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January 2005

## Tests 2305 & 2306: Challenger MT555B Autopower IV Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# SUMMARY OF OECD TESTS 2305 & 2306 NEBRASKA SUMMARY 518 CHALLENGER MT555B AUTOPOWER IV DIESEL 32 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—1098 rpm)					
133.8 (99.8)	2196	8.75 (33.11)	0.465 (0.283)	15.29 (3.01)	
Standard Power Take-off Speed(1000 rpm)					
139.7 (104.2)	2000	8.48 (32.11)	0.432 (0.263)	16.44 (3.24)	
Maximum Power (1 hour)					
141.2 (105.3)	1951	8.51 (32.21)	0.429 (0.261)	16.60 (3.27)	

## VARYING POWER AND FUEL CONSUMPTION

133.8 (99.8)	2196	8.75 (33.11)	0.465 (0.283)	15.29 (3.01)	Air temperature
114.2 (85.2)	2207	7.54 (28.53)	0.470 (0.286)	15.14 (2.98)	73°F(23°C)
86.1 (64.2)	2215	6.18 (23.38)	0.512 (0.311)	13.92 (2.74)	Relative humidity
57.8 (43.1)	2223	4.79 (18.13)	0.590 (0.359)	12.08 (2.38)	43%
28.8 (21.5)	2232	3.54 (13.39)	0.872 (0.531)	8.14 (1.61)	Barometer
--	2238	2.29 (8.66)	--	--	29.9" Hg(101.3 kPa)
--			--	--	

Maximum Torque - 475.5 lb.-ft. (644.7 Nm) at 1400 rpm  
Maximum Torque Rise - 48.6%  
Torque rise at 1750 engine rpm - 29%

## DRAWBAR PERFORMANCE (Unballasted - Front Drive Engaged) 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—13th(3TD) Gear									
101.8 (75.9)	7530 (33.5)	5.07 (8.16)	2192	3.2	0.581 (0.353)	12.19 (2.40)	181 (83)	57 (14)	30.0 (101.6)
75% of Pull at Maximum Power—13th(3TD) Gear									
76.0 (56.7)	5530 (24.6)	5.16 (8.30)	2200	1.8	0.635 (0.386)	11.17 (2.20)	183 (84)	59 (15)	30.0 (101.6)
50% of Pull at Maximum Power—13th(3TD) Gear									
53.0 (39.5)	3775 (16.8)	5.26 (8.46)	2213	1.0	0.750 (0.456)	9.44 (1.86)	181 (83)	59 (15)	30.0 (101.6)
75% of Pull at Reduced Engine Speed—14th(4TB) Gear									
76.2 (56.8)	5555 (24.7)	5.15 (8.29)	2093	2.0	0.613 (0.373)	11.56 (2.28)	181 (83)	59 (15)	30.0 (101.6)
50% of Pull at Reduced Engine Speed—14th(4TB) Gear									
52.6 (39.2)	3750 (16.7)	5.26 (8.46)	2107	1.0	0.709 (0.431)	10.00 (1.97)	181 (83)	59 (15)	30.0 (101.6)

**Location of tests:** Groupement d'Antony, Parc de Touvoie, BP 44 Antony, Cedex, France 92163  
**Dates of tests:** September - October, 2005  
Operator sound level - December 19, 2006

**Manufacturer:** AGCOS.A. BP 307, Avenue Blaise Pascal, 60026 Beauvais, France

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.854  
**Fuel weight** 7.11 lbs/gal (0.852 kg/l) **Oil SAE** 15W40 **API service classification** CH4  
**Transmission and hydraulic lubricant** BP Terrac Tractan 9 fluid **Front axle lubricant** API GL5 - SAE 85W140

**ENGINE:** Make Perkins Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler  
**Serial No.** VK 31483 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 3.937" x 5.00" (100.0 mm x 127.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 365 cu in (5985 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **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 **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS:** **Type** 2WD and FWA **Serial No.** M289 101 **Tread width** rear 61.7" (1567 mm) to 79.1" (2008 mm) front 2WD - 60.6" (1538 mm) to 91.7" (2330 mm), FWA - 66.5" (1690 mm) to 85.5" (2172 mm) **Wheelbase** 2WD - 120.1" (3050 mm) FWA - 120.1" (3050 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (4) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.50 (2.41) second 1.76 (2.83) third 2.08 (3.34) fourth 2.27 (3.65) fifth 2.42 (3.90) sixth 2.65 (4.27) seventh 3.13 (5.04) eighth 3.24 (5.22) ninth 3.67 (5.90) tenth 3.79 (6.10) eleventh 4.47 (7.20) twelfth 4.69 (7.55) thirteenth 5.24 (8.43) fourteenth 5.49 (8.84) fifteenth 5.78 (9.30) sixteenth 6.48 (10.43) seventeenth 6.76 (10.88) eighteenth 7.59 (12.21) nineteenth 7.98 (12.84) twentieth 8.73 (14.05) twenty-first 9.34 (15.03) twenty-second 10.22 (16.45) twenty-third 12.07 (19.42) twenty-fourth 12.48 (20.08) twenty-fifth 14.12 (22.73) twenty-sixth 14.60 (23.50) twenty-seventh 17.24 (27.74) twenty-eighth 18.07 (29.08) twenty-ninth 20.18 (32.47) thirtieth 21.15 (34.03) thirty-first 24.96 (40.17) thirty-second 24.86 (40.00) reverse 1.50 (2.41), 1.76 (2.83), 2.08 (3.34), 2.27 (3.65), 2.42 (3.90), 2.65 (4.27), 3.13 (5.04), 3.24 (5.22), 3.67 (5.90), 3.79 (6.10), 4.47 (7.20), 4.69 (7.55), 5.24 (8.43), 5.49 (8.84), 5.78 (9.30), 6.48 (10.43), 6.76 (10.88), 7.59 (12.21), 7.98 (12.84), 8.73 (14.05), 9.34 (15.03), 10.22 (16.45),

## DRAWBAR PERFORMANCE

### (Unballasted - Front Drive Engaged) 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)	
65.2 (48.6)	12700 (56.5)	1.93 (3.10)	2201	15.2	4th(2TA)Gear 0.670 (0.408)	10.56 (2.08)	181 (83)	54 (12)	30.0 (101.7)
68.9 (51.4)	12545 (55.8)	2.06 (3.32)	2205	14.7	5th(1TD) Gear 0.661 (0.402)	10.71 (2.11)	174 (79)	54 (12)	30.0 (101.7)
78.2 (58.3)	12400 (55.2)	2.36 (3.80)	2195	11.0	6th(2TB) Gear 0.615 (0.374)	11.52 (2.27)	183 (84)	54 (12)	30.0 (101.7)
92.5 (69.0)	12285 (54.7)	2.82 (4.55)	2192	9.8	7th(2TC)Gear 0.593 (0.361)	11.95 (2.36)	178 (81)	55 (13)	30.0 (101.7)
94.7 (70.6)	12160 (54.1)	2.92 (4.70)	2190	9.6	8th(3TA)Gear 0.571 (0.348)	12.41 (2.45)	180 (82)	57 (14)	30.0 (101.6)
105.8 (78.9)	11760 (52.3)	3.37 (5.43)	2189	8.1	9th(2TD)Gear 0.613 (0.345)	12.49 (2.46)	181 (83)	55 (13)	30.0 (101.7)
109.0 (81.3)	11780 (52.4)	3.47 (5.59)	2183	8.0	10th(3TB)Gear 0.567 (0.345)	12.49 (2.46)	183 (84)	57 (14)	30.0 (101.7)
115.2 (85.9)	11060 (49.2)	3.91 (6.29)	2040	6.3	11th(3TC)Gear 0.532 (0.324)	13.32 (2.63)	181 (83)	57 (14)	30.0 (101.6)
114.5 (85.4)	11015 (49.0)	3.90 (6.27)	1943	6.2	12th(4TA)Gear 0.519 (0.316)	13.65 (2.69)	181 (83)	59 (15)	30.0 (101.6)
116.1 (86.6)	9835 (43.8)	4.43 (7.13)	1951	5.0	13th (3TD)Gear 0.512 (0.312)	13.83 (2.73)	180 (82)	57 (14)	30.0 (101.6)
114.1 (85.1)	9035 (40.2)	4.74 (7.63)	1972	4.3	14th(4TB)Gear 0.527 (0.321)	13.44 (2.65)	183 (84)	59 (15)	30.0 (101.6)
116.5 (86.9)	8845 (39.4)	4.94 (7.95)	1965	4.9	15th(1LA)Gear 0.517 (0.315)	13.70 (2.70)	183 (84)	61 (16)	30.0 (101.6)
111.8 (83.4)	7505 (33.4)	5.59 (8.99)	1950	3.7	16th(4TC)Gear 0.531 (0.323)	13.35 (2.63)	183 (84)	59 (15)	30.0 (101.6)
114.1 (85.1)	7395 (32.9)	5.79 (9.32)	1950	4.1	17th(1LB)Gear 0.527 (0.320)	13.45 (2.65)	183 (84)	61 (16)	30.0 (101.6)
111.3 (83.0)	6475 (28.8)	6.45 (10.38)	1946	4.0	18th(4TD)Gear 0.539 (0.328)	13.15 (2.59)	183 (84)	59 (15)	30.0 (101.6)
111.3 (83.0)	6190 (27.5)	6.74 (10.85)	1950	5.0	19th(1LC)Gear 0.535 (0.326)	13.24 (2.61)	183 (84)	61 (16)	30.0 (101.6)
110.2 (82.2)	5545 (24.7)	7.45 (11.99)	1957	4.5	20th(2LA)Gear 0.543 (0.331)	13.04 (2.57)	183 (84)	61 (16)	30.0 (101.6)
110.0 (82.0)	5220 (23.2)	7.90 (12.72)	1948	4.8	21st(1LD)Gear 0.537 (0.327)	13.20 (2.60)	183 (84)	61 (16)	30.0 (101.6)

### Tested Without Ballast

#### 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

#### Front Wheel Assist

Two 520/85R42; \*\*,15(100)

Two 420/90R30; \*\*,16(110)

21.3 in (540 mm)

9635 lb (4370 kg)

5205 lb (2360 kg)

14840 lb (6730 kg)

#### 2WD

Two 520/85R42; \*\*,15(100)

Two 10.00-16; 8; 32(220)

31.5 in (800 mm)

9555 lb (4335 kg)

4100 lb (1860 kg)

13655 lb (6195 kg)

12.07 (19.42), 12.48 (20.08), 14.12 (22.73), 14.60 (23.50), 17.24 (27.74), 18.07 (29.08), 20.18 (32.47), 21.15 (34.03), 24.96 (40.17), 24.86 (40.00) **Clutch** multiple wet disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1980 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 2WD - 13495 lb (6120 kg), FWA - 14675 lb (6655 kg)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claims of 71.0 dB(A) cab sound level nor 29.0 GPM remote hydraulic flow. 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 summary of data from OECD Reports No. **2305 2306**, Nebraska Summary 518, January 5, 2007.

Roger M. Hoy  
Director

M.F. Kocher  
V.I. Adamchuk  
J.A. Smith  
Board of Tractor Test Engineers

# DRAWBAR PERFORMANCE

## (Unballasted - 2WD)

### 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—13th(3TD) Gear</b>									
99.9 (74.5)	7600 (33.8)	4.93 (7.93)	2192	6.0	0.584 (0.355)	12.13 (2.39)	183 (84)	57 (14)	30.1 (101.8)
<b>75% of Pull at Maximum Power—13th(3TD) Gear</b>									
76.4 (57.0)	5705 (25.4)	5.02 (8.09)	2200	4.3	0.637 (0.388)	11.12 (2.19)	183 (84)	57 (14)	30.1 (101.8)
<b>50% of Pull at Maximum Power—13th(3TD) Gear</b>									
51.8 (38.6)	3800 (16.9)	5.11 (8.22)	2203	2.9	0.755 (0.459)	9.39 (1.85)	183 (84)	57 (14)	30.1 (101.8)
<b>75% of Pull at Reduced Engine Speed—14th(4TB) Gear</b>									
76.7 (57.2)	5725 (25.5)	5.03 (8.09)	2102	4.8	0.597 (0.363)	11.88 (2.34)	183 (84)	59 (15)	30.1 (101.8)
<b>50% of Pull at Reduced Engine Speed—14th(4TB) Gear</b>									
52.2 (38.9)	3810 (16.9)	5.14 (8.27)	2118	3.3	0.698 (0.425)	10.15 (2.00)	181 (83)	59 (15)	30.1 (101.8)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
<b>6th(2TB) Gear</b>									
63.0 (47.0)	10335 (46.0)	2.29 (3.68)	2203	14.3	0.658 (0.400)	10.76 (2.12)	183 (84)	54 (12)	30.1 (101.8)
<b>7th(2TC) Gear</b>									
75.6 (56.4)	10320 (45.9)	2.75 (4.42)	2196	12.4	0.626 (0.381)	11.32 (2.23)	183 (84)	54 (12)	30.1 (101.8)
<b>8th (3TA) Gear</b>									
76.2 (56.8)	9870 (43.9)	2.90 (4.66)	2199	10.8	0.612 (0.372)	11.57 (2.28)	181 (83)	54 (12)	30.1 (101.8)
<b>9th(2TD) Gear</b>									
87.8 (65.5)	9980 (44.4)	3.30 (5.31)	2198	10.3	0.584 (0.355)	12.13 (2.39)	181 (83)	54 (12)	30.1 (101.8)
<b>10th(3TB) Gear</b>									
89.0 (66.4)	9710 (43.2)	3.44 (5.53)	2194	9.5	0.585 (0.356)	12.12 (2.39)	181 (83)	54 (12)	30.1 (101.8)
<b>11th(3TC) Gear</b>									
103.0 (76.8)	9385 (41.7)	4.12 (6.62)	2192	8.1	0.584 (0.355)	12.13 (2.39)	185 (85)	55 (13)	30.1 (101.8)
<b>12th(4TA) Gear</b>									
107.1 (79.9)	9510 (42.3)	4.23 (6.80)	2170	8.9	0.577 (0.351)	12.28 (2.42)	183 (84)	59 (15)	30.1 (101.8)
<b>13th(3TD) Gear</b>									
111.0 (82.8)	9230 (41.0)	4.51 (7.26)	2067	8.6	0.554 (0.337)	12.79 (2.52)	183 (84)	57 (14)	30.1 (101.8)
<b>14th(4TB) Gear</b>									
110.0 (82.0)	8765 (39.0)	4.70 (7.57)	2041	8.2	0.554 (0.337)	12.79 (2.52)	185 (85)	59 (15)	30.1 (101.8)
<b>15th(1LA) Gear</b>									
114.0 (85.1)	8830 (39.3)	4.85 (7.80)	2006	8.0	0.528 (0.321)	13.44 (2.65)	183 (84)	59 (15)	30.1 (101.8)
<b>16th(4TC) Gear</b>									
112.1 (83.6)	7800 (34.7)	5.39 (8.67)	1953	6.8	0.537 (0.327)	13.20 (2.60)	183 (84)	59 (15)	30.1 (101.8)
<b>17th(1LB) Gear</b>									
115.3 (86.0)	7735 (34.4)	5.59 (9.00)	1955	7.1	0.517 (0.314)	13.71 (2.70)	183 (84)	59 (15)	30.1 (101.8)
<b>18th(4TD) Gear</b>									
111.7 (83.3)	6565 (29.2)	6.38 (10.27)	1953	5.4	0.532 (0.324)	13.32 (2.63)	185 (85)	59 (15)	30.1 (101.8)
<b>19th(1LC) Gear</b>									
114.4 (85.3)	6405 (28.5)	6.70 (10.79)	1957	5.5	0.525 (0.320)	13.49 (2.66)	185 (85)	59 (15)	30.1 (101.8)
<b>20th(2LA) Gear</b>									
113.9 (84.9)	5800 (25.8)	7.36 (11.84)	1946	5.2	0.525 (0.320)	13.49 (2.66)	181 (83)	61 (16)	30.1 (101.8)
<b>21st(1LD) Gear</b>									
112.6 (84.0)	5360 (23.8)	7.88 (12.68)	1944	4.9	0.531 (0.323)	13.35 (2.63)	183 (84)	61 (16)	30.1 (101.8)
<b>22nd(2LB) Gear</b>									
111.7 (83.3)	4830 (21.5)	8.67 (13.95)	1945	4.4	0.539 (0.328)	13.15 (2.59)	185 (85)	61 (16)	30.1 (101.8)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	2WD dB(A)	Engaged dB(A)
At no load in 13th (3TD) gear	71.2	71.4
Bystander	--	--

### THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range: 17400 lbs (77.4 kN)

i) Opening pressure of relief valve: NA

one coupler set      two outlet sets combined

Sustained pressure of the open relief valve: 2815 psi (194 bar)      2815 psi (194 bar)

ii) Pump delivery rate at minimum pressure: 26.5 GPM (100.2 l/min)      28.4 GPM (107.6 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 22.5 GPM (85.2 l/min)      25.1 GPM (94.9 l/min)

Delivery pressure: 2160 psi (149 bar)      2235 psi (161 bar)

Power: 28.4 hp (21.2 kW)      32.7 Hp (24.4 kW)

### HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	31.7	805
B	15.7	400
C	21.0	534
D	19.5	495
E	11.6	295
F	12.2	310
G	36.4	925
H	2.0	50
I	16.9	430
J	24.2	615
K	25.2	640
L	48.2	1224
M	24.6	624
N	38.0	966
O	10.6	270
P	48.2	1225
Q	40.2	1020
R	36.3	923

