



Prüfstelle für Landmaschinen



***REPORT on test in accordance with
OECD STANDARD CODE 2 for the
Official Testing of Agricultural Tractor Performance***

**OECD No. 2/1898
12th April 2000**

Agricultural Tractor

CASE IH 90 (4WD), 40 km/h version

Manufacturer

**CASE United Kingdom Limited
Doncaster, DN2 4PG, England**



CASE IH CX 90 (4WD)

DLG-Test No 98-297

Tractor manufacturer:	CASE United Kingdom Limited Doncaster, DN2 4PG, England
Location of tractor assembly:	Doncaster, DN2 4PG, England
Submitted for test by:	CASE United Kingdom Limited
Selected by:	Manufacturer with agreement by DLG
Place of running-in:	Doncaster and Groß-Umstadt
Duration of running-in:	engine and tractor approximate 50 h
Location of test:	DLG-Testing Station, D-64823 Groß-Umstadt

1 SPECIFICATION OF TRACTOR

1.1 Identification

- Make/Model/Type:	CASE IH / CX 90/ wheel tractor, unit construction, four wheel driven
- Trade name:	CX 90 A, 40 km/h version
- Number of driving- wheels:	4
- Serial No.:	JJE 100 2103
- 1st serial No.:	JJE 100 0001

1.2 Engine

Make/Model:	PERKINS / 1004-4T HR (Case - model 5632)
Type:	Water-cooled 4-stroke Diesel-engine, direct injection, supercharged
Serial no.:	AQ U873802 D

1.2.1 Cylinders

Number/disposition:	4 / In line
Bore/stroke:	100 / 127 mm
Capacity:	3990 cm ³
Compression ratio:	17.25 : 1
Arrangement of valves:	Overhead valves
Cylinder liners:	Dry

1.2.2 Supercharging

- Make/Model/Type:	GARRETT / GT 2052 / exhaust driven supercharger, wastegate
- Pressure:	max. 110 kPa



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1.2.3	<p>Fuel system</p> <ul style="list-style-type: none"> - Fuel feed system: Diaphragm fuel supply pump, fuel cooler in front of engine's water cooler - Fuel filter <ul style="list-style-type: none"> Make/Model: PERKINS / - / Type : 1 replaceable filter - Capacity of fuel tank: 155 dm³ - Injection pump <ul style="list-style-type: none"> Make/Model: LUCAS/8920 A 690 T Type : DP 200, distributor pump Serial no.: 35697 MPG Manufacturer's production setting: 71 ± 2.4 mm³/stroke at full load and rated speed; Flow rate: 18.8 ± 0.7 dm³/h at 2200 min⁻¹ and full load Timing: Commencement of delivery: Static 1° BTDC ± 2° - Injectors <ul style="list-style-type: none"> Make/Model: LUCAS / KN L 063 PBA Type : multi hole Injection pressure: 29.4 ± 0.5 MPa
1.2.4	<p>Governor</p> <ul style="list-style-type: none"> - Make/Model/Type: LUCAS / - / mechanical, centrifugal variable speed governor, integral with injection pump - Governed range of engine speed: 800 ± 50 to 2360 - 50 min⁻¹ - Rated engine speed: 2200 min⁻¹
1.2.5	<p>Air cleaner</p> <ul style="list-style-type: none"> - Pre-cleaner - Make/Model/Type: DONALDSON / - / Cyclone type, integrated in main cleaner housing <ul style="list-style-type: none"> Location of air intake: In front of engine, below bonnet - Main cleaner <ul style="list-style-type: none"> Make/Model: DONALDSON / 222 421 A1 Type: Dry paper element filter with additional safety cartridge - Maintenance Indicator: Warning light on dashboard
1.2.6	<p>Lubrication system: Pressure lubrication with engine oil/cooling water heat exchanger in filter socket</p> <ul style="list-style-type: none"> - Type of feed pump: Internal gear pump - Type of filter: Full flow, replaceable (metallic cartridge) - Number of filter: 1



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1.3 Transmission

1.3.1 Clutch (travel alone)

- Make/Model/Type: LUK / 223 808 A / dry multi-plate
- Diameter of discs: 305 mm
- Method of operation: By pedal, hydraulic

1.3.2 Gear box

- Make/Model/Type: CASE / KT / mechanical, power shift, 40 km/h version
- Description:
 1. Synchro-mesh gearbox with 4 speeds
 2. synchro-mesh range gear with 2 ranges (Hi/Lo)
 3. power shifted range gear with 2 ranges (TA/DD)
 4. synchro-mesh reversing gear (F/R)
reversing operation only for range TA

	forward	reverse
no. of gears	4	4
no. of ranges	2x2	2
total	16	8

- Available options:
 1. CASE / NT / mechanical, power shift, 30 km/h version, 16 forward / 8 reverse
 2. CASE / QT / mechanical, 30 km/h version, 8 forward / 8 reverse
- Lubrication: Forced-feed lubrication, oil cooler in front of engine's water cooler

1.3.3 Rear axle and final drives

- Make/Model/Type: CASE / - / bevel gear drive with bevel gear differential and planetary final drives
- Differential lock
 - Type: Multi-plate, wet
 - Engagement: By toggle switch, electro-hydraulic (through low pressure hydraulic circuit)
 - Disengagement: By service brake operation or engine cut off

1.3.4 Front axle and final drives

- Make/Model/Type: CARRARO / 707S4 164 / bevel gear drive with bevel gear differential and planetary final drives, driven by wet multi plate clutch and central shaft, clutch electro-hydraulically operated by toggle switch (through low pressure hydraulic circuit)



2. TEST CONDITIONS

2.1 Overall dimensions

Length	Width	Height at top of	
		protective structure	exhaust silencer pipe
mm	mm	mm	mm
4000	2150	2520	2520

2.2 Ground clearance 330 mm

- Clearance-limiting part: Bracket of swinging drawbar

2.3 Tractor mass Unballasted (with frame)

	Without driver kg	With driver kg
Front	1520	1535
Rear	2185	2245
Total	3705	3780

2.4 Track specifications Not applicable

2.5 Tyres and track widths specifications

	Front	Rear
Tyres:	GOODYEAR	GOODYEAR
dimensions	13.6 R 24	18.4 R 34
load index speed index	121 A8	144 A8
type	radial ply	radial ply
maximum load (tyre manufacturer's)	14.2 kN	27.5 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	160 kPa	160 kPa
radius index (ISO 4251-1 : 1992)	560 mm	770 mm
Chosen track width:	1530 mm	1620 mm
Technically permissible axle load:	30.4 kN	54.9 kN
Technically permissible total weight:	58.9 kN	



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3. COMPULSORY TESTS RESULTS

3.1 MAIN POWER TAKE OFF PERFORMANCE (1000 min⁻¹)

Date of tests: 1st October 1998
 Location of tests: DLG-Testing Station Groß-Umstadt
 Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power kW	Speed		Fuel consumption hourly		Specific energy kWh/dm ³
	Engine min ⁻¹	P.t.o. min ⁻¹	dm ³ /h	kg/h	

Maximum power

3.1.1 At 2-hour test

60.5	2000	1000	18.00	15.17	251	3.36
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3.1.2 At rated speed

59.4	2200	1100	18.81	15.86	267	3.16
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3.1.3 At standard p.t.o. speed

60.5	1998	999	18.01	15.18	251	3.36
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3.1.4 Part loads, the governor hand lever in the position corresponding to maximum power at full load (curve a)

3.1.4.1 the torque corresponding to maximum power at rated speed

59.4	2200	1100	18.81	15.86	267	3.16
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3.1.4.2 85% of the torque obtained in 3.1.4.1

52.0	2272	1136	17.47	14.73	283	2.97
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3.1.4.3 75% of the torque defined in 3.1.4.2

39.4	2294	1147	14.78	12.46	317	2.66
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3.1.4.4 50% of the torque defined in 3.1.4.2

28.4	2314	1157	12.14	10.23	387	2.18
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3.1.4.5 25% of the torque defined in 3.1.4.2

13.3	2336	1168	9.49	8.00	600	1.41
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3.1.4.6 unloaded

-	2361	1181	5.96	5.02	-	-
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Power kW	Speed		Fuel consumption		Specific energy kWh/dm ³
	Engine min ⁻¹	P.t.o. min ⁻¹	hourly dm ³ /h	specific kg/h	

3.1.5 Part loads, the governor hand lever in the position corresponding to standard p.t.o. speed at full load (curve b)

3.1.5.1 the torque corresponding to maximum power

60.5	1998	999	18.01	15.18	251	3.36
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3.1.5.2 85% of the torque obtained in 3.1.5.1

52.5	2042	1021	16.20	13.66	260	3.24
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3.1.5.3 75% of the torque defined in 3.1.5.2

40.0	2070	1035	13.50	11.38	285	2.96
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3.1.5.4 50% of the torque defined in 3.1.5.2

27.0	2098	1049	10.89	9.18	340	2.48
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3.1.5.5 25% of the torque defined in 3.1.5.2

13.7	2130	1065	8.24	6.95	507	1.66
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3.1.5.6 unloaded

-	2168	1084	4.83	4.07	-	-
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No load maximum engine speed: 2361 min⁻¹
 Equivalent flywheel torque at rated engine speed: 258 Nm
 Equivalent flywheel torque at 2-hour test: 289 Nm
 at engine speed: 2000 min⁻¹
 Maximum equivalent flywheel torque: 319 Nm
 at engine speed: 1400 min⁻¹

Mean atmospheric conditions

temperature: 21 °C
 pressure: 989 hPa
 relative humidity: 33 %

Maximum temperatures

coolant: 81 °C
 oil: 116 °C
 fuel: 46 °C
 air intake: 21 °C



