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Test 1513: Massey-Ferguson 3545 Diesel 16-Speed

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1513

MASSEY FERGUSON 3545 DIESEL

16 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—1147 rpm)									
126.72 (94.50)	2400	7.997 (30.269)	0.441 (0.269)	15.85 (3.122)	186 (85.5)	57 (13.9)	75 (24.1)	28.91 (97.61)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
122.15 (91.09)	2092	7.181 (27.179)	0.411 (0.250)	17.01 (3.351)	185 (85.1)	57 (13.8)	75 (23.9)	28.90 (97.59)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
111.71 (83.30)	2487	7.420 (28.085)	0.465 (0.283)	15.06 (2.966)	185 (84.7)	57 (13.9)	76 (24.2)	..... .....
0.00 (0.00)	2614	2.852 (10.796)	..... .....	..... .....	179 (81.7)	57 (13.6)	75 (23.6)	..... .....
57.55 (42.91)	2563	5.211 (19.725)	0.633 (0.385)	11.04 (2.176)	182 (83.3)	57 (13.9)	76 (24.2)	..... .....
127.13 (94.80)	2400	8.007 (30.310)	0.441 (0.268)	15.88 (3.128)	187 (86.1)	57 (13.9)	76 (24.4)	..... .....
29.03 (21.65)	2586	4.061 (15.374)	0.978 (0.595)	7.15 (1.408)	180 (81.9)	56 (13.3)	75 (23.6)	..... .....
85.18 (63.52)	2529	6.352 (24.043)	0.522 (0.317)	13.41 (2.642)	183 (83.9)	57 (13.6)	75 (23.6)	..... .....
Av Av	68.44 (51.04)	2530 (21.389)	5.650 (0.351)	0.577 (0.351)	12.11 (2.386)	183 (83.6)	57 (13.7)	75 (23.9)	28.88 (97.51)

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 10th (5H) Gear											
102.37 (76.33)	6535 (29.07)	5.87 (9.45)	2401	7.98	7.963 (30.143)	0.544 (0.331)	12.86 (2.532)	189 (87.2)	45 (7.2)	54 (12.2)	28.84 (97.39)
75% of Pull at Maximum Power—Ten Hours 10th (5H) Gear											
82.99 (61.88)	4951 (22.02)	6.29 (10.12)	2520	6.17	7.234 (27.383)	0.610 (0.371)	11.47 (2.260)	187 (86.3)	42 (5.7)	43 (6.2)	28.75 (97.09)
50% of Pull at Maximum Power—Two Hours 10th (5H) Gear											
57.27 (42.70)	3300 (14.68)	6.51 (10.47)	2558	4.20	5.940 (22.485)	0.726 (0.441)	9.64 (1.899)	187 (86.1)	45 (7.2)	56 (13.3)	28.68 (96.85)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
57.38 (42.79)	3301 (14.68)	6.52 (10.49)	1589	4.12	4.167 (15.775)	0.508 (0.309)	13.77 (2.712)	186 (85.6)	49 (9.4)	62 (16.4)	28.66 (96.76)

MAXIMUM POWER IN SELECTED GEARS

100.58 (75.01)	10563 (46.98)	3.57 (5.75)	2445	14.93	7th (4L) Gear			188 (86.7)	43 (6.1)	51 (10.6)	28.69 (96.88)
102.54 (76.47)	9091 (40.44)	4.23 (6.81)	2401	11.65	8th (5L) Gear			188 (86.7)	44 (6.7)	50 (10.0)	28.88 (97.52)
100.32 (74.81)	7561 (33.63)	4.98 (8.01)	2400	9.43	9th (4H) Gear			189 (86.9)	45 (7.2)	51 (10.6)	28.88 (97.52)
103.26 (77.00)	6601 (29.36)	5.87 (9.44)	2398	8.02	10th (5H) Gear			188 (86.7)	45 (7.2)	53 (11.7)	28.87 (97.49)
105.16 (78.42)	5786 (25.74)	6.82 (10.97)	2400	6.87	11th (6L) Gear			189 (86.9)	45 (7.2)	54 (12.2)	28.87 (97.49)
100.14 (74.67)	4042 (17.98)	9.29 (14.95)	2399	4.73	12th (6H) Gear			188 (86.7)	45 (7.2)	53 (11.7)	28.86 (97.46)

Department of Agricultural Engineering

Dates of Test: April 14-25, 1984

Manufacturer: MASSEY FERGUSON S.A. RN
188 LA Boursidiere-92357, Le Plessis, Robin-
son, France

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°) 0.8401 Fuel weight 6.995 lbs/gal
(0.838 kg/l) Oil SAE 20-20W API service class-
ification SE, CC, CD To motor 4.902 gal (18.556 l)
Drained from motor 3.020 gal (11.432 l) Trans-
mission and final drive lubricant Massey Fergu-
son Permatran III fluid Total time engine was
operated 55.0 hours.

ENGINE: Make Perkins Diesel Type six cyl-
inder vertical with turbocharger and intercooler
Serial No. TU31093U706661K Crankshaft
lengthwise Rated rpm 2400 Bore and stroke
3.875" × 5.0" (98.4 mm × 127 mm) Compression
ratio 15.5 to 1 Displacement 354 cu in (5798 ml)
Starting system 12 volt Lubrication pressure
Air cleaner two paper elements and aspirator Oil
filter two full flow cartridges Oil cooler heat ex-
changer in lower part of radiator for crankcase oil,
radiator for hydraulic and transmission oil Fuel
filter two paper elements Muffler vertical Cool-
ing medium temperature control two thermostats.

