2009

Test 1846A: Challenger MT765C

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1846A–SUMMARY 478A
CHALLENGER MT765B DIESEL
ALSO CHALLENGER MT765C 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)					
265.78 *(198.20)*	2100	16.57 *(62.73)*	0.438 *(0.266)*	16.04 *(3.16)*	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
294.81 *(219.84)*	1979	17.08 *(64.66)*	0.407 *(0.248)*	17.26 *(3.40)*	
Maximum Power (1 hour)					
320.72 *(239.16)*	1750	17.70 *(67.00)*	0.388 *(0.236)*	18.12 *(3.57)*	
VARYING POWER AND FUEL CONSUMPTION					
265.78 *(198.20)*	2100	16.57 *(62.73)*	0.438 *(0.266)*	16.04 *(3.16)*	Air temperature
235.96 *(175.96)*	2191	15.17 *(57.44)*	0.452 *(0.275)*	15.55 *(3.06)*	77°F *(25°C)*
177.37 *(132.26)*	2198	12.95 *(49.04)*	0.513 *(0.312)*	13.69 *(2.70)*	Relative humidity
118.30 *(88.20)*	2198	10.41 *(39.39)*	0.618 *(0.376)*	11.37 *(2.24)*	39%
59.02 *(44.01)*	2198	6.82 *(25.81)*	0.812 *(0.494)*	8.66 *(1.71)*	Barometer
2.11 *(1.58)*	2198	3.63 *(13.74)*	12.066 *(7.339)*	0.58 *(0.11)*	28.69" Hg *(97.16 kPa)*

Maximum Torque - 1027 lb.-ft. *(1392 Nm)* at 1401 rpm
Maximum Torque Rise - 54.3%
Torque rise at 1699 engine rpm - 45%
Power increase at 1750 engine rpm - 20.6%

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									
228.21 *(170.17)*	19667 *(87.48)*	4.35 *(7.00)*	2099	3.57	0.522 *(0.317)*	13.46 *(2.65)*	177 *(81)*	69 *(21)*	28.72 *(97.26)*
75% of Pull at Maximum Power—6th Gear									
181.54 *(135.37)*	14685 *(63.52)*	4.64 *(7.46)*	2198	1.91	0.546 *(0.332)*	12.86 *(2.53)*	176 *(80)*	71 *(22)*	28.73 *(97.29)*
50% of Pull at Maximum Power—6th Gear									
122.45 *(91.31)*	9795 *(43.57)*	4.69 *(7.54)*	2200	0.83	0.682 *(0.415)*	10.30 *(2.03)*	176 *(80)*	73 *(23)*	28.74 *(97.33)*
75% of Pull at Reduced Engine Speed—9th Gear									
181.39 *(135.26)*	14683 *(65.31)*	4.63 *(7.46)*	1537	1.87	0.487 *(0.296)*	14.42 *(2.84)*	177 *(81)*	72 *(22)*	28.74 *(97.33)*
50% of Pull at Reduced Engine Speed—9th Gear									
122.64 *(91.45)*	9791 *(43.55)*	4.70 *(7.56)*	1543	0.87	0.563 *(0.342)*	12.48 *(2.46)*	175 *(79)*	75 *(24)*	28.75 *(97.36)*

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

Dates of tests: May 9 - 13, 2005
Hydraulic performance - high flow pump - July 10, 2009

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)*** 0.8437 **Fuel weight** 7.025 lbs/gal *(0.842 kg/l)* **Oil SAE** 10W-30 **API service classification** CI-4 **Transmission and hydraulic lubricant** AGCO 821 XL fluid **Total time engine was operated:** 24.5 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *JSC00106* **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: 113.0 - 119.9 lb/h *(51.3 - 54.4 kg/h)* **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 20.2 - 22.2 psi *(139 - 153 kPa)* as measured 21.2 psi *(146 kPa)*

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *AGCMT765JAMS61198* **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** 31085 lb *(14100 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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					3rd Gear				
183.35	28566	2.41	2175	12.48	0.602	11.66	177	64	28.70
(136.72)	*(127.07)*	*(3.87)*			*(0.366)*	*(2.30)*	*(80)*	*(18)*	*(97.19)*
					4th Gear				
213.91	25799	3.11	2096	7.90	0.560	12.55	177	65	28.71
(159.51)	*(114.76)*	*(5.00)*			*(0.340)*	*(2.47)*	*(81)*	*(18)*	*(97.22)*
					5th Gear				
224.21	22002	3.82	2099	4.73	0.530	13.27	178	67	28.72
(167.20)	*(97.87)*	*(6.15)*			*(0.322)*	*(2.61)*	*(81)*	*(19)*	*(97.26)*
					6th Gear				
228.21	19667	4.35	2099	3.57	0.522	13.46	177	69	28.72
(170.17)	*(87.48)*	*(7.00)*			*(0.317)*	*(2.65)*	*(81)*	*(21)*	*(97.26)*
					7th Gear				
224.22	16906	4.97	2101	2.45	0.531	13.23	179	70	28.65
(167.20)	*(75.20)*	*(8.00)*			*(0.323)*	*(2.61)*	*(81)*	*(21)*	*(97.02)*
					8th Gear				
227.61	15151	5.63	2103	1.93	0.523	13.44	178	69	28.66
(169.73)	*(67.40)*	*(9.07)*			*(0.318)*	*(2.65)*	*(81)*	*(21)*	*(97.05)*
					9th Gear				
223.08	13166	6.35	2100	1.59	0.528	13.29	179	72	28.64
(166.35)	*(58.56)*	*(10.23)*			*(0.321)*	*(2.62)*	*(82)*	*(22)*	*(96.99)*
					10th Gear				
223.37	11667	7.18	2101	1.12	0.532	13.20	179	73	28.63
(166.57)	*(51.90)*	*(11.55)*			*(0.324)*	*(2.60)*	*(82)*	*(23)*	*(96.95)*
					11th Gear				
210.83	9747	8.11	2096	0.75	0.563	12.48	178	74	28.62
(157.21)	*(43.36)*	*(13.05)*			*(0.343)*	*(2.46)*	*(81)*	*(23)*	*(96.92)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: Report reissued, supplemental for Challenger MT 765C Diesel, July, 2009.

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 143°F *(62°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. **1846A**, Nebraska Summary 478A, July 30, 2009.

Roger M. Hoy
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	74.0
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)	3490 lb *(1583 kg)*	None
- Cast iron(front idlers)	1250 lb *(567 kg)*	None
Height of Drawbar	18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static Weight with operator	36000 lb(*16329 kg)*	31260 lb(*14179 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				
186.07	29028	2.40	2165	12.12	0.600	11.70	177	64	28.70
(138.75)	*(129.12)*	*(3.87)*			*(0.365)*	*(2.31)*	*(81)*	*(18)*	*(97.20)*
					4th Gear				
215.59	26467	3.05	2082	8.93	0.556	12.63	178	66	28.71
(160.77)	*(117.73)*	*(4.92)*			*(0.338)*	*(2.49)*	*(81)*	*(19)*	*(97.22)*
					5th Gear				
240.87	26436	3.42	1960	8.75	0.509	13.81	179	68	28.72
(179.61)	*(117.59)*	*(5.50)*			*(0.309)*	*(2.72)*	*(82)*	*(20)*	*(97.26)*
					6th Gear				
254.01	25924	3.67	1865	8.40	0.488	14.38	180	69	28.72
(189.42)	*(115.31)*	*(5.91)*			*(0.297)*	*(2.83)*	*(82)*	*(21)*	*(97.26)*
					7th Gear				
260.58	24588	3.97	1752	6.46	0.476	14.75	181	71	28.65
(194.31)	*(109.37)*	*(6.40)*			*(0.290)*	*(2.91)*	*(83)*	*(22)*	*(97.02)*
					8th Gear				
268.30	22088	4.55	1748	4.58	0.465	15.12	180	70	28.65
(200.07)	*(98.25)*	*(7.33)*			*(0.283)*	*(2.98)*	*(82)*	*(21)*	*(97.02)*
					9th Gear				
266.30	19258	5.19	1748	3.40	0.467	15.03	181	73	28.63
(198.58)	*(85.67)*	*(8.35)*			*(0.284)*	*(2.96)*	*(83)*	*(23)*	*(96.95)*
					10th Gear				
269.13	17123	5.89	1750	2.58	0.465	15.10	182	73	28.63
(200.69)	*(76.17)*	*(9.49)*			*(0.283)*	*(2.98)*	*(83)*	*(23)*	*(96.95)*
					11th Gear				
264.24	14769	6.71	1753	1.89	0.473	14.84	182	75	28.62
(197.04)	*(65.70)*	*(10.80)*			*(0.288)*	*(2.92)*	*(83)*	*(24)*	*(96.92)*
					12th Gear				
265.35	13140	7.57	1749	1.41	0.467	15.03	183	76	28.62
(197.87)	*(58.45)*	*(12.19)*			*(0.284)*	*(2.96)*	*(84)*	*(24)*	*(96.92)*
					13th Gear				
264.97	10947	9.08	1752	0.88	0.473	14.86	183	78	28.61
(197.59)	*(48.69)*	*(14.61)*			*(0.288)*	*(2.93)*	*(84)*	*(26)*	*(96.88)*

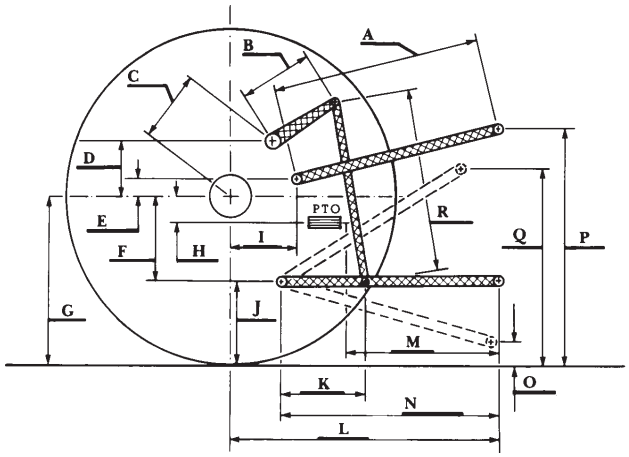
DRAWBAR PERFORMANCE
(Ballasted to 36000 lbs at 1750 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	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					
175.39 *(130.79)*	34145 *(151.89)*	1.93 *(3.10)*	2198	12.17	0.586 *(0.356)*	11.99 *(2.36)*	175 *(80)*	58 *(14)*	28.75 *(97.36)*
				3rd Gear					
205.98 *(153.60)*	32328 *(143.80)*	2.39 *(3.85)*	2119	10.68	0.565 *(0.344)*	12.43 *(2.45)*	177 *(80)*	58 *(14)*	28.76 *(97.39)*
				4th Gear					
237.56 *(177.15)*	30843 *(137.19)*	2.89 *(4.65)*	1979	9.34	0.509 *(0.310)*	13.79 *(2.72)*	177 *(80)*	58 *(14)*	28.76 *(97.39)*
				5th Gear					
259.52 *(193.52)*	30098 *(133.88)*	3.23 *(5.20)*	1847	8.36	0.478 *(0.291)*	14.68 *(2.89)*	177 *(81)*	57 *(14)*	28.77 *(97.43)*
				6th Gear					
268.00 *(199.85)*	28735 *(127.82)*	3.50 *(5.63)*	1754	7.22	0.464 *(0.282)*	15.14 *(2.98)*	178 *(81)*	57 *(14)*	28.78 *(97.46)*
				7th Gear					
270.44 *(201.67)*	25060 *(111.47)*	4.05 *(6.51)*	1754	4.84	0.458 *(0.278)*	15.35 *(3.02)*	177 *(81)*	57 *(14)*	28.78 *(97.46)*
				8th Gear					
274.53 *(204.72)*	22276 *(99.09)*	4.62 *(7.44)*	1757	3.80	0.451 *(0.274)*	15.59 *(3.07)*	178 *(81)*	56 *(13)*	28.79 *(97.49)*
				9th Gear					
272.48 *(203.17)*	19507 *(86.77)*	5.24 *(8.43)*	1755	2.81	0.455 *(0.277)*	15.44 *(3.04)*	178 *(81)*	56 *(13)*	28.80 *(97.53)*
				10th Gear					
275.15 *(205.18)*	17407 *(77.43)*	5.93 *(9.54)*	1754	2.19	0.451 *(0.274)*	15.59 *(3.07)*	179 *(82)*	57 *(14)*	28.81 *(97.56)*
				11th Gear					
269.89 *(201.26)*	15061 *(66.99)*	6.72 *(10.81)*	1753	1.63	0.456 *(0.278)*	15.39 *(3.03)*	180 *(82)*	58 *(14)*	28.81 *(97.56)*
				12th Gear					
270.08 *(201.40)*	13321 *(59.25)*	7.60 *(12.24)*	1755	1.29	0.461 *(0.281)*	15.23 *(3.00)*	180 *(82)*	58 *(14)*	28.82 *(97.60)*
				13th Gear					
266.65 *(198.84)*	11014 *(48.99)*	9.08 *(14.61)*	1753	0.93	0.463 *(0.281)*	15.19 *(2.99)*	180 *(82)*	59 *(15)*	28.82 *(97.60)*

HYDRAULIC PERFORMANCE

CATEGORY: III
Quick Attach: yes
OECD Static test
Maximum force exerted through whole range: 17263 lbs *(76.8 kN)*

	Standard pump 2 inlets - 2 outlets	**High flow pump** 3 inlets - 3 outlets
i) Sustained pressure at compensator cutoff:	2980 psi *(205 bar)*	2854 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.0 GPM *(166.6 l/min)*	59.4 GPM *(168.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	42.3 GPM *(160.1 l/min)*	56.9 GPM *(215.4 l/min)*
Delivery pressure:	2794 psi *(193 bar)*	2797 psi *(193 bar)*
Power:	69.0 HP *(51.4 kW)*	92.8 HP *(69.2 kW)*
	1 inlet - 1 outlet	1 inlet - 1 outlet
i) Sustained pressure at compensator cutoff:	2860 psi *(197 bar)*	2854 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.2 GPM *(152.2 l/min)*	39.9 GPM *(151.0 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	39.5 GPM *(149.5 l/min)*	37.8 GPM *(143.3 l/min)*
Delivery pressure:	2154 psi *(148 bar)*	2325 psi *(160 bar)*
Power:	49.6 HP *(37.0 kW)*	51.3 HP *(38.3 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 MT765B DIESEL

Institute of Agriculture and Natural Resources
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