

# NEBRASKA OECD TRACTOR TEST 1813 – SUMMARY 379

## CHALLENGER MT765 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—1060 rpm)</b>					
259.30 (193.36)	2100	15.33 (58.02)	0.415 (0.252)	16.92 (3.33)	
<b>Standard Power Take-off Speed - (PTO speed - 1000 rpm)</b>					
282.95 (211.00)	1980	15.89 (60.17)	0.394 (0.240)	17.80 (3.51)	
<b>Maximum Power (2 hours)</b>					
298.77 (222.79)	1751	16.12 (61.03)	0.379 (0.230)	18.53 (3.65)	

#### VARYING POWER AND FUEL CONSUMPTION

259.30 (193.36)	2100	15.33 (58.02)	0.415 (0.252)	16.92 (3.33)	Air temperature
230.68 (172.02)	2196	14.53 (55.01)	0.442 (0.269)	15.87 (3.13)	83°F(28°C)
172.77 (128.84)	2199	12.18 (46.11)	0.495 (0.301)	14.18 (2.79)	Relative humidity
114.65 (85.50)	2199	9.23 (34.95)	0.565 (0.344)	12.42 (2.45)	55%
57.33 (42.75)	2199	6.20 (23.46)	0.759 (0.462)	9.25 (1.82)	Barometer
1.06 (0.79)	2199	3.46 (13.11)	22.996 (13.988)	0.31 (0.06)	28.88" Hg (97.80 kPa)

Maximum Torque - 1012 lb.-ft. (1372 Nm) at 1402 rpm  
 Maximum Torque Rise - 56.0%  
 Torque rise at 1699 engine rpm - 42%

#### 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 dry med	Barom. inch Hg (kPa)
<b>Maximum Power—6th Gear</b>								
221.81 (165.40)	19101 (84.96)	4.35 (7.01)	2100	3.72	0.485 (0.295)	14.47 (2.85)	183 (84)	57 (14)
<b>75% of Pull at Maximum Power—6th Gear</b>								
176.54 (131.64)	14285 (63.54)	4.63 (7.46)	2200	2.35	0.534 (0.325)	13.15 (2.59)	182 (83)	62 (17)
<b>50% of Pull at Maximum Power—6th Gear</b>								
119.07 (88.79)	9523 (42.36)	4.69 (7.55)	2199	1.19	0.607 (0.369)	11.56 (2.28)	182 (83)	65 (18)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>								
176.69 (131.75)	14274 (63.49)	4.64 (7.47)	1543	2.20	0.458 (0.278)	15.33 (3.02)	184 (84)	64 (18)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>								
119.20 (88.89)	9526 (42.37)	4.69 (7.55)	1542	1.19	0.516 (0.314)	13.62 (2.68)	182 (83)	66 (19)

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

**Dates of tests:** October 2 - November 25, 2002

**Manufacturer:** AGCO Corporation, 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) 0.8430 Fuel weight 7.019 lbs/gal (0.841 kg/l) Oil SAE 10W-30 API service classification CH-4 Transmission and hydraulic lubricant Caterpillar MTO fluid Total time engine was operated: 60.0 hours

**ENGINE: Make** Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** \*4ZF02171\* **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 **Fuel cooler** radiator for return fuel **Muffler** vertical **Cooling medium temperature control** 1 thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 104.5 - 115.7 lb/h (47.4 - 52.5 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.6 - 25.4 psi (128 - 175 kPa) as measured 20.4 psi (141 kPa)

**CHASSIS: Type** tracklayer-rubber tracked **Serial No.** \*AGCMT765PAMS20359\* **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 dis 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** 29345 lb (13311 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/lp.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									
177.97 (132.71)	28095 (124.97)	2.38 (3.82)	2191	14.34	0.584 (0.355)	12.01 (2.37)	182 (83)	50 (10)	29.05 (98.37)
4th Gear									
206.19 (153.75)	25158 (111.91)	3.07 (4.95)	2098	8.88	0.523 (0.318)	13.41 (2.64)	183 (84)	51 (11)	29.04 (98.34)
5th Gear									
216.24 (161.25)	21320 (94.83)	3.80 (6.12)	2102	5.41	0.497 (0.302)	14.13 (2.78)	182 (83)	62 (17)	28.71 (97.22)
6th Gear									
221.81 (165.40)	19101 (84.96)	4.35 (7.01)	2100	3.72	0.485 (0.295)	14.47 (2.85)	183 (84)	57 (14)	28.67 (97.09)
7th Gear									
220.16 (164.17)	16648 (74.05)	4.96 (7.98)	2100	2.74	0.488 (0.297)	14.39 (2.84)	184 (84)	58 (14)	28.70 (97.19)
8th Gear									
222.10 (165.62)	14821 (65.93)	5.62 (9.04)	2103	2.12	0.484 (0.294)	14.51 (2.86)	183 (84)	58 (14)	28.70 (97.19)
9th Gear									
219.11 (163.39)	12953 (57.62)	6.34 (10.21)	2097	1.50	0.492 (0.299)	14.26 (2.81)	183 (84)	57 (14)	28.57 (96.75)
10th Gear									
219.20 (163.46)	11464 (50.99)	7.17 (11.54)	2101	1.42	0.491 (0.298)	14.31 (2.82)	183 (84)	56 (13)	28.60 (96.85)
11th Gear									
209.50 (156.22)	9677 (43.05)	8.12 (13.07)	2103	1.03	0.512 (0.311)	13.72 (2.70)	184 (84)	55 (13)	28.62 (96.92)

**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 121°F(50°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. **1813**, Nebraska Summary 379, January 8, 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	75.1
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)	1480 lb (671 kg)	None
Height of Drawbar	18.5 in (470 mm)	18.0 in (455 mm)
Static Weight with operator	31000 lb(14061 kg)	29520 lb(13390 kg)

**DRAWBAR PERFORMANCE**  
**(Unballasted at 1750 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									
178.32 (132.97)	28229 (125.57)	2.37 (3.81)	2189	14.58	0.584 (0.355)	12.03 (2.37)	183 (84)	50 (10)	29.05 (98.37)
4th Gear									
207.07 (154.41)	26377 (117.33)	2.94 (4.74)	2066	11.41	0.527 (0.321)	13.32 (2.62)	183 (84)	52 (11)	29.03 (98.31)
5th Gear									
229.56 (171.19)	25486 (113.37)	3.38 (5.44)	1966	10.20	0.489 (0.297)	14.36 (2.83)	183 (84)	55 (13)	29.01 (98.24)
6th Gear									
242.88 (181.12)	25697 (114.30)	3.54 (5.70)	1831	10.20	0.469 (0.285)	14.96 (2.95)	184 (84)	55 (13)	29.02 (98.27)
7th Gear									
246.97 (184.17)	23295 (103.62)	3.98 (6.40)	1752	6.68	0.458 (0.279)	15.32 (3.02)	185 (85)	57 (14)	28.69 (97.16)
8th Gear									
255.85 (190.79)	21064 (93.70)	4.55 (7.33)	1754	4.90	0.444 (0.270)	15.82 (3.12)	185 (85)	58 (14)	28.70 (97.19)
9th Gear									
253.53 (189.06)	18304 (81.42)	5.19 (8.36)	1753	3.57	0.448 (0.272)	15.67 (3.09)	185 (85)	58 (14)	28.70 (97.19)
10th Gear									
257.34 (191.90)	16337 (72.67)	5.91 (9.51)	1755	2.58	0.442 (0.269)	15.87 (3.13)	185 (85)	57 (14)	28.58 (96.78)
11th Gear									
253.16 (188.78)	14180 (63.08)	6.70 (10.77)	1749	2.05	0.450 (0.273)	15.61 (3.08)	185 (85)	56 (13)	28.61 (96.88)
12th Gear									
254.87 (190.06)	12652 (56.28)	7.55 (12.16)	1744	1.66	0.446 (0.271)	15.74 (3.10)	185 (85)	56 (13)	28.63 (96.95)
13th Gear									
249.44 (186.01)	10327 (45.94)	9.06 (14.58)	1749	1.19	0.454 (0.276)	15.45 (3.04)	185 (85)	56 (13)	28.65 (97.02)

**DRAWBAR PERFORMANCE**  
**(Ballasted to 31000 lbs at 1750 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)
3rd Gear									
190.40 (141.98)	30075 (133.78)	2.37 (3.82)	2164	13.31	0.550 (0.334)	12.77 (2.52)	183 (84)	48 (9)	29.01 (98.24)
4th Gear									
216.38 (161.35)	28256 (125.69)	2.87 (4.62)	2010	10.97	0.514 (0.313)	13.65 (2.69)	183 (84)	63 (17)	28.88 (97.80)
5th Gear									
235.62 (175.70)	26526 (117.99)	3.33 (5.36)	1922	9.41	0.482 (0.293)	14.56 (2.87)	183 (84)	66 (19)	28.89 (97.83)
6th Gear									
246.27 (183.64)	25802 (114.77)	3.58 (5.76)	1811	8.13	0.464 (0.282)	15.12 (2.98)	184 (84)	64 (18)	28.89 (97.83)
7th Gear									
248.99 (185.67)	23405 (104.11)	3.99 (6.42)	1752	6.33	0.457 (0.278)	15.36 (3.03)	184 (84)	68 (20)	28.90 (97.87)
8th Gear									
255.18 (190.29)	20958 (93.23)	4.57 (7.35)	1750	4.61	0.445 (0.271)	15.77 (3.11)	185 (85)	69 (21)	28.91 (97.90)
9th Gear									
255.41 (190.46)	18428 (81.97)	5.20 (8.36)	1750	3.35	0.445 (0.271)	15.78 (3.11)	185 (85)	69 (21)	28.91 (97.90)
10th Gear									
258.55 (192.80)	16413 (73.01)	5.91 (9.51)	1753	2.66	0.440 (0.268)	15.94 (3.14)	184 (84)	70 (21)	28.91 (97.90)
11th Gear									
252.48 (188.28)	14057 (62.53)	6.74 (10.84)	1758	1.90	0.449 (0.273)	15.62 (3.08)	185 (85)	71 (22)	28.90 (97.87)
12th Gear									
253.04 (188.69)	12568 (55.90)	7.55 (12.15)	1744	1.58	0.449 (0.273)	15.63 (3.08)	186 (86)	72 (22)	28.90 (97.87)
13th Gear									
249.15 (185.79)	10316 (45.89)	9.06 (14.58)	1749	1.11	0.457 (0.278)	15.37 (3.03)	184 (84)	73 (23)	28.90 (97.87)

**DRAWBAR PERFORMANCE**  
**(Ballasted to 36000 lbs at 1750 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									
173.36 (129.28)	34542 (153.65)	1.88 (3.03)	2166	14.56	0.580 (0.353)	12.10 (2.38)	183 (84)	45 (7)	29.02 (98.27)
3rd Gear									
197.16 (147.02)	30565 (135.96)	2.42 (3.89)	2142	10.88	0.535 (0.325)	13.12 (2.58)	183 (84)	56 (13)	28.92 (97.93)
4th Gear									
223.82 (166.90)	28958 (128.81)	2.90 (4.66)	1989	9.45	0.498 (0.303)	14.10 (2.78)	183 (84)	58 (14)	28.91 (97.90)
5th Gear									
243.23 (181.37)	27793 (122.63)	3.28 (5.28)	1875	8.65	0.468 (0.285)	15.00 (2.95)	183 (84)	58 (14)	28.91 (97.90)
6th Gear									
249.11 (185.76)	26847 (119.42)	3.48 (5.60)	1753	7.97	0.455 (0.277)	15.42 (3.04)	184 (84)	59 (15)	28.90 (97.87)
7th Gear									
252.49 (188.28)	23553 (104.77)	4.02 (6.47)	1750	5.52	0.450 (0.274)	15.61 (3.07)	184 (84)	60 (16)	28.89 (97.83)
8th Gear									
256.99 (191.64)	20977 (93.31)	4.59 (7.39)	1751	4.13	0.441 (0.268)	15.92 (3.14)	185 (85)	62 (17)	28.89 (97.83)
9th Gear									
255.43 (190.47)	18375 (81.73)	5.21 (8.39)	1749	3.23	0.444 (0.270)	15.81 (3.11)	185 (85)	62 (17)	28.89 (97.83)
10th Gear									
259.01 (193.14)	16453 (73.19)	5.90 (9.50)	1748	2.78	0.437 (0.266)	16.07 (3.17)	185 (85)	63 (17)	28.88 (97.80)
11th Gear									
252.95 (188.63)	14180 (63.07)	6.69 (10.77)	1746	2.09	0.448 (0.273)	15.66 (3.08)	185 (85)	63 (17)	28.88 (97.80)
12th Gear									
253.76 (189.23)	12566 (55.89)	7.57 (12.19)	1748	1.62	0.449 (0.273)	15.63 (3.08)	183 (84)	64 (18)	28.87 (97.77)
13th Gear									
250.46 (186.77)	10366 (46.11)	9.06 (14.58)	1750	1.23	0.455 (0.277)	15.44 (3.04)	182 (83)	65 (18)	28.87 (97.77)

**TIRES, BALLAST AND WEIGHT**

	With Ballast	Without Ballast
<b>Track width</b>	25.0 in (635 mm)	25.0 in (635 mm)
<b>Ballast</b> - Cast iron(front end)	2850 lb (1293 kg)	None
- Cast iron(front idlers)	3630 lb (1646 kg)	None
<b>Height of Drawbar</b>	18.5 in (470 mm)	18.0 in (455 mm)
<b>Static Weight with operator</b>	36000 lb(16329 kg)	29520 lb(13390 kg)

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

CATEGORY: III

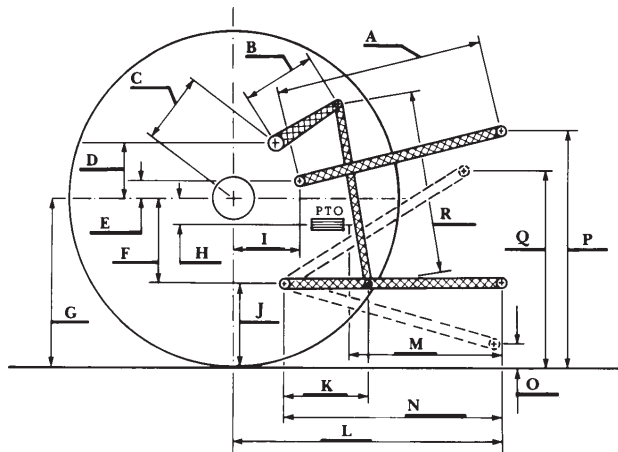
Quick Attach: yes

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

i) Opening pressure of relief valve: NA  
Sustained pressure at compensator cutoff: 2940 psi (203 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 43.8 GPM (165.8 l/min)

iii) Pump delivery rate at maximum hydraulic power: 42.1 GPM (159.4 l/min)  
Delivery pressure: 2705 psi (186 bar)  
Power: 66.4 HP (49.5 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 MT765 DIESEL

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Darrell Nelson, Dean and Director