10-10-1984

Test 1542: Steiger Bearcat IV KM-225 Diesel 20-Speed

Nebraska Tractor Test Lab
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NEBRASKA TRACTOR TEST 1542—STEIGER BEARCAT IV KM-225 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											
188.03 (140.21)	13209 (58.75)	5.34 (8.59)	2098	3.41	11.444 (43.321)	0.424 (0.258)	16.43 (3.237)	183 (83.9)	44 (6.7)	45 (7.2)	28.51 (96.26)
75% of Pull at Maximum Power — Ten Hours 10th (3B) Gear											
152.15 (113.46)	10106 (44.95)	5.65 (9.09)	2198	2.34	9.956 (37.686)	0.456 (0.278)	15.28 (3.011)	182 (83.6)	54 (12.3)	58 (14.2)	28.45 (96.06)
50% of Pull at Maximum Power — Two Hours 10th (3B) Gear											
103.08 (76.87)	6692 (29.77)	5.78 (9.30)	2236	1.88	7.859 (29.749)	0.532 (0.323)	13.12 (2.584)	181 (82.5)	42 (5.6)	43 (6.1)	28.47 (96.14)
50% of Pull at Reduced Engine Speed — Two Hours 14th (4B) Gear											
103.34 (77.06)	6690 (29.76)	5.79 (9.32)	1357	1.92	6.525 (24.700)	0.440 (0.268)	15.84 (3.120)	184 (84.4)	39 (3.9)	41 (4.7)	28.60 (96.56)
MAXIMUM POWER IN SELECTED GEARS											
170.97 (127.49)	31556 (140.37)	2.03 (3.27)	2125	14.82	3rd (1C)Gear			182 (83.3)	40 (4.4)	44 (6.7)	28.81 (97.29)
180.36 (134.49)	28154 (125.23)	2.40 (3.87)	2100	9.49	4th (1D) Gear			182 (83.3)	42 (5.6)	46 (7.8)	28.81 (97.29)
186.35 (138.96)	24759 (110.13)	2.82 (4.54)	2099	7.14	5th (2A) Gear			182 (83.3)	45 (7.2)	49 (9.4)	28.81 (97.29)
189.56 (141.36)	22143 (98.50)	3.21 (5.17)	2098	6.22	6th (2B) Gear			183 (83.6)	49 (9.4)	53 (11.7)	28.82 (97.32)
190.71 (142.22)	19529 (86.87)	3.66 (5.89)	2100	5.21	7th (2C) Gear			183 (83.6)	50 (10.0)	54 (12.2)	28.83 (97.35)
193.11 (144.00)	17318 (77.03)	4.18 (6.73)	2099	4.02	8th (2D) Gear			184 (84.2)	44 (6.7)	50 (10.0)	28.83 (97.35)
192.82 (143.78)	15289 (68.01)	4.73 (7.61)	2099	3.53	9th (3A) Gear			183 (83.6)	44 (6.7)	50 (10.0)	28.89 (97.56)
192.32 (143.41)	13474 (59.94)	5.35 (8.61)	2100	3.04	10th (3B) Gear			183 (83.9)	43 (6.1)	50 (10.0)	28.93 (97.69)
191.18 (142.56)	11828 (52.61)	6.06 (9.75)	2098	2.71	11th (3C) Gear			183 (83.9)	44 (6.7)	50 (10.0)	28.88 (97.52)
187.82 (140.06)	10276 (45.71)	6.85 (11.03)	2100	2.30	12th (3D) Gear			183 (83.6)	44 (6.7)	51 (10.6)	28.87 (97.49)
187.62 (139.91)	8859 (39.41)	7.94 (12.78)	2101	1.68	13th (4A) Gear			183 (83.9)	45 (7.2)	51 (10.6)	28.85 (97.42)
183.86 (137.10)	7684 (34.18)	8.97 (14.44)	2101	1.62	14th (4B) Gear			182 (83.3)	45 (7.2)	51 (10.6)	28.84 (97.39)

LUGGING ABILITY IN 10th (3B) GEAR

Crankshaft Speed rpm	2100	1887	1680	1464	1246	1047
Pull—lbs (kN)	13474 (59.94)	15945 (70.93)	17949 (79.84)	19665 (87.47)	20253 (90.09)	18741 (83.36)
Increase in Pull %	0	18	33	46	50	39
Power—Hp (kW)	192.32 (143.41)	203.34 (151.63)	202.67 (151.13)	192.54 (143.58)	168.38 (125.56)	131.47 (98.03)
Speed—Mph (kmh)	5.35 (8.61)	4.78 (7.70)	4.23 (6.81)	3.67 (5.91)	3.12 (5.02)	2.63 (4.23)
Slip %	3.04	3.62	4.26	4.74	5.06	4.58

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	1900 RPM dB(A)	2100 RPM dB(A)
Maximum Available Power—Two Hours	81.0	79.5	79.0
75% of Pull at Maximum Power—Ten Hours			80.5
50% of Pull at Maximum Power—Two Hours			80.0
50% of Pull at Reduced Engine Speed—Two Hours			77.0
Bystander in 18th (5B) gear			101.5

Department of Agricultural Engineering

Dates of Test: October 10 to 23, 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** 10W-30 **API service classification** SE-SF, CC-CD **To motor** 7.122 gal *(26.961 l)* **Drained from motor** 6.138 gal *(23.236 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 80W-90 **Total time engine was operated** 48.5 hours.

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 34505469 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 4.921″ × 5.354″ *(125 mm × 136 mm)* **Compression ratio** 16.0 to 1 **Displacement** 611 cu in *(10014 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge and one bypass 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 **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive with duals **Serial No.** 112- 03847 **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 74.4″ *(1890 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 1.8 *(2.9)* second 2.0 *(3.2)* third 2.3 *(3.7)* fourth 2.6 *(4.2)* fifth 2.9 *(4.7)* sixth 3.3 *(5.3)* seventh 3.7 *(6.0)* eighth 4.2 *(6.8)* ninth 4.7 *(7.6)* tenth 5.4 *(8.7)* eleventh 6.0 *(9.7)* twelfth 6.8 *(10.9)* thirteenth 7.8 *(12.6)* fourteenth 8.9 *(14.3)* fifteenth 10.0 *(16.1)* sixteenth 11.3 *(18.2)* seventeenth 12.5 *(20.1)* eighteenth 14.2 *(22.9)* nineteenth 15.8 *(25.4)* twentieth 18.0 *(29.0)* reverse 1.8 *(2.9)*, 2.0 *(3.2)*, 2.3 *(3.7)*, 2.6 *(4.2)* **Clutch** dual dry disc hydraulically actuated by foot pedal **Brakes** single caliper 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 concrete surface without brake) right 590″ *(14.99 m)* left 600″ *(15.24 m)* **Power take-off** none **Unladen tractor mass** 28220 lb *(12801 kg)*.

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											
199.69 (148.91)	15550 (69.17)	4.82 (7.75)	1900	3.66	11.545 (43.701)	0.403 (0.245)	17.30 (3.407)	184 (84.4)	41 (4.7)	44 (6.7)	28.99 (97.88)
MAXIMUM POWER IN SELECTED GEARS											
180.67 (134.72)	31624 (140.67)	2.14 (3.45)	1987	14.76	4th (1D) Gear			183 (83.9)	44 (6.7)	48 (8.9)	28.81 (97.29)
190.57 (142.11)	28935 (128.71)	2.47 (3.97)	1900	10.20	5th (2A) Gear			184 (84.4)	47 (8.3)	51 (10.6)	28.81 (97.29)
196.20 (146.31)	25730 (114.45)	2.86 (4.60)	1900	7.66	6th (2B) Gear			184 (84.4)	49 (9.4)	53 (11.7)	28.82 (97.32)
198.88 (148.30)	22744 (101.17)	3.28 (5.28)	1901	6.38	7th (2C) Gear			186 (185.3)	51 (10.6)	55 (12.8)	28.84 (97.39)
202.24 (150.81)	20208 (89.89)	3.75 (6.04)	1900	4.82	8th (2D) Gear			185 (84.7)	44 (6.7)	50 (10.0)	28.82 (97.32)
202.31 (150.86)	17847 (79.39)	4.25 (6.84)	1900	4.18	9th (3A) Gear			185 (85.0)	44 (6.7)	50 (10.0)	28.88 (97.52)
203.31 (151.61)	15829 (70.41)	4.82 (7.75)	1900	3.62	10th (3B) Gear			185 (85.0)	43 (6.1)	50 (10.0)	28.92 (97.66)
201.85 (150.52)	13851 (61.61)	5.46 (8.79)	1901	3.21	11th (3C) Gear			185 (85.0)	44 (6.7)	50 (10.0)	28.87 (97.49)
200.79 (149.73)	12177 (54.17)	6.18 (9.95)	1901	2.71	12th (3D) Gear			186 (85.3)	44 (6.7)	51 (10.6)	28.87 (97.49)
199.84 (149.02)	10476 (46.60)	7.15 (11.51)	1899	2.30	13th (4A) Gear			186 (85.3)	45 (7.2)	51 (10.6)	28.85 (97.42)
197.19 (147.04)	9144 (40.67)	8.09 (13.01)	1900	1.96	14th (4B) Gear			185 (84.7)	45 (7.2)	51 (10.6)	28.84 (97.39)

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											
198.75 (148.21)	17396 (77.38)	4.28 (6.89)	1700	4.18	11.380 (43.077)	0.399 (0.243)	17.47 (3.441)	183 (86.4)	44 (6.7)	51 (10.3)	28.98 (97.86)
MAXIMUM POWER IN SELECTED GEARS											
179.83 (134.10)	31203 (138.80)	2.16 (3.48)	1752	14.82	5th (2A) Gear			186 (85.3)	48 (8.9)	52 (11.1)	28.81 (97.29)
190.40 (141.98)	28531 (126.91)	2.50 (4.03)	1699	9.78	6th (2B) Gear			187 (85.8)	50 (10.0)	54 (12.2)	28.83 (97.35)
196.18 (146.29)	25371 (112.86)	2.90 (4.67)	1701	7.51	7th (2C) Gear			185 (85.0)	51 (10.6)	56 (13.3)	28.84 (97.39)
198.48 (148.00)	22362 (99.47)	3.33 (5.36)	1698	5.45	8th (2D) Gear			187 (85.8)	44 (6.7)	50 (10.0)	28.82 (97.32)
200.46 (149.48)	19883 (88.44)	3.78 (6.08)	1700	4.90	9th (3A) Gear			188 (86.4)	44 (6.7)	50 (10.0)	28.88 (97.52)
202.70 (151.15)	17722 (78.83)	4.29 (6.90)	1701	4.10	10th (3B) Gear			188 (86.4)	43 (6.1)	50 (10.0)	28.91 (97.62)
201.84 (150.51)	15536 (69.11)	4.87 (7.84)	1701	3.62	11th (3C) Gear			187 (86.1)	44 (6.7)	51 (10.6)	28.87 (97.49)
201.10 (149.96)	13687 (60.88)	5.51 (8.87)	1700	3.04	12th (3D) Gear			189 (86.9)	44 (6.7)	51 (10.6)	28.86 (97.46)
200.97 (149.86)	11807 (52.52)	6.38 (10.27)	1699	2.71	13th (4A) Gear			188 (86.7)	45 (7.2)	51 (10.6)	28.84 (97.39)
199.68 (148.90)	10369 (46.12)	7.22 (11.62)	1701	2.46	14th (4B) Gear			187 (86.1)	45 (7.2)	51 (10.6)	28.83 (97.35)
195.74 (145.96)	8978 (39.93)	8.18 (13.16)	1700	2.05	15th (4C) Gear			186 (85.6)	45 (7.2)	51 (10.6)	28.83 (97.35)

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 inlet was maintained at 121°F *(49.4°C)*. Twelve 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 No. **1542**, December 3, 1984.

LOUIS I. LEVITICUS
Engineer-in-Charge

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

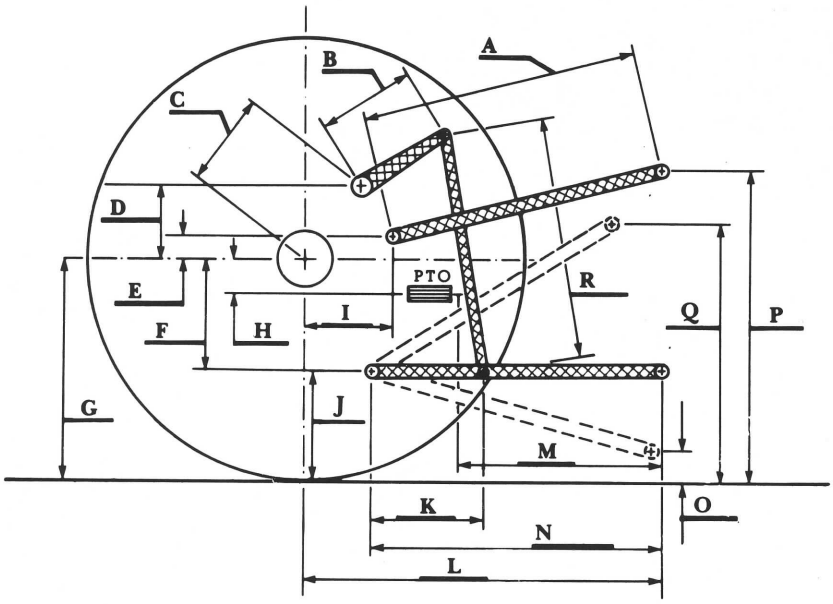
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., Size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1552 lb *(704 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., Size, 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)	1163 lb *(527 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static Weight with Operator	—Rear	15105 lb *(6852 kg)*	12000 lb *(5443 kg)*
	—Front	18725 lb *(8493 kg)*	16400 lb *(7439 kg)*
	—Total	33830 lb *(15345 kg)*	28400 lb *(12882 kg)*

THREE POINT HITCH PERFORMANCE

Observed Maximum Pressure psi *(kPa)*	2400	*16550*
Location	remote	
Hydraulic oil temperature °F *(°C)*	108	*42*
Location	hydraulic reservoir	

	Maximum Lift Capacity		Lift Capacity for Transport
QUICK ATTACH	yes		
CATEGORY	III		*not measured
LOAD lbs *(kg)*	13460	*6105*	
TIME sec	3.56		
HITCH POINT MOVEMENT in *(mm)*			
Lowest position	13.6	*346*	
Top of timed range	39.6	*1006*	
Highest position	40.1	*1019*	
LOAD CG MOVEMENT in *(mm)*			
Lowest position	13.0	*330*	
Top of timed range	42.0	*1067*	
Highest position	42.5	*1080*	

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



Hitch Dimensions as Tested — No Load

	inch	*mm*
A	31.3	*794*
B	15.0	*381*
C	26.8	*681*
D	22.3	*566*
E	5.7	*145*
F	13.5	*343*
G	32.4	*822*
H	NA	*NA*
I	18.1	*460*
J	18.9	*479*
K	15.0	*381*
L	50.1	*1273*
L'	56.6	*1438*
M	NA	*NA*
N	32.0	*813*
O	8.0	*203*
P	40.9	*1038*
Q	36.1	*918*
R	34.3	*870*

L' to end of quick attach

Steiger Bearcat IV KM-225 Diesel

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