

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

4-14-1986

Test 1589: John Deere 3150 and 3155 Diesel 16-Speed

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 1589: John Deere 3150 and 3155 Diesel 16-Speed" (1986). *Nebraska Tractor Tests*. 1900.

<https://digitalcommons.unl.edu/tractormuseumlit/1900>

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 TRACTOR TEST 1589—JOHN DEERE 3150 DIESEL ALSO JOHN DEERE 3155 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption			Temperature °F (°C)			Barometer inch Hg (kPa)	
		gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling medium	Air wet bulb	Air dry bulb		
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed — Two hours (PTO Speed — 997 rpm)									
96.06 (71.63)	2400	5.841 (22.111)	0.426 (0.259)	16.45 (3.240)	183 (84.1)	64 (17.6)	75 (23.8)	28.90 (97.59)	
VARYING POWER AND FUEL CONSUMPTION — Two Hours									
83.90 (62.56)	2466	5.257 (19.899)	0.439 (0.267)	15.96 (3.144)	182 (83.3)	64 (17.8)	75 (23.9)	..... .....
0.00 (0.00)	2562	1.948 (7.373)	..... .....	..... .....	180 (82.2)	63 (17.2)	75 (23.9)	..... .....
42.58 (31.75)	2501	3.467 (13.126)	0.571 (0.347)	12.28 (2.419)	181 (82.8)	64 (17.5)	76 (24.2)	..... .....
96.53 (71.98)	2400	5.826 (22.055)	0.423 (0.257)	16.57 (3.264)	184 (84.4)	64 (17.5)	75 (23.9)	..... .....
21.43 (15.98)	2520	2.723 (10.306)	0.890 (0.542)	7.87 (1.550)	180 (82.2)	63 (16.9)	76 (24.2)	..... .....
63.39 (47.27)	2484	4.294 (16.253)	0.475 (0.289)	14.76 (2.908)	182 (83.3)	62 (16.7)	76 (24.2)	..... .....
Av Av	51.30 (38.26)	2489	3.919 (14.835)	0.535 (0.326)	13.09 (2.579)	182 (83.1)	63 (17.3)	75 (24.0)	28.90 (97.58)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cool- ing med	Air wet bulb	Air dry bulb	
Maximum Available Power — Two Hours 9th (5L) Gear											
81.92 (61.09)	5445 (24.22)	5.64 (9.08)	2399	5.08	5.758 (21.795)	0.493 (0.300)	14.23 (2.803)	185 (84.7)	47 (8.3)	60 (15.6)	29.18 (98.54)
75% of Pull at Maximum Power — Ten Hours 9th (5L) Gear											
65.18 (48.60)	4140 (18.42)	5.90 (9.50)	2473	3.63	4.887 (18.500)	0.525 (0.320)	13.34 (2.627)	184 (84.3)	46 (7.7)	58 (14.3)	29.13 (98.36)
50% of Pull at Maximum Power — Two Hours 9th (5L) Gear											
44.30 (33.03)	2760 (12.28)	6.02 (9.69)	2491	2.59	3.953 (14.962)	0.625 (0.380)	11.21 (2.208)	184 (84.4)	47 (8.3)	62 (16.7)	29.14 (98.40)
50% of Pull at Reduced Engine Speed — Two Hours 12th (6H) Gear											
44.30 (33.03)	2760 (12.28)	6.02 (9.69)	1469	2.63	3.025 (11.451)	0.479 (0.291)	14.64 (2.885)	182 (83.1)	49 (9.4)	62 (16.7)	28.96 (97.78)

MAXIMUM POWER IN SELECTED GEARS

71.78 (53.53)	10507 (46.74)	2.56 (4.12)	2453	14.83	4th (2H) Gear			183 (83.6)	45 (6.9)	51 (10.6)	28.97 (97.83)	
77.80 (58.02)	9565 (42.55)	3.05 (4.91)	2401	11.63	5th (3L) Gear			183 (83.9)	45 (7.2)	55 (12.8)	29.19 (98.57)	
79.31 (59.14)	7645 (34.00)	3.89 (6.26)	2399	8.03	6th (3H) Gear			184 (84.2)	45 (7.2)	55 (12.8)	29.19 (98.57)	
81.49 (60.77)	7062 (31.41)	4.33 (6.96)	2400	6.77	7th (4L) Gear			183 (83.9)	45 (7.2)	54 (12.2)	29.19 (98.57)	
81.37 (60.68)	5647 (25.12)	5.40 (8.70)	2398	5.16	8th (4H) Gear			183 (83.9)	45 (7.2)	54 (12.2)	29.19 (98.57)	
83.04 (61.92)	5520 (24.55)	5.64 (9.08)	2399	4.92	9th (5L) Gear			184 (84.2)	46 (7.8)	57 (13.9)	29.20 (98.60)	
82.08 (61.21)	4395 (19.55)	7.00 (11.27)	2397	3.97	10th (5H) Gear			184 (84.2)	46 (7.8)	57 (13.9)	29.20 (98.60)	
81.74 (60.96)	3863 (17.18)	7.94 (12.77)	2401	3.41	11th (6L) Gear			184 (84.2)	46 (7.8)	56 (13.3)	29.20 (98.60)	
78.60 (58.62)	3004 (13.36)	9.81 (15.79)	2399	2.76	12th (6H) Gear			183 (83.9)	46 (7.8)	56 (13.3)	29.20 (98.60)	

Department of Agricultural Engineering

Dates of Test: April 1 to 14, 1986

Manufacturer: JOHN DEERE TRACTOR
WERKE MANNHEIM, Mannheim, West Ger-
many

FUEL, OIL AND TIME: Fuel No. 2 Diesel
Cetane No. 46.9 (rating taken from oil company's
inspection data) **Specific gravity converted to 60/
60°F (15/15°C)** 0.8417 **Fuel weight** 7.008 lbs/gal
(0.840 kg/l) **Oil** SAE 15W-40 **API service classi-
fication** CD, CC, SD **To motor** 2.13 gal (10.647
l) **Drained from motor** 2.391 gal (9.050 l) **Trans-
mission and final drive lubricant** John Deere Hy-
Gard transmission and hydraulic oil **Front axle
lubricant** John Deere GL-5 gear lubricant **Total
time engine was operated** 35.0 hours.

ENGINE: Make John Deere Diesel **Type** six
cylinder vertical **Serial No.** *CD6359D683229*
Crankshaft lengthwise **Rated rpm** 2400 **Bore and
stroke** 4.19" × 4.33" (106.5 mm × 110 mm)
Compression ratio 17.8 to 1 **Displacement** 359 cu
in (5883 ml) **Starting system** 12 volt **Lubrication**
pressure **Air cleaner** two paper elements **Oil filter**
one full flow cartridge **Oil cooler** engine coolant
heat exchanger for crankcase oil, radiator for hy-
draulic and transmission oil **Fuel filter** one paper
cartridge **Muffler** underhood **Exhaust** vertical
Cooling medium temperature control two ther-
mostats.

CHASSIS: **Type** front wheel assist **Serial No.**
L03150U565096 **Tread width** rear 62.2" (1580
mm) to 94.9" (2410 mm) front 66.9" (1700 mm) to
82.7" (2100 mm) **Wheel base** 101.7" (2582 mm) **Center
of gravity** (without operator or ballast, with
minimum tread, with fuel tank filled and tractor
serviced for operation) Horizontal distance for-
ward from center-line of rear wheels 36.1" (917
mm) Vertical distance above roadway 38.6" (980
mm) Horizontal distance from center of rear wheel
tread 0.2" (5 mm) to the left **Hydraulic control
system** direct engine drive **Transmission** selective
gear fixed ratio with partial (2) range operator
controlled powershift **Advised speeds mph (km/
h)** first 1.7 (2.7) second 2.1 (3.3) third 2.3 (3.8)
fourth 2.9 (4.6) fifth 3.4 (5.4) sixth 4.1 (6.6) sev-
enth 4.5 (7.3) eighth 5.5 (8.9) ninth 5.8 (9.3) tenth
7.1 (11.4) eleventh 8.0 (12.9) twelfth 9.8 (15.8)
thirteenth 11.5 (18.5) fourteenth 14.1 (22.7) fif-
teenth 15.5 (24.9) sixteenth 19.0 (30.6) reverse 2.6
(4.2), 3.2 (5.1), 3.6 (5.8), 4.4 (7.1), 5.1 (8.3), 6.3
(10.2), 6.9 (11.2), 8.5 (13.7) **Clutch** single dry disc
hydraulically actuated by foot pedal **Brakes** wet
disc hydraulically power actuated by two foot pe-
dals which can be locked together **Steering** hy-
drostatic **Turning radius** (on concrete surface with
brake applied) right 162" (4.11 m) left 162" (4.11
m) (on concrete surface without brake) right 169"

LUGGING ABILITY IN 9th (5L) GEAR

Crankshaft Speed rpm	2399	2160	1921	1687	1432	1206	958
Pull—lbs (kN)	5520 (24.55)	6187 (27.52)	6610 (29.40)	7076 (31.48)	7271 (32.34)	7383 (32.84)	7263 (32.31)
Increase in Pull %	0	12	20	28	32	34	32
Power—Hp (kW)	83.04 (61.92)	83.16 (62.01)	78.53 (58.56)	73.34 (54.69)	63.76 (47.55)	54.37 (40.54)	42.51 (31.70)
Speed—Mph (kmh)	5.64 (9.08)	5.04 (8.11)	4.46 (7.17)	3.89 (6.25)	3.29 (5.29)	2.76 (4.44)	2.19 (3.53)
Slip %	4.92	5.85	6.47	6.92	7.37	7.52	7.52

TRACTOR SOUND LEVEL WITH CAB

	Front Wheel Drive Disengaged dB(A)	Engaged dB(A)
Maximum Available Power—Two Hours		77.0
75% of Pull at Maximum Power—Ten Hours		77.5
50% of Pull at Maximum Power—Two Hours		76.5
50% of Pull at Reduced Engine Speed—Two Hours		72.0
Bystander in 16th (8H) gear	90.0	

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires	Two 18.4-38; 8; 16 (110)	Two 18.4-38; 8; 16 (110)
Ballast	None	None
—No., size, ply & psi (kPa)	58 lb (26 kg)	None
—Liquid (each)		
—Test equip (each)		
Front Tires	Two 16.9-24; 6; 16 (110)	Two 16.9-24; 6; 16 (110)
Ballast	None	None
—No., size, ply & psi (kPa)	120 lb (54 kg)	None
—Liquid (each)		
—Cast Iron (each)		
Height of Drawbar	20 in (510 mm)	20 in (510 mm)
Static Weight with Operator —Rear	7860 lb (3565 kg)	7745 lb (3513 kg)
—Front	4440 lb (2014 kg)	4200 lb (1905 kg)
—Total	12300 lb (5579 kg)	11945 lb (5418 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2350 (16200)		
Location	pump		
Hydraulic oil temperature °F (°C)	152 (67)		
Location	pump inlet		
	Maximum Lift Capacity	Lift Capacity for Transport	
QUICK ATTACH	no	no	
CATEGORY	II	II	
Load lbs (kg)	6308 (2861)	4272 (1938)	
TIME sec.	3.41	2.48	
HITCH POINT MOVEMENT in (mm)			
Lowest position	12.7 (323)	8.0 (203)	
Top of timed range	36.7 (932)	31.6 (803)	
Highest position	36.7 (932)	31.6 (803)	
LOAD CG MOVEMENT in (mm)			
Lowest position	12.1 (307)	8.0 (203)	
Top of timed range	40.9 (1039)	33.7 (856)	
Highest position	41.0 (1041)	33.7 (856)	

(4.30 m) left 169" (4.30 m) **Turning space diameter** (on concrete surface with brake applied) right 341" (8.66 m) left 341" (8.66 m)(on concrete surface without brake) right 355" (9.01 m) left 355" (9.01 m) **Power take-off** 540 rpm at 2415 engine rpm and 997 rpm at 2400 engine rpm **Unladen tractor mass** 11770 lb (5339 kg).

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes and the technically equivalent ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F (60.7°C). Nine gears were chosen between 15% slip and 10 mph (16.1 km/h).

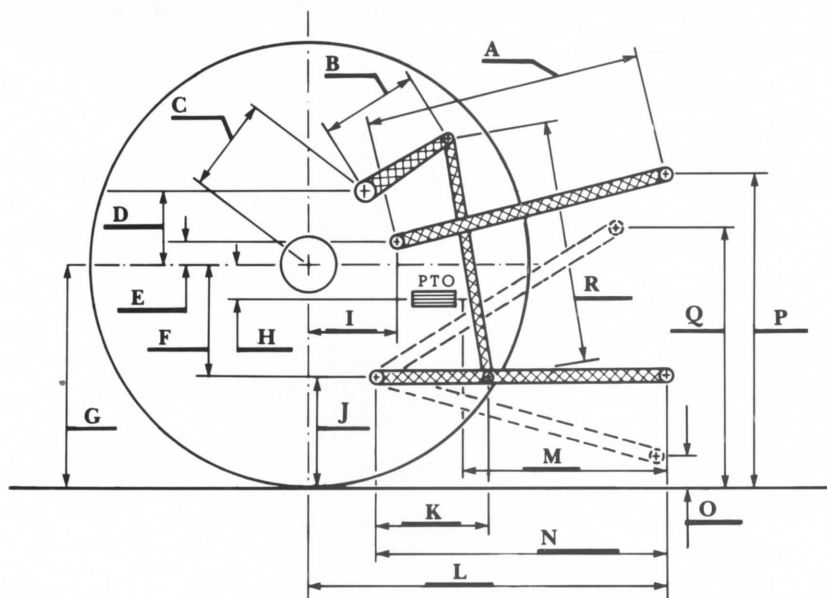
We, the undersigned, certify that this is as true and correct report of official Tractor Test No. 1589, May 6, 1986.

Report reissued. Supplemental sales permit for John Deere 3155 Diesel May 12, 1988.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
R. D. GRISSE JR.
J. R. GILLEY

Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	24.1	613
B	12.4	315
*C	13.2	336
D	13.2	336
E	6.9	176
F	9.9	251
G	32.1	816
H	2.8	71
I	18.5	470
J	22.3	565
K	22.2	565
L	43.3	1101
M	22.0	560
N	38.8	986
O	8.0	203
P	41.3	1048
Q	33.8	857
R	29.5	749

* rockshaft is ahead of rear axle.



John Deere 3150 Diesel

Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Dale H. Vanderholm, Dean and Director