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Test 1550: Steiger Panther IV SM-325 Diesel 20-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1550—STEIGER PANTHER IV SM-325 DIESEL 20 SPEED

DRAWBAR PERFORMANCE AT 2100 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power — Two Hours 10th (3B) Gear											
270.89 (202.00)	14996 (66.71)	6.77 (10.90)	2100	3.52	15.825 (59.905)	0.407 (0.248)	17.12 (3.372)	177 (80.3)	38 (3.3)	44 (6.7)	29.36 (99.13)
75% of Pull at Maximum Power — Ten Hours 10th (3B) Gear											
219.76 (163.88)	11507 (51.19)	7.16 (11.53)	2198	2.49	13.749 (52.045)	0.436 (0.265)	15.98 (3.149)	176 (79.9)	31 (−0.8)	35 (1.8)	29.23 (98.70)
50% of Pull at Maximum Power — Two Hours 10th (3B) Gear											
149.43 (111.43)	7680 (34.16)	7.30 (11.74)	2224	1.73	10.512 (39.792)	0.491 (0.298)	14.22 (2.800)	173 (78.3)	41 (4.7)	48 (8.6)	29.28 (98.87)
50% of Pull at Reduced Engine Speed — Two Hours 14th (4B) Gear											
150.05 (111.89)	7677 (34.15)	7.33 (11.80)	1349	1.69	8.963 (33.929)	0.417 (0.253)	16.74 (3.298)	174 (78.9)	33 (0.3)	39 (3.6)	29.41 (99.30)
MAXIMUM POWER IN SELECTED GEARS											
239.71 (178.76)	33651 (149.68)	2.67 (4.30)	2171	14.25	3rd (1C) Gear			176 (79.7)	36 (2.2)	43 (6.1)	29.36 (99.14)
256.58 (191.33)	31890 (141.85)	3.02 (4.86)	2099	11.19	4th (1D) Gear			176 (80.0)	36 (2.2)	43 (6.1)	29.36 (99.14)
268.10 (199.92)	28224 (125.54)	3.56 (5.73)	2101	7.82	5th (2A) Gear			177 (80.3)	36 (2.2)	43 (6.1)	29.36 (99.14)
272.73 (203.37)	25139 (111.82)	4.07 (6.55)	2101	6.57	6th (2B) Gear			176 (80.0)	36 (2.2)	43 (6.1)	29.36 (99.14)
274.67 (204.82)	22028 (97.99)	4.68 (7.52)	2099	5.43	7th (2C) Gear			177 (80.3)	36 (2.2)	44 (6.7)	29.35 (99.11)
274.93 (205.02)	19400 (86.30)	5.31 (8.55)	2101	4.58	8th (2D) Gear			176 (80.0)	35 (1.7)	42 (5.6)	29.34 (99.08)
278.03 (207.33)	17427 (77.52)	5.98 (9.63)	2098	3.80	9th (3A) Gear			177 (80.6)	40 (4.4)	48 (8.9)	29.30 (98.94)
278.09 (207.37)	15380 (68.41)	6.78 (10.91)	2101	3.48	10th (3B) Gear			177 (80.6)	39 (3.9)	47 (8.3)	29.32 (99.01)
275.33 (205.31)	13356 (59.41)	7.73 (12.44)	2098	2.92	11th (3C) Gear			177 (80.3)	41 (5.0)	49 (9.4)	29.29 (98.91)
273.53 (203.97)	11728 (52.17)	8.75 (14.08)	2099	2.43	12th (3D) Gear			176 (80.0)	41 (5.0)	50 (10.0)	29.28 (98.87)

LUGGING ABILITY IN 10th (3B) GEAR

Crankshaft Speed rpm	2101	1889	1680	1476	1256	1048
Pull—lbs (kN)	15380 (68.41)	16753 (74.52)	18682 (83.10)	20218 (89.93)	20190 (89.81)	18703 (83.20)
Increase in Pull %	0	9	21	31	31	22
Power—Hp (kW)	278.09 (207.37)	271.37 (202.36)	267.91 (199.78)	253.49 (189.02)	215.35 (160.59)	167.22 (124.70)
Speed—Mph (kmh)	6.78 (10.91)	6.07 (9.78)	5.38 (8.65)	4.70 (7.57)	4.00 (6.44)	3.35 (5.40)
Slip %	3.48	3.80	4.27	4.58	4.74	4.27

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	1900 RPM dB(A)	2100 RPM dB(A)
Maximum Available Power—Two Hours	77.0	79.0	80.5
75% of Pull at Maximum Power—Ten Hours			81.5
50% of Pull at Maximum Power—Two Hours			81.0
50% of Pull at Reduced Engine Speed—Two Hours			75.0
Bystander in 18th (5B) gear			100.0

Department of Agricultural Engineering

Dates of Test: November 16 to 26, 1984

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

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)*** 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SE-SF, CC-CD **To motor** 6.556 gal *(24.818 l)* **Drained from motor** 5.885 gal *(22.276 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 80W-90 **Total time engine was operated** 39.5 hours.

ENGINE: Make Komatsu Diesel **Model** SA6D125-4 **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 11296 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 4.921″ × 5.906″ *(125 mm × 150 mm)* **Compression ratio** 14.5 to 1 **Displacement** 674 cu in *(11045 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 and transfer case oil **Fuel filter** one paper cartridge and water separator **Muffler** none **Cooling medium temperature control** two thermostats.

CHASSIS: Type four wheel drive with duals **Serial No.** 119- 04028 **Tread width** rear 79″ *(2007 mm)* to 136.3″ *(3462 mm)* front 79″ *(2007 mm)* to 136.3″ *(3462 mm)* **Wheel base** 129″ *(3277 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 76.0″ *(1930 mm)* Vertical distance above roadway 45.5″ *(1156 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 2.3 *(3.7)* second 2.6 *(4.2)* third 3.0 *(4.8)* fourth 3.4 *(5.5)* fifth 3.8 *(6.1)* sixth 4.3 *(6.9)* seventh 4.9 *(7.9)* eighth 5.5 *(8.8)* ninth 6.1 *(9.8)* tenth 7.0 *(11.3)* eleventh 7.8 *(12.5)* twelfth 8.9 *(14.3)* thirteenth 10.2 *(16.4)* fourteenth 11.5 *(18.5)* fifteenth 13.0 *(20.9)* sixteenth 14.8 *(23.8)* seventeenth 15.8 *(25.4)* eighteenth 18.0 *(29.0)* nineteenth 20.3 *(32.7)* twentieth 23.1 *(37.2)* reverse 2.3 *(3.7)*, 2.6 *(4.2)*, 3.0 *(4.8)*, 3.4 *(5.5)* **Clutch** dual dry disc hydraulically operated by foot pedal **Brakes** dual caliper, single disc hydraulically actuated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 283″ *(7.19 m)* left 288″ *(7.32 m)* **Turning space diameter** (on

