Prüfstelle für Landmaschinen



REPORT on test in accordance with **OECD No. 2/2235**
OECD STANDARD CODE 2 for the *23rd March 2005*
Official Testing of Agricultural Tractor Performance

Agricultural Tractor

AGCO RT 120

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: July till October 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: 23rd March 2005 OECD No. 2/2235

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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AGCO RT 120 **DLG-Test No. 2004-244**

[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:	28 h
[C]	Location of test:	DLG-Testing Station, D-64823 Gross-Umstadt

1 SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1

[C]	- Make:	AGCO
[C]	- Model:	RT 120
[C]	- Type:	4WD, wheel tractor, unit construction

1.1.2 Numbers

[D]	- 1st serial No.:	n.a.
[C]	- Serial No.:	N119001

1.1.3 Other specifications:

[C]	- Transmission version:	CVT (continue variation transmission), 40 km/h
[D]	- Engine version:	exhaust emission according to TIER2, EPA and guideline 2000/25/EG
[D]	- Technical type number:	G31

1.2 Engine

[C]	- Make/Model/Type:	CUMMINS / 6BTA6.7MECH / water-cooled 4-stroke Diesel-engine, direct injection, supercharged and intercooler (air to air),
[C]	- Serial No.:	AGCORT115.BETA21600364

1.2.1	Cylinders	
[C]	- Number/disposition:	6 / vertical in line
[D]	- Bore/stroke:	104 mm / 134 mm
[D]	- Capacity:	6830 cm^3
[D]	- Compression ratio:	17.5 ± 1 : 1
[D]	- Arrangement of valves:	Overhead valves, 2 per cylinder
[D]	- Cylinder liners:	no
1.2.2	Supercharging	
[D]	- Make / Model / Type:	Holset / HX35W / exhaust driven supercharger with air to air intercooler
[D]	- Pressure	Max. 134 kPa
1.2.3	Fuel system	
[D]	- Fuel feed system:	1 diaphragm fuel supply pump
	- Fuel filter	
[D]	Make/Model:	Fleetguard / n.a.
[C]	Type :	1 replaceable paper element filter
[D]	- Capacity of fuel tank:	300 dm^3
	- Injection pump	
[D]	Make/Model:	BOSCH / VP 30 - 00470006002
[D]	Type:	Rotary
[D]	Serial no.:	3288253
[C]	Manufacturer's production setting:	Standard: 75 ± 3 (boosted: 79 ± 3) mm^3/stroke at full load and rated speed;
[C]	Flow rate:	Standard: 30 ± 0.8 (boosted: 31 ± 0.8) dm^3/h at 2200 min^{-1} and full load
[D]	Timing:	electronically controlled
	- Injectors	
[D]	Make/Model:	BOSCH / B 3288256
[D]	Type :	DSLA mini sac
[D]	Injection pressure:	26 + 1 MPa
1.2.4	Governor	
[D]	- Make/Model/Type:	BOSCH / - / all speed governor, attached to injection pump
[C]	- Governed range of engine speed:	950 to 2440 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 / FPG 10
[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 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:	560 mm
[D]	- Coolant capacity:	24 dm^3
[D]	- Type of temperature control:	Calorstat
	- Superpressure system:	100 kPa

1.2.8	Starting system	
[D]	- Make/Model/Type:	ISKRA / AZF / electrical, solenoid pre-engaged drive starter motor
[C]	- Starter motor power rating:	3 kW
[C]	- Cold starting aid:	Flame glow plug in air intake manifold (Thermostart)
[C]	- Safety device:	Starter only operating when clutch pedal depressed
1.2.9	Electrical system	
[C]	- Voltage:	14 V, negative earth
	- Generator:	
[C]	Make/Model/Type:	ISKRA / AAK5379 / 3-phase alternator
[D]	Power:	1.68 kW
[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
	- Location:	Vertical stack at right A-post of cab, mouth showing upward / forward to the right
1.2.11	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 130
[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 I/II - engine under-speed supervisor - Various control modes
[D]	- Available options (not fitted):	transmission version CVT, 50 km/h
[C]	- Lubrication:	Oil circuit in common with rear axle drive, ar-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 / HA130 / 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 / 20.29 / 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:	1.327

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; 2 speeds may be selected by push-button electro-hydraulically

1.4.1.1 Power take-off proportional to engine speed, 540 or 1000 min^{-1} p.t.o.

[C] - Location: At rear of tractor

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

[C] - Number of splines: 6 (540 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: 750 mm

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

[C] - Distance behind rear wheel axis: 490 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]	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 / -

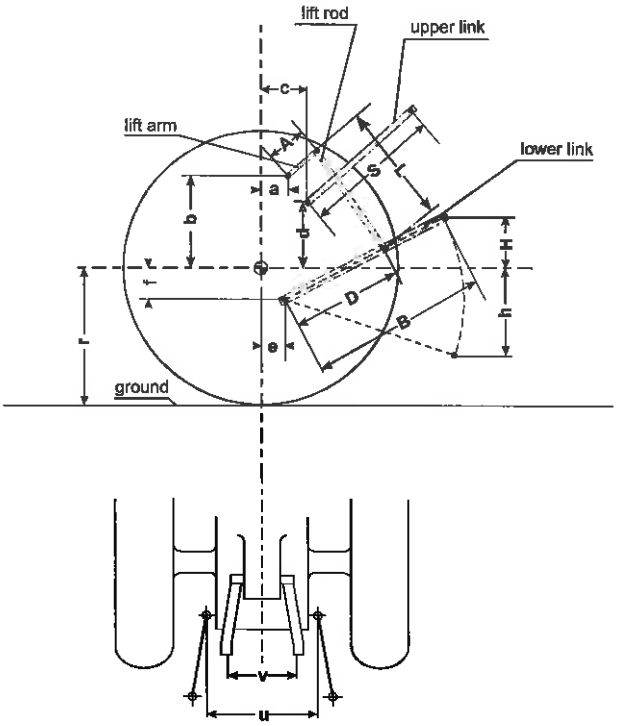
[C] - Type: electronic-hydraulic power lift at rear, desintegrated construction

[C]	- Hydraulic system:	Closed, load sensing, pressure and flow compensated system; supplies rear and front power lift including additional control valves, 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
[C]	- Type and number of cylinders:	2 external cylinders, double acting, 100/90 mm bore (left/right), 247 mm stroke, 40/36 mm piston rod diameter (left/right)
[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:	A10V045 DFR1/52 R
[D]	- Type:	Variable displacement axial-piston pump
[D]	- Transmission between pump and engine:	Independently driven by gear box
[D]	- Type and number of filters:	1, exchangeable filter in return line
[D]	- Site of oil reservoir:	Separate oil reservoir with 80 dm³ volume on right hand side below cab floor
[C]	- Type, number and location of tapping points:	4 double acting, quick-action coupler-pairs at rear of tractor with adjustable flow control
[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:	2, 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	36
[C]	Rear tyres 18.4 R 38 Front tyres 14.9 R 28		(r) *) (r') *)	820 640		
[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)	190 295		
[C]	Horizontal distance between the 2 lower link pivot points		(u)	460		
[C]	Horizontal distance between the 2 lift arm end points		(v)	620		
[C]	Length of upper link		(S)	from 670 to 960	740	775
[C]	Distance of upper link pivot point from rear wheel axis	horizontal vertical	(c) (d)	445 / 405 / 365 140 / 230 / 315	445 140	365 315
[C]	Distance of lower link pivot points from rear wheel axis	horizontal vertical	(e) (f)	115 250		
[C]	Distance of lower link pivot points from lift rod pivot points on lower links		(D)	600 / 665	665	665
[C]	Length of lift rods		(L)	from 670 to 790	745	670

Heights (h, H, H') of lower link hitch points relative to rear wheel axis (situated 820 mm above ground), at different adjustments of L

These data are valid for unloaded power lift

[C]	Length of lift rods	(L)	670	790	745	670
[C]	Linkage distance of lift rods	(D)	600 / 665		665	665
[C]	Lowest position	(h)	545 / 470	855/ 710	620	470
[C]	Highest position	(H)	210 / 215	15 / 25	100	210
[C]	Transport position	(H')	210 /215	15 / 25	100	210

*) Assuming r resp. r' = tyre dynamic radius index (in conformity with ISO 4251-1:1998)

1.6.2 [C]	Three-point linkage at front:	Not fitted	
1.7	**Swinging drawbar**		
[C]	- Type:	Longitudinally adjustable in five steps	
[C]	- Height above ground		420 mm
[C]	- Type of adjustment:	-	
[C]	- Distance of hitch point from rear wheel axis	Horizontal:	750 / 850 / 1010 / 1060 / 1160 mm
[C]	- Distance of hitch point from p.t.o. shaft end	Vertical:	280 mm
		Horizontal:	260 / 360 / 520 / 570 / 670 mm
[C]	- Lateral adjustment (centre of clevis)	Right/left hand side:	240 mm
[C]	- Distance of pivot point from rear-wheel axis, horizontally:		400 mm
[C]	- Diameter of drawbar pin hole:		30 mm
[D]	- Maximum permissible vertical load:		18 kN
1.8	**Trailer hitch**	Optionally available, not fitted	
1.9	**Holed drawbar**	Optionally available, not fitted	

1.10	**Steering**	
[D]	- Make/Model/Type:	DANFOSS/ OSPC 160 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 35.4 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, 70 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 5 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: 2780 mm

[D] - Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1610	1844	Adjustable gauge-bowl rims
Rear	1760	1890	Adjustable gauge-bowl rims

1.13 Protective structure

[C] - Make/Model/Type: MASSEY FERGUSON / 6003 S3 / 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; sound- and vibration insulated;
cab supports:
at front by rubber absorbers; at rear by pneumatic damping fixed to the rear axle; 1 door and 3 steps each at the left and right side; rear window and side window to open; water-heating, ventilation system, air conditioner

[C] Tiltable / not tiltable: Not tiltable

- OECD approval

[D] Approval number: 4/0 765

[D] Date of approval: March 11th, 2003

[D] Nos. minor modification certificates, if any: 1

1.14 Seat

1.14.1	Driver's seat	Fitted to tractor
[C]	- Make/Model:	Grammer / MSG 95G / 741
[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:	200 mm
[C]	Vertical:	400 to 590 mm
[C]	- Safety belt:	Yes
1.14.2	Optional driver's seats	
[D]	- Make/Model/Type:	Grammer / MSG 85/731; MSG 95A/731 / mechanical suspension or pneumatic suspension
1.14.3 [C]	Passenger seat:	Optional, fitted to tractor tested

1.15 Lighting

Electrical, 12 Volt, according to US legislation

		Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
[C]	Headlights	1280	160 x 100	195
[C]	Side Lights	2765	140 x 75	930
[C]	Rearlights	1840	Ø 120	1015
[C]	Reflectors, 1st pair	1800	Ø 55	810
	2nd pair	740	100 x60	600

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width (track width as in 2.5)	Height at top of	
			protective structure	exhaust silencer pipe
	mm	mm	mm	mm
Unballasted	4670	2250	2900	2915

2.2 Ground clearance

370 mm

- Clearance-limiting part: Bracket of swinging drawbar

2.3 Tractor mass

- Unballasted (with cab)

	Without driver kg	With driver kg
Front	2330	2355
Rear	4500	4550
Total	6830	6905

2.4 Track specifications

Not applicable

2.5 Tyres and track widths specifications

	Front	Rear
Tyres:	Goodyear Super Traction	Goodyear Super Traction
- Dimensions	14.9 R 28	18.4 R 38
- Load index speed index	128 A8	146 A8
- Type	radial	radial
- Maximum load (tyre manufacturer's)	18.00 kN*)	30.00 kN*)
- Maximum load (tractor manufacturer's)	18.00 kN	30.00 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	160 kPa	160 kPa
dynamic radius index	640 mm	820 mm
Chosen track width:	1700 mm	1890 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 0.8379 g/cm³
  at drawbar power test 0.8379 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	BP Full-Year Engine oil	BP
Viscosity	SAE 10W/30, 10W/40 SAE 15W/30 or 15W/40	10W/40
Classification	API-CH4	API-CH4
Gearbox Rear axle drive Type	BP Super-Tractor-Oil-Universal STOU	BP
Viscosity	SAE 10W/40, 15W/40	10W/40
Classification	API-GL4	API-GL4
Rear axle final drives Type	BP Hypoid-Gear-Oil	BP
Viscosity	SAE 85W/90	85W/90
Classification	API-GL5	API-GL5
Front axle drive Front axle final drives Type	BP Hypoid-Gear-Oil	BP
Viscosity	SAE , 85W/140	85W/140
Classification	API-GL5	API-GL5
Hydraulic system Type	BP STOU	BP
Viscosity	SAE 10W/40	10W/40
Classification	API-CH4	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: 2004-07-08
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	dm³/h	g/kWh	kWh/dm³
Maximum power							
3.1.1 At 2-hour test							
91.1	2150	1057	2023	25.25	30.13	277	3.02
3.1.2 At rated speed							
89.4	2199	1081	2053	25.74	30.72	288	2.91
3.1.3 At standard p.t.o. speed							
89.9	2034	1000	1978	24.10	28.76	268	3.13
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							
89.4	2199	1081	2053	25.74	30.72	288	2.91
3.1.4.2 85% of the torque obtained in 3.1.4.1							
77.8	2250	1106	2154	23.51	28.06	302	2.77
3.1.4.3 75% of the torque defined in 3.1.4.2							
59.0	2278	1120	2092	19.93	23.79	338	2.48
3.1.4.4 50% of the torque defined in 3.1.4.2							
40.5	2335	1148	2117	16.28	19.43	402	2.08
3.1.4.5 25% of the torque defined in 3.1.4.2							
20.6	2382	1171	2131	12.59	15.03	611	1.37
3.1.4.6 unloaded							
-	2441	1200	1528	7.81	9.32	-	-

Power	Speed		Fan	Fuel consumption			Specific
	Engine	P.t.o.		hourly		specific	energy
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

89.9	2034	1000	1978	24.10	28.76	268	3.13

3.1.5.2 85% of the torque obtained in 3.1.5.1

77.0	2050	1008	1677	21.05	25.12	273	3.07

3.1.5.3 75% of the torque defined in 3.1.5.2

58.9	2091	1028	1773	17.81	21.26	302	2.77

3.1.5.4 50% of the torque defined in 3.1.5.2

40.3	2148	1056	1948	14.52	17.33	360	2.33

3.1.5.5 25% of the torque defined in 3.1.5.2

20.7	2213	1088	1367	10.36	12.36	500	1.67

3.1.5.6 unloaded

-	2270	1116	1439	7.04	8.40	-	-

OPTIONAL RESULTS

Power kW	Speed Engine min^{-1}	Speed P.t.o. min^{-1}	Fan min^{-1}	Fuel consumption hourly kg/h	Fuel consumption hourly dm^3/h	Fuel consumption specific g/kWh	Specific energy kWh/dm^3
3.1.6 Part loads at different engine speeds							
3.1.6.1 maximum power at rated engine speed							
89.4	2199	1081	2053	25.74	30.72	288	2.91
3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting							
71.5	2258	1110	2108	22.53	26.89	315	2.66
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
71.7	1983	975	1911	19.80	23.63	276	3.03
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
35.9	1979	973	1259	11.79	14.07	328	2.55
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
53.5	1314	646	962	12.74	15.20	238	3.52
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
35.6	1312	645	1010	9.00	10.74	253	3.31

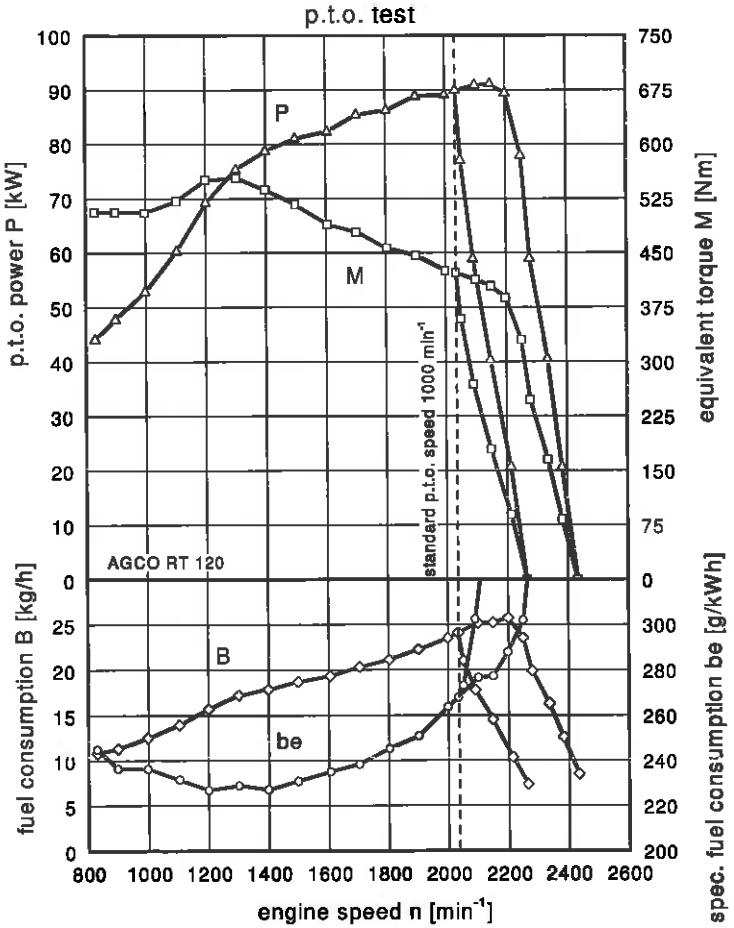
No load maximum engine speed:	2441	min^{-1}
Equivalent flywheel torque at rated engine speed:	388	Nm
Equivalent flywheel torque at 2-hour test:	404	Nm
at engine speed:	2150	min^{-1}
Maximum equivalent flywheel torque:	553	Nm
at engine speed:	1300	min^{-1}

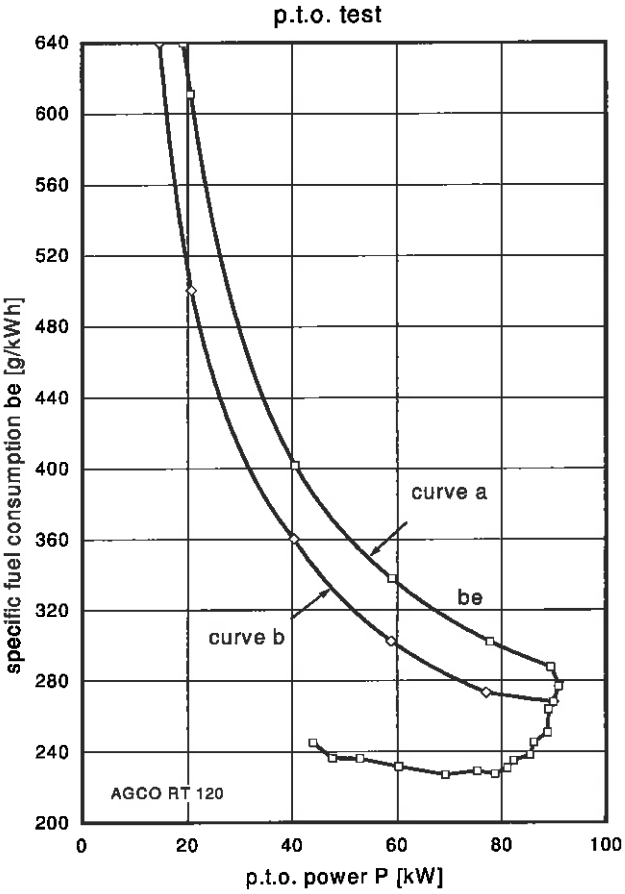
Mean atmospheric conditions

temperature:	22	°C
pressure:	99.4	kPa
relative humidity:	72	%

Maximum temperatures

coolant:	65	°C
oil:	108	°C
fuel:	42	°C
air intake:	20	°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
AGCO RT 120
100
90
80
70
60
50
40
30
20
10
0
750
675
600
525
450
375
300
225
150
75
0
25
20
15
10
5
0
300
280
260
240
220
200
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
p.t.o. power P [kW]
curve a
be
curve b
AGCO RT 120

3.2 HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 23rd September 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	20.0	69	70	2441	-	-
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	18.0	74 [1)]		2375 [1)]	77.9 [1)]	23.4 [1)]
		68 [2)]		2349 [2)]	114.8 [2)]	34.6 [2)]
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair	3.6	61		2439	110.5	-
	16.4	70		2361	107.9	29.6
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)	1.7	63		2440	127.4	-
	18.9	68		2348	110.8	34.9

- 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

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	200 mm	
Vertical movement without lifting forces with lifting forces	715 mm 706 mm	900 mm 885 mm
Max. corrected force exerted through full range	61.30 kN	48.55 kN
Corresponding pressure	18.0 MPa	
Moment about rear axle	70.20 kNm	85.19 kNm
Max. tilt angle of mast from vertical	-	12°

Lifting heights relative to horizontal lower links												
mm	-460	-370	-300	-200	-100	0	100	200	300	336	400	420
Lifting forces at hitch points, corrected to 18.0 MPa												
kN		61.30	63.10	66.20	69.35	72.50	76.45	78.40	77.25	76.05		
Lifting forces at standard frame, corrected to 18.0 MPa												
kN	54.55		55.30	56.35	56.35	56.70	56.70	56.35	54.20		50.30	48.55

3.3 DRAWBAR POWER TEST (unballasted tractor)

Date of tests: 12th - 13th July 2004
Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure Front	Rear
Unballasted	430 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	55.0	63.08	3.14	2266	15.0	1946	413	2.03	34	64	110	21	50	99.7
I	64.2	63.32	3.65	2239	14.9	2012	388	2.16	33	64	110	22	50	99.7
I	72.1	58.28	4.45	2152	9.8	1877	349	2.40	32	65	110	20	53	99.7
I	74.8	51.31	5.25	2156	6.2	1957	339	2.47	32	64	110	20	52	99.6
I	74.8	47.20	5.70	2156	5.1	1950	337	2.49	31	64	110	19	53	99.6
I	75.3	39.76	6.82	2151	4.0	1933	338	2.48	31	64	110	19	53	99.6
I	75.7	35.02	7.78	2151	3.3	1986	338	2.48	30	65	109	19	54	99.2
I	74.6	29.95	8.96	2151	2.9	2003	339	2.47	33	66	109	20	50	99.2
I	73.7	25.97	10.22	2150	2.5	1979	342	2.45	35	67	112	20	50	99.2
I	73.7	23.37	11.34	2152	2.1	1920	342	2.45	35	68	112	20	50	99.2
I	72.5	19.90	13.12	2154	1.8	1933	347	2.41	37	69	114	20	51	99.2
I	71.2	16.88	15.19	2150	1.4	1937	353	2.37	38	69	115	19	54	99.2
I	69.7	14.60	17.18	2154	1.1	1928	361	2.32	37	68	113	20	51	99.2

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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/dm^3	°C	°C	°C	°C	%	kPa
II	72.3	27.73	9.39	2151	2.8	1890	348	2.41	36	68	113	20	50	99.6
II	74.3	26.00	10.28	2150	2.6	1907	339	2.47	37	69	114	19	51	99.6
II	74.5	22.83	11.75	2152	2.3	1905	338	2.48	38	69	114	18	53	99.6
II	74.3	20.49	13.04	2150	2.0	1908	340	2.47	38	69	115	18	55	99.6
II	73.6	18.02	14.71	2153	1.7	1906	343	2.44	39	69	115	18	53	99.6
II	72.5	16.17	16.14	2156	1.4	1909	347	2.41	39	70	115	19	51	99.7

AGCO RT 120

DLG-Test No. 2004-244

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													
3.3.2.1	In selected gear, at maximum power at rated speed													
I	74.4	43.75	6.12	2202	5.0	1973	343	2.44	36	68	113	19	50	99.7
3.3.2.1.1	75 % of pull at maximum power at rated speed													
I	58.5	32.78	6.42	2267	3.4	1986	383	2.19	36	68	113	19	46	99.7
3.3.2.1.2	50 % of pull at maximum power at rated speed													
I	40.4	21.84	6.66	2318	2.3	2014	450	1.86	37	68	113	18	52	99.7
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	59.1	32.81	6.49	2023	3.5	1302	330	2.54	36	66	111	19	48	99.7
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	40.5	21.81	6.68	2053	2.1	1342	376	2.23	36	67	110	19	48	99.7
3.3.2.2	In selected gear nearest to 7.50 km/h at rated speed													
I	74.8	34.40	7.83	2202	3.4	1973	343	2.44	33	66	108	21	41	99.8
3.3.2.2.1	75 % of pull at maximum power at rated speed													
I	58.3	25.71	8.17	2268	2.6	2015	384	2.18	34	65	109	22	40	99.7
3.3.2.2.2	50 % of pull at maximum power at rated speed													
I	40.1	17.10	8.44	2314	1.8	2032	461	1.82	34	65	110	22	40	99.7
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	58.1	25.73	8.13	1962	2.6	1399	328	2.56	36	67	110	21	43	99.7
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	40.4	17.11	8.51	2025	1.8	1725	390	2.15	36	68	110	20	42	99.7

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	2330	2355
Rear	5100	5150
Total	7430	7505

4.1.2 Tyres and track width specification

Dual wheels (2 front wheels, 4 rear wheels)

	Front	Rear
Tyres:	Goodyear Super Traction	
- Dimensions	14.9 R 28	18.4 R 38
- Load index speed index	128 A8	146 A8
- Type	radial	radial
- Maximum load (tyre manufacturer's)	18.00 kN*)	30.00 kN*)
- Maximum load (tractor manufacturer's)	18.00 kN	30.00 kN
at travelling speed	40 km/h	40 km/h
at tyre inflation pressure	160 kPa	160 kPa
dynamic radius index	640 mm	820 mm
Chosen track width:	1630 mm	3100 mm

*) With other tyres higher load capacity possible

4.1.3 Test Results Drawbar Power Test with dual wheels

Date of tests: 14th and 15th July 2004
Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure Front	Rear
Unballasted	430 mm	50 kPa	50 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	54.0	74.69	2.60	2269	15.0	1930	422	1.99	33	66	111	22	68	99.7
I	63.0	74.80	3.03	2248	15.1	1947	392	2.14	33	66	111	22	68	99.7
I	69.3	70.48	3.54	2149	12.1	1927	363	2.31	32	65	109	22	63	99.8
I	73.6	57.92	4.57	2151	6.5	1976	343	2.45	37	67	112	24	39	99.9
I	72.9	49.63	5.26	2149	4.6	2024	340	2.47	36	68	113	24	38	100.0
I	74.1	46.51	5.73	2151	4.2	1970	339	2.47	36	68	112	24	39	100.0
I	75.1	40.19	6.72	2151	3.2	1967	337	2.49	36	69	112	24	39	100.0
I	77.0	35.92	7.72	2150	2.9	1877	330	2.54	34	67	112	20	50	100.0
I	76.1	31.16	8.80	2151	2.4	1892	333	2.51	34	67	113	21	47	100.0
I	75.8	26.89	10.15	2150	2.1	1893	335	2.50	35	69	114	20	50	100.1
I	74.7	23.50	11.45	2151	1.7	1911	339	2.47	36	69	114	20	49	100.1
I	73.9	20.44	13.02	2150	1.5	1916	343	2.44	37	69	114	21	48	100.1

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)

I	72.4	17.46	14.93	2158	1.3	1933	351	2.38	37	69	114	21	47	100.0
I	70.1	14.36	17.57	2158	1.0	1943	363	2.31	38	70	115	21	47	100.0
II	74.7	28.90	9.31	2150	2.4	1973	339	2.47	34	68	110	22	64	99.8
II	74.4	26.28	10.19	2150	2.0	1968	340	2.46	35	68	112	23	63	99.8
II	73.8	23.15	11.48	2151	1.8	1993	343	2.44	36	68	113	23	61	99.8
II	73.6	20.61	12.85	2150	1.6	1995	344	2.44	37	68	113	24	60	99.7
II	72.4	17.69	14.74	2153	1.3	1995	349	2.40	37	70	114	23	61	99.7
II	70.8	15.52	16.43	2155	1.1	1992	357	2.35	39	70	115	23	61	99.7
II	69.9	13.96	18.02	2150	1.0	2004	360	2.32	39	71	116	24	60	99.7

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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/dm^3	°C	°C	°C	°C	%	kPa
	FUEL CONSUMPTION													
4.1.3.2	In selected gear, at maximum power at rated speed													
I	73.2	29.52	8.93	2204	2.5	1989	348	2.41	39	67	110	27	50	99.7
4.1.3.2.1	75 % of pull at maximum power at rated speed													
I	56.9	22.02	9.31	2271	1.9	2136	391	2.14	40	69	112	27	49	99.7
4.1.3.2.2	50 % of pull at maximum power at rated speed													
I	39.2	14.60	9.67	2314	1.2	2154	467	1.80	40	68	112	27	49	99.7
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	57.3	22.03	9.36	2003	1.9	1948	346	2.43	40	67	111	26	52	99.7
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	39.1	14.57	9.67	2040	1.1	1922	402	2.08	40	67	109	25	53	99.7
4.1.3.3	In selected gear nearest to 7.50 km/h at rated speed													
I	71.9	33.13	7.81	2203	2.9	2076	354	2.36	38	69	111	27	49	99.7
4.1.3.3.1	75 % of pull at maximum power at rated speed													
I	56.5	24.75	8.21	2269	2.2	2170	398	2.11	38	69	112	26	50	99.7
4.1.3.3.2	50 % of pull at maximum power at rated speed													
I	39.0	16.42	8.54	2315	1.4	2181	469	1.79	39	68	112	26	51	99.7
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	56.5	24.79	8.21	2015	2.1	1952	351	2.39	40	69	111	26	51	99.7
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	36.3	16.42	8.62	2082	1.3	1970	407	2.06	39	67	109	26	51	99.7

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	350 mm	
Vertical movement without lifting forces	680 mm	732 mm
with lifting forces	658 mm	692 mm
Max. corrected force exerted through full range	65.25 kN	63.05 kN
Corresponding pressure	18.0 MPa	
Moment about rear axle	74.70 kNm	110.70 kNm
Max. tilt angle of mast from vertical	-	5°

Lifting heights relative to horizontal lower links												
mm	-250	-220	-200	-100	0	100	200	300	400	438	442	
Lifting forces at hitch points, corrected to 18.0 MPa												
kN		65.25	65.65	67.60	71.35	74.50	78.40	80.95	80.75	79.40		
Lifting forces at standard frame, corrected to 18.0 MPa												
kN	66.80		67.60	68.40	68.95	69.75	70.35	69.75	65.65		63.10	

5	**REPAIRS**	**None**
6	**REMARKS**	The engine of the tractor AGCO RT 120 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.

Head of Vehicle Technology

Dipl.-Ing. (FH) Ottmar Degrell

Test carried out by

Dipl.-Ing. (FH) Thomas Feuerstein

Date: 30th March, 2005

AGCO RT 120 **DLG-Test No. 2004-244**



Deutsche Landwirtschafts-Gesellschaft e.V.
Prüfstelle für Landmaschinen
Max-Eyth-Weg 1, D-64823 Groß-Umstadt
Telefon: 0 60 78 / 96 35 0 Fax: 0 60 78 / 96 35 90
E-mail: Tech@DLG.org, Internet: www.DLG.org/landtechni