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## Test 1127: International 464 Diesel

Nebraska Tractor Test Lab

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# NEBRASKA TRACTOR TEST 1127 – INTERNATIONAL 464 DIESEL

## POWER TAKE-OFF PERFORMANCE

| Hp  | Crank-<br>shaft<br>speed<br>rpm | Fuel Consumption<br>Gal<br>per<br>hr | Lb<br>per<br>hp-hr | Hp-hr<br>per<br>gal | Temperature<br>Cooling<br>medium | Degrees F<br>Air<br>wet<br>bulb | Air<br>dry<br>bulb | Barometer<br>inches of<br>Mercury |
|---|---------------------------------|--------------------------------------|--------------------|---------------------|----------------------------------|---------------------------------|--------------------|-----------------------------------|
| <b>MAXIMUM POWER AND FUEL CONSUMPTION</b>               |                                 |                                      |                    |                     |                                  |                                 |                    |                                   |
| <b>Rated Engine Speed—Two Hours (PTO Speed—605 rpm)</b> |                                 |                                      |                    |                     |                                  |                                 |                    |                                   |
| 44.42   | 2400                            | 3.147                                | 0.495              | 14.12               | 190                              | 61                              | 75                 | 29.000                            |
| <b>Standard Power Take-off Speed (540 rpm)</b>          |                                 |                                      |                    |                     |                                  |                                 |                    |                                   |
| 41.73   | 2140                            | 2.896                                | 0.485              | 14.41               | 192                              | 62                              | 75                 | 28.980                            |
| <b>VARYING POWER AND FUEL CONSUMPTION—Two Hours</b>     |                                 |                                      |                    |                     |                                  |                                 |                    |                                   |
| 38.54   | 2449                            | 2.759                                | 0.500              | 13.97               | 186                              | 62                              | 75                 | .....                             |
| 0.00  | 2640                            | 0.988                                | .....              | .....               | 180                              | 63                              | 76                 | .....                             |
| 19.88   | 2529                            | 1.822                                | 0.640              | 10.91               | 184                              | 63                              | 76                 | .....                             |
| 44.41   | 2401                            | 3.171                                | 0.499              | 14.01               | 192                              | 64                              | 79                 | .....                             |
| 10.12   | 2566                            | 1.409                                | 0.972              | 7.18                | 180                              | 64                              | 79                 | .....                             |
| 29.37   | 2492                            | 2.243                                | 0.533              | 13.09               | 185                              | 65                              | 81                 | .....                             |
| Av. 23.72   | 2513                            | 2.065                                | 0.608              | 11.49               | 184                              | 63                              | 78                 | 28.927                            |

## DRAWBAR PERFORMANCE

| Hp  | Draw-<br>bar<br>pull<br>lbs | Speed<br>miles<br>per<br>hr | Crank-<br>shaft<br>speed<br>rpm | Slip of<br>drivers<br>% | Fuel Consumption |                    |                     | Temp                | Degrees F          |                    |                                   |
|---|-----------------------------|-----------------------------|---------------------------------|-------------------------|------------------|--------------------|---------------------|---------------------|--------------------|--------------------|-----------------------------------|
|   |                             |                             |                                 |                         | Gal<br>per<br>hr | Lb<br>per<br>hp-hr | Hp-hr<br>per<br>gal | Cool-<br>ing<br>med | Air<br>wet<br>bulb | Air<br>dry<br>bulb | Barometer<br>inches of<br>Mercury |
| VARYING DRAWBAR POWER AND FUEL CONSUMPTION WITH BALLAST       |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| Maximum Available Power—Two Hours—3rd Gear (3 Lo)             |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| 39.02   | 3221                        | 4.54                        | 2399                            | 5.46                    | 3.186            | 0.570              | 12.25               | 186                 | 60                 | 70                 | 28.960                            |
| 75% of Pull at Maximum Power—Ten Hours—3rd Gear (3 Lo)        |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| 32.75   | 2618                        | 4.69                        | 2451                            | 4.40                    | 2.606            | 0.555              | 12.57               | 183                 | 57                 | 68                 | 28.753                            |
| 50% of Pull at Maximum—Two Hours—3rd Gear (3 Lo)              |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| 21.76   | 1691                        | 4.83                        | 2483                            | 3.01                    | 2.040            | 0.654              | 10.67               | 178                 | 45                 | 51                 | 29.120                            |
| 50% of Pull at Reduced Engine Speed—Two Hours—5th Gear (1 Hi) |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| 21.57   | 1665                        | 4.86                        | 1488                            | 2.95                    | 1.611            | 0.521              | 13.39               | 180                 | 49                 | 56                 | 29.140                            |
| MAXIMUM POWER WITH BALLAST                                    |                             |                             |                                 |                         |                  |                    |                     |                     |                    |                    |                                   |
| 29.04   | 5488                        | 1.98                        | 2490                            | 11.59                   | 1st Gear (1 Lo)  |                    | .....               | 186                 | 54                 | 55                 | 28.800                            |
| 38.92   | 4479                        | 3.26                        | 2399                            | 8.34                    | 2nd Gear (2 Lo)  |                    | .....               | 185                 | 59                 | 63                 | 28.960                            |
| 39.97   | 3310                        | 4.53                        | 2396                            | 5.69                    | 3rd Gear (3 Lo)  |                    | .....               | 182                 | 55                 | 63                 | 28.960                            |
| 39.04   | 2469                        | 5.93                        | 2398                            | 4.07                    | 4th Gear (4 Lo)  |                    | .....               | 186                 | 59                 | 63                 | 28.970                            |
| 39.27   | 1886                        | 7.80                        | 2401                            | 2.95                    | 5th Gear (1 Hi)  |                    | .....               | 184                 | 58                 | 68                 | 28.970                            |
| 35.32   | 1028                        | 12.88                       | 2398                            | 1.36                    | 6th Gear (2 Hi)  |                    | .....               | 189                 | 58                 | 68                 | 28.980                            |

## VARYING DRAWBAR PULL AND TRAVEL SPEED WITH BALLAST—3rd Gear (3 Lo)

|                      |       |       |       |       |       |       |
|----------------------|-------|-------|-------|-------|-------|-------|
| Pounds Pull          | 3310  | 3499  | 3686  | 3858  | 3935  | 3808  |
| Horsepower           | 39.97 | 37.71 | 35.34 | 32.23 | 28.04 | 22.81 |
| Crankshaft Speed rpm | 2396  | 2146  | 1916  | 1678  | 1433  | 1202  |
| Miles Per Hour       | 4.53  | 4.04  | 3.60  | 3.13  | 2.67  | 2.24  |
| Slip of Drivers %    | 5.69  | 6.09  | 6.31  | 6.64  | 6.87  | 6.64  |

## TRACTOR SOUND LEVEL

|   | dB (A) |
|---|--------|
| Maximum Available Power 2 Hours             | 99.5   |
| 75% of Pull at Max. Power 10 Hours          | 98.5   |
| 50% of Pull at Max. Power 2 Hours           | 98.5   |
| 50% of Pull at Reduced Engine Speed 2 Hours | 92.5   |
| Bystander 8th Gear (4 Hi)                   | 85.0   |

## TIRES, BALLAST AND WEIGHT

|                                  | With Ballast         | Without Ballast  |
|----------------------------------|----------------------|------------------|
| Rear tires                       | No, size, ply & psi  | Two 14.9-28;6;16 |
| Ballast                          | —Liquid              | 680 lb each      |
|                                  | Cast Iron            | 540 lb each      |
| Front tires                      | —No, size, ply & psi | Two 6.50-16;4;24 |
| Ballast                          | —Liquid              | None             |
|                                  | Cast Iron            | None             |
| Height of drawbar                | 13 inches            | 13½ inches       |
| Static weight with operator—Rear | 5730 lb              | 3290 lb          |
|                                  | Front                | 1840 lb          |
|                                  | Total                | 7570 lb          |

## Department of Agricultural Engineering

Dates of Test: April 28 to May 17, 1973

Manufacturer: INTERNATIONAL HARVESTER COMPANY, CHICAGO, ILLINOIS

**FUEL, OIL AND TIME** Fuel No 2 Diesel Cetane No 50.1 (rating taken from oil company's typical inspection data Specific gravity converted to 60°/60° 0.8386 Weight per gallon 6.982 lb Oil SAE 30 API service classification I.H. No 1 engine SAE 30 recommended or series 3 (CD CC CB CA SE SD SC) (Formerly DS DM DG MS) To motor 1.759 gal Drained from motor 1.656 gal Transmission and final drive lubricant I.H. Hy-Tran fluid Total time engine was operated 46 hours.

**ENGINE** Make International Diesel Type 3 cylinder vertical Serial No 179DT2D051920\* Crankshaft mounted lengthwise Rated rpm 2400 Bore and stroke 3.875" x 5.060" Compression ratio 16.0 to 1 Displacement 179 cu in Cranking system 12 volt electric Lubrication pressure Air cleaner dual stage dry type with replaceable pleated paper element and automatic dust unloader Oil filter Full flow treated paper screw-on cartridge Oil cooler radiator for transmission and hydraulic fluid Fuel filter one primary and one final using replaceable screw-on paper cartridges Muffler was used Cooling medium temperature control thermostat.

**CHASSIS** Type Standard Serial No 2210147U100094\* Tread width rear 52" to 76" front 48" to 80" Wheel base 75.2" 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 27.3" Vertical distance above roadway 29.7" Horizontal distance from center of rear wheel tread 0" to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio Advertised speeds mph first 2 second 3½ third 4¾ fourth 6¼ fifth 8 sixth 13 seventh 17¾ eighth 22¾ reverse 2¾, 4½, 6 and 7¾ Clutch single plate dry disc operated by foot pedal Brakes wet single disc hydraulically power actuated by two foot pedals that can be locked together with automatic equalizing Steering hydrostatic Turning radius (on concrete surface with brake applied) right 110" left 110" (on concrete surface without brake) right 124" left 124" Turning space diameter (on concrete surface with brake applied) right 231" left 231" (on concrete surface without brake) right 259" left 259" Power take-off 605 rpm at 2400 engine rpm.

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**REMARKS:** All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure.

Pull in 1st gear was limited by the tire tangential pull factor. Seventh and eighth gears were not run as test procedure requires only six travel speeds.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1127.

L. F. LARSEN

Engineer-in-charge

G. W. STEINBRUEGGE, Chairman

W. E. SPLINTER

D. E. LANE

Board of Tractor Test Engineers

The University of Nebraska Agricultural Experiment Station

E. F. Frolik, Dean; H. W. Ottoson, Director; Lincoln, Nebraska