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2009

Test 1965: Challenger MT875C

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1965 – SUMMARY 662

CHALLENGER MT875C 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)					
521.31 (388.74)	2100	32.28 (122.18)	0.435 (0.265)	16.15 (3.18)	
Standard Power Take-off Speed (1000 rpm)					
556.48 (414.97)	1979	33.07 (125.19)	0.418 (0.254)	16.83 (3.31)	
Maximum Power (1 hour)					
586.45 (437.32)	1750	32.23 (122.02)	0.387 (0.235)	18.19 (3.58)	

VARYING POWER AND FUEL CONSUMPTION

521.31 (388.74)	2100	32.28 (122.18)	0.435 (0.265)	16.15 (3.18)	Air temperature
462.03 (344.54)	2189	31.83 (120.48)	0.484 (0.295)	14.52 (2.86)	74°F (23°C)
3/4 of 85% load level not run: see note 1, p.2					Relative humidity
1/2 of 85% load level not run: see note 1, p.2					30%
1/4 of 85% load level not run: see note 1, p.2					Barometer
1.73 (1.29)	2200	6.53 (24.73)	26.574 (16.164)	0.26 (0.05)	29.09" Hg (98.51 kPa)

Maximum Torque - 2002 lb.-ft. (2714 Nm) at 1300 rpm
Maximum Torque Rise - 53.5%
Torque rise at 1699 engine rpm - 38%
Power increase at 1750 engine rpm - 12.5%

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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th Gear									
441.14 (328.96)	29161 (129.72)	5.67 (9.12)	2102	2.8	0.520 (0.316)	13.54 (2.67)	172 (78)	62 (17)	28.70 (97.19)
75% of Pull at Maximum Power—8th Gear									
351.85 (262.37)	21891 (97.38)	6.03 (9.70)	2200	1.1	0.591 (0.360)	11.90 (2.34)	185 (85)	67 (19)	28.55 (96.68)
50% of Pull at Maximum Power—8th Gear									
235.23 (175.41)	14588 (64.89)	6.05 (9.73)	2199	0.8	0.701 (0.426)	10.03 (1.98)	184 (84)	68 (20)	28.53 (96.61)
75% of Pull at Reduced Engine Speed—11th Gear									
350.31 (261.22)	21809 (97.01)	6.02 (9.69)	1541	1.1	0.472 (0.287)	14.91 (2.94)	184 (85)	68 (20)	28.54 (96.65)
50% of Pull at Reduced Engine Speed—11th Gear									
235.89 (175.90)	14553 (64.73)	6.08 (9.78)	1548	0.8	0.536 (0.326)	13.13 (2.59)	183 (84)	68 (20)	28.52 (96.58)

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

Dates of tests: November 11 - 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:** 30.5 hours

ENGINE: Make Caterpillar **Diesel Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *ELG01740* **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:** 210.5 - 232.6 lb/h (95.5 - 105.5 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 20.3 - 23.2 psi (140 - 160 kPa) as measured 21.7 psi (150 kPa)

CHASSIS: Type track layer-rubber tracked **Serial No.** *AGCC0875LNULG1063* **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** 43245 lb (19615 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)	Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
343.01 (255.78)	32745 (145.66)	3.93 (6.32)	2100	3.7	0.543 (0.331)	12.94 (2.55)	179 (82)	44 (7)	29.02 (98.27)
6th Gear									
403.52 (300.90)	34409 (153.06)	4.40 (7.07)	2100	4.3	0.489 (0.297)	14.38 (2.83)	181 (83)	44 (7)	29.03 (98.31)
7th Gear									
442.65 (330.08)	33357 (148.38)	4.98 (8.01)	2103	4.0	0.464 (0.283)	15.14 (2.98)	181 (83)	43 (6)	29.04 (98.34)
8th Gear									
441.14 (328.96)	29161 (129.72)	5.67 (9.12)	2102	2.8	0.520 (0.316)	13.54 (2.67)	172 (78)	62 (17)	28.70 (97.19)
9th Gear									
436.66 (325.62)	25477 (113.33)	6.43 (10.35)	2100	1.6	0.523 (0.318)	13.45 (2.65)	173 (79)	59 (15)	28.76 (97.39)
10th Gear									
435.86 (325.02)	22472 (99.96)	7.28 (11.71)	2100	1.2	0.529 (0.322)	13.30 (2.62)	175 (80)	64 (18)	28.68 (97.12)
11th Gear									
432.24 (322.32)	19734 (87.78)	8.22 (13.22)	2101	0.8	0.532 (0.324)	13.21 (2.60)	187 (86)	66 (19)	28.65 (97.02)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

Note 1: Load levels not run because of an unstable interaction between the engine and dynamometer controllers.

Note 2: This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 7.

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 fuel filter was maintained at 101°F (39°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. **1965**, Nebraska Summary 662, 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)	2300 lb (1043 kg)	None
Height of Drawbar	19.5 in (495 mm)	19.0 in (485 mm)
Static Weight with operator	50000 lb(22679 kg)	43420 lb(19695 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
357.35 (266.47)	43459 (193.32)	3.09 (4.96)	1759	10.1	5th Gear 0.516 (0.314)	13.64 (2.69)	181 (82)	45 (7)	29.01 (98.24)
425.51 (317.30)	41275 (183.60)	3.87 (6.22)	1921	8.2	6th Gear 0.470 (0.286)	14.97 (2.95)	180 (82)	44 (7)	29.03 (98.31)
478.31 (356.67)	40712 (181.10)	4.41 (7.09)	1931	7.6	7th Gear 0.432 (0.263)	16.28 (3.21)	180 (82)	44 (7)	29.04 (98.34)
483.75 (360.73)	40231 (178.95)	4.51 (7.26)	1753	7.5	8th Gear 0.483 (0.294)	14.57 (2.87)	173 (79)	64 (18)	28.69 (97.16)
492.22 (367.04)	35429 (157.59)	5.21 (8.38)	1750	4.4	9th Gear 0.472 (0.287)	14.91 (2.94)	175 (80)	59 (15)	28.75 (97.36)
497.89 (371.28)	31337 (139.39)	5.96 (9.58)	1749	2.9	10th Gear 0.467 (0.284)	15.07 (2.97)	178 (81)	65 (18)	28.67 (97.09)
498.09 (371.43)	27608 (122.81)	6.77 (10.89)	1748	1.9	11th Gear 0.468 (0.285)	15.03 (2.96)	191 (88)	66 (19)	28.62 (96.92)
498.89 (372.02)	24316 (108.16)	7.70 (12.38)	1753	1.6	12th Gear 0.466 (0.283)	15.09 (2.97)	190 (88)	67 (19)	28.59 (96.82)
496.52 (370.25)	20262 (90.13)	9.19 (14.79)	1754	1.2	13th Gear 0.469 (0.285)	15.00 (2.95)	190 (88)	67 (19)	28.57 (96.75)

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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th Gear									
375.80 (280.23)	43772 (194.71)	3.22 (5.18)	1749	5.2	0.499 (0.304)	14.08 (2.77)	181 (83)	49 (9)	28.83 (97.62)
6th Gear									
432.64 (322.62)	44769 (199.14)	3.62 (5.83)	1754	5.5	0.467 (0.284)	15.05 (2.96)	181 (83)	49 (9)	28.82 (97.60)
7th Gear									
491.20 (366.29)	45300 (201.51)	4.07 (6.54)	1759	6.1	0.442 (0.269)	15.91 (3.13)	169 (76)	54 (12)	28.94 (98.00)
8th Gear									
505.92 (377.26)	41041 (182.56)	4.62 (7.44)	1748	4.6	0.449 (0.273)	15.66 (3.09)	171 (77)	54 (12)	28.94 (98.00)
9th Gear									
506.93 (378.01)	36136 (160.74)	5.27 (8.47)	1744	3.1	0.446 (0.271)	15.76 (3.10)	170 (77)	55 (13)	28.94 (98.00)
10th Gear									
511.52 (381.44)	31948 (142.11)	6.01 (9.66)	1755	2.4	0.447 (0.272)	15.72 (3.10)	170 (77)	55 (13)	28.94 (98.00)
11th Gear									
505.43 (376.90)	27838 (123.83)	6.81 (10.96)	1752	1.8	0.452 (0.275)	15.57 (3.07)	170 (77)	56 (13)	28.93 (97.97)
12th Gear									
513.08 (382.60)	25017 (111.28)	7.69 (12.38)	1750	1.4	0.443 (0.270)	15.87 (3.13)	185 (85)	56 (13)	28.93 (97.97)
13th Gear									
516.19 (384.92)	21047 (93.62)	9.20 (14.81)	1749	0.8	0.439 (0.267)	16.03 (3.16)	185 (85)	57 (14)	28.93 (97.97)

