January 1979

Test 1322: Massey-Ferguson 2705 Diesel 8-Speed

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NEBRASKA TRACTOR TEST 1322 — MASSEY-FERGUSON 2705 DIESEL 8 SPEED

**POWER TAKE-OFF PERFORMANCE**

<table>
<thead>
<tr>
<th>Power</th>
<th>Hg (lbf)</th>
<th>Crank Shaft speed (rpm)</th>
<th>Bullwheel (in)</th>
<th>Halfwheel (in)</th>
<th>Temperature (°F)</th>
<th>Cooling water (°F)</th>
<th>Air bleed</th>
<th>Automatic transmission</th>
<th>Horsepower (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>121.1</td>
<td>2500</td>
<td>7.969 0.461 15.20</td>
<td>189 68 75 28.843</td>
<td>(189.5)</td>
<td>(25.6)</td>
<td>(10.7)</td>
<td>(7.2)</td>
<td>(26.5)</td>
<td>(23.6)</td>
</tr>
</tbody>
</table>

**MAXIMUM POWER AND FUEL CONSUMPTION**

- **Base Engine Speed** — Two Hours (PTO Speed — 1196 rpm)
  - 121.11 2500 7.969 0.461 15.20 189 68 75 28.843

**Standard Power Take-Off Speed (1000 rpm) — One Hour**

| 114.44 2091 6.797 0.416 10.84 | 190 68 75 28.815 |

**VARYING POWER AND FUEL CONSUMPTION — Two Hours**

| 110.84 2069 6.019 0.506 13.82 | 189 68 75 |
| 0.00 2815 3.176 | 181 68 75 |
| 56.80 2756 6.823 0.693 10.10 | 185 68 76 |

**ENGINE:**

- **Make:** Perkins Diesel Type six cylinder vertical with turbocharger
- **Model:** Serial No. T1331015N29564
- **Crankshaft lengthwise rpm:** 2500
- **Bore and stroke:** 3.875" × 5.0" (98.44 × 127.0 mm)
- **Compression ratio:** 16.0 to 1
- **Power take-off:** 354 cu in (5861 ml)
- **Clutch system:** 12 volts
- **Lubrication system:** Pressure/Filte
- **Fuel system:** Two paper elements with aspirator

**TURBINE:**

- **FUEL, OIL AND TIME:** Diesel No. 2
- **Transmission and final drive lubricant:** Transmission service gear fixed ratio
- **Oil change:** Every 10,000 miles
- **Brakes:** Disc brakes
- **Safety features:** Warning indicators

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**CHASSIS:**

- **Type:** Standard Serial No. 9R 004209
- **Tire size:** front 65" (1651 mm) to 95° (2413 mm)
- **Wheel base:** 105.4" (2677 mm)
- **Center of gravity:** Vertical distance above roadway 43.8" (1110 mm)
- **Distance from center of rear wheel treadline 0.7" (17 mm) to right/left hydraulic system
- **Frame:** Steel frame

**MAXIMUM POWER IN SELECTED GEARS**

<table>
<thead>
<tr>
<th>Power</th>
<th>Hg (lbf)</th>
<th>Drawbar pull (lb)</th>
<th>Wheel speed (mph)</th>
<th>Bullwheel (in)</th>
<th>Halfwheel (in)</th>
<th>Temperature (°F)</th>
<th>Cooling water (°F)</th>
<th>Air bleed</th>
<th>Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>98.51</td>
<td>6929</td>
<td>5.20 7.31 18.57 26.68</td>
<td>127.4 110.6 28.77</td>
<td>(125.6)</td>
<td>(110.6)</td>
<td>(28.7)</td>
<td>(26.6)</td>
<td>(110.6)</td>
<td>(125.6)</td>
</tr>
</tbody>
</table>

**LUGGING ABILITY IN 4th GEAR**

- **Crankshaft Speed rpm:** 2499 2253 1996 1742 1492 1247
- **Pull — lbs:** 7155 7760 8541 8815 8820 8496
  - (16.1) | (14.6) | (12.9) | (12.9) | (12.9) | (12.9) |
- **Increase in Pull %:** 0 8 19 23 23 19
- **Power — Hg:** 101.05 101.05 101.05 101.05 101.05 101.05
  - (22.2) | (22.2) | (22.2) | (22.2) | (22.2) | (22.2) |
- **Speed —Mph:** 5.30 4.74 4.16 3.62 3.10 2.60
  - (2.8) | (2.8) | (2.8) | (2.8) | (2.8) | (2.8) |
- **Slip %:** 7.03 7.62 8.50 9.83 9.07 8.64

**Department of Agricultural Engineering**

**Dates of Test:** August 31 to September 6, 1979

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

**FUEL, OIL AND TIME:**

- **Fuel:** No. 2 Diesel Cetane N 49.8 (rating taken from oil company's typical inspection data)
- **Specific gravity converted to 60°/60° (15°/15°):** 0.8407
- **Fuel weight:** 7,000 lbs/gal (6.836 kg/l)
- **Oil SAE 20-20W API service classification:** SN/SE/CA/CD
- **To motor 1499 gal (15,895 l):** Drained from motor 3,565 gal (13,953 l)
- **Transmission and final drive lubricant:** MPM Transaxle
- **Total time engine was operated:** 33.0 hours

**ENGINE:**

- **Make:** Perkins Diesel Type six cylinder vertical with turbocharger
- **Model:** Serial No. T1331015N29564
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- **Compression ratio:** 16.0 to 1
- **Power take-off:** 354 cu in (5861 ml)
- **Clutch system:** 12 volt
- **Lubrication pressure:** Air cleaner set
- **Neffler vertical cooling medium temperatur control two thermostats**

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**REPAIRS AND ADJUSTMENTS:** The tube in the left rear tire was replaced at end of the 50% Drawbar Fuel Test.
TRACTOR SOUND LEVEL WITH CAB  dB(A)

Maximum Available Power—Two Hours  80.5
75% of Pull at Maximum Power—Ten Hours  80.0
50% of Pull at Maximum Power—Two Hours  80.0
50% of Pull at Reduced Engine Speed—Two Hours  79.0
Bystander in 7th gear  89.0

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 151°F (66.2°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 1322.

LOUIS I. LEVITIGUS
Engineer-in-Charge
G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
K. VON BARGEN
Board of Tractor Test Engineers

TIRES, BALLAST AND WEIGHT

With Ballast

<table>
<thead>
<tr>
<th>Rear Tires</th>
<th>Ballast</th>
<th>Front Tires</th>
<th>Ballast</th>
</tr>
</thead>
<tbody>
<tr>
<td>— No. size, ply &amp; psi (kPa)</td>
<td>— Liquid (each)</td>
<td>— Cast iron (each)</td>
<td>— Liquid (each)</td>
</tr>
<tr>
<td>Two 20.8-38, 10, 22 (150)</td>
<td>1148 lb (521 kg)</td>
<td>1000 lb (454 kg)</td>
<td>None</td>
</tr>
<tr>
<td>Two 11.00-16, 6, 32 (220)</td>
<td>1000 lb (454 kg)</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Without Ballast

<table>
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<th>Ballast</th>
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</table>

Height of Drawbar

With Ballast

| — None |
| 22.5 in (570 mm) | 22.5 in (570 mm) |

Without Ballast

| — None |
| None | None |

Static Weight with Operator—Rear

| — None |
| 12950 lb (5873 kg) |

Static Weight with Operator—Front

| — None |
| 9650 lb (4331 kg) |

Static Weight—Total

| — None |
| 22600 lb (10262 kg) |

Massey-Ferguson 2705 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
H. W. Ottoson, Director