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2014

Test 2093: Case IH Steiger 420

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2093 - SUMMARY 958

CASE IH STEIGER 420 DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1160 rpm)						
367.38 (273.96)	2101	21.46 (81.25)	0.410 (0.250)	17.12 (3.37)	1.63 (6.17)	
Maximum Power (1 hour)						
413.44 (308.30)	1902	22.46 (85.02)	0.381 (0.232)	18.41 (3.63)	1.95 (7.39)	
Standard Power Take-off Speed (1000 rpm)						
407.49 (303.87)	1811	21.75 (82.32)	0.375 (0.228)	18.74 (3.69)	1.89 (7.17)	

VARYING POWER AND FUEL CONSUMPTION

367.38 (273.96)	2101	21.46 (81.25)	0.410 (0.250)	17.12 (3.37)	1.63 (6.17)	Air temperature
319.82 (238.49)	2151	19.45 (73.61)	0.427 (0.260)	16.45 (3.24)	1.44 (5.43)	73°F (23°C)
240.59 (179.41)	2158	15.68 (59.37)	0.458 (0.278)	15.34 (3.02)	1.09 (4.13)	Relative humidity
161.02 (120.07)	2167	12.12 (45.89)	0.529 (0.322)	13.28 (2.62)	0.73 (2.77)	56%
80.95 (60.36)	2176	8.61 (32.60)	0.747 (0.454)	9.40 (1.85)	0.42 (1.61)	Barometer
2.61 (1.95)	2185	5.34 (20.20)	14.331 (8.718)	0.49 (0.10)	0.14 (0.54)	28.86" Hg (97.73 kPa)

Maximum torque - 1351 lb.-ft. (1832 Nm) at 1400 rpm

Maximum torque rise - 47.1%

Torque rise at 1681 engine rpm - 36%

Power increase at 1902 engine rpm - 12.5%

DRAWBAR PERFORMANCE

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	D.E.F. Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—4th Gear									
340.86 (254.18)	25612 (113.93)	4.99 (8.03)	2099	2.9	0.442 (0.269)	15.90 (3.13)	207 (97)	72 (22)	28.83 (97.63)
75% of Pull at Maximum Power—4th Gear									
264.22 (197.03)	19199 (85.40)	5.16 (8.30)	2154	2.2	0.470 (0.286)	14.95 (2.94)	208 (98)	77 (25)	28.84 (97.66)
50% of Pull at Maximum Power—4th Gear									
178.13 (132.83)	12809 (56.98)	5.22 (8.39)	2163	1.6	0.530 (0.322)	13.26 (2.61)	207 (97)	81 (27)	28.82 (97.60)
75% of Pull at Reduced Engine Speed—8th Gear									
264.20 (197.01)	19111 (85.01)	5.18 (8.34)	1424	2.2	0.391 (0.238)	17.95 (3.54)	207 (97)	79 (26)	28.83 (97.63)
50% of Pull at Reduced Engine Speed—8th Gear									
178.32 (132.97)	12780 (56.85)	5.23 (8.42)	1428	1.6	0.428 (0.260)	16.42 (3.23)	200 (93)	82 (28)	28.83 (97.63)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: September 23 to October 1, 2014

Manufacturer: CNH Industrial America LLC, 700 State St. Racine, Wi. 53404 USA

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.8434 **Fuel weight** 7.022 lbs/gal (0.842 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 10W40 API service classification** CJ-4 **Transmission lubricant** Akcelia Hy-Tran Ultrraction fluid **Hydraulic and axle lubricant** Akcelia Hy-Tran Ultrraction fluid **Total time engine was operated:** 22.0 hours

ENGINE: Make FPT Industrial Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** 000010353 **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.315" x 5.906" (135.0 mm x 150.0 mm) **Compression ratio** 16.5 to 1 **Displacement** 786 cu in (12880 ml) **Starting system** 24 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, separate radiators for hydraulic and transmission oil **Fuel filter** two paper elements **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) with a vertical muffler **Cooling medium** **temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 144.2 - 153.0 lb/h (65.4 - 69.4 kg/h) **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 21.0 - 23.9 psi (145 - 165 kPa) as measured 22.8 psi (157 kPa)

CHASSIS: Type four wheel drive with duals **Serial No.** *ZEF300725* **Tread width** rear 60.0" (1524 mm) to 130.0" (3302 mm) front 60.0" (1524 mm) to 130.0" (3302 mm) **Wheelbase** 148.0" (3759 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 2.97 (4.78) second 3.58 (5.76) third 4.32 (6.95) fourth 5.20 (8.37) fifth 5.97 (9.61) sixth 6.56 (10.56) seventh 7.20 (11.58) eighth 7.90 (12.72) ninth 8.69 (13.98) tenth 9.55 (15.37) eleventh 10.46 (16.84) twelfth 11.50 (18.51) thirteenth 13.20 (21.25) fourteenth 15.91 (25.60) fifteenth 19.21 (30.91) sixteenth 23.13 (37.23) reverse 4.50 (7.24), 9.05 (14.57) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated

DRAWBAR PERFORMANCE AT 2100 ENGINE RPM

DRAWBAR POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
302.95 (225.91)	41762 (185.76)	2.72 (4.38)	2106	7.9	1st Gear 0.466 (0.284)	15.06 (2.97)	0.043 (0.026)	209 (98)	64 (18)	28.80 (97.53)
336.77 (251.13)	37712 (167.75)	3.35 (5.39)	2099	5.2	2nd Gear 0.447 (0.272)	15.71 (3.09)	0.044 (0.027)	208 (98)	67 (19)	28.80 (97.53)
341.98 (255.01)	31194 (138.76)	4.11 (6.61)	2099	4.7	3rd Gear 0.440 (0.267)	15.97 (3.15)	0.043 (0.026)	206 (97)	71 (22)	28.80 (97.53)
340.86 (254.18)	25612 (113.93)	4.99 (8.03)	2099	3.0	4th Gear 0.442 (0.269)	15.90 (3.13)	0.044 (0.027)	207 (97)	72 (22)	28.83 (97.63)
341.33 (254.53)	22245 (98.95)	5.75 (9.25)	2099	2.7	5th Gear 0.441 (0.268)	15.91 (3.13)	0.044 (0.027)	207 (97)	71 (21)	28.83 (97.63)
343.01 (255.78)	20302 (90.31)	6.34 (10.20)	2100	2.3	6th Gear 0.438 (0.266)	16.04 (3.16)	0.043 (0.026)	207 (97)	73 (23)	28.82 (97.60)
339.28 (253.00)	18290 (81.36)	6.96 (11.20)	2099	2.0	7th Gear 0.444 (0.270)	15.82 (3.12)	0.043 (0.026)	207 (97)	73 (23)	28.83 (97.63)
341.73 (254.83)	16734 (74.43)	7.66 (12.33)	2099	1.9	8th Gear 0.441 (0.268)	15.93 (3.14)	0.042 (0.026)	207 (97)	77 (25)	28.83 (97.63)
337.77 (251.87)	15062 (67.00)	8.41 (13.53)	2099	1.7	9th Gear 0.446 (0.271)	15.74 (3.10)	0.042 (0.025)	207 (97)	74 (24)	28.80 (97.53)

Power take-off MY 2014 - 1000 rpm at 1998 engine rpm, MY 2015 -1000 rpm at 1811 engine rpm **Unladen tractor mass** 42290 lb (19182 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

Note 1: This tractor has a driveline protection system that limits the maximum engine torque in gears 1 through 3.

Note 2: The performance figures on this report are the result of replacing the electronic engine control module of the Case IH Steiger 470 with the Case IH Steiger 420 module.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests, the fuel temperature at the primary fuel filter was maintained at 110°F (43°C). The performance figures on this Summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2093**, Nebraska Summary 958, December 19, 2014.

Roger M. Hoy
Director

M.F. Kocher
J.D. Luck
P.J. Jasa
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB

	dB(A)
At no load in 4th gear	73.9
Bystander in 16th gear	87.8

TIRES AND WEIGHT

Rear Tires -No., size, ply & psi (kPa)
Front Tires -No., size, ply & psi (kPa)
Height of Drawbar
Static Weight with operator -Rear
- Front
- Total

Tested Without Ballast

Four 480/95R50;***;9(65)
Four 480/95R50;***;12(85)
21.0 in (535 mm)
17920 lb (8128 kg)
24545 lb(11134 kg)
42465 lb(19262 kg)

DRAWBAR PERFORMANCE AT 1900 RPM **MAXIMUM POWER IN SELECTED GEARS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
1st Gear										
303.69 (226.46)	41851 (186.16)	2.73 (4.39)	2119	8.4	0.471 (0.286)	14.91 (2.94)	0.044 (0.027)	208 (98)	66 (19)	28.81 (97.56)
2nd Gear										
348.52 (259.89)	40687 (180.98)	3.22 (5.17)	2040	6.6	0.441 (0.268)	15.94 (3.14)	0.044 (0.027)	208 (98)	68 (20)	28.80 (97.53)
3rd Gear										
376.84 (281.01)	38716 (172.22)	3.65 (5.87)	1900	6.5	0.418 (0.254)	16.80 (3.31)	0.046 (0.028)	208 (98)	70 (21)	28.80 (97.53)
4th Gear										
381.76 (284.67)	31981 (142.26)	4.48 (7.20)	1900	4.0	0.412 (0.251)	17.03 (3.36)	0.044 (0.027)	207 (97)	72 (22)	28.80 (97.53)
5th Gear										
382.69 (285.37)	27732 (123.36)	5.18 (8.33)	1900	3.5	0.412 (0.250)	17.05 (3.36)	0.046 (0.028)	207 (97)	71 (22)	28.83 (97.63)
6th Gear										
384.93 (287.04)	25316 (112.61)	5.70 (9.17)	1900	3.0	0.409 (0.249)	17.17 (3.38)	0.046 (0.028)	207 (97)	72 (22)	28.83 (97.63)
7th Gear										
381.12 (284.20)	22808 (101.45)	6.27 (10.09)	1899	2.4	0.413 (0.251)	17.01 (3.35)	0.045 (0.027)	208 (98)	75 (24)	28.83 (97.63)
8th Gear										
383.71 (286.13)	20858 (92.78)	6.90 (11.10)	1900	2.2	0.410 (0.249)	17.13 (3.37)	0.045 (0.027)	207 (97)	76 (24)	28.83 (97.63)
9th Gear										
384.14 (286.45)	18972 (84.39)	7.59 (12.21)	1899	2.1	0.411 (0.250)	17.10 (3.37)	0.046 (0.028)	207 (97)	72 (22)	28.80 (97.53)
10th Gear										
384.62 (286.81)	17254 (76.75)	8.36 (13.45)	1901	1.9	0.408 (0.248)	17.21 (3.39)	0.044 (0.027)	207 (97)	73 (23)	28.81 (97.56)

Power take-off performance with 1:1.998 ratio PTO box
These data apply to production for model year 2014.

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption Gal/hr (l/h)	lb/hp.hr (kg/kWh)	Hp.hr/gal (kW.h/l)	D.E.F. Consumption Gal/hr (l/h)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1051 rpm)						
365.10 (272.25)	2100	21.44 (81.18)	0.412 (0.251)	17.03 (3.35)	1.62 (6.12)	
Standard Power Take-off Speed (1000 rpm)						
394.76 (294.37)	1998	22.20 (84.02)	0.395 (0.240)	17.79 (3.50)	1.75 (6.64)	
Maximum Power (1 hour)						
412.53 (307.62)	1900	22.46 (85.03)	0.382 (0.233)	18.37 (3.62)	1.92 (7.26)	
VARYING POWER AND FUEL CONSUMPTION						
365.10 (272.25)	2100	21.44 (81.18)	0.412 (0.251)	17.03 (3.35)	1.62 (6.12)	Air temperature
317.46 (236.73)	2151	19.35 (73.25)	0.428 (0.260)	16.41 (3.23)	1.35 (5.10)	74°F (23°C)
239.01 (178.23)	2158	15.68 (59.37)	0.461 (0.280)	15.24 (3.00)	1.03 (3.89)	Relative humidity
159.98 (119.29)	2166	12.05 (45.61)	0.529 (0.322)	13.28 (2.62)	0.67 (2.55)	61%
80.28 (59.87)	2176	8.54 (32.32)	0.747 (0.454)	9.40 (1.85)	0.39 (1.48)	Barometer
1.41 (1.06)	2185	5.28 (19.99)	26.204 (15.939)	0.27 (0.05)	0.07 (0.26)	28.61" Hg (96.88 kPa)
Maximum torque - 1345 lb.-ft. (1823 Nm) at 1401 rpm						
Maximum torque rise - 47.2%						
Torque rise at 1680 engine rpm - 36%						
Power increase at 1900 engine rpm - 13.0%						

HYDRAULIC PERFORMANCE

CATEGORY: IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:

21903 lbs (97.4 kN)

Three outlet sets combined

Standard pump

2877 psi (198 bar)

High flow pump

3042 psi (210 bar)

i) Sustained pressure of the open relief valve:

ii) Pump delivery rate at minimum pressure

and rated engine speed:

43.8 GPM (165.8 l/min) 59.0 GPM (223.4 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

43.3 GPM (163.7 l/min) 56.2 GPM (212.9 l/min)

Delivery pressure:

2526 psi (174 bar) 2648 psi (183 bar)

Power:

63.7 HP (47.5 kW) 86.9 Hp (64.8 kW)

Single outlet set

ii) Pump delivery rate at minimum pressure

and rated engine speed:

42.8 GPM (162.2 l/min) 48.4 GPM (183.4 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

42.7 GPM (161.6 l/min) 44.6 GPM (168.9 l/min)

Delivery pressure:

2024 psi (139 bar) 2091 psi (144 bar)

Power:

50.4 HP (37.6 kW) 54.4 Hp (40.6 kW)

TwinFlow system

Two outlet sets combined

Standard pump

2877 psi (198 bar)

TwinFlow pump

2855 psi (197 bar)

i) Sustained pressure at compensator cutoff:

ii) Pump delivery rate at minimum pressure

and rated engine speed:

43.8 GPM (165.8 l/min) 57.3 GPM (217.0 l/min)

Combined flow:

101.1 GPM (382.8 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

43.3 GPM (163.7 l/min) 56.4 GPM (213.6 l/min)

Delivery pressure:

2526 psi (174 bar) 2479 psi (171 bar)

Power:

63.7 HP (47.5 kW) 81.6 Hp (60.9 kW)

Two outlet sets combined

High flow pump

2993 psi (206 bar)

TwinFlow pump

2855 psi (197 bar)

i) Sustained pressure at compensator cutoff:

ii) Pump delivery rate at minimum pressure

and rated engine speed:

61.0 GPM (230.9 l/min) 57.3 GPM (217.0 l/min)

Combined flow:

118.3 GPM (447.9 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

56.7 GPM (214.7 l/min) 56.4 GPM (213.6 l/min)

Delivery pressure:

2517 psi (174 bar) 2479 psi (171 bar)

Power:

83.3 HP (62.1 kW) 81.6 Hp (60.9 kW)

HITCH DIMENSIONS AS TESTED - NO LOAD

inch mm

A 39.0 990

B 30.7 780

C 27.9 709

D 26.5 673

E 13.5 342

F 16.3 415

G 38.2 970

H 2.6 66

I 21.2 538

J 21.9 555

K 30.5 775

L 58.5 1487

*L' 65.8 1671

M 53.6 1361

N 43.0 1093

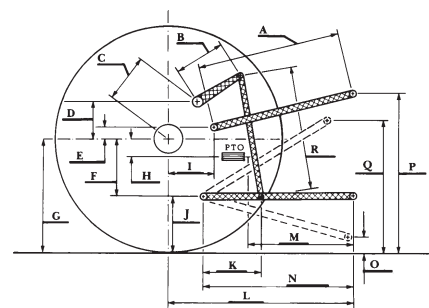
O 9.1 230

P 52.6 1335

Q 46.5 1181

R 39.4 1000

*L' to Quick Attach ends



Case IH STEIGER 420 Diesel

Institute of Agriculture and Natural Resources
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