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January 2004

## Nebraska Summary 474: Massey Ferguson 7490 DYNAV T Diesel Dyna Step Transmission

Nebraska Tractor Test Lab

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# SUMMARY OF OECD TEST 2197-NEBRASKA SUMMARY 474

## MASSEY FERGUSON 7490 DYNAV T 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed—(PTO speed—1082 rpm)</b>					
143.2 (106.8)	2201	9.36 (35.44)	0.455 (0.276)	15.28 (3.01)	
<b>Standard Power Take-off Speed(1000 rpm)</b>					
153.1 (114.2)	2034	9.06 (34.31)	0.411 (0.250)	16.90 (3.33)	
<b>Maximum Power (2 hours)</b>					
154.4 (115.1)	1900	8.78 (33.23)	0.395 (0.240)	17.57 (3.46)	

#### VARYING POWER AND FUEL CONSUMPTION

143.2 (106.8)	2201	9.36 (35.44)	0.455 (0.276)	15.28 (3.01)	Air temperature
123.2 (91.9)	2237	8.54 (32.32)	0.482 (0.293)	14.42 (2.84)	
94.0 (70.1)	2264	6.72 (25.43)	0.496 (0.302)	14.01 (2.76)	Relative humidity
63.2 (47.1)	2286	5.39 (20.40)	0.593 (0.361)	11.71 (2.31)	27%
32.1 (23.9)	2315	3.82 (14.46)	0.827 (0.503)	8.39 (1.65)	Barometer
--	2335	2.49 (9.41)	--	--	29.7" Hg (100.6 kPa)

Maximum Torque - 500 lb.-ft. (679 Nm) at 1096 rpm  
Maximum Torque Rise - 46.7%  
Torque rise at 1800 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)
<b>Maximum Power—Turtle 12</b>									
115.1 (85.8)	9020 (40.12)	4.78 (7.70)	2201	4.3	0.561 (0.341)	12.39 (2.44)	160 (71)	72 (22)	29.2 (99.0)
<b>75% of Pull at Maximum Power—Turtle 12</b>									
89.7 (66.9)	6785 (30.18)	4.96 (7.98)	2247	3.0	0.598 (0.364)	11.61 (2.29)	158 (70)	70 (21)	29.2 (99.0)
<b>50% of Pull at Maximum Power—Turtle 12</b>									
61.6 (45.9)	4550 (20.23)	5.08 (8.17)	2273	1.9	0.707 (0.430)	9.82 (1.93)	156 (69)	70 (21)	29.2 (99.0)
<b>75% of Pull at Reduced Engine Speed—Turtle 14</b>									
89.8 (67.0)	6775 (30.14)	4.97 (8.00)	1681	3.0	0.495 (0.301)	14.02 (2.76)	154 (68)	73 (23)	29.2 (99.0)
<b>50% of Pull at Reduced Engine Speed—Turtle 14</b>									
61.4 (45.8)	4565 (20.30)	5.04 (8.11)	1673	2.0	0.528 (0.321)	13.15 (2.59)	156 (69)	73 (23)	29.2 (99.0)

**Location of tests:** DLG testing Station for Agricultural Machinery, Max-Eyth-Weg 1 D-64823 Gros - Umstadt, Germany

**Dates of tests:** December 2003 to May, 2004  
Sound tests: January 19, 2006

**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)** 0.834  
**Fuel weight** 6.94 lbs/gal (0.8322 kg/l) **Oil SAE** 10W40 **API service classification** CF4  
**Transmission and hydraulic lubricant** BP Terrac Tractan 9 10W/40 **Front axle lubricant** SAE 85W140 API GL-5

**ENGINE: Make** Sisu Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler  
**Serial No.** M20369 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.252" x 4.724" (108.0 mm x 120.0 mm) **Compression ratio** 18.5 to 1 **Displacement** 402 cu in (6596 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** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS: Type** front wheel assist **Serial No.** M309065 **Tread width** rear 63.1" (1604 mm) to 70.8" (1798 mm) front 67.0" (1702 mm) to 75.4" (1915 mm) **Wheelbase** 118.4" (3008 mm) **Hydraulic control system** direct engine drive **Transmission** AGCO Stepshift. 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-4.8 (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)	Consumption Hp.hr/gal (kW.h/l)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Turtle 10									
113.7 (84.8)	14565 (64.79)	2.93 (4.71)	1908	14.8	0.532 (0.323)	13.06 (2.57)	158 (70)	66 (19)	29.2 (99.0)
Turtle 11									
120.8 (90.1)	13025 (57.94)	3.48 (5.60)	1897	8.9	0.495 (0.301)	14.03 (2.76)	160 (71)	66 (19)	29.2 (99.0)
Turtle 12									
123.1 (91.8)	11610 (51.65)	3.98 (6.40)	1905	6.8	0.487 (0.296)	14.26 (2.81)	158 (70)	61 (16)	29.2 (99.0)
Turtle 13									
123.8 (92.3)	9555 (42.50)	4.86 (7.82)	1903	4.9	0.485 (0.295)	14.31 (2.82)	158 (70)	64 (18)	29.2 (99.0)
Turtle 14									
123.5 (92.1)	8545 (38.02)	5.42 (8.72)	1906	4.2	0.487 (0.296)	14.26 (2.81)	160 (71)	68 (20)	29.2 (99.0)
Turtle 15									
123.4 (92.0)	7580 (33.71)	6.10 (9.82)	1898	3.6	0.487 (0.296)	14.26 (2.81)	160 (71)	64 (18)	29.2 (99.0)
Turtle 16									
121.4 (90.5)	6435 (28.63)	7.07 (11.38)	1897	2.9	0.495 (0.301)	14.03 (2.76)	160 (71)	64 (18)	29.2 (99.0)
Turtle 17									
120.0 (89.5)	5570 (24.78)	8.08 (13.00)	1901	2.4	0.499 (0.304)	13.91 (2.74)	160 (71)	63 (17)	29.2 (99.0)
Turtle 18									
117.1 (87.3)	4975 (22.13)	8.83 (14.21)	1902	2.1	0.509 (0.309)	13.65 (2.69)	158 (70)	64 (18)	29.2 (99.0)
Rabbit 10									
121.2 (90.4)	8430 (37.50)	5.39 (8.68)	1904	4.0	0.495 (0.301)	14.02 (2.76)	158 (70)	61 (16)	29.2 (99.0)
Rabbit 11									
122.5 (91.4)	7370 (32.78)	6.23 (10.03)	1903	3.4	0.490 (0.298)	14.16 (2.79)	156 (69)	64 (18)	29.2 (99.0)
Rabbit 12									
121.9 (90.9)	6460 (28.73)	7.08 (11.39)	1895	2.8	0.489 (0.297)	14.19 (2.79)	158 (70)	64 (18)	29.2 (99.0)
Rabbit 13									
121.1 (90.3)	5835 (25.96)	7.78 (12.52)	1892	2.5	0.494 (0.300)	14.06 (2.77)	160 (71)	66 (19)	29.2 (99.0)
Rabbit 14									
120.8 (90.1)	5065 (22.52)	8.95 (14.40)	1896	2.1	0.496 (0.302)	14.01 (2.76)	160 (71)	64 (18)	29.2 (99.0)

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** 540rpm at 2062 engine rpm or 1000rpm at 2033 engine rpm **Unladen tractor mass** 15145 lb (6870 kg)

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

**NOTE 1:** The performance figures on this report are the result of replacing the electronic engine control module of the Massey Ferguson 7495 with the Massey Ferguson 7490 module.

**NOTE 2:** The engine of the Massey Ferguson 7490 has two different injection pump characteristics. Power boosted - for travel speeds above 9.3 mph (15.0 kmh) or above 5.0 mph (8.0 kmh) with PTO engaged. Standard for all other conditions.

**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 Report No. **2197**, Nebraska Summary 474, March 15, 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)

- Liquid(none)

**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 480/80R42; \*\*,6 (40)

1770 lb (803 kg)

None

Two 380/85R30; \*\*,12 (80)

None

None

21.7 in (550 mm)

11330 lb (5140 kg)

5535 lb (2510 kg)

16865 lb (7650 kg)

**Without Ballast**

Two 520/85R42; \*\*,12(80)

None

None

Two 540/65R30; \*\*,12(80)

None

None

21.7 in (550 mm)

9635 lb (4370 kg)

5675 lb (2575 kg)