DRAWBAR PERFORMANCE AT 1900 RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power — Two Hours 10th (3B) Gear											
268.18 *(199.99)*	16434 *(73.10)*	6.12 *(9.85)*	1901	3.60	15.252 *(57.734)*	0.397 *(0.241)*	17.58 *(3.464)*	176 *(80.0)*	39 *(3.9)*	41 *(5.0)*	28.94 *(97.71)*
MAXIMUM POWER IN SELECTED GEARS											
*244.93 *(182.64)*	33487 *(148.96)*	2.74 *(4.41)*	1988	14.57	4th (1D) Gear			176 *(80.0)*	36 *(2.2)*	43 *(6.1)*	29.36 *(99.14)*
256.53 *(191.30)*	30388 *(135.17)*	3.17 *(5.09)*	1899	9.18	5th (2A) Gear			176 *(79.7)*	36 *(2.2)*	43 *(6.1)*	29.36 *(99.14)*
263.29 *(196.34)*	27124 *(120.65)*	3.64 *(5.86)*	1898	7.31	6th (2B) Gear			176 *(79.7)*	36 *(2.2)*	44 *(6.7)*	29.36 *(99.14)*
264.94 *(197.57)*	23619 *(105.06)*	4.21 *(6.77)*	1901	5.97	7th (2C) Gear			176 *(80.0)*	36 *(2.2)*	43 *(6.1)*	29.35 *(99.11)*
268.67 *(200.35)*	21057 *(93.67)*	4.78 *(7.70)*	1901	5.13	8th (2D) Gear			176 *(80.0)*	34 *(1.1)*	41 *(5.0)*	29.34 *(99.08)*
269.67 *(201.09)*	18734 *(83.33)*	5.40 *(8.69)*	1900	4.27	9th (3A) Gear			177 *(80.6)*	40 *(4.4)*	48 *(8.9)*	29.30 *(98.94)*
270.09 *(201.41)*	16571 *(73.71)*	6.11 *(9.84)*	1899	3.80	10th (3B) Gear			177 *(80.3)*	40 *(4.4)*	48 *(8.9)*	29.31 *(98.98)*
269.53 *(200.99)*	14489 *(64.45)*	6.98 *(11.23)*	1898	3.24	11th (3C) Gear			177 *(80.3)*	41 *(5.0)*	49 *(9.4)*	29.29 *(98.91)*
267.96 *(199.82)*	12706 *(56.52)*	7.91 *(12.73)*	1902	2.68	12th (3D) Gear			176 *(79.7)*	41 *(5.0)*	50 *(10.0)*	29.28 *(98.87)*
264.07 *(196.92)*	10886 *(48.42)*	9.10 *(14.64)*	1900	2.35	13th (4A) Gear			176 *(80.0)*	41 *(5.0)*	50 *(10.0)*	29.28 *(98.87)*

DRAWBAR PERFORMANCE AT 1700 RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F *(°C)* Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power — Two Hours 10th (3B) Gear											
265.92 *(198.29)*	18334 *(81.55)*	5.44 *(8.75)*	1699	4.19	14.707 *(55.671)*	0.386 *(0.235)*	18.08 *(3.562)*	176 *(80.0)*	41 *(4.7)*	44 *(6.7)*	28.91 *(97.62)*
MAXIMUM POWER IN SELECTED GEARS											
240.15 *(179.08)*	33535 *(149.17)*	2.69 *(4.32)*	1709	14.44	5th (2A) Gear			176 *(80.0)*	36 *(2.2)*	43 *(6.1)*	29.36 *(99.14)*
256.27 *(191.10)*	29957 *(133.25)*	3.21 *(5.16)*	1703	8.97	6th (2B) Gear			176 *(79.7)*	36 *(2.2)*	44 *(6.7)*	29.35 *(99.11)*
259.99 *(193.88)*	26209 *(116.58)*	3.72 *(5.99)*	1699	6.94	7th (2C) Gear			176 *(80.0)*	36 *(2.2)*	43 *(6.1)*	29.35 *(99.11)*
264.08 *(196.93)*	23336 *(103.80)*	4.24 *(6.83)*	1699	5.82	8th (2D) Gear			176 *(80.0)*	34 *(1.1)*	41 *(5.0)*	29.34 *(99.08)*
267.10 *(199.17)*	20872 *(92.84)*	4.80 *(7.72)*	1700	4.82	9th (3A) Gear			176 *(80.0)*	40 *(4.4)*	48 *(8.9)*	29.29 *(98.91)*
268.68 *(200.36)*	18530 *(82.42)*	5.44 *(8.75)*	1699	4.27	10th (3B) Gear			176 *(80.0)*	40 *(4.4)*	48 *(8.9)*	29.31 *(98.98)*
266.86 *(199.00)*	16073 *(71.49)*	6.23 *(10.02)*	1701	3.40	11th (3C) Gear			176 *(80.0)*	41 *(5.0)*	49 *(9.4)*	29.29 *(98.91)*
264.89 *(197.53)*	14115 *(62.78)*	7.04 *(11.33)*	1698	3.08	12th (3D) Gear			176 *(80.0)*	41 *(5.0)*	50 *(10.0)*	29.28 *(98.87)*
263.61 *(196.57)*	12173 *(54.15)*	8.12 *(13.07)*	1701	2.76	13th (4A) Gear			176 *(79.7)*	41 *(5.0)*	50 *(10.0)*	29.28 *(98.87)*

concrete surface without brake) right 590″ *(14.99 m)* left 600″ *(15.24 m)* **Power take-off** none **Unladen tractor mass** 28725 lb *(13030 kg)*.

REPAIRS AND ADJUSTMENTS: During the warm-up for the initial drawbar test run, coolant was detected in the No. 3 cylinder. The injector cap screws had inadequate torque. Gaskets were replaced and the test continued.

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 inlet was maintained at 114°F *(45.6°C)*. Ten gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is as true and correct report of official Tractor Test No. **1550**, December 10, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

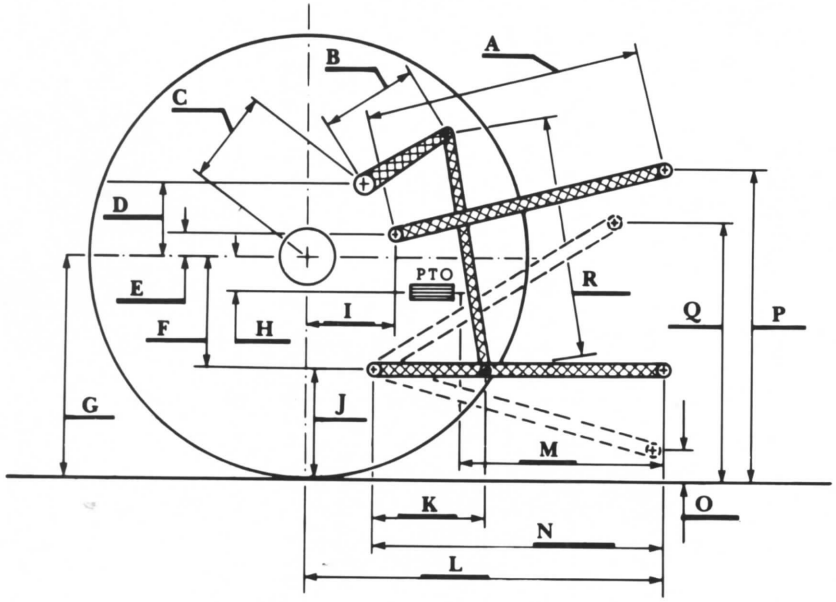
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., Size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1215 lb *(551 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., Size, 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)	1300 lb *(590 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		17.5 in *(445 mm)*	17.5 in *(445 mm)*
Static Weight with Operator—	Rear	14210 lb *(6446 kg)*	11780 lb *(5343 kg)*
	—Front	19720 lb *(8945 kg)*	17120 lb *(7766 kg)*
	—Total	33930 lb *(15391 kg)*	28900 lb *(13109 kg)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi *(kPa)*	2450	*16890*
Location	remote	
Hydraulic oil temperature °F *(°C)*	101	*38*
Location	hydraulic reservoir	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	yes		
CATEGORY	III		*not measured
LOAD lbs *(kg)*	13038	*5914*	
TIME sec	3.72		
HITCH POINT MOVEMENT in *(mm)*			
Lowest position	13.1	*333*	
Top of timed range	39.1	*994*	
Highest position	40.0	*1016*	
LOAD CG MOVEMENT in *(mm)*			
Lowest position	13.0	*330*	
Top of timed range	42.4	*1078*	
Highest position	43.5	*1105*	

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



Hitch Dimensions as Tested — No Load

	inch	*mm*
A	30.8	*781*
B	15.0	*381*
C	26.8	*681*
D	22.3	*566*
E	5.7	*145*
F	13.5	*343*
G	32.0	*813*
H	NA	*NA*
I	18.1	*460*
J	18.5	*470*
K	15.0	*381*
L	50.1	*1273*
L'	56.6	*1438*
M	NA	*NA*
N	32.0	*813*
O	8.0	*203*
P	40.5	*1029*
Q	36.0	*914*
R	34.0	*864*

L' to end of quick attach

Steiger Panther IV SM-325 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director