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Test 1521: Massey-Ferguson 270 Diesel 8-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1521 — MASSEY FERGUSON 270 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—642 rpm)									
55.85 (41.64)	2000	3.440 (13.020)	0.431 (0.262)	16.23 (3.198)	185 (84.9)	66 (18.6)	75 (24.1)	29.04 (98.07)	
Standard Power Take-off Speed (540 rpm) — One hour									
52.75 (39.33)	1683	3.142 (11.891)	0.417 (0.254)	16.79 (3.308)	186 (85.6)	66 (19.0)	76 (24.4)	29.03 (98.03)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
48.62 (36.26)	2050	3.072 (11.627)	0.442 (0.269)	15.83 (3.118)	182 (83.3)	66 (18.9)	77 (24.7)	.....
0.00 (0.00)	2201	1.161 (4.394)	.....	.....	177 (80.6)	66 (18.9)	75 (23.9)	.....
25.40 (18.94)	2141	2.082 (7.881)	0.574 (0.349)	12.20 (2.403)	179 (81.7)	66 (18.9)	76 (24.2)	.....
56.69 (42.27)	2001	3.466 (13.119)	0.428 (0.260)	16.36 (3.222)	185 (85.0)	66 (18.9)	77 (24.7)	.....
12.90 (9.62)	2175	1.602 (6.065)	0.870 (0.529)	8.05 (1.587)	178 (81.1)	67 (19.4)	77 (25.0)	.....
37.28 (27.80)	2094	2.545 (9.632)	0.478 (0.291)	14.65 (2.886)	181 (82.5)	66 (18.9)	77 (25.0)	.....
Av Av	30.15 (22.48)	2110	2.321 (8.786)	0.539 (0.328)	12.99 (2.559)	180 (82.4)	66 (19.0)	76 (24.6)	29.01 (97.97)

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	
Maximum Available Power—Two Hours 5th (1H) Gear											
46.26 (34.50)	3492 (15.53)	4.97 (8.00)	1999	7.28	3.441 (13.027)	0.521 (0.317)	13.44 (2.648)	191 (88.3)	68 (19.7)	76 (24.2)	28.61 (96.59)
75% of Pull at Maximum Power—Ten Hours 5th (1H) Gear											
37.34 (27.85)	2669 (11.87)	5.25 (8.44)	2058	4.98	2.852 (10.795)	0.535 (0.325)	13.10 (2.580)	187 (86.1)	62 (16.6)	67 (19.2)	28.87 (97.48)
50% of Pull at Maximum Power—Two Hours 5th (1H) Gear											
25.96 (19.36)	1780 (7.92)	5.47 (8.80)	2111	3.34	2.313 (8.757)	0.624 (0.380)	11.22 (2.211)	187 (86.1)	70 (20.8)	80 (26.4)	28.59 (96.54)
50% of Pull at Reduced Engine Speed—Two Hours 6th (2H) Gear											
25.99 (19.38)	1779 (7.91)	5.48 (8.82)	1439	3.21	1.849 (7.000)	0.498 (0.303)	14.06 (2.769)	186 (85.6)	73 (22.5)	81 (26.9)	28.58 (96.49)

MAXIMUM POWER IN SELECTED GEARS

27.07 (20.19)	5896 (26.23)	1.72 (2.77)	2103	14.87	2nd (2L) Gear			186 (85.3)	64 (17.8)	69 (20.6)	28.64 (96.71)
44.31 (33.04)	5446 (24.23)	3.05 (4.91)	1999	13.42	3rd (3L) Gear			190 (87.5)	65 (18.3)	72 (22.2)	28.63 (96.68)
46.05 (34.34)	4425 (19.68)	3.90 (6.28)	2001	9.84	4th (4L) Gear			191 (88.1)	64 (17.8)	72 (22.2)	28.63 (96.68)
47.08 (35.11)	3558 (15.82)	4.96 (7.99)	1999	7.44	5th (1H) Gear			190 (87.8)	66 (18.9)	74 (23.3)	28.62 (96.65)
47.04 (35.08)	2354 (10.47)	7.50 (12.06)	2000	4.77	6th (2H) Gear			189 (87.2)	64 (17.8)	72 (22.2)	28.62 (96.65)

LUGGING ABILITY IN 5th (1H) GEAR

Crankshaft Speed rpm		1999	1801	1597	1393	1200	1000
Pull—lbs (kN)		3558 (15.82)	3841 (17.22)	4072 (18.25)	4229 (18.96)	4325 (19.39)	4170 (18.69)
Increase in Pull %		0	8	14	19	22	17
Power—Hp (kW)		47.08 (35.11)	45.47 (33.91)	42.47 (31.67)	38.22 (28.50)	33.55 (25.02)	27.07 (20.19)
Speed—Mph (km/h)		4.96 (7.99)	4.44 (7.14)	3.91 (6.29)	3.39 (5.45)	2.91 (4.68)	2.43 (3.92)
Slip %		7.44	8.09	8.69	9.38	9.61	9.38

Department of Agricultural Engineering

Dates of Test: May 10-25, 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 1.754 gal (6.639 l) Drained from motor 1.571 gal (5.946 l) Transmission and final drive lubricant Massey Ferguson Permatran III fluid Total time engine was operated 49.0 hours.

ENGINE: Make Perkins Diesel Type four cylinder vertical Serial No. LD22784U932437K Crankshaft lengthwise Rated rpm 2000 Bore and stroke 3.875" × 5.0" (98.4 mm × 127 mm) Compression ratio 16 to 1 Displacement 236 cu in (3863 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Oil cooler radiator for hydraulic and transmission oil Fuel filter one paper element and sediment bowl Muffler vertical Cooling medium temperature control one thermostat.

CHASSIS: Type standard Serial No. 287194 Tread width rear 56" (1422 mm) to 90" (2286 mm) front 52" (1321 mm) to 72" (1829 mm) Wheel base 84" (2134 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 27.5" (700 mm) Vertical distance above roadway 32.0" (813 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio Advertised speeds mph (km/h) first 1.3 (2.1) second 1.9 (3.1) third 3.5 (5.6) fourth 4.3 (6.9) fifth 5.3 (8.6) sixth 7.8 (12.6) seventh 14.3 (23.1) eighth 17.6 (28.3) reverse 1.8 (2.9), 7.2 (11.6) Clutch single dry disc operated by foot pedal Brakes multiple wet disc hydraulically operated by two foot pedals which can be locked together and mechanically by hand lever Steering hydrostatic Turning radius (on concrete surface with brake applied) right 131" (3.33 m) left 128" (3.25 m) (on concrete surface without brake) right 157" (3.99 m) left 151" (3.84 m) Turning space diameter (on concrete surface with brake applied) right 270" (6.86 m) left 264" (6.71 m) (on concrete surface without brake) right 322" (8.18 m) left 310" (7.87 m) Power take-off 540 rpm at 1683 engine rpm.

REPAIRS and ADJUSTMENTS: The PTO clutch was adjusted during preliminary PTO tests.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	98.5
75% of Pull at Maximum Power—Ten Hours	94.0
50% of Pull at Maximum Power—Two Hours	95.0
50% of Pull at Reduced Engine Speed—Two Hours	91.5
Bystander in 7th (3H) gear	86.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 16.9-30; 6; 18 (125)	Two 16.9-30; 6; 18 (125)
Ballast	—Liquid (each)	595 lb (270 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.5L-15; 6; 44 (305)	Two 7.5L-15; 6; 44 (305)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	52 lb (24 kg)	None
Height of Drawbar		19.5 in (495 mm)	19.5 in (495 mm)
Static Weight with Operator—Rear		5885 lb (2669 kg)	4695 lb (2130 kg)
	—Front	2310 lb (1048 kg)	2205 lb (1000 kg)
	—Total	8195 lb (3717 kg)	6900 lb (3130 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 149°F (65.1°C). Five gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1521, 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 270 Diesel