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2012

## Test 2048: Case IH Steiger 550 Quadtrac

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 2048 - SUMMARY 848

## CASE IH STEIGER 550 QUADTRAC DIESEL

### 16 SPEED

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

**Dates of tests:** November 13 - 19, 2012

**Manufacturer:** Case Corporation, 700 State Street Racine, Wi. 53404 USA.

**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 and hydraulic lubricant** Akcela Hy-Tran Ultra transmission fluid **Front and rear axle lubricant** Akcela Nexplore 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-000-002925\* **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, separate 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) as measured 37.7 psi (260 kPa)

**CHASSIS: Type** Tracklayer - rubber tracked **Serial No.** \*ZCF130882\* **Track width** rear 88.0" (2235 mm) front 88.0" (2235 mm) **Trackbase** 154.0" (3912 mm) **Length of track on ground** 29.4" (748 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 2.78 (4.47) second 3.34 (5.38) third 4.04 (6.50) fourth 4.87 (7.83) fifth 5.59 (8.99) sixth 6.14 (9.88) seventh 6.73 (10.83) eighth 7.39 (11.90) ninth 8.13 (13.08) tenth 8.93 (14.37) eleventh 9.79 (15.76) twelfth 10.76 (17.32) thirteenth 12.35 (19.88) fourteenth 14.88 (23.94) fifteenth 17.98 (28.93) sixteenth 21.64 (34.82) reverse 4.21 (6.77), 9.30 (14.97) **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** single wet disc hydraulically actuated by foot pedal **Steering** hydrostatic and articulated **Power take-off** 1000 rpm at 1998 engine rpm **Unladen tractor mass** 58800 lb (26671 kg)

#### 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
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1051 rpm)</b>						
474.47 (353.81)	2102	26.31 (99.61)	0.389 (0.236)	18.03 (3.55)	2.12 (8.03)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
517.43 (385.85)	1998	27.67 (104.73)	0.375 (0.228)	18.70 (3.68)	2.11 (8.01)	
<b>Maximum Power (1 hour)</b>						
535.77 (399.52)	1900	27.92 (105.68)	0.365 (0.222)	19.19 (3.78)	2.12 (8.02)	

#### VARYING POWER AND FUEL CONSUMPTION

474.47 (353.81)	2102	26.31 (99.61)	0.389 (0.236)	18.03 (3.55)	2.12 (8.03)	Air temperature
411.70 (307.00)	2146	23.59 (89.30)	0.402 (0.244)	17.45 (3.44)	2.08 (7.87)	73°F (23°C)
310.60 (231.61)	2156	19.02 (72.01)	0.429 (0.261)	16.33 (3.22)	1.46 (5.52)	Relative humidity
208.00 (155.11)	2166	14.41 (54.56)	0.486 (0.295)	14.43 (2.84)	0.96 (3.65)	13%
105.30 (78.52)	2178	9.95 (37.66)	0.662 (0.403)	10.58 (2.09)	0.47 (1.76)	Barometer
2.30 (1.72)	2186	5.35 (20.23)	16.287 (9.907)	0.43 (0.08)	0.17 (0.64)	29.05" Hg (98.37 kPa)

Maximum torque - 1740 lb.-ft. (2360 Nm) at 1401 rpm

Maximum torque rise - 46.6%

Torque rise at 1684 engine rpm - 37%

Power increase at 1900 engine rpm - 12.9%

#### 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)
<b>Maximum Power—4th Gear</b>									
434.20 (323.78)	34497 (153.45)	4.72 (7.60)	2100	2.8	0.444 (0.270)	15.78 (3.11)	208 (98)	49 (9)	29.02 (98.27)
<b>75% of Pull at Maximum Power—4th Gear</b>									
335.51 (250.19)	25840 (114.94)	4.87 (7.84)	2137	1.5	0.476 (0.289)	14.73 (2.90)	205 (96)	61 (16)	29.02 (98.27)
<b>50% of Pull at Maximum Power—4th Gear</b>									
227.97 (170.00)	17252 (76.74)	4.96 (7.97)	2160	0.7	0.545 (0.331)	12.86 (2.53)	200 (93)	60 (16)	29.02 (98.27)
<b>75% of Pull at Reduced Engine Speed—8th Gear</b>									
335.81 (250.41)	26047 (115.86)	4.84 (7.78)	1397	1.5	0.406 (0.247)	17.27 (3.40)	193 (89)	61 (16)	29.02 (98.27)
<b>50% of Pull at Reduced Engine Speed—8th Gear</b>									
228.73 (170.56)	17232 (76.65)	4.98 (8.01)	1429	0.7	0.446 (0.271)	15.71 (3.10)	185 (85)	60 (16)	29.02 (98.27)

## 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 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)
1st Gear									
353.05 (263.27)	52446 (233.29)	2.53 (4.06)	2110	9.3	0.492 (0.299)	14.26 (2.81)	200 (93)	51 (10)	29.16 (98.75)
2nd Gear									
405.63 (302.47)	49364 (219.58)	3.08 (4.96)	2100	7.8	0.476 (0.290)	14.72 (2.90)	207 (97)	53 (11)	29.15 (98.71)
3rd Gear									
419.69 (312.96)	40846 (181.69)	3.86 (6.20)	2101	4.5	0.458 (0.279)	15.30 (3.01)	209 (98)	60 (16)	29.03 (98.31)
4th Gear									
434.20 (323.78)	34497 (153.45)	4.72 (7.60)	2100	2.8	0.444 (0.270)	15.78 (3.11)	208 (98)	49 (9)	29.02 (98.27)
5th Gear									
436.17 (325.25)	29924 (133.11)	5.47 (8.80)	2101	2.0	0.442 (0.269)	15.84 (3.12)	208 (98)	47 (8)	29.01 (98.24)
6th Gear									
434.20 (323.78)	27030 (120.23)	6.02 (9.69)	2100	1.7	0.443 (0.270)	15.81 (3.11)	209 (98)	51 (10)	29.03 (98.31)
7th Gear									
425.99 (317.66)	24051 (106.98)	6.64 (10.69)	2101	1.3	0.452 (0.275)	15.50 (3.05)	209 (98)	56 (13)	29.03 (98.31)
8th Gear									
423.81 (316.03)	21731 (96.66)	7.32 (11.77)	2100	1.1	0.454 (0.276)	15.42 (3.04)	209 (98)	57 (14)	29.03 (98.31)
9th Gear									
415.88 (310.12)	19384 (86.22)	8.05 (12.95)	2100	0.9	0.463 (0.282)	15.14 (2.98)	208 (98)	59 (15)	29.03 (98.31)

**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 4.

**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 injection pump inlet was maintained at 110°F (40°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. **2048**, Nebraska Summary 848, 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	74.8
Bystander in 16th Gear	87.5

## TIRES, BALLAST AND WEIGHT

Rear tracks - no & size  
Front tracks - no & size  
Height of drawbar  
Static weight with operator- Rear  
- Front  
- Total

## Tested without ballast

2 x 30.0 in (762 mm)  
2 x 30.0 in (762 mm)  
20.5 in (520 mm)  
24845 lb (11269 kg)  
34130 lb (15481 kg)  
58975 lb (26750 kg)

# **DRAWBAR PERFORMANCE AT 1900 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)
325.26 (242.55)	53184 (236.57)	2.29 (3.69)	1920	9.5	1st Gear 0.477 (0.290)	14.70 (2.89)	195 (91)	50 (10)	29.17 (98.78)
409.46 (305.33)	51276 (228.08)	3.00 (4.83)	2076	9.1	2nd Gear 0.478 (0.290)	14.67 (2.89)	209 (98)	54 (12)	29.14 (98.68)
450.75 (336.12)	48152 (214.19)	3.51 (5.65)	1974	7.4	3rd Gear 0.452 (0.275)	15.51 (3.06)	210 (99)	56 (13)	29.12 (98.61)
469.42 (350.05)	42175 (187.60)	4.17 (6.71)	1900	5.0	4th Gear 0.437 (0.266)	16.04 (3.16)	209 (98)	60 (16)	29.03 (98.31)
486.40 (362.70)	37453 (166.60)	4.87 (7.84)	1901	3.4	5th Gear 0.421 (0.256)	16.64 (3.28)	209 (98)	48 (9)	29.01 (98.24)
488.17 (364.02)	33914 (150.86)	5.40 (8.68)	1901	2.7	6th Gear 0.420 (0.255)	16.69 (3.29)	209 (98)	50 (10)	29.03 (98.31)
483.44 (360.50)	30490 (135.62)	5.95 (9.57)	1900	2.1	7th Gear 0.423 (0.257)	16.56 (3.26)	209 (98)	57 (14)	29.03 (98.31)
484.29 (361.13)	27691 (123.18)	6.56 (10.55)	1900	1.7	8th Gear 0.423 (0.257)	16.57 (3.26)	211 (99)	57 (14)	29.04 (98.34)
480.35 (358.20)	24896 (110.74)	7.24 (11.64)	1900	1.4	9th Gear 0.425 (0.259)	16.48 (3.25)	213 (100)	58 (14)	29.03 (98.31)
475.45 (354.54)	22214 (98.81)	8.03 (12.91)	1912	1.1	10th Gear 0.431 (0.262)	16.25 (3.20)	213 (100)	59 (15)	29.03 (98.31)

## HYDRAULIC PERFORMANCE

CATEGORY: IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:	19728 lbs (87.8 kN)	
	<b>Three outlet sets combined</b>	
	<u>Standard pump</u>	<u>High flow pump</u>
i) Sustained pressure of the open relief valve:	2877 psi (198 bar)	2961 psi (204 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)	58.3 GPM (220.8 l/min)
Delivery pressure:	2526 psi (174 bar)	2558 psi (176 bar)
Power:	63.7 HP (47.5 kW)	87.1 Hp (64.9 kW)

### Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	42.8 GPM (162.2 l/min)	48.9 GPM (185.0 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.6 l/min)	46.0 GPM (174.2 l/min)
Delivery pressure:	2024 psi (139 bar)	2096 psi (145 bar)
Power:	50.4 HP (37.6 kW)	56.3 Hp (42.0 kW)

## TwinFlow system

### Two outlet sets combined

	<u>Standard pump</u>	<u>TwinFlow pump</u>
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

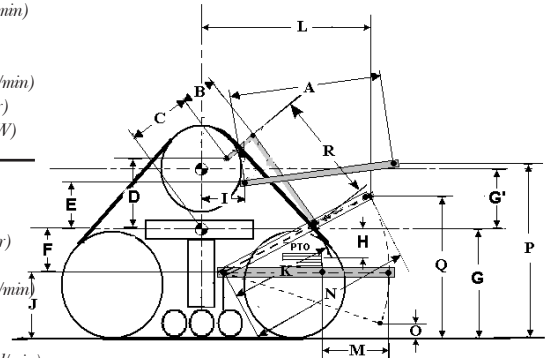
	<u>High flow pump</u>	<u>TwinFlow pump</u>
i) Sustained pressure at compensator cutoff:	2993 psi (206 bar)	2855 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	61.0 GPM (230.9 l/min)	57.3 GPM (217.0 l/min)
Combined flow:	118.3 GPM (447.9 l/min)	
iii) Pump delivery rate 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	35.0	890
*G'	11.8	300
H	4.6	117
I	22.8	578
J	21.6	550
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	45.4	1154
Q	40.9	1039
R	38.5	978

\*G' to undercarriage pivot point

\*L' to Quick coupler ends



Case IH Steiger 550 Quadtrac Diesel

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln