OECD REPORT

TRACTOR

BLT reference number: 286/06

Report on test in accordance with the OECD-standard Code 2
Testing of Tractor performance for the Official Testing of Agricultural and Forestry Tractors

O.E.C.D. approval Number: **2/2 409**
Date of approval: **30 May 2008**



Tractor NH T7030

Manufacturer:

CNH UK Limited
Basildon
Essex SS14 3AD
UNITED KINGDOM

This report has been approved by the O.E.C.D. Coordinating Centre (CEMAGREF, France)
as being in accordance with the O.E.C.D. Tractors Test Code

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Tractor manufacturer's name and address:	CNH UK Limited Basildon Essex SS14 3AD United Kingdom
Location of tractor assembly:	Basildon, Essex
Submitted for test by:	The manufacturer
Selected for test by:	The manufacturer with the agreement of the testing station
Place of running in:	Basildon, Essex
Duration of running in:	161 hours
Location of test:	HBLFA Francisco Josephinum BLT Biomass – Logistics – Technology Rottenhauser Straße 1 AT 3250 Wieselburg

1 SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1 Denomination

[C]	Make of tractor:	New Holland
[C]	Model (trade name):	T7030
[C]	Type:	Four-Wheel Drive, unit construction

1.1.2 Numbers

[D]	1st Serial No or prototype:	Z6BG01001
[C]	Serial No:	Z6BG01009

1.1.3 Other specifications

[D]	Model(s) for other countries:	None
[C]	Transmission type or gears x ranges:	19-Speed Full – Power Shift
[C]	Speed version:	50 km/h
[D]	Manufacturer identification or Technical type number:	BGGCFC

1.2 Engine

[C]	Make:	CNH
[C]	Model:	667TA/EBN
[C]	Type:	4 stroke turbocharged direct injection & after cooled diesel
[C]	Serial No:	359098

1.2.1 Cylinders

[C]	Number/disposition:	6/vertical in-line
[D]	Bore/stroke:	104mm/132mm
[D]	Capacity:	6728 cm^3
[D]	Compression ratio:	16.5:1
[D]	Arrangement of valves:	Overhead
[D]	Cylinder liners:	None, monobloc construction

1.2.2 Supercharging

[C]	Make:	Holset
[C]	Model:	HX35
[C]	Type:	Exhaust driven
[D]	Pressure:	150 kPa at rated speed/load

1.2.3 Fuel system

[C]	Fuel feed system:	Gear pump
[C]	Make, type and model of fuel filter:	None, 3 total, 2 disposable canister filters with sediment and water separation plus metal tank strainer and inline filter
[D]	Capacity of fuel tank:	405 dm^3

Injection pump

[C]	Make:	Bosch
[C]	Model:	0445020007
[C]	Type:	High pressure pump common rail
[C]	Serial No:	4898921 / A413 030 144

Manufacturer's production setting of injection pump

[D]	Flow rate (rated engine speed and full load):	40.8 dm^3/h (103 mm^3 per stroke)
[D]	Timing:	Variable

[D]	Injectors	
[C]	Make:	Bosch
[C]	Model:	DLLA 137 PV3
[C]	Type:	managed electronic control unit
[D]	Injection pressure:	90 MPa

1.2.4 Governor

[C]	Make:	Bosch
[C]	Model:	EDC16
[C]	Type:	Managed by electronic control unit
[C]	Governed range of engine speed:	650 to 2425 min^{-1} (rev/min)
[C]	Rated engine speed:	2200 min^{-1} (rev/min)

1.2.5 Air cleaner

Pre-cleaner

[C]	Make:	None
[C]	Model:	None
[C]	Type:	Spin tubes incorporated
[C]	Location:	Air cleaner canister inlet

Main cleaner

[C]	Make:	Donaldson
[C]	Model:	None
[C]	Type:	3 stage dry paper element with replaceable cartridge exhaust aspirated
[C]	Location of air intake:	Under engine bonnet on front and above radiator.
[C]	Maintenance indicator:	Warning light on instrument panel

1.2.6 Lubrication system

[D]	Type of feed pump:	Force feed from concentric rotor pump
[C]	Type of filter:	Metal mesh strainer in sump on suction line and full flow disposable canister on pressure line to engine
[C]	Number of filters:	1

1.2.7 Cooling system

[C]	Type of coolant:	Water and antifreeze (50 % solution)
[C]	Type of pump:	Belt driven centrifugal impeller

Specification of fan

[C]	Number of fan blades:	9
[C]	Fan diameter:	620 mm
[D]	Coolant capacity:	27 dm^3
[C]	Type of temperature control:	Thermostat with full flow bypass
[D]	Over-pressure system:	100 kPa

1.2.8 Starting system

[C]	Make:	Iskra
[C]	Model:	AZF4115
[C]	Type:	Electrical, positive engagement, solenoid operated
[D]	Starter motor power rating:	4.2 kW
[C]	Cold starting aid:	Philips and Temro thermostarter
[C]	Safety device:	Starting inoperable unless shuttle lever in neutral, clutch pedal depressed and seat presence switch is activated

1.2.9 Electrical system

[C]	Voltage:	12 V
	Generator:	Alternator
[C]	Make:	Iskra
[C]	Model:	AAN5164
[C]	Type:	Belt driven
[D]	Power:	1.8 kW / 150 amp capacity
	Battery of accumulators	
[C]	Number:	1 Exide lead acid, Mounted on RHS fuel tank
[D]	Rating:	176 Ah at 20 hours

1.2.10 Exhaust system

[C]	Make:	Arvin Meritor
[C]	Model:	None
[C]	Type:	Vertical stack pipe with integral silencer
[C]	Location:	Engine rear on right hand side
[C]	Height of outlet above ground:	3130 mm

1.3 Transmission

1.3.1 Clutch (Travel alone)

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Wet multiplate in gearbox, for travel only
[D]	Number of plates:	12
[D]	Diameter of plates:	150 mm
[C]	Method of operation:	Electro-hydraulic with pedal override

1.3.2 Gear box

[D] Make: CNH

[D] Model: Full Power Shift

[C] Description: Electro/Hydraulic, 19 forward and 6 reverse powershift speeds, selected by 2 buttons on an adjustable lever mounted on the right-hand console.
Forward/reverse is actuated by a steering column mounted shuttle lever.

		Forward	Reverse
[C]	Number of gears	19	6
[C]	Number of ranges/groups	1	1
[C]	Total of arrangements	19	6

[D] Available options:

17 x 6 with creep (30 km/h)
18 x 6 with creep (30 km/h Japan)
18 x 6 with creep (40 km/h)
19 x 6 with creep (40 km/h)
19 x 6 with creep (50 km/h)

1.3.3 Rear axle and final drivers

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Crown wheel pinion with differential and inboard epicyclic reduction gear final drive
	Differential lock	
[D]	Type:	Multiplate clutch
[C]	Method of engagement:	Electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto diff lock actuation
[C]	Method of disengagement:	Via panel switch or in response to signal from brakes on application, or auto diff lock disengagement

1.3.4 Front axle and final drives

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Crown wheel and pinion with differential and outboard epicyclic reduction gear final drives
	Drive engagement	
[D]	Type:	Mechanical or multiplate clutch – located within the gearbox
[C]	Method of operation:	Electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto 4WD engagement
	Differential lock	
[D]	Type:	Mechanical or multiplate clutch
[C]	Method of engagement:	Electro-hydraulic actuation in response to signal from switch on right-hand control panel or auto diff lock actuation
[D]	Method of disengagement:	Via panel switch or in response to signal from brakes on application, or auto diff lock disengagement

1.3.5 Total ratios and travelling speeds - 19 x 6 50 km/h

	Gear	Number of engine revolutions for one revolution of the driving wheels			Nominal travelling speed at rated engine speed:* 2200 (rev/min) km/h		
	Forward	As tested		New model	As tested		New model
[C]	1	396.08	/	388.31	1.94	/	1.98
[C]	2	329.38	/	324.99	2.33	/	2.36
[C]	3	274.21	/	270.34	2.80	/	2.84
[C]	4	228.03	/	226.25	3.36	/	3.39
[C]	5	189.58	/	190.12	4.05	/	4.04
[C]	6	157.65	/	159.12	4.87	/	4.82
[C]	7	136.44	/	133.77	5.62	/	5.74
[C]	8	113.47	/	111.95	6.76	/	6.85
[C]	9	94.46	/	93.13	8.12	/	8.24
[C]	10	78.55	/	77.94	9.76	/	9.84
[C]	11	65.31	/	65.49	11.75	/	11.71
[C]	12	54.31	/	54.81	14.13	/	14.00
[C]	13	47.25	/	46.32	16.24	/	16.56
[C]	14	39.29	/	38.77	19.52	/	19.79
[C]	15	32.71	/	32.25	23.45	/	23.79
[C]	16	27.20	/	26.99	28.20	/	28.42
[C]	17	22.62	/	22.68	33.92	/	33.83
[C]	18	18.81	/	18.98	40.79	/	40.42
[C]	19	14.80	/	14.37	49.90	/	49.80
	Reverse						
[C]	1	178.88	/	175.37	4.30	/	4.38
[C]	2	148.75	/	146.77	5.16	/	5.23
[C]	3	123.84	/	122.09	6.20	/	6.28
[C]	4	102.98	/	102.18	7.45	/	7.51
[C]	5	85.62	/	85.86	8.96	/	8.94
[C]	6	71.20	/	71.86	10.78	/	10.68

(*) Calculated with a tyre dynamic radius index of 925 mm - ETRTO Standards manual 2007

Remark: Engine restriction to 2120 rev/min in the 19th gear to limit the speed

[C] Number of revolutions of front wheels for one revolution of rear-wheels: 1.343 / 1.324

1.4 Power take-off

1.4.1 Main power take-off

[C]	Type:	Independent
[C]	Method of engagement:	Electro – hydraulic operated multi-plate clutch in response to a signal from switch on the right – hand control panel
[C]	Number of shafts:	1 interchangeable shaft, 6 or 21 splines to ISO 500/1991
[C]	Method of changing power take-off speeds:	Two speed shiftable, 540 or 1000 min^{-1} (rev/min) by lever on right-hand console and by changing shafts
	Clutch	
[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Multiplate, wet
[D]	Number of plates:	8
[D]	Diameter of plates:	140.0 mm

1.4.1.1 Power take-off proportional to engine speed

Power take-off at 540 min^{-1} (rev/min)

[C]	Location:	Rear of tractor
[C]	Diameter of power take-off shaft:	34.9 mm
[C]	Number of splines:	6 in conformity with ISO 500/1991 (available option: 21 / 20)
[C]	Height above ground:	865 mm
[C]	Distance from the median plane of the tractor:	Central
[C]	Distance behind rear-wheel axis:	637 mm
[C]	Pto speed at rated engine speed:	609 min^{-1} (rev/min)
[C]	Engine speed at standard power take-off speed:	1950 min^{-1} (rev/min)
[C]	Ratio of rotation speeds:	3.61
[D]	Power restriction:	None
[D]	Maximum torque transmissible:	No restriction
[C]	Direction of rotation (viewed from behind tractor):	Clockwise

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

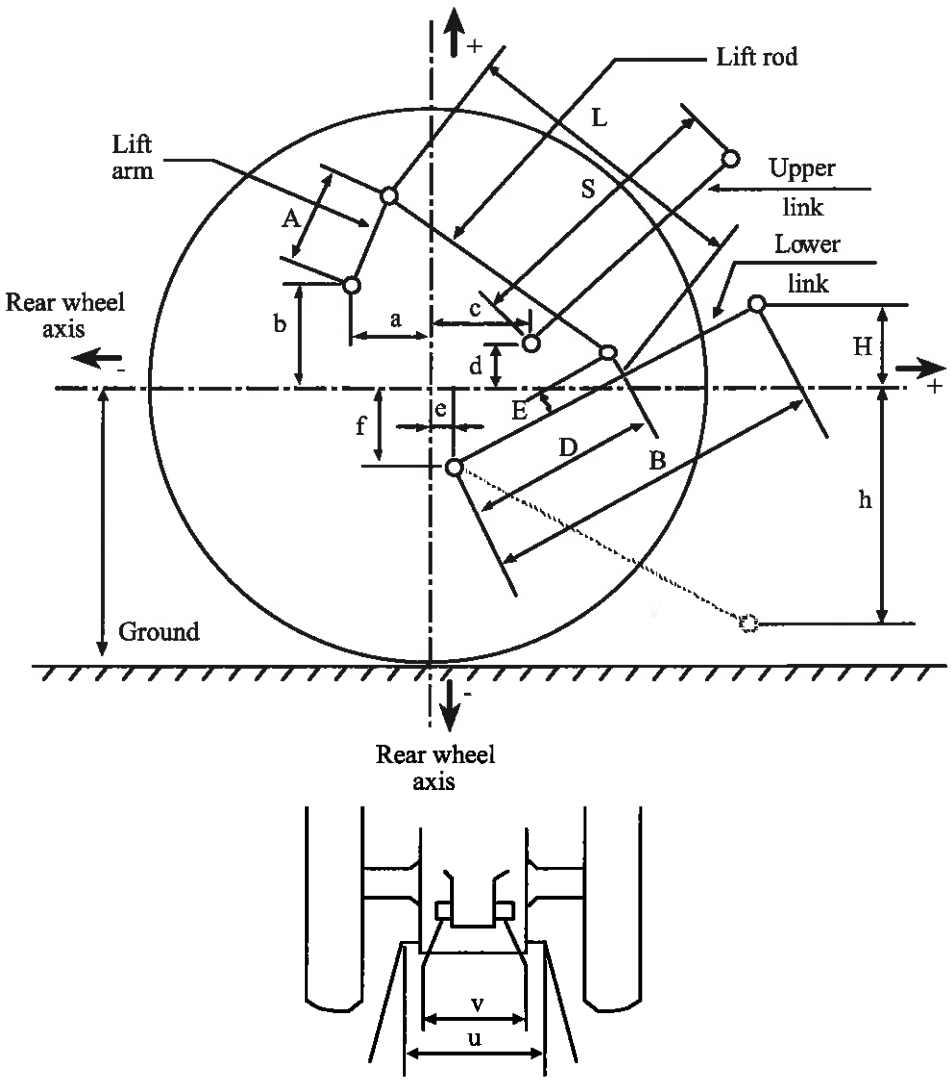
[C]	Location:	Rear of tractor
[C]	Diameter of power take-off shaft:	34.9 mm
[C]	Number of splines:	21 in conformity with ISO 500/1991 (available option: 6 / 20)
[C]	Height above ground:	865 mm
[C]	Distance from the median plane of the tractor:	Central
[C]	Distance behind rear-wheel axis:	637 mm
[C]	Pto speed at rated engine speed:	1021 min^{-1} (rev/min)
[C]	Engine speed at standard power take-off speed:	2153 min^{-1} (rev/min)
[C]	Ratio of rotation speeds:	2.15
[D]	Power restriction:	None
[D]	Maximum torque transmissible:	No restriction
[C]	Direction of rotation (viewed from behind tractor):	Clockwise

1.5 **Hydraulic power lift** (as fitted to the test tractor)

[C]	Make:	CNH
[C]	Model:	None
[C]	Type:	Electro-hydraulic closed centre load sensing
[C]	Type and number of cylinders:	2 single acting, externally mounted (90 mm Dia)
[C]	Type of linkage lock for transport:	Hydraulic
[D]	Relief valve pressure setting:	20.5-21.9 MPa
[D]	Opening pressure of cylinder safety valve:	22.0-23.0 MPa
[D]	Lift pump type:	Variable displacement piston pump
[D]	Transmission between pump and engine:	Gear driven from PTO shaft, independent of main and PTO clutches
[C]	Type and number of filters:	1 disposable canister and 1 element filter
[C]	Site of oil reservoir:	Rear axle housing
[C]	Type, number and location of tapping points:	2,3,4 or 5 remote couplers at rear of tractor (3 remote valves fitted on test tractor)
[D]	Maximum volume of oil available to external cylinders:	28 dm^3 max. under normal conditions (flat fields) 40 dm^3 max. when operating stationary on level ground

1.6 Three-point linkage

[D]	Category:	Cat 3 in conformity with ISO 730-1:1994 + Cor.1:1995 and ISO 730-2:1979
[D]	Category adapter:	Cat 2 adaptors available
[D]	Controls:	Electronic draught/position control, with lower link sensing



LIFT TEST
Linkage geometry

Fig 2.1

Table 1.1

Dimensions of linkage when attached to the standard frame (ISO 730-1:1994 CAT 2/3)

			Figure 2.1	Dimensions or range	Settings used in		
				[mm]	Test 3.2.2	Test 3.3.3.1	Test 3.2.2.2
[C]	Length of lift arms:		(A)	454	454	454	454
[C]	Length of lower links:		(B)	974 – 1074	974	974	974
[C]	Distance of lift arm pivot point from rear-wheel axis:	horizontally: vertically:	(a) (b)	92 372	92 372	92 372	92 372
[C]	Horizontal distance between the two lower link points:		(u)	644	644	644	644
[C]	Horizontal distance between the two lift arm end points:		(v)	560	560	560	560
[C]	Length of upper link:		(S)	690 – 915	810	810	800
[C]	Distance of upper link pivot point from rear-wheel axis:	horizontally: vertically:	(c) (d)	440 – 500 217 – 277	440 277	440 277	440 277
[C]	Distance of lower link pivot point from rear-wheel axis:	horizontally: vertically:	(e) (f)	250 270	250 270	250 270	250 270
[C]	Distance of lower link points to lift rod pivot points on lower links:		(D)	437 – 682	682	682	682
[C]	Length of lift rods:		(L)	870 – 1022	1022	985	875
[C]	Height of lower hitch points (*) relative to the rear-wheel axis:	in low position: in high position:	(h) (H)	425 – 785 0 – 225	695 45	635 125	425 225
[C]	Height of lower hitch points when locked in transport position (*)			Any height within lift range (hydraulic transport lock)			

*Assuming r = tyre dynamic radius index of 925 - ETRTO Standards manual 2007

1.7 Swinging drawbar

[C]	Type:	Clevis	Hook
[C]	Height above ground unballasted		
	Maximum:	503 mm	533mm
	Minimum:	None	None
[C]	Type of adjustment:	None	
[C]	Distance of hitch point from rear-wheel axis, horizontally:	1037 - 1421 mm	699 - 1083 mm
[C]	Distance of hitch point from power take-off shaft end		
	Vertically:	338 mm	308 mm
	Horizontally:	400 - 784 mm	62 - 446 mm
	Lateral adjustment (centre of clevis/hook)		
	Right-hand:	None	None
	Left-hand:	None	None
[C]	Distance of pivot point from rear-wheel axis:	Not applicable	
[C]	Diameter of drawbar pinhole:	33 mm	
[C]	Width of clevis:	60 mm	
[D]	Maximum vertical permissible load Clevis uppermost:	1500 kg*) / 2000 kg**)	3000kg

Remark: *) extended position, **) close coupled position

1.8 Trailer hitch

None fitted

1.9 Holed drawbar

None fitted

1.10 Steering

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Hydrostatic
	Method of operation	
[D]	Pump:	Bosch Rexroth
[D]	Motor:	Sauer Danfoss OSPD 60/220 OR
[D]	Rams:	2, balanced system with double acting cylinders one operating each steering arm
[D]	Filter:	Integral with hydraulic power lift system
[D]	Working pressure:	18.5-19.0 MPa

1.11 Brakes

1.11.1 Service brake

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Oil immersed two plate disc
[C]	Method of operation:	Hydrostatic booster, independent on rear wheels (On 4WD model. When the service brakes are activated the front wheel drive is automatically engaged providing 4-wheel braking)
[C]	Trailer braking take-off:	Hydraulic connector fitted to ISO 5676-1983

1.11.2 Parking brake

[C]	Type:	Fully independent six plate disc operating on bevel pinion shaft
[C]	Method of operation:	Hand lever with ratchet

1.12 Wheels

Number

[D]	Front:	2 driving/steering
[D]	Rear:	2 driving
[D]	Wheelbase:	2884 mm

Track width adjustment:

		Minimum [mm]	Maximum [mm]	Adjustment method
[D]	Front *	1538 / 1560	2238 / 2260	Reversing wheels and offset lug rims
[D]	Rear	1530	2230	Reversing wheels and offset lug rims Optional bar axle

* 55° steering angle available only on 1860 mm and larger track settings
Remark: 1538 mm track setting with smallest front tyres; 1560 mm as tested

1.13 Protective structure

[C]	Make:	CNH
[C]	Model:	CNH SLTV 14
[C]	Type:	Cab safety frame - suspended
[C]	Manufacturer's name and address:	CNH UK Ltd Cranes Farm Road Basildon Essex SS14 3AD

Protective device

[C]	Cab/frame/rollguard/other:	Safety cab
[C]	Tiltable/Not tiltable:	Not tiltable

OECD approval

[C]	Approval number:	4/0960
[C]	Date of approval:	12 July 2006
[C]	Nos. minor modification certificates, if any:	1

The certificates for minor modifications established by Danish testing station

1.14 Seat

1.14.1 Driver's seat

[C]	Make/Model/Type:	SEARS Series 5000D / with belt, heated cushion and semi-active suspension II+III e11 1294/5
[C]	Seat and steering wheel reversible:	No
[C]	Type of suspension:	Low frequency, parallelogram suspension air spring
[C]	Type of damping:	Double acting, hydraulic
	Range of adjustment	
[C]	Longitudinally:	± 100 mm
[C]	Vertically:	± 38 mm
[C]	Safety belt:	Yes

1.14.2 Optional driver's seat

[D]	Make/Model/Type:	SEARS Series 5000D / with belt (optional with heated cushion), II+III e11 1294/5 or SEARS Series 5000 / with belt II+III e11 1294/5
[D]	Seat and steering wheel reversible:	No
[D]	Type of suspension:	Low frequency, parallelogram suspension air spring
[D]	Type of damping:	Double acting, hydraulic
	Range of adjustment	
[D]	Longitudinally:	± 100 mm
[D]	Vertically:	± 38 mm
[D]	Safety belt:	Yes
[D]	Make/Model/Type:	GRAMMER MSG95G/741 / with belt (optional with heated cushion), II+III e1 100519
[D]	Seat and steering wheel reversible:	No
[D]	Type of suspension:	Parallelogram suspension air spring
[D]	Type of damping:	Double acting, hydraulic
	Range of adjustment	
[D]	Longitudinally:	± 95 mm
[D]	Vertically:	± 40 mm
[D]	Safety belt:	Yes

1.14.3 Passenger seat: None

1.15 Lighting

In accordance with EEC directive 78/933/EEC
Unrestricted beam angle of headlight in plan view: 140°

		Height above ground to centre	Size	Distance from outside edge of lights to median plane of tractor
		[mm]	[mm]	[mm]
[C]	Headlights	1465	180 x 140	280
[C]	Sidelights	1970	80 x 65	900
[C]	Rear lights	1950	260 x 55	1110
[C]	Rear fender reflectors	1950	260 x 55	1110
[C]	Axle reflectors	870	100 x 35	560

2 TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		Minimum	Maximum	Protective structure	Exhaust pipe
	[mm]	[mm]	[mm]	[mm]	[mm]
Unballasted	5110	2135	3395	3050	3130

2.2 Ground clearance (unballasted tractor): 450 mm

Clearance-limiting part: APUH carrier

2.3 Tractor mass (with safety cab)

	Unballasted		Ballasted	
	Without driver	With driver	Without driver	With Driver
	[kg]	[kg]	[kg]	[kg]
Front	3135	3135	N/A	N/A
Rear	4905	4970	N/A	N/A
Total	8040	8115	N/A	N/A

2.4 Ballast: Not applicable

2.5 Track specifications: Not applicable

2.6 Tyres and track width specification

	Front	Rear
Tyres dimensions ply rating type	600/65/R 28 142A8 Radial	710/70R 38 166A8 Radial
Maximum load (tyre manufacturer's) 50 (30, 40) km/h	23,69 (27,81, 26,00) kN	47,33 (55,62, 52,00) kN
Maximum load (tractor manufacturer's)	23,69 (27,81, 26,00) kN	47,33 (55,62, 52,00) kN
Inflation pressure (tyre manufacturer's)	160 kPa	160 kPa
Dynamic radius index	700 mm	925 mm
Chosen track width (manufacturer's nominal)	1880 mm	2050 mm

2.7 Fuel

Type:	Diesel oil to Class D, 1.5 to 5.5 cSt
Density at 15°C:	0.827 g/cm^3

2.8 Oils and lubrication

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	[dm^3]	[h]	[h]
Engine	19.00	600	600
Front axle differential	14.00	1200	None
Front axle hub (each)	2.15	1200	None
Gearbox	100	1200	600
Rear axle Hydraulic system Final drives (rear) Steering	Integral with gearbox		
Brakes	0.50	Top-up	None

2.8.2 Specifications

Oils	Recommended	Used during test	NH spec
Engine oil Type: Viscosity: Classification:	SAE 10W/30 11.5 cSt at 100 °C API CG – 4	As recommended	NH 324H
Transmission oils Type: Viscosity: Classification:	SAE 10W/30 9 cSt at 100 °C API GL – 4	As recommended	NH 410B
Rear final drives Type: Viscosity: Classification:	SAE 10W/30 9 cSt at 100 °C API GL – 4	As recommended	NH 410B
Front differential and final drives Type: Viscosity: Classification:	SAE 10W/30 9 cSt at 100 °C API GL – 4	As recommended	NH 410B
Hydraulic brakes Type: Viscosity: Classification:	No equivalent 6 cSt at 100 °C No equivalent	As recommended	NH 610A
Hydraulic fluid Type: Viscosity: Classification:	SAE 10W/30 9 cSt at 100 °C API GL – 4	As recommended	NH 410B
Steering oil Type: Viscosity: Classification:	SAE 10W/30 9 cSt at 100 °C API GL – 4	As recommended	NH 410B

2.8.3 Grease

Grease Points Type:	Lithium Based	As recommended	NH 710A
Number of lubrication points:	14		

3 TESTS RESULTS

3.1 Main power take-off

Date and location of tests: 18, 19 and 20 April 2007
FJ-BLT Wieselburg, Austria

Type of dynamometer bench: Eddy Current, SCHENCK W780

Power	Speed			Fuel consumption			Specific energy
	Engine	P. T.O.	Fan	Hourly		Specific	
[kW]	[min^{-1}(rev/min)]			[kg/h]	[l/h]	[g/kWh]	[kWh/l]
3.1.1 MAXIMUM POWER - ONE-HOUR TEST							
121.7	1800	836	1860	29.72	35.95	244.1	3.39
3.1.2 POWER AT RATED ENGINE SPEED							
104.2	2200	1022	1800	29.57	35.77	283.7	2.91
3.1.3 POWER AT STANDARD PTO SPEED							
105.5	2153	1000	1980	29.27	35.41	277.4	2.98
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed							
104.2	2200	1022	1800	29.57	35.77	283.7	2,91
3.1.4.2 85% of torque obtained in 3.1.4.1							
91.0	2260	1050	1920	27.80	33.63	305.5	2.71
3.1.4.3 75% of torque defined in 3.1.4.2							
69.0	2285	1061	1920	22.96	27.77	332.8	2.48
3.1.4.4 50 % of torque defined in 3.1.4.2							
46.6	2310	1073	1920	18.17	22.01	390.3	2.12
3.1.4.5 25 % of torque defined in 3.1.4.2							
23.5	2330	1082	1920	12.96	15.70	552.0	1.50
3.1.4.6 unloaded							
0	2345	1089	1920	8.68	10.51	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED 3.1.5.1 the torque corresponding to maximum power							
105.5	2153	1000	1980	29.27	35.41	277.4	2.98
3.1.5.2 85 % of torque obtained in 3.1.5.1							
90.6	2175	1010	1800	26.49	32.01	292.3	2.83
3.1.5.3 75 % of torque obtained in 3.1.5.2							
68.6	2195	1020	1800	21.80	26.32	317.7	2.61
3.1.5.4 50 % of torque obtained in 3.1.5.2							
46.2	2215	1029	1800	17.28	20.89	374.1	2.21
3.1.5.5 25 % of torque obtained in 3.1.5.2							
23.3	2230	1036	1800	12.56	15.18	538.8	1.53
3.1.5.6 unloaded							
0	2245	1043	1800	8.33	10.07	-	-

No load maximum engine speed: 2345 min^{-1} (rev/min)

Torque (equivalent crankshaft) at maximum power

At rated engine speed:	452.4 Nm
At 1-hour test:	645.8 Nm
Maximum torque (equivalent crankshaft): ((engine speed: 1400 min^{-1} (rev/min))	731.8 Nm

Mean atmospheric conditions:		
Temperature	21	°C
Pressure	100.2	kPa
Relative humidity	45	%
Maximum temperatures:		
Coolant	89	°C
Engine oil	110	°C
Fuel	52	°C
Engine air intake	23	°C

3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS 3.1.6.1 maximum power at rated engine speed							
104.2	2200	1022	1800	29.57	35.77	283.7	2.91
3.1.6.2 80 % of power obtained in 3.1.6.1 at max. speed setting							
83.4	2270	1054	1920	26.00	31.42	311.8	2.65
3.1.6.3 80 % of power obtained in 3.1.6.1 with governor control set to 90 % of rated engine speed							
83.4	1981	920	1920	23.52	28.43	282.1	2.93
3.1.6.4 40 % of power obtained in 3.1.6.1 with governor control set to 90 % of rated engine speed							
41.7	1981	920	1800	15.07	18.23	361.6	2.29
3.1.6.5 60 % of power obtained in 3.1.6.1 with governor control set to 60 % of rated engine speed							
62.5	1320	613	1560	15.57	18.84	249.0	3.32
3.1.6.6 40 % of power obtained in 3.1.6.1 with governor control set to 60 % of rated engine speed							
41.7	1320	613	1560	11.54	13.96	276.8	2.99

Optional power take-off test

Boosted power

Power	Speed			Fuel consumption			Specific energy
	Engine	P. T.O.	Fan	Hourly		Specific	
[kW]	[min^{-1}(rev/min)]			[kg/h]	[l/h]	[g/kWh]	[kWh/l]
3.1.1 MAXIMUM POWER - ONE-HOUR TEST							
139.0	1900	882	2340	34.40	41.61	247.5	3.34
3.1.2 POWER AT RATED ENGINE SPEED							
128.3	2200	1022	2400	34.32	41.47	267.4	3.09
3.1.3 POWER AT STANDARD PTO SPEED							
132.0	2153	1000	2400	34.23	41.41	259.3	3.19
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed							
128.3	2200	1022	2400	34.32	41.47	267.4	3.09
3.1.4.2 85% of torque obtained in 3.1.4.1							
111.1	2240	1040	2100	31.37	37.95	282.3	2,93
3.1.4.3 75% of torque defined in 3.1.4.2							
84.5	2270	1054	1980	26.32	31.81	311.6	2.66
3.1.4.4 50 % of torque defined in 3.1.4.2							
57.0	2300	1068	1800	20.25	24.50	355.0	2.33
3.1.4.5 25 % of torque defined in 3.1.4.2							
28.8	2320	1078	1800	14.43	17.45	501.4	1.65
3.1.4.6 unloaded							
0	2345	1089	1800	8.93	10.80	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED 3.1.5.1 the torque corresponding to maximum power							
132.0	2153	1000	2400	34.23	41.41	259.3	3.19
3.1.5.2 85 % of torque obtained in 3.1.5.1							
112.8	2165	1006	1920	30.51	36.91	270.4	3.06
3.1.5.3 75 % of torque obtained in 3.1.5.2							
85.5	2185	1015	1800	25.35	30.67	296.7	2.79
3.1.5.4 50 % of torque obtained in 3.1.5.2							
57.5	2205	1024	1800	19.50	23.59	339.4	2.44
3.1.5.5 25 % of torque obtained in 3.1.5.2							
29.1	2230	1036	1800	13.73	16.61	471.8	1.75
3.1.5.6 unloaded							
0	2245	1043	1800	8.30	10.04	-	-

No load maximum engine speed: 2345 min^{-1} (rev/min)

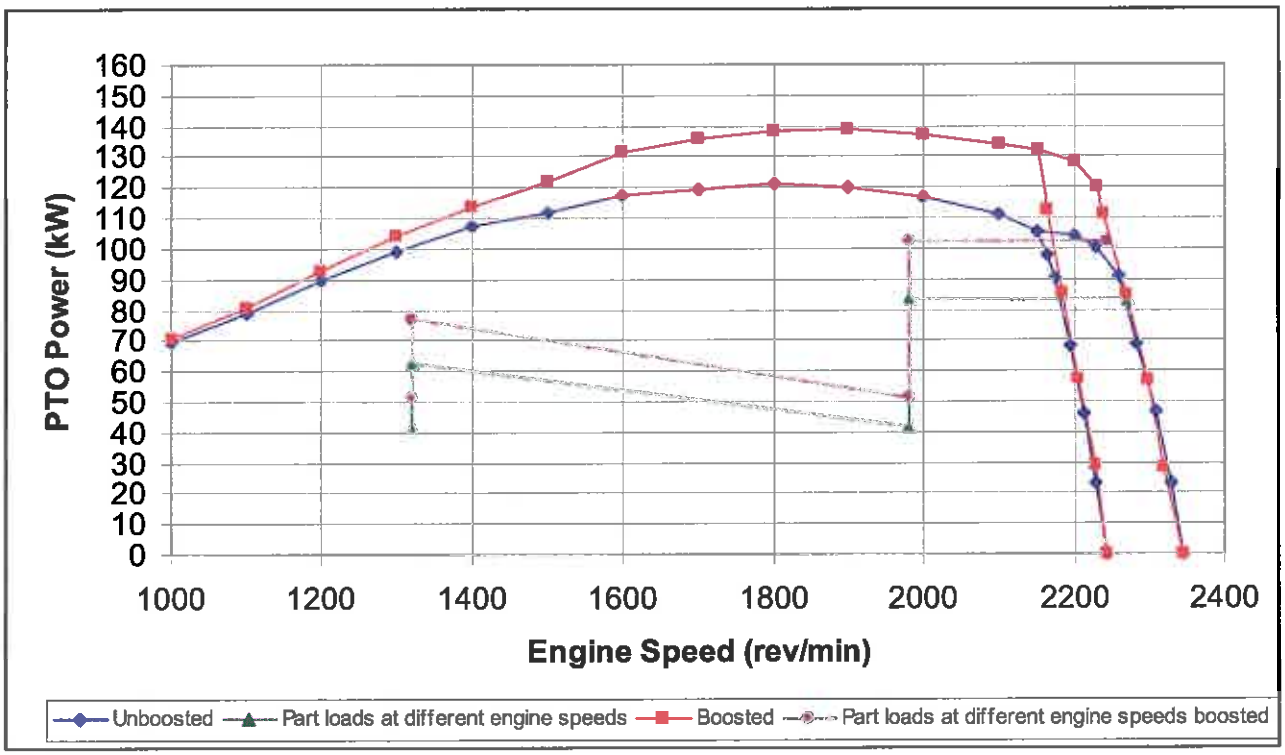
Torque (equivalent crankshaft) at maximum power

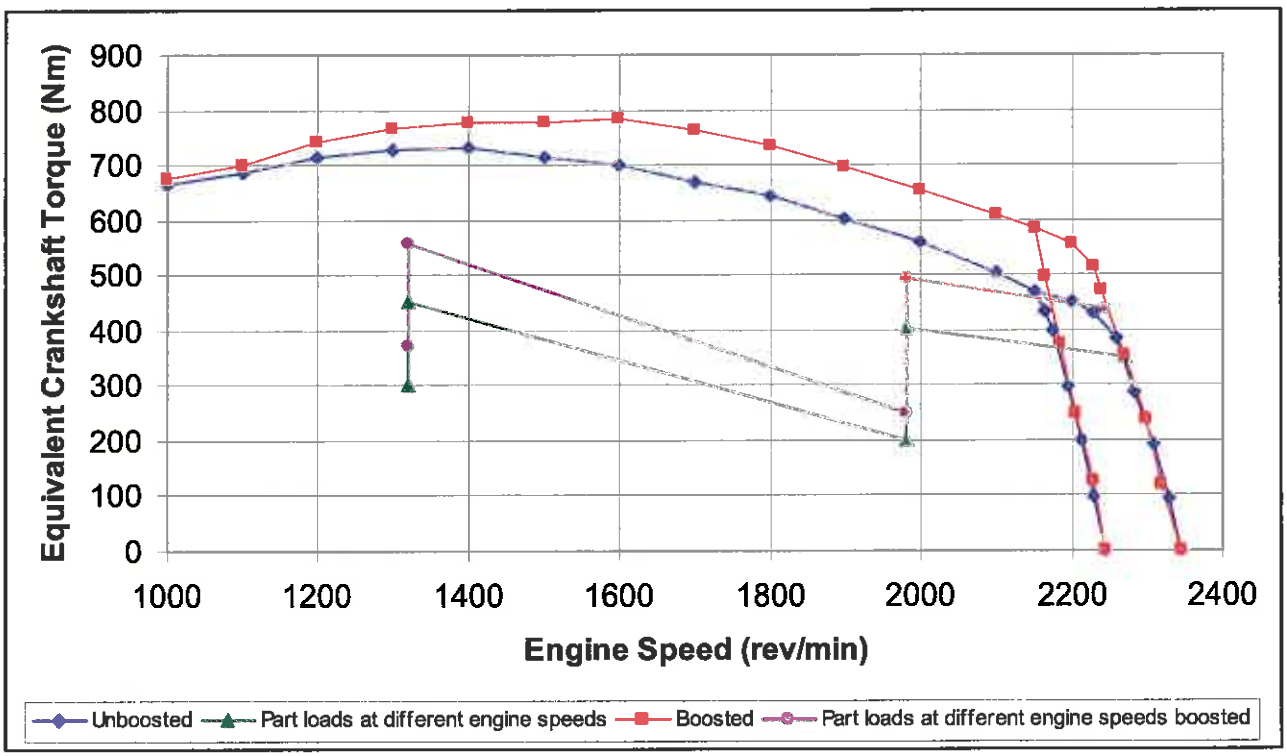
At rated engine speed:	557.1 Nm
At 1-hour test:	698.6 Nm
Maximum torque (equivalent crankshaft): ((engine speed: 1600 min^{-1} (rev/min))	785.1 Nm

Mean atmospheric conditions:		
Temperature	17	°C
Pressure	100.5	kPa
Relative humidity	45	%
Maximum temperatures:		
Coolant	85	°C
Engine oil	111	°C
Fuel	51	°C
Engine air intake	23	°C

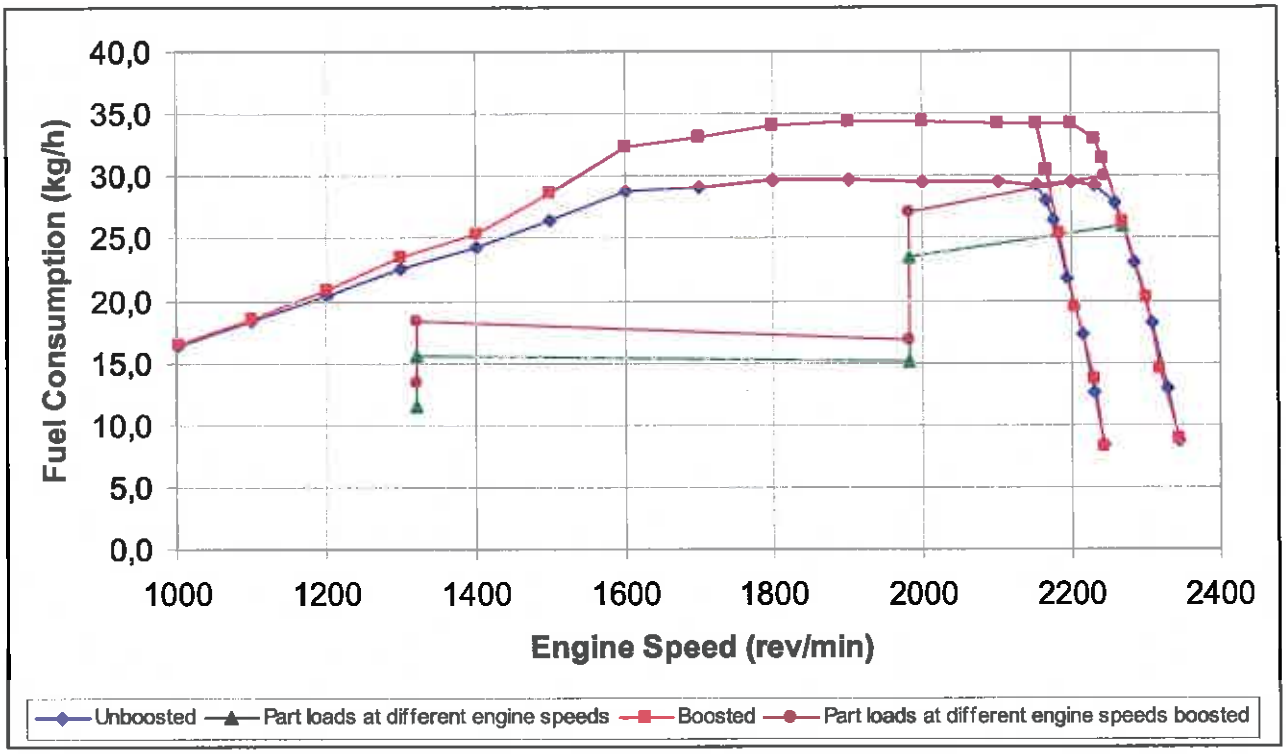
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS 3.1.6.1 maximum power at rated engine speed							
128.3	2200	1022	2400	34.32	41.47	267.4	3.09
3.1.6.2 80 % of power obtained in 3.1.6.1 at max. speed setting							
102.6	2245	1043	2040	30.02	36.32	292.6	2.82
3.1.6.3 80 % of power obtained in 3.1.6.1 with governor control set to 90 % of rated engine speed							
102.6	1981	920	1800	27.14	32.84	264.6	3.12
3.1.6.4 40 % of power obtained in 3.1.6.1 with governor control set to 90 % of rated engine speed							
51.3	1981	920	1860	16.79	20.31	327.0	2.53
3.1.6.5 60 % of power obtained in 3.1.6.1 with governor control set to 60 % of rated engine speed							
77.0	1320	613	1680	18.44	22.31	239.5	3.45
3.1.6.6 40 % of power obtained in 3.1.6.1 with governor control set to 60 % of rated engine speed							
51.3	1320	613	1560	13.43	16.24	261.6	3.16

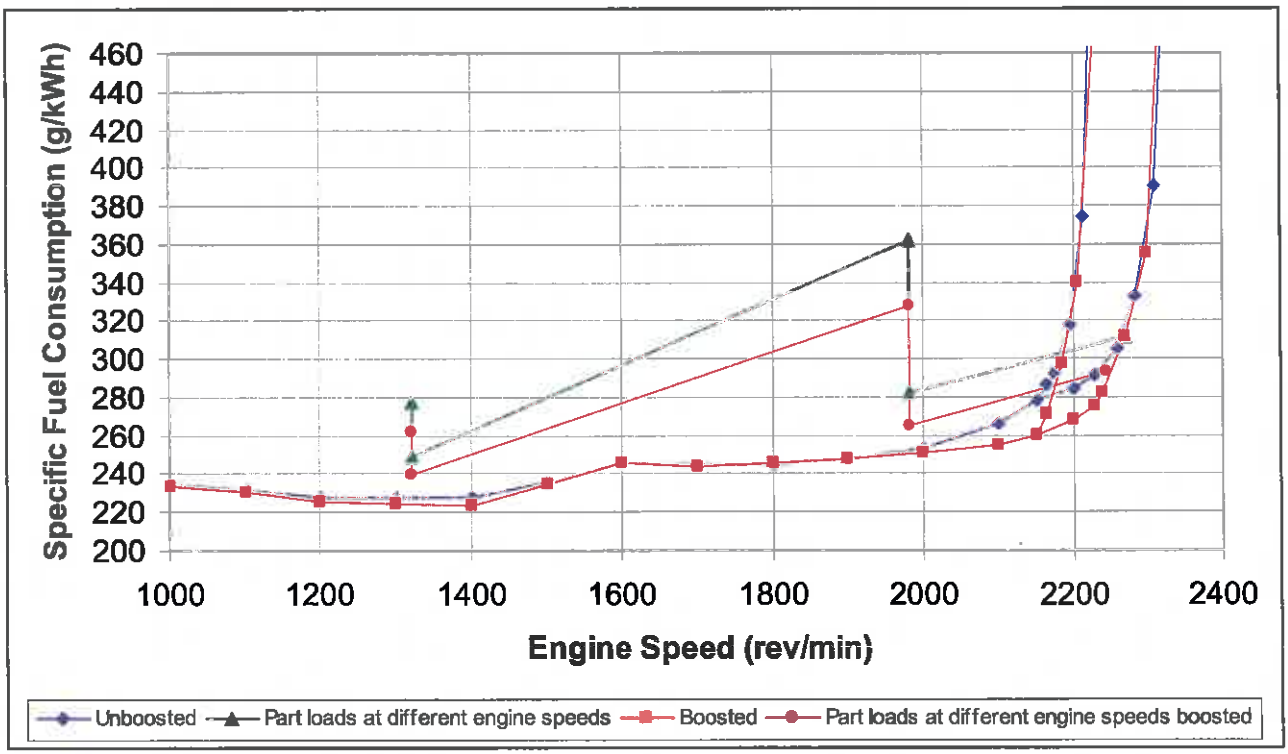
Power take-off curves:



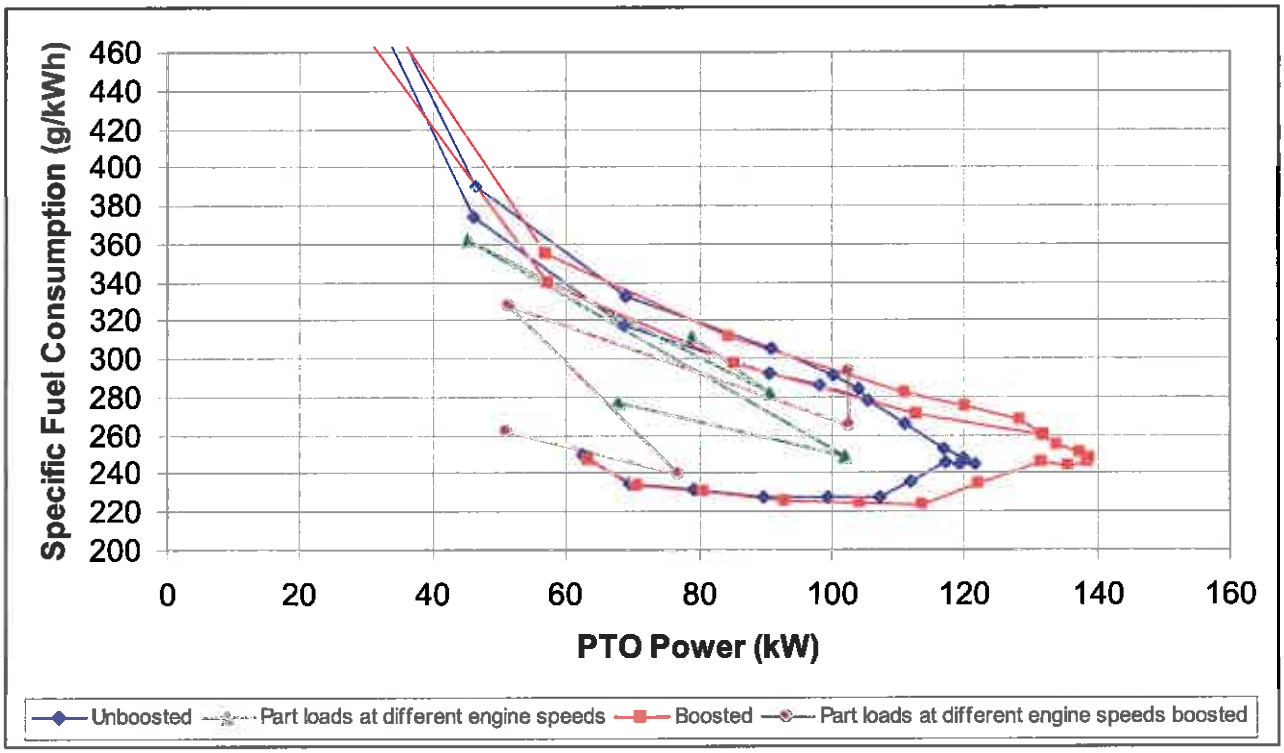


Power take-off curves:





Power take-off curves:



3.2 Hydraulic power and lifting force

Date of tests: 20 July 2007

3.2.1 Hydraulic power test

3.2.1.1 Hydraulic fluid data:

Hydraulic fluid type:	SAE 10W/30
Viscosity index (ISO 3448:1992):	9 cSt at 100°C
Viscosity at 65°C:	36.5 mm^2/s

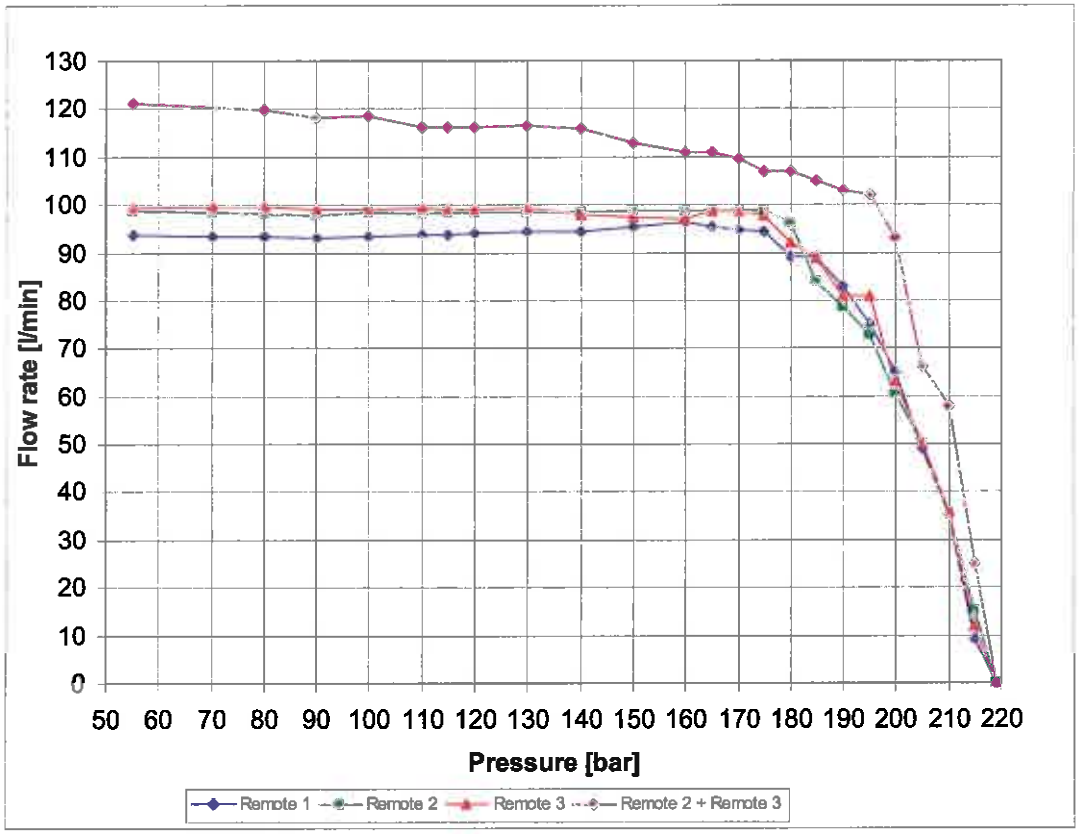
3.2.1.2 Compulsory Reporting (Test Results):

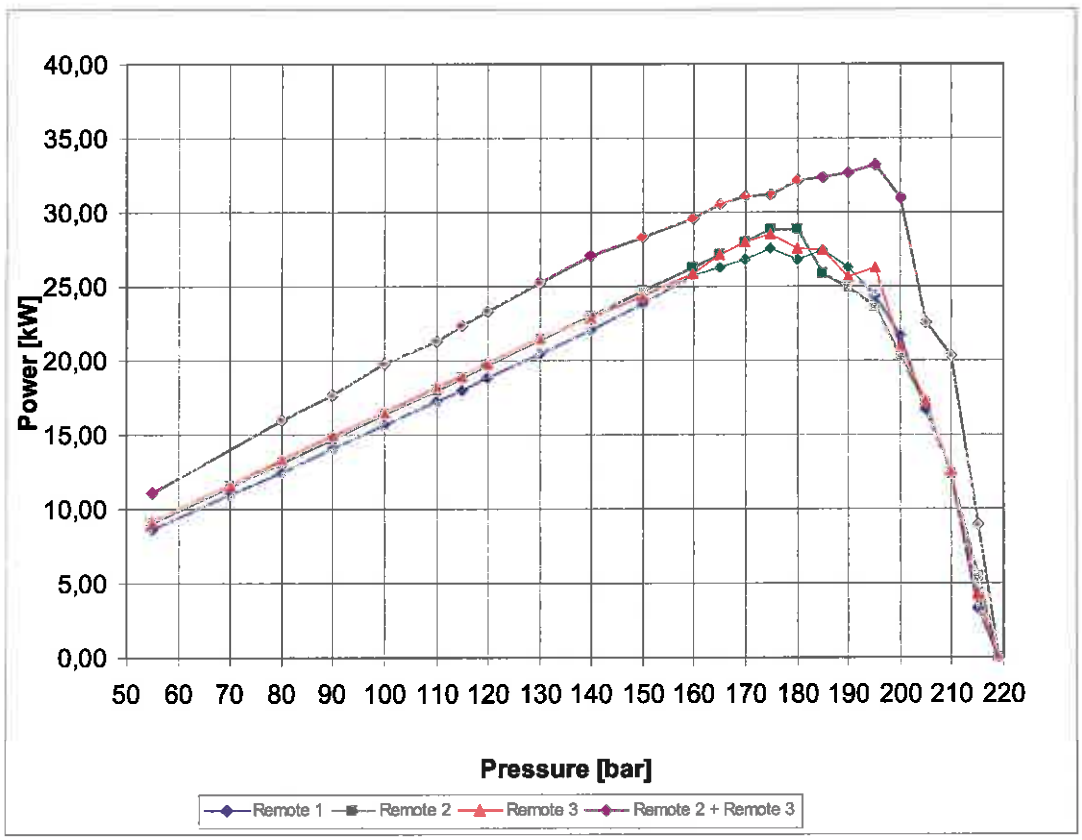
	Pressure	Reservoir oil temperature °C (65 °C target)		Engine speed	Flow rate	Power
	[MPa]	[min]	[max]	[rev/min]	[l/min]	[kW]
Rated Engine Speed *(Manufacturers Specification)*				2200		
3.2.1.2.1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: No	21.9	63	68	2345		
3.2.1.2.2 Flow rate corresponding to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting and corresponding hydraulic power measured at one coupler	19.7 *19.7	63 *66		2320 *2316	81.0 *102.0	26.3 33.2
3.2.1.2.3 Maximum available hydraulic power with flow through a single coupler pair, and corresponding flow and available coupler outlet pressure	17.5	65		2312	97.7	28.5
3.2.1.2.4 Maximum available hydraulic power with coupler pairs operating simultaneously (flow through two or more coupler pairs if required), and corresponding flow and available coupler outlet pressure	19.5	67		2306	102.0	33.2

From 2 couplers*

Maximum flow from 1 pair of couplers:	99.3 l/min (Remote 3)
Maximum flow from 2 pair of couplers:	121.0 l/min (Remote 2 + 3)

Curve


Flow rate [l/min]
130
120
110
100
90
80
70
60
50
40
30
20
10
0
50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220
Pressure [bar]
Remote 1
Remote 2
Remote 3
Remote 2 + Remote 3

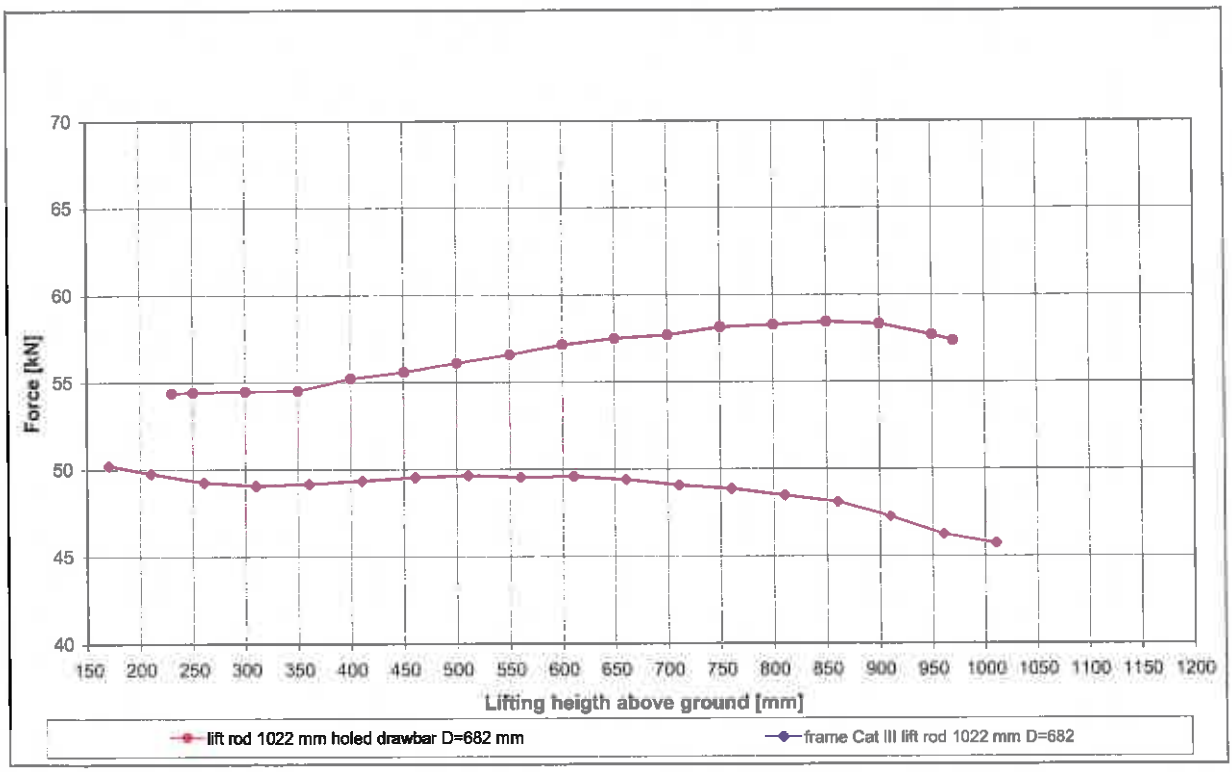

Power [kW]
40,00
35,00
30,00
25,00
20,00
15,00
10,00
5,00
0,00
50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220
Pressure [bar]
Remote 1
Remote 2
Remote 3
Remote 2 + Remote 3

3.2.2 Compulsory Power lift test

Linkage settings for test - see Table 1.1

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	230 mm	170 mm
Vertical movement	740 mm	840 mm
Maximum corrected force exerted through full range	54.4 kN	45.7 kN
Corresponding pressure of hydraulic fluid	19.7 MPa	19.7 MPa
Moment about rear-wheel axis	66.6 kNm	83.8 kNm
Maximum tilt angle of mast from vertical	- degrees	7 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 485	- 425	- 350	- 300	- 200	- 100	0	+ 100	+ 200	+ 315	+ 355
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting of the hydraulic lift system):											
at the hitch points in kN	-	54.4	54.5	54.6	55.6	56.5	57.5	58.1	58.4	57.3	-
Corresponding pressure: 19.7 MPa											
at the frame in kN	50.2	49.5	49.1	49.2	49.5	49.5	49.4	49.0	48.0	46.2	45.7
Corresponding pressure: 19.7 MPa											



3.3 Compulsory drawbar power and fuel consumption test (unballasted tractor)

Date of tests: 25 and 29 June 2007
Type of track: Concrete

	Height of drawbar above ground	pressure	Tyre inflation
		Front	Rear
	[mm]	[kPa]	[kPa]
unballasted 4WD	510	100	100
unballasted 4WD disengaged	600	100	100

Four-Wheel Drive engaged

Gear Number and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels and/or tracks	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	[kW]	[kN]	[km/h]	[min^{-1}]	[min^{-1}]	[%]	[g/kWh]	[kWh/l]	[°C]	[°C]	[°C]	[°C]	[%]	[kPa]
3.3.1	MAXIMUM POWER IN TESTED GEARS/SPEED SETTINGS													
1	36.12	74.15	1.75	2300	2100	14.3	542.3	1.54	45	83	95	29	48	99.5
2	42.20	72.31	2.10	2293	1920	14.3	508.6	1.64	45	83	96	29	48	99.5
3	50.83	73.23	2.50	2278	1980	14.6	477.6	1.74	45	83	96	29	49	99.5
4	60.50	72.00	3.03	2261	2040	13.4	461.0	1.81	46	83	98	29	49	99.5
5	70.59	72.67	3.50	2217	2160	14.4	416.1	2.00	46	83	101	29	48	99.5
6	78.09	72.71	3.87	2018	2340	14.2	381.9	2.18	47	84	98	29	48	99.5
7	88.65	70.06	4.56	2004	2340	11.9	338.7	2.46	48	84	98	29	47	99.5
8	94.56	67.82	5.02	1814	2280	11.1	316.8	2.63	48	82	97	29	47	99.5
9	95.57	55.59	6.19	1801	2220	7.7	313.2	2.66	49	78	95	30	47	99.5
10	96.72	45.89	7.59	1800	2220	6.0	310.0	2.69	49	78	95	30	47	99.5
11	96.12	38.63	8.96	1800	2160	5.9	312.8	2.64	49	79	96	28	48	99.5
12	94.53	31.12	10.94	1800	2160	4.5	316.7	2.59	49	80	98	29	48	99.5

FJ BLT WIESELBURG

Four-Wheel Drive engaged

Gear Number and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels and/or tracks	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	[kW]	[kN]	[km/h]	[min^{-1}]	[min^{-1}]	[%]	[g/kWh]	[kWh/l]	[°C]	[°C]	[°C]	[°C]	[%]	[kPa]
3.3.2 3.3.2.1	FUEL CONSUMPTION in selected gear/speed setting nearest 7.5 km/h, at maximum power at rated engine speed													
8	79.82	44.69	6.43	2203	2280	6.0	370.6	2.25	48	84	97	27	45	100.0
3.3.2.1.1	75 % of pull corresponding to maximum power at rated engine speed													
8	63.46	33.50	6.82	2271	1800	4.2	380.0	2.18	48	83	97	27	45	100.0
3.3.2.1.2	50 % of pull corresponding to maximum power at rated engine speed													
8	42.74	22.32	6.89	2293	1800	3.2	483.4	1.72	43	82	98	23	46	100.0
3.3.2.1.3.	highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.1.1 and 3..3.2.1.2 ; same pull and travelling speed as in 3.3.2.1.1													
9	64.57	33.40	6.96	1975	1800	4.2	345.0	2.40	43	82	97	24	45	100.0
3.3.2.1.4	same gear/speed selection as 3.3.2.1.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
9	44.3	22.85	6.98	1941	1860	3.6	410.0	2.03	41	81	97	22	45	100.0
3.3.2.2	in selected gear/speed setting nearest between 7 km/h and 10 km/h at rated engine speed													
9	79.29	36.33	7.86	2200	1920	4.5	370.4	2.25	42	82	98	23	45	99.8
3.3.2.2.1	75 % of pull corresponding to maximum power at rated engine speed													
9	61.80	27.20	8.18	2270	1920	3.4	410.0	2.03	42	82	98	22	45	99.8
3.3.2.2.2	50 % of pull corresponding to maximum power at rated engine speed													
9	42.04	18.17	8.33	2293	2040	2.6	498.6	1.67	44	82	99	23	44	99.8
3.3.2.2.3	highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.2.1 and 3..3.2.2.2 ; same pull and travelling speed as in 3.3.2.2.1													
10	61.90	27.00	8.25	1931	2100	3.2	372.7	2.24	44	79	90	26	45	99.8
3.3.2.2.4	same gear/speed setting as 3.3.2.2.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.2.3													
10	42.30	18.00	8.46	1936	2100	2.5	433.5	1.92	44	80	90	25	45	99.8

FJ BLT WIESELBURG

Four-Wheel Drive disengaged

Gear Number and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels and/or tracks	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	[kW]	[kN]	[km/h]	[min^{-1}]	[min^{-1}]	[%]	[g/kWh]	[kWh/l]	[°C]	[°C]	[°C]	[°C]	[%]	[kPa]
3.3.1	MAXIMUM POWER IN TESTED GEARS/SPEED SETTINGS													
1	27.91	58.14	1.73	2307	1920	15.0	642.8	1.30	40	83	89	22	50	100.5
2	33.75	58.08	2.09	2300	1920	14.8	575.4	1.45	46	83	97	27	48	100.5
3	40.43	58.83	2.47	2290	1920	15.0	537.8	1.55	46	83	98	27	48	100.5
4	48.64	58.03	3.02	2278	2040	13.5	496.5	1.68	46	83	100	23	48	100.5
5	57.21	57.52	3.58	2266	2160	14.2	465.7	1.79	46	83	100	23	48	100.5
6	68.49	57.48	4.29	2240	2220	13.6	434.2	1.92	47	81	102	26	48	100.5
7	76.10	54.86	4.99	2206	2220	11.5	387.5	2.15	47	82	102	26	47	100.4
8	85.66	55.57	5.55	2044	2280	11.8	347.7	2.40	47	81	100	24	47	100.4
9	91.36	56.65	5.81	1812	2220	13.3	328.9	2.53	47	80	99	23	47	100.4
10	94.76	46.50	7.34	1805	2220	8.6	317.8	2.62	47	78	98	23	47	100.5
11	82.59	31.63	9.40	1810	2100	7.0	357.2	2.33	47	78	97	23	47	100.5
12	81.85	26.19	11.25	1800	2160	5.3	366.5	2.27	48	78	96	24	47	100.5

Four-Wheel Drive disengaged

Gear Number and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels and/or tracks	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	[kW]	[kN]	[km/h]	[min^{-1}]	[min^{-1}]	[%]	[g/kWh]	[kWh/l]	[°C]	[°C]	[°C]	[°C]	[%]	[kPa]
3.3.2 3.3.2.1	FUEL CONSUMPTION in selected gear/speed setting nearest 7.5 km/h, at maximum power at rated engine speed													
8	80.9	45.51	6.40	2206	2100	7.2	368.5	2.26	47	80	96	24	47	100.5
3.3.2.1.1	75 % of pull corresponding to maximum power at rated engine speed													
8	62.7	34.20	6.6	2271	2100	5.5	401.4	2.08	47	80	96	24	47	100.5
3.3.2.1.2	50 % of pull corresponding to maximum power at rated engine speed													
8	42.45	22.70	6.74	2295	1800	4.6	492.3	1.69	45	82	97	24	47	100.5
3.3.2.1.3.	highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.1.1 and 3..3.2.1.2 ; same pull and travelling speed as in 3.3.2.1.1													
9	63.68	34.26	6.69	1908	1860	5.1	352.5	2.37	45	80	97	25	47	100.5
3.3.2.1.4	same gear/speed selection as 3.3.2.1.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
9	42.98	22.63	6.84	1929	1860	4.2	420.6	1.98	44	79	97	25	47	100.5
3.3.2.2	in selected gear/speed setting nearest between 7 km/h and 10 km/h at rated engine speed													
9	80.0	37.75	7.63	2201	1920	6.3	367.8	2.27	45	80	98	25	47	100.5
3.3.2.2.1	75 % of pull corresponding to maximum power at rated engine speed													
9	62.55	28.20	7.99	2268	1920	4.8	422.7	1.97	44	78	96	25	46	100.4
3.3.2.2.2	50 % of pull corresponding to maximum power at rated engine speed													
9	42.96	18.98	8.15	2290	2040	3.7	500.1	1.67	43	78	96	25	46	100.4
3.3.2.2.3	highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.2.1 and 3..3.2.2.2 ; same pull and travelling speed as in 3.3.2.2.1													
10	63.95	28.43	8.10	1915	2100	4.9	369.0	2.26	43	78	97	23	46	100.4
3.3.2.2.4	same gear/speed setting as 3.3.2.2.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.2.3													
10	43.20	18.96	8.20	1950	2100	4.1	437.3	1.91	43	77	96	23	46	100.4

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4 OPTIONAL TEST RESULTS

- Optional P.T.O. test (boosted)
- Optional drawbar test (front axle disengaged)
- Optional drawbar consumption test (front axle disengaged)

5 REPAIRS

None

6 REMARK

Boosted Power Take – Off (P.T.O.) Operation
This vehicle is equipped with an electronically – controlled engine Power Management™ system that monitors and boosts engine power output in certain circumstances, as engine load increases. This is achieved by electronically changing the characteristics of the engine power – speed curve.

The engine Power Management function ("boosted" power level) becomes active in higher transmission gears (16th and above), for road transport applications. The system is also activated once power transfer through the rear P.T.O. exceeds a pre – set level (and forward speed exceeds 0.5 km/h), for mobile P.T.O. - driven implement applications.

An over – ride system is provided to enable P.T.O. operation at the "boosted" power level whilst the vehicle is stationary, for test purposes. The results of such a P.T.O. power output test are presented in this report.

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Hofrat Dipl.-Ing. Dr.
Johann Schrottmaier

Date of test report: 11.12.2007

7 ANNEX

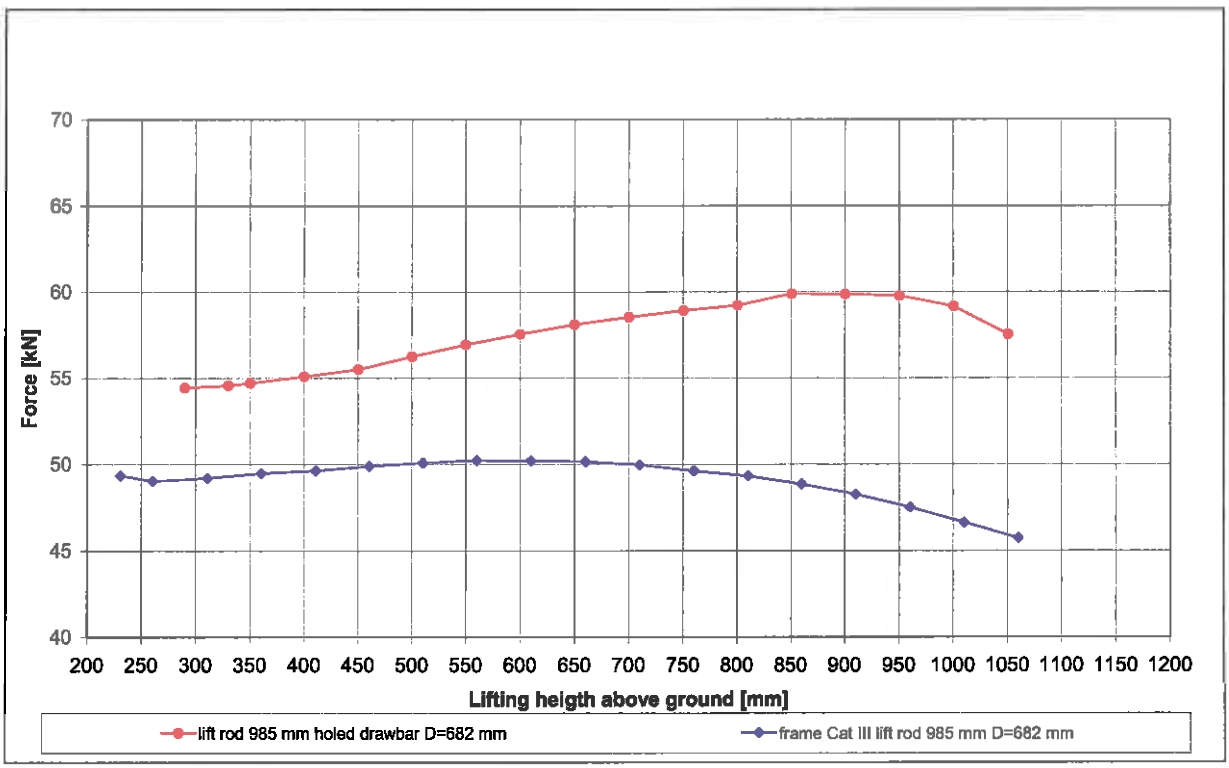
7.1 Power lift tests – (To Manufacturers lift rod setting)

"Not covered by the approval"

Linkage settings for test – see Table 1.1

	at the hitch point	on the frame
Height of lower hitch points above ground in down position	290 mm	230 mm
Vertical movement	760 mm	830 mm
Maximum corrected force exerted through full range	54.5 kN	45.7 kN
Corresponding pressure of hydraulic fluid	19.7 MPa	19.7 MPa
Moment about rear-wheel axis	66.7 kNm	83.8 kNm
Maximum tilt angle of mast from vertical	- degrees	6.5 degrees

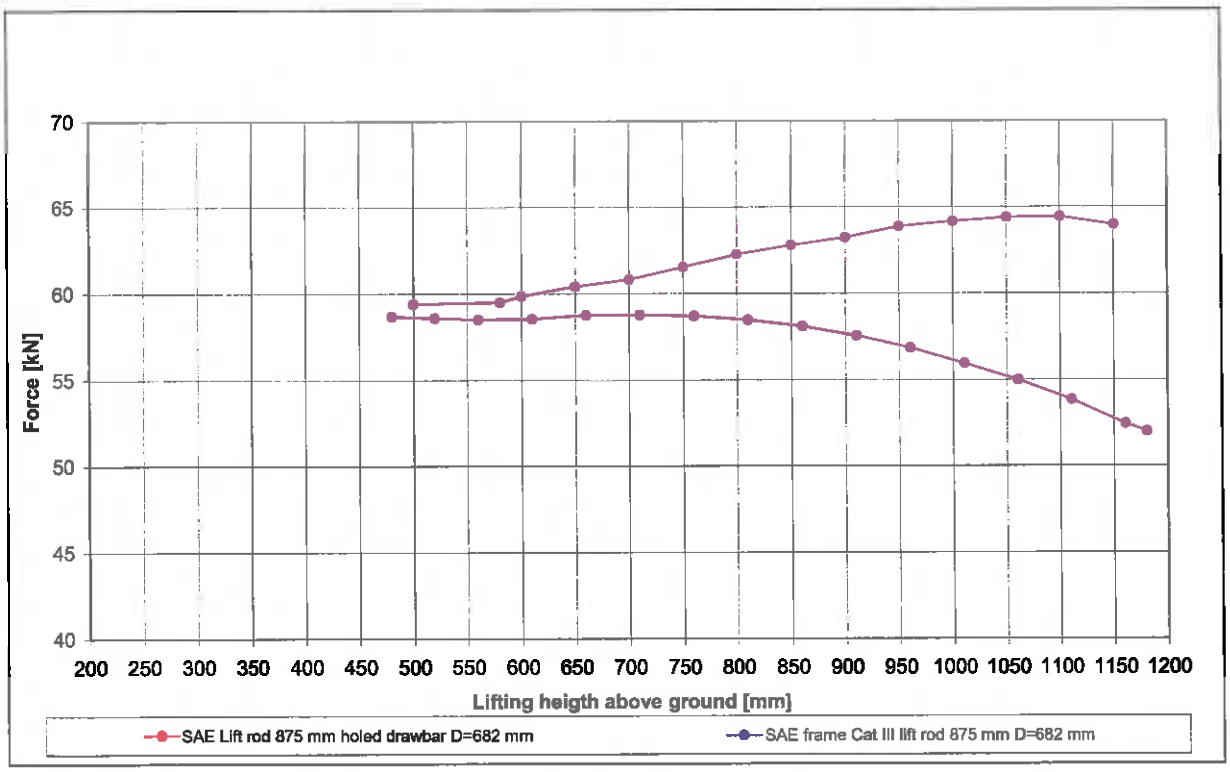
Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 425	- 365	- 300	- 200	- 100	0	+ 100	+ 200	+ 300	+ 345	+ 395
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90 % of the actual relief valve pressure setting of the hydraulic lift system):											
at the hitch points in kN	-	54.5	54.9	55.6	57.0	58.1	58.9	60.0	59.6	59.1	57.5
Corresponding pressure: 19.7 MPa											
at the frame in kN	49.3	49.2	49.4	47.8	50.1	50.1	49.7	48.7	47.5	46.6	45.7
Corresponding pressure: 19.7 MPa											



7.2 Power lift tests – (To SAE J283)

Linkage settings for test – see Table 1.1

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 155	- 100	- 55	0	+ 100	+ 200	+ 300	+ 400	+ 445	+ 495	+ 525
SAE J283											
kN (hitch points)	59.4	59.5	59.9	60.4	61.6	62.8	63.9	64.4	64.4	64.0	---
kN (frame)	58.7	58.5	58.5	58.7	58.7	58.2	57.0	55.1	54.0	52.7	52.0
Corresponding pressure: 19.7 MPa											



7.3 Test results (OECD Code 5)

"Not covered by the approval"

Make and type of sound level meter: Bruel and Kjaer Pulse

Type of test track: Concrete

Date of tests: 14 June 2007

Four wheel drive engaged Windows closed

Gear	Test Condition	Measured traveling speed	Sound level
		[km/h]	[dB(A)]
8	Light Load	7.15	72

Four wheel drive engaged Windows open

Gear	Test Condition	Measured traveling speed	Sound level
		[km/h]	[dB(A)]
8	Light Load	7.15	87

Four wheel drive dis-engaged Windows closed

Gear	Test Condition	Measured traveling speed	Sound level
		[km/h]	[dB(A)]
8	Light Load	7.20	72

Four wheel drive dis-engaged Windows open

Gear	Test Condition	Measured traveling speed	Sound level
		[km/h]	[dB(A)]
8	Light Load	7.20	87