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January 1941

Test 378: John Deere AR

Nebraska Tractor Test Lab

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL COLLEGE, LINCOLN

Copy of Report of Official Tractor Test No. 378**

Dates of test: October 27 to November 3, 1941
Name and model of tractor: John Deere AR
Manufacturer: John Deere Tractor Company, Waterloo, Iowa.
Manufacturer's rating: NOT RATED

BRAKE HORSEPOWER TESTS

| HP. | Crank- Shaft Speed R.P.M. | Fuel Consumption | | | Water used gal. per Hr. | Temperature Deg. F. | | Barometer Inches of Mercury |
|-----|------------------------------------|--------------------|---------------------|--------------------|-------------------------------------|------------------------|-----|--------------------------------------|
| | | Gal. per hr. | Hp.-hr. per Gal. | Lb. per Hp.-hr. | | Cool- ing Medium | Air | |

TEST B - 100% MAXIMUM LOAD - TWO HOURS

| | | | | | | | | |
|-------|-----|-------|------|-------|-------|-----|----|--------|
| 30.33 | 975 | 3.116 | 9.73 | 0.711 | 0.000 | 206 | 55 | 29.180 |
|-------|-----|-------|------|-------|-------|-----|----|--------|

TEST C - OPERATING MAXIMUM LOAD - ONE HOUR

| | | | | | | | | |
|------------------|----------------|------------------|------------------|------------------|------------------|----------------|---------------|-------------------|
| 28.71 | 976 | 2.582 | 11.12 | 0.622 | 0.000 | 205 | 61 | 29.190 |
|------------------|----------------|------------------|------------------|------------------|------------------|----------------|---------------|-------------------|

*TEST D - ONE HOUR

| | | | | | | | | |
|-------|-----|-------|-------|-------|-------|-----|----|--------|
| 26.37 | 975 | 2.370 | 11.13 | 0.622 | 0.000 | 205 | 58 | 29.120 |
|-------|-----|-------|-------|-------|-------|-----|----|--------|

TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

| | | | | | | | | |
|-------|------|-------|-------|-------|-------|-----|----|--------|
| 26.40 | 977 | 2.376 | 11.11 | 0.623 | ----- | 204 | 58 | ----- |
| 1.73 | 1046 | 0.993 | 1.74 | 3.971 | ----- | 204 | 57 | ----- |
| 13.79 | 1018 | 1.530 | 9.01 | 0.768 | ----- | 205 | 61 | ----- |
| 28.04 | 941 | 2.545 | 11.02 | 0.628 | ----- | 207 | 66 | ----- |
| 7.02 | 1036 | 1.361 | 5.16 | 1.342 | ----- | 205 | 69 | ----- |
| 20.19 | 996 | 1.903 | 10.61 | 0.652 | ----- | 205 | 70 | ----- |
| 16.20 | 1002 | 1.785 | 9.08 | 0.762 | 0.000 | 205 | 63 | 29.100 |

*Formerly called RATED LOAD; see REMARKS 4, page 5.

**Last Tractor Tested By Carlton Zink - 1941.

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DRAWBAR HORSEPOWER TESTS

| P | Draw bar pull lbs. | Speed Miles per Hr. | Crank- shaft speed R.P.M. | Slip of Drive Wheels % | Fuel Consumption | | | Water used gal. per hr. | Temp. Deg. F. | | Barom- eter Inches of Mercury |
|---|-----------------------------|------------------------------|------------------------------------|------------------------------------|--------------------|---------------------|--------------------|-------------------------------------|----------------------|-----|---|
| | | | | | Gal. per hr. | Hp.-hr. per Gal. | Lb. per Hp.-hr. | | Cool- ing Med. | Air | |

Rear wheels, tires and added weight used in Tests F, G and H: Case iron wheels:
12-26, 6 ply tires and 753 lbs. added weight per wheel.

TEST F - 100% MAXIMUM LOAD - Third GEAR

| | | | | | | | | | | | |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|
| 26.52 | 2417 | 4.11 | 976 | 5.84 | ---Not Recorded--- | | | | 201 | 49 | 28.925 |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|

TEST G - OPERATING MAXIMUM LOAD

| | | | | | | | | | | | |
|-------|------|------|-----|-------|--------------------|--|--|--|-----|----|--------|
| 19.86 | 4248 | 1.75 | 975 | 17.56 | ---Not Recorded--- | | | | 203 | 40 | 29.160 |
| 25.57 | 3124 | 3.07 | 974 | 7.87 | " " | | | | 203 | 49 | 28.925 |
| 25.01 | 2270 | 4.13 | 974 | 5.23 | " " | | | | 205 | 48 | 28.920 |
| 24.58 | 1390 | 6.63 | 975 | 3.06 | " " | | | | 202 | 49 | 28.925 |

*TEST H - TEN HOURS - Third GEAR

| | | | | | | | | | | | |
|-------|------|------|-----|-----|-------|------|-------|-------|-----|----|--------|
| 20.66 | 1861 | 4.16 | 975 | 460 | 2.139 | 9.66 | 0.716 | 0.000 | 205 | 40 | 29.170 |
|-------|------|------|-----|-----|-------|------|-------|-------|-----|----|--------|

TEST J - OPERATING MAXIMUM LOAD

Same wheels and tires as used in Tests F, G, and H. All added weight removed from tractor (liquid, cast iron or any other added forms). Third gear.

| | | | | | | | | | | | |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|
| 24.83 | 2291 | 4.06 | 976 | 7.66 | ---Not Recorded--- | | | | 197 | 42 | 28.675 |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|

TEST K - OPERATING MAXIMUM LOAD

Rear wheels, tires and added weight used: Cast iron wheels; 11-26, 6 ply tires and no added weight per wheel (**Combination No. 1). Third gear.

| | | | | | | | | | | | |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|
| 24.22 | 2372 | 3.83 | 975 | 9.91 | ---Not Recorded--- | | | | 204 | 41 | 28.675 |
|-------|------|------|-----|------|--------------------|--|--|--|-----|----|--------|

*Formerly called RATED LOAD; see REMARKS 4, page 5.

**Combination No. 1: Includes wheels, tires and added weight recommended in the manufacturer's published specifications.

Combination No. 2: When the manufacturer does not make a specific recommendation, then the tires used are the smallest size and ply and the wheels are the lightest listed in published specifications or the application for test.

See Page 3 for specifications on wheels, tires and weight.

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FUEL, OIL and TIME

Fuel Distillate Octane 38 Weight per gallon 6.93 pounds
Oil: S.A.E. No. 20 To motor 2.729 gal. Drained from motor 2.300 gal.
Total time motor was operated 44 hours.

TIRES, WHEELS and WEIGHT

| | | Tests F, G & H | Test J | Test K |
|---|-----------------|---------------------------|---------------------------|---------------------------|
| Rear Wheel: (each) | Type and Weight | Cast Iron 339 lbs | Cast Iron 339 lbs | Cast Iron 339 lbs |
| | Liquid Ballast | 333 lbs | None | None |
| | Added Cast Iron | 420 lbs | None | None |
| Rear Tires: | No., Size & Ply | 2, 12-26, 6 ply | 2, 12-26, 6 ply | 2, 11-26, 6 ply |
| | Type of Tread | Ground Grip | Ground Grip | Ground Grip |
| | Make | Firestone | Firestone | Firestone |
| | Air Pressure | 16 lbs | 16 lbs | 16 lbs |
| Front Wheel: (each) | Type and Weight | Pressed Steel, 18 lbs. | Pressed Steel, 18 lbs. | Pressed Steel, 18 lbs. |
| | Liquid Ballast | None | None | None |
| | Added Cast Iron | None | None | None |
| Front Tires: | No., Size & Ply | 2, 6.00-16, 4 ply | 2, 6.00-16, 4 ply | 2, 6.00-16, 4 ply |
| | Type of Tread | Guide Grip | Guide Grip | Guide Grip |
| | Make | Firestone | Firestone | Firestone |
| | Air Pressure | 28 lbs | 28 lbs | 28 lbs |
| Height of Drawbar | | 16" | 16 1/2" | 15" |
| Static Weight: Rear End | | 4765 lbs. | 3250 lbs. | 3160 lbs. |
| | | 1405 lbs. | 1415 lbs. | 1405 lbs. |
| Total Weight as Tested (With Operator) | | 6350 lbs. | 4815 lbs. | 4745 lbs. |

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CHASSIS

Type Standard Serial No. 260725 Drive Enclosed Gear
Tread width: Rear 51 7/8" Front 48"
Advertised speeds, miles per hour: First 2 Second 3 Third 4
Fourth 6 1/2 Reverse 3
Belt Pulley: Diam 12 3/4" Face 7 3/8" R.P.M. 975 Belt speed 3270 f.p.m
Clutch: Make Own Type Dry disc Operated by Hand
Seat Pressed Steel
Brakes: Make Own Type Single external contracting band
Location On Differential shaft
Gear reduction (brake drum to rear wheel) 4.533 to 1
Operated by Left foot
Locked by Ratch and slot in platform
Equalization None

MOTOR

Make Own Serial No. 260725 Type 2 cylinder, horizontal
Head I Mounting Crankshaft crosswise Lubrication Pressure
Bore and stroke 5 1/2" x 6 3/4" Rated R.P.M. 975
Port diameter valves: Inlet 1 15/16" Exhaust 1 49/64"
Magnet: Make Wico Model C-1042
Carburetor: Make Marvel-Schebler Model DLTX-41 Size 1 1/2"
Governor: Make Own Type Variable speed, centrifugal
Air Cleaner: Make Vortex Type Oil-washed wire filter
Oil Filter: Make Purolator Products, inc. Type Full-flow filter with by-pass
using impregnated replaceable paper
element
Cooling medium temperature control: Pines radiator shutters

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REPAIRS AND ADJUSTMENTS

No repairs or adjustments

REMARKS

1. All results shown on pages 1 and 2 of this report were determined from observed data and without allowances, additions or deductions. Tests B and F were made with carburetor set for 100% maximum belt horsepower and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, D, E, G, H, J and K were made with an operating setting of the carburetor (selected by the manufacturer) of 95.2% of maximum belt horsepower.
2. Observed maximum horsepower (tests F and B)

| | | |
|--|----------------|-------------|
| | <u>Drawbar</u> | <u>Belt</u> |
| | 26.52 | 30.33 |
3. Sea level (calculated) maximum horsepower

| | | |
|--|-------|-------|
| | 27.13 | 30.94 |
|--|-------|-------|

(based on 60° F. and 29.92" Hg.)
4. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly A.S.A.E. and S.A.E. ratings)

| | | |
|--|-------|-------|
| | 20.35 | 26.30 |
|--|-------|-------|

We, the undersigned, certify that the above is a true and correct report of official tractor test 378.

Carlton L. Zink
Engineer-in-Charge

E. E. Brackett

C. W. Smith

L. W. Hurlbut
Board of Tractor Test Engineers