2012

Test 2047: Case IH Steiger 550

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

NEBRASKA OECD TRACTOR TEST 2047 - SUMMARY 847
CASE IH STEIGER 550 DIESEL
16 SPEED

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

Dates of tests: November 8-16, 2012

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

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—1051 rpm)						
475.47 *(354.56)*	2100	26.42 *(100.02)*	0.389 *(0.237)*	17.99 *(3.54)*	2.10 *(7.94)*	
Standard Power Take-off Speed (1000 rpm)						
518.57 *(386.70)*	1999	27.69 *(104.81)*	0.374 *(0.228)*	18.73 *(3.69)*	2.13 *(8.07)*	
Maximum Power (1 hour)						
536.32 *(399.93)*	1900	27.99 *(105.97)*	0.366 *(0.222)*	19.16 *(3.77)*	2.14 *(8.09)*	
VARYING POWER AND FUEL CONSUMPTION						
475.47 *(354.56)*	2100	26.42 *(100.02)*	0.389 *(0.237)*	17.99 *(3.54)*	2.10 *(7.94)*	Air temperature
413.40 *(308.27)*	2147	23.77 *(89.98)*	0.403 *(0.245)*	17.39 *(3.43)*	1.82 *(6.90)*	73°F *(23°C)*
311.30 *(232.14)*	2155	19.05 *(72.11)*	0.429 *(0.261)*	16.34 *(3.22)*	1.28 *(4.86)*	Relative humidity
208.30 *(155.33)*	2166	14.36 *(54.35)*	0.483 *(0.294)*	14.51 *(2.86)*	0.94 *(3.56)*	23%
104.90 *(78.22)*	2176	9.90 *(37.47)*	0.661 *(0.402)*	10.60 *(2.09)*	0.42 *(1.59)*	Barometer
2.90 *(2.16)*	2185	5.24 *(19.82)*	12.652 *(7.696)*	0.55 *(0.11)*	0.14 *(0.52)*	28.65" Hg *(97.02 kPa)*

Maximum torque - 1736 lb.-ft. *(2353 Nm)* at 1401 rpm
Maximum torque rise - 46.0%
Torque rise at 1681 engine rpm - 37%
Power increase at 1900 engine rpm - 12.8%

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 *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—5th Gear									
462.64 *(344.99)*	31838 *(141.62)*	5.45 *(8.77)*	2100	2.7	0.418 *(0.254)*	16.77 *(3.30)*	208 *(98)*	57 *(14)*	29.01 *(98.24)*
75% of Pull at Maximum Power—5th Gear									
355.47 *(265.07)*	23827 *(105.99)*	5.60 *(9.00)*	2138	2.1	0.444 *(0.270)*	15.77 *(3.11)*	202 *(94)*	60 *(16)*	28.96 *(98.07)*
50% of Pull at Maximum Power—5th Gear									
240.72 *(179.50)*	15912 *(70.78)*	5.68 *(9.13)*	2151	1.3	0.491 *(0.299)*	14.27 *(2.81)*	188 *(86)*	61 *(16)*	28.94 *(98.00)*
75% of Pull at Reduced Engine Speed—9th Gear									
355.71 *(265.25)*	24054 *(107.00)*	5.55 *(8.92)*	1460	2.1	0.387 *(0.235)*	18.11 *(3.57)*	194 *(90)*	60 *(16)*	28.95 *(98.03)*
50% of Pull at Reduced Engine Speed—9th Gear									
241.56 *(180.13)*	15989 *(71.12)*	5.67 *(9.12)*	1477	1.3	0.412 *(0.250)*	17.02 *(3.35)*	180 *(82)*	60 *(16)*	28.94 *(98.00)*

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Diesel Exhaust Fluid (DEF)** 32% 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:** 19.5 hours

ENGINE: Make F.P.T. Diesel **Type** six cylinder vertical with two turbochargers, air to air intercooler, water to air intercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *A-000-002899* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.315" x 5.906" *(135.0 mm x 150.0 mm)* **Compression ratio** 15.5 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, 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: 535 engine hp: 178.8 - 191.6 lb/h *(81.1 - 86.9 kg/h)* 550 engine hp: 183.6 - 196.9 lb/h *(83.3 -89.3 kg/h)* **High idle:** 2165 - 2215 rpm **Turbo boost:** nominal 34.8 - 39.2 psi *(240 - 270 kPa)* not measured

CHASSIS: Type four wheel drive with duals **Serial No.** *ZCF130825* **Tread width** rear 83.4" *(2118 mm)* to 160.2" *(4070 mm)* front 83.4" *(2118 mm)* to 160.2" *(4070 mm)* **Wheelbase** 154.0" *(3911 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 2.71 *(4.36)* second 3.27 *(5.26)* third 3.95 *(6.36)* fourth 4.75 *(7.64)* fifth 5.46 *(8.79)* sixth 6.00 *(9.65)* seventh 6.57 *(10.57)* eighth 7.22 *(11.62)* ninth 7.94 *(12.78)* tenth 8.72 *(14.03)* eleventh 9.56 *(15.38)* twelfth 10.52 *(16.93)* thirteenth 12.06 *(19.41)* fourteenth 14.53 *(23.38)* fifteenth 17.54 *(28.23)* sixteenth 21.14 *(34.02)* reverse 4.18 *(6.73)*, 8.32 *(13.39)* **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** 51835 lb *(23512 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)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					1st Gear				
354.94 *(264.68)*	51953 *(231.10)*	2.56 *(4.12)*	2136	9.6	0.466 *(0.283)*	15.04 *(2.96)*	202 *(94)*	56 *(13)*	29.00 *(98.21)*
					2nd Gear				
424.09 *(316.24)*	51146 *(227.51)*	3.11 *(5.00)*	2130	8.6	0.451 *(0.274)*	15.54 *(3.06)*	209 *(98)*	56 *(13)*	29.00 *(98.21)*
					3rd Gear				
454.69 *(339.06)*	44427 *(197.62)*	3.84 *(6.17)*	2101	5.3	0.425 *(0.259)*	16.49 *(3.25)*	209 *(98)*	57 *(14)*	28.98 *(98.14)*
					4th Gear				
460.55 *(343.43)*	36622 *(162.90)*	4.72 *(7.60)*	2101	3.4	0.420 *(0.255)*	16.69 *(3.29)*	208 *(98)*	58 *(14)*	28.99 *(98.17)*
					5th Gear				
462.64 *(344.99)*	31838 *(141.62)*	5.45 *(8.77)*	2100	2.7	0.418 *(0.254)*	16.77 *(3.30)*	208 *(98)*	57 *(14)*	29.01 *(98.23)*
					6th Gear				
462.13 *(344.61)*	28812 *(128.16)*	6.02 *(9.68)*	2101	2.3	0.419 *(0.255)*	16.73 *(3.30)*	208 *(98)*	56 *(13)*	29.03 *(98.31)*
					7th Gear				
462.75 *(345.07)*	26229 *(116.67)*	6.62 *(10.65)*	2101	2.1	0.417 *(0.254)*	16.80 *(3.31)*	208 *(98)*	56 *(13)*	29.01 *(98.24)*
					8th Gear				
464.42 *(346.32)*	23962 *(106.59)*	7.27 *(11.70)*	2098	1.9	0.418 *(0.254)*	16.76 *(3.30)*	210 *(99)*	59 *(15)*	28.97 *(98.10)*
					9th Gear				
461.40 *(344.07)*	21554 *(95.87)*	8.03 *(12.92)*	2101	1.7	0.418 *(0.254)*	16.76 *(3.30)*	209 *(98)*	59 *(15)*	28.97 *(98.10)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

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

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 pull in 1st gear was limited to avoid excessive power hop. 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. **2047**, Nebraska Summary 847, December 21, 2012.

Roger M. Hoy
Director

M.R. Riley
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 4th gear	74.0
Bystander in 16th gear	86.6

