

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

---

10-23-1984

## Test 1547: Case 1594 Powershift Diesel 12-Speed

Nebraska Tractor Test Lab

University of Nebraska-Lincoln, [tractortestlab@unl.edu](mailto: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 1547: Case 1594 Powershift Diesel 12-Speed" (1984). *Nebraska Tractor Tests*. 2254.

<https://digitalcommons.unl.edu/tractormuseumlit/2254>

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 1547—CASE 1594 POWERSHIFT DIESEL ALSO CASE INTERNATIONAL 1594 POWERSHIFT DIESEL 12 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—1123 rpm)									
85.54 (63.79)	2300	5.232 (19.805)	0.427 (0.260)	16.35 (3.221)	193 (89.4)	69 (20.5)	75 (24.0)	29.03 (98.03)	
Standard Power Take-off Speed (1000 rpm)—One Hour									
81.94 (61.11)	2048	4.861 (18.401)	0.414 (0.252)	16.86 (3.321)	193 (89.5)	70 (20.9)	76 (24.5)	29.01 (97.96)	
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
73.96 (55.15)	2339	4.589 (17.371)	0.433 (0.264)	16.12 (3.175)	190 (87.5)	68 (20.0)	73 (22.8)	..... .....	
0.00 (0.00)	2449	1.461 (5.530)	..... .....	..... .....	185 (85.0)	68 (20.0)	73 (22.8)	..... .....	
38.07 (28.39)	2407	2.922 (11.060)	0.536 (0.326)	13.03 (2.567)	186 (85.6)	68 (20.0)	74 (23.1)	..... .....	
85.16 (63.50)	2299	5.246 (19.860)	0.430 (0.262)	16.23 (3.198)	192 (88.9)	69 (20.6)	74 (23.3)	..... .....	
19.14 (14.27)	2425	2.204 (8.344)	0.804 (0.489)	8.68 (1.711)	185 (85.0)	69 (20.6)	75 (23.6)	..... .....	
56.20 (41.91)	2371	3.730 (14.118)	0.463 (0.282)	15.07 (2.969)	187 (86.1)	68 (20.0)	74 (23.1)	..... .....	
Av Av	45.42 (33.87)	2381	3.359 (12.714)	0.516 (0.314)	13.52 (2.664)	187 (86.3)	68 (20.2)	74 (23.1)	29.00 (97.92)

The following performance figures apply to tractors after chassis S/N 11221501.

## 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 7th (2-3) Gear											
69.37 (51.73)	4766 (21.20)	5.46 (8.78)	2300	6.81	5.106 (19.328)	0.514 (0.313)	13.59 (2.676)	192 (88.9)	60 (15.6)	66 (18.6)	28.48 (96.16)
75% of Pull at Maximum Power—Ten Hours 7th (2-3) Gear											
55.94 (41.71)	3627 (16.13)	5.78 (9.31)	2385	4.79	4.271 (16.167)	0.533 (0.324)	13.10 (2.580)	189 (87.0)	46 (7.7)	55 (12.7)	28.97 (97.83)
50% of Pull at Maximum Power—Two Hours 7th (2-3) Gear											
38.14 (28.44)	2422 (10.77)	5.91 (9.50)	2397	3.29	3.330 (12.605)	0.610 (0.371)	11.45 (2.256)	188 (86.7)	59 (14.7)	66 (18.9)	28.48 (96.17)
50% of Pull at Reduced Engine Speed—Two Hours 10th (3-2) Gear											
38.30 (28.56)	2421 (10.77)	5.93 (9.55)	1501	3.18	2.764 (10.464)	0.504 (0.307)	13.85 (2.729)	188 (86.7)	58 (14.2)	65 (18.1)	28.50 (96.22)
MAXIMUM POWER IN SELECTED GEARS											
62.14 (46.34)	8198 (36.47)	2.84 (4.57)	2332	14.98	4th (2-1) Gear			190 (87.8)	61 (16.1)	64 (17.8)	28.46 (96.11)
65.25 (48.65)	7528 (33.48)	3.25 (5.23)	2299	12.51	5th (1-4) Gear			192 (88.6)	58 (14.4)	68 (20.0)	28.67 (96.81)
68.10 (50.78)	6250 (27.80)	4.09 (6.58)	2299	9.12	6th (2-2) Gear			193 (89.2)	59 (15.0)	69 (20.6)	28.72 (96.98)
70.59 (52.64)	4842 (21.54)	5.47 (8.80)	2299	6.64	7th (2-3) Gear			192 (88.9)	59 (15.0)	68 (20.0)	28.68 (96.85)
69.11 (51.54)	3989 (17.74)	6.50 (10.46)	2299	5.38	8th (3-1) Gear			193 (89.2)	59 (15.0)	69 (20.6)	28.71 (96.95)
69.13 (51.55)	3394 (15.10)	7.64 (12.29)	2298	4.60	9th (2-4) Gear			192 (88.9)	59 (15.0)	69 (20.6)	28.70 (96.92)
67.74 (50.51)	2807 (12.48)	9.05 (14.57)	2299	3.58	10th (3-2) Gear			192 (88.9)	59 (15.0)	69 (20.6)	28.69 (96.88)

Department of Agricultural Engineering

Dates of Test: October 23 to 30, 1984

Manufacturer: J. I. CASE COMPANY, 700 State Street, Racine, Wisconsin 53404

**FUEL, OIL AND TIME:** Fuel No. 2 Diesel Cetane No. 46.8 (rating taken from oil company's inspection data) Specific gravity converted to 60/60° F (15/15°C) 0.8385 Fuel weight 6.982 lbs/gal (0.837 kg/l) Oil SAE 30 API service classification SF-CD To motor 3.060 gal (11.584 l) Drained from motor 2.574 gal (9.744 l) Transmission and hydraulic lubricant Case TFD fluid Final drive lubricant Case ETHB fluid Total time engine was operated 37.0 hours.

**ENGINE:** Make Case Diesel Type six cylinder vertical Serial No. 330002 11465518 Crankshaft lengthwise Rated rpm 2300 Bore and stroke 3.939" × 4.500" (100 mm × 114.3 mm) Compression ratio 16 to 1 Displacement 329 cu in (5392 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements and centrifugal precleaner Oil filter one full flow cartridge Oil cooler radiator for hydraulic and transmission oil Fuel filter two paper elements with sediment bowl and screen Muffler vertical Cooling medium temperature control one thermostat.

**CHASSIS:** Type standard Serial No. \*154/BJD/11219781\* Tread width rear 61" (1549 mm) to 85" (2159 mm) front 60" (1524 mm) to 88" (2235 mm) Wheel base 100" (2540 mm) Center of gravity (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.6" (853 mm) Vertical distance above roadway 36.7" (932 mm) Horizontal distance from center of rear wheel tread 0" (0 mm) to the right/left Hydraulic control system direct engine drive Transmission selective gear fixed ratio with partial (4) range operator controlled powershift Advertised speeds mph (km/h) first 1.5 (2.4) second 2.1 (3.4) third 2.7 (4.4) fourth 3.3 (5.3) fifth 3.7 (6.0) sixth 4.5 (7.2) seventh 5.9 (9.5) eighth 6.9 (11.1) ninth 8.0 (12.9) tenth 9.4 (15.1) eleventh 12.3 (19.8) twelfth 16.7 (26.9) reverse 3.5 (5.6), 4.8 (7.7), 6.3 (10.1), 8.6 (13.8) Clutch single dry disc hydraulically actuated by foot pedal Brakes multiple wet disc hydraulically operated by two foot pedals which can be locked together Steering hydrostatic Turning radius (on concrete surface with brake applied) right 148" (3.76 m) left 148" (3.76 m) (on concrete surface without brake) right 176" (4.47 m) left 176" (4.47 m) Turning space diameter (on concrete surface with brake applied) right 309" (7.85 m) left 309" (7.85 m) (on concrete surface without brake) right 364" (9.25 m) left 364" (9.25 m) Power take-off 540 rpm at 2077 engine rpm and 1000 rpm at 2048 engine rpm Unladen tractor mass 9290 lb (4214 kg).

### LUGGING ABILITY IN 7th (2-3) GEAR

Crankshaft Speed rpm	2299	2072	1836	1606	1374	1145
Pull—lbs ( <i>kN</i> )	4842 (21.54)	5326 (23.69)	5594 (24.88)	5724 (25.46)	5745 (25.56)	5713 (25.41)
Increase in Pull %	0	10	16	18	19	18
Power—Hp ( <i>kW</i> )	70.59 (52.64)	69.37 (51.73)	64.26 (47.92)	57.36 (42.78)	49.23 (36.71)	40.80 (30.43)
Speed—Mph ( <i>km/h</i> )	5.47 (8.80)	4.88 (7.86)	4.31 (6.93)	3.76 (6.05)	3.21 (5.17)	2.68 (4.31)
Slip %	6.64	7.46	7.86	8.26	8.13	8.13

TRACTOR SOUND LEVEL WITH CAB						dB(A)
Maximum Available Power—Two Hours						80.5
75% of Pull at Maximum Power—Ten Hours						82.5
50% of Pull at Maximum Power—Two Hours						83.5
50% of Pull at Reduced Engine Speed—Two Hours						80.5
Bystander in 12th (3-4) gear						88.5

### TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
<b>Rear Tires</b>	—No., size, ply & psi ( <i>kPa</i> )	Two 18.4-34; 6; 16 (110)	Two 18.4-34; 6; 16 (110)
Ballast	—Liquid (each)	478 lb (217 kg)	None
	—Cast Iron (each)	335 lb (152 kg)	None
<b>Front Tires</b>	—No., size, ply & psi ( <i>kPa</i> )	Two 10.00-16; 8; 44 (305)	Two 10.00-16; 8; 44 (305)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb (27 kg)	None
<b>Height of Drawbar</b>		20 in (510 mm)	20 in (510 mm)
<b>Static Weight with Operator—Rear</b>		7970 lb (3615 kg)	6345 lb (2878 kg)
	—Front	3240 lb (1470 kg)	3120 lb (1415 kg)
	—Total	11210 lb (5085 kg)	9465 lb (4293 kg)

### THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi ( <i>kPa</i> )	2350	16200
Location	lift cylinder	
Hydraulic oil temperature °F (°C)	169	76
Location	drain plug	
	Maximum Lift Capacity	Lift Capacity for Transport
QUICK ATTACH CATEGORY	no II	*not measured
LOAD lbs ( <i>kg</i> )	6002	2723
TIME sec	2.63	
HITCH POINT MOVEMENT in ( <i>mm</i> )		
Lowest position	13.3	337
Top of timed range	**36.3	921
Highest position	36.5	927
LOAD CG MOVEMENT in ( <i>mm</i> )		
Lowest position	12.6	319
Top of timed range	35.9	913
Highest position	36.3	922

\*Implement load capacity for transport purposes not specified by manufacturer.

\*\*The observed power range 23.2" (590 mm) does not meet the minimum power range 24" (610 mm) specified by ASAE Standard S217.10

**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 179°F (81.9°C). Seven gears were chosen between 15% slip and 10 mph (16.1 km/h). The drawbar performance figures on this report apply to tractors after chassis S/N 11221501.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1547, December 3, 1984.

Report reissued. Supplemental sales permit for Case International 1594 Powershift Diesel June 18, 1985.

LOUIS I. LEVITICUS

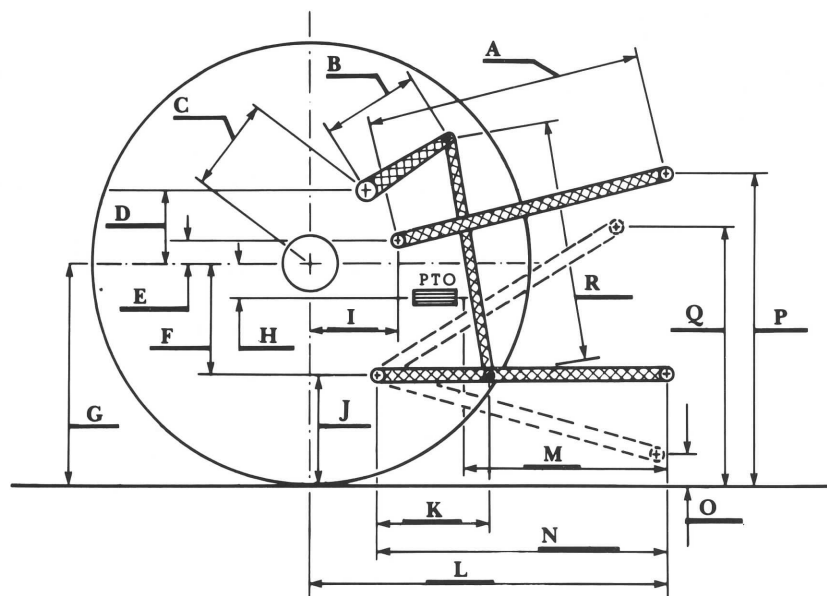
Engineer-in-Charge

K. VON BARGEN

L. L. BASHFORD

T. L. THOMPSON

Board of Tractor Test Engineers



Hitch Dimensions as Tested — No Load

	inch	mm
A	30.6	778
B	9.5	241
C	10.2	258
D	10.1	257
E	11.4	289
F	7.9	200
G	29.4	746
H	-0.4	-10
I	7.0	178
J	21.5	546
K	19.0	483
L	38.0	965
M	25.2	641
N	38.0	965
O	8.0	203
P	40.5	1029
Q	33.5	851
R	24.8	629



Case 1594 Powershift Diesel