January 1961

Test 787: Case 630C (Diesel)

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# NEBRASKA TRACTOR TEST 787 - CASE 630C DIESEL

The University of Nebraska Agricultural Experiment Station

E. F. Frolik, Dean; A. W. Epp, Acting Director, Lincoln, Nebraska

## POWER TAKE-OFF PERFORMANCE

<table>
<thead>
<tr>
<th>Hp</th>
<th>Crank shaft speed rpm</th>
<th>Fuel Consumption</th>
<th>Temp. Degrees F</th>
<th>Barometer inches of mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Gal per hr</td>
<td>Lb per hp</td>
<td>Hp-hr per gal</td>
</tr>
</tbody>
</table>

### 5th Gear Torq. Conv.

#### Rated Engine Speed—Two Hours

- 48.85 2250 3.862 0.546 12.65 188 60 75 28.817
- 45.24 1960 3.942 0.72 12.96 187 60 75 28.875

#### VARYING POWER AND FUEL CONSUMPTION—TWO HOURS

- 42.72 2517 3.314 0.536 12.89 182 58 73
- 0.00 2386 1.138
- 21.72 2555 2.219 0.706 9.79 168 58 72
- 49.09 2251 3.856 0.543 12.73 188 60 74
- 10.95 2253 1.659 1.047 6.60 154 59 73
- 32.34 2258 2.688 0.574 12.03 172 60 70

#### Average

- 26.14 2336 2.479 0.655 10.54 169 59 73 28.783

## DRAWBAR PERFORMANCE

<table>
<thead>
<tr>
<th>Hp</th>
<th>Drawbar pull lbs</th>
<th>Speed miles per hr</th>
<th>Crankshaft speed rpm</th>
<th>Fuel Consumption</th>
<th>Temperature Degrees F</th>
<th>Barometer inches of mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gal per hr</td>
<td>Lb per hp</td>
<td>Hp-hr per gal</td>
</tr>
</tbody>
</table>

### 5th Gear Torq. Conv.

#### Maximum Available Power—Two Hours—5th Gear

- 34.21 7190 1.78 2232 14.71 1st Gear
- 44.44 6720 2.66 2251 10.82 2nd Gear
- 45.69 5793 2.96 2251 9.44 3rd Gear
- 45.44 4620 3.63 2250 7.33 4th Gear
- 45.00 3730 4.52 2249 5.72 5th Gear
- 44.24 2748 6.04 2248 4.18 6th Gear
- 27.61 7145 1.45 2242 14.66 1st Gear
- 37.82 6918 2.05 2289 13.75 2nd Gear
- 39.18 6536 2.25 2270 11.52 3rd Gear
- 39.89 5499 2.72 2264 8.99 4th Gear
- 40.60 4416 3.43 2267 7.03 5th Gear
- 40.01 3301 4.45 2251 4.98 6th Gear

#### Maximum Power with Ballast

- 32.94 2823 4.38 2307 14.60 5th Gear
- 26.41 2792 3.55 2308 14.54 5th Gear

#### VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—5th Gear

<table>
<thead>
<tr>
<th>Pounds pull</th>
<th>Horsepower</th>
<th>Miles per hour</th>
<th>Pounds pull</th>
<th>Horsepower</th>
<th>Miles per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>3750</td>
<td>45.00</td>
<td>4.0</td>
<td>4100</td>
<td>45.00</td>
<td>4.0</td>
</tr>
<tr>
<td>14.50 psi</td>
<td>39.4</td>
<td>3.6</td>
<td>4250</td>
<td>39.4</td>
<td>3.6</td>
</tr>
<tr>
<td>4300</td>
<td>31.0</td>
<td>3.1</td>
<td>4300</td>
<td>31.0</td>
<td>3.1</td>
</tr>
</tbody>
</table>

#### Maximum Power without Ballast

- 32.94 2823 4.38 2307 14.60 5th Gear
- 26.41 2792 3.55 2308 14.54 5th Gear

## TIRES, BALLAST and WEIGHT

### With Ballast

- No, size, ply & psi
- Liquid
- Cast iron
- No, size, ply & psi
- Liquid
- Cast iron
- 14½ inches
- Rear
- 7600 lb
- Front
- 1920 lb
- Total weight with operator

### Without Ballast

- Two 16-9.5-28, 8-20
- 62 lb each
- None
- None
- None
- None
- None
- None
- None
- None
- None
- None
- None
- None
- None
- 16½ inches
- Rear
- 2743 lb
- Front
- 1920 lb
- Total weight with operator

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Department of Agricultural Engineering

Dates of Tests: April 7 to April 21, 1961

Manufacturer: J. I. CASE COMPANY, RACINE, WISCONSIN

Manufacturer’s Power Rating: 50 Belt Horsepower (corrected to Standard Conditions)

FUEL, OIL and TIME Fuel No 2 Diesel Cetane No 54 (rating taken from oil company’s typical inspection data) Specific gravity converted to 60°/60° 0.8297 Weight per gallon 6.908 lb Oil SAE 20-20W API service classification DS To motor 1.357 gal Drained from motor 0.822 gal Transmission and final-drive lubricant SAE 90 Type multi-purpose gear lubricant (E.P.) Total time engine was operated 52½ hours.

**ENGINE** Make Case Diesel Type 4 cylinder vertical Serial No 601-80-3226 Crankshaft mounted lengthwise Rated rpm 2350 Bore and stroke 316 x 4¾” Compression ratio 17.5 to 1 Displacement 88.4 cu in Cranking system 12 volt electric (two 6 volt batteries) Lubrication pressure Air cleaner oil used in making the maximum power runs with ballast.

**CHASSIS** Type standard Serial No 6153217 Tread width rear 48” to 26” front 32” Wheelbase 79% 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 35” Vertical distance above roadway 31.3” Horizontal distance from center of rear wheel tread 0” to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio plus torque converter with lockout Advertised speeds mph first 2.60 third 2.86 fourth 3.43 fifth 4.20 sixth 5.52 seventh 8.46 eighth 13.64 reverse 2.04 and 3.40 Clutch multiple disc main hydraulic power-clutch operated by piston through foot pedal control valve and single disc direct drive hydraulic clutch, locking turbine to engine through hand operated control valve Brakes double disc operated by two foot pedals

**REPAIRS and ADJUSTMENTS** No repairs or adjustments.

**REMARKS** All test results were determined from observed data obtained in accordance with the SAE, and ASAE test code.

Only 12 gears, as selected by the manufacturer’s representative are used in making the maximum power runs with ballast.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 787.

L. F. LARSEN

Engineer-in-Charge

L. W. HURLBUT

G. W. STEINBRUEGGE

J. L. SULEK

Board of Tractor Test Engineers