15310 lb (6945 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 (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—Turtle 12</b>									
114.6 (85.4)	8810 (39.20)	4.88 (7.85)	2198	3.9	0.564 (0.343)	12.28 (2.42)	158 (70)	66 (19)	29.4 (99.6)
<b>75% of Pull at Maximum Power—Turtle 12</b>									
88.7 (66.1)	6600 (29.36)	5.04 (8.11)	2244	3.1	0.618 (0.376)	11.22 (2.21)	158 (70)	66 (19)	29.4 (99.6)
<b>50% of Pull at Maximum Power—Turtle 12</b>									
60.7 (45.3)	4410 (19.62)	5.16 (8.31)	2271	2.3	0.725 (0.441)	9.59 (1.89)	154 (68)	66 (19)	29.4 (99.6)
<b>75% of Pull at Reduced Engine Speed—Turtle 13</b>									
89.9 (67.0)	6675 (29.69)	5.05 (8.13)	1960	3.2	0.524 (0.319)	13.25 (2.61)	156 (69)	70 (21)	29.4 (99.6)
<b>50% of Pull at Reduced Engine Speed—Turtle 13</b>									
60.7 (45.3)	4395 (19.55)	5.18 (8.34)	1960	2.3	0.615 (0.374)	11.30 (2.23)	153 (67)	70 (21)	29.4 (99.6)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
Turtle 9									
108.1 (80.6)	16960 (75.44)	2.39 (3.85)	2065	15.0	0.582 (0.354)	11.93 (2.35)	160 (71)	68 (20)	29.4 (99.6)
Turtle 10									
121.6 (90.7)	13990 (62.22)	3.26 (5.24)	1897	7.3	0.492 (0.299)	14.11 (2.78)	160 (71)	68 (20)	29.4 (99.6)
Turtle 11									
122.8 (91.6)	12815 (57.00)	3.59 (5.79)	1899	5.9	0.487 (0.296)	14.26 (2.81)	158 (70)	68 (20)	29.4 (99.6)
Turtle 12									
122.6 (91.4)	11290 (50.23)	4.07 (6.55)	1900	5.2	0.487 (0.296)	14.31 (2.82)	160 (71)	66 (19)	29.4 (99.6)
Turtle 13									
120.6 (89.9)	9480 (42.17)	4.77 (7.67)	1901	4.5	0.498 (0.303)	13.96 (2.75)	160 (71)	64 (18)	29.4 (99.6)
Turtle 14									
120.3 (89.7)	8125 (36.15)	5.55 (8.94)	1903	3.5	0.496 (0.302)	13.96 (2.75)	160 (71)	66 (19)	29.4 (99.6)
Turtle 15									
118.3 (88.2)	7240 (32.21)	6.13 (9.86)	1896	3.2	0.505 (0.307)	13.71 (2.70)	158 (70)	66 (19)	29.4 (99.6)
Turtle 16									
118.1 (88.1)	6275 (27.92)	7.06 (11.36)	1896	2.9	0.506 (0.308)	13.71 (2.70)	158 (70)	64 (18)	29.4 (99.6)
Turtle 17									
113.2 (84.4)	5195 (23.12)	8.17 (13.15)	1896	2.3	0.523 (0.318)	13.30 (2.62)	160 (71)	66 (19)	29.4 (99.6)
Turtle 18									
111.8 (83.4)	4640 (20.64)	9.04 (14.54)	1900	2.1	0.533 (0.324)	13.05 (2.57)	158 (70)	66 (19)	29.4 (99.6)
Rabbit 10									
117.9 (87.9)	8065 (35.87)	5.48 (8.83)	1895	3.6	0.505 (0.307)	13.76 (2.71)	156 (69)	66 (16)	29.4 (99.6)
Rabbit 11									
117.3 (87.5)	7005 (31.16)	6.28 (10.11)	1905	3.3	0.510 (0.311)	13.60 (2.68)	153 (67)	66 (16)	29.4 (99.6)
Rabbit 12									
117.5 (87.6)	6305 (28.05)	6.99 (11.24)	1895	3.2	0.509 (0.309)	13.65 (2.69)	154 (68)	59 (15)	29.4 (99.6)
Rabbit 13									
115.9 (86.4)	5535 (24.61)	7.85 (12.63)	1897	2.6	0.514 (0.313)	13.50 (2.66)	156 (69)	63 (17)	29.4 (99.6)
Rabbit 14									
116.9 (87.2)	4870 (21.66)	9.00 (14.49)	1892	2.6	0.512 (0.312)	13.55 (2.67)	154 (68)	63 (17)	29.4 (99.6)

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in T13	70.4
Bystander in R21	86.4

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

CATEGORY: III

Quick Attach: None

Maximum force exerted through whole range: 14283 lbs (63.5 kN)

i) Opening pressure of relief valve: NA

Sustained pressure of the open relief valve: 2875 psi (198 bar)

ii) Pump delivery rate at minimum pressure: 32.2 GPM (122.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 29.0 GPM (109.7 l/min)

Delivery pressure: 2610 psi (180 bar)

Power: 44.1 HP (32.9 kW)

### HITCH DIMENSIONS AS TESTED - NO LOAD

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	30.3	768	29.7	754
B	14.0	355	14.0	355
C	13.7	347	13.7	347
D	12.0	305	12.0	305
E	12.6	321	12.6	321
F	10.0	255	10.0	255
G	34.2	870	34.2	870
H	2.4	60	2.4	60
I	18.7	476	18.7	476
J	24.2	615	24.2	615
K	27.2	690	27.2	690
L	46.3	1175	46.3	1175
M	26.2	665	26.2	665
N	40.6	1030	40.6	1030
O	8.0	203	9.0	230
P	46.2	1173	51.2	1300
Q	37.3	947	39.5	1003
R	29.9	759	29.3	744

### THREE POINT HITCH PERFORMANCE - SAE Test

Observed Maximum Pressure psi.(bar) 2850(197)

Location: lift cylinder

Hydraulic oil temperature: °F(°C) 148(64)

Location: hydraulic sump

Category: III

Quick attach: None

SAE Static Test—System pressure 2665 psi (177 Bar)

Hitch point distance to ground level in.(mm)	8.2(208)	14.4(366)	20.8(528)	27.2(691)	33.6(853)	40.0(1016)
Lift force on frame lb	19719	17748	17721	18009	17874	16992
" " " " " " (kN)	(87.7)	(78.9)	(78.8)	(79.5)	(79.5)	(75.6)

