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## Test 1480: Massey-Ferguson 294 Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1480—MASSEY FERGUSON 294 DIESEL 12 SPEED

## POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption		Temperature °F (°C)		Barometer inch Hg (kPa)
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	

### MAXIMUM POWER AND FUEL CONSUMPTION

Rated Engine Speed—Two Hours (PTO Speed—584 rpm)								
67.39 (50.25)	2100	3.905 (14.782)	0.406 (0.247)	17.26 (3.399)	190 (88.0)	56 (13.5)	75 (23.7)	28.933 (97.704)
Standard Power Take-off Speed (540 rpm)—One Hour								
64.94 (48.43)	1944	3.694 (13.983)	0.399 (0.243)	17.58 (3.463)	190 (87.8)	59 (15.0)	75 (24.1)	28.940 (97.726)

### VARYING POWER AND FUEL CONSUMPTION—Two Hours

59.83 (44.62)	2192	3.501 (13.253)	0.410 (0.250)	17.09 (3.367)	186 (85.6)	59 (15.0)	74 (23.6)	.....
0.00 (0.00)	2262	1.053 (3.986)	.....	.....	164 (73.3)	58 (14.2)	76 (24.4)	.....
30.39 (22.66)	2229	2.174 (8.229)	0.501 (0.305)	13.98 (2.754)	171 (77.2)	58 (14.4)	74 (23.6)	.....
67.09 (50.03)	2100	3.886 (14.710)	0.406 (0.247)	17.26 (3.401)	189 (87.2)	60 (15.3)	76 (24.2)	.....
15.31 (11.42)	2244	1.601 (6.060)	0.733 (0.446)	9.56 (1.884)	165 (73.9)	60 (15.3)	76 (24.4)	.....
45.21 (33.71)	2210	2.778 (10.516)	0.431 (0.262)	16.28 (3.206)	178 (80.8)	60 (15.6)	75 (23.9)	.....
<b>Av 36.31</b> <b>Av (27.08)</b>	<b>2206</b>	<b>2.499</b> <b>(9.460)</b>	<b>0.482</b> <b>(0.293)</b>	<b>14.53</b> <b>(2.863)</b>	<b>175</b> <b>(79.7)</b>	<b>59</b> <b>(14.9)</b>	<b>75</b> <b>(24.1)</b>	<b>28.935</b> <b>(97.709)</b>

## DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 8th Gear											
55.23 (41.18)	3594 (15.98)	5.76 (9.28)	2099	8.76	3.763 (14.245)	0.478 (0.290)	14.68 (2.891)	191 (88.3)	53 (11.4)	68 (19.7)	28.985 (97.878)
75% of Pull at Maximum Power—Ten Hours 8th Gear											
44.87 (33.46)	2746 (12.21)	6.13 (9.86)	2196	7.18	3.217 (12.179)	0.503 (0.306)	13.95 (2.747)	177 (80.3)	49 (9.2)	50 (10.1)	28.893 (97.567)
50% of Pull at Maximum Power—Two Hours 8th Gear											
30.85 (23.01)	1831 (8.14)	6.32 (10.17)	2211	4.98	2.461 (9.316)	0.559 (0.340)	12.54 (2.470)	174 (78.6)	52 (11.1)	53 (11.7)	28.675 (96.831)
50% of Pull at Reduced Engine Speed—Two Hours 10th Gear											
30.89 (23.03)	1831 (8.14)	6.33 (10.18)	1414	4.70	2.104 (7.966)	0.478 (0.290)	14.68 (2.891)	175 (79.2)	55 (12.8)	57 (13.6)	28.625 (96.662)

### MAXIMUM POWER IN SELECTED GEARS

51.44 (38.36)	5665 (25.20)	3.41 (5.48)	2101	14.92	6th Gear		181 (82.8)	52 (11.1)	54 (12.2)	28.690 (96.882)
53.94 (40.22)	4415 (19.64)	4.58 (7.37)	2100	11.34	7th Gear		191 (88.1)	52 (11.1)	64 (17.8)	29.010 (97.962)
56.28 (41.97)	3661 (16.28)	5.77 (9.28)	2100	8.67	8th Gear		191 (88.1)	52 (11.1)	63 (17.2)	29.010 (97.962)
54.60 (40.71)	2887 (12.84)	7.09 (11.41)	2100	6.78	9th Gear		190 (87.8)	52 (11.1)	65 (18.3)	29.000 (97.929)
54.90 (40.94)	2198 (9.78)	9.37 (15.07)	2101	5.08	10th Gear		191 (88.1)	52 (11.1)	66 (18.9)	29.000 (97.929)

Department of Agricultural Engineering

Dates of Test: May 9-20, 1983

**Manufacturer:** MASSEY FERGUSON S.p.A.,  
Landini Division, Via Matteotti 17, 42042 Fab-  
brico (RE) Italy

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel  
Cetane No. 47.0 (rating taken from oil company's  
inspection data) **Specific gravity converted to 60°/**  
**60° (15°/15°)** 0.8418 **Fuel weight** 7.009 lbs/gal  
(0.840 kg/l) **Oil** SAE 20-20W **API service classi-**  
**fication** SE, SF, CC **To motor** 1.684 gal (6.374 l)  
**Drained from motor** 1.529 gal (5.787 l) **Trans-**  
**mission and final drive lubricant** Massey Fergu-  
son Permatran oil **Total time engine was oper-**  
**ated** 44.5 hours.

**ENGINE:** Make Perkins Diesel Type four  
cylinder vertical **Serial No.** LF22575U843253J  
**Crankshaft** lengthwise **Rated rpm** 2100 **Bore**  
**and stroke** 3.975" × 5" (101 mm × 127 mm) **Com-**  
**pression ratio** 16 to 1 **Displacement** 248 cu in  
(4067 ml) **Starting system** 12 volt **Lubrication**  
pressure **Air cleaner** oil bath with centrifugal  
precleaner **Oil filter** one full flow cartridge **Fuel**  
**filter** one paper element **Muffler** vertical **Cool-**  
**ing medium temperature control** one thermostat.

**CHASSIS:** Type front wheel assist **Serial No.**  
\*2236220\* **Tread width** rear 61" (1549 mm) to 81"  
(2057 mm) front 61.5" (1562 mm) **Wheel base**  
87.25" (2216 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 34.9" (886 mm) Vertical distance above  
roadway 30.3" (769 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  
**Advertised speeds mph (km/h)** first 1.0 (1.6)  
second 1.6 (2.6) third 2.0 (3.3) fourth 2.5 (4.0)  
fifth 3.0 (4.8) sixth 3.9 (6.2) seventh 5.0 (8.0)  
eighth 6.1 (9.8) ninth 7.4 (11.8) tenth 9.5 (15.3)  
eleventh 12.3 (19.8) twelfth 18.1 (29.1) reverse 2.7  
(4.3), 4.1 (6.6), 5.3 (8.6), 7.8 (12.6) **Clutch** dry disc  
operated by foot pedal **Brakes** dry disc operated  
by two foot pedals which can be locked together  
and hand lever **Steering** hydrostatic **Turning**  
**radius** (on concrete surface with brake applied)  
right 165.5" (4.20 m) left 167.5" (4.25 m) (on con-  
crete surface without brake) right 187.5" (4.76 m)  
left 187.5" (4.76 m) **Turning space diameter** (on  
concrete surface with brake applied) right 342"  
(8.69 m) left 346" (8.79 m) (on concrete surface  
without brake) right 386" (9.80 m) left 386" (9.80  
m) **Power take-off** 540 rpm at 1944 engine rpm.

### LUGGING ABILITY IN 8th GEAR

Crankshaft Speed rpm	2100	1888	1683	1468	1255	1054
Pull—lbs (kN)	3661 (16.28)	3888 (17.29)	4120 (18.33)	4295 (19.11)	4378 (19.47)	4325 (19.24)
Increase in Pull %	0	6	13	17	20	18
Power—Hp (kW)	56.28 (41.97)	53.30 (39.75)	49.90 (37.21)	45.06 (33.60)	39.19 (29.22)	32.53 (24.26)
Speed—Mph (km/h)	5.77 (9.28)	5.14 (8.27)	4.54 (7.31)	3.93 (6.33)	3.36 (5.40)	2.82 (4.54)
Slip %	8.67	9.49	10.24	10.85	11.09	11.09

TRACTOR SOUND LEVEL WITHOUT CAB	Front Wheel Drive	
	dB(A)	Disengaged dB(A)
Maximum Available Power—Two Hours	100.0	100.0
75% of Pull at Maximum Power—Ten Hours		100.0
50% of Pull at Maximum Power—Two Hours		98.5
50% of Pull at Reduced Engine Speed—Two Hours		97.5
Bystander in 12th gear		87.5

### DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 8th Gear											
56.24 (41.94)	3504 (15.59)	6.02 (9.69)	2101	5.67	3.781 (14.312)	0.471 (0.287)	14.88 (2.930)	191 (88.3)	52 (11.1)	68 (19.7)	28.940 (97.726)

### MAXIMUM POWER IN SELECTED GEARS

44.35 (33.07)	7253 (32.26)	2.29 (3.69)	2184	14.87	4th Gear			174 (78.6)	52 (11.1)	54 (12.2)	28.690 (96.882)
56.80 (42.35)	3541 (15.75)	6.02 (9.68)	2100	5.87	8th Gear			191 (88.3)	52 (11.1)	68 (20.0)	28.950 (97.760)

### TIRES, BALLAST AND WEIGHT

<b>Rear Tires</b>	—No., size, ply & psi (kPa)
<b>Ballast</b>	—Liquid (each)
	—Cast Iron (each)
<b>Front Tires</b>	—No., size, ply & psi (kPa)
<b>Ballast</b>	—Liquid (each)
	—Cast Iron (each)

#### With Ballast

Two 18.4-30; 6; 22 (150)
672 lb (305 kg)
110 lb (50 kg)
Two 12.4-24; 6; 20 (140)
180 lb (82 kg)
None
18.5 in (470 mm)
5595 lb (2538 kg)
3050 lb (1383 kg)
8645 lb (3921 kg)

#### Without Ballast

Two 18.4-30; 6; 22 (150)
None
None
Two 12.4-24; 6; 20 (140)
None
None
18.5 in (470 mm)
4030 lb (1828 kg)
2690 lb (1220 kg)
6720 lb (3048 kg)

#### Height of Drawbar

<b>Static Weight with Operator—Rear</b>
—Front
—Total

**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 or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 155°F (68.3°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. 1480.

LOUIS I. LEVITICUS  
Engineer-in-Charge

K. VON BARGEN  
W. E. SPLINTER  
L. L. BASHFORD  
Board of Tractor Test Engineers



**Massey Ferguson 294 Diesel**

The Agricultural Experiment Station  
Institute of Agriculture and Natural Resources  
University of Nebraska—Lincoln  
Irvin T. Omtvedt, Dean and Director