1997

Nebraska Summary: S254 Caterpillar Challenger 55

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SUMMARY OF OECD TEST 1752–NEBRASKA SUMMARY 254
CATERPILLAR CHALLENGER 55 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—1104 rpm)					
229.6 *(171.1)*	2102	13.68 *(51.8)*	0.422 *(0.257)*	16.78 *(3.31)*	
Standard Power Take-off Speed (1000 rpm)					
251.8 *(187.8)*	1900	14.16 *(53.6)*	0.399 *(0.242)*	17.78 *(3.50)*	
Maximum Power (2 hours)					
251.8 *(187.8)*	1900	14.16 *(53.6)*	0.399 *(0.242)*	17.78 *(3.50)*	
VARYING POWER AND FUEL CONSUMPTION					
229.6 *(171.1)*	2102	13.68 *(51.8)*	0.422 *(0.257)*	16.78 *(3.31)*	Air temperature
203.3 *(151.6)*	2190	12.52 *(47.4)*	0.437 *(0.266)*	16.23 *(3.20)*	77°F *(25°C)*
155.0 *(115.6)*	2226	10.33 *(39.1)*	0.473 *(0.288)*	15.00 *(2.95)*	Relative humidity
105.2 *(78.4)*	2265	8.09 *(30.6)*	0.546 *(0.332)*	13.01 *(2.56)*	78%
53.6 *(40.0)*	2309	6.05 *(22.9)*	0.799 *(0.486)*	8.87 *(1.75)*	Barometer
4.5 *(3.4)*	2258	4.07 *(15.4)*	6.418 *(3.904)*	1.12 *(0.22)*	29.0" Hg *(97.9 kPa)*

Maximum Torque 839 lb.-ft. *(1137 Nm)* at 1252 rpm
Maximum Torque Rise 46.2%
Torque rise at 1700 engine rpm 32%

DRAWBAR PERFORMANCE (UNBALLASTED)
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—8th Gear									
204.0 *(152.2)*	15510 *(69.00)*	4.93 *(7.94)*	2100	3.2	0.462 *(0.293)*	14.72 *(2.90)*	181 *(83)*	46 *(8)*	28.9 *(97.6)*
75% of Pull at Maximum Power—8th Gear									
163.0 *(121.6)*	11630 *(51.73)*	5.26 *(8.46)*	2193	1.2	0.534 *(0.325)*	13.27 *(2.61)*	183 *(84)*	55 *(13)*	28.9 *(97.5)*
50% of Pull at Maximum Power—8th Gear									
111.3 *(83.0)*	7750 *(34.45)*	5.39 *(8.67)*	2234	0.6	0.621 *(0.378)*	11.40 *(2.25)*	180 *(82)*	55 *(13)*	28.9 *(97.5)*
75% of Pull at Reduced Engine Speed—9th Gear									
163.3 *(121.8)*	11640 *(51.75)*	5.26 *(8.47)*	1877	1.3	0.492 *(0.299)*	14.40 *(2.84)*	181 *(83)*	57 *(14)*	28.9 *(97.5)*
50% of Pull at Reduced Engine Speed—9th Gear									
111.3 *(83.0)*	7750 *(34.48)*	5.39 *(8.67)*	1908	0.6	0.549 *(0.334)*	12.92 *(2.55)*	180 *(82)*	57 *(14)*	28.9 *(97.5)*

Location of Test: Prairie Agricultural Machinery Institute (PAMI), Portage La Prairie, Manitoba, Canada

Dates of Test: September - October, 1997

Manufacturer: Caterpillar Inc. 100 N.E. Adams St. Peoria IL 61629

FUEL and OIL: Fuel No. 2 Diesel **Cetane No.** NA **Specific gravity converted to 60°/60° F *(15°/15°C)*** 0.8504 **Fuel weight** 7.089 lbs/gal *(0.849 kg/l)* **Oil SAE** 10W-30 **API service classification** CF-4 **Oil consumption for 10 hours** NA **Transmission and hydraulic lubricant** SAE 10W-30 CF-4(MTO)

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** *55K00493* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.33" × 5.00" *(110.0 mm × 127.0 mm)* **Compression ratio** 16.7 to 1 **Displacement** 442 cu in *(7245 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** one element and one cartridge **Fuel cooler** radiator for pump inlet fuel **Muffler** vertical **Cooling medium temperature control** thermostat

CHASSIS: Type tracklayer - rubber tracked **Serial No.** *7DM00548* **Tread width** 60.0" *(1524 mm)* to 90.0" *(2286 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 1.67 *(2.69)* second 1.97 *(3.17)* third 2.30 *(3.70)* fourth 2.64 *(4.25)* fifth 3.13 *(5.03)* sixth 3.65 *(5.87)* seventh 4.30 *(6.92)* eighth 5.08 *(8.18)* ninth 5.94 *(9.56)* tenth 6.95 *(11.19)* eleventh 7.96 *(12.81)* twelfth 9.40 *(15.13)* thirteenth 11.00 *(17.71)* fourteenth 12.95 *(20.84)* fifteenth 15.31 *(24.64)* sixteenth 17.92 *(28.84)* reverse 2.30 *(3.70)*, 2.64 *(4.25)*, 3.13 *(5.03)*, 3.65 *(5.87)*, 4.30 *(6.92)*, 5.08 *(8.18)*, 5.94 *(9.56)*, *6.95 (11.19)*, *7.96 (12.81)* **Clutch** multiple wet disc hydraulically actuated by foot pedal **Brakes** caliper disc hydraulicall;y operated by foot pedal **Steering** differential steering hydrostatically actuated by steering wheel **Power take-off** 1000 rpm at 1900 engine rpm **Unladen tractor mass** 23610 lb *(10709 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

DRAWBAR PERFORMANCE (UNBALLASTED)
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)*
					6th Gear				
187.1 *(139.5)*	24390 *(108.50)*	2.88 *(4.63)*	1939	15.0	0.549 *(0.334)*	12.91 *(2.54)*	181 *(83)*	45 *(8)*	28.9 *(97.6)*
					7th Gear				
214.1 *(159.6)*	22050 *(98.07)*	3.64 *(5.86)*	1901	6.7	0.480 *(0.292)*	14.76 *(2.91)*	181 *(83)*	45 *(7)*	28.9 *(97.6)*
					8th Gear				
220.9 *(164.7)*	18880 *(83.98)*	4.39 *(7.06)*	1901	5.0	0.463 *(0.281)*	15.30 *(3.01)*	181 *(83)*	46 *(8)*	28.9 *(97.6)*
					9th Gear				
223.8 *(166.9)*	15960 *(71.00)*	5.26 *(8.46)*	1901	2.6	0.455 *(0.277)*	15.56 *(3.07)*	181 *(83)*	46 *(8)*	28.9 *(97.6)*
					10th Gear				
221.1 *(164.9)*	13390 *(59.54)*	6.20 *(9.97)*	1899	1.7	0.456 *(0.278)*	15.52 *(3.06)*	181 *(83)*	48 *(9)*	28.9 *(97.6)*

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturers claim of 55% PTO torque rise. The performance figures on this summary were taken from a test conducted under the OECD Code II test code procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **1752**, Nebraska Summary 254, August 18, 1998.

LEONARD L. BASHFORD
Director

M.F. KOCHER
R.D. GRISSO
G.J. HOFFMAN
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At 75% load in 8th gear	75.5
Bystander in 16th gear	89.7

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	25.0 in *(635 mm)*	25.0 in *(635 mm)*
Ballast—Cast iron–front	2149 lb *(975 kg)*	None
–Center	503 lb *(220 kg)*	None
Height of Drawbar	21.7 in *(551 mm)*	17.7 in *(449 mm)*
Static Weight with operator	26464 lb *(12003 kg)*	23810 lb *(10800 kg)*

DRAWBAR PERFORMANCE (BALLASTED)
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—8th Gear									
202.8 *(151.3)*	15500 *(68.95)*	4.91 *(7.90)*	2100	4.1	0.492 *(0.299)*	14.42 *(2.84)*	180 *(82)*	45 *(7)*	29.0 *(97.9)*
75% of Pull at Maximum Power—8th Gear									
159.4 *(118.9)*	11620 *(51.68)*	5.15 *(8.28)*	2195	3.7	0.532 *(0.324)*	13.13 *(2.63)*	183 *(84)*	51 *(11)*	28.9 *(97.6)*
50% of Pull at Maximum Power—8th Gear									
109.0 *(81.2)*	7760 *(34.52)*	5.26 *(8.47)*	2234	3.3	0.619 *(0.376)*	11.45 *(2.26)*	181 *(83)*	51 *(11)*	28.9 *(97.6)*
75% of Pull at Reduced Engine Speed—9th Gear									
159.5 *(119.0)*	11630 *(51.74)*	5.14 *(8.28)*	1855	2.7	0.478 *(0.291)*	14.83 *(2.92)*	185 *(85)*	51 *(11)*	28.9 *(97.6)*
50% of Pull at Reduced Engine Speed—9th Gear									
109.0 *(81.2)*	7750 *(34.49)*	5.27 *(8.48)*	1892	2.2	0.540 *(0.328)*	13.13 *(2.59)*	180 *(82)*	55 *(12)*	28.9 *(97.6)*
MAXIMUM POWER IN SELECTED GEARS									
					5th Gear				
191.3 *(142.6)*	29060 *(129.27)*	2.47 *(3.97)*	1940	15.0	0.536 *(0.326)*	13.21 *(2.60)*	185 *(85)*	47 *(8)*	29.0 *(97.8)*
					6th Gear				
211.3 *(157.6)*	25710 *(114.38)*	3.08 *(4.96)*	1900	7.4	0.487 *(0.296)*	14.55 *(2.87)*	183 *(84)*	46 *(7)*	29.0 *(97.8)*
					7th Gear				
217.9 *(162.6)*	22010 *(97.89)*	3.71 *(5.98)*	1899	5.2	0.472 *(0.287)*	15.02 *(2.96)*	181 *(83)*	45 *(7)*	29.0 *(97.9)*
					8th Gear				
220.2 *(164.2)*	18770 *(83.50)*	4.40 *(7.08)*	1899	4.9	0.464 *(0.282)*	15.28 *(3.01)*	181 *(83)*	45 *(7)*	29.0 *(97.9)*
					9th Gear				
221.6 *(165.3)*	15870 *(70.57)*	5.24 *(8.43)*	1901	3.3	0.461 *(0.280)*	15.39 *(3.03)*	180 *(82)*	45 *(7)*	29.0 *(97.9)*
					10th Gear				
214.8 *(160.2)*	13080 *(58.18)*	6.16 *(9.91)*	1899	2.7	0.470 *(0.286)*	15.08 *(2.97)*	181 *(83)*	45 *(6)*	29.0 *(98.0)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: III
Quick Attach: None

Maximum Force Exerted Through Whole Range:	11300 lbs	*(50.3 kN)*
	14170 lbs	*(63.0 kN)* (with 4.5" lift cylinders)
i) Opening pressure of relief valve:	NA	
Sustained pressure of the open relief valve:	2727 psi	*(188 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	31.3 GPM	*(118.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	28.1 GPM	*(106.4 l/min)*
Delivery pressure:	2455 psi	*(169 bar)*
Power:	40.4 HP	*(30.1 kW)*

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed Maximum Pressure psi *(bar)*	2700 *(186)*
Location	lift cylinder
Hydraulic oil Temperature 'F *('C)*	140 *(60)*
Location	hydraulic sump
Category	III
Quick Attach	None

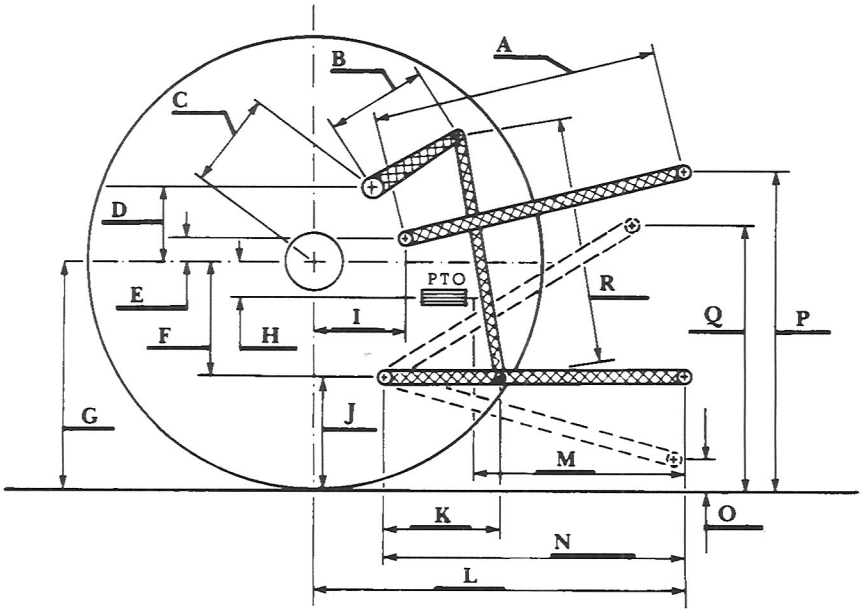
With 4" lift cylinders

Hitch point distance to ground level in. *(mm)*	8.5 *(215)*	15.6 *(395)*	23.4 *(595)*	35.2 *(895)*	41.4 *(1052)*
Lift force on frame lb.	14460	15480	15820	14770	13470
" " " " *(kN)*	*(64.3)*	*(68.8)*	*(70.4)*	*(65.7)*	*(59.9)*

With 4.5" lift cylinders

Hitch point distance to ground level in. *(mm)*	7.9 *(201)*	15.6 *(395)*	23.4 *(595)*	35.2 *(895)*	44.0*(1117)*
Lift force on frame lb.	17950	18710	18950	18330	17210
" " " " *(kN)*	*(79.8)*	*(83.2)*	*(84.3)*	*(81.5)*	*(76.5)*

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	*mm*
A	30.2	*766*
B	15.0	*380*
C	17.4	*444*
D	15.6	*395*
E	7.9	*200*
F	12.4	*315*
G	31.9	*810*
H	2.4	*60*
I	19.9	*505*
J	19.5	*495*
K	18.6	*473*
L	48.8	*1240*
M	25.2	*640*
N	36.0	*915*
O	7.9	*200*
P	41.5	*1055*
Q	37.9	*962*
R	33.7	*855*

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