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January 2005

## Nebraska Summary 545: Massey Ferguson 8450 Diesel Dyna-Step Transmission

Nebraska Tractor Test Lab

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# SUMMARY OF OECD TEST 2321-NEBRASKA SUMMARY 545

## MASSEY FERGUSON 8450 DIESEL

## DYNA-STEP TRANSMISSION

### 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—1082rpm)					
186.5 (139.1)	2201	11.35 (42.95)	0.424 (0.258)	16.45 (3.24)	
Standard Power Take-off Speed(1000rpm)					
209.9 (156.5)	2034	11.49 (43.49)	0.381 (0.232)	18.27 (3.60)	
Maximum Power (2 hours)					
210.4 (156.9)	1999	11.28 (42.69)	0.373 (0.227)	18.68 (3.68)	
VARYING POWER AND FUEL CONSUMPTION					
186.5 (139.1)	2201	11.35 (42.95)	0.424 (0.258)	16.45 (3.24)	Air temperature
160.9 (120.0)	2237	10.04 (38.04)	0.436 (0.265)	15.99 (3.15)	63°F (17°C)
121.6 (90.7)	2248	8.18 (30.97)	0.468 (0.285)	14.87 (2.93)	Relative humidity
81.4 (60.7)	2260	6.07 (22.96)	0.519 (0.316)	13.40 (2.64)	35%
40.8 (30.4)	2270	4.12 (15.58)	0.704 (0.428)	9.90 (1.95)	Barometer
--	2279	2.45 (9.27)	--	--	29.2" Hg (98.8 kPa)
--			--	--	
Maximum Torque - 645 lb.-ft. (875 Nm) at 1200 rpm					
Maximum Torque Rise - 45.1%					
Torque rise at 1800 engine rpm - 33%					

### 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—Turtle 12									
155.2 (115.7)	12175 (54.16)	4.78 (7.69)	2201	4.2	0.507 (0.308)	13.71 (2.70)	176 (80)	61 (16)	29.6 (100.2)
75% of Pull at Maximum Power—Turtle 12									
120.3 (89.7)	9115 (40.54)	4.95 (7.97)	2243	3.2	0.543 (0.330)	12.79 (2.52)	178 (81)	61 (16)	29.6 (100.2)
50% of Pull at Maximum Power—Turtle 12									
81.3 (60.6)	6045 (26.88)	5.04 (8.12)	2252	2.1	0.616 (0.375)	11.27 (2.22)	178 (81)	61 (16)	29.6 (100.2)
75% of Pull at Reduced Engine Speed—Turtle 13									
120.2 (89.6)	9105 (40.50)	4.95 (7.97)	1935	3.1	0.458 (0.279)	15.18 (2.99)	181 (83)	61 (16)	29.6 (100.2)
50% of Pull at Reduced Engine Speed—Turtle 13									
81.9 (61.1)	6060 (26.96)	5.07 (8.16)	1949	2.0	0.507 (0.309)	13.70 (2.70)	181 (83)	61 (16)	29.6 (100.2)

**Location of tests:** DLG - Test Centre, Technology and Farm inputs, Max-Eyth-Weg 1, D-64823 Gross-Umstadt, Germany

**Dates of tests:** March - May, 2005

**Manufacturer:** AGCO S.A. BP 60307, Avenue Blaise Pascal, 60026 Beauvais, France

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.836 **Fuel weight** 6.96 lbs/gal (0.8346 kg/l) **Oil SAE 10W40 API service classification** CH4 **Transmission and hydraulic lubricant** BP STOU 10W/40 **Front axle lubricant** SAE 85W90 API GL5

**ENGINE:** Make Sisu Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** P08255 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.252" x 5.276" (108.0 mm x 134.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 449 cu in (7365 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** front wheel assist **Serial No.** N174999 **Tread width** rear 66.9" (1699 mm) to 91.6" (2326 mm) front 72.5" (1842 mm) to 78.6" (1996 mm) **Wheelbase** 121.1" (3075 mm) **Hydraulic control system** direct engine drive **Transmission** AGCO Dynastep A combination of mechanical and hydrostatic sections are electronically controlled to give the travel speeds shown. The transmission has two mechanical ranges. **Nominal travel speeds mph (km/h)** Forward: Low range 1st-1.1 (1.8), 2nd-1.4 (2.2), 3rd-1.6 (2.6), 4th-1.9 (3.0), 5th-2.1 (3.4), 6th-2.4 (3.8), 7th-2.6 (4.2), 8th-3.0 (4.8), 9th-3.4 (5.4), 10th-3.7 (6.0), 11th-4.2 (6.8), 12th-4.8 (7.8), 13th - 5.6 (9.0), 14th - 6.5 (10.4), 15th - 7.3 (11.8), 16th - 8.3 (13.4), 17th - 9.6 (15.4), 18th - 11.1 (17.8), 19th-12.8 (20.6), 20th-14.8 (23.8), 21st-17.0 (27.4) High range: 1st - 2.4 (3.8), 2nd - 2.6 (4.2), 3rd - 3.0 (4.8), 4th - 3.4 (5.4), 5th - 3.7 (6.0), 6th - 4.2 (6.8), 7th - 4.7 (7.6), 8th - 5.3 (8.6), 9th-6.0 (9.6), 10th - 6.6 (10.6), 11th-7.3 (11.8), 12th-8.2 (13.2), 13th - 9.2 (14.8), 14th-10.3 (16.6), 15th-11.7 (18.8), 16th - 13.3 (21.4), 17th - 15.0 (24.2), 18th - 17.0 (27.4), 19th-19.4 (31.2), 20th-22.0 (35.4), 21st-25.0 (40.2) Reverse Low range: 1.1 (1.8), 1.4 (2.2), 1.6 (2.6), 1.9 (3.0), 2.1 (3.4), 2.4 (3.8), 2.6 (4.2), 3.0 (4.8), 3.4 (5.4), 3.7 (6.0), 4.2 (6.8), 4.8 (7.8), 5.6 (9.0), 6.5 (10.4), 7.3 (11.8), 8.3 (13.4), 9.6 (15.4), 11.1 (17.8)

## 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)
Turtle 9								
151.4 (112.9)	19795 (88.06)	2.87 (4.62)	2096	15.0	0.520 (0.316)	13.36 (2.63)	178 (81)	29.6 (100.2)
Turtle 10								
169.4 (126.3)	19560 (87.01)	3.25 (5.23)	2002	10.3	0.464 (0.282)	14.97 (2.95)	176 (80)	29.6 (100.2)
Turtle 11								
175.5 (130.9)	17085 (76.01)	3.85 (6.20)	2000	6.4	0.447 (0.272)	15.58 (3.07)	181 (83)	29.6 (100.2)
Turtle 12								
174.7 (130.3)	15345 (68.27)	4.27 (6.87)	2001	5.5	0.452 (0.275)	15.38 (3.03)	180 (82)	29.6 (100.2)
Turtle 13								
176.2 (131.4)	12935 (57.55)	5.11 (8.22)	2003	4.4	0.447 (0.272)	15.53 (3.06)	180 (82)	29.6 (100.2)
Turtle 14								
175.1 (130.6)	11350 (50.49)	5.79 (9.31)	2002	3.6	0.450 (0.274)	15.43 (3.04)	181 (83)	29.6 (100.2)
Turtle 15								
174.7 (130.3)	9880 (43.95)	6.63 (10.67)	2002	3.2	0.452 (0.275)	15.38 (3.03)	181 (83)	29.6 (100.2)
Turtle 16								
173.5 (129.4)	8720 (38.78)	7.46 (12.01)	2003	2.8	0.456 (0.278)	15.23 (3.00)	183 (84)	29.6 (100.2)
Turtle 17								
170.8 (127.4)	7375 (32.80)	8.69 (13.98)	2003	2.6	0.459 (0.279)	15.13 (2.98)	180 (82)	29.6 (100.2)
Rabbit 7								
166.6 (124.2)	14780 (65.75)	4.23 (6.80)	2000	5.3	0.473 (0.288)	14.67 (2.89)	180 (82)	29.6 (100.2)
Rabbit 8								
169.6 (126.5)	13345 (59.37)	4.77 (7.67)	2001	4.7	0.464 (0.282)	14.97 (2.95)	180 (82)	29.6 (100.2)
Rabbit 9								
171.5 (127.9)	11975 (53.26)	5.37 (8.65)	2001	4.0	0.459 (0.279)	15.13 (2.98)	178 (81)	29.6 (100.2)
Rabbit 10								
171.0 (127.5)	10910 (48.53)	5.88 (9.46)	2002	3.7	0.460 (0.280)	15.08 (2.97)	183 (84)	29.6 (100.2)
Rabbit 11								
171.6 (128.0)	9850 (43.82)	6.53 (10.51)	2002	3.3	0.458 (0.279)	15.18 (2.99)	185 (85)	29.6 (100.2)
Rabbit 12								
172.3 (128.5)	8380 (37.27)	7.71 (12.41)	2002	3.1	0.456 (0.278)	15.23 (3.00)	185 (85)	29.6 (100.2)
Rabbit 13								
170.6 (127.2)	7775 (34.59)	8.23 (13.24)	2005	2.5	0.461 (0.281)	15.07 (2.97)	178 (81)	29.6 (100.2)

High range: 2.4(3.8), 2.6(4.2), 3.0(4.8), 3.4(5.4), 3.7(6.0), 4.2(6.8), 4.7(7.6), 5.3(8.6), 6.0(9.6), 6.6(10.6), 7.3(11.8), 8.2(13.2), 9.2(14.8), 10.3(16.6), 11.7(18.8) **Clutch** a foot pedal controls the hydrostatic oil flow **Brakes** multiple wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1588 engine rpm or 1000 rpm at 2033 engine rpm **Unladen tractor mass** 19910 lb (9030 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 claim of 39.0 GPM (147 lpm) flow at the remote outlets. 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 Report No. **2321**, Nebraska Summary 545, August 23, 2006.

Leonard L. Bashford  
Director

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

## TIRES, BALLAST AND WEIGHT

**Rear tires** - No., size, ply & psi (kPa)

Ballast - Duals (total)

- Cast iron (total)

**Front tires** - No., size, ply & psi (kPa)

Ballast - Liquid (total)

- Cast Iron (total)

**Height of Drawbar**

**Static Weight with operator**- Rear

- Front

- Total

### With Ballast

Four 480/80R46; \*\*\*, 10 (65)

2190 lb (993 kg)

1005 lb (455 kg)

Two 14.9R34; \*\*\*, 30 (210)

None

1215 lb (552 kg)

20.5 in (520 mm)

15170 lb (6880 kg)

9315 lb (4225 kg)

24485 lb (11105 kg)

### Without Ballast

Two 650/85R38; \*\*\*, 12 (80)

None

None

Two 600/70R28; \*\*\*, 12 (80)

None

None

20.5 in (520 mm)

12280 lb (5570 kg)

7795 lb (3535 kg)

20075 lb (9105 kg)

# DRAWBAR PERFORMANCE

## (Ballasted - 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 cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—Turtle 12</b>									
153.0 (114.1)	11670 (51.90)	4.92 (7.91)	2200	4.4	0.507 (0.309)	13.70 (2.70)	174 (79)	54 (12)	29.5 (100.0)
<b>75% of Pull at Maximum Power—Turtle 12</b>									
118.0 (88.0)	8725 (38.80)	5.07 (8.16)	2242	3.5	0.550 (0.335)	12.63 (2.49)	176 (80)	54 (12)	29.5 (100.0)
<b>50% of Pull at Maximum Power—Turtle 12</b>									
79.5 (59.3)	5775 (25.70)	5.16 (8.31)	2251	2.8	0.639 (0.389)	10.86 (2.14)	176 (80)	54 (12)	29.5 (100.0)
<b>75% of Pull at Reduced Engine Speed—Turtle 13</b>									
118.4 (88.3)	8725 (38.82)	5.09 (8.19)	2009	3.5	0.480 (0.292)	14.47 (2.85)	174 (79)	52 (11)	29.5 (100.0)
<b>50% of Pull at Reduced Engine Speed—Turtle 13</b>									
79.9 (59.6)	5780 (25.72)	5.19 (8.35)	2017	2.8	0.554 (0.337)	12.54 (2.47)	171 (77)	52 (11)	29.5 (100.0)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
Turtle 7									
150.3 (112.1)	24905 (110.79)	2.26 (3.64)	2128	15.0	0.523 (0.318)	13.30 (2.62)	174 (79)	48 (9)	29.5 (100.0)
Turtle 8									
167.5 (124.9)	23610 (105.03)	2.66 (4.28)	2001	11.1	0.470 (0.286)	14.77 (2.91)	174 (79)	46 (8)	29.5 (100.0)
Turtle 9									
169.9 (126.7)	22115 (98.37)	2.88 (4.64)	2001	9.1	0.464 (0.282)	14.97 (2.95)	178 (81)	55 (13)	29.4 (99.6)
Turtle 10									
173.9 (129.7)	19855 (88.31)	3.29 (5.29)	2001	7.4	0.452 (0.275)	15.38 (3.03)	176 (80)	55 (13)	29.4 (99.5)
Turtle 11									
174.7 (130.3)	16840 (74.90)	3.89 (6.26)	2000	5.9	0.450 (0.274)	15.43 (3.04)	178 (81)	55 (13)	29.4 (99.5)
Turtle 12									
174.9 (130.4)	14410 (64.09)	4.55 (7.32)	2001	5.2	0.450 (0.274)	15.43 (3.04)	181 (83)	61 (16)	29.5 (100.0)
Turtle 13									
175.0 (130.5)	13155 (58.52)	4.99 (8.03)	2001	4.8	0.450 (0.274)	15.43 (3.04)	180 (82)	61 (16)	29.5 (100.0)
Turtle 14									
172.5 (128.6)	11205 (49.85)	5.77 (9.29)	2001	4.2	0.455 (0.276)	15.29 (3.01)	180 (82)	63 (17)	29.5 (100.0)
Turtle 15									
171.1 (127.6)	9775 (43.47)	6.56 (10.57)	2004	3.6	0.460 (0.280)	15.12 (2.98)	180 (82)	63 (17)	29.5 (100.0)
Turtle 16									
166.2 (123.9)	8240 (36.65)	7.56 (12.17)	2002	3.5	0.472 (0.287)	14.71 (2.90)	176 (80)	59 (15)	29.4 (99.5)
Turtle 17									
163.6 (122.0)	7240 (32.21)	8.47 (13.64)	2002	3.1	0.480 (0.292)	14.45 (2.85)	180 (82)	59 (15)	29.4 (99.5)
Rabbit 7									
165.2 (123.2)	14815 (65.89)	4.18 (6.73)	2000	5.4	0.475 (0.289)	14.62 (2.88)	180 (82)	63 (17)	29.5 (100.0)
Rabbit 8									
169.6 (126.5)	13250 (58.93)	4.80 (7.73)	2002	5.0	0.464 (0.282)	14.97 (2.95)	178 (81)	61 (16)	29.5 (100.0)
Rabbit 9									
169.0 (126.0)	11825 (52.61)	5.36 (8.62)	2001	4.7	0.463 (0.281)	15.02 (2.96)	176 (80)	52 (11)	29.6 (100.2)
Rabbit 10									
169.2 (126.2)	10640 (47.33)	5.96 (9.60)	2002	4.4	0.463 (0.282)	15.01 (2.96)	180 (82)	52 (11)	29.6 (100.1)
Rabbit 11									
169.4 (126.3)	9595 (42.69)	6.62 (10.65)	2001	4.0	0.463 (0.282)	15.01 (2.96)	181 (83)	54 (12)	29.6 (100.1)
Rabbit 12									
167.5 (124.9)	8255 (36.73)	7.61 (12.24)	2002	3.2	0.467 (0.284)	14.87 (2.93)	180 (82)	54 (12)	29.6 (100.1)
Rabbit 13									
166.2 (123.9)	7620 (33.89)	8.18 (13.17)	2004	3.1	0.472 (0.287)	14.72 (2.90)	178 (81)	59 (15)	29.6 (100.1)

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in Turtle-4.6 mph (7.5 km/h)- no load	71.0
Bystander	---

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

CATEGORY: III	
Quick Attach: None	
Maximum force exerted through whole range:	14648 lbs (65.2 kN)
i) Opening pressure of relief valve:	NA
Sustained pressure of the open relief valve:	2875 psi (192 bar)
ii) Pump delivery rate at minimum pressure:	37.4 GPM (141.5 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	35.3 GPM (133.7 l/min)
Delivery pressure:	2320 psi (160 bar)
Power:	47.7 HP (35.6 kW)

	OECD test		SAE test	
	inch	mm	inch	mm
A	31.9	809	30.4	773
B	14.2	360	14.2	360
C	17.7	449	17.7	449
D	15.4	390	15.4	390
E	11.8	300	8.9	225
F	13.0	330	13.0	330
G	36.2	920	36.2	920
H	3.4	85	3.4	85
I	15.7	400	18.7	475
J	23.2	590	23.2	590
K	26.8	680	26.8	680
L	50.4	1281	50.4	1281
M	27.9	709	27.9	709
N	41.1	1045	41.1	1045
O	9.0	230	8.0	203
P	50.2	1275	45.2	1150
Q	39.3	999	38.5	978
R	34.3	872	34.8	886

### THREE POINT HITCH PERFORMANCE SAE Test

Observed Maximum Pressure psi.(bar)	2800(193)
Location:	lift cylinder
Hydraulic oil temperature: °F(°C)	150(66)
Location:	hydraulic sump
Category:	III
Quick attach:	None

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

Hitch point distance to ground level in. (mm)	8.2 (208)	16.1 (409)	24.1 (612)	32.1 (815)	40.0 (1016)
Lift force on frame lb	16994	18242	18320	18191	16921
" " " " " " (kN)	(75.6)	(81.1)	(81.5)	(80.9)	(75.3)

