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Test 1274: Steiger Panther III PT-350 With or Without PTO

Nebraska Tractor Test Lab

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NEBRASKA TRACTOR TEST 1274 — STEIGER PANTHER III PT 350
and STEIGER PANTHER III PT 350 WITHOUT PTO
ALSO STEIGER PANTHER III ST 350 DIESEL (SOUND RETEST)
20 SPEED

POWER TAKE-OFF PERFORMANCE (PT 350) (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 350)											
Rated PTO HP—One Hour—Full Throttle Setting—(PTO Speed—1020 rpm)											
105.63 (78.94)	2769	11.386 (43.100)	0.744 (0.453)	9.30 (1.831)	177 (80.7)	64 (17.7)	79 (26.0)	28.615 (96.629)			
Rated PTO HP—One Hour—Minimum Throttle Setting—(PTO Speed—1008 rpm)											
105.63 (78.77)	2355	9.308 (35.234)	0.610 (0.371)	11.35 (2.236)	175 (79.6)	64 (18.0)	80 (26.7)	28.600 (96.578)			
VARYING POWER AND FUEL CONSUMPTION—Two Hours— Minimum Throttle Setting											
90.96 (67.83)	2362	8.514 (32.231)	0.648 (0.394)	10.68 (2.105)	176 (79.7)	63 (17.2)	78 (25.6)	..... .....		
0.00 (0.00)	2430	4.465 (16.903)	..... .....	..... .....	174 (78.9)	63 (17.2)	79 (26.1)	..... .....		
46.93 (34.99)	2390	6.772 (25.634)	0.999 (0.607)	6.93 (1.365)	176 (80.0)	62 (16.9)	79 (26.1)	..... .....		
105.97 (79.02)	2364	9.338 (35.349)	0.610 (0.371)	11.35 (2.235)	176 (80.0)	62 (16.7)	78 (25.8)	..... .....		
23.73 (17.70)	2399	5.688 (21.531)	1.658 (1.009)	4.17 (0.822)	175 (79.4)	62 (16.7)	78 (25.8)	..... .....		
69.40 (51.75)	2382	7.691 (29.113)	0.767 (0.466)	9.02 (1.778)	176 (80.0)	62 (16.9)	80 (26.4)	..... .....		
Av Av	56.17 (41.88)	2388	7.078 (26.793)	0.872 (0.530)	7.94 (1.563)	175 (79.7)	62 (16.9)	79 (26.0)	28.603 (96.589)		
DRAWBAR PERFORMANCE (PT 350)											
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 10th (3LH) Gear											
293.15 (218.61)	16893 (75.15)	6.51 (10.47)	2600	3.38	19.656 (74.406)	0.464 (0.282)	14.91 (2.938)	180 (82.2)	48 (8.6)	55 (12.8)	28.605 (96.595)
75% of Pull at Maximum Power—Ten Hours 10th (3LH) Gear											
241.07 (179.77)	13209 (58.76)	6.84 (11.01)	2712	2.67	17.528 (66.350)	0.503 (0.306)	13.75 (2.709)	181 (82.7)	61 (15.9)	74 (23.1)	28.857 (97.446)
50% of Pull at Maximum Power—Two Hours 10th (3LH) Gear											
169.47 (126.37)	8879 (39.50)	7.16 (11.52)	2811	1.74	14.977 (56.694)	0.611 (0.372)	11.32 (2.229)	177 (80.6)	47 (8.1)	53 (11.4)	28.840 (97.388)
50% of Pull at Reduced Engine Speed—Two Hours 15th (4HL) Gear											
167.29 (124.75)	8791 (39.10)	7.14 (11.48)	1500	1.70	10.767 (40.759)	0.445 (0.271)	15.54 (3.061)	177 (80.6)	51 (10.6)	60 (15.6)	28.870 (97.490)
MAXIMUM POWER IN SELECTED GEARS (PT 350)											
243.54 (181.61)	32276 (143.57)	2.83 (4.55)	2670	14.83	4th (1HH) Gear		180 (82.2)	52 (11.1)	64 (17.8)	28.870 (97.490)	
274.43 (204.64)	31468 (139.98)	3.27 (5.26)	2600	11.84	5th (2LL) Gear		181 (82.8)	53 (11.7)	65 (18.3)	28.860 (97.456)	
290.70 (216.78)	28117 (125.07)	3.88 (6.24)	2602	7.30	6th (2LH) Gear		181 (82.5)	53 (11.7)	66 (18.9)	28.860 (97.456)	
295.82 (220.59)	24892 (110.72)	4.46 (7.17)	2600	5.64	7th (2HL) Gear		180 (82.2)	48 (8.9)	56 (13.3)	28.620 (96.645)	
298.72 (222.76)	22112 (98.36)	5.07 (8.15)	2599	4.62	8th (2HH) Gear		181 (82.5)	48 (8.9)	56 (13.3)	28.630 (96.679)	
304.37 (226.97)	19891 (88.48)	5.74 (9.23)	2598	4.07	9th (3LL) Gear		180 (82.2)	48 (8.9)	56 (13.3)	28.630 (96.679)	
305.48 (227.80)	17608 (78.32)	6.51 (10.47)	2599	3.51	10th (3LH) Gear		180 (82.2)	48 (8.9)	56 (13.3)	28.630 (96.679)	
304.12 (226.78)	15449 (68.72)	7.38 (11.88)	2600	2.94	11th (3HL) Gear		179 (81.7)	48 (8.9)	56 (13.3)	28.620 (96.645)	
304.44 (227.02)	13669 (60.80)	8.35 (13.44)	2600	2.61	12th (3HH) Gear		179 (81.7)	48 (8.9)	56 (13.3)	28.620 (96.645)	
LUGGING ABILITY IN RATED GEAR (10th 3LH) (PT 350)											
Crankshaft Speed rpm			2599	2341	2078	1818	1562	1298			
Pull—lbs (kN)			17608 (78.32)	19757 (87.88)	20992 (93.38)	22289 (99.15)	22340 (99.37)	21092 (93.82)			
Increase in Pull %			0	12	19	27	27	20			
Power—Hp (kW)			305.48 (227.80)	306.88 (228.84)	288.33 (215.01)	266.70 (198.88)	229.55 (171.17)	180.70 (134.75)			
Speed—Mph (km/h)			6.51 (10.47)	5.82 (9.37)	5.15 (8.29)	4.49 (7.22)	3.85 (6.20)	3.21 (5.17)			
Slip %			3.51	3.99	4.46	4.78	4.78	4.62			

Department of Agricultural Engineering

Dates of Test: May 2-17, 1978

ST 350 Sound Retest: June 12-13, 1979

MANUFACTURER: STEIGER TRACTOR, INC. 3101 First Avenue No., 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°) 0.8310 Fuel weight 6.919 lbs/gal (0.831 kg/l) Oil SAE 30 API service classification SB/SE - CA/CD To motor 7.119 gal (26.948 l) Drained from motor 5.594 gal (21.173 l) Transmission and drop box lubricant 303 or equivalent Final drive lubricant SAE 80W90 Total time engine was operated 48 hours.

ENGINE: Make Cummins Diesel Type Eight cylinder vee with turbocharger Serial No. 10647945 Crankshaft lengthwise Rated rpm 2600 Bore and stroke 5.5" x 4.75" (139.7 mm x 121 mm) Compression ratio 15.5 to 1 Displacement 903 cu in (14800 ml) Cranking system 12 volt Lubrication pressure Air cleaner two paper elements with aspirator Oil filter one full flow paper cartridge and one bypass element Oil cooler engine coolant heat exchanger for crankcase oil, radiator for transmission and dropbox oil, radiator for hydrostatic PTO oil Fuel filter two paper cartridges Muffler none Cooling medium temperature control 2 thermostats.

CHASSIS: Type Four-wheel drive with duals Serial No. 140-00007 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 75.2" (1910 mm) Vertical distance above roadway 47.2" (1200 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 Advertised speeds mph (km/h) first 2.2 (3.5) second 2.4 (3.9) third 2.8 (4.5) fourth 3.1 (5.0) fifth 3.6 (5.8) sixth 4.0 (6.5) seventh 4.5 (7.3) eighth 5.1 (8.2) ninth 5.8 (9.3) tenth 6.5 (10.4) eleventh 7.3 (11.8) twelfth 8.3 (13.3) thirteenth 9.5 (15.3) fourteenth 10.7 (17.2) fifteenth 12.1 (19.6) sixteenth 13.7 (22.0) seventeenth 15.2 (24.5) eighteenth 17.1 (27.6) nineteenth 19.3 (31.1) twentieth 21.7 (35.0) reverse 2.2 (3.5), 2.4 (3.9), 2.8 (4.5), 3.1 (5.0) 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 257" (6.53 m) left 261.5" (6.64 m) Turning space diameter (on concrete surface without brake) right 537" (13.64 m) left 546" (13.87 m) Power take-off hydrostatic drive — nominally 1000 rpm within the engine speed range of 2350 rpm to high idle.

TRACTOR SOUND LEVEL WITH CAB	PT-350 With PTO DB(A)	PT-350 W/O PTO DB(A)	ST 350 DB(A)
Maximum Available Power—Two Hours	80.5	80.5	80.0
75% of Pull at Maximum Power—Ten Hours	79.5		80.5
50% of Pull at Maximum Power—Two Hours	80.5		80.5
50% of Pull at Reduced Engine Speed—Two Hours	77.0		76.5
Bystander in 19th (5HL) gear	102.0	102.0	99.5

DRAWBAR PERFORMANCE (PT 350 Without PTO)										
Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)		
					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 10th (3LH) Gear										
297.09 (221.54)	17144 (76.26)	6.50 (10.46)	2599	3.55	19.764 (74.816)	0.460 (0.280)	15.03 (2.961)	179 (81.7)	47 (8.1)	53 (11.7)
										28.585 (96.527)

MAXIMUM POWER IN SELECTED GEARS (PT 350 Without PTO)										
273.11 (203.66)	32059 (142.60)	3.19 (5.14)	2610	14.26	5th (2LL) Gear			181 (82.5)	54 (12.2)	68 (20.0)
										28.850 (97.422)
296.33 (220.97)	28774 (128.00)	3.86 (6.22)	2600	7.60	6th (2LH) Gear			180 (81.9)	53 (11.7)	66 (18.9)
										28.860 (97.456)
299.84 (223.59)	25271 (112.41)	4.45 (7.16)	2599	5.71	7th (2HL) Gear			180 (81.9)	49 (9.4)	57 (13.9)
										28.630 (96.679)
302.75 (225.76)	22424 (99.75)	5.06 (8.15)	2600	4.78	8th (2HH) Gear			179 (81.7)	49 (9.4)	57 (13.9)
										28.630 (96.679)
309.13 (230.52)	20197 (89.84)	5.74 (9.24)	2600	4.15	9th (3LL) Gear			180 (81.9)	49 (9.4)	57 (13.9)
										28.620 (96.645)
310.83 (231.79)	17922 (79.72)	6.50 (10.47)	2600	3.67	10th (3LH) Gear			180 (81.9)	48 (8.9)	56 (13.3)
										28.620 (96.645)
311.64 (232.39)	15841 (70.46)	7.38 (11.87)	2600	3.02	11th (3HL) Gear			179 (81.7)	49 (9.4)	57 (13.9)
										28.640 (96.713)
309.77 (231.00)	13927 (61.95)	8.34 (13.42)	2598	2.53	12th (3HH) Gear			179 (81.7)	49 (9.4)	57 (13.9)
										28.650 (96.747)

LUGGING ABILITY IN RATED GEAR (10th 3LH) (PT 350 W/O PTO)						
Crankshaft Speed rpm		2600	2337	2082	1823	1559
Pull—lbs (kN)		17922 (79.72)	20160 (89.68)	21587 (96.02)	22802 (101.43)	22711 (101.02)
						21587 (96.02)
Increase in Pull %		0	12	20	27	27
Power—Hp (kW)		310.83 (231.79)	312.33 (232.90)	296.68 (221.24)	273.38 (203.86)	232.74 (173.55)
						184.71 (137.74)
Speed—Mph (km/h)		6.50 (10.47)	5.81 (9.35)	5.15 (8.29)	4.50 (7.24)	3.84 (6.18)
						3.21 (5.16)
Slip %		3.67	3.67	4.46	4.78	4.94
						4.46

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	—Liquid (each) —Cast Iron (each)	None None	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	—Liquid (each inner) —Cast Iron (each)	1428 lb (648 kg) None	None None
Height of Drawbar		14.5 in (370 mm)	14.5 in (370 mm)
Static Weight with Operator	Rear Front Total	13550 lb (6145 kg) 20450 lb (9274 kg) 34000 lb (15419 kg)	13550 lb (6145 kg) 17595 lb (7979 kg) 31145 lb (14124 kg)

NOTE: The Power take-off on this tractor does not transmit full engine power. The standard 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	No Variation	No Variation
Minimum Throttle	No Variation	No Variation
85% Torque	No Variation	No Variation
¾ x 85% Torque	2370-2390	1038-1046
½ x 85% Torque	2389-2397	1048-1060
¼ x 85% Torque	2387-2407	1042-1066

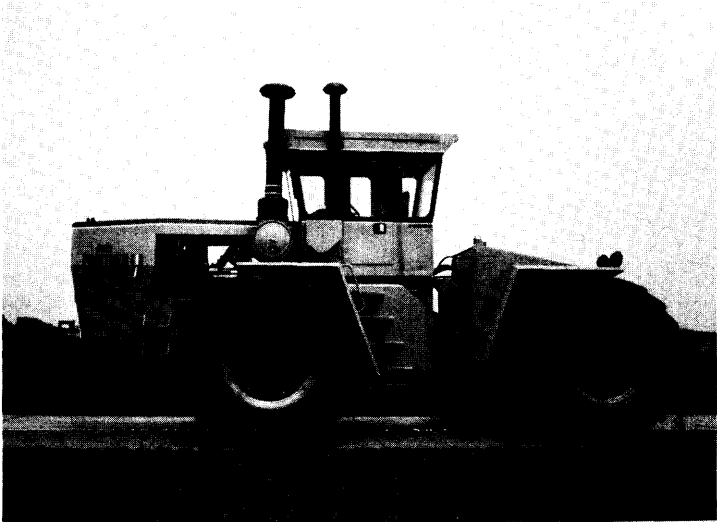
REPAIRS and ADJUSTMENTS: Steiger ST 350—The fuel pump was replaced after the gear pump drive shaft broke twice during the sound retest.

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 140°F (60.0°C). Nine gears were chosen between 15% slip and 10 mph 16.1 km/h). Steiger PT 350—During two hour maximum available power test with PTO pump disconnected an air conditioner hose developed a leak. Test had to be stopped and a rerun was made.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1274**.

LOUIS I. LEVITICUS
Engineer-in-Charge

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



Steiger Panther III PT-350 Diesel