

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

2008

Test 1942: John Deere 9430 Diesel

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Nebraska Tractor Test Lab, "Test 1942: John Deere 9430 Diesel" (2008). *Nebraska Tractor Tests*. 2318. <https://digitalcommons.unl.edu/tractormuseumlit/2318>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA OECD TRACTOR TEST 1942–SUMMARY 618

JOHN DEERE 9430 DIESEL

18 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1108 rpm)					
337.90 (251.97)	2099	20.17 (76.35)	0.416 (0.253)	16.75 (3.30)	
Standard Power Take-off Speed—(PTO speed—1000 rpm)					
378.62 (282.34)	1895	21.96 (83.11)	0.405 (0.246)	17.24 (3.40)	
Maximum Power (1 hour)					
383.79 (286.19)	1850	22.25 (84.24)	0.405 (0.246)	17.25 (3.40)	

VARYING POWER AND FUEL CONSUMPTION

337.90 (251.97)	2099	20.17 (76.35)	0.416 (0.253)	16.75 (3.30)	Air temperature
290.50 (216.62)	2124	18.17 (68.80)	0.436 (0.265)	15.98 (3.15)	75°F (24°C)
219.29 (163.52)	2138	15.28 (57.84)	0.486 (0.296)	14.35 (2.83)	Relative humidity
147.43 (109.94)	2154	11.92 (45.14)	0.564 (0.343)	12.36 (2.44)	36%
74.12 (55.27)	2170	8.57 (32.44)	0.807 (0.491)	8.65 (1.70)	Barometer
1.97 (1.47)	2181	6.22 (23.55)	22.004 (13.384)	0.32 (0.06)	28.62" Hg (96.92 kPa)

Maximum Torque - 1231 lb.-ft. (1669 Nm) at 1349 rpm

Maximum Torque Rise - 45.7%

Torque rise at 1701 engine rpm - 37%

Power increase at 1850 engine rpm - 13.6%

DRAWBAR PERFORMANCE (Unballasted)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—8th Gear									
343.05 (255.81)	23988 (106.70)	5.36 (8.63)	2102	3.3	0.447 (0.272)	15.62 (3.08)	181 (83)	52 (11)	29.15 (98.71)
75% of Pull at Maximum Power—8th Gear									
268.43 (200.17)	18013 (80.12)	5.59 (8.99)	2167	2.1	0.490 (0.298)	14.23 (2.80)	181 (83)	61 (16)	29.17 (98.78)
50% of Pull at Maximum Power—8th Gear									
182.09 (135.78)	12047 (53.59)	5.67 (9.12)	2190	1.5	0.556 (0.338)	12.56 (2.47)	179 (82)	62 (17)	29.16 (98.75)
75% of Pull at Reduced Engine Speed—11th Gear									
267.81 (199.71)	18117 (80.59)	5.54 (8.92)	1590	2.2	0.467 (0.284)	14.95 (2.95)	190 (88)	61 (16)	29.17 (98.78)
50% of Pull at Reduced Engine Speed—11th Gear									
183.03 (136.48)	12117 (53.90)	5.66 (9.12)	1609	1.4	0.516 (0.314)	13.51 (2.66)	181 (83)	62 (17)	29.18 (98.82)

Location of Tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of Test: October 10 -November 5, 2008

Manufacturer: John Deere Tractor Works, 3500 East Donald St., P.O. Box 270, Waterloo Ia, 50704-0270

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8380 Fuel weight 6.977 lbs/gal (0.836 kg/l) Oil SAE 15W-40 API service classification CH-4 Transmission, hydraulic and final drive lubricant John Deere Hy-Gard fluid Total time engine was operated: 36.5 hours

ENGINE: Make John Deere **Diesel Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.** *RG6135L003267* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.197" x 6.496" (132.0 mm x 165.0 mm) **Compression ratio** 16.0 to 1 **Displacement** 826 cu in (13548 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic oil, radiator for transmission, front and rear axle oil **Fuel filter** two paper cartridges **Fuel cooler** radiator for returned fuel **Muffler** vertical **Cooling medium temperature control** 3 thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: (375 engine hp) 130.5 - 141.1 lb/h (59.2 - 64.0 kg/h), (400 engine hp) 137.3 - 148.5 lb/h (62.3 - 67.4 kg/h), (425 engine hp) 144.0 - 155.6 lb/h (65.3 - 70.6 kg/h) **High idle:** 2215 - 2265 rpm (2160 - 2200 rpm with PTO engaged) **Turbo boost:** (425 engine hp) nominal 23.9 - 26.8 psi (165 - 185 kPa) as measured 26.0 psi (179 kPa)

CHASSIS: Type four wheel drive with triples **Serial No.** *RW9430P003399* **Tread width** rear 57.5" (1460 mm) to 155.5" (3950 mm), front 57.5" (1460 mm) to 155.5" (3950 mm) **Wheelbase** 137.7" (3498 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph (km/h)** first 2.40 (3.87) second 2.96 (4.76) third 3.27 (5.27) fourth 3.66 (5.89) fifth 4.03 (6.49) sixth 4.50 (7.24) seventh 4.98 (8.02) eighth 5.56 (8.95) ninth 6.13 (9.87) tenth 6.85 (11.02) eleventh 7.58 (12.20) twelfth 8.38 (13.49) thirteenth 9.33 (15.02) fourteenth 10.32 (16.60) fifteenth 12.75 (20.52) sixteenth 15.68 (25.24) seventeenth 19.39 (31.21) eighteenth 23.87 (38.41) reverse 2.40 (3.87), 3.27 (5.27), 3.66 (5.89), 4.98 (8.02), 5.56 (8.95), 7.58 (12.20)

DRAWBAR PERFORMANCE

(Unballasted at 2100 rpm)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
284.42 (212.09)	39192 (174.33)	2.72 (4.38)	2101	9.0	2nd Gear 0.481 (0.293)	14.51 (2.86)	180 (82)	41 (5)	29.20 (98.88)
298.31 (222.45)	36378 (161.82)	3.08 (4.95)	2097	7.4	3rd Gear 0.462 (0.281)	15.12 (2.98)	181 (83)	48 (9)	29.19 (98.85)
321.26 (239.56)	34706 (154.38)	3.47 (5.59)	2100	5.8	4th Gear 0.455 (0.277)	15.34 (3.02)	180 (82)	53 (12)	29.19 (98.85)
340.60 (253.99)	33354 (148.36)	3.83 (6.16)	2099	5.1	5th Gear 0.451 (0.274)	15.46 (3.05)	181 (83)	49 (9)	29.18 (98.82)
340.48 (253.88)	29456 (131.03)	4.33 (6.98)	2100	4.0	6th Gear 0.451 (0.274)	15.47 (3.05)	181 (83)	50 (10)	29.17 (98.78)
344.62 (256.98)	26825 (119.32)	4.82 (7.75)	2101	3.6	7th Gear 0.446 (0.271)	15.65 (3.08)	181 (83)	50 (10)	29.16 (98.75)
343.05 (255.81)	23988 (106.70)	5.36 (8.63)	2102	3.3	8th Gear 0.447 (0.272)	15.62 (3.08)	181 (83)	52 (11)	29.15 (98.71)
341.74 (254.84)	21456 (95.44)	5.97 (9.61)	2101	2.9	9th Gear 0.448 (0.272)	15.59 (3.07)	181 (83)	53 (12)	29.14 (98.68)
342.27 (255.23)	19264 (85.69)	6.66 (10.72)	2102	2.6	10th Gear 0.447 (0.272)	15.60 (3.07)	181 (83)	53 (12)	29.13 (98.65)
337.80 (251.90)	17200 (76.51)	7.36 (11.85)	2100	2.3	11th Gear 0.454 (0.276)	15.38 (3.03)	181 (83)	53 (12)	29.13 (98.65)
343.36 (256.04)	15677 (69.73)	8.21 (13.22)	2102	2.0	12th Gear 0.446 (0.271)	15.65 (3.08)	180 (82)	52 (11)	29.09 (98.51)

Clutch wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1895 engine rpm **Unladen tractor mass** 38600 lb (17509 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE: The 9430 engine has an electronic control system which provides a vehicle protection system to avoid overloading the drive train. This system provides three different engine power levels. At 2100 rpm the engine produces up to 375 hp when the transmission is in forward gears 1 through 3 or when the tractor is being used for stationary PTO operations. At 2100 rpm the engine produces 400 hp when the transmission is in gear 4. At 2100 rpm the engine produces 425 hp in all other applications.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the primary fuel filter was maintained at 108°F (42°C). The pull in 2nd gear was limited to avoid excessive tractor bouncing. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1942**, Nebraska Summary 618, January 12, 2009.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 6th gear	73.7
Transport speed-no load-18th gear	75.7
Bystander in 18th gear	90.3

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires - No., size, ply & psi(kPa)	Six 480/80R46;***;12(85)	Six 480/80R46;***;10(70)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	4605 lb (2089 kg)	None
Front Tires - No., size, ply & psi(kPa)	Six 480/80R46;***;14(95)	Six 480/80R46;***;12(85)
Ballast - Liquid (total)	None	None
- Cast Iron (total)	1625 lb (737 kg)	None
Height of Drawbar	21.0 in (535 mm)	21.5 in (545 mm)
Static Weight with operator - Rear	20680 lb (9380 kg)	16075 lb (7292 kg)
- Front	24325 lb(11034 kg)	22700 lb(10296 kg)
- Total	45005 lb(20414 kg)	38775 lb(17588 kg)

DRAWBAR PERFORMANCE
(Unballasted at 1900 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
285.13 (212.62)	39241 (174.55)	2.72 (4.39)	2103	9.3	2nd Gear 0.481 (0.292)	14.51 (2.86)	180 (82)	42 (6)	29.20 (98.88)
304.38 (226.96)	38300 (170.36)	2.98 (4.80)	2058	8.6	3rd Gear 0.462 (0.281)	15.11 (2.98)	181 (83)	50 (10)	29.19 (98.85)
331.15 (246.94)	37396 (166.34)	3.32 (5.34)	2037	7.0	4th Gear 0.454 (0.276)	15.38 (3.03)	181 (83)	56 (13)	29.18 (98.82)
356.93 (266.16)	36256 (161.27)	3.69 (5.94)	2044	6.3	5th Gear 0.445 (0.271)	15.68 (3.09)	182 (83)	58 (14)	29.18 (98.82)
371.93 (277.35)	35050 (155.91)	3.98 (6.40)	1964	5.8	6th Gear 0.446 (0.272)	15.63 (3.08)	182 (83)	50 (10)	29.17 (98.78)
385.41 (287.40)	33903 (150.81)	4.26 (6.86)	1898	5.2	7th Gear 0.438 (0.266)	15.93 (3.14)	184 (84)	52 (11)	29.15 (98.71)
390.05 (290.86)	30351 (135.01)	4.82 (7.76)	1902	4.2	8th Gear 0.431 (0.262)	16.20 (3.19)	184 (84)	52 (11)	29.15 (98.71)
387.95 (289.29)	27172 (120.86)	5.35 (8.62)	1898	3.8	9th Gear 0.433 (0.263)	16.12 (3.18)	185 (85)	53 (12)	29.14 (98.68)
388.10 (289.41)	24367 (108.39)	5.97 (9.61)	1902	3.4	10th Gear 0.432 (0.263)	16.14 (3.18)	185 (85)	53 (12)	29.13 (98.64)
387.64 (289.06)	21955 (97.66)	6.62 (10.65)	1898	2.8	11th Gear 0.434 (0.264)	16.08 (3.17)	187 (86)	54 (12)	29.12 (98.61)
387.50 (289.96)	19627 (87.31)	7.40 (11.92)	1901	2.4	12th Gear 0.434 (0.264)	16.08 (3.17)	190 (88)	53 (12)	29.09 (98.51)
381.12 (284.20)	17437 (77.56)	8.20 (13.19)	1898	2.2	13th Gear 0.441 (0.268)	15.84 (3.12)	189 (87)	52 (11)	29.08 (98.48)

Lugging ability in 11th gear

Crankshaft speed rpm	2100	2000	1898	1807	1701	1599	1298	1105
Pull-lbs (kN)	17200 (76.50)	19883 (88.44)	21955 (97.66)	22814 (101.48)	24085 (107.14)	24721 (109.96)	25554 (113.67)	25369 (112.85)
Increase in pull%	0	16	28	33	40	44	49	47
Power-Hp (kW)	337.80 (251.82)	371.68 (277.16)	387.64 (289.06)	381.68 (284.62)	379.50 (282.99)	365.62 (272.64)	307.36 (229.20)	258.97 (193.11)
Speed-mph (km/h)	7.36 (11.84)	7.01 (11.28)	6.62 (10.65)	6.27 (10.10)	5.91 (9.51)	5.55 (8.93)	4.51 (7.26)	3.83 (6.16)
Slip %	2.3	2.4	2.8	3.5	3.6	3.7	3.8	3.8

DRAWBAR PERFORMANCE
(Ballasted at 1900 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
259.85 (193.77)	44141 (196.35)	2.21 (3.55)	2153	11.9	1st Gear 0.506 (0.308)	13.78 (2.71)	180 (82)	44 (7)	29.32 (99.29)
302.99 (225.94)	42759 (190.20)	2.66 (4.28)	2043	8.8	2nd Gear 0.469 (0.285)	14.89 (2.93)	181 (83)	47 (8)	29.31 (99.26)
319.42 (238.19)	41224 (183.37)	2.91 (4.68)	1998	7.7	3rd Gear 0.453 (0.276)	15.40 (3.03)	181 (83)	50 (10)	29.30 (99.22)
349.08 (260.31)	40822 (181.59)	3.21 (5.16)	1966	6.7	4th Gear 0.448 (0.272)	15.58 (3.07)	182 (83)	52 (11)	29.29 (99.19)
379.65 (283.10)	40728 (181.16)	3.50 (5.63)	1946	6.6	5th Gear 0.439 (0.267)	15.89 (3.13)	183 (84)	54 (12)	29.28 (99.15)
384.37 (286.63)	37282 (165.84)	3.87 (6.22)	1902	5.5	6th Gear 0.439 (0.267)	15.89 (3.13)	188 (86)	56 (13)	29.26 (99.07)
391.56 (291.99)	34089 (151.64)	4.31 (6.93)	1901	4.4	7th Gear 0.430 (0.262)	16.21 (3.19)	187 (86)	56 (13)	29.25 (99.05)
394.47 (294.15)	30701 (136.56)	4.82 (7.75)	1899	3.8	8th Gear 0.428 (0.260)	16.29 (3.21)	190 (88)	57 (14)	29.24 (99.02)
390.21 (290.98)	27289 (121.39)	5.36 (8.63)	1901	3.3	9th Gear 0.432 (0.263)	16.16 (3.18)	189 (87)	58 (14)	29.22 (98.95)
390.64 (291.30)	24489 (108.93)	5.98 (9.63)	1902	3.0	10th Gear 0.431 (0.262)	16.19 (3.19)	194 (90)	58 (14)	29.21 (98.92)
388.89 (289.99)	21976 (97.75)	6.64 (10.68)	1901	2.7	11th Gear 0.432 (0.263)	16.13 (3.18)	190 (88)	58 (14)	29.20 (98.88)
390.82 (291.43)	19841 (88.25)	7.39 (11.89)	1902	2.5	12th Gear 0.431 (0.262)	16.18 (3.19)	192 (89)	59 (15)	29.19 (98.85)
379.75 (283.18)	17348 (77.17)	8.21 (13.21)	1903	2.3	13th Gear 0.443 (0.269)	15.76 (3.10)	192 (89)	60 (16)	29.18 (98.82)

HYDRAULIC PERFORMANCE

CATEGORY: III, IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range: 15712 lbs (69.9 kN) (Cat III)
15677 lbs (69.7 kN) (Cat IVN)

i) Sustained pressure at compensator cutoff: 2930 psi (202 bar)
18 speed Powershift Transmission
Single outlet set Three outlet sets combined

ii) Pump delivery rate at minimum pressure and rated engine speed: 38.9 GPM (147.1 l/min) 51.1 GPM (193.3 l/min)

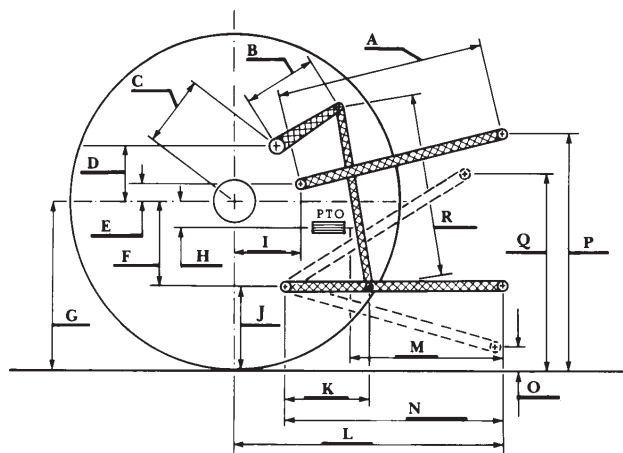
iii) Pump delivery rate at maximum
hydraulic power: 35.2 GPM (133.3 l/min) 49.0 GPM (185.6 l/min)
Delivery pressure: 2239 psi (154 bar) 2590 psi (179 bar)
Power: 46.0 HP (34.3 kW) 74.1 HP (55.3 kW)

24 speed manual shift transmission
Single outlet set Three outlet sets combined

ii) Pump delivery rate at minimum pressure and rated engine speed: 38.5 GPM (145.6 l/min) 46.2 GPM (174.8 l/min)

iii) Pump delivery rate at maximum
hydraulic power: 35.9 GPM (135.9 l/min) 44.2 GPM (167.3 l/min)
Delivery pressure: 2234 psi (154 bar) 2606 psi (180 bar)
Power: 46.8 HP (34.9 kW) 67.2 HP (50.1 kW)

HITCH DIMENSIONS AS TESTED—NO LOAD



	Category III		Category IVN	
	inch	mm	inch	mm
A	30.7	780	30.9	785
B	18.6	472	18.6	472
C	26.2	666	26.2	666
D	24.4	620	24.4	620
E	11.3	288	11.3	288
F	13.8	350	13.8	350
G	36.2	920	36.2	920
H	4.0	101	4.0	101
I	22.7	577	22.7	577
J	22.4	570	22.4	570
K	28.8	731	28.3	718
L	55.3	1405	54.5	1385
*L'	61.3	1557	61.8	1570
M	31.4	797	31.9	810
N	44.0	1117	43.2	1097
O	9.0	230	9.0	230
P	49.4	1255	49.4	1256
Q	41.3	1050	41.5	1053
R	43.7	1110	43.7	1110

*L' to Quick Attach ends



JOHN DEERE 9430 DIESEL

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln