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Test 1251: Massey-Ferguson 245 Diesel

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1251 — MASSEY FERGUSON 245 DIESEL

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—722 rpm)								
42.90 *(31.99)*	2250	2.792 *(10.567)*	0.454 *(0.276)*	15.37 *(3.027)*	194 *(90.0)*	70 *(20.9)*	76 *(24.7)*	28.890 *(97.557)*
Standard Power Take-off Speed (540 rpm)—One Hour								
36.50 *(27.22)*	1683	2.246 *(8.501)*	0.429 *(0.261)*	16.25 *(3.202)*	197 *(91.6)*	70 *(21.3)*	76 *(24.5)*	28.890 *(97.557)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
37.29 *(27.81)*	2302	2.433 *(9.211)*	0.455 *(0.277)*	15.33 *(3.019)*	187 *(86.1)*	71 *(21.7)*	76 *(24.4)*	....
0.00 *(0.00)*	2402	0.873 *(3.304)*	....	....	180 *(82.2)*	71 *(21.7)*	76 *(24.4)*	....
19.05 *(14.21)*	2348	1.535 *(5.810)*	0.562 *(0.342)*	12.41 *(2.445)*	182 *(83.6)*	71 *(21.7)*	76 *(24.7)*	....
43.22 *(32.23)*	2252	2.820 *(10.676)*	0.455 *(0.277)*	15.33 *(3.019)*	195 *(90.6)*	72 *(21.9)*	77 *(25.0)*	....
9.65 *(7.19)*	2380	1.187 *(4.492)*	0.858 *(0.522)*	8.13 *(1.601)*	180 *(82.2)*	71 *(21.7)*	77 *(25.0)*	....
28.23 *(21.05)*	2323	1.960 *(7.421)*	0.485 *(0.295)*	14.40 *(2.837)*	186 *(85.6)*	72 *(22.2)*	78 *(25.6)*	....
Av 22.91	**2334**	**1.801**	**0.549**	**12.72**	**185**	**71**	**77**	**28.887**
Av (17.08)		***(6.819)***	***(0.334)***	***(2.505)***	***(85.0)***	***(21.8)***	***(24.9)***	***(97.546)***

DRAWBAR PERFORMANCE

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 6th (3L H) Gear											
34.97 *(26.07)*	2542 *(11.31)*	5.16 *(8.30)*	2250	8.20	2.812 *(10.646)*	0.561 *(0.341)*	12.43 *(2.449)*	188 *(86.7)*	71 *(21.7)*	78 *(25.3)*	28.955 *(97.777)*
75% of Pull at Maximum Power—Ten Hours 6th (3L H) Gear											
28.46 *(21.22)*	1970 *(8.76)*	5.42 *(8.72)*	2312	6.13	2.225 *(8.422)*	0.545 *(0.332)*	12.79 *(2.520)*	183 *(83.8)*	66 *(18.6)*	68 *(19.8)*	29.089 *(98.229)*
50% of Pull at Maximum Power—Two Hours 6th (3L H) Gear											
19.54 *(14.57)*	1318 *(5.86)*	5.56 *(8.94)*	2332	4.57	1.756 *(6.645)*	0.627 *(0.381)*	11.13 *(2.193)*	181 *(82.8)*	73 *(22.8)*	80 *(26.4)*	28.910 *(97.625)*
50% of Pull at Reduced Engine Speed—Two Hours 9th (2H L) Gear											
20.04 *(14.95)*	1354 *(6.02)*	5.55 *(8.93)*	1397	4.77	1.361 *(5.154)*	0.474 *(0.288)*	14.72 *(2.900)*	183 *(83.9)*	69 *(20.6)*	78 *(25.3)*	28.965 *(97.810)*
MAXIMUM POWER IN SELECTED GEARS											
30.90 *(23.04)*	4279 *(19.03)*	2.71 *(4.36)*	2298	13.48	4th (2L H) Gear			184 *(84.4)*	66 *(18.9)*	73 *(22.8)*	28.940 *(97.726)*
35.53 *(26.49)*	3491 *(15.53)*	3.82 *(6.14)*	2250	11.29	5th (3L L) Gear			185 *(85.0)*	62 *(16.7)*	68 *(20.0)*	29.040 *(98.064)*
36.06 *(26.89)*	2625 *(11.68)*	5.15 *(8.29)*	2250	8.35	6th (3L H) Gear			188 *(86.7)*	68 *(20.0)*	74 *(23.3)*	28.990 *(97.895)*
36.75 *(27.40)*	2328 *(10.36)*	5.92 *(9.53)*	2249	7.46	7th (1H L) Gear			187 *(86.1)*	63 *(17.2)*	68 *(20.0)*	29.020 *(97.996)*
36.71 *(27.38)*	1747 *(7.77)*	7.88 *(12.68)*	2249	5.67	8th (1H H) Gear			187 *(86.1)*	64 *(17.8)*	69 *(20.6)*	29.010 *(97.962)*
36.47 *(27.20)*	1535 *(6.83)*	8.91 *(14.34)*	2251	5.00	9th (2H L) Gear			186 *(85.6)*	64 *(17.8)*	69 *(20.6)*	29.010 *(97.962)*

LUGGING ABILITY IN RATED GEAR 6th (3L H)

Crankshaft Speed rpm	2250	2027	1797	1575	1344	1124
Pull—lbs *(kN)*	2625 *(11.68)*	2845 *(12.65)*	2968 *(13.20)*	3092 *(13.75)*	3120 *(13.88)*	3039 *(13.52)*
Increase in Pull %	0	8	13	18	19	16
Power—Hp *(kW)*	36.06 *(26.89)*	34.93 *(26.05)*	32.15 *(23.98)*	29.21 *(21.78)*	25.13 *(18.74)*	20.51 *(15.29)*
Speed—Mph *(km/h)*	5.15 *(8.29)*	4.60 *(7.41)*	4.06 *(6.54)*	3.54 *(5.70)*	3.02 *(4.86)*	2.53 *(4.07)*
Slip %	8.35	9.08	9.49	10.00	10.10	9.90

Department of Agricultural Engineering

Dates of Test: August 24 to September 6, 1977

Manufacturer: Massey-Ferguson Inc., 1901 Bell Avenue, Des Moines, IA 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 50.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8381 **Fuel weight** 6.978 lbs/gal *(0.838 kg/l)* **Oil SAE** 20-20W **API service classification** MS/DS MM,DG,DM **To motor** 1.436 gal *(5.436 l)* **Drained from motor** 1.234 gal *(4.671 l)* **Transmission and final drive lubricant** Massey-Ferguson Permatran oil **Total time engine was operated** 44.5 hours

ENGINE Make Perkins Diesel **Type** 3 cylinder vertical **Serial No.** 39263DSL **Crankshaft** lengthwise **Rated rpm** 2250 **Bore and stroke** 3.6″ × 5″ *(91.4 mm × 127.0 mm)* **Compression ratio** 16.5 to 1 **Displacement** 153 cu in *(2502 ml)* **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** paper primary and felt safety elements with centrifugal precleaner **Oil filter** full flow paper spin-on cartridge **Fuel filter** paper element **Muffler** vertical **Cooling medium temperature control** thermostat

CHASSIS: Type standard **Serial No.** 9A-259591 **Tread width** rear 56″ *(1422 mm)* to 72″ *(1829 mm)* front 48″ *(1219 mm)* to 80″ *(2032 mm)* **Wheel base** 73.1″ *(1857 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 30.1″ *(765 mm)* Vertical distance above roadway 26.8″ *(682 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 with partial (2) range operator controlled power shift **Advertised speeds mph *(km/h)*** first 1.6 *(2.6)* second 2.1 *(3.3)* third 2.3 *(3.8)* fourth 3.0 *(4.9)* fifth 4.3 *(6.8)* sixth 5.6 *(9.0)* seventh 6.4 *(10.2)* eighth 8.3 *(13.3)* ninth 9.3 *(15.0)* tenth 12.2 *(20.4)* eleventh 17.1 *(27.9)* twelfth 22.3 *(35.9)* reverse 2.2 *(3.5)*, 2.8 *(4.5)*, 8.6 *(13.9)*, 11.3 *(18.2)* **Clutch** single plate dry disc with PTO clutch operated by single foot pedal **Brakes** shoe and drum operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 112.5″ *(2.86 m)* left 111.2″ *(2.83 m)* (on concrete surface without brake) right 123.2″ *(3.13 m)* left 121.4″ *(3.08 m)* **Turning space diameter** (on concrete surface with brake applied) right 236″ *(5.99 m)* left 233″ *(5.92 m)* (on concrete surface without brake) right 258″ *(6.55 m)* left 254″ *(6.45 m)* **Power take-off** 540 rpm at 1683 engine rpm.

REPAIRS and ADJUSTMENTS: The bolts of the left rear wheel weights were retightened at the conclusion of the 2 hour maximum drawbar power test.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	97.0
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	96.5
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 11th (3H L) gear	86.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 4; 14 *(100)*	Two 13.6-28; 4; 14 *(100)*
Ballast	—Liquid (each)	500 lb *(227 kg)*	None
	—Cast Iron (each)	470 lb (213 kg)	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6.00-16; 4; 32 *(220)*	Two 6.00-16; 4; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	80 lb *(36 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static weight with operator—rear		4390 lb *(1991 kg)*	2450 lb *(1111 kg)*
front		1760 lb *(798 kg)*	1600 lb *(726 kg)*
total		6150 lb *(2790 kg)*	4050 lb *(1837 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 162°F *(72.1°C)*. Six gears were chosen between tangential pull limit of drive tires and 15 mph *(24.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1251.**

LOUIS I. LEVITICUS
Engineer-in Charge

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Massey Ferguson 245 Diesel

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