January 2002

Test 1813: Challenger MT765 Diesel

Nebraska Tractor Test Lab
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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
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1060 rpm)					
259.30 *(193.36)*	2100	15.33 *(58.02)*	0.415 *(0.252)*	16.92 *(3.33)*	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
282.95 *(211.00)*	1980	15.89 *(60.17)*	0.394 *(0.240)*	17.80 *(3.51)*	
Maximum Power (2 hours)					
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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—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)*
75% of Pull at Maximum Power—6th Gear									
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)*	28.99 *(98.17)*
50% of Pull at Maximum Power—6th Gear									
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)*	28.97 *(98.10)*
75% of Pull at Reduced Engine Speed—9th Gear									
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)*	28.97 *(98.10)*
50% of Pull at Reduced Engine Speed—9th Gear									
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)*	28.95 *(98.04)*

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

Dates of Test: October 2-November 25, 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:** 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 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** 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/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				3th 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 code 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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					3th Gear				
178.32	28229	2.37	2189	14.58	0.584	12.03	183	50	29.05
(132.97)	*(125.57)*	*(3.81)*			*(0.355)*	*(2.37)*	*(84)*	*(10)*	*(98.37)*
					4th Gear				
207.07	26377	2.94	2066	11.41	0.527	13.32	183	52	29.03
(154.41)	*(117.33)*	*(4.74)*			*(0.321)*	*(2.62)*	*(84)*	*(11)*	*(98.31)*
					5th Gear				
229.56	25486	3.38	1966	10.20	0.489	14.36	183	55	29.01
(171.19)	*(113.37)*	*(5.44)*			*(0.297)*	*(2.83)*	*(84)*	*(13)*	*(98.24)*
					6th Gear				
242.88	25697	3.54	1831	10.20	0.469	14.96	184	55	29.02
(181.12)	*(114.30)*	*(5.70)*			*(0.285)*	*(2.95)*	*(84)*	*(13)*	*(98.27)*
					7th Gear				
246.97	23295	3.98	1752	6.68	0.458	15.32	185	57	28.69
(184.17)	*(103.62)*	*(6.40)*			*(0.279)*	*(3.02)*	*(85)*	*(14)*	*(97.16)*
					8th Gear				
255.85	21064	4.55	1754	4.90	0.444	15.82	185	58	28.70
(190.79)	*(93.70)*	*(7.33)*			*(0.270)*	*(3.12)*	*(85)*	*(14)*	*(97.19)*
					9th Gear				
253.53	18304	5.19	1753	3.57	0.448	15.67	185	58	28.70
(189.06)	*(81.42)*	*(8.36)*			*(0.272)*	*(3.09)*	*(85)*	*(14)*	*(97.19)*
					10th Gear				
257.34	16337	5.91	1755	2.58	0.442	15.87	185	57	28.58
(191.90)	*(72.67)*	*(9.51)*			*(0.269)*	*(3.13)*	*(85)*	*(14)*	*(96.78)*
					11th Gear				
253.16	14180	6.70	1749	2.05	0.450	15.61	185	56	28.61
(188.78)	*(63.08)*	*(10.77)*			*(0.273)*	*(3.08)*	*(85)*	*(13)*	*(96.88)*
					12th Gear				
254.87	12652	7.55	1744	1.66	0.446	15.74	185	56	28.63
(190.06)	*(56.28)*	*(12.16)*			*(0.271)*	*(3.10)*	*(85)*	*(13)*	*(96.95)*
					13th Gear				
249.44	10327	9.06	1749	1.19	0.454	15.45	185	56	28.65
(186.01)	*(45.94)*	*(14.58)*			*(0.276)*	*(3.04)*	*(85)*	*(13)*	*(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)*	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

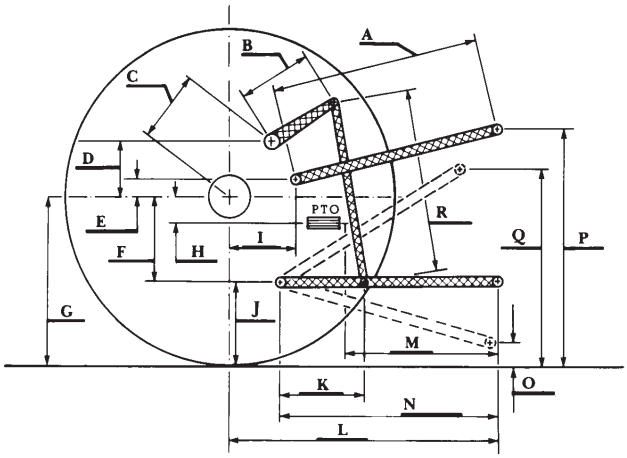
Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					2nd Gear				
173.36 *(129.28)*	34542 *(153.65)*	1.88 *(3.03)*	2166	14.56	0.580 *(0.353)*	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**
Track width	25.0 in *(635 mm)*	25.0 in *(635 mm)*
Ballast - Cast iron(front end)	2850 lb *(1293 kg)*	None
- Cast iron(front idlers)	3630 lb *(1646 kg)*	None
Height of Drawbar	18.5 in *(470 mm)*	18.0 in *(455 mm)*
Static Weight with operator	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

Agricultural Research Division
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Darrell Nelson, Dean and Director