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2009

Test 1953: Challenger MT845C Diesel

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 1953 – SUMMARY 640

CHALLENGER MT845C 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)					
390.78 (291.41)	2100	23.98 (90.78)	0.433 (0.263)	16.29 (3.21)	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
417.21 (311.11)	1980	24.84 (94.03)	0.420 (0.255)	16.80 (3.31)	
Maximum Power (1 hour)					
442.53 (329.99)	1700	24.82 (93.95)	0.395 (0.241)	17.83 (3.51)	

VARYING POWER AND FUEL CONSUMPTION

390.78 (291.41)	2100	23.98 (90.78)	0.433 (0.263)	16.29 (3.21)	Air temperature
347.04 (258.79)	2193	22.16 (83.90)	0.450 (0.274)	15.66 (3.08)	77°F (25°C)
261.22 (194.79)	2199	18.67 (70.69)	0.504 (0.307)	13.99 (2.76)	Relative humidity
174.02 (129.76)	2200	14.87 (56.29)	0.603 (0.367)	11.70 (2.31)	48%
87.00 (64.88)	2200	10.07 (38.13)	0.817 (0.497)	8.64 (1.70)	Barometer
2.65 (1.97)	2200	6.45 (24.45)	17.207 (10.467)	0.41 (0.08)	28.64" Hg (96.99 kPa)

Maximum Torque - 1511 lb.-ft. (2048 Nm) at 1051 rpm

Maximum Torque Rise - 54.6%

Torque rise at 1700 engine rpm - 40%

Power increase at 1700 engine rpm - 13.2%

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—6th Gear									
331.68 (247.33)	27840 (123.84)	4.47 (7.19)	2103	2.5	0.513 (0.312)	13.76 (2.71)	181 (83)	67 (19)	28.83 (97.63)
75% of Pull at Maximum Power—6th Gear									
264.12 (196.95)	20951 (93.20)	4.73 (7.60)	2200	1.3	0.567 (0.345)	12.45 (2.45)	184 (84)	78 (26)	28.85 (97.70)
50% of Pull at Maximum Power—6th Gear									
177.21 (132.15)	13956 (62.08)	4.77 (7.67)	2199	0.6	0.681 (0.414)	10.37 (2.04)	183 (84)	79 (26)	28.86 (97.73)
75% of Pull at Reduced Engine Speed—9th Gear									
264.08 (196.92)	20978 (93.32)	4.72 (7.60)	1540	1.4	0.501 (0.305)	14.09 (2.77)	184 (85)	81 (27)	28.86 (97.73)
50% of Pull at Reduced Engine Speed—9th Gear									
177.05 (132.03)	13951 (62.06)	4.76 (7.66)	1540	0.7	0.562 (0.342)	12.56 (2.47)	182 (84)	80 (27)	28.86 (97.73)

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

Dates of tests: May 12 - 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)** 0.8470 **Fuel weight** 7.052 lbs/gal (0.845 kg/l) **Oil SAE** 10W-30 **API service classification** CI-4 **Transmission and hydraulic lubricant** AGCO Trandraulic 821 XL fluid **Total time engine was operated:** 29.0 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *JAS00812* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.402" x 6.752" (137.2 mm x 171.5 mm) **Compression ratio** 18.0 to 1 **Displacement** 928 cu in (15213 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: 156.3 - 172.8 lb/h (70.9 - 78.4 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.1 - 20.3 psi (125 - 140 kPa) as measured 19.6 psi (135 kPa)

CHASSIS: Type tracklayer-rubber tracked **Serial No.** *AGCC0845ENUHAI001* **Track width** 100.0" (2540 mm) to 120.0" (3048 mm) **Length of track on ground** 124.3" (3157 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 dis 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** 43380 lb (19677 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)
3rd Gear									
281.69 (210.05)	42616 (189.57)	2.48 (3.99)	2176	12.2	0.586 (0.356)	12.05 (2.37)	181 (83)	68 (20)	28.91 (97.90)
4th Gear									
317.29 (236.60)	36945 (164.34)	3.22 (5.18)	2106	6.3	0.543 (0.330)	13.00 (2.56)	181 (83)	72 (22)	28.90 (97.87)
5th Gear									
329.62 (245.79)	31477 (140.02)	3.93 (6.32)	2102	3.9	0.522 (0.318)	13.52 (2.66)	182 (83)	68 (20)	28.83 (97.63)
6th Gear									
331.68 (247.33)	27840 (123.84)	4.47 (7.19)	2103	2.5	0.513 (0.312)	13.76 (2.71)	181 (83)	67 (19)	28.83 (97.63)
7th Gear									
327.61 (244.30)	24189 (107.60)	5.08 (8.17)	2103	1.8	0.520 (0.316)	13.57 (2.67)	181 (83)	63 (17)	28.82 (97.60)
8th Gear									
326.35 (243.36)	21379 (95.10)	5.73 (9.21)	2100	1.4	0.521 (0.317)	13.54 (2.67)	180 (82)	62 (17)	28.82 (97.60)
9th Gear									
320.37 (238.90)	18592 (82.70)	6.46 (10.40)	2100	1.3	0.533 (0.324)	13.24 (2.61)	181 (83)	70 (21)	28.83 (97.63)
10th Gear									
318.35 (237.39)	16266 (72.36)	7.34 (11.81)	2101	0.9	0.536 (0.326)	13.18 (2.60)	182 (83)	72 (22)	28.84 (97.66)
11th Gear									
307.14 (229.03)	13940 (62.01)	8.27 (13.30)	2097	0.6	0.555 (0.337)	12.73 (2.51)	182 (83)	74 (23)	28.84 (97.66)

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 115°F(46°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. **1953**, Nebraska Summary 640, 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	75.2
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 end)	4280 lb (1941 kg)	None
- Cast iron(front idlers)	2165 lb (982 kg)	None
Height of Drawbar	21.0 in (535 mm)	21.0 in (535 mm)
Static Weight with operator	50000 lb(22679 kg)	43555 lb(19756 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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
3rd Gear									
282.27 (210.49)	42736 (190.10)	2.48 (3.99)	2173	12.3	0.582 (0.354)	12.12 (2.39)	181 (83)	67 (19)	28.91 (97.90)
4th Gear									
325.49 (242.72)	40677 (180.94)	3.00 (4.83)	2025	9.5	0.545 (0.332)	12.95 (2.55)	181 (83)	70 (21)	28.91 (97.90)
5th Gear									
356.80 (266.07)	39328 (174.94)	3.40 (5.47)	1903	8.2	0.509 (0.309)	13.87 (2.73)	182 (83)	73 (23)	28.89 (97.83)
6th Gear									
367.26 (273.86)	37660 (167.52)	3.66 (5.89)	1790	6.5	0.483 (0.294)	14.60 (2.88)	182 (83)	67 (19)	28.83 (97.63)
7th Gear									
373.78 (278.72)	35133 (156.28)	3.99 (6.42)	1701	4.6	0.470 (0.286)	15.03 (2.96)	182 (83)	65 (18)	28.83 (97.63)
8th Gear									
376.44 (280.71)	30990 (137.85)	4.56 (7.33)	1700	3.1	0.470 (0.286)	15.03 (2.96)	182 (83)	60 (16)	28.82 (97.60)
9th Gear									
372.63 (277.87)	27022 (120.20)	5.17 (8.32)	1700	2.4	0.475 (0.289)	14.86 (2.93)	183 (84)	71 (22)	28.84 (97.66)
10th Gear									
371.12 (276.74)	23792 (105.83)	5.85 (9.41)	1701	1.9	0.474 (0.288)	14.91 (2.94)	183 (84)	73 (23)	28.84 (97.66)
11th Gear									
366.96 (273.64)	20728 (92.20)	6.64 (10.68)	1700	1.6	0.479 (0.291)	14.75 (2.91)	184 (84)	75 (24)	28.85 (97.70)
12th Gear									
362.96 (270.66)	18142 (80.70)	7.50 (12.07)	1703	1.2	0.492 (0.299)	14.36 (2.83)	183 (84)	76 (24)	28.85 (97.70)
13th Gear									
356.11 (265.55)	14902 (66.29)	8.97 (14.43)	1701	0.9	0.496 (0.302)	14.22 (2.80)	183 (84)	77 (25)	28.85 (97.70)

DRAWBAR PERFORMANCE
(Ballasted 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
3rd Gear									
318.88 (237.79)	49464 (220.03)	2.42 (3.89)	2104	11.6	0.535 (0.325)	13.18 (2.60)	180 (82)	54 (12)	28.98 (98.14)
4th Gear									
353.39 (263.52)	46350 (206.18)	2.86 (4.60)	1896	7.8	0.510 (0.310)	13.83 (2.72)	180 (82)	63 (17)	28.66 (97.05)
5th Gear									
361.67 (269.70)	43153 (191.95)	3.14 (5.05)	1756	8.0	0.491 (0.299)	14.37 (2.83)	182 (83)	69 (21)	28.95 (98.04)
6th Gear									
376.45 (280.72)	39752 (176.82)	3.55 (5.71)	1704	4.6	0.465 (0.283)	15.17 (2.99)	181 (83)	63 (17)	28.65 (97.02)
7th Gear									
375.45 (279.97)	34794 (154.77)	4.05 (6.52)	1699	3.2	0.466 (0.283)	15.14 (2.98)	181 (83)	63 (17)	28.63 (96.95)
8th Gear									
377.22 (281.29)	30686 (136.50)	4.61 (7.42)	1704	2.3	0.465 (0.283)	15.19 (2.99)	180 (82)	63 (17)	28.67 (97.09)
9th Gear									
371.27 (276.85)	26992 (120.06)	5.16 (8.30)	1690	2.2	0.476 (0.289)	14.83 (2.92)	182 (83)	70 (21)	28.91 (97.90)
10th Gear									
373.06 (278.19)	23722 (105.52)	5.90 (9.49)	1708	1.6	0.475 (0.289)	14.86 (2.93)	181 (83)	70 (21)	28.89 (97.83)
11th Gear									
369.31 (275.39)	20714 (92.14)	6.69 (10.76)	1706	1.2	0.478 (0.290)	14.79 (2.91)	181 (83)	70 (21)	28.87 (97.77)
12th Gear									
357.26 (266.41)	17866 (79.47)	7.50 (12.07)	1700	0.9	0.494 (0.300)	14.30 (2.82)	182 (83)	71 (22)	28.85 (97.70)
13th Gear									
358.77 (267.53)	14974 (66.61)	8.98 (14.45)	1703	0.7	0.501 (0.304)	14.10 (2.78)	181 (83)	71 (22)	28.83 (97.63)

HYDRAULIC PERFORMANCE

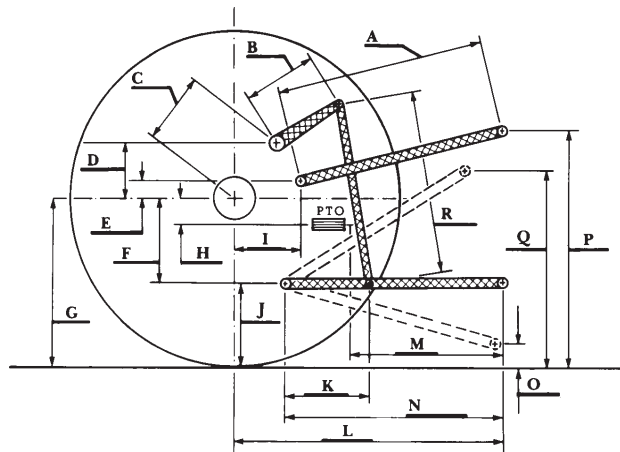
CATEGORY: IVN

Quick Attach: yes

OECD Static test

	20936 lbs (93.1 kN)	
	Standard pump	High flow pump
	2 inlets - 2 outlets	3 inlets - 3 outlets
Maximum force exerted through whole range:	2943 psi (203 bar)	2856 psi (197 bar)
i) Sustained pressure at compensator cutoff:		
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.5 GPM (168.5 l/min)	62.8 GPM (237.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.0 GPM (162.8 l/min)	56.7 GPM (214.6 l/min)
Delivery pressure:	2692 psi (186 bar)	2800 psi (193 bar)
Power:	67.5 HP (50.4 kW)	92.6 HP (69.1 kW)
	1 inlet - 1 outlet	1 inlet - 1 outlet
i) Sustained pressure at compensator cutoff:	2850 psi (197 bar)	2850 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.3 GPM (141.2 l/min)	40.9 GPM (154.8 l/min)
iii) Pump delivery rate at maximum hydraulic power:	36.4 GPM (137.8 l/min)	39.3 GPM (148.8 l/min)
Delivery pressure:	2235 psi (154 bar)	2291 psi (158 bar)
Power:	47.5 HP (35.4 kW)	52.5 HP (39.2 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 MT845C DIESEL