TIRES AND WEIGHT

	Tested Without Ballast
Rear Tires - No., size, ply & psi *(kPa)*	Four 800/70R38;***;9*(60)*
Front Tires - No., size, ply & psi *(kPa)*	Four 800/70R38;***;11*(75)*
Height of Drawbar	22.0 in *(560 mm)*
Static Weight with operator - Rear	22950 lb*(10410 kg)*
- Front	29060 lb*(13181 kg)*
- Total	52010 lb*(23591 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)*
					1st Gear				
355.42 *(265.04)*	51918 *(230.94)*	2.57 *(4.13)*	2136	9.5	0.466 *(0.284)*	15.03 *(2.96)*	203 *(95)*	55 *(13)*	29.00 *(98.21)*
					2nd Gear				
424.18 *(316.31)*	51071 *(227.18)*	3.12 *(5.01)*	2130	8.5	0.445 *(0.271)*	15.74 *(3.10)*	209 *(98)*	57 *(14)*	28.99 *(98.17)*
					3rd Gear				
480.11 *(358.02)*	50105 *(222.88)*	3.59 *(5.78)*	2015	7.6	0.423 *(0.257)*	16.58 *(3.27)*	210 *(99)*	58 *(14)*	28.99 *(98.17)*
					4th Gear				
504.60 *(376.28)*	45432 *(202.09)*	4.17 *(6.70)*	1900	5.7	0.407 *(0.247)*	17.23 *(3.39)*	207 *(97)*	61 *(16)*	28.97 *(98.10)*
					5th Gear				
513.35 *(382.80)*	39550 *(175.92)*	4.87 *(7.83)*	1900	4.1	0.399 *(0.243)*	17.57 *(3.46)*	208 *(98)*	60 *(16)*	28.98 *(98.14)*
					6th Gear				
515.87 *(384.68)*	35863 *(159.52)*	5.40 *(8.68)*	1901	3.2	0.396 *(0.241)*	17.69 *(3.49)*	208 *(98)*	56 *(13)*	29.02 *(98.27)*
					7th Gear				
515.31 *(384.27)*	32531 *(144.70)*	5.94 *(9.56)*	1900	2.8	0.399 *(0.242)*	17.59 *(3.46)*	209 *(98)*	57 *(14)*	29.02 *(98.27)*
					8th Gear				
519.10 *(387.09)*	29782 *(132.48)*	6.54 *(10.52)*	1899	2.5	0.395 *(0.241)*	17.72 *(3.49)*	213 *(100)*	59 *(15)*	28.96 *(98.07)*
					9th Gear				
518.77 *(386.84)*	26943 *(119.85)*	7.22 *(11.62)*	1899	2.3	0.396 *(0.241)*	17.71 *(3.49)*	214 *(101)*	59 *(15)*	28.96 *(98.07)*
					10th Gear				
516.80 *(385.38)*	24205 *(107.67)*	8.01 *(12.88)*	1916	1.9	0.397 *(0.241)*	17.67 *(3.48)*	214 *(101)*	58 *(14)*	28.96 *(98.07)*

HYDRAULIC PERFORMANCE

CATEGORY: IVN
Quick Attach: yes
OECD Static test
Maximum force exerted through whole range: 19620 lbs *(87.3 kN)*

Three outlet sets combined

	Standard pump	High flow pump
i) Sustained pressure of the open relief valve:	2877 psi *(198 bar)*	2865 psi *(198 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM *(165.8 l/min)*	61.7 GPM *(233.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM *(163.7 l/min)*	58.8 GPM *(222.4 l/min)*
Delivery pressure:	2526 psi *(174 bar)*	2466 psi *(170 bar)*
Power:	63.7 HP *(47.5 kW)*	84.5 Hp *(63.0 kW)*

Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	42.8 GPM *(162.2 l/min)*	49.1 GPM *(185.9 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM *(161.6 l/min)*	46.2 GPM *(174.9 l/min)*
Delivery pressure:	2024 psi *(139 bar)*	1938 psi *(134 bar)*
Power:	50.4 HP *(37.6 kW)*	52.2 Hp *(39.0 kW)*

TwinFlow system

Two outlet sets combined

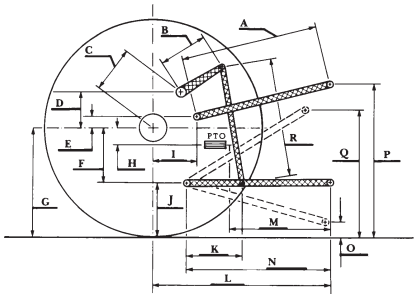
	Standard pump	TwinFlow pump
i) Sustained pressure at compensator cutoff:	2877 psi *(198 bar)*	2855 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM *(165.8 l/min)*	57.3 GPM *(217.0 l/min)*
Combined flow:	101.1 GPM *(382.8 l/min)*	
iii) Pump delivery rate at 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	32.6	*827*
B	29.9	*760*
C	23.2	*590*
D	22.0	*558*
E	13.5	*342*
F	13.4	*340*
G	38.2	*970*
H	6.4	*162*
I	22.8	*578*
J	24.8	*630*
K	29.0	*736*
L	56.3	*1431*
*L'	63.6	*1615*
M	34.3	*871*
N	46.5	*1181*
O	7.9	*200*
P	48.6	*1234*
Q	42.2	*1072*
R	39.8	*1010*



CASE IH STEIGER 550 Diesel

Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln