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## Test 1520: Massey-Ferguson 250 Diesel 8-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1520 — MASSEY FERGUSON 250 DIESEL 8 SPEED

## POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb	
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—679 rpm)								
40.86 (30.47)	2250	2.707 (10.245)	0.464 (0.282)	15.09 (2.974)	182 (83.4)	58 (14.4)	75 (23.8)	29.16 (98.48)
Standard Power Take-off Speed (540 rpm) — One hour								
36.93 (27.54)	1789	2.338 (8.848)	0.443 (0.270)	15.80 (3.113)	185 (85.1)	58 (14.4)	75 (23.9)	29.13 (98.37)

## VARYING POWER AND FUEL CONSUMPTION—Two Hours

36.64 (27.32)	2374	2.450 (9.275)	0.468 (0.285)	14.95 (2.945)	180 (81.9)	58 (14.2)	75 (23.9)	.....
0.00 (0.00)	2435	0.823 (3.113)	.....	.....	167 (75.0)	57 (13.9)	74 (23.3)	.....
18.56 (13.84)	2405	1.568 (5.935)	0.592 (0.360)	11.84 (2.332)	173 (78.3)	58 (14.4)	75 (23.9)	.....
40.75 (30.39)	2250	2.733 (10.346)	0.470 (0.286)	14.91 (2.937)	182 (83.1)	58 (14.4)	75 (23.9)	.....
9.31 (6.94)	2416	1.178 (4.459)	0.886 (0.539)	7.90 (1.556)	170 (76.7)	58 (14.4)	75 (23.9)	.....
27.64 (20.61)	2388	1.979 (7.492)	0.501 (0.305)	13.96 (2.751)	176 (80.0)	60 (15.3)	76 (24.4)	.....
<b>Av 22.15</b> <b>Av (16.52)</b>	<b>2378</b>	<b>1.789</b> <b>(6.770)</b>	<b>0.565</b> <b>(0.344)</b>	<b>12.38</b> <b>(2.440)</b>	<b>175</b> <b>(79.2)</b>	<b>58</b> <b>(14.4)</b>	<b>75</b> <b>(23.9)</b>	<b>29.08</b> <b>(98.21)</b>

## DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
<b>Maximum Available Power—Two Hours 5th (1H) Gear</b>											
34.69 (25.87)	2242 (9.97)	5.80 (9.34)	2250	5.77	2.685 (10.162)	0.542 (0.330)	12.92 (2.545)	186 (85.3)	56 (13.3)	63 (16.9)	28.81 (97.29)
<b>75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear</b>											
28.18 (21.02)	1698 (7.55)	6.22 (10.02)	2376	4.34	2.255 (8.535)	0.560 (0.341)	12.50 (2.462)	180 (81.9)	52 (11.1)	60 (15.6)	29.07 (98.17)
<b>50% of Pull at Maximum Power—Two Hours 5th (1H) Gear</b>											
19.05 (14.21)	1127 (5.01)	6.34 (10.20)	2395	3.32	1.778 (6.730)	0.654 (0.398)	10.72 (2.111)	176 (80.0)	52 (10.8)	56 (13.1)	28.81 (97.27)
<b>50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear</b>											
19.04 (14.20)	1126 (5.01)	6.34 (10.20)	1632	3.20	1.421 (5.378)	0.523 (0.318)	13.40 (2.640)	176 (79.7)	53 (11.4)	57 (13.6)	28.82 (97.32)

## MAXIMUM POWER IN SELECTED GEARS

23.97 (17.88)	4297 (19.11)	2.09 (3.37)	2388	12.74	2nd (2L) Gear			177 (80.6)	51 (10.6)	53 (11.7)	28.79 (97.22)
33.53 (25.00)	3350 (14.90)	3.75 (6.04)	2251	9.42	3rd (3L) Gear			183 (83.9)	51 (10.6)	53 (11.7)	28.79 (97.22)
33.92 (25.30)	2703 (12.02)	4.71 (7.58)	2251	7.44	4th (4L) Gear			184 (84.4)	51 (10.6)	54 (12.2)	28.79 (97.22)
35.07 (26.15)	2264 (10.07)	5.81 (9.35)	2250	5.66	5th (1H) Gear			186 (85.3)	56 (13.3)	63 (17.2)	28.83 (97.35)
34.45 (25.69)	1490 (6.63)	8.67 (13.96)	2250	4.03	6th (2H) Gear			184 (84.4)	51 (10.6)	54 (12.2)	28.78 (97.19)

## LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm			2250	2026	1805	1571	1355	1126
Pull—lbs (kN)			2264 (10.07)	2421 (10.85)	2583 (11.58)	2712 (12.16)	2768 (12.41)	2710 (12.15)
Increase in Pull %			0	7	14	20	22	20
Power—Hp (kW)			35.07 (26.15)	33.49 (24.98)	31.68 (23.62)	28.85 (21.52)	25.33 (18.89)	20.66 (15.40)
Speed—Mph (km/h)			5.81 (9.35)	5.19 (8.35)	4.60 (7.40)	3.99 (6.42)	3.43 (5.52)	2.86 (4.60)
Slip %			5.66	6.42	6.96	7.39	7.39	7.39

Department of Agricultural Engineering

Dates of Test: May 10-29, 1984

Manufacturer: MASSEY FERGUSON MANUFACTURING CO., P.O. Box 62 Banner Lane, Coventry CV4 9GF Warwickshire, England

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.0 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8410 **Fuel weight** 7.003 lbs/gal (0.839 kg/l) **Oil** SAE 15W-40 **API service classification** SE, SF, CC, CD **To motor** 2.495 gal (9.444 l) **Drained from motor** 1.144 gal (4.332 l) **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 43.0 hours.

**ENGINE:** Make Perkins Diesel **Type** three cylinder vertical **Serial No.** CE2248U73580L **Crankshaft** lengthwise **Rated rpm** 2250 **Bore and stroke** 3.6" × 5" (91.4 mm × 127 mm) **Compression ratio** 18.5 to 1 **Displacement** 152 cu in (2491 ml) **Starting system** 12 volt **Lubrication pressure** **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

**CHASSIS:** **Type** standard **Serial No.** 624034 **Tread width** rear 52" (1321 mm) to 90" (2286 mm) front 52" (1321 mm) to 72" (1829 mm) **Wheel base** 76" (1930 mm) **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.0" (660 mm) Vertical distance above roadway 27.0" (686 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left **Hydraulic control system** constant running except when PTO clutch is disengaged **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.6 (2.5) second 2.3 (3.7) third 4.2 (6.8) fourth 5.2 (8.3) fifth 6.3 (10.1) sixth 9.2 (14.8) seventh 16.9 (27.2) eighth 20.8 (33.4) reverse 2.2 (3.5), 8.6 (13.8) **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc operated by two foot pedals which can be locked together and hand lever **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" (2.97 m) left 118" (3.00 m) (on concrete surface without brake) right 131" (3.32 m) left 128" (3.25 m) **Turning space diameter** (on concrete surface with brake applied) right 240" (6.10 m) left 242" (6.15 m) (on concrete surface without brake) right 268" (6.82 m) left 262" (6.66 m) **Power take-off** 540 rpm at 1789 engine rpm.

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

**TRACTOR SOUND LEVEL WITHOUT CAB**

	dB(A)
Maximum Available Power—Two Hours	95.5
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	95.0
50% of Pull at Reduced Engine Speed—Two Hours	91.0
Bystander in 7th (3H) gear	85.5

**TIRES, BALLAST AND WEIGHT**

		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi (kPa)	Two 13.6-28; 4; 14 (95)	Two 13.6-28; 4; 14 (95)
<b>Ballast</b>	—Liquid (each)	470 lb (213 kg)	None
	—Cast Iron (each)	80 lb (36 kg)	None
<b>Front Tires</b>	—No., size, ply & psi (kPa)	Two 6.00-16; 4; 32 (220)	Two 6.00-16; 4; 32 (220)
<b>Ballast</b>	—Liquid (each)	None	None
	—Cast Iron (each)	37 lb (17 kg)	None
<b>Height of Drawbar</b>		17.5 in (445 mm)	17.5 in (445 mm)
<b>Static Weight with Operator—Rear</b>		4140 lb (1878 kg)	3040 lb (1379 kg)
	—Front	1620 lb (735 kg)	1545 lb (701 kg)
	—Total	5760 lb (2613 kg)	4585 lb (2080 kg)

**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 146°F (63.2°C). Five gears were chosen between tire tangential pull limit and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1520, July 3, 1984.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
W. E. SPLINTER  
L. L. BASHFORD  
Board of Tractor Test Engineers



**Massey Ferguson 250 Diesel**