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1-1-1977

## Test 1250: Massey-Ferguson 255 Diesel 12-Speed

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1250 — MASSEY FERGUSON 255 DIESEL 12 SPEED

## POWER TAKE-OFF PERFORMANCE

| Power<br>Hp<br>(kW)                              | Crank<br>shaft<br>speed<br>rpm | Fuel Consumption  |                       |                       | Temperature °F (°C) |                    |                    | Barometer<br>inch Hg<br>(kPa) |
|--|--------------------------------|-------------------|-----------------------|-----------------------|---------------------|--------------------|--------------------|-------------------------------|
|  |                                | gal/hr<br>(l/h)   | lb/hp.hr<br>(kg/kW.h) | Hp.hr/gal<br>(kW.h/l) | Cooling<br>medium   | Air<br>wet<br>bulb | Air<br>dry<br>bulb |                               |
| MAXIMUM POWER AND FUEL CONSUMPTION               |                                |                   |                       |                       |                     |                    |                    |                               |
| Rated Engine Speed—Two Hours (PTO Speed—641 rpm) |                                |                   |                       |                       |                     |                    |                    |                               |
| 52.68<br>(39.28)                                 | 2000                           | 3.310<br>(12.529) | 0.438<br>(0.267)      | 15.92<br>(3.135)      | 190<br>(88.0)       | 64<br>(17.7)       | 75<br>(23.7)       | 29.080<br>(98.199)            |
| Standard Power Take-off Speed (540 rpm)—One Hour |                                |                   |                       |                       |                     |                    |                    |                               |
| 48.37<br>(36.07)                                 | 1685                           | 2.859<br>(10.822) | 0.412<br>(0.251)      | 16.92<br>(3.333)      | 191<br>(88.5)       | 65<br>(18.3)       | 75<br>(24.0)       | 29.090<br>(98.233)            |
| VARYING POWER AND FUEL CONSUMPTION—Two Hours     |                                |                   |                       |                       |                     |                    |                    |                               |
| 46.29<br>(34.52)                                 | 2064                           | 3.001<br>(11.359) | 0.452<br>(0.275)      | 15.42<br>(3.039)      | 189<br>(87.2)       | 66<br>(18.9)       | 76<br>(24.7)       | .....<br>.....                |
| 0.00<br>(0.00)                                   | 2139                           | 1.092<br>(4.134)  | .....<br>.....        | .....<br>.....        | 180<br>(82.2)       | 66<br>(18.9)       | 77<br>(25.0)       | .....<br>.....                |
| 23.48<br>(17.50)                                 | 2094                           | 1.960<br>(7.421)  | 0.583<br>(0.354)      | 11.97<br>(2.359)      | 184<br>(84.2)       | 67<br>(19.4)       | 78<br>(25.8)       | .....<br>.....                |
| 52.64<br>(39.25)                                 | 2000                           | 3.293<br>(12.466) | 0.437<br>(0.266)      | 15.98<br>(3.149)      | 191<br>(88.3)       | 67<br>(19.4)       | 79<br>(26.1)       | .....<br>.....                |
| 11.96<br>(8.92)                                  | 2134                           | 1.522<br>(5.761)  | 0.888<br>(0.540)      | 7.86<br>(1.549)       | 180<br>(82.5)       | 66<br>(19.2)       | 78<br>(25.8)       | .....<br>.....                |
| 35.08<br>(26.16)                                 | 2088                           | 2.472<br>(9.358)  | 0.492<br>(0.299)      | 14.19<br>(2.796)      | 185<br>(85.0)       | 68<br>(19.7)       | 80<br>(26.7)       | .....<br>.....                |
| Av<br>Av   | 28.24<br>(21.06)               | 2.223<br>(8.417)  | 0.549<br>(0.334)      | 12.70<br>(2.502)      | 185<br>(84.9)       | 67<br>(19.3)       | 78<br>(25.7)       | 29.093<br>(98.244)            |

## DRAWBAR PERFORMANCE

| Power<br>Hp<br>(kW)   | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption  |                       |                       | Temp. °F (°C)       |                    |                    | Barom.<br>inch Hg<br>(kPa) |
|---|--------------------------------|------------------------|---------------------------------|-----------|-------------------|-----------------------|-----------------------|---------------------|--------------------|--------------------|----------------------------|
|   |                                |                        |                                 |           | gal/hr<br>(l/h)   | lb/hp.hr<br>(kg/kW.h) | Hp.hr/gal<br>(kW.h/l) | Cool-<br>ing<br>med | Air<br>wet<br>bulb | Air<br>dry<br>bulb |                            |
| Maximum Available Power—Two Hours 7th (1H L) Gear             |                                |                        |                                 |           |                   |                       |                       |                     |                    |                    |                            |
| 43.49<br>(32.43)  | 3115<br>(13.86)                | 5.24<br>(8.42)         | 1998                            | 7.50      | 3.260<br>(12.341) | 0.523<br>(0.318)      | 13.34<br>(2.628)      | 188<br>(86.4)       | 67<br>(19.2)       | 79<br>(26.1)       | 28.975<br>(97.844)         |
| 75% of Pull at Maximum Power—Ten Hours 7th (1H L) Gear        |                                |                        |                                 |           |                   |                       |                       |                     |                    |                    |                            |
| 35.10<br>(26.17)  | 2382<br>(10.59)                | 5.53<br>(8.89)         | 2064                            | 5.39      | 2.737<br>(10.361) | 0.544<br>(0.331)      | 12.82<br>(2.526)      | 184<br>(84.2)       | 72<br>(22.1)       | 78<br>(25.6)       | 28.784<br>(97.199)         |
| 50% of Pull at Maximum Power—Two Hours 7th (1H L) Gear        |                                |                        |                                 |           |                   |                       |                       |                     |                    |                    |                            |
| 24.71<br>(18.42)  | 1621<br>(7.21)                 | 5.72<br>(9.20)         | 2101                            | 3.91      | 2.239<br>(8.476)  | 0.632<br>(0.385)      | 11.03<br>(2.174)      | 183<br>(83.9)       | 76<br>(24.2)       | 86<br>(29.7)       | 28.795<br>(97.236)         |
| 50% of Pull at Reduced Engine Speed—Two Hours 9th (2H L) Gear |                                |                        |                                 |           |                   |                       |                       |                     |                    |                    |                            |
| 24.55<br>(18.31)  | 1610<br>(7.16)                 | 5.72<br>(9.20)         | 1432                            | 3.78      | 1.756<br>(6.645)  | 0.499<br>(0.304)      | 13.99<br>(2.755)      | 183<br>(83.6)       | 76<br>(24.4)       | 86<br>(30.0)       | 28.755<br>(97.101)         |

## MAXIMUM POWER IN SELECTED GEARS

|                  |                 |                 |      |       |                 |  |               |              |              |                    |
|------------------|-----------------|-----------------|------|-------|-----------------|--|---------------|--------------|--------------|--------------------|
| 35.59<br>(26.54) | 5591<br>(24.87) | 2.39<br>(3.84)  | 2066 | 14.93 | 4th (2L H) Gear |  | 180<br>(81.9) | 60<br>(15.6) | 65<br>(18.3) | 29.050<br>(98.097) |
| 41.79<br>(31.16) | 4723<br>(21.01) | 3.32<br>(5.34)  | 2001 | 12.90 | 5th (3L L) Gear |  | 188<br>(86.7) | 66<br>(18.9) | 80<br>(26.7) | 29.000<br>(97.929) |
| 43.14<br>(32.17) | 3546<br>(15.77) | 4.56<br>(7.34)  | 2000 | 8.37  | 6th (3L H) Gear |  | 189<br>(86.9) | 66<br>(18.9) | 79<br>(26.1) | 29.010<br>(97.962) |
| 44.36<br>(33.08) | 3175<br>(14.12) | 5.24<br>(8.43)  | 2000 | 7.38  | 7th (1H L) Gear |  | 188<br>(86.7) | 66<br>(18.9) | 79<br>(26.1) | 29.030<br>(98.030) |
| 42.99<br>(32.06) | 2301<br>(10.23) | 7.01<br>(11.28) | 2000 | 5.34  | 8th (1H H) Gear |  | 180<br>(81.9) | 66<br>(18.9) | 80<br>(26.7) | 28.980<br>(97.861) |
| 44.75<br>(33.37) | 2126<br>(9.46)  | 7.89<br>(12.70) | 1999 | 4.97  | 9th (2H L) Gear |  | 187<br>(86.1) | 66<br>(18.9) | 80<br>(26.7) | 28.980<br>(97.861) |

## LUGGING ABILITY IN RATED GEAR 7th (1H L)

|                      |                  |                  |                  |                  |                  |                  |
|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Crankshaft Speed rpm | 2000             | 1805             | 1602             | 1401             | 1196             | 995              |
| Pull—lbs<br>(kN)     | 3175<br>(14.12)  | 3385<br>(15.06)  | 3567<br>(15.87)  | 3723<br>(16.56)  | 3843<br>(17.10)  | 3617<br>(16.09)  |
| Increase in Pull %   | 0                | 7                | 12               | 17               | 21               | 14               |
| Power—Hp<br>(kW)     | 44.36<br>(33.08) | 42.45<br>(31.66) | 39.49<br>(29.45) | 35.85<br>(26.73) | 31.46<br>(23.46) | 24.79<br>(18.48) |
| Speed—Mph<br>(km/h)  | 5.24<br>(8.43)   | 4.70<br>(7.57)   | 4.15<br>(6.68)   | 3.61<br>(5.81)   | 3.07<br>(4.94)   | 2.57<br>(4.14)   |
| Slip %               | 7.38             | 7.96             | 8.42             | 8.99             | 9.44             | 8.88             |

Department of Agricultural Engineering

Dates of Test: August 23 to September 1, 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** 2.392 gal (9.055 l) **Drained from motor** 1.358 gal (5.141 l) **Transmission and final drive lubricant** Massey-Ferguson M-1127 **Total time engine was operated** 46.5 hours

**ENGINE** Make Perkins Diesel **Type** 4 cylinder vertical **Serial No.** 45CT44132 **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 3.875" × 5" (98.4 mm × 127.0 mm) **Compression ratio** 16 to 1 **Displacement** 236 cu in (3865 ml) **Cranking system** 12 volt **Lubrication** pressure **Air cleaner** paper primary and felt safety elements **Oil filter** full flow paper spin-on cartridge **Oil cooler** radiator for transmission and hydraulic oil **Fuel filter** paper element **Muffler** vertical **Cooling medium temperature control** thermostat

**CHASSIS:** **Type** standard **Serial No.** 9A265503 **Tread width** rear 56" (1422 mm) to 90" (2286 mm) front 48" (1219 mm) to 80" (2032 mm) **Wheel base** 82" (2083 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 26.2" (666 mm) Vertical distance above roadway 32.4" (823 mm) Horizontal distance from center of rear wheel tread 0.06" (2 mm) to the left **Hydraulic control system** constant running except when PTO clutch is disengaged **Transmission** selective gear fixed ratio transmission with partial (2) range operator controlled power shift **Advertised speeds mph (km/h)** first 1.4 (2.2) second 1.8 (2.9) third 2.0 (3.2) fourth 2.6 (4.2) fifth 3.6 (6.0) sixth 4.8 (7.8) seventh 5.4 (8.8) eighth 7.0 (11.6) ninth 7.9 (13.0) tenth 10.4 (17.0) eleventh 14.5 (23.8) twelfth 19.0 (31.1) reverse 1.8 (3.0), 2.4 (3.9), 7.4 (12.1), 9.6 (15.7) **Clutch** single plate dry disc operated by foot pedal **Brakes** double dry disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 116.5" (2.96 m) left 118" (3.00 m) (on concrete surface without brake) right 128" (3.25 m) left 125.5" (3.19 m) **Turning space diameter** (on concrete surface with brake applied) right 241" (6.12 m) left 234" (5.94 m) (on concrete surface without brake) right 263" (6.68 m) left 260" (6.60 m) **Power take-off** 540 rpm at 1685 rpm.

**REPAIRS and ADJUSTMENTS:** Throttle level friction disc was tightened during drawbar tests.

**REMARKS:** All test results were determined from observed data obtained in accordance with

| <b>TRACTOR SOUND LEVEL WITH CAB</b>           | <b>dB(A)</b> |
|---|--------------|
| Maximum Available Power—Two Hours             | 96.0         |
| 75% of Pull at Maximum Power—Ten Hours        | 96.0         |
| 50% of Pull at Maximum Power—Two Hours        | 94.5         |
| 50% of Pull at Reduced Engine Speed—Two Hours | 92.0         |
| Bystander in 11th (3H L) gear                 | 88.0         |

| <b>TIRES, BALLAST AND WEIGHT</b>     |                                      | <b>With Ballast</b>      | <b>Without Ballast</b>   |
|--------------------------------------|--------------------------------------|--------------------------|--------------------------|
| <b>Rear Tires</b>                    | —No., size, ply & psi ( <i>kPa</i> ) | Two 16.9-28; 6; 16 (110) | Two 16.9-28; 6; 16 (110) |
|                                      | —Liquid (each)                       | 300 lb (136 kg)          | None                     |
|                                      | —Cast Iron (each)                    | 50 lb (23 kg)            | None                     |
| <b>Front Tires</b>                   | —No., size, ply & psi ( <i>kPa</i> ) | Two 7.5L-15; 6; 32 (220) | Two 7.5L-15; 6; 32 (220) |
|                                      | —Liquid (each)                       | None                     | None                     |
|                                      | —Cast Iron (each)                    | 100 lb (45 kg)           | None                     |
| <b>Height of Drawbar</b>             |                                      | 23 in (580 mm)           | 23 in (580 mm)           |
| <b>Static weight with operator</b> — | rear                                 | 5080 lb (2304 kg)        | 4385 lb (1989 kg)        |
|                                      | front                                | 2230 lb (1012 kg)        | 2030 lb (921 kg)         |
|                                      | total                                | 7310 lb (3316 kg)        | 6415 lb (2910 kg)        |

SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump return was 153°F (67.1°C). Six gears were chosen between 15% slip and 15 mph (24.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1250**.

LOUIS I. LEVITICUS  
Engineer-in Charge

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



**Massey Ferguson 255 Diesel**