

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 1976

Test 1214: Massey-Ferguson MF 230 Diesel

Tractor Museum

University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

Museum, Tractor, "Test 1214: Massey-Ferguson MF 230 Diesel" (1976). *Nebraska Tractor Tests*. 1535.
<http://digitalcommons.unl.edu/tractormuseumlit/1535>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA TRACTOR TEST 1214 – MASSEY-FERGUSON MF 230 DIESEL

POWER TAKE-OFF PERFORMANCE

Hp	Crank-shaft speed rpm	Fuel Consumption		Hp-hr per gal	Temperature Degrees F			Barometer inches of Mercury
		Gal per hr	Lb per hp-hr		Cooling medium	Air wet bulb	Air dry bulb	
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		Hp-hr per gal	Temp Degrees F			Barometer inches of Mercury
					Gal per hr	Lb per hp-hr		Cooling med	Air wet bulb	Air dry bulb	
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	2409	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	Two 12.4-28; 4; 16	Two 12.4-28; 4; 16
Ballast	500 lb each	None
	Cast Iron	None
Front Tires	Two 5.50-16; 4; 36	Two 5.50-16; 4; 36
Ballast	None	None
	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