CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA

ISMA
ISTITUTO SPERIMENTALE PER LA MECCANIZZAZIONE AGRICOLA

REPORT ON TEST IN ACCORDANCE WITH OECD STANDARD CODE FOR THE OFFICIAL TESTING OF AGRICULTURAL AND FORESTRY TRACTOR PERFORMANCE (CODE 2)

SAME EXPLORER 85 SPECIAL

12 forward and 12 reverse speeds
30 km/h
four-wheel drive agricultural tractor



LAMBORGHINI 774-85 N

12 forward and 12 reverse speeds
30 km/h
four-wheel drive agricultural tractor



Manufactured by:

SAME DEUTZ-FAHR ITALIA S.p.A
Viale F. Cassani 15
24047 Treviglio BG
Italy

OECD approval No.: 2/2 373
Date of approval: 4 June 2007
Period of test: March 2007

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Notes

1) 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.

2) The Same Explorer 85 Special (4WD) and Lamborghini 774-85 N (4WD) tractors are technically identical in all main respects except with regard to model designation and colour.
Both the above mentioned tractors can be fitted with two different frame-type protective structures, respectively the T 45 and the T 62 B models and consequently, different rear mudguards and rear lights position.
All tests were carried out on the Same Explorer 85 Special (4WD) with the T 45 frame model.

C	- Tractor manufacturer's name and address:	SAME DEUTZ-FAHR ITALIA S.p.A.; V.le F. Cassani 15, 24047 Treviglio BG, Italy;
D	- Location of tractor assembly:	Treviglio BG, Italy;
D	- Submitted for test by:	the manufacturer;
C	- Selected for test by:	the manufacturer with the agreement of ISMA;
D	- Place of running-in:	Treviglio BG, Italy;
D	- Duration of running-in:	50 hours;
C	- Location of test:	ISMA, Via Milano 43, Treviglio BG, Italy.

1. SPECIFICATIONS OF TRACTOR

1.1 Identification

1.1.1 Denomination

C	- Make:	SAME;
C	- Model:	EXPLORER 85 SPECIAL;
C	- Type:	four-wheel drive, unit construction.

1.1.2 Numbers

D	- First serial number:	EXP85ST20001;
C	- Serial number:	EXP85ST20009.

1.1.3 Other specification

D	- Model for other countries:	SAME EXPLORER 80 SPECIAL and LAMBORGHINI 774-80 N;
C	- Speed version:	30 km/h.

1.2 Engine

C	- Make/Model/Type:	SAME DEUTZ-FAHR ITALIA / 1000.4 W1 / water cooled 4-stroke diesel, direct injection, naturally aspirated;
C	- Serial number:	36054.

1.2.1 Cylinders

C	- Number and disposition:	4 vertical in line;
D	- Bore x stroke:	105 x 115.5 mm;
D	- Capacity:	4000 cm^3;
D	- Compression ratio:	17:1;
D	- Arrangement of valves:	overhead valves, 2 per cylinder;
D	- Cylinder liners:	wet liners.

1.2.2 Supercharging

C	- Make/Model/Type:	none.

1.2.3 Fuel system

C	- Fuel feed system:	AC corone fuel feed pump;
C	- Make/Model/Type of fuel filter:	FIAMM / FNA 255/00 / replaceable paper element filter;
D	- Capacity of fuel tank:	61 dm^3;
C	- Make/Model/Type of injection pump:	BOSCH / PFR 1 K-90A 555 / immersed, one per cylinder in line;
C	- Serial number:	without serial number;
	- Manufacturer's production setting of injection pump:	
C	. Flow rate:	62 ± 2 mm^3/stroke at rated speed and full load corresponding 18.7 dm^3/h;
D	. Timing:	13° before TDC;
D	- Make/Model/Type of injectors:	BOSCH / DLLA 155 S 1323 / multihole injection nozzles;
D	- Injection pressure:	18 ± 1 MPa.

1.2.4 Governor

C	- Make/Model/Type:	SAME DEUTZ-FAHR ITALIA / SAME 06516510 / mechanical;
C	- Governed range of engine speed:	from 650 to 2730 min^{-1};
C	- Rated engine speed:	2500 min^{-1}.

1.2.5 Air cleaner

	- Pre-cleaner:	
C	- Make/Model/Type:	DONALDSON / P01-6330 / cyclone;
C	- Location of air intake:	front of engine, above the bonnet;
	- Main cleaner	
C	- Make/Model/Type:	DONALDSON / FLG08-0524 / dry paper element filter with two replaceable cartridge elements;
C	- Maintenance indicator:	none.

1.2.6 Lubrication system

D	- Type of feed pump:	forced feed from gear pump;
C	- Type of filter:	FIAMM FT 4803 IN;
C	- Number of filters:	1.

1.2.7 Cooling system

C	- Type of coolant:	water cooling;
D	- Type of pump:	impeller pump;
	- Specification of fan	
C	- Number of fan blades:	10;
C	- Fan diameter:	480 mm;
D	- Coolant capacity:	11 dm^3;
C	- Type of temperature control:	electrical control;
D	- Superpressure system:	60 kPa.

1.2.8 Starting system

C	- Make/Model/Type:	BOSCH / 12V / JF12V / electromagnetic engagement;
D	- Starter motor power rating:	3 kW;
C	- Cold starting aid:	not fitted;
C	- Safety device:	gear lever shifted in neutral position; and pto disengaged at engine shut off.

1.2.9 Electrical system

C	- Voltage:	12 V;
	- Generator	
C	- Make/Model/Type:	ISKRA / 14V 65A / alternator;
D	- Power:	910 W;
	- Battery:	
C	- Number:	1 lead acid;
D	- Rating:	120 Ah at 20 hours.

1.2.10 Exhaust system

C	- Make/Model/Type:	SAME DEUTZ-FAHR ITALIA / DGM-SA 1130 / one reflection absorption chamber;
C	- Location:	on the left hand side of engine, vertical position above side bonnet.

1.3 Transmission

1.3.1 Clutch (utilized only for travelling of tractor)

D	- Make/Model/Type:	AP AUTOMOTIVE PRODUCTS ITALY / MCFK04011A / single disk dry clutch;
D	- Number of plates:	1;
D	- Diameter of plates:	305 mm;
C	- Method of operation:	hydraulic operated by pedal.

1.3.2 Gear box

D - Make/Model/Type: SAME DEUTZ-FAHR ITALIA / E87.31 / mechanical synchromesh;

- Description: 4 speeds forward with 3 ranges (S/N/F) and one reverser.

	Forward	Reverse
C Number of gears	4	4
C Number of ranges	3	3
C Total of arrangements	12	12

D - Available option: 20 forward and 20 reverse,
24 forward and 12 reverse,
16 forward and 16 reverse.

1.3.3 Rear axle and final drives

D - Make/Model/Type: SAME DEUTZ-FAHR ITALIA / E85.44 / bevel gear differential and epyciclic final drives.

- Differential lock

D - Type: mechanical;
C - Method of engagement: pedal operated;
C - Method of disengagement: pedal operated.

1.3.4 Front axle and final drives

D - Make/Model/Type: SAME DEUTZ-FAHR ITALIA / E85.43 / central shaft bevel gear drive, differential and epicyclic final drives.

- Differential lock

D . Type: mechanical;
C . Method of engagement: pedal operated;
C . Method of disengagement: pedal operated.

1.3.5 Total ratios and travelling speeds

	Gear	Range	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed at rated engine speed of 2500 min^{-1} (*) km/h
	FORWARD			
C	1	Slow	551.75	1.31
C	2	Slow	414.71	1.75
C	3	Slow	314.38	2.31
C	4	Slow	236.86	3.07
C	1	Normal	173.24	4.19
C	2	Normal	130.21	5.57
C	3	Normal	98.71	7.35
C	4	Normal	74.37	9.76
C	1	Fast	57.22	12.68
C	2	Fast	43.01	16.87
C	3	Fast	32.60	22.26
C	4	Fast	24.56	29.55
	REVERSE			
C	1	Slow	529.79	1.37
C	2	Slow	398.21	1.82
C	3	Slow	301.78	2.40
C	4	Slow	227.47	3.19
C	1	Normal	166.35	4.36
C	2	Normal	125.03	5.80
C	3	Normal	94.78	7.65
C	4	Normal	71.41	10.16
C	1	Fast	54.94	13.21
C	2	Fast	41.29	17.57
C	3	Fast	31.30	23.18
C	4	Fast	23.58	30.77

(*)*Calculated with a tyre dynamic radius index of 770 mm (in conformity with ISO 4251-1:1998)*

- Number of revolutions of front wheels for one revolution of rear wheels: 1.3071.

1.4 Power take-off

1.4.1 Main power take-off

C	- Type:	independent, at rear of tractor;
C	- Method of engagement:	engaged or disengaged by hand lever, driven by wet clutch independent of travel clutch;
C	- Number of shafts:	1;
C	- Method of changing power take-off shaft ends and speeds:	not changeable, speed shiftable by external hand lever.

1.4.1.1 Power take-off proportional to engine speed

Power take-off at 540 min^{-1}

C	- Location:	at rear of tractor;
C	- Diameter of power take-off shaft ends:	35 mm;
C	- Number of splines:	6, in conformity with ISO 500:1991, type 1;
C	- Height above ground:	770 mm;
C	- Distance from the median plane of the tractor:	0 mm;
C	- Distance behind rear axle:	405 mm;
C	- PTO speed at rated engine speed:	614 min^{-1};
C	- Engine speed at standard power take-off speed:	2198 min^{-1};
C	- Ratio of rotation speeds (engine speed/p.t.o. speed):	4.071;
D	- Power restriction:	not specified;
D	- Maximum torque transmissible:	not specified;
C	- Direction of rotation (viewed from behind tractor):	clockwise.

Power take-off at 1000 min^{-1}

C	- Location:	at rear of tractor;
C	- Diameter of power take-off shaft ends:	35 mm;
C	- Number of splines:	6, in conformity with ISO 500:1991, type 1;
C	- Height above ground:	770 mm;
C	- Distance from the median plane of the tractor:	0 mm; .
C	- Distance behind rear axle:	405 mm;
C	- PTO speed at rated engine speed:	1020 min^{-1};

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

C	- Engine speed at standard power take-off speed:	2450 min^{-1} ;
C	- Ratio of rotation speeds (engine speed/p.t.o. speed):	2.450;
D	- Power restriction:	not specified;
D	- Maximum torque transmissible:	not specified;
C	- Direction of rotation (viewed from behind tractor):	clockwise.

1.4.1.2 Power take-off proportional to ground speed: not available.

1.4.2 Optional power take-off: none.

1.5 Hydraulic power lift

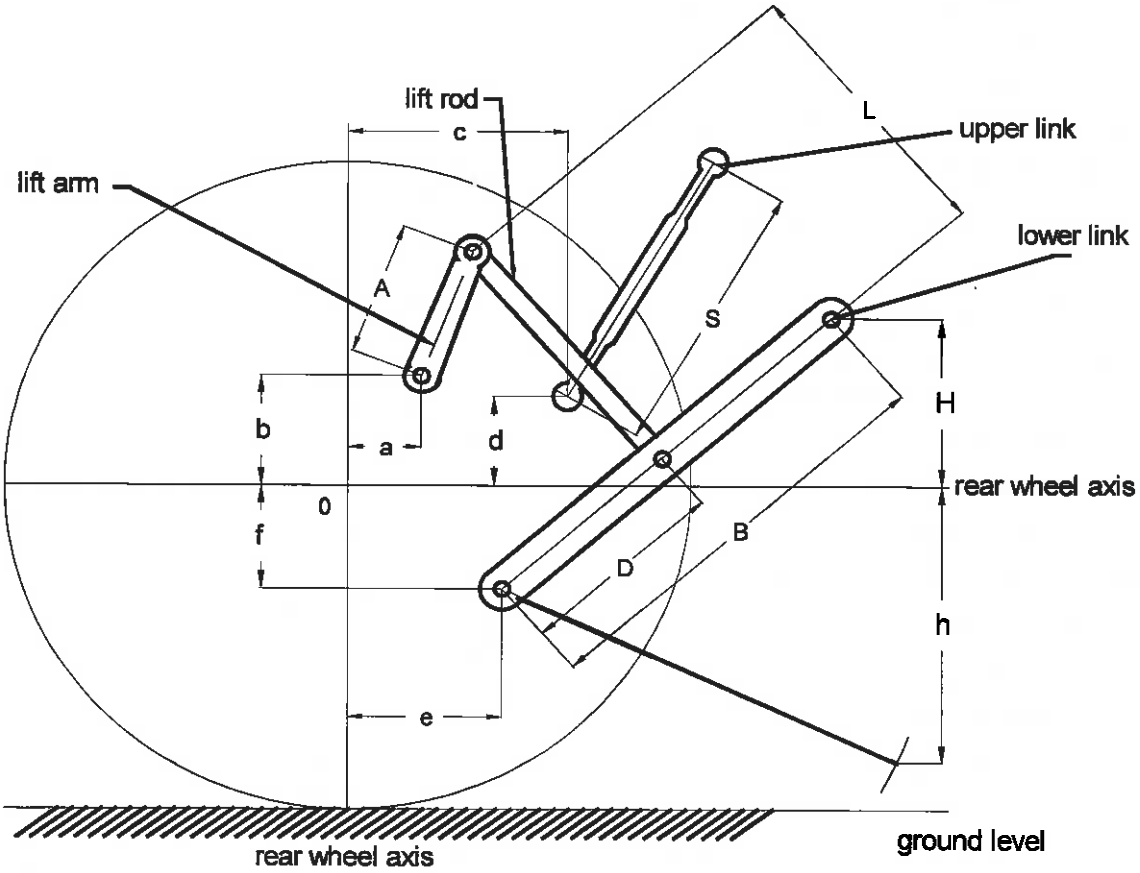
C	- Make/Model/Type:	SAME DEUTZ-FAHR ITALIA / - / open centre system, load sensing;
C	- Type and number of cylinders:	1 internal single acting;
C	- Type of linkage lock for transport:	not available;
D	- Relief valve pressure setting:	19.0 ± 0.5 MPa;
D	- Opening pressure of cylinder safety valve:	21.0 ± 0.5 MPa;
D	- Lift pump type:	hydraulic rotary pump, driven by engine shaft;
D	- Transmission between pump and engine:	mechanical;
C	- Type and number of filters:	1, replaceable paper cartridge;
C	- Site of oil reservoir:	gear box;
C	- Type, number and location of tapping points:	4, double acting, at rear of tractor;
D	- Maximum volume of oil available to external cylinders:	15 dm^3 .

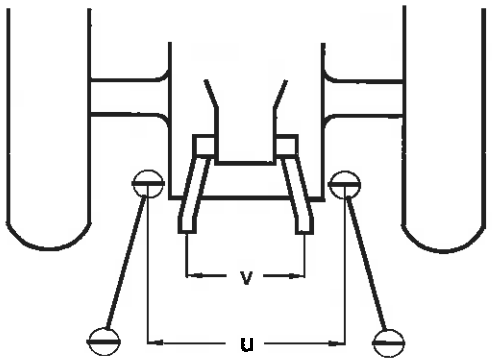
1.6 Three-point linkage

[C] - Category: 2, in conformity with category 2 of ISO 730-1:1994 + corrigendum 1:1995;

[C] - Category adapter: none.

Linkage geometry





Dimensions of linkage geometry when connected to the standard frame

			Dimension or range		Settings used in test
			mm		mm
C	Length of lift arms:	(A)	285		285
C	Length of lower links:	(B)	850		850
	Distance of lift arm pivot point from rear wheel axis (behind):				
C	- horizontally	(a)	95		95
C	- vertically	(b)	400		400
C	Horizontal distance between the 2 lower link points:	(u)	510		510
C	Horizontal distance between the 2 lift arm end points:	(v)	580		580
C	Length of upper link:	(S)	from 570 to 700		660
	Distance of upper link pivot point from rear wheel axis:				
C	- horizontally	(c)	347		347
C	- vertically	(d)	225-290-355		290
	Distance of lower link pivot point from rear wheel axis:				
C	- horizontally	(e)	145		145
C	- vertically	(f)	180		180
C	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	420		420
C	Length of lift rods:	(L)	from 695 to 870		777
	Height of lower hitch points relative to the rear wheel axis:				
C	Length of lift rods:	(L)	695	870	777
C	Linkage distance of lift rods:	(D)	420		
C	Lowest position:	(h)	366	797	570
C	Highest position:	(H)	303	-81	125
C	Height above ground of lower hitch points when locked in transport position(*)		689	1073	895

(*) *Assuming a dynamic radius index of 770 mm (in conformity with ISO 4251-1:1998)*

1.7 Swinging drawbar

C	- Type:	adjustable in height and length;
	- Height above ground	
C	- Maximum:	615 mm;
C	- Minimum:	515 mm ;
C	- Type of adjustment:	inverting drawbar;
C	- Distance of hitch point from rear-wheel axis, horizontally:	770, 820 mm;
	- Distance of hitch point from power take-off shaft end	
C	- Vertically:	155, 255 mm;
C	- Horizontally:	365, 415 mm;
	- Lateral adjustment (centre of clevis)	
C	- Right/left hand side:	50, 100 mm;
C	- Distance of pivot point from rear-wheel axis, horizontally:	115 mm;
C	- Diameter of drawbar pinhole:	33 mm;
D	- Max. vertical permissible load:	10.8 kN.

1.8 Trailer hitch

C	- Type:	adjustable in height;
C	- Hole diameter:	28 mm;
C	- Height above ground:	centre of clevis adjustable in 4 steps to 705, 600, 540, 470 mm;
C	- Distance of hitch point from rear wheel axis - Horizontally:	495 mm;
	- Distance of hitch point from power take-off shaft end	
C	- Vertically:	below 65, 170, 230, 300 mm; above, none;
C	- Horizontally:	90 mm;
D	- Maximum vertical permissible load:	15 kN.

1.9 Holed drawbar (optional, not fitted on tested tractor)

D	- Number of holes:	9;
D	- Distance between holes:	100 mm;
D	- Hole diameter:	33 mm;
D	- Thickness x width of the drawbar:	30 x 80 mm;
	- Height above ground,	
D	- Min.:	- 27 mm;
D	- Max.:	1073 mm;
D	- Horizontal distance behind power take-off shaft end:	565 mm.

1.10 Steering

D	- Make/Model/Type:	DANFOSS / OSPC 80 OR / hydrostatic steering, acting on front wheels.
	- Method of operation	
D	- Pump:	hydraulic gear pump;
D	- Rams:	2 simple acting directly on front axle;
D	- Working pressure:	15 MPa.

1.11 Brakes

1.11.1 Service brake

D	- Make/Model/Type:	SAME DEUTZ-FAHR ITALIA / E85.54 / oil-immersed disc, total 4 discs (one for wheel), mounted on front and rear differential half shafts before the final drive, disc 290 mm diameter;
C	- Method of operation:	hydraulically actuated with 2 pedals;
C	- Trailer braking take-off:	not available.

1.11.2 Parking brake

D	- Type:	fully independent of service brake, 3 oil bath disc mounted on the pinion shaft in the gear box;
C	- Method of operation:	mechanical by hand lever.

1.12 Wheels

- Number

C - Front: 2, steering and driving;
C - Rear: 2, driving;
C - Wheelbase: 2297 mm.

-Track width adjustment:

		Minimum	Maximum	Adjustment method
		mm	mm	
D	Front	1500	2000	changing the position of the rims with respect to the disc
D	Rear	1500	2000	

1.13 Protective structure

C - Make/Model/Type: SAME DEUTZ-FAHR ITALIA / T 45 / frame;
C - Manufacturer's name and address: SAME DEUTZ-FAHR ITALIA S.p.A., Viale F. Cassani 15, 24047 Treviglio BG, Italy.

- Protective device

C - Cab/frame/rollguard/other: frame;
C - Tiltable/not tiltable: not tiltable.

- OECD approval

C	Model	T 45	T 62 B
C	Approval number	CSD 0914/23	CSS 0367/39
C	Date of approval	21 November 1986	8 March 1996
C	No. of minor modification certificate	IIA 774 MI 2006	IIA 776 MI 2006

1.14 Seat

1.14.1 Driver's seat

C - Make/Model/Type: KAB / P2 XL2 / upholstered seat with back rest;
C - Seat and steering wheel reversible: no;
C - Type of suspension: adjustable spring;
C - Type of damping: shock absorber;
- Range of adjustment

C - Longitudinally 150 mm;
C - Vertically not adjustable;
C - Safety belt: yes;
Type : manually adjusting lap belt only.

1.14.2 Optional driver's seats

D	- Make/Model/Type:	KAB / P2 XH2 / upholstered seat with back rest.
D	- Seat and steering wheel reversible:	no;
D	- Type of suspension:	adjustable spring;
D	- Type of damping:	shock absorber;
	- Range of adjustment	
D	- Longitudinally	150 mm;
D	- Vertically	60 mm;
D	- Safety belt:	yes;
	Type :	manually adjusting lap belt only.

1.14.3 Passenger's seat: none.

1.15 Lighting

		Height above ground of centre	Size	Distance from out side edge of lights to median plane of tractor
		mm	mm	mm
C	Headlights	1355	140 x 85	195
C	Side lights	1635	90 x 45	830
C	Rear lights	1590	180 x 35	830
C	Reflectors	1535	100 x 53	770
		820	∅ 80	445

2. TEST CONDITIONS

2.1 Overall dimensions

	Length	Width		Height at top of	
		minimum	maximum	protective structure	exhaust pipe
	mm	mm	mm	mm	mm
Ballasted	4410	1960	2460	2440	2700
Unballasted	4080	1960	2460	2440	2700

2.2 Ground clearance: 500 mm (unballasted tractor);
Clearance-limiting part: gear box.

2.3 Tractor mass (with full fuel tank, frame).

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	1630	1655	1390	1415
Rear	1925	1975	1800	1850
Total	3555	3630	3190	3265

2.4 Ballast

	Weights		Water
	Number	Total mass	
		kg	kg
Front	5	165	-
Rear wheels	2 + 2	200	-

2.5 Track specifications

Not applicable.

2.6 Tyres and track width specifications

	Front	Rear
Tyres		
- make	CONTINENTAL	CONTINENTAL
- model	CONTRACT AC85	CONTRACT AC85
- dimensions	16.9R24	18.4R34
- ply rating	-	-
- load index/speed index	137 A8	147 A8
- type	radial	radial
- maximum load (tyre manufacturer's)	20.79 kN	30.16 kN
- maximum load (tractor manufacturer's)	22.60 kN	33.83 kN
- inflation pressure (tyre manufacturer's)	160 kPa	160 kPa
- dynamic radius index	620 mm	770 mm
Chosen track width	1735 mm	1700 mm

2.7 Fuel

- Type: AGIP DIESEL, DIN 51601; (in accordance with the national standard)
- Density at 15 °C: 0.835 g/cm^3.

2.8 Oils and lubricants

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine	9.2	150	300
Gear box with rear axle and final drives, hydraulic system, steering	45	1200	2400(*)
Front axle/final drives	6/3	1200	-
Brakes	max level	1200	2400

(*) Or when the warning lamp is lighted

2.8.2 Specifications

	Recommended	Used during test
Engine oil		
Type	AKROS TURBO	AKROS TURBO
Viscosity	12.5 cSt	12.5 cSt
Classification	API CE MIL	API CE MIL
Transmission oil used in gear box, front/rear axle, final drives and steering		
Type	AKROS MULTI FCT	AKROS MULTI FCT
Viscosity	11.5 cSt	11.5 cSt
Classification	API GL 4	API GL 4
Hydraulic fluid		
Type	AKROS MULTI FCT	AKROS MULTI FCT
Viscosity	11.5 cSt	11.5 cSt
Classification	API GL 4	API GL 4
Braking oil		
Type	AKROS MATIC	AKROS MATIC
Viscosity	6.7 cSt	6.7 cSt
Classification	API GL 4	API GL 4

2.8.3 Grease

- Type: AKROS GREASE T2;
- Number of lubrication points: 18.

3. TESTS RESULTS

3.1 Main power take-off

- Date and location of tests: 8 March 2007, ISMA, Treviglio BG, Italy;
- Type of dynamometer bench: eddy-current, ZÖLLNER B500.

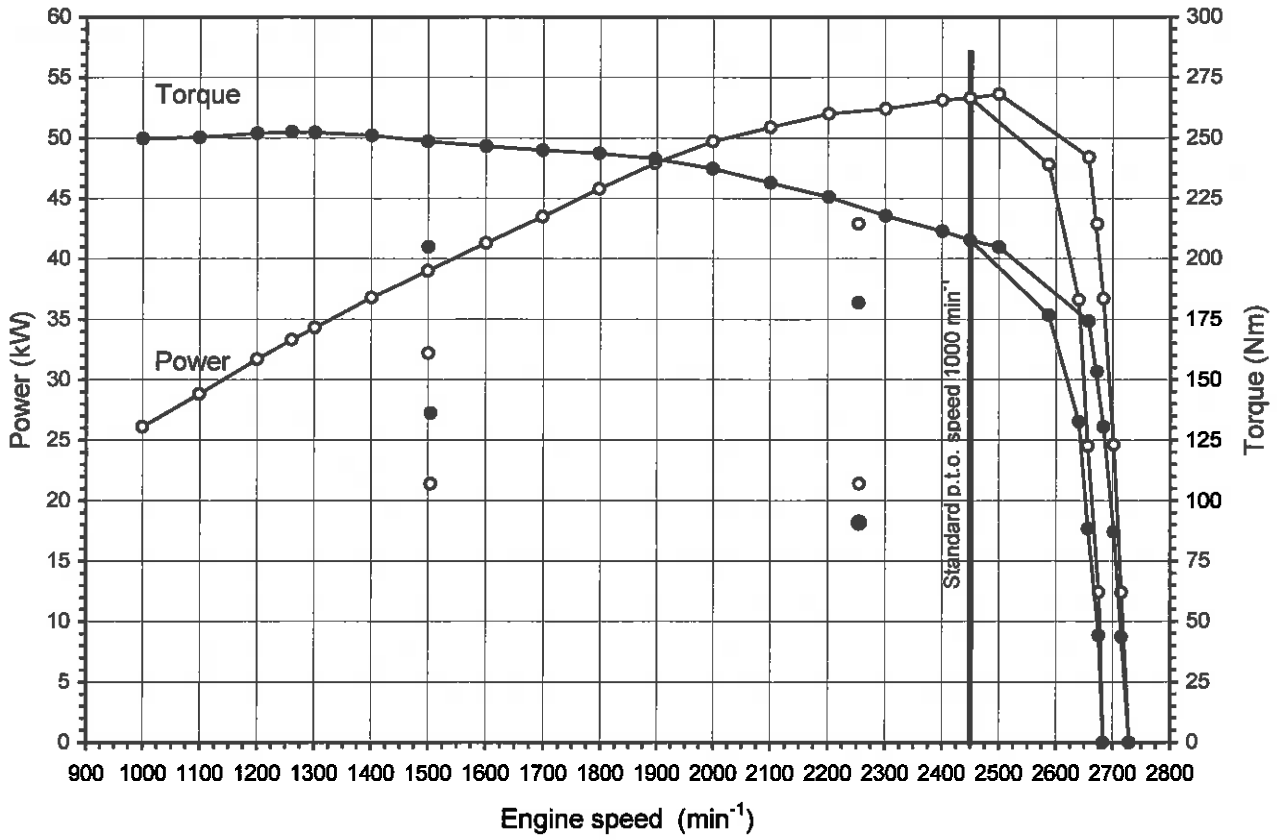
Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O.	Fan	Hourly		Specific	
kW	min^{-1}			kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - ONE-HOUR TEST							
53.6	2500	1021	3400	15.65	18.74	292	2.86
3.1.2 POWER AT RATED ENGINE SPEED							
53.6	2500	1021	3400	15.65	18.74	292	2.86
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000 ± 25 min^{-1})							
53.3	2450	1000	3331	15.49	18.55	291	2.87
3.1.4 PART LOADS 3.1.4.1 The torque corresponding to maximum power at rated engine speed							
53.6	2500	1021	3400	15.65	18.74	292	2.86
3.1.4.2 85% of torque obtained in 3.1.4.1							
48.4	2658	1085	3615	14.27	17.09	295	2.83
3.1.4.3 75% of torque defined in 3.1.4.2							
36.7	2684	1095	3650	11.37	13.62	310	2.69
3.1.4.4 50% of torque defined in 3.1.4.2							
24.6	2701	1103	3674	8.79	10.53	357	2.34
3.1.4.5 25% of torque defined in 3.1.4.2							
12.4	2715	1108	3693	6.62	7.93	534	1.56
3.1.4.6 unloaded							
0	2729	1114	3712	4.56	5.46	-	-

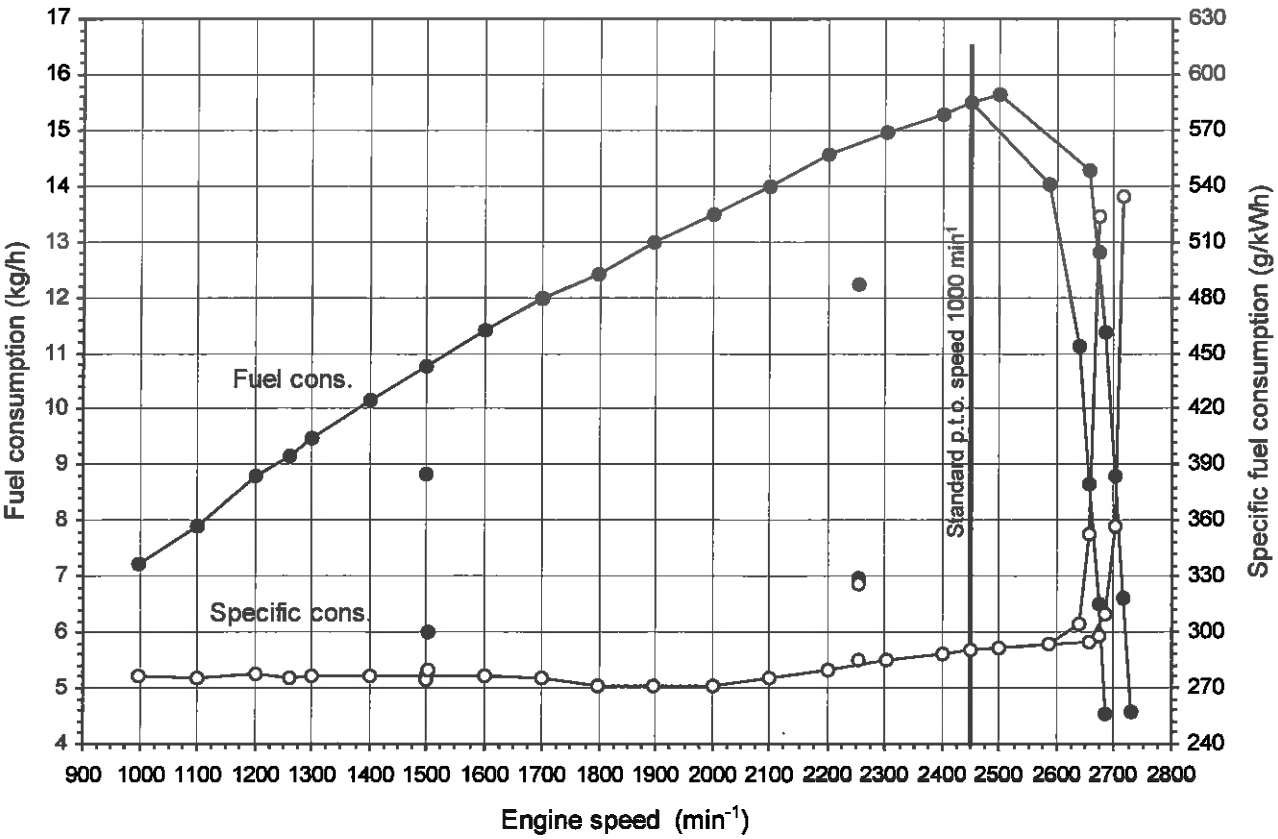
Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O.	Fan	Hourly		Specific	
kW	min^{-1}			kg/h	l/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 ± 25 min^{-1})							
3.1.5.1 The torque corresponding to maximum power available							
53.3	2450	1000	3331	15.49	18.55	291	2.87
3.1.5.2 85% of torque obtained in 3.1.5.1							
47.8	2588	1056	3519	14.03	16.80	294	2.85
3.1.5.3 75% of torque defined in 3.1.5.2							
36.6	2640	1078	3590	11.11	13.31	304	2.75
3.1.5.4 50% of torque defined in 3.1.5.2							
24.5	2656	1084	3612	8.64	10.35	353	2.37
3.1.5.5 25% of torque defined in 3.1.5.2							
12.4	2675	1092	3638	6.5	7.78	524	1.59
3.1.5.6 unloaded							
0	2683	1095	3649	4.53	5.43	-	-

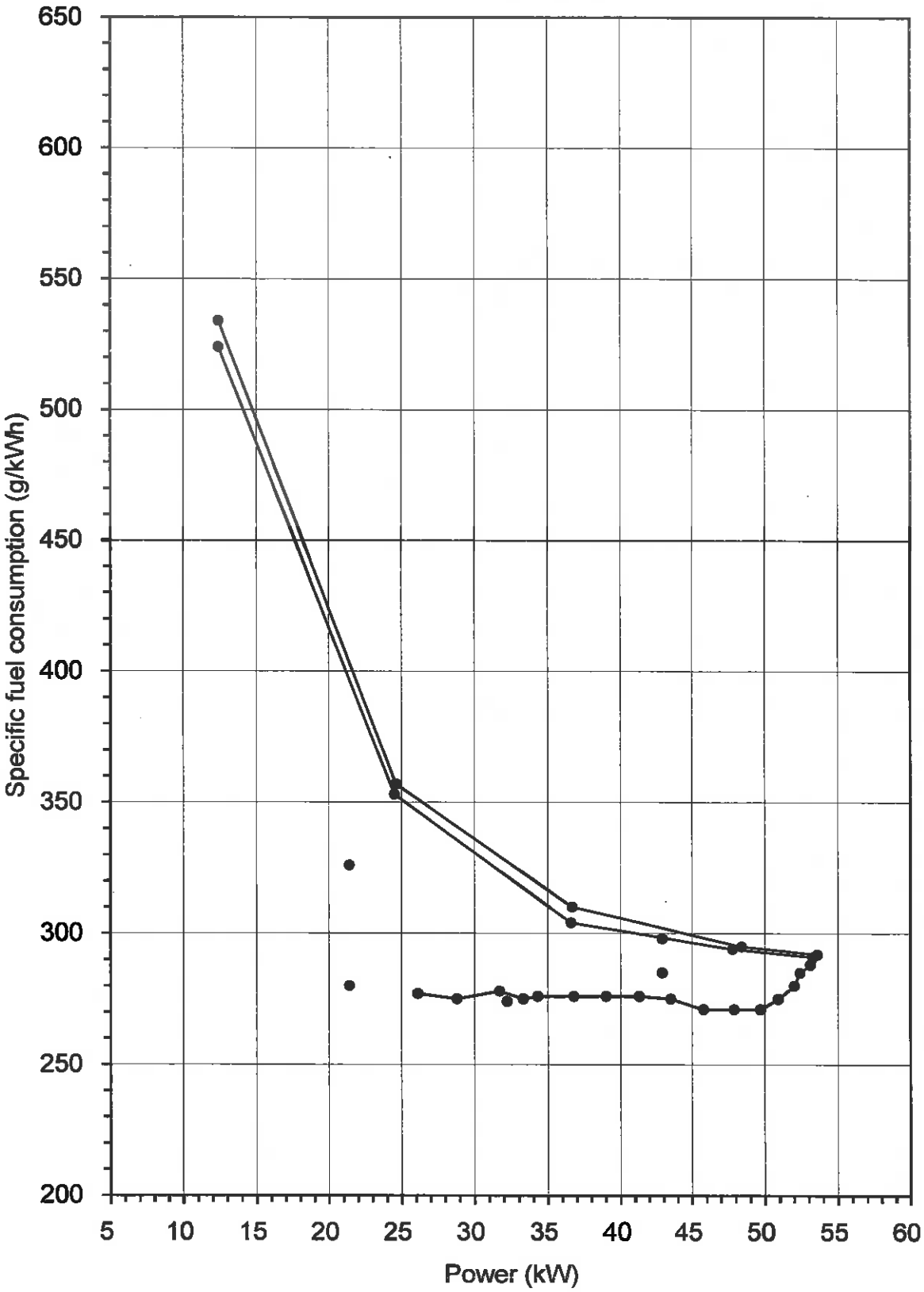
Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O.	Fan	Hourly		Specific	
kW	min^{-1}			kg/h	l/h	g/kWh	kWh/l
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEED							
3.1.6.1 maximum power at rated engine speed							
53.6	2500	1021	3400	15.65	18.74	292	2.86
3.1.6.2 80% of power obtained in 3.1.6.1 at maximum speed setting							
42.9	2672	1091	3634	12.8	15.33	298	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							
42.9	2253	920	3065	12.23	14.65	285	2.93
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
21.4	2255	920	3066	6.98	8.36	326	2.56
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
32.2	1501	612	2041	8.82	10.56	274	3.05
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
21.4	1505	614	2046	6.00	7.19	280	2.98

- No load maximum engine speed: 2729 min^{-1};
- Equivalent flywheel torque at rated engine speed: 204.8 Nm;
- Equivalent flywheel torque at 1-hour test: 204.8 Nm;
- Maximum equivalent flywheel torque: 252.4 Nm at 1261 min^{-1} of the engine.

Mean atmospheric conditions:	
Temperature	20 °C
Pressure	99.6 kPa
Relative humidity	62 %
Maximum temperatures:	
Coolant	83 °C
Engine oil	112 °C
Fuel	24 °C
Engine air intake	23 °C


Torque
Power
Power (kW)
Torque (Nm)
Standard p.t.o. speed 1000 min-1
Engine speed (min-1)


Fuel cons.
Specific cons.
Fuel consumption (kg/h)
Specific fuel consumption (g/kWh)
Standard p.t.o. speed 1000 min-1
Engine speed (min-1)


650
600
550
500
450
400
350
300
250
200
Specific fuel consumption (g/kWh)
5
10
15
20
25
30
35
40
45
50
55
60
Power (kW)

3.2 Hydraulic power and lifting force

- Date of tests: 19 March 2007.

3.2.1 *Hydraulic power test*

3.2.1.1 Hydraulic fluid data

- Hydraulic fluid type: AKROS MULTI FCT;
- Viscosity index (ISO 3448 + Corr. 1:1993): 160;
- Viscosity at 65°C: 29 mm^2/s.

3.2.1.2 Test results

	Pressure	Reservoir oil Temperature		Engine Speed	Flow rate	Power
		Min.	Max.			
	MPa	°C	°C	min^{-1}	l/min	kW
Rated engine speed				-		
3.2.1.2.1 Maximum pressure with relief valve open as measured at the coupler Pump stalled: No	18.0	61	63	2727		
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	16.2	62		2725	27.6	7.45
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair	1.7 14.4	61 62		2729 2725	45.1 41.4	- 9.91
3.2.1.2.4 Maximum available flow and maximum power from coupler pairs operating simultaneously	Simultaneous operation not available					

3.2.2 *Power lift test*

Linkage setting for test - see paragraph 1.6

		At the hitch point	On the frame
Height of lower hitch point above ground in down position	mm	200	136
Vertical movement			
without lifting forces	mm	695	854
with lifting forces	mm	651	781
Maximum corrected force exerted through full range	kN	22.05	18.76
Corresponding pressure of hydraulic fluid	MPa	16.2	16.2
Moment about rear-wheel axis	kNm	21.83	30.02
Maximum tilt angle of mast from vertical	degrees	-	9

Lifting heights relative to the horizontal plane including the lower link pivot points (mm)											
	-464	-400	-300	-200	-100	0	+100	+200	+251	+300	+317
Lifting forces (the values of force measured shall be corrected to correspond to a hydraulic pressure equivalent to 90% of the actual relief valve setting of the hydraulic lift system):											
at the hitch points (kN), corrected to 16.2 MPa											
	-	22.05	25.00	26.65	27.79	28.82	29.06	30.44	28.63	-	-
at the frame (kN), corrected to 16.2 MPa											
	18.76	20.03	21.58	22.44	22.83	22.39	22.20	22.15	-	22.00	21.82

3.3 Drawbar power and fuel consumption

- Date of tests: 9, 12, 13, and 14 March 2007;
- Type of track: concrete.

	Height of drawbar above ground mm	Tyre inflation pressure	
		Front kPa	Rear kPa
Unballasted	537	160	160
Ballasted	536	160	160

Gear and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)														
1S	10.4	29.67	1.26	2691	3660	14.9	1002	0.83	25	82	102	17	63	100.0
2S	14.3	31.25	1.65	2683	3649	14.9	807	1.03	25	82	102	17	63	100.0
3S	18.4	30.53	2.17	2679	3643	15.0	655	1.28	26	83	102	17	63	100.0
4S	22.0	27.61	2.87	2671	3633	15.0	587	1.42	26	82	104	17	63	100.0
1N	26.4	24.23	3.92	2662	3620	14.9	526	1.59	27	83	104	18	62	100.0
2N	34.4	23.40	5.29	2646	3599	13.2*	421	1.98	27	83	105	17	62	100.0
3N	45.8	23.20	7.11	2500	3400	6.5	343	2.44	28	82	108	18	63	100.0
4N	46.5	17.29	9.69	2500	3400	3.9	338	2.47	29	82	109	19	62	99.9
1F	45.9	12.91	12.82	2500	3400	2.6	341	2.45	29	82	111	19	62	100.0
2F	44.9	9.38	17.24	2500	3400	1.4	350	2.39	30	82	113	20	62	99.9
3F	43.9	6.89	22.91	2500	3400	0.7	359	2.33	30	83	111	21	63	99.9
4F	39.1	4.59	30.64	2500	3400	0.0	403	2.07	32	82	112	21	62	99.9

* Not possible to achieve steady condition at 15% slip

Gear and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.2 FUEL CONSUMPTION														
3.3.2.1 In selected gear at maximum power at rated engine speed														
3N	45.8	23.20	7.11	2500	3400	6.5	343	2.44	28	82	108	18	63	100.0
3.3.2.1.1 75% of pull corresponding to maximum power at rated engine speed														
3N	37.5	17.44	7.74	2642	3593	3.9	387	2.16	29	80	108	19	67	99.9
3.3.2.1.2 50% of pull corresponding to maximum power at rated engine speed														
3N	25.6	11.63	7.93	2663	3622	2.0	536	1.56	30	81	108	19	67	99.9
3.3.2.1.3. Next higher gear at reduced engine speed. same pull and travelling speed as in 3.3.2.1.1														
4N	37.6	17.45	7.77	1999	2719	3.8	332	2.52	29	81	109	19	67	99.9
3.3.2.1.4. Next higher gear at reduced engine speed. same pull and travelling speed as in 3.3.2.1.2														
4N	25.5	11.61	7.92	1991	2708	2.0	448	1.86	28	80	109	19	66	99.8
3.3.2.2 In selected gear nearest to 7.50 km/h at rated engine speed														
4N	46.5	17.29	9.69	2500	3400	3.9	338	2.47	29	82	109	19	62	99.9
3.3.2.2.1 75% of pull corresponding to maximum power at rated engine speed														
4N	37.6	12.96	10.45	2646	3599	2.3	384	2.18	29	81	109	19	66	99.9
3.3.2.2.2 50% of pull corresponding to maximum power at rated engine speed														
4N	25.7	8.64	10.72	2667	3627	1.1	515	1.62	28	82	110	19	66	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														
1F	37.5	12.94	10.43	2023	2751	2.3	331	2.52	28	82	111	19	66	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														
1F	25.9	8.68	10.74	2064	2807	1.1	434	1.92	29	82	111	18	66	99.8

Gear and range	Power	Drawbar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	min^{-1}	min^{-1}	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.3.3 OPTIONAL MAXIMUM POWER IN TESTED GEARS (ballasted tractor)														
1S	11.5	33.42	1.24	2699	3671	14.9	805	1.04	25	83	108	20	63	99.8
2S	13.7	30.15*	1.64	2691	3660	15.1	757	1.10	25	83	108	20	63	99.8
3S	16.6	27.38*	2.18	2679	3643	14.9	724	1.15	25	83	108	20	63	99.8
4S	20.9	25.48*	2.95	2675	3638	12.7**	595	1.40	25	83	109	21	63	99.8
1N	26.7	23.38*	4.11	2667	3627	11.0**	500	1.67	26	83	110	21	63	99.8
2N	34.8	22.80*	5.50	2646	3599	9.8**	415	2.01	26	82	110	21	63	99.8
3N	46.2	24.66	6.75	2500	3400	10.9	341	2.45	26	82	111	21	62	99.8
4N	47.5	17.41	9.82	2500	3400	2.8	332	2.52	26	82	111	21	62	99.8
1F	47.3	13.19	12.91	2500	3400	1.7	333	2.51	28	82	111	21	62	99.9
2F	47.0	9.78	17.32	2500	3400	0.5	335	2.49	28	82	112	21	62	99.9
3F	44.1	6.90	23.00	2500	3400	0.2	357	2.34	29	82	112	21	62	99.8
4F	37.0	4.35	30.61	2497	3396	0.0	426	1.96	29	82	112	21	62	99.8
3.3.4 FIVE HOUR TESTS														
3.3.4.1 FIVE HOUR TEST at 75% of pull at maximum power														
3N	40.1	18.48	7.81	2638	3588	2.8	363	2.30	28	82	112	23	63	99.8
3.3.4.2 FIVE HOUR TEST at pull corresponding to 15% wheelslip. with additional ballast: 160 kg														
2N	37.0	22.79	5.84	2650	3604	4.3	390	2.14	28	83	113	22	63	99.8

* Not possible to achieve maximum drawbar pull because of the tractor jumping behaviour
** Not possible to achieve steady condition at 15% slip

Oil consumption during ten hours duration of test 3.3.4.1 and 3.3.4.2: 38 g/h.

4. OPTIONAL TEST RESULTS

4.1 Turning area and turning circle

	Without brakes	
	Right-hand	Left-hand
	m	m
Radius of turning area	5.45	5.41
Radius of turning circle	5.22	5.18

4.2 Location of centre of gravity

Height above ground: 870 mm
Distance from the vertical plane containing the axis of the rear-wheels: 995 mm
Distance from the median longitudinal plane to the left of the tractor: 11 mm
Angle of suspension of the tractor: 20 °

4.3 Braking

Date of tests: 15 March 2007.

4.3.1 *Cold service braking device test*

	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking the wheels
	km/h	kN	m/s^2	m
Ballasted tractor	33.4	0.10	1.42	30.2
	33.4	0.16	2.15	20.0
	33.0	0.23	2.85	14.7
	33.1	0.27	3.32	12.7
	33.1	0.30	3.57	11.8
Unballasted tractor	33.0	0.09	1.44	29.1
	33.1	0.15	2.19	19.3
	33.2	0.20	2.89	14.7
	33.3	0.25	3.43	12.5
	33.2	0.28	3.77	11.3

4.3.1 *Cold service braking device test* (continued)

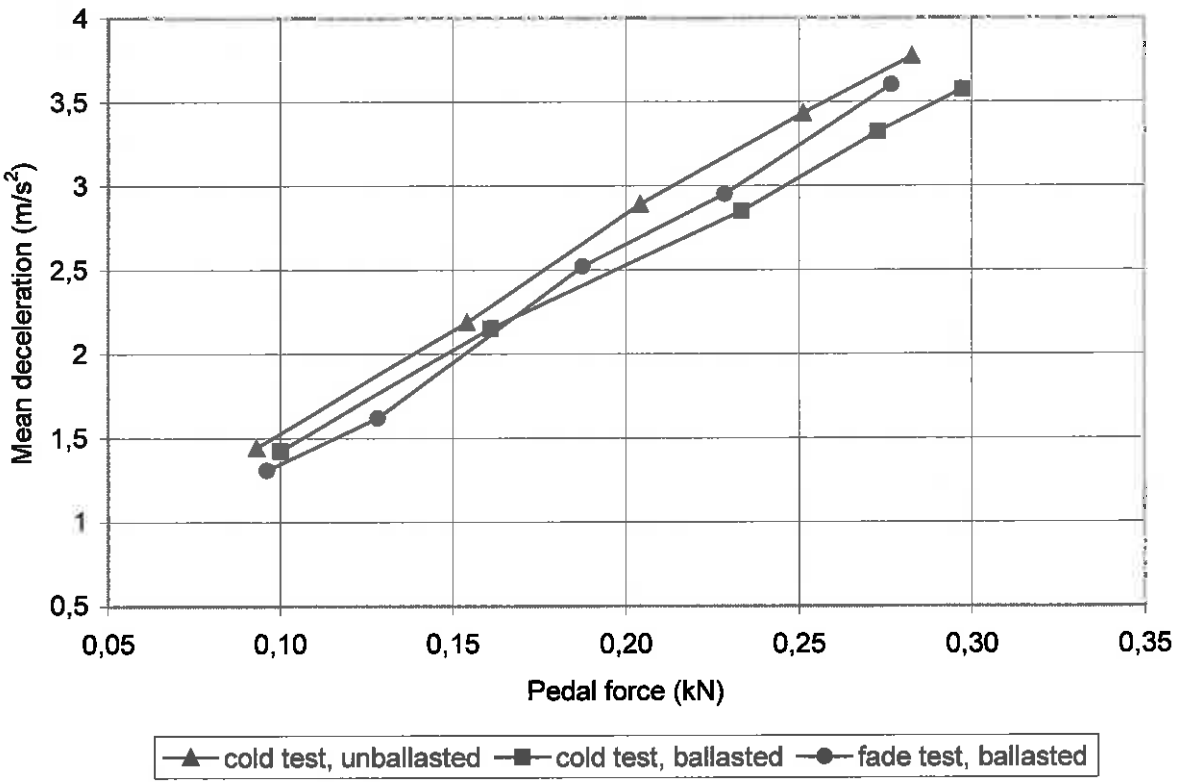
- Maximum deviation of tractor from its original course: none;
- Abnormal vibration: none;

4.3.2 *Fade test*

	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking the wheels
	km/h	kN	m/s^2	m
Ballasted tractor	32.9	0.10	1.31	31.9
	33.2	0.13	1.62	26.2
	33.0	0.19	2.52	16.7
	33.2	0.23	2.95	14.4
	33.2	0.28	3.60	11.8

- Maximum deviation of tractor from its original course: none;
- Abnormal vibration: none;
- Brake heating method: heated by towing of the tractor for 1 km.

Service brake test



4.3.3 *Parking brake device test*

	Ballasted tractor on 18% slope	
	Uphill	Downhill
	kN	kN
Braking device control force	0.12	0.12

4.4 Measurement of external noise level

- Date of test: 15 March 2007;
- Type of sound level meter: BRÜEL & KJÆR model 2231;
- Type of track: concrete.

Gear	Travelling speed before acceleration	Sound level
	km/h	dB(A)
4F	25.2	89.0

5. REPAIRS: none.

6. REMARKS: none.

TEST ENGINEER
(Dr. Carlo BISAGLIA)

HEAD OF ISMA
(Ing. Giovanni SANTORO)