

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F. Larsen

5-7-1986

Test 1593: Steiger Cougar 1000 12-Speed (Caterpillar 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 1593: Steiger Cougar 1000 12-Speed (Caterpillar Diesel)" (1986). *Nebraska Tractor Tests*. 1904.

<https://digitalcommons.unl.edu/tractormuseumlit/1904>

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 1593 — STEIGER COUGAR 1000 DIESEL 12 SPEED (CATERPILLAR ENGINE)

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 — 1001 rpm)								
259.96 (193.85)	2100	15.051 (56.975)	0.406 (0.247)	17.27 (3.402)	194 (89.8)	64 (17.9)	75 (24.1)	28.79 (97.23)
VARYING POWER AND FUEL CONSUMPTION — Two Hours								
225.92 (168.47)	2148	13.554 (51.307)	0.421 (0.256)	16.67 (3.283)	193 (89.4)	66 (18.6)	77 (25.0)	..... .....
0.00 (0.00)	2253	3.795 (14.365)	..... .....	..... .....	189 (87.2)	66 (18.6)	77 (24.7)	..... .....
115.97 (86.48)	2209	8.446 (31.970)	0.511 (0.311)	13.73 (2.705)	191 (88.3)	65 (18.3)	78 (25.6)	..... .....
260.95 (194.59)	2100	14.996 (56.765)	0.403 (0.245)	17.40 (3.428)	193 (89.4)	67 (19.4)	80 (26.7)	..... .....
58.69 (43.76)	2231	6.216 (23.532)	0.743 (0.452)	9.44 (1.860)	191 (88.1)	67 (19.4)	80 (26.4)	..... .....
171.94 (128.22)	2177	10.884 (41.201)	0.444 (0.270)	15.80 (3.112)	192 (88.9)	69 (20.3)	82 (27.5)	..... .....
Av 138.91 Av (103.59)	2186	9.648 (36.523)	0.487 (0.296)	14.40 (2.836)	191 (88.6)	66 (19.1)	79 (26.0)	28.79 (97.22)

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 Gear											
225.27 (167.98)	12820 (57.03)	6.59 (10.60)	2099	2.71	14.846 (56.198)	0.462 (0.281)	15.17 (2.989)	194 (89.7)	58 (14.2)	69 (20.6)	28.81 (97.29)
75% of Pull at Maximum Power — Ten Hours 7th Gear											
178.90 (133.41)	9830 (43.73)	6.82 (10.98)	2157	1.92	12.501 (47.323)	0.490 (0.298)	14.31 (2.819)	194 (90.2)	62 (16.4)	74 (23.6)	28.64 (96.72)
50% of Pull at Maximum Power — Two Hours 7th Gear											
121.93 (90.92)	6554 (29.15)	6.98 (11.23)	2191	1.33	9.733 (36.845)	0.560 (0.340)	12.53 (2.468)	193 (89.4)	59 (15.0)	75 (23.6)	28.77 (97.14)
50% of Pull at Reduced Engine Speed — Two Hours 9th Gear											
121.86 (90.87)	6553 (29.15)	6.97 (11.22)	1483	1.33	8.108 (30.690)	0.467 (0.284)	15.03 (2.961)	192 (88.6)	59 (14.7)	76 (24.2)	28.73 (97.02)

MAXIMUM POWER IN SELECTED GEARS

184.44 (137.54)	30981 (137.81)	2.23 (3.59)	2140	14.49	2nd Gear			193 (89.4)	61 (16.1)	64 (17.8)	28.65 (96.75)
218.71 (163.10)	28642 (127.41)	2.86 (4.61)	2098	8:89	3rd Gear			194 (90.0)	54 (12.2)	61 (16.1)	28.80 (97.25)
227.75 (169.83)	23460 (104.35)	3.64 (5.86)	2099	5.53	4th Gear			194 (90.0)	53 (11.7)	60 (15.6)	28.80 (97.25)
229.29 (170.98)	19413 (86.35)	4.43 (7.13)	2100	4.28	5th Gear			194 (90.0)	53 (11.7)	60 (15.6)	28.80 (97.25)
228.91 (170.70)	15602 (69.40)	5.50 (8.85)	2099	3.40	6th Gear			194 (90.0)	55 (12.8)	64 (17.8)	28.80 (97.25)
230.18 (171.65)	13107 (58.30)	6.59 (10.60)	2099	2.75	7th Gear			194 (89.7)	56 (13.3)	65 (18.3)	28.80 (97.25)
227.77 (169.85)	10769 (47.90)	7.93 (12.76)	2096	2.17	8th Gear			194 (90.0)	55 (12.8)	63 (17.2)	28.80 (97.25)
222.96 (166.26)	8517 (37.89)	9.82 (15.80)	2098	1.67	9th Gear			194 (90.0)	54 (12.2)	62 (16.7)	28.80 (97.25)

Department of Agricultural Engineering

Dates of Test: May 7 to 15, 1986

Manufacturer: STEIGER TRACTOR, INC., 406 Main Avenue, Fargo, North Dakota 58126

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)** 0.8422 **Fuel weight** 7.012 lbs/gal (0.840 kg/l) **Oil** SAE 15W-40 **API service classification** CD-SF-CC **To motor** 6.665 gal (25.229 l) **Drained from motor** 5.801 gal (21.959 l) **Transmission and hydraulic lubricant** Steiger hydraulic transmission oil **Final drive lubricant** SAE 80W-90 gear oil API GL-5 **Total time engine was operated** 34.0 hours.

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 64Z04500 **Crankshaft lengthwise Rated rpm** 2100 **Bore and stroke** 4.75" × 6.00" (120.7 mm × 152.4 mm) **Compression ratio** 15.0 to 1 **Displacement** 638 cu in (10455 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 oil **Fuel filter** one paper cartridge and prestrainer **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** four wheel drive with duals **Serial No.** C11- 6092 **Tread width** rear 64" (1625 mm) to 130" (3302 mm) front 64" (1625 mm) to 130" (3302 mm) **Wheel base** 130" (3302 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 72" (1829 mm) Vertical distance above roadway 46" (1168 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 full range operator controlled powershift **Advertised speeds mph (km/h)** first 2.0 (3.3) second 2.5 (3.9) third 3.0 (4.9) fourth 3.7 (5.9) fifth 4.4 (7.1) sixth 5.5 (8.8) seventh 6.5 (10.5) eighth 7.8 (12.5) ninth 9.6 (15.4) tenth 11.7 (18.9) eleventh 14.1 (22.7) twelfth 17.3 (27.9) reverse 2.7 (4.3), 4.8 (7.8) **Clutch** wet multiple disc hydraulically power actuated by foot pedal **Brakes** caliper disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 240" (6.1 m) left 240" (6.1 m) **Turning space diameter** (on concrete surface without brake) right 501" (12.7 m) left 501" (12.7 m) **Power take-off** 1001 rpm at 2100 engine rpm **Unladen tractor mass** 25490 lb (11562 kg).

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th GEAR

Crankshaft Speed rpm	2099	1886	1682	1467	1253	1044
Pull—lbs (kN)	13107 (58.30)	14792 (65.80)	16361 (72.78)	17622 (78.39)	18272 (81.28)	17507 (77.88)
Increase in Pull %	0	13	25	34	39	34
Power—Hp (kW)	230.18 (171.65)	232.66 (173.49)	228.65 (170.50)	214.04 (159.61)	189.20 (141.09)	151.18 (112.73)
Speed—Mph (km/h)	6.59 (10.60)	5.90 (9.49)	5.24 (8.43)	4.55 (7.33)	3.88 (6.25)	3.24 (5.21)
Slip %	2.75	3.15	3.48	3.96	3.96	3.80

TRACTOR SOUND LEVEL WITH CAB

dB(A)

Maximum Available Power—Two Hours	80.0
75% of Pull at Maximum Power—Ten Hours	79.0
50% of Pull at Maximum Power—Two Hours	79.0
50% of Pull at Reduced Engine Speed—Two Hours	77.5
Bystander in 12th gear	90.0

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 161°F (71.5°C). Eight gears were chosen between 15% slip and 10 mph (16.1 km/h). The performance figures on this report apply to Cougar 1000 models equipped with Caterpillar Diesel engines.

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. **1593**, June 13, 1986.

LOUIS I. LEVITICUS

Engineer-in-Charge

K. VON BARGEN

W. E. SPLINTER

L. L. BASHFORD

Board of Tractor Test Engineers

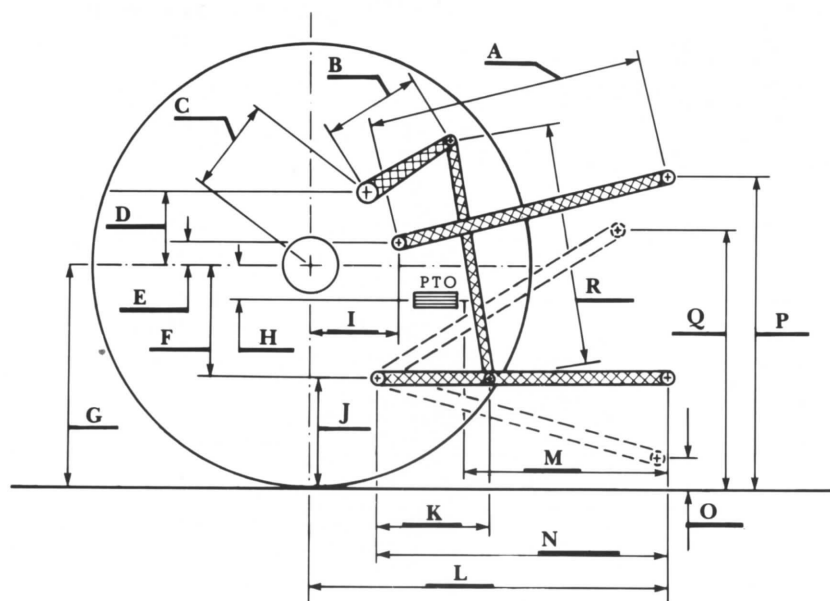
TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	—No., Size, ply & psi (kPa)	Four 23.1-34; 8; inner 14 (95) outer 12 (85)	Four 23.1-34; 8; inner 14 (95) outer 12 (85)
Ballast	—Test equip. (each) —Cast Iron (each)	15 lb (7 kg) None	None None
Front Tires	—No., Size, ply & psi (kPa)	Four 23.1-34; 8; inner 14 (95) outer 12 (85)	Four 23.1-34; 8; inner 14 (95) outer 12 (85)
Ballast	—Liquid (each inner) —Cast Iron (each)	1380 lb (626 kg) None	None None
Height of Drawbar		19 in (485 mm)	19 in (485 mm)
Static Weight with Operator	—Rear —Front —Total	12800 lb (5806 kg) 18470 lb (8378 kg) 31270 lb (14184 kg)	12740 lb (5779 kg) 15710 lb (7126 kg) 28450 lb (12905 kg)

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi (kPa)	2500 (17240)	
Location	remote outlet	
Hydraulic oil temperature °F (°C)	135 (57)	
Location	charge pump inlet	
	Maximum Lift Capacity	Lift Capacity for Transport
QUICK ATTACH	yes	
CATEGORY	3	*not measured
LOAD lbs (kg)	12768 (5791)	
TIME sec	2.95	
HITCH POINT MOVEMENT in (mm)		
Lowest position	9.9 (252)	
Top of timed range	35.9 (912)	
Highest position	40.1 (1019)	
LOAD CG MOVEMENT in (mm)		
Lowest position	10.6 (269)	
Top of timed range	36.2 (919)	
Highest position	41.5 (1054)	

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



Hitch Dimensions as Tested — No Load

	inch	mm
A	29.5	749
B	21.0	533
C	25.8	654
D	25.1	638
E	11.4	289
F	9.9	251
G	32.8	832
H	9.6	243
I	23.3	591
J	22.9	581
K	23.0	584
L	52.7	1338
L'	57.7	1465
M	25.0	635
N	42.0	1067
O	7.8	198
P	44.9	1140
Q	39.4	1000
R	35.6	905

L' to end of quick attach



Steiger Cougar 1000 Diesel