OECD APPROVAL # 1361
(Restricted code)
Date of approval: March 24 1992

NEBRASKA TRACTOR TESTING LABORATORY
DEPARTMENT OF AGRICULTURAL ENGINEERING
INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA - EAST CAMPUS
LINCOLN, NEBRASKA 68583-0832, USA

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTOR PERFORMANCE

CATERPILLAR CHALLENGER 75 - RUBBER TRACKED TRACTOR.



MANUFACTURED BY: Caterpillar Inc.
100 N.E. Adams Street
Peoria, Illinois 61629, USA

NEBRASKA TEST NO. 1654

Test date: October 1991

This test report provides the results of the tests conducted in accordance with the OECD Restricted Test Code for the Official Testing of Agricultural Tractor Performance - C(87)53 Final - Annex II.

This report has been approved by the OECD Coordinating Centre in Paris (CEMAGREF) on March 24 1992

Caterpillar Challenger 75, rubber-tracked tractor OECD # 1361

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SPECIFICATIONS OF TRACTOR

Manufacturers name/address	:	Caterpillar Inc. 100 N.E. Adams Street Peoria, Illinois 61629 USA
Location of tractor assembly	:	same
Submitted for test by	:	The manufacturer.
Selected for test by	:	The manufacturer in agreement with the test station.
Place of running in	:	Caterpillar proving grounds Peoria Illinois
Duration of running in	:	62 hours
Location of test	:	Tractor Testing laboratory University of Nebraska Lincoln, Nebraska, USA

SPECIFICATIONS OF TRACTOR.

Make/Model/Type	Caterpillar Challenger 75, Unit construction, Track laying
Number of driving members	Two rubber tracks.
Serial number	*4CJ00356*
1st Serial number	This model is the 1st of the 4CJ series

ENGINE.

Make	Caterpillar
Model	3176 DITA ATAAC
Type	Diesel,direct injection,turbocharged and air to air aftercooled.
Serial Number	*43Z00251*
Cylinders	
Number/Disposition	6, in-line, vertical
Bore/Stroke	125 mm x 140 mm (4.92 in x 5.5 in)
Cubic capacity	10308 ml (629 cu in)
Compression Ratio	16 to 1
Arrangement of valves	Overhead
Cylinder liners	Wet, replaceable
Turbocharging	
Make/Model/Type	Schwitzer/S3B5060/radial flow Exhaust gas driven.
Pressure	88 - 116 kPa (12.8 - 16.8 psi)
Fuel System	
Fuel Feed system	Engine driven transfer pump
Make/Model/Type of filters	Cat/4N5823/paper element
Fuel tank capacity	832 liters (220 US gallons)

Make/Model/Type of Injection Pump	not available
Pump Serial number	not available
Production setting of pump	individual unit fuel injectors
Flow Rate (at 2100 engine rpm and full load)	45.1 - 50.0 kg/h (99.3 - 109.8 lb/h) (fuel density - 0.838 kg/l)
Make/Model/Type of injectors	Caterpillar part # 8N7003
Injection pressure	152 MPa (22000 psi)
Timing	Electronically controlled
Governor	
Make/Model/Type	Cat/NIA/ECM
Governed engine speed range	From 700 to 2300 rev/min
Rated engine speed	2100 rev/min
high-idle speed range	2300 +/- 40 rev/min
Air Cleaner.	
Pre-cleaner	
Make/Model/Type	Caterpillar/8N6883
Air intake location	Right front, above hood.
Main Cleaner	
Make/Model/Type	Caterpillar,7W5316, dry paper dual element
Maintenance indicator	Restriction gage on engine.
Lubrication system.	
Type of feed pump	Gear pump
Type of filters	Spin on, Caterpillar 1W3300
Number	One
Oil cooler	Heat exchanger with engine coolant
Cooling System.	
Type of coolant	Liquid
Type of pump	Gear driven/impeller
Fan specification	Schwitzer, direct drive
Number of fan blades	8
Fan diameter	914 mm (36 in.)
Coolant capacity	42 liter (44 qt)
Type of temperature control	Thermostat
Superpressure system	48 kPa (7 psi)
Starting system.	
Make/Model/Type of starter	Delco 42MT, electro-mechanical engagement
Power Rating	5.6 kW (7.5 hp)
Cold starting aid	Ether spray in intake manifold.
Safety device	Transmission neutral switch.

Electrical System.	
Voltage & grounding.	12 Volt DC;negative ground
Generator	
Make/Model/Type	Delco Remy/21SI type 200/9X9096
Power rating	115 Ampere at 2100 engine rev/min
Batteries	
Number & connection	4-12 V batteries in parallel
Rating	100 Ampere-hours per battery at 20 hour rating.
Exhaust system.	
Make/Model/Type	Donaldson/M120507/ expansion chamber
Location	Underhood muffler; vertical exhaust pipe, right front side.

TRANSMISSION

Clutch. (travel alone)	
Make/Model/Type	Caterpillar, wet disc,integral with transmission,oil cooled
Number of plates	6
Diameter of plates	190 mm (7.5 in)
Method of operation	Hydraulic, foot pedal.
Gear Box.	
Make/Model/Type	Caterpillar, direct drive, full powershift,mechanical
Arrangement	Four rotating countershaft clutches and four stationary planetary clutches
Number of gears	10 forward and 2 reverse, controlled by a single hand lever
Oil cooler	heat exchanger with engine coolant
Available options	none
Rear axle and final drives.	
Make/Model/Type	Caterpillar/outboard single reduction pinion and bull gear
Differential lock	Not applicable

Gear ratios and travel speeds.

Gear Number	Number of Engine revolutions for one revolution of the driving wheels	Nominal travel speed at rated engine speed of 2100 rev/min [km/h]	[mph]
1 fwd	99.535	4.2	2.6
2 fwd	65.923	6.4	4.0
3 fwd	55.880	7.5	4.7
4 fwd	48.798	8.6	5.3
5 fwd	42.491	9.9	6.1
6 fwd	37.009	11.3	7.0
7 fwd	32.320	13.0	8.1
8 fwd	28.143	14.9	9.3
9 fwd	21.773	19.3	12.0
10 fwd	14.421	29.3	18.1
1 rev	135.731	3.1	1.9
2 rev	57.942	7.2	4.5

*Calculated with a rear axle radius of 600 mm (23.6")

POWER - TAKE - OFF.

Main Power-Take-Off.

Type	Independent
Method of engagement	Multiplate wet clutch hydraulically actuated by hand lever, independent of main drive clutch
Number of shafts	One

Power take-off proportional to engine speed.

1000 rev/min

Location	Rear of tractor in vertical center plane.
Diameter of shaft	45 mm (1.75 in.)
Number of splines	20; conforms to ISO 500/1979.
Height above ground	736 mm (29.0 in.)
Distance from median plane of tractor	0 mm
Distance behind rear axle	382 mm (15.1 in.)
PTO Speed at rated engine spd	1025 rev/min
Engine speed at std PTO spd	2050
Ratio of Engine rpm to PTO rpm	2.05 to 1
Direction of Rotation (viewed facing driving end)	Clockwise.

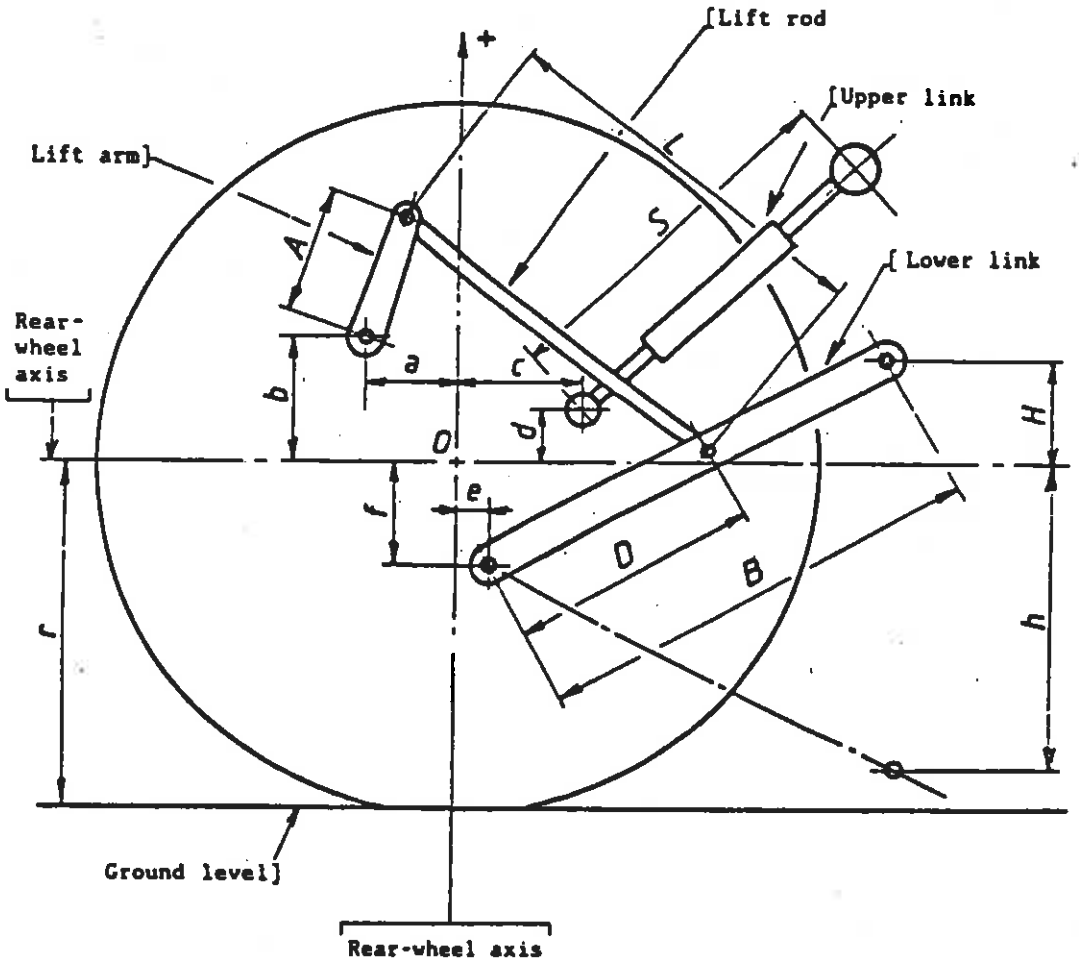
POWER LIFT.

Make/Model/Type	Caterpillar
Type of hydraulic system	Closed center; load sensing
Type/Number of cylinders	Two single acting, external.
Type of linkage lock for transport	Electrohydraulic position control
Compensator setting	17.6 +/- 0.35 MPa (2550 +/- 50 psi)
Opening pressure of cylinder safety valve	20.7 +/- 0.5 MPa (3000 +/- 72 psi)
Lift pump type	Cessna load sensing piston pump
Transmission pump to engine	Gear drive from transmission.
Type/Number of filters	1 spin-on cartridge
Location of oil reservoir	Behind cab
Type/Number/Location of tapping points.	4 pairs of ISO standard couplings at rear of tractor
Max. oil volume available for external cylinders.	40 l (10.6 gal)

THREE POINT LINKAGE

Category 3 in conformity with ISO 730/1-1977
Category adapter - none

THREE-POINT LINKAGE.



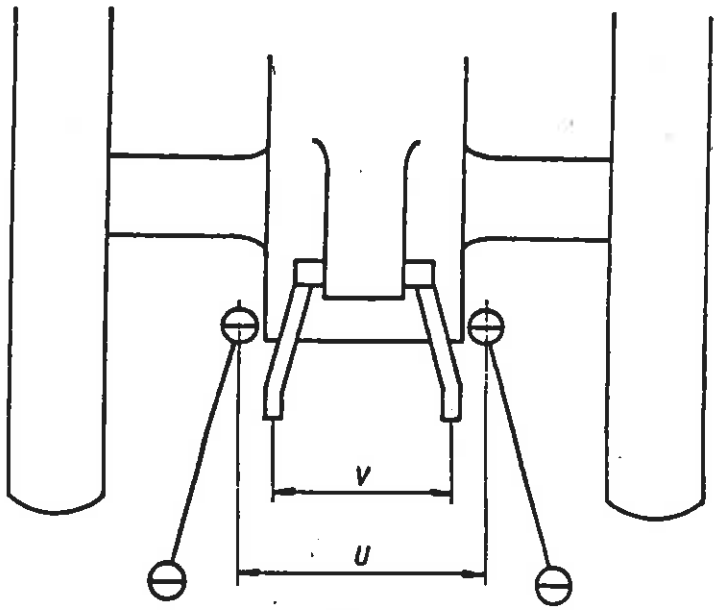


Table 1. -*Linkage geometry dimensions.

		Dimension or range		Settings used on test	
		[mm]	[in]	[mm]	[in]
Category		III			
Length of lift arms	(A)	545	21.5	same	
Length of lower links	(B)	765	30.1	same	
Distance of lift arm pivot from rear wheel axis: horizontal	(a)	225	8.9	same	
Distance of lift arm pivot from rear wheel axis: vertical	(b)	415	16.3	same	
Horizontal distance between the 2 lower link points	(u)	860	33.9	same	
Horizontal distance between the 2 lift arm end points	(v)	1040	40.9	same	
Length of upper link	(s)	640 to 740	25.2 to 29.1	678	26.7
Distance of upper link pivot from rear axle centerline: horizontal	(c)	370	14.6	same	
Distance of upper link pivot from rear axle centerline: vertical	(d)	422	16.6	same	
Distance of lower link pivot from rear wheel axis: horizontal	(e)	265	10.4	same	
Distance of lower link pivot from rear wheel axis: vertical	(f)	98	3.9	same	
Distance of lower link pivot points to lift rod pivot points on lower links.	(D)	535	21.1	same	
Length of lift rods	(L)	560 to 665	22.0 to 26.2	663	26.1
Height of lower hitch points relative to rear axle: In low position	(h)	230 to 375	9.1 to 14.8	371	14.6
Height of lower hitch points relative to rear axle: In high position	(H)	470 to 350	18.5 to 13.8	358	14.1
Height above ground of lower hitch points when locked in transport position.		950 to 1070	37.4 to 42.1	962	37.9

*Calculated with a rear axle radius of 600 mm (23.6 in)

SWINGING DRAWBAR.

Type		Oscillating
Height above ground		424 mm (16.7 in)
Adjustments		None
Distance of hitch point from rear axle:	horizontal	840 mm (33.1 in)
	vertical	174 mm (6.9 in)
Distance of hitch point from PTO shaft end:	Vertical	299 mm (11.8 in)
	Horizontal	509 mm (20.0 in)
Lateral adjustment:	Right side	134 mm (5.3 in)
	Left side	134 mm (5.3 in)
Distance of pivot point from rear axle;	horizontal	730 mm (28.7 in)
Diameter of drawbar pin hole		40 mm (1.6 in)
Maximum vertical static permissible load:		18 kN (4050 lb)

STEERING.

Make/Model/Type	Caterpillar/differential steer
Method of operation	Linde piston pump and motor, pilot activated valves, controlled by steering wheel.
Working pressure	42.0 MPa (6090 psi)
Oil cooler	Radiator ahead of main radiator

BRAKES

Service brake.	
Make/Model/Type	Caterpillar, caliper, dry disc
Method of operation	Manual/Hydraulic; foot pedal control.
Trailer braking take-off	None
Parking brake.	
Type	Caliper, dry disc.
Method of operation	Manual/mechanical, hand lever.

CAB STRUCTURE.

Make/Model/Type	Caterpillar/3W5036/Cab
Manufacturers name/address	Caterpillar Inc. 100 N.E. Adams street Peoria, Ill. 61629, USA
Protective device	Cab, not tiltable.
OECD approval number	None.

DRIVER'S SEAT.

Make/Model/Type	Grammer/DS85H/90AR
Type of suspension	Adjustable spring suspension with swivel and fore/aft isolators
Type of damping	Hydraulic
Range of adjustment	
Longitudinal	150 mm (5.9 in.)
Vertical	15 mm (0.6 in.)

LIGHTING.

	Height above ground of center		Size	Distance from outside edge to median plane of tractor	
	[mm]	[in]	[mm]	[mm]	[in]
Headlights	1478	58.2	90 x 155	1328	52.3
Rear lights	2178	85.7	100 x 165	790	31.1
Rear reflectors	1478	58.2	110 x 110	884	34.8
Stop lights	1478	58.2	110 x 110	1328	52.3

TEST CONDITIONS.

Overall dimensions.

Length	5718 mm (225.1 in)
Width - Minimum	2862 mm (112.7 in)
Height - Top of Cab	3284 mm (129.3 in)
- Top of exhaust	3492 mm (137.5 in)
Ground clearance	422 mm (16.6 in)
Clearance-limiting part	Drawbar anchor point

Tractor Mass (with Cab)

		Without driver		With driver	
		[kg]	[lb]	[kg]	[lb]
Unballasted	Total	15590	34370	15665	34535

TRACK SPECIFICATIONS.

Track materials	Rubber coated steel cords
Track width and base	700 mm (27.5 in),2718 mm (107 in)
Dynamic radius(rolling radius)	524 mm (20.6 in)
Track support system	5 bogey wheels - pneumatically suspended
Treadbars	
Number per metre	4.2
Track weight	522 kg (1150 lb)
Track length	8529 mm (336 in)

Oils and Lubrication.

Capacity and change interval:

	Capacity liter	Capacity quart	Oil change hours	Filter change hours
Engine (w/o filter)	25	26	250	250
Transmission	55	58	1000	500
Differential/final drive	193	204	1000	--
Hydraulic system	61	64	1000	1000
Steering system	35	37	1000	1000

Oil and Lubricant specifications:

	Recommended	Used during test
Engine oil		
Type	Caterpillar CXP	
Viscosity	SAE 15W40	SAE 10W30
Classification	API-CD	
Transmission		
Type	Caterpillar CXP	same
Viscosity	SAE 30W	
Classification	CD/TO-2	
Hydraulic fluid		
Type	Caterpillar CXP	same
Viscosity	SAE 10W	
Classification	HYDO	
Grease	MPGM NLGI No.2	
Number of lubrication points	24	

Fuel

Type/grade	Grade 2-D, in conformity with the national standard
Density (Pto test)	0.838 g/cubic-cm (6.993 lbs/gallon) at 15'C (59'F)
(Drawbar test)	Same as Pto test.
Cetane number	53.9
Viscosity	2.40 cSt at 38'C (100'F)

COMPULSORY TESTS RESULTS.

(1) MAIN POWER TAKE-OFF PERFORMANCE (1000 rev/min).

Date of tests : 4 October 1991
Location of tests : Tractor Testing Laboratory
University of Nebraska, Lincoln, Nebraska.
Type of Dynamometer: Eaton Dynamatic 2025 D.G.

Power kW (hp)	Speeds engine rev/min	Speeds PTO rev/min	Fuel Consumption hourly l/h (gal/h)	Fuel Consumption hourly kg/h (lb/h)	Fuel Consumption specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
1.1 Maximum power - 2 hour test.						
225.09 (301.85)	1949	951	61.19 (16.17)	51.25 (113.00)	0.228 (0.374)	3.68 (18.67)
1.2 Power at rated engine speed.- 1 hour						
209.81 (281.36)	2099	1024	59.07 (15.61)	49.48 (109.08)	0.236 (0.388)	3.55 (18.03)
1.3 Maximum power at standard PTO speed.(1000 rev/min)						
212.94 (285.55)	2050	1000	59.38 (15.69)	49.74 (109.65)	0.234 (0.384)	3.59 (18.20)

1.4 Part Loads - Governor hand lever set for maximum power at rated engine speed.

Power kW (hp)	Speeds engine rev/min	PTO rev/min	Fuel Consumption hourly 1/h (gal/h)	hourly kg/h (lb/h)	specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
(i) Torque obtained at maximum power at rated engine speed.						
209.81 (281.36)	2099	1024	59.07 (15.61)	49.48 (109.08)	0.236 (0.388)	3.55 (18.03)
(ii) 85% of the torque obtained in (i).						
182.18 (244.31)	2145	1046	52.80 (13.95)	44.23 (97.50)	0.243 (0.399)	3.45 (17.52)
(iii) 75% of the torque defined in (ii).						
139.96 (187.68)	2194	1070	43.54 (11.50)	36.47 (80.40)	0.261 (0.428)	3.21 (16.32)
(iv) 50% of the torque defined in (ii).						
95.31 (127.82)	2242	1094	34.28 (9.06)	28.71 (63.30)	0.301 (0.495)	2.78 (14.11)
(v) 25% of the torque defined in (ii).						
48.66 (65.25)	2294	1119	25.02 (6.61)	20.96 (46.20)	0.431 (0.708)	1.94 (9.87)
(vi) Unloaded.						
0.60 (0.80)	2299	1122	15.11 (3.99)	12.66 (27.90)	21.194 (34.842)	0.04 (0.20)

1.5 Part Loads - Governor hand lever set for maximum power at standard PTO speed.

Power kW (hp)	Speeds engine rev/min	Speeds PTO rev/min	Fuel Consumption hourly l/h (gal/h)	Fuel Consumption hourly kg/h (lb/h)	Fuel Consumption specific kg/kW.h (lb/hp.h)	Specific energy kW.h/l (hp.h/gal)
(i) Torque obtained at standard PTO speed						
212.94 (285.55)	2050	1000	59.38 (15.69)	49.74 (109.65)	0.234 (0.384)	3.59 (18.20)
(ii) 85% of the torque obtained in (i).						
188.36 (252.59)	2133	1041	53.61 (14.16)	44.91 (99.00)	0.238 (0.392)	3.51 (17.83)
(iii) 75% of the torque defined in (ii).						
143.10 (191.90)	2161	1054	44.03 (11.63)	36.88 (81.30)	0.258 (0.424)	3.25 (16.50)
(iv) 50% of the torque defined in (ii).						
96.75 (129.74)	2191	1069	33.95 (8.97)	28.44 (62.70)	0.294 (0.483)	2.85 (14.46)
(v) 25% of the torque defined in (ii).						
49.09 (65.84)	2224	1085	24.37 (6.44)	20.41 (45.00)	0.416 (0.684)	2.01 (10.23)
(vi) Unloaded.						
0.58 (0.78)	2251	1098	15.11 (3.99)	12.66 (27.90)	21.643 (35.582)	0.04 (0.20)

No load maximum engine speed	2299 rev/min
Equivalent engine torque:	
at rated engine speed	954 Nm(2099 rev/min)
at maximum power	1103 Nm(1949 rev/min)
at maximum torque	1301 Nm(1352 rev/min)
Mean atmospheric conditions:	
Temperature-dry bulb	24'C (75'F)
Relative humidity	43 %
Barometer	97.75 kPa(28.87 in.Hg)

Maximum temperatures:		
	Thermostat housing	91'C (196'F)
	Engine oil pan	113'C (236'F)
	Fuel return	68'C (155'F)
	Engine air intake	31'C (88'F)
	Trans./Hydr.oil	42'C (107'F)
Turbocharger boost pressure		
	at rated engine speed	97 kPa (14.0 psi)
	at maximum power	110 kPa (16.0 psi)

2. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE TEST.

Date of test: 8 October 1991
Location: Tractor Testing Lab./UNL, Lincoln, Nebr.

2.1 HYDRAULIC POWER TEST - Hydraulic pump performance.

i. Sustained pressure with relief valve open.	17.03 MPa (2470 psi)
ii. Pump delivery rate at minimum pressure and rated engine speed	103.7 l/min (27.4 gpm)

iii.

	Flow rate l/min (gal/min)	Pressure Mpa (psi)	Power kW (hp)
At 90% of relief valve setting	92.0 (24.3)	15.4 (2230)	23.6 (31.6)
At maximum hydraulic power	90.5 (23.9)	16.0 (2320)	24.1 (32.4)

Tapping point(s)	Two hydraulic outlets combined
Hydraulic fluid temperature: at flow meter	63'C (145'F)

2.2 POWER LIFT TEST.

This test was conducted at the Caterpillar facility under supervision by staff of the Tractor Testing Laboratory
Date of test: 27 August 1991

		Hitch points	Frame
Lower hitch points above ground - down position:	[mm/in]	229/9.0	178/7.0
Vertical movement: without load:	[mm/in]	729/28.7	945/37.2
Vertical movement: with load:	[mm/in]	706/27.8	902/35.5
Maximum corrected force through full range:	[kN/lb]	81.5/18315	50.6/11367
Corresponding pressure:	[kPa/psi]	15513/2250	
Moment about rear axle:	[kN.m/lb.ft]	83.8/61813	82.8/61098
Maximum mast tilt angle:	[deg]	--	13.7

Lifting height relative to horizontal position of lower links.

	[mm]	-330	-279	-201	-99	0	99
	[in]	-13.0	-11.0	-7.9	-3.9	0	3.9
Corrected lift forces							
Hitch point.	[kN]	--	129.0	120.5	112.4	106.4	101.4
	[lb]	--	28998	27090	25263	23913	22788
at frame	[kN]	106.4	--	100.7	93.7	86.9	79.6
	[lb]	23922	--	22644	21069	19539	17892

Lifting height relative to horizontal position of lower links.

	[mm]	201	300	401	427	572
	[in]	7.9	11.8	15.8	16.8	22.5
Corrected lift forces						
Hitch point	[kN]	95.8	91.0	83.3	81.5	--
	[lb]	21528	20488	18729	18315	--
at frame	[kN]	--	72.5	64.2	--	50.6
	[lb]	--	16290	14436	--	11367

Drawbar Power at Part Loads

Date of tests:		09–Oct–91		Fuel density:		0.838 kg/l								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine									Relative	Barometric
Gear	Power	Pull	Speed	Speed	Slip	SFC	SFE	Temperature, deg C					humidity	Pressure
	kW	kN	km/h	rev/min		kg/kW.h	kW.h/l	Fuel	Coolant	Oil	Dry	Wet		kPa
II. Part Loads (unballasted, trac drive at 2100 rev/min)														
				Drawbar height:		419 mm								
II.1 in selected gear at maximum power														
4	199.67	92.01	7.81	1947	1.81%	0.257	3.25	59	87	109	18	13	55%	98.48
II.1.1 75% of pull at maximum power at rated speed														
4	144.21	59.39	8.74	2161	1.07%	0.286	2.93	57	87	111	27	21	58%	98.41
II.1.2 50% of pull at maximum power at rated speed														
4	98.92	39.55	9.00	2220	0.81%	0.336	2.49	58	86	109	27	21	58%	98.41
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
5	143.57	59.41	8.70	1875	1.07%	0.269	3.12	56	87	109	27	21	58%	98.41
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
5	98.73	39.62	8.97	1928	0.81%	0.307	2.73	56	86	106	27	21	58%	98.41
II.2 in selected gear nearest to 7.5 km/h														
3	198.49	105.45	6.78	1948	2.79%	0.260	3.23	58	87	110	21	14	44%	98.48
II.2.1 75% of pull at maximum power at rated speed														
3	145.36	68.54	7.64	2162	1.28%	0.281	2.98	59	86	107	27	21	58%	98.41
II.2.2 50% of pull at maximum power at rated speed														
3	99.86	45.63	7.88	2222	0.81%	0.326	2.57	58	87	107	27	21	58%	98.41
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
4	145.14	68.51	7.63	1889	1.28%	0.269	3.11	57	87	110	27	21	58%	98.41
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
4	99.66	45.69	7.85	1937	1.02%	0.304	2.76	57	86	108	27	21	58%	98.41

Date of tests:		09–Oct–91		Fuel density:		6.990 lb/gal								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine									Relative	Barometric
Gear	Power	Pull	Speed	Speed	Slip	SFC	SFE	Temperature, deg F					humidity	Pressure
	hp	lb	mph	rpm		lb/hp.h	hp.h/gal	Fuel	Coolant	Oil	Dry	Wet		
II. Part Loads (unballasted, trac drive at 2100 rev/min)														
				Drawbar height:		16.5 in								
II.1 in selected gear at maximum power														
4	267.76	20684	4.85	1947	1.81%	0.423	16.52	138	189	229	65	55	57%	29.08
II.1.1 75% of pull at maximum power at rated speed														
4	193.38	13352	5.43	2161	1.07%	0.470	14.87	134	188	232	80	69	58%	29.06
II.1.2 50% of pull at maximum power at rated speed														
4	132.65	8891	5.59	2220	0.81%	0.552	12.66	137	187	228	80	69	58%	29.06
II.1.3 next higher gear at reduced engine speed, same pull and travel speed as II.1.1														
5	192.54	13356	5.41	1875	1.07%	0.442	15.82	133	189	229	80	69	58%	29.06
II.1.4 next higher gear at reduced engine speed, same pull and travel speed as II.1.2														
5	132.40	8907	5.57	1928	0.81%	0.505	13.85	133	188	223	80	69	58%	29.06
II.2 in selected gear nearest to 4.6 mph														
3	266.17	23706	4.21	1948	2.79%	0.427	16.38	137	188	230	69	57	46%	29.08
II.2.1 75% of pull at maximum power at rated speed														
3	194.93	15408	4.74	2162	1.28%	0.461	15.15	138	187	225	80	69	58%	29.06
II.2.2 50% of pull at maximum power at rated speed														
3	133.91	10257	4.90	2222	0.81%	0.537	13.03	136	189	225	80	69	58%	29.06
II.2.3 next higher gear at reduced engine speed, same pull and travel speed as II.2.1														
4	194.64	15401	4.74	1889	1.28%	0.442	15.81	134	188	230	80	69	58%	29.06
II.2.4 next higher gear at reduced engine speed, same pull and travel speed as II.2.2														
4	133.65	10272	4.88	1937	1.02%	0.499	14.00	134	187	226	80	69	58%	29.06

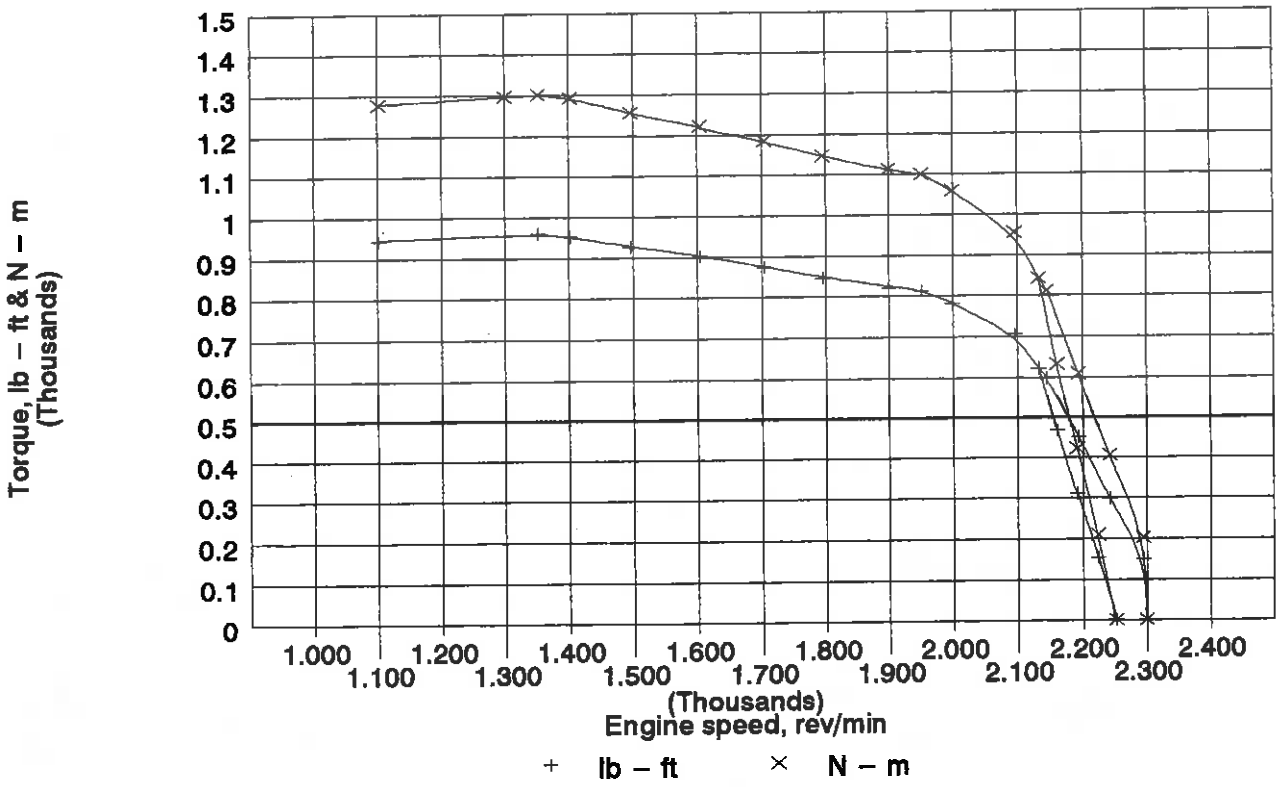
Drawbar Power at Maximum Engine Power

Date of tests:		09–Oct–91		Fuel density:		0.838 kg/l								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine										
Gear	Power kW	Pull kN	Speed km/h	Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
Ia. Maximum Power (unballasted, trac drive at 1950 rev/min)														
				Drawbar height:	419 mm									
1	155.10	150.93	3.70	2128	14.19%	0.312	2.69	58	85	107	14	10	60%	98.78
2	191.12	121.32	5.67	1946	4.70%	0.268	3.12	58	87	111	25	16	39%	98.48
3	196.49	105.45	6.78	1948	2.79%	0.260	3.23	58	87	110	21	14	46%	98.48
4	199.67	92.01	7.81	1947	1.81%	0.257	3.25	59	87	109	18	13	57%	98.48
5	198.37	79.16	9.02	1951	1.55%	0.259	3.23	59	87	109	14	11	68%	98.48
6	196.12	67.89	10.40	1949	1.12%	0.261	3.21	58	87	109	16	12	63%	98.48
7	195.80	59.00	11.95	1955	1.07%	0.264	3.17	58	88	110	21	14	46%	98.48
8	192.37	50.61	13.68	1950	0.97%	0.266	3.15	59	88	110	23	15	42%	98.48

Date of tests:		09–Oct–91		Fuel density:		6.990 lb/gal								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine										
Gear	Power hp	Pull lb	Speed mph	Speed rpm	Slip	SFC lb/hp.h	SFE hp.h/gal	Temperature, deg F Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure in Hg
Ia. Maximum Power (unballasted, trac drive at 1950 rev/min)														
				Drawbar height:	16.5 in									
1	208.00	33931	2.30	2128	14.19%	0.512	13.64	137	186	225	58	50	60%	29.17
2	256.30	27273	3.52	1946	4.70%	0.441	15.86	137	189	231	77	60	39%	29.08
3	266.17	23706	4.21	1948	2.79%	0.427	16.38	137	188	230	69	57	46%	29.08
4	267.76	20684	4.85	1947	1.81%	0.423	16.52	138	189	229	65	55	57%	29.08
5	266.02	17797	5.61	1951	1.55%	0.426	16.40	139	189	228	58	52	68%	29.08
6	263.00	15263	6.46	1949	1.12%	0.429	16.28	136	189	229	61	53	63%	29.08
7	262.57	13264	7.42	1955	1.07%	0.434	16.09	136	191	231	69	56	46%	29.08
8	257.97	11379	8.50	1950	0.97%	0.437	16.00	138	191	230	73	59	42%	29.08

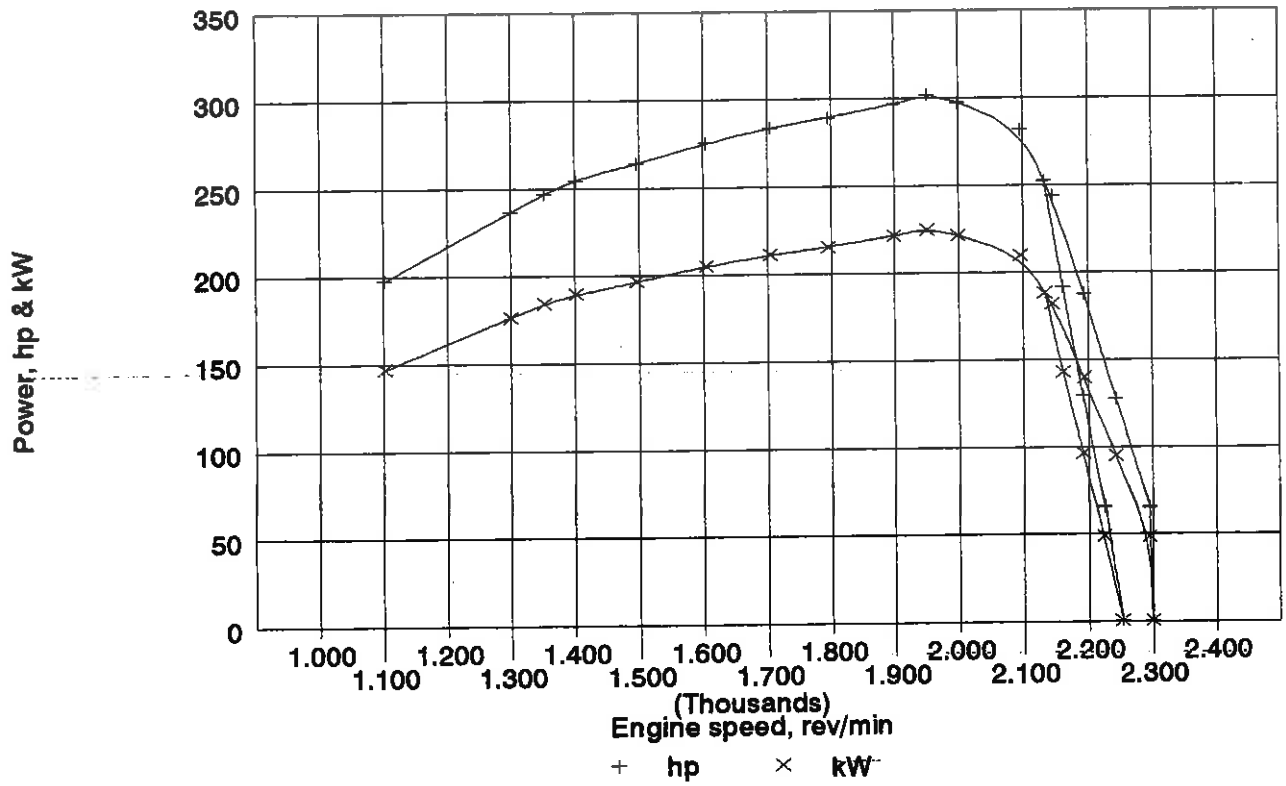
Equivalent Crankshaft Torque

Caterpillar Challenger 75



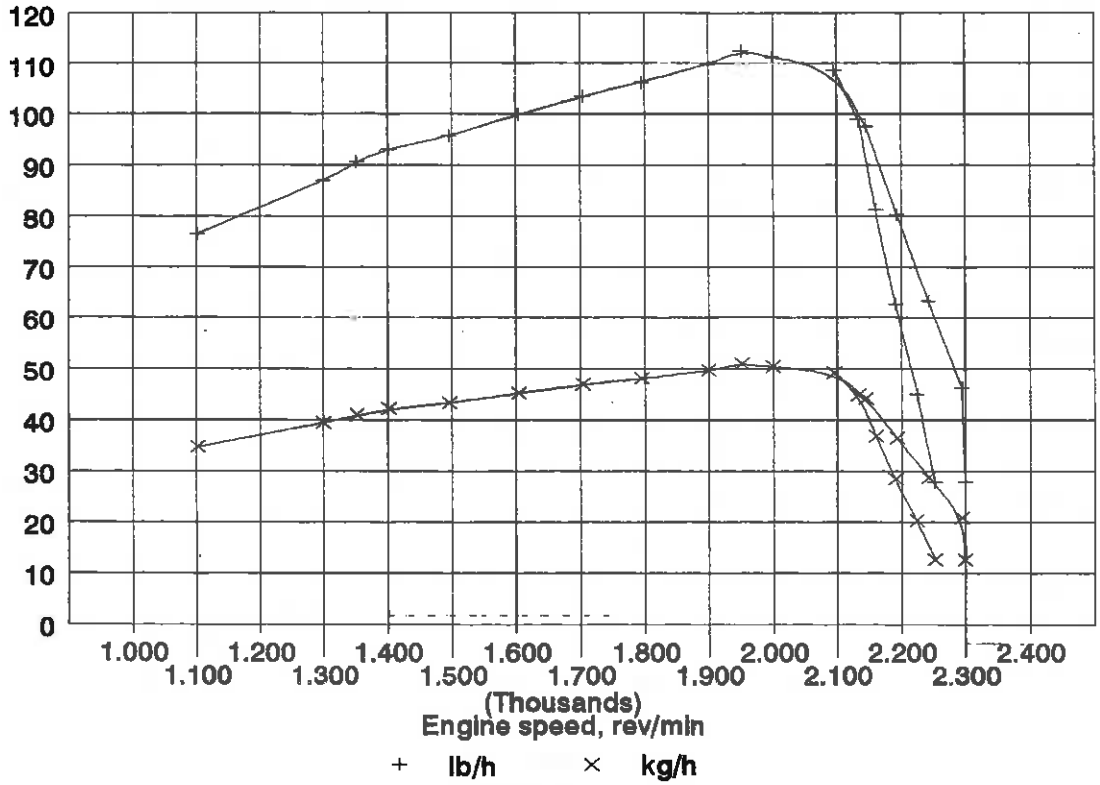
PTO Power

Caterpillar Challenger 75



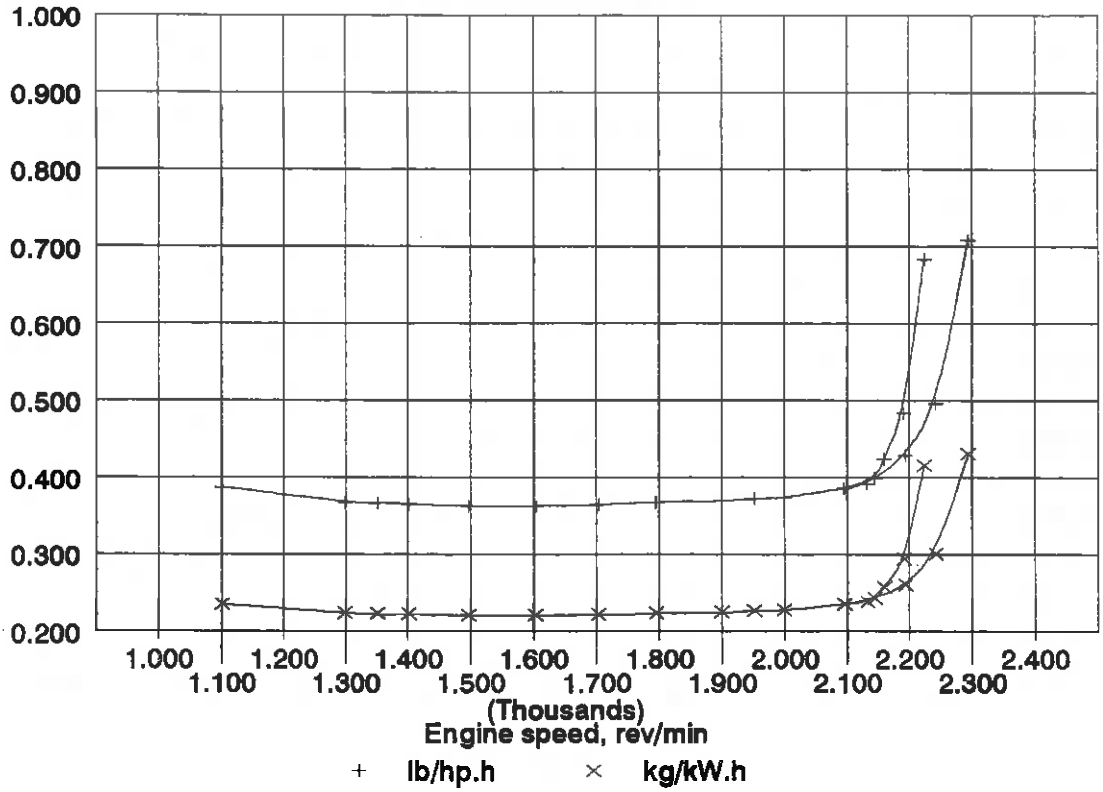
PTO Fuel Consumption

Caterpillar Challenger 75



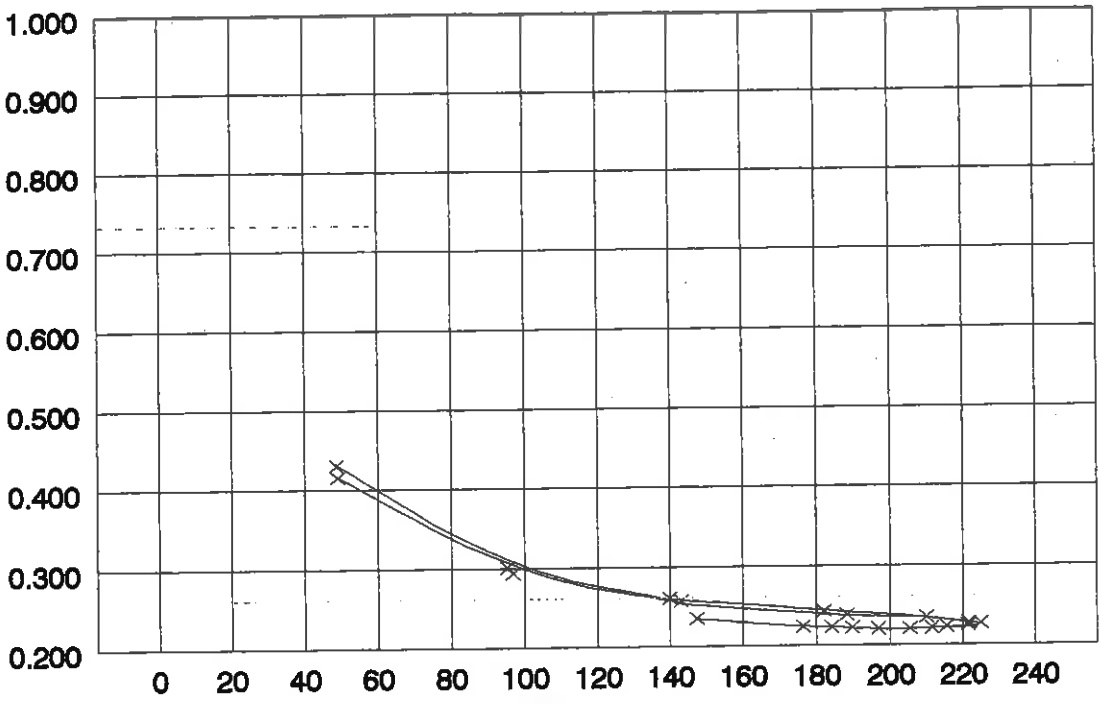
PTO Specific Fuel Consumption

Caterpillar Challenger 75



SFC vs PTO Power

Caterpillar Challenger 75



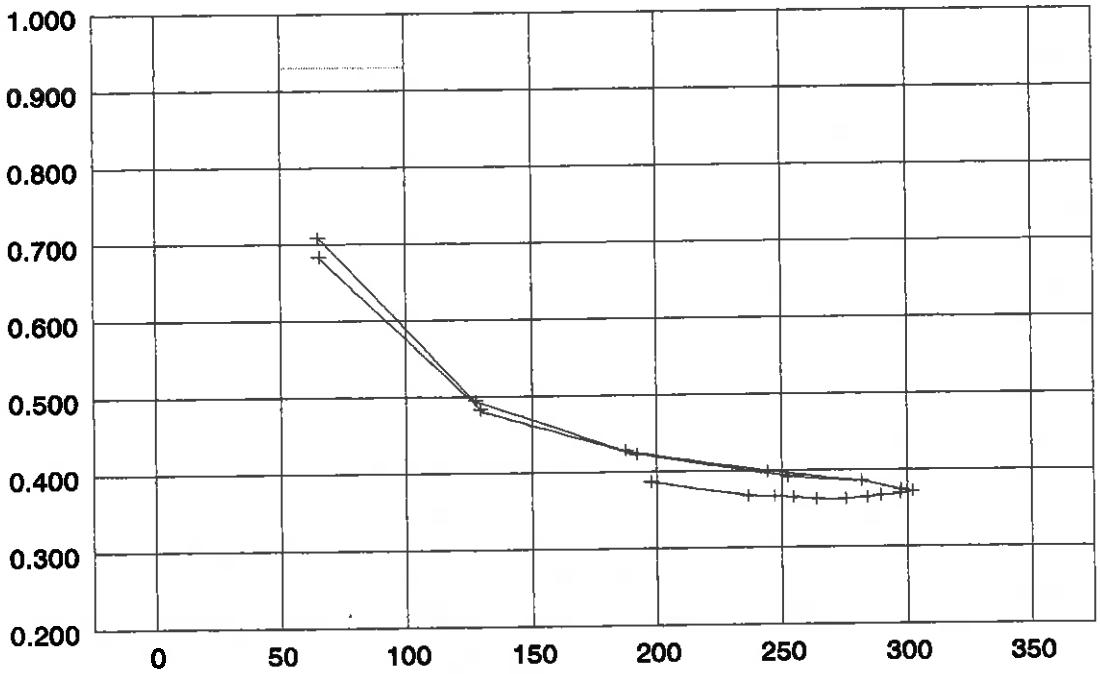
SFC, kg/kW.h

Power, kW

× kg/kW.h

SFC vs PTO Power

Caterpillar Challenger 75



SFC, lb/hp.h

Power, hp

+ lb/hp.h

Drawbar Power at Rated Engine Speed

Date of tests:		09–Oct–91		Fuel density:		0.838 kg/l								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine										
Gear	Power kW	Pull kN	Speed km/h	Speed rev/min	Slip	SFC kg/kW.h	SFE kW.h/l	Temperature, deg C Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure kPa
I. Maximum Power (unballasted, trac drive at 2100 rev/min)														
				Drawbar height:	419 mm									
1	156.76	152.61	3.70	2125	14.07%	0.313	2.68	62	85	97	12	9	68%	98.78
2	182.45	105.53	6.22	2097	3.00%	0.273	3.07	58	86	106	24	15	37%	98.48
3	187.18	91.62	7.36	2096	1.91%	0.266	3.15	59	87	108	20	13	44%	98.48
4	186.84	79.49	8.46	2097	1.39%	0.269	3.11	58	86	107	17	12	55%	98.48
5	183.67	67.98	9.73	2099	1.28%	0.272	3.08	59	86	109	14	11	66%	98.54
6	181.52	58.29	11.21	2098	1.07%	0.277	3.03	58	87	108	16	12	63%	98.51
7	179.71	50.37	12.84	2100	0.91%	0.279	3.01	58	88	110	21	14	46%	98.48
8	176.03	42.96	14.75	2100	0.86%	0.282	2.97	59	88	110	22	14	40%	98.48

Date of tests:		09–Oct–91		Fuel density:		6.990 lb/gal								
		10–Oct–91	Test #	1654										
Type of track:		Concrete		Engine										
Gear	Power hp	Pull lb	Speed mph	Speed rpm	Slip	SFC lb/hp.h	SFE hp.h/gal	Temperature, deg F Fuel	Coolant	Oil	Dry	Wet	Relative humidity	Barometric Pressure in Hg
I. Maximum Power (unballasted, trac drive at 2100 rev/min)														
				Drawbar height:	16.5 in									
1	210.22	34309	2.30	2125	14.07%	0.514	13.59	143	186	206	53	48	68%	29.17
2	244.68	23724	3.87	2097	3.00%	0.449	15.57	137	188	222	75	59	37%	29.08
3	251.01	20596	4.57	2096	1.91%	0.437	15.96	138	188	226	68	56	44%	29.08
4	250.56	17871	5.26	2097	1.39%	0.442	15.81	137	188	224	63	54	55%	29.08
5	246.30	15282	6.04	2099	1.28%	0.447	15.64	139	188	226	57	51	66%	29.10
6	243.43	13105	6.97	2098	1.07%	0.455	15.37	137	188	227	60	53	63%	29.09
7	241.00	11323	7.98	2100	0.91%	0.458	15.26	137	190	230	69	57	46%	29.08
8	236.06	9657	9.17	2100	0.86%	0.463	15.09	136	190	230	71	58	40%	29.08

Repairs: None
Remarks: None