ISTITUTO SPERIMENTALE PER
LA MECCANIZZAZIONE AGRICOLA
SEZIONE DI TREVIGLIO

CODE 1

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



SAME S10N673AVT

trade name: **SAME GOLDEN 65 COMPATTO**

45 forward and 45 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
OECD approval No.:	**1/1798**
Date of approval:	9 December 1998
Period of test:	September - October 1998

ISMA Via Milano 43 24047 Treviglio BG Italy
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All stated dimensions and tests refer to tyre size 240/70R16 at front and 380/70R20 at rear, as well as to track widths 1060 mm at front and 910 mm at rear.

- Tractor manufacturer's name and address:	SAME DEUTZ-FAHR Group S.p.A.; 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.

1. SPECIFICATION OF TRACTOR

1.1 Identification

- Make:	SAME;
- Model:	S10N673AVT with 45 forward and 45 reverse speeds 40 km/h version;
- Trade name:	GOLDEN 65 COMPATTO;
- Type:	four-wheel drive, unit construction;
- Number of driving wheels:	4;
- Serial number:	1095;
- First serial number:	1001.

1.2 Engine

- Make:	SAME DEUTZ-FAHR Group;
- Model:	1000.3 AT1;
- Type:	air cooled 4-stroke diesel, direct injection turbo charged;
- Serial number:	1100.

1.2.1 *Cylinders*

- Number and disposition:	3 vertical in line;
- Bore x stroke:	105 x 115.5 mm;
- Capacity:	3000 cm^3;
- Compression ratio:	16:1;
- Arrangement of valves:	overhead;
- Cylinder liners:	without liners.

1.2.2 *Supercharging*

- Make:	GARRET;
- Model:	TA 25;
- Type:	exhaust driven supercharger, without intercooler;
- Pressure:	74.1 kPa.

1.2.3 *Fuel system*

- Fuel feed system:	AC corone fuel feed pump;
- Make, model and type of fuel filter:	FIAMM FNA 166/20;
- Total capacity of fuel tanks:	58 dm^3 (26+32 dm^3);
- Make, model and type of injection pump:	BOSCH PFR 1 K-90A 543, 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 13.19 dm^3/h;
. Timing:	16° before TDC;
- Make, model and type of injectors:	BOSCH DLLA 150 S 1323 multihole injecton nozzles;
- Injection pressure:	18 ± 1 MPa.

1.2.4 *Governor*

- Make:	SAME DEUTZ-FAHR Group;
- Model:	007.0992.4;
- Type:	electronic;
- Governed range of engine speed:	from 650 to 2500 rev/min;
- Rated engine speed:	2350 rev/min.

1.2.5 *Air cleaner*

- Pre-cleaner:	(optional, fitted on tested tractor)
. Make:	DONALDSON;
. Model:	P01-6330;
. Type:	cyclone;
. Location:	above the bonnet;
- Main filter	
. Make:	DONALDSON;
. Model:	FLG 08-0524;
. Type:	dry paper element filter with replaceable cartridge;
. Location of air intake :	front of engine, above bonnet;
- Maintenance indicator	with warning lamp on the dashboard.

1.2.6 *Lubrication system*

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

1.2.7 *Cooling system*

- Type of coolant:	air cooling with axial blower;
- Specification of fan:	propeller fan driven by engine shaft;
- Number of fan blades:	13;
- Fan diameter:	250 mm;
- Type of temperature control:	electrical control.

1.2.8 *Starting system*

- Make:	ISKRA;
- Model:	AZ 1349 12 V;
- Type:	electromagnetic engagement;
- Starter motor power rating:	2.7 kW;
- Cold starting aid:	thermostarter;
- Safety device:	electrical lockout on clutch and PTO controls;

1.2.9 *Electrical equipment*

- Voltage:	14 V;
- Generator	
. Make:	MAGNETI MARELLI;
. Model:	AAK 3563 14 V 65 A;
. Type:	alternator;
. Power:	65 A;
- Battery:	1 lead acid;
. capacity:	100 Ah at 20 hours rating.

1.2.10 *Exhaust system*

- Make:	SAME DEUTZ-FAHR Group;
- Model:	DGM SA 1857;
- Type:	one reflection absorption chamber;
- Location:	on the left hand side of engine, horizontal position under side bonnet;
- Height of outlet above ground:	340 mm.

1.3 Transmission

1.3.1 *Clutch (utilized only for travelling of tractor)*

- Make:	SAME DEUTZ-FAHR Group;
- Model:	790.23;
- Type:	single disk dry clutch;
- Number of plates:	1;
- Plates diameter:	280 mm;
- Control system:	hydraulic operated by pedal.

1.3.2 *Gear box*

- Make:	SAME DEUTZ-FAHR Group;
- Model:	790.31;
- Type:	mechanical synchromesh speed change gear; 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.
- Available options:	5 speed with 3 ranges of speeds (S/N/F), 2 forward speed (low/high), and one reverse speed.
. Number of gears:	30 forward and 15 reverse.
- Available options:	5 speed with 2 ranges of speeds (N/F), 2 forward speed (low/high), and one reverse speed.
. Number of gears:	20 forward and 10 reverse.

1.3.3 *Rear axle and final drives*

- Make:	SAME DEUTZ FAHR Group;
- Model:	790.44;
- Type:	bevel gear differential and epyciclic final drive.
- Differential lock	
. Make:	SAME DEUTZ FAHR Group;
. Model:	790.47;
. Type:	electrohydraulic;
. Control system:	engaged or disengaged by button.

1.3.4 *Front axle and final drives*

- Make:	SAME DEUTZ FAHR Group;
- Model:	790.43;
- Type:	original SAME DEUTZ-FAHR system with central shaft bevel gear drive, differential and epicyclic final drives.
- Differential lock	
. Make:	SAME DEUTZ FAHR Group;
. Model:	790.46;
. Type:	electrohydraulic;
. Control system:	engaged or disengaged by button.

1.3.5 *Total ratios and travelling speeds*

Gear	Group	Number of engine revolutions for one revolution of the driving wheels			Nominal travelling speed at rated engine speed of 2350 rev/min (*) km/h		
		Low	Medium	High	Low	Medium	High
FORWARD							
1	Slow	2952.67	2460.57	2004.41	0.15	0.18	0.23
2	Slow	2067.08	1722.62	1421.20	0.22	0.26	0.32
3	Slow	1442.63	1202.17	991.87	0.31	0.38	0.46
4	Slow	1032.36	860.27	709.79	0.44	0.53	0.64
5	Slow	679.20	566.00	466.96	0.67	0.80	0.97
1	Normal	467.54	389.60	321.43	0.97	1.16	1.41
2	Normal	327.30	272.79	225.00	1.38	1.66	2.01
3	Normal	228.41	190.39	157.02	1.98	2.37	2.88
4	Normal	163.46	136.25	112.36	2.76	3.32	4.02
5	Normal	107.54	89.62	73.94	4.20	5.04	6.11
1	Fast	84.96	70.83	58.41	5.32	6.38	7.74
2	Fast	59.45	49.59	40.87	7.60	9.11	11.06
3	Fast	41.53	34.61	28.54	10.88	13.06	15.83
4	Fast	29.68	24.75	20.39	15.22	18.26	22.16
5	Fast	19.54	16.28	13.44	23.12	27.75	33.63
REVERSE							
1	Slow	3112.01	2593.36	2112.58	0.15	0.17	0.21
2	Slow	2593.36	1815.58	1497.90	0.21	0.25	0.30
3	Slow	1520.48	1267.05	1045.40	0.30	0.36	0.43
4	Slow	1088.07	906.69	748.10	0.42	0.50	0.60
5	Slow	715.85	596.55	492.16	0.63	0.76	0.92
1	Normal	492.77	410.62	338.77	0.92	1.10	1.33
2	Normal	344.97	287.51	237.14	1.31	1.57	1.91
3	Normal	240.74	200.67	165.49	1.88	2.25	2.73
4	Normal	172.28	143.60	118.42	2.62	3.15	3.82
5	Normal	113.34	94.46	77.93	3.99	4.78	5.80
1	Fast	89.54	74.65	61.56	5.05	6.05	7.34
2	Fast	62.66	52.26	43.07	7.21	8.64	10.49
3	Fast	43.77	36.48	30.08	10.32	12.39	15.02
4	Fast	31.28	26.08	21.49	14.45	17.32	21.03
5	Fast	20.60	17.16	14.16	21.94	26.33	31.91

(*) *Calculated with a tyre dynamic radius index of 510 mm. (ISO 4251/1-1992)*

- Number of revolutions of front wheels for one revolution of rear wheels: 1.4998.

1.4 Power take-off

1.4.1 *Main power take-off proportional to engine speed*

- Type: independent, at rear of tractor, engaged or disengaged by push button, driven by multiplate wet clutch independent of travel clutch;
- Number of shafts: 1;
- Method of changing and dimensions of power take-off shaft ends: not changeable, 35 mm diameter, 6 splines, ISO 500-1991, type 1;
- Method of changing speed: by internal or external hand lever;
- Height above ground: 500 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance behind rear axle: 440 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	540 611	2077 2350	3.8462	none
750	750 752	2344 2350	3.1250	none
1000 (*)	1000 1021	2300 2350	2.3000	none

(*) *not fitted on tested tractor*

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

- Type: independent, at front of tractor, engaged or disengaged by push button, 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: 530 mm;
- Distance from the median plane of the tractor: 0 mm;
- Distance forward front axle: 630 mm;
- Direction of rotation (viewed facing driving end): anticlockwise.

PTO type	PTO speed rev/min	Engine speed rev/min	Engine/PTO transmission ratio	Power restriction kW
1000	1000 979	2400 2350	2.40	none

1.4.3 *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 main 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: 0.28 m;
- Number of power take-off shaft revolutions for one revolution of rear driving wheels: 14.74.

1.5 Hydraulic power lift

1.5.1 *Rear power lift*

- Make:	SAME DEUTZ-FAHR Group;
- Model:	790.39;
- Type:	load sensing;
- Type of hydraulic system:	open centre system;
- Number and type of cylinders:	1 internal single-acting;
- Type of lock for transport:	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 pump, driven by engine shaft;
- Transmission between pump and engine:	mechanical;
- Number and type of filters:	1, replaceable paper cartridge;
- Oil capacity:	41 dm^3 ;
- Site of oil reservoir:	gear box;
- Number, type and location of tapping points:	3, double acting, at rear of tractor;
- Maximum volume of oil available to external cylinders:	15 dm^3 ;

1.5.2 *Front power lift* (optional, fitted on tested tractor)

- Make:	SAME DEUTZ-FAHR Group;
- Model:	790.59;
- Type of hydraulic system:	open centre system;
- Type and number of cilinders:	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;
- Number and type of filters:	1, repeceable paper cartridge;
- Oil capacity:	41 dm^3 ;
- Site of oil reservoir:	gear box;
- Number, type and location of tapping points:	none;
- Maximum volume of oil available to external cylinders:	none;

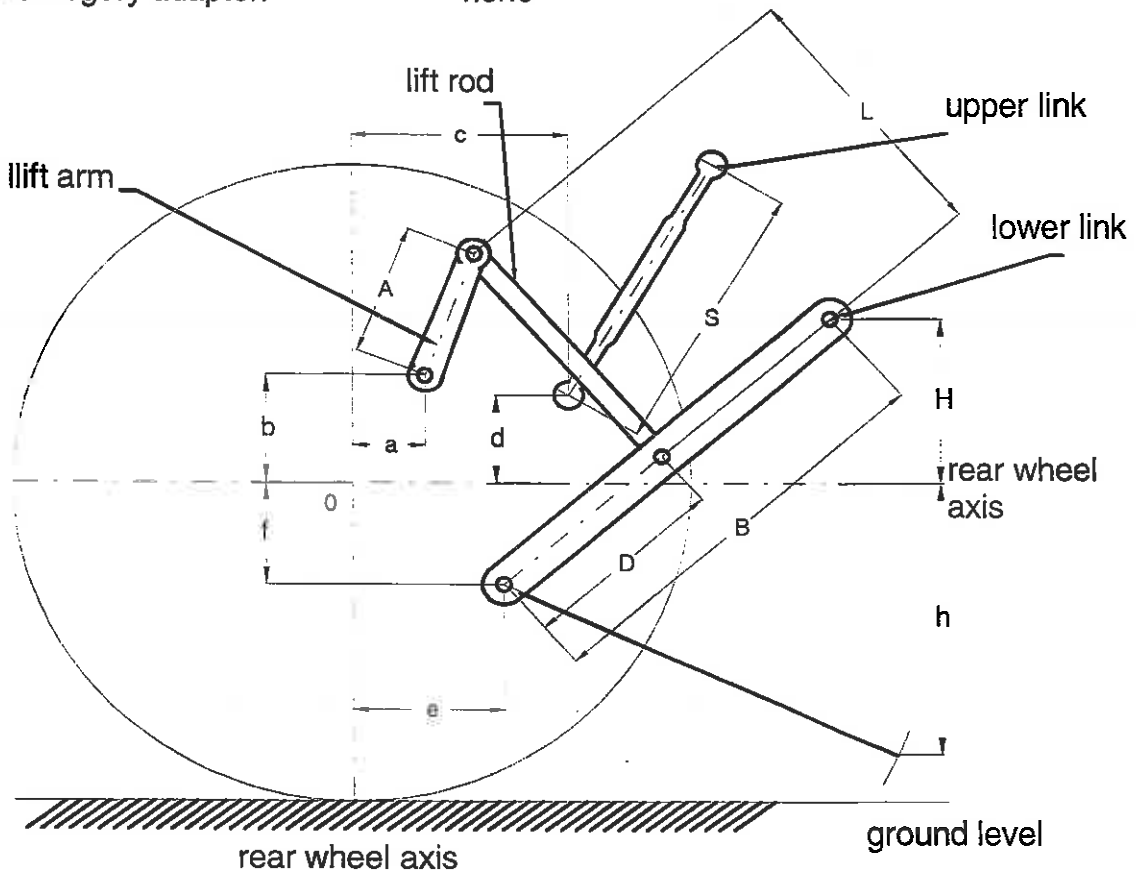
1.6 Three-point linkage

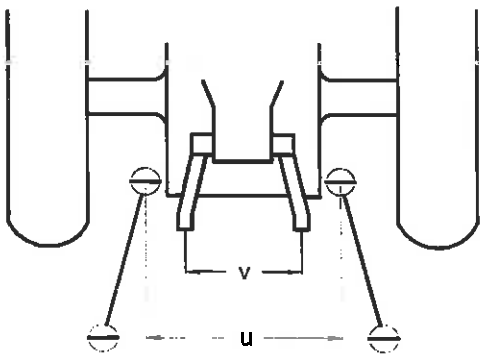
1.6.1 *Rear three point linkage*

- Category (ISO 730/1-1994): 2;
- Category adapter: none.

1.6.2 *Front three point linkage*

- Category (ISO 730/1-1994): 2
- Category adapter: none





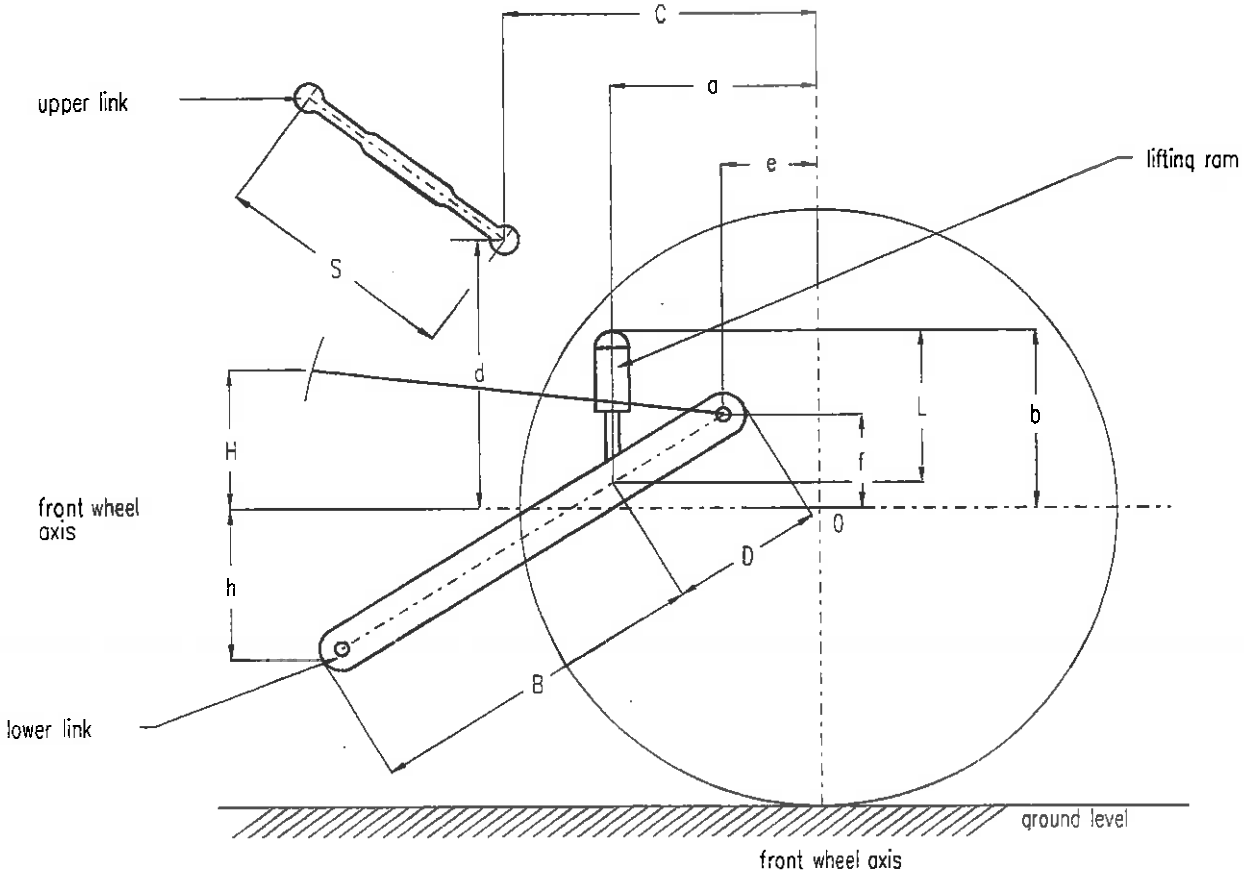
REAR LINKAGE GEOMETRY

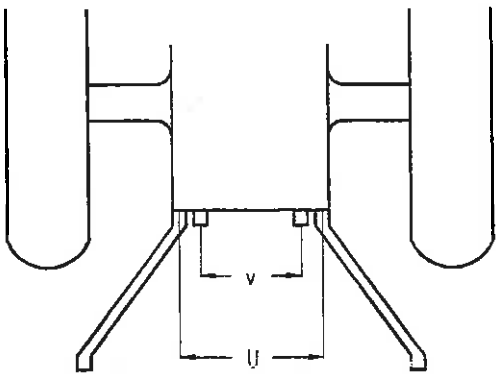
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Dimensions of rear linkage geometry when connected to the standard frame

			Dimension or range mm	Settings used in test mm
Length of lift arms		(A)	380	380
Length of lower links		(B)	746	746
Distance of lift arm pivot point from rear wheel axis (behind)				
- horizontally		(a)	177	177
- vertically		(b)	315	315
Horizontal distance between the 2 lower link points		(u)	435	435
Horizontal distance between the 2 lift arm end points		(v)	330	330
Length of upper link		(S)	from 475 to 680	535
Distance of upper link pivot point from rear wheel axis				
- horizontally		(c)	407-397-407	397
- vertically		(d)	260-295-335	295
Distance of lower link pivot point from rear wheel axis				
- horizontally		(e)	183	183
- vertically		(f)	154	154
Distance of lower link pivot points to lift rod pivot points on lower links		(D)	520	520
Length of lift rods		(L)	from 500 to 640	530
Height of lower hitch points relative to the rear wheel axis:				
Length of lift rods	(L)	500	640	530
Linkage distance of lift rods	(D)	520	520	520
Lowest position	(h)	263	484	310
Highest position	(H)	385	225	353
Height above ground of lower hitch points when locked in transport position (*)				863

(*) *Assuming the dynamic radius index = 510 mm (ISO 4251/1-1992)*





FRONT LINKAGE GEOMETRY

Dimensions of front linkage geometry when connected to the standard frame

		Dimension or range mm	Settings used in test mm
Length of lower links	(B)	670	670
Distance of cilinders pivot point from front wheel axis (forward)			
- horizontally	(a)	630	630
- vertically	(b)	485	485
Horizontal distance between the 2 lower link points	(u)	280	280
Horizontal distance between the 2 lift arm end points	(v)	310	310
Length of upper link	(S)	from 470 to 680	473
Distance of upper link pivot point from front wheel axis			
- horizontally	(c)	630 - 675	630
- vertically	(d)	540 - 480	540
Distance of upper link pivot point from front wheel axis			
- horizontally	(e)	433	433
- vertically	(f)	40	40
Distance of lower link pivot points to cylinders pivot points on lower links	(D)	235	235
Length of cylinders			
- in low position	(L)	360	360
- in high position	(L)	560	560
Height of lower hitch points relative to the front wheel axis			
- in low position	(h)	219	219
- in high position	(H)	365	365
Height above ground of lower hitch points (*)			715

(*) Assuming the dynamic radius index = 350 mm (ISO 4251/1-1992)

1.7 Swinging drawbar

(not available)

1.8 Trailer hitch

- Type:	DGM-GA 4200 C 6t V1,5;
- Hole diameter:	28 mm;
- Height above ground	
. Min.:	250 mm;
. Max.:	670 mm;
- Distance of hitch point from rear wheel axis	
. Horizontally:	600 mm;
- Distance of hitch point from power take-off shaft end	
. Vertically:	270 mm below, 140 mm above;
. Horizontally:	160 mm;
- Maximum vertical permissible load:	14.7 kN.

1.9 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.:	155 mm;
. Max.:	985 mm;
- Horizontal distance behind power take-off shaft end:	470 mm;
- Diameter of the pinhole:	28 mm.

1.10 Steering

- Specification:	hydrostatic steering with BOSCH hydraulic gear pump, 2 simple acting ram directly on front axle.
- Make:	DANFOSS;
- Model:	ORBITROLL OSPC 80 R;
- Type:	hydrostatic;
- Working pressure:	15 MPa;

1.11 Brakes

1.11.1 *Service brake*

- Make: SAME DEUTZ-FAHR Group;
- Model: 790.54;
- 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: 178 mm;
  - . Rear disc diameter: 224 mm;
  - . Material: FRENDO HDT 303 SINTERIX 2 lining material;
- Method of operation: hydraulically actuated with 2 pedals;
- Trailer braking take-off: none.

1.11.2 *Parking brake*

- Type: fully independent of service brake, 2 oil bath disc mounted on the pinion shaft in the gear box;
- Method of operation: mechanical by hand lever.

1.11.3 *Steering brake*

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

1.12 Wheels

- Number
  - . Front: 2, steering and driving;
  - . Rear: 2, driving;
- Wheelbase: 1926 mm.

-Track width adjustment:

	Minimum mm	Maximum mm	Adjustment method
Front	1020	1265	changing the position of the rims with respect to the disc
Rear	890	1290	

1.13 Protective strutture

- Make:	SAME DEUTZ-FAHR GROUP;
- Model:	C 40;
- Type:	cab, not tiltable;
- Manufacturer's name and address:	SAME DEUTZ-FAHR GROUP S.p.A., Viale F. Cassani 15, 24047 Treviglio BG, Italy.
- OECD approval number:	7/S/0 125;
- Date of approval:	19 March 1998;
- Modification certificate:	none.

1.14 Seat

1.14.1 *Driver's seat*

- Make:	GRAMMER;
- Model:	MSG 83/8;
- Type:	upholstered seat with back rest;
- Seat and steering wheel reversible:	no;
- Type of suspension:	adjustable spring;
- Type of damping:	shock absorber;
- Range of adjustment:	150 mm longitudinally and 60 mm vertically;
- Safety belt:	no.

1.14.2 *Optional driver's seats*

- Make:	KAB;
- Models:	P1/XH 2;
- Type:	upholstered seat with back rest
- Seat and steering wheel reversible:	no;
- Type of suspension:	adjustable spring;
- Type of damping:	shock absorber;
- Range of adjustment:	150 mm longitudinally and 60 mm vertically;
- Safety belt:	no.

1.14.2 *Optional driver's seats* (continued)

- Make:	GRAMMER;
- Models:	MSG 93/8;
- Type:	upholstered seat with back rest
- Seat and steering wheel reversible:	no;
- Type of suspension:	pneumatic, with automatic weight adjustment;
- Type of damping:	shock absorber;
- Range of adjustment:	150 mm longitudinally and 60 mm vertically;
- Safety belt:	no.

- Make:	GRAMMER;
- Models:	DS 83H/8;
- Type:	upholstered seat with back rest
- Seat and steering wheel reversible:	no;
- Type of suspension:	adjustable spring;
- Type of damping:	shock absorber;
- Range of adjustment:	150 mm longitudinally and 60 mm vertically;
- Safety belt:	no.

1.14.3 *Passenger's seat* none.

1.15 Lighting

Lighting system in accordance with EEC 78/933

	Height above ground of centre mm	Size mm	Distance from out side edge of lights to median plane of tractor mm
Headlights	990	160 x 100	185
Front parking lights	1220	110 x 35	495
Front direction indicator	1220	110 x 35	535
Rear parking lights	1080	50 x 60	430
Rear direction indicator	1080	50 x 60	480
Brake lights	1080	50 x 60	380
Reflectors	650	⌀ 80	490

2. TEST CONDITIONS

2.1 Overall dimensions

	Length		Width		Height at top of protective structure
	with front power lift	without front power lift	minimum	maximum	
	mm	mm	mm	mm	mm
Unballasted	4036	3431	1290	1640	2110
Ballasted	4136	3671	1290	1640	2110

2.2 Ground clearance:

230 mm below front axle (unballasted tractor).

2.3 Tractor mass (with full fuel tanks, cab and front power lift)

	Unballasted		Ballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	1140	1160	1490	1510
Rear	1295	1350	1180	1235
Total	2435	2510	2670	2745

2.4 Ballast

	Weights		Water
	Number	Total mass	
		kg	kg
Front	1	235	-
Rear wheels	-	-	-

2.5 Tyres and track width specifications

	Front	Rear
Tyres		
make	GOOD YEAR	PIRELLI
model	DT 810 RADIAL	TM 700
dimensions	240/70R16	380/70R20
ply rating	-	-
load index/speed index	104 A8	122 A8
type	radial	radial
maximum load (tyre manufacturer's)	900 daN	1500 daN
inflation pressure (tyre manufact.'s)	240 kPa	160 kPa
dynamic radius index	350 mm	510 mm
Chosen track width	1060 mm	910 mm
Technically permissible axle load	1766 daN	2943 daN
Other tyres available	280/65R15.5	380/70R20

2.6 Fuel

- Type: AGIP DIESEL, DIN 51601; (in accordance with the national standard)
- Density at 15 °C: 0.839 g/m^3.

2.7 Oils and lubricants

2.7.1 *Capacity and change interval*

	Capacity dm^3	Oil change h	Filter change h
Engine	6.7	150	300
Gear box with rear axle and final drives, hydraulic system, steering	41	1200	2400(*)
Front PTO transmission	2.5	1200	-
Front axle/final drives	6/3	1200	-
Brakes	2.5	-	-

(*) Or when the warning lamp is lighted

2.7.2 *Specifications*

	Recommended	Using during test
Engine oil		
Type	AKROS TURBO	AKROS TURBO
Viscosity	12.5 cSt	12.5 cSt
Classification	API SE - CD	API SE - CD
Transmission oil used in Gear box, front PTO transmission, front / 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

2.7.3 *Grease*

- Type: AKROS GREASE T2;
- Number of lubrication points: 15.

3. COMPULSORY TESTS RESULTS

3.1 Main power take-off

- Date and location of test: 17 September 1998, ISMA, Treviglio BG, Italy;
- Type of dynamometer: eddy-current, ZÖLLNER B500.

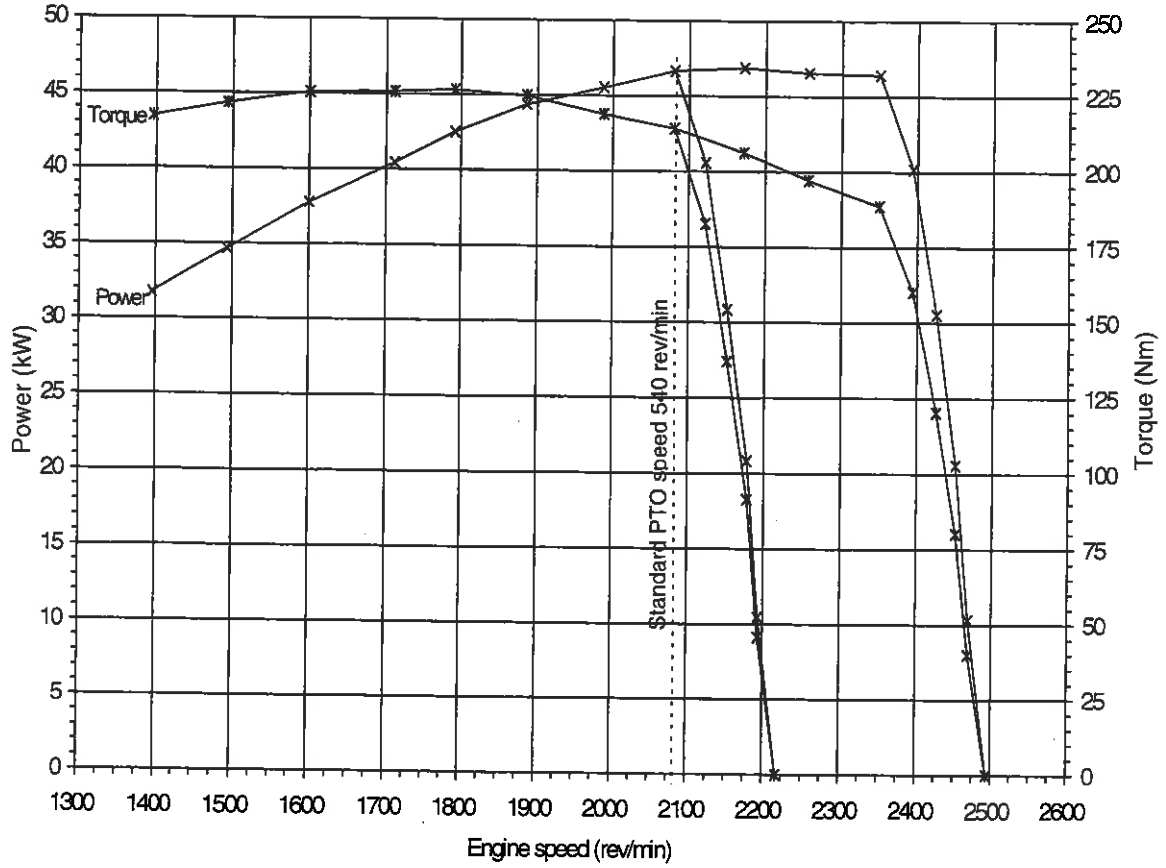
Power	Speed		Fuel consumption			Specific energy
	Engine	PTO	Hourly		Specific	
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO-HOUR TEST						
46.89	2172	565	12.98	10.89	232	3.61
3.1.2 POWER AT RATED ENGINE SPEED						
46.41	2350	611	13.19	11.07	239	3.52
3.1.3 STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
46.66	2081	541	12.75	10.70	229	3.66
3.1.4 PART LOADS						
3.1.4.1 The torque corresponding to maximum power at rated engine speed						
46.41	2350	611	13.19	11.07	239	3.52
3.1.4.2 85% of torque obtained in 1.4.1						
40.18	2394	622	12.35	10.36	258	3.25
3.1.4.3 75% of torque defined in 1.4.2						
30.54	2426	631	10.21	8.57	281	2.99
3.1.4.4 50% of torque defined in 1.4.2						
20.58	2452	638	7.96	6.68	325	2.58
3.1.4.5 25% of torque defined in 1.4.2						
10.36	2469	642	6.15	5.16	498	1.68
3.1.4.6 unloaded						
0	2494	648	4.06	3.41	-	-

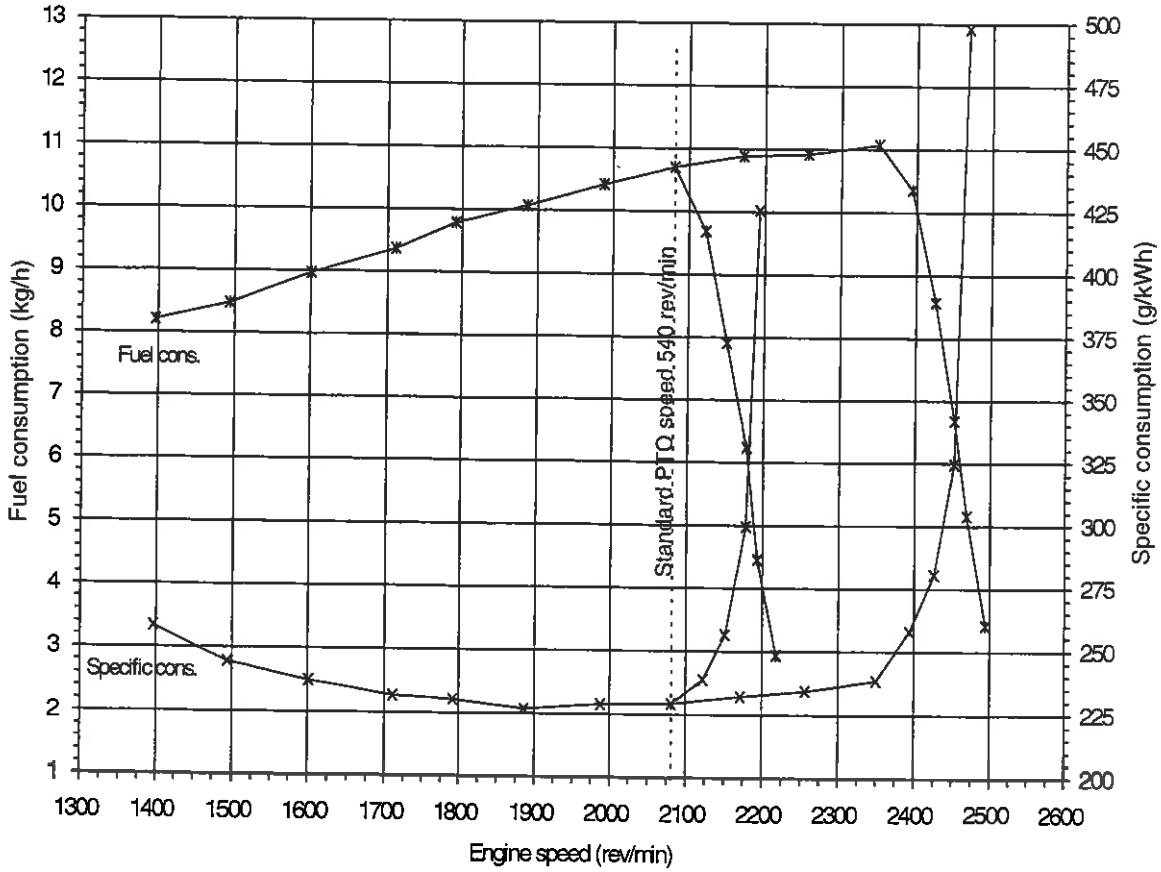
Power	Speed		Fuel consumption			Specific
	Engine	PTO	Hourly		Specific	energy
kW	rev/min	rev/min	l/h	kg/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED (540 rev/min)						
3.1.5.1 The torque corresponding to maximum power available						
46.66	2081	541	12.75	10.70	229	3.66
3.1.5.2 85% of torque obtained in 1.5.1						
40.57	2122	552	11.55	9.69	239	3.51
3.1.5.3 75% of torque defined in 1.5.2						
30.85	2151	559	9.43	7.91	256	3.27
3.1.5.4 50% of torque defined in 1.5.2						
20.83	2178	566	7.44	6.24	300	2.80
3.1.5.5 25% of torque defined in 1.5.2						
10.48	2193	570	5.32	4.46	426	1.97
3.1.5.6 unloaded						
0	2218	577	3.50	2.94	-	-

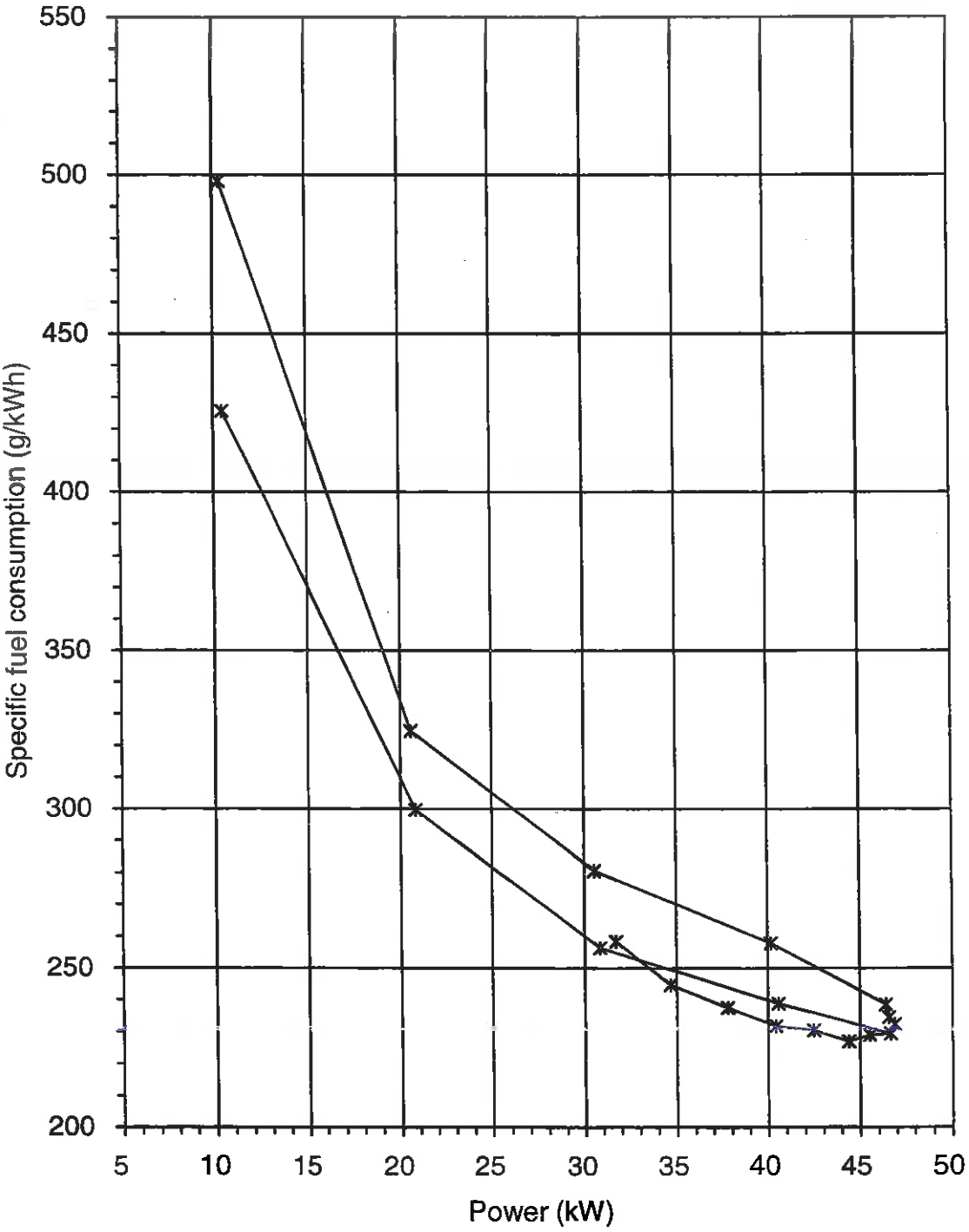
- No load maximum engine speed: 2494 rev/min;
- Equivalent flywheel torque at rated engine speed: 188.69 Nm;
- Equivalent flywheel torque at 2-hour test: 206.24 Nm;
- Maximum equivalent flywheel torque: 226.56 Nm at 1792 rev/min of the engine.

- Mean atmospheric conditions
  . Temperature: 21 °C
  . Pressure: 98.9 kPa
  . Relative humidity: 62 %

- Maximum temperatures
  . Coolant: 90 °C
  . Engine oil: 146 °C
  . Fuel: 32 °C
  . Engine air intake: 28 °C


Torque
Power
Power (kW)
Torque (Nm)
Standard PTO speed 540 rev/min
Engine speed (rev/min)


Fuel cons.
Specific cons.
Fuel consumption (kg/h)
Specific consumption (g/kWh)
Standard PTO speed 540 rev/min
Engine speed (rev/min)


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

3.2 Hydraulic power and lifting force

- Date of tests: 9 October 1998.

3.2.1 *Hydraulic power test*

- Sustained pressure with relief valve open: 18.5 MPa;
- Pump delivery rate at minimum pressure: 34.4 l/min;

	Flow rate l/min	Pressure MPa	Power kW
At 90% of the actual relief valve setting	33.7	16.7	9.38
Maximum	33.6	17.4	9.74

- 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.

3.2.2 *Rear power lift test*

		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	663	932
with lifting forces	mm	648	897
Maximum corrected force exerted through full range	kN	18.28	10.46
Corresponding pressure of hydraulic fluid	MPa	16.7	16.7
Moment about rear axle	kNm	16.98	16.10
Maximum tilt angle of mast from vertical	degrees	-	22

Lifting heights relative to the horizontal lower links (mm)											
-167	-156	-100	0	+100	+200	+300	+400	+492	+600	+700	+730
Lifting forces at hitch points (kN), corrected to 16.7 MPa											
-	18.28	18.47	19.12	19.49	19.64	19.25	19.99	21.81	-	-	-
Lifting forces at test frame (kN), corrected to 16.7 MPa											
16.95	-	16.99	16.60	15.99	15.15	13.69	12.61	-	10.89	10.64	10.46

3.2.3 *Front power lift test*

		At hitch point	On the frame
Height of lower hitch point above ground in down position	mm	131	131
Vertical movement			
without lifting forces	mm	584	616
with lifting forces	mm	580	612
Maximum corrected force exerted through full range	kN	14.52	11.88
Corresponding pressure of hydraulic fluid	MPa	16.7	16.7
Moment about rear axle	kNm	16.02	20.37
Maximum tilt angle of mast from vertical	degrees	-	5

Lifting heights relative to the horizontal lower links											
mm	-259	-238	-200	-100	0	+100	+200	+300	+321	+374	-
Lifting forces at hitch points, corrected to 16.7 MPa											
kN	14.52	-	14.59	14.67	15.18	15.80	16.40	16.91	17.09	-	-
Lifting forces at test frame, corrected to 16.7 MPa											
kN	-	17.66	16.10	15.50	14.67	14.06	13.31	12.40	-	11.88	-

3.3 Drawbar performance

- Date of tests: 23, 24, 29 and 30 September 1998;
- Type of track: concrete.

	Height of drawbar above ground mm	Tyre inflation pressure	
		Front kPa	Rear kPa
Unballasted	337	240	160
Ballasted	341	240	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
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)													
1NM	6.79	23.75	1.03	2462	15.1	869	0.96	27	88	122	23	62	99.6
2NL	7.51	21.98	1.23	2458	15.0	832	1.01	27	88	122	23	62	99.6
1NH	7.57	21.80	1.25	2458	15.0	831	1.01	27	89	122	23	62	99.7
2NM	8.75	21.29	1.48	2454	14.7	754	1.11	27	89	124	23	62	99.6
3NL	10.50	21.49	1.76	2454	15.0	626	1.34	27	88	124	23	62	99.5
2NH	11.14	22.55	1.78	2450	15.0	624	1.34	30	89	124	23	62	99.6
3NM	12.70	21.78	2.10	2450	15.2	546	1.54	30	90	125	23	62	99.6
4NL	15.19	22.32	2.45	2446	15.1	479	1.75	30	90	126	24	61	99.6
3NH	16.13	22.68	2.56	2442	14.8	462	1.81	30	90	126	24	62	99.5
4NM	17.98	22.03	2.94	2438	14.9	430	1.95	31	92	126	23	61	99.6
4NH	21.03	21.39	3.54	2419	14.8	426	1.97	31	92	127	23	61	99.6
5NL	21.76	21.23	3.69	2419	15.2	414	2.03	31	92	126	24	61	99.6
5NM	26.46	21.56	4.42	2404	14.6	372	2.25	31	91	127	24	61	99.6
1FL	28.91	22.44	4.64	2400	15.0	348	2.41	30	91	127	24	60	99.6
5NH	30.35	20.39	5.36	2335	12.1	367	2.28	30	91	128	24	60	99.6
1FM	31.01	20.34	5.49	2365	15.0	351	2.38	31	92	128	24	60	99.4
2FL	35.44	18.34	6.96	2350	8.9	315	2.66	31	90	127	24	60	99.6
1FH	36.17	18.24	7.14	2349	8.2	307	2.73	31	91	127	25	60	99.6
2FM	36.84	15.43	8.60	2347	6.1	301	2.79	32	91	128	24	60	99.6
3FL	37.83	13.02	10.46	2346	4.4	296	2.84	31	92	129	25	60	99.6
2FH	38.25	12.93	10.65	2346	4.1	292	2.87	32	91	129	25	61	99.6
3FM	38.34	10.82	12.76	2344	2.8	291	2.88	32	91	131	25	60	99.8
4FL	38.75	9.33	14.96	2346	2.0	287	2.92	32	92	131	25	60	99.6
3FH	38.14	8.83	15.56	2335	1.7	293	2.86	32	90	130	25	60	99.6
4FM	38.65	7.77	17.92	2323	1.3	286	2.93	33	90	131	25	60	99.5

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
3.3.2 MAXIMUM POWER IN TESTED GEARS (ballasted tractor)													
1SL	0.69	16.53	0.15	2481	14.7	6406	0.13	32	87	116	23	65	100.2
1SM	0.95	19.02	0.18	2480	14.6	4716	0.18	32	87	116	23	65	100.2
2SL	1.21	20.69	0.21	2479	15.0	3678	0.23	32	87	116	23	65	100.2
1SH	1.16	19.97	0.21	2477	15.3	3983	0.21	32	87	117	24	65	100.2
2SM	1.35	18.75	0.26	2477	14.6	3407	0.25	32	88	117	23	65	100.2
3SL	1.90	23.58	0.29	2476	14.6	2437	0.34	32	87	119	23	65	100.2
2SH	1.89	23.48	0.29	2475	14.9	2466	0.34	33	88	120	23	64	100.2
3SM	2.28	24.13	0.34	2473	15.3	2154	0.39	33	88	120	23	65	100.2
4SL	2.78	25.67	0.39	2470	14.8	1842	0.46	33	88	123	23	65	100.3
3SH	2.88	25.26	0.41	2466	14.8	1896	0.44	33	90	123	24	64	100.3
4SM	3.16	24.71	0.46	2466	15.2	1744	0.48	33	90	123	24	64	100.2
4SH	3.93	25.27	0.56	2462	15.0	1476	0.57	32	90	125	24	64	100.2
5SL	4.39	26.37	0.60	2463	15.0	1317	0.64	32	90	125	24	64	100.2
5SM	5.11	25.93	0.71	2462	15.0	1137	0.74	33	91	125	24	64	100.2
1NL	6.24	26.12	0.86	2466	14.4	886	0.95	33	91	126	23	64	100.1
5SH	6.06	25.69	0.85	2459	15.0	1000	0.84	33	91	127	23	64	100.1
1NM	7.21	25.19	1.03	2462	15.0	816	1.03	32	91	127	23	64	100.1
2NL	8.38	24.74	1.22	2458	14.9	730	1.15	32	90	130	23	63	100.1
1NH	8.77	25.25	1.25	2457	14.9	722	1.16	32	90	130	22	63	100.1
2NM	10.17	24.91	1.47	2455	14.7	640	1.31	34	91	131	22	63	100.2
3NL	12.01	24.72	1.75	2450	14.9	577	1.45	34	91	132	23	63	100.1
2NH	12.44	25.16	1.78	2451	14.9	553	1.52	34	91	132	23	63	100.2
3NM	14.67	25.04	2.11	2447	14.6	492	1.70	34	92	132	23	63	100.2
4NL	17.57	25.93	2.44	2438	14.8	439	1.91	33	92	132	23	63	100.2
3NH	17.95	25.45	2.54	2431	14.6	461	1.82	33	92	133	23	63	100.2
4NM	20.27	25.09	2.91	2427	15.0	426	1.97	33	92	132	23	63	100.2
4NH	24.97	25.61	3.51	2412	14.8	378	2.22	34	92	133	22	64	100.3
5NL	25.36	24.88	3.67	2408	14.7	379	2.21	34	91	133	22	64	100.3
5NM	29.94	24.67	4.37	2394	15.0	349	2.41	34	91	132	22	63	100.3
1FL	31.40	24.53	4.61	2395	15.1	331	2.53	34	92	133	22	62	100.3
5NH	32.12	20.84	5.55	2346	9.1	346	2.42	33	92	133	22	63	100.3
1FM	36.05	23.26	5.58	2323	11.7	305	2.75	34	92	133	23	63	100.3
2FL	36.46	18.62	7.05	2346	7.3	306	2.74	34	92	134	23	63	100.3
1FH	37.42	18.85	7.15	2335	7.1	297	2.83	35	92	133	22	63	100.3
2FM	37.92	15.92	8.58	2331	5.2	290	2.89	35	91	134	22	63	100.3
3FL	38.40	13.31	10.39	2332	3.9	286	2.93	34	92	134	22	63	100.2
2FH	38.63	13.11	10.61	2338	3.7	286	2.93	34	92	134	23	63	100.2
3FM	38.58	10.97	12.66	2335	2.6	288	2.91	33	93	134	23	64	100.2
4FL	38.96	9.45	14.84	2333	1.9	286	2.93	34	93	134	22	63	100.2
3FH	38.90	8.93	15.68	2346	1.0	288	2.92	34	93	133	22	63	100.2
4FM	38.61	7.81	17.81	2318	1.0	285	2.94	34	93	133	22	63	100.2

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
3.3.3 FIVE HOUR TESTS													
3.3.3.1 FIVE HOUR TEST at 75% of pull at maximum power													
2FL	29.16	13.98	7.51	2408	3.7	331	2.53	33	93	133	23	61	100.2
3.3.3.2 FIVE HOUR TEST at pull corresponding to 15% wheel slip, without additional ballast													
4NM	31.33	24.31	4.64	2391	14.7	340	2.47	34	92	135	22	61	100.4

Oil consumption during ten hours duration of test 3.3.3.1 and 3.3.3.2: 59 g/h.

3.4 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	4.00	3.91	4.30	4.22
Radius of turning circle	3.36	3.27	3.65	3.58

3.5 Location of centre of gravity

	mm
Height above ground	618
Distance forward from rear axle centre	890
Distance from tractor's median plane to the left	10

3.6 Braking

- Date of tests: 12 October 1998.

3.6.1 *Cold service braking device test*

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
Ballasted tractor	35.5	1.0	4.04
		2.0	4.55
		3.0	4.70
		4.0	4.86
		5.0	5.09
		6.0	4.96
Unballasted tractor	35.5	1.0	3.28
		2.0	3.57
		3.0	4.15
		4.0	4.45
		5.0	4.59
		6.0	4.72

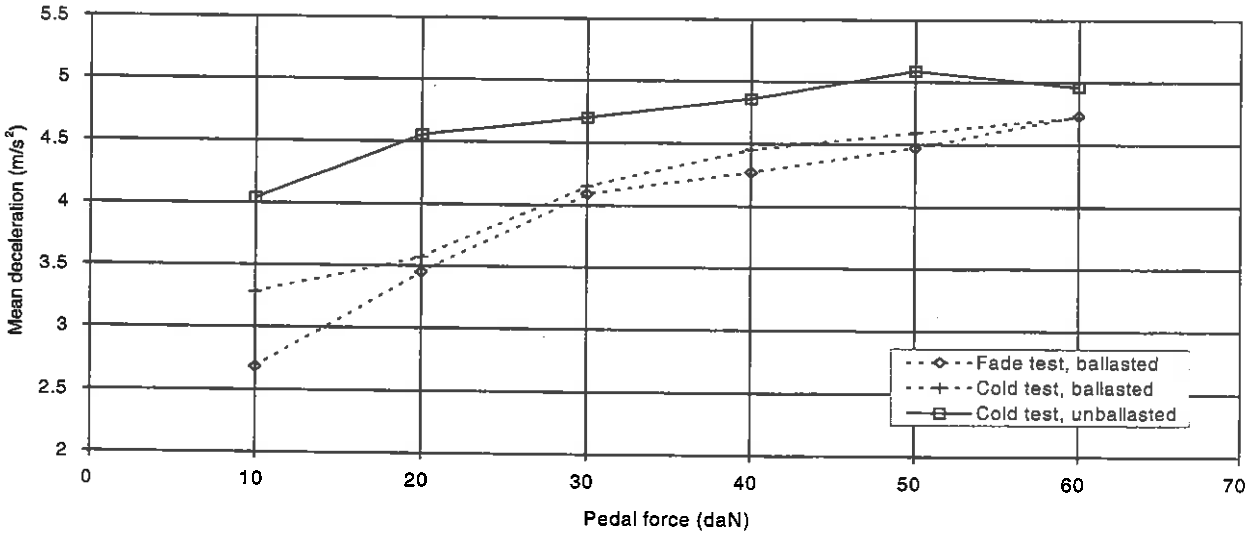
- Maximum deviation of tractor from its original course: none;
- Abnormal vibration: none;
- Brake heating method: heated by towing of the tractor for 1 km.

3.6.2 *Fade test*

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2
Ballasted tractor	35.5	1.0	2.68
		2.0	3.45
		3.0	4.09
		4.0	4.27
		5.0	4.47
		6.0	4.73

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

3.6.1 *Cold service braking device test* (continued)
3.6.2 *Fade test* (continued)



3.6.3 *Parking brake*

	Ballasted tractor on 18% slope	
	up	down
	daN	daN
Braking device control force	11.9	12.7

3.7 Measurement of external noise level

- Date of test: 13 October 1998;
- Type of track: concrete;
- Type of sound level meter: BRÜEL & KJÆR model 2231.

Gear	Travelling speed before acceleration	Sound level
	km/h	dB(A)
5FH	26.6	86.0

3.8 Repairs: none.
3.9 Remarks: none.

TEST ENGINEER
(Dr. Carlo BISAGLIA)

DIRECTOR OF TESTING STATION
(Prof. Giuseppe COLZANI)

HEAD OF ISMA
(Ing. Giovanni SANTORO)