

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

1-1-1989

Test 1634: Deutz-Allis 9170 Diesel 18-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 1634: Deutz-Allis 9170 Diesel 18-Speed" (1989). *Nebraska Tractor Tests*. 1945.

<https://digitalcommons.unl.edu/tractormuseumlit/1945>

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 1634—DEUTZ ALLIS 9170 DIESEL

18 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—1061 rpm)

173.37 (129.28)	2300	11.017 (41.705)	0.439 (0.267)	15.74 (3.10)	178 (81)	52 (11)	75 (24)	29.19 (98.83)
--------------------	------	--------------------	------------------	-----------------	-------------	------------	------------	------------------

Standard Power Take-off Speed (1000 rpm)—One Hour

178.70 (133.26)	2167	10.692 (40.473)	0.413 (0.251)	16.71 (3.29)	180 (82)	52 (11)	74 (23)	29.21 (98.92)
--------------------	------	--------------------	------------------	-----------------	-------------	------------	------------	------------------

VARYING POWER AND FUEL CONSUMPTION—Two Hours

150.83 (112.47)	2355	10.172 (38.506)	0.466 (0.283)	14.83 (2.92)	185 (85)	56 (13)	82 (28)	.....
.....	2484	3.352 (12.687)	.....	.....	191 (88)	52 (11)	71 (22)	.....
76.78 (57.26)	2392	6.491 (24.570)	0.584 (0.355)	11.83 (2.33)	173 (78)	54 (12)	77 (25)	.....
165.44 (123.37)	2300	10.628 (40.232)	0.444 (0.270)	15.57 (3.07)	175 (79)	53 (11)	75 (24)	.....
38.83 (28.96)	2421	4.793 (18.144)	0.853 (0.519)	8.10 (1.60)	182 (83)	54 (12)	75 (24)	.....
113.26 (84.46)	2354	8.292 (31.390)	0.506 (0.308)	13.66 (2.69)	171 (77)	55 (13)	79 (26)	.....
Av 90.99 Av (67.85)	2384	7.288 (27.588)	0.553 (0.337)	12.49 (2.46)	179 (82)	54 (12)	76 (25)	29.22 (98.95)

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 8th (3D) Gear											
155.86 (116.22)	11857 (52.74)	4.93 (7.93)	2301	3.23	11.143 (42.182)	0.494 (0.301)	13.99 (2.75)	164 (73)	45 (7)	56 (13)	28.72 (97.24)
75% of Pull at Maximum Power—Ten Hours 8th (3D) Gear											
123.97 (92.44)	9055 (40.28)	5.13 (8.26)	2377	2.43	9.734 (36.847)	0.543 (0.330)	12.74 (2.51)	145 (63)	44 (7)	50 (10)	23.81 (97.55)
50% of Pull at Maximum Power—Two Hours 8th (3D) Gear											
84.53 (63.04)	6037 (26.85)	5.25 (8.45)	2414	1.79	7.887 (29.856)	0.645 (0.392)	10.72 (2.11)	142 (61)	47 (8)	57 (14)	28.63 (96.94)
50% of Pull at Reduced Engine Speed—Two Hours 14th (5D) Gear											
84.53 (63.04)	6037 (26.85)	5.25 (8.45)	1557	1.66	5.543 (20.981)	0.453 (0.276)	15.25 (3.00)	148 (64)	46 (8)	58 (14)	28.56 (96.72)

MAXIMUM POWER IN SELECTED GEARS

137.24 (102.34)	19027 (84.64)	2.70 (4.35)	2336	13.67	5th (2D) Gear			146 (63)	41 (5)	44 (7)	28.71 (97.22)
154.02 (114.85)	16775 (74.62)	3.44 (5.54)	2299	5.73	6th (2O) Gear			155 (68)	43 (6)	53 (12)	28.74 (97.33)
155.79 (116.17)	14607 (64.97)	4.00 (6.44)	2300	4.27	7th (3U) Gear			153 (67)	42 (6)	52 (11)	28.74 (97.33)
158.66 (118.31)	12073 (53.70)	4.93 (7.93)	2301	3.19	8th (3D) Gear			157 (69)	43 (6)	53 (12)	28.79 (97.49)
154.82 (115.45)	10977 (48.83)	5.29 (8.51)	2300	2.94	9th (4U) Gear			155 (68)	43 (6)	53 (12)	28.74 (97.33)
156.36 (116.60)	9990 (44.44)	5.87 (9.45)	2300	2.60	10th (3O) Gear			157 (69)	43 (6)	54 (12)	28.74 (97.33)
155.24 (115.76)	9229 (41.05)	6.31 (10.15)	2298	2.43	11th (5U) Gear			160 (71)	45 (7)	55 (13)	28.73 (97.29)
158.50 (118.19)	9170 (40.79)	6.48 (10.43)	2300	2.43	12th (4D) Gear			157 (69)	44 (7)	55 (13)	28.73 (97.29)
154.35 (115.10)	7502 (33.37)	7.72 (12.42)	2300	2.00	13th (4O) Gear			160 (71)	44 (7)	55 (13)	28.72 (97.26)
157.63 (117.54)	7661 (34.08)	7.72 (12.42)	2298	2.00	14th (5D) Gear			161 (72)	44 (7)	55 (13)	28.71 (97.22)
151.49 (112.97)	6178 (27.48)	9.20 (14.80)	2302	1.57	15th (5O) Gear			158 (70)	44 (7)	55 (13)	28.70 (97.19)

Department of Agricultural Engineering

Dates of Test: October 31-November 15, 1989

Manufacturer: WHITE NEW IDEA FARM
EQUIPMENT CO., 123 West Sycamore Street,
Coldwater, Ohio 45828

FUEL, OIL AND TIME: Fuel No. 2 Diesel Ce-
tane No. 51.1 (rating taken from oil company's
inspection data) **Specific gravity converted to 60°/**
60° (15°/15°) 0.8300 Fuel weight 6.910 lbs/gal (0.828
kg/l) Oil SAE 15W-40 API service classification
CE, CD-II, SG To motor 6.871 gal (26.009 l)
Drained from motor 6.074 gal (22.994 l) Trans-
mission and final drive lubricant Deutz Allis Power
Fluid 821-XL Total time engine was operated 34.5
hours.

ENGINE: Make Klockner-Humboldt-Deutz Ag
Diesel **Type** six cylinder vertical with turbocharger
Serial No. 7634213 **Crankshaft** lengthwise **Rated**
rpm 2300 Bore and stroke (as specified) 4.921" ×
5.118" (125 mm × 130 mm) **Compression ratio 15.8**
to 1 Displacement 584 cu in (9570 ml) Starting
system 12 volt Lubrication pressure **Air cleaner**
two paper elements and aspirator Oil filter two
full flow cartridges Oil cooler radiator for crank-
case oil, separate radiators for transmission and
powershift oils **Fuel filter** two paper cartridges
Fuel cooler radiator for injection pump return
fuel **Muffler** underhood **Exhaust** vertical **Cooling**
medium temperature control air cooled with var-
iable speed fan.

ENGINE OPERATING PARAMETERS: Fuel
rate 74.96-80.47 lb/h (34.0-36.5 kg/h) **High idle**
2450-2500 rpm **Turbo boost** nominal 12.4-16.0 psi
(85-110 kPa) as measured 14.8 psi (102 kPa).

CHASSIS: **Type** standard with duals **Serial No.**
9170T-1016 **Tread width** rear 64" (1626 mm) to
125" (3175 mm) front 65.0" (1650 mm) to 85" (2160
mm) **Wheel base 119" (3023 mm) Center of gravity**
(without operator or ballast, with minimum tread,
with fuel tank filled and tractor serviced for op-
eration) Horizontal distance forward from center-
line of rear wheels 37.5" (953 mm) Vertical distance
above roadway 39.6" (1006 mm) Horizontal distance
from center of rear wheel tread 0" (0 mm) to the
right/left **Hydraulic control system** direct en-
gine drive **Transmission** selective gear fixed ratio
with partial (3) range operator controlled power-
shift **Advertised speeds mph (km/h)** first 1.9 (3.1)
second 2.3 (3.8) third 2.5 (4.0) fourth 2.8 (4.5) fifth
3.1 (4.9) sixth 3.6 (5.8) seventh 4.1 (6.6) eighth 5.0
(8.1) ninth 5.4 (8.7) tenth 6.0 (9.6) eleventh 6.4
(10.2) twelfth 6.6 (10.6) thirteenth 7.8 (12.5) four-
teenth 7.8 (12.6) fifteenth 9.2 (14.9) sixteenth 13.8
(22.2) seventeenth 16.8 (27.0) eighteenth 19.9 (32.0)
reverse 2.2 (3.6), 2.7 (4.4), 3.2 (5.2), 4.8 (7.7), 5.9
(9.4) 6.9 (11.1) **Clutch** dry disc operated by foot
pedal **Brakes** wet disc hydraulically power ac-
tuated by two foot pedals which can be locked

LUGGING ABILITY IN 8th (3D) GEAR

Crankshaft Speed rpm	2301	2076	1842	1607	1378	1151
Pull—lbs (kN)	12073 (53.70)	13600 (60.50)	14999 (66.72)	16337 (72.67)	16652 (74.07)	16429 (73.08)
Increase in Pull %	0	13	24	35	38	36
Power—Hp (kW)	158.66 (118.31)	160.49 (119.68)	156.00 (116.33)	146.96 (109.59)	128.11 (95.53)	105.66 (78.79)
Speed—Mph (km/h)	4.93 (7.93)	4.43 (7.13)	3.90 (6.28)	3.37 (5.42)	2.89 (4.65)	2.41 (3.88)
Slip %	3.19	3.61	4.27	5.23	5.41	5.41

