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January 1996

Test 1709: Case IH 7220 Diesel 18-Speed (Chassis S/N JJA0065000 and Higher) Also Case IH 8920 Diesel

Nebraska Tractor Test Lab

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NEBRASKA OECD TRACTOR TEST 1709—SUMMARY 204

CASE IH 7220 DIESEL

18 SPEED

(CHASSIS SERIAL NUMBERS JJA0065000 AND HIGHER)

ALSO CASE IH 8920 DIESEL

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—1003 rpm)					
156.90 (117.00)	2200	9.79 (37.05)	0.438 (0.266)	16.03 (3.16)	
Maximum Power (2 hours)					
168.56 (125.69)	1950	9.65 (36.54)	0.402 (0.245)	17.46 (3.44)	
VARYING POWER AND FUEL CONSUMPTION					
156.90 (117.00)	2200	9.79 (37.05)	0.438 (0.266)	16.03 (3.16)	Air temperature
136.26 (101.61)	2252	8.84 (33.48)	0.456 (0.277)	15.41 (3.03)	75°F (24°C)
104.16 (77.67)	2287	7.48 (28.31)	0.504 (0.307)	13.93 (2.74)	Relative humidity
70.77 (52.77)	2331	5.94 (22.48)	0.589 (0.358)	11.92 (2.35)	37%
36.12 (26.93)	2379	4.53 (17.15)	0.880 (0.536)	7.97 (1.57)	Barometer
1.05 (0.79)	2429	3.16 (11.97)	21.065 (12.814)	0.33 (0.07)	28.68" Hg (97.12 kPa)

Maximum Torque 516 lb.-ft. (700 Nm) at 1399 rpm
 Maximum Torque Rise 37.8%
 Torque rise at 1800 engine rpm 27%

DRAWBAR PERFORMANCE (UNBALLASTED—FRONT DRIVE ENGAGED) FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)		Barom. inch Hg (kPa)
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	cool- ing med	Air dry bulb	
Maximum Power—8th Gear									
132.79 (99.02)	10493 (46.67)	4.75 (7.64)	2195	3.68	0.513 (0.312)	13.68 (2.69)	188 (87)	71 (22)	28.72 (97.26)
75% of Pull at Maximum Power—8th Gear									
103.96 (77.53)	7859 (34.96)	4.96 (7.98)	2266	2.58	0.552 (0.336)	12.73 (2.51)	188 (86)	73 (23)	28.60 (96.85)
50% of Pull at Maximum Power—8th Gear									
71.25 (53.13)	5238 (23.30)	5.10 (8.21)	2310	1.72	0.654 (0.398)	10.74 (2.11)	187 (86)	73 (23)	28.60 (96.85)
75% of Pull at Reduced Engine Speed—10th Gear									
104.80 (78.15)	7855 (34.94)	5.00 (8.05)	1728	2.58	0.466 (0.284)	15.06 (2.97)	185 (85)	73 (23)	28.60 (96.85)
50% of Pull at Reduced Engine Speed—10th Gear									
71.39 (53.24)	5243 (23.32)	5.11 (8.22)	1748	1.63	0.517 (0.315)	13.57 (2.67)	184 (84)	73 (23)	28.60 (96.85)

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

Dates of Test: April 30-May 10, 1996

Manufacturer: Case Corporation, 700 State Street,
Racine, Wisconsin 53404

FUEL OIL and TIME: Fuel No. 2 Diesel Cetane No. 50.6 Specific gravity converted to 60°/60° F (15°/15°C) 0.8432 Fuel weight 7.021 lbs/gal (0.841 kg/l) Oil SAE 15W-40 API service classification CG-4, CE, CD-II To motor 4.157 gal (15.735 l) Drained from motor 3.621 gal (13.707 l) Transmission and hydraulic lubricant Case IH Hytran Plus fluid Front axle lubricant Case IH 135 HEP Gear Lube SAE 85W140 Total time engine was operated 18.5 hours.

ENGINE: Make Consolidated Diesel Corporation Diesel **Type** six cylinder vertical with turbocharger **Serial No.** *45259135* **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** (as specified) 4.488" × 5.315" (114.0 mm × 135.0 mm) **Compression ratio** 16.5 to 1 **Displacement** 505 cu in (8268 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 hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for return fuel **Muffler** vertical **Cooling medium temperature control** two thermostats and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 67.7-74.7 lb/h (30.7-33.8 kg/h) **High idle:** 2370-2530 rpm **Turbo boost** nominal 18.6-21.2 psi (128-146 kPa) as measured 18.4 psi (127 kPa)

CHASSIS: Type front wheel assist **Serial No.** *JJA0065013* **Tread width** rear 64.0" (1626 mm) to 131.0" (3327 mm) front 60.1" (1527 mm) to 94.8" (2408 mm) **Wheel base** 118.3" (3006 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 1.80 (2.90) second 2.06 (3.32) third 2.38 (3.83) fourth 2.73 (4.40) fifth 3.13 (5.04) sixth 3.60 (5.79) seventh 4.19 (6.75) eighth 4.81 (7.74) ninth 5.55 (8.93) tenth 6.36 (10.23) eleventh 7.30 (11.75) twelfth 8.36 (13.46) thirteenth 9.58 (15.41) fourteenth 10.99 (17.68) fifteenth 12.67 (20.39) sixteenth 14.53 (23.39) seventeenth 16.67 (26.83) eighteenth 19.12 (30.77) reverse 2.59 (4.17), 2.98 (4.79), 6.04 (9.72), 6.93 (11.15) **Clutch** multiple wet disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by two foot pedals which can be locked

**DRAWBAR PERFORMANCE AT 1950 RPM
(UNBALLASTED—FRONT DRIVE ENGAGED)
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/kWh)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear									
109.72 (81.82)	16832 (74.87)	2.44 (3.93)	2238	14.39	0.587 (0.357)	11.96 (2.36)	187 (86)	65 (18)	28.77 (97.43)
5th Gear									
122.97 (91.70)	16101 (71.62)	2.86 (4.61)	2188	10.61	0.552 (0.336)	12.72 (2.50)	187 (86)	68 (20)	28.76 (97.39)
6th Gear									
133.12 (99.27)	15252 (67.84)	3.27 (5.27)	2115	7.78	0.523 (0.318)	13.42 (2.64)	188 (86)	69 (21)	28.75 (97.36)
7th Gear									
141.05 (105.18)	14501 (64.50)	3.65 (5.87)	1991	6.45	0.483 (0.294)	14.52 (2.86)	188 (86)	70 (21)	28.74 (97.32)
8th Gear									
142.74 (106.44)	12889 (57.33)	4.15 (6.68)	1949	5.25	0.473 (0.288)	14.84 (2.92)	189 (87)	74 (23)	28.69 (97.16)
9th Gear									
143.04 (106.66)	11057 (49.18)	4.85 (7.81)	1950	4.02	0.473 (0.288)	14.85 (2.93)	188 (87)	72 (22)	28.70 (97.19)
10th Gear									
143.30 (106.86)	9583 (42.63)	5.61 (9.02)	1953	3.43	0.473 (0.288)	14.84 (2.92)	189 (87)	75 (24)	28.68 (97.12)
11th Gear									
140.27 (104.60)	8134 (36.18)	6.47 (10.41)	1950	2.84	0.484 (0.295)	14.49 (2.86)	189 (87)	75 (24)	28.66 (97.05)
12th Gear									
139.26 (103.92)	7020 (31.23)	7.44 (11.98)	1948	2.32	0.488 (0.297)	14.39 (2.83)	190 (88)	75 (24)	28.65 (97.02)
13th Gear									
139.05 (103.69)	6075 (27.02)	8.58 (13.81)	1957	1.98	0.489 (0.297)	14.36 (2.83)	190 (88)	74 (23)	28.64 (96.99)

TRACTOR SOUND LEVEL WITH CAB

dB(A)

At 75% load in 6th Gear	73.0
Bystander in 18th Gear	85.0

TIRES, BALLAST AND WEIGHT

	With Ballast	Without Ballast
Rear Tires —No., size, ply & psi (kPa)	Four 20.8R38; **, 12 (85)	Two 20.8R38; **, 18 (125)
Ballast —Duals (total)	1608 lb (729 kg)	None
—Cast Iron (total)	970 lb (440 kg)	None
Front Tires —No., size, ply & psi (kPa)	Two 14.9R30; ***, 16 (110)	Two 14.9R30; ***, 14 (95)
Ballast —Liquid (total)	None	None
—Cast Iron (total)	516 lb (261 kg)	None
Height of Drawbar	18.0 in (455 mm)	17.0 in (430 mm)
Static Weight with Operator —Rear	14454 lb (6556 kg)	12136 lb (5505 kg)
—Front	6284 lb (2850 kg)	5448 lb (2471 kg)
—Total	20738 lb (9406 kg)	17584 lb (7976 kg)

together **Steering** hydrostatic **Power take-off** 540 rpm at 2229 engine rpm or 1000 rpm at 2193 engine rpm **Unladen tractor mass** 17418 lb (7900 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

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 return was maintained at 135°F (57°C). The pull in 3rd gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Restricted Standard Test Code procedure.

NOTE: The performance figures on this report apply to tractors with chassis serial numbers JJA0065000 and higher.

REPORT REISSUED: Supplemental sales permit for Case IH 8920 Diesel, 18 speed.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1709**, Summary 204, November 11, 1997.

LOUIS I. LEVITICUS
Engineer-in-Charge

L.L. BASHFORD
R.D. GRISSO
M.F. KOCHER

Board of Tractor Test Engineers

**DRAWBAR PERFORMANCE AT 1950 RPM
(BALLASTED TRACTOR)
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)
3rd Gear									
123.25 (91.91)	20588 (91.58)	2.24 (3.61)	2223	8.96	0.539 (0.328)	13.04 (2.57)	187 (86)	51 (11)	28.84 (97.66)
4th Gear									
135.24 (100.85)	19757 (87.88)	2.57 (4.13)	2160	6.74	0.508 (0.309)	13.82 (2.72)	186 (86)	53 (12)	28.85 (97.70)
5th Gear									
140.45 (104.73)	19300 (85.85)	2.73 (4.39)	1991	6.11	0.483 (0.294)	14.53 (2.86)	187 (86)	54 (12)	28.85 (97.70)
6th Gear									
142.54 (106.29)	17135 (76.22)	3.12 (5.02)	1951	4.49	0.473 (0.287)	14.86 (2.93)	187 (86)	55 (13)	28.85 (97.70)
7th Gear									
147.15 (109.73)	15027 (66.84)	3.67 (5.91)	1952	3.66	0.459 (0.279)	15.31 (3.02)	188 (87)	56 (13)	28.85 (97.70)
8th Gear									
146.12 (108.96)	12940 (57.56)	4.23 (6.82)	1949	2.99	0.461 (0.280)	15.24 (3.00)	188 (86)	57 (14)	28.85 (97.70)
9th Gear									
145.37 (108.40)	11087 (49.32)	4.92 (7.91)	1952	2.65	0.463 (0.281)	15.18 (2.99)	188 (86)	58 (14)	28.85 (97.70)
10th Gear									
143.89 (107.30)	9554 (42.50)	5.65 (9.09)	1948	2.05	0.468 (0.285)	14.99 (2.95)	187 (86)	58 (14)	28.85 (97.70)
11th Gear									
141.23 (105.32)	8115 (36.10)	6.53 (10.50)	1954	1.79	0.478 (0.291)	14.68 (2.89)	187 (86)	59 (15)	28.85 (97.70)
12th Gear									
138.94 (103.60)	6955 (30.94)	7.49 (12.06)	1950	1.61	0.487 (0.296)	14.42 (2.84)	188 (87)	60 (16)	28.85 (97.70)
13th Gear									
137.55 (102.57)	6015 (26.75)	8.58 (13.80)	1947	1.44	0.494 (0.300)	14.22 (2.80)	188 (87)	60 (16)	28.85 (97.70)

THREE POINT HITCH PERFORMANCE (SAE Dynamic Test)

Observed Maximum Pressure psi. (bar)	2700	(186)
Location	Hydraulic pump	
Hydraulic oil temperature °F (°C)	140	(60)
Location	Transmission sump	
Maximum Lift Capacity		
QUICK ATTACH	Yes	
CATEGORY:	III	
LOAD lbs (kg)	10040	(4554)
TIME sec	3.17	
HITCH MOVEMENT in (mm)		
Lowest position	15.4	(391)
Top of timed range	*40.4	(1026)
Highest position	40.6	(1031)
LOAD CG MOVEMENT in (mm)		
Lowest position	15.6	(396)
Top of timed range	42.1	(1069)
Highest position	42.5	(1080)

*The observed power range 25.0 in (635 mm) is less than the minimum power range for Cat. III, 26.0 in (660 mm) specified by ASAE Standard S217.10.

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III

Quick Attach: None

Maximum Force Exerted Through Whole Range:	10611 lbs	(47.2 kN)
i) Opening pressure of relief valve:	NA	
Sustained pressure with pump installed:	2670 psi	(184 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	29.2 GPM	(110.5 l/min)
iii) Pump delivery rate at maximum hydraulic power:	27.4 GPM	(103.7 l/min)
Delivery pressure:	2230 psi	(154 bar)
Power:	35.6 HP	(26.6 kW)

HYDRAULIC PUMP PERFORMANCE

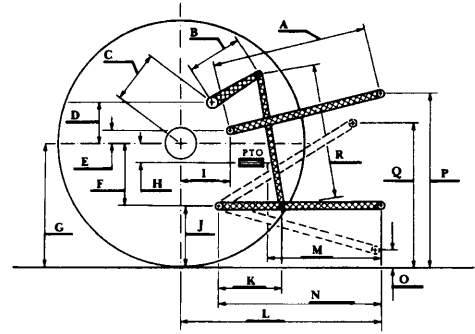
	2650 psi system	2800 psi system
i) Sustained pressure at compensator cutoff:	2630 psi (181 bar)	2760 psi (190 bar)
ii) Pump delivery rate at minimum pressure and rated engine speed:	29.7 GPM (112.4 l/min)	29.7 GPM (112.4 l/min)
iii) Pump delivery rate at maximum hydraulic power:	26.9 GPM (101.8 l/min)	27.0 GPM (102.2 l/min)
Delivery pressure:	2070 psi (143 bar)	2170 psi (150 bar)
Power:	32.5 HP (24.2 kW)	34.2 HP (25.5 kW)

THREE POINT HITCH PERFORMANCE (SAE Dynamic Test)

Observed Maximum Pressure psi. (bar)	2800 (193)
Location	Remote outlet
Hydraulic oil temperature °F (°C)	141 (61)
Location	Transmission sump

Maximum Lift Capacity

QUICK ATTACH	No
CATEGORY:	III
LOAD lbs (kg)	12810 (5810)
TIME sec	6.23
HITCH MOVEMENT in (mm)	
Lowest position	14.0 (356)
Top of timed range	40.0 (1016)
Highest position	40.0 (1016)
LOAD CG MOVEMENT in (mm)	
Lowest position	16.1 (409)
Top of timed range	43.3 (1100)
Highest position	43.3 (1100)



HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	mm	inch	mm
A	25.9	657	25.9	657
B	15.0	381	15.0	381
C	21.9	557	21.9	557
D	16.6	422	16.6	422
E	9.8	250	9.8	250
F	13.1	332	13.1	332
G	33.7	855	32.7	831
H	3.5	90	3.5	90
I	24.7	627	24.7	627
J	20.6	523	19.6	498
K	22.8	579	22.8	579
L	51.4	1306	51.4	1306
*L'	—	—	55.4	1407
M	22.1	561	22.1	561
N	33.9	861	33.9	861
O	9.9	251	8.0	203
P	42.6	1083	41.6	1058
Q	37.8	959	35.8	908
R	31.3	794	32.1	816

*L' to Quick Attach ends



CASE IH 7220 DIESEL

Agricultural Research Division
 Institute of Agriculture and Natural Resources
 University of Nebraska—Lincoln
 Darrell Nelson, Dean and Director