

Tractor Test and Power Museum, The Lester F. Larsen

UNL Larsen Tractor Museum Archives

University of Nebraska - Lincoln

Year 1978

Test 1273: Steiger Cougar III PT-270
With or Without PTO (20-Speed)

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA TRACTOR TEST 1273 — STEIGER COUGAR III PT 270 DIESEL and STEIGER COUGAR III PT 270 DIESEL WITHOUT PTO 20 SPEED

POWER TAKE-OFF PERFORMANCE (SEE NOTE)

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 (PT 270)								
Rated PTO HP—One Hour—Full Throttle Setting (PTO Speed—998 rpm)								
105.68 (78.80)	2412	11.055 (41.847)	0.724 (0.440)	9.56 (1.883)	184 (84.3)	56 (13.3)	75 (24.0)	28.580 (96.510)
Rated PTO HP—One Hour—Minimum Throttle Setting (PTO Speed—1014 rpm)								
105.66 (78.79)	1703	8.538 (32.318)	0.559 (0.340)	12.38 (2.438)	184 (84.4)	56 (13.3)	75 (24.0)	28.580 (96.510)
VARYING POWER AND FUEL CONSUMPTION—Two Hours— Minimum Throttle Setting								
91.27 (68.06)	1766	7.652 (28.965)	0.580 (0.353)	11.93 (2.350)	181 (82.8)	57 (13.9)	75 (23.9)	.....
0.00 (0.00)	1946	3.186 (12.062)	.....	.....	178 (81.4)	57 (13.9)	74 (23.6)	.....
47.08 (35.10)	1880	5.276 (19.972)	0.776 (0.472)	8.92 (1.758)	180 (82.5)	58 (14.2)	76 (24.4)	.....
105.47 (78.65)	1694	8.519 (32.247)	0.559 (0.340)	12.38 (2.439)	183 (83.9)	56 (13.6)	74 (23.3)	.....
23.71 (17.68)	1918	4.205 (15.918)	1.227 (0.746)	5.64 (1.111)	179 (81.7)	57 (13.9)	75 (23.9)	.....
70.02 (52.21)	1834	6.329 (23.960)	0.626 (0.381)	11.06 (2.179)	181 (82.8)	58 (14.2)	76 (24.4)	.....
Av 56.26 Av (41.95)	1840	5.861 (22.187)	0.721 (0.439)	9.60 (1.891)	180 (82.5)	57 (13.9)	75 (23.9)	28.960 (97.794)

DRAWBAR PERFORMANCE (PT 270)

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 11th (3HL) Gear											
211.17 (157.47)	12573 (55.93)	6.30 (10.14)	2201	2.78	16.582 (62.771)	0.543 (0.331)	12.73 (2.509)	185 (85.0)	44 (6.7)	52 (11.1)	29.000 (97.929)
75% of Pull at Maximum Power—Ten Hours 11th (3HL) Gear											
171.83 (128.14)	9524 (42.37)	6.77 (10.89)	2348	2.09	14.548 (55.072)	0.586 (0.356)	11.81 (2.327)	184 (84.6)	56 (13.1)	58 (14.3)	28.651 (96.750)
50% of Pull at Maximum Power—Two Hours 11th (3HL) Gear											
119.97 (89.46)	6434 (28.62)	6.99 (11.25)	2410	1.40	11.723 (44.377)	0.676 (0.411)	10.23 (2.016)	184 (84.4)	46 (7.5)	56 (13.1)	28.980 (97.861)
50% of Pull at Reduced Engine Speed—Two Hours 15th (4HL) Gear											
120.52 (89.88)	6468 (28.77)	6.99 (11.25)	1456	1.40	9.068 (34.326)	0.521 (0.317)	13.29 (2.618)	183 (83.9)	46 (7.5)	57 (13.6)	28.970 (97.827)

MAXIMUM POWER IN SELECTED GEAR

189.47 (141.29)	30122 (133.99)	2.36 (3.80)	2213	14.92	4th (1HH) Gear			187 (85.8)	45 (7.2)	60 (15.6)	29.000 (97.929)
206.33 (153.86)	26574 (118.21)	2.91 (4.69)	2202	7.89	5th (2LL) Gear			185 (85.0)	45 (7.2)	60 (15.6)	29.010 (97.962)
210.68 (157.11)	23701 (105.43)	3.33 (5.36)	2199	6.23	6th (2LH) Gear			185 (84.7)	46 (7.8)	60 (15.6)	29.020 (97.996)
211.61 (157.80)	20770 (92.39)	3.82 (6.15)	2199	4.67	7th (2HL) Gear			191 (88.3)	60 (15.6)	70 (21.1)	28.690 (96.882)
213.69 (159.35)	18480 (82.20)	4.34 (6.98)	2199	3.96	8th (2HH) Gear			191 (88.3)	60 (15.6)	70 (21.1)	28.690 (96.882)
216.30 (161.30)	16522 (73.50)	4.91 (7.90)	2199	3.48	9th (3LL) Gear			193 (89.2)	60 (15.6)	70 (21.1)	28.690 (96.882)
216.95 (161.78)	14638 (65.11)	5.56 (8.94)	2199	2.99	10th (3LH) Gear			192 (88.6)	60 (15.6)	70 (21.1)	28.690 (96.882)
219.39 (163.60)	13081 (58.19)	6.29 (10.12)	2202	2.99	11th (3HL) Gear			186 (85.3)	47 (8.3)	62 (16.7)	29.980 (97.861)
217.06 (161.86)	11422 (50.81)	7.13 (11.47)	2201	2.32	12th (3HH) Gear			192 (88.6)	60 (15.6)	70 (21.1)	28.690 (96.882)
215.07 (160.38)	9764 (43.43)	8.26 (13.29)	2202	1.91	13th (4LL) Gear			190 (87.5)	60 (15.6)	70 (21.1)	28.690 (96.882)

LUGGING ABILITY IN 11th (3HL) GEAR

Crankshaft Speed rpm	2202	1979	1757	1538	1319	1100
Pull—lbs (kN)	19081 (58.19)	14271 (63.48)	15208 (67.65)	15657 (69.64)	15451 (68.73)	12447 (55.37)
Increase in Pull %	0	9	16	20	18	-5
Power—Hp (kW)	219.39 (163.60)	214.95 (160.29)	202.87 (151.28)	182.59 (136.16)	154.54 (115.24)	104.50 (77.93)
Speed—Mph (km/h)	6.29 (10.12)	5.65 (9.09)	5.00 (8.05)	4.37 (7.04)	3.75 (6.04)	3.15 (5.07)
Slip %	2.99	2.99	3.31	3.48	3.31	2.66

Department of Agricultural Engineering

Dates of Test: April 20 to May 9, 1978

Manufacturer: STEIGER TRACTOR INC.,
3101 First Avenue North, Fargo, North Dakota
58102

FUEL, OIL AND TIME: Fuel No. 2 Diesel Cetane No. 50.4 (rating taken from oil company's typical inspection data) **Specific gravity converted to 60°/60° (15°/15°) 0.8311 Fuel weight 6.920 lbs/gal (0.829 kg/l) Oil SAE 30 API service classification SB/SE-CA/CD To motor 7.411 gal (28.054 l) Drained from motor 6.350 gal (24.037 l) Transmission and drop box lubricant 303 or equivalent Final drive lubricant SAE 80W90 Total time engine was operated 49.5 hours**

ENGINE: Make Caterpillar Diesel Type six cylinder vertical with turbocharger and inter-cooler Serial No. 66D 23188 Crankshaft lengthwise Rated rpm 2200 Bore and stroke 4.75" × 6.00" (120.7 mm × 152.4 mm) Compression ratio 17.5 to 1 Displacement 638 cu in (10454 ml) Cranking system 12 volt Lubrication pressure Air cleaner primary and secondary paper elements with aspirator Oil filter full flow screw-on cartridge Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission and drop box oil, radiator for hydrostatic PTO oil Fuel filter one paper cartridge Muffler none Cooling medium temperature control thermostat

CHASSIS: Type four wheel drive with duals Serial No. 143-00042 Tread width rear 79.0" (2005 mm) and 136.4" (3465 mm) front 79.0" (2005 mm) and 136.4" (3465 mm) Wheel base 132.5" (3365 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 73.3" (1860 mm) Vertical distance above roadway 45.8" (1165 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 Adver-tised speeds mph (km/h) first 1.8 (3.0) second 2.1 (3.4) third 2.3 (3.8) fourth 2.6 (4.3) fifth 3.0 (4.9) sixth 3.4 (5.5) seventh 3.8 (6.2) eighth 4.3 (7.0) ninth 4.9 (7.8) tenth 5.5 (8.8) eleventh 6.2 (10.0) twelfth 7.0 (11.2) thirteenth 8.0 (12.9) fourteenth 9.1 (14.6) fifteenth 10.3 (16.5) sixteenth 11.6 (18.6) seventeenth 12.9 (20.7) eighteenth 14.5 (23.3) nineteenth 16.3 (26.3) twentieth 18.4 (29.6) reverse 1.8 (3.0), 2.1 (3.4), 2.3 (3.8), 2.6 (4.3) Clutch two dry plates hydraulically operated by foot pedal Brakes multiple dry disc hydraulically operated by foot pedal Steering hydrostatic and articulated Turning radius (on concrete surface without brake) right 254.5" (6.46 m) left 253.5" (6.44 m) Turning space diameter (on concrete surface without brake) right 532" (13.51 m) left 530" (13.46 m) Power take-off hydrostatic drive—nominally 1000 rpm within the engine speed range of 1700 rpm to high idle.

DRAWBAR PERFORMANCE (PT 270 Without PTO)

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 (lh)	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 11th (3HL) Gear											
214.34 (159.83)	12774 (56.82)	6.29 (10.13)	2200	2.86	16.528 (62.566)	0.534 (0.325)	12.97 (2.555)	190 (87.8)	59 (14.7)	69 (20.3)	28.735 (97.034)
75% of Pull at Maximum Power—Two Hours 11th (3HL) Gear											
180.81 (134.83)	9990 (44.44)	6.79 (10.92)	2357	2.08	14.523 (54.976)	0.556 (0.338)	12.45 (2.452)	184 (84.4)	51 (10.4)	57 (14.0)	28.915 (97.642)
50% of Pull at Maximum Power—Two Hours 11th (3HL) Gear											
123.95 (92.43)	6613 (29.42)	7.03 (11.31)	2423	1.36	11.525 (43.625)	0.643 (0.391)	10.76 (2.119)	183 (83.9)	38 (3.3)	43 (6.1)	29.100 (98.266)
50% of Pull at Reduced Engine Speed—Two Hours 15th (4HL) Gear											
124.79 (93.05)	6654 (29.60)	7.03 (11.32)	1466	1.36	8.996 (34.052)	0.499 (0.303)	13.87 (2.733)	184 (84.2)	43 (6.1)	55 (12.5)	29.070 (98.165)

MAXIMUM POWER IN SELECTED GEARS

194.24 (144.85)	29950 (133.23)	2.43 (3.91)	2284	14.98	4th (1HH) Gear	185 (85.0)	46 (7.8)	60 (15.6)	29.040 (98.064)
211.60 (157.79)	27567 (122.62)	2.88 (4.63)	2200	8.77	5th (2LL) Gear	186 (85.3)	46 (7.8)	60 (15.6)	29.030 (98.030)
218.14 (162.67)	24681 (109.78)	3.31 (5.33)	2199	6.69	6th (2LH) Gear	186 (85.3)	46 (7.8)	60 (15.6)	29.020 (97.996)
218.22 (162.73)	21471 (95.51)	6.13 (6.13)	2200	5.07	7th (2HL) Gear	186 (85.6)	60 (15.6)	69 (20.6)	28.700 (96.916)
219.17 (163.44)	19002 (84.53)	4.33 (6.96)	2198	4.36	8th (2HH) Gear	188 (86.7)	60 (15.6)	69 (20.6)	28.700 (96.916)
224.54 (167.44)	17229 (76.64)	4.89 (7.87)	2199	3.96	9th (3LL) Gear	185 (85.0)	48 (8.9)	63 (17.2)	28.960 (97.794)
222.77 (166.12)	15066 (67.02)	5.54 (8.92)	2198	3.15	10th (3LH) Gear	192 (88.6)	60 (15.6)	69 (20.6)	28.710 (96.949)
222.17 (165.68)	13258 (58.97)	6.28 (10.11)	2198	2.91	11th (3HL) Gear	191 (88.3)	59 (15.0)	69 (20.6)	28.720 (96.983)
220.81 (164.66)	11625 (51.71)	7.12 (11.46)	2201	2.41	12th (3HH) Gear	189 (87.2)	60 (15.6)	69 (20.6)	28.690 (96.882)
219.56 (163.73)	9981 (44.40)	8.25 (13.28)	2201	1.99	13th (4LL) Gear	187 (86.1)	60 (15.6)	69 (20.6)	28.690 (96.882)

LUGGING ABILITY IN 11th (3HL) GEAR

Crankshaft Speed rpm	2198	1978	1764	1541	1322	1096
Pull—lbs (kN)	13258 (58.97)	14658 (65.20)	15601 (69.40)	16031 (71.31)	15798 (70.27)	12643 (56.24)
Increase in Pull %	0	11	18	21	19	-5
Power—Hp (kW)	222.17 (165.68)	220.56 (164.47)	208.65 (155.59)	186.92 (139.38)	158.31 (118.06)	105.78 (78.88)
Speed—Mph (km/h)	6.28 (10.11)	5.64 (9.08)	5.02 (8.07)	4.37 (7.04)	3.76 (6.05)	3.14 (5.05)
Slip %	2.91	3.15	3.48	3.64	3.48	2.82

TRACTOR SOUND LEVEL WITH CAB

	With PTO dB(A)	W/O PTO dB(A)
Maximum Available Power—Two Hours	78.5	78.0
75% of Pull at Maximum Power—Ten Hours	78.0	78.0
50% of Pull at Maximum Power—Two Hours	77.5	78.5
50% of Pull at Reduced Engine Speed—Two Hours	75.5	75.0
Bystander in 19th (5HL) gear	100.5	100.5

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 (80)	Four 23.1-34, 8, inner 14 (95), outer 12 (80)
Ballast	None	None
—Liquid (each)	None	None
—Cast Iron (each)	None	None
Front Tires		
—No., size, ply & psi (kPa)	Four 23.1-34, 8, inner 14 (95), outer 12 (80)	Four 23.1-34, 8, inner 14 (95), outer 12 (80)
Ballast	None	None
—Liquid (each inner)	748 lb (339 kg)	None
—Cast Iron (each)	None	None
Height of Drawbar	14.5 in (370 mm)	14.5 in (370 mm)
Static Weight with Operator—Rear	13780 lb (6250 kg)	13780 lb (6251 kg)
—Front	18430 lb (8360 kg)	16935 lb (7681 kg)
—Total	32210 lb (14610 kg)	30715 lb (13932 kg)

NOTE: The Power take-off on this tractor does not transmit full engine power. The speed and the power are controlled by an electro-hydraulic system. The PTO test was run at two speeds: Full throttle setting and the minimum setting which would maintain standard PTO speed and advertised power. The following maximum variations were observed during the PTO runs:

	Eng. RPM	PTO RPM
Full Throttle	2409-2415	992-1004
Minimum Throttle	1679-1737	1011-1017
85% Torque	1731-1793	1023-1035
¾ × 85% Torque	1804-1850	1044-1062
½ × 85% Torque	1859-1891	1053-1081
¼ × 85% Torque	1895-1927	1060-1090

REPAIRS AND ADJUSTMENTS: During preliminary PTO runs the automatic control system for the hydrostatic PTO drive required adjustment.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. Temperature at injection pump was 131°F (55.0°C). Ten gears were chosen between 15% slip and 10 mph (16.1 km/h).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1273**.

LOUIS I. LEVITICUS
Engineer-in Charge

G. W. STEINBRUEGGE, Chairman
W. E. SPLINTER
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Board of Tractor Test Engineers



Steiger Cougar III PT-270 Diesel

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