4-17-1984

Test 1512: Massey-Ferguson 3525 Diesel 16-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1512
MASSEY FERGUSON 3525 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1148 rpm)								
108.01 (80.54)	2400	6.954 (26.322)	0.450 (0.274)	15.53 (3.060)	183 (83.8)	56 (13.5)	75 (23.8)	28.66 (96.78)
Standard Power Take-off Speed (1000 rpm)—One Hour								
103.67 (77.31)	2091	6.219 (23.538)	0.420 (0.255)	16.67 (3.284)	182 (83.4)	57 (14.0)	75 (23.8)	28.62 (96.65)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
95.20 (70.99)	2488	6.558 (24.822)	0.482 (0.293)	14.52 (2.860)	182 (83.3)	59 (14.7)	77 (24.7)	....
0.00 (0.00)	2617	2.659 (10.065)	....	....	177 (80.6)	57 (13.9)	74 (23.3)	....
49.03 (36.56)	2565	4.645 (17.582)	0.663 (0.403)	10.56 (2.080)	180 (81.9)	58 (14.4)	77 (24.7)	....
108.92 (81.22)	2400	6.999 (26.494)	0.449 (0.273)	15.56 (3.066)	183 (83.9)	58 (14.4)	76 (24.4)	....
24.77 (18.47)	2590	3.654 (13.832)	1.032 (0.628)	6.78 (1.335)	178 (81.1)	57 (13.9)	75 (23.9)	....
72.69 (54.21)	2534	5.588 (21.153)	0.538 (0.327)	13.01 (2.563)	180 (82.2)	57 (13.9)	75 (23.9)	....
Av 58.44	**2532**	**5.017**	**0.601**	**11.65**	**180**	**58**	**76**	**28.63**
Av (43.58)		***(18.991)***	***(0.365)***	***(2.294)***	***(82.2)***	***(14.2)***	***(24.2)***	***(96.67)***

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (5H) Gear											
88.68 (66.13)	6005 (26.71)	5.54 (8.91)	2400	8.11	7.012 (26.544)	0.553 (0.336)	12.65 (2.491)	187 (85.8)	48 (8.6)	53 (11.4)	28.56 (96.43)
75% of Pull at Maximum Power—Ten Hours 10th (5H) Gear											
72.31 (53.92)	4552 (20.25)	5.96 (9.59)	2517	5.85	6.273 (23.746)	0.607 (0.369)	11.53 (2.271)	186 (85.3)	43 (6.3)	56 (13.1)	29.04 (98.07)
50% of Pull at Maximum Power—Two Hours 10th (5H) Gear											
49.96 (37.26)	3035 (13.50)	6.17 (9.94)	2565	4.17	5.368 (20.321)	0.752 (0.457)	9.31 (1.834)	185 (85.0)	39 (3.6)	44 (6.4)	29.08 (98.20)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
49.93 (37.23)	3036 (13.50)	6.17 (9.93)	1590	4.10	3.617 (13.691)	0.507 (0.308)	13.80 (2.719)	184 (84.4)	42 (5.3)	48 (8.9)	29.10 (98.25)
MAXIMUM POWER IN SELECTED GEARS											
84.45 (62.97)	9322 (41.47)	3.40 (5.47)	2461	14.94	7th (4L) Gear			186 (85.3)	35 (1.7)	40 (4.4)	29.05 (98.10)
88.19 (65.77)	8371 (37.24)	3.95 (6.36)	2399	12.68	8th (5L) Gear			187 (85.8)	41 (5.0)	47 (8.3)	28.50 (96.24)
88.15 (65.74)	7043 (31.33)	4.69 (7.55)	2400	9.62	9th (4H) Gear			186 (85.6)	41 (5.0)	47 (8.3)	28.49 (96.21)
89.92 (67.06)	6069 (26.99)	5.56 (8.94)	2398	7.93	10th (5H) Gear			186 (85.6)	40 (4.4)	46 (7.8)	28.48 (96.17)
91.22 (68.02)	5308 (23.61)	6.45 (10.37)	2399	6.92	11th (6L) Gear			187 (85.8)	42 (5.6)	50 (10.0)	28.53 (96.34)
87.70 (65.40)	3740 (16.64)	8.79 (14.15)	2401	4.67	12th (6H) Gear			187 (85.8)	42 (5.6)	51 (10.6)	28.54 (96.38)

Department of Agricultural Engineering

Dates of Test: April 17 to May 1, 1984

Manufacturer: MASSEY FERGUSON S.A. RN 188 LA Boursidiere-92357, Le Plessis, Robinson, 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 classification** SE, CC, CD **To motor** 4.022 gal *(15.223 l)* **Drained from motor** 3.452 gal *(13.069 l)* **Transmission and final drive lubricant** Massey Ferguson Permatran III fluid **Total time engine was operated** 47.5 hours.

ENGINE: **Make** Perkins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** TU31107U706132K **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875″ × 5″ *(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 with aspirator **Oil filter** two paper cartridges **Oil cooler** heat exchanger in lower part of radiator for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** front wheel assist **Serial No.** Δ3525RWK320219Δ **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 ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 38.5″ *(978 mm)* Vertical distance above roadway 40.7″ *(1033 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 with partial (2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 1.3 *(2.1)* second 1.8 *(2.8)* third 2.0 *(3.3)* fourth 2.7 *(4.4)* fifth 2.8 *(4.6)* sixth 3.8 *(6.1)* seventh 3.9 *(6.3)* eighth 4.6 *(7.4)* ninth 5.3 *(8.5)* tenth 6.1 *(9.8)* eleventh 7.0 *(11.3)* twelfth 9.4 *(15.1)* thirteenth 9.8 *(15.8)* fourteenth 13.1 *(21.1)* fifteenth 13.7 *(22.0)* sixteenth 18.2 *(29.3)* reverse 1.5 *(2.3)*, 1.9 *(3.1)*, 2.2 *(3.6)*, 3.0 *(4.8)*, 3.1 *(5.0)*, 4.1 *(6.7)*, 4.3 *(6.9)*, 5.0 *(8.1)*, 5.8 *(9.3)*, 6.7 *(10.8)*, 7.7 *(12.4)*, 10.2 *(16.5)* **Clutch** single dry disc hydraulically 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	2158	1919	1693	1428	1195
Pull—lbs *(kN)*	6069 *(26.99)*	6605 *(29.60)*	7195 *(32.25)*	7691 *(34.47)*	7650 *(34.29)*	7387 *(33.11)*
Increase in Pull %	0	9	19	27	26	22
Power—Hp *(kW)*	89.92 *(67.06)*	87.21 *(65.03)*	83.57 *(62.32)*	77.88 *(58.07)*	65.41 *(48.78)*	53.08 *(39.58)*
Speed—Mph *(km/h)*	5.56 *(8.94)*	4.95 *(7.97)*	4.36 *(7.01)*	3.80 *(6.11)*	3.21 *(5.16)*	2.69 *(4.34)*
Slip %	7.93	8.57	9.69	10.78	10.64	10.10

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Engaged dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	80.5	81.5
75% of Pull at Maximum Power—Ten Hours		80.5
50% of Pull at Maximum Power—Two Hours		80.0
50% of Pull at Reduced Engine Speed—Two Hours		76.5
Bystander in 15th (8L) gear		89.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 10th (5H) Gear											
90.10 *(67.19)*	5894 *(26.22)*	5.73 *(9.23)*	2401	5.73	6.991 *(26.463)*	0.543 *(0.330)*	12.89 *(2.539)*	187 *(86.1)*	45 *(6.9)*	57 *(13.9)*	28.60 *(96.58)*
MAXIMUM POWER IN SELECTED GEARS											
80.16 *(59.77)*	12023 *(53.48)*	2.50 *(4.02)*	2488	14.79	5th (3L) Gear			185 *(85.0)*	35 *(1.7)*	40 *(4.4)*	29.01 *(97.96)*
91.74 *(68.41)*	8240 *(36.65)*	4.18 *(6.72)*	2400	8.41	8th (5L) Gear			187 *(85.8)*	41 *(5.0)*	48 *(8.9)*	28.51 *(96.27)*
91.34 *(68.11)*	5959 *(26.50)*	5.75 *(9.25)*	2401	5.54	10th (5H) Gear			186 *(85.3)*	40 *(4.4)*	46 *(7.8)*	28.47 *(96.14)*
92.27 *(68.81)*	5213 *(23.19)*	6.64 *(10.68)*	2401	4.93	11th (6L) Gear			186 *(85.6)*	42 *(5.6)*	49 *(9.4)*	28.52 *(96.31)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-38; 8; 20 *(140)*	Two 18.4-38; 8; 20 *(140)*
Ballast	—Liquid (each)	535 lb *(243 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 8; 22 *(150)*	Two 13.6-28; 8; 22 *(150)*
Ballast	—Liquid (each)	238 lb *(108 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		24 in *(610 mm)*	24 in *(610 mm)*
Static Weight with Operator	—Rear	9520 lb *(4318 kg)*	8450 lb *(3833 kg)*
	—Front	5125 lb *(2325 kg)*	4650 lb *(2109 kg)*
	—Total	14645 lb *(6643 kg)*	13100 lb *(5942 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 2091 engine rpm.

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 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 143°F *(61.5°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. During inspection, a longitudinal scratch was found in cylinder No. 4.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1512,** June 18, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

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Massey Ferguson 3525 Diesel

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