SILSOE RESEARCH INSTITUTE

OECD Report

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CODE 2

OECD RESTRICTED STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL AND FORESTRY TRACTOR PERFORMANCE

New Holland PEC7AC1 (TS 135A) Four-Wheel Drive Tractor with 16-speed Semi Powered Shift Transmission (30 km/h)



Manufactured by: CNH UK Limited
Basildon
Essex SS14 3AD
United Kingdom

Reference No: 845

Date: August 2004

ENGINEERING for Life

File: 6650/2003

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Statement

The information opposite each item has been validated by the Testing Station. An item marked [C] indicates to the test report user that the information declared by the manufacturer has been checked; an item marked [D] indicates that the manufacturer's declaration has been endorsed.

[C]	Tractor manufacturer's name and address:	CNH UK Limited Basildon, Essex, SS14 3AD United Kingdom
[C]	Location of tractor assembly:	Basildon, Essex / St Valentin, Austria
[D]	Submitted for test by:	The manufacturer
[C]	Selected for test by:	The manufacturer with the agreement of the testing station
[D]	Place of running in:	Basildon. Essex
[D]	Duration of running in:	10 hours
[C]	Location of test:	Silsoe Research Institute Wrest Park, Silsoe, MK45 4HS United Kingdom

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1

[C]	Make of tractor:	New Holland
[C]	Model (trade name):	TS135A
[C]	Type:	Four- wheel drive, unit construction

1.1.2 *Numbers*

[D]	1st Serial No or prototype:	ACP207661/EKP001001
[C]	Serial No:	209584

1.1.3 *Other specifications (if applicable)*

[D]	Model(s) for other countries:	None
[C]	Transmission type or gears x ranges:	16-Speed Semi-Power Shift
[C]	Speed version:	30 km/h
[C]	Manufacturer identification or Technical type number:	PEC7AC1

1.2 Engine

[C]	Make:	CNH
[C]	Model:	F4DE0684A*D
[C]	Type:	4 stroke turbocharged direct injection and after cooled diesel
[C]	Serial No:	00066631

1.2.1 *Cylinders*

[C]	Number/disposition:	6 vertical in-line
[D]	Bore/stroke:	104.0mm/132.0mm
[D]	Capacity:	6728 cm^3
[D]	Compression ratio:	17.0 : 1
[D]	Arrangement of valves:	Overhead
[D]	Cylinder liners:	None, monobloc construction

1.2.2	*Supercharging*	
[D]	Make/Model:	Holset /HX35W, HX35
[C]	Type:	Exhaust driven
[D]	Pressure:	0.115 MPa at rated speed/load
1.2.3	*Fuel system*	
[D]	Fuel feed system:	Gear pump
[C]	Make, type and model of fuel filter:	None, two disposable canister filters incorporating sediment and water separation plus plastic strainer in tank
[D]	Capacity of fuel tank:	254 dm^3
[D]	Make, type and model of injection pump:	Bosch, high pressure pump – common rail/CR/CP3 S3
[D]	Serial No:	489 8921
	Manufacturer's production setting of injection pump	
[C]	Flow rate (rated engine speed and full load):	82 mm^3 ± 5% per stroke at 2200 min^{-1} (rev/min) 30.84–34.10 dm^3/h
[D]	Timing:	Variable
[D]	Make, type and model of injectors:	Bosch, managed by electronic control unit DSLA143 P970
[D]	Injection pressure:	92 MPa
1.2.4	*Governor*	
[C]	Make:	Bosch
[D]	Model:	None
[C]	Type:	Managed by electronic control unit
[C]	Governed range of engine speed:	700 to 2375 min^{-1} (rev/min)
[C]	Rated engine speed:	2200 min^{-1} (rev/min)
1.2.5	*Air cleaner*	
[C]	Pre-cleaner	Not fitted
[C]	Type:	—
[C]	Location:	—
	Main cleaner Make:	Donaldson
[C]	Type:	3 stage dry paper element with replaceable cartridge
[D]	Model:	None
[C]	Location of air intake:	Under engine bonnet at front and above radiator.
[C]	Maintenance indicator:	Warning light on instrument panel

1.2.6 *Lubrication system*

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

1.2.7 *Cooling system*

[C]	Type of coolant:	Water and antifreeze (50% solution)
[D]	Type of pump:	Belt driven centrifugal impeller
	Specification of fan	
[C]	Number of fan blades:	5
[C]	Fan diameter:	510 mm
[D]	Coolant capacity:	25 dm^3
[D]	Type of temperature control:	Thermostat with full flow bypass
[D]	System pressure:	100 kPa

1.2.8 *Starting system*

[D]	Make:	Bosch
[D]	Model:	EV3
[C]	Type:	Electrical, positive engagement, solenoid operated
[D]	Starter motor power rating:	3.1/3.6 kW 3.0 kW (Reduction geared)
[D]	Cold starting aid:	Phillips and Temro, injection management thermostarter
[C]	Safety device:	Starting inoperable unless shuttle lever in neutral, clutch pedal depressed and operator seat presence switch is activated

1.2.9 *Electrical system*

[C]	Voltage:	12 V
	Generator:	Alternator
[C]	Make:	Denso
[C]	Model:	A 127
[C]	Type:	Belt driven
[C]	Power:	120 amps at 6000 min^{-1} (rev/min)
	Batteries	
[C]	Number:	1 Exide lead acid, mounted behind right hand steps
[D]	Rating:	176 Ah at 20 hours

1.2.10 *Exhaust system*

[C]	Make:	COR.TUBI
[D]	Model:	None
[C]	Type:	Vertical stack pipe with intergral silencer
[C]	Location:	Engine rear on right hand side
[C]	Height of outlet above ground:	2930 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:	9
[D]	Diameter of plates:	160 mm
[C]	Method of operation:	Electro-hydraulic with pedal override

1.3.2 *Gear box*

[D]	Make:	CNH
[C]	Model:	Semi power shift
[C]	Description:	Electro/Hydraulic, synchromesh operation. 4 powershift gears with 4 ranges (total 16 speeds) selected by a combination of mechanical lever and electrical buttons located within the right-hand console Forward/reverse is actuated by a steering column mounted shuttle lever.

		Forward	Reverse
[C]	Number of gears	4	4
[C]	Number of ranges/groups	4	4
[C]	Total of arrangements	16	16

Available options:

12 x12 with or without creep (30/40 km/h)
16 x 16 with or without creep (30/40 km/h)
24 x 24 with or without creep (30/40 km/h)
17 x 16 less creep only (50km/h)

1.3.3 *Rear axle and final drives*

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Crown wheel pinion with differential and inboard epicyclic reduction gear final drive
	Differential lock:	
[D]	Type:	Mechanical or multiplate
[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
[C]	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*

	Gear	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed:* 2200 rev/min km/h
	Forward			
[C]	1	A	298.92	2.28
[C]	2	A	244.66	2.78
[C]	3	A	200.12	3.40
[C]	4	A	163.80	4.15
[C]	5	B	127.24	5.35
[C]	6	B	104.15	6.53
[C]	7	B	85.19	7.98
[C]	8	B	69.73	9.75
[C]	9	C	96.24	7.07
[C]	10	C	78.77	8.63
[C]	11	C	64.43	10.56
[C]	12	C	52.74	12.90
[C]	13	D	40.97	16.60
[C]	14	D	33.53	20.28
[C]	15	D	27.43	24.80
[C]	16	D	22.45	30.30
	Reverse			
[C]	1	A	302.45	2.25
[C]	2	A	247.56	2.75
[C]	3	A	202.49	3.37
[C]	4	A	165.73	4.10
[C]	5	B	128.75	5.28
[C]	6	B	105.38	6.45
[C]	7	B	86.20	7.89
[C]	8	B	70.55	9.64
[C]	9	C	97.38	6.98
[C]	10	C	79.70	8.53
[C]	11	C	65.19	10.43
[C]	12	C	53.36	12.75
[C]	13	D	41.46	16.41
[C]	14	D	33.93	20.05
[C]	15	D	27.75	24.51
[C]	16	D	22.71	29.94

(*) Calculated with a tyre dynamic radius index of 820 mm

[C] Number of revolutions of front wheels for one revolution of rear wheels: 1.353

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 or by changing shafts
	Clutch	
[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Multiplate, wet
[D]	Number of plates:	6
[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)
[C]	Height above ground:	792 mm
[C]	Distance from the median plane of the tractor:	Central
[C]	Distance behind rear wheel axis:	555 mm
[C]	PTO speed at rated engine speed:	603 min^{-1} (rev/min)
[C]	Engine speed at standard power take-off speed:	1969 min^{-1} (rev/min)
[C]	Ratio of rotation speeds:	3.65
[D]	Power restriction:	None
[D]	Maximum torque transmissible:	None
[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)
[C]	Height above ground:	792 mm
[C]	Distance from the median plane of the tractor:	Central
[C]	Distance behind rear wheel axis:	555 mm
[C]	PTO speed at rated engine speed:	1038 min^{-1} (rev/min)
[C]	Engine speed at standard power take-off speed:	2120 min^{-1} (rev/min)
[C]	Ratio of rotation speeds:	2.12
[D]	Power restriction	None
[D]	Maximum torque transmissible:	None
[C]	Direction of rotation (viewed from behind tractor):	Clockwise

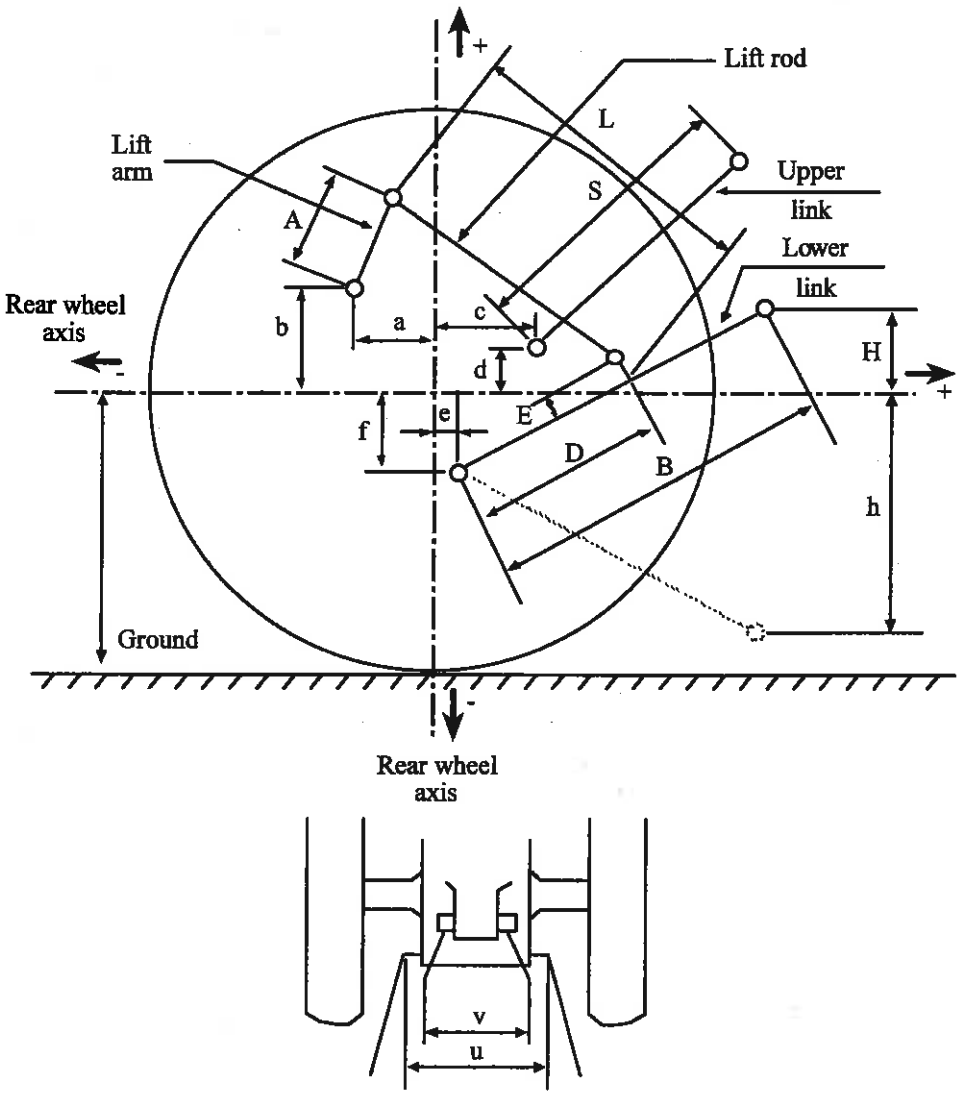
1.4.1.2 Power take-off proportional to ground speed — Not applicable

1.5 Hydraulic power lift

[C]	Make:	CNH
[D]	Model:	None
[D]	Type:	Electro-hydraulic closed centre load sensing
[C]	Type and number of cylinders:	2 single acting externally mounted rams.
[C]	Type of linkage lock for transport:	Hydraulic
[D]	Pump maximum pressure / Relief valve pressure setting:	20.5 – 21.5 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 filters:	1 disposable canister filter and 1 cartridge filter
[C]	Site of oil reservoir:	Rear axle housing
[C]	Type, number and location of tapping points:	4 remote couplers at rear of tractor
[D]	Maximum volume of oil available to external cylinders:	19 litres under normal conditions (flat fields) 27 litres when operating stationary on level ground

1.6 Three-point linkage

[C]	Category:	2 in conformity with ISO 730-1:1994 + Cor.1:1995
[C]	Category adapter:	None
[C]	Controls:	Electronic draught/ position control with lower link sensing



LIFT TEST
Linkage geometry

Fig 1.1 and Fig 1.2

Table 1.1
Dimensions of linkage when attached to the standard frame (ISO 730-1-1994 CAT 2)

				Dimensions or ranges	Settings used in tests		
					3.2.2	7.1	7.2
				mm	mm	mm	mm
[C]	Length of lift arms:		(A)	310	310	310	310
[C]	Length of lower links:		(B)	950	950	950	950
[C]	Distance of lift arm pivot point from rear wheel centre line:	horizontally: vertically:	(a) (b)	138 370	138 370	138 370	138 370
[C]	Horizontal distance between the two lower link points:		(u)	460	460	460	460
[C]	Horizontal distance between the two lift arm end points:		(v)	550	550	550	550
[C]	Length of upper link:		(S)	650 – 913	700	720	708
[C]	Distance of upper link pivot point from rear wheel centre line:	horizontally: vertically:	(c) (d)	430 – 455 208 – 275	455 208	430 275	430 275
[C]	Distance of lower link pivot point from rear wheel centre line:	horizontally: vertically:	(e) (f)	168 235	168 235	168 235	168 235
[C]	Distance of lower link points to lift rod pivot points on lower link centre line:		(D)	502 – 580	502	580	580
[C]	Length of lift rods:		(L)	700 – 888	825	875	875/820
	Height of lower hitch points (*) Relative to the rear wheel centre line, situated 820 mm above the ground level:						
[C]	- in low position		(h)	290 – 750	625	622	594/503
[C]	- in high position		(H)	0 – 260	48	0	0/85
[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 820 mm

Table 2.1
Dimensions of linkage when attached to the standard frame (ISO 730-1-1994 CAT 2)

With 1012 mm lower links

				Dimensions or ranges	Settings used in tests		
					3.2.2.1	7.1.1	7.2.1
				mm	mm	mm	mm
[C]	Length of lift arms:		(A)	310	310	310	310
[C]	Length of lower links:		(B)	1012	1012	1012	1012
[C]	Distance of lift arm pivot point from rear wheel centre line:	horizontally: vertically:	(a) (b)	138 370	138 370	138 370	138 370
[C]	Horizontal distance between the two lower link points:		(u)	460	460	460	460
[C]	Horizontal distance between the two lift arm end points:		(v)	550	550	550	550
[C]	Length of upper link:		(S)	650 – 913	760	782	770
[C]	Distance of upper link pivot point from rear wheel centre line:	horizontally: vertically:	(c) (d)	430 – 455 208 – 275	455 208	430 275	430 275
[C]	Distance of lower link pivot point from rear wheel centre line:	horizontally: vertically:	(e) (f)	168 235	168 235	168 235	168 235
[C]	Distance of lower link points to lift rod pivot points on lower link centre line:		(D)	502,580,658	502	658	580
[C]	Length of lift rods:		(L)	700 – 888	820	888	888/820
	Height of lower hitch points (*) Relative to the rear wheel centre line, situated 820 mm above the ground level:						
[C]	- in low position		(h)	202 – 720	625	565	625/515
[C]	- in high position		(H)	0 – 318	80	38	20/100
[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 820 mm

1.7 Swinging drawbar

[C]	Type:		Clevis		
[C]	Height above ground:	Unballasted Maximum:	558 mm		
		Minimum:	448 mm		
[C]	Type of adjustment:		Inverting drawbar		
[C]	Distance of hitch point from rear-wheel axis, horizontally:		805 mm	905 mm	955 mm
[C]	Distance of hitch point from power take-off shaft end:				
		Vertically:	234 mm	344 mm	
		Horizontally:	250 mm	350 mm	400 mm
[C]	Lateral adjustment (centre of clevis):				
		Right-hand:	—	203 mm	225 mm
		Left-hand:	—	203 mm	225 mm
[C]	Distance of pivot point from rear axles	horizontally:	243 mm	behind rear axle	
[C]	Width of clevis:		70 mm		
[C]	Diameter of drawbar pin hole:		33 mm		
[D]	Maximum vertical permissible load:	Clevis uppermost:	2040 kg	1330 kg	1140 kg
		Clevis underneath:	1305 kg	1225 kg	1045 kg

1.8 Trailer hitch

None fitted

1.9 Holed drawbar

Type: None fitted

1.10 Steering

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Hydrostatic
	Method of operation	
[C]	Pump:	Bosch
[C]	Motor:	Sauer Danfoss OSPC-160-OR
[C]	Ram:	2, balanced system with double acting cylinders one operating each steering arm
[D]	Filter:	Integral with hydraulic power lift system
[D]	Working pressure:	17 MPa

1.11 Brakes

1.11.1 *Service brake*

[D]	Make:	CNH
[D]	Model:	None
[D]	Type:	Oil-immersed single plate disc
[C]	Method of operation:	Hydraulic, independent on rear wheels (On 4WD models. 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*

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

1.12 Wheels

Number

[C] Front: 2 driving/steering

[C] Rear: 2 driving

[C] Wheelbase: 2652 mm

Track width adjustment:

		Minimum mm	Maximum mm	Adjustment method
[C]	Front*	1630	2080	Reversing wheels and offset lug rims
[C]	Rear	1730	2130	Reversing wheels and offset lug rims

*55° steering angle available only on 1860 mm and larger track settings

1.13 Protective structure

[C] Make: CNH

[C] Model: SLTV 12

[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: Cab

[C] Tiltable/Not tiltable: Not tiltable

OECD approval

[C] Approval number: 4/0741

[C] Date of approval: 20 September 2002

Nos. minor modification certificates, if any: 2

The certificates for minor modifications established by Danish testing station

1.14 Seat

1.14.1 *Driver's seat*

[C]	Make/model/Type:	Grammer MSG 93/731, 95A/741 EEC approved to 78/764/EEC – e1*0006*03, e1*100514*07
[C]	Seat and steering wheel reversible:	No
[C]	Type of suspension:	Parallelogram, suspension air spring
[C]	Type of damping:	Double acting, hydraulic
	Range of adjustment -	
[C]	Longitudinal:	+ 90 mm / -120 mm
[C]	Vertical:	± 40 mm
[C]	Safety belt:	Yes

1.14.2 *Optional driver's seat(s)*

1.14.3 *Passenger seat*

[C]	Make:	Not fitted

1.15 Lighting

		Height above ground to centre	Size	Distance from outside edge of lights to medium plane of tractor
		mm	mm	mm
[C]	Headlights	1360	145 x 145	280
[C]	Sidelights	1890	75 x 70	1008
[C]	Rear lights	1860	265 x 53	893
[C]	Rear fender reflectors	1860	265 x 53	893
[C]	Rear axle reflectors	795	100 x 35	581

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	4505	2420	2420	2935	2930

2.2 Ground clearance (unballasted tractor) 350 mm

Clearance-limiting part: Drawbar clevis in lowest position

2.3 Tractor mass

Mass (with or without frame/roll guard/cab/other): With cab

	Unballasted	
	Without driver	With driver
	kg	kg
Front	2140	2149
Rear	3312	3378
Total	5452	5527

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	 480/65R28 136 A8 Radial	 600/65R 38 153 A8 Radial
Maximum load (tyre manufacturer's) 30/40/50 km/h	15.4/14.4/13.1 kN	25.3/23.6/21.4 kN
Maximum load (tractor manufacturer's) 30/40/50	15.4/14.4/13.1 kN	25.3/23.6/21.4 kN
Inflation pressure (tyre manufacturer's)	62 kPa	62 kPa
Dynamic radius index	640 mm	820 mm
Chosen track width (manufacturer's nominal)	1830 mm	1830 mm

2.7 Fuel

Type: Diesel oil to Class D, 1.5 to 5.5 cSt.

Density at 15° C: 0.8453 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	15.0	600	600
Front axle differential	9.0	1200	None
Front axle hub (each)	1.7	1200	None
Gearbox	62.0	1200	600/1200
Rear axle Hydraulic system Final drives (rear) Steering	Integral with gearbox		
Brakes	0.5	Top-up	None

2.8.2 *Specifications (SAE, APL, CCMC, ACEA, MILL, ISO)*

	spec	Recommended	Used during test
Engine oil Type: Viscosity Classification:	NH 324H	Ambra Super Gold HSP 11.5 cSt at 100° C API CH – 4	As recommended
Transmission oils Type: Viscosity Classification:	NH 410B	Ambra Multi G 9 cSt at 100° C API GL – 4	As recommended
Rear final drives Type: Viscosity: Classification:	NH 410B	Ambra Multi G 9 cSt at 100° C API GL – 4	As recommended
Front differential and final drives Type: Viscosity: Classification:	NH 410B	Ambra Multi G 9 cSt at 100° C API GL – 4	As recommended
Hydraulic brakes Type: Viscosity: Classification:	NH 610A	Ambra LHM Brake 6 cSt at 100° C ISO 7308	As recommended
Hydraulic fluid Type: Viscosity: Classification:	NH 410B	Ambra Multi G 9 cSt at 100° C API GL – 4	As recommended
Steering oil Type: Viscosity: Classification:	NH 410B	Ambra Multi G 9 cSt at 100° C API GL – 4	As recommended

2.8.3 *Grease*

Type: NH 710A Ambra GR 9 NLGI 2 Lithium Based As recommended

Number of lubrication points: 14

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

Date and location of tests: 1 and 4 June 2004
Silsoe Research Institute
Wrest Park, Silsoe, Bedford

Type of dynamometer bench: Eddy Current, Borghi and Saveri

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 – TWO - HOUR TEST							
95.0	1900	896	2513	22.93	27.13	241	3.50
3.1.2 POWER AT RATED ENGINE SPEED							
85.4	2199	1037	2774	23.01	27.22	269	3.14
3.1.3 STANDARD POWER TAKE-OFF SPEED [1000 ± 25 min^{-1} (rev/min)]							
89.6	2120	1000	2713	23.07	27.29	258	3.28
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at rated engine speed							
85.4	2199	1037	2774	23.01	27.22	269	3.14
3.1.4.2 85% of torque obtained in 3.1.4.1							
74.6	2257	1065	2746	21.06	24.92	282	2.99
3.1.4.3 75% of torque defined in 3.1.4.2							
57.0	2298	1084	2579	17.56	20.78	308	2.74
3.1.4.4 50% of torque defined in 3.1.4.2							
38.5	2326	1097	2579	14.10	16.68	366	2.31
3.1.4.5 25% of torque defined in 3.1.4.2							
19.4	2358	1112	2142	10.50	12.42	540	1.57
3.1.4.6 unloaded							
0	2372	1119	2115	7.39	8.74	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED [1000± 25 min^{-1} (rev/min)] 3.1.5.1 the torque corresponding to maximum power							
89.6	2120	1000	2713	23.07	27.29	258	3.28
3.1.5.2 85% of torque obtained in 3.1.5.1							
78.1	2171	1024	2670	20.53	24.29	263	3.21
3.1.5.3 75% of torque defined in 3.1.5.2							
59.0	2187	1032	2570	16.82	19.90	285	2.97
3.1.5.4 50% of torque defined in 3.1.5.2							
39.7	2203	1039	2471	13.32	15.76	336	2.52
3.1.5.5 25% of torque defined in 3.1.5.2							
19.9	2219	1047	1925	9.74	11.53	490	1.73
3.1.5.6 unloaded							
0	2232	1053	1911	6.39	7.56	-	-

3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 maximum power at rated engine speed							
85.4	2199	1037	2774	23.01	27.22	269	3.14
3.1.6.2 80% of power obtained in 3.1.6.1 at max speed setting							
68.3	2280	1075	2599	19.65	23.25	288	2.94
3.1.6.3 80% of power obtained in 3.1.6.1 with governor set to 90% of rated engine speed							
68.3	1979	934	2340	17.50	20.71	256	3.30
3.1.6.4 40% of power obtained in 3.1.6.1 with governor set to 90% of rated engine speed							
34.2	1978	933	1958	11.03	13.05	322	2.62
3.1.6.5 60% of power obtained in 3.1.6.1 with governor set to 60% of rated engine speed							
51.2	1321	623	1420	11.89	14.07	232	3.64
3.1.6.6 40% of power obtained in 3.1.6.1 with governor set to 60% of rated engine speed							
34.2	1321	623	1370	8.71	10.31	255	3.32

No load maximum engine speed: 2372 min^{-1} (rev/min)

Torque (equivalent crankshaft) at maximum power

At rated engine speed: 371.0 Nm

At 2-hour test: 477.7 Nm

Maximum torque (equivalent crankshaft): 553.4 Nm
(engine speed: 1398 min^{-1} (rev/min)

Mean atmospheric conditions:	
Temperature	23 °C
Pressure	101.0 kPa
Relative humidity	56 %
Maximum temperatures:	
Coolant	83 °C
Engine oil	99 °C
Fuel	54 °C
Engine air intake	28 °C

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							
113.0	1900	896	2557	26.61	31.48	235	3.59
3.1.2 POWER AT RATED ENGINE SPEED							
105.5	2199	1037	2900	27.29	32.29	259	3.27
3.1.3 STANDARD POWER TAKE-OFF SPEED [1000 ± 25 min^{-1} (rev/min)]							
108.3	2122	1001	2830	27.29	32.28	252	3.35
3.1.4 PART LOADS							
3.1.4.1 the torque corresponding to maximum power at rated engine speed							
105.5	2199	1037	2900	27.29	32.29	259	3.27
3.1.4.2 85% of torque obtained in 3.1.4.1							
91.5	2241	1057	2581	23.74	28.09	259	3.26
3.1.4.3 75% of torque defined in 3.1.4.2							
69.8	2278	1075	2777	20.67	24.45	296	2.85
3.1.4.4 50% of torque defined in 3.1.4.2							
47.2	2312	1090	2826	16.16	19.12	342	2.47
3.1.4.5 25% of torque defined in 3.1.4.2							
24.0	2352	1109	2530	11.77	13.92	490	1.72
3.1.4.6 unloaded							
0	2372	1119	2340	7.68	9.08	-	-
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED [1000± 25 min^{-1} (rev/min)]							
3.1.5.1 the torque corresponding to maximum power							
108.3	2122	1001	2830	27.29	32.28	252	3.35
3.1.5.2 85% of torque obtained in 3.1.5.1							
93.5	2157	1018	2650	23.56	27.87	252	3.35
3.1.5.3 75% of torque defined in 3.1.5.2							
70.8	2177	1027	2660	19.96	23.61	282	3.00
3.1.5.4 50% of torque defined in 3.1.5.2							
47.7	2195	1035	2600	14.85	17.57	312	2.71
3.1.5.5 25% of torque defined in 3.1.5.2							
24.1	2217	1046	2440	10.78	12.75	448	1.89
3.1.5.6 unloaded							
0	2231	1052	2300	6.58	7.78	-	-

3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 maximum power at rated engine speed							
105.5	2199	1037	2900	27.29	32.29	259	3.27
3.1.6.2 80% of power obtained in 3.1.6.1 at max speed setting							
84.4	2254	1063	2670	22.23	26.30	263	3.21
3.1.6.3 80% of power obtained in 3.1.6.1 with governor set to 90% of rated engine speed							
84.4	1980	934	2550	20.59	24.36	244	3.47
3.1.6.4 40% of power obtained in 3.1.6.1 with governor set to 90% of rated engine speed							
42.2	1982	934	2290	12.52	14.81	297	2.85
3.1.6.5 60% of power obtained in 3.1.6.1 with governor set to 60% of rated engine speed							
63.3	1323	624	1784	14.38	17.02	227	3.72
3.1.6.6 40% of power obtained in 3.1.6.1 with governor set to 60% of rated engine speed							
42.2	1318	622	1782	10.30	12.19	244	3.46

No load maximum engine speed: 2372 min^{-1} (rev/min)

Torque (equivalent crankshaft) at maximum power

At rated engine speed: 458.4 Nm

At maximum power: 568.0 Nm

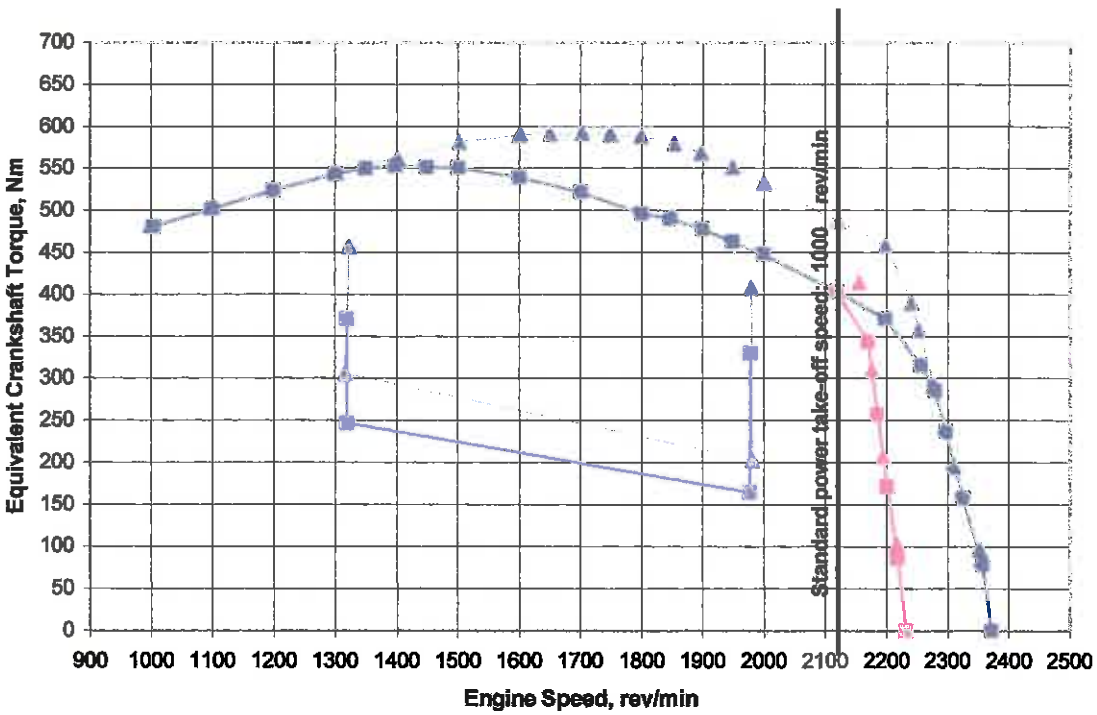
Maximum torque (equivalent crankshaft): 591.8 Nm
(engine speed:1703 min^{-1} (rev/min)

Mean atmospheric conditions:	
Temperature	23 °C
Pressure	101.7 kPa
Relative humidity	55 %
Maximum temperatures:	
Coolant	82 °C
Engine oil	100 °C
Fuel	55 °C
Engine air intake	28 °C

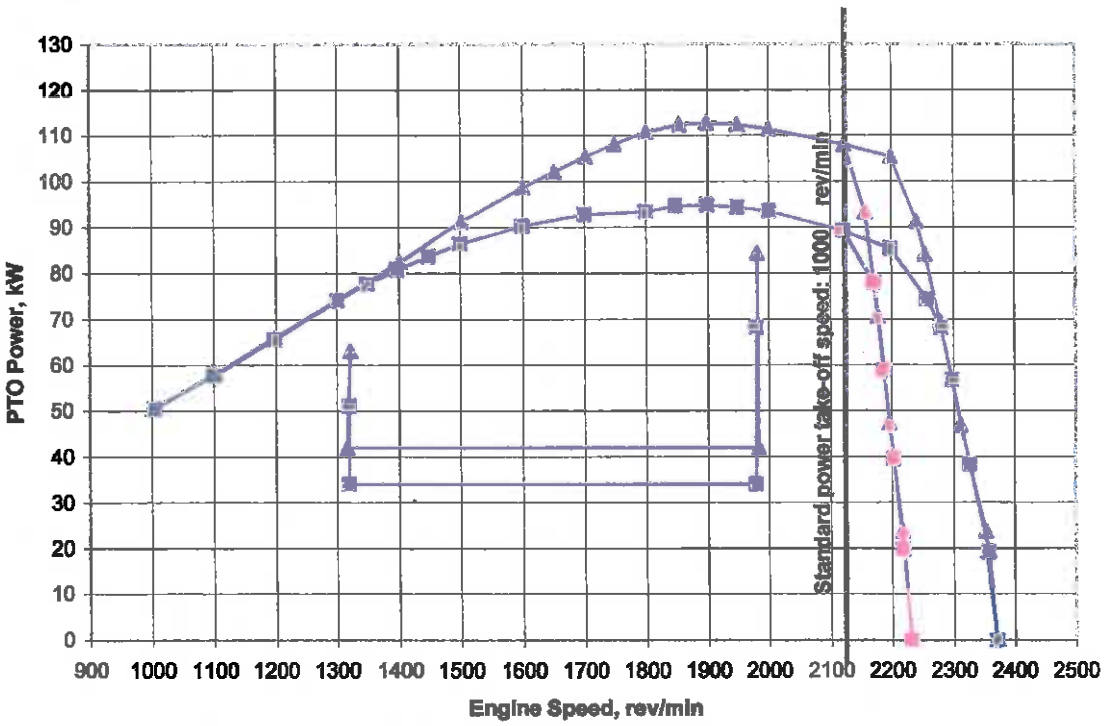
■ Main power take-off curve

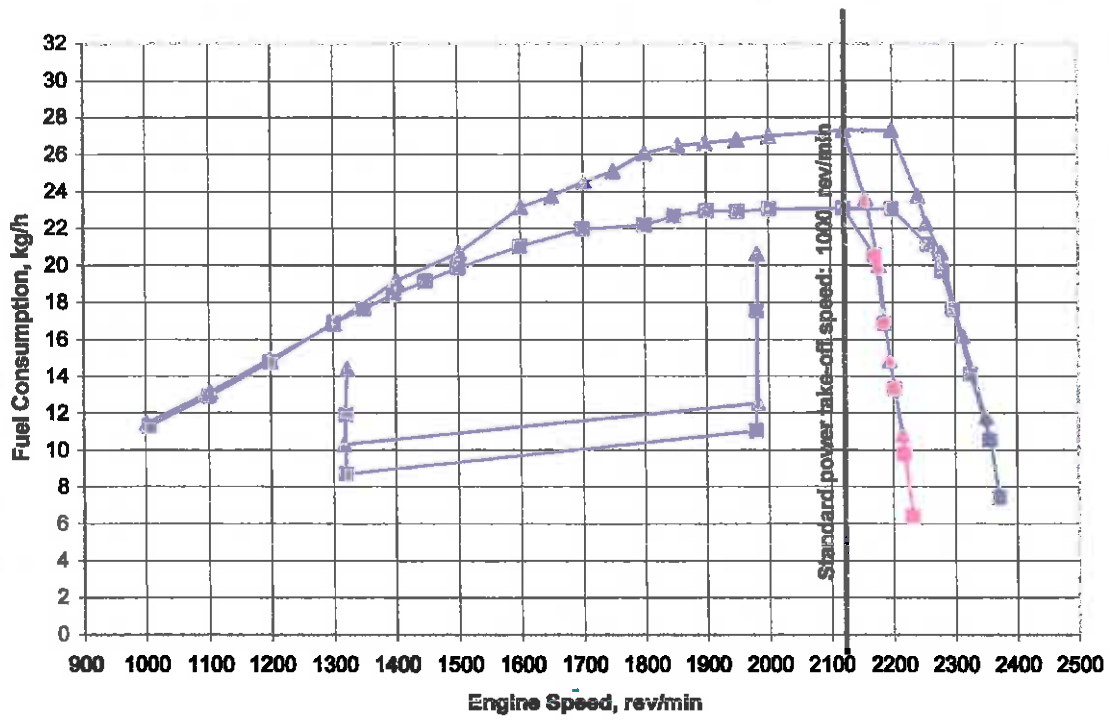
▲ Boosted power take-off curve

Power take-off curves

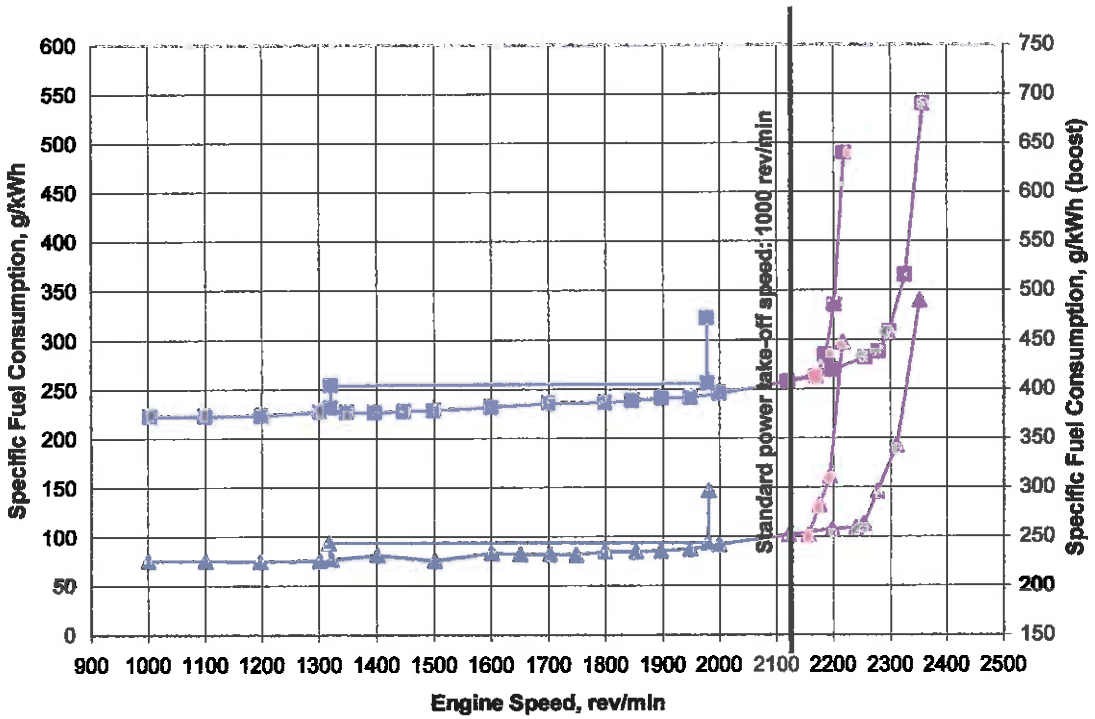


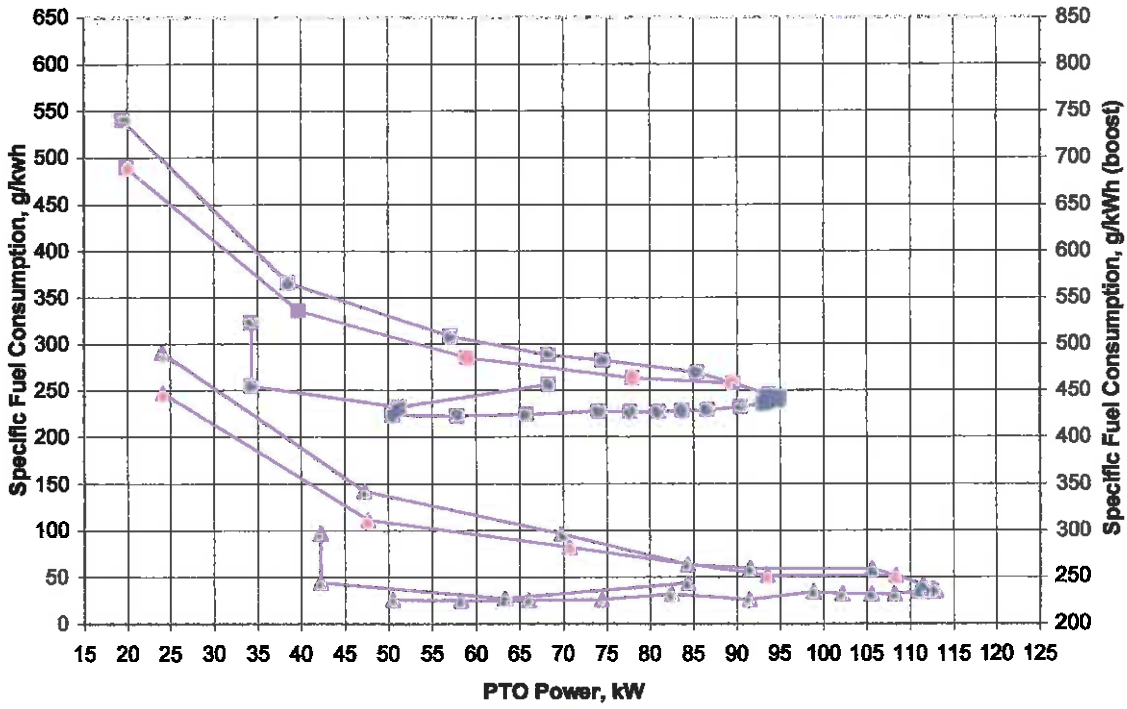
Power take-off curves





Power take-off curves





3.2 Hydraulic power and lifting force

Date of tests: 11, 12 and 16 August 2004

3.2.1 *Hydraulic power test*

3.2.1.1 Hydraulic fluid data

Hydraulic fluid type: NH 410B

Viscosity index (ISO 3448+Corr 1:1993): 130

Viscosity at 65° C: 36.5mm^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				2200		
3.2.1.2.1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	21.4	63	68	2370		
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 from one coupler pair:	19.3 19.3*	65 67*		2347 2341*	66.5 73.6*	21.40 23.67*
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair:	17.5	65		2327	89.4	26.08
3.2.1.2.4 Maximum available flow and maximum power from coupler pairs operating simultaneously (flow through two coupler pairs):	18.0	65		2328	94.5	28.35

* From 2 couplers

Maximum flow from 1 pair of couplers: 91.5 l/m

Maximum flow from 2 pairs of couplers: 99.0 l/m

3.2.2 Compulsory Power lift test

Power lift test – (To ISO 730-1:1994)

Linkage settings for test – see Table 1.1 and Figures 1.1 and 1.2.

	At the hitch point	on the frame
Height of lower hitch points above ground in down position	195 mm	125 mm
Vertical movement	673 mm	833 mm
Maximum corrected force exerted through full range	53.1 kN	42.4 kN
Corresponding pressure of hydraulic fluid	19.3 MPa	19.3 MPa
Moment about rear-wheel axis	59.4 kNm	73.3 kNm
Maximum tilt angle of mast from vertical	—	10 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 460	- 390	- 255	- 185	- 85	0	+ 115	+ 200	+ 240	+ 283	+ 373
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 kN	—	53.1	54.8	56.0	57.8	58.8	60.6	61.4	61.8	62.1	—
Corresponding pressure: 19.3 MPa											
at the frame kN	47.4	—	47.1	47.3	47.2	47.1	45.8	44.6	43.6	—	42.4
Corresponding pressure: 19.3 MPa											

3.2.2.1

Power lift test – (To ISO 730-1:1994)

Optional Test with 1012 mm lower links

Linkage settings for test – see Table 2.1 and Figures 1.1 and 1.2.

	At the hitch point	on the frame
Height of lower hitch points above ground in down position	195 mm	130 mm
Vertical movement	705 mm	860 mm
Maximum corrected force exerted through full range	50.1 kN	41.1 kN
Corresponding pressure of hydraulic fluid	19.3 MPa	19.3 MPa
Moment about rear-wheel axis	59.1 kNm	73.6 kNm
Maximum tilt angle of mast from vertical	—	10 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 455	- 390	- 285	- 180	- 100	0	+ 85	+ 179	+ 235	+ 315	+ 405
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 kN	–	50.1	51.2	52.7	54.2	55.4	56.8	57.7	58.1	58.9	–
Corresponding pressure: 19.3 MPa											
at the frame kN	44.7	–	44.7	45.0	45.0	44.9	44.3	43.4	42.4	–	41.1
Corresponding pressure: 19.3 MPa											

3.3 Drawbar power test (unballasted tractor)

Date and Location of tests: 28 and 29 June 2004
Silsoe Research Institute
Wrest Park
Silsoe
Bedford MK45 4HS

Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted 4WD	415	70	70
Unballasted 4WD disengaged	515	70	70

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels or track	Fan speed	Specific fuel cons	Specific Energy	Temperature			Atmospheric condition		
									Fuel	Coolant	Engine oil	Temp	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 (unballasted tractor)													
1A	30.9	52.3	2.13	2323	13.0	1924	473	1.79	53	83	98	22	38	101.9
2A	37.6	52.0	2.60	2311	12.5	2367	422	2.00	53	84	99	22	34	101.9
3A	46.7	52.3	3.21	2292	10.9	2378	388	2.18	51	83	99	21	40	101.9
4A	55.1	50.7	3.91	2277	10.8	2361	351	2.41	53	83	100	21	43	101.9
5B	69.1	50.2	4.95	2203	9.2	2421	327	2.58	54	82	100	21	40	101.9
6B	77.3	49.7	5.60	2034	8.9	2624	294	2.88	54	81	99	21	42	101.9
9C	77.8	48.4	5.79	1902	7.0	2347	295	2.86	51	81	97	19	50	101.9
7B	78.0	41.9	6.70	1911	5.2	2370	286	2.95	51	80	97	20	47	101.9
10C	79.5	39.6	7.23	1900	4.7	2488	279	3.03	52	81	98	20	47	101.9
8B	79.2	34.3	8.31	1920	4.3	2540	291	2.90	53	80	97	22	39	101.9
11C	77.7	30.9	9.04	1921	3.8	2471	300	2.82	53	81	99	20	45	101.9
12C	76.6	24.9	11.09	1915	3.2	2365	308	2.75	53	80	99	20	44	101.9
13D	76.7	19.2	14.41	1923	2.7	2492	303	2.79	52	80	99	20	43	101.9

3.3.2 FUEL CONSUMPTION														
3.3.2.1 In selected gear, at maximum power at rated speed														
10C	70.1	29.7	8.48	2203	3.8	2839	319	2.65	54	81	99	23	34	101.9
3.3.2.1.1 75% of pull corresponding to maximum power at rated engine speed														
10C	54.9	22.3	8.86	2281	3.1	2574	349	2.42	53	82	99	22	35	101.9
3.3.2.1.2 50% of pull corresponding to maximum power at rated engine speed														
10C	37.6	14.9	9.05	2311	2.2	2593	445	1.90	53	82	99	22	37	101.9
3.3.2.1.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1														
8B	54.9	22.3	8.87	2021	3.0	2276	329	2.57	53	80	97	22	37	101.9
3.3.2.1.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2														
8B	37.5	14.9	9.07	2049	2.3	2295	370	2.28	53	81	97	22	38	101.9
3.3.2.2 In selected gear nearest to 7.5 km/h at rated engine speed														
9C	70.4	36.8	6.88	2199	4.5	1904	318	2.66	51	82	94	19	53	101.9
3.3.2.2.1 75% of pull corresponding to maximum power at rated engine speed														
9C	55.2	27.6	7.20	2279	3.5	2290	353	2.39	50	82	98	19	48	101.9
3.3.2.2.2 50% of pull corresponding to maximum power at rated engine speed														
9C	37.8	18.4	7.37	2310	2.8	2460	427	1.98	50	82	98	19	52	101.9
3.3.2.2.3 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1														
7B	55.4	27.6	7.21	2020	3.6	2348	335	2.52	53	81	97	22	36	101.9
3.3.2.2.4 Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2														
7B	37.8	18.4	7.40	2052	2.5	2365	368	2.30	52	81	97	22	39	101.9

Drawbar power test (unballasted tractor)

Optional Test

(Four-Wheel Drive disengaged)

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels or track	Fan speed	Specific fuel cons	Specific Energy	Temperature			Atmospheric condition		
									Fuel	Coolant	Engine oil	Temp	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 (unballasted tractor)													
1A	22.4	38.1	2.12	2342	12.8	2381	557	1.52	55	83	99	24	44	101.8
2A	27.0	37.9	2.57	2331	13.0	2505	497	1.70	55	84	99	23	42	101.8
3A	33.2	37.7	3.17	2316	11.6	2597	459	1.84	56	84	99	24	42	101.8
4A	40.4	37.7	3.86	2304	11.5	2418	416	2.03	55	82	99	23	43	101.8
5B	51.5	37.5	4.95	2282	11.0	2482	389	2.17	54	83	99	23	45	101.8
6B	61.9	37.3	5.98	2237	10.1	2686	361	2.34	54	83	99	23	42	101.7
9C	68.1	37.1	6.60	2200	7.0	2550	333	2.54	49	81	94	21	56	101.8
7B	72.4	36.8	7.08	2079	6.5	2555	314	2.69	52	81	99	20	58	101.9
10C	75.9	36.5	7.48	2034	6.6	2471	296	2.85	49	81	94	20	56	101.8
8B	78.2	35.0	8.05	1916	5.6	2501	299	2.82	54	81	99	22	52	101.9
11C	77.5	31.9	8.75	1911	4.8	2473	289	2.92	51	80	93	23	45	101.8
12C	78.9	26.1	10.87	1913	3.4	2333	295	2.87	52	81	98	21	55	101.9
13D	79.4	20.3	14.06	1907	2.6	2430	283	2.99	52	80	98	20	59	101.9

3.3.2	FUEL CONSUMPTION													
3.3.2.1	In selected gear, at maximum power at rated speed													
13D	68.1	15.0	16.30	2196	2.1	2343	334	2.53	53	81	99	21	50	101.9
3.3.2.1.1	75% of pull corresponding to maximum power at rated engine speed													
13D	51.7	11.2	16.62	2231	1.7	2636	415	2.04	54	81	98	22	49	101.8
3.3.2.1.2	50% of pull corresponding to maximum power at rated engine speed													
13D	35.7	7.6	16.91	2261	1.2	2600	591	1.43	53	81	99	21	52	101.8
3.3.2.1.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1													
14D*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3.3.2.1.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
14D*	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3.3.2.2	In selected gear nearest to 7.5 km/h at rated engine speed													
9C	68.1	37.1	6.60	2200	7.0	2550	333	2.54	49	81	94	21	56	101.8
3.3.2.2.1	75% of pull corresponding to maximum power at rated engine speed													
9C	54.7	27.8	7.08	2282	3.6	2478	360	2.35	51	82	97	21	57	101.9
3.3.2.2.2	50% of pull corresponding to maximum power at rated engine speed													
9C	37.7	18.6	7.27	2312	2.4	2387	433	1.95	50	82	97	20	58	101.9
3.3.2.2.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1													
7B	54.8	27.8	7.09	2028	4.0	2548	311	2.72	50	80	93	23	44	101.8
3.3.2.2.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2													
7B	37.7	18.6	7.29	2055	2.7	2308	357	2.37	50	81	93	23	45	101.8

* Shutdowns were not possible in gear 14D as speed was to fast to control test load vehicle

5. REPAIRS None

6. REMARKS Boosted Engine Power Operation

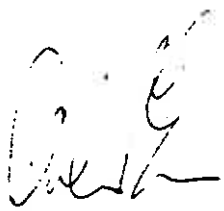
This vehicle is equipped with an electronically – controlled engine Power Management™ system that monitors and boosts engine power output in certain circumstances, as engine load increases. This is achieved by electronically changing the characteristics of the engine power-speed curve.

The engine Power Management function ("boosted" power level) becomes active in higher transmission gears (16th gear and above with 24 x 24 transmissions and 13th gear and above with 16 x 16 transmissions), for road transport applications. With the 24 x 24 transmission, 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.

Test carried out by: S J Devonshire

Signed: Officer in charge



J P Evans
Senior Test Engineer
Field Machinery Centre

Date: 4 January 2005

APPENDIX 1 ADDITIONAL TESTS

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

"Not covered by the approval"

Linkage settings for test – see Table 1.1 and Figures 1.1 and 1.2.

	At the hitch point	on the frame
Height of lower hitch points above ground in down position	198 mm	198 mm
Vertical movement	622 mm	705 mm
Maximum corrected force exerted through full range	58.8 kN	47.6 kN
Corresponding pressure of hydraulic fluid	19.3 MPa	19.3 MPa
Moment about rear-wheel axis	65.7 kNm	82.3 kNm
Maximum tilt angle of mast from vertical	—	5 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 430	- 387	- 295	- 190	- 75	0	+ 40	+ 115	+ 180	+ 235	+ 275
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 kN	–	58.8	59.8	61.4	63.2	63.9	64.4	64.6	64.6	64.3	–
Corresponding pressure: 19.3 MPa											
at the frame kN	55.2	–	55.1	55.6	54.8	54.5	54.5	53.0	51.4	–	47.6
Corresponding pressure: 19.3 MPa											

7.1.1 Optional Test with 1012 mm lower links

Linkage settings for test – see Table 2.1 and Figures 1.1 and 1.2.

	At the hitch point	on the frame
Height of lower hitch points above ground in down position	255 mm	255 mm
Vertical movement	603 mm	685 mm
Maximum corrected force exerted through full range	62.2 kN	49.8 kN
Corresponding pressure of hydraulic fluid	19.3 MPa	19.3 MPa
Moment about rear-wheel axis	73.4 kNm	89.1 kNm
Maximum tilt angle of mast from vertical	—	6 degrees

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 365	- 330	- 200	- 90	0	+ 90	+ 185	+ 200	+ 240	+ 275	+ 320
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 kN	--	62.2	63.6	64.9	65.5	65.6	65.1	64.7	64.1	63.4	--
Corresponding pressure: 19.3 MPa											
at the frame kN	57.7	--	57.8	57.4	56.6	55.2	52.5	51.6	50.8	--	49.8
Corresponding pressure: 19.3 MPa											

7.2 *Power lift tests – (To SAE J283)*

Linkage settings for test – see Table 1.1

* Lift rods readjusted to 820 mm to allow for lift force to be measured throughout the total lift range

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 387	- 325	- 268	- 223	- 117	0	+88	+ 178	+ 207	---	---
*mm	---	---	- 268	- 223	- 117	0	+ 88	+ 178	+ 207	+ 258	+ 320
SAE J283											
kN	69.1	69.1	66.9	64.7	62.6	61.0	59.1	56.6	55.7	—	—
*kN	—	—	64.4	64.4	63.0	61.9	60.2	58.4	57.5	56.0	53.6
Corresponding pressure: 18.5 MPa											

7.2.1 Optional Test with 1012 mm lower links

Linkage settings for test – see Table 2.1

* Lift rods readjusted to 820 mm to allow for lift force to be measured throughout the total lift range

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	- 390	- 345	- 280	- 190	- 110	0	+ 90	+185	+ 255	—	—
*mm	---	---	- 280	- 190	- 110	0	+ 90	+ 185	+ 255	+ 317	+ 335
SAE J283											
kN	64.5	64.5	62.0	60.1	58.9	57.7	56.1	53.8	51.4	—	—
*kN	—	—	60.7	59.7	59.0	57.7	57.0	55.4	53.3	50.7	50.0
Corresponding pressure: 18.5 MPa											

TEST RESULTS (OECD Code 5)

"Not covered by the approval"

Make and type of sound level meter: Bruel and Kjaer 2260

Type of test track: Concrete

Date of tests: 23 August 2004

Four wheel drive engaged Windows closed

Gear	Test Condition	Measured travelling speed km/h	Sound level dB(A)
9C	Light Load	7.7	73

Four wheel drive engaged Windows open

Gear	Test Condition	Measured travelling speed km/h	Sound level dB(A)
9C	Light Load	7.7	76

Four wheel drive dis-engaged Windows closed

Gear	Test Condition	Measured travelling speed km/h	Sound level dB(A)
9C	Light Load	7.7	72

Four wheel drive dis-engaged Windows open

Gear	Test Condition	Measured travelling speed km/h	Sound level dB(A)
9C	Light Load	7.7	75