CHASSIS: Type front wheel assist Serial No.
A3545RWK309205Δ Tread width rear 63.8"
(1620 mm) to 96.9" (2460 mm) front 63.0" (1600
mm) to 81.5" (2070 mm) Wheel base 107.3" (2726
mm) Center of gravity (without operator or bal-
last, with minimum tread, with fuel tank filled and
tractor serviced for operation) Horizontal distance
forward from center-line of rear wheels 38.7" (983
mm) Vertical distance above roadway 39.8" (1010
mm) Horizontal distance from center of rear wheel
tread 0" (0 mm) to the right/left Hydraulic con-
trol system direct engine drive Transmission se-
lective gear fixed ratio with partial (2) range
operator controlled powershift Advertised speeds
mph (km/h) first 1.4 (2.2) second 1.8 (2.9) third 2.1
(3.4) fourth 2.8 (4.5) fifth 3.0 (4.8) sixth 3.9 (6.3)
seventh 4.1 (6.6) eighth 4.8 (7.7) ninth 5.5 (8.8)
tenth 6.3 (10.2) eleventh 7.3 (11.7) twelfth 9.7 (15.6)
thirteenth 10.2 (16.5) fourteenth 13.6 (21.9) fif-
teenth 14.2 (22.8) sixteenth 18.9 (30.5) reverse 1.5
(2.4), 2.0 (3.2), 2.3 (3.7), 3.1 (4.9), 3.2 (5.2), 4.3
(6.9), 4.5 (7.2), 5.2 (8.4), 6.0 (9.6), 6.9 (11.2), 8.0
(12.8), 10.6 (17.1) Clutch single dry disc hydraul-
ically operated by foot pedal Brakes single wet
disc hydraulically operated by two foot pedals which
can be locked together Steering hydrostatic
Turning radius (on concrete surface with brake
applied) right 194.5" (4.94 m) left 187" (4.75 m)

LUGGING ABILITY IN 10th (5H) GEAR

Crankshaft Speed rpm	2398	2164	1913	1680	1439	1196
Pull—lbs (kN)	6601 (29.36)	7213 (32.33)	8026 (35.97)	8211 (36.80)	8067 (36.16)	7450 (33.39)
Increase in Pull %	0	9	22	24	22	13
Power—Hp (kW)	103.26 (77.00)	100.80 (75.17)	97.97 (73.06)	87.63 (65.34)	73.92 (55.12)	57.27 (42.71)
Speed—Mph (km/h)	5.87 (9.44)	5.24 (8.43)	4.58 (7.37)	4.00 (6.44)	3.44 (5.53)	2.88 (4.64)
Slip %	8.02	8.92	9.94	10.52	10.23	9.36

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive	
	Engaged dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	82.0	82.5
75% of Pull at Maximum Power—Ten Hours		81.0
50% of Pull at Maximum Power—Two Hours		82.5
50% of Pull at Reduced Engine Speed—Two Hours		78.0
Bystander in 15th (8L) gear		88.0

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)			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 10th (5H) Gear											
104.90 (78.22)	6505 (28.93)	6.05 (9.73)	2399	5.60	7.956 (30.116)	0.531 (0.323)	13.19 (2.597)	189 (86.9)	46 (7.8)	52 (11.1)	28.85 (97.42)

MAXIMUM POWER IN SELECTED GEARS

97.19 (72.48)	13982 (62.20)	2.61 (4.20)	2465	14.94	5th (3L) Gear			187 (85.8)	39 (3.9)	45 (7.2)	28.67 (96.81)
106.64 (79.52)	9036 (40.19)	4.43 (7.12)	2400	7.91	8th (5L) Gear			188 (86.7)	44 (6.7)	49 (9.4)	28.88 (97.52)
105.75 (78.86)	6551 (29.14)	6.05 (9.74)	2399	5.57	10th (5H) Gear			188 (86.7)	45 (7.2)	52 (11.1)	28.88 (97.52)
106.91 (79.73)	5724 (25.46)	7.00 (11.27)	2399	4.84	11th (6L) Gear			189 (86.9)	45 (7.2)	53 (11.7)	28.86 (97.46)

TIRES, BALLAST AND WEIGHT

Rear Tires		With Ballast		Without Ballast	
Ballast	—No., size, ply & psi (kPa) —Liquid (each) —Cast Iron (each)	Two 20.8-38; 8; 18 (125) 1420 lb (644 kg) None		Two 20.8-38; 8; 18 (125) None None	
Front Tires		With Ballast		Without Ballast	
Ballast	—No., size, ply & psi (kPa) —Liquid (each) —Cast Iron (each)	Two 14.9-28; 6; 20 (140) 548 lb (248 kg) None		Two 14.9-28; 6; 20 (140) None None	
Height of Drawbar		22 in (560 mm)		22 in (560 mm)	
Static Weight with Operator—Rear		11390 lb (5167 kg)		8550 lb (3878 kg)	
—Front		5845 lb (2651 kg)		4750 lb (2155 kg)	
—Total		17235 lb (7818 kg)		13300 lb (6033 kg)	

(on concrete surface without brake) right 228" (5.79 m) left 222" (5.64 m) **Turning space diameter** (on concrete surface with brake applied) right 405" (10.28 m) left 391" (9.93 m) (on concrete surface without brake) right 471" (11.96 m) left 459" (11.66 m) **Power take-off** 540 rpm at 1992 engine rpm and 1000 rpm at 2092 engine rpm.

REPAIRS and ADJUSTMENTS: During drawbar limber up run, the engine oil began leaking from the outlet fitting of the oil cooler. The fitting was tightened and limber up resumed.

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 142°F (61.3°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. 1513, June 18, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Massey Ferguson 3545 Diesel