ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Report on test in accordance with the OECD Standard Code I (Full Code) for the Official Testing of Agricultural and Forestry Tractor



SAME SILVER 90 VDT

OECD No. **1663** Full Code

with 60 forward and 60 reverse speeds
40 km/h four-wheel drive agricultural tractor

Manufactured by:

SAME DEUTZ-FAHR Group S.p.A.
V.le F. Cassani 15
24047 Treviglio BG
Italy

Date of OECD approval: 30 April 1997
Period of test: December 1996 - February 1997

ISMA Via Milano 43 24047 Treviglio BG Italy
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Table of contents

SPECIFICATION OF TRACTOR 5

TEST CONDITIONS 21

TEST RESULTS

1. Main power take-off performance 25
2. Hydraulic power and lifting force 29
3. Drawbar performance 31
4. Turning area and turning circle 35
5. Location of centre of gravity 35
6. Braking performance 36
7. Measurement of external noise level 37
8. Repairs 37
9. Remarks 37

APPENDIX

Measurement of noise in the protective structure 38

All stated dimensions and tests refer to tyre size 16.9R24 at front and 18.4R34 at rear, as well as to track widths 1700 mm at front and 1600 mm at rear.

Tractor manufacturer

- Name:	SAME DEUTZ-FAHR Group S.p.A.;
- Address:	V.le F. Cassani 15, 24047 Treviglio BG, Italy;
- Location of tractor assembly:	Treviglio BG, Italy;
- Submitted for test by:	the manufacturer;
- Selected by:	the manufacturer with the agreement of ISMA;
- Place of running in:	Treviglio BG, Italy;
- Duration of running in:	50 hours,
- Location of test:	ISMA, Via Milano 43, Treviglio BG, Italy.

SPECIFICATION OF TRACTOR

TRACTOR

- Make:	SAME;
- Model:	SILVER 90 VDT, with 60 forward and 60 reverse speeds, 40 km/h version;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	2183;
- First serial number:	1001.

ENGINE

- Make:	SAME DEUTZ-FAHR Group;
- Model:	1000.4 AT2;
- Type:	air cooled 4-stroke diesel, direct injection, turbocharged;
- Serial number:	2141.

Cylinders

- Number and disposition:	4, vertical, in-line;
- Bore x stroke:	105 x 115.5 mm;
- Capacity:	4000 cm^3;
- Compression ratio:	16:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	without liners.

Supercharging:

- Make:	GARRET;
- Model:	TA 31-30;MI 82
- Type:	exhaust driven supercharger;
- Supercharging pressure:	60 kPa.

Fuel system

- Fuel feed system:	AC corone fuel feed pump;
- Make, model and type of fuel filter:	FIAMM FNA 166/20;
- Capacity of fuel tank:	150 dm^3;
- Make, model and type of injection pump:	BOSCH PFR 1K 90 A 517, immersed, one per cylinder in line;
. serial number:	without serial number;
- Manufacturer's production setting of injection pump:	
. flow rate:	62 ± 2 mm^3/stroke at rated speed and full load corresponding 18.70 dm^3/h;
. timing:	16° before TDC;
- Make, model and type of injectors:	BOSCH DLLA 150 S 925 multihole injection nozzles;
- Injection pressure:	18 ± 1 MPa.

Governor

- Make:	SAME DEUTZ-FAHR Group;
- Model:	007.0992.4;
- Type:	electronic;
- Governor range of engine speed:	from 650 to 2700 rev/min;
- Rated engine speed:	2500 rev/min.

Air cleaner

- Pre-cleaner	
. make:	DONALDSON;
. model:	P 01-6330;
. type:	cyclone;
. location:	above the bonnet.
- Main filter	
. make:	DONALDSON;
. model:	FLG 08-0524;
. type:	dry paper element filter with replaceable cartridge;
. location:	front of engine;
. air intake location:	above bonnet;
- Maintenance indicator:	with the warning lamp on the dashboard.

Lubrication system

- Type of feed pump:	forced feed from gear pump;
- Type of filter:	FIAMM FT 4803;
- Oil specifications:	see page 23.

Cooling system

- Type and detail:	air cooling with axial blower;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	13;
- Fan diameter:	320 mm;
- Type of temperature control:	none.

Starting system

- Make:	ISKRA;
- Model:	AZ 1349 12 V;
- Type:	electromagnetic engagement;
- Starter motor power rating:	3.0 kW;
- Safety device:	electrical lockout on clutch and PTO controls;
- Starting system for low temperatures:	none.

Electrical equipment

- Voltage:	12 V;
- Generator	
. make:	ISKRA;
. model:	AAK 5115 14 V 85 A;
. type:	alternator;
. power:	85 A;
- Battery:	1lead acid;
. capacity:	180 Ah at 20 hours rating.

Exhaust system

- Make:	SAME DEUTZ-FAHR Group;
- Model:	DGM SA 1554;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, vertical position, under side bonnet;
- Height of outlet above ground:	2715 mm.

ISTITUTO SPERIMENTALE PER
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TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.23;
- Type:	single disk dry clutch;
- Number of plates:	1;
- Plates diameter:	330 mm;
- Control system:	hydraulic, operated by pedal.

Gear box

The tractor can be fitted alternatively with a "normal" or a "heavy duty" gear box, slightly differing in their dimensions (see report No. CSD 1385 OECD).
The test tractor was fitted with the "heavy duty" version.

. make:	SAME DEUTZ-FAHR Group;
. model:	617.31;
. type:	heavy duty gear box, mechanical synchromesh speed change gear; 5 speed with 4 ranges of speeds (C/S/N/F), one electrohydraulic reduction gear (low/medium/high), and one reverse group;
. number of gears:	60 forward and 60 reverse.
- Available options:	5 speed with 3 ranges of speeds (S/N/F), one electrohydraulic reduction gear (low/medium/high), and one reverse group;
. number of gears:	45 forward and 45 reverse.

Rear axle and final drives

- Make:	own make;
- Model:	617.44;
- Type:	bevel gear differential and epicyclic final drive.

Rear differential lock

- Make:	own make;
- Model:	617.47;
- Type:	electrohydraulic;
- Control system:	engaged or disengaged by button.

Front axle and final drives

- Make: own make;
- Model: 617.43;
- Type: original SAME DEUTZ-FAHR system with central shaft, bevel gear drive, differential and epicyclic final drives.

Front differential lock

- Make: own make;
- Model: 617.46;
- Type: electrohydraulic;
- Control system: engaged or disengaged by button.

Total rations and speed

Gear	Group	Number of engine revolution for one revolution of the driving wheels			Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h		
		Low	Medium	High	Low	Medium	High
FORWARD							
1	Creep	2466.0	2061.3	1691.3	0.29	0.35	0.43
2	Creep	1664.9	1391.4	1141.6	0.44	0.52	0.64
3	Creep	1251.3	1045.8	858.0	0.58	0.69	0.85
4	Creep	948.6	792.8	650.3	0.77	0.92	1.12
5	Creep	714.7	597.3	490.1	1.02	1.21	1.48
1	Slow	725.5	606.3	497.5	1.00	1.20	1.46
2	Slow	489.7	409.3	335.8	1.48	1.77	2.16
3	Slow	368.1	307.6	252.4	1.97	2.36	2.88
4	Slow	279.0	233.2	191.3	2.60	3.11	3.79
5	Slow	210.2	175.7	144.1	3.45	4.13	5.04
1	Normal	280.1	234.1	192.1	2.59	3.10	3.78
2	Normal	189.1	158.0	129.6	3.84	4.59	5.60
3	Normal	142.0	118.7	97.4	5.11	6.11	7.45
4	Normal	107.7	90.0	73.8	6.74	8.06	9.83
5	Normal	81.1	67.8	55.6	8.95	10.70	13.05
1	Fast	94.1	78.6	64.5	7.71	9.23	11.25
2	Fast	63.5	53.1	43.5	11.43	13.67	16.68
3	Fast	47.7	39.9	32.7	15.21	18.19	22.19
4	Fast	36.2	30.2	24.8	20.05	24.03	29.26
5	Fast	27.3	22.8	18.7	26.58	31.83	38.81

(*) Calculated with a tyre dynamic radius index of 770 mm (ISO 4251/1-1992).

Total rations and speed (continued)

Gear	Group	Number of engine revolution for one revolution of the driving wheels			Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h		
		Low	Medium	High	Low	Medium	High
REVERSE							
1	Creep	2368.0	1979.4	1624.1	0.31	0.37	0.45
2	Creep	1598.8	1336.1	1096.3	0.45	0.54	0.66
3	Creep	1201.6	1004.3	823.9	0.60	0.72	0.88
4	Creep	910.9	761.3	624.5	0.80	0.95	1.16
5	Creep	686.3	573.6	470.6	1.06	1.27	1.54
1	Slow	696.7	582.2	477.7	1.04	1.25	1.52
2	Slow	470.2	393.0	322.5	1.54	1.85	2.25
3	Slow	353.5	295.4	242.4	2.05	2.46	2.99
4	Slow	267.9	223.9	183.7	2.71	3.24	3.95
5	Slow	201.9	168.7	138.4	3.60	4.30	5.24
1	Normal	269.0	224.8	184.5	2.70	3.23	3.93
2	Normal	181.6	151.7	124.5	4.00	4.78	5.83
3	Normal	136.4	114.0	93.5	5.32	6.37	7.76
4	Normal	103.4	86.4	70.9	7.02	8.40	10.24
5	Normal	77.9	65.1	53.4	9.32	11.15	13.59
1	Fast	90.4	75.5	61.9	8.03	9.61	11.72
2	Fast	61.0	51.0	41.8	11.90	14.23	17.37
3	Fast	45.8	38.3	31.4	15.84	18.94	23.11
4	Fast	34.8	29.0	23.8	20.88	25.02	30.47
5	Fast	26.2	21.9	18.0	27.68	33.15	40.41

(*) Calculated with a tyre dynamic radius index of 770 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.3072.

POWER TAKE-OFF

Main power take-off proportional to engine speed

- Type: independent, at rear of tractor, in tractor's median plane, engaged or disengaged by push botton, driven by multiplate wet clutch independent of travel clutch;
- Number of shafts: 1;
- Method of changing power take-off shaft ends: it is possible, through 6 screws, to mount one PTO shaft end, 35 mm diameter, 6 splines, ISO 500-1991, type 1or 35 mm diameter, 21 splines, ISO 500-1991, type 2;
- Method of changing speed: combination of internal and external hand lever;
- Height above ground: 785 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 480 mm;
- Direction of rotation (viewed facing driving end): clockwise.

PTO type	PTO speed rev/min	Engine speed rev/min	Engine/PTO transmission ratio	Power restriction kW
540	540 614	2198 2500	4.0714	-
775	775 786	2463 2500	3.1791	-
1000	1000 1020	2450 2500	2.4500	-
1300	1300 1307	2487 2500	1.9130	-

Secondary power take-off proportional to engine speed
(optional, fitted on tested tractor)

- Type:	independent, at front of tractor, in tractor's median plane, engaged or disengaged by push botton, driven by multiplate wet clutch independent of travel clutch;
- Number and type of shafts:	1, ISO 500-1991, type 1 (35 mm dia, 6 splines)
- Height above ground:	750 mm;
- Distance from the median plane of the tractor:	0 mm;
- Distance forward front axle:	700 mm;
- Ratio of rotation speeds (engine speed/PTO speed):	2.4;
- Direction of rotation (viewed facing driving end):	anticlockwise.

Power take-off proportional to ground speed
(optional, not fitted on tested tractor)

- Type:	independent, not adjustable to 540-1000 rev/min, location at rear of tractor, in tractor's median plane, below the mean PTO, engaged or disengaged by hand lever at the left hand side of the seat;
- Number and type of shafts:	1, ISO 500-1991, type 1 (35 mm dia, 6 splines);
- Method of changing power take-off shaft ends:	none;
- Direction of rotation with forward gear engaged:	clockwise;
- Travelling distance for one revolution of power take-off shaft:	0.18 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels:	25.666.

REAR POWER LIFT

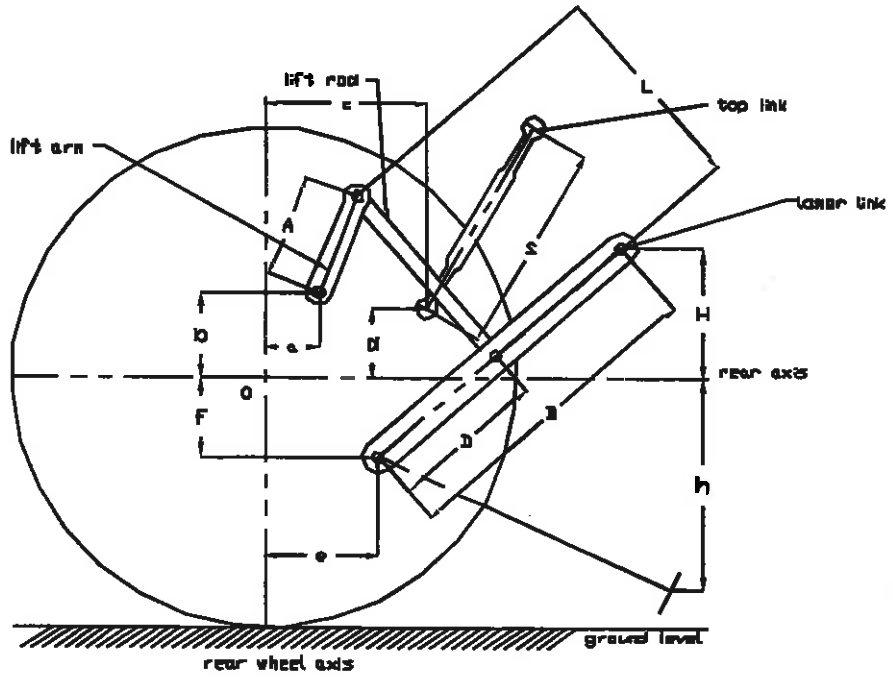
- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.39 electronic-hydraulic power lift, optional fitted on tested tractor;
- Type:	load sensing;
- Type of hydraulic system:	open centre system;
- Number and type of cylinders:	1 internal single-acting;
- Type of lock for transport:	electro-hydraulic;
- Relief valves pressure setting:	18.0 ± 0.5 MPa;
- Opening pressure of anti-shock valve:	21.0 ± 0.5 MPa;

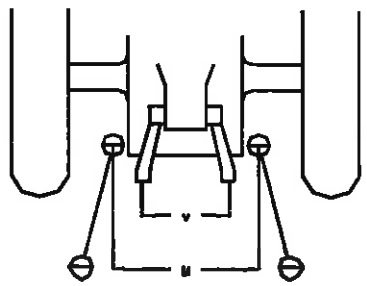
- Lift pump
  . make: BOSCH;
  . type: hydraulic rotary pumps, driven by engine shaft;
- Transmission between pump and engine: mechanical;
- Number and type of filters: 1, replaceable paper cartridge;
- Oil capacity: 71 dm^3;
- Site of oil reservoir: gear box;
- Number, type and location of tapping points: 4 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 15 dm^3.

- Recommended oil: see page 23.

Rear three-point linkage

- Category (ISO 730/1-1990): 2;
- Category adapter: none.





REAR LINKAGE GEOMETRY

REAR POWER LIFT (continued)

Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	280	280
Length of lower links	(B)	840	840
Distance of lift arm pivot point from rear wheel axis (behind)			
- horizontally	(a)	90	90
- vertically	(b)	402	402
Horizontal distance between the 2 lower link points	(u)	460	460
Horizontal distance between the 2 lift arm end points	(v)	580	580
Length of upper link	(S)	from 620 to 845	640
Distance of upper link pivot point from rear wheel axis			
- horizontally	(c)	350	350
- vertically	(d)	220-285-350	285
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	150	150
- vertically	(f)	220	220
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	420	420
Length of lift rods	(L)	from 700 to 823	785

Height of lower hitch points relative to the rear wheel axis:

Length of lift rods	(L)	700	823	785
Linkage distance of lift rods	(D)	420	420	420
Lowest position	(h)	380	656	570
Highest position	(H)	286	216	140
Height above ground of lower hitch points when locked in transport position (*)				910

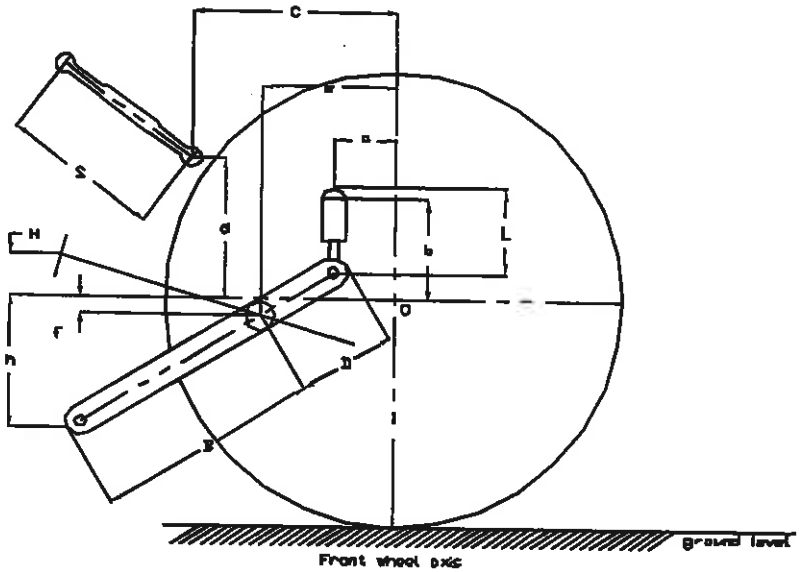
(*) *Assuming the dynamic radius index = 770 mm (ISO 4251/1-1992)*

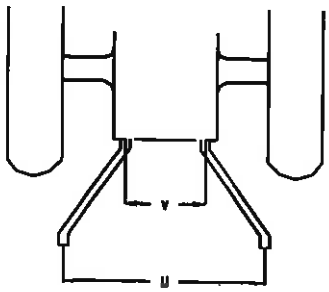
FRONT POWER LIFT (optional, fitted on tested tractor)

- Make:	SAME DEUTZ-FAHR Group;
- Model:	ORIGINAL SAME SYSTEM 617.59 FRONT;
- Type and number of cylinders:	2 at single acting;
- Type of lock for transport:	none;
- Relief valve pressure setting:	18.0 ± 0.5 MPa;
- Opening pressure of anti-shock valve:	21.0 MPa;
- Lift pump type:	hydraulic rotary pump, driven by engine shaft, pump make BOSCH;
- Trasmission between pump and engine:	mechanical;
- Type and number of filters:	1, repeceable paper cartridge;
- Change interval:	2400 hrs or when the filter clogging warning lamp is lighted;
- Oil capacity:	71 dm^3;

Front three-point linkage

- Category (ISO 730/1-1990):	2;
- Category adapter:	none.





FRONT LINKAGE GEOMETRY

FRONT POWER LIFT

Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lower links	(B)	750	750
Distance of cylinders pivot point from front wheel axis (forward)			
- horizontally	(a)	300	300
- vertically	(b)	334	334
Horizontal distance between the 2 lower link points	(u)	860	860
Horizontal distance between the 2 lift arm end points	(v)	300	300
Length of upper link	(S)	from 500 to 770	578
Distance of upper link pivot point from front wheel axis			
- horizontally	(c)	662 - 677	677
- vertically	(d)	177 - 437	437
Distance of upper link pivot point from front wheel axis			
- horizontally	(e)	507	507
- vertically	(f)	60	60
Distance of lower link pivot point to cylinders pivot points on lower links	(D)	214	214
Length of cylinders			
- in low position	(L)	325	325
- in high position	(L)	500	500
Height of lower hitch points relative to the front wheel axis			
- in low position	(h)	445	445
- in high position	(H)	180	180
Height above ground of lower hitch points (*)			800

(*) *Assuming the dynamic radius index = 620 mm (ISO 4251/1-1992)*

SWINGING DRAWBAR: optional, not fitted on tested tractor

HOLED DRAWBAR:

- Number of holes:	7;
- Distance between holes:	100 mm;
- Hole diameter:	28.5 mm;
- Thickness x width of the drawbar:	30 x 80 mm;
- Height above ground,	
. min:	136 mm;
. max:	1089 mm;
- Horizontal distance behind power take-off shaft end:	555 mm;
- Diameter of the pinhole:	28 mm.

TRAILER HITCH

- Type:	DGM-GA 2107 C 6t V1.5;
- Hole diameter:	28 mm;
- Height above ground	
. min:	420 mm;
. max:	1105 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	625 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	375 mm below, 255 mm above;
. horizontally:	200 mm;
- Maximum vertical permissible load:	14.7 kN.

STEERING

- Specification:	hydrostatic steering with BOSCH hydraulic gear pump, two simple acting ram acting directly on front axle.
- Make:	DANFOSS;
- Model:	ORBITROLL OSPC 80 OR;
- Type:	hydrostatic;
- Working pressure:	15 MPa;
- Recommended oil:	see page 23.

BRAKES

Service brake

- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.54;
- Type:	oil bath disc, total 4 discs, 2 at front (1 per wheel) and 2 at rear (1 per wheel), all mounted before the final drive;
. front disc diameter:	224 mm,
. rear disc diameter:	280 mm,
. material:	FRENDO HDT 303 lining material;
- Method of operation:	hydraulically actuated with 2 pedals;
- Trailer braking take-off:	hydraulic brake system.

Parking brake

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

Steering brake

- Metod of operation:	divided pedal of service brake, for normal use locked together.

STEERING WHEELS

- Number:	2;
- Location:	at front;
- Track widths	
. min:	1600 mm:
. max:	1900 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

DRIVING WHEELS

- Number:	4;
- Location:	two at front and two at rear;
- Rear track widths	
. min:	1600 mm;
. max:	1900 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

WHEELBASE: 2373 mm.

PROTECTIVE STRUCTURE

Specifications

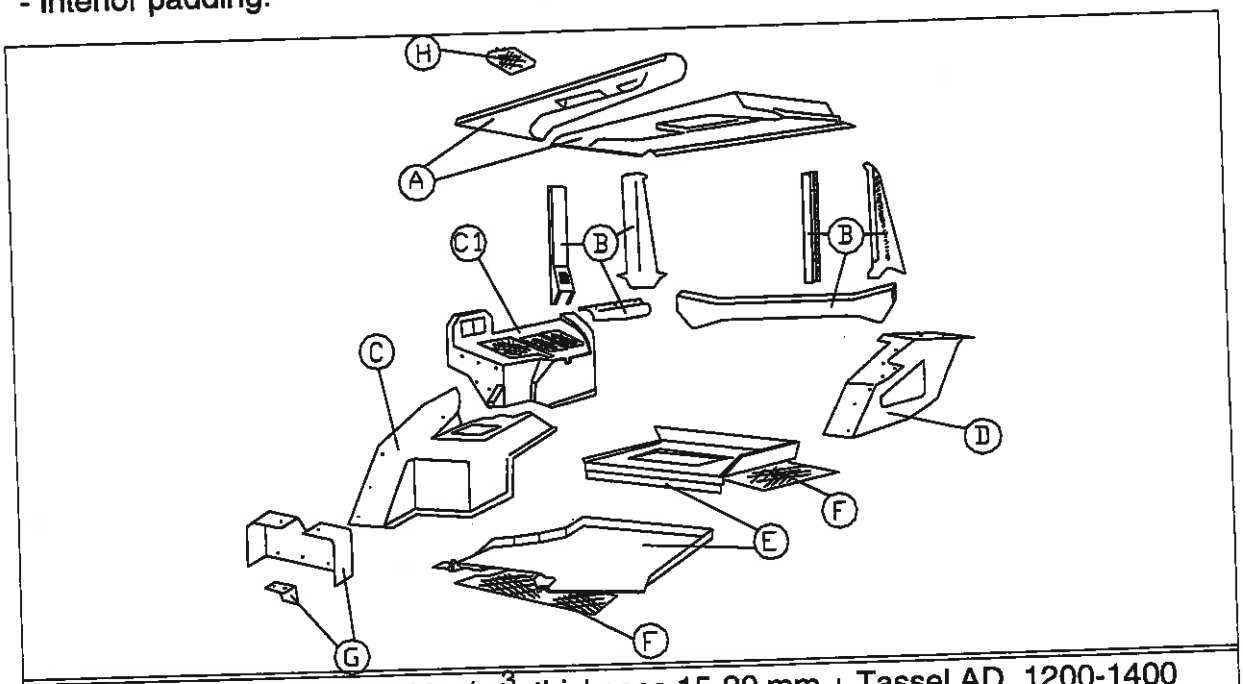
Seat	Gear box	OECD approval number
GRAMMER LS 95 H 1 / 90 AR	"heavy duty"	CSD 1385/227
	"normal"	CSD 1385/223
GRAMMER DS 83 H / 90 A	"heavy duty"	CSD 1385/225
	"normal"	CSD 1385/221
GRAMMER DS 85 H / 90 A	"heavy duty"	CSD 1385/226
	"normal"	CSD 1385/222
KAB XH 2 / U	"heavy duty"	CSD 1385/228
	"normal"	CSD 1385/224

- Date of approval: 21 December 1993;
- Location and country of test of protective structure: Istituto di Ingegneria Agraria, Università degli Studi di Milano, Italy;
- Mass used for calculating impact energies and crushing forces: 4500 kg;
- Wheelbase used for calculating impact energy at the rear: 2633 mm;
- Make: S+L+H;
- Model: C 37;
- Type: cab, not tiltable;
- Manufacturer's name and address: SAME DEUTZ-FAHR GROUP S.p.A., Viale F. Cassani 15, 24047 Treviglio BG, Italy.

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Details of materials used for sound proofing the protective structure

- Glass: security glass, thickness 5 and 6 mm;
  . type: 43 R - 000589 (doors, windscreen, windows);
  . model: OSLV, parallelogram type;
- Windscreen wipers: COBO E3;
- Direction indicators: BORLETTI;
- Heating and ventilation system: rubber GMTA 20 - 70 P, SP 550 and PEC 75.
- Draught proofing: see below;
- Interior padding:



A) Porous material, 50-60 g/m^3, thickness 15-20 mm + Tassel AD, 1200-1400 g/m^3, thickness 6 mm + textile fiber + TNT.

B) PUR, low density, 250-300 g/m^3, coated with expanded laminated PVC.

C) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm, and bitumen sheet.

C1) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm.

D) Tassel AD, 1400-1600 g/m^3 + PVC, thickness 12 + 22 mm.

E) Rubber, 2-3 kg/m^3, thickness 5 mm + polyurethan foam, thickness 20 mm + thermoplastic film.

F) Bitumen, thickness 6 mm.

G) Rubber + Tassel AB x AD, 800-1000 g/m^3 + Tassel AB x BD, 1400 g/m^3, thickness 23 mm.

H) Polyurethan foam, thickness 30 mm.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

DRIVER'S SEAT: four seats available;

Make	Model	Type of suspension	Type of damping	Range of adjustment	
				vertical	longitudinal
GRAMMER	LS95 H 1 / 90 AR	pneumatic	hydraulic	60 mm	150 mm
GRAMMER	DS 83 H / 90 A	mechanical	hydraulic	60 mm	150 mm
GRAMMER	DS 85 H / 90 A	mechanical	hydraulic	60 mm	150 mm
KAB	XH 2 / U	mechanical	hydraulic	60 mm	150 mm

PASSENGER'S SEAT : none.

LIGHTING
Lighting system in accordance with EEC 78/933

	Height above ground of centre mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
Headligths	1210	160 x 100	210
Front parking lights	1703	110 x 35	850
Front direction indicator	1738	110 x 35	850
Rear parking lights	1713	120 x 65	860
Rear direction indicator	1690	75 x 110	935
Brake lights	1690	75 x 110	740
Reflectors 1st pair	1658	120 x 45	860
2nd pair	720	Ø 80	460

TEST CONDITIONS

OVERALL DIMENSIONS

	Length		Width		Height at top of	
	with front power lift mm	without front power lift mm	minimum mm	maximum mm	protective structure mm	exhaust silencer mm
Unballasted	4813	4123	2240	2500	2680	2715
Ballasted	4883	4553	2240	2500	2680	2715

- Ground clearance: 415 mm below front axle;

ISTITUTO SPERIMENTALE PER
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SEZIONE DI TREVIGLIO

TRACTOR MASS (with full fuel tank, cab and front power lift)

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1965	1990	2530	2555
Rear	2155	2205	2220	2270
Total	4120	4195	4750	4825

BALLAST

	Weights		Water
	Number	Total mass kg	kg
Front	1	375	-
Rear wheels	6	255	-

TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres		
make	PIRELLI	PIRELLI
model	TM 700	TM 700
dimensions	16.9R24	18.4R34
ply rating	-	-
load index/speed index	134 A8	144 A8
type	radial	radial
maximum load (tyre manufacturer's)	1373 daN	2206 daN
inflation pressure (tyre manufact.'s)	160 kPa	160 kPa
dinamic radius index	620 mm	770 mm
Chosen track width	1700 mm	1600 mm
Technically permissible axle load	2747 daN	4415 daN
Other tyres available	14.9R24 16.9R24 16.9R24	16.9R24 520/70R34 18.4R34

OILS AND LUBRICATION

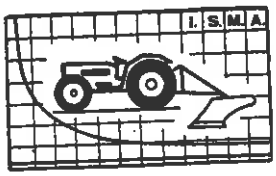
Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	9	150	300
Gear box with rear axle and final drives, hydraulic system, steering	71	1200	2400(*)
Front PTO transmission	2.5	1200	-
Front axle / final drives	10.5 / 5	1200	-
Brakes	2.5	-	-

(*) *Or when the warning lamp is lighted*

Specifications

	Recomended	Using during test
Engine oil Type Viscosity Classification	AKROS MOTOR OIL 12.5 cSt API SE - CD	AKROS MOTOR OIL 12.5 cSt API SE - CD
Transmission oil used in Gear box Front PTO transmission Front axle and final drives Rear axle and final drives Type Viscosity Classification	AKROS MULTI 11.5 cSt API GL 4	AKROS MULTI 11.5 cSt API GL 4
Steering oil Type Viscosity Classification	AKROS MULTI 11.5 cSt API GL 4	AKROS MULTI 11.5 cSt API GL 4
Braking oil Type Viscosity Classification	AKROS MATIC 6.7 cSt API GL 4	AKROS MATIC 6.7 cSt API GL 4



ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Grease

- Type: AKROS GREASE T2;
- Number of lubrication points: 10.

FUEL

- Type: AGIP DIESEL, DIN 51601;
(in accordance with the national standard)
- Density at 15 °C: 0.838 g/cm^3.

TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 6 December 1996, ISMA, Treviglio BG, Italy;
- Type of dynamometer: ZÖLLNER 350 AC.

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - TWO-HOUR TEST						
62.4	2500	1020	18.70	15.67	251	3.33
1.2 POWER AT RATED ENGINE SPEED						
62.4	2500	1020	18.70	15.67	251	3.33
1.3 STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
61.8	2450	1000	18.13	15.19	246	3.41
1.4 PART LOADS						
1.4.1 The torque corresponding to maximum power at rated engine speed						
62.4	2500	1020	18.70	15.67	251	3.33
1.4.2 85% of torque obtained in 1.4.1						
54.4	2568	1048	17.36	14.55	267	3.14
1.4.3 75% of torque defined in 1.4.2						
41.5	2609	1065	14.39	12.06	291	2.88
1.4.4 50% of torque defined in 1.4.2						
28.0	2644	1079	11.93	10.00	357	2.35
1.4.5 25% of torque defined in 1.4.2						
14.1	2668	1089	8.96	7.51	531	1.58
1.4.6 unloaded						
0	2697	1101	6.21	5.2	-	-

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
1.5.1 The torque corresponding to maximum power available						
61.8	2450	1000	18.13	15.19	246	3.41
1.5.2 85% of torque obtained in 1.5.1						
54.3	2536	1035	16.98	14.23	262	3.20
1.5.3 75% of torque defined in 1.5.2						
41.3	2568	1048	14.46	12.12	294	2.86
1.5.4 50% of torque defined in 1.5.2						
27.9	2601	1062	11.56	9.69	348	2.41
1.5.5 25% of torque defined in 1.5.2						
14.1	2625	1071	8.83	7.40	526	1.59
1.5.6 unloaded						
0	2650	1082	6.03	5.05	-	-

- No load maximum engine speed: 2697 rev/min;
- Equivalent flywheel torque at rated engine speed: 238.3 Nm;
- Equivalent flywheel torque at 2-hour test: 238.3 Nm;
- Maximum equivalent flywheel torque: 307.4 Nm at 1470 rev/min of the engine.

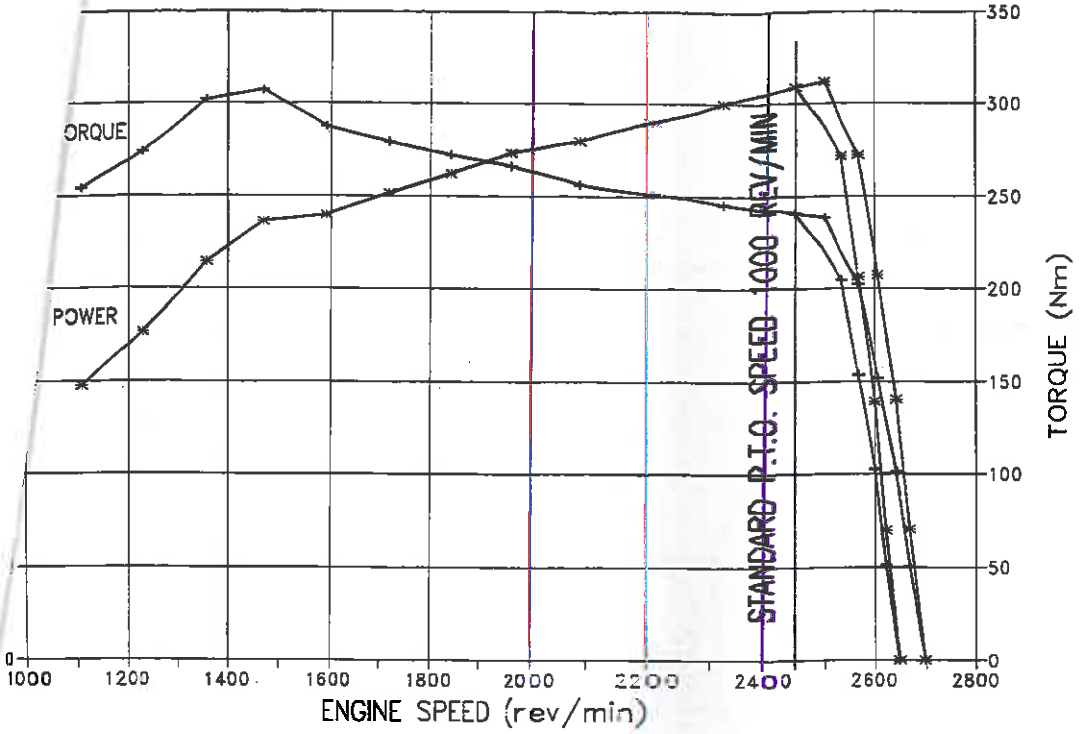
- Mean atmospheric conditions

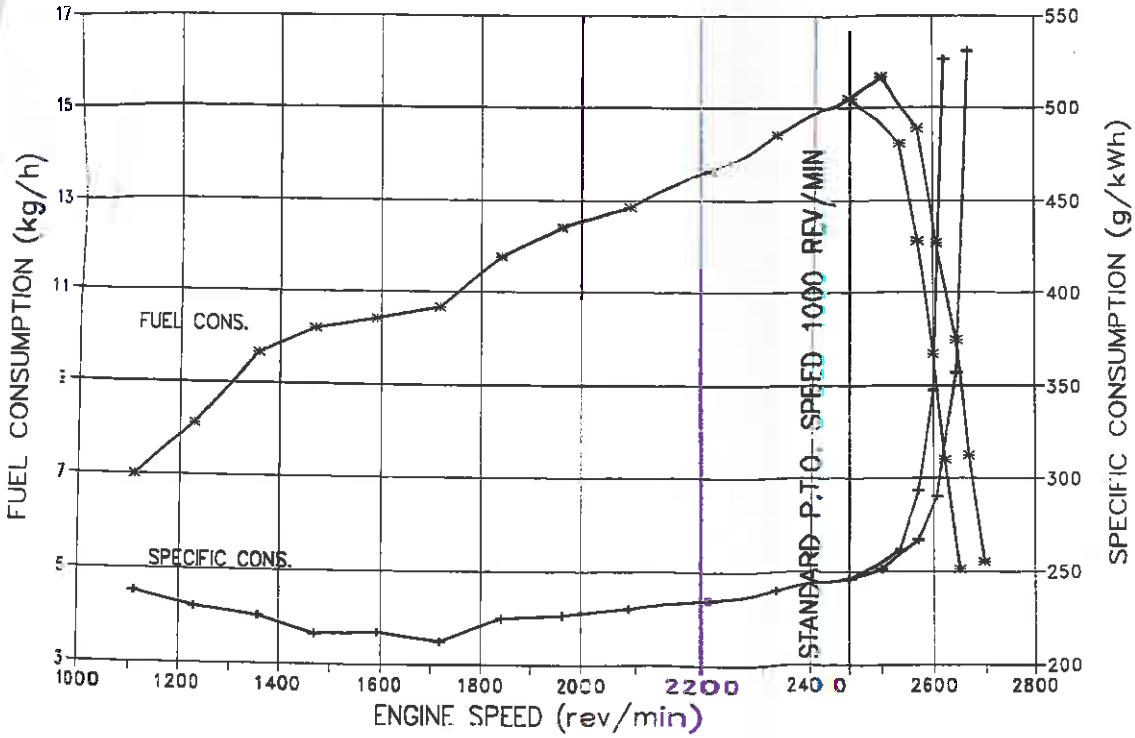
. temperature: 19 °C
. pressure:100.0 kPa
. relative humidity: 66 %

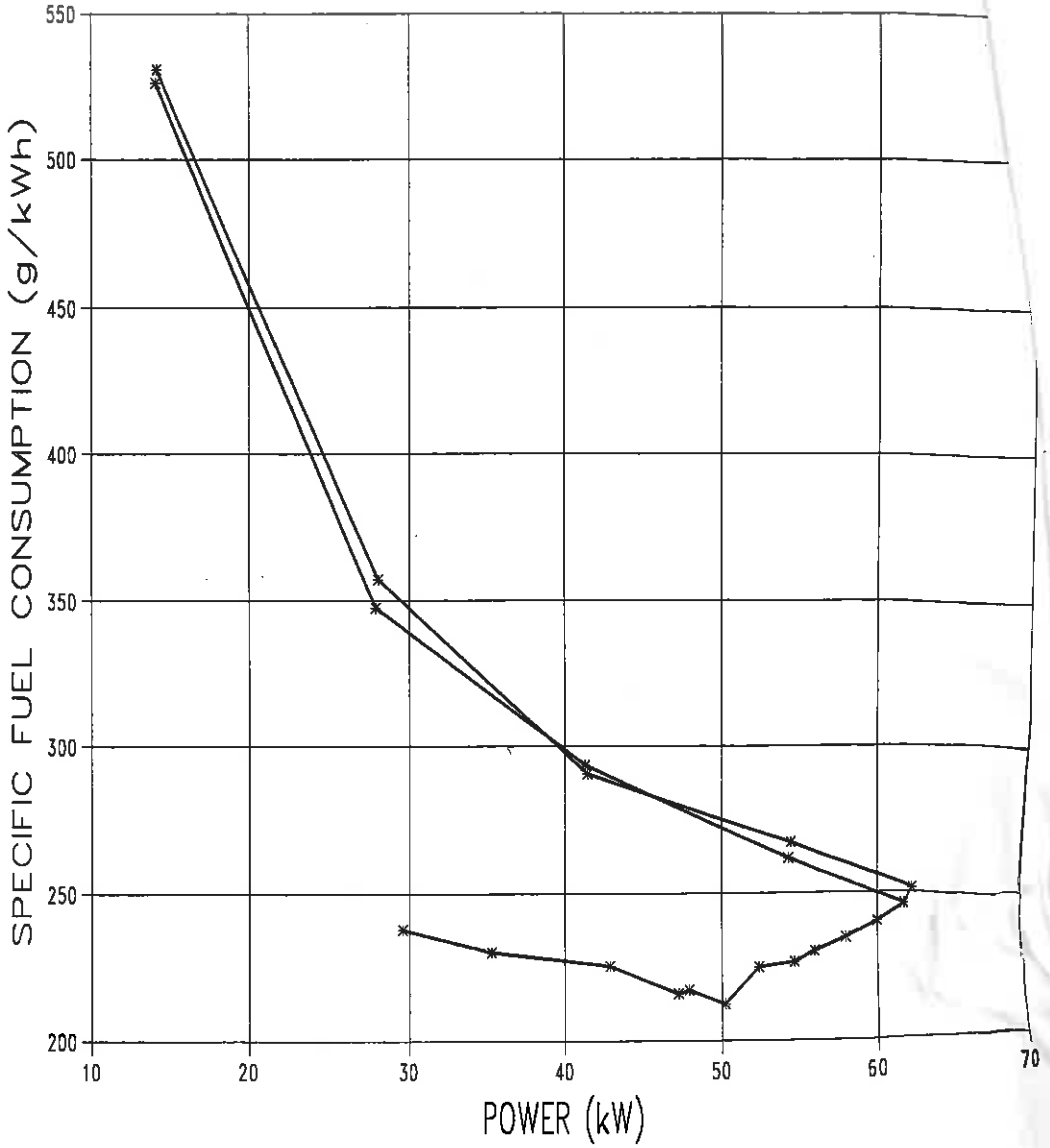
- Maximum temperatures

. coolant: 93 °C
. engine oil: 136 °C
. fuel: 26 °C
. engine air intake: 23 °C

I. S. TITUTO SPERIMENTALE PER
MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO






SPECIFIC FUEL CONSUMPTION (g/kWh)
550
500
450
400
350
300
250
200
10
20
30
40
50
60
70
POWER (kW)

2. HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 4 February 1997.

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 18.5 MPa;
- Pump delivery rate at minimum pressure: 35.3 l/min;

	Power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	8.08	29.2	166	66
Maximum	8.27	32.0	155	64

- Tapping point used for test: at rear of tractor;
- Temperature of hydraulic fluid if different from 65 ± 5 °C: - °C;
- Opening pressure of the unloading valve: - MPa;
- Closing pressure of the unloading valve: - MPa.

2.2 REAR POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	200	200
Vertical movement			
without lifting forces	mm	710	721
with lifting forces	mm	683	683
Maximum corrected force exerted through full range	kN	21.19	24.81
Corresponding pressure of hydraulic fluid	MPa	16.6	16.6
Moment about rear axle	kNm	20.98	39.70
Maximum tilt angle of mast over range of lift	degrees	-	3

Lifting heights relative to the horizontal lower links											
mm	-350	-318	-300	-200	-100	0	+100	+200	+300	+333	+365
Lifting forces at hitch points, corrected to 16.6 MPa											
kN	21.19	-	21.44	23.03	24.42	25.53	26.20	27.43	29.14	30.09	-
Lifting forces at test frame, corrected to 16.6 MPa											
kN	-	24.81	25.05	25.10	25.44	25.52	25.37	25.46	25.64	-	25.59

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

2.3 FRONT POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	175	175
Vertical movement			
without lifting forces	mm	625	614
with lifting forces	mm	611	600
Maximum corrected force exerted through full range	kN	16.33	12.98
Corresponding pressure of hydraulic fluid	MPa	16.6	16.6
Moment about rear axle	kNm	20.49	24.21
Maximum tilt angle of mast over range of lift	degrees	-	3

Lifting heights relative to the horizontal lower links										
mm	-385	-353	-300	-200	-100	0	+100	+200	+226	+247
Lifting forces at hitch points, corrected to 16.6 MPa										
kN	18.54	-	17.70	17.31	17.08	16.88	16.66	16.40	16.33	-
Lifting forces at test frame, corrected to 16.6 MPa										
kN	-	22.78	19.80	17.76	16.47	15.36	14.26	13.26	-	12.98

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Report on test in accordance with the OECD Standard Code I (Full Code) for the Official Testing of Agricultural and Forestry Tractor



SAME SILVER 90 VDT

OECD No. **1663** Full Code

with 60 forward and 60 reverse speeds
40 km/h four-wheel drive agricultural tractor

Manufactured by:	SAME DEUTZ-FAHR Group S.p.A. V.le F. Cassani 15 24047 Treviglio BG Italy
Date of OECD approval:	30 April 1997
Period of test:	December 1996 - February 1997

ISMA Via Milano 43 24047 Treviglio BG Italy
Tel: (0363) 49603 Fax: (0363) 302007

Table of contents

SPECIFICATION OF TRACTOR 5

TEST CONDITIONS 21

TEST RESULTS

1. Main power take-off performance 25
2. Hydraulic power and lifting force 29
3. Drawbar performance 31
4. Turning area and turning circle 35
5. Location of centre of gravity 35
6. Braking performance 36
7. Measurement of external noise level 37
8. Repairs 37
9. Remarks 37

APPENDIX

Measurement of noise in the protective structure 38

All stated dimensions and tests refer to tyre size 16.9R24 at front and 18.4R34 at rear, as well as to track widths 1700 mm at front and 1600 mm at rear.

Tractor manufacturer

- Name:	SAME DEUTZ-FAHR Group S.p.A.;
- Address:	V.le F. Cassani 15, 24047 Treviglio BG, Italy;
- Location of tractor assembly:	Treviglio BG, Italy;
- Submitted for test by:	the manufacturer;
- Selected by:	the manufacturer with the agreement of ISMA;
- Place of running in:	Treviglio BG, Italy;
- Duration of running in:	50 hours,
- Location of test:	ISMA, Via Milano 43, Treviglio BG, Italy.

SPECIFICATION OF TRACTOR

TRACTOR

- Make:	SAME;
- Model:	SILVER 90 VDT, with 60 forward and 60 reverse speeds, 40 km/h version;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	2183;
- First serial number:	1001.

ENGINE

- Make:	SAME DEUTZ-FAHR Group;
- Model:	1000.4 AT2;
- Type:	air cooled 4-stroke diesel, direct injection, turbocharged;
- Serial number:	2141.

Cylinders

- Number and disposition:	4, vertical, in-line;
- Bore x stroke:	105 x 115.5 mm;
- Capacity:	4000 cm^3;
- Compression ratio:	16:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	without liners.

Supercharging:

- Make:	GARRET;
- Model:	TA 31-30;MI 82
- Type:	exhaust driven supercharger;
- Supercharging pressure:	60 kPa.

Fuel system

- Fuel feed system:	AC corone fuel feed pump;
- Make, model and type of fuel filter:	FIAMM FNA 166/20;
- Capacity of fuel tank:	150 dm^3;
- Make, model and type of injection pump:	BOSCH PFR 1K 90 A 517, immersed, one per cylinder in line;
. serial number:	without serial number;
- Manufacturer's production setting of injection pump:	
. flow rate:	62 ± 2 mm^3/stroke at rated speed and full load corresponding 18.70 dm^3/h;
. timing:	16° before TDC;
- Make, model and type of injectors:	BOSCH DLLA 150 S 925 multihole injection nozzles;
- Injection pressure:	18 ± 1 MPa.

Governor

- Make:	SAME DEUTZ-FAHR Group;
- Model:	007.0992.4;
- Type:	electronic;
- Governor range of engine speed:	from 650 to 2700 rev/min;
- Rated engine speed:	2500 rev/min.

Air cleaner

- Pre-cleaner	
. make:	DONALDSON;
. model:	P 01-6330;
. type:	cyclone;
. location:	above the bonnet.
- Main filter	
. make:	DONALDSON;
. model:	FLG 08-0524;
. type:	dry paper element filter with replaceable cartridge;
. location:	front of engine;
. air intake location:	above bonnet;
- Maintenance indicator:	with the warning lamp on the dashboard.

Lubrication system

- Type of feed pump:	forced feed from gear pump;
- Type of filter:	FIAMM FT 4803;
- Oil specifications:	see page 23.

Cooling system

- Type and detail:	air cooling with axial blower;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	13;
- Fan diameter:	320 mm;
- Type of temperature control:	none.

Starting system

- Make:	ISKRA;
- Model:	AZ 1349 12;
- Type:	electromagnetic engagement;
- Starter motor power rating:	3.0 kW;
- Safety device:	electrical lockout on clutch and PTO controls;
- Starting system for low temperatures:	none.

Electrical equipment

- Voltage:	12 V;
- Generator	
. make:	ISKRA;
. model:	AAK 5115 14 V 85 A
. type:	alternator;
. power:	85 A;
- Battery:	1 lead acid;
. capacity:	180 Ah at 20 hours r

Exhaust system

- Make:	SAME DEUTZ-FAHR;
- Model:	DGM SA 1554;
- Type:	one reflection absorption muffler;
- Location:	on the left hand side, vertical position, under side b
- Height of outlet above ground:	2715 mm.

TRANSMISSION

Clutch (utilized only for travelling of tractor)

- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.23 ;
- Type:	single disk dry clutch;
- Number of plates:	1;
- Plates diameter:	330 mm;
- Control system:	hydraulic, operated by pedal.

Gear box

The tractor can be fitted alternatively with a "normal" or a "heavy duty" gear box, slightly differing in their dimensions (see report No. CSD 1385 OECD).
The test tractor was fitted with the "heavy duty" version.

. make:	SAME DEUTZ-FAHR Group;
. model:	617.31 ;
. type:	heavy duty gear box, mechanical synchromesh speed change gear; 5 speed with 4 ranges of speeds (C/S/N/F), one electrohydraulic reduction gear (low/medium/high), and one reverse group;
. number of gears:	60 forward and 60 reverse.
- Available options:	5 speed with 3 ranges of speeds (S/N/F), one electrohydraulic reduction gear (low/medium/high), and one reverse group;
. number of gears:	45 forward and 45 reverse.

Rear axle and final dri

- Make:	own make;
- Model:	617.44;
- Type:	bevel gear differential and epicyclic final drive.

Rear differenti

- Make:	own make;
- Model:	617.47;
- Type:	electrohydraulic;
- Control sy	engaged or disengaged by button.

Front axle and final drives

- Make: own make;
- Model: 617.43;
- Type: original SAME DEUTZ-FAHR system with central shaft, bevel gear drive, differential and epicyclic final drives.

Front differential lock

- Make: own make;
- Model: 617.46;
- Type: electrohydraulic;
- Control system: engaged or disengaged by button.

Total rations and speed

Gear	Group	Number of engine revolution for one revolution of the driving wheels			Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h		
		Low	Medium	High	Low	Medium	High
FORWARD							
1	Creep	2466.0	2061.3	1691.3	0.29	0.35	0.43
2	Creep	1664.9	1391.4	1141.6	0.44	0.52	0.64
3	Creep	1251.3	1045.8	858.0	0.58	0.69	0.85
4	Creep	948.6	792.8	650.3	0.77	0.92	1.12
5	Creep	714.7	597.3	490.1	1.02	1.21	1.48
1	Slow	725.5	606.3	497.5	1.00	1.20	1.46
2	Slow	489.7	409.3	335.8	1.48	1.77	2.16
3	Slow	368.1	307.6	252.4	1.97	2.36	2.88
4	Slow	279.0	233.2	191.3	2.60	3.11	3.79
5	Slow	210.2	175.7	144.1	3.45	4.13	5.04
1	Normal	280.1	234.1	192.1	2.59	3.10	3.78
2	Normal	189.1	158.0	129.6	3.84	4.59	5.60
3	Normal	142.0	118.7	97.4	5.11	6.11	7.45
4	Normal	107.7	90.0	73.8	6.74	8.06	9.83
5	Normal	81.1	67.8	55.6	8.95	10.70	13.05
1	Fast	94.1	78.6	64.5	7.71	9.23	11.25
2	Fast	63.5	53.1	43.5	11.43	13.67	16.68
3	Fast	47.7	39.9	32.7	15.21	18.19	22.19
4	Fast	36.2	30.2	24.8	20.05	24.03	29.26
5	Fast	27.3	22.8	18.7	26.58	31.83	38.81

(*) Calculated with a tyre dynamic radius index of 770 mm (ISO 4251/1-1992).

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Total rations and speed (continued)

Gear	Group	Number of engine revolution for one revolution of the driving wheels			Nominal travelling speed at rated engine speed of 2500 rev/min (*) km/h		
		Low	Medium	High	Low	Medium	High
REVERSE							
1	Creep	2368.0	1979.4	1624.1	0.31	0.37	0.45
2	Creep	1598.8	1336.1	1096.3	0.45	0.54	0.66
3	Creep	1201.6	1004.3	823.9	0.60	0.72	0.88
4	Creep	910.9	761.3	624.5	0.80	0.95	1.16
5	Creep	686.3	573.6	470.6	1.06	1.27	1.54
1	Slow	696.7	582.2	477.7	1.04	1.25	1.52
2	Slow	470.2	393.0	322.5	1.54	1.85	2.25
3	Slow	353.5	295.4	242.4	2.05	2.46	2.99
4	Slow	267.9	223.9	183.7	2.71	3.24	3.95
5	Slow	201.9	168.7	138.4	3.60	4.30	5.24
1	Normal	269.0	224.8	184.5	2.70	3.23	3.93
2	Normal	181.6	151.7	124.5	4.00	4.78	5.83
3	Normal	136.4	114.0	93.5	5.32	6.37	7.76
4	Normal	103.4	86.4	70.9	7.02	8.40	10.24
5	Normal	77.9	65.1	53.4	9.32	11.15	13.59
1	Fast	90.4	75.5	61.9	8.03	9.61	11.72
2	Fast	61.0	51.0	41.8	11.90	14.23	17.37
3	Fast	45.8	38.3	31.4	15.84	18.94	23.11
4	Fast	34.8	29.0	23.8	20.88	25.02	30.47
5	Fast	26.2	21.9	18.0	27.68	33.15	40.41

(*) Calculated with a tyre dynamic radius index of 770 mm (ISO 4251/1-1992).

Number of revolutions of front wheels for one revolution of rear wheels: 1.3072.

POWER TAKE-OFF

Main power take-off proportional to engine speed

- Type: independent, at rear of tractor, in tractor's median plane, engaged or disengaged by push botton, driven by multiplate wet clutch independent of travel clutch;
- Number of shafts: 1;
- Method of changing power take-off shaft ends: it is possible, through 6 screws, to mount one PTO shaft end, 35 mm diameter, 6 splines, ISO 500-1991, type 1or 35 mm diameter, 21 splines, ISO 500-1991, type 2;
- Method of changing speed: combination of internal and external hand lever;
- Height above ground: 785 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 480 mm;
- Direction of rotation (viewed facing driving end): clockwise.

PTO type	PTO speed rev/min	Engine speed rev/min	Engine/PTO transmission ratio	Power restriction kW
540	540 614	2198 2500	4.0714	-
775	775 786	2463 2500	3.1791	-
1000	1000 1020	2450 2500	2.4500	-
1300	1300 1307	2487 2500	1.9130	-

Secondary power take-off proportional to engine speed
(optional, fitted on tested tractor)

- Type:	independent, at front of tractor, in tractor's median plane, engaged or disengaged by push botton, driven by multiplate wet clutch independent of travel clutch;
- Number and type of shafts:	1, ISO 500-1991, type 1 (35 mm dia, 6 splines)
- Height above ground:	750 mm;
- Distance from the median plane of the tractor:	0 mm;
- Distance forward front axle:	700 mm;
- Ratio of rotation speeds (engine speed/PTO speed):	2.4;
- Direction of rotation (viewed facing driving end):	anticlockwise.

Power take-off proportional to ground speed
(optional, not fitted on tested tractor)

- Type:	independent, not adjustable to 540-1000 rev/min, location at rear of tractor, in tractor's median plane, below the mean PTO, engaged or disengaged by hand lever at the left hand side of the seat;
- Number and type of shafts:	1, ISO 500-1991, type 1 (35 mm dia, 6 splines);
- Method of changing power take-off shaft ends:	none;
- Direction of rotation with forward gear engaged:	clockwise;
- Travelling distance for one revolution of power take-off shaft:	0.18 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels:	25.666.

REAR POWER LIFT

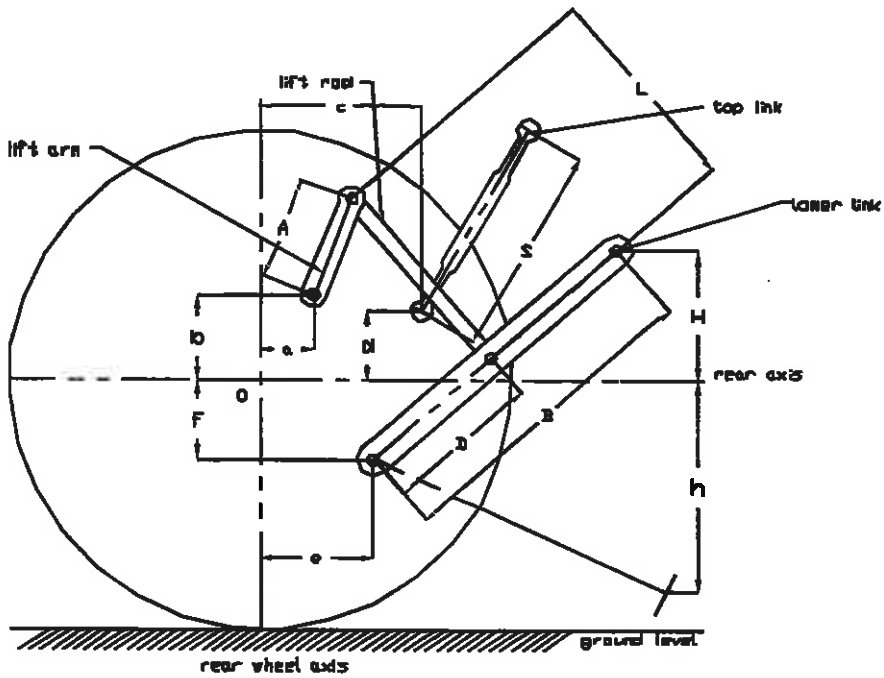
- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.39 electronic-hydraulic power lift, optional fitted on tested tractor;
- Type:	load sensing;
- Type of hydraulic system:	open centre system;
- Number and type of cylinders:	1 internal single-acting;
- Type of lock for transport:	electro-hydraulic;
- Relief valves pressure setting:	18.0 ± 0.5 MPa;
- Opening pressure of anti-shock valve:	21.0 ± 0.5 MPa;

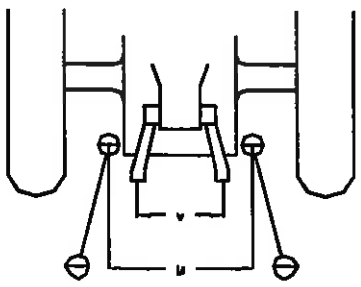
- Lift pump
  . make: BOSCH;
  . type: hydraulic rotary pumps, driven by engine shaft;
- Transmission between pump and engine: mechanical;
- Number and type of filters: 1, replaceable paper cartridge;
- Oil capacity: 71 dm^3;
- Site of oil reservoir: gear box;
- Number, type and location of tapping points: 4 ways distributor at rear of tractor;
- Maximum volume of oil available to external cylinders: 15 dm^3.

- Recommended oil: see page 23.

Rear three-point linkage

- Category (ISO 730/1-1990): 2;
- Category adapter: none.





REAR LINKAGE GEOMETRY

REAR POWER LIFT (continued)

Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lift arms	(A)	280	280
Length of lower links	(B)	840	840
Distance of lift arm pivot point from rear wheel axis (behind)			
- horizontally	(a)	90	90
- vertically	(b)	402	402
Horizontal distance between the 2 lower link points	(u)	460	460
Horizontal distance between the 2 lift arm end points	(v)	580	580
Length of upper link	(S)	from 620 to 845	640
Distance of upper link pivot point from rear wheel axis			
- horizontally	(c)	350	350
- vertically	(d)	220-285-350	285
Distance of lower link pivot point from rear wheel axis			
- horizontally	(e)	150	150
- vertically	(f)	220	220
Distance of lower link pivot point to lift rod pivot points on lower links	(D)	420	420
Length of lift rods	(L)	from 700 to 823	785

Height of lower hitch points relative to the rear wheel axis:

Length of lift rods	(L)	700 823	785
Linkage distance of lift rods	(D)	420 420	420
Lowest position	(h)	380 656	570
Highest position	(H)	286 216	140
Height above ground of lower hitch points when locked in transport position (*)			910

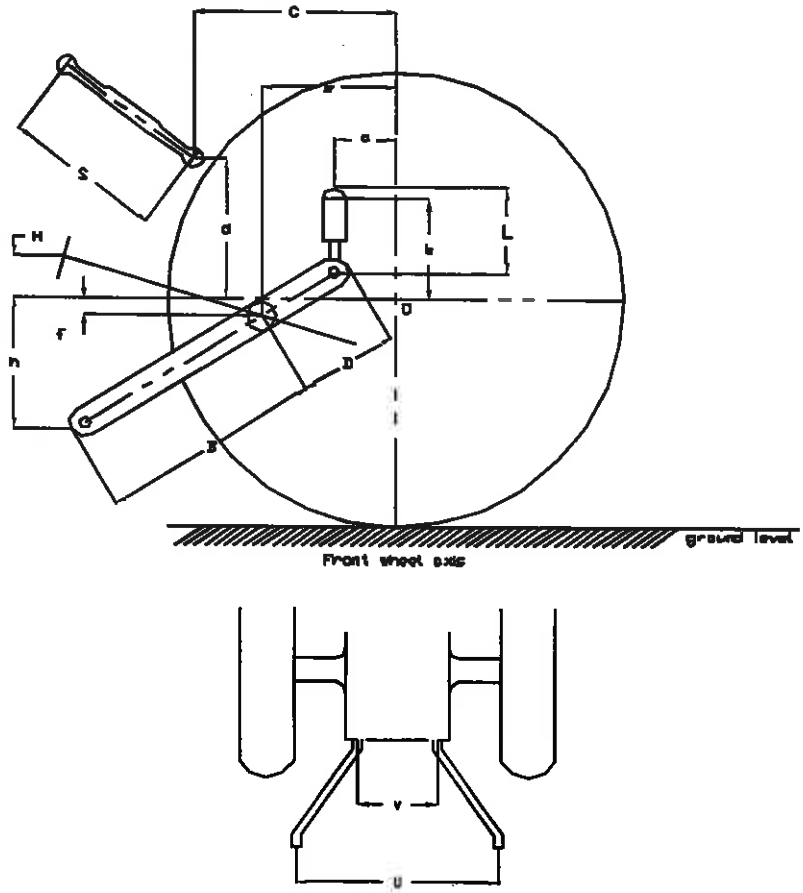
(*) *Assuming the dynamic radius index = 770 mm (ISO 4251/1-1992)*

FRONT POWER LIFT (optional, fitted on tested tractor)

- Make:	SAME DEUTZ-FAHR Group;
- Model:	ORIGINAL SAME SYSTEM 617.59 FRONT;
- Type and number of cylinders:	2 at single acting;
- Type of lock for transport:	none;
- Relief valve pressure setting:	18.0 ± 0.5 MPa;
- Opening pressure of anti-shock valve:	21.0 MPa;
- Lift pump type:	hydraulic rotary pump, driven by engine shaft, pump make BOSCH;
- Trasmission between pump and engine:	mechanical;
- Type and number of filters:	1, repeceable paper cartridge;
- Change interval:	2400 hrs or when the filter clogging warning lamp is lighted;
- Oil capacity:	71 dm^3;

Front three-point linkage

- Category (ISO 730/1-1990):	2;
- Category adapter:	none.



FRONT LINKAGE GEOMETRY

FRONT POWER LIFT

Dimensions of linkage geometry (when connected to the standard frame)

		Dimension or range mm	Settings used in test mm
Length of lower links	(B)	750	750
Distance of cylinders pivot point from front wheel axis (forward)			
- horizontally	(a)	300	300
- vertically	(b)	334	334
Horizontal distance between the 2 lower link points	(u)	860	860
Horizontal distance between the 2 lift arm end points	(v)	300	300
Length of upper link	(S)	from 500 to 770	578
Distance of upper link pivot point from front wheel axis			
- horizontally	(c)	662 - 677	677
- vertically	(d)	177 - 437	437
Distance of upper link pivot point from front wheel axis			
- horizontally	(e)	507	507
- vertically	(f)	60	60
Distance of lower link pivot point to cylinders pivot points on lower links	(D)	214	214
Length of cylinders			
- in low position	(L)	325	325
- in high position	(L)	500	500
Height of lower hitch points relative to the front wheel axis			
- in low position	(h)	445	445
- in high position	(H)	180	180
Height above ground of lower hitch points (*)			800

(*) *Assuming the dynamic radius index = 620 mm (ISO 4251/1-1992)*

SWINGING DRAWBAR: optional, not fitted on tested tractor

HOLED DRAWBAR:

- Number of holes:	7;
- Distance between holes:	100 mm;
- Hole diameter:	28.5 mm;
- Thickness x width of the drawbar:	30 x 80 mm;
- Height above ground,	
. min:	136 mm;
. max:	1089 mm;
- Horizontal distance behind power take-off shaft end:	555 mm;
- Diameter of the pinhole:	28 mm.

TRAILER HITCH

- Type:	DGM-GA 2107 C 6t V1.5;
- Hole diameter:	28 mm;
- Height above ground	
. min:	420 mm;
. max:	1105 mm;
- Distance of hitch point from rear wheel axis	
. horizontally:	625 mm;
- Distance of hitch point from power take-off shaft end	
. vertically:	375 mm below, 255 mm above;
. horizontally:	200 mm;
- Maximum vertical permissible load:	14.7 kN.

STEERING

- Specification:	hydrostatic steering with BOSCH hydraulic gear pump, two simple acting ram acting directly on front axle.
- Make:	DANFOSS;
- Model:	ORBITROLL OSPC 80 OR;
- Type:	hydrostatic;
- Working pressure:	15 MPa;
- Recommended oil:	see page 23.

BRAKES

Service brake

- Make:	SAME DEUTZ-FAHR Group;
- Model:	617.54;
- Type:	oil bath disc, total 4 discs, 2 at front (1 per wheel) and 2 at rear (1 per wheel), all mounted before the final drive;
. front disc diameter:	224 mm,
. rear disc diameter:	280 mm,
. material:	FRENDO HDT 303 lining material;
- Method of operation:	hydraulically actuated with 2 pedals;
- Trailer braking take-off:	hydraulic brake system.

Parking brake

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

Steering brake

- Metod of operation:	divided pedal of service brake, for normal use locked together.

STEERING WHEELS

- Number:	2;
- Location:	at front;
- Track widths	
. min:	1600 mm:
. max:	1900 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

DRIVING WHEELS

- Number:	4;
- Location:	two at front and two at rear;
- Rear track widths	
. min:	1600 mm;
. max:	1900 mm;
- Adjustment:	changing the position of the rims with respect to the disc.

WHEELBASE: 2373 mm.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

PROTECTIVE STRUCTURE

Specifications

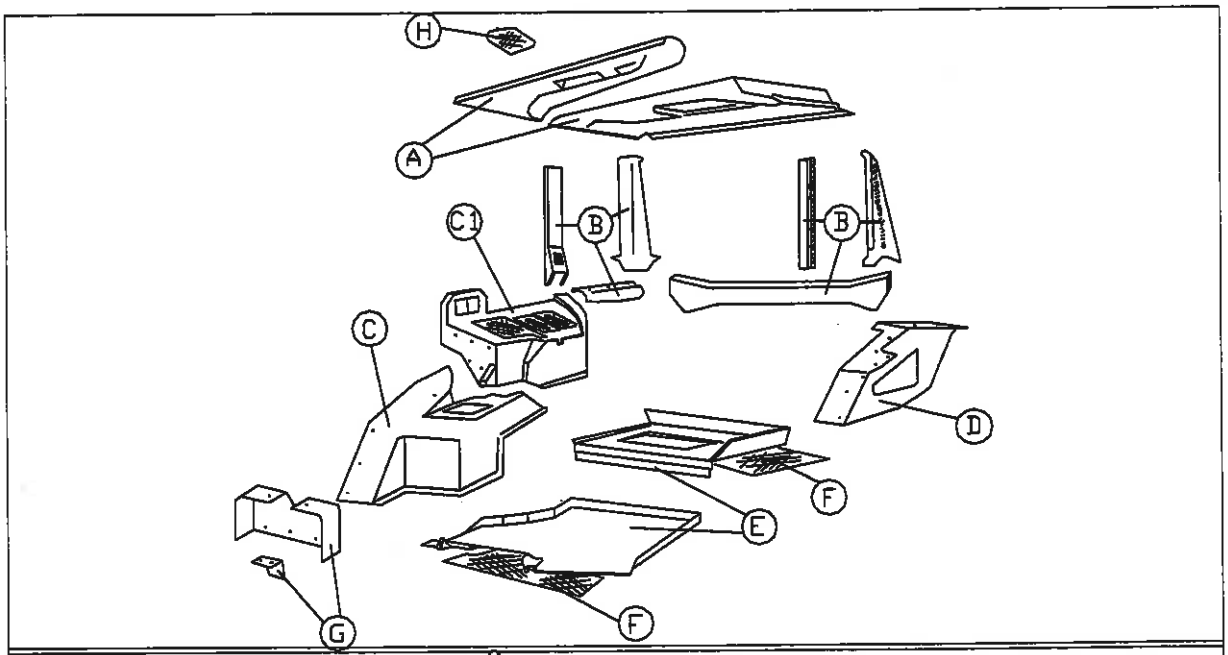
Seat	Gear box	OECD approval number
GRAMMER	"heavy duty"	CSD 1385/227
LS 95 H 1 / 90 AR	"normal"	CSD 1385/223
GRAMMER	"heavy duty"	CSD 1385/225
DS 83 H / 90 A	"normal"	CSD 1385/221
GRAMMER	"heavy duty"	CSD 1385/226
DS 85 H / 90 A	"normal"	CSD 1385/222
KAB	"heavy duty"	CSD 1385/228
XH 2 / U	"normal"	CSD 1385/224

- Date of approval: 21 December 1993;
- Location and country of test of protective structure: Istituto di Ingegneria Agraria, Università degli Studi di Milano, Italy;
- Mass used for calculating impact energies and crushing forces: 4500 kg;
- Wheelbase used for calculating impact energy at the rear: 2633 mm;
- Make: S+L+H;
- Model: C 37;
- Type: cab, not tiltable;
- Manufacturer's name and address: SAME DEUTZ-FAHR GROUP S.p.A., Viale F. Cassani 15, 24047 Treviglio BG, Italy.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Details of materials used for sound proofing the protective structure

- Glass:	
. type:	security glass, thickness 5 and 6 mm;
. model:	43 R - 000589 (doors, windscreen, windows);
- Windscreen wipers:	OSLV, parallelogram type;
- Direction indicators:	COBO E3;
- Heating and ventilation system:	BORLETTI;
- Draught proofing:	rubber GMTA 20 - 70 P, SP 550 and PEC 75.
- Interior padding:	see below;



A) Porous material, 50-60 g/m^3, thickness 15-20 mm + Tassel AD, 1200-1400 g/m^3, thickness 6 mm + textile fiber + TNT.

B) PUR, low density, 250-300 g/m^3, coated with expanded laminated PVC.

C) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm, and bitumen sheet.

C1) Polypropylene, thickness 3 mm, internally covered with polyurethan foam, thickness 30 mm.

D) Tassel AD, 1400-1600 g/m^3 + PVC, thickness 12 + 22 mm.

E) Rubber, 2-3 kg/m^3, thickness 5 mm + polyurethan foam, thickness 20 mm + thermoplastic film.

F) Bitumen, thickness 6 mm.

G) Rubber + Tassel AB x AD, 800-1000 g/m^3 + Tassel AB x BD, 1400 g/m^3, thickness 23 mm.

H) Polyurethan foam, thickness 30 mm.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

DRIVER'S SEAT: four seats available;

Make	Model	Type of suspension	Type of damping	Range of adjustment	
				vertical	longitudinal
GRAMMER	LS95 H 1 / 90 AR	pneumatic	hydraulic	60 mm	150 mm
GRAMMER	DS 83 H / 90 A	mechanical	hydraulic	60 mm	150 mm
GRAMMER	DS 85 H / 90 A	mechanical	hydraulic	60 mm	150 mm
KAB	XH 2 / U	mechanical	hydraulic	60 mm	150 mm

PASSENGER'S SEAT : none.

LIGHTING
Lighting system in accordance with EEC 78/933

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	mm	mm	mm
Headligths	1210	160 x 100	210
Front parking lights	1703	110 x 35	850
Front direction indicator	1738	110 x 35	850
Rear parking lights	1713	120 x 65	860
Rear direction indicator	1690	75 x 110	935
Brake lights	1690	75 x 110	740
Reflectors 1st pair	1658	120 x 45	860
2nd pair	720	Ø 80	460

TEST CONDITIONS

OVERALL DIMENSIONS

	Length		Width		Height at top of	
	with front power lift	without front power lift	minimum	maximum	protective structure	exhaust silencer
	mm	mm	mm	mm	mm	mm
Unballasted	4813	4123	2240	2500	2680	2715
Ballasted	4883	4553	2240	2500	2680	2715

- Ground clearance: 415 mm below front axle;

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

TRACTOR MASS (with full fuel tank, cab and front power lift)

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1965	1990	2530	2555
Rear	2155	2205	2220	2270
Total	4120	4195	4750	4825

BALLAST

	Weights		Water
	Number	Total mass kg	kg
Front	1	375	-
Rear wheels	6	255	-

TYRES AND TRACK WIDTH SPECIFICATIONS

	Front	Rear
Tyres		
make	PIRELLI	PIRELLI
model	TM 700	TM 700
dimensions	16.9R24	18.4R34
ply rating	-	-
load index/speed index	134 A8	144 A8
type	radial	radial
maximum load (tyre manufacturer's)	1373 daN	2206 daN
inflation pressure (tyre manufact.'s)	160 kPa	160 kPa
dinamic radius index	620 mm	770 mm
Chosen track width	1700 mm	1600 mm
Technically permissible axle load	2747 daN	4415 daN
Other tyres available	14.9R24 16.9R24 16.9R24	16.9R24 520/70R34 18.4R34

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

OILS AND LUBRICATION

Capacity and change interval

	Capacity dm^3	Oil change h	Filter change h
Engine	9	150	300
Gear box with rear axle and final drives, hydraulic system, steering	71	1200	2400(*)
Front PTO transmission	2.5	1200	-
Front axle / final drives	10.5 / 5	1200	-
Brakes	2.5	-	-

(*) *Or when the warning lamp is lighted*

Specifications

	Recomended	Using during test
Engine oil		
Type	AKROS MOTOR OIL	AKROS MOTOR OIL
Viscosity	12.5 cSt	12.5 cSt
Classification	API SE - CD	API SE - CD
Transmission oil used in		
Gear box		
Front PTO transmission		
Front axle and final drives		
Rear axle and final drives		
Type	AKROS MULTI	AKROS MULTI
Viscosity	11.5 cSt	11.5 cSt
Classification	API GL 4	API GL 4
Steering oil		
Type	AKROS MULTI	AKROS MULTI
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

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Grease

- Type:	AKROS GREASE T2;
- Number of lubrication points:	10.

FUEL

- Type:	AGIP DIESEL, DIN 51601; (in accordance with the national standard)
- Density at 15 °C:	0.838 g/cm^3.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

TEST RESULTS

COMPULSORY TESTS RESULTS

1. MAIN POWER TAKE-OFF PERFORMANCE

- Date and location of test: 6 December 1996, ISMA, Treviglio BG, Italy;

- Type of dynamometer: ZÖLLNER 350 AC.

Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.1 MAXIMUM POWER - TWO-HOUR TEST						
62.4	2500	1020	18.70	15.67	251	3.33
1.2 POWER AT RATED ENGINE SPEED						
62.4	2500	1020	18.70	15.67	251	3.33
1.3 STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
61.8	2450	1000	18.13	15.19	246	3.41
1.4 PART LOADS 1.4.1 The torque corresponding to maximum power at rated engine speed						
62.4	2500	1020	18.70	15.67	251	3.33
1.4.2 85% of torque obtained in 1.4.1						
54.4	2568	1048	17.36	14.55	267	3.14
1.4.3 75% of torque defined in 1.4.2						
41.5	2609	1065	14.39	12.06	291	2.88
1.4.4 50% of torque defined in 1.4.2						
28.0	2644	1079	11.93	10.00	357	2.35
1.4.5 25% of torque defined in 1.4.2						
14.1	2668	1089	8.96	7.51	531	1.58
1.4.6 unloaded						
0	2697	1101	6.21	5.2	-	-

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Power	Speed		Fuel consumption			Specific
	Engine	PTO	Hourly		Specific	energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (1000 rev/min)						
1.5.1 The torque corresponding to maximum power available						
61.8	2450	1000	18.13	15.19	246	3.41
1.5.2 85% of torque obtained in 1.5.1						
54.3	2536	1035	16.98	14.23	262	3.20
1.5.3 75% of torque defined in 1.5.2						
41.3	2568	1048	14.46	12.12	294	2.86
1.5.4 50% of torque defined in 1.5.2						
27.9	2601	1062	11.56	9.69	348	2.41
1.5.5 25% of torque defined in 1.5.2						
14.1	2625	1071	8.83	7.40	526	1.59
1.5.6 unloaded						
0	2650	1082	6.03	5.05	-	-

- No load maximum engine speed: 2697 rev/min;
- Equivalent flywheel torque at rated engine speed: 238.3 Nm;
- Equivalent flywheel torque at 2-hour test: 238.3 Nm;
- Maximum equivalent flywheel torque: 307.4 Nm at 1470 rev/min of the engine.

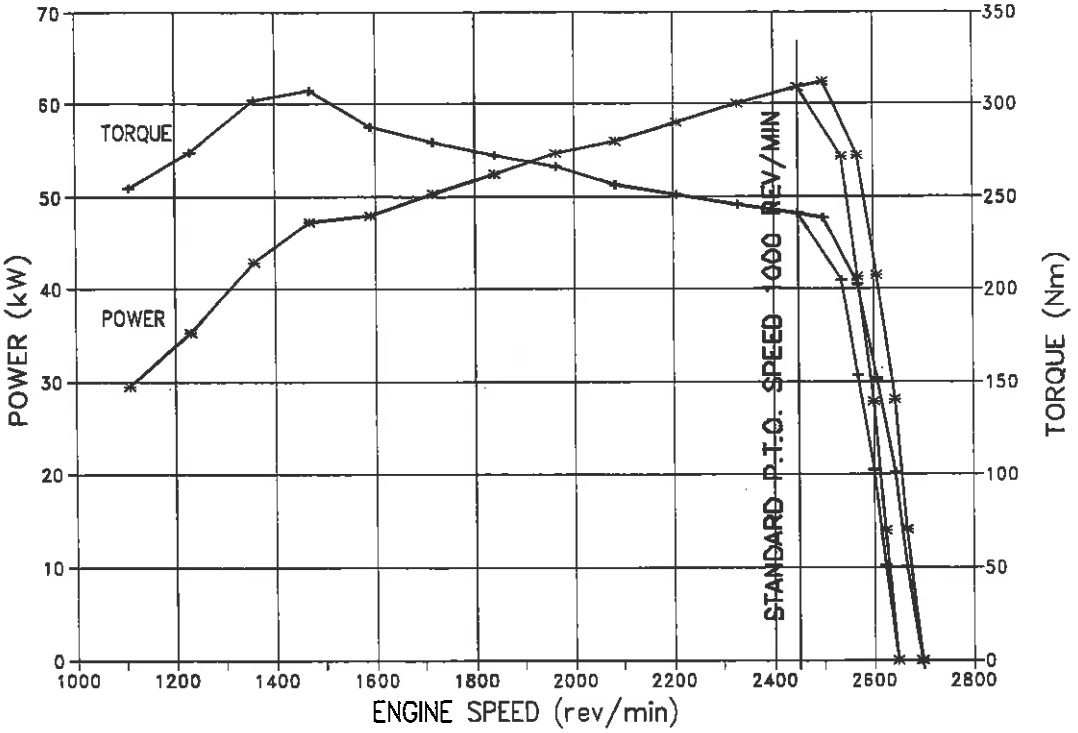
- Mean atmospheric conditions

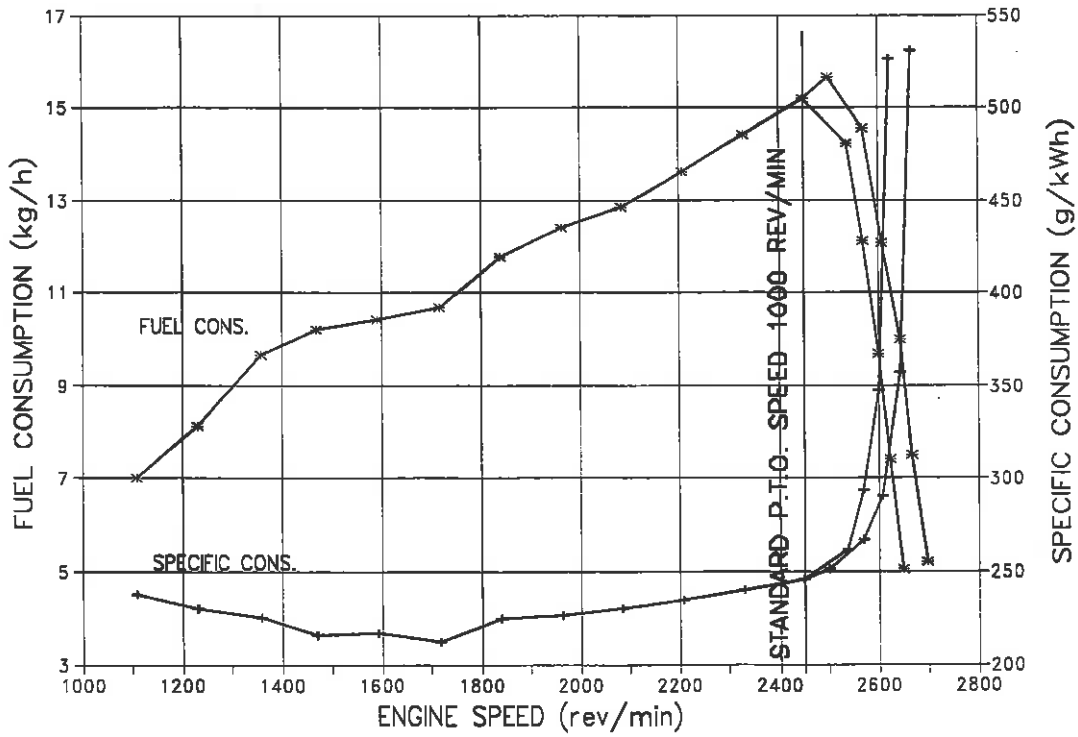
. temperature: 19 °C
. pressure:100.0 kPa
. relative humidity: 66 %

- Maximum temperatures

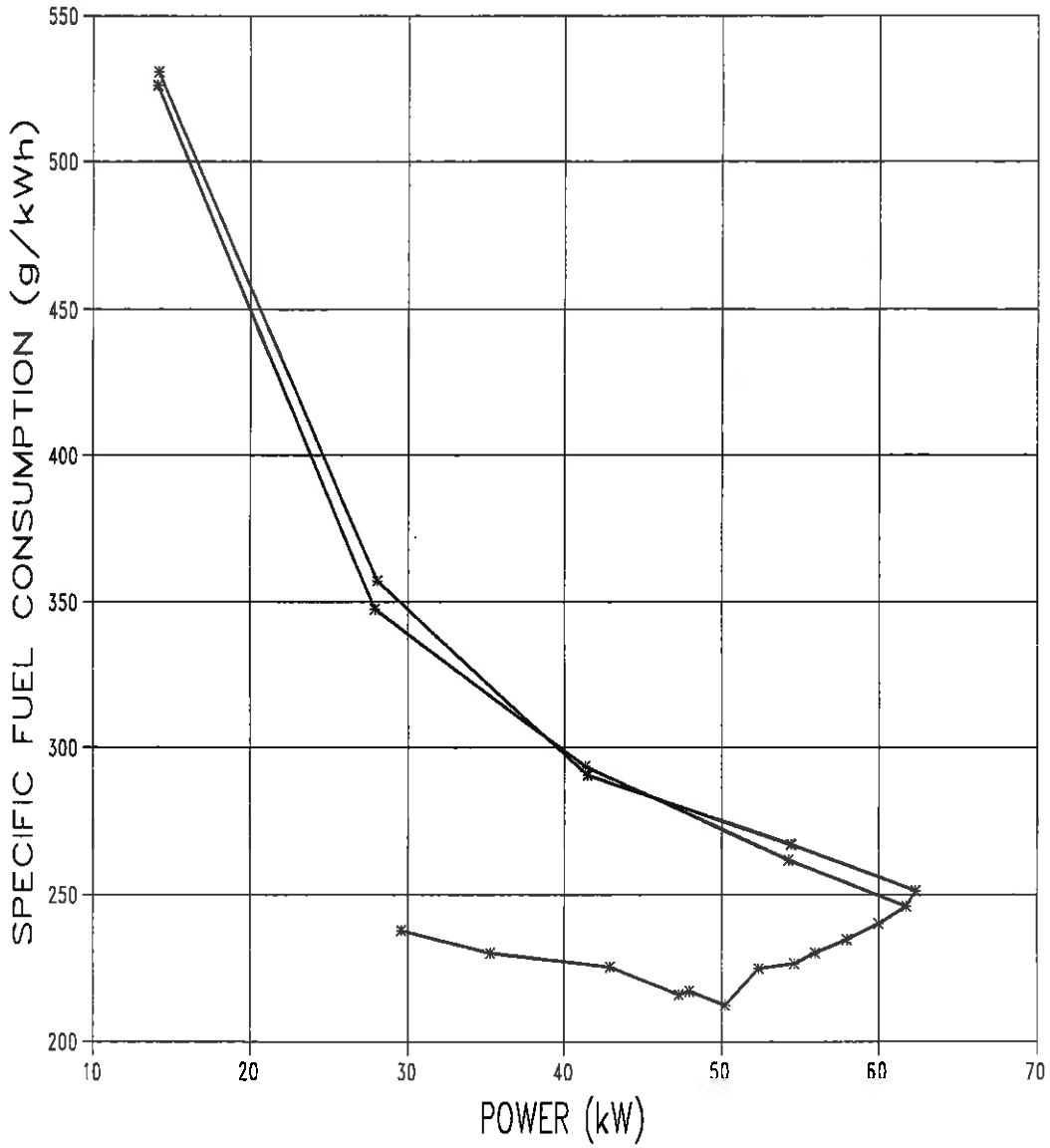
. coolant: 93 °C
. engine oil: 136 °C
. fuel: 26 °C
. engine air intake: 23 °C

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO





ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO



ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

2. HYDRAULIC POWER AND LIFTING FORCE

- Date of tests: 4 February 1997.

2.1 HYDRAULIC POWER TEST

- Sustained pressure with relief valve open: 18.5 MPa;
- Pump delivery rate at minimum pressure: 35.3 l/min;

	Power kW	Flow rate l/min	Pressure MPa	Oil temp. °C
At 90% of the actual relief valve setting	8.08	29.2	166	66
Maximum	8.27	32.0	155	64

- Tapping point used for test: at rear of tractor;
- Temperature of hydraulic fluid if different from 65 ± 5 °C: - °C;
- Opening pressure of the unloading valve: - MPa;
- Closing pressure of the unloading valve: - MPa.

2.2 REAR POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	200	200
Vertical movement			
without lifting forces	mm	710	721
with lifting forces	mm	683	683
Maximum corrected force exerted through full range	kN	21.19	24.81
Corresponding pressure of hydraulic fluid	MPa	16.6	16.6
Moment about rear axle	kNm	20.98	39.70
Maximum tilt angle of mast over range of lift	degrees	-	3

Lifting heights relative to the horizontal lower links											
mm	-350	-318	-300	-200	-100	0	+100	+200	+300	+333	+365
Lifting forces at hitch points, corrected to 16.6 MPa											
kN	21.19	-	21.44	23.03	24.42	25.53	26.20	27.43	29.14	30.09	-
Lifting forces at test frame, corrected to 16.6 MPa											
kN	-	24.81	25.05	25.10	25.44	25.52	25.37	25.46	25.64	-	25.59

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

2.3 FRONT POWER LIFT

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	175	175
Vertical movement			
without lifting forces	mm	625	614
with lifting forces	mm	611	600
Maximum corrected force exerted through full range	kN	16.33	12.98
Corresponding pressure of hydraulic fluid	MPa	16.6	16.6
Moment about rear axle	kNm	20.49	24.21
Maximum tilt angle of mast over range of lift	degrees	-	3

Lifting heights relative to the horizontal lower links										
mm	-385	-353	-300	-200	-100	0	+100	+200	+226	+247
Lifting forces at hitch points, corrected to 16.6 MPa										
kN	18.54	-	17.70	17.31	17.08	16.88	16.66	16.40	16.33	-
Lifting forces at test frame, corrected to 16.6 MPa										
kN	-	22.78	19.80	17.76	16.47	15.36	14.26	13.26	-	12.98

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

3. DRAWBAR PERFORMANCE

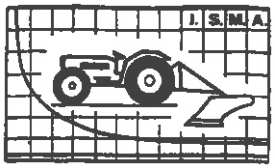
- Date of test: 4 to 7 February 1997;
- Type of track: concrete.

	Height of drawbar above ground mm	Tyre inflation pressure	
		Front kPa	Rear kPa
Unballasted	530	160	160
Ballasted	530	160	160

Gear and range	Power kW	Drawbar pull kN	Speed km/h	Engine speed rev/min	Slip of wheels %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure kPa
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
4CH	10.5	37.92	1.00	2646	15	940	0.89	27	82	110	2	65	100.3
1SM	11.4	37.77	1.09	2658	15	717	1.17	27	82	110	2	65	100.2
5CM	11.5	37.74	1.10	2648	15	846	0.99	27	82	110	2	65	100.2
1SH	13.6	37.47	1.31	2648	15	715	1.17	27	82	110	2	65	100.2
5CH	13.1	35.72	1.32	2632	15	810	1.03	27	82	111	2	64	100.2
2SL	13.5	36.82	1.32	2650	15	689	1.22	27	82	111	2	64	100.3
2SM	15.9	35.79	1.60	2646	15	629	1.33	28	82	112	2	64	100.3
3SL	18.1	36.49	1.79	2640	15	562	1.49	28	82	112	2	64	100.2
2SH	19.0	35.69	1.92	2635	15	549	1.53	28	83	112	2	64	100.2
3SM	21.4	36.52	2.11	2630	15	505	1.66	28	83	112	3	63	100.2
1NL	22.8	35.57	2.31	2631	15	473	1.77	27	82	113	2	64	100.2
4SL	22.6	35.17	2.31	2625	15	492	1.70	28	83	113	3	63	100.2
3SH	25.6	35.77	2.58	2616	15	456	1.84	28	83	113	3	63	100.2
1NM	26.8	34.68	2.78	2619	15	426	1.97	28	83	113	2	63	100.2
4SM	26.5	34.17	2.79	2617	15	442	1.90	28	84	113	2	64	100.3
5SL	29.2	34.19	3.08	2597	15	438	1.91	28	83	114	2	63	100.3
1NH	32.0	34.68	3.32	2595	15	400	2.09	27	83	114	2	64	100.3
4SH	32.7	34.91	3.37	2588	15	404	2.07	28	84	114	3	64	100.4
2NL	31.7	33.35	3.42	2596	15	407	2.06	28	84	114	3	64	100.3
5SM	36.7	36.09	3.66	2596	15	376	2.23	29	84	114	3	64	100.2

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Gear and range	Power kW	Drawbar pull kN	Speed km/h	Engine speed rev/min	Slip of wheels %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure kPa
3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor) continued													
2NM	37.8	33.45	4.07	2589	15	349	2.40	29	84	114	3	64	100.2
5SH	36.9	30.40	4.37	2532	15	412	2.03	29	84	115	4	64	100.2
3NL	43.8	35.18	4.48	2560	15	329	2.55	28	85	115	3	63	100.1
2NH	50.9	37.02	4.95	2570	15	281	2.98	28	84	115	4	63	100.0
3NM	50.9	32.36	5.66	2580	11	269	3.11	28	85	115	4	63	100.0
4NL	50.0	29.11	6.19	2500	9	314	2.67	29	85	115	4	62	100.0
3NH	50.5	25.99	7.00	2507	7	311	2.70	29	85	116	4	62	100.1
1FL	53.8	26.77	7.24	2500	7	290	2.89	29	85	116	5	62	100.1
4NM	51.9	24.43	7.65	2502	6	303	2.77	29	85	116	4	62	100.1
5NL	49.8	20.89	8.58	2502	5	315	2.66	29	85	116	5	63	100.2
1FM	53.0	21.60	8.83	2498	5	295	2.85	28	86	116	4	62	100.1
4NH	48.1	18.07	9.58	2503	3	325	2.58	28	85	116	5	62	100.1
5NM	52.2	17.83	10.55	2500	2	299	2.81	28	85	116	5	62	100.0
1FH	53.2	17.32	11.07	2500	2	291	2.88	28	85	116	5	62	100.0
2FL	49.9	15.98	11.25	2501	2	313	2.68	28	85	116	5	62	100.1



ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
1CL	3.0	38.38	0.27	2674	15	2305	0.36	27	80	109	2	69	99.9
1CM	3.7	41.80	0.32	2675	15	1887	0.44	27	80	109	2	69	99.8
1CH	4.8	42.87	0.40	2670	15	1534	0.55	27	80	109	2	69	99.8
2CL	4.8	42.20	0.41	2670	15	1521	0.55	28	80	109	2	69	99.8
2CM	5.5	41.99	0.47	2666	15	1405	0.60	27	80	109	2	69	99.8
3CL	6.0	41.75	0.52	2664	15	1294	0.65	27	80	110	2	69	99.9
2CH	6.4	40.84	0.56	2660	15	1291	0.65	27	80	111	2	69	99.9
3CM	8.0	46.46	0.62	2660	15	1025	0.82	27	81	111	2	68	100.0
4CL	8.4	43.94	0.69	2655	15	1045	0.80	27	81	111	2	68	99.8
3CH	9.4	44.09	0.77	2652	15	954	0.88	27	81	111	3	68	99.8
4CM	10.3	45.09	0.82	2654	15	847	0.99	27	81	112	2	68	99.8
1SL	10.6	42.92	0.89	2655	15	820	1.02	27	81	112	2	68	99.8
5CL	11.3	44.70	0.91	2650	15	823	1.02	27	81	112	3	68	99.8
4CH	12.2	44.40	0.99	2642	15	827	1.01	27	82	113	3	68	99.8
1SM	12.9	43.27	1.07	2650	15	723	1.16	28	82	113	3	68	99.9
5CM	13.3	43.40	1.10	2646	15	739	1.13	28	82	113	3	68	99.9
1SH	16.1	44.27	1.31	2646	15	609	1.38	28	82	113	3	68	99.9
5CH	15.1	41.58	1.31	2620	15	747	1.12	28	81	113	3	68	99.9
2SL	16.1	43.14	1.34	2647	15	611	1.37	28	81	114	3	68	100.0
2SM	18.6	42.72	1.57	2638	15	553	1.52	28	81	114	3	68	100.0
3SL	20.9	42.35	1.78	2633	15	514	1.63	28	82	114	3	68	100.0
2SH	22.4	41.29	1.95	2627	15	492	1.70	28	82	114	3	67	100.0
3SM	25.2	42.52	2.13	2622	15	449	1.87	29	82	114	3	67	100.0
1NL	27.0	41.73	2.33	2622	15	419	2.00	29	82	114	3	68	100.0
4SL	27.8	42.99	2.33	2610	15	431	1.94	28	83	114	3	68	100.0
3SH	27.2	38.02	2.58	2608	15	448	1.87	28	83	115	4	68	100.0
1NM	29.5	38.15	2.78	2617	15	390	2.15	28	83	115	3	68	99.9
4SM	31.3	40.38	2.79	2610	15	384	2.19	28	83	115	3	68	99.9

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Gear and range	Power	Drawbar pull	Speed	Engine speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperatures			Atmospheric conditions		
								Fuel	Coolant	Engine oil	Temperature	Relative humidity	Pressure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	%	kPa
3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor) continued													
5SL	33.3	38.94	3.08	2600	15	375	2.23	28	83	115	3	68	99.9
1NH	34.9	37.34	3.37	2600	15	358	2.34	28	83	115	3	67	99.9
4SH	36.2	39.03	3.34	2578	15	387	2.17	28	83	115	3	67	100.0
2NL	33.4	34.98	3.44	2598	14	380	2.21	29	83	115	3	67	100.0
5SM	39.3	37.94	3.73	2575	13	359	2.34	28	84	116	4	67	100.0
2NM	43.1	38.40	4.04	2580	14	320	2.62	28	84	116	4	66	100.0
5SH	43.3	34.32	4.54	2500	10	365	2.29	28	84	116	4	66	99.9
3NL	43.9	35.66	4.43	2530	15	346	2.42	29	84	116	4	66	99.9
2NH	51.8	36.01	5.18	2501	8	305	2.75	29	84	116	4	66	99.9
3NM	51.9	32.64	5.73	2500	6	302	2.77	29	84	117	4	67	99.8
4NL	52.2	29.53	6.37	2500	6	302	2.77	29	84	117	4	67	99.8
3NH	51.7	25.91	7.18	2502	4	308	2.72	29	84	117	5	67	99.8
1FL	55.8	26.97	7.45	2499	4	280	3.00	29	85	117	4	67	99.9
4NM	51.9	24.28	7.70	2500	4	302	2.77	30	84	117	5	67	99.9
5NL	51.2	21.10	8.74	2498	3	304	2.75	29	84	116	5	67	99.8
1FM	53.2	21.51	8.91	2501	3	293	2.86	29	84	117	5	67	99.9
4NH	50.0	18.91	9.53	2503	3	314	2.67	29	85	117	5	67	99.9
5NM	51.8	17.67	10.55	2500	2	302	2.77	30	85	117	5	67	99.8
1FH	54.3	17.69	11.06	2499	2	287	2.92	30	84	117	6	66	99.8
2FL	52.5	16.82	11.23	2500	2	298	2.81	30	84	117	6	66	99.9

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

Gear and range	Power kW	Drawbar pull kN	Speed km/h	Engine speed rev/min	Slip of wheels %	Specific fuel consumption g/kWh	Specific energy kWh/l	Temperatures Fuel °C	Coolant °C	Engine oil °C	Atmospheric conditions Temperature °C	Relative humidity %	Pressure kPa
3.3 FIVE HOUR TESTS													
3.3.1 FIVE HOUR TEST at 75% of pull at maximum power													
3NH	40.4	19.42	7.50	2568	2	360	2.33	28	82	112	6	68	99.7
3.3.2 FIVE HOUR TEST at pull corresponding to 15% wheel slip with additional ballast: 85 kg													
3NL	47.9	35.70	4.83	2560	(*)	(*)	(*)	28	84	116	7	69	99.9

(*) *Having the test been carried out with additional ballast, these figures are irrelevant*

Oil consumption during ten hours duration of tests 3.3.1 and 3.3.2: 70 g/h.

4.TURNING AREA AND TURNING CIRCLE (front wheel drive disengaged)

	With brakes		Without brakes	
	left-hand m	right-hand m	left-hand m	right-hand m
Radius of turning area	3.79	3.74	6.25	6.04
Radius of turning circle	3.54	3.50	6.00	5.80

5. LOCATION OF CENTRE OF GRAVITY

	mm
Height above ground	894
Distance forward from rear axle centre	1126
Distance from tractor's median plane to the left	5

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

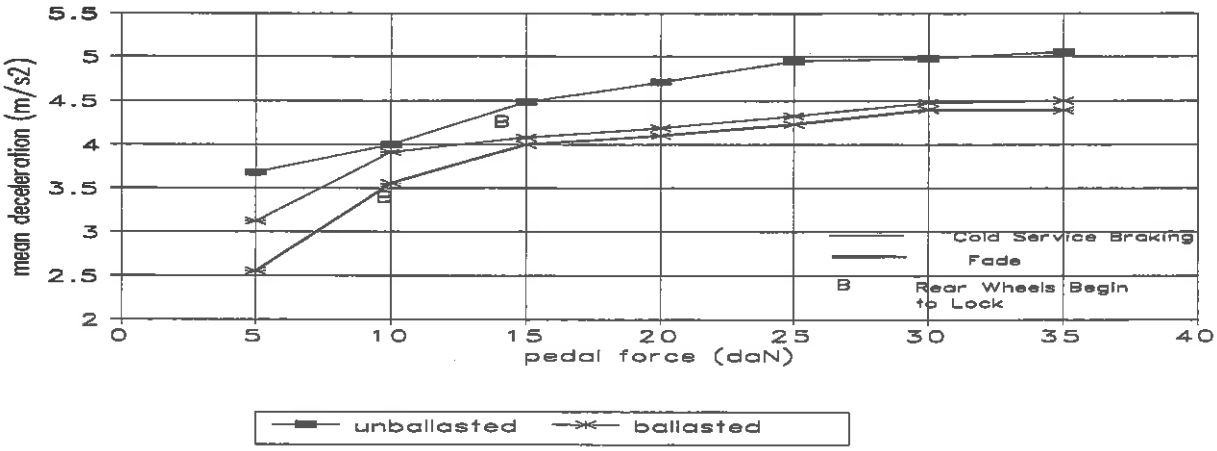
6. BRAKING (front wheel drive disengaged)

- Date of test: 10 February 1997;
- Type of track: concrete.

	Tractor mass (with driver)			Speed before application brakes
	front	rear	total	
	kg	kg	kg	km/h
Unballasted	1990	2205	4195	41.8
Ballasted	2555	2270	4825	41.8

6.1 COLD SERVICE BRAKING DEVICE TEST

6.2 FADE TEST



No significant deviation of tractor from original course and no abnormal vibrations
The tractor brakes were heated by towing of the tractor for 1 km

6.3 PARKING BRAKE

	Ballasted tractor on 18% slope	
	up	down
	daN	daN
Braking device control force	13.7	12.7

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

7. MEASUREMENT OF EXTERNAL NOISE LEVEL

- Date of test: 10 February 1997;
- Type of track: concrete;
- Type of sound level meter: BRÜEL & KJÆR model 2231.

Gear	Travelling speed before acceleration km/h	Sound level dB(A)
5 FAST high	31.5	84.4

8. REPAIRS: none.

9. REMARKS: none.

ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

APPENDIX

MEASUREMENT OF NOISE IN THE PROTECTIVE STRUCTURE - OECD code V

- Test report of: SAME SILVER 90 VDT "4WD";
- Protective structure: S+L+H C37;
- Gear box: heavy duty;
- Driver's seat: GRAMMER LS 95 H1/90 AR;
- OECD test No.: CSD 1385/227/NM 1613;
- Date of approval: 5 December 1995;
- Date of test: 25 and 26 October 1995;
- Location: ISMA, Via Milano 43, Treviglio BG, Italy;
- Type of sound level meter: BRÜEL & KJÆR 2231;
- Type of track: concrete.

Gear	Driving axles	Drawbar pull kN	Travelling speed km/h	Sound level a dB(A)	Sound level b dB(A)
Unloaded test in the gear giving the forward speed nearest to 7.5 km/h					
3 N high	1	0	7.8	76.2	85.8
3 N high	2	0	8.0	75.8	85.5
Unloaded test in the gear giving the maximum forward speed					
5 F high	1	0	41.2	77.2	86.2
5 F high	2	0	41.3	77.3	86.6
Test with the drawbar pull for which the tractor gives the maximum sound level in a gear giving the nominal forward speed nearest to 7.5 km/h					
3 N high	1	23.5	6.9	78.3	87.5
3 N high	2	24.0	6.6	79.0	87.7
Test with the drawbar pull for which the tractor gives the maximum sound level in any gear with a sound level increase of at least 1 dB(A) compared to the previous test					
-	-	-	-	-	-
-	-	-	-	-	-

a - *all openings closed*
b - *doors, side and rear windows and roof hatch open*

TEST ENGINEER
(Dr. Carlo BISAGLIA)

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)