

# NEBRASKA OECD TRACTOR TEST 1812—SUMMARY 378

## CHALLENGER MT755 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>					
236.87 (176.64)	2101	13.63 (51.58)	0.404 (0.246)	17.38 (3.42)	
<b>Standard Power Take-off Speed - (PTO speed - 1000 rpm)</b>					
257.33 (191.89)	1980	14.07 (53.28)	0.384 (0.234)	18.28 (3.60)	
<b>Maximum Power (2 hours)</b>					
270.23 (201.51)	1801	14.27 (54.00)	0.371 (0.225)	18.94 (3.73)	

#### VARYING POWER AND FUEL CONSUMPTION

236.87 (176.64)	2101	13.63 (51.58)	0.404 (0.246)	17.38 (3.42)	Air temperature
209.49 (156.21)	2185	12.99 (49.18)	0.435 (0.265)	16.12 (3.18)	81°F (27°C)
158.08 (117.88)	2200	10.81 (40.93)	0.480 (0.292)	14.62 (2.88)	Relative humidity
105.09 (78.37)	2199	8.46 (32.03)	0.565 (0.344)	12.42 (2.75)	48%
52.84 (39.40)	2199	5.77 (21.84)	0.767 (0.466)	9.16 (1.80)	Barometer
1.06 (0.79)	2199	3.33 (12.62)	22.144 (13.470)	0.32 (0.06)	28.61" Hg (96.88 kPa)

Maximum Torque - 921 lb.-ft. (1248 Nm) at 1400 rpm  
 Maximum Torque Rise - 55.4%  
 Torque rise at 1699 engine rpm - 41%

#### 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>									
202.94 (151.33)	17332 (77.09)	4.39 (7.07)	2100	3.18	0.466 (0.284)	15.06 (2.97)	180 (82)	66 (19)	28.85 (97.70)
<b>75% of Pull at Maximum Power—6th Gear</b>									
161.05 (120.09)	12970 (57.69)	4.66 (7.49)	2200	1.80	0.525 (0.319)	13.37 (2.63)	180 (82)	63 (17)	28.99 (98.17)
<b>50% of Pull at Maximum Power—6th Gear</b>									
108.44 (80.86)	8657 (38.51)	4.70 (7.56)	2200	0.94	0.611 (0.371)	11.49 (2.26)	179 (82)	64 (18)	28.98 (98.14)
<b>75% of Pull at Reduced Engine Speed—9th Gear</b>									
161.49 (120.43)	12944 (57.58)	4.68 (7.53)	1548	1.72	0.448 (0.273)	15.66 (3.08)	181 (83)	64 (18)	28.98 (98.14)
<b>50% of Pull at Reduced Engine Speed—9th Gear</b>									
108.30 (80.76)	8661 (38.52)	4.69 (7.55)	1537	0.94	0.503 (0.306)	13.96 (2.75)	179 (82)	64 (18)	28.97 (98.10)

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

**Dates of Test:** October 3-November 20, 2002

**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) 0.8430 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: 32.0 hours

**ENGINE:** Make Caterpillar Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No.\*4ZF02166\* 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 returned fuel Muffler vertical Cooling medium temperature control 1 thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS:** Fuel rate: 95.5 - 105.2 lb/h (43.3 - 47.7 kg/h) High idle: 2175 - 2225 rpm Turbo boost: nominal 18.1 - 24.4 psi (125 - 168 kPa) as measured 18.1 psi (125 kPa)

**CHASSIS:** Type tracklayer-rubber tracked Serial No.\*AGCMT755JALM20278\* 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 29365 lb (13320 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		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
3rd Gear									
174.20 (129.90)	28137 (125.16)	2.32 (3.74)	2126	13.74	0.538 (0.327)	13.06 (2.57)	181 (83)	53 (12)	28.99 (98.17)
4th Gear									
192.67 (143.68)	22743 (101.16)	3.18 (5.11)	2101	6.04	0.490 (0.298)	14.32 (2.82)	181 (83)	54 (12)	28.99 (98.17)
5th Gear									
202.64 (151.11)	19765 (87.92)	3.84 (6.19)	2097	4.30	0.467 (0.284)	15.04 (2.96)	181 (83)	56 (13)	29.01 (98.24)
6th Gear									
202.94 (151.33)	17332 (77.09)	4.39 (7.07)	2100	3.18	0.466 (0.284)	15.06 (2.97)	180 (82)	66 (19)	28.85 (97.70)
7th Gear									
202.51 (151.01)	15224 (67.72)	4.99 (8.03)	2098	2.19	0.472 (0.287)	14.87 (2.93)	180 (82)	66 (19)	28.86 (97.73)
8th Gear									
201.81 (150.49)	13430 (59.74)	5.64 (9.07)	2096	1.80	0.470 (0.286)	14.92 (2.94)	181 (83)	70 (21)	28.85 (97.70)
9th Gear									
200.38 (149.43)	11806 (52.51)	6.37 (10.24)	2097	1.33	0.476 (0.290)	14.74 (2.90)	181 (83)	65 (18)	28.86 (97.73)
10th Gear									
198.49 (148.01)	10356 (46.07)	7.19 (11.57)	2097	1.10	0.476 (0.290)	14.74 (2.90)	182 (83)	74 (23)	28.84 (97.66)
11th Gear									
189.62 (141.40)	8745 (38.90)	8.13 (13.09)	2098	0.86	0.503 (0.306)	13.96 (2.75)	181 (83)	74 (23)	28.84 (97.66)

**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 code procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1812**, Nebraska Summary 378, 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	76.8
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)	1460 lb (662 kg)	None
Height of Drawbar	18.5 in (470 mm)	18.0 in (455 mm)
Static Weight with operator	31000 lb(14061 kg)	29540 lb(13399 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
175.31 (130.73)	28104 (125.01)	2.34 (3.76)	2127	13.14	0.533 (0.324)	13.16 (2.59)	181 (83)	54 (12)	28.99 (98.17)
4th Gear									
201.41 (150.19)	26586 (118.26)	2.84 (4.57)	1979	10.76	0.492 (0.299)	14.28 (2.81)	181 (83)	55 (13)	29.00 (98.21)
5th Gear									
219.34 (163.56)	25191 (112.05)	3.27 (5.25)	1866	8.53	0.459 (0.279)	15.29 (3.01)	181 (83)	58 (14)	29.01 (98.24)
6th Gear									
225.14 (167.89)	23377 (103.98)	3.61 (5.81)	1802	7.02	0.443 (0.269)	15.84 (3.12)	182 (83)	62 (17)	29.00 (98.21)
7th Gear									
227.09 (169.34)	20348 (90.51)	4.19 (6.74)	1803	4.59	0.443 (0.269)	15.85 (3.12)	181 (83)	69 (21)	28.85 (97.70)
8th Gear									
232.00 (173.00)	18255 (81.20)	4.77 (7.67)	1801	3.26	0.433 (0.263)	16.22 (3.19)	182 (83)	66 (19)	28.86 (97.73)
9th Gear									
229.80 (171.36)	15991 (71.13)	5.39 (8.67)	1797	2.65	0.435 (0.264)	16.15 (3.18)	182 (83)	71 (22)	28.85 (97.70)
10th Gear									
232.86 (173.64)	14308 (63.64)	6.10 (9.82)	1798	1.96	0.433 (0.263)	16.20 (3.19)	182 (83)	68 (20)	28.86 (97.73)
11th Gear									
226.36 (168.80)	12280 (54.62)	6.91 (11.13)	1795	1.49	0.443 (0.270)	15.83 (3.12)	183 (84)	74 (23)	28.84 (97.66)
12th Gear									
226.40 (168.83)	10860 (48.31)	7.82 (12.58)	1798	1.18	0.441 (0.268)	15.91 (3.13)	182 (83)	74 (23)	28.84 (97.66)
13th Gear									
224.58 (167.47)	9015 (40.10)	9.34 (15.03)	1799	0.86	0.444 (0.270)	15.82 (3.12)	184 (84)	74 (23)	28.84 (97.66)

**DRAWBAR PERFORMANCE**  
**(Ballasted to 31000 lbs 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/kWh)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
184.36 (137.48)	30223 (134.44)	2.29 (3.68)	2088	13.42	0.518 (0.315)	13.54 (2.67)	181 (83)	59 (15)	28.80 (97.53)
4th Gear									
211.00 (157.34)	28327 (126.00)	2.79 (4.50)	1927	9.79	0.477 (0.290)	14.72 (2.90)	181 (83)	59 (15)	28.80 (97.53)
5th Gear									
222.61 (166.00)	26318 (117.07)	3.17 (5.10)	1796	7.78	0.448 (0.273)	15.65 (3.08)	182 (83)	60 (16)	28.80 (97.53)
6th Gear									
228.44 (170.35)	23399 (104.08)	3.66 (5.89)	1798	5.61	0.436 (0.265)	16.11 (3.17)	183 (84)	62 (17)	28.80 (97.53)
7th Gear									
229.41 (171.07)	20455 (90.99)	4.21 (6.77)	1802	3.93	0.435 (0.264)	16.15 (3.18)	182 (83)	62 (17)	28.80 (97.53)
8th Gear									
232.81 (173.61)	18306 (81.43)	4.77 (7.68)	1798	3.03	0.427 (0.260)	16.43 (3.24)	183 (84)	62 (17)	28.80 (97.53)
9th Gear									
231.25 (172.44)	16040 (71.35)	5.41 (8.70)	1799	2.27	0.432 (0.263)	16.25 (3.20)	182 (83)	62 (17)	28.80 (97.53)
10th Gear									
234.11 (174.58)	14356 (63.86)	6.12 (9.84)	1800	1.73	0.426 (0.259)	16.47 (3.24)	182 (83)	62 (17)	28.80 (97.53)
11th Gear									
227.46 (169.62)	12289 (54.66)	6.94 (11.17)	1802	1.35	0.440 (0.268)	15.96 (3.14)	184 (84)	62 (17)	28.80 (97.53)
12th Gear									
227.95 (169.98)	10929 (48.61)	7.82 (12.59)	1799	1.02	0.438 (0.267)	16.01 (3.15)	184 (84)	61 (16)	28.80 (97.53)
13th Gear									
225.04 (167.81)	9003 (40.05)	9.37 (15.09)	1805	0.79	0.444 (0.270)	15.80 (3.11)	184 (84)	61 (16)	28.80 (97.53)

**DRAWBAR PERFORMANCE**  
**(Ballasted to 34000 lbs 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									
162.56 (121.22)	32990 (146.74)	1.85 (2.97)	2177	14.99	0.560 (0.341)	12.54 (2.47)	181 (83)	44 (7)	28.82 (97.60)
3rd Gear									
188.28 (140.40)	29929 (133.13)	2.36 (3.80)	2095	11.03	0.502 (0.305)	13.98 (2.75)	181 (83)	54 (12)	29.00 (98.21)
4th Gear									
213.31 (159.06)	28640 (127.39)	2.79 (4.49)	1917	9.35	0.470 (0.286)	14.93 (2.94)	181 (83)	55 (13)	29.01 (98.24)
5th Gear									
225.79 (168.37)	26486 (117.81)	3.20 (5.14)	1801	7.25	0.443 (0.269)	15.86 (3.12)	182 (83)	56 (13)	29.02 (98.27)
6th Gear									
231.06 (172.30)	23676 (105.32)	3.66 (5.89)	1795	5.34	0.432 (0.263)	16.23 (3.20)	182 (83)	57 (14)	29.03 (98.31)
7th Gear									
230.98 (172.24)	20582 (91.55)	4.21 (6.77)	1803	3.80	0.431 (0.262)	16.29 (3.21)	182 (83)	58 (14)	29.01 (98.24)
8th Gear									
234.37 (174.77)	18386 (81.78)	4.78 (7.69)	1803	2.97	0.425 (0.259)	16.50 (3.25)	183 (84)	59 (15)	28.99 (98.17)
9th Gear									
232.47 (173.35)	16080 (71.53)	5.42 (8.72)	1806	2.36	0.429 (0.261)	16.38 (3.23)	183 (84)	60 (16)	28.97 (98.10)
10th Gear									
233.54 (174.15)	14369 (63.91)	6.10 (9.81)	1795	1.90	0.427 (0.260)	16.43 (3.24)	182 (83)	60 (16)	28.97 (98.10)
11th Gear									
228.39 (170.31)	12365 (55.00)	6.93 (11.15)	1801	1.59	0.434 (0.264)	16.17 (3.19)	182 (83)	60 (16)	28.97 (98.10)
12th Gear									
227.82 (169.89)	10931 (48.62)	7.82 (12.58)	1800	1.20	0.438 (0.267)	16.01 (3.15)	183 (84)	60 (16)	28.96 (98.07)
13th Gear									
224.75 (167.60)	8993 (40.00)	9.37 (15.08)	1806	0.88	0.445 (0.271)	15.78 (3.11)	184 (84)	60 (16)	28.96 (98.07)

**TIRES, BALLAST AND WEIGHT**

**Track width**

**Ballast** - Cast iron(front end)  
- Cast iron(front idlers)

**Height of Drawbar**

**Static Weight with operator**

**With Ballast**

25.0 in (635 mm)  
2850 lb (1293 kg)  
1610 lb (730 kg)  
18.5 in (470 mm)  
34000 lb(15422 kg)

**Without Ballast**

25.0 in (635 mm)  
None  
None  
18.0 in (455 mm)  
29540 lb(13399 kg)

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

CATEGORY: III

Quick Attach: yes

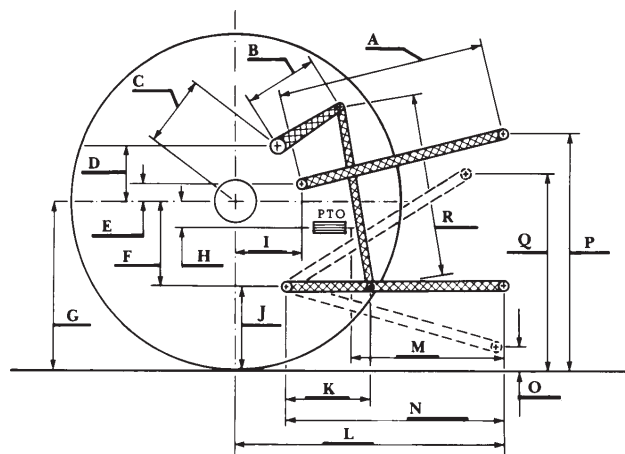
Maximum Force Exerted Through Whole Range: 17263 lbs (76.8 kN)

i) Opening pressure of relief valve: NA  
 Sustained pressure at compensator cutoff: 2930 psi (202 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 43.5 GPM (164.7 l/min)

iii) Pump delivery rate at maximum hydraulic power: 42.2 GPM (159.7 l/min)  
 Delivery pressure: 2756 psi (190 bar)  
 Power: 67.8 HP (50.6 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 MT755 DIESEL**

Agricultural Research Division  
 Institute of Agriculture and Natural Resources  
 University of Nebraska–Lincoln  
 Darrell Nelson, Dean and Director