

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 1998

Test 1898: Case IH CX 90/Case IH C90/ McCormick C 90 & CX 90 & CX 95 Diesel

Follow this and additional works at: <http://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

"Test 1898: Case IH CX 90/Case IH C90/McCormick C 90 & CX 90 & CX 95 Diesel" (1998). *Nebraska Tractor Tests*. 246.
<http://digitalcommons.unl.edu/tractormuseumlit/246>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TEST 1898—NEBRASKA SUMMARY 328
CASE IH CX 90 DIESEL
ALSO CASE IH C90 DIESEL
ALSO McCORMICK C 90 & CX 90 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-1100 rpm) | | | | | |
|--|------|-----------------|------------------|-----------------|--|
| 79.7 (59.4) | 2200 | 4.97 (18.81) | 0.439 (0.267) | 16.04 (3.16) | |
| Standard Power Take-off Speed (1000 rpm) | | | | | |
| 81.1 (60.5) | 2000 | 4.76 (18.00) | 0.413 (0.251) | 17.05 (3.36) | |

VARYING POWER AND FUEL CONSUMPTION

| | | | | | |
|----------------|------|-----------------|------------------|-----------------|---------------------|
| 79.7 (59.4) | 2200 | 4.97 (18.81) | 0.439 (0.267) | 16.04 (3.16) | Air temperature |
| 69.7 (52.0) | 2272 | 4.62 (17.47) | 0.466 (0.283) | 15.10 (2.97) | 70°F (21°C) |
| 52.9 (39.4) | 2294 | 3.90 (14.78) | 0.521 (0.317) | 13.50 (2.66) | Relative humidity |
| 35.4 (26.4) | 2314 | 3.21 (12.14) | 0.636 (0.387) | 11.07 (2.18) | 33% |
| 17.8 (13.3) | 2336 | 2.51 (9.49) | 0.986 (0.600) | 7.13 (1.41) | Barometer |
| -- | 2361 | 1.57 (5.96) | -- | -- | 29.2" Hg (98.9 kPa) |

Maximum Torque - 235 lb.-ft. (319 Nm) at 1400 rpm
 Maximum Torque Rise -23.6%
 Torque rise at 1800 engine rpm -20%

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 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 7th (1HiTA) Gear | | | | | | | | | |
| 69.2 (51.6) | 5450 (24.24) | 4.76 (7.67) | 2190 | 3.6 | 0.510 (0.310) | 13.81 (2.72) | 179 (82) | 49 (9) | 29.4 (99.7) |
| 75% of Pull at Maximum Power 7th (1HiTA) Gear | | | | | | | | | |
| 54.5 (40.6) | 4105 (18.27) | 4.98 (8.01) | 2268 | 2.6 | 0.569 (0.346) | 12.35 (2.43) | 178 (81) | 49 (9) | 29.4 (99.7) |
| 50% of Pull at Maximum Power 7th (1HiTA) Gear | | | | | | | | | |
| 36.8 (27.4) | 2720 (12.10) | 5.07 (8.16) | 2291 | 1.9 | 0.711 (0.432) | 9.89 (1.95) | 174 (79) | 49 (9) | 29.4 (99.7) |
| 75% of Pull at Reduced Engine Speed 8th (4LoTA) Gear | | | | | | | | | |
| 53.8 (40.1) | 4085 (18.18) | 4.94 (7.95) | 2066 | 2.6 | 0.549 (0.334) | 12.80 (2.52) | 176 (80) | 49 (9) | 29.4 (99.7) |
| 50% of Pull at Reduced Engine Speed 8th (4LoTA) Gear | | | | | | | | | |
| 36.6 (27.3) | 2710 (12.04) | 5.06 (8.15) | 2093 | 1.5 | 0.648 (0.394) | 10.86 (2.14) | 176 (80) | 49 (9) | 29.4 (99.7) |

Location of Test: DLG Testing Station for Agricultural Machinery Max - Eyth - Weg 1, D-64823 Gros-Umstadt, Germany

Dates of Test: October - November, 1998

Manufacturer: Case United Kingdom Limited, Doncaster, DN2 4PG, England

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60° F (15°/15°C)** 0.845 **Fuel weight** 7.03 lbs/gal (0.843 kg/l) **Oil SAE 15W-40 API service classification** CF-4 **Transmission and hydraulic lubricant** Case Hy-Tran Plus fluid **Front axle lubricant** SAE 85W-140 gear oil

ENGINE: Make Perkins Diesel **Type** four cylinder vertical with turbocharger **Serial No.** AQU873802D **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 3.937" x 5.00" (100.0 mm x 127.0 mm) **Compression ratio** 17.25 to 1 **Displacement** 243 cu in (3990 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: **Type** front wheel assist **Serial No.** JJE 100 2103 **Tread width** rear 55.9" (1420 mm) to 75.7" (1922 mm) front 53.7" (1364 mm) to 76.0" (1930 mm) **Wheel base** 92.8" (2356 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.32 (2.12) second 1.59 (2.56) third 2.32 (3.73) fourth 2.80 (4.50) fifth 3.44 (5.53) sixth 4.14 (6.67) seventh 4.94 (7.95) eighth 5.39 (8.67) ninth 5.96 (9.59) tenth 6.50 (10.46) eleventh 8.70 (14.00) twelfth 10.49 (16.88) thirteenth 12.89 (20.75) fourteenth 15.55 (25.02) fifteenth 20.21 (32.52) sixteenth 24.37 (39.22) reverse 1.44 (2.31), 2.53 (4.07), 3.75 (6.04), 5.39 (8.67), 5.88 (9.46), 9.49 (15.28), 14.06 (22.63), 22.05 (35.48) **Clutch** multiple dry disc hydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1994 engine rpm and 1000 rpm at 2000 engine rpm **Unladen tractor mass** 8170 lb (3705 kg)

DRAWBAR PERFORMANCE
(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/kW.h) | Consumption Hp.hr/gal (kW.h/l) | Temp. °F cool- ing med | Temp. °C Air dry bulb | Barom. inch Hg (kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|--|--------------------------------------|---------------------------------|--------------------------------|-------------------------------|
| 49.5 (36.9) | 9220 (41.02) | 2.01 (3.24) | 2232 | 14.9 | 0.704 (0.428) | 10.00 (1.97) | 181 (83) | 57 (14) | 29.4 (99.5) |
| 3rd (2LoTA) Gear | | | | | | | | | |
| 56.2 (41.9) | 9105 (40.50) | 2.31 (3.72) | 1990 | 9.3 | 0.601 (0.366) | 11.71 (2.31) | 183 (84) | 55 (13) | 29.4 (99.5) |
| 4th (2LoDD) Gear | | | | | | | | | |
| 65.0 (48.5) | 8365 (37.22) | 2.91 (4.69) | 1991 | 6.8 | 0.519 (0.315) | 13.56 (2.67) | 183 (84) | 57 (14) | 29.4 (99.5) |
| 5th (3LoTA) Gear | | | | | | | | | |
| 66.4 (49.5) | 6915 (30.75) | 3.60 (5.80) | 1993 | 4.5 | 0.506 (0.308) | 13.90 (2.74) | 181 (83) | 55 (13) | 29.4 (99.5) |
| 6th (3LoDD) Gear | | | | | | | | | |
| 70.8 (52.8) | 6135 (27.30) | 4.33 (6.96) | 1999 | 4.0 | 0.476 (0.290) | 14.77 (2.91) | 181 (83) | 49 (9) | 29.4 (99.5) |
| 7th (1HiTA) Gear | | | | | | | | | |
| 68.7 (51.2) | 5410 (24.06) | 4.76 (7.66) | 2002 | 3.3 | 0.492 (0.299) | 14.31 (2.82) | 180 (82) | 50 (10) | 29.4 (99.5) |
| 8th (4LoTA) Gear | | | | | | | | | |
| 68.0 (50.7) | 4850 (21.57) | 5.26 (8.47) | 1995 | 2.9 | 0.496 (0.302) | 14.16 (2.79) | 180 (82) | 54 (12) | 29.4 (99.5) |
| 9th (1HiDD) Gear | | | | | | | | | |
| 66.0 (49.2) | 4305 (19.15) | 5.75 (9.25) | 1992 | 2.8 | 0.511 (0.311) | 13.76 (2.71) | 181 (83) | 55 (13) | 29.4 (99.5) |
| 10th (4LoDD) Gear | | | | | | | | | |

NOTE: The Case IH C 90 Diesel varies from the Case IH CX 90 Diesel by chassis design and transmission options.

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claims of 30% torque rise, cab sound level of 73.0 dB(A), nor 3 point lift capacity of 3665 lbs. or 5097 lbs. with optional boost cylinder. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code procedure.

NOTE: Report reissued. Supplemental permit for McCormick C 90 & CX 90 Diesels, July 2002.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1898**, Nebraska Summary 328, June 13, 2002.

Brent T. Sampson
 Test Engineer

L.L. Bashford
 M.F. Kocher
 V.I. Adamchuck
 Board of Tractor Test Engineers

| TRACTOR SOUND LEVEL WITH CAB | Front Wheel Drive | |
|-------------------------------|-------------------|---------------------|
| | Engaged dB(A) | Disengaged dB(A) |
| Maximum Sound Level | 77.0 | 77.5 |
| At no load in 7th(1HiTA) gear | 75.0 | 73.5 |
| Bystander | | |

| TRACTOR SOUND LEVEL WITHOUT CAB | Front Wheel Drive | |
|---------------------------------|-------------------|---------------------|
| | Engaged dB(A) | Disengaged dB(A) |
| At no load in 7th(1HiTA) gear | 85.5 | 85.5 |
| Bystander | | |

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

Two 18.4R34;**, 12(80)
 Two 13.6R24;**, 12(80)
 15.7 in (400 mm)
 4950 lb (2245 kg)
 3385 lb (1535 kg)
 8335 lb (3780 kg)

THREE POINT HITCH PERFORMANCE (OECD Static Test)

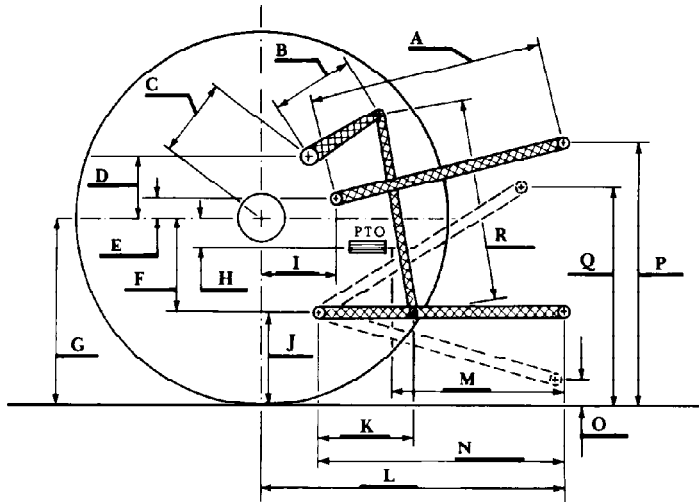
CATEGORY: II

Quick Attach: None

Maximum Force Exerted Through Whole Range: 2610 lbs (11.30 kN)
 4000 lbs (17.80 kN) (with boost cylinder)

- i) Opening pressure of relief valve: NA
- Sustained pressure of the open relief valve: 2585 psi (178 bar)
- ii) Pump delivery rate at minimum pressure: 17.0 GPM (64.3 l/min)
- iii) Pump delivery rate at maximum
 - hydraulic power: 14.1 GPM (53.2 l/min)
 - Delivery pressure: 2320 psi (160 bar)
 - Power: 19.1 HP (14.2 kW)

HITCH DIMENSIONS AS TESTED NO LOAD



| | inch | mm |
|---|------|------|
| A | 28.2 | 716 |
| B | 11.7 | 298 |
| C | 11.6 | 295 |
| D | 11.3 | 288 |
| E | 7.9 | 200 |
| F | 6.7 | 170 |
| G | 30.3 | 770 |
| H | 4.8 | 122 |
| I | 11.8 | 300 |
| J | 23.6 | 600 |
| K | 21.7 | 550 |
| L | 38.4 | 975 |
| M | 21.3 | 540 |
| N | 32.0 | 814 |
| O | 7.9 | 200 |
| P | 47.6 | 1210 |
| Q | 34.1 | 865 |
| R | 29.5 | 750 |