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Test 1214: Massey-Ferguson MF 230 Diesel

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NEBRASKA TRACTOR TEST 1214 – MASSEY-FERGUSON MF 230 DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temperature Degrees F Cooling medium	Air wet bulb	Air dry bulb	Barometer inches of Mercury
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—642 rpm)								
34.53	2000	1.946	0.393	17.74	188	64	75	28.990
Standard Power Take-off Speed (540 rpm)—One Hour								
30.80	1684	1.694	0.383	18.18	191	63	75	28.985
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
30.00	2045	1.713	0.398	17.52	178	63	75	.....
0.00	2153	0.525	.....	.....	174	63	75	.....
15.39	2097	1.080	0.489	14.25	179	63	75	.....
34.84	2001	1.980	0.396	17.60	188	64	75	.....
7.79	2123	0.792	0.709	9.83	173	63	75	.....
22.83	2074	1.394	0.426	16.37	180	63	75	.....
Av 18.47	**2082**	**1.247**	**0.471**	**14.81**	**179**	**63**	**75**	**28.980**

DRAWBAR PERFORMANCE

Hp	Draw-bar pull lbs	Speed miles per hr	Crank-shaft speed rpm	Slip of drivers %	Fuel Consumption Gal per hr	Lb per hp-hr	Hp-hr per gal	Temp Degrees F Cool-ing med	Air wet bulb	Air dry bulb	Barometer inches of Mercury
VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST											
Maximum Available Power—Two Hours—4th Gear (1-H)											
28.36	2093	5.08	2000	6.87	1.883	0.463	15.06	187	70	81	28.970
75% of Pull at Maximum Power—Ten Hours—4th Gear (1-H)											
23.32	1640	5.33	2058	5.06	1.582	0.473	14.74	178	60	77	29.062
50% of Pull at Maximum Power—Two Hours—4th Gear (1-H)											
16.15	1106	5.47	2085	3.79	1.255	0.542	12.87	175	67	78	29.065
50% of Pull at Reduced Engine Speed—Two Hours—5th Gear (2-H)											
16.37	1121	5.47	1418	3.60	1.076	0.458	15.21	179	67	84	29.010
MAXIMUM POWER WITH BALLAST											
19.32	4030	1.80	2085	13.77	2nd Gear (2-L)			173	63	70	29.060
27.86	3204	3.26	1999	11.09	3rd Gear (3-L)			185	69	80	29.000
29.62	2184	5.09	2001	6.90	4th Gear (1-H)			183	68	78	29.010
29.66	1456	7.64	1999	4.54	5th Gear (2-H)			185	70	81	29.000

VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—4th Gear (1-H)

Pounds Pull	2184	2292	2370	2109	2329	2290
Horsepower	29.62	27.82	25.50	22.63	18.85	15.49
Crankshaft Speed rpm	2001	1800	1600	1398	1202	1003
Miles Per Hour	5.09	4.55	4.04	3.52	3.04	2.54
Slip of Drivers %	6.90	7.62	7.62	7.62	7.62	7.42

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power 2 Hours	96.0
75% of Pull at Max. Power 10 Hours	95.0
50% of Pull at Max. Power 2 Hours	94.0
50% of Pull at Reduced Engine Speed 2 Hours	90.0
Bystander in 6th gear (3-H)	84.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi	Two 12.4-28; 4; 16	Two 12.4-28; 4; 16
Ballast	—Liquid	500 lb each	None
	Cast Iron	35 lb each	None
Front Tires	—No., size, ply & psi	Two 5.50-16; 4; 36	Two 5.50-16; 4; 36
Ballast	—Liquid	None	None
	Cast Iron	20 lb each	None
Height of drawbar		22.5 inches	22.5 inches
Static weight with operator—rear		3500 lb	2430 lb
front		1610 lb	1570 lb
total		5110 lb	4000 lb

Department of Agricultural Engineering

Dates of Test: June 1 to 9, 1976

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

FUEL, OIL AND TIME **Fuel** No 2 Diesel **Cetane No** 51.8 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60°** 0.8372 **Weight per gallon** 6.971 lb **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 1.944 gal **Drained from motor** 1.328 gal **Transmission and final drive lubricant** Massey-Ferguson Permatran Oil **Total time engine was operated** 43.5 hours .

ENGINE **Make** Perkins Diesel **Type** 3 cylinder vertical **Serial No** 432754 DL **Crankshaft mounted** lengthwise **Rated rpm** 2000 **Bore and stroke** 3.6" x 5.0" **Compression ratio** 18.5 to 1 **Displacement** 153 cu in **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** dry dual paper element **Oil filter** full flow paper cartridge **Fuel filter** paper element **Muffler** vertical **Cooling medium temperature control** thermostat.

CHASSIS **Type** standard **Serial No** 9A 236079 **Tread width** rear 50" to 76" front 48" to 72" **Wheel base** 72.375" **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 32" Vertical distance above roadway 27.3" Horizontal distance from center of rear wheel tread 0.06" to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** first 1.4 second 2.0 third 3.6 fourth 5.4 fifth 7.9 sixth 14.5 reverse 1.8 and 7.4 **Clutch** single dry disc operated by a foot pedal **Brakes** drum and shoes operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 108" left 108" (on concrete surface without brake)right 118" left 118" **Turning space diameter** (on concrete surface with brake applied) right 223" left 223" (on concrete surface without brake) right 241" left 241" **Power take-off** 540 rpm at 1684 engine rpm.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data in accordance with SAE and ASAE test code or official Nebraska test procedure. Four gears were chosen between tangential pull limit of drive tires and 15 mph. Temperature at injection pump was 166°F. The fuel tank leaked by the fuel level sensing unit during drawbar runs.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1214.**

LOUIS I. LEVITICUS
Engineer-in-Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

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