2011

Test 2008: Case IH Steiger 350

Nebraska Tractor Test Lab
University of Nebraska-Lincoln, tractortestlab@unl.edu

NEBRASKA OECD TRACTOR TEST 2008 - SUMMARY 791
CASE IH STEIGER 350 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)*	D.E.F. Consumption 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—1002 rpm)						
307.70 *(229.45)*	2001	16.44 *(62.21)*	0.376 *(0.229)*	18.72 *(3.69)*	1.50 *(5.68)*	
Standard Power Take-off Speed (1002 rpm)						
307.70 *(229.45)*	2001	16.44 *(62.21)*	0.376 *(0.229)*	18.72 *(3.69)*	1.50 *(5.68)*	
Maximum Power (1 hour)						
341.13 *(254.38)*	1798	17.59 *(66.58)*	0.363 *(0.221)*	19.39 *(3.82)*	1.45 *(5.49)*	
VARYING POWER AND FUEL CONSUMPTION						
307.70 *(229.45)*	2001	16.44 *(62.21)*	0.376 *(0.229)*	18.72 *(3.69)*	1.50 *(5.68)*	Air temperature
273.37 *(203.85)*	2094	15.15 *(57.36)*	0.391 *(0.238)*	18.04 *(3.55)*	1.41 *(5.33)*	74°F *(23°C)*
206.89 *(154.27)*	2111	12.19 *(46.13)*	0.415 *(0.252)*	16.98 *(3.34)*	1.11 *(4.20)*	Relative humidity
139.03 *(103.68)*	2130	9.30 *(35.21)*	0.471 *(0.287)*	14.95 *(2.94)*	0.74 *(2.80)*	8%
70.21 *(52.35)*	2145	6.66 *(25.22)*	0.669 *(0.407)*	10.54 *(2.08)*	0.30 *(1.14)*	Barometer
-- --	2166	3.72 *(14.08)*	-- --	-- --	0.15 *(0.57)*	29.13" Hg *(98.14 kPa)*

Maximum torque - 1138 lb.-ft. *(1543 Nm)* at 1400 rpm
Maximum torque rise - 40.9%
Torque rise at 1600 engine rpm - 33%
Power increase at 1798 engine rpm - 11.0%

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)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F cool-ing med	*(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th Gear									
272.97 *(203.55)*	18748 *(83.39)*	5.46 *(8.79)*	2000	3.7	0.425 *(0.259)*	16.58 *(3.27)*	200 *(93)*	57 *(14)*	28.59 *(96.82)*
75% of Pull at Maximum Power—5th Gear									
217.99 *(162.55)*	14116 *(62.79)*	5.79 *(9.32)*	2101	2.6	0.455 *(0.277)*	15.50 *(3.05)*	188 *(87)*	62 *(17)*	28.57 *(96.75)*
50% of Pull at Maximum Power—5th Gear									
147.90 *(110.29)*	9396 *(41.80)*	5.91 *(9.51)*	2120	1.7	0.517 *(0.314)*	13.63 *(2.68)*	184 *(84)*	63 *(17)*	28.57 *(96.75)*
75% of Pull at Reduced Engine Speed—9th Gear									
218.10 *(162.64)*	14059 *(62.54)*	5.82 *(9.37)*	1449	2.5	0.418 *(0.254)*	16.87 *(3.32)*	185 *(85)*	64 *(18)*	28.57 *(96.75)*
50% of Pull at Reduced Engine Speed—9th Gear									
148.02 *(110.38)*	9403 *(41.82)*	5.91 *(9.51)*	1458	1.7	0.446 *(0.271)*	15.79 *(3.11)*	181 *(82)*	64 *(18)*	28.56 *(96.72)*

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

Dates of tests: November 9-15, 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 Nexplore hydraulic fluid **Total time engine was operated:** 16.5 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.** *11H000010496* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.606" x 5.315" *(117.0 mm x 135.0 mm)* **Compression ratio** 15.9 to 1 **Displacement** 531 cu in *(8704 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, seperate radiators for hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 110.1 - 118.0 lb/h *(49.9 - 53.5 kg/h)* **High idle:** 2100 - 2200 rpm **Turbo boost:** nominal 24.7 - 27.6 psi *(170 - 190 kPa)* as measured 25.9 psi *(178 kPa)*

CHASSIS: Type four wheel drive with duals **Serial No.** *ZBF125730* **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 2.73 *(4.39)* second 3.29 *(5.29)* third 3.97 *(6.39)* fourth 4.78 *(7.69)* fifth 5.49 *(8.84)* sixth 6.03 *(9.70)* seventh 6.61 *(10.63)* eighth 7.27 *(11.70)* ninth 7.99 *(12.86)* tenth 8.78 *(14.13)* eleventh 9.62 *(15.48)* twelfth 10.57 *(17.01)* thirteenth 12.14 *(19.54)* fourteenth 14.62 *(23.53)* fifteenth 17.65 *(28.40)* sixteenth 21.26 *(34.21)* reverse 4.18 *(6.73)*, 8.52 *(13.71)* **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** 38330 lb *(17386 kg)*

DRAWBAR PERFORMANCE AT 2000 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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					1st Gear				
230.44 *(171.84)*	34349 *(152.79)*	2.52 *(4.05)*	2080	14.0	0.480 *(0.292)*	14.68 *(2.89)*	186 *(86)*	53 *(11)*	28.61 *(96.88)*
					2nd Gear				
263.97 *(196.84)*	31940 *(142.07)*	3.10 *(4.99)*	2003	8.8	0.444 *(0.270)*	15.86 *(3.12)*	184 *(84)*	46 *(8)*	28.61 *(96.88)*
					3rd Gear				
271.75 *(202.64)*	26461 *(117.70)*	3.85 *(6.20)*	2000	6.0	0.431 *(0.262)*	16.34 *(3.22)*	187 *(86)*	49 *(10)*	28.61 *(96.88)*
					4th Gear				
271.62 *(202.55)*	21632 *(96.22)*	4.71 *(7.58)*	2000	4.4	0.433 *(0.264)*	16.26 *(3.20)*	191 *(88)*	55 *(13)*	28.60 *(96.85)*
					5th Gear				
272.97 *(203.55)*	18748 *(83.40)*	5.46 *(8.79)*	2000	3.7	0.425 *(0.259)*	16.58 *(3.27)*	200 *(93)*	57 *(14)*	28.59 *(96.82)*
					6th Gear				
276.45 *(206.15)*	17131 *(76.20)*	6.05 *(9.74)*	2001	2.8	0.423 *(0.257)*	16.67 *(3.28)*	182 *(83)*	46 *(8)*	28.93 *(97.97)*
					7th Gear				
272.14 *(202.93)*	15321 *(68.15)*	6.67 *(10.73)*	2001	2.5	0.428 *(0.260)*	16.47 *(3.24)*	181 *(83)*	50 *(10)*	28.96 *(98.07)*
					8th Gear				
271.44 *(202.41)*	13864 *(61.67)*	7.34 *(11.81)*	2001	2.1	0.430 *(0.261)*	16.40 *(3.23)*	181 *(83)*	49 *(9)*	28.95 *(98.04)*
					9th Gear				
268.33 *(200.09)*	12470 *(55.47)*	8.07 *(12.99)*	2000	1.8	0.435 *(0.264)*	16.22 *(3.19)*	182 *(83)*	47 *(9)*	28.94 *(98.00)*

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 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. **2008**, Nebraska Summary 791, 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	73.7
Bystander in 16th gear	86.5

TIRES AND WEIGHT

	Tested Without Ballast
Rear Tires - No., size, ply & psi *(kPa)*	Four 480/95R50;***;12*(85)*
Front Tires - No., size, ply & psi *(kPa)*	Four 480/95R50;***;15*(105)*
Height of Drawbar	21.0 in *(535 mm)*
Static Weight with operator - Rear	16745 lb *(7595 kg)*
- Front	21760 lb *(9870 kg)*
- Total	38505 lb *(17465 kg)*

DRAWBAR PERFORMANCE AT 1800 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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
				1st Gear					
230.80 *(172.10)*	34479 *(153.37)*	2.51 *(4.04)*	2080	14.3	0.480 *(0.292)*	14.69 *(2.89)*	185 *(85)*	52 *(11)*	28.61 *(96.88)*
				2nd Gear					
257.67 *(192.14)*	33338 *(148.29)*	2.90 *(4.67)*	1972	13.3	0.463 *(0.282)*	15.22 *(3.00)*	186 *(86)*	48 *(9)*	28.62 *(96.92)*
				3rd Gear					
287.16 *(214.14)*	30216 *(134.41)*	3.56 *(5.73)*	1883	7.7	0.429 *(0.261)*	16.44 *(3.24)*	193 *(89)*	51 *(11)*	28.61 *(96.88)*
				4th Gear					
298.36 *(222.48)*	26818 *(119.29)*	4.17 *(6.71)*	1800	6.1	0.418 *(0.255)*	16.84 *(3.32)*	208 *(98)*	56 *(13)*	28.60 *(96.85)*
				5th Gear					
302.30 *(225.42)*	23381 *(104.00)*	4.85 *(7.81)*	1800	4.8	0.412 *(0.250)*	17.12 *(3.37)*	211 *(99)*	59 *(15)*	28.60 *(96.85)*
				6th Gear					
306.44 *(228.51)*	21345 *(94.95)*	5.39 *(8.67)*	1800	3.8	0.405 *(0.246)*	17.41 *(3.43)*	189 *(87)*	45 *(7)*	28.92 *(97.93)*
				7th Gear					
303.59 *(226.38)*	19163 *(85.24)*	5.95 *(9.57)*	1801	3.2	0.411 *(0.250)*	17.14 *(3.38)*	182 *(83)*	49 *(10)*	28.96 *(98.07)*
				8th Gear					
305.64 *(227.91)*	17482 *(77.76)*	6.56 *(10.55)*	1800	2.8	0.406 *(0.247)*	17.37 *(3.42)*	183 *(84)*	48 *(9)*	28.95 *(98.04)*
				9th Gear					
301.64 *(224.93)*	15676 *(69.73)*	7.22 *(11.61)*	1800	2.5	0.412 *(0.250)*	17.11 *(3.37)*	186 *(85)*	47 *(8)*	28.93 *(97.97)*
				10th Gear					
302.13 *(225.30)*	14119 *(62.80)*	8.03 *(12.91)*	1809	2.2	0.414 *(0.252)*	17.03 *(3.35)*	186 *(85)*	46 *(8)*	28.93 *(97.97)*

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)*	3027 psi *(209 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	41.7 GPM *(157.7 l/min)*	58.1 GPM *(220.0 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM *(163.7 l/min)*	56.5 GPM *(213.8 l/min)*
Delivery pressure:	2526 psi *(174 bar)*	2680 psi *(185 bar)*
Power:	63.7 HP *(47.5 kW)*	88.3 Hp *(65.9 kW)*

Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	41.0 GPM *(155.2 l/min)*	42.5 GPM *(160.9 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM *(161.6 l/min)*	40.9 GPM *(154.9 l/min)*
Delivery pressure:	2024 psi *(139 bar)*	2298 psi *(158 bar)*
Power:	50.4 HP *(37.6 kW)*	54.9 Hp *(40.9 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:	41.7 GPM *(157.7 l/min)*	54.6 GPM *(206.8 l/min)*
Combined flow:	96.3 GPM *(364.5 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)*

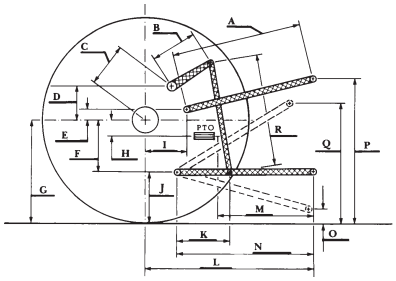
Two outlet sets combined

	High flow pump	TwinFlow pump
i) Sustained pressure at compensator cutoff:	3014 psi *(208 bar)*	2855 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	58.2 GPM *(220.1 l/min)*	54.6 GPM *(206.8 l/min)*
Combined flow:	112.8 GPM *(426.9 l/min)*	
iii) Pump delivery rate at maximum hydraulic power:	57.3 GPM *(216.8 l/min)*	56.4 GPM *(213.6 l/min)*
Delivery pressure:	2539 psi *(175 bar)*	2479 psi *(171 bar)*
Power:	84.8 HP *(63.3 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 350 Diesel

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln