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2004

Nebraska Summary: S506 Challenger MT535B

Nebraska Tractor Test Lab

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SUMMARY OF OECD TESTS 2212 & 2213—NEBRASKA SUMMARY 506 CHALLENGER MT 535B AUTOPOWER IV DIESEL 32 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/ltr (l/h)	lb/hp.hr (kg/kW.h)	Hp.ltr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1100 rpm)					
105.9 (79.0)	2200	7.27 (27.53)	0.487 (0.296)	14.57 (2.87)	
Standard Power Take-off Speed(1000 rpm)					
112.9 (84.2)	2000	7.20 (27.25)	0.452 (0.273)	15.68 (3.09)	
Maximum Power (2 hours)					
116.3 (86.7)	1798	6.99 (26.46)	0.426 (0.259)	16.63 (3.28)	

VARYING POWER AND FUEL CONSUMPTION

105.9 (79.0)	2200	7.27 (27.53)	0.487 (0.296)	14.57 (2.87)	Air temperature
91.2 (68.0)	2214	6.56 (24.82)	0.510 (0.310)	13.90 (2.74)	73°F(23°C)
69.2 (51.6)	2236	5.46 (20.66)	0.559 (0.340)	12.68 (2.50)	Relative humidity
45.9 (34.2)	2256	4.37 (16.55)	0.675 (0.411)	10.51 (2.07)	46%
23.7 (17.7)	2276	3.26 (12.33)	0.973 (0.592)	7.29 (1.44)	Barometer
--	2295	2.19 (8.28)	--	--	30.1" Hg(101.9 kPa)

Maximum Torque - 373.7 lb.-ft. (506.7 Nm) at 1402 rpm
Maximum Torque Rise - 47.7%
Torque rise at 1750 engine rpm - 37%

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.ltr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Barom. inch Hg (kPa)
Maximum Power—12th(4TA) Gear								
79.1 (59.0)	6160 (27.4)	4.82 (7.76)	2202	5.0	0.597 (0.363)	11.88 (2.34)	187 (86)	59 (15)
75% of Pull at Maximum Power—12th(4TA) Gear								
60.3 (45.0)	4620 (20.6)	4.90 (7.88)	2217	4.2	0.678 (0.413)	10.46 (2.06)	183 (84)	59 (15)
50% of Pull at Maximum Power—12th(4TA) Gear								
41.0 (30.6)	3075 (13.7)	5.00 (8.05)	2233	2.4	0.808 (0.491)	8.78 (1.73)	183 (84)	59 (15)
75% of Pull at Reduced Engine Speed—15th(4TB) Gear								
60.3 (45.0)	4630 (20.6)	4.88 (7.85)	1895	4.1	0.568 (0.345)	12.50 (2.46)	183 (84)	59 (15)
50% of Pull at Reduced Engine Speed—15th(4TB) Gear								
40.9 (30.5)	3080 (13.7)	4.98 (8.02)	1907	2.9	0.665 (0.405)	10.66 (2.10)	185 (85)	59 (15)

Location of tests: Groupement d'Antony, Parc de Touvoie, BP 44 Antony, Cedex, France 92163
Dates of tests: May - June, 2004

Manufacturer: AGCO S.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) 0.851
Fuel weight 7.09 lbs/gal (0.850 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. 3711 K05 AVS **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.** M127032 **Tread width** rear 54.1" (1375 mm) to 86.8" (2205 mm) front 2WD - 65.4" (1660 mm) to 86.2" (2190 mm), FWA - 62.9" (1597 mm) to 80.0" (2033 mm) **Wheelbase** 2WD - 112.1" (2848 mm), FWA - 109.4" (2780 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 1.40 (2.26) second 1.65 (2.65) third 1.94 (3.12) fourth 2.12 (3.41) fifth 2.27 (3.65) sixth 2.48 (3.99) seventh 2.93 (4.71) eighth 3.14 (5.06) ninth 3.43 (5.52) tenth 3.67 (5.91) eleventh 4.34 (6.99) twelfth 4.87 (7.84) thirteenth 5.08 (8.17) fourteenth 5.26 (8.47) fifteenth 5.70 (9.18) sixteenth 6.16 (9.92) seventeenth 6.73 (10.83) eighteenth 7.27 (11.70) nineteenth 7.88 (12.68) twentieth 7.95 (12.79) twenty-first 8.51 (13.69) twenty-second 9.30 (14.97) twenty-third 10.98 (17.67) twenty-fourth 11.77 (18.94) twenty-fifth 12.86 (20.69) twenty-sixth 13.78 (22.17) twenty-seventh 16.26 (26.17) twenty-eighth 18.26 (29.38) twenty-ninth 19.03 (30.63) thirtieth 21.36 (34.38) thirty-first 25.22 (40.59) thirty-second 24.86 (40.00) reverse 1.40 (2.26), 1.65 (2.65), 1.94 (3.12), 2.12 (3.41), 2.27 (3.65), 2.48 (3.99), 2.93 (4.71), 3.14 (5.06), 3.43 (5.52), 3.67 (5.91), 4.34 (6.99), 4.87 (7.84), 5.08 (8.17), 5.26 (8.47), 5.70 (9.18), 6.16 (9.92), 6.73 (10.83), 7.27 (11.70), 7.88 (12.68), 7.95 (12.79), 8.51 (13.69),

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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
5th(1TD)Gear									
65.0 (48.5)	12345 (54.9)	1.98 (3.18)	2186	15.3	0.669 (0.407)	10.61 (2.09)	185 (85)	57 (14)	30.2 (102.2)
6th(2TB) Gear									
71.1 (53.0)	12160 (54.1)	2.19 (3.52)	2196	14.7	0.668 (0.406)	10.62 (2.09)	185 (85)	59 (15)	30.2 (102.2)
7th(2TC)Gear									
83.1 (62.0)	12095 (53.8)	2.58 (4.15)	2181	14.2	0.624 (0.379)	11.37 (2.24)	185 (85)	59 (15)	30.2 (102.2)
8th(3TA)Gear									
88.8 (66.2)	11915 (53.0)	2.79 (4.50)	2160	13.0	0.595 (0.362)	11.93 (2.35)	189 (87)	59 (15)	30.2 (102.2)
9th(2TD)Gear									
94.9 (70.8)	11625 (51.7)	3.06 (4.93)	2113	10.1	0.557 (0.339)	12.74 (2.51)	183 (84)	59 (15)	30.2 (102.2)
10th(3TB) Gear									
95.6 (71.3)	11080 (49.3)	3.24 (5.21)	2063	9.7	0.559 (0.340)	12.69 (2.50)	185 (85)	59 (15)	30.2 (102.1)
11th(3TC) Gear									
99.2 (74.0)	10230 (45.5)	3.64 (5.86)	1943	8.3	0.521 (0.317)	13.60 (2.68)	185 (85)	59 (15)	30.2 (102.1)
12th(4TA) Gear									
103.0 (76.8)	9960 (44.3)	3.88 (6.25)	1839	8.0	0.529 (0.322)	13.40 (2.64)	185 (85)	59 (15)	30.2 (102.1)
13th(3TD)Gear									
101.9 (76.0)	9240 (41.1)	4.14 (6.66)	1865	7.3	0.518 (0.315)	13.71 (2.70)	183 (84)	59 (15)	30.2 (102.2)
14th(1LA)Gear									
104.8 (78.2)	9475 (42.1)	4.15 (6.67)	1806	8.7	0.519 (0.316)	13.65 (2.69)	185 (85)	63 (17)	30.2 (102.1)
15th(4TB)Gear									
104.3 (77.8)	8715 (38.8)	4.49 (7.23)	1799	7.2	0.519 (0.316)	13.65 (2.69)	185 (85)	59 (15)	30.2 (102.2)
16th(1LB) Gear									
105.0 (78.3)	8070 (35.9)	4.88 (7.85)	1799	6.5	0.518 (0.315)	13.71 (2.70)	187 (86)	63 (17)	30.2 (102.1)
17th(4TC)Gear									
103.7 (77.3)	7250 (32.2)	5.36 (8.63)	1799	6.0	0.519 (0.316)	13.65 (2.69)	183 (84)	63 (17)	30.2 (102.1)
18th(1LC)Gear									
105.5 (78.7)	6810 (30.3)	5.81 (9.35)	1798	5.1	0.518 (0.315)	13.71 (2.70)	185 (85)	63 (17)	30.2 (102.1)
19th(4TD)Gear									
104.1 (77.6)	6170 (27.5)	6.32 (10.18)	1798	5.2	0.519 (0.316)	13.65 (2.69)	187 (86)	63 (17)	30.2 (102.1)
20th(2LA)Gear									
105.4 (78.6)	6195 (27.6)	6.38 (10.27)	1798	4.8	0.516 (0.314)	13.76 (2.71)	185 (85)	65 (18)	30.2 (102.1)
21st(1LD)Gear									
103.7 (77.3)	5675 (25.3)	6.85 (11.02)	1793	4.7	0.527 (0.320)	13.47 (2.65)	185 (85)	65 (18)	30.2 (102.1)
22nd(2LB)Gear									
102.1 (76.1)	5085 (22.6)	7.53 (12.11)	1798	4.8	0.535 (0.326)	13.24 (2.61)	185 (85)	65 (18)	30.2 (102.1)

9.30 (14.97), 10.98 (17.67), 11.77 (18.94), 12.86 (20.69), 13.78 (22.17), 16.26 (26.17), 18.26 (29.38), 19.03 (30.63), 21.36 (34.38), 25.22 (40.59), 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 1976 engine rpm or 1000 rpm at 2000 engine rpm **Unladen tractor mass** 2WD - 13140 lb (5960 kg), FWA - 13215 lb (5995 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. 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. **2212 & 2213**, Nebraska Summary 506, January 20, 2006.

Leonard L. Bashford
Director

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

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 580/70R38; **,15 (100)

Two 480/70R28; **,16 (110)

20.5 in (520 mm)

7925 lb (3595 kg)

5465 lb (2480 kg)

13395 lb (6075 kg)

2WD

Two 580/70R38; **,15(100)

Two 11.00-16; 8; 40 (275)

33.5 in (850 mm)

7805 lb (3540 kg)

5510 lb (2500 kg)

13315 lb (6040 kg)

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)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—12th(4TA) Gear									
79.8 (59.5)	6405 (28.5)	4.67 (7.52)	2205	7.8	0.632 (0.385)	11.22 (2.21)	187 (86)	73 (23)	30.0 (101.6)
75% of Pull at Maximum Power—12th(4TA) Gear									
61.2 (45.6)	4790 (21.3)	4.79 (7.71)	2217	5.8	0.689 (0.419)	10.30 (2.03)	187 (86)	73 (23)	30.0 (101.6)
50% of Pull at Maximum Power—12th(4TA) Gear									
41.7 (31.1)	3205 (14.3)	4.88 (7.85)	2240	5.1	0.847 (0.515)	8.38 (1.65)	185 (85)	73 (23)	30.0 (101.6)
75% of Pull at Reduced Engine Speed—15th(4TB) Gear									
60.7 (45.3)	4785 (21.3)	4.76 (7.66)	1890	6.4	0.592 (0.360)	11.98 (2.36)	183 (84)	75 (24)	30.0 (101.6)
50% of Pull at Reduced Engine Speed—15th(4TB) Gear									
42.0 (31.3)	3220 (14.3)	4.89 (7.87)	1917	5.2	0.713 (0.434)	9.95 (1.96)	181 (83)	75 (24)	30.0 (101.6)
MAXIMUM POWER IN SELECTED GEARS									
6th(2TB) Gear									
55.8 (41.6)	9600 (42.7)	2.18 (3.51)	2199	15.2	0.735 (0.447)	9.64 (1.90)	185 (85)	70 (21)	30.0 (101.6)
7th(2TC) Gear									
65.8 (49.1)	9530 (42.4)	2.59 (4.17)	2210	14.9	0.699 (0.425)	10.15 (2.00)	185 (85)	72 (22)	30.0 (101.6)
8th(3TA) Gear									
69.7 (52.0)	9295 (41.4)	2.81 (4.53)	2191	13.7	0.674 (0.410)	10.52 (2.07)	185 (85)	72 (22)	30.0 (101.6)
9th(2TD) Gear									
76.3 (56.9)	9250 (41.1)	3.09 (4.97)	2196	12.8	0.654 (0.398)	10.84 (2.14)	185 (85)	72 (22)	30.0 (101.6)
10th(3TB) Gear									
81.0 (60.4)	9050 (40.3)	3.36 (5.40)	2193	11.6	0.632 (0.384)	11.23 (2.21)	187 (86)	72 (22)	30.0 (101.6)
11th(3TC) Gear									
89.7 (66.9)	9170 (40.8)	3.67 (5.91)	2042	12.0	0.589 (0.358)	12.04 (2.37)	187 (86)	73 (23)	30.0 (101.6)
12th(4TA) Gear									
97.2 (72.5)	8680 (38.6)	4.20 (6.76)	2052	10.8	0.561 (0.341)	12.64 (2.49)	185 (85)	73 (23)	30.0 (101.6)
13th(3TD) Gear									
94.1 (70.2)	8365 (37.2)	4.22 (6.79)	1965	10.5	0.557 (0.339)	12.74 (2.51)	187 (86)	73 (23)	30.0 (101.6)
14th(1LA) Gear									
99.9 (74.5)	8835 (39.3)	4.24 (6.82)	1947	12.1	0.561 (0.341)	12.64 (2.49)	190 (88)	72 (22)	30.0 (101.6)
15th(4TB) Gear									
101.1 (75.4)	8205 (36.5)	4.62 (7.44)	1912	10.1	0.548 (0.334)	12.93 (2.55)	189 (87)	73 (23)	30.0 (101.6)
16th(1LB) Gear									
102.6 (76.5)	8205 (36.5)	4.69 (7.55)	1804	10.4	0.529 (0.322)	13.40 (2.64)	190 (88)	73 (23)	30.0 (101.6)
17th(4TC) Gear									
102.2 (76.2)	7430 (33.1)	5.16 (8.30)	1798	9.6	0.533 (0.324)	13.30 (2.62)	190 (88)	75 (24)	30.0 (101.6)
18th(1LC) Gear									
103.7 (77.3)	6930 (30.8)	5.61 (9.03)	1799	8.8	0.525 (0.319)	13.51 (2.66)	189 (87)	75 (24)	30.0 (101.6)
19th(4TD) Gear									
103.1 (76.9)	6270 (27.9)	6.17 (9.93)	1799	7.6	0.525 (0.320)	13.50 (2.66)	190 (88)	75 (24)	30.0 (101.6)
20th(2LA) Gear									
103.7 (77.3)	6270 (27.9)	6.20 (9.98)	1798	7.9	0.522 (0.318)	13.58 (2.68)	189 (87)	75 (24)	30.0 (101.6)
21st(1LD) Gear									
104.5 (77.9)	5885 (26.2)	6.66 (10.71)	1797	7.6	0.518 (0.315)	13.71 (2.70)	190 (88)	73 (23)	30.0 (101.6)
22nd(2LB) Gear									
102.2 (76.2)	5235 (23.3)	7.32 (11.78)	1798	7.0	0.524 (0.319)	13.54 (2.67)	192 (89)	75 (24)	30.0 (101.6)

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	2WD dB(A)	Engaged dB(A)
At no load in 12th (4TA) gear	71.0	71.0
Bystander	--	--

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range: 8923 lbs (39.7 kN)

i) Opening pressure of relief valve: NA

Sustained pressure of the open relief valve: 2830 psi (195 bar) one coupler set 2830 psi (195 bar) two outlet sets combined

ii) Pump delivery rate at minimum pressure: 28.1 GPM (106.4 l/min) 29.6 GPM (112.0 l/min)

iii) Pump delivery rate at maximum
 hydraulic power: 24.2 GPM (91.5 l/min) 27.2 GPM (103.0 l/min)
 Delivery pressure: 2045 psi (141 bar) 2090 psi (144 bar)
 Power: 28.8 hp (21.5 kW) 33.1 Hp (24.7 kW)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (bar)	2800 (193)
Location:	lift cylinder
Hydraulic oil temperature: °F (°C)	149 (65)
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2520 psi (174 Bar)

Hitch point distance to ground level in. (mm)	8.0 (203)	15.1 (384)	22.0 (559)	29.3 (744)	36.2 (919)
Lift force on frame lb	12539	11933	11629	11129	9939
" " " " " " (kN)	(55.8)	(53.1)	(51.7)	(49.5)	(44.2)

HITCH DIMENSIONS AS TESTED—NO LOAD

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	27.6	702	28.2	716
B	11.6	295	11.6	295
C	13.9	354	13.9	354
D	13.0	330	13.0	330
E	7.9	200	7.9	200
F	10.2	260	10.2	260
G	32.3	820	32.3	820
H	0.3	8	0.3	8
I	15.3	389	15.3	389
J	22.1	560	22.1	560
K	21.5	545	21.5	545
L	40.9	1040	40.9	1040
M	22.2	565	22.2	565
N	37.0	940	37.0	940
O	8.0	203	8.0	203
P	41.1	1043	46.1	1170
Q	36.0	914	36.0	914
R	29.4	748	29.4	748

