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2016

## Test 2160: Case IH Steiger 370 RowTrac

Nebraska Tractor Test Laboratory

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# NEBRASKA OECD TRACTOR TEST 2160 - SUMMARY 1041

## CASE IH STEIGER 370 ROWTRAC DIESEL

### 16 SPEED

#### POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel Consumption		D.E.F. Consumption		Mean Atmospheric Conditions
		Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Gal/hr (l/h)	
<b>MAXIMUM POWER AND FUEL CONSUMPTION</b>						
<b>Rated Engine Speed—(PTO speed—1104 rpm)</b>						
322.13 (240.21)	2000	17.02 (64.44)	0.370 (0.225)	18.92 (3.73)	1.87 (7.10)	
<b>Standard Power Take-off Speed (1000 rpm)</b>						
363.28 (270.90)	1811	18.75 (70.97)	0.362 (0.220)	19.38 (3.82)	1.71 (6.47)	
<b>Maximum Power (1 hour)</b>						
364.88 (272.09)	1800	18.83 (71.29)	0.362 (0.220)	19.38 (3.82)	1.70 (6.44)	

#### VARYING POWER AND FUEL CONSUMPTION

322.13 (240.21)	2000	17.02 (64.44)	0.370 (0.225)	18.92 (3.73)	1.87 (7.10)	Air temperature
289.15 (215.62)	2110	16.05 (60.77)	0.389 (0.237)	18.01 (3.55)	1.41 (5.34)	73°F (23°C)
218.09 (162.63)	2121	12.74 (48.24)	0.410 (0.249)	17.12 (3.37)	1.04 (3.92)	Relative humidity
146.42 (109.19)	2137	9.66 (36.56)	0.462 (0.281)	15.16 (2.99)	0.67 (2.52)	54%
73.79 (55.02)	2149	6.62 (25.07)	0.629 (0.383)	11.14 (2.19)	0.39 (1.48)	Barometer
1.20 (0.89)	2166	3.63 (13.73)	21.222 (12.909)	0.33 (0.07)	0.23 (0.86)	28.89" Hg (97.82 kPa)

Maximum torque - 1248 lb-ft (1691 Nm) at 1400 rpm

Maximum torque rise - 47.4%

Torque rise at 1601 engine rpm - 39%

Power increase at 1800 engine rpm - 13.3%

#### 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)	
<b>Power at Rated Engine Speed—4th Gear</b>										
280.37 (209.07)	22236 (98.91)	4.73 (7.61)	1999	1.8	0.426 (0.259)	16.47 (3.24)	0.056 (0.034)	210 (99)	62 (17)	28.98 (98.13)
<b>75% of Pull at Rated Engine Speed—4th Gear</b>										
222.68 (166.05)	16665 (74.13)	5.01 (8.06)	2114	1.5	0.470 (0.286)	14.92 (2.94)	0.044 (0.027)	191 (88)	63 (17)	28.93 (97.97)
<b>50% of Pull at Rated Engine Speed—4th Gear</b>										
150.28 (112.06)	11101 (49.38)	5.08 (8.18)	2127	0.8	0.528 (0.321)	13.27 (2.61)	0.046 (0.028)	186 (85)	64 (18)	28.93 (97.97)
<b>75% of Pull at Reduced Engine Speed—8th Gear</b>										
222.89 (166.21)	16659 (74.10)	5.02 (8.08)	1392	1.5	0.429 (0.261)	16.34 (3.22)	0.043 (0.026)	199 (93)	63 (17)	28.94 (98.00)
<b>50% of Pull at Reduced Engine Speed—8th Gear</b>										
150.64 (112.33)	11116 (49.44)	5.08 (8.18)	1401	0.8	0.464 (0.282)	15.12 (2.98)	0.046 (0.028)	185 (85)	64 (18)	28.92 (97.93)

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

**Dates of tests:** September 13 - 20, 2016

**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)** 0.8418 **Fuel weight** 7.009 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 10W40 API service classification** CJ-4 **Transmission lubricant** Akcela Hy-Tran Ultraction fluid **Hydraulic and axle lubricant** Akcela Hy-Tran Ultraction fluid **Total time engine was operated:** 18.0 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.** 000010704 **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, separate radiators for hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for pump return fuel **Exhaust DOC** (diesel oxidation catalyst) and SCR (selective catalyst reduction) within a vertical muffler **Cooling medium temperature control** thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 116.2 - 123.2 lb/h (52.7 - 55.9 kg/h) **High idle:** 2165 - 2215 rpm **Turbo boost:** nominal 23.2 - 26.1 psi (160 - 180 kPa) as measured 25.4 psi (175 kPa)

**CHASSIS: Type** 4WD with rubber tracks **Serial No.** \*ZGF308579\* **Track width** rear 88.0" (2235 mm) front 88.0" (2235 mm) **Trackbase** 160.0" (4064 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 2.72 (4.37) second 3.27 (5.27) third 3.95 (6.35) fourth 4.76 (7.66) fifth 5.46 (8.79) sixth 6.00 (9.66) seventh 6.58 (10.59) eighth 7.23 (11.63) ninth 7.95 (12.79) tenth 8.73 (14.05) eleventh 9.57 (15.40) twelfth 10.51 (16.92) thirteenth 12.07 (19.43) fourteenth 14.54 (23.40) fifteenth 17.57 (28.27) sixteenth 19.00 (30.58) electronically limited reverse 4.11 (6.62), 9.09 (14.63)

**DRAWBAR PERFORMANCE AT 2000 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)
254.07 (189.46)	36644 (163.00)	2.60 (4.18)	2002	5.5	0.439 (0.267)	15.96 (3.14)	0.050 (0.030)	210 (99)	73 (23)	28.78 (97.46)
					1st Gear					
279.81 (208.65)	32981 (146.71)	3.18 (5.12)	2000	3.9	0.428 (0.261)	16.36 (3.22)	0.053 (0.032)	206 (96)	70 (21)	28.80 (97.53)
					2nd Gear					
280.12 (208.88)	26935 (119.81)	3.90 (6.28)	2000	2.4	0.426 (0.259)	16.47 (3.24)	0.053 (0.032)	212 (100)	71 (22)	28.78 (97.46)
					3rd Gear					
280.37 (209.07)	22236 (98.91)	4.73 (7.61)	1999	1.8	0.426 (0.259)	16.47 (3.24)	0.056 (0.034)	210 (99)	62 (17)	28.98 (98.14)
					4th Gear					
276.30 (206.04)	19041 (84.70)	5.44 (8.75)	2000	1.6	0.432 (0.263)	16.21 (3.19)	0.057 (0.035)	212 (100)	62 (17)	28.98 (98.14)
					5th Gear					
274.63 (204.79)	17235 (76.67)	5.98 (9.62)	2000	1.5	0.437 (0.266)	16.06 (3.16)	0.057 (0.034)	206 (97)	63 (17)	28.95 (98.04)
					6th Gear					
267.81 (199.70)	15290 (68.01)	6.57 (10.57)	2000	1.4	0.446 (0.271)	15.72 (3.10)	0.058 (0.035)	212 (100)	63 (17)	28.95 (98.04)
					7th Gear					
266.84 (198.98)	13844 (61.58)	7.23 (11.64)	1999	1.2	0.448 (0.273)	15.63 (3.08)	0.057 (0.035)	205 (96)	63 (17)	28.97 (98.10)
					8th Gear					
261.42 (194.94)	12318 (54.79)	7.96 (12.81)	1999	1.0	0.458 (0.279)	15.30 (3.01)	0.059 (0.036)	211 (99)	63 (17)	28.96 (98.07)
					9th Gear					
258.90 (193.06)	11087 (49.32)	8.76 (14.10)	2000	0.9	0.461 (0.280)	15.21 (3.00)	0.060 (0.036)	208 (98)	63 (17)	28.94 (98.00)
					10th Gear					

**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 1811 engine rpm **Unladen tractor mass** 53135 lb (24102 kg)

**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. 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. **2160**, Nebraska Summary 1041, December 12, 2016.

Roger M. Hoy  
Director

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

**TRACTOR SOUND LEVEL WITH CAB**

	dB(A)
At no load in 4th gear	73.8
Bystander in 15th gear	88.0

**TRACKS 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 16.0 in (406 mm)  
2 x 16.0 in (406 mm)  
21.5 in (545 mm)  
24060 lb (10913 kg)  
29250 lb (13268 kg)  
53310 lb (24181 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)	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										
227.50 (169.65)	36488 (162.31)	2.34 (3.77)	1800	5.9	0.431 (0.262)	16.24 (3.20)	0.045 (0.028)	205 (96)	74 (23)	28.78 (97.46)
2nd Gear										
268.01 (199.85)	35395 (157.44)	2.84 (4.57)	1802	4.8	0.424 (0.258)	16.55 (3.26)	0.048 (0.029)	211 (99)	71 (22)	28.80 (97.53)
3rd Gear										
314.17 (234.28)	34278 (152.48)	3.44 (5.54)	1799	4.5	0.421 (0.256)	16.65 (3.28)	0.043 (0.026)	212 (100)	72 (22)	28.76 (97.39)
4th Gear										
316.65 (236.12)	28195 (125.42)	4.21 (6.78)	1800	2.8	0.418 (0.254)	16.78 (3.30)	0.044 (0.027)	213 (101)	68 (20)	28.80 (97.53)
5th Gear										
315.74 (235.45)	24287 (108.03)	4.88 (7.85)	1800	2.0	0.418 (0.254)	16.78 (3.31)	0.044 (0.027)	214 (101)	68 (20)	28.79 (97.49)
6th Gear										
315.32 (235.13)	22001 (97.87)	5.38 (8.65)	1800	1.7	0.418 (0.254)	16.77 (3.30)	0.044 (0.027)	214 (101)	69 (20)	28.78 (97.46)
7th Gear										
310.61 (231.62)	19723 (87.73)	5.91 (9.51)	1799	1.4	0.425 (0.259)	16.48 (3.25)	0.045 (0.027)	214 (101)	69 (21)	28.79 (97.49)
8th Gear										
308.44 (230.00)	17795 (79.15)	6.50 (10.46)	1800	1.2	0.427 (0.260)	16.40 (3.23)	0.046 (0.028)	214 (101)	69 (21)	28.80 (97.53)
9th Gear										
304.14 (226.80)	15934 (70.88)	7.16 (11.52)	1800	1.1	0.434 (0.264)	16.15 (3.18)	0.045 (0.027)	214 (101)	69 (21)	28.79 (97.49)
10th Gear										
303.41 (226.25)	14448 (64.27)	7.88 (12.67)	1800	1.0	0.435 (0.265)	16.11 (3.17)	0.047 (0.028)	216 (102)	69 (21)	28.78 (97.46)
11th Gear										
294.21 (219.39)	12766 (56.78)	8.64 (13.90)	1800	0.8	0.449 (0.273)	15.63 (3.08)	0.047 (0.028)	215 (102)	69 (21)	28.80 (97.53)

## 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)	3047 psi (210 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	41.7 GPM (157.7 l/min)	55.1 GPM (208.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM (163.7 l/min)	52.6 GPM (199.2 l/min)
Delivery pressure:	2526 psi (174 bar)	2679 psi (185 bar)
Power:	63.7 HP (47.5 kW)	82.3 Hp (61.4 kW)

### Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	41.0 GPM (155.2 l/min)	49.0 GPM (185.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.6 l/min)	45.7 GPM (173.0 l/min)
Delivery pressure:	2024 psi (139 bar)	2178 psi (150 bar)
Power:	50.4 HP (37.6 kW)	58.1 Hp (43.3 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

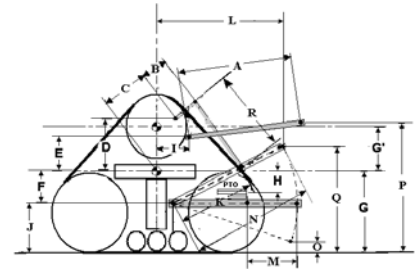
	High flow pump	TwinFlow pump
i) Sustained pressure at compensator cutoff:	3014 psi (208 bar)	2855 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	58.2 GPM (220.1 l/min)	54.6 GPM (206.8 l/min)
Combined flow:		112.8 GPM (426.9 l/min)
iii) Pump delivery rate at maximum hydraulic 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	28.8	731
D	27.9	709
E	14.9	378
F	14.9	379
G	34.0	864
*G'	14.9	378
H	1.2	30
I	22.8	578
J	19.1	485
K	30.5	775
L	60.1	1527
*L'	67.4	1711
M	30.4	771
N	43.0	1093
O	6.3	160
P	49.8	1265
Q	43.7	1111
R	39.4	1000

\*G' to undercarriage pivot point

\*L' to Quick coupler ends



CASE IH 370 ROWTRAC Diesel

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln