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2008

Test 1928: Challenger MT945B Diesel

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1928 – SUMMARY 600

CHALLENGER MT945B 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—1050 rpm)					
363.35 (270.95)	2100	23.05 (87.25)	0.444 (0.270)	15.77 (3.11)	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
383.04 (285.63)	2000	23.51 (88.99)	0.430 (0.262)	16.29 (3.21)	
Maximum Power (1 hour)					
416.25 (310.40)	1700	23.91 (90.52)	0.403 (0.245)	17.41 (3.43)	

VARYING POWER AND FUEL CONSUMPTION

363.35 (270.95)	2100	23.05 (87.24)	0.444 (0.270)	15.77 (3.11)	Air temperature
321.33 (239.62)	2184	21.19 (80.22)	0.462 (0.281)	15.16 (2.99)	77°F (25°C)
243.10 (181.28)	2199	18.24 (69.04)	0.526 (0.320)	13.33 (2.63)	Relative humidity
159.81 (119.17)	2199	14.29 (54.08)	0.626 (0.381)	11.19 (2.20)	48%
79.67 (59.41)	2199	10.16 (38.46)	0.894 (0.544)	7.84 (1.54)	Barometer
2.09 (1.56)	2199	6.55 (24.80)	21.936 (13.343)	0.32 (0.06)	28.99" Hg (98.17 kPa)

Maximum Torque - 1446 lb.-ft. (1961 Nm) at 1054 rpm
Maximum Torque Rise - 59.1%
Torque rise at 1700 engine rpm - 41%
Power increase at 1700 engine rpm - 14.6%

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)	Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—6th Gear									
327.08 (243.90)	28501 (126.78)	4.30 (6.93)	2097	2.61	0.503 (0.306)	13.93 (2.74)	189 (87)	81 (27)	28.48 (96.44)
75% of Pull at Maximum Power—6th Gear									
259.83 (193.76)	21404 (95.21)	4.55 (7.33)	2199	1.84	0.549 (0.334)	12.77 (2.52)	189 (87)	88 (31)	28.48 (96.44)
50% of Pull at Maximum Power—6th Gear									
173.83 (129.63)	14208 (63.20)	4.59 (7.38)	2201	1.11	0.663 (0.404)	10.56 (2.08)	187 (86)	90 (32)	28.48 (96.44)
75% of Pull at Reduced Engine Speed—9th Gear									
259.73 (193.68)	21488 (95.58)	4.53 (7.29)	1535	1.83	0.487 (0.296)	14.40 (2.84)	190 (88)	88 (31)	28.48 (96.44)
50% of Pull at Reduced Engine Speed—9th Gear									
173.72 (129.54)	14289 (63.56)	4.56 (7.34)	1532	1.05	0.546 (0.332)	12.83 (2.53)	188 (87)	91 (33)	28.48 (96.44)

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

Dates of tests: May 27 - June 6, 2008

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)** 0.8416 **Fuel weight** 7.007 lbs/gal (0.840 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:** 24.0 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *JAS00777* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.402" x 6.748" (137.2 mm x 171.4 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 oil, radiator for transmission and front and rear axle oil **Fuel filter** two paper elements and water separator **Muffler** vertical **Cooling medium temperature control** 2 thermostats

ENGINE OPERATING PARAMETERS: **Fuel rate:** 159.0 - 168.7 lb/h (72.1 - 76.5 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.9 - 20.3 psi (130 - 140 kPa) as measured 19.1 psi (132 kPa)

CHASSIS: Type four wheel drive with triples **Serial No.** *AGCC0945PNTIRG1007* **Tread width** rear 77.0" (1955 mm) to 183.0" (4650 mm) front 77.0" (1955 mm) to 183.0" (4650 mm) **Wheelbase** 155.5" (3950 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 1.65 (2.65) second 2.09 (3.36) third 2.65 (4.26) fourth 3.36 (5.41) fifth 4.00 (6.44) sixth 4.50 (7.25) seventh 5.08 (8.17) eighth 5.72 (9.20) ninth 6.43 (10.34) tenth 7.24 (11.65) eleventh 8.16 (13.14) twelfth 9.19 (14.79) thirteenth 10.94 (17.61) fourteenth 13.89 (22.36) fifteenth 17.59 (28.30) sixteenth 24.46 (39.36) at 2300 rpm, reverse 1.32 (2.12), 3.20 (5.15), 3.60 (5.80), 8.76 (14.09) **Clutch** wet multiple disch hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** hydrostatic **Power take-off** 1000 rpm at 2000 engine rpm **Unladen tractor mass** 50495 lb (22904 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)
2nd Gear									
244.75 (182.51)	49755 (221.32)	1.84 (2.97)	2198	14.21	0.609 (0.370)	11.51 (2.27)	188 (86)	70 (21)	28.42 (96.24)
3rd Gear									
300.86 (224.35)	48428 (215.42)	2.33 (3.75)	2098	10.25	0.547 (0.333)	12.82 (2.52)	189 (87)	72 (22)	28.41 (96.21)
4th Gear									
315.85 (235.53)	37393 (166.33)	3.17 (5.10)	2102	4.12	0.521 (0.317)	13.45 (2.65)	189 (87)	72 (22)	28.41 (96.21)
5th Gear									
325.76 (242.92)	32115 (142.86)	3.80 (6.12)	2098	3.15	0.505 (0.307)	13.88 (2.73)	189 (87)	73 (23)	28.40 (96.17)
6th Gear									
327.08 (243.90)	28501 (126.78)	4.30 (6.93)	2097	2.61	0.503 (0.306)	13.93 (2.74)	189 (87)	81 (27)	28.48 (96.45)
7th Gear									
324.50 (241.98)	24911 (110.81)	4.88 (7.86)	2101	2.21	0.505 (0.307)	13.88 (2.73)	189 (87)	83 (28)	28.48 (96.45)
8th Gear									
323.95 (241.57)	22029 (97.99)	5.51 (8.87)	2100	1.91	0.505 (0.307)	13.87 (2.73)	189 (87)	86 (30)	28.48 (96.45)
9th Gear									
314.63 (234.62)	19018 (84.60)	6.20 (9.98)	2098	1.70	0.518 (0.315)	13.53 (2.67)	189 (87)	75 (24)	28.65 (97.02)
10th Gear									
312.71 (233.19)	16746 (74.49)	7.00 (11.27)	2099	1.46	0.518 (0.315)	13.52 (2.66)	189 (87)	79 (26)	28.67 (97.09)
11th Gear									
298.32 (222.46)	14149 (62.94)	7.91 (12.72)	2095	1.19	0.545 (0.331)	12.87 (2.53)	190 (88)	78 (26)	28.50 (96.51)
12th Gear									
299.32 (223.20)	12549 (55.82)	8.94 (14.39)	2100	0.98	0.544 (0.331)	12.89 (2.54)	189 (87)	81 (27)	28.49 (96.48)

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 primary fuel filter was maintained at 112°F(45°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. **1928**, Nebraska Summary 600, December 15, 2008.

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	76.5
Bystander	--

TIRES AND WEIGHT

Rear tires - No.,size, ply & psi(kPa)
Front tires - No.,size, ply & psi(kPa)
Height of Drawbar
Static Weight with operator-Rear
 -Front
 -Total

Tested without ballast

Six 520/85R46;***; 8(55)
 Six 520/85R46;***;12(85)
 21.5 in (545 mm)
 22065 lb (10008 kg)
 28605 lb (12975 kg)
 50670 lb (22983 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)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
2nd Gear									
251.18 (187.30)	49652 (220.86)	1.90 (3.05)	2198	11.79	0.589 (0.359)	11.89 (2.34)	189 (87)	70 (21)	28.41 (96.21)
3rd Gear									
302.21 (225.36)	47923 (213.17)	2.36 (3.81)	2102	9.13	0.543 (0.330)	12.91 (2.54)	189 (87)	71 (22)	28.41 (96.21)
4th Gear									
342.52 (255.42)	47155 (209.76)	2.72 (4.38)	1897	8.69	0.513 (0.312)	13.66 (2.69)	190 (88)	72 (22)	28.41 (96.21)
5th Gear									
358.58 (267.39)	45315 (201.57)	2.97 (4.78)	1705	6.98	0.482 (0.293)	14.53 (2.86)	191 (88)	74 (23)	28.40 (96.17)
6th Gear									
367.96 (274.39)	40475 (180.04)	3.41 (5.49)	1700	4.86	0.465 (0.283)	15.05 (2.97)	191 (88)	75 (24)	28.39 (96.14)
7th Gear									
370.87 (276.56)	35530 (158.04)	3.91 (6.30)	1711	3.75	0.468 (0.285)	14.98 (2.95)	191 (88)	76 (24)	28.39 (96.14)
8th Gear									
372.72 (277.94)	31696 (140.99)	4.41 (7.10)	1700	3.10	0.463 (0.281)	15.15 (2.98)	191 (88)	85 (29)	28.48 (96.44)
9th Gear									
366.72 (273.46)	27625 (122.88)	4.98 (8.01)	1699	2.59	0.472 (0.287)	14.85 (2.93)	191 (88)	77 (25)	28.66 (97.05)
10th Gear									
366.71 (273.46)	24438 (108.71)	5.63 (9.06)	1700	2.24	0.472 (0.287)	14.84 (2.92)	191 (88)	80 (27)	28.68 (97.12)
11th Gear									
360.79 (269.04)	21241 (94.48)	6.37 (10.25)	1698	1.81	0.477 (0.290)	14.70 (2.90)	191 (88)	79 (26)	28.49 (96.48)
12th Gear									
359.66 (268.20)	18757 (83.43)	7.19 (11.57)	1698	1.54	0.477 (0.290)	14.68 (2.89)	191 (88)	81 (27)	28.49 (96.48)
13th Gear									
357.93 (266.91)	15687 (69.78)	8.56 (13.77)	1691	1.26	0.479 (0.291)	14.63 (2.88)	191 (88)	81 (27)	28.48 (96.44)

HYDRAULIC PERFORMANCE

CATEGORY: NA

Quick Attach: NA

Maximum force exerted through whole range:

i) Sustained pressure at compensator cutoff:	NA	
	3067 psi (211 bar)	2917 psi (201 bar)
	Standard pump	High flow pump

ii) Pump delivery rate at minimum pressure and rated engine speed:	43.7 GPM (165.4 l/min)	59.4 GPM (224.9 l/min)
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iii) Pump delivery rate at maximum hydraulic power:	41.2 GPM (156.0 l/min)	54.5 GPM (206.4 l/min)
Delivery pressure:	2761 psi (190 bar)	2632 psi (183 bar)
Power:	66.4 HP (49.5 kW)	84.4 HP (62.9 kW)



CHALLENGER MT945B DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln