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2011

Test 2009: Case IH Steiger 450

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 2009 - SUMMARY 792

CASE IH STEIGER 450 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—1051 rpm)						
407.70 (304.02)	2100	22.62 (85.62)	0.391 (0.238)	18.03 (3.55)	1.87 (7.08)	
Standard Power Take-off Speed (1000 rpm)						
436.66 (325.62)	1999	23.46 (88.80)	0.379 (0.230)	18.61 (3.67)	1.86 (7.04)	
Maximum Power (1 hour)						
451.28 (336.52)	1900	23.81 (90.11)	0.372 (0.226)	18.96 (3.73)	1.87 (7.08)	

VARYING POWER AND FUEL CONSUMPTION

407.70 (304.02)	2100	22.62 (85.62)	0.391 (0.238)	18.03 (3.55)	1.87 (7.08)	Air temperature
356.29 (265.68)	2161	20.75 (78.55)	0.410 (0.250)	17.17 (3.38)	1.32 (5.00)	74°F (23°C)
268.15 (199.96)	2168	16.51 (62.49)	0.434 (0.264)	16.24 (3.20)	0.92 (3.48)	Relative humidity
179.19 (133.62)	2176	12.52 (47.39)	0.492 (0.300)	14.31 (2.82)	0.64 (2.40)	9%
90.03 (67.14)	2182	8.39 (31.77)	0.657 (0.400)	10.73 (2.11)	0.39 (1.48)	Barometer
--	2190	4.47 (16.93)	--	--	0.16 (0.61)	28.97" Hg (98.10 kPa)

Maximum torque - 1467 lb.-ft. (1989 Nm) at 1551 rpm

Maximum torque rise - 43.9%

Torque rise at 1701 engine rpm - 33%

Power increase at 1900 engine rpm - 10.7%

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)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—5th Gear									
365.60 (272.63)	23997 (106.74)	5.71 (9.19)	2100	3.4	0.437 (0.266)	16.12 (3.17)	201 (94)	49 (10)	28.97 (98.10)
75% of Pull at Maximum Power—5th Gear									
285.52 (212.91)	18034 (80.22)	5.94 (9.56)	2164	2.5	0.475 (0.289)	14.85 (2.92)	191 (88)	50 (10)	28.88 (97.80)
50% of Pull at Maximum Power—5th Gear									
192.36 (143.44)	12006 (53.40)	6.01 (9.67)	2172	1.7	0.535 (0.326)	13.17 (2.59)	181 (83)	50 (10)	28.86 (97.73)
75% of Pull at Reduced Engine Speed—9th Gear									
284.84 (212.40)	18005 (80.09)	5.93 (9.54)	1487	2.7	0.408 (0.248)	17.29 (3.41)	181 (83)	50 (10)	28.87 (97.77)
50% of Pull at Reduced Engine Speed—9th Gear									
192.92 (143.86)	12015 (53.44)	6.02 (9.69)	1494	1.7	0.441 (0.268)	15.99 (3.15)	178 (81)	49 (9)	28.85 (97.70)

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

Dates of tests: November 10-21, 2011

Manufacturer: CNH 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)** 0.8463 **Fuel weight** 7.047 lbs/gal (0.845 kg/l) **Diesel Exhaust Fluid (DEF)** 30% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil SAE 15W40 API service classification** CI-4 **Transmission lubricant** Case IH Hytran Ultra transmission fluid **Hydraulic and axle lubricant** Akcela Nexphlore hydraulic fluid **Total time engine was operated:** 15.5 hours

ENGINE: Make F.P.T. Diesel **Type** six cylinder vertical with turbocharger, air to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *A000171139* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.315" x 5.906" (135.0 mm x 150.0 mm) **Compression ratio** 17.5 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 **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 151.9 - 162.7 lb/h (68.9 - 73.8 kg/h) **High idle:** 2150 - 2200 rpm **Turbo boost:** nominal 23.2 - 26.1 psi (160 - 180 kPa) as measured 24.4 psi (168 kPa)

CHASSIS: Type four wheel drive with duals **Serial No.** *ZBF125707* **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 2.85 (4.59) second 3.43 (5.52) third 4.15 (6.68) fourth 5.00 (8.05) fifth 5.74 (9.24) sixth 6.30 (10.14) seventh 6.91 (11.12) eighth 7.59 (12.21) ninth 8.34 (13.42) tenth 9.17 (14.75) eleventh 10.05 (16.17) twelfth 11.04 (17.77) thirteenth 12.68 (20.41) fourteenth 15.27 (24.57) fifteenth 18.44 (29.68) sixteenth 22.22 (35.76) reverse 4.32 (6.95), 8.85 (14.24) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1999 engine rpm **Unladen tractor mass** 39890 lb (18094 kg)

DRAWBAR PERFORMANCE AT 2100 ENGINE 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)	Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
337.40 (251.60)	39131 (174.06)	3.23 (5.20)	2138	10.3	2nd Gear 0.475 (0.289)	14.84 (2.92)	195 (90)	47 (8)	28.61 (96.88)
360.97 (269.18)	33665 (149.75)	4.03 (6.48)	2101	6.3	3rd Gear 0.446 (0.271)	15.82 (3.12)	195 (91)	48 (9)	28.61 (96.88)
363.75 (271.25)	27668 (123.07)	4.93 (7.93)	2100	4.2	4th Gear 0.442 (0.269)	15.94 (3.14)	200 (93)	50 (10)	28.95 (98.04)
365.60 (272.63)	23997 (106.74)	5.71 (9.19)	2100	3.4	5th Gear 0.437 (0.266)	16.12 (3.17)	201 (94)	49 (10)	28.97 (98.10)
366.77 (273.50)	21826 (97.09)	6.31 (10.15)	2099	2.9	6th Gear 0.436 (0.265)	16.17 (3.19)	202 (94)	47 (8)	28.99 (98.17)
361.46 (269.54)	19583 (87.11)	6.92 (11.14)	2100	2.8	7th Gear 0.444 (0.270)	15.89 (3.13)	202 (94)	51 (11)	28.92 (97.93)
362.48 (270.30)	17842 (79.37)	7.62 (12.26)	2100	2.6	8th Gear 0.443 (0.270)	15.90 (3.13)	202 (94)	51 (10)	28.90 (97.87)
359.73 (268.25)	16064 (71.45)	8.40 (13.52)	2101	2.4	9th Gear 0.447 (0.272)	15.75 (3.10)	201 (94)	51 (10)	28.89 (97.83)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

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 111°F (44°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. **2009**, Nebraska Summary 792, January 24, 2012.

Roger M. Hoy
Director

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

TRACTOR SOUND LEVEL WITH CAB dB(A)

At no load in 4th gear	74.5
Bystander in 16th gear	87.9

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;***;10(70)
 Four 480/95R50;***;12(85)
 21.0 in (535 mm)
 17325 lb (7858 kg)
 22740 lb (10315 kg)
 40065 lb (18173 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)	Temp.°F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
2nd Gear									
337.49 (251.67)	39163 (174.21)	3.24 (5.21)	2137	10.2	0.476 (0.289)	14.81 (2.92)	196 (91)	47 (8)	28.61 (96.88)
3rd Gear									
371.80 (227.25)	36139 (160.75)	3.86 (6.21)	2044	7.5	0.443 (0.270)	15.90 (3.13)	202 (94)	49 (9)	28.60 (96.85)
4th Gear									
393.27 (293.26)	33459 (148.83)	4.41 (7.10)	1916	6.2	0.428 (0.261)	16.45 (3.24)	202 (94)	51 (11)	28.93 (97.97)
5th Gear									
398.92 (297.47)	29277 (130.23)	5.11 (8.22)	1900	4.6	0.421 (0.256)	16.75 (3.30)	202 (94)	49 (10)	28.95 (98.04)
6th Gear									
400.95 (298.98)	26593 (118.29)	5.65 (9.09)	1900	3.8	0.418 (0.254)	16.85 (3.32)	201 (94)	48 (9)	28.98 (98.14)
7th Gear									
399.60 (297.98)	24102 (107.21)	6.22 (10.01)	1901	3.5	0.420 (0.256)	16.77 (3.30)	202 (94)	51 (11)	28.92 (97.93)
8th Gear									
399.62 (297.99)	21806 (97.00)	6.88 (11.06)	1901	3.1	0.420 (0.255)	16.78 (3.31)	201 (94)	51 (11)	28.90 (97.87)
9th Gear									
397.73 (296.58)	19654 (87.42)	7.59 (12.21)	1901	2.8	0.422 (0.257)	16.68 (3.29)	202 (94)	50 (10)	28.89 (97.83)
10th Gear									
399.68 (298.04)	18006 (80.09)	8.33 (13.40)	1900	2.6	0.423 (0.257)	16.68 (3.29)	202 (94)	50 (10)	28.89 (97.83)

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	High flow pump
i) Sustained pressure of the open relief valve:	2877 psi (198 bar)	2996 psi (207 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM (165.8 l/min)	61.3 GPM (232.2 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM (163.7 l/min)	58.7 GPM (222.3 l/min)
Delivery pressure:	2526 psi (174 bar)	2591 psi (179 bar)
Power:	63.7 HP (47.5 kW)	88.8 Hp (66.2 kW)

Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	42.8 GPM (162.2 l/min)	44.7 GPM (169.3 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.6 l/min)	41.9 GPM (158.7 l/min)
Delivery pressure:	2024 psi (139 bar)	2283 psi (157 bar)
Power:	50.4 HP (37.6 kW)	55.8 Hp (41.6 kW)

TwinFlow system

Two outlet sets combined

	Standard pump	TwinFlow pump
i) Sustained pressure at compensator cutoff:	2877 psi (198 bar)	2855 psi (197 bar)
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)

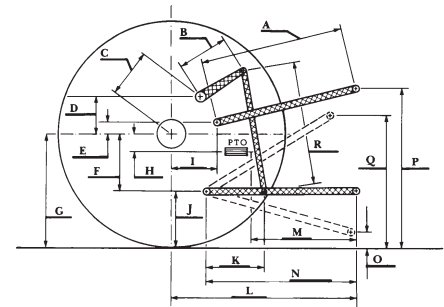
Two outlet sets combined

	High flow pump	TwinFlow pump
i) Sustained pressure at compensator cutoff:	2993 psi (206 bar)	2855 psi (197 bar)
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 450 Diesel

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln