

Tractor Test and Power Museum, The Lester F. Larsen

UNL Larsen Tractor Museum Archives

University of Nebraska - Lincoln

Year 2007

Test 1909: Case-IH Steiger 430 and 435
Diesel 16-Speed Also Case-IH STX 430
Diesel 16-Speed

Tractor Museum
University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

NEBRASKA OECD TRACTOR TEST 1909 - SUMMARY 577

CASE IH STEIGER 430 DIESEL

ALSO CASE IH STX 430 DIESEL

ALSO CASE IH STEIGER 435 DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1000 rpm)					
384.59 (286.79)	2000	22.54 (85.32)	0.410 (0.250)	17.06 (3.36)	
Maximum Power (1 Hour)					
438.97 (327.34)	1800	24.52 (92.83)	0.391 (0.238)	17.90 (3.53)	
VARYING POWER AND FUEL CONSUMPTION					
384.59 (286.79)	2000	22.54 (85.32)	0.410 (0.250)	17.06 (3.36)	Air temperature
333.90 (248.99)	2038	20.51 (77.65)	0.430 (0.262)	16.28 (3.21)	80°F (26°C)
252.89 (188.58)	2062	17.14 (64.89)	0.475 (0.289)	14.75 (2.91)	Relative humidity
170.63 (127.24)	2090	12.94 (48.99)	0.531 (0.323)	13.18 (2.60)	35%
86.62 (64.60)	2124	8.40 (31.80)	0.679 (0.413)	10.31 (2.03)	Barometer
1.58 (1.18)	2147	4.61 (17.47)	20.381 (12.397)	0.34 (0.07)	28.95" Hg (98.04 kPa)
Maximum torque -1465 lb.-ft. (1986 Nm) at 1400 rpm					
Maximum torque rise - 45.1%					
Torque rise at 1600 engine rpm - 37%					
Power increase at 1800 engine rpm - 14%					

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 cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Maximum Power—6th Gear									
351.28 (261.95)	24277 (107.99)	5.43 (8.73)	1998	2.63	0.441 (0.269)	15.86 (3.12)	183 (84)	71 (22)	28.90 (97.87)
75% of Pull at Maximum Power—6th Gear									
272.31 (203.06)	18234 (81.11)	5.60 (9.01)	2047	1.88	0.487 (0.296)	14.37 (2.83)	184 (84)	75 (24)	28.90 (97.87)
50% of Pull at Maximum Power—6th Gear									
185.68 (138.46)	12159 (54.09)	5.73 (9.22)	2080	1.34	0.552 (0.336)	12.67 (2.50)	183 (84)	75 (24)	28.90 (97.87)
75% of Pull at Reduced Engine Speed—9th Gear									
272.11 (202.91)	18271 (81.27)	5.58 (8.99)	1542	1.93	0.436 (0.265)	16.06 (3.16)	183 (84)	75 (24)	28.90 (97.87)
50% of Pull at Reduced Engine Speed—9th Gear									
185.59 (138.39)	12155 (54.07)	5.73 (9.21)	1571	1.31	0.473 (0.288)	14.81 (2.92)	183 (84)	75 (24)	28.90 (97.87)

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

Dates of tests: September 25 - October 12, 2007

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

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60° F (15°/15°C) 0.8407 Fuel weight 7.000 lbs/gal (0.839 kg/l) Oil SAE 15W40 API service classification CI-4 Transmission and hydraulic lubricant Akcela Hy-Tran Ultra fluid Front and rear axle lubricant Akcela Hy-Tran Ultra fluid Total time engine was operated 29.5 hours

ENGINE: Make Iveco Diesel Type six cylinder vertical with turbocharger and air to air aftercooler Serial No. 94962 Crankshaft lengthwise Rated engine speed 2000 Bore and stroke 5.314" x 5.906" (135.0 mm x 150.0 mm) Compression ratio 16.5 to 1 Displacement 786 cu in (12880 ml) Starting system 12 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 transmission and hydraulic oil Fuel filter one paper element Fuel cooler radiator for returned fuel Muffler vertical Cooling medium temperature control one thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 152.2 - 161.7 lb/h (69.0 - 73.3 kg/h) High idle: 2130 - 2170 rpm Turbo boost: nominal 27.0 - 29.9 psi (186 - 206 kPa) as measured 28.6 psi (197 kPa)

CHASSIS: Type four wheel drive with triples Serial No. *Z7F105673* Tread width rear 73.6" (1870 mm) to 187.6" (4766 mm) front 73.6" (1870 mm) to 187.6" (4766 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 2.55 (4.10) second 3.07 (4.94) third 3.70 (5.96) fourth 4.46 (7.18) fifth 5.13 (8.25) sixth 5.63 (9.06) seventh 6.17 (9.93) eighth 6.78 (10.91) ninth 7.46 (12.00) tenth 8.19 (13.18) eleventh 8.98 (14.45) twelfth 9.87 (15.88) thirteenth 11.33 (18.23) fourteenth 13.64 (21.95) fifteenth 16.49 (26.53) sixteenth 19.84 (31.93) reverse 3.86 (6.21), 8.53 (13.73) 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 41605 lb (18872 kg)

**DRAWBAR PERFORMANCE AT 1800 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)
2nd Gear									
255.15 (190.26)	36669 (163.11)	2.61 (4.20)	1813	5.29	0.470 (0.286)	14.91 (2.94)	182 (83)	66 (19)	29.00 (98.21)
3rd Gear									
307.06 (228.98)	36609 (162.84)	3.15 (5.06)	1806	5.06	0.458 (0.279)	15.29 (3.01)	183 (84)	70 (21)	29.00 (98.21)
4th Gear									
382.33 (285.10)	38234 (170.07)	3.75 (6.03)	1805	6.05	0.434 (0.264)	16.12 (3.18)	184 (84)	73 (23)	29.01 (98.24)
5th Gear									
395.97 (295.27)	33932 (150.94)	4.38 (7.04)	1802	4.36	0.430 (0.261)	16.29 (3.21)	185 (85)	71 (22)	28.90 (97.87)
6th Gear									
397.76 (296.61)	30876 (137.34)	4.83 (7.77)	1797	3.64	0.428 (0.260)	16.36 (3.22)	184 (85)	69 (21)	28.90 (97.87)
7th Gear									
401.95 (299.74)	28292 (125.85)	5.33 (8.57)	1799	3.19	0.423 (0.257)	16.54 (3.26)	184 (84)	73 (23)	29.01 (98.24)
8th Gear									
400.48 (298.64)	25582 (113.79)	5.87 (9.45)	1798	2.81	0.425 (0.259)	16.45 (3.24)	185 (85)	75 (24)	29.01 (98.24)
9th Gear									
397.57 (296.47)	23027 (102.43)	6.47 (10.42)	1798	2.49	0.429 (0.261)	16.33 (3.22)	185 (85)	76 (24)	29.01 (98.24)
10th Gear									
398.57 (297.21)	20960 (93.24)	7.13 (11.48)	1797	2.27	0.428 (0.260)	16.36 (3.22)	184 (85)	76 (24)	29.01 (98.24)
11th Gear									
393.44 (293.39)	18846 (83.83)	7.83 (12.60)	1797	2.04	0.435 (0.265)	16.08 (3.17)	185 (85)	77 (25)	29.02 (98.27)
12th Gear									
392.39 (292.60)	17062 (75.90)	8.62 (13.88)	1798	1.84	0.438 (0.266)	15.99 (3.15)	186 (85)	78 (26)	29.02 (98.27)

LUGGING ABILITY IN 2ND GEAR(See Note 2)

Crankshaft speed rpm	1996	1890	1800	1694	1599	1506	1432
Pull-lbs (kN)	35911 (159.74)	35544 (158.11)	37096 (165.01)	38564 (171.54)	37391 (166.32)	38718 (172.22)	41089 (182.77)
Increase in pull%	0	-1	3	7	4	8	14
Power-Hp (kW)	277.51 (206.94)	260.33 (194.13)	256.91 (191.58)	249.53 (186.07)	229.17 (170.89)	222.13 (165.65)	218.92 (163.25)
Speed-mph (km/h)	2.90 (4.66)	2.75 (4.42)	2.60 (4.18)	2.43 (3.91)	2.30 (3.70)	2.15 (3.46)	2.00 (3.22)
Slip %	4.49	4.41	5.08	5.75	5.45	6.03	8.21

TRACTOR SOUND LEVEL WITH DELUXE CAB

	dB(A)
At no load in 4th gear	74.2
Bystander in 16th gear	88.7

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.

Note 2: This test conducted at manufacturer's request. The drawbar pull was limited to avoid excessive tractor bouncing.

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 101°F (38°C). The manufacturer's claim of 75 dB(A) cab sound, with Luxury cab, was not verified. The performance figures on this Summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1909**, Nebraska Summary 577, February 8, 2008.

Roger M. Hoy
Director

M.F. Kocher
R.E. Yoder
J.A. Smith
Board of Tractor Test Engineers

TIRES AND WEIGHT

Rear tires - No., size, ply & psi(kPa)
Front tires - No., size, ply & psi(kPa)
Height of Drawbar
Static Weight with operator- Rear
- Front
- Total

Tested without ballast

Six 480/80R46;***;13(90)
Six 480/80R46;***;14(95)
21.0 in (535 mm)
17810 lb (8078 kg)
23970 lb(10873 kg)
41780 lb (18951 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: IVN

Quick Attach: yes

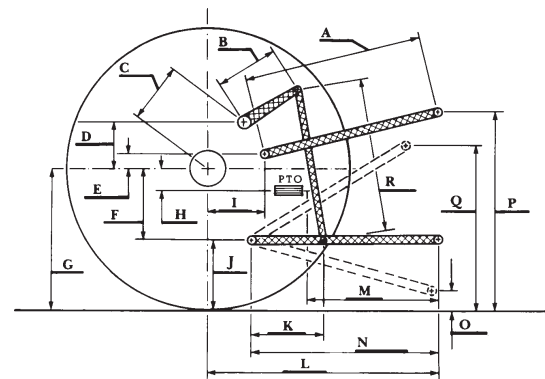
Maximum force exerted through whole range:	19620 lbs (87.3 kN)	
	<u>Standard pump</u>	<u>High flow pump</u>
i) Sustained pressure of the open relief valve:	3040 psi (210 bar)	2990 psi (206 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	40.6 GPM (153.7 l/min)	55.8 GPM (211.2 l/min)
iii) Pump delivery rate at maximum hydraulic power:	37.7 GPM (142.7 l/min)	54.3 GPM (205.5 l/min)
Delivery pressure:	2805 psi (193 bar)	2604 psi (180 bar)
Power:	61.7 HP (46.0 kW)	82.5 Hp (61.5 kW)

TwinFlow system

	<u>Main pump</u>	<u>TwinFlow pump</u>
i) Sustained pressure at compensator cutoff:	3026 psi (208 bar)	3041 psi (210 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	56.6 GPM (214.2 l/min)	37.7 GPM (142.6 l/min)
Combined flow:	94.3 GPM (356.8 l/min)	
iii) Pump delivery rate at maximum hydraulic power:	55.4 GPM (209.5 l/min)	35.9 GPM (135.9 l/min)
Delivery pressure:	2430 psi (167 bar)	2861 psi (197 bar)
Power:	78.5 HP (58.5 kW)	59.9 Hp (44.7 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 430 Diesel

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