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
Maximum Available Power—Two Hours	76.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	76.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 18th (6O) gear	88.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires		
—No., size, ply & psi (kPa)	Four 20.8R38; *, 14 (95)	Four 20.8R38; *, 14 (95)
Ballast	874 lb (396 kg)	None
—Liquid (each)	90 lb (41 kg)	None
—Test Equip (each)		None
Front Tires		
—No., size, ply & psi (kPa)	Two 16.5L-16.1; 8; 32 (220)	Two 16.5L-16.1; 8; 32 (220)
Ballast	None	None
—Liquid (each)	80 lb (36 kg)	None
—Cast Iron (each)		
Height of Drawbar	22 in (560 mm)	22 in (560 mm)
Static Weight with Operator—Rear	15865 lb (7196 kg)	12010 lb (5448 kg)
—Front	5615 lb (2547 kg)	5455 lb (2474 kg)
—Total	21480 lb (9743 kg)	17465 lb (7922 kg)

together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 168" (4.27 m) left 161" (4.09 m) (on concrete surface without brake) right 209" (5.31 m) left 198" (5.03 m) **Turning space diameter** (on concrete surface with brake applied) right 353" (8.97 m) left 339" (8.61 m) (on concrete surface without brake) right 436" (11.07 m) left 414" (10.52 m) **Power take-off** 1000 rpm at 2168 engine rpm **Unladen tractor mass** 15835 lb (7183 kg).

REPAIRS and ADJUSTMENTS: During the 10 hour test the left rear dual wheel came off the axle. The wheel was remounted and the test continued.

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 injection pump return was maintained at 132°F (56°C). Eleven gears were chosen between 15% slip and 10 mph (16.1 km/h). The cooling air temperature was measured in the airstream of cylinder number 5. The report reflects the test on the tractor equipped with the above hood air inlet.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1634, February 8, 1990.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

R. D. GRISSO

G. J. HOFFMAN

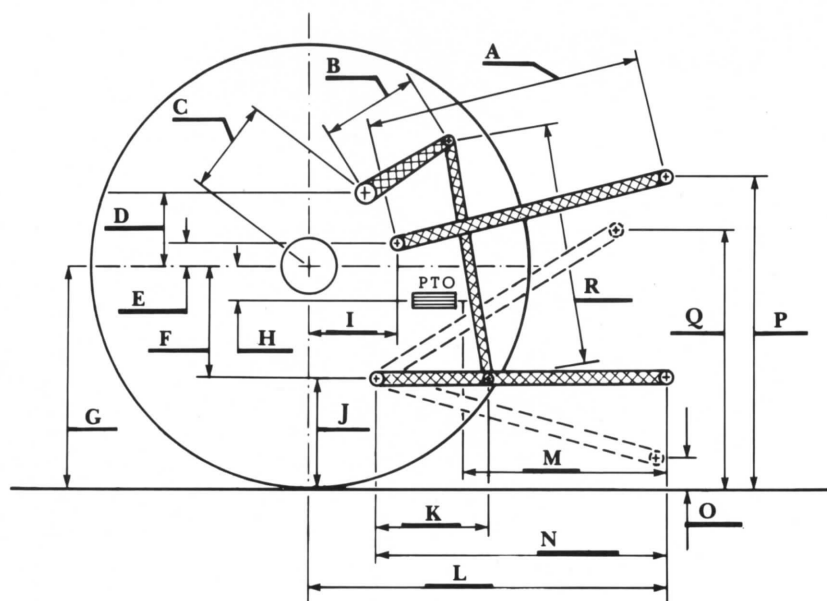
Board of Tractor Test Engineers

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi. (kPa)	2250 (15515)
Location	remote outlet
Hydraulic oil temperature °F (°C)	150 (66)
Location	hydraulic suction line

Maximum Lift Capacity with boost cylinder

QUICK ATTACH	No	No
CATEGORY	III	III
LOAD lbs (kg)	7628 (3460)	8746 (3967)
TIME sec	5.95	5.42
HITCH POINT MOVEMENT in (mm)		
Lowest position	14.0 (356)	14.0 (356)
Top of timed range	40.0 (1016)	40.0 (1016)
Highest position	40.0 (1016)	40.1 (1019)
LOAD CG MOVEMENT in (mm)		
Lowest position	14.6 (371)	14.4 (366)
Top of timed range	42.0 (1067)	41.9 (1064)
Highest position	41.9 (1064)	42.1 (1069)



HITCH DIMENSIONS AS TESTED—NO LOAD

	inch	mm
A	24.8	629
B	16.0	406
C	20.1	511
D	18.6	472
E	10.4	263
F	10.2	260
G	33.2	831
H	1.9	48
I	19.9	506
J	23.0	584
K	22.3	566
L	45.3	1151
M	23.5	597
N	34.8	884
O	8.0	203
P	45.0	1143
Q	35.8	908
R	39.3	997



Deutz Allis 9170 Diesel

Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska—Lincoln
Darrell Nelson, Dean and Director