	0.444 (0.270)	15.89 (3.13)	176 (80)	65 (18)	28.89 (97.83)
11th Gear									
260.77 (194.46)	15001 (66.73)	6.52 (10.49)	1700	1.61	0.452 (0.275)	15.62 (3.08)	177 (81)	67 (19)	28.89 (97.83)
12th Gear									
262.05 (195.41)	13344 (59.36)	7.36 (11.85)	1698	1.25	0.450 (0.274)	15.65 (3.08)	178 (81)	68 (20)	28.90 (97.87)
13th Gear									
262.21 (195.53)	11152 (49.61)	8.82 (14.19)	1698	0.72	0.449 (0.273)	15.69 (3.09)	178 (81)	70 (21)	28.90 (97.87)

### 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

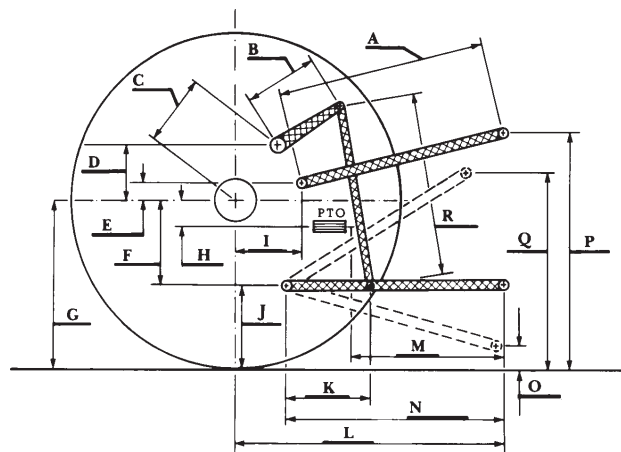
Sustained pressure at compensator cutoff: 2968 psi (205 bar)

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: 43.2 GPM (163.5 l/min)

Delivery pressure: 2734 psi (189 bar)

Power: 68.9 HP (51.4 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 MT755B DIESEL

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln