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Test 1478: Massey-Ferguson 254 Diesel 12-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1478—MASSEY FERGUSON 254 DIESEL 12 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—625 rpm)								
43.36 (32.33)	2250	2.721 (10.300)	0.440 (0.268)	15.93 (3.139)	183 (84.1)	56 (13.6)	75 (23.9)	29.013 (97.974)

Standard Power Take-off Speed (540 rpm)—One Hour								
40.71 (30.36)	1944	2.456 (9.297)	0.423 (0.257)	16.58 (3.266)	184 (84.2)	56 (13.5)	75 (23.8)	28.990 (97.895)

VARYING POWER AND FUEL CONSUMPTION—Two Hours

37.80 (28.19)	2307	2.367 (8.960)	0.439 (0.267)	15.97 (3.146)	181 (82.8)	54 (12.2)	74 (23.6)	.....
0.00 (0.00)	2380	0.762 (2.884)	.....	.....	178 (80.8)	56 (13.6)	75 (23.9)	.....
19.22 (14.33)	2345	1.464 (5.542)	0.534 (0.325)	13.13 (2.586)	178 (81.4)	55 (12.8)	75 (23.9)	.....
43.31 (32.30)	2250	2.740 (10.372)	0.443 (0.270)	15.81 (3.114)	184 (84.2)	56 (13.3)	76 (24.4)	.....
9.70 (7.23)	2370	1.100 (4.164)	0.795 (0.484)	8.82 (1.736)	178 (80.8)	56 (13.1)	74 (23.6)	.....
28.55 (21.29)	2324	1.884 (7.132)	0.462 (0.281)	15.16 (2.985)	179 (81.7)	55 (12.8)	74 (23.6)	.....
Av 23.10 Av (17.23)	2329	1.719 (6.507)	0.522 (0.317)	13.43 (2.648)	180 (81.9)	55 (12.9)	75 (23.8)	28.950 (97.760)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

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 8th Gear											
33.43 (24.93)	2160 (9.61)	5.80 (9.34)	2250	7.18	2.604 (9.858)	0.546 (0.332)	12.84 (2.529)	184 (84.4)	54 (12.2)	58 (14.4)	28.835 (97.371)
75% of Pull at Maximum Power—Ten Hours 8th Gear											
27.49 (20.50)	1700 (7.56)	6.07 (9.76)	2303	5.28	2.197 (8.318)	0.560 (0.341)	12.51 (2.465)	184 (84.3)	55 (12.6)	59 (15.2)	28.965 (97.810)
50% of Pull at Maximum Power—Two Hours 8th Gear											
18.93 (14.12)	1133 (5.04)	6.27 (10.09)	2332	3.39	1.784 (6.752)	0.660 (0.402)	10.62 (2.091)	184 (84.2)	51 (10.6)	53 (11.7)	28.820 (97.321)
50% of Pull at Reduced Engine Speed—Two Hours 10th Gear											
18.94 (14.12)	1133 (5.04)	6.27 (10.09)	1491	3.18	1.391 (5.267)	0.515 (0.313)	13.61 (2.681)	183 (83.6)	58 (14.2)	62 (16.4)	28.790 (97.220)

MAXIMUM POWER IN SELECTED GEARS

27.57 (20.56)	3844 (17.10)	2.69 (4.33)	2303	14.80	5th Gear			184 (84.2)	58 (14.4)	65 (18.3)	28.760 (97.118)
33.41 (24.92)	3650 (16.23)	3.43 (5.53)	2251	13.52	6th Gear			185 (85.0)	53 (11.7)	56 (13.3)	28.830 (97.355)
34.18 (25.49)	2767 (12.31)	4.63 (7.46)	2250	9.52	7th Gear			185 (84.7)	52 (11.1)	55 (12.8)	28.780 (97.186)
35.14 (26.20)	2266 (10.08)	5.82 (9.36)	2251	7.15	8th Gear			185 (84.7)	52 (11.1)	55 (12.8)	28.780 (97.186)
32.85 (24.49)	1731 (7.70)	7.12 (11.45)	2249	5.58	9th Gear			185 (84.7)	53 (11.7)	56 (13.3)	28.830 (97.355)
32.75 (24.42)	1312 (5.83)	9.37 (15.07)	2249	4.13	10th Gear			185 (85.0)	53 (11.7)	56 (13.3)	28.830 (97.355)

Department of Agricultural Engineering

Dates of Test: May 11-23, 1983

Manufacturer: MASSEY FERGUSON S.p.A
Landini Division, Via Matteotti 17, 42042 Fab-
brico (RE) Italy

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 47.0 (rating taken from oil company's
inspection data) **Specific gravity converted to 60°/**
60° (15°/15°) 0.8417 Fuel weight 7.008 lbs/gal
(0.840 kg/l) Oil SAE 20-20W API service classi-
fication SE, SF, CC To motor 1.869 gal (7.076 l)
Drained from motor 1.351 gal (5.115 l) Trans-
mission and final drive lubricant Massey Fergu-
son Permatran oil Total time engine was oper-
ated 42.5 hours.

ENGINE: Make Perkins Diesel Type three
cylinder vertical Serial No. CE21899U703041J
Crankshaft lengthwise **Rated rpm 2250 Bore**
and stroke 3.6" × 5.0" (91.4 mm × 127.0 mm)
Compression ratio 16.5 to 1 Displacement 153
cu in (2502 ml) Starting system 12 volt Lubrica-
tion pressure Air cleaner oil bath with centrifugal
precleaner Oil filter one full flow paper car-
tridge Fuel filter one paper element Muffler
vertical Cooling medium temperature control
one thermostat.

CHASSIS: Type front wheel assist Serial No.
2229794 **Tread width rear 59.1" (1500 mm) to**
74.8" (1900 mm) front 59.0" (1500 mm) Wheel
base 81.1" (2060 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 33.9" (860 mm) Vertical distance above
roadway 30.6" (778 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 1.0 (1.6)
second 1.6 (2.6) third 2.1 (3.3) fourth 2.5 (4.0)
fifth 3.0 (4.8) sixth 3.9 (6.3) seventh 5.0 (8.0)
eighth 6.1 (9.8) ninth 7.4 (11.9) tenth 9.6 (15.4)
eleventh 12.4 (19.9) twelfth 18.2 (29.3) reverse 2.7
(4.3), 4.2 (6.7), 5.3 (8.6), 7.9 (12.7) **Clutch** dry disc
operated by foot pedal **Brakes** dry disc operated
by two foot pedals which can be locked together
and hand lever **Steering** hydrostatic **Turning**
radius (on concrete surface with brake applied)
right 144" (3.66 m) left 156" (3.96 m) (on concrete
surface without brake) right 168" (4.27 m) left 186"
(4.72 m) **Turning space diameter** (on concrete
surface with brake applied) right 302" (7.67 m) left
327" (8.31 m) (on concrete surface without brake)
right 351" (8.92 m) left 387" (9.83 m) **Power take-**
off 540 rpm at 1944 engine rpm.

LUGGING ABILITY IN 8th GEAR

Crankshaft Speed rpm	2251	2027	1807	1578	1347	1116
Pull—lbs (kN)	2266 (10.08)	2472 (11.00)	2608 (11.60)	2733 (12.16)	2801 (12.46)	2735 (12.17)
Increase in Pull %	0	9	15	21	24	21
Power—Hp (kW)	35.14 (26.20)	34.22 (25.52)	31.88 (23.78)	29.12 (21.71)	25.43 (18.96)	20.64 (15.39)
Speed—Mph (km/h)	5.82 (9.36)	5.19 (8.36)	4.58 (7.38)	4.00 (6.43)	3.40 (5.48)	2.83 (4.55)
Slip %	7.15	7.86	8.73	8.94	9.15	8.73

TRACTOR SOUND LEVEL WITHOUT CAB		Front Wheel Drive	
		dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours		99.0	98.0
75% of Pull at Maximum Power—Ten Hours			98.0
50% of Pull at Maximum Power—Two Hours			97.0
50% of Pull at Reduced Engine Speed—Two Hours			94.5
Bystander in 11th gear			86.0

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			
					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	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th Gear											
33.97 (25.33)	2139 (9.51)	5.96 (9.59)	2250	4.60	2.568 (9.723)	0.530 (0.322)	13.23 (2.606)	184 (84.4)	53 (11.7)	62 (16.4)	28.850 (97.422)

MAXIMUM POWER IN SELECTED GEARS

30.94 (23.07)	5279 (23.48)	2.20 (3.54)	2289	14.85	4th Gear			184 (84.4)	58 (14.4)	64 (17.8)	28.760 (97.118)
35.86 (26.74)	2261 (10.06)	5.95 (9.57)	2250	4.74	8th Gear			184 (84.4)	52 (11.1)	55 (12.8)	28.780 (97.186)

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 13.6-28; 6; 20 (140)	Two 13.6-28; 6; 20 (140)
	—Liquid (each)	545 lb (247 kg)	None
	—Cast Iron (each)	98 lb (44 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5-20; 8; 20 (140)	Two 9.5-20; 8; 20 (140)
	—Liquid (each)	200 lb (91 kg)	None
	—Cast Iron (each)	53 lb (24 kg)	None
Height of Drawbar		15.5 in (395 mm)	15.5 in (395 mm)
Static Weight with Operator—Rear		4515 lb (2048 kg)	3230 lb (1465 kg)
—Front		2760 lb (1252 kg)	2255 lb (1023 kg)
—Total		7275 lb (3300 kg)	5485 lb (2488 kg)



Massey Ferguson 254 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Irvin T. Omtvedt, Dean and Director

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 146°F (63.3°C). Six 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. 1478.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD

Board of Tractor Test Engineers