2009

Test 1964: Challenger MT865C Diesel

Nebraska Tractor Test Lab
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NEBRASKA OECD TRACTOR TEST 1964 – SUMMARY 661
CHALLENGER MT865C 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)					
470.25 *(350.66)*	2100	28.67 *(108.54)*	0.429 *(0.261)*	16.40 *(3.23)*	
Standard Power Take-off Speed (1000 rpm)					
513.65 *(383.03)*	1979	30.54 *(115.62)*	0.418 *(0.254)*	16.82 *(3.31)*	
Maximum Power (1 hour)					
533.87 *(398.11)*	1699	30.43 *(115.21)*	0.401 *(0.244)*	17.54 *(3.46)*	
VARYING POWER AND FUEL CONSUMPTION					
470.25 *(350.66)*	2100	28.67 *(108.54)*	0.429 *(0.261)*	16.40 *(3.23)*	Air temperature
416.60 *(310.66)*	2188	27.97 *(105.87)*	0.472 *(0.287)*	14.90 *(2.93)*	73°F *(23°C)*
3/4 of 85% load level not run, see note, p.2					Relative humidity
1/2 of 85% load level not run, see note, p.2					17%
1/4 of 85% load level not run, see note, p.2					Barometer
-- --	2200	5.92 *(22.43)*	-- --	-- --	29.06" Hg *(98.41 kPa)*

Maximum Torque - 1785 lb.-ft. *(2421 Nm)* at 1301 rpm
Maximum Torque Rise - 51.8%
Torque rise at 1700 engine rpm - 40%
Power increase at 1700 engine rpm - 13.5%

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	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—8th Gear									
409.62 *(305.45)*	27107 *(120.58)*	5.67 *(9.12)*	2099	2.6	0.498 *(0.303)*	14.12 *(2.78)*	188 *(87)*	47 *(8)*	29.18 *(98.82)*
75% of Pull at Maximum Power—8th Gear									
325.56 *(242.77)*	20250 *(90.08)*	6.03 *(9.70)*	2200	1.1	0.631 *(0.384)*	11.15 *(2.20)*	188 *(87)*	60 *(16)*	29.19 *(98.85)*
50% of Pull at Maximum Power—8th Gear									
217.10 *(161.89)*	13414 *(59.67)*	6.07 *(9.77)*	2200	0.4	0.723 *(0.440)*	9.72 *(1.91)*	173 *(79)*	62 *(17)*	29.20 *(98.88)*
75% of Pull at Reduced Engine Speed—11th Gear									
325.07 *(242.40)*	20328 *(90.42)*	6.00 *(9.65)*	1533	1.0	0.480 *(0.292)*	14.65 *(2.89)*	188 *(87)*	61 *(16)*	29.20 *(98.88)*
50% of Pull at Reduced Engine Speed—11th Gear									
216.55 *(161.48)*	13506 *(60.08)*	6.01 *(9.67)*	1527	0.3	0.543 *(0.330)*	12.96 *(2.55)*	173 *(79)*	62 *(17)*	29.20 *(98.88)*

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

Dates of tests: November 3 - 20, 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)*** 0.8445 **Fuel weight** 7.032 lbs/gal *(0.843 kg/l)* **Oil SAE** 10W-30 **API service classification** CI-4 **Transmission and hydraulic lubricant** AGCO 821 XL fluid **Total time engine was operated:** 28.5 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *ELG01788* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.709" x 7.205" *(145.0 mm x 183.0 mm)* **Compression ratio** 16.3 to 1 **Displacement** 1105 cu in *(18130 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** 2 thermostats

ENGINE OPERATING PARAMETERS: Fuel rate: 186.0 - 204.1 lb/h *(83.9 - 92.6 kg/h)* **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 20.3 - 21.8 psi *(140 - 150 kPa)* as measured 21.3 psi *(147 kPa)*

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *AGCC0865CNUKG1339* **Track width** 100.0" *(2540 mm)* to 128.0" *(3250 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 11.10 *(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** 43125 lb *(19561 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)*
					4th Gear				
350.87 *(261.64)*	42644 *(189.69)*	3.09 *(4.96)*	2143	12.9	0.584 *(0.355)*	12.05 *(2.37)*	187 *(86)*	51 *(11)*	29.11 *(98.58)*
					5th Gear				
396.78 *(295.88)*	39442 *(175.45)*	3.78 *(6.08)*	2099	7.9	0.515 *(0.314)*	13.64 *(2.69)*	187 *(86)*	53 *(12)*	29.10 *(98.55)*
					6th Gear				
402.02 *(299.78)*	34670 *(154.22)*	4.35 *(7.00)*	2101	5.3	0.508 *(0.309)*	13.84 *(2.73)*	176 *(80)*	53 *(12)*	29.18 *(98.82)*
					7th Gear				
407.52 *(303.88)*	30568 *(135.97)*	5.00 *(8.05)*	2101	3.4	0.496 *(0.302)*	14.18 *(2.79)*	188 *(87)*	49 *(9)*	29.18 *(98.82)*
					8th Gear				
409.62 *(305.45)*	27107 *(120.58)*	5.67 *(9.12)*	2099	2.6	0.498 *(0.303)*	14.12 *(2.78)*	188 *(87)*	47 *(8)*	29.18 *(98.82)*
					9th Gear				
400.58 *(298.71)*	23359 *(103.90)*	6.43 *(10.35)*	2101	1.6	0.510 *(0.310)*	13.78 *(2.71)*	178 *(81)*	55 *(13)*	29.18 *(98.82)*
					10th Gear				
402.05 *(299.80)*	20747 *(92.29)*	7.27 *(11.69)*	2099	1.2	0.512 *(0.312)*	13.73 *(2.70)*	175 *(79)*	58 *(14)*	29.19 *(98.85)*
					11th Gear				
387.79 *(289.18)*	17682 *(78.65)*	8.23 *(13.24)*	2100	0.9	0.531 *(0.323)*	13.24 *(2.61)*	175 *(80)*	58 *(14)*	29.19 *(98.85)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

Note: Load levels not run because of an unstable interaction between the engine and dynamometer controllers.

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 111°F *(44°C)*. The performance figures on this summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1964**, Nebraska Summary 661, January 14, 2010.

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	76.1
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)	4280 lb *(1941 kg)*	None
- Cast iron(front idlers)	2420 lb *(1098 kg)*	None
Height of Drawbar	20.0 in *(510 mm)*	19.5 in *(495 mm)*
Static Weight with operator	50000 lb(*22679 kg)*	43300 lb(*19640 kg)*

DRAWBAR PERFORMANCE
(Unballasted at 1700 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)*
					4th Gear				
354.83 *(264.60)*	43055 *(191.52)*	3.09 *(4.97)*	2139	12.4	0.577 *(0.351)*	12.19 *(2.40)*	187 *(86)*	51 *(11)*	29.11 *(98.58)*
					5th Gear				
399.60 *(297.98)*	41246 *(183.47)*	3.64 *(5.85)*	2069	10.1	0.521 *(0.317)*	13.49 *(2.66)*	187 *(86)*	55 *(13)*	29.09 *(98.51)*
					6th Gear				
425.64 *(317.40)*	39333 *(174.96)*	4.06 *(6.53)*	1999	7.4	0.508 *(0.309)*	13.84 *(2.73)*	188 *(87)*	58 *(14)*	29.09 *(98.51)*
					7th Gear				
442.12 *(329.69)*	37711 *(167.75)*	4.40 *(7.07)*	1916	6.9	0.496 *(0.302)*	14.18 *(2.79)*	182 *(84)*	51 *(11)*	29.18 *(98.82)*
					8th Gear				
453.99 *(338.54)*	36120 *(160.67)*	4.71 *(7.58)*	1803	5.8	0.476 *(0.289)*	14.78 *(2.91)*	189 *(87)*	48 *(9)*	29.18 *(98.82)*
					9th Gear				
454.12 *(338.63)*	33633 *(149.61)*	5.06 *(8.14)*	1702	4.4	0.477 *(0.290)*	14.73 *(2.90)*	180 *(82)*	57 *(14)*	29.18 *(98.82)*
					10th Gear				
456.02 *(340.05)*	29664 *(131.95)*	5.77 *(9.28)*	1699	3.3	0.475 *(0.289)*	14.79 *(2.91)*	175 *(80)*	58 *(14)*	29.19 *(98.85)*
					11th Gear				
453.07 *(337.85)*	25828 *(114.89)*	6.58 *(10.59)*	1700	2.1	0.479 *(0.291)*	14.69 *(2.89)*	176 *(80)*	58 *(14)*	29.19 *(98.85)*
					12th Gear				
452.71 *(337.59)*	22791 *(101.38)*	7.45 *(11.99)*	1704	1.8	0.481 *(0.293)*	14.61 *(2.88)*	176 *(80)*	58 *(14)*	29.19 *(98.85)*
					13th Gear				
451.30 *(336.53)*	18997 *(84.50)*	8.91 *(14.33)*	1699	1.3	0.488 *(0.297)*	14.42 *(2.84)*	176 *(80)*	59 *(15)*	29.19 *(98.85)*

DRAWBAR PERFORMANCE
(Ballasted to 50000 lbs at 1700 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				
336.66 *(251.05)*	50398 *(224.18)*	2.51 *(4.03)*	2183	11.8	0.601 *(0.366)*	11.70 *(2.30)*	189 *(87)*	69 *(21)*	28.62 *(96.92)*
					4th Gear				
395.73 *(295.10)*	47728 *(212.30)*	3.11 *(5.01)*	2074	8.7	0.525 *(0.319)*	13.39 *(2.64)*	189 *(87)*	69 *(21)*	28.60 *(96.85)*
					5th Gear				
432.10 *(332.21)*	45956 *(204.42)*	3.53 *(5.67)*	1953	7.3	0.505 *(0.307)*	13.92 *(2.74)*	176 *(80)*	70 *(21)*	28.59 *(96.82)*
					6th Gear				
443.91 *(331.02)*	44755 *(199.08)*	3.72 *(5.99)*	1821	6.9	0.492 *(0.300)*	14.28 *(2.81)*	177 *(81)*	70 *(21)*	28.58 *(96.78)*
					7th Gear				
449.14 *(334.92)*	42428 *(188.73)*	3.97 *(6.39)*	1703	5.2	0.483 *(0.294)*	14.57 *(2.87)*	179 *(82)*	71 *(22)*	28.57 *(96.75)*
					8th Gear				
466.49 *(347.86)*	38519 *(171.34)*	4.55 *(7.31)*	1701	3.8	0.465 *(0.283)*	15.12 *(2.98)*	191 *(89)*	65 *(18)*	28.67 *(97.09)*
					9th Gear				
465.34 *(347.00)*	33842 *(150.54)*	5.16 *(8.30)*	1701	2.7	0.469 *(0.285)*	14.99 *(2.95)*	191 *(88)*	68 *(20)*	28.65 *(97.02)*
					10th Gear				
469.30 *(349.96)*	30064 *(133.73)*	5.86 *(9.42)*	1702	2.0	0.465 *(0.283)*	15.11 *(2.98)*	192 *(89)*	69 *(21)*	28.63 *(96.95)*
					11th Gear				
453.33 *(338.05)*	25627 *(113.99)*	6.63 *(10.67)*	1701	1.4	0.483 *(0.294)*	14.56 *(2.87)*	179 *(82)*	71 *(22)*	28.57 *(96.75)*
					12th Gear				
453.65 *(338.29)*	22715 *(101.04)*	7.49 *(12.05)*	1698	1.2	0.486 *(0.296)*	14.47 *(2.85)*	179 *(82)*	72 *(22)*	28.56 *(96.72)*
					13th Gear				
445.31 *(332.07)*	18688 *(83.13)*	8.94 *(14.38)*	1699	0.9	0.496 *(0.302)*	14.17 *(2.79)*	180 *(82)*	72 *(22)*	28.56 *(96.72)*

DRAWBAR PERFORMANCE
(Ballasted to 56000 lbs at 1700 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				
361.58 *(269.63)*	56305 *(250.46)*	2.41 *(3.88)*	2131	13.5	0.572 *(0.348)*	12.30 *(2.42)*	176 *(80)*	46 *(8)*	29.25 *(99.05)*
					4th Gear				
412.85 *(307.86)*	50482 *(224.55)*	3.07 *(4.94)*	2042	8.6	0.518 *(0.315)*	13.59 *(2.68)*	177 *(81)*	47 *(8)*	29.25 *(99.05)*
					5th Gear				
445.59 *(332.28)*	48191 *(214.36)*	3.47 *(5.58)*	1916	6.9	0.494 *(0.301)*	14.24 *(2.81)*	177 *(81)*	48 *(9)*	29.25 *(99.05)*
					6th Gear				
454.87 *(339.20)*	47532 *(211.43)*	3.59 *(5.78)*	1752	6.6	0.476 *(0.290)*	14.77 *(2.91)*	178 *(81)*	49 *(9)*	29.25 *(99.05)*
					7th Gear				
455.68 *(339.80)*	43021 *(191.37)*	3.98 *(6.40)*	1702	5.6	0.474 *(0.288)*	14.83 *(2.92)*	177 *(81)*	51 *(11)*	29.25 *(99.05)*
					8th Gear				
463.38 *(345.54)*	38311 *(170.41)*	4.54 *(7.30)*	1700	3.8	0.467 *(0.284)*	15.07 *(2.97)*	179 *(81)*	53 *(12)*	29.25 *(99.05)*
					9th Gear				
462.61 *(344.97)*	33592 *(149.43)*	5.17 *(8.31)*	1701	2.7	0.473 *(0.288)*	14.86 *(2.93)*	179 *(81)*	55 *(13)*	29.24 *(99.02)*
					10th Gear				
461.96 *(344.48)*	29670 *(131.98)*	5.84 *(9.40)*	1698	1.9	0.471 *(0.287)*	14.93 *(2.94)*	179 *(81)*	57 *(14)*	29.24 *(99.02)*
					11th Gear				
456.93 *(340.73)*	25849 *(114.98)*	6.63 *(10.66)*	1698	1.5	0.482 *(0.293)*	14.59 *(2.87)*	179 *(82)*	58 *(14)*	29.24 *(99.02)*
					12th Gear				
457.12 *(340.87)*	22886 *(101.80)*	7.49 *(12.05)*	1698	1.1	0.481 *(0.293)*	14.62 *(2.88)*	179 *(82)*	59 *(15)*	29.24 *(99.02)*
					13th Gear				
451.97 *(337.03)*	18974 *(84.40)*	8.93 *(14.37)*	1696	0.8	0.488 *(0.297)*	14.42 *(2.84)*	179 *(81)*	60 *(16)*	29.23 *(98.98)*

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 *(1942 kg)*	None
- Cast iron(front idlers)	4500 lb *(2041 kg)*	None
- Cast iron(side)	3920 lb *(1778 kg)*	None
Height of Drawbar	20.0 in *(510 mm)*	19.0 in *(485 mm)*
Static Weight with operator	56000 lb(*25401 kg)*	43300 lb(*19640 kg)*

HYDRAULIC PERFORMANCE

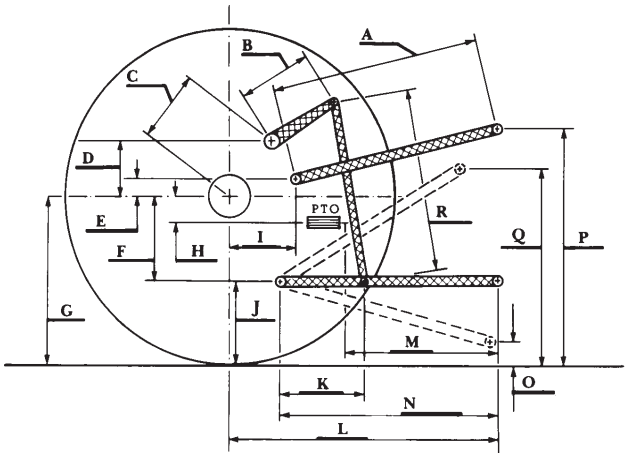
CATEGORY: IVN
Quick Attach: yes
OECD Static test
Maximum force exerted through whole range: 20936 lbs *(93.1 kN)*

	Standard pump 2 inlets - 2 outlets	**High flow pump** 3 inlets - 3 outlets
i) Sustained pressure at compensator cutoff:	2943 psi *(203 bar)*	2870 psi *(198 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.5 GPM *(168.5 l/min)*	62.2 GPM *(235.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	43.0 GPM *(162.8 l/min)*	58.2 GPM *(220.3 l/min)*
Delivery pressure:	2692 psi *(186 bar)*	2770 psi *(191 bar)*
Power:	67.5 HP *(50.4 kW)*	94.1 HP *(70.1 kW)*
	1 inlet - 1 outlet	1 inlet - 1 outlet
i) Sustained pressure at compensator cutoff:	2850 psi *(197 bar)*	2884 psi *(199 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.3 GPM *(141.2 l/min)*	41.1 GPM *(155.6 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	36.4 GPM *(137.8 l/min)*	38.8 GPM *(146.9 l/min)*
Delivery pressure:	2235 psi *(154 bar)*	2283 psi *(157 bar)*
Power:	47.5 HP *(35.4 kW)*	51.7 HP *(38.5 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 MT865C DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln