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CODE 2
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NEBRASKA TRACTOR TEST LABORATORY
DEPARTMENT OF BIOLOGICAL SYSTEMS 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 2 FOR THE OFFICIAL TESTING OF AGRICULTURAL TRACTORS



CHALLENGER MT745
Rubber Tracklaying Tractor

MANUFACTURED BY:	**AGCO Corp** **4205 River Green Parkway** **Duluth, GA 30096**
NEBRASKA TEST NO.	**1822**
TEST DATES:	**April 16 – May 19, 2003**

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This test report provides the results of the tests conducted in accordance with the OECD Standard Test Code for the Official Testing of Agricultural Tractor Performance - C(87)53 Final, Code 2.

This report has been approved by the OECD Coordinating Centre in Paris on 27 August 2003 for the Challenger MT745 rubber tracklaying tractor with OECD Number 2/2 074.

No reproduction of this report or any part of it can be made without prior approval by the Nebraska Tractor Test Laboratory, Lincoln, Nebraska USA.

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Date: DEC 1 8 2003

SPECIMEN TEST REPORT

Note: Units shown below, which appear in ISO 1000:1992, shall be stated and followed by national units in parentheses, if necessary.

C - Tractor manufacturer's name and address:	AGCO Corp 4205 River Green Parkway Duluth, GA 30096
C - Location of tractor assembly:	12101 Barber Green Road DeKalb, IL 60115 USA
D - Submitted for test by:	The Manufacturer
C - Selected for test by:	The Manufacturer in agreement with the test station
D - Place of running-in:	Caterpillar Proving Grounds Peoria, IL USA
C - Duration of running-in:	71 hrs
C - Location of test:	Nebraska Tractor Test Laboratory University of Nebraska Lincoln, Nebraska 68583-0832 USA

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

C - Make:	Challenger
C - Model:	MT745
C - Type:	Rubber Track Laying
C - Number of driving wheels:	Two Rubber Tracks
C - Serial N°:	AGCMT745PALA30220
D - 1st Serial N°:	Confidential

1.2 Engine

C - Make:	Caterpillar
C - Model:	C-9
C - Type:	4-stroke diesel; direct injection; turbocharged; air to air aftercooled
C - Serial N°:	4ZF04281

1.2.1 *Cylinders*

C - Number/disposition:	6, in-line, vertical
D - Bore/stroke:	112 mm/149 mm
D - Capacity:	8810 cm^3
D - Compression ratio:	16:1
D - Arrangement of valves:	4 per cylinder (2 intake, 2 exhaust)
D - Cylinder liners (wet or dry):	wet

1.2.2 *Supercharging*

C - Make:	Borg Warner
C - Model:	Basic p/n 191-5094
C - Type:	S310S 080 – 1.25 VTF
D - Pressure:	0.130 MPa (@ 2100 rpm full load) 0.132 MPa (@1400 rpm full load)

1.2.3 *Fuel system*

C - Fuel feed system:	Gear driven transfer pump
C - Make:	Caterpillar
C - Model:	166-1759
C - Type of fuel filter(s):	Primary: Caterpillar 1R0770, Radial seal, spin on water separator, 10 Micron paper element Secondary: Caterpillar 1R0762, Radial seal, spin on paper element, 2 Micron
D - Capacity of fuel tank:	Main Tank 447 dm^3 Standard Optional: Up to 3 slab tanks each at 114 dm^3
C - Make:	Caterpillar
C - Model:	166-1759
C - Type of injection pump:	HEP (High Efficiency) hydraulic pump
C - Serial N°:	9440015900
- Manufacturer's production setting of injection pump	
C . Flow rate:	Rated = 46.5 dm^3/hr +/- 2.1 dm^3/hr Full load = 47.5 dm^3/hr +/- 2.1 dm^3/hr
D . Timing:	Electronically controlled
D - Make:	Caterpillar
D - Model:	204-4944
D - Type of injectors:	HEUI (Hydraulic Electronic Unit Injector)
D - Injection pressure:	Electronically controlled from 15-50 MPa
D - Make/Model/Type of carburetor:	N/A

1.2.4 *Governor*

C - Make:	Caterpillar
C - Model:	Caterpillar / ADEM III Engine Management
C - Type:	Caterpillar Electronic Control Module
C - Governed range of engine speed	1000 – 2300 rev/min
C - Rated engine speed:	2100 rev/min

1.2.5 *Air cleaner*

- Pre-cleaner	
C . Make:	Donaldson
C . Model:	PSH002357
C . Type:	Strada Pre-cleaner, scavenged

C . Location of air intake:	Front of vehicle, between radiator and hood
- Main cleaner	
C . Make:	Donaldson
C . Model:	ERB120429
C . Type:	Primary Dry with Safety
C . Location of air intake:	Front of vehicle, between radiator and hood
C - Maintenance indicator:	Restriction gauge on air intake near air cleaner

1.2.6 *Lubrication system*

D - Type of feed pump:	Concentric – Gerotor pump
C - Type of filer(s):	Spin-on (Cellulose Media) Caterpillar 1R0716
C - Number of filters:	One

1.2.7 *Cooling system*

C - Type of coolant:	Liquid
C - Type of pump:	Impeller Pump
- Specification of fan or blower	
C . Number of fan blades:	6
C . Fan diameter:	711.2 mm
D - Coolant capacity:	42 dm^3
C - Type of temperature control:	Single Thermostat
D - Superpressure system:	89.6 kPa

1.2.8 *Starting system*

C - Make:	Delco Remy America
C - Model:	42 MT
C - Type:	Solenoid engaged
D - Starter motor power rating:	7.76 kW
C - Cold starting aid:	Air inlet heater
C - Safety device:	Engine software

1.2.9 *Electrical system*

D - Voltage:	12 V
- Generator	
C . Make:	Prestolite Electric Inc.
C . Model:	8LHC
C . Type:	Brush type, clockwise rotation
D . Power:	1.92 kW @2100 rpm
- Battery of accumulators	
C . Number:	2
D . Rating	950 Cold Cranking Amps, 180 Ah at 20 hours

D . Rating — 950 Cold Cranking Amps, 180 Ah at 20 hours

1.2.10 *Exhaust system*

C - Make: Fleetguard/Nelson Industries
C - Model: 29313A, 185 mm O.D.
C - Type: Aspirating
C - Location: Muffler and exhaust pipe vertical next to front RH Cab A-Post

1.3 Transmission

1.3.1 *Clutch (travel and power take-off/travel alone)*

D - Make: Caterpillar
D - Model: Not applicable
D - Type: Wet disc, integral with transmission, oil cooled

D - Number of plates: 6
D - Diameter of plates: 190 mm
C - Method of operation: Electronic/ Hydraulic, pedal-actuated

1.3.2 *Gear box*

D - Make: Caterpillar
D - Model: Not applicable
D - Type: Direct drive, full powershift transmission

D - Description: Six rotating countershaft clutches, two stationary planetary clutches

		Forward	Reverse
C	Number of gears	16	4
C	Number of ranges/groups	All gears accessible with the use of single hand lever	All gears accessible with the use of single hand lever
C	Total of arrangements	16	4

D - Available options: Not applicable

1.3.3 *Rear axle and final drives*

D - Make: Caterpillar
D - Model: Not applicable
D - Type: Inboard single reduction, 3 planetary final drive with Caterpillar steering differential

1.3.4 *Front axle and final drives* Not applicable

1.3.5 *Total ratios and traveling speeds*

	Gear No.	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of 2100 min^{-1} (rev/min) km/h
C	1	232.77	2.67
C	2	183.30	3.40
C	3	144.83	4.28
C	4	114.05	5.44
C	5	95.79	6.49
C	6	85.08	7.31
C	7	75.43	8.24
C	8	67.00	9.27
C	9	59.60	10.43
C	10	52.94	11.73
C	11	46.94	13.23
C	12	41.69	14.90
C	13	35.01	17.73
C	14	27.57	22.53
C	15	21.79	28.52
C	16LO	17.16	36.21
C	16HI[a]	17.16	39.65
D	1R	290.96	2.14
D	2R	119.74	5.18
D	3R	106.35	5.84
D	4R	43.77	14.19

(*) Calculated with rear track dynamic radius index of 785 mm
[a] Engine high idle increases to 2300 rev/min in 16HI

- Number of revolutions of front wheels for one revolution of rear-wheels (For 4WD tractors only): Not applicable

1.4 Power take-off

1.4.1 *Main power take-off*

C - Type (independent, semi-independent or not independent):	Independent
C - Method of engagement (if necessary describe the type of clutch):	Multiple wet clutch electronic/hydraulic, independent of main drive clutch
C - Number of shafts:	1
C - Method of changing power take-off shaft ends and speeds:	None

1.4.1.1 Power take-off proportional to engine speed

Power take-off at 1000 min^{-1} (rev/min)

C - Location:	Rear of tractor, center plane
C - Diameter of power take-off shaft end:	44.45 mm
D - Number of splines:	20, in conformity with ISO 500:1991
C - Height above ground:	825 mm
C - Distance from the median plane of the tractor:	0 mm
C - Distance behind rear-wheel axis:	521 mm
C - PTO speed at rated engine speed (2100 rev/min):	1061 (rev/min)
C - Engine speed at standard power take-off speed:	1980 (rev/min)
C - Ratio of rotation speeds (engine speed/p.t.o. speed):	1.979 to 1
C - Power restriction:	None
D - Maximum torque transmissible:	2613 Nm
C - Direction of rotation (viewed from behind tractor):	Clockwise

1.4.1.2 Power take-off proportional to ground speed

Not applicable

1.4.2 *Optional power take-off*

D - Give the same description as for the main PTO.	Not applicable

1.5 Hydraulic power lift

C - Make:	Caterpillar
C - Model:	Not applicable
C - Type of hydraulic system:	Closed center, load sensing
C - Type and number of cylinders:	Two single acting
C - Type of linkage lock for transport:	Hydraulic
C - Relief valve pressure setting (tolerance):	20 MPa +/- .2 MPa
D - Opening pressure of cylinder safety valve (if fitted):	22 MPa
D - Lift pump type:	Piston pump
D - Transmission between pump and engine:	1.282 gear ratio
C - Type and number of filters:	One, 5 micron filter
C - Site of oil reservoir:	Internal to main reservoir
C - Type, number and location of tapping points:	4 pairs of ISO-5675 standard couplings at rear of tractor
D - Maximum volume of oil available to external cylinders:	120 dm^3

1.6 Three point linkage

C - Category: 3, in conformity with category 3 of ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979.

C - Category adapter:	Quick attaching coupler

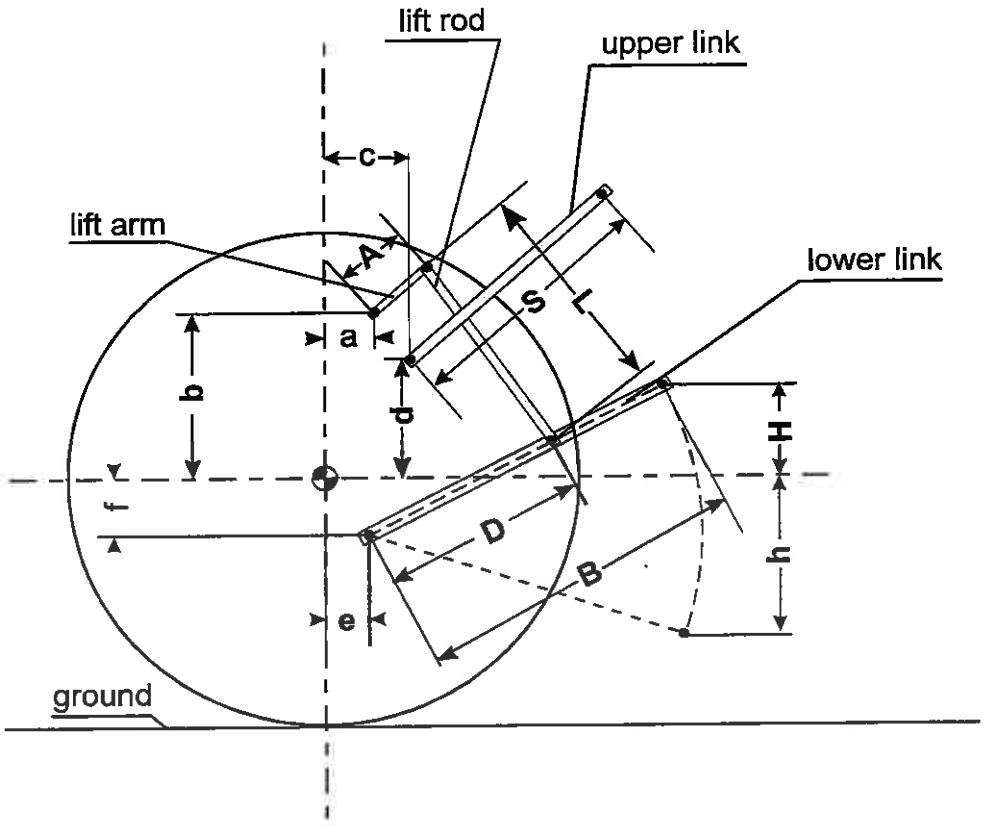


Figure 2.1
Lift test - Linkage Geometry

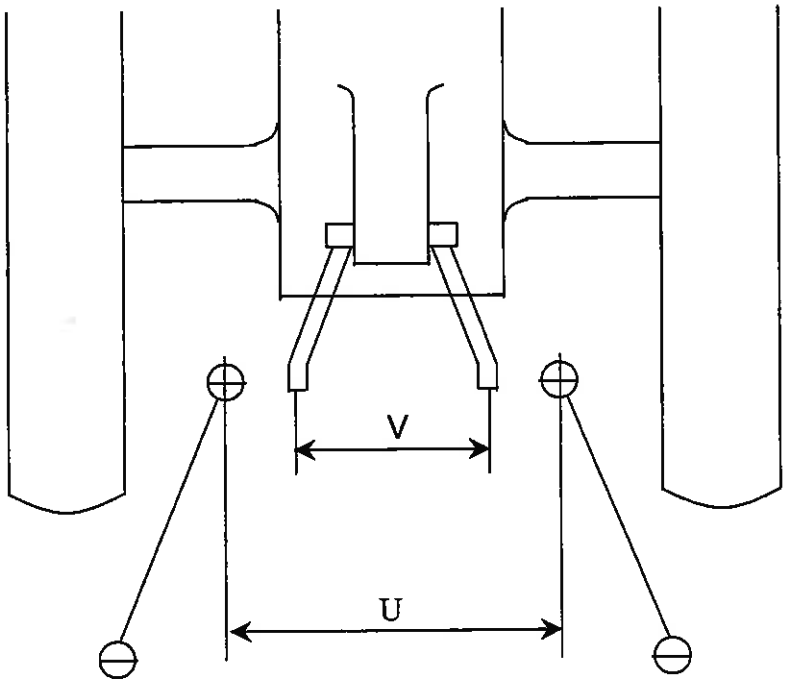


Figure 2. Lift test - Linkage Geometry

			Dimension or range	Settings used in test
			mm	mm
C	Length of lift arms:	(A)	550	550
C	Length of lower links:	(B)	1005	1005
	Distance of lift arm pivot point from rear-wheel axis			
C	- horizontally:	(a)	-125	-125
C	- vertically:	(b)	583	583
C	Horizontal distance between the 2 lower link points:	(u)	554	554
C	Horizontal distance between the 2 lift arm end points:	(v)	750	750
C	Length of upper link:	(S)	635 - 785	702
	Distance of upper link pivot point from rear wheel axis			
C	- horizontally:	(c)	425	425
C	- vertically:	(d)	290	290
	Distance of lower link pivot point from rear wheel axis			
C	- horizontally:	(e)	225	225
C	- vertically:	(f)	300	300
C	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	688	688
C	Length of lift rods:	(L)	988 - 1125	1079
	Height of lower hitch points relative to the rear-wheel axis			
C	- in low position:	(h)	487 - 678	641
C	- in high position:	(H)	111 - 278	173
C	Height above ground of lower hitch points when locked in transport position (*)		981 - 1148	1022
(*) Assuming r = 870 mm				

Table 2.1
Dimensions of linkage geometry when connected to the standard frame

1.7 Swinging drawbar

C - Type:	Sliding drawbar
- Height above ground	
C . Maximum:	450 mm
C . Minimum:	450 mm
C - Type of adjustment:	None
C - Distance of hitch point from rear-wheel axis, horizontally:	1023 mm
- Distance of hitch point from power take-off shaft end	
C . Vertically:	344 mm
C . Horizontally:	502 mm
C - Lateral adjustment (centre of clevis)	
C . Right hand	160 mm
C . Left hand	160 mm
C - Distance of pivot point from rear-wheel axis, horizontally:	0 mm
C - Diameter of drawbar pin hole:	41 mm
C - Maximum vertical permissible load:	36.6 kN

1.8 Trailer hitch

- Type:	Not applicable

1.9 Holed drawbar

- Number of holes:	Not applicable

1.10 Steering

D - Make:	Caterpillar
D - Model:	Not applicable
D - Type:	Differential steer
- Method of operation	
D . Pump(s):	Rexroth piston pump and Rexroth motor, electro hydraulic valve controlled by steering wheel
D . Ram(s):	Not applicable
D - Working pressure:	48 MPa

1.11 Brakes

1.11.1 *Service brake*

D - Make:	Caterpillar
D - Model:	MT700
D - Type:	Internal wet disc, oil cooled, hydraulically boosted, located in steering differential
C - Method of operation:	Manual pedal and power brake modulating valve
D - Trailer braking take-off (hydraulic or air brake):	None on North American machines

1.11.2 *Parking brake*

C - Type:	Internal wet disc
C - Method of operation:	Spring applied, Electronic/hydraulic release, switch operated

1.12 Wheels

- Number	
C . Front:	One – driving and steering
C . Rear:	One – driving and steering
- Wheelbase:	Not applicable
D - Track width adjustment:	Manual adjustment with gauge adjusting tool

		Minimum	Maximum	Adjustment
		mm	mm	method
D	Front	1524	4064	Sliding hub on axle
D	Rear	1524	4064	Sliding hub on axle

1.13 Protective structure

C - Make:	Caterpillar/Crenlo
C - Model:	151-9998
C - Type:	4-post ROPS
C - Manufacturer's name and address:	Crenlo Inc 1600 4th Ave NW Rochester, MN
- Protective device	
C . Cab/frame/ rollguard/ other:	Cab/frame
C . Tiltable/not tiltable:	Not tiltable
- OECD approval	
C . Approval number:	4/0709
C . Date of approval:	21 February 02
C . Nos. of minor modification certificates, if any:	Not applicable

1.14 Seat

1.14.1 *Driver's seat*

C - Make:	Sears
C - Model:	SA 18603
C - Type:	Air Seat
C - Seat and steering wheel reversible:	No
C - Type of suspension:	Air
C - Type of damping:	Adjustable damper
- Range of adjustment	
C . Longitudinally:	152 mm
C . Vertically	172 mm
C - Safety belt	Yes

1.14.2 *Optional driver's seat(s)*

D - Make:	Not applicable

1.14.3 *Passenger seat*

C - Location:	Left side of cab
C - Capacity (number):	One

1.15 Lighting

		Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
		mm	mm	mm
C	Headlights	1830	460 x 120	250
C	Sidelights	1740	110 x 110	480
C	Rearlights	2040	600 x 100	750
C	Reflectors	2110	230 x 110	1280

2. TEST CONDITIONS

Separate tables may be added to report other test conditions or equipments.

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Unballasted	5290	3376	3934	3444	3360

2.2 Ground clearance (unballasted tractor): 582 mm

- Clearance-limiting part: Drawbar

2.3 Tractor mass

Mass (with cab, full fuel tank):

	Without driver	With driver
	kg	kg
Unballasted		
Total	12714	12789
Ballasted		
Total	13816	13891

Ballast Added (1)	Number of Weights	Total Mass	Liquid
		kg	kg
Front (weight support)	1	295	-
Front (front idler weights)	13	807	-

2.4 Track specifications

Track materials	Rubber covered steel cables
Track width and base	457 mm, 2600 mm
Dynamic radius (rolling radius)	785 mm
Track support system	Six rubber midwheels
Treadbars	Rubber
Number of treadbars per metre	14
Height, width and length	38 mm 70 mm 210 mm
Other specifications	

2.5 Tyres and track width specifications

Track width: 2435 mm

2.6 Fuel

- Type: Diesel Fuel,Grade 2-D, in conformity with national standard.

- Density at 15°C: 0.837 g/cm^3

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine	30	250	250
Gear box*	181.7*	1000*	250*
Front axle	N/A	N/A	N/A
Rear axle	N/A	N/A	N/A
Final drive (front)	N/A	N/A	N/A
Final drive (rear)*	181.7*	1000*	250*
Hydraulic system*	181.7*	1000*	250*
Steering*	181.7*	1000*	250*
(*) Common with gear box and rear axle.			

2.7.2 *Specifications (SAE, API, CCMC, ACEA, Mil.L, ISO)*

	Recommended	Used during test
Engine oil . Type: . Viscosity: . Classification:	Caterpillar Fluids SAE 10W30 API-CH-4/SJ	Caterpillar Fluids SAE 10W30 API-CH-4/SJ
Transmission oils . Type: . Viscosity: . Classification:	Caterpillar MTO Fluids SAE 10W30	Caterpillar MTO Fluids SAE 10W30
Hydraulic fluid . Type: . Viscosity: . Classification:	Caterpillar MTO Fluids SAE 10W30	Caterpillar MTO Fluids SAE 10W30
Steering oil . Type: . Viscosity: . Classification:	Caterpillar MTO Fluids SAE 10W30	Caterpillar MTO Fluids SAE 10W30

2.7.3 *Grease*

- Number of lubrication points: Six, 3pt hitch models only

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of tests: 16-Apr-03 Nebraska Tractor Test Laboratory, Lincoln, NE, USA
- Type of dynamometer bench: Eaton

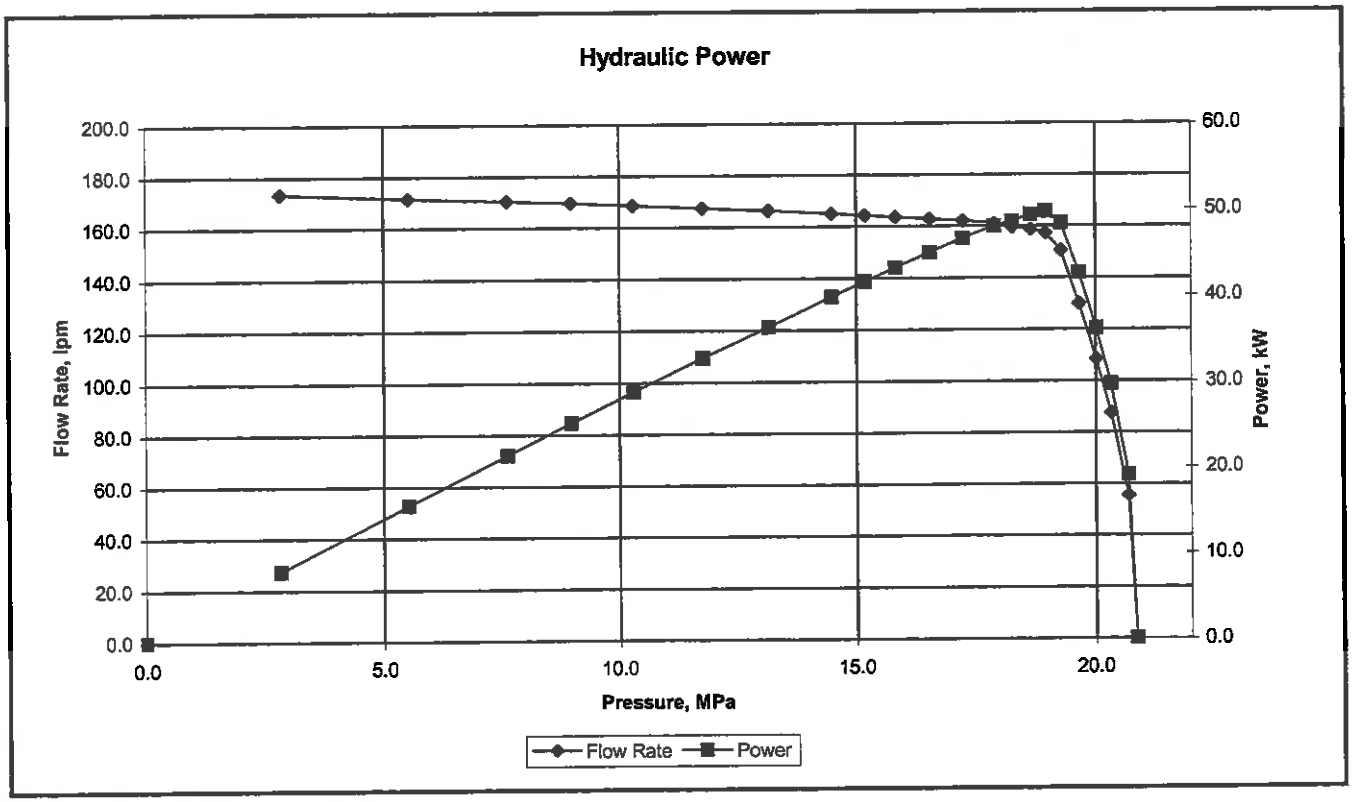
	Speed		Fuel consumption			Specific
Power	Engine	PTO	Hourly		Specific	energy
kW	rev/min		kg/h	l/h	g/kWh	kW-h/l
3.1 MAXIMUM POWER - TWO HOUR TEST						
176.13	1700	858	39.18	46.83	222	3.76
3.1.2 POWER AT RATED ENGINE SPEED						
155.05	2100	1060	38.23	45.70	247	3.39
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
164.66	1982	1000	38.73	46.29	235	3.56
3.1.4 PART LOADS						
3.1.4.1 the torque corresponding to maximum power at rated engine speed						
155.05	2100	1060	38.23	45.70	247	3.39
3.1.4.2 85% of torque obtained in 3.1.4.1						
136.41	2177	1098	35.79	42.78	262	3.19
3.1.4.3 75% of torque defined in 3.1.4.2						
103.19	2200	1110	30.07	35.95	291	2.87
3.1.4.4 50% of torque defined in 3.1.4.2						
68.95	2201	1110	24.09	28.79	349	2.39
3.1.4.5 25% of torque defined in 3.1.4.2						
34.67	2201	1110	17.28	20.66	498	1.68
3.1.4.6 unloaded						
1.58	2201	1110	11.16	13.34	7080	0.12
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 +/- 25 rev/min)						
3.1.5.1 the torque corresponding to maximum power						
164.66	1982	1000	38.73	46.29	235	3.56
3.1.5.2 85% of torque obtained in 3.1.5.1						
140.59	1990	1004	34.02	40.66	242	3.46
3.1.5.3 75% of torque defined in 3.1.5.2						
105.49	1991	1004	28.03	33.51	266	3.15
3.1.5.4 50% of torque defined in 3.1.5.2						
70.56	1990	1004	21.64	25.86	307	2.73
3.1.5.5 25% of torque defined in 3.1.5.2						
34.57	1991	1004	14.83	17.73	429	1.95
3.1.5.6 unloaded						
1.43	1991	1004	9.12	10.90	6396	0.13

- No load maximum engine speed: 2201 rev/min
- Torque (equivalent crankshaft) at rated speed:
  - At rated engine speed 705 Nm
  - At 2-hour test 989 Nm
- Maximum torque (equivalent crankshaft): 1090 Nm
  (engine speed: 1200 rev/min)

Mean atmospheric conditions:		
Dry bulb	24	°C
Pressure	96.5	kPa
Relative Humidity	51	%
Maximum temperatures:		
Coolant	86	°C
Engine oil	89	°C
Fuel	62	°C
Engine air intake	36	°C

3.2 Hydraulic power lifting forces

Date of Test:	29-Apr-03	Challenger MT 745	
Location of Test-City-State:		Tractor Test Lab, Lincoln, NE, USA	
Tapping point used for test:		Two sets of remote hydraulic outlets	
I.	Sustained pressure with pump stalled:		
	20.86 MPa		
	3025 psig		
II.	Pump delivery rate at minimum pressure:		
	173.4 l/min		
	45.8 gpm		
III.	Flow rate, pressure, power:		
	90% of relief valve setting		
	158.6 l/min	18.65 MPa	49.3 kW
	41.9 gpm	*2705 psig*	*66.1 hp*
	Maximum hydraulic power:		
	157.1 l/min	18.97 MPa	49.7 kW
	41.5 gpm	*2751 psig*	*66.6 hp*
IV.	Hydraulic fluid temperature at flow meter:		
	71 °C		
	159 °F		
	This hydraulic system does not use an accumulator. Opening and closing pressures of the unloading valve could not be measured.		



3.2.2 POWER LIFT TEST, Category III w/Quick coupler
Date of test: 21 August 2002. (Data taken from test conducted on Challenger MT 755 which is mechanically identical).

	Hitch points	Frame
Lower hitch points above ground - down position:	229 mm	206 mm
Vertical movement - without load:	792 mm	932 mm
with load:	780 mm	918 mm
Maximum corrected force exerted through full range:	81.7 kN	76.8 kN
Corresponding pressure:	18.2 MPa	18.2 MPa
Moment about rear axle:	100.4 kNm	141.2 kNm
Maximum mast tilt angle	--	10.7 degrees

Lifting height relative to horizontal position of lower links.

mm	-344	-321	-297	-198	-93	0	100	199	300	400	459	574
Corrected lift forces												
At the Hitch point kN	--	81.7	84.7	90.5	98.6	104.1	108.8	115.0	120.6	127.3	130.9	--
At the Frame kN	76.8	81.8	--	86.7	92.1	95.2	95.4	96.0	--	95.7	94.8	93.3
Corresponding pressure 18.2 Mpa												

OECD Drawbar Data (SI)

Date of tests: 21,22-Apr-03 | Fuel density: 0.837 kg/l

Type of track: Concrete | Test number: 1822

3.3.1 Maximum power in tested gears (unballasted, CRWL) | Tire pressure: 0 kPa, rear 0 kPa, front | Drawbar Height: 521 mm

Gear	Gear Designation	Power	Drawbar pull	Speed	Engine speed	Slip	Fuel		Temperature			Atmospheric conditions		
							SFC	SFE	Fuel	Coolant	Oil	Temperature	Relative humidity	Pressure
		kW	kN	km/h	rev/min	%	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
1	1	71.79	107.82	2.40	2200	14	0.411	2.03	56	82	73	17	48	98.0
2	2	99.61	119.80	2.99	2185	15	0.365	2.29	55	82	66	7	71	98.0
3	3	118.79	112.27	3.81	2100	11	0.324	2.58	55	82	69	8	67	98.0
4	4	129.43	103.59	4.50	1942	10	0.302	2.77	57	83	79	18	41	98.0
5	5	137.87	95.06	5.22	1842	7	0.283	2.95	57	83	83	18	42	97.9
6	6	143.20	94.82	5.44	1705	8	0.274	3.05	57	83	83	19	43	97.9
7	7	147.54	83.50	6.36	1702	4	0.267	3.13	58	83	82	17	49	98.0
8	8	151.46	75.33	7.24	1697	3	0.260	3.22	58	83	83	12	66	98.0
9	9	149.31	65.47	8.21	1700	2	0.263	3.18	58	83	81	14	58	98.0
10	10	150.99	58.48	9.30	1700	2	0.261	3.20	58	83	82	11	71	98.0
11	11	145.61	49.71	10.54	1702	1	0.270	3.09	58	83	83	17	49	98.0
12	12	146.78	44.28	11.93	1707	1	0.267	3.13	58	83	84	16	52	98.0
13	13	144.69	36.76	14.17	1698	1	0.270	3.10	59	83	84	17	52	98.1
3.3.2 Fuel consumption														
3.3.2.1			In selected gear at maximum power at rated engine speed.											
8	8	129.59	51.24	9.10	2100	1	0.295	2.84	57	83	75	14	59	98.0
3.3.2.1.1			75% of pull at maximum power at rated engine speed											
8	8	102.15	38.38	9.58	2199	1	0.336	2.49	57	83	81	20	44	98.0
3.3.2.1.2			50% of pull at maximum power at rated engine speed											
8	8	68.46	25.62	9.62	2200	0	0.406	2.06	56	82	77	21	35	98.0
3.3.2.1.3			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
9	9	102.01	38.26	9.60	1960	1	0.309	2.70	57	83	82	20	44	98.0
3.3.2.1.4			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
9	9	68.42	25.57	9.63	1959	0	0.367	2.28	56	82	81	22	33	97.9
3.3.2.1.5			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.1											
11	11	102.07	38.37	9.58	1540	1	0.285	2.94	58	83	81	20	41	98.0
3.3.2.1.6			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.1.2											
11	11	68.38	25.61	9.61	1540	1	0.324	2.58	57	82	78	22	34	97.9
3.3.2.2			In selected gear nearest to 7.5 km/h at rated engine speed.											
6	6	132.49	67.24	7.09	2098	2	0.290	2.88	57	83	77	12	66	98.0
3.3.2.2.1			75% of pull at maximum power at rated engine speed											
6	6	104.98	50.36	7.50	2200	1	0.327	2.56	56	82	81	18	49	98.0
3.3.2.2.2			50% of pull at maximum power at rated engine speed											
6	6	70.55	33.61	7.56	2199	1	0.386	2.17	56	82	78	20	37	98.0
3.3.2.2.3			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1											
7	7	104.97	50.38	7.50	1950	1	0.300	2.79	57	83	81	18	50	98.0
3.3.2.2.4			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2											
7	7	70.49	33.59	7.56	1949	1	0.351	2.38	56	82	81	20	37	98.0
3.3.2.2.5			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.1											
9	9	104.93	50.39	7.50	1541	2	0.280	2.99	58	83	82	19	47	98.0
3.3.2.2.6			Higher gear at reduced engine speed, same pull and travel speed as 3.3.2.2.2											
9	9	70.57	33.64	7.55	1539	1	0.311	2.69	57	[illegible]	79	21	34	98.0

OECD Drawbar Data (SI)

Date of tests: 21,22-Apr-03							**Fuel density:** 0.838 kg/l							
Type of track: Concrete							**Test number:** 1822							
4.1 Maximum power in tested gears (unballasted, CRWL)							**Tire pressure:** TRK kPa, rear TRK kPa, front					**Drawbar Height:** 521 mm		
Gear	Gear Designation	Power	Drawbar pull	Speed	Engine speed	Slip	Fuel		Temperature			Atmospheric conditions		
							SFC	SFE	Fuel	Coolant	Oil	Temperature	Relative humidity	Pressure
		kW	kN	km/h	rev/min	%	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
1	1	71.23	107.39	2.39	2199	14	0.414	2.02	56	82	72	17	48	98.0
2	2	98.56	117.58	3.02	2192	14	0.367	2.28	55	82	69	7	71	98.0
3	3	118.00	111.59	3.81	2102	11	0.326	2.57	56	82	72	8	67	98.0
4	4	122.48	85.75	5.14	2096	5	0.312	2.68	57	82	78	17	45	98.0
5	5	129.83	74.78	6.25	2100	3	0.294	2.84	58	83	84	17	49	98.0
6	6	132.49	67.24	7.09	2098	2	0.290	2.88	57	83	77	12	66	98.0
7	7	129.56	57.99	8.04	2097	2	0.296	2.83	57	83	78	13	62	98.0
8	8	129.59	51.24	9.10	2100	1	0.295	2.84	57	83	75	14	59	98.0
9	9	127.13	44.68	10.24	2096	1	0.302	2.77	57	83	77	10	75	98.0
10	10	125.93	39.11	11.59	2101	1	0.303	2.76	57	83	79	16	51	98.0
11	11	120.17	33.02	13.10	2102	1	0.318	2.63	57	83	80	17	52	98.1

OECD Drawbar Data (SI)

Date of tests: 25,28-Apr-03 & 14-May-03 | Fuel density: 0.837 kg/l

Type of track: Concrete | Test number: 1822

4.2 Maximum power in tested gears (ballasted, crwl) | Tire pressure: (trk) kPa, rear (trk) kPa, front | Drawbar Height: 521 mm

Gear	Gear Designation	Power	Drawbar pull	Speed	Engine speed	Slip	Fuel		Temperature			Atmospheric conditions		
							SFC	SFE	Fuel	Coolant	Oil	Temperature	Relative humidity	Pressure
		kW	kN	km/h	rev/min	%	kg/kW.h	kW.h/l	°C	°C	°C	°C	%	kPa
*2	2	105.69	127.02	3.00	2160	14	0.349	2.40	55	82	71	12	94	97.5
3	3	122.34	116.71	3.77	2064	10	0.316	2.65	56	83	78	14	78	97.6
4	4	133.31	105.90	4.53	1916	8	0.295	2.84	58	83	84	21	42	97.2
5	5	141.80	100.74	5.07	1779	7	0.277	3.02	58	83	86	21	42	97.2
6	6	146.97	95.31	5.55	1700	6	0.267	3.13	59	83	88	20	41	97.2
7	7	147.73	83.52	6.37	1698	4	0.265	3.16	59	83	86	19	43	97.2
8	8	150.26	74.56	7.26	1700	3	0.262	3.19	58	83	85	18	46	97.2
9	9	149.60	65.42	8.23	1703	2	0.265	3.16	58	83	81	16	51	97.2
10	10	150.39	58.22	9.30	1701	2	0.262	3.19	58	83	80	16	52	97.2
11	11	145.56	49.79	10.52	1699	1	0.269	3.11	59	83	83	17	48	97.2
12	12	145.12	44.03	11.87	1701	1	0.270	3.10	58	83	85	17	49	97.2
13	13	143.25	36.43	14.15	1696	1	0.274	3.06	58	83	83	18	46	97.2

* Note: Slip within operating procedures of testing station.

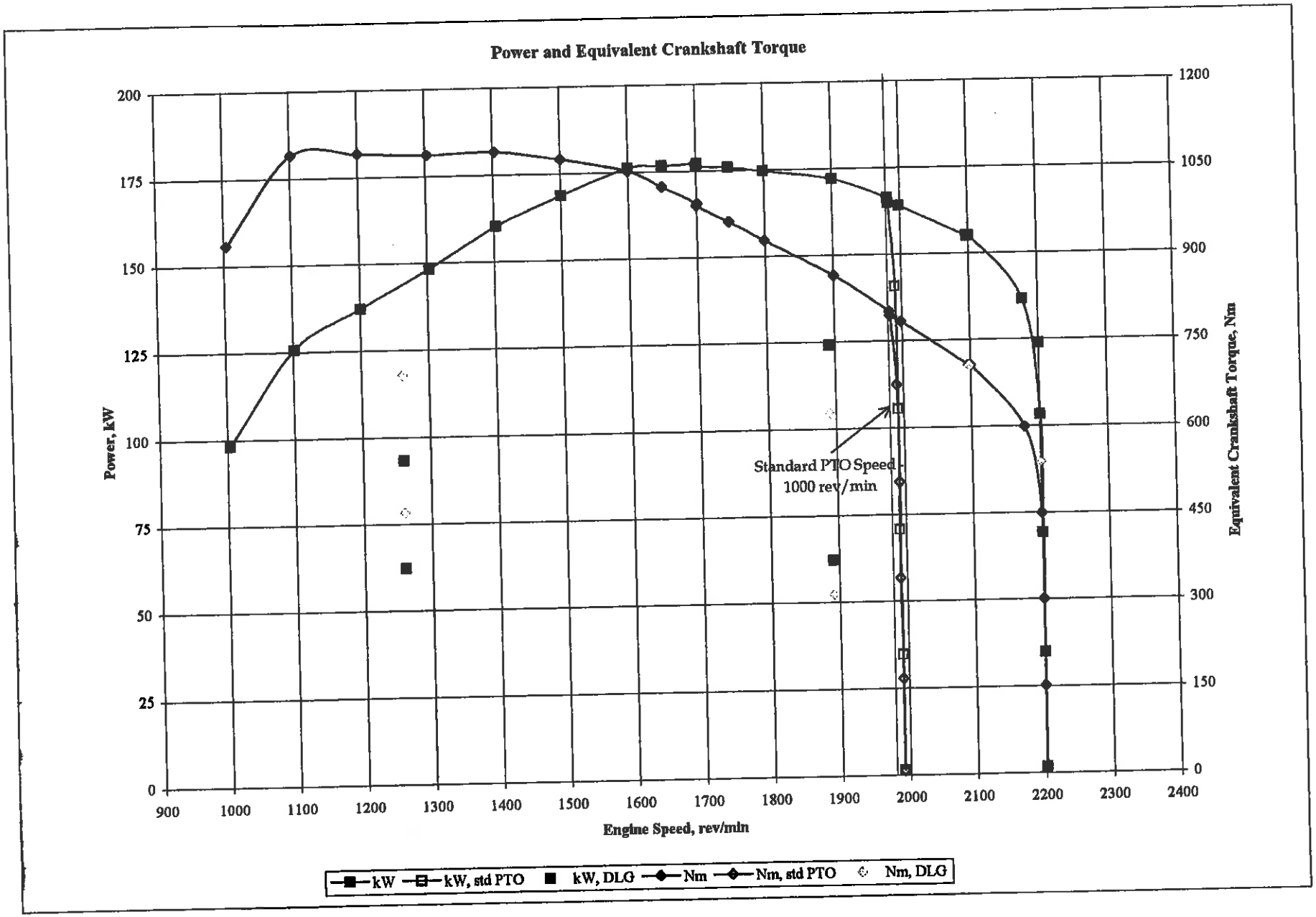
4.3 Measurement of Noise Level at Operator's Ear*

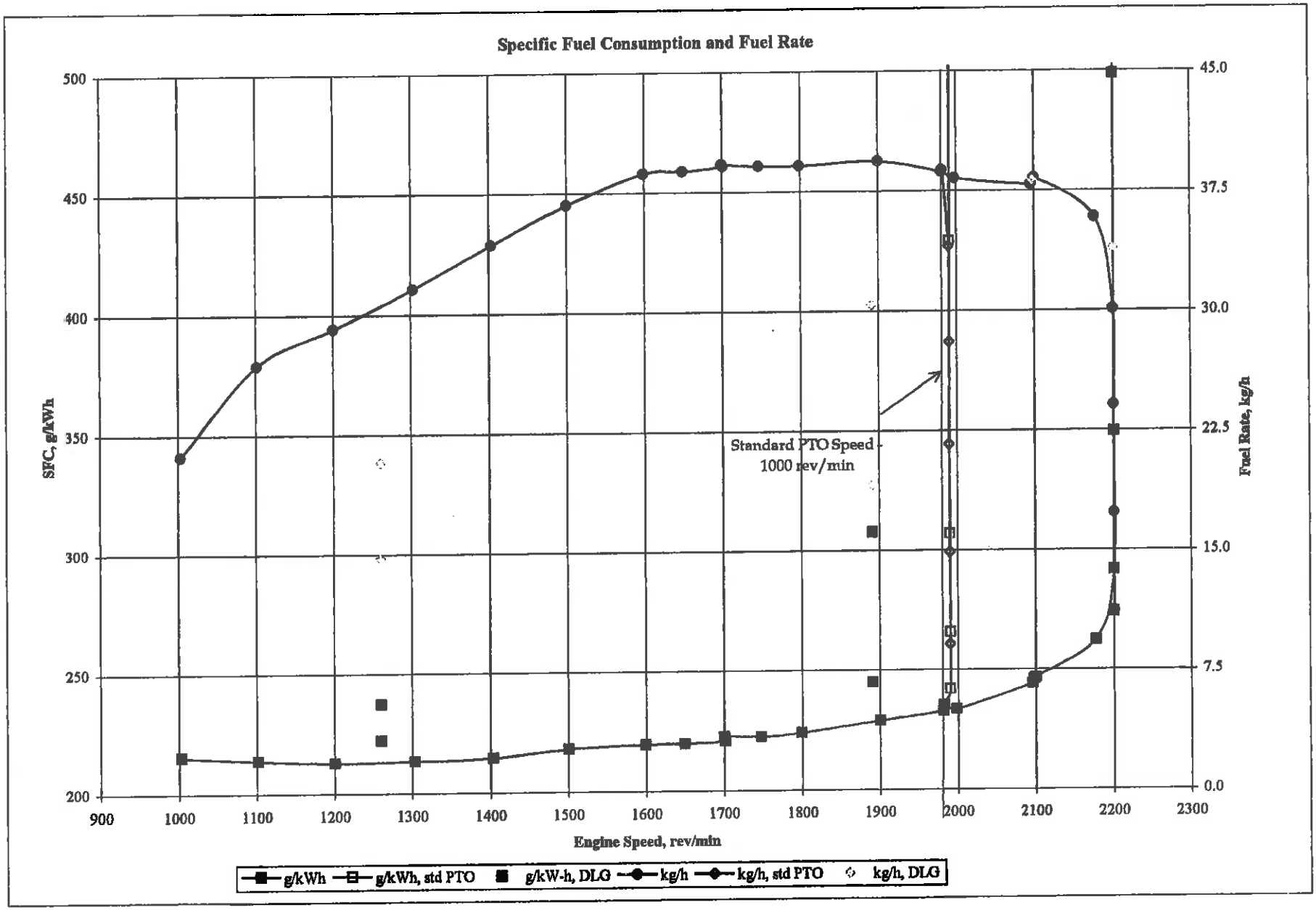
-- Date of Test	April 22, 2003
-- Location of Test	Nebraska Tractor Test Laboratory
-- Sound Level Meter	Bruel and Kjaer 2236
-- Type of Track	Concrete Oval
-- Gear Number	6
-- Drawbar Load	None
-- Noise at Operator Ear	74.7 dB(A)

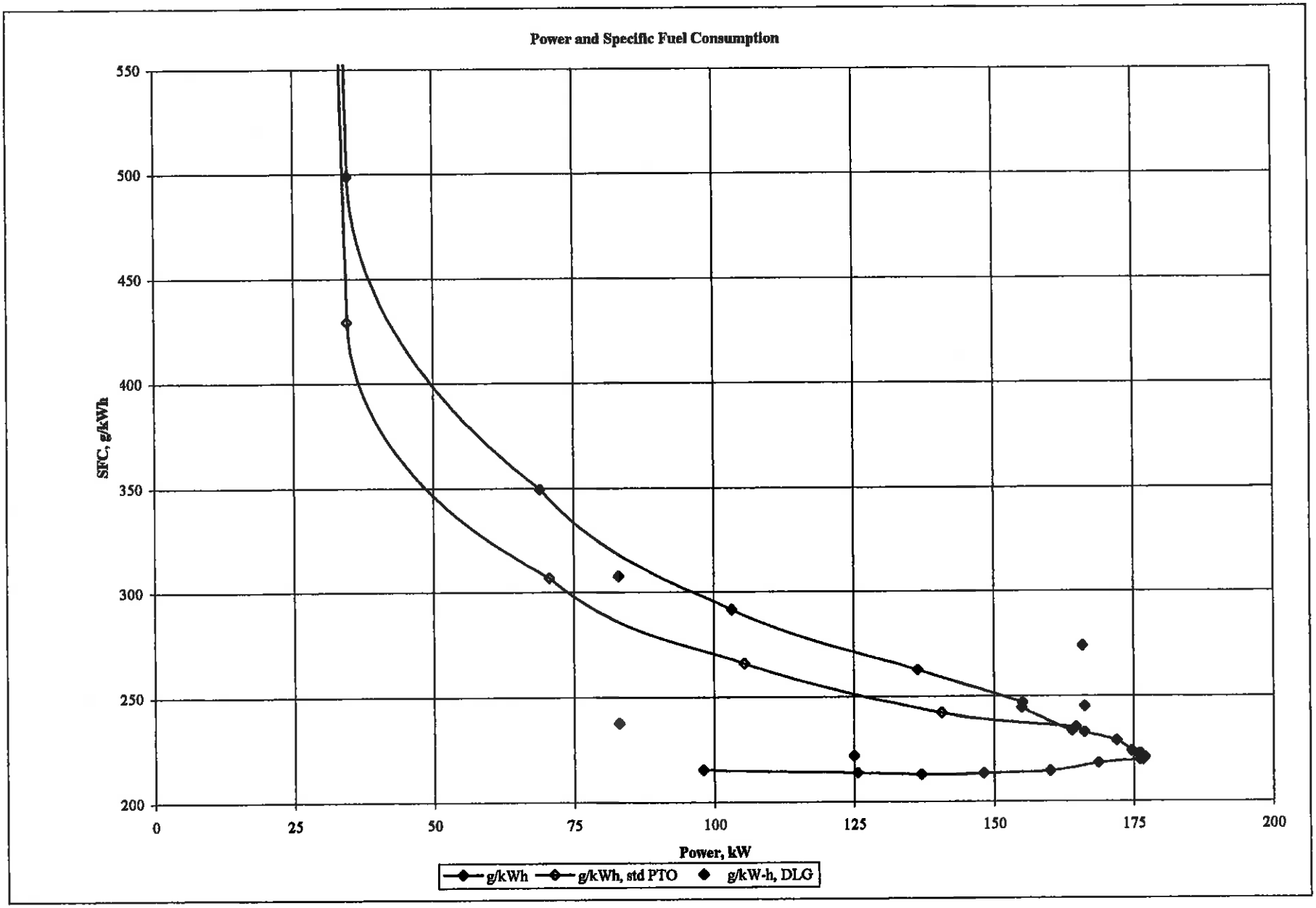
* Note: Nebraska tractor test station guidelines.

5. Repairs and Adjustments: None

6. Remarks: The minimum atmospheric pressure of 96.6 kPa was not available for all times that official testing was conducted.


Power and Equivalent Crankshaft Torque
Power, kW
Equivalent Crankshaft Torque, Nm
Engine Speed, rev/min
Standard PTO Speed
1000 rev/min
kW
kW, std PTO
kW, DLG
Nm
Nm, std PTO
Nm, DLG


Specific Fuel Consumption and Fuel Rate
SFC, g/kWh
Fuel Rate, kg/h
Engine Speed, rev/min
Standard PTO Speed
1000 rev/min
500
450
400
350
300
250
200
45.0
37.5
30.0
22.5
15.0
7.5
0.0
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
g/kWh
g/kWh, std PTO
g/kW-h, DLG
kg/h
kg/h, std PTO
kg/h, DLG


Power and Specific Fuel Consumption
SFC, g/kWh
550
500
450
400
350
300
250
200
0
25
50
75
100
125
150
175
200
Power, kW
g/kWh
g/kWh, std PTO
g/kW-h, DLG