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2013

## Test 2072: Case IH Steiger 450 Quadtrac

Nebraska Tractor Test Lab

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# NEBRASKA OECD TRACTOR TEST 2072 - SUMMARY 890

## CASE IH QUADTRAC 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)						
402.48 (300.13)	2100	22.47 (85.06)	0.392 (0.239)	17.91 (3.53)	1.57 (5.94)	
Standard Power Take-off Speed (1000 rpm)						
433.32 (323.20)	1999	23.38 (88.51)	0.379 (0.231)	18.54 (3.65)	1.74 (6.60)	
Maximum Power (1 hour)						
455.06 (339.34)	1900	24.12 (91.31)	0.373 (0.227)	18.86 (3.72)	1.80 (6.81)	

#### VARYING POWER AND FUEL CONSUMPTION

402.48 (300.13)	2100	22.47 (85.06)	0.392 (0.239)	17.91 (3.53)	1.57 (5.94)	Air temperature
346.58 (258.45)	2128	20.24 (76.61)	0.410 (0.250)	17.12 (3.37)	1.13 (4.26)	76°F (25°C)
261.27 (194.83)	2139	16.39 (62.04)	0.441 (0.268)	15.94 (3.14)	0.72 (2.73)	Relative humidity
175.39 (130.79)	2153	12.48 (47.26)	0.500 (0.304)	14.05 (2.77)	0.50 (1.89)	55%
88.08 (65.68)	2165	8.55 (32.36)	0.682 (0.415)	10.30 (2.03)	0.30 (1.14)	Barometer
2.38 (1.78)	2180	5.07 (19.18)	14.956 (9.097)	0.47 (0.09)	0.14 (0.52)	28.55" Hg (96.68 kPa)

Maximum torque - 1470 lb.-ft. (1993 Nm) at 1401 rpm

Maximum torque rise - 46.0%

Torque rise at 1680 engine rpm - 35%

Power increase at 1900 engine rpm - 13.1%

#### 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—4th Gear									
351.18 (261.87)	27731 (123.35)	4.75 (7.64)	2099	2.6	0.458 (0.279)	15.34 (3.02)	187 (86)	68 (20)	28.67 (97.09)
75% of Pull at Maximum Power—4th Gear									
270.50 (201.71)	20841 (92.70)	4.87 (7.84)	2132	1.6	0.493 (0.300)	14.27 (2.81)	183 (84)	75 (24)	28.68 (97.12)
50% of Pull at Maximum Power—4th Gear									
182.83 (136.33)	13907 (61.86)	4.93 (7.93)	2145	1.0	0.563 (0.343)	12.48 (2.46)	178 (81)	77 (25)	28.67 (97.09)
75% of Pull at Reduced Engine Speed—8th Gear									
270.44 (201.66)	20878 (92.87)	4.86 (7.82)	1400	1.6	0.427 (0.260)	16.46 (3.24)	171 (77)	76 (24)	28.68 (97.12)
50% of Pull at Reduced Engine Speed—8th Gear									
182.86 (136.36)	13963 (62.11)	4.91 (7.90)	1406	1.0	0.464 (0.282)	15.14 (2.98)	172 (78)	78 (26)	28.67 (97.09)

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

**Dates of tests:** September 27 -October 3, 2013

**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)** 0.8442 **Fuel weight** 7.029 lbs/gal (0.842 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** CJ-4 **Transmission lubricant** Hytran Ultra Action fluid **Hydraulic and axle lubricant** Hytran Ultra Action 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.** \*A-002-209564\* **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, radiator for hydraulic and front and rear axle, radiator for transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

**ENGINE OPERATING PARAMETERS:** **Fuel rate:** 148.6 - 159.4 lb/h (67.4 -72.3 kg/h) **High idle:** 2165 - 2215 rpm **Turbo boost:** nominal 24.7 - 27.6 psi (170 - 190 kPa) as measured 26.6 psi (183 kPa)

**CHASSIS:** **Type** Tracklayer - rubber tracked **Serial No.** \*ZDF134988\* **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** 54290 lb (24625 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 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									
323.37 (241.13)	48019 (213.60)	2.53 (4.07)	2105	9.6	0.492 (0.299)	14.30 (2.82)	185 (85)	58 (14)	28.63 (96.95)
2nd Gear									
340.85 (254.17)	40606 (180.62)	3.15 (5.06)	2102	6.3	0.471 (0.287)	14.91 (2.94)	183 (84)	62 (17)	28.65 (97.02)
3rd Gear									
348.53 (259.90)	33583 (149.38)	3.89 (6.26)	2100	3.9	0.458 (0.279)	15.34 (3.02)	182 (83)	64 (18)	28.66 (97.05)
4th Gear									
351.18 (261.87)	27731 (123.35)	4.75 (7.64)	2099	2.6	0.458 (0.279)	15.34 (3.02)	187 (86)	68 (20)	28.67 (97.09)
5th Gear									
350.81 (261.60)	23969 (106.62)	5.49 (8.84)	2100	2.0	0.459 (0.279)	15.31 (3.02)	187 (86)	69 (21)	28.68 (97.12)
6th Gear									
350.55 (261.41)	21739 (96.70)	6.05 (9.74)	2100	1.7	0.457 (0.278)	15.37 (3.03)	188 (87)	70 (21)	28.69 (97.16)
7th Gear									
345.50 (257.64)	19494 (86.71)	6.65 (10.70)	2100	1.4	0.463 (0.282)	15.18 (2.99)	185 (85)	71 (22)	28.69 (97.16)
8th Gear									
342.74 (255.58)	17590 (78.24)	7.31 (11.76)	2099	1.3	0.466 (0.284)	15.08 (2.97)	187 (86)	72 (22)	28.69 (97.16)
9th Gear									
339.00 (252.79)	15798 (70.27)	8.05 (12.95)	2099	1.1	0.472 (0.287)	14.90 (2.93)	186 (85)	73 (23)	28.68 (97.12)

**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 and 2.

**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 (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. **2072**, Nebraska Summary 890, December 2, 2013.

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	75.6
Bystander in 15th Gear	88.5

### 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)  
23550 lb (10682 kg)  
30915 lb (14023 kg)  
54465 lb (24705 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)
319.04 (237.90)	49958 (222.22)	2.40 (3.85)	2049	11.9	1st Gear 0.492 (0.299)	14.28 (2.81)	183 (84)	59 (15)	28.64 (96.99)
357.80 (266.81)	48171 (214.27)	2.79 (4.49)	1953	10.6	2nd Gear 0.472 (0.287)	14.89 (2.93)	184 (84)	61 (16)	28.64 (96.99)
382.52 (285.25)	42034 (186.97)	3.41 (5.49)	1901	7.0	3rd Gear 0.449 (0.273)	15.65 (3.08)	187 (86)	66 (19)	28.66 (97.05)
391.55 (291.98)	34712 (154.40)	4.23 (6.81)	1902	4.2	4th Gear 0.439 (0.267)	16.00 (3.15)	188 (86)	67 (19)	28.67 (97.09)
393.83 (293.68)	30087 (133.83)	4.91 (7.90)	1900	3.1	5th Gear 0.438 (0.267)	16.03 (3.16)	189 (87)	70 (21)	28.68 (97.12)
395.33 (294.80)	27343 (121.63)	5.42 (8.72)	1899	2.6	6th Gear 0.435 (0.265)	16.16 (3.18)	188 (87)	70 (21)	28.68 (97.12)
394.05 (293.84)	24756 (110.12)	5.97 (9.60)	1899	2.1	7th Gear 0.437 (0.266)	16.10 (3.17)	187 (86)	72 (22)	28.69 (97.16)
393.47 (293.41)	22411 (99.69)	6.59 (10.60)	1900	1.8	8th Gear 0.438 (0.266)	16.06 (3.16)	188 (87)	72 (22)	28.69 (97.16)
391.71 (292.15)	20259 (90.12)	7.25 (11.67)	1900	1.5	9th Gear 0.438 (0.267)	16.04 (3.16)	188 (87)	74 (23)	28.68 (97.12)
390.06 (290.87)	18262 (81.23)	8.01 (12.89)	1905	1.3	10th Gear 0.440 (0.268)	15.98 (3.15)	188 (87)	74 (23)	28.69 (97.16)

## 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)	3080 psi (212 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	43.8 GPM (165.8 l/min)	58.9 GPM (222.9 l/min)
iii) Pump delivery rate at maximum hydraulic power:	43.3 GPM (163.7 l/min)	55.5 GPM (210.2 l/min)
Delivery pressure:	2526 psi (174 bar)	2675 psi (184 bar)
Power:	63.7 HP (47.5 kW)	86.7 HP (64.6 kW)

### Single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed:	42.8 GPM (162.2 l/min)	47.5 GPM (179.7 l/min)
iii) Pump delivery rate at maximum hydraulic power:	42.7 GPM (161.6 l/min)	44.2 GPM (167.3 l/min)
Delivery pressure:	2024 psi (139 bar)	2161 psi (149 bar)
Power:	50.4 HP (37.6 kW)	55.7 HP (41.5 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

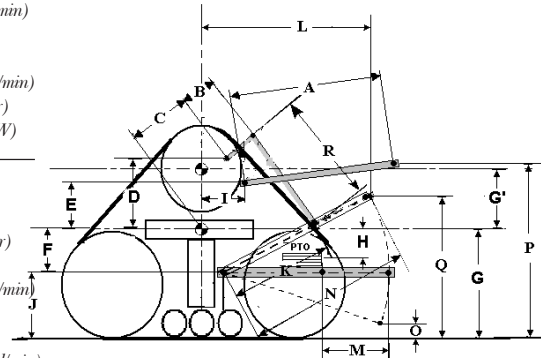
	<u>High flow pump</u>	<u>TwinFlow pump</u>
i) Sustained pressure at compensator cutoff:	2993 psi (206 bar)	2855 psi (197 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	61.0 GPM (230.9 l/min)	57.3 GPM (217.0 l/min)
Combined flow:	118.3 GPM (447.9 l/min)	
iii) Pump delivery rate 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 Quadtrac 450 Diesel

Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln