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January 1949

## Test 406: John Deere R Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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UNIVERSITY OF NEBRASKA - AGRICULTURAL ENGINEERING DEPARTMENT  
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Copy of Report of Official Tractor Test No. 406

Dates of test: April 19, 1949 to April 28, 1949  
 Name and model of tractor: JOHN DEERE "R" DIESEL  
 Manufacturer: JOHN DEERE WATERLOO TRACTOR WORKS OF DEERE MFG. CO., WATERLOO, IOWA  
 Manufacturer's rating: None

HORSEPOWER SUMMARY

	DRAWBAR	BELT
1. Sea level (calculated maximum horsepower based on 60° F. and 29.92" Hg.)	45.69	50.96
2. Observed maximum horsepower (tests F & B)	43.15	48.58
3. Seventy-five per cent of calculated maximum drawbar horsepower and eighty-five per cent of calculated maximum belt horsepower (formerly ASAE and SAE ratings)	34.27	43.32

REMARKS

Glass sediment bowl broke during limber-up test. One small screw was missing from back rest on tractor seat at end of test.

FUEL, OIL and TIME

Fuel Diesel Fuel      Cetane 47\*      Weight per gallon 7.056  
Oil SAE 20      To motor 4.124 gal.      Drained from motor 3.793 gal.  
Total time motor was operated 57 hours

\* Cetane rating taken from oil company's typical inspection data.

We, the undersigned, certify that this is a true and correct report of official tractor test No. 406.

L. F. Larsen  
 Engineer in Charge

C. W. Smith  
L. W. Hurlbut  
F. D. Yung  
 BOARD OF TRACTOR TEST ENGINEERS

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All results shown on pages 2 and 3 of this report were determined from observed data and without additions or deductions. Tests B and F were made with fuel pumps as set by the manufacturer and data from these tests were used in determining the horsepower to be developed in tests D and H, respectively. Tests C, E, G and J were made with the same setting.

B E L T   H O R S E P O W E R   T E S T S

Horse- power	Crank shaft speed  rpm	Fuel Consumption			Water used  gal per hr	Temperature		Barometer  Inches of Mercury
		gal per hr	hp-hr per gal	lb per hp-hr		Cool- ing med °F.	Air °F.	

TEST B & C - 100 % MAXIMUM LOAD - TWO HOURS

48.58	1000	2.800	17.35	0.407	0.00	185	72	25.850
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\*TEST D - ONE HOUR

43.52	1000	2.469	17.63	0.400	0.00	176	73	28.857
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TEST E - VARYING LOAD - TWO HOURS (20 minute runs; last line average)

43.53	1001	2.466	17.65	0.400	- - -	173	71	- - -
1.68	1055	0.651	2.58	2.732	- - -	172	71	- - -
22.61	1038	1.471	15.37	0.459	- - -	171	72	- - -
46.30	945	2.636	17.56	0.402	- - -	178	73	- - -
11.37	1042	1.020	11.15	0.633	- - -	183	72	- - -
33.50	1025	1.969	17.01	0.415	- - -	168	72	- - -
26.50	1017	1.702	15.57	0.453	0.00	174	72	28.865

\* Formerly called RATED LOAD, see HORSEPOWER SUMMARY 3, page 1.



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D R A W B A R   H O R S E P O W E R   T E S T S

Horse- power	Draw bar pull lb	Speed mph	Crank shaft speed rpm	Slip on drive wheels %	Fuel Consumption			Water used gal per hr	Temperature		Barometer Inches of Mercury
					gal per hr	hp-hr per gal	lb per hp-hr		Cool- ing med °F.	Air °F.	

TESTS F & G - 100% MAXIMUM LOAD

33.30	6644	1.88	1004	15.01	-----	Not Recorded	-----		182	71	28.780
42.24	5003	3.17	1000	7.35	-----	Not Recorded	-----		188	62	28.965
43.15	4000	4.05	1001	6.55	-----	Not Recorded	-----		188	82	28.853
42.87	3064	5.25	1000	4.34	-----	Not Recorded	-----		182	73	28.965
36.26	1193	11.40	997	1.79	-----	Not Recorded	-----		182	84	28.853

\*TEST H - TEN HOURS - 3rd GEAR

34.45	3140	4.11	998	4.70	2.268	15.19	0.465	0.00	176	81	28.766
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TEST J - OPERATING MAXIMUM LOAD - 3rd GEAR

41.69	3878	4.03	1002	8.68	-----	Not Recorded	-----		177	74	28.965
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\* Formerly called RATED LOAD; see POWER SUMMARY 3, page 1.

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TIRES, WHEELS, and WEIGHT

	Tests F, G, & H	Test J
Rear Wheel; Type (each)	Cast Disc	Cast Disc
Liquid Ballast	500 lb.	None
Added Cast Iron	900 lb.	None
Rear Tires; No. Size & Ply	2 14-34 6 ply	2 14-34 6 ply
Type of Tread	Champion Ground Grip	Champion Ground Grip
Make	Firestone	Firestone
Air Pressure	14 lb.	12 lb.
Front Wheel; Type (each)	Pressed Steel	Pressed Steel
Liquid Ballast	None	None
Added Cast Iron	None	None
Front Tires; No. Size & Ply	2 7.50-18 4 ply	2 7.50-18 4 ply
Type of Tread	Guide Grip	Guide Grip
Make	Firestone	Firestone
Air Pressure	28 lb.	28 lb.
Height of Drawbar	21 inches	22 1/2 inches
Static Weight; Rear End	7719 lb.	4918 lb.
Front End	2514 lb.	2520 lb.
Total Weight as Tested (with Operator)	10,398 lb.	7603 lb.

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SPECIFICATIONS

Type Standard                      Serial No. R-1358                      Drive Enclosed gear  
Tread width: Rear 62 1/2 in.                      Front 54 in.                      Wheel Base 85 1/8 in.  
Advertised speeds, miles per hour: First 2 1/8    Second 3 1/3    Third 4 1/4  
    Fourth 5 1/3                      Fifth 11 1/2                      Reverse 2 1/2  
Belt pulley: Diam. 12 7/32 in.                      Face 9 in.                      RPM 1000                      Belt speed 3199 fpm  
Clutch: Make Own                      Type Dry Disc                      Operated by Hand  
Seat: Spring cushion with padded back rest  
Hydraulic Control: None

Brakes: Make Own                      Operated by One foot pedal on each brake

Location On independent shafts geared to each rear axle

Gear reduction (brake drum to rear wheel) 6.27 - 1

Locked by Latches anchored on tractor platform                      Equalization None

Engine: Make Own                      Serial No. R-1358                      Type 2 cylinder horizontal

Head I                      Mounting Crankshaft Crosswise                      Lubrication Pressure

Bore & Stroke 5 3/4 in. x 8 in.                      Compression Ratio 16:1                      Rated rpm 1000

Port diameter valves: Inlet 2.062                      Exhaust 1.655 in.

Generator: Delco-Remy                      Battery Delco, 6 Volt

Governor: Make Own                      Type Flyball

Air Cleaner: Make Donaldson                      Type Oil washed wire screen filter

Fuel Filter: Make Purolator (2 used)                      Type Impregnated paper element

Oil Filter: Make Purolator (2 used)                      Type Full flow filter with by-pass using impregnated replaceable paper

Cooling medium temperature control: Radiator shutter

Starting Engine: Make Own                      Serial No. R-1358                      Type 2 cyl. horizontal opposed

Bore & stroke 2 6/10 in. x 2 5/16 in.                      Rated rpm 4000

Magneto: Wico                      Starter Delco-Remy                      Air Cleaner Donaldson