Prüfstelle für Landmaschinen



REPORT on test in accordance with OECD STANDARD CODE 2 for the Official Testing of Agricultural Tractor Performance

OECD No. 2/2196
1st December 2004

Agricultural Tractor

Massey Ferguson 7485

Manufacturer

AGCO S.A., B.P. 60307, 60026 Beauvais, FRANCE

This is a report on a tractor test in accordance with OECD STANDARD CODE for the Official Testing of Agricultural Tractor Performance (C(2002)17(FINAL) "Red Code", Code 2).

It does not contain an evaluation of the tractor on practical work.

Duration of tests: December 2003 till May 2004

DLG-Testing Station for Agricultural Machinery, Max-Eyth-Weg 1,
D-64823 Gross-Umstadt

This report has been approved by the OECD Co-Ordinating Centre (CEMAGREF, France) as being in accordance with the OECD STANDARD CODE.

Date of approval: 1st December 2004 OECD No. 2/2196

Remark: The test of the Massey Ferguson 7485 tractor was performed with the Massey Ferguson 7495 tractor (DLG test no.: 2004-008).
Details see section "6. Remarks", page36.

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.

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Printed in Germany, July 2005
DLG-No. 344

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[C]	Tractor manufacturer's name and address:	AGCO S.A. ZA n°2 BP 60307, Avenue Blaise Pascal 60026 Beauvais Cedex, FRANCE
[C]	Location of tractor assembly:	60026 Beauvais Cedex, FRANCE
[D]	Submitted for test by:	Manufacturer
[C]	Selected for test by:	Manufacturer with agreement by DLG
[D]	Place of running-in:	Beauvais and Gross-Umstadt
[D]	Duration of running-in:	68 h
[C]	Location of test:	DLG-Testing Station, D-64823 Gross-Umstadt

1 SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1

[C]	- Make:	Massey Ferguson
[C]	- Model:	7485
[C]	- Type:	4WD, wheel tractor, unit construction

1.1.2 Numbers

[D]	- 1st serial No.:	M153001
[C]	- Serial No.:	M153001

1.1.3 Other specifications:

[C]	- Transmission version:	DynaVT, 40 km/h
[D]	- Engine version:	exhaust emission according to TIER2, EPA and guideline 2000/25/EG
[D]	- Technical type number:	Y34

1.2 Engine

[C]	- Make/Model/Type:	SISU DIESEL / 66.253 ETA / water-cooled 4-stroke Diesel-engine, direct injection, supercharged and intercooler (air to air),
[C]	- Serial No.:	M20369

1.2.1	Cylinders	
[C]	- Number/disposition:	6 / vertical in line
[D]	- Bore/stroke:	108 mm / 120 mm
[D]	- Capacity:	6596 cm^3
[D]	- Compression ratio:	18.5 ± 1 : 1
[D]	- Arrangement of valves:	Overhead valves, 2 per cylinder
[D]	- Cylinder liners:	Wet
1.2.2	Supercharging	
[D]	- Make / Model / Type:	BORG WARNER / S200 / exhaust driven supercharger with air to air intercooler
[D]	- Pressure	Max. 160 kPa
1.2.3	Fuel system	
[D]	- Fuel feed system:	1 diaphragm fuel supply pump
	- Fuel filter	
[D]	Make/Model:	STANADYNE / fuel manager
[C]	Type :	2 replaceable paper element filter
[D]	- Capacity of fuel tank:	380 dm^3
	- Injection pump	
[D]	Make/Model:	BOSCH / VP 30 – VE60470 006 004
[D]	Type:	Rotary
[D]	Serial no.:	33.760.454.957
[C]	Manufacturer's production setting:	Standard: 82 ± 3 (boosted: 86 ± 3) mm^3/stroke at full load and rated speed;
[C]	Flow rate:	Standard: 31 ± 0.8 (boosted: 32 ± 0.8) dm^3/h at 2200 min^{-1} and full load
[D]	Timing:	electronically controlled
	- Injectors	
[D]	Make/Model:	STANADYNE / M35 927/8367 64613
[D]	Type :	Multi hole
[D]	Injection pressure:	27 ± 0.8 MPa
1.2.4	Governor	
[D]	- Make/Model/Type:	SISU DIESEL / EEM2 / electronically driven all speed governor
[C]	- Governed range of engine speed:	800 to 2300 min^{-1}
[C]	- Rated engine speed:	2200 min^{-1}

1.2.5	Air cleaner	
	- Pre-cleaner	
[C]	Make/Model:	DONALDSON / -
[C]	Type:	Cyclone, aspirated, pre-cleaner integrated in housing of main cleaner
[C]	Location of air intake:	on the superior hood
	- Main cleaner	
[C]	Make/Model:	DONALDSON / FRG 130193
[C]	Type:	Dry paper element filter with additional safety cartridge
[C]	- Maintenance indicator:	Warning light on dashboard
1.2.6		
	Lubrication system	
[D]	- Type of feed pump:	Gear pump
[D]	- Type of filter:	Full flow, replaceable paper cartridge
[D]	- Number of filters:	1
1.2.7		
	Cooling system	
[C]	- Type of coolant:	Water-anti-freeze mixture
[C]	- Type of pump:	Centrifugal pump
[C]	- Specification of fan	BWCS viscous drive fan, belt driven, variable fan speed controlled by air flow temperature
[C]	Number of fan blades:	9
[C]	Fan diameter:	550 mm
[D]	- Coolant capacity:	28.5 dm^3
[D]	- Type of temperature control:	Calorstat
	- Superpressure system:	50 kPa

1.2.8	Starting system	
[D]	- Make/Model/Type:	ISKRA / AZF / electrical, solenoid pre-engaged drive starter motor
[D]	- Starter motor power rating:	3 kW
[C]	- Cold starting aid:	Grid heater
[C]	- Safety device:	Starter only operating when clutch pedal depressed
1.2.9	Electrical system	
[C]	- Voltage:	12 V, negative earth
	- Generator:	
[C]	Make/Model/Type:	ISKRA / AAN 5123 / 3-phase alternator
[D]	Power:	1120 VA
[C]	- Battery:	2 lead acid battery, 12 V / 420 Ah rating at 20 hours
1.2.10	Exhaust system	
[C]	- Make/Model/Type:	AGCO S.A. / 0040 / absorption-reflection type silencer, round 168 mm dia, 1340 mm long
[C]	- Location:	Vertical stack at right A-post of cab, mouth showing upward / forward to the right
1.2.11		
[D]	Operating hours meter:	Electronic, counts real hours when engine is running

1.3 Transmission

1.3.1		
[D]	Clutch	No clutch in usual sense, pedal fitted, controls the oil flow in hydrostatic drive by valve

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1.3.2 Gear box

[D] - Make: FENDT

[D] - Model: ML 160

[D] - Type: Continue variation transmission with variable power branching in a hydrostatic and a mechanic branch

[D] - Power flow: From crankshaft via torsional-vibration damper and primary shaft to the planetary-gear carrier of via the internal gear to the hydrostatic part, and via the sun gear to the mechanical part; both power branches are rejoint on a summation shaft and transmitted by a 2 step range gear to the rear axle

[D] - Hydrostatic branch: Acts as travel clutch, as infinitely variable gearbox and as reversing gear; is composed of a variable displacement axial-piston pump and an adjustable axial-piston motor; the axial-piston pump, driven by internal gear of planetary gear train, is hydrostatically coupled to the axial-piston motor; both are adjusted in common according to the following scheme

Travel speed	Displacement angle [°]	
	pump	motor
Min	0	45
Max	45	0

[D] - Mechanical branch: Consists of planetary gear train and of 2-step range gear (primary shaft of range gear simultaneously serves as summation shaft); the sun gear of planetary gear train propels the summation shaft;
electromechanical change of travelling ranges at travelling speed below 2 km/h by push button

range		travel speed [km/h]	
		forward	reverse
I	heavy use	0-28	0-18
II	fast transport	0-40	0-19

[D]	- Operation:	Power shuttle (located to the left of steering wheel) which controls following functions: - declutching gearbox in position "neutral" - quick reversing (change of driving direction) - the operating speed of gear ratio change may be varied in 4 steps - continuous change of transmission ratio - forward and reverse Hand lever in the right armrest which controls following functions: - continuous change of transmission ratio - forward and reverse Buttons and switches in the right armrest and the right panel which control following functions - automatic control of travelling speed (cruise control) - change of range turtle-rabbit - engine under-speed supervisor - Various control modes
[D]	- Available options (not fitted):	Transmission version DynaVT, 50 km/h
[C]	- Lubrication:	Oil circuit in common with rear axle drive, air-oil cooler in front of engine water cooler; 1 oil filter in suction line 1 oil filter in pressure line

1.3.3 Rear axle and final drives

[D]	- Make/Model/Type:	FENDT / HA160 / bevel gear drive with bevel gear differential and planetary final drives
	- Differential lock:	
[D]	Type:	Multi-plate lock
[C]	Method of engagement/ disengagement:	Electro-hydraulically operated by switch, disengaged when brakes are actuated; indicator light

1.3.4	Front axle and final drives	
[C]	- Make/Model/Type:	CARRARO / 20.43 / 4WD axle, transmission via wet multi-plate clutch, shaft in median plane of tractor, bevel gear drive, differential with lock, planetary final drives ; clutch electro-hydraulically operated by non locking push button;
	- Differential lock:	
[D]	Type:	Wet multi plate lock and additional limited slip multi plate lock
[D]	Method of engagement/ disengagement:	In common with rear axle differential lock, respectively automatic
1.3.5	Total ratios and travelling speeds:	Not applicable, ranges specified in 1.3.2
[D]	Number of revolutions of front wheels for one revolution of rear wheels:	1.345

1.4 Power take-off

1.4.1	Main power take-off	
[C]	- Type:	Independent
[C]	- Method of engagement:	Driven by wet multi-plate clutch with 178 mm dia, electro-hydraulically operated by push buttons; engagement speed controlled by actuation time of push button; additional remote control of p.t.o. clutch on rear mudguards
[C]	- Number of shafts:	1
[C]	- Method of changing power take-off shaft ends and speeds:	Flanged stub shaft, changeable; 3 speeds may be selected by push-button electro-hydraulically

1.4.1.1 Power take-off proportional to engine speed, 540 , 540E[*)] or 1000 min^{-1} p.t.o.
[*)] 540E: Economic type p.t.o. for reduced engine speed

[C] - Location: At rear of tractor

[C] - Diameter of p.t.o. shaft end: 35 mm

[C] - Number of splines: 6 (540, 540E min^{-1}) in conformity with ISO 500:1991, type 1
21(1000 min^{-1}) in conformity with ISO 500:1991, type 2

[C] - Height above ground: 875 mm

[C] - Distance from the median plane of the tractor: 0 mm

[C] - Distance behind rear wheel axis: 510 mm

	P.t.o. type	P.t.o. transmission ratio	P.t.o. speed min^{-1}	Engine speed min^{-1}	Power restriction kW	Max. torque transmissible Nm
[D]	540	3.82	540 576	2062 2200	75 kW	not specified
[D]	540E	2.94	540 748	1588 2200	75 kW	not specified
[D]	1000	2.03	1000 1083	2030 2200	not specified	

[C] - Direction of rotation (viewed from behind tractor): Clockwise

1.4.1.2

[D] Power take-off proportional to ground speed: None

1.4.2

[D] Optional power take-off: Front p.t.o., independent, not fitted to tractor

1.5 Hydraulic power lift

[C] - Make/Model: AGCO / -

[C] - Type: electronic-hydraulic power lift at rear, desintegrated construction

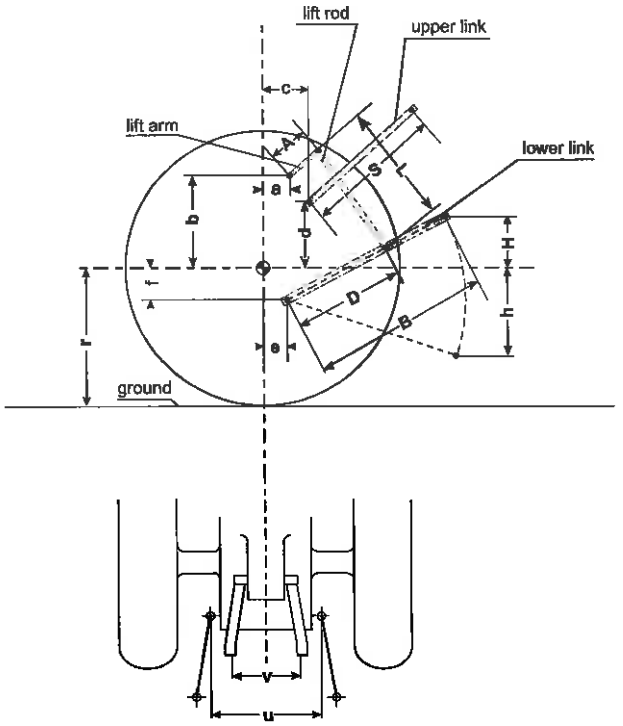
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[C]	- Hydraulic system:	Closed, load sensing, pressure and flow compensated system; supplies rear and front power lift including additional control valves and steering system
[C]	- Rear power lift:	external push buttons left and right on rear mudguards; draft, position and intermixable control; floating position, fast raising (switch with transport lock and button for "vibration damping"), raise limit, lowering throttle, lower link sensing
[C]	- Front power lift:	Optional, not fitted to tractor tested
[D/C]	- Type and number of cylinders:	2 external cylinders, double acting, piston 100 mm bore, tige 36 mm bore, 247 mm stroke
[C]	- Type of linkage lock for transport:	Hydraulic, lowering throttle
[D]	- Relief valve pressure setting:	20.0 + 1.0 MPa
[D]	- Opening pressure of cylinder safety valve:	23.0 + 1.9 MPa
	- Lift pump:	
[D]	- Make:	REXROTH
[D]	- Model:	A10VO45 DFR1/52 R
[D]	- Type:	Variable displacement axial-piston pump
[D]	- Transmission between pump and engine:	Independently driven by gear box
[C]	- Type and number of filters:	1, exchangeable filter in return line
[D]	- Site of oil reservoir:	Separate oil reservoir with 100 dm³ volume on right hand side below cab floor
[C]	- Type, number and location of tapping points:	Double acting, quick-action; 4 coupler-pairs with adjustable flow control and 1 coupler for low pressure return line at rear of tractor Optional: 1 pair of couplers at front of tractor
[D]	- Maximum volume of oil available to external cylinders:	60 dm³

1.6 Three-point linkage:

1.6.1 Three-point linkage at rear:

[C]	- Category:	3, in conformity with ISO 730-1/1994 + Cor. 1:1995
[C]	- Category adapter:	None



	Dimensions of rear implement linkage			Projected lengths in mm: Dimensions	Settings used in test on page: 28	35
[C]	Rear tyres 520/85 R 42 Front tyres 540/65 R 30		(r) *) (r') *)	920 695		
[C]	Length of lift arms		(A)	355		
[C]	Length of lower links		(B)	1030		
[C]	Distance of lift arm pivot points from rear wheel axis	horizontal vertical	(a) (b)	165 305		
[C]	Horizontal distance between the 2 lower link pivot points		(u)	470		
[C]	Horizontal distance between the 2 lift arm end points		(v)	535		
[C]	Length of upper link		(S)	from 670 to 960	805	830
[C]	Distance of upper link pivot point from rear wheel axis	horizontal vertical	(c) (d)	400 / 370 / 350 215 / 275 / 325	400 215	350 325
[C]	Distance of lower link pivot points from rear wheel axis	horizontal vertical	(e) (f)	145 255		
[C]	Distance of lower link pivot points from lift rod pivot points on lower links		(D)	600 / 665	600	665
[C]	Length of lift rods		(L)	from 665 to 790	740	665

Heights (h, H, H') of lower link hitch points relative to rear wheel axis (situated 920 mm above ground), at different adjustments of L

These data are valid for unloaded power lift

[C]	Length of lift rods	(L)	665	790	740	665
[C]	Linkage distance of lift rods	(D)	600 / 665		600	665
[C]	Lowest position	(h)	545 / 465	855/ 710	690	495
[C]	Highest position	(H)	210 / 215	15 / 25	150	240
[C]	Transport position	(H')	210 /215	15 / 25	150	240

*) Assuming r resp. r' = tyre dynamic radius index

1.6.2 [C]	Three-point linkage at front:	Not fitted	
1.7	**Swinging drawbar**		
[C]	- Type:	Longitudinally adjustable in three steps	
[C]	- Height above ground		575 mm
[C]	- Type of adjustment:	-	
[C]	- Distance of hitch point from rear wheel axis	Horizontal:	890 / 940 / 1040 mm
[C]	- Distance of hitch point from p.t.o. shaft end	Vertical: Horizontal:	300 mm 380 / 430 / 530 mm
[C]	- Lateral adjustment (centre of clevis)	Right/left hand side:	160 / 210 / 260 mm
[C]	- Distance of pivot point from rear-wheel axis, horizontally:		300 mm
[C]	- Diameter of drawbar pin hole:		30 mm
[D]	- Maximum permissible vertical load:		18 kN
1.8	**Trailer hitch**		
[C]	- Make/Model/Type:	ROCKINGER / 810 U 140 / non-automatic	
[C]	- Pin diameter:		30 mm
[C]	- Height above ground:	Centre of clevis adjustable in 5 steps to	910, 950, 990, 1030, 1070 mm
[C]	- Distance of hitch point from rear wheel axis, horizontally:		710 mm
[C]	- Distance of hitch point from power take-off shaft end		
	vertically:	above	35, 75, 115, 155, 195 mm
	horizontally:		200 mm
[D]	- Maximum permissible vertical load:		2000 kg
1.9	**Holed drawbar**	Optionally available, not fitted	

1.10	**Steering**	
[D]	- Make/Model/Type:	DANFOSS/ OSPD 80/205 ON + OVR / hydrostatic steering, acting on front wheels
[C]	- Method of operation:	By steering wheel and cylinder directly acting on steering levers
[D]	Pump:	Gear pump with 45.0 dm³/min delivery at rated engine speed (only if delivery of axial-piston pump of hydraulic circuit is ordered by control valves)
[D]	Ram:	1 integrated ram (symmetrical design) acting on steering levers; 270 mm stroke,75 mm bore and 38 mm dia of piston rod
[D]	- Working pressure:	15.0 MPa
1.11	**Brakes**	
1.11.1	Service brake	
[D]	- Make/Model/ Type:	FENDT & KNOTT / - / Pedal operated combined muscle / power braking system acting on both axles
	Rear axle brake:	Muscle power brake, 1 wet multi disc brake with 4 discs with 222 mm diameter each on left and right differential half shafts
	Front axle brake:	Power braking system, controlled by relay valve in brake circuit, hydraulically operated; 1 wet multi disc brake on drive shaft to front axle; 5 discs with 222 mm dia
[C]	- Method of operation:	Pedal operated, hydraulic transmission
[C]	-Trailer braking take-off:	None
1.11.2	Parking brake	
[D]	- Type:	Mechanical brake, acting on rear axle
[C]	- Method of operation:	Operated by lever

1.12 Wheels

[C] - Number

Front:	2, driving and steering
Rear:	2, driving

[C] - Wheelbase: 3007 mm

[D] - Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1702	1915	adjustable gauge-bowl rims
Rear	1604	1798	adjustable gauge-bowl rims

1.13 Protective structure

[C] - Make/Model/Type: MASSEY FERGUSON / 6033 J2 / Cab

[C] - Manufacturer's name and address: AGCO S.A., ZA N°2 BP 60307
Avenue Blaise Pascal, 60026 Beauvais Cedex
FRANCE

- Protective device

[C] Cab: Safety cab with integrated safety frame; welded and screwed profile steel tube construction, mounted on antivibration silent blocks; 1 door and 3 steps each at the left and right side; rear window, roof hatch and side window to open; water-heating, ventilation system, air conditioner

[C] Tiltable / not tiltable: Not tiltable

- OECD approval

[D] Approval number: 4/0 809

[D] Date of approval: 06th January 2004

[D] Nos. minor modification certificates, if any: none

1.14 Seat

1.14.1	Driver's seat	Fitted to tractor
[C]	- Make/Model:	Grammer / MSG 95 A / 731
[C]	- Type:	Air suspended upholstered seat with backrest and armrests
[C]	- Seat and steering wheel reversible:	No
[C]	- Type of suspension:	Pneumatic
[C]	- Type of damping:	Hydraulic
	- Range of adjustment	
[C]	Longitudinal:	220 mm
[C]	Vertical:	430 to 600 mm
[C]	- Safety belt:	Yes
1.14.2	Optional driver's seats	
[D]	- Make/Model/Type:	Grammer / MSG 85/731; MSG 95AL/741; MSG 95G/731 / mechanical suspension or pneumatic suspension
1.14.3	Passenger seat:	
[C]		Optional, fitted to tractor tested

1.15 Lighting

Electrical, 12 Volt, according to EEC legislation

		Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
[C]	Headlights	1440	Ø 120	190
[C]	Side Lights	2170	110 x 30	1000
[C]	Rearlights	2030	Ø 120	1010
[C]	Reflectors, 1st pair	2020	Ø 55	887
	2nd pair	1000	50 x 100	550

2. TEST CONDITIONS

2.1 Overall dimensions

	Length mm	Width (track width as in 2.5) mm	Height at top of protective structure mm	Height at top of exhaust silencer pipe mm
Unballasted	5040	2530	3100	3095

2.2 Ground clearance 480 mm

- Clearance-limiting part: Bracket of swinging drawbar

2.3 Tractor mass

- Unballasted (with cab)

	Without driver kg	With driver kg
Front	2550	2575
Rear	4320	4370
Total	6870	6945

2.4 Track specifications Not applicable



2.5 Tyres and track widths specifications

	Front	Rear
Tyres:	MICHELIN XM108	MICHELIN Agribib
- Dimensions	540/65 R 30	520/85 R 42
- Load index speed index	143 A8	157 A8
- Type	radial	radial
- Maximum load (tyre manufacturer's)	26.50 kN*)	41.25 kN*)
- Maximum load (tractor manufacturer's)	26.50 kN	41.25 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	160 kPa	160 kPa
dynamic radius index	695 mm	920 mm
Chosen track width:	1730 mm	1685 mm

*) With other tyres higher load capacity possible

2.6 Fuel

- Type: ARAL-Diesel-fuel, in conformity with DIN 51601
- Density at 15°C: At p.t.o. tests 0.8322 g/cm³
  at drawbar power tests 0.8313 g/cm³

2.7 Oils and lubrication

2.7.1 Capacity and change interval

	Capacity dm³	Oil change h	Filter-change h
Engine	20	400	400
Gear box and rear axle	58	1200	400
Front axle	6	800	-
Rear axle	in common with gearbox		
Final drives (front each)	1.5	800	-
Final drives rear (each)	13	1200	-
Hydraulic system	100	1200	1200

2.7.2 Specifications:

	Specified	Used during test
Engine Type Viscosity Classification	BP Full-Year Engine oil SAE 10W/30, 10W/40 SAE 15W/30 or 15W/40 API-CH4	BP 10W/40 API-CH4
Gearbox Rear axle drive Type Viscosity Classification	BP Super-Tractor-Oil-Universal STOU SAE 10W/40, 15W/40 API-GL4	BP 10W/40 API-GL4
Rear axle final drives Type Viscosity Classification	BP Hypoid-Gear-Oil SAE 85W/90 API-GL5	BP 85W/90 API-GL5
Front axle drive Front axle final drives Type Viscosity Classification	BP Hypoid-Gear-Oil SAE , 85W/140 API-GL5	BP 85W/140 API-GL5
Hydraulic system Type Viscosity Classification	BP STOU SAE 10W/40 API-CH4	BP 10W/40 API-CH4

2.7.3 Grease Multi purpose grease TERRAC CHARGE

- Number of lubrication points: 15

3 COMPULSORY TESTS

3.1 Main power take off performance

Date of tests: 2003-12-17
Location of tests: DLG-Testing Station Groß-Umstadt
Type of dynamometer: SCHENCK hydraulic dynamometer U1-40

Power	Speed			Fuel consumption			Specific
	Engine	P.t.o.	Fan	hourly		specific	energy
kW	min^{-1}	min^{-1}	min^{-1}	kg/h	dm^3/h	g/kWh	kWh/dm^3

Maximum power

3.1.1 At 2-hour test

103.0	1900	934	2269	24.65	29.62	239	3.48

3.1.2 At rated speed

95.4	2199	1081	2293	26.45	31.78	277	3.00

3.1.3 At standard p.t.o. speed

101.8	2034	1000	2190	25.95	31.18	255	3.26

3.1.4 Part loads, the governor hand lever in the position corresponding to maximum power at full load (curve a)

3.1.4.1 the torque corresponding to maximum power at rated speed

95.4	2199	1081	2293	26.45	31.78	277	3.00

3.1.4.2 85% of the torque obtained in 3.1.4.1

82.6	2237	1100	2216	24.27	29.16	294	2.83

3.1.4.3 75% of the torque defined in 3.1.4.2

62.8	2260	1111	2218	19.80	23.79	315	2.64

3.1.4.4 50% of the torque defined in 3.1.4.2

42.3	2286	1124	1681	15.51	18.64	367	2.27

3.1.4.5 25% of the torque defined in 3.1.4.2

21.3	2313	1137	1704	11.56	13.89	543	1.53

3.1.4.6 unloaded

-	2331	1146	1704	7.93	9.53	-	-

Power	Speed		Fan	Fuel consumption			Specific energy
	Engine	P.t.o.		hourly		specific	
kW	min^{-1}	min^{-1}	min^{-1}	kg/h	dm^3/h	g/kWh	kWh/dm^3

3.1.5 Part loads, the governor hand lever in the position corresponding to standard p.t.o. speed at full load (curve b)

3.1.5.1 the torque corresponding to maximum power

101.8	2034	1000	2190	25.95	31.18	255	3.26

3.1.5.2 85% of the torque obtained in 3.1.5.1

87.9	2062	1014	2097	22.56	27.11	257	3.24

3.1.5.3 75% of the torque defined in 3.1.5.2

66.5	2085	1025	2038	18.80	22.59	283	2.94

3.1.5.4 50% of the torque defined in 3.1.5.2

44.8	2103	1034	1980	14.75	17.72	329	2.53

3.1.5.5 25% of the torque defined in 3.1.5.2

22.6	2128	1046	1616	10.46	12.57	463	1.80

3.1.5.6 unloaded

-	2146	1055	1576	7.05	8.47	-	-

OPTIONAL RESULTS

Power	Speed		Fan	Fuel consumption			Specific energy
	Engine	P.t.o.		hourly		specific	
kW	min^{-1}	min^{-1}	min^{-1}	kg/h	dm^3/h	g/kWh	kWh/dm^3

3.1.6 Part loads at different engine speeds

3.1.6.1 maximum power at rated engine speed

95.4	2199	1081	2293	26.45	31.78	277	3.00

3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting

76.5	2244	1103	2157	22.73	27.31	297	2.80

3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed

76.7	1989	978	1896	20.32	24.42	265	3.14

3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed

38.1	1975	971	1953	12.53	15.06	329	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

57.4	1324	651	1171	13.29	15.97	232	3.59

3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed

38.5	1320	649	1475	9.64	11.58	250	3.32

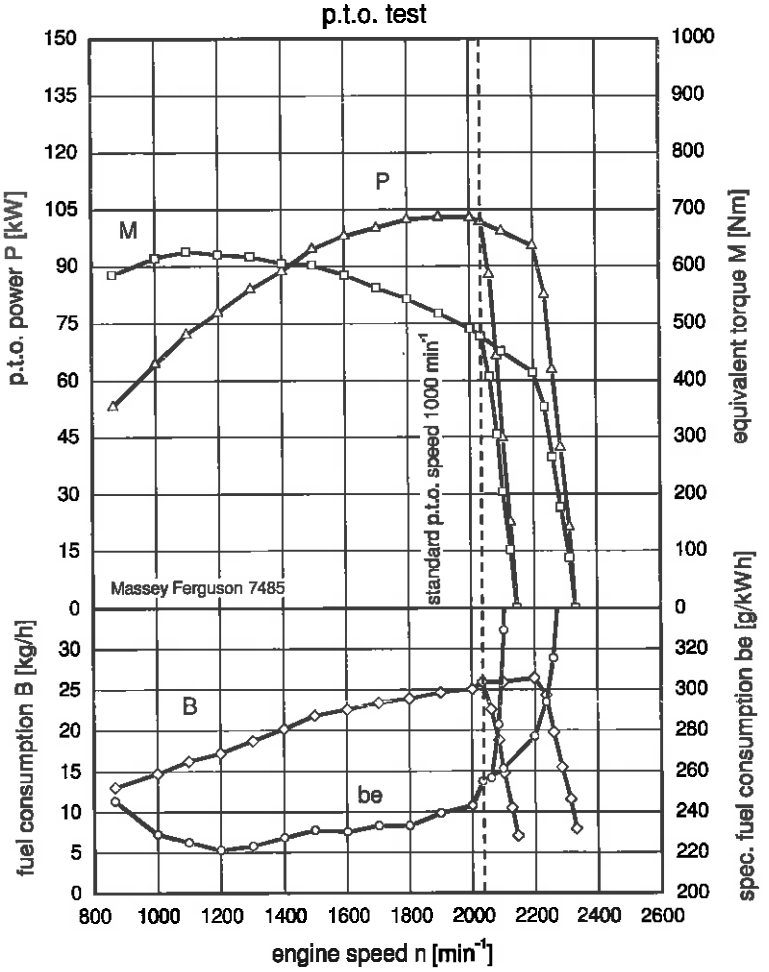
No load maximum engine speed:	2331	min^{-1}
Equivalent flywheel torque at rated engine speed:	414	Nm
Equivalent flywheel torque at 2-hour test:	518	Nm
at engine speed:	1900	min^{-1}
Maximum equivalent flywheel torque:	626	Nm
at engine speed:	1100	min^{-1}

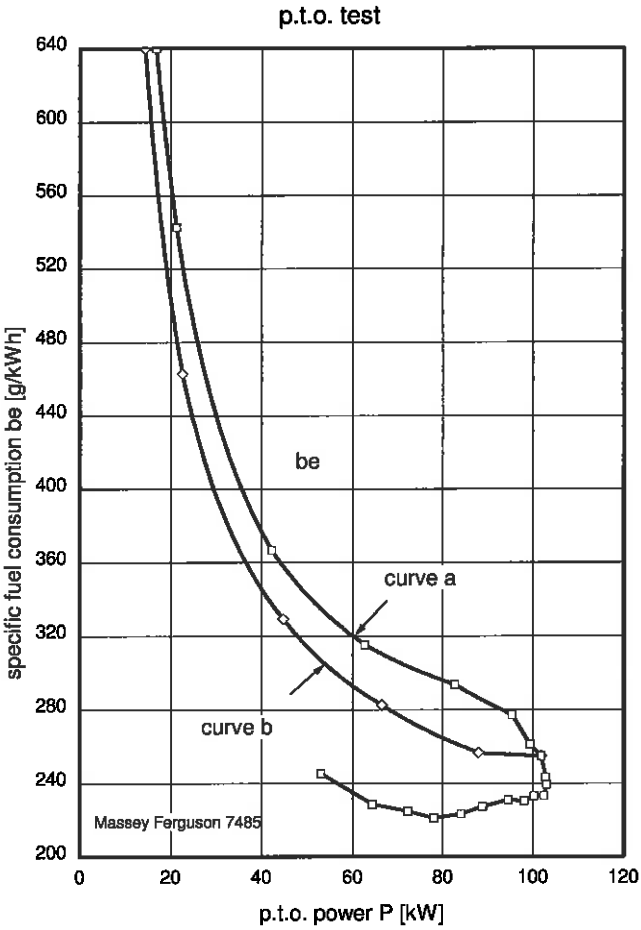
Mean atmospheric conditions

temperature:	19	°C
pressure:	100.9	kPa
relative humidity:	33	%

Maximum temperatures

coolant:	70	°C
oil:	105	°C
fuel:	49	°C
air intake:	21	°C


p.t.o. test
p.t.o. power P [kW]
equivalent torque M [Nm]
fuel consumption B [kg/h]
spec. fuel consumption be [g/kWh]
engine speed n [min-1]
P
M
B
be
standard p.t.o. speed 1000 min-1
Massey Ferguson 7485
150
135
120
105
90
75
60
45
30
15
0
1000
900
800
700
600
500
400
300
200
100
0
320
300
280
260
240
220
200
30
25
20
15
10
5
0
800
1000
1200
1400
1600
1800
2000
2200
2400
2600


p.t.o. test
specific fuel consumption be [g/kWh]
640
600
560
520
480
440
400
360
320
280
240
200
0
20
40
60
80
100
120
p.t.o. power P [kW]
be
curve a
curve b
Massey Ferguson 7485

3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 8th March 2004

3.2.1 Hydraulic power test

3.2.1.1 Hydraulic fluid data

- Hydraulic fluid type:	STOU
- Viscosity index (ISO 3448+Corr 1:1993):	SAE 10W/40
- Viscosity at 65°C:	34 cst

3.2.1.2 Compulsory Reporting (Test Results):

	Pressure	Reservoir oil Temperature °C (65°C traget)		Engine speed	Flow rate	Power
		Min.	Max.			
	MPa	°C	°C	min^{-1}	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	19.8	65	65	2333	-	-
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	17.8	65		2315 [1)] 2306 [2)]	79.0 [1)] 110.7 [2)]	23.4 [1)] 32.8 [2)]
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair	5.0 17.0	65 65		2333 2311	101.7 98.4	- 27.9
3.2.1.2.4 Maximum available flow and maximum power from coupler pairs operating simultaneously (flow through two or more coupler pairs if required)	3.2 18.0	65 65		2332 2306	122.0 109.7	- 32.9

Tapping point used for test: At rear of tractor, [1)] 1 double acting control valve
[2)] 2 double acting control valves parallel connection

3.2.2 Power lift test at rear power lift – Category 3

- Linkage settings for test - see on page 14

	At the hitch points	On the frame
Height of lower hitch points above ground in down position	230 mm	
Vertical movement without lifting forces with lifting forces	840 mm 810 mm	1010 mm 979 mm
Max. corrected force exerted through full range	57.15 kN	49.95 kN
Corresponding pressure	17.8 MPa	
Moment about rear axle	67.15 kNm	91.55 kNm
Max. tilt angle of mast from vertical	-	11°

Lifting heights relative to horizontal lower links												
mm	-500	-435	-400	-300	-200	-100	0	+100	+200	+300	+375	+480
Lifting forces at hitch points, corrected to 17.8 MPa												
kN		57.15	58.50	61.90	65.70	69.10	73.60	77.40	81.00	82.35	80.10	
Lifting forces at standard frame, corrected to 17.8 MPa												
kN	49.95	51.30	52.20	54.00	56.25	58.05	59.85	61.65	63.00	62.55	61.20	56.25

3.3 DRAWBAR POWER TEST (unballasted tractor)

Date of tests: 22nd and 23rd April 2004
Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure Front	Rear
Unballasted	550 mm	80 kPa	80 kPa

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Fan speed	Specific fuel consumption	Specific energy	Temperature Fuel	Coolant	Engine oil	Atmospheric conditions Tempe-rature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	%	min^{-1}	g/kWh	kWh/dm³	°C	°C	°C	°C	%	kPa

3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)

I	72.6	64.58	4.05	2037	14.8	2371	352	2.36	54	73	108	26	75	99.8
I	74.5	64.71	4.15	1913	14.7	2280	334	2.49	53	72	107	27	75	99.8
I	80.1	57.14	5.05	1894	8.3	2284	305	2.72	52	72	108	26	75	99.8
I	82.6	50.93	5.84	1894	6.5	2233	299	2.78	51	71	106	25	75	99.8
I	83.2	46.36	6.46	1900	5.0	1825	294	2.83	43	68	106	16	75	99.8
I	83.4	37.82	7.94	1902	3.9	2097	294	2.82	44	68	106	17	75	99.8
I	82.7	34.56	8.61	1902	3.6	2000	298	2.79	46	68	106	19	75	99.8
I	82.3	29.22	10.14	1890	2.9	2067	297	2.80	48	71	106	22	75	99.8
I	81.0	24.40	11.95	1900	2.2	2023	304	2.74	49	71	106	22	75	99.8
I	78.7	22.17	12.78	1902	2.1	2257	314	2.65	49	70	106	23	75	99.8
I	79.5	19.34	14.80	1895	1.7	2252	309	2.69	49	71	107	23	75	99.8
II	81.2	33.17	8.81	1897	3.5	2278	303	2.75	51	72	103	28	75	99.8
II	82.1	29.77	9.93	1898	3.1	2284	301	2.77	54	73	107	28	75	99.8
II	81.5	26.87	10.92	1893	2.7	2287	302	2.76	54	74	108	28	75	99.8
II	80.9	22.73	12.82	1902	2.2	2294	305	2.73	54	73	107	30	75	99.8
II	80.0	19.51	14.76	1909	1.9	2297	307	2.71	55	74	108	29	75	99.8

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Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Fan speed	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Tempe-rature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	%	min^{-1}	g/kWh	kWh/dm^3	°C	°C	°C	°C	%	kPa
	FUEL CONSUMPTION													
3.3.2.1	In selected gear, at maximum power at rated speed													
I	75.2	29.72	9.11	2199	2.9	2239	351	2.37	45	70	105	16	75	99.8
3.3.2.1.1	75 % of pull at maximum power at rated speed													
I	58.6	22.41	9.42	2246	2.0	2291	385	2.16	46	69	106	16	75	99.8
3.3.2.1.2	50 % of pull at maximum power at rated speed													
I	39.8	14.90	9.61	2269	1.4	2269	468	1.78	46	68	105	15	75	99.8
3.3.2.1.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1													
I	57.6	22.19	9.34	1703	2.1	1509	306	2.72	46	68	102	15	75	99.8
3.3.2.1.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2													
I	38.3	14.45	9.54	1723	1.4	1368	353	2.35	45	68	101	15	75	99.8
3.3.2.2	In selected gear nearest to 7.50 km/h at rated speed													
I	74.9	36.02	7.49	2199	4.0	2528	350	2.38	56	73	105	30	75	99.8
3.3.2.2.1	75 % of pull at maximum power at rated speed													
I	58.1	27.06	7.73	2245	2.8	2605	389	2.14	57	72	108	30	75	99.8
3.3.2.2.2	50 % of pull at maximum power at rated speed													
I	39.9	18.11	7.93	2271	1.8	2522	456	1.82	56	71	107	30	75	99.8
3.3.2.2.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.1													
I	58.2	27.08	7.74	1575	2.7	1382	299	2.78	41	69	95	15	75	99.8
3.3.2.2.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2													
I	39.9	18.10	7.94	1594	1.9	1381	332	2.50	42	67	98	15	75	99.8

4 ADDITIONAL TESTS under the responsibility of the DLG Testing Station

Not covered by the approval.

4.1 DRAWBAR POWER TEST (unballasted tractor with dual wheels)

4.1.1 Tractor mass

Unballasted (with cab); dual wheels (2 front wheels, 4 rear wheels)

	Without driver kg	With driver kg
Front	2485	2510
Rear	5090	5140
Total	7575	7650

4.1.2 Tyres and track width specification

Dual wheels (2 front wheels, 4 rear wheels)

	Front	Rear
Tyres:	Michelin Agribib	
- Dimensions	380/85 R 30	480/80 R42
- Load index speed index	135 A8	151 A8
- Type	radial	radial
- Maximum load (tyre manufacturer's)	21.80 kN*)	34.50 kN*)
- Maximum load (tractor manufacturer's)	21.00 kN	18.25 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	160 kPa	160 kPa
dynamic radius index	695 mm	920 mm
Chosen track width:	1680 mm	2680 mm

*) With other tyres higher load capacity possible

4.1.3 Test Results Drawbar Power Test with dual wheels

Date of tests: 3rd, 4th and 10th May 2004
Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure Front	Rear
Unballasted	550 mm	70 kPa	40 kPa

Gear number and range	Power	Drawbar pull	Speed	Engine speed	Slip of Wheels	Fan speed	Specific Fuel consumption	Specific energy	Temperature Fuel	Coolant	Engine Oil	Atmospheric conditions Tempe-rature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	%	min^{-1}	g/kWh	kWh/dm³	°C	°C	°C	°C	%	kPa

4.1.3.1 MAXIMUM POWER IN TESTED GEARS

I	69.9	74.49	3.38	2103	15.1	2401	379	2.19	48	69	107	23	55	99.6
I	72.5	74.57	3.50	1955	15.2	2310	344	2.42	47	70	108	21	55	99.6
I	76.8	69.88	3.96	1898	11.1	2605	319	2.60	44	69	107	19	55	99.6
I	80.4	56.68	5.11	1902	7.0	2300	307	2.71	52	92	110	23	55	99.6
I	81.7	51.63	5.69	1903	5.7	2291	302	2.75	52	92	109	24	55	99.6
I	80.6	42.81	6.78	1904	4.9	2280	296	2.72	48	71	108	24	55	99.6
I	80.3	38.48	7.52	1901	4.2	2264	307	2.71	49	72	109	25	55	99.6
I	80.2	33.25	8.69	1900	3.6	2238	308	2.70	50	71	108	25	55	99.6
I	78.6	28.35	9.98	1898	2.9	2257	314	2.65	50	72	109	26	55	99.6
I	76.6	24.75	11.15	1885	2.5	2262	319	2.61	45	63	101	25	55	99.6
I	74.8	74.78	13.23	1904	2.2	2286	327	2.54	49	71	106	27	55	99.6
I	71.6	71.59	14.90	1902	1.7	2278	346	2.40	51	73	108	27	55	99.6

Gear Number and range	Power	Drawbar Pull	Speed	Engine Speed	Slip of Wheels	Fan speed	Specific Fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine Oil	Tempe-rature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	%	min^{-1}	g/kWh	kWh/dm^3	°C	°C	°C	°C	%	kPa

4.1.3.1 MAXIMUM POWER IN TESTED GEARS (continued)

II	78.6	31.42	9.00	1901	3.3	2207	314	2.65	47	71	107	22	55	99.6
II	78.2	27.93	10.08	1899	3.0	2274	316	2.64	48	70	108	22	55	99.6
II	76.8	24.80	11.14	1898	2.8	2273	322	2.58	48	71	108	24	55	99.6
II	78.6	22.58	12.52	1898	3.4	2278	313	2.66	49	71	108	24	55	99.6
II	72.3	17.50	14.86	1899	2.3	2283	340	2.45	49	72	109	23	55	99.6

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Gear number and range	Power	Drawbar pull	Speed	Engine Speed	Slip of Wheels	Fan speed	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/dm³	°C	°C	°C	°C	%	kPa
	FUEL CONSUMPTION													
4.1.3.2	In selected gear, at maximum power at rated speed													
I	73.8	39.19	6.78	2201	3.8	2212	356	2.34	42	69	106	16	55	99.6
4.1.3.2.1	75 % of pull at maximum power at rated speed													
I	57.1	29.39	7.00	2246	3.0	2252	395	2.11	44	68	107	17	55	99.6
4.1.3.2.2	50 % of pull at maximum power at rated speed													
I	39.1	19.71	7.15	2269	2.0	2238	473	1.76	44	67	106	17	55	99.6
4.1.3.2.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 4.1.3.2.1													
I	57.2	29.51	6.98	1954	2.9	1933	330	2.52	45	68	105	19	55	99.6
4.1.3.2.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 4.1.3.2.2													
I	38.6	19.46	7.13	1973	2.0	1714	390	2.13	45	67	104	19	55	99.6
4.1.3.3	In selected gear nearest to 7.50 km/h at rated speed													
I	73.6	34.03	7.78	2197	3.7	2289	357	2.33	46	70	107	21	55	99.6
4.1.3.3.1	75 % of pull at maximum power at rated speed													
I	57.0	25.51	8.04	2244	2.8	2368	396	2.10	47	70	109	22	55	99.6
4.1.3.3.2	50 % of pull at maximum power at rated speed													
I	38.1	16.63	8.24	2269	1.9	2266	488	1.70	47	68	107	21	55	99.6
4.1.3.3.3	Next higher gear at reduced engine speed; same pull and travelling speed as in 4.1.3.3.1													
I	57.5	25.67	8.07	1980	2.7	2099	341	2.43	47	68	106	21	55	99.6
4.1.3.3.4	Next higher gear at reduced engine speed; same pull and travelling speed as in 4.1.3.3.2													
I	38.8	16.96	8.24	1999	1.8	2100	405	2.05	46	66	105	21	55	99.6

4.2 Additional power lift test at rear power lift with different linkage adjustments to obtain maximum lifting force:

- Linkage settings for test - see on page 14

	At the hitch points	On the frame
Height of lower hitch points above ground in down position	425 mm	
Vertical movement without lifting forces	735 mm	815 mm
Vertical movement with lifting forces	710 mm	785 mm
Max. corrected force exerted through full range	69.30 kN	65.70 kN
Corresponding pressure	17.8 MPa	
Moment about rear axle	81.45 kNm	118.90 kNm
Max. tilt angle of mast from vertical	-	7°

Lifting heights relative to horizontal lower links												
mm	-255	-240	-200	-100	0	+100	+200	+300	+400	+470	+500	+530
Lifting forces at hitch points, corrected to 17.8 MPa												
kN		69.30	70.20	73.80	77.85	82.80	87.30	91.35	92.70	90.00		
Lifting forces at standard frame, corrected to 17.8 MPa												
kN	65.70		66.60	67.95	70.65	72.45	75.15	76.05	76.50		72.45	70.65

5	**REPAIRS**	**None**
6	**REMARKS**	The engine of the tractor Massey Ferguson 7485 has two different injection pump characteristics.

- **Standard**, for heavy drawbar work (forward speeds below 15 km/h) and also for PTO-operation with standing tractor or forward speed below 8 km/h

- **Power boosted**, for transport work at forward speeds higher than about 15 km/h and for PTO work at forward speeds higher than about 8 km/h. In this mode the maximum fuel injection at high engine speeds is increased.

The electronic engine control device of the 7495 model was replaced by the 7485 module and all relevant measurements were repeated. All other specifications of the models 7495 and 7485 are identical.

Head of Vehicle Technology

Dipl.-Ing. (FH) Ottmar Degrell

Test carried out by

Dipl.-Ing. (FH) Thomas Feuerstein

Date: 30th March 2005



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