1-1-1981

Test 1391: Massey-Ferguson MF 4900 Diesel 18-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1391 — MASSEY FERGUSON MF 4900 DIESEL 18 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—1107 rpm)								
320.55 *(239.03)*	2600	20.452 *(77.419)*	0.447 *(0.272)*	15.67 *(3.087)*	169 *(76.2)*	60 *(15.3)*	75 *(23.8)*	28.877 *(97.512)*
Standard Power take-off Speed (1000 rpm)—One Hour								
323.88 *(241.52)*	2347	19.280 *(72.983)*	0.417 *(0.253)*	16.80 *(3.309)*	170 *(76.4)*	60 *(15.6)*	76 *(24.2)*	28.870 *(97.490)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
280.51 *(209.18)*	2678	18.971 *(71.813)*	0.473 *(0.288)*	14.78 *(2.913)*	169 *(75.8)*	60 *(15.3)*	75 *(23.9)*	....
0.00 *(0.00)*	2813	6.888 *(26.074)*	....	....	165 *(73.9)*	59 *(15.0)*	75 *(23.6)*	....
143.96 *(107.35)*	2746	13.669 *(51.743)*	0.665 *(0.404)*	10.53 *(2.075)*	167 *(75.0)*	59 *(15.0)*	76 *(24.2)*	....
321.31 *(239.60)*	2600	20.129 *(76.197)*	0.439 *(0.267)*	15.96 *(3.144)*	171 *(76.9)*	59 *(14.7)*	76 *(24.2)*	....
72.49 *(54.06)*	2770	10.712 *(40.549)*	1.034 *(0.629)*	6.77 *(1.333)*	166 *(74.2)*	60 *(15.6)*	77 *(25.0)*	....
213.49 *(159.20)*	2716	15.967 *(60.442)*	0.523 *(0.318)*	13.37 *(2.634)*	169 *(75.8)*	60 *(15.3)*	76 *(24.4)*	....
Av 171.96 *Av (128.23)*	**2720**	**14.389** *(54.468)*	**0.586** *(0.356)*	**11.95** *(2.354)*	**168** *(75.3)*	**59** *(15.2)*	**76** *(24.2)*	**28.850** *(97.422)*

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 9th (2 HI LO) Gear											
266.16 *(198.47)*	15515 *(69.01)*	6.43 *(10.35)*	2599	3.77	20.074 *(75.989)*	0.528 *(0.321)*	13.26 *(2.612)*	173 *(78.3)*	57 *(13.6)*	60 *(20.3)*	28.830 *(97.350)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
216.83 *(161.69)*	12045 *(53.58)*	6.75 *(10.86)*	2697	2.67	18.349 *(69.459)*	0.592 *(0.360)*	11.82 *(2.328)*	172 *(77.9)*	54 *(11.9)*	67 *(19.4)*	29.057 *(98.120)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
148.88 *(111.02)*	8054 *(35.83)*	6.93 *(11.16)*	2741	1.58	15.091 *(57.127)*	0.709 *(0.432)*	9.87 *(1.943)*	171 *(76.9)*	59 *(15.0)*	72 *(21.9)*	28.785 *(97.200)*
50% of Pull at Reduced Engine Speed—Two Hours 13th (3 LO LO) Gear											
149.34 *(111.36)*	8062 *(35.86)*	6.95 *(11.18)*	1647	1.62	10.394 *(39.347)*	0.487 *(0.296)*	14.37 *(2.830)*	172 *(77.8)*	61 *(16.1)*	75 *(23.9)*	28.710 *(96.950)*
MAXIMUM POWER IN SELECTED GEARS											
233.53 *(174.14)*	30090 *(133.85)*	2.91 *(4.68)*	2650	14.78	4th (1 LO HI) Gear			170 *(76.7)*	54 *(12.2)*	63 *(17.2)*	28.860 *(97.460)*
259.76 *(193.70)*	27689 *(123.17)*	3.52 *(5.66)*	2600	11.01	5th (1 HI INT) Gear			172 *(77.8)*	53 *(11.7)*	67 *(19.4)*	29.090 *(98.230)*
264.94 *(197.57)*	24179 *(107.55)*	4.11 *(6.61)*	2597	7.77	6th (1 HI HI) Gear			173 *(78.3)*	52 *(11.1)*	66 *(18.9)*	29.100 *(98.270)*
269.53 *(200.99)*	21361 *(95.02)*	4.73 *(7.61)*	2599	5.99	7th (2 LO LO) Gear			173 *(78.1)*	52 *(11.1)*	66 *(18.9)*	29.100 *(98.270)*
274.65 *(204.81)*	17863 *(79.46)*	5.77 *(9.28)*	2600	4.44	8th (2 LO INT) Gear			173 *(78.3)*	52 *(11.1)*	65 *(18.3)*	29.110 *(98.300)*
274.88 *(204.98)*	16047 *(71.38)*	6.42 *(10.34)*	2597	3.89	9th (2 HI LO) Gear			172 *(77.8)*	52 *(11.1)*	64 *(17.8)*	29.130 *(98.370)*
278.78 *(207.89)*	16004 *(71.19)*	6.53 *(10.51)*	2599	3.81	10th (2 LO HI) Gear			173 *(78.1)*	52 *(11.1)*	65 *(18.3)*	29.120 *(98.330)*
275.15 *(205.18)*	13271 *(59.03)*	7.78 *(12.51)*	2599	3.09	11th (2 HI INT) Gear			173 *(78.3)*	53 *(11.7)*	67 *(19.4)*	29.090 *(98.230)*
273.81 *(204.18)*	11676 *(51.94)*	8.79 *(14.15)*	2600	2.61	12th (2 HI HI) Gear			173 *(78.1)*	53 *(11.7)*	67 *(19.4)*	29.090 *(98.230)*

Department of Agricultural Engineering

Dates of Test: May 12-26, 1981

Manufacturer: MASSEY FERGUSON, INC., 1901 Bell Avenue, Des Moines, Iowa 50315

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° *(15°/15°)*** 0.8406 **Fuel weight** 6.999 lbs/gal *(0.839 kg/l)* **Oil SAE** 15W-40 **API service classification** SB/SE-CA/CD **To motor** 7.753 gal *(29.348 l)* **Drained from motor** 6.976 gal *(26.407 l)* **Transmission and final drive lubricant** M. F. Permatran fluid **Total time engine was operated** 44.0 hours

ENGINE: Make Cummins Diesel **Type** eight cylinder vee with turbocharger **Serial No.** 10966576 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 5.5″ × 4.75″ *(139.7 mm × 120.7 mm)* **Compression ratio** 15.5 to 1 **Displacement** 903 cu in *(14800 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type four wheel with duals **Serial No.** 9D002815 **Tread width** rear 70″ *(1778 mm)* to 130.5″ *(3315 mm)* front 70″ *(1778 mm)* to 130.5″ *(3315 mm)* **Wheel base** 137″ *(3480 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 83.1″ *(2111 mm)* Vertical distance above roadway 49.2″ *(1250 mm)* Horizontal distance from center of rear wheel tread 0.2″ *(4 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 2.4 *(3.8)* second 2.9 *(4.6)* third 3.2 *(5.1)* fourth 3.2 *(5.2)* fifth 3.8 *(6.1)* sixth 4.3 *(6.9)* seventh 4.8 *(7.8)* eighth 5.8 *(9.3)* ninth 6.4 *(10.3)* tenth 6.5 *(10.5)* eleventh 7.7 *(12.4)* twelfth 8.7 *(14.0)* thirteenth 10.7 *(17.2)* fourteenth 12.8 *(20.6)* fifteenth 14.2 *(22.9)* sixteenth 14.4 *(23.2)* seventeenth 17.0 *(27.4)* eighteenth 19.2 *(30.9)* reverse 3.2 *(5.2)*, 3.9 *(6.3)*, 4.3 *(7.0)*, 4.4 *(7.1)*, 5.2 *(8.3)*, 5.8 *(9.4)*, **Clutch** multiple wet disc operated by foot pedal **Brakes** caliper disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 246″ *(6.25 m)* left 246″ *(6.25 m)* **Turning space diameter** (on concrete surface without brake) right 516″ *(13.10 m)* left 516″ *(13.10 m)* **Power take-off** 1000 rpm at 2347 engine rpm.

LUGGING ABILITY IN 9th (2 HI LO) GEAR

Crankshaft Speed rpm	2597	2338	2084	1822	1560	1297
Pull—lbs *(kN)*	16047 *(71.38)*	18163 *(80.79)*	19448 *(86.51)*	19814 *(88.13)*	19499 *(86.74)*	18933 *(84.22)*
Increase in Pull %	0	13	21	23	22	18
Power—Hp *(kW)*	274.88 *(204.98)*	278.07 *(207.36)*	263.68 *(196.62)*	234.43 *(174.81)*	197.84 *(147.53)*	160.05 *(119.35)*
Speed—Mph *(km/h)*	6.42 *(10.34)*	5.74 *(9.24)*	5.08 *(8.18)*	4.44 *(7.14)*	3.80 *(6.12)*	3.17 *(5.10)*
Slip %	3.89	4.60	5.22	5.38	5.22	5.07

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	83.5
75% of Pull at Maximum Power—Ten Hours	83.0
50% of Pull at Maximum Power—Two Hours	83.0
50% of Pull at Reduced Engine Speed—Two Hours	78.5
Bystander in 17th (3 HI INT) gear	93.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 16 *(110)* outer 12 *(85)*	Four 23.1-34; 8; inner 16 *(110)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1330 lb *(603 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 16 *(110)* outer 12 *(85)*	Four 23.1-34; 8; inner 16 *(110)* outer 12 *(85)*
Ballast	—Liquid (each inner)	158 lb *(72 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		22 in *(560 mm)*	22 in *(560 mm)*
Static Weight with Operator—Rear		14840 lb *(6731 kg)*	12180 lb *(5525 kg)*
Front		19100 lb *(8664 kg)*	18785 lb *(8521 kg)*
Total		33940 lb *(15395 kg)*	30965 lb *(14046 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

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 148°F *(64.3°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. **1391.**

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Massey Ferguson MF 4900 Diesel

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