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January 1999

## Nebraska Summary 318: Massey Ferguson 8220 Diesel 18-Speed

Nebraska Tractor Test Lab

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# SUMMARY OF OECD TESTS 1845 & 1846-NEBRASKA SUMMARY 318 MASSEY FERGUSON 8220 DIESEL 18 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>					
<b>Rated Engine Speed (PTO speed 1049rpm)</b>					
135.4 (101.0)	2194	8.72 (33.00)	0.457 (0.278)	15.53 (3.06)	
<b>Standard Power Take-off Speed(999 rpm)</b>					
141.2 (105.3)	2089	8.66 (32.78)	0.436 (0.265)	16.30 (3.21)	

## VARYING POWER AND FUEL CONSUMPTION

135.4 (101.0)	2194	8.72 (33.00)	0.457 (0.278)	15.53 (3.06)	Air temperature
115.9 (86.4)	2242	7.90 (29.90)	0.484 (0.295)	14.67 (2.89)	72°F (22°C)
87.0 (64.9)	2258	6.78 (25.67)	0.554 (0.337)	12.83 (2.53)	Relative humidity
58.9 (43.9)	2271	5.63 (21.30)	0.679 (0.413)	10.46 (2.06)	60%
29.2 (21.8)	2288	4.24 (16.07)	1.030 (0.627)	6.89 (1.36)	Barometer
--	2310	2.70 (10.23)	--	--	30.4" Hg (102.9 kPa)

Maximum Torque - 440.2 lb.-ft. (596.8 Nm) at 1369 rpm

Maximum Torque Rise - 35.8%

Torque rise at 1800 engine rpm - 24%

## 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 9th Gear</b>									
133.6 (99.6)	9965 (44.3)	5.03 (8.09)	2092	5	0.477 (0.290)	14.87 (2.93)	180 (82)	63 (17)	29.4 (99.6)
<b>75% of Pull at Maximum Power 9th Gear</b>									
104.6 (78.0)	7155 (31.8)	5.48 (8.82)	2241	3	0.532 (0.323)	13.35 (2.63)	180 (82)	63 (17)	29.4 (99.6)
<b>50% of Pull at Maximum Power 9th Gear</b>									
70.3 (52.4)	4735 (21.1)	5.58 (8.96)	2255	2	0.652 (0.397)	10.89 (2.15)	178 (81)	63 (17)	29.4 (99.6)
<b>75% of Pull at Reduced Engine Speed 10th Gear</b>									
103.9 (77.5)	7115 (31.7)	5.48 (8.82)	1970	3	0.468 (0.284)	15.18 (2.99)	185 (85)	63 (17)	29.4 (99.6)
<b>50% of Pull at Reduced Engine Speed 10th Gear</b>									
70.8 (52.8)	4750 (21.1)	5.59 (8.99)	1993	2	0.576 (0.351)	12.32 (2.43)	187 (86)	63 (17)	29.4 (99.6)

**Location of Test:** Groupement d'Antony, Parc de Touvoie, BP 44 Antony, France 92163

**Dates of Test:** February - June, 1999

**Manufacturer:** AGCO S.A. Z.A.-No.2 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)** 0.853 **Fuel weight** 7.10 lbs/gal (0.851 kg/l) **Oil SAE 10W30 API service classification** CD/CE **Transmission and hydraulic lubricant** BP Terrac Extra 10W/40 **Front axle lubricant** API GL5 - SAE 85W140

**ENGINE: Make** Perkins Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** U644841B **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 3.937" x 5.00" (100.0 mm x 127.0 mm) **Compression ratio** 16.0 to 1 **Displacement** 365 cu in (5985 ml) **Starting system** 12volt **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 and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

**CHASSIS: Type** 2WD & front wheel assist **Serial No.** G201039 **Tread width** rear 64.2" (1630 mm) to 79.9" (2030 mm) front: 2WD - 64.8" (1645 mm) to 88.6" (2250 mm), FWA - 63.4" (1610 mm) to 74.8" (1900 mm) **Wheelbase** 111.2" (2825 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.50 (2.41) second 1.94 (3.12) third 2.50 (4.02) fourth 2.85 (4.58) fifth 3.23 (5.19) sixth 3.68 (5.91) seventh 4.17 (6.70) eighth 4.75 (7.63) ninth 5.39 (8.66) tenth 6.13 (9.85) eleventh 6.94 (11.16) twelfth 7.91 (12.72) thirteenth 8.96 (14.41) fourteenth 10.21 (16.42) fifteenth 11.57 (18.60) sixteenth 14.94 (24.02) seventeenth 19.27 (30.99) eighteenth 24.89 (40.03) reverse 1.50 (2.41), 2.50 (4.02), 2.85 (4.58), 4.17 (6.70), 4.75 (7.63), 6.94 (11.16), 7.91 (12.72), 11.57 (18.60), 19.27 (30.99) **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 1993 engine rpm or 1000 rpm at 2091 engine rpm **Unladen tractor mass** 2WD - 14760 lb (6695 kg), FWA - 15895 lb (7210 kg)

## 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 Gear									
112.9 (84.2)	14705 (65.4)	2.88 (4.63)	2233	15	0.546 (0.332)	12.99 (2.56)	185 (85)	63 (17)	29.4 (99.6)
6th Gear									
127.9 (95.4)	14325 (63.7)	3.35 (5.39)	2179	11	0.499 (0.303)	14.24 (2.80)	183 (84)	63 (17)	29.4 (99.6)
7th Gear									
131.6 (98.1)	12215 (54.3)	4.04 (6.50)	2199	6	0.481 (0.293)	14.77 (2.91)	187 (86)	63 (17)	29.4 (99.6)
8th Gear									
133.6 (99.6)	11240 (50.0)	4.46 (7.17)	2120	5	0.476 (0.289)	14.92 (2.94)	180 (82)	63 (17)	29.4 (99.6)
9th Gear									
133.6 (99.6)	9965 (44.3)	5.03 (8.09)	2092	5	0.477 (0.290)	14.87 (2.93)	180 (82)	63 (17)	29.4 (99.6)
10th Gear									
132.6 (98.9)	8655 (38.5)	5.75 (9.25)	2085	4	0.474 (0.288)	14.97 (2.95)	185 (85)	63 (17)	29.4 (99.6)
11th Gear									
131.4 (98.0)	7640 (34.0)	6.45 (10.38)	2058	3	0.480 (0.292)	14.77 (2.91)	185 (85)	63 (17)	29.4 (99.6)
12th Gear									
132.0 (98.4)	6735 (30.0)	7.35 (11.83)	2049	3	0.473 (0.288)	15.02 (2.96)	183 (84)	63 (17)	29.4 (99.6)
13th Gear									
131.0 (97.7)	5925 (26.4)	8.29 (13.35)	2037	3	0.471 (0.286)	15.08 (2.97)	183 (84)	63 (17)	29.4 (99.6)
14th Gear									
127.0 (94.7)	4925 (21.9)	9.67 (15.56)	2070	2	0.492 (0.299)	14.42 (2.84)	187 (86)	63 (17)	29.4 (99.6)

**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 3 point lift claim of 19180 lbs (8700 kg) at link ends. 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. **1845 & 1846**, Nebraska Summary 318, June 26, 2000.

Brent T. Sampson  
Test Engineer

L.L. Bashford  
M.F. Kocher  
G.J. Hoffman  
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	2WD dB(A)
At no load in 8th gear	77.0	77.0
Bystander	--	--

#### Tested Without Ballast

TIRES AND WEIGHT	FWA	2WD
<b>Rear tires</b> - No., size, ply & psi(kPa)	Two 20.8R42; **,15(100)	Two 20.8R42; **,15(100)
<b>Front tires</b> - No., size, ply & psi(kPa)	Two 16.9R30; **,16(110)	Two 14L-16.1,10,36(250)
<b>Height of Drawbar</b>	23.6 in (600 mm)	33.5 in (850 mm)
<b>Static Weight with operator</b> - Rear	10405 lb (4720 kg)	10275 lb (4660 kg)
- Front	5655 lb (2565 kg)	4650 lb (2110 kg)
- Total	16060 lb (7285 kg)	14925 lb (6770 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 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 11th Gear</b>									
130.6 (97.4)	7615 (33.9)	6.43 (10.35)	2070	5	0.471 (0.287)	15.08 (2.97)	190 (88)	79 (26)	29.8 (100.9)
<b>75% of Pull at Maximum Power 11th Gear</b>									
94.8 (70.7)	5005 (22.3)	7.11 (11.44)	2243	3	0.571 (0.347)	12.44 (2.45)	192 (89)	79 (26)	29.8 (100.9)
<b>50% of Pull at Maximum Power 11th Gear</b>									
64.0 (47.7)	3325 (14.8)	7.21 (11.61)	2258	2	0.703 (0.428)	10.10 (1.99)	190 (88)	79 (26)	29.8 (100.9)
<b>75% of Pull at Reduced Engine Speed 12th Gear</b>									
94.6 (70.5)	5010 (22.3)	7.08 (11.39)	1962	3	0.500 (0.304)	14.21 (2.80)	189 (87)	79 (26)	29.8 (100.9)
<b>50% of Pull at Reduced Engine Speed 12th Gear</b>									
63.4 (47.3)	3285 (14.6)	7.24 (11.66)	1988	2	0.606 (0.369)	11.72 (2.31)	189 (87)	79 (26)	29.8 (100.9)
<b>MAXIMUM POWER IN SELECTED GEARS</b>									
4th Gear									
84.4 (62.9)	12330 (54.9)	2.57 (4.13)	2254	14	0.630 (0.383)	11.27 (2.22)	189 (87)	79 (26)	29.8 (100.9)
5th Gear									
97.9 (73.0)	12105 (53.8)	3.03 (4.88)	2246	10	0.576 (0.350)	12.33 (2.43)	189 (87)	79 (26)	29.8 (100.9)
6th Gear									
109.4 (81.6)	11900 (52.9)	3.45 (5.55)	2232	10	0.547 (0.333)	12.99 (2.56)	189 (87)	79 (26)	29.8 (100.9)
7th Gear									
122.0 (91.0)	11860 (52.8)	3.86 (6.21)	2179	9	0.525 (0.319)	13.52 (2.66)	189 (87)	79 (26)	29.8 (100.9)
8th Gear									
127.0 (94.7)	10905 (48.5)	4.37 (7.03)	2120	7	0.501 (0.305)	14.16 (2.79)	189 (87)	79 (26)	29.8 (100.9)
9th Gear									
127.1 (94.8)	9510 (42.3)	5.01 (8.07)	2111	6	0.500 (0.304)	14.21 (2.80)	190 (88)	79 (26)	29.8 (100.9)
10th Gear									
128.2 (95.6)	8505 (37.8)	5.65 (9.09)	2079	6	0.484 (0.295)	14.67 (2.89)	190 (88)	79 (26)	29.8 (100.9)
11th Gear									
130.6 (97.4)	7620 (33.9)	6.43 (10.35)	2070	5	0.471 (0.287)	15.08 (2.97)	190 (88)	79 (26)	29.8 (100.9)
12th Gear									
128.2 (95.6)	6550 (29.1)	7.34 (11.81)	2057	4	0.482 (0.293)	14.72 (2.90)	190 (88)	79 (26)	29.8 (100.9)
13th Gear									
129.5 (96.6)	5880 (26.2)	8.26 (13.30)	2035	4	0.473 (0.288)	15.02 (2.96)	190 (88)	79 (26)	29.8 (100.9)
14th Gear									
124.4 (92.8)	4825 (21.5)	9.67 (15.56)	2077	3	0.501 (0.305)	14.16 (2.79)	185 (85)	79 (26)	29.8 (100.9)
15th Gear									
126.9 (94.6)	4405 (19.6)	10.80 (17.38)	2046	2	0.484 (0.295)	14.67 (2.89)	190 (88)	79 (26)	29.8 (100.9)

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

CATEGORY: II, III

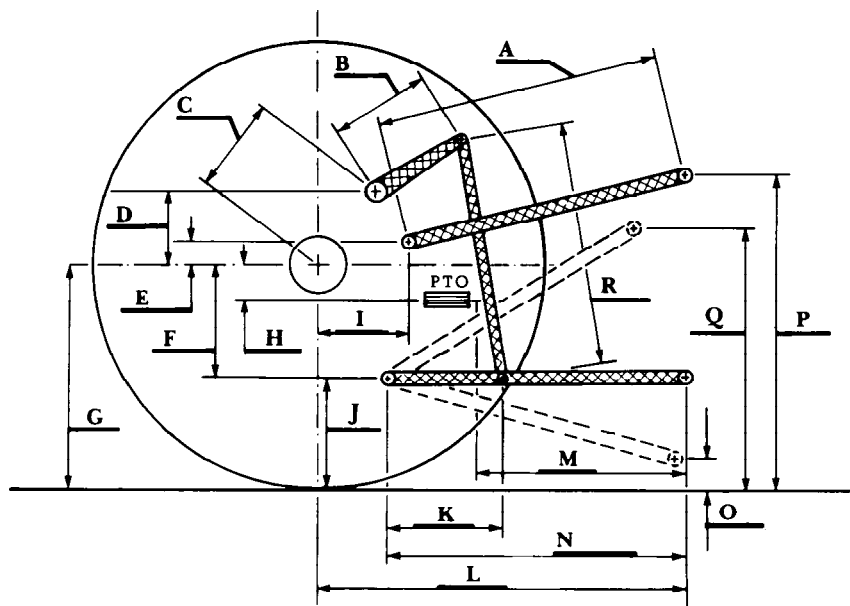
Quick Attach: None

Maximum Force Exerted

	Cat II	Cat III
Through Whole Range:	15150 lbs (67.4 kN)	13805 lbs (61.4 kN) (at the frame)
	14410 lbs (64.1 kN)	14635 lbs (65.1 kN) (at the hitch points)

- |  |                        |
|--|------------------------|
| i) Opening pressure of relief valve:         | NA                     |
| Sustained pressure of the open relief valve: | 2800 psi (193 bar)     |
| ii) Pump delivery rate at minimum pressure:  | 30.9 GPM (116.8 l/min) |
| iii) Pump delivery rate at maximum           |                        |
| hydraulic power:                             | 27.8 GPM (105.2 l/min) |
| Delivery pressure:                           | 2205 psi (152 bar)     |
| Power:                                       | 35.8 HP (26.7 kW)      |

HITCH DIMENSIONS AS TESTED NO LOAD



	Cat II test		Cat III test	
	inch	mm	inch	mm
A	31.9	810	31.3	795
B	15.0	380	15.0	380
C	19.4	492	19.4	492
D	17.6	447	17.6	447
E	11.0	280	11.0	280
F	13.0	330	13.0	330
G	35.6	905	35.6	905
H	3.0	77	3.0	77
I	17.6	448	17.6	448
J	22.6	575	22.6	575
K	20.9	530	20.9	530
L	48.5	1231	48.5	1217
M	23.6	599	23.0	585
N	38.6	981	38.1	967
O	8.1	207	8.0	204
P	46.7	1185	49.6	1260
Q	33.1	841	33.1	841
R	35.6	905	35.6	905