January 2002

Test 1815: Challenger MT865 Diesel

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1815–SUMMARY 381
CHALLENGER MT865 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—1061 rpm)					
444.19 *(331.24)*	2100	25.48 *(96.45)*	0.403 *(0.245)*	17.43 *(3.43)*	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
490.93 *(366.09)*	1980	26.80 *(101.45)*	0.383 *(0.233)*	18.32 *(3.61)*	
Maximum Power (2 hours)					
523.60 *(390.45)*	1750	27.01 *(102.24)*	0.362 *(0.220)*	19.39 *(3.82)*	
VARYING POWER AND FUEL CONSUMPTION					
444.19 *(331.24)*	2100	25.48 *(96.45)*	0.403 *(0.245)*	17.43 *(3.43)*	Air temperature
393.39 *(293.35)*	2185	23.98 *(90.77)*	0.428 *(0.260)*	16.41 *(3.23)*	75°F *(24°C)*
296.68 *(221.23)*	2199	19.83 *(75.07)*	0.469 *(0.285)*	14.96 *(2.95)*	Relative humidity
197.78 *(147.49)*	2199	14.83 *(56.14)*	0.526 *(0.320)*	13.34 *(2.63)*	40%
98.89 *(73.74)*	2199	10.26 *(38.83)*	0.728 *(0.443)*	9.64 *(1.90)*	Barometer
1.06 *(0.79)*	2199	5.98 *(22.65)*	39.710 *(24.155)*	0.18 *(0.03)*	28.92" Hg *(97.93 kPa)*

Maximum Torque - 1757 lb.-ft. *(2383 Nm)* at 1398 rpm
Maximum Torque Rise - 58.3%
Torque rise at 1699 engine rpm - 46%

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 cool-ing med	Temp. *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—6th Gear									
378.75 *(282.43)*	32240 *(143.41)*	4.41 *(7.09)*	2097	3.67	0.472 *(0.287)*	14.88 *(2.93)*	178 *(81)*	46 *(8)*	28.93 *(97.97)*
75% of Pull at Maximum Power—6th Gear									
305.04 *(227.47)*	24222 *(107.74)*	4.72 *(7.60)*	2200	1.52	0.520 *(0.316)*	13.50 *(2.66)*	179 *(81)*	55 *(13)*	29.03 *(98.31)*
50% of Pull at Maximum Power—6th Gear									
204.93 *(152.82)*	16142 *(71.80)*	4.76 *(7.66)*	2200	0.81	0.610 *(0.371)*	11.51 *(2.27)*	177 *(81)*	59 *(15)*	29.01 *(98.24)*
75% of Pull at Reduced Engine Speed—9th Gear									
304.61 *(227.15)*	24210 *(107.69)*	4.72 *(7.59)*	1539	1.60	0.442 *(0.269)*	15.89 *(3.13)*	179 *(82)*	57 *(14)*	29.02 *(98.27)*
50% of Pull at Reduced Engine Speed—9th Gear									
204.94 *(152.83)*	16156 *(71.87)*	4.76 *(7.66)*	1539	0.73	0.478 *(0.291)*	14.69 *(2.89)*	178 *(81)*	62 *(17)*	28.99 *(98.17)*

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

Dates of Test: October 7-November 21, 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:** 51.0 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.***GDA00284* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.512" x 6.732" *(140.0 mm x 171.0 mm)* **Compression ratio** 15.5 to 1 **Displacement** 964 cu in *(15794 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** 1 thermostat

ENGINE OPERATING PARAMETERS: Fuel rate: 170.2 - 185.6 lb/h *(77.2 - 84.2 kg/h)* **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 21.0 - 25.4 psi *(145 - 175 kPa)* as measured 22.5 psi *(155 kPa)*

CHASSIS: Type tracklayer-rubber tracked **Serial No.***AGCMT865CBDS20396* **Track width** 100.0" *(2540 mm)* to 120.0 *(3048 mm)* **Length of track on ground** 122.4" *(3110 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 11.02 *(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** 44220 lb *(20058 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)*
					3rd Gear				
283.66	43213	2.46	2199	12.64	0.591	11.88	177	43	28.91
(211.53)	*(192.22)*	*(3.96)*			*(0.359)*	*(2.34)*	*(81)*	*(6)*	*(97.90)*
					4th Gear				
337.08	41430	3.05	2111	11.14	0.530	13.25	178	45	28.91
(251.36)	*(184.29)*	*(4.91)*			*(0.322)*	*(2.61)*	*(81)*	*(7)*	*(97.90)*
					5th Gear				
368.76	35888	3.85	2100	5.22	0.482	14.56	179	46	28.91
(274.98)	*(159.64)*	*(6.20)*			*(0.293)*	*(2.87)*	*(82)*	*(8)*	*(97.90)*
					6th Gear				
378.75	32240	4.41	2097	3.67	0.472	14.88	178	46	28.93
(282.43)	*(143.41)*	*(7.09)*			*(0.287)*	*(2.93)*	*(81)*	*(8)*	*(97.97)*
					7th Gear				
376.12	28008	5.04	2095	2.30	0.480	14.62	179	46	28.93
(280.47)	*(124.59)*	*(8.10)*			*(0.292)*	*(2.88)*	*(82)*	*(8)*	*(97.97)*
					8th Gear				
380.51	24944	5.72	2099	1.52	0.467	15.04	178	46	28.94
(283.75)	*(110.96)*	*(9.21)*			*(0.284)*	*(2.96)*	*(81)*	*(8)*	*(98.00)*
					9th Gear				
376.60	21854	6.46	2100	1.21	0.475	14.78	179	46	28.94
(280.83)	*(97.21)*	*(10.40)*			*(0.289)*	*(2.91)*	*(82)*	*(8)*	*(98.00)*
					10th Gear				
375.06	19282	7.29	2101	0.97	0.472	14.86	179	44	29.08
(279.68)	*(85.77)*	*(11.74)*			*(0.287)*	*(2.93)*	*(81)*	*(7)*	*(98.48)*
					11th Gear				
357.57	16291	8.23	2098	0.81	0.500	14.05	178	50	29.06
(266.64)	*(72.47)*	*(13.25)*			*(0.304)*	*(2.77)*	*(81)*	*(10)*	*(98.41)*

REPAIRS AND ADJUSTMENTS: A steel hydraulic line was replaced during the hydraulic flow test. Tests continued after repair.

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 103°F*(39°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. **1815**, Nebraska Summary 381, 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	76.7
Bystander	--

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	36.0 in *(915 mm)*	36.0 in *(915 mm)*
Ballast - Cast iron(front)	3280 lb *(1488 kg)*	None
- Cast iron(front idlers)	2325 lb *(1055 kg)*	None
Height of Drawbar	22.5 in (*560 mm)*	22.0 in (*560 mm)*
Static Weight with operator	50000 lb(*22680 kg)*	44395 lb(*20137 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)*
					3rd Gear				
286.86 *(213.91)*	42859 *(190.65)*	2.51 *(4.04)*	2199	10.89	0.553 *(0.336)*	12.69 *(2.50)*	178 *(81)*	65 *(18)*	28.97 *(98.10)*
					4th Gear				
339.21 *(252.95)*	41389 *(184.11)*	3.07 *(4.95)*	2113	10.62	0.534 *(0.325)*	13.14 *(2.59)*	178 *(81)*	45 *(7)*	28.91 *(97.90)*
					5th Gear				
380.03 *(283.39)*	40471 *(180.02)*	3.52 *(5.67)*	2025	10.24	0.478 *(0.291)*	14.68 *(2.89)*	179 *(82)*	46 *(8)*	28.92 *(97.93)*
					6th Gear				
411.13 *(306.58)*	40034 *(178.08)*	3.85 *(6.20)*	1931	8.51	0.450 *(0.273)*	15.61 *(3.08)*	179 *(82)*	46 *(8)*	28.91 *(97.90)*
					7th Gear				
426.84 *(318.30)*	38905 *(173.06)*	4.11 *(6.62)*	1814	7.83	0.445 *(0.271)*	15.76 *(3.10)*	180 *(82)*	46 *(8)*	28.92 *(97.93)*
					8th Gear				
442.47 *(329.95)*	36068 *(160.44)*	4.60 *(7.40)*	1754	5.37	0.430 *(0.262)*	16.31 *(3.21)*	180 *(82)*	46 *(8)*	28.94 *(98.00)*
					9th Gear				
444.77 *(331.67)*	31594 *(140.54)*	5.28 *(8.50)*	1753	3.29	0.426 *(0.259)*	16.47 *(3.24)*	180 *(82)*	46 *(8)*	28.95 *(98.04)*
					10th Gear				
450.15 *(335.67)*	28099 *(124.99)*	6.01 *(9.67)*	1752	2.15	0.419 *(0.255)*	16.77 *(3.30)*	180 *(82)*	46 *(8)*	28.94 *(98.00)*
					11th Gear				
443.74 *(330.90)*	24322 *(108.19)*	6.84 *(11.01)*	1757	1.60	0.425 *(0.258)*	16.52 *(3.25)*	180 *(82)*	45 *(7)*	29.08 *(98.48)*
					12th Gear				
443.11 *(330.42)*	21500 *(95.63)*	7.73 *(12.44)*	1755	1.13	0.424 *(0.258)*	16.57 *(3.26)*	180 *(82)*	48 *(9)*	29.07 *(98.44)*
					13th Gear				
435.26 *(324.57)*	17680 *(78.64)*	9.23 *(14.86)*	1756	0.89	0.429 *(0.261)*	16.36 *(3.22)*	180 *(82)*	51 *(11)*	29.05 *(98.37)*

DRAWBAR PERFORMANCE
(Ballasted to 50000 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					
325.68 *(242.86)*	50734 *(225.67)*	2.41 *(3.87)*	2146	12.47	0.546 *(0.332)*	12.86 *(2.53)*	178 *(81)*	51 *(11)*	28.75 *(97.36)*
				4th Gear					
377.88 *(281.79)*	46693 *(207.70)*	3.03 *(4.88)*	2038	8.59	0.475 *(0.289)*	14.79 *(2.91)*	179 *(82)*	52 *(11)*	28.75 *(97.36)*
				5th Gear					
410.15 *(305.85)*	44447 *(197.71)*	3.46 *(5.57)*	1943	8.10	0.454 *(0.276)*	15.45 *(3.04)*	179 *(82)*	61 *(16)*	28.71 *(97.22)*
				6th Gear					
435.51 *(324.76)*	43576 *(193.84)*	3.75 *(6.03)*	1840	6.65	0.432 *(0.263)*	16.24 *(3.20)*	180 *(82)*	60 *(16)*	28.72 *(97.26)*
				7th Gear					
441.91 *(329.54)*	40365 *(179.55)*	4.11 *(6.61)*	1755	4.93	0.426 *(0.259)*	16.48 *(3.25)*	180 *(82)*	62 *(17)*	28.71 *(97.22)*
				8th Gear					
449.61 *(335.27)*	35807 *(159.28)*	4.71 *(7.58)*	1758	3.30	0.419 *(0.255)*	16.75 *(3.30)*	181 *(83)*	63 *(17)*	28.70 *(97.19)*
				9th Gear					
447.54 *(333.73)*	31342 *(139.41)*	5.35 *(8.62)*	1757	2.23	0.420 *(0.256)*	16.71 *(3.29)*	181 *(83)*	63 *(17)*	28.69 *(97.16)*
				10th Gear					
454.96 *(339.27)*	28190 *(125.39)*	6.05 *(9.74)*	1753	1.52	0.413 *(0.251)*	16.99 *(3.35)*	181 *(83)*	63 *(17)*	28.68 *(97.12)*
				11th Gear					
451.53 *(336.70)*	24753 *(110.11)*	6.84 *(11.01)*	1749	1.21	0.419 *(0.255)*	16.75 *(3.30)*	180 *(82)*	46 *(8)*	28.79 *(97.49)*
				12th Gear					
453.31 *(338.03)*	21978 *(97.76)*	7.73 *(12.45)*	1755	1.13	0.414 *(0.252)*	16.94 *(3.34)*	181 *(83)*	59 *(15)*	28.68 *(97.12)*
				13th Gear					
442.05 *(329.64)*	17994 *(80.04)*	9.21 *(14.83)*	1750	0.81	0.428 *(0.260)*	16.40 *(3.23)*	181 *(83)*	57 *(14)*	28.68 *(97.12)*

DRAWBAR PERFORMANCE
(Ballasted to 56000 lbs at 1750 RPM)
MAXIMUM POWER IN SELECTED GEARS

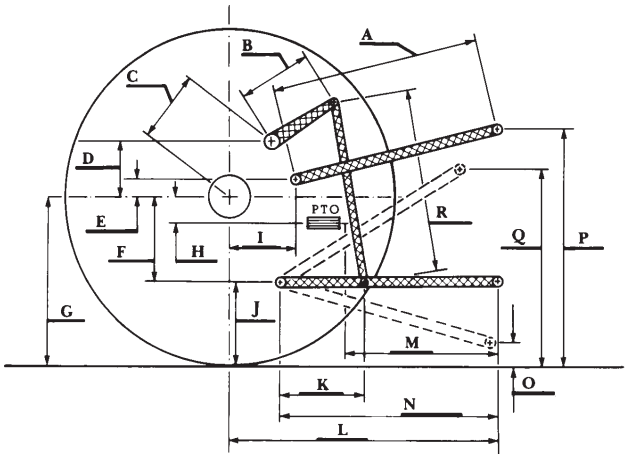
Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Temp.°F*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
				2nd Gear					
307.18 *(229.06)*	58031 *(258.13)*	1.99 *(3.19)*	2195	10.79	0.557 *(0.339)*	12.60 *(2.48)*	178 *(81)*	40 *(4)*	28.95 *(98.04)*
				3rd Gear					
354.45 *(264.32)*	53350 *(237.31)*	2.49 *(4.01)*	2108	7.86	0.504 *(0.307)*	13.93 *(2.74)*	179 *(82)*	43 *(6)*	28.95 *(98.04)*
				4th Gear					
400.17 *(298.41)*	51065 *(227.15)*	2.94 *(4.73)*	1961	8.13	0.477 *(0.290)*	14.72 *(2.90)*	179 *(82)*	51 *(11)*	28.85 *(97.70)*
				5th Gear					
427.85 *(319.05)*	47813 *(212.68)*	3.36 *(5.40)*	1852	6.46	0.448 *(0.273)*	15.66 *(3.09)*	180 *(82)*	57 *(14)*	28.83 *(97.63)*
				6th Gear					
439.95 *(328.07)*	45575 *(202.73)*	3.62 *(5.83)*	1753	5.39	0.431 *(0.262)*	16.30 *(3.21)*	181 *(83)*	58 *(14)*	28.84 *(97.66)*
				7th Gear					
445.03 *(331.86)*	40165 *(178.66)*	4.16 *(6.69)*	1747	3.54	0.428 *(0.261)*	16.38 *(3.23)*	180 *(83)*	59 *(15)*	28.85 *(97.70)*
				8th Gear					
449.22 *(334.99)*	35517 *(157.99)*	4.74 *(7.63)*	1752	2.40	0.423 *(0.257)*	16.59 *(3.27)*	181 *(83)*	59 *(15)*	28.86 *(97.73)*
				9th Gear					
446.32 *(332.82)*	31197 *(138.77)*	5.37 *(8.63)*	1752	1.86	0.423 *(0.258)*	16.58 *(3.27)*	181 *(83)*	59 *(15)*	28.86 *(97.73)*
				10th Gear					
451.66 *(336.80)*	27928 *(124.23)*	6.06 *(9.76)*	1750	1.23	0.423 *(0.257)*	16.61 *(3.27)*	181 *(83)*	59 *(15)*	28.86 *(97.73)*
				11th Gear					
444.37 *(331.37)*	24341 *(108.27)*	6.85 *(11.02)*	1747	1.07	0.430 *(0.261)*	16.34 *(3.22)*	181 *(83)*	59 *(15)*	28.87 *(97.77)*
				12th Gear					
442.11 *(329.68)*	21377 *(95.09)*	7.76 *(12.48)*	1755	0.99	0.433 *(0.263)*	16.23 *(3.20)*	181 *(83)*	59 *(15)*	28.87 *(97.77)*
				13th Gear					
436.22 *(325.29)*	17743 *(78.92)*	9.22 *(14.84)*	1749	0.75	0.439 *(0.267)*	16.00 *(3.15)*	181 *(83)*	59 *(15)*	28.88 *(97.80)*

TIRES, BALLAST AND WEIGHT	**With Ballast**	**Without Ballast**
Track width	36.0 in *(915 mm)*	36.0 in *(915 mm)*
Ballast - Cast iron(front end)	4280 lb *(1941 kg)*	None
- Cast iron(front idlers)	4625 lb *(2098 kg)*	None
- Cast iron(side)	2700 lb *(1225 kg)*	None
Height of Drawbar	22.5 in *(570 mm)*	22.0 in *(560 mm)*
Static Weight with operator	56000 lb(*25401 kg*)	44395 lb(*20137 kg*)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: IVN
Quick Attach: yes
Maximum Force Exerted Through Whole Range: 20936 lbs *(93.1 kN)*

		High flow option
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)*	58.8 GPM *(222.5 l/min)*
at 2200 engine rpm:	45.6 GPM *(172.6 l/min)*	60.9 GPM *(230.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	42.2 GPM *(159.7 l/min)*	54.6 GPM *(206.8 l/min)*
Delivery pressure:	2755 psi *(190 bar)*	2674 psi *(184 bar)*
Power:	67.9 Hp *(50.6 kW)*	85.2 Hp *(63.5 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 MT865 DIESEL

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