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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
5th Gear									
378.28 (282.08)	43479 (193.40)	3.26 (5.25)	1757	4.7	0.503 (0.306)	13.97 (2.75)	180 (82)	47 (8)	28.88 (97.80)
6th Gear									
435.73 (324.92)	44814 (199.34)	3.65 (5.87)	1750	4.8	0.470 (0.286)	14.95 (2.94)	181 (83)	48 (9)	28.88 (97.80)
7th Gear									
497.31 (370.84)	45476 (202.29)	4.10 (6.60)	1752	5.0	0.448 (0.272)	15.70 (3.09)	169 (76)	49 (9)	28.88 (97.80)
8th Gear									
512.06 (381.84)	41197 (183.26)	4.67 (7.51)	1749	3.9	0.454 (0.276)	15.50 (3.05)	169 (76)	49 (9)	28.89 (97.83)
9th Gear									
510.02 (380.32)	36071 (160.45)	5.31 (8.54)	1750	3.0	0.457 (0.278)	15.38 (3.03)	170 (77)	50 (10)	28.89 (97.83)
10th Gear									
513.28 (382.75)	32048 (142.56)	6.01 (9.67)	1749	2.3	0.455 (0.277)	15.45 (3.04)	169 (76)	51 (11)	28.89 (97.83)
11th Gear									
505.20 (376.73)	27833 (123.81)	6.81 (10.95)	1746	1.6	0.462 (0.281)	15.22 (3.00)	171 (77)	51 (11)	28.89 (97.83)
12th Gear									
510.61 (380.76)	24813 (110.37)	7.72 (12.42)	1753	1.3	0.458 (0.279)	15.34 (3.02)	184 (84)	52 (11)	28.90 (97.87)
13th Gear									
498.59 (371.79)	20343 (90.49)	9.19 (14.79)	1749	1.0	0.469 (0.285)	14.99 (2.95)	170 (77)	53 (12)	28.90 (97.87)

TIRES, BALLAST AND WEIGHT

Track width

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

Height of Drawbar

Static Weight with operator

With Ballast

36.0 in (915 mm)
4280 lb (1942 kg)
4500 lb (2041 kg)
3800 lb (1723 kg)
20.0 in (510 mm)
56000 lb(25401 kg)

Without Ballast

36.0 in (915 mm)
None
None
None
19.0 in (485 mm)
43420 lb(19695 kg)

HYDRAULIC PERFORMANCE

CATEGORY: NA

Quick Attach: NA

No 3 point lift available for this model

Maximum force exerted through whole range:

	NA	
	Standard pump	High flow pump
	<u>2 inlets - 2 outlets</u>	<u>3 inlets - 3 outlets</u>
i) Sustained pressure at compensator cutoff:	2943 psi (203 bar)	2812 psi (194 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.5 GPM (168.5 l/min)	62.5 GPM (236.6 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.0 GPM (162.8 l/min)	58.7 GPM (222.2 l/min)
Delivery pressure:	2692 psi (186 bar)	2729 psi (188 bar)
Power:	67.5 HP (50.4 kW)	93.5 HP (69.7 kW)
	<u>1 inlet - 1 outlet</u>	<u>1 inlet - 1 outlet</u>
i) Sustained pressure at compensator cutoff:	2850 psi (197 bar)	2811 psi (194 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.3 GPM (141.2 l/min)	41.9 GPM (158.6 l/min)
iii) Pump delivery rate at maximum hydraulic power:	36.4 GPM (137.8 l/min)	39.0 GPM (147.6 l/min)
Delivery pressure:	2235 psi (154 bar)	2243 psi (155 bar)
Power:	47.5 HP (35.4 kW)	51.0 HP (38.0 kW)



CHALLENGER MT